I. THE SENATOR SHUMAKER PUBLIC SAFETY CENTER

ARCHITECTURAL ASSESSMENT

A. CENTER HISTORY AND USE

- The Center was dedicated on May 19, 2000. However, many of the facilities buildings have been in use since 1987 and 1991.

- The Facility is used to train fire, police, emergency medical personnel, healthcare personnel and transportation technology.

- The facility includes the following structures
  
  o North Hall
  o Drill Tower
  o Smoke Building
  o Burn Building
  o Outdoor Shooting Range
  o Police Training Building
  o Pole Building for Storage
  o Pole Barn and Outdoor Covered Pavilion
  o Pump House
  o Driver Training Skid Pad
B. NORTH HALL

- North Hall was constructed in 1991, it is **42,122 Square Feet** and two stories in height, there are no floors below grade.

- The building currently houses classrooms, offices, automotive labs, training facilities, and a cafeteria. The building is composed of a two story core with two one story wings. The second floor is composed of 8 classrooms ranging from 680 square feet to 800 square feet.

- Main offices for the Public Safety Center are located within the structure.
  - Current offices are undersized and do not have adequate storage which occurs in egress paths. Due to the overcrowding there is not adequate egress capacity from the offices to meet current code requirements. This should be a priority to reduce overcrowding within this space as part of a construction project.

- The building is a load bearing masonry and steel frame structure built on a pier foundation system. The foundation system was chosen because the site was a former landfill. Differential settlement has occurred within the building creating cracks in the building. This has not affected the building’s integrity, but should continue to be monitored. Minor cracks should be repaired routinely.

- The building has both a metal and ballasted membrane roof that is in fair to poor condition. It appears that with regular maintenance there is still useful life in the two systems. However, this should be monitored closely. The last reported maintenance to the roof was 1996.

- The exterior façade is a combination of dryvit wall panels and brick.
  - The brick is in good condition
The Dryvit panels are in fair condition, however they are beginning to show signs of wear and should receive routine recaulking of joints and repainting.

- Windows are in fair condition.
- Exterior doors are in fair/good condition.
- Interior doors and hardware should be replaced as part of a future renovation project.
  - Majority of interior doors may be able to be refurbished, door hardware however does not meet current code requirements and should be replaced as part of a construction project.
- Entrances are in Good Condition, excluding the Bell Monument at the front of the building which has damaged brick that needs to be repaired.
- Future renovations of the building should investigate the ability to create a security vestibule at the main entrance. It was expressed that access to the facility after hours is not monitored and that this does raise concerns about possible damage to the facility.
- Railings for the stairs should be replaced to meet current safety standards.
- Renovations should investigate replacement of acoustical tile ceilings in the classrooms to improve sound transfer within the classrooms.
- Phase 1 renovations should investigate the ability to replace floor finishes and paint walls in the classrooms to create equity in the facility if the new law enforcement complex building is constructed.
  - It was discussed that the design team should work closely with the college to meet standards for classroom design throughout the college.
- The current cafeteria is undersized, possible expansion or relocation within the Safety Center should be investigated.
Transportation labs and vehicle bays are in good condition, routine maintenance of the overhead doors should occur to extend the life of these systems.

- Concern was expressed by the staff that the facilities have no more room for expansion. This concern was addressed in the Program in which expansion of the facility is addressed. It is expected that this expansion would occur in Phase 4 of the Master Plan. Expansion could also occur in Phase 2 and 3 as departments move out of North Hall.

- Restrooms are accessible and in good condition. Locker Rooms are undersized, however possible expansion of the facility through the Law Enforcement Complex Building may help alleviate these concerns.
C. DRILL TOWER

- The Drill Tower is a 5 story load bearing masonry and steel frame structure supporting Fire Training constructed in 1987. The building is approximately 4,700 square feet. While the building is structurally sound and in fair condition, the following concerns should be addressed to extend the life and usefulness of the structure.

- Steel frame is in fair condition, paint should be mechanically removed and repainted with high performance acrylic paint system to deter corrosion.
• The existing brick is in good/fair condition. Brick should be cleaned to remove efflorescence from the exterior that may damage brick in the future. Due to the existing foundations, as part of a construction project, additional control joints should be added to the buildings to meet National Masonry Institute standards for masonry expansion and differential settlement.

• The majority of the railing systems are in disrepair and should be repaired or replaced from exposure to the elements.
  
  o Currently the railings are cemented into the concrete floor slabs, which allows corrosion to damage the concrete slabs. It is advised that new railings be attached horizontally to the steel structure to not further damage the floor deck.

• Replacement of Doors, frames and Hollow Metal Window Openings is recommended. These systems are failing from 22 years of use and exposure to the elements and are becoming safety hazards.
It is recommended that a railing system be added to the roof to create an additional training environment.

Surrounding concrete apron appears to be in good condition.

Discussions with the facilities instructors referenced a need to possibly enclose one or both sides of the training tower with masonry construction. This would increase the training that occurs within the structure and offer new prop training.

- Selection of materials for enclosure should be investigated carefully, due to the existing foundation system which accommodates the site’s history as a landfill, the structure may be limited to weight that the foundations may accommodate.

There are limited electrical devices within the structure, possible improvements to the facility including prop training will require expansions to the existing electrical system.

- It is recommended that all lighting be replaced as part of a renovation project.
C. BURN BUILDING

- The Burn Building is a 2-1/2 story structure that is about 4,122 square feet in size. The Building is brick over CMU Block construction.

- The current limitations of the building include concerns about the wear and tear of the doors, railings and limited fall protection. However the facility has received a five year survey and it is in good condition for its current age. The structure of the building is sound and with a rehabilitation of the building the building can be returned to “like new” condition at a considerable cost savings over a new structure.

- The building has three burn rooms, including a basement level. It does allow for second and third story fire simulation.

- The building is heavily used, however due to its limited size, it does not allow for multiple fire company training or evolutions at a time.

- The building is used to simulate Class “A” fires and the majority of the rooms are lined with heat resistive panels to protect the building structure.
  
  - The exception to this is a kitchen simulation room, it was requested by staff that the building would be more useful if this part of the building was modified also accommodate Class “A” fires.

- The original building was designed to utilize a Symtron propane fueled Class “B” live fire prop system. Due to constant maintenance issues this system was removed.
The building was retrofitted with High Temperature Lining material to accommodate Class “A” live fires.

- The Class “A” fires are preferred due to the fact they more closely simulate actual fire conditions.

- The exterior brick is in good condition, it is recommended that the exterior brick be cleaned and that limited damage to the brick be repaired by repointing. This includes minor repairs from the removal of the Symtron Fire simulation system.

- The Exterior railings are in poor condition and should be repaired or replaced due to heavy use that is required by the fire training.

- All doors and window shutters are at the end of their life and are currently safety hazards. These should be replaced to extend the life of the building.
• Additional fall protection and railings should be added to the structure, this could help expand training to the roof of the structure.

• There was discussion about expanding the structure. This was not recommended because it would limit the ability to have multiple companies training at the same time. A more appropriate solution is to convert the Smoke Building into a secondary Class “A” fire training facility.

• Damage has occurred to the exterior concrete stairs. These present safety hazards and should be repaired.
D. SMOKE BUILDING

- The Smoke building was constructed in 1987 and is a 1939 square foot building constructed of brick veneer over concrete block.

- Overall the building is in good condition, minor cleaning and repainting of some interior structural steel is required. A roof replacement is recommended in the near future to accommodate leaks that have occurred in the building.

- Currently the building sits dormant much of the year due to limited use. It was suggested by staff that a conversion of the structure to accommodate a second burn building would greatly enhance the usefulness of the drill grounds. This would allow for multiple company or evolutions occurring at the same time on the grounds.

- In order to modify the existing building, the building would need rooms to be lined with fire resistive panels. While there is cost associated with preparing the building, this appears to be a strong use of the building.

- In addition to interior conversions of the building, existing hollow metal doors and hardware should be replaced and existing metal railing systems should be repaired or replaced due to safety concerns and to extend the life of the facility.
E. FIRE TRAINING PAVILION

- The Wood Frame Pavilion and Storage Building was constructed in the past five years to provide Storage, bathrooms and covered seating on the fire training grounds.

- The building is in good condition, and creates an adequate outdoor instructional environment.

- While the building is a useful addition to the training grounds, it was requested that an enclosed thermally controlled building be provided in the future to accommodate classroom training year around, and that an office space is needed on the drill grounds to receive paperwork, complete staging for training, prep areas and record documentation in addition to the open pavilion.
F. POLICE TRAINING BUILDING

- The Police Training Building is a prefabricated structure that was installed on the grounds this past spring 2009.

- The building is in excellent condition. The temporary building can be moved in the future to accommodate phases of the Public Safety Center Master Plan.

- The building consists of a series of situational rooms that can be used for police training or Small Group Instruction.

- At this time, it is anticipated that the Police Training Building will not be affected by Phase 1 of the Master Plan. However, Phase 2 of the Master Plan does anticipate a new Fire Training Building at this location. At this point in the Master Plan this building will need to be relocated within the facility.

G. OUTDOOR FIRING RANGE
The outdoor firing range consists of a 15 lane pistol and rifle training range, a pole barn for a classroom, safety briefings and weapons cleaning, a viewing tower/storage facility and a small storage shed.

The firing range is surrounded on three sides by an earthen bermed structure. The top of the earthen structure is has a wood fence/baffle construction to help bullets from leaving the range.

- While the earthen structure is effective at absorbing bullets, there is concern that the wood fence and overhead baffle system has limited effectiveness from preventing bullets from leaving the range.

- Staff expressed extreme concern that the range is beyond its life expectancy, and does not meet current safety standards. Requests were voiced that an indoor covered range with full containment of stray bullets through a modern metal baffle system be provided in any renovation project.

- The end of the range is faced with rubber mats and fragments of rubber tires to stop the bullets where it can be collected, however the system has been failing for years. At this time much of the earthen wall is contaminated with lead. Any plans to remove the existing structure should take into account the need to properly abate this material. This process does not need to be cost prohibitive, but should be anticipated.

- The viewing/storage tower is not utilized heavily due to a number of conditions.
  - The current method of instruction requires the instructors to be hands on, and thus it is an adverse teaching environment to have the instructors elevated and removed for the students.
  - The hollow metal doors for the structure are in poor condition, this makes it difficult to use this structure for storage.
H. PUMP HOUSE

- The Pump House is a load bearing CMU masonry structure faced with a brick veneer, the building is approximately 484 square feet constructed in 1991.

- Doors and windows are in poor condition and should be replaced and should be replaced.

- Brick Veneer is in good condition, however it should be chemically cleaned to mitigate damage to the brick.

- The primary concern with the current pump house is that when the pump goes down there is no back up power or pump, which limits the use of the facility. A primary goal of a first phase to the master plan should be the expansion of the pump house for a back up pump system.

II. PHYSICAL PLANT

E. HVAC System

Main Building:
- The entire building is served by a water-source heat pump system which is original to the building (1991).
- The majority of the heat pump units are located on a mezzanine level and are accessible. They were manufactured by Snyder General and appeared to be in fair condition.
Water is circulated by a pair of 20 HP base-mounted pumps. They are manufactured by Armstrong and appeared to be in good to fair condition.

Water is heated by four gas-fired Weil McLain Gold-GL boilers. They appeared to be in good condition. They are controlled by a boiler control system to stage the four boilers.
Gas Fired Weil McLain Gold GL Boilers & Control System

- Heat is rejected from the water loop via two ground-mounted Baltimore Air Coil closed circuit coolers. They appeared to be in fair to poor condition.

Baltimore Air Coil Closed Circuit Coolers

- Water is circulated in steel piping with grooved fittings. No leaks or issues were reported by maintenance staff. Piping is not insulated.

Water Piping
• Return air is via above ceiling plenum. Maintenance staff indicated that there were issues getting air back to the unit mezzanine. Existing openings were made larger and new openings were created. The issue appears to be resolved.
• Supply air is distributed through steel ductwork to ceiling diffusers in the classroom/office areas and duct-mounted diffusers in the auto mechanics area. Ductwork did not appear to be insulated.

Pump House:
• The room is heated with an electric unit heater.
• A wall-mounted exhaust fan provides ventilation air. The units appeared to be fair condition.
Burn Building:

- The control room is heated via an electric wall heater which appeared to be in poor condition.

  ![Exhaust Fan](image1.png) ![Electric Wall Heater](image2.png)

- **Recommendation:**
  - ASHRAE Fundamentals (2007) table 4 on page 36.3 lists service life estimates for heat pump equipment as approximately 15 years, pumps as 20 years, cooling towers as 20 years, cast iron boilers as 35 years, electric unit heaters as 13 years, ductwork as 30 years, and electronic controls as 15 years. Most equipment is beyond this average service life including:
    - Heat pump units and supplemental electric heat.
  - If a renovation project were to occur, replacement of the heat pump units should be considered. If not, the Owner should budget money to replace equipment as it fails.
  - The cooling towers appeared to be worn. Replacement should be considered.

- **Estimated Construction Costs:**
  - New heat pump units: $4,000 per unit.
  - New closed circuit coolers: $20,000 each.
  - Supplemental heaters: $500 each.

**Ventilation**

- All buildings are served by independent methane ventilation systems. These systems are required due to the site being a previous dump.

**Main Building:**

- Combustion air is provided through a louver in the boiler room. No damper covers the louver, leaving outdoor air to enter the space even when the boilers or water heaters are not firing. It appeared that the majority of the open louver was blocked with insulation.
• Makeup air for the vehicle exhaust system in the garage area is introduced through a Sterling gas-fired air handling unit hanging from the structure. The unit appeared to be in fair to good condition. The vehicle exhaust system is complete with flex duct “snorkels” to attach to vehicle tail pipes.

• The emergency generator radiator is ducted to a louver in the exterior wall. There is a louver with an automatic damper which appeared to be tied to the generator to open when the generator runs.

• Two classrooms are served with fume hoods which were reported to be in good condition with no issues.
Outdoor air for the building is introduced through louvers in the west elevation of the building. The Owner indicated there were issues with rain penetration. They have made adjustments and feel they have corrected the problem.

It is assumed, due to the age of the building, that the outdoor air quantities meet current Code requirements.

The kitchen is served by an exhaust hood. No issues were reported with this system.

Smoke Building:
- A wall-mounted exhaust fan is located on the second floor. The associated intake louver is located on the first floor. The system appeared to be in fair condition.
- The methane ventilation system is missing a piece of piping on the side of the building which should be replaced.

Recommendations:
- Replace piping in methane ventilation system where missing.
- Add automatic damper on louver in mechanical room.

Estimated Construction Costs:
- Methane piping: $1,000
- Damper: $5,000

Air Conditioning

Main Building:
- The entire building is air conditioned. See above for description.

Recommendation:
- See above.

Estimated Construction Costs:
- See above.

Automatic Temperature Control

Crabtree, Rohrbaugh & Associates Architects
Main Building:
- The building is connected to the campus wide Johnson Controls Metasys system.
- Thermostats were McQuay (same as heat pump units (parent company)).

![McQuay Thermostat](image)

- **Recommendation:**
  - None, unless a renovation project is considered.

- **Estimated Construction Costs:**
  - $0

**F. Plumbing**

**Plumbing Fixtures**
- Water closets were wall-mounted type with manual flush valve.
- Urinals were wall-mounted type with automatic flush valves.
- Lavatories were wall-mounted type with standard 4" centerset faucets.

![Plumbing Fixtures](image)

- Fixtures appeared to meet ADA requirements. However, ADA lavatories were observed to not have the required trim insulation guards.

- An emergency shower is located in the auto mechanics shop.
The auto mechanics shop also has a semi-circular wash basin.

- It is assumed, due to the age of the fixtures, that they do no meet current water flow requirements.
- Fixtures appeared to be in good condition.
- Maintenance staff indicated no issues with plumbing fixtures.

- **Recommendation:**
  - None.

- **Estimated Construction Costs:**
  - $0
Domestic Water System

Main Building:
- Domestic water service enters the building in the mechanical room. There are two separate meter assemblies in the space, tied to the same piping system. One is a 3" assembly, and the other is a 1" assembly. Both assemblies include backflow prevention. Maintenance staff indicated no issues with the water service.

Water Meter Assemblies

- Water service is provided by the City of Harrisburg.
- Domestic water is distributed throughout the building in copper piping. Maintenance staff indicated that this piping was in good condition with no major issues.

- **Recommendation:**
  - None.

- **Estimated Construction Costs:**
  - $0

Hot Water Generating System

- Domestic hot water is generated by a pair of storage type gas-fired water heaters. One is a Rheem R200-37 with 37 gallons of storage and a gas input of 199.9 MBH. The other is an AO Smith BTP 540A with 69 gallons of storage and a gas input of 540 MBH. They both appeared to be in good to fair condition.
Rheem & AO Smith Water Heaters

- Domestic hot water is recirculated with a ½ HP inline pump which appeared to be in fair condition.

Domestic Hot Water Recirculating Pump

- **Recommendation:**
  - None.

- **Estimated Construction Costs:**
  - $0

Sanitary Sewer System

- Piping was reported by maintenance staff to be cast iron and in good condition except for a section downstream of the kitchen area. The piping is original to the building and is only snaked if an issue occurs.
- There is no grease trap serving the kitchen drains. The issues downstream of the kitchen are believed to be caused by grease being introduced into the waste piping system where it solidifies and causes blockage.
- The sewer authority is the City of Harrisburg.
• **Recommendation:**
  - Add an indoor grease interceptor to serve the kitchen.

• **Estimated Construction Costs:**
  - $10,000

**Rainwater System**

• The building is served by a combination of gutter/downspouts and internal roof drains.
• Piping for the roof drains was reported to be PVC by maintenance staff.
• No issues were reported by maintenance staff.

• **Recommendation:**
  - None.

• **Estimated Construction Costs:**
  - $0

**Fuel Oil**

• There is no fuel oil system serving the main building or the site around the main building.

• **Recommendation:**
  - None.

• **Estimated Construction Costs:**
  - $0

**Natural Gas**

• The building is served natural gas by UGI.
• Natural gas is distributed in welded black steel piping.
• The system serves the boilers, domestic water heater, and the emergency generator.
• There is an underground gas piping system located near the railroad tanker car and tanker trailer. The Owner stated that this piping system is questionable.
• The existing LP gas system which served the burn building was previously removed with the exception of the underground piping and some above ground piping where the old above-ground tanks were located.

• **Recommendation:**
  - None.

• **Estimated Construction Costs:**
  - $0
Compressed Air

- The auto mechanics bay area is served by a compressed air system with an Ingersoll Rand 242-5N air compressor. The compressor was reported to be in good condition. Compressed air is distributed through copper piping which also appeared to be in good condition.

*Ingersoll Rand Air Compressor*

- **Recommendation:**
  - None.

- **Estimated Construction Costs:**
  - $0

Sprinkler System

- The main building is not served by an automatic sprinkler system.
- The site training system consists of:
  - Dry hydrants throughout the training area.
  - Dry standpipes and sprinklers in the tower building.
These systems are not active unless activated by the fire pump or a pumper truck and are for training only.

- A 1500 GPM electric fire pump located in a pump house which serves the entire system. The system is “dead” unless the pump is activated and is used for training only. The pump is fed from a 1 million gallon pond adjacent to the pump house. All rainwater catch basins in the training area drain to the pond.

- Recommendation:
  - None.
G. **Electrical**

**Electric Service**

- The existing electrical switchboard was manufactured by General Electric. It is a 1600A, 480y/277v, 3ph, 4w switchboard. (1991)

- **Recommendation:**
  - Provide service and cleaning to internal parts.

- **Estimated Construction Costs:**
  - $5,000

**Emergency Generator**

- The Emergency Generator is a Kohler, natural gas, 20kw emergency generator. Located in the mechanical room.

- **Recommendation:**
  - The owner has an existing service contract associated with emergency generator for this building. Continue service and maintenance contract.
• Estimated Construction Costs:
  o Typical maintenance fee.

**Data Network**

• The data networking system is part of a campus wide network system.

• **Recommendation:**
  o None.

• **Estimated Construction Costs:**
  o $0
Lighting

- The existing building was adequate lighting.
- Existing spaces did not have means of automatic shut-off as per the federal energy act.

- Recommendation:
  - Provide dual technology occupancy sensor in all classrooms, offices and meeting rooms. Provide a lighting control panel for shop lighting, lounge and kitchen.

- Estimated Construction Costs:
  - $50,000
Fire Alarm

- The existing fire alarm system is manufactured by Simplex.
- The existing combination horn/strobes located in the automotive shop area are mounted extremely high and are tough to see.

  - **Recommendation:**
    - Lower existing combination horn/strobes in shop area.

  - **Estimated Construction Costs:**
    - $5,000

Telephone System

- The existing telephone system is part of a campus wide system.

  - **Recommendation:**
    - None.

  - **Estimated Construction Costs:**
    - $0