Ari DiMaria
10/17/2018

Building Statistics

Part 1

- Building name

Hyattsville Branch Library

- Location and site

6530 Adelphi Rd., Hyattsville, MD

- Building Occupant Name

Prince George's County Memorial Library System

- Occupancy or function types (type of building)

Library (public use)

- Size (total square feet)

40258 sq.ft. library, 46314 sq.ft. garage

- Number of stories above grade and total levels

1 level library above grade and parking garage below grade

Architect: Grimm and Parker
https://www.grimmandparker.com/
Owner: Prince George's County Memorial Library System
https://www.pgcmls.info/
Structural: ReStl
http://restl.com/
Civil: ADTEK Engineers
http://www.adtekengineers.com/
Landscape: Bradley Site Design
http://www.bradleysitedesign.com/
MEP: Weigand Associates, Inc.
http://www.wainet.net/

- Dates of construction (start – finish)

Start: Spring 2018
Finish: Unknown

- Cost Conditions

General Conditions: $1,448,629.85
Sitework: $5,483,738.42
Garage: $6,018,708.02
Main Building: $15,019,167.86
Total: $27,970,244.15

Building Statistics

- Project delivery method

Design Bid Build

Architecture

The Hyattsville Branch Library has been designed as a single-story library with a partially underground, one floor parking garage below the library footprint. The main entrance for pedestrians is on the south façade, whereas the parking garage entrance is on the north side and has southern elevators and stairs to bring people up to the library. The library was designed to provide spaces to support the community, such as, Community meeting rooms, children's area, café/vending, teen area, group study rooms, quiet study rooms, public computers, plaza deck. The overall design concept was to create a welcoming facility with flexible spaces and modern technology that is accessible to all people.

Figure 45: Library Level Plan

Building Statistics

- Major national model code/s

2015 NFPA 101 Life Safety Code and Subtitle 11 Prince George's County Fire Safety Code

2012 International Building Code and Subtitle 4 Prince George's County Building Code

2014 NFPA 70 National Electrical Code and Subtitle 9 Prince George's County Electrical Code

2012 International Mechanical Code

2012 International Energy Conservation Code

2010 ASHRAE 90.1

- Zoning

R-55 (One-Family Detached Residential)

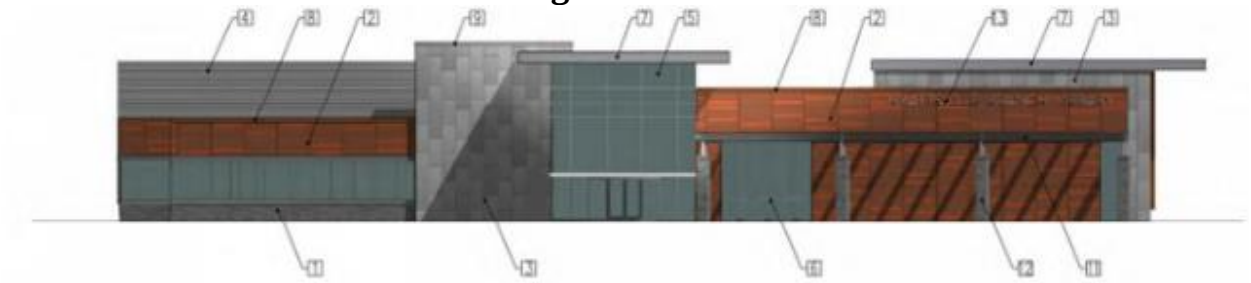
- Historical requirements of building or historical district where built

Not applicable, this is new construction.

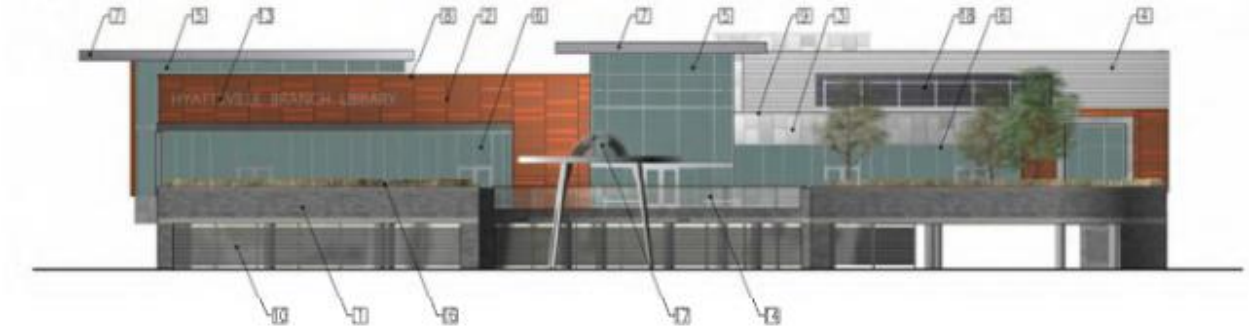
Building Enclosure

The enclosure for Hyattsville Library is a made up of walls pulled in and out of different materials and different leveled rooves that provide additional functions. The facades are either metal panels, terracotta blocks, aluminum curtain walls, or low-e double glazed glass curtain walls. Primarily the glass walls are on the north and south side to take advantage of useable daylight. Canopies and sun shades by the entrance, patio, and east/west windows help to eliminate glare that could be caused by glass walls and windows. The highest roof of the three-level roof in the center is metal deck that is supported by joists and beams, whereas the lower rooves are 6" composite slabs with 4" of concrete. The lower rooves are much stronger, because they must support a PV array on the west side and a green roof on the east. In addition, there are a few small glass skylights that do not provide any structural support.

Building Statistics



3 SOUTH ELEVATION



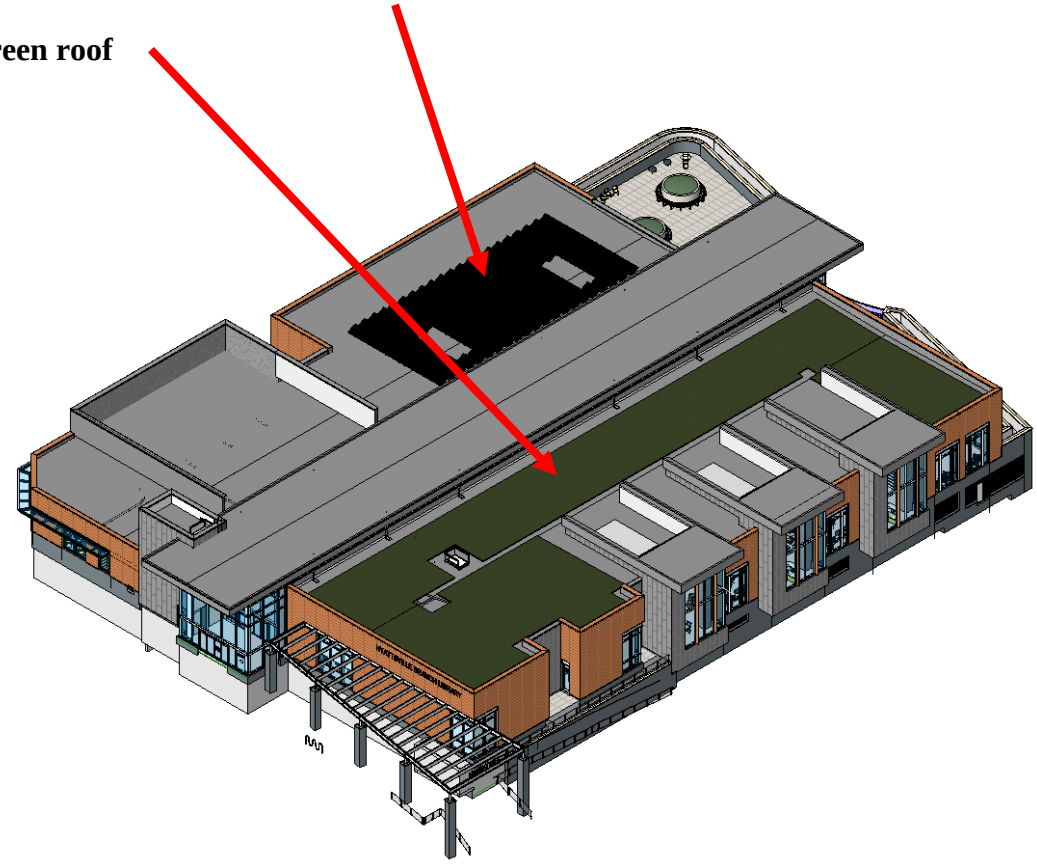
4 NORTH ELEVATION

Building Statistics

Sustainability Features

Rooftop photovoltaic array

Green roof



Part 2

Construction

Construction of the nearly 28-million-dollar library and parking garage is supposed to begin this year (Spring 2018), but I have been told there has been delays and the start date has not been finalized. Once begun, the entire project along with inspection is estimated to take 31 months. The construction of the 40,000 square foot library and 46,000 square foot garage will take 15 months.

Building Statistics

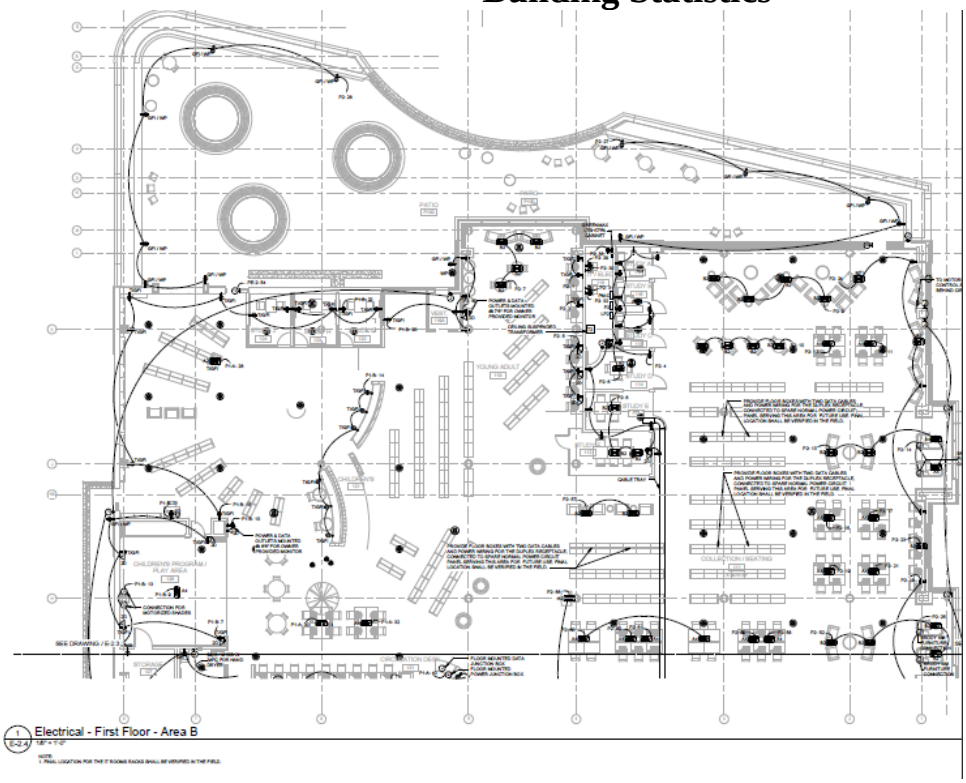
Electrical

The electricity for the building is supplied from a utility transformer that provides 480/277V electricity to the building. There is also a standby generator and PV array that are connected to the electrical system by automatic transfer switches that switch between utility power and one of the alternative sources. All electrical devices are UL listed. The electrical system has a surge protection device on the main distribution panel as well as each branch circuit panel. Each branch panel has 42 circuits for bolt on breakers and copper bussing. Most wires in the building are copper and THHN/THWN, minimum 12 gage. Conduit must be at least ¾" above grade or 1" in diameter if below grade. At least one receptacle is present in every space. One receptacle is positioned every 12 feet in open offices and every 30 feet in corridors. Receptacles within 6 feet of plumbing devices or pipes are GFI protected. Charging for electrical vehicles is present in the parking garage, which is also where the standby generator is located.

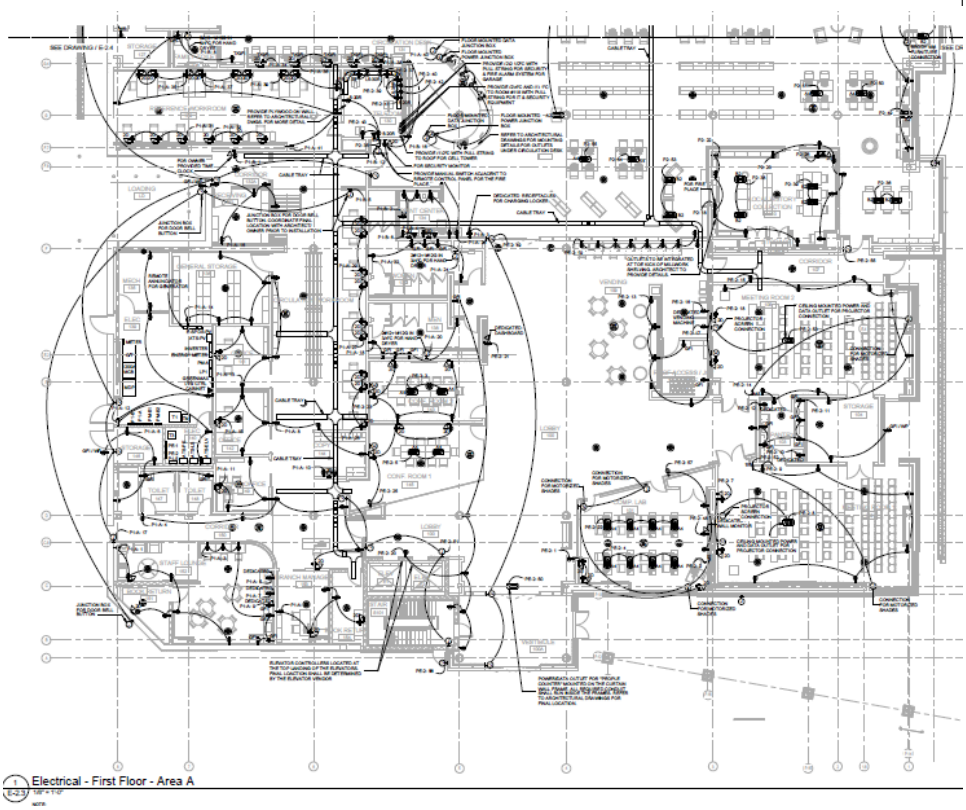
Lighting

The luminaires chosen for this building are all LED with rapid programed start drivers, most of which have 0-10V dimming. The lighting in the support spaces is fairly simple with 2'x2' and linear fixtures, but in the open library spaces there are different mounting heights, custom luminaires, and groups of different LED fixtures depending on task type. The lighting power density for the current design is 1.037 in the library and 0.197 for the garage, which complies with ASHRAE 90.1 requirements. The lighting controls are from GreenMAX and Leviton and include daylight sensors, switches, and infrared and dual-tech occupancy sensors. Occupancy sensors in offices, conference rooms, break rooms, and store rooms turn off after 10 to 30 minutes automatically, whereas sensors in the parking garage keep the lights dimmed and turn the output to 100% when motion is sensed. In addition, emergency lighting is designed to allow at least 1fc in the egress route and 0.2 fc in the rest of the building.

Building Statistics

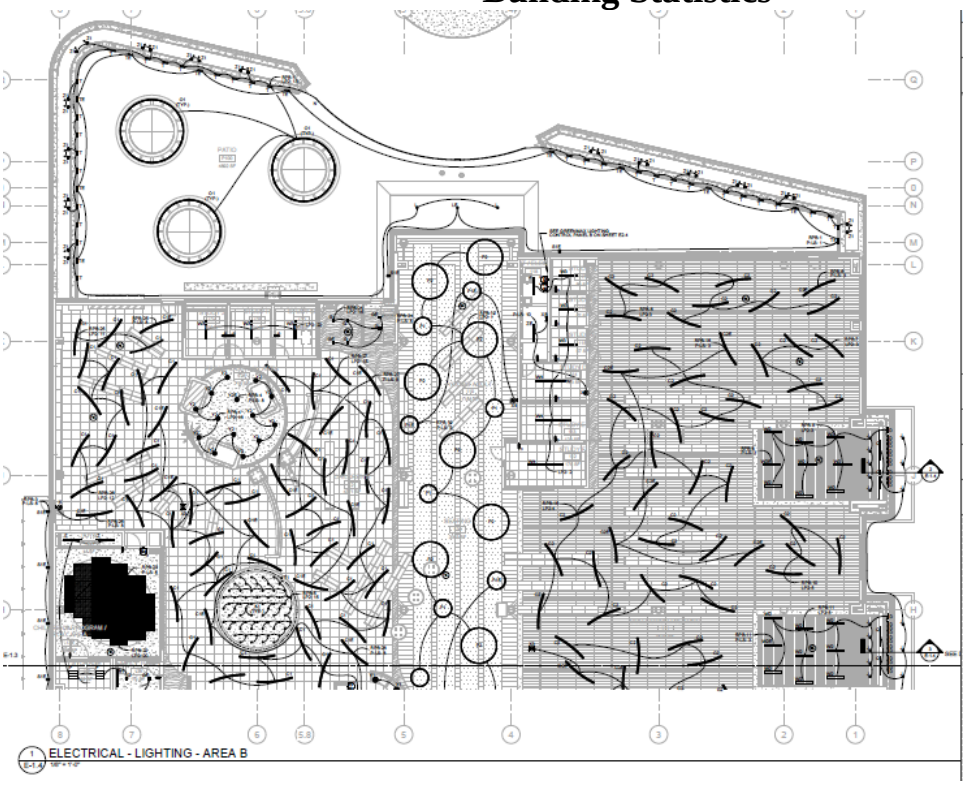


1 E-2.4 Electrical - First Floor - Area B

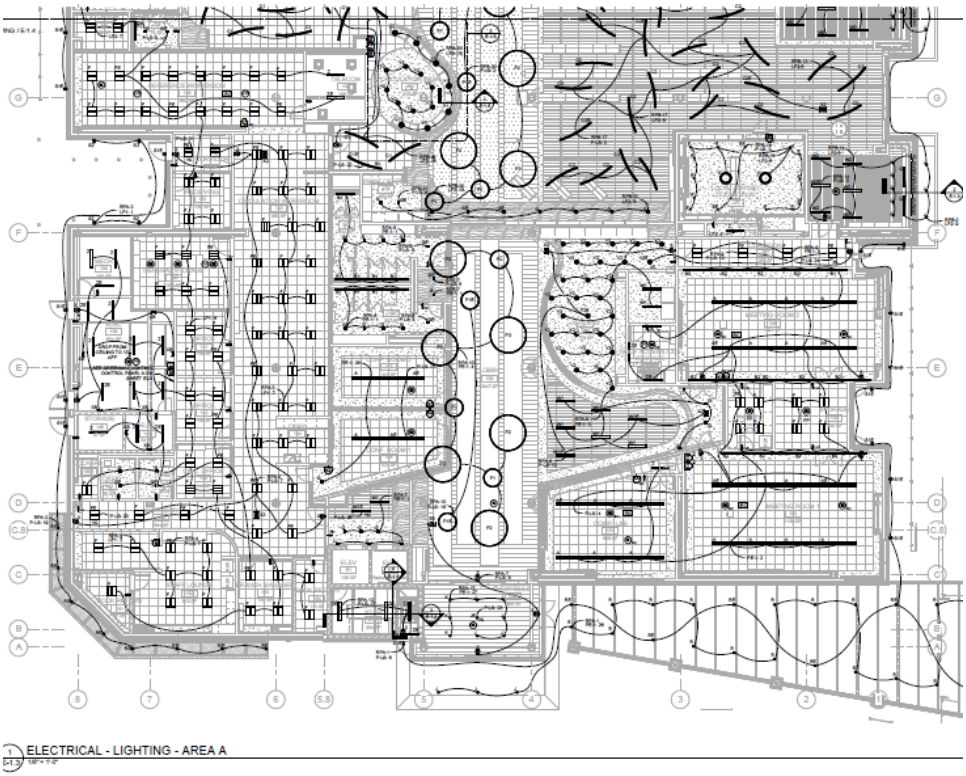


1 E-2.3 Electrical - First Floor - Area A

Building Statistics



ELECTRICAL - LIGHTING - AREA B



ELECTRICAL - LIGHTING - AREA A

Building Statistics

Mechanical

In addition to the codes above, the mechanical system follows requirements in ASHRAE 55 2004 (thermal environmental conditions for human occupancy) and 62.1 2010 (ventilation for acceptable indoor air quality). The main mechanical system for the building is a variable air volume system with DX rooftop units. It contains a DX coiling coil, and air-cooled economizer, and electric heating coils. There are also separate PRV fans and duct system for bathrooms and copy rooms. There is a building management system for setpoint control, temperature monitoring, scheduling, and an alarm system that contacts the repairman if any device fails. There is also a temperature sensor in every room to provide info to the BMS. In the summer the interior setpoint is 75°F with 50% relative humidity and 70ºF in the winter. The library is open from 7am to 9pm, so the BMS also sets back the temperature a little bit when the building is not operational to save energy. The mechanical system provides supply air 5% more than return air to maintain positive pressure in the building.

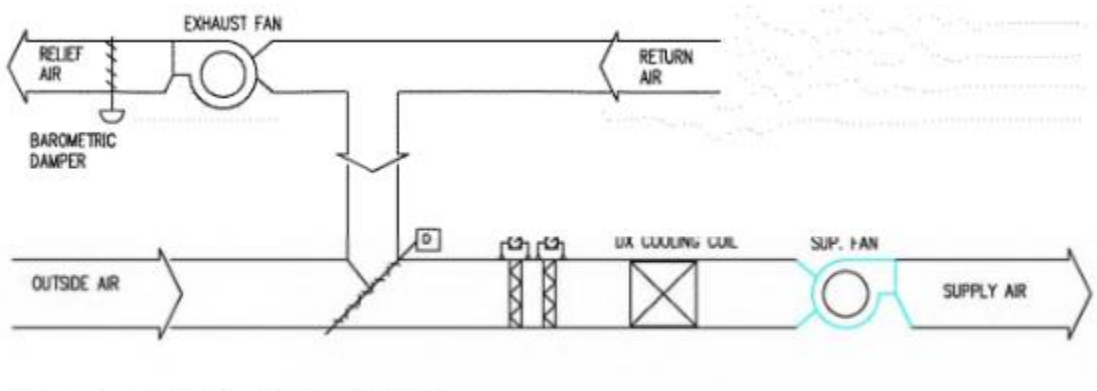


Figure 28: VAV System Ventilation Unit Schematic

Structural

In the design there was reinforced concrete slab on grade as well as a concrete foundation with 28-day strength and can support 3500 psi. This concrete has A615 and A706 grade 60 reinforcing steel and A185 welded wire fabric. The structural steel in the building includes A992 wide flanges, A572 rolled channels, A36 rods/plates/angles, and A500 grade B hollow structural sections. The roof is steel deck that is 1.5 inches or 2 inches with 4 inches of concrete to support the green roof and solar panels. The library also has steel columns to support the building enough to allow for large curtain walls in the north and south facades.

Building Statistics

Fire Protection

As well as a fire pump and associated plumbing equipment, there is an addressable, microprocessor-based fire alarm system. Devices include: pull stations, smoke detectors, thermal detectors, sprinkler control modules, and voice/alarm annunciators for mass warning. MC cable is used for fire alarm concealed wiring. A control panel for the fire alarm system is located in the main electrical room. Also, there is an annunciator near the main entrance that has a faceplate to tell the condition of the system from the control panel.

Transportation

The main entrance is on the south façade at street level. The entrance opens into a corridor that goes along the length of the building with the support spaces in the south and open library areas in the north. More north is two exits onto the patio area that is above the entrance to the parking garage below. The entrance to the parking garage is on the northwestern side. The parking garage fills the entire space below the library footprint and has two elevators and a staircase near the south side to go up into the library.

Building Statistics

Telecommunications and Other Systems

The library has also been designed with telephone, data, and cable/satellite TV wiring to support the occupants and tasks within the library. A telecom room houses most of the important devices for the system. In addition, there is a security system in place to monitor the library and support spaces.

*All images credited to Grimm & Parker Architects and MEP plans to Weigand Associates