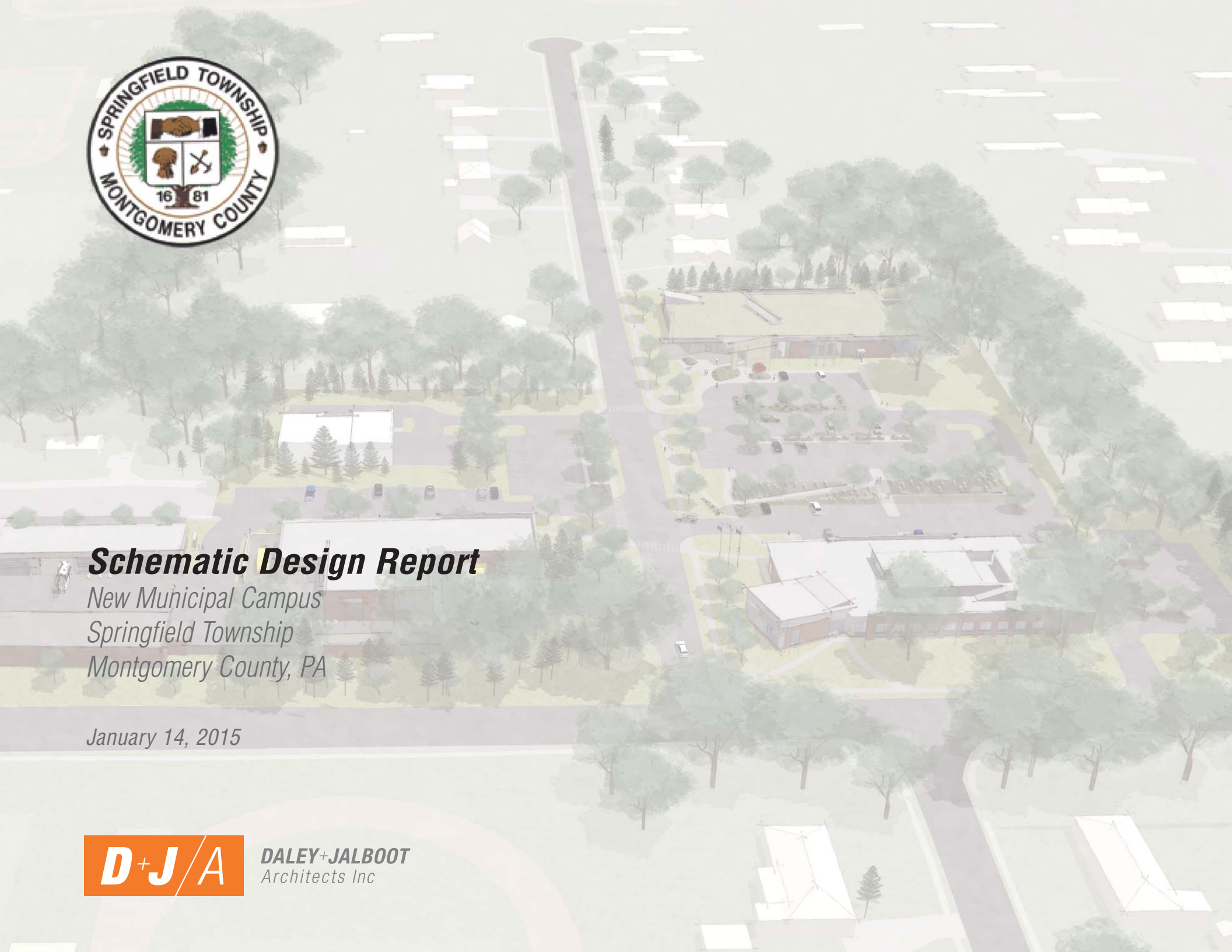

Schematic Design Report

New Municipal Campus
Springfield Township
Montgomery County, PA

January 14, 2015

DALEY+JALBOOT
Architects Inc

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INTRODUCTION

The following Schematic Design Report is based on accumulative work completed by Daley + Jalboot and our team of consultants over the course of 5 months, from August 2014 to December 2014.

The main component of this Schematic Design is a new Municipal Campus at the current location, a 9.08 acre parcel at the intersection of Paper Mill Road and Hawthorne Lane in Springfield Township, Montgomery County, PA. Buildings include a new 22,000 sf Public Works Building, a new 22,000 sf Public Library, and a new 19,000 sf Police and Administration Building.

The first phase of the design work started in August 2014 with the Predesign phase. This phase began with space programming and concluded with conceptual campus designs. Space programming of the campus was completed and documented with the 'Space Needs Assessment' report issued on September 17, 2014. Information was compiled via numerous meetings with the Township staff to determine the actual space needs. That document serves as a basis for the conceptual and schematic design of the campus.

Following space programming, conceptual campus and building designs were generated and reviewed with both the Township staff and the Municipal Campus Advisory Comittee over a three month period. During that time, we met with the committee on five occassions and the staff on four occassions. The conceptual designs were revised, reviewed, and fine-tuned to address the comments and ideas discussed. The Schematic Design for the Campus and Buildings are the result of this collaborative process.

The Schematic Design documented in this report summarizes the design of the campus and all the buildings listed above. In addition to this report, a full set of Schematic Design drawings were completed that delineate scope of work and building systems.

Four volumes of drawings were created and organized accordingly:

Volume 1 -	Site Improvements
Volume 2 -	New Public Works Facility
Voulme 3 -	New Public Library
Volume 4 -	New Police Administration Building

These volumes include information regarding the following disciplines:

- Civil Engineering
- Landscape Architecture
- Architecture
- Structural Engineering
- Mechanical Engineering
- Electrical Engineering
- Plumbing Engineering

The Mechanical, Electrical, and Plumbing disciplines also generate a Basis of Design that further describes the building systems. Using the designs and information developed by all the disciplines noted above, a preliminary estimate of probable cost was developed and is included in this report.

D+JA has enjoyed working closely with the representatives for Springfield Township and we look forward to developing this project for the benefit of the Springfield Township community.

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PROJECT GOALS

The following are project design goals and design criteria expressed by the Municipal Campus Advisory Committee. These items were generated by the Committee over years of planning, during the Master Plan and previous project phases. They represent the basic parameters within which the campus and project should be developed.

Design Goals

- Buffering the existing adjacent residential properties from the new campus components.
- Addressing and improving the identity and image of the Township Campus from both Paper Mill Road and Hawthorne Lane.
- Carefully considering views to and from the site.
- Improved circulation planning, including attention to pedestrian connections.
- Demonstration of leadership in stormwater management.
- Creation of integral and useful outdoor spaces that extend the buildings into the landscape and amplify the civic purpose of the campus.
- Integrated design approach to Public Works that addressed the functionality of operations and integrates building, work yard and access drive spaces.

Design Criteria

- Overall sustainable design approach, during both the design and construction phases.
- A Stormwater Management system that incorporates a 'Best Practices' approach.
- Comfortable work environments that create an efficient and healthy environment, support occupants needs, and increase productivity.
- Lowest practical 'cost of ownership' over the project's life cycle.
- Creative use of space that allows for flexibility to accommodate future changes in function and occupancy.
- A comprehensive overall design that is at least 30% more efficient then current energy code requirements.

SUMMARY SPACE NEEDS

The space needs were documented in the 'Space Needs Assessment' report, dated September 17, 2014. The following is a summary of those needs and criteria:

Campus

- Create a cohesive composition of buildings that projects a positive civic image of the campus and respects the surrounding community.
- Develop clear and separate vehicle access and pedestrian pathways. Create a safe walkable campus with connections to the surrounding trails.
- Demonstrate leadership in stormwater management by using creative and cost effective methods that enhance the site and limit its impact on the surrounding environment.
- Maintain a scale sensitive to the neighboring residences, especially along Hawthorne Lane.
- Develop an easy to maintain outdoor landscape that works with the built environment to enhance the overall visual appeal of the Campus. The landscape should also create beautiful and useful environments and habitats that work to limit run off, water usage and 'heat island' effect energy loads.

Stormwater Management

- The Township has a desire to 'lead by example' and the campus should serve as a model for responsible and environmentally sensitive land development.
- Per the direction of the Township Engineer, the overall system should be designed to reduce post- development runoff for a given storm to the next lowest pre-development rate. For example, the post-development for a 100 year storm should be reduced, at a minimum, to the pre-development rate for a 50 year storm.
- Ideally the system will infiltrate the new two-year increase in runoff volume in accordance with the National Pollutant Discharge Elimination System (NPDES) permit requirements of the PA Department of Environmental Protection (DEP). Infiltration capability of the site will be determined by testing the soils at areas selected for recharge structure locations.
- Per the direction of the Township's Municipal Campus Advisory Committee, vegetated bio-retention areas (rain gardens) are to be incorporated into the stormwater management plan to, literally, increase the "greening' of the site.
- The overall stormwater system should be designed to allow for the anticipated phasing of construction of the new Campus.

Public Works

- Provide covered storage, both in building and open shed configurations, for the majority of Township owned vehicles and equipment. This will extend the life of this equipment and so decrease the budget impact of repair and replacement costs.
- Expand area of storage for support supplies and tools to increase overall efficiency and productivity.
- Improve and expand support areas for Public Works staff. These areas may have to be used for 24 hour support for emergencies and snow events and should be equipped accordingly.

Administration

- Create a modern, technology enhanced, public facility with an improved presence in the community. Design of the building and its technology should be flexible to allow for future expansion and addressing the community's evolving needs.
- Facility should support both government and community activities and be visible, open, and welcoming to the Township community at large.
- Improve township residents' access and way-finding to frequently utilized departments, such as Parks & Recreation, Code Enforcement, and Tax Collector offices.
- Provide additional space for departments that have outgrown their current facilities.
- Realign adjacencies to improve ease of staff interactions and functional efficiencies.
- Improve technical capabilities of Board Room for presentations and meetings. New facilities are to include the ability to properly project materials and images, which is lacking in the current space.
- Provide sufficient file & drawing storage capabilities throughout. Area at Code Enforcement should include space to effectively review large format drawings required for building permits and land development applications.
- Improve support spaces including work rooms, copy areas and conference rooms.
- Conference rooms should equipped with projection and teleconferencing capabilities. These spaces should be located to allow for community use.

Police

- Facility should be designed meet Pennsylvania Law Enforcement Accreditation Commission (PLEAC) standards, so that the Police Department may be PLEAC accredited. PLEAC standards include minimum space requirements for detention cells and evidence storage and handling.
- Provide a separate entrance with the receptionist located behind glass and within the secure area.
- Improve workforce conditions for officers and staff.
- Provide improved technology capabilities.
- Create properly separated detention spaces for the safety and security of the officers, staff and detainees.
- Provide a dedicated Emergency Operations Center (EOC) for use in emergency situations. This does not currently exist and EOC activities occur in the main office space, impacting efficiency and daily operations.

Library

- Create a welcoming environment for all ages.
- The building should accommodate a wide array of library and community activities in a lively atmosphere.
- The spaces should foster an open interaction among use groups, while accommodating their individual needs.
- Create areas and rooms separated from the more active spaces for quieter reading, study and contemplation.
- Open, flexible spaces to accommodate and adapt to a wide variety of programs and events.
- Provide a wide choice of seating options, including tables and casual seating. Primary tables should be for two people. Tables should allow for their combination to create space for larger groups. Seating should be flexible to allow patrons and staff to create 'spaces within spaces' that can easily be set and reset. These seating options should be dispersed throughout the entire library.
- Community Rooms should be designed and located so they can be separated from the library areas to allow for use when the Library is closed.
- Design a Café that creates a comfortable environment for social interaction. The Café should have a vending area to allow patrons to buy beverages and snacks during their visits.
- A centralized service desk that handles both reference and circulation functions.
- Separate the areas for children and young adults/teens. Each area should have its own unique identity that caters to the needs of these very different groups.

PROJECT NARRATIVE

The Schematic Design delineated in this document is the result of careful review of the SNA document, the project budget, and the Springfield Township design goals articulated in the preceding pages. The byproduct of a collaborative process with the Municipal Campus Advisory Committee and Township staff, these criteria were synthesized, developed, tested, and given form in the Schematic Design for the Municipal Campus, Police and Administration Building, Public Works Facility, and Library.

Overview

This schematic design includes all new integrated facilities, however the site design can accommodate leaving the existing Police / Administration for replacement in a later phase. While the overall building area of the campus has increased from Master Plan projections, the construction budget estimates for the Campus remain within the Township's established parameters.

Construction of the individual buildings and the site improvements will be phased to maintain continuous operation of the campus. Phasing will be further refined moving forward through close collaboration with the project's Construction Manager.

The following are key aspects of the Schematic Design.

Campus

The campus design is a sensitive and efficient. It balances natural site features, attributes of the adjacent residential properties, Township goals, and program requirements. The design creates significant usable green space and establishes a convenient relationship between buildings and parking areas. Additionally, these green spaces are linked with key interior spaces to provide a strong connection between building and site. Working closely with the Committee, the parking capacity was reviewed and the schematic design accommodates a total of 179 cars. The parking lots are linked via walkways to allow convenient shared use when larger activities occur.

The buildings are placed on the site as per the Master Plan configuration. All use a similar material palette, while creating their own unique identity within the overall composition. Public Works and the Police / Administration buildings are designed to create a measured presence along Paper Mill Road and inflected to create a gateway entrance to the Campus. Arrival to the site and building entrances is via Hawthorne Lane, giving the buildings a presence along this public way. This configuration also makes the entrances convenient to adjacent parking.

Vehicle circulation and pedestrian ways are clearly delineated and separated to improve overall site access and safety. Main pedestrian circulation is shifted to the south side of Hawthorne Lane and is buffered from the road and parking lots with a wide tree lined landscaped lane. This pathway links the Police / Administration and Library buildings and mediates between the civic and neighborhood scale of Hawthorne Lane. Infrastructure improvements utilize environmentally sensitive designs and include a new fiber optic loop that will deliver improved technology capabilities and create a flexible campus tele/data backbone.

The overall landscape design preserves existing mature specimens near the entrance to the campus to provide a stately natural gateway to the site. Layers of deciduous canopy trees, evergreens, flowering understory trees, lawn and perennial plantings are employed to buffer the more noisy campus functions from the quieter uses. These same elements are used to define outdoor spaces that allow for a wide variety of campus and community uses. Native species and other hardy, tolerant plantings will be employed to create an active and varied landscape that will enhance the environment and habitat of the campus, while limiting the cost and amount of maintenance required on the site.

Stormwater Management

The overall approach is sustainable, creative, cost effective, and efficient. Individual components of this integrated design are as follows:

- System will utilize a 'rain tank' infiltration system. These tanks will employ a modular plastic unit system that is 95% open by volume and provides superior support capacity that allows them to be utilized at more places in and around the site. Locations of the tanks accommodates phased construction.
- Vegetated bio-retention areas are incorporated into parking areas of the site to provide filtering of parking lot runoff before it enters the subsurface system. Use of these bio-retention areas will reduce maintenance requirements for the rain tank system and extend their operating life.
- In parking areas that cannot be drained to bio-retention areas 'water quality inlets' are proposed to remove sediment and debris before they enter the rain tank system, again extending the operational life of the system.
- Roof runoff will be harvested from the main Public Works building and will be stored in a cistern. This water will be available for use to wash the Township vehicles.
- A green roof is proposed for the Library. This roof will aid in the reduction of runoff from the roof, as well as provide other environmental and habitat benefits.
- Strategic use of bio-retention rain gardens filled with a low maintenance mix of native species provides functionality, and adds considerable aesthetic value in key locations.

Public Works Facility

The schematic design accommodates the space needs and addresses the challenges of site and existing topograpghy by separating the program elements into stand-alone component buildings. This approach combines compatible functions and allows the buildings to be scaled to their individual needs. It also allows all access to the Public Works compound to be from Township owned land. These buildings are placed at the perimeter of the yard, thereby enhancing both the visual and the acoustic screening of the public works activities from the rest of the site and the surrounding neighbors. Landscaping and fencing will be employed to aid this screening and provide an attractive and natural face to Paper Mill Road.

Public Works Facility consists of the following departments:

- Administrative
- Staff Support
- Equipment Bay
- Refuse Bay
- Repair Bay
- Wash Bay

Additional Public Works Facility features:

- Buildings will be constructed of durable material to withstand the inherent level of abuse associated with the functions they contain.
- A 20,000 gallon underground cistern will collect all roof stormwater for reuse in the washing of equipment. This unit is sized using existing water usage statistics and annual rainfall averages to avoid oversizing.
- The efficiency of the high height garage and storage bay spaces of the garage will be increased by inserting storage and mechanical lofts above them.
- The use of exterior covered storage will protect the equipment and limit the amount of conditioned space, thereby reducing both energy use and costs.
- The layout of individual buildings and covered storage facilities around an open yard accommodates the Townships request to provide protection for vital and expensive equipment. This will extend the life of the equipment.
- The open yard provides adequate maneuvering and operations space, as well as space to easily accommodate seasonal community programs.
- Air conditioned spaces are limited to office, staff, locker, and training room spaces. Heating systems at these and other spaces, such as work bays, include ventilation systems to maintain a healthy work environment by bringing in outside air. Heat exchangers will be employed in this ventilation system to heat the outside air as it comes into the buildings, reducing the energy cost of providing this healthy outside air.
- Technology will be upgraded throughout to improve systems and equipment management capabilities and increase operational efficiency.

Police / Administration Building

This one story building is placed along Paper Mill Road. It will accommodate both Police and Township Administration and serves as the civic face of the campus. The design is inflected at the corner of Hawthorne Lane to announce the entrance to the campus and to support the building's civic role. Separate entrances, facing the interior of the campus, are provided for both the Police and Administration. Primary significance is given to the Administration wing entrance off of Hawthorne Lane, as this will see more frequent community use. The building will be technology rich to improve communication and efficiency. The Police and Administration wings are provided with internal connections, both for the public and the Township staff to ease access and improve interaction between departments and functions. All spaces will be ADA accessible to provide the broadest use of the facility by all segments of the community.

Additional Police / Administration shared features:

- Majority of the occupied administrative spaces are located at the perimeter of the building to allow daylight and fresh air to enter and to provide exterior views.
- The use of loft spaces for mechanical equipment and long term storage utilizes space efficiently and reduces the overall footprint of the building. The exterior walls of the loft extend to effectively screen rooftop mechanical equipment, both visually and acoustically.
- Separate Heating Ventilating and Air Conditioning (HVAC) units will be provided for the Administration and Police areas to allow for the different patterns of use of these functions. In addition, the Board and server / telecom rooms will have their own units to handle their unique energy requirements. This will allow for individual control programs based on occupant use patterns that will increase the overall energy efficiency of the building.
- Light monitors will be used at the center of the building to bring natural light to the interior spaces and limit the amount of artificial light required. This will reduce energy requirements as well as providing a healthy work environment.
- Solar orientation of the building requires shading of windows to reduce glare and solar heat gain while allow daylight into the building.
- Compact floor layout utilizes double loaded corridor floor plans for increased circulation efficiency.
- A shared, secure server and telecommunications room will eliminate the need for two separate spaces and increase the overall efficiency of delivering the latest technologies to all building occupants.

Administration Wing

This area is designed to present a welcoming face to the Township community. The main entrance is clearly defined and located in close proximity to both Hawthorne Lane and the adjacent parking lot. The meeting and conference rooms will be equipped with a wide range of audio visual capabilities. These rooms, as well as the reception desk and departments most frequently accessed by the public, are located off of an inviting main lobby.

The Administration wing consists of the following departments:

- Township Administration (including Tax Collector)
- Parks and Recreations
- Code Enforcement
- Support

Additional Administration wing features:

- Layout of Board Room and Board Room Lobby provides the ability to accommodate additional attendees to public meetings if necessary.
- The following are the increase in area for each Township Administration Department based on existing spaces:

Administration:	+610 SF (includes Tax Collector office & stor)
Parks & Recreation:	+335 SF
Code Enforcement:	+590 SF
Support:	+1,480 SF
Board Room:	+590 SF

- Support Area includes spaces such as Archive File Storage, Staff Toilet Rooms, Caucus Room, Copy/Work Room, Break Room, and Board Room Lobby.

Police Wing

This wing is designed to meet the needs of the police officers and staff in an inviting, efficient, safe, and highly functional work environment. The building will be designed to PLEAC standards so that the facility that can be PLEAC certified. The design provides both officers and staff with the spaces and tools they need to perform their duties with a high degree of safety and proper procedural protocals. Support spaces will include separate Men's and Woman's Locker rooms. Multi-use meeting rooms will have current audio visual technology, with the flexibility to accommodate future upgrades. Public spaces will be as open as possible while still providing the controls and safety that the police operations require.

The Police wing consists of the following departments:

- Police Administration
- Police Patrol Operations
- Police Patrol Operations Detention
- Support

Additional Police wing features:

- Separate entrances for officers and public. Both are located adjacent to their respective dedicated use parking lots.
- The discrete location of the Sally Port will enhance safe police operations.
- The new facility will provide secure evidence storage with the necessary chain of custody procedures that meet PLEAC standards.
- The design provides detention cells for adults (male and female), and juveniles. These facilities will be designed to meet PLEAC standards.
- The secure detention area will provide the necessary area separation and safety features common in modern police facilities. These include gun lockers, alarmed panic devices, compartmentalization, secure access, and direct access from the Sally Port.
- The building and area will be equipped with a security and access control system that limits access to certain areas to authorized staff only.
- The following are the increase is area for each Police Department based on existing spaces:

Police Administration:	+905 SF
Police Patrol Operations:	+2,590 SF
Police Patrol Operations Detention:	+635 SF
Support:	+295 SF

Library

The Library Building is towards the rear of the campus, thereby putting the quietest component of the campus in the closest proximity to the residential neighbors. The entrance to this building is located along Hawthorne Lane, on the side of the building facing the Administration and Police Building. The building also utilizes natural grade to bank the back side of the building and reduce its scale along the edge that faces the neighbors' properties. While respectful of the scale of the residential building nearby, the Library creates an exciting, open and inviting presence on the campus side and along Hawthorne Lane. This building also engages with the exterior spaces surrounding it, drawing the landscape into the building and the activities of the building out into the landscape. This technology rich facility will engage the community on many levels and serve as the communal living room for Springfield Township.

Library consists of the following departments:

- Adult Services
- Teen / Young Adult Services
- Children's Services
- Support / Administrative
- Meeting / Public

Additional Library features:

- A flexible open plan that will accommodate many different types of programs, while providing future adaptability.
- A wide variety of rooms for community and library use, that can accommodate varied uses such as: special events, library and community programs, seminars, workshops, voting, and public meetings.
- The design of the Children's section includes ample interior play area that would allow the library to qualify as a Family Place library, making it eligible for grant funding. This play area is augmented by a controlled exterior courtyard that further expands play and learning opportunities.
- The plan creates clearly separated Children's and Teen/Young Adult areas, each with its own unique identity and a scale that fits the intended audience of users. These spaces are also separated from adult reading areas to limit any noise interference.
- Energy conscious design features, such as large overhangs and screen walls shade the large areas of glazing, reduce solar heat gain in the summer while allowing for an open and inviting library environment.
- North facing light monitors allows a diffuse light to enter deep into the building. This use of natural light will reduce overall lighting costs of operation for the building.
- A green roof reduces HVAC cooling load in the summer, helps to control run off from the roof and creates a habitat that increases the biodiversity of the site.
- Shelving layouts provide an average of 10-15% increase in shelving space throughout the sections of the Library.

CAMPUS AREA SUMMARY - PER BUILDING		NET PROGRAM AREA	NET BLDG AREA	GROSS BLDG AREA
PUBLIC WORKS	GROUND LEVEL	18,875 SF	20,180 SF	22,225 SF
	LOFT LEVEL	2,440 SF	5,425 SF	5,925 SF
PUBLIC WORKS		**21,315 SF**	**25,605 SF**	**28,150 SF**
PUBLIC WORKS EXTERIOR SUPPORT		**7,540 SF**		**8,015 SF**
ADMINISTRATION	GROUND LEVEL	7,325 SF	8,535 SF	9,510 SF
POLICE	GROUND LEVEL	6,795 SF	8,100 SF	9,205 SF
GROUND LEVEL SUBTOTAL		**14,120 SF**	**16,635 SF**	**18,715 SF**
ADMINISTRATION	LOFT LEVEL	610 SF		650 SF
POLICE	LOFT LEVEL	510 SF		540 SF
SHARED LOFT		970 SF		1,035 SF
LOFT LEVEL SUBTOTAL		**2,090 SF**	**0 SF**	**2,225 SF**
GROUND LEVEL		14,120 SF	16,635 SF	18,715 SF
LOFT LEVEL		2,090 SF	0 SF	2,225 SF
POLICE / ADMIN		**16,210 SF**	**16,635 SF**	**20,940 SF**
LIBRARY		**17,045 SF**	**20,515 SF**	**22,025 SF**

TOTAL CAMPUS AREA		
PUBLIC WORKS	GROUND LEVEL	22,225 SF
POLICE / ADMINISTRATION	GROUND LEVEL	18,715 SF
LIBRARY	GROUND LEVEL	22,025 SF
GROUND LEVEL SUBTOTAL		**62,965 SF**
PUBLIC WORKS	LOFT LEVEL	5,925 SF
POLICE / ADMINISTRATION	LOFT LEVEL	2,225 SF
LOFT LEVEL SUBTOTAL		**8,150 SF**
GROUND LEVEL SUBTOTAL		62,965 SF
LOFT LEVEL SUBTOTAL		8,150 SF
TOTAL CAMPUS AREA		**71,115 SF**
PUBLIC WORKS EXTERIOR		**8,015 SF**

			GROSS BLDG AREA	SD ESTIMATE	
1	PUBLIC WORKS	GROUND LEVEL	22,225 SF	$ 5,463,000	
2		LOFT LEVEL	5,925 SF		
3		EXTERIOR SUPPORT	8,015 SF	$ 687,000	
4	POLICE / ADMIN	GROUND LEVEL	18,715 SF	$ 5,390,000	
5		LOFT LEVEL	2,225 SF		
6	LIBRARY		22,025 SF	$ 6,922,000	
7	SITEWORK			$ 3,676,000	
8	**CONSTRUCTION SUBTOTAL**		79,130 SF	**$ 22,138,000**	
9					
10	CONSTRUCTION CONTINGENCY			$ 1,106,000	
11	**CONSTRUCTION COST**			**$ 23,244,000**	
12					
13	FF&E PUBLIC WORKS		22,225 SF	$ 557,250	*B
14	FF&E POLICE / ADMIN		18,715 SF	$ 642,775	*B
15	FF&E LIBRARY		22,025 SF	$ 761,600	*B
16	**SUBTOTAL - CONSTRUCTION + FF&E**			**$ 25,205,625**	*A
17					
18	ARCHITECTURAL & ENGINEERING FEES			$ 1,377,555	*C
19	CM FEES			$ 540,000	
20	LEGAL FEES			$ 25,000	
21	FINANCING COSTS			TBD	
22	MISCELLANEOUS - ALLOWANCE			$ 52,000	
23	OTHER			TBD	
24					
25	**TOTAL PROJECT COST**			**$ 27,200,180**	

Notes

*A Master Plan Project Figure in Report included Lines 1 to 16. Total estimate, line 16, provided in MP was $20M to 25.1M

*B Township to provide figures for FF&E Line Items 13, 14, 15 related to Technology, Security, A/V, and Telephone/Com

*C Line Item #18 for Architectural & Engineering Fees does NOT include fees for DD to CA for Police / Admin Building
This Add Alternate is $272,570.

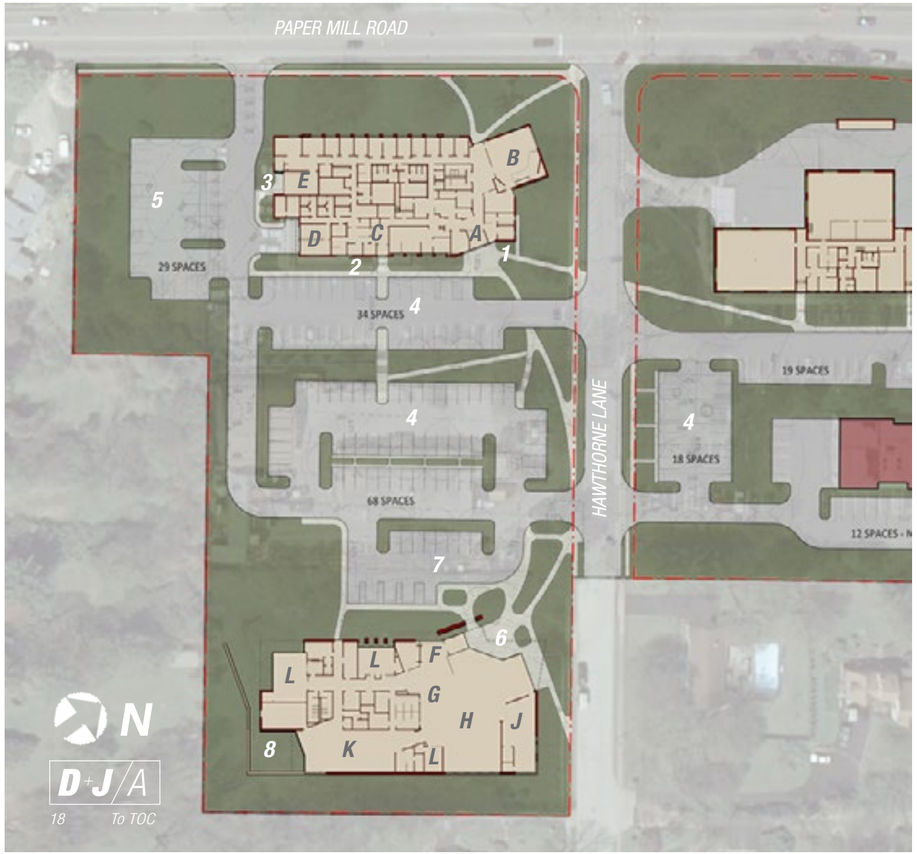
*D Township consulting Construction Manager to provide independent project construction estimates.

*E RFP established a construction budget of $20M for initial phase of PW, Library, & Site. SD estimate for these items is $18.9M

Site Plan - Existing

A. NEW ADMINISTRATION BLDG
B. POLICE DEPARTMENT
C. NEW LIBRARY
D. NEW PUBLIC WORKS FACILITY
E. AMBULANCE BLDG
F. LASALLE COLLEGE HS FIELDS
G. SPRINGFIELD TWP HS
FRASER ROAD
PAPER MILL ROAD
RTE 309
CHELTENHAM AVENUE
HAWTHORNE LANE
G
B
A
D
E
C
F
N
D+J/A

A. NEW ADMINISTRATION BLDG
B. POLICE DEPARTMENT
C. NEW LIBRARY
D. NEW PUBLIC WORKS FACILITY
E. AMBULANCE BLDG
F. LASALLE COLLEGE HS FIELDS
G. SPRINGFIELD TWP HS
FRASER ROAD
PAPER MILL ROAD
RTE 309
CHELTENHAM AVENUE
HAWTHORNE LANE
UNDERGROUND INFILTRATION 'RAIN TANK'
BIO-RETENTION RAIN GARDEN
G
B
A
D
E
C
F
N
D+J/A



SITE FEATURES
1. ADMINISTRATION ENTRY
2. POLICE ENTRY
3. PATROL OFFICERS ENTRANCE
4. PARKING - PUBLIC
5. PARKING - TOWNSHIP VEHICLES
6. LIBRARY ENTRY & PLAZA
7. LIBRARY DROP-OFF LOOP
8. EXTERIOR COURTYARD
9. LANDSCAPE BUFFER
10. PUBLIC WORKS EQUIPMENT YARD

POLICE/ADMIN BUILDING
- **A.** ADMIN LOBBY
- **B.** BOARD ROOM
- **C.** POLICE LOBBY
- **D.** SALLY PORT
- **E.** ROLL CALL / TRAINING / MTG RM

LIBRARY
- **F.** LIBRARY LOBBY
- **G.** CIRCULATION DESK
- **H.** ADULT READING ROOM
- **J.** TEEN READING ROOM
- **K.** CHILDREN'S READING ROOM
- **L.** COMMUNITY ROOM

PUBLIC WORKS
- **O.** REFUSE BAY
- **P.** REPAIR BAY
- **Q.** ADMIN / SUPPORT SPACES
- **R.** WASH BAY
- **S.** GAS PUMPS
- **T.** EQUIPMENT BAYS
- **U.** EXTERIOR STORAGE
- **V.** SALT SHED

A. NEW ADMINISTRATION BLDG
B. POLICE DEPARTMENT
C. NEW MUNICIPAL LIBRARY
D. NEW PUBLIC WORKS FACILITY
E. AMBULANCE BLDG
F. LASALLE COLLEGE HS FIELDS
G. SPRINGFIELD TWP HS
F
C
E
D
A
B
G
HAWTHORNE LANE
PAPER MILL ROAD
FRASER ROAD

A. NEW ADMINISTRATION BLDG
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G. SPRINGFIELD TWP HS
B
A
G
C
D
PAPER MILL ROAD
E
HAWTHORNE LANE
A
F

Aerial View - Campus

Exterior view - Public Works Facility

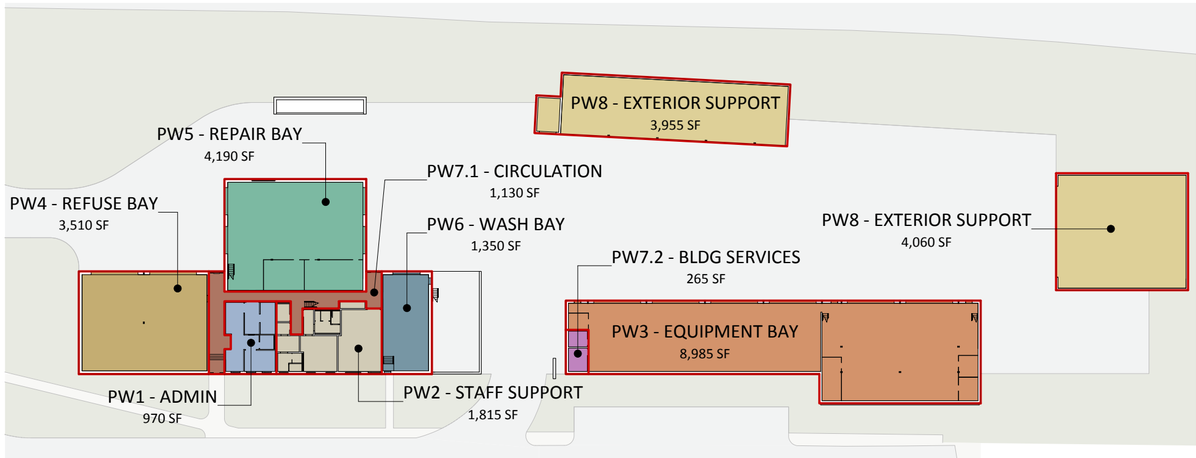
SPRINGFIELD
TOWNSHIP

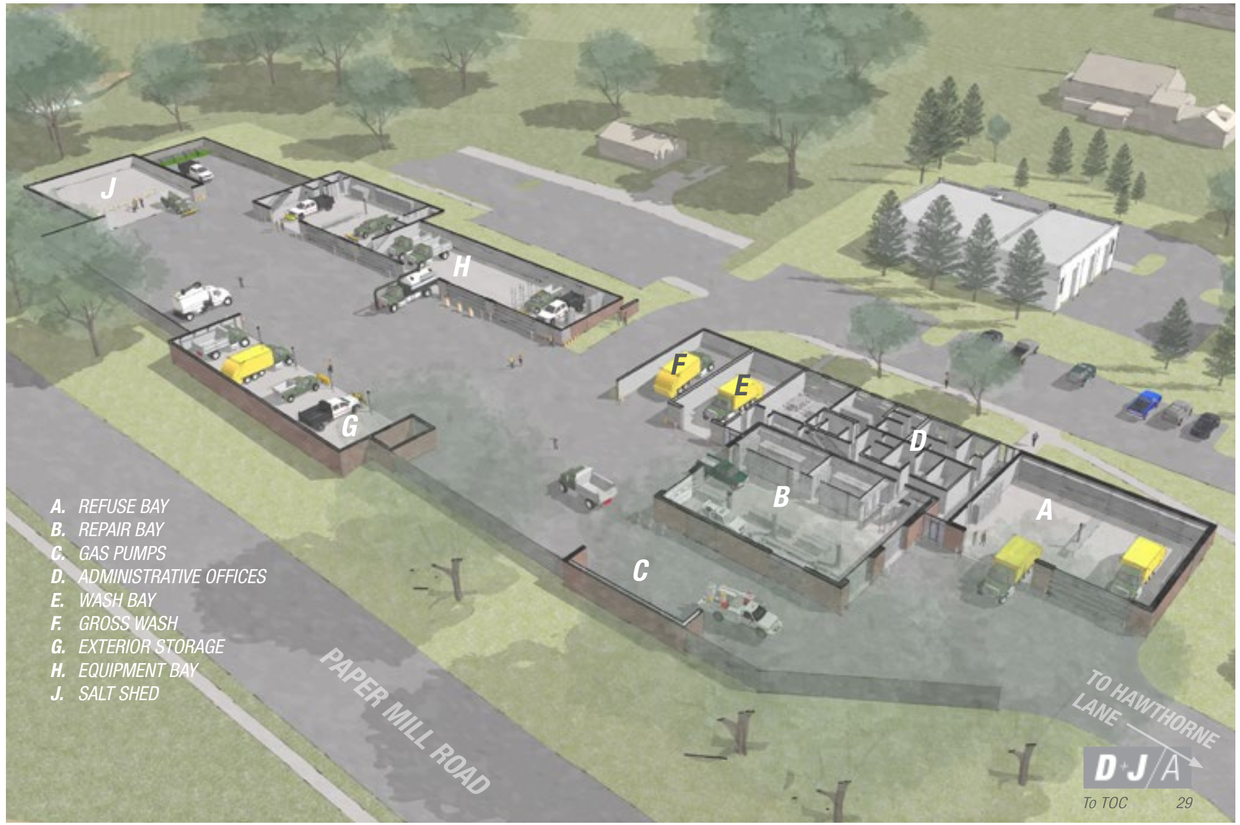
DEPARTMENTAL LEGEND

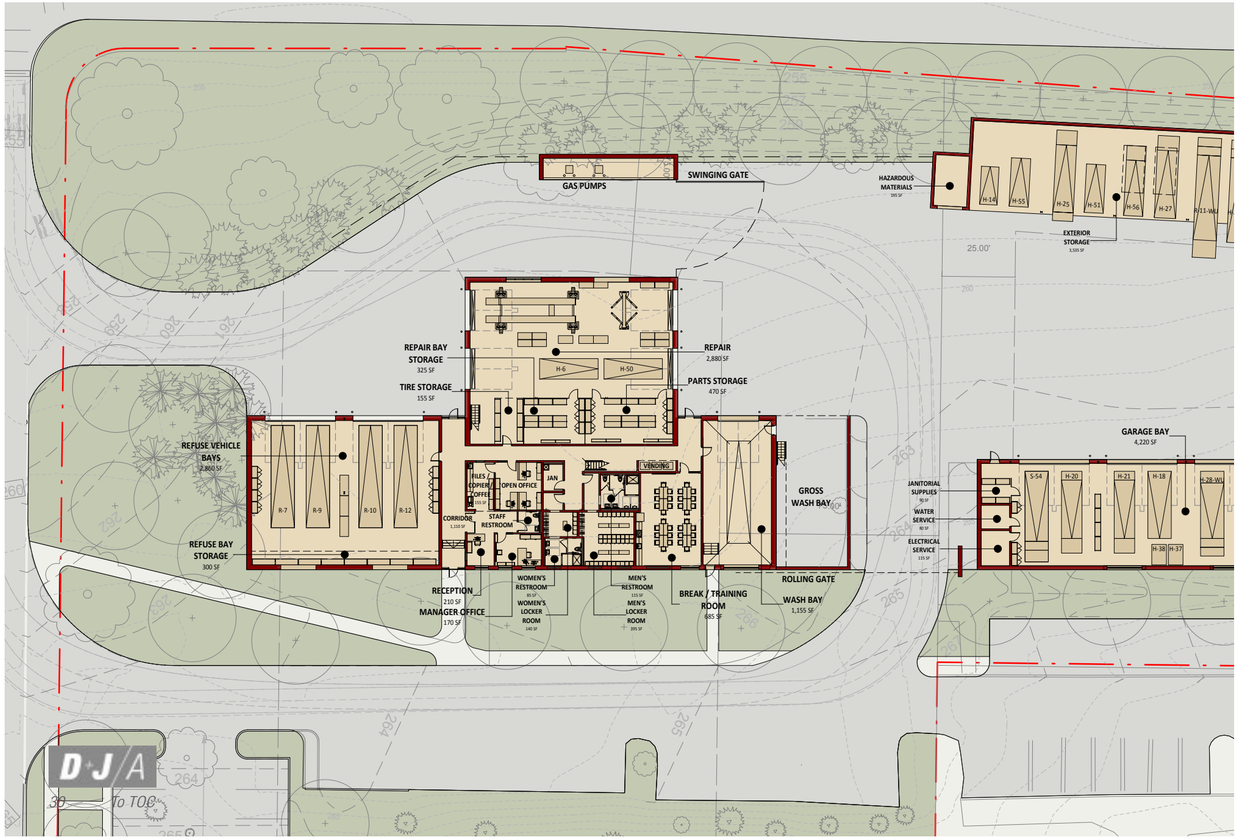
- PW1 - ADMIN
- PW2 - STAFF SUPPORT
- PW3 - EQUIPMENT BAY
- PW4 - REFUSE BAY
- PW5 - REPAIR BAY
- PW6 - WASH BAY
- PW7.1 - CIRCULATION
- PW7.2 - BLDG SERVICES
- PW8 - EXTERIOR SUPPORT

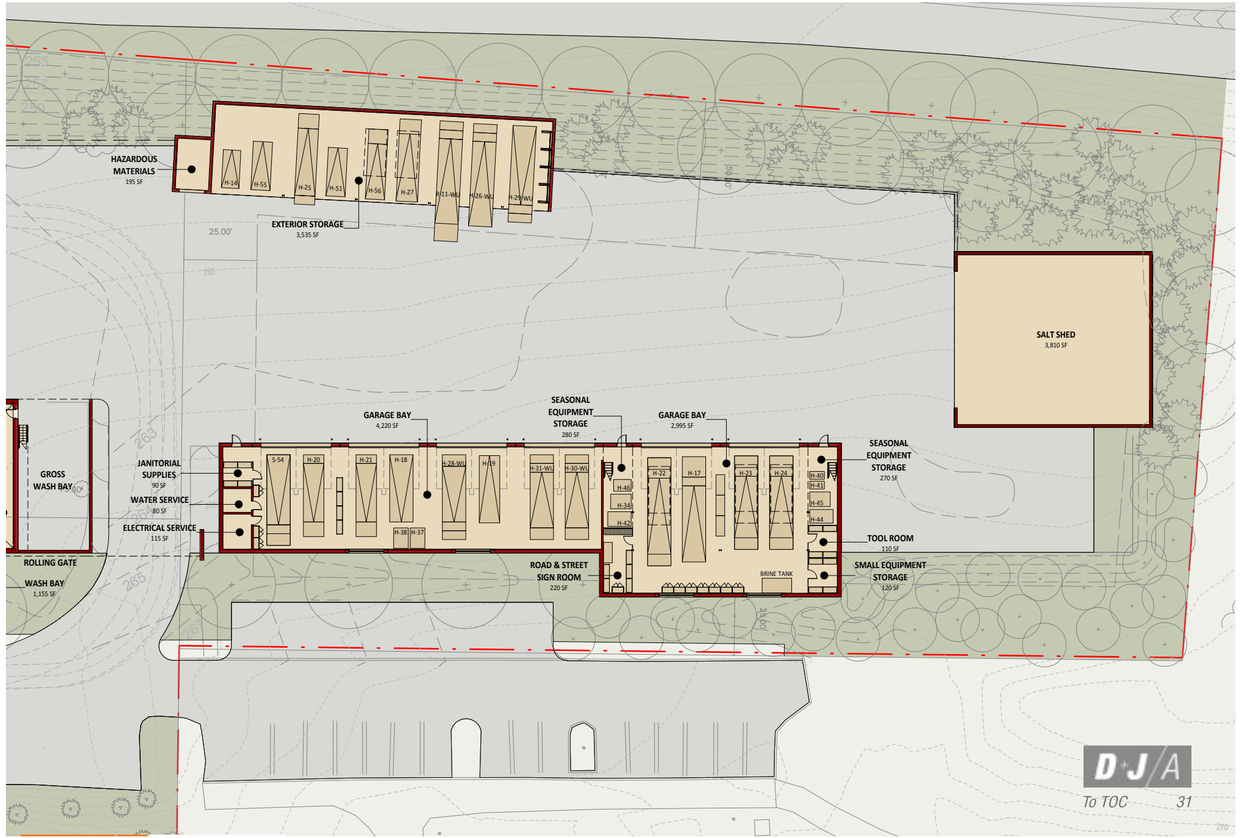
4 - GROSS AREA (Departments)	
NAME	AREA
1 - MAIN BLDG	
PW1 - ADMIN	970 SF
PW2 - STAFF SUPPORT	1,815 SF
PW4 - REFUSE BAY	3,510 SF
PW5 - REPAIR BAY	4,190 SF
PW6 - WASH BAY	1,350 SF
PW7.1 - CIRCULATION	1,130 SF
	12,970 SF
2 - EQUIPMENT BLDG	
PW3 - EQUIPMENT BAY	8,985 SF
PW7.2 - BLDG SERVICES	265 SF
	9,250 SF

4 - GROSS AREA (Departments)	
NAME	AREA
3 - EXTERIOR	
PW8 - EXTERIOR SUPPORT	8,015 SF
	8,015 SF
4 - MAIN BLDG LOFT	
PW2 - STAFF SUPPORT	560 SF
PW5 - REPAIR BAY	1,050 SF
PW7.1 - CIRCULATION	465 SF
PW7.2 - BLDG SERVICES	2,620 SF
	4,695 SF
5 - EQUIPMENT BLDG LOFT	
PW3 - EQUIPMENT BAY	1,080 SF
PW7.1 - CIRCULATION	155 SF
	1,230 SF






GAS PUMPS
SWINGING GATE
HAZARDOUS MATERIALS
195 SF
EXTERIOR STORAGE
3,535 SF
25.00'
REPAIR BAY STORAGE
325 SF
TIRE STORAGE
155 SF
REPAIR
2,880 SF
PARTS STORAGE
470 SF
REFUSE VEHICLE BAYS
2,800 SF
REFUSE BAY STORAGE
300 SF
CORRIDOR
1,100 SF
STAFF RESTROOM
OPEN OFFICE
JAN
VENDING
GROSS WASH BAY
GARAGE BAY
4,220 SF
JANITORIAL SUPPLIES
90 SF
WATER SERVICE
80 SF
ELECTRICAL SERVICE
115 SF
RECEPTION
210 SF
MANAGER OFFICE
170 SF
WOMEN'S RESTROOM
WOMEN'S LOCKER ROOM
MEN'S RESTROOM
MEN'S LOCKER ROOM
BREAK / TRAINING ROOM
685 SF
ROLLING GATE
WASH BAY
1,155 SF

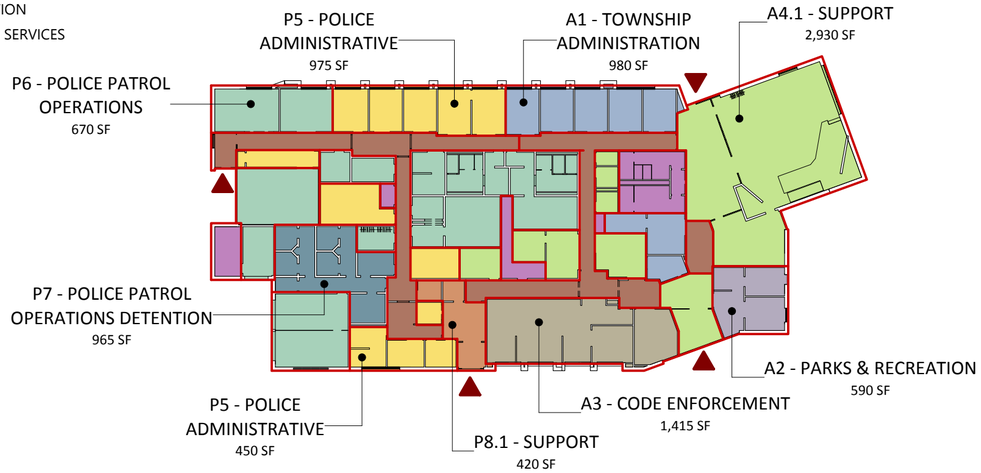

HAZARDOUS MATERIALS
195 SF
EXTERIOR STORAGE
3,535 SF
25.00'
SALT SHED
3,810 SF
GROSS WASH BAY
ROLLING GATE
WASH BAY
1,155 SF
JANITORIAL SUPPLIES
90 SF
WATER SERVICE
80 SF
ELECTRICAL SERVICE
115 SF
GARAGE BAY
4,220 SF
SEASONAL EQUIPMENT STORAGE
280 SF
GARAGE BAY
2,995 SF
ROAD & STREET SIGN ROOM
220 SF
BRINE TANK
SEASONAL EQUIPMENT STORAGE
270 SF
TOOL ROOM
110 SF
SMALL EQUIPMENT STORAGE
120 SF

DEPARTMENT LEGEND

- A1 - TOWNSHIP ADMINISTRATION
- A2 - PARKS & RECREATION
- A3 - CODE ENFORCEMENT
- A4.1 - SUPPORT
- A4.2 - CIRCULATION
- A4.3 - BUILDING SERVICES
- P5 - POLICE ADMINISTRATIVE
- P6 - POLICE PATROL OPERATIONS
- P7 - POLICE PATROL OPERATIONS DETENTION
- P8.1 - SUPPORT
- P8.2 - CIRCULATION
- P8.3 - BUILDING SERVICES
- S4.2 - CIRCULATION
- S4.3 - BUILDING SERVICES

3 - GROSS AREA (Departmental)	
NAME	AREA
ADMIN	
A1 - TOWNSHIP ADMINISTRATION	1,390 SF
A2 - PARKS & RECREATION	590 SF
A3 - CODE ENFORCEMENT	1,415 SF
A4.1 - SUPPORT	4,235 SF
A4.2 - CIRCULATION	1,185 SF
A4.3 - BUILDING SERVICES	695 SF
	9,510 SF
ADMIN LOFT	
A4.1 - SUPPORT	650 SF
	650 SF

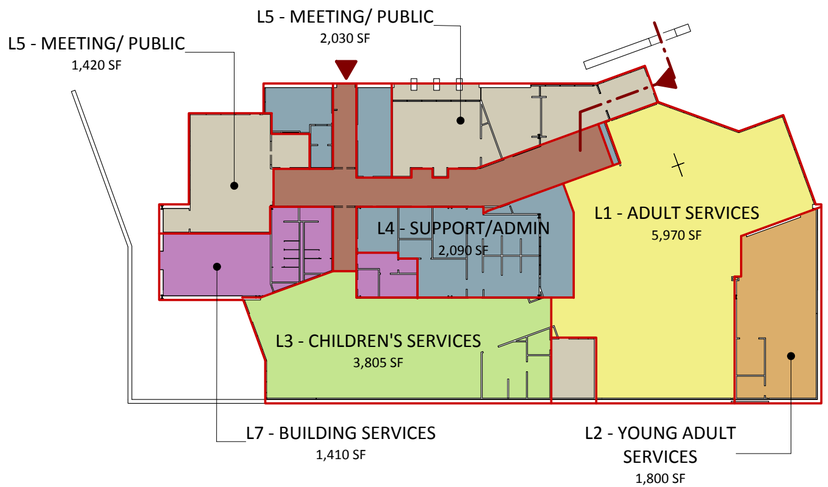
3 - GROSS AREA (Departmental)	
NAME	AREA
POLICE	
P5 - POLICE ADMINISTRATIVE	2,180 SF
P6 - POLICE PATROL OPERATIONS	4,250 SF
P7 - POLICE PATROL OPERATIONS DETENTION	965 SF
P8.1 - SUPPORT	420 SF
P8.2 - CIRCULATION	1,145 SF
P8.3 - BUILDING SERVICES	240 SF
	9,205 SF
POLICE LOFT	
P8.1 - SUPPORT	540 SF
	540 SF
SHARED LOFT	
S4.2 - CIRCULATION	130 SF
S4.3 - BUILDING SERVICES	910 SF
	1,035 SF
	20,935 SF

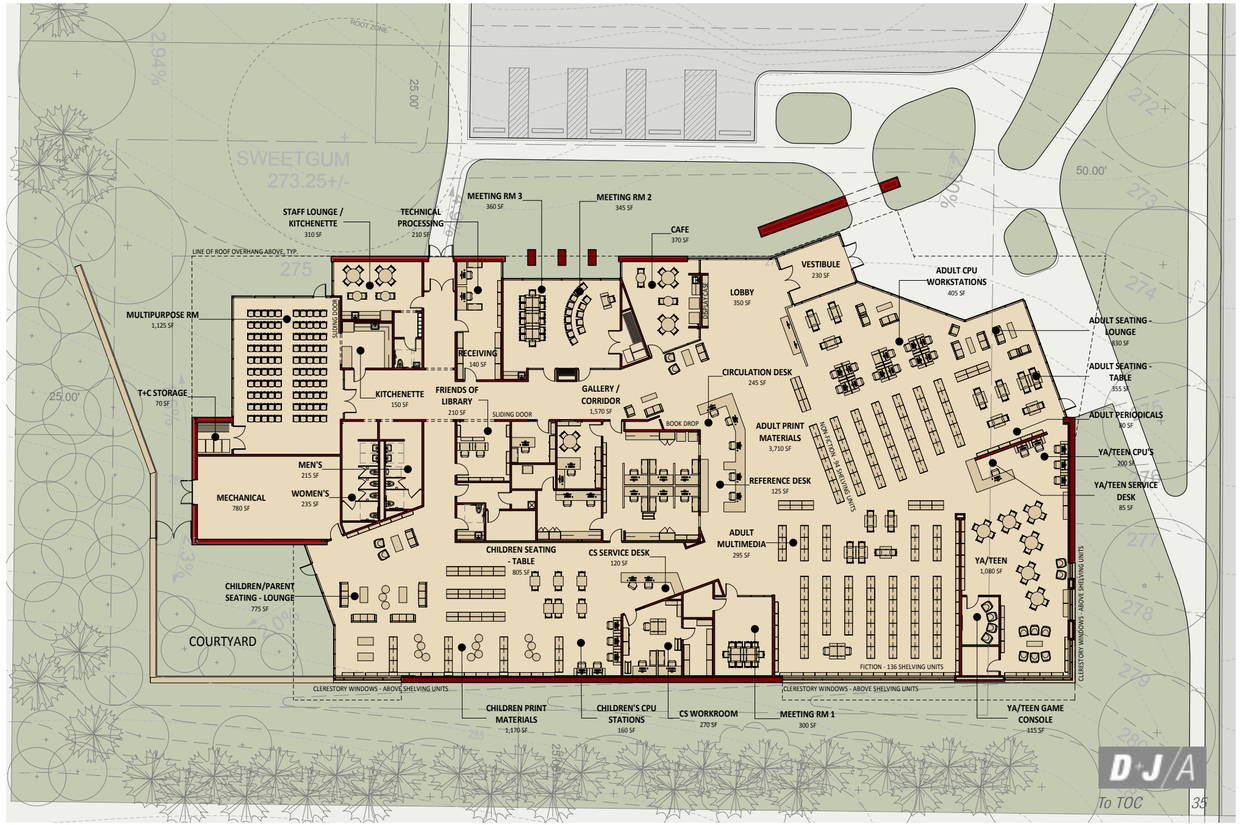


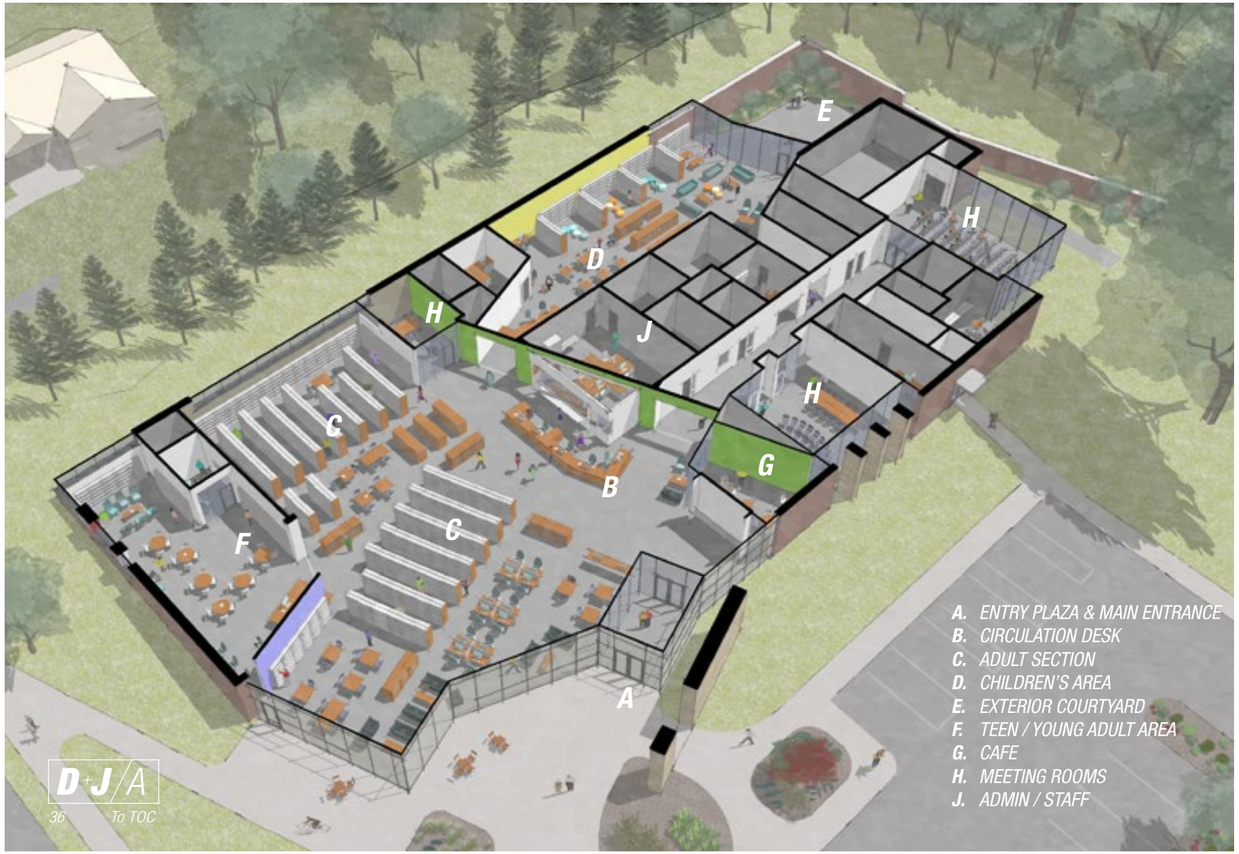
DEPARTMENT LEGEND

- L1 - ADULT SERVICES
- L2 - YOUNG ADULT SERVICES
- L3 - CHILDREN'S SERVICES
- L4 - SUPPORT/ADMIN
- L5 - MEETING/ PUBLIC
- L6 - CIRCULATION
- L7 - BUILDING SERVICES

4 - GROSS AREA (Departmental)	
NAME	AREA
L1 - ADULT SERVICES	5,970 SF
L2 - YOUNG ADULT SERVICES	1,800 SF
L3 - CHILDREN'S SERVICES	3,805 SF
L4 - SUPPORT/ADMIN	3,000 SF
L5 - MEETING/ PUBLIC	3,795 SF
L6 - CIRCULATION	1,940 SF
L7 - BUILDING SERVICES	1,715 SF
	22,025 SF






E
H
D
J
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C
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G
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F
G
A
A. ENTRY PLAZA & MAIN ENTRANCE
B. CIRCULATION DESK
C. ADULT SECTION
D. CHILDREN'S AREA
E. EXTERIOR COURTYARD
F. TEEN / YOUNG ADULT AREA
G. CAFE
H. MEETING ROOMS
J. ADMIN / STAFF

GROUND LEVEL - AREA SUMMARY			SD AREA	VITETTA MP
PW1 - ADMINISTRATIVE			840 SF	578 SF
PW2 - STAFF SUPPORT			1,580 SF	1,080 SF
PW3 - EQUIPMENT BAY			8,305 SF	8,975 SF
PW4 - REFUSE BAY	MP AREA INCL IN EQUIPMENT BAY		3,160 SF	N/I
PW5 - REPAIR BAY			3,830 SF	1,750 SF
PW6 - WASH BAY			1,160 SF	600 SF
INTERIOR PROGRAM AREA - NET	GROUND LEVEL		**18,875 SF**	**12,983 SF**
PW8 - CIRCULATION		+/- 5.6%	1,110 SF	
PW9 - BUILDING SERVICES		+/- 1%	195 SF	
GROUND LEVEL AREA - NET	GROUND LEVEL		**20,180 SF**	

LOFT LEVEL - AREA SUMMARY			SD AREA	VITETTA MP
PW2 - STAFF SUPPORT	BUNK ROOM		535 SF	
PW3 - EQUIPMENT BAY	STORAGE LOFTS		920 SF	
PW5 - REPAIR BAY	STORAGE LOFT		985 SF	
PW8 - CIRCULATION	LOFT STAIRS		500 SF	
PW9 - BUILDING SERVICES		+/- 9.5%	2,485 SF	
LOFT LEVEL AREA - NET			**5,425 SF**	

ALL LEVELS - AREA SUMMARY			SD AREA	VITETTA MP
GROUND LEVEL AREA - NET			20,180 SF	
WALLS - GROUND LEVEL		+/- 10%	2,045 SF	
GROUND LEVEL AREA - GROSS			**22,225 SF**	**17,821 SF**
LOFT LEVEL AREA - NET			5,425 SF	
WALLS - LOFT LEVEL		+/- 9.2%	500 SF	
BUILDING AREA - GROSS			**28,150 SF**	

EXTERIOR STRUCTURES - AREA SUMMARY			SD AREA	VITETTA MP
PW7 - EXTERIOR SUPPORT			7,540 SF	
EXTERIOR PROGRAM AREA - NET			**7,540 SF**	
WALLS		+/- 6.3%	475 SF	
EXTERIOR BUILDING AREA - GROSS			**8,015 SF**	**8,000 SF**

A = ASSIGNABLE N-A = NON-ASSIGNABLE

ROOM NAME	OCCUPANT	PROGRAM OCCUPANCY	AREA	COMMENTS	SPACE TYPE	SPACE USE CATEGORY
PW1 - ADMINISTRATIVE						
MANAGER OFFICE	DON SIRIANNI	1	170 SF		A	OFFICE - PRIVATE
OPEN OFFICE	ED S., CHRIS M., FUTR	3	250 SF		A	OFFICE - SHARED
RECEPTION	DOTTI SNYDER	1	210 SF		A	OFFICE - OPEN WORKSTATION
FILES / COPIER / COFFEE			155 SF	N/I MASTER PLAN	N-A	SUPPORT
STAFF RESTROOM			55 SF		N-A	SUPPORT
			840 SF			
PW2 - STAFF SUPPORT						
BREAK / TRAINING ROOM		12	685 SF		N-A	MEETING
MEN'S LOCKER ROOM		38	395 SF		N-A	SUPPORT
MEN'S RESTROOM			115 SF		N-A	SUPPORT
MEN'S SHOWER			30 SF		N-A	SUPPORT
WOMEN'S LOCKER ROOM		3	140 SF		N-A	SUPPORT
WOMEN'S RESTROOM			85 SF		N-A	SUPPORT
WOMEN'S SHOWER			25 SF		N-A	SUPPORT
VENDING			45 SF	N/I MASTER PLAN	N-A	SUPPORT
JANITOR			60 SF	N/I MASTER PLAN	N-A	SUPPORT
SUBTOTAL	GROUND LEVEL		**1,580 SF**			
BUNK ROOM	LOFT LOCATION		535 SF	N/I MASTER PLAN	N-A	SUPPORT
			2,115 SF			
PW3 - EQUIPMENT BAY						
GARAGE BAY			4,220 SF		N-A	VEHICLE BAY
GARAGE BAY			2,995 SF		N-A	VEHICLE BAY
ROAD & STREET SIGN ROOM			220 SF		N-A	STORAGE
SMALL EQUIPMENT STORAGE			120 SF		N-A	STORAGE
TOOL ROOM			110 SF		N-A	STORAGE
JANITORIAL SUPPLIES			90 SF	N/I MASTER PLAN	N-A	STORAGE
SEASONAL EQUIPMENT STORAGE			280 SF	N/I MASTER PLAN	N-A	STORAGE
SEASONAL EQUIPMENT STORAGE			270 SF	N/I MASTER PLAN	N-A	STORAGE
SUBTOTAL	GROUND LEVEL		**8,305 SF**			
STORAGE LOFT	LOFT LOCATION		460 SF	N/I MASTER PLAN	N-A	STORAGE
STORAGE LOFT	LOFT LOCATION		460 SF	N/I MASTER PLAN	N-A	STORAGE
			9,225 SF			

A = ASSIGNABLE N-A = NON-ASSIGNABLE

ROOM NAME	OCCUPANT	PROGRAM OCCUPANCY	AREA	COMMENTS	SPACE TYPE	SPACE USE CATEGORY
PW4 - REFUSE BAY						
VEHICLE BAY		1	2,860 SF	N/I MASTER PLAN	N-A	VEHICLE BAY
REFUSE STORAGE		1	300 SF	N/I MASTER PLAN	N-A	VEHICLE BAY
			3,160 SF			
PW5 - REPAIR BAY						
REPAIR			2,880 SF		N-A	VEHICLE BAY
PARTS STORAGE			470 SF	N/I MASTER PLAN	N-A	STORAGE
REPAIR BAY STORAGE			325 SF	N/I MASTER PLAN	N-A	STORAGE
TIRE STORAGE			155 SF	N/I MASTER PLAN	N-A	STORAGE
SUBTOTAL	GROUND LEVEL		**3,830 SF**			
STORAGE LOFT	LOFT LOCATION		985 SF	N/I MASTER PLAN	N-A	STORAGE
			4,815 SF			
PW6 - WASH BAY						
WASH BAY		1	1,160 SF		N-A	VEHICLE BAY
			1,160 SF			
PW7 - EXTERIOR SUPPORT						
EXTERIOR STORAGE			3,535 SF	N/I MASTER PLAN	N-A	VEHICLE BAY
HAZARDOUS MATERIALS			195 SF	N/I MASTER PLAN	N-A	
SALT SHED			3,810 SF	N/I MASTER PLAN	N-A	VEHICLE BAY
			7,540 SF			
PW8 - CIRCULATION						
CORRIDOR			1,110 SF		N-A	CIRCULATION
SUBTOTAL	GROUND LEVEL		**1,110 SF**			
LOFT STAIRS	LOFT LEVEL		290 SF		N-A	CIRCULATION
REPAIR LOFT STAIR	LOFT LEVEL		100 SF		N-A	CIRCULATION
EQUIP LOFT STAIR	LOFT LEVEL		55 SF		N-A	CIRCULATION
LOFT STAIRS	LOFT LEVEL		55 SF		N-A	CIRCULATION
			1,610 SF			
PW9 - BUILDING SERVICES						
WATER SERVICE			80 SF		N-A	SERVICE
ELECTRICAL SERVICE			115 SF		N-A	SERVICE
SUBTOTAL	GROUND LEVEL		**195 SF**			

A = ASSIGNABLE N-A = NON-ASSIGNABLE

ADMINISTRATION GROUND LEVEL - AREA SUMMARY		SD AREA	VITETTA MP	EX AREA
A1 - TOWNSHIP ADMINISTRATION		1,200 SF	1,053 SF	590 SF
A2 - PARKS & RECREATION		505 SF	645 SF	170 SF
A3 - CODE ENFORCEMENT		1,300 SF	1,029 SF	710 SF
A4.1 - SUPPORT		3,945 SF	2,455 SF	1,735 SF
ADMIN PROGRAM AREA - NET		**6,950 SF**	**5,182 SF**	**3,205 SF**
A4.2 - CIRCULATION	+/- 16.7%	1,160 SF		
A4.3 - BUILDING SERVICES	+/- 8.3%	580 SF		
ADMIN GROUND LEVEL AREA - NET		**8,690 SF**		

POLICE GROUND LEVEL - AREA SUMMARY		SD AREA	VITETTA MP	EX AREA
P5 - POLICE ADMINISTRATIVE		1,770 SF	1,389 SF	865 SF
P6 - POLICE PATROL OPERATIONS		3,830 SF	3,636 SF	1,240 SF
P7 - POLICE PATROL OPERATIONS SECURE		805 SF	525 SF	170 SF
P8.1 - POLICE SUPPORT		385 SF	460 SF	90 SF
PROGRAM AREA - NET		**6,790 SF**	**6,010 SF**	**2,365 SF**
P8.2 - CIRCULATION	+/- 16.5%	1,120 SF		
P8.3 - BUILDING SERVICES	+/- 2.7%	185 SF		
POLICE GROUND LEVEL AREA - NET		**8,095 SF**		

LOFT LEVEL - AREA SUMMARY		SD AREA
A4.1 - SUPPORT	ADMIN STORAGE	610 SF
P8.1 - SUPPORT	POLICE STORAGE	510 SF
8.2 - CIRCULATION	SHARED MECH RM	125 SF
8.3 - BUILDING SERVICES	SHARED MECH RM	845 SF
LOFT LEVEL AREA - NET		**2,090 SF**

ALL LEVELS - AREA SUMMARY		SD AREA		
ADMIN GROUND LEVEL AREA - NET		8,690 SF		
POLICE GROUND LEVEL AREA - NET		8,095 SF		
WALLS - GROUND LEVEL	+/- 11.5%	1,930 SF		
GROUND LEVEL AREA - GROSS		**18,715 SF**	**15,389 SF**	**8,070 SF**
LOFT LEVEL AREA - NET		2,090 SF		
WALLS - LOFT LEVEL	+/- 6.6%	140 SF		
TOTAL BUILDING AREA - GROSS		**20,945 SF**		**9,420 SF**

A = ASSIGNABLE N-A = NON-ASSIGNABLE

ROOM NAME	OCCUPANT	PROGRAM OCCUPANCY	AREA	COMMENTS	SPACE TYPE	EXISTING AREA	SPACE USE CATEGORY
A1 - TOWNSHIP ADMINISTRATION							
TOWNSHIP MANAGER OFFICE	DON BERGER, JR	1	175 SF		A	135 SF	OFFICE - PRIVATE
ASSIST TOWNSHIP MANAGER OFFICE	MIKE TAYLOR	1	165 SF		A	135 SF	OFFICE - PRIVATE
OFFICE MANAGER	CAROL TAYLOR	1	165 SF	INCLUDES ACTIVE FILES	A	135 SF	OFFICE - PRIVATE
FINANCE OFFICE	GAIL KENNEY	1	165 SF	INCLUDES ACTIVE FILES	A	135 SF	OFFICE - PRIVATE
MEETING / FUTURE OFFICE	FUTURE	1	165 SF		A	SF	OFFICE - PRIVATE
RECEPTION	MARGY KASS	1	100 SF		A	50 SF	OFFICE - OPEN WORKSTATION
TAX COLLECTOR OFFICE		2	175 SF		A	SF	OFFICE - SHARED
TAX COLLECTOR FILE STORAGE			90 SF	N/I MASTER PLAN	N-A	SF	STORAGE
			1,200 SF			**590 SF**	
A2 - PARKS & RECREATION							
P/R DIRECTOR OFFICE	CHARLES CARABBA	1	155 SF		A	65 SF	OFFICE - PRIVATE
P/R RECEPTION OFFICE	NANCY ASHTON	1	220 SF		A	65 SF	OFFICE - OPEN WORKSTATION
EQUIPMENT STORAGE			130 SF		N-A	40 SF	STORAGE
SUBTOTAL			**505 SF**			**170 SF**	
A3 - CODE ENFORCEMENT							
TRANSACTION COUNTER		1	130 SF		N-A	70 SF	SERVICE
BUILDING/ZONING OFFICE	ROBIN LOGAN	1	120 SF		A	65 SF	OFFICE - OPEN WORKSTATION
CODE ENFORCEMENT OFFICER OFFICE	ROBERT DUNLOP	1	180 SF		A	135 SF	OFFICE - PRIVATE
CODE INSPECTOR OFFICE	CHARLES BAILY	1	100 SF		A	35 SF	OFFICE - OPEN WORKSTATION
TOWNSHIP ENGINEER OFFICE	MARK W EISOLD	1	125 SF		A	160 SF	OFFICE - OPEN WORKSTATION
MUNICIPAL INSPECTOR	JIM DONOFRY	1	100 SF		A	35 SF	OFFICE - OPEN WORKSTATION
ACTIVE FILE STORAGE			290 SF		N-A	210 SF	STORAGE
CONFERENCE		8	255 SF	N/I MASTER PLAN	N-A	SF	MEETING
SUBTOTAL			**1,300 SF**			**710 SF**	

A = ASSIGNABLE N-A = NON-ASSIGNABLE

ROOM NAME	OCCUPANT	PROGRAM OCCUPANCY	AREA	COMMENTS	SPACE TYPE	EXISTING AREA	SPACE USE CATEGORY
A4.1 - SUPPORT							
BOARD ROOM		75+	1,560 SF		N-A	970 SF	MEETING
LOBBY			675 SF		N-A	170 SF	PUBLIC SPACE
ENTRY LOBBY			195 SF		N-A		PUBLIC SPACE
VESTIBULE			190 SF	N/I MASTER PLAN	N-A	50 SF	PUBLIC SPACE
CONFERENCE		12+	425 SF	MODIFIED FROM MP	N-A	185 SF	MEETING
COPY / WORK ROOM			245 SF	N/I MASTER PLAN	N-A	135 SF	SUPPORT
BREAK ROOM		8	180 SF		N-A	115 SF	MEETING
SERVER / TELECOMM ROOM			140 SF	MODIFIED FROM MP	N-A	SF	EQUIPMENT
ARCHIVE FILE STORAGE			115 SF		N-A	110 SF	STORAGE
MEN'S STAFF TOILET			50 SF	N/I MASTER PLAN	N-A	SF	SERVICE
WOMEN'S STAFF TOILET			50 SF	N/I MASTER PLAN	N-A	SF	SERVICE
STORAGE			65 SF	N/I MASTER PLAN	N-A	SF	STORAGE
A/V			55 SF	N/I MASTER PLAN	N-A	SF	EQUIPMENT
SUBTOTAL			**3,945 SF**			**1,735 SF**	
ADMIN STORAGE	LOFT LOCATION		610 SF	N/I MASTER PLAN	N-A		SUPPORT
			4,555 SF				
A4.2 - CIRCULATION							
CORRIDOR			520 SF		N-A	SF	CIRCULATION
CORRIDOR			235 SF		N-A	SF	CIRCULATION
CORRIDOR			160 SF		N-A	SF	CIRCULATION
CORRIDOR			245 SF		N-A	SF	CIRCULATION
SUBTOTAL			**1,160 SF**			**0 SF**	
A4.3 - BUILDING SERVICES							
MEN'S TOILET			185 SF		N-A	110 SF	SERVICE
WOMEN'S TOILET			190 SF		N-A	110 SF	SERVICE
MECH / LOFT STAIRS			155 SF		N-A	SF	SERVICE
JANITOR			35 SF		N-A	SF	SERVICE
ELECTRICAL			15 SF		N-A	SF	SERVICE
SUBTOTAL			**580 SF**			**220 SF**	

A = ASSIGNABLE N-A = NON-ASSIGNABLE

ROOM NAME	OCCUPANT	PROGRAM OCCUPANCY	AREA	COMMENTS	SPACE TYPE	EXISTING AREA	SPACE USE CATEGORY
P5 - POLICE ADMINISTRATIVE							
POLICE CHIEF OFFICE	MICHAEL PITKOW	1	175 SF		A	245 SF	OFFICE - PRIVATE
DEPUTY CHIEF OFFICE	DON FANTRY	1	165 SF		A	75 SF	OFFICE - PRIVATE
CHIEF CLERK	DONNA LINGG	1	165 SF		A	125 SF	OFFICE - PRIVATE
RECEPTION	MIMI MCLENNAN	1	65 SF		A	60 SF	OFFICE - WORKSTATION
SAFETY OFFICER	JOHN GROSS + (1) WS	2	175 SF		A	125 SF	OFFICE - SHARED
DETECTIVE OFFICE	JOHN COTTON	1	115 SF	N/I MASTER PLAN	A	75 SF	OFFICE - PRIVATE
DETECTIVES OFFICE	(2) WORKSTATIONS	2	180 SF		A	160 SF	OFFICE - SHARED
RECORDS ROOM			310 SF		N-A	SF	STORAGE
COPY/WORK ROOM			140 SF		N-A	SF	EQUIPMENT
BREAK ROOM		6	170 SF	N/I MASTER PLAN	N-A	SF	SUPPORT
INTERVIEW ROOM			95 SF	N/I MASTER PLAN	N-A	SF	MEETING
STORAGE			15 SF		N-A	SF	STORAGE
SUBTOTAL			**1,770 SF**			**865 SF**	
P6 - POLICE PATROL OPERATIONS							
ROLL CALL / TRAINING ROOM		24	525 SF	MODIFIED FROM MP	N-A	100 SF	MEETING
SHIFT SUPERVISOR		4	255 SF		A	135 SF	OFFICE - SHARED
SQUAD ROOM		8	320 SF	MODIFIED FROM MP	N-A	120 SF	OFFICE - SHARED
STAFF MEETING ROOM		12	175 SF	MODIFIED FROM MP	N-A	320 SF	MEETING
EMERGENCY OPERATIONS CENTER		2	160 SF	N/I MASTER PLAN	N-A	100 SF	SUPPORT
ARMORY			100 SF		N-A	SF	SUPPORT
EVIDENCE PROCESSING			80 SF		N-A	35 SF	SUPPORT
EVIDENCE LOCKER			95 SF		N-A	SF	STORAGE
SECURE EVIDENCE STORAGE			320 SF		N-A	90 SF	STORAGE
PROPERTY STORAGE			115 SF		N-A	SF	STORAGE
QUARTERMASTER			100 SF	N/I MASTER PLAN	N-A	SF	STORAGE
MEN'S LOCKER ROOM		29	365 SF		N-A	240 SF	SUPPORT
MEN'S SHOWER			25 SF		N-A	10 SF	SUPPORT
MEN'S SHOWER			25 SF		N-A	SF	SUPPORT
MEN'S TOILET RM			120 SF		N-A	90 SF	SUPPORT
WOMEN'S LOCKER ROOM		6	105 SF		N-A	SF	SUPPORT
WOMEN'S SHOWER			25 SF		N-A	SF	SUPPORT
WOMEN'S TOILET RM			125 SF		N-A	SF	SUPPORT
SALLY PORT			615 SF		N-A	SF	SUPPORT
BIKE STORAGE			180 SF		N-A	SF	STORAGE
SUBTOTAL			**3,830 SF**			**1,240 SF**	

A = ASSIGNABLE N-A = NON-ASSIGNABLE

ROOM NAME	OCCUPANT	PROGRAM OCCUPANCY	AREA	COMMENTS	SPACE TYPE	EXISTING AREA	SPACE USE CATEGORY
P7 - POLICE PATROL OPERATIONS DETENTION							
INTERROGATION ROOM			100 SF		N-A	SF	MEETING
PROCESSING ROOM			120 SF		N-A	90 SF	SUPPORT
HOLDING CELL			55 SF		N-A	40 SF	SUPPORT
HOLDING CELL			55 SF		N-A	40 SF	SUPPORT
HOLDING CELL			55 SF	N/I MASTER PLAN	N-A	SF	SUPPORT
HOLDING CELL			55 SF		N-A	SF	SUPPORT
DETENTION CORRIDOR			330 SF	N/I MASTER PLAN	N-A	SF	SUPPORT
JANITOR			35 SF		N-A	SF	SERVICE
SUBTOTAL			**805 SF**			**170 SF**	
P8.1 - POLICE SUPPORT							
STAFF TOILET			55 SF	N/I MASTER PLAN	N-A	10 SF	SERVICE
POLICE LOBBY / WAITING			195 SF	N/I MASTER PLAN	N-A	SF	PUBLIC SPACE
VESTIBULE			85 SF	N/I MASTER PLAN	N-A	SF	PUBLIC SPACE
PUBLIC TOILET			50 SF		N-A	SF	SERVICE
			385 SF				
GENERAL STORAGE	LOFT LOCATION		510 SF		N-A	80 SF	STORAGE
SUBTOTAL			**895 SF**			**90 SF**	
P8.2 - CIRCULATION							
PATROL CORRIDOR			230 SF		N-A		CIRCULATION
CORRIDOR			285 SF		N-A		CIRCULATION
DETECTIVE COMMONS			165 SF		N-A		CIRCULATION
ADMIN COMMONS			155 SF		N-A		CIRCULATION
CORRIDOR			195		N-A		CIRCULATION
VESTIBULE			90		N-A		CIRCULATION
SUBTOTAL			**1,120 SF**				
P8.3 - BUILDING SERVICES							
ELECTRICAL			35 SF		N-A		SERVICE
UTILITY SERVICE			150 SF		N-A		SERVICE
SUBTOTAL			**185 SF**				

A = ASSIGNABLE N-A = NON-ASSIGNABLE

BUILDING AREA SUMMARY		SD AREA	VITETTA MP
L1 - ADULT SERVICES		5,945 SF	5,420 SF
L2 - YOUNG ADULT SERVICES		1,550 SF	1,316 SF
L3 - CHILDREN'S SERVICES		3,480 SF	3,833 SF
L4 - SUPPORT / ADMIN		2,625 SF	2,970 SF
L5 - MEETING / PUBLIC		3,445 SF	2,490 SF
PROGRAM AREA - NET		**17,045 SF**	**16,029 SF**
L6 - CIRCULATION	+/- 11.5%	1,965 SF	
L7 - BUILDING SERVICES	+/- 8.8%	1,505 SF	
BUILDING AREA - NET		**20,515 SF**	
EXTERIOR & INTERIOR WALLS	+/- 7.6%	1,565 SF	
BUILDING AREA - GROSS		**22,025 SF**	**21,639 SF**

ROOM NAME	OCCUPANT	PROGRAM OCCUPANCY	AREA	COMMENTS	SPACE TYPE	SPACE USE CATEGORY
L1 - ADULT SERVICES						
ADULT PRINT MATERIALS			3,710 SF		N-A	PUBLIC - STACKS
ADULT PERIODICALS			80 SF		N-A	PUBLIC - STACKS
ADULT MULTIMEDIA			295 SF		N-A	PUBLIC - STACKS
ADULT SEATING - TABLE			355 SF		N-A	PUBLIC - TABLES & CHAIRS
ADULT SEATING - TABLE			270 SF		N-A	PUBLIC - TABLES & CHAIRS
ADULT SEATING - LOUNGE			830 SF		N-A	PUBLIC - SEATING
ADULT CPU WORKSTATIONS		11	405 SF		N-A	PUBLIC - CPU
			5,945 SF			

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ROOM NAME	OCCUPANT	PROGRAM OCCUPANCY	AREA	COMMENTS	SPACE TYPE	SPACE USE CATEGORY
L2 - YOUNG ADULT SERVICES						
YA/TEEN	PRINT MATERIALS & SEATING		1,080 SF		N-A	PUBLIC - STACKS
YA/TEEN SEATING - TABLE		24	SF		N-A	PUBLIC - TABLES & CHAIRS
YA/TEEN SEATING - LOUNGE		8	SF		N-A	PUBLIC - SEATING
YA/TEEN CPU WORKSTATIONS		6	200 SF		N-A	PUBLIC - CPU
YA/TEEN GAME CONSOLE		4	115 SF		N-A	PUBLIC - SEATING
YA/TEEN SERVICE DESK			85 SF		N-A	SUPPORT
YA/TEEN STORAGE			70 SF		N-A	SUPPORT
			1,550 SF			
L3 - CHILDREN'S SERVICES						
CHILDREN PRINT MATERIALS			1,170 SF		N-A	PUBLIC - STACKS
CHILDREN MEDIA & PERIODICALS			70 SF		N-A	PUBLIC - STACKS
CHILDREN SEATING - TABLE		24	805 SF		N-A	PUBLIC - TABLES & CHAIRS
CHILDREN/PARENT SEATING - LOUNGE		10	775 SF		N-A	PUBLIC - SEATING
CHILDREN CPU STATIONS		9	160 SF		N-A	PUBLIC - CPU
CS SERVICE DESK		2	120 SF		N-A	SUPPORT
CS WORKROOM		2	270 SF		N-A	SUPPORT
CS STORAGE			110 SF		N-A	SUPPORT
			3,480 SF			
L4 - SUPPORT / ADMIN						
CIRCULATION DESK		3	245 SF		N-A	SUPPORT
REFERENCE DESK		1	125 SF		N-A	SUPPORT
SERVICE DESK WORKROOM		3	350 SF		N-A	SUPPORT
REFERENCE SERVICES WORKROOM		3	340 SF		N-A	SUPPORT
TECHNICAL PROCESSING		2	210 sf		N-A	SUPPORT
DIRECTOR OFFICE	MARYCATHERINE MCGARVEY	1	195 SF		A	OFFICE - PRIVATE
ASSIST. DIRECTOR OFFICE	JOY UTZ	1	120 SF		A	OFFICE - PRIVATE
IT OFFICE / WORK AREA	TIM MCCARVER	1	210 SF		A	OFFICE - SHARED
STAFF LOUNGE / KITCHENETTE		12	310 SF		N-A	SUPPORT
RECEIVING			140 SF	N/I MASTER PLAN	N-A	SUPPORT
FRIENDS OF LIBRARY			210 SF		A	SUPPORT
STAFF LOCKERS			45 SF	N/I MASTER PLAN	N-A	SUPPORT
STAFF TOILET			55 SF		N-A	SUPPORT
SERVER			70 SF		N-A	SUPPORT
			2,625 SF			

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ROOM NAME	OCCUPANT	PROGRAM OCCUPANCY	AREA	COMMENTS	SPACE TYPE	SPACE USE CATEGORY
L5 - MEETING / PUBLIC						
CAFÉ		14	370 SF	N/I MASTER PLAN	N-A	PUBLIC
LOBBY			350 SF		N-A	PUBLIC
VESTIBULE			230 SF		N-A	CIRCULATION
MULTIPURPOSE RM		110	1,125 SF		N-A	MEETING
MEETING RM 1		14	300 SF		N-A	MEETING
MEETING RM 2		14	345 SF		N-A	MEETING
MEETING RM 3		14	360 SF		N-A	MEETING
T+C STORAGE			70 SF	N/I MASTER PLAN	N-A	SUPPORT
T+C STORAGE			65 SF	N/I MASTER PLAN	N-A	SUPPORT
T+C STORAGE			55 SF	N/I MASTER PLAN	N-A	SUPPORT
VENDING			25 SF	N/I MASTER PLAN	N-A	PUBLIC
KITCHENETTE			150 SF		N-A	SUPPORT
			3,445 SF			
L6 - CIRCULATION						
VESTIBULE		14	60 SF	N/I MASTER PLAN	N-A	CIRCULATION
GALLERY / CORRIDOR			1,570 SF		N-A	CIRCULATION
CORRIDOR			160 SF		N-A	CIRCULATION
CORRIDOR			175 SF		N-A	CIRCULATION
			1,965 SF			
L7 - BUILDING SERVICES						
WOMEN'S			235 SF	N/I MASTER PLAN	N-A	PUBLIC
MEN'S			215 SF		N-A	PUBLIC
FAMILY TOILET ROOM			65 SF		N-A	MEETING
JANITOR			30 SF		N-A	MEETING
MECHANICAL			780 SF		N-A	MEETING
ELECTRICAL			80 SF		N-A	MEETING
MECHANICAL			100 SF	N/I MASTER PLAN	N-A	SUPPORT
			1,505 SF			

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Issued: October 10, 2014

Working from the detailed survey, D+JA with LRSLA and Duffield Associates, conducted a review of the existing topography as well as the proposed topography of the Master Plan. Attached are two drawings that illustrate our findings.

Existing Site Characteristics

- The highest point of the site is at the southern corner of the library site. Elevation is 287'.
- The lowest point of the site is along Paper Mill Road at the Western corner of the Police/Admin site. Elevation is 253'.
- Hawthorne Lane, from the eastern edge of the site to the existing driveway of the Police/Admin building, the slope is 4.7%. From this driveway to the intersection, the slope is 2.9%. Total vertical offset is 27'.
- Along the southern edge of the site along the property line of the Cheltenham Avenue residences, the average slope between the high point of the site and the Police/Admin drive is 6.5%. Total vertical offset is 27'.
- The grading at the existing Public Works creates a plateau condition with a steeper slope between the Police/Admin building to the west and a steeper slope to the east.
- The existing finish floor of the Police/Admin Building is approximately 8' higher than the adjacent elevation of Paper Mill Road.
- The existing Library is approximately 6.5' higher than the adjacent elevation of Paper Mill Road.

Finish floor elevations of the existing buildings:

Library: 260' (entry at grade)
Police/Admin: 262' (natural grade at 260' at perimeter of building, step up/ramp up into building)
Public Works: 268.25' (entry at grade)

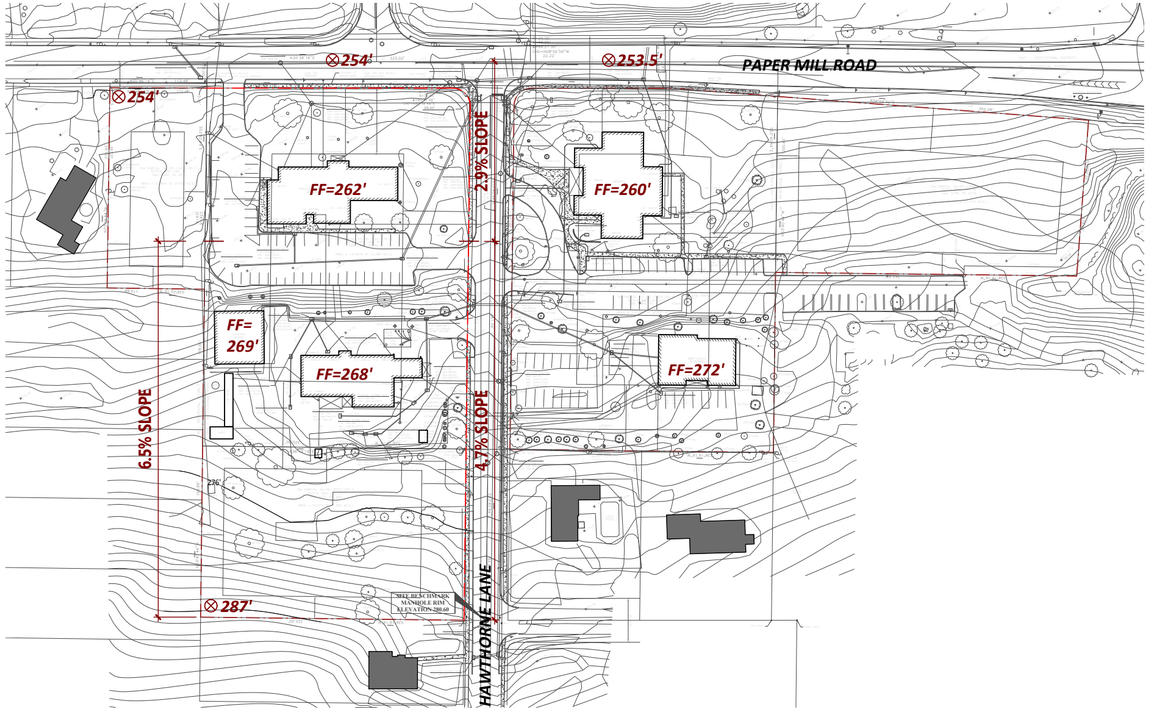
Master Plan Topography Analysis

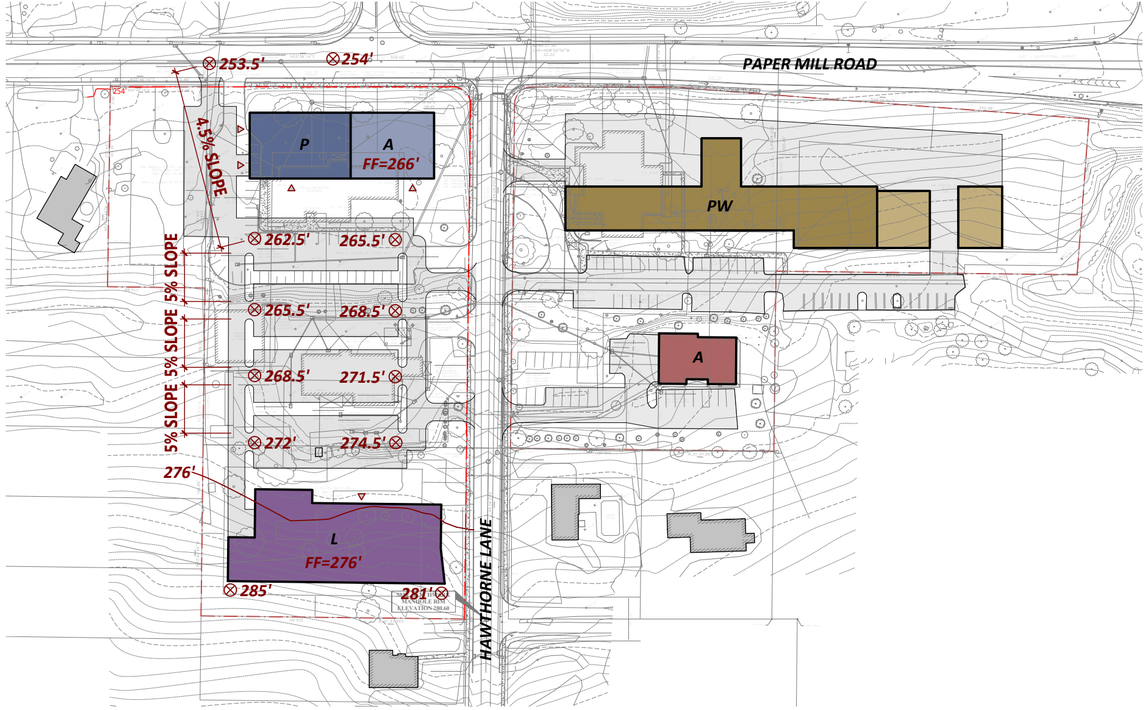
We analyzed the Master Plan layout incorporating the information from the survey. On the southern side of Hawthorne Lane where the Library and Police/Admin Buildings are located, we studied possible floor elevations and grading solutions at the parking lot between the Library and Police/Admin buildings, we assumed that the Library would be 'banked' into the site with access along the parking lot façade of the building. We established a target finish floor elevation of 276' for the Library. This floor elevation would create a 9' vertical offset from the highest grade elevation at the location of the eastern library wall. This elevation allows entry into the building at natural grade from the parking lot. This targeted floor elevation addresses drainage issues and balances the ability to allow natural light into the building along the 'banked' edge.

Establishing this floor elevation allows us to establish an elevation of the first bay of parking. ADA parking spots will be located in this bay and the parking spots can have a slope not greater than 2%. Path access from these spaces to the building can be sloped as much as 1:12, though formal ramps with handrails will need to be provided. At walking paths, a slope of 1:20 is the maximum allowable without the need of handrails. As the entry to the library was shown to have some type of plaza/usable outdoor hardscape, a maximum slope of 1:48 is recommended to allow for use of outdoor furniture, etc. Based on these requirements, we established an approximate elevation of 275' for the first bay of parking which allows for a flatter 1:48 plaza but also utilizes paths at 1:20. Due to the greater slope along the southern property line, we sloped the first bay at 3% while accommodating the maximum slope of 2% at the ADA parking spots. The subsequent parking bays have targeted elevations based on a maximum driveway slope of 5% between these bays.

At the last parking bay adjacent to the Police/Admin building, a targeted elevation of approximately 265.5' establishes the ADA entry sequence to the Police/Admin building with a floor elevation of 266'. This floor elevation is 4' higher than the current Police/Admin floor elevation and is 12' higher than the street elevation at Paper Mill Road.

At the Public Works building, we began by determining an approximate elevation of the vehicle and equipment yard by the access drives from Hawthorne Lane and from the existing parking lot on LaSalle's property. Utilizing a maximum slope of 5% at each of these drives, the targeted elevations at the end of these drives result in a difference of +/-5'. Due to the nature of the buildings and vehicle access, accommodating this offset within the yard is not possible. Alternate driveway locations will need to be explored.


254'
253.5'
PAPER MILL ROAD
254'
2.9% SLOPE
FF=262'
FF=260'
FF=
269'
FF=268'
FF=272'
6.5% SLOPE
4.7% SLOPE
287'
HAWTHORNE LANE


253.5'
254'
PAPER MILL ROAD
4.5% SLOPE
P
A
FF=266'
PW
262.5'
265.5'
5% SLOPE
5% SLOPE
5% SLOPE
265.5'
268.5'
A
268.5'
271.5'
272'
274.5'
276'
L
FF=276'
285'
281'
HAWTHORNE LANE

PARKING SUMMARY	AREA		CODE REQ'D	CURRENT	7A-7P	7P-7A	MP
1 - ADMINISTRATION	8,575 SF		67	29	27	42	42
2 - POLICE DEPARTMENT	9,785 SF		41	24	29	19	24
3 - LIBRARY	21,800 SF		91	37	88	84	72
4 - PUBLIC WORKS	23,200 SF		24	23	28	0	37
PARKING SUB-TOTAL	**63,360 SF**		**223**	**113**	**172**	**145**	**175**
5 - AMBULANCE	4,735 SF		12	12	12	12	16
PARKING TOTAL	**68,095 SF**		**235**	**125**	**184**	**157**	**191**

LASALLE	SHARED SPACES AVAILABLE		0	17	17	17	17

	COMMENTS	AREA	CALCULATION	CODE REQUIRED	CURRENT PARKING	7AM-7PM	7PM-7AM	MASTER PLAN
1 - ADMINISTRATION								
FULL TIME STAFF	8AM-5PM	6,975 SF	200 SF/PS	35	14	10	10	
PART TIME STAFF	8AM-5PM					2	0	
VISITORS					15	15	0	
ASSEMBLY		1,600 SF	50 SF/PS	32			32	
ADMINISTRATION SUB-TOTAL		**8,575 SF**		**67**	**29**	**27**	**42**	**42**

2 - POLICE DEPARTMENT								
FULL TIME STAFF	8AM-5PM	8,285 SF	200 SF/PS	41	14	10		
PATROL OFFICEERS	7AM-7PM / 7PM-7AM					6	6	
POLICE VEHICLES	24 / 7				10	13	13	
POLICE SUB-TOTAL		**9,785 SF**		**41**	**24**	**29**	**19**	**24**

	COMMENTS	AREA	CALCULATION	CODE REQUIRED	CURRENT PARKING	7AM-7PM	7PM-7AM	MASTER PLAN
3 - LIBRARY								
STAFF		3,000 SF	200 SF/PS	15		12	8	
LIBRARY PATRONS		16,000 SF	800 SF/PS	20		20	20	
LIBRARY ASSEMBLY		2,800 SF	50 SF/PS	56		56	56	
LIBRARY SUB-TOTAL		**21,800 SF**		**91**	**37**	**88**	**84**	**72**

4 - PUBLIC WORKS								
STAFF - TOWNSHIP VEHICLES	7AM-3PM	23,200 SF	1 PS/EMPLOYEE	4		4	0	37
STAFF - PRIVATE VEHICLES	7AM-3PM	N/A	1 PS/EMPLOYEE	24		24	0	N/A
		23,200 SF		**28**	**23**	**28**	**0**	**37**

5 - AMBULANCE								
STAFF		4,735 SF		12	12	12	12	16

WATER USAGE / MONTH	LIBRARY		PUBLIC WORKS		ADMIN / POLICE	
June 2013	8,000	$ 169.90	21,800	$ 250.36	8,000	$ 169.90
July 2013	7,000	$ 159.90	31,600	$ 336.46	12,000	$ 169.90
August 2013	6,000	$ 149.90	27,900	$ 303.95	7,000	$ 159.90
September 2013	7,000	$ 159.90	28,300	$ 307.47	7,000	$ 159.90
October 2013	6,000	$ 149.90	17,100	$ 209.07	7,000	$ 159.90
November 2013	7,000	$ 159.90	12,300	$ 169.52	7,000	$ 159.90
December 2013	5,000	$ 144.90	32,200	$ 346.73	5,000	$ 144.90
January 2014	6,000	$ 149.90	18,100	$ 222.13	8,000	$ 169.90
February 2014	7,000	$ 159.90	42,100	$ 415.52	9,000	$ 179.90
March 2014	7,000	$ 159.90	33,700	$ 354.31	6,000	$ 149.90
April 2014	6,000	$ 149.90	12,700	$ 170.42	7,000	$ 159.90
May 2014	7,000	$ 151.90	14,000	$ 181.84	11,000	$ 198.69
June 2014	7,000	$ 159.90	23,400	$ 264.42	7,000	$ 159.90
13 Month Total	86,000 gal	$ 2,025.70	315,200 gal	$ 3,532.20	101,000 gal	$ 2,142.49
Monthly Average	6,615 gal	$ 155.82	24,246 gal	$ 271.71	7,769 gal	$ 164.81
Incoming Service	1 1/2" Service		1" Service		1 1/2" Service	

Public Works Rainwater Collection System

Cistern Size:	20,000 gallon underground
System Efficiency:	93% of the demand met
Annual Water Savings:	296,700 gallons
Rain Event Capacity:	will hold a 1.75” rain event

HEATING, VENTILATING AND AIR CONDITIONING

In accordance with the project RFP, a life cycle cost analysis (LCCA) has been performed for the Administration/Police building and for the Library, to compare appropriate HVAC system alternatives. Due to the minimal requirements for HVAC systems and potential energy usage, an analysis was not completed for the Public Works Facility. These multiple systems for the Library and Police/ Administration building include:

Water Source Heat Pumps (WSHP). System utilizes individual heat pump units located throughout the building to provide heating and cooling to individual spaces. The heat pumps utilize a piped water loop to supply or extract heat; and a boiler maintains a minimum water temperature and an outdoor fluid cooler maintains a maximum loop water temperature.

Ventilation air is provided by a dedicated Outside Air Unit with Energy recovery ducted directly to each heat pump, exhaust from each space.

The cost versus energy savings of adding a geothermal well field was also analyzed (GEO).

Variable Flow Refrigerant (VFR). System utilizes multiple indoor blower/coil units connected to a central outdoor condensing unit, to provide heating or cooling to individual spaces. VFR utilizes a refrigerant piping loop, and can heat or cool in each zone simultaneously.

Ventilation air is provided by a dedicated Outside Air Unit with Energy recovery ducted directly to each space, exhaust from each space.

Variable-Air-Volume (VAV). System utilizes a central air handling unit (AHU) to supply air to individual terminal units for each temperature control zone. Each terminal unit includes a reheat coil. Cooling is provided by a refrigerant coil at the AHU. Heating for the terminal units is from a high-efficiency gas-fired boiler.

The LCCA not only provides an energy comparison, but analyzes all costs of owning/operating for each of the above systems. Examples include: reliability/ life expectancy; maintenance costs; initial construction cost.

Other factors not a part of the LCCA, but just as important include: acoustical performance and cost impact of future modification.
Based on the overall LCCA the VAV system is recommended for the Administration/Police building and the Library. While providing an energy effi cient option, it also has a very compelling advantage, being a competitive LCCA option and rating well in other characteristics. The current and expected long term, low cost of natural gas provides a competitive cost for energy in the VAV system. Significant energy savings is achieved from the use of a 100% outside air economizer feature. VAV is very competitive in first cost, maintenance cost and system longevity. VAV also provides flexibility for future remodeling where zoning might change.

Both the heat pump and VFR systems have the disadvantage of requiring added first cost and maintenance cost to provide dedicated outdoor air units to condi tion make-up air. The GEO option has a significant added cost to provide a geo thermal well field in order to maximize energy performance.

Refer to Section 6 for the full Life Cycle Cost Analysis report that includes detailed information and full summaries of cash flows, energy usage and maintenance replacement costs.

The Administration/Police building and the Library will have “standalone” HVAC systems.

The Public Works building has very limited areas requiring air conditioning. This limits the appropriate system alternatives. Either refrigerant rooftop or split sys tem units utilizing gas heat are recommended.

Other Public Works areas are recommended to have minimum winter ventilation with heating of make-up air, additional summer ventilation and radiant heating.

Vehicle exhaust systems will be provided for the two vehicle repair bays.
Specific HVAC Considerations:

- Spaces with large glass area will be addressed to insure limiting of drafts in cold season weather.
- Placement of outdoor units will address sound impact.

Codes and Standards

The HVAC systems will be designed in accordance with the following codes and standards:

- Pennsylvania Building Codes
- 2009 International Energy Conservation Code (IECC)
- ASHRAE 90.1-2007
- National Fire Protection Association (NFPA)
- American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
- Sheet Metal & Air Conditioning Contractors' National Association (SMACNA)

DESIGN CONDITIONS

(A) Interior Design Conditions:
72o F----------Winter
75o F----------Summer

(B) Exterior Design Conditions:*
12o F----------Winter
91o F DB, 79o F ----------Summer
*Equipment and systems for the Police Department will be selected for the conditions of 0º winter and 95º summer.

(C) Outdoor Air Ventilation
Outdoor ventilation air will be provided according to (ASHRAE) Standard 62.1-2007.

Heating Source Equipment

The Police/Administration building and the Library will each have high efficiency gas-fired hot water boilers. Both buildings will utilize multiple boilers for added assurance of heat if one boiler should fail.

The Public Works building will utilize gas fired furnace sections as part of the air conditioning unit in areas with cooling. Maintenance/work areas will be heated with radiant heating units for improved energy efficiency.

Cooling Source Equipment

The Police/Administration building and the Library will each be served by pack aged outdoor refrigerant, air cooled condensing units, with one dedicated for each air handling unit.

HVAC SYSTEMS

Police / Administration Building

The building will be served by three air handling units (AHUs) with one dedicated to each of the following areas:

- Police
- Administration
- Town Assembly Hall

The AHUs will be located in the attic, along with the boiler and related pumps and accessories. This location will insure introducing of outdoor ventilation air well above grade for improved air quality. All AHUs will include an economizer cycle that uses outdoor air for "free cooling" during moderate weather.

The Police and Administration AHUs will be variable-air-volume for improved energy performance. A floor plan indicating proposed temperature control zones is included with this submittal.

The Town Assembly Hall AHU will be a constant volume single zone AHU. This AHU is dedicated to the Town Assembly Hall since its usage pattern is very differ ent from the remainder of the building. This decision will result in improved sys tem wide energy performance.

Hot water from the boilers will be piped to preheat coils at the Police and Administration AHUs; a reheat coil at the Assembly Hall AHU; and to the VAV terminal unit heating coils serving each temperature control zone.

Library

The library will be served by one, variable-air-volume (VAV) air handling unit (AHU).

The AHU will be located in the first floor mechanical room, along with the boilers and related pumps and accessories. Outside, ventilation air will be introduced thru a roof mounted intake hood to insure improved air quality. The AHU will include an economizer cycle that uses outdoor air for "free cooling" during moderate weather.

A floor plan indicating proposed temperature control zones is included in the estimate drawings.

Hot water from the boilers will be piped to a preheat coil in the AHU and to the VAV terminal unit heating coils serving each temperature control zone.

Public Works Facility

The work bays will include a winter season ventilation system with gas preheat; and a higher level summer ventilation system.

The work bays will utilize gas fired infrared heating where applicable and local gas-fired unit heaters where not applicable. Smaller spaces will utilize electric unit heaters.

The offices and adjoining areas will be heated and cooled by packaged rooftop units with DX cooling and gas heating. Limited zoning may be provided.

IT Server Rooms

The IT server rooms will have dedicated systems to provide continuous cooling, not dependent on the building HVAC system. Each room will be provided with the capability to receive conditioned air from the building HVAC system as a backup, should the dedicated unit fail.

Exhaust of the restrooms will be provided by powered exhaust fans.

A direct digital control, campus energy management system will be provided to monitor and control all building HVAC systems and will include features needed to monitor and insure peak energy performance.

Ductwork will comply with SMACNA standards, latest addition.

Life Cycle Cost Analysis

Life cycle analysis was performed for the Library and the Police/Administration buildings comparing four HVAC systems:

Alternative 1 – VAV AHU (VAV);
Alternative 2 – VRF System with dedicated Outside Air system (VRF);
Alternative 3 – Geothermal Heat Pump Unit System with dedicated Outside Air unit (GEO);
Alternative 4 – Water Source Heat Pumps Unit System with dedicated Outside Air unit (WSHP).

- The analysis was performed for a period of 20 years.
- Principal costs were derived from Means 2014.
- Maintenance costs were derived from Means 2014.
- Replacement costs were derived from Means 2014.
- Repairs based on 10 year increments for all systems.
- Minor Replacement for GEO and WSHP based on 15 year increment.
- Major Replacement for GEO and WSHP based on 20 year increment.
- 2% inflation rate used on maintenance and repair/replacement costs.
- 0.5% inflation rate used on utility costs.
- High efficiency Modular boilers were modeled for Alternatives utilizing boilers.

Graphs and data are at the end of the MEP Marrative.

ELECTRICAL

Electrical Power Distribution (Normal)

The Electric Utility Company (PECO) will extend power from Paper Mill Road serve a pad mounted transformer located at the New Library. The underground electric service entrance originating at the pad mount transformers will be 1200A, 120/208V, 3 phase, 4W. All circuit routings will be coordinated with PECO.

Power for the Administration/Police Building will originate from the existing PECO utility pole with transformer. The underground service entrance will be 800A, 120/208V, 3 phase, 4W. The existing utility pole is located on North/West end of the property.

There will be one main electric service to the Main Public Works Building. The main service will originate from the PECO overhead distribution system on Paper Mill Road. Electric service to Main Public Works Building will be 800A, 120/208V, 3 phase 4W. Main distribution panelboards will be used to distribute power throughout the building. Support buildings associated with the Public Works Building will be served from the Public Works Building electrical service.

Branch panelboards will be provided in each of the buildings to serve individua loads and branch circuits.

Electrical Power Distribution (Emergency)

Emergency power for new buildings will originate from two generators. The existing 100kw, 120/208V, 3 phase, 4W that currently serves the Public Works Building will be reassigned to serve the new Library.

A new generator will serve the Public Works Building and the Police / Administration Building. The generator with weather enclosure will be located close to the Public Works Building.

Emergency electrical distribution circuits will be installed underground from the Public Works Building to the Police/Administration Building.

The Public Works and Police Buildings will have 100% electric service backed up furnished by the emergency generator system. Select loads will be on the emegency power system in the Administration Building.

Lighting

The interior lighting system will be designed in accordance with the Illuminating Engineering Society (IES) standards and recommendations.

Fluorescent and light emitting diode (LED) lighting fixtures will be utilized as the lighting source. High color rendering lighting sources will be utilized. All fixtures will be equipped with electronic high power factor ballast and drivers.

Emergency egress and exit lighting will be provided throughout the interior spaces. Emergency egress lighting will be provided for all paths of egress and in selected specialized areas. Exit lighting will be provided at all points deemed necessary to define the paths of egress. Emergency egress and exit lighting will be connected to the emergency power distribution system.

All spaces will be provided with a local wall lighting control switch. Lighting sys tems in areas other than paths of egress will also be provided with controls for automatic shutoff to comply with the State Energy Code. Motion sensors and zoned lighting controls will be utilized to provide Code required automatic con trols.

Wiring Methods

All wiring will be copper. Feeder circuits will be routed in conduit. Metal clad cable (MC cable) will be utilized for branch circuits originating from individual panelboards.

Receptacles will be provided through the areas. Ground fault circuit interrupter (GFI) type receptacles will be provided for devices located outdoors, in wet areas, within six feet of a sink or water source, and other areas deemed necessary as defined by the NEC. Receptacles located outdoors will be provided with a weath erproof while-in-use cover. Receptacles located in the children's area of the Library will be provided with tamper resistant type receptacles. Special recep tacles will be provided where necessary.

IT Communications

A Central IT/Server Room will be established in the Administration/Police building to serve the campus. The room will house equipment for networks servers, net works switches, telephones, communication utility demarcations, and other nec essary equipment. To provide redundancy to the IT/communication system, an Alternate IT Room will be provided in the Library as a second demarcation. The Montgomery County Library System fiber optic cables will also be terminated into the Library IT/Server room.
A fiber optic backbone system will be provided to interconnect the buildings on campus. The distribution will be a loop configuration to allow multiple paths for the communication signals. An underground duct bank system will be provided to route the fiber optic loop.

Smaller IT Rooms or Closets will be used in each building for distribution of cabling infrastructure and fiber terminations within the building.

Data outlets will be provided throughout the buildings to allow network access for building occupants. Horizontal station cabling will be provided from each outlet back to an IT Room or Closet for connection to the IT backbone. Wifi net work access point will be provided to allow the public to access the network sys tem.

The Voice over IP (VoIP) telephone system will be proved to serve the campus and will be sized to accommodate approximately 100 users.

A POTS line (plain old telephone service) will be provided for emergency opera tions and will be provided to the Emergency Operations Centers. A POTS line will also be proved to the fire alarm control panel for automatic dialing to a UL listed Central Station for monitoring.

The telephone system will be designed to receive audio from the Police Department's radio system.

Coaxial cable service for television signal distribution and internet access will be brought to each of the two IT/Server Rooms.

Security

An access control system will be provided for the campus. Access control will be provided on all exterior building doors, interior doors to the Police Department area, and at all IT/Server Rooms.

A video surveillance system will be provided and will be IP based. The system will be expandable to allow integration of future cameras located at remote township facilities.

Cameras will be placed at building exits, at prisoner handling areas, and in the detention cell areas.

The detention cell area will also be provided with a two-way audio communiction system.

Fire Alarm

An analog addressable fire alarm system will be provided for each building. Each building will have a standalone system with an individual control panel. The pan els will be interconnected to a main panel within the Administration Building through a fire alarm cabling network.

Manual pull stations will be provided at each building exit. Smoke detectors will be provided at selected locations required by Code. Monitoring devices will be provided for the monitoring of non-addressable devices, such as fire protection valves and flow switches. Control devices will be provided to allow the fire alarm system to control selected equipment, such as smoke dampers and security sys tem interconnection.

Alarm notification appliances will be provided throughout the building to notify occupants of an alarm condition. Notification appliances will consist of horns and strobes.

Sound Reinforcement

A sound reinforcement system will be provided in the Board Room to allow sound reinforcement and recording of events within the room, such as monthly meetings.

Fire Suppression

All buildings will have fire protection systems in accordance with all applicable requirements of NFPA-13, State, and Local Building Codes.

The Administration/Police building and the Library will be wet systems with recessed sprinkler heads in all finished area. Piping will be concealed above ceilings. If some areas have substantial ceiling heights, then consideration to exposed piping and upright heads can be an option. Police holding or related areas will require institutional heads

The Admin/Police building would be considered "Light Hazard", requiring a discharge intensity of 0.10 GPM over 1500SF. The Library would be considered "Ordinary Hazard Group I", requiring a density of 0.15 GPM over 1500SF.

A new 4" fire service will be extended from Paper Mill Road.
A new 4" fire service will be extended from Hawthorne Lane.

The Public Works building will be a combination of wet and dry systems. Areas where freezing could inadvertently occur should be considered for a dry system to prevent accidental discharge from freezing of a head or pipe. Sprinkler heads within finished spaces should be recessed and areas without ceiling will have upright heads.

The Public Works building would be considered "Ordinary Hazard Group II", requiring 0.20 GPM over 1500SF.

All sprinkler densities listed above are in accordance with NFPA-13 requirements. The owners' insurance underwriter requirements will also be reviewed. The greater of the two densities will be applied to the design.

A new 6" fire service will be extended from Paper Mill road. To serve The Public Works Building and Support buildings associated with the Public Works Building.

A water main flow test should be performed at the nearest fire hydrant to insure adequate flow for the fire protection systems. But it is expected that adequate pressure is available. If not, a fire pump would be required.

PLUMBING

Domestic Water

A new 2" cold water service including water meter and reduce pressure zone assembly will be provided to the new Library.

The Police/Administration building will have a new 2 ½" cold water service including water meter and reduce pressure zone assembly.

There will be one main 2 ½" water service to the Public Works building including water meter and reduce pressure zone assembly. Support buildings associated with the Public Works Building will be served from the Public Works Building water service.

The wash bay will be served by a high pressure washer located in the wash bay equipment room. High pressure washer will be electric powered, electric heated, 3.5 GPM, 3,000 psi, 7.5 HP. High pressure water will be piped from the wash bay equipment room to a drop on each side of the wash bay. Each drop will have a 50' hose and variable pressure wand.

Rain water harvesting will be considered in the Public Works building. Harvested nonpotable water will be used for washing of vehicles or irrigation.

All three buildings will have a 95% thermal efficiency gas fired water heater. Temperature regulating valves will be provided to reduce the 140oF water to 120oF. 120oF water will be used throughout the facility. Due to the length of runs each system will be provided with a hot water recirculating system. Shut off valves will be provided at each branch takeoff and at each piece of equiment

Sanitary

The New Library will have a 4" gravity sanitary system exiting the northwest of the building and will discharge into the site sanitary sewer system.

The Police/Administration building will have a 6" gravity sanitary system exiting the northwest of the building and will discharge into the site sanitary sewer system.

There will be a 6" gravity sanitary system exiting the northwest of each building. All drain located in a vehicle maintenance area will be routed through an oil separator.

Natural Gas

The gas company will extend gas service from Hawthorne Lane and provide a new gas meter located on the southwest side on the Library. Gas service will serve HVAC equipment and the domestic water heater.

The gas company will extend gas service from Paper Mill Road and provide a new gas meter located on the northwest side on the Police/Administration building. Gas service will serve HVAC equipment and the domestic water heater.

The gas company will extend gas service from Hawthorne Lane and provide a new gas meter located on the southeast side on the Public Works building. Support buildings associated with the Public Works Building will be served from the Public Works Building gas service. Gas service will serve HVAC equipment and the domestic water heater.

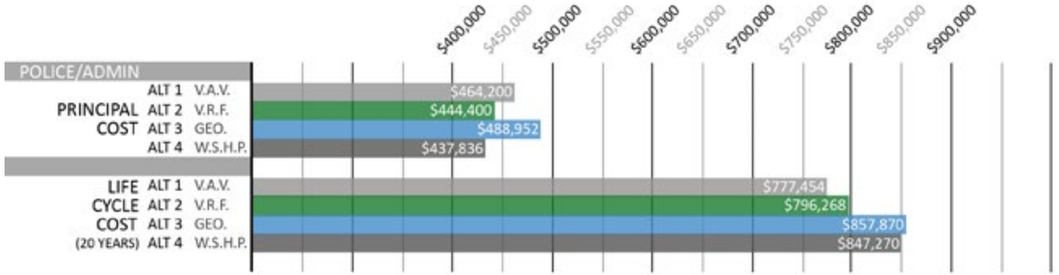
Compressed Air

Public Works buildings will have compressed air that will be produced by a rotary screw air compressor and dried and filtered by a refrigerated air dryer and a 1 micron filter prior to being distributed to the type L copper piping house air system. House air drops will be provided at each wheel location in the maintenance bays and convenience locations throughout the facility including outlets on the exterior.

Plumbing Fixtures

The Township's focus on sustainable design is well noted and will be incorporated in all plumbing fixture selections to reduce water and energy use. Urinals will be 0.128 GPF and water closets will be 1.28 GPF. Sinks and lavatories will be high quality and have low flow faucets. Lavatory faucets will be 0.35 GPM and sink faucets will be 1.5 GPM. Shower head will be 0.5 low flow heads. The low flow faucets and shower heads will reduce demand for hot water thus saving energy.

Conformity of fixtures between the several buildings will be a focus to minimiz stocking of repair parts.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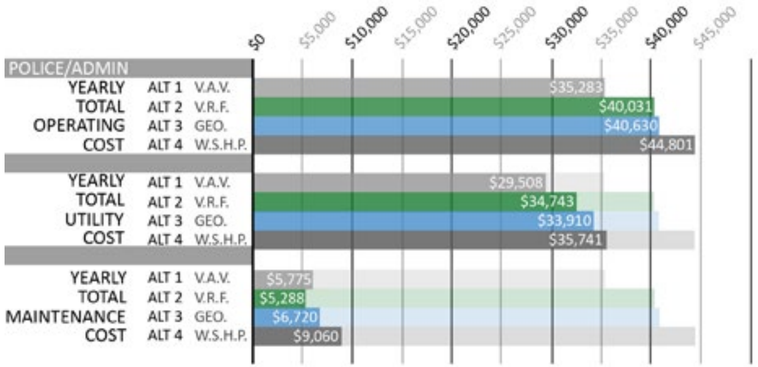
$800,000
$850,000
$900,000
POLICE/ADMIN
PRINCIPAL COST
ALT 1 V.A.V. $464,200
ALT 2 V.R.F. $444,400
ALT 3 GEO. $488,952
ALT 4 W.S.H.P. $437,836
LIFE CYCLE COST (20 YEARS)
ALT 1 V.A.V. $777,454
ALT 2 V.R.F. $796,268
ALT 3 GEO. $857,870
ALT 4 W.S.H.P. $847,270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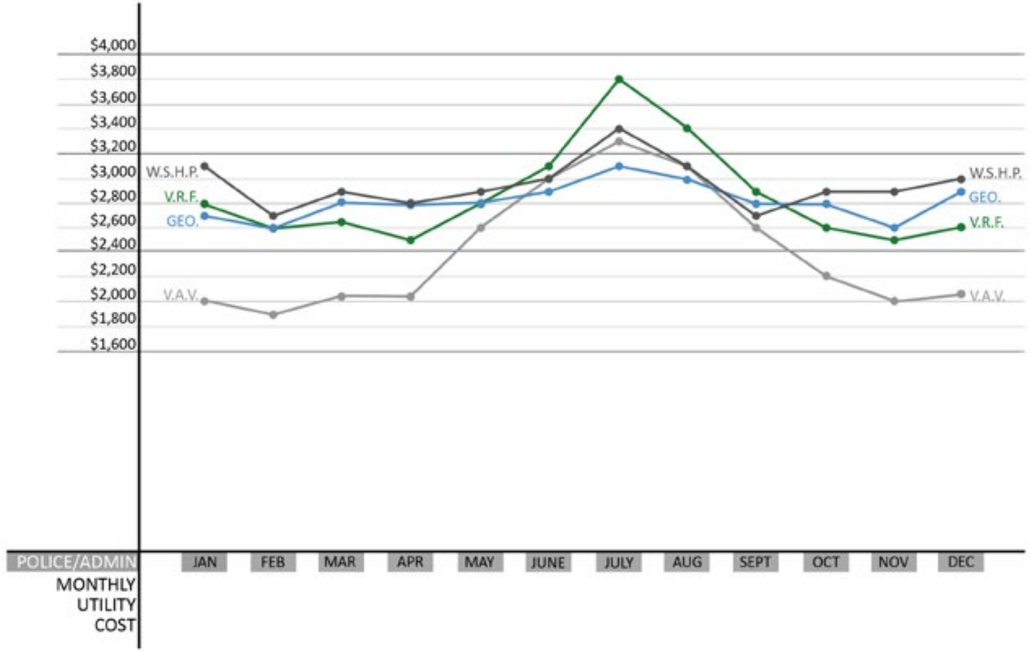
$15,000
$20,000
$25,000
$30,000
$35,000
$40,000
$45,000
POLICE/ADMIN
YEARLY TOTAL OPERATING COST
ALT 1 V.A.V. $35,283
ALT 2 V.R.F. $40,031
ALT 3 GEO. $40,630
ALT 4 W.S.H.P. $44,801
YEARLY TOTAL UTILITY COST
ALT 1 V.A.V. $29,508
ALT 2 V.R.F. $34,743
ALT 3 GEO. $33,910
ALT 4 W.S.H.P. $35,741
YEARLY TOTAL MAINTENANCE COST
ALT 1 V.A.V. $5,775
ALT 2 V.R.F. $5,288
ALT 3 GEO. $6,720
ALT 4 W.S.H.P. $9,060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$3,400
$3,200
$3,000
$2,800
$2,600
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$2,200
$2,000
$1,800
$1,600
W.S.H.P.
V.R.F.
GEO.
V.A.V.
POLICE/ADMIN MONTHLY UTILITY COST
JAN
FEB
MAR
APR
MAY
JUNE
JULY
AUG
SEPT
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NOV
DEC

POLICE/ADMINISTRATION BUILDING					
YEARLY CASH FLOW					
YEAR	UTILITY COST	MAINTENANCE COST	PRINCIPAL COST	REPLACEMENT EXPENSES	CASH FLOW EFFECT
ALTERNATIVE 1- V.A.V.					
0	$0	$0	$464,200	$0	$464,200
1	$29,508	$5,775	$0	$0	$35,283
2	$29,656	$5,775	$0	$0	$35,431
3	$29,804	$5,775	$0	$0	$35,579
4	$29,953	$5,775	$0	$0	$35,728
5	$30,103	$5,775	$0	$0	$35,878
6	$30,253	$5,775	$0	$0	$36,028
7	$30,405	$5,775	$0	$0	$36,180
8	$30,557	$5,775	$0	$0	$36,332
9	$30,709	$5,775	$0	$0	$36,484
10	$30,863	$5,775	$0	$0	$36,638
11	$31,017	$5,775	$0	$0	$36,792
12	$31,172	$5,775	$0	$0	$36,947
13	$31,328	$5,775	$0	$0	$37,103
14	$31,485	$5,775	$0	$0	$37,260
15	$31,642	$5,775	$0	$18,750	$56,167
16	$31,801	$5,775	$0	$0	$37,576
17	$31,960	$5,775	$0	$0	$37,735
18	$32,119	$5,775	$0	$0	$37,894
19	$32,280	$5,775	$0	$0	$38,055
20	$32,441	$5,775	$0	$0	$38,216

POLICE/ADMINISTRATION BUILDING					
YEARLY CASH FLOW					
YEAR	UTILITY COST	MAINTENANCE COST	PRINCIPAL COST	REPLACEMENT EXPENSES	CASH FLOW EFFECT
ALTERNATIVE 2- V.R.F.					
0	$0	$0	$444,400	$0	$444,400
1	$34,743	$5,288	$0	$0	$40,031
2	$34,917	$5,288	$0	$0	$40,205
3	$35,091	$5,288	$0	$0	$40,379
4	$35,267	$5,288	$0	$0	$40,555
5	$35,443	$5,288	$0	$0	$40,731
6	$35,620	$5,288	$0	$0	$40,908
7	$35,798	$5,288	$0	$0	$41,086
8	$35,977	$5,288	$0	$0	$41,265
9	$36,157	$5,288	$0	$0	$41,445
10	$36,338	$5,288	$0	$0	$41,626
11	$36,520	$5,288	$0	$0	$41,808
12	$36,702	$5,288	$0	$0	$41,990
13	$36,886	$5,288	$0	$0	$42,174
14	$37,070	$5,288	$0	$0	$42,358
15	$37,256	$5,288	$0	$5,000	$47,544
16	$37,442	$5,288	$0	$0	$42,730
17	$37,629	$5,288	$0	$0	$42,917
18	$37,817	$5,288	$0	$0	$43,105
19	$38,006	$5,288	$0	$0	$43,294
20	$38,196	$5,288	$0	$0	$43,484

POLICE/ADMINISTRATION BUILDING					
YEARLY CASH FLOW					
YEAR	UTILITY COST	MAINTENANCE COST	PRINCIPAL COST	REPLACEMENT EXPENSES	CASH FLOW EFFECT
ALTERNATIVE 3- GEO.					
0	$0	$0	$488,952	$0	$488,952
1	$33,910	$6,720	$0	$0	$40,630
2	$34,079	$6,720	$0	$0	$40,799
3	$34,250	$6,720	$0	$0	$40,970
4	$34,421	$6,720	$0	$0	$41,141
5	$34,593	$6,720	$0	$0	$41,313
6	$34,766	$6,720	$0	$0	$41,486
7	$34,940	$6,720	$0	$0	$41,660
8	$35,115	$6,720	$0	$0	$41,835
9	$35,290	$6,720	$0	$0	$42,010
10	$35,467	$6,720	$0	$8,250	$50,437
11	$35,644	$6,720	$0	$0	$42,364
12	$35,822	$6,720	$0	$0	$42,542
13	$36,001	$6,720	$0	$0	$42,721
14	$36,181	$6,720	$0	$0	$42,901
15	$36,362	$6,720	$0	$37,500	$80,582
16	$36,544	$6,720	$0	$0	$43,264
17	$36,727	$6,720	$0	$0	$43,447
18	$36,910	$6,720	$0	$0	$43,630
19	$37,095	$6,720	$0	$0	$43,815
20	$37,280	$6,720	$0	$8,250	$52,250

POLICE/ADMINISTRATION BUILDING					
YEARLY CASH FLOW					
YEAR	UTILITY COST	MAINTENANCE COST	PRINCIPAL COST	REPLACEMENT EXPENSES	CASH FLOW EFFECT
ALTERNATIVE 4- W.S.H.P.					
0	$0	$0	$437,836	$0	$437,836
1	$35,741	$9,060	$0	$0	$44,801
2	$35,919	$9,060	$0	$0	$44,979
3	$36,099	$9,060	$0	$0	$45,159
4	$36,279	$9,060	$0	$0	$45,339
5	$36,461	$9,060	$0	$0	$45,521
6	$36,643	$9,060	$0	$0	$45,703
7	$36,826	$9,060	$0	$0	$45,886
8	$37,010	$9,060	$0	$0	$46,070
9	$37,195	$9,060	$0	$0	$46,255
10	$37,381	$9,060	$0	$8,250	$54,691
11	$37,568	$9,060	$0	$0	$46,628
12	$37,756	$9,060	$0	$0	$46,816
13	$37,945	$9,060	$0	$0	$47,005
14	$38,135	$9,060	$0	$0	$47,195
15	$38,325	$9,060	$0	$56,250	$103,635
16	$38,517	$9,060	$0	$0	$47,577
17	$38,710	$9,060	$0	$0	$47,770
18	$38,903	$9,060	$0	$0	$47,963
19	$39,098	$9,060	$0	$0	$48,158
20	$39,293	$9,060	$0	$8,250	$56,603

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$800,000
$850,000
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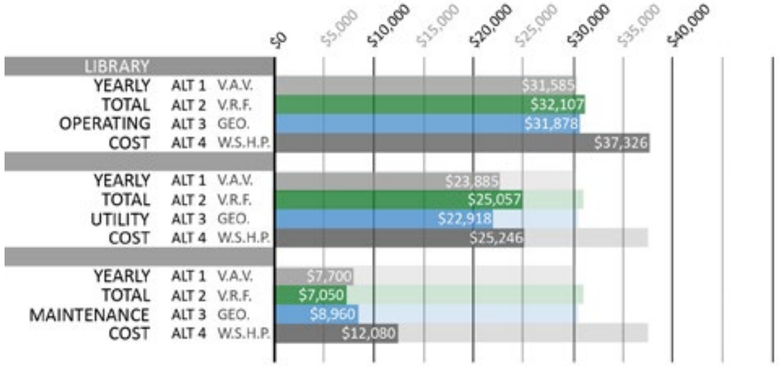
$1,050,000
LIBRARY
PRINCIPAL COST
ALT 1 V.A.V. $648,125
ALT 2 V.R.F. $701,250
ALT 3 GEO. $749,375
ALT 4 W.S.H.P. $612,000
LIFE CYCLE COST (20 YEARS)
ALT 1 V.A.V. $941,137
ALT 2 V.R.F. $991,928
ALT 3 GEO. $1,059,118
ALT 4 W.S.H.P. $980,508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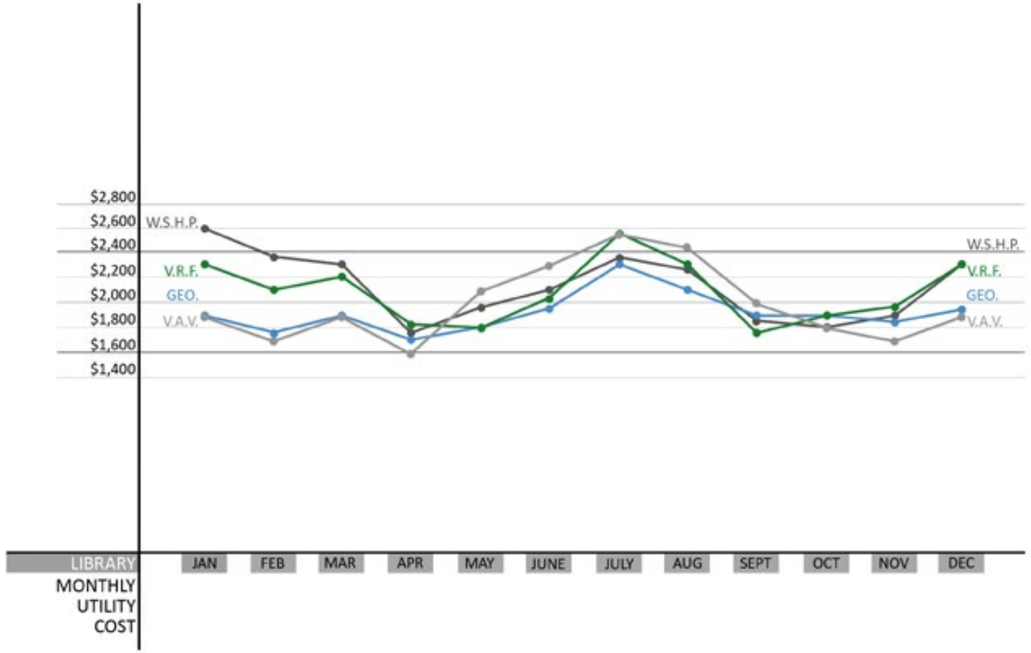
$15,000
$20,000
$25,000
$30,000
$35,000
$40,000
LIBRARY
YEARLY TOTAL OPERATING COST
ALT 1 V.A.V. $31,585
ALT 2 V.R.F. $32,107
ALT 3 GEO. $31,878
ALT 4 W.S.H.P. $37,326
YEARLY TOTAL UTILITY COST
ALT 1 V.A.V. $23,885
ALT 2 V.R.F. $25,057
ALT 3 GEO. $22,918
ALT 4 W.S.H.P. $25,246
YEARLY TOTAL MAINTENANCE COST
ALT 1 V.A.V. $7,700
ALT 2 V.R.F. $7,050
ALT 3 GEO. $8,960
ALT 4 W.S.H.P. $12,080


$2,800
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$2,200
$2,000
$1,800
$1,600
$1,400
W.S.H.P.
V.R.F.
GEO.
V.A.V.
LIBRARY MONTHLY UTILITY COST
JAN
FEB
MAR
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LIBRARY BUILDING					
YEARLY CASH FLOW					
YEAR	UTILITY COST	MAINTENANCE COST	PRINCIPAL COST	REPLACEMENT EXPENSES	CASH FLOW EFFECT
ALTERNATIVE 1- V.A.V.					
0	$0	$0	$648,125	$0	$648,125
1	$23,885	$7,700	$0	$0	$31,585
2	$24,004	$7,854	$0	$0	$31,858
3	$24,124	$8,011	$0	$0	$32,135
4	$24,245	$8,171	$0	$0	$32,416
5	$24,366	$8,335	$0	$0	$32,701
6	$24,488	$8,501	$0	$0	$32,989
7	$24,610	$8,671	$0	$0	$33,281
8	$24,733	$8,845	$0	$0	$33,578
9	$24,857	$9,022	$0	$0	$33,879
10	$24,981	$9,202	$0	$0	$34,183
11	$25,106	$9,386	$0	$0	$34,492
12	$25,232	$9,574	$0	$0	$34,806
13	$25,358	$9,765	$0	$0	$35,123
14	$25,484	$9,961	$0	$0	$35,445
15	$25,612	$10,160	$0	$32,987	$68,759
16	$25,740	$10,363	$0	$0	$36,103
17	$25,869	$10,570	$0	$0	$36,439
18	$25,998	$10,782	$0	$0	$36,780
19	$26,128	$10,997	$0	$0	$37,125
20	$26,259	$11,217	$0	$0	$37,476

LIBRARY BUILDING					
YEARLY CASH FLOW					
YEAR	UTILITY COST	MAINTENANCE COST	PRINCIPAL COST	REPLACEMENT EXPENSES	CASH FLOW EFFECT
ALTERNATIVE 2- V.R.F.					
0	$0	$0	$701,250	$0	$701,250
1	$25,057	$7,050	$0	$0	$32,107
2	$25,182	$7,191	$0	$0	$32,373
3	$25,308	$7,335	$0	$0	$32,643
4	$25,435	$7,482	$0	$0	$32,917
5	$25,562	$7,631	$0	$0	$33,193
6	$25,690	$7,784	$0	$0	$33,474
7	$25,818	$7,939	$0	$0	$33,757
8	$25,947	$8,098	$0	$0	$34,045
9	$26,077	$8,260	$0	$0	$34,337
10	$26,207	$8,425	$0	$0	$34,632
11	$26,338	$8,594	$0	$0	$34,932
12	$26,470	$8,766	$0	$0	$35,236
13	$26,602	$8,941	$0	$0	$35,543
14	$26,735	$9,120	$0	$0	$35,855
15	$26,869	$9,302	$0	$6,597	$42,768
16	$27,003	$9,488	$0	$0	$36,491
17	$27,138	$9,678	$0	$0	$36,816
18	$27,274	$9,872	$0	$0	$37,146
19	$27,411	$10,069	$0	$0	$37,480
20	$27,548	$10,271	$0	$0	$37,819

LIBRARY BUILDING					
YEARLY CASH FLOW					
YEAR	UTILITY COST	MAINTENANCE COST	PRINCIPAL COST	REPLACEMENT EXPENSES	CASH FLOW EFFECT
ALTERNATIVE 3- GEO.					
0	$0	$0	$749,375	$0	$749,375
1	$22,918	$8,960	$0	$0	$31,878
2	$23,032	$9,139	$0	$0	$32,171
3	$23,148	$9,322	$0	$0	$32,470
4	$23,263	$9,508	$0	$0	$32,771
5	$23,380	$9,699	$0	$0	$33,079
6	$23,497	$9,893	$0	$0	$33,390
7	$23,614	$10,090	$0	$0	$33,704
8	$23,732	$10,292	$0	$0	$34,024
9	$23,851	$10,498	$0	$0	$34,349
10	$23,970	$10,708	$0	$13,146	$47,824
11	$24,090	$10,922	$0	$0	$35,012
12	$24,210	$11,141	$0	$0	$35,351
13	$24,331	$11,363	$0	$0	$35,694
14	$24,453	$11,591	$0	$0	$36,044
15	$24,575	$11,823	$0	$65,974	$102,372
16	$24,698	$12,059	$0	$0	$36,757
17	$24,822	$12,300	$0	$0	$37,122
18	$24,946	$12,546	$0	$0	$37,492
19	$25,070	$12,797	$0	$0	$37,867
20	$25,196	$13,053	$0	$0	$38,249

LIBRARY BUILDING					
YEARLY CASH FLOW					
YEAR	UTILITY COST	MAINTENANCE COST	PRINCIPAL COST	REPLACEMENT EXPENSES	CASH FLOW EFFECT
ALTERNATIVE 4- W.S.H.P.					
0	$0	$0	$612,000	$0	$612,000
1	$25,246	$12,080	$0	$0	$37,326
2	$25,372	$12,322	$0	$0	$37,694
3	$25,499	$12,568	$0	$0	$38,067
4	$25,627	$12,819	$0	$0	$38,446
5	$25,755	$13,076	$0	$0	$38,831
6	$25,883	$13,337	$0	$0	$39,220
7	$26,013	$13,604	$0	$0	$39,617
8	$26,143	$13,876	$0	$0	$40,019
9	$26,274	$14,154	$0	$0	$40,428
10	$26,405	$14,437	$0	$13,146	$53,988
11	$26,537	$14,725	$0	$0	$41,262
12	$26,670	$15,020	$0	$0	$41,690
13	$26,803	$15,320	$0	$0	$42,123
14	$26,937	$15,627	$0	$0	$42,564
15	$27,072	$15,939	$0	$98,961	$141,972
16	$27,207	$16,258	$0	$0	$43,465
17	$27,343	$16,583	$0	$0	$43,926
18	$27,480	$16,915	$0	$0	$44,395
19	$27,617	$17,253	$0	$0	$44,870
20	$27,755	$17,598	$0	$0	$45,353

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