



George J. Hartman Architects, P.C.

6905 Telegraph Road • Suite 101
Bloomfield Hills • Michigan • 48301
248-258-5811 • hartmanarchitects@ameritech.net

July 23, 2021

Mr. Michael Damman, Chairman
Lake Angelus Planning Commission
45 Gallogly
Lake Angelus, Michigan 48236

Re: Building Evaluation Report
Lake Angelus Police Station
3575 Baldwin Road

Dear Mr. Damman,

On July 1, 2021, per agreement with the City of Lake Angelus, I conducted an on-site review of the condition of the existing Lake Angelus Police Department building located at 3575 Baldwin Road. The review process was visual in nature and did not include invasive or destructive review measures. The review covered all areas of the building and the site immediately around the building.

General Observations

- The building is considered as Use Group “B – Business” under the Michigan Building Code.
- Construction Classification is Type V-B (“5-B”), unprotected, which permits any material allowed by the code to be utilized in the construction.
- Police buildings are to be structurally designed to comply with Risk Category IV per the Michigan Building Code.
- The building is a wood frame structure with wood siding. The western part of the building has a basement of concrete block while the eastern portion is a concrete block crawl space. The garage is an addition to the original building and is wood framed and slab on grade. The age of the original building and garage addition are unknown.

Site

The building is situated on the north side of a gravel road that runs westerly off of Baldwin Road. A concrete and asphalt driveway extends to the garage of the building from the gravel road. A concrete walkway leads from the driveway to the front entrance to the building. The building is situated on a small rise in the topography which is higher than the road. The building is surrounded by several trees and open land, with the grade at the west end of the building falling off to a walk-out condition at the basement level.

Site Observations

- Driveway slope varies from 6.25% to 9.5%. Recommended drive slopes are 5% or less. Since the drive is used as a “walkway” to the building entrance, the drive needs to comply with the accessibility requirements for a “ramp”. Slopes from 5% to 8.3% are considered

ramps and require handrails. Slopes less than 5% are considered a “walking surface”. **(IMAGE 1)**

- The sidewalk from the driveway to the front building entrance has a running slope of 5.2% average and at several locations a side to side slope of 10%. The running slope classifies this walkway as a ramp and requires handrails. The side to side slope exceeds the allowable side to side slope of 2%. **(IMAGE 2,3)**
- The sidewalk at the front entrance to the building is 4” below the floor of the building. This is required to be level with the building floor. **(IMAGE 4)**
- A detectable warning strip should be placed at the intersection of the sidewalk and driveway to comply with the accessibility code. **(IMAGE 2)**
- There is no marked vehicle parking for visitors or barrier free parking.
- The grade at all exterior main level doors is approximately 6” below the floor and does not comply with building code egress requirements. There is no concrete landing at the rear egress door from the stairwell. **(IMAGE 5,6)**
- The grade at the basement egress door is above the threshold of the door. There is no concrete landing at this location. **(IMAGE 7)**
- Erosion of the sloping earth on the south side of the building is held back by a plywood bulkhead. **(IMAGE 8,9)**
- Various forms of concrete barriers are placed around the building as protective measures to prevent vehicle intrusion. **(IMAGE 10,11)**

Building Exterior

The exterior materials of the building are a combination of painted concrete block at exposed foundations and wood board & batten siding at main exterior walls with wood shingle siding high on the exterior walls. The overhangs are exposed rafter tails and roof deck sheathing at the original building with plywood soffits at the garage addition. There are gutters on most of the overhangs. Windows are solid vinyl type sliders and double hung. The basement level has glass block windows. The roof is asphalt shingles. The original cupola was recently removed from the building to reduce roof load. The septic tank is located at the southwest corner of the building. The location of the septic field is unknown.

Building Exterior Observations

- The exterior paint is generally failing in most areas of the exterior. Many areas lack paint completely. There is bare wood exposed in many areas. **(IMAGE 12,13)**
- The basement concrete block window headers show horizontal cracking, most likely from rusted reinforcing expansion. **(IMAGE 14,15)**
- There is some vertical and horizontal cracking visible in the basement concrete block. **(IMAGE 16)**
- The wood framing at the basement egress door shows rotting at the grade level. **(IMAGE 7)**
- Many areas of the board & batten drip edge are rotted, with rot apparent in the board & batten along the drip edge. **(IMAGE 17,18)**
- Wood window sub-sills are beginning to rot. **(IMAGE 19)**
- Many areas of the exterior board & batten, wood shingle siding and trim boards show signs of bird damage from pecking, most likely due to bug infestation in the wood. **(IMAGE 20,21)**
- Areas of damaged wood shingles have been patched with metal flashing cards slipped behind the wood shingles. **(IMAGE 22)**
- The overhangs and fascia are crooked, out of level and sagging due to structural roof issues (described under Attic Observations). **(IMAGE 22)**
- The attic access door is warped and rotting and does not shut properly. It is not designed to keep weather out. The location of this attic access is also a security issue. **(IMAGE 23)**
- The original gutters are still on portions of the building and failing with holes evident. **(IMAGE 24,25)**

- The gutters over the front of the garage are plugged and overflow water to the drive creating a dangerous condition in cold weather. **(IMAGE 26)**
- Some downspouts at the garage spill to grade and flow water over the drive creating a dangerous condition in cold weather. **(IMAGE 27)**
- Asphalt roof shingles and roof boards are beginning to cup on the eastern side of the roof. **(IMAGE 28)**
- There are signs of animals digging along the foundation. **(IMAGE 29)**
- The exterior doors are a residential quality insulated metal door. These are not secure doors. The front entry door swings outward with hinges exposed to the exterior. **(IMAGE 30)**

Basement & Crawlspace

The basement is constructed of concrete block walls with a concrete slab and wood floor joists over to create the main level floor. The joists are supported on wood beams with wood columns and steel columns. Glass block windows are located on the south, west and north walls. The basement houses the gas fired furnace, electric water heater and the electric service panel. Internet and communications equipment is located in the basement. The crawl space is constructed of concrete block with an earth floor and wood joists over to create the main level floor.

Basement & Crawlspace Observations

- The basement walls are constructed of concrete block. The block has the appearance of being a "light-weight" form of block, not a "standard-weight" block. **(IMAGE 31)**
- The south wall of the basement has three quarters of an inch of bow in the middle of it as measured from the basement slab to the top of the wall. **(IMAGE 32)**
- The east and south walls show some mold staining on the lower parts of the walls, possibly from failure of waterproofing. **(IMAGE 33,34)**
- The existence of perimeter drain tile is unknown. There is no sump or drainage system visible.
- The concrete block lintels over the west wall glass block windows show significant cracking, most likely due to rusting reinforcing rods which are expanding and cracking the concrete lintel. **(IMAGE 35,36)**
- Some cracking is visible in the vertical and horizontal mortar joints of the block walls indicating some movement of the block. **(IMAGE 37)**
- There is no evidence of any type of reinforcing in the block walls.
- The exterior door is framed in a wood wall at the west end of the basement. It appears that at some previous point in time there was a wider door or opening that was closed in. **(IMAGE 38)**
- There is no insulation visible in the basement. There is no insulation for the rim area of the floor framing at the basement. Some rim joist insulation appears visible in the crawl space. **(IMAGE 39)**
- The vapor barrier in the crawlspace has been disturbed in many areas and there is construction debris scattered throughout the crawlspace. **(IMAGE 40,41)**
- The crawlspace walls are constructed of concrete block. **(IMAGE 41)**
- There is some evidence of water leakage in the corners of the crawlspace. **(IMAGE 40)**
- Floor joists over the basement area are 2 x 8 size and run east to west. **(IMAGE 42)**
- The joists have a notch cut in the ends where they bear on the exterior walls. This effectively reduces the depth of the joist to a 2 x 6 size. **(IMAGE 43)**
- There is no physical connection of the joists to the top of the concrete block basement wall. **(IMAGE 43)**
- The joists are over-spanned in the westerly end of the basement allowing for excessive deflection.

- A number of joists have been cut to accommodate plumbing lines, plumbing fixtures, ductwork, and electrical fixtures. **(IMAGE 44)**
- The subfloor and joists under the locker room shower show signs of water leakage and rot. **(IMAGE 45)**
- The joists are hung with joist hangers from the face of wood beams installed flush in the floor joist system that run north to south in two separate beam lines. **(IMAGE 46)**
- The wood beams support the floor joists for the main floor as well as the ceiling joists for the main floor ceiling.
- The westerly beam has been cut in several locations to accommodate the installation of ductwork and plumbing. The beam was reinforced by the installation of a new triple 2 x 12 beam placed under the original beam and supported on each end by light gauge steel columns set on the concrete slab. The new support does not run the length of the original beam. The columns and new beam are braced against lateral movement by steel angles welded to the columns and attached to the face of the new beam. The columns are not anchored to the slab to prevent lateral movement. **(IMAGE 47,48,49)**
- The thickness and structural capacity of the concrete basement slab is unknown.
- The slab does not show any signs of failure at the bearing area of the two light gauge steel columns. Slab bearing for columns is not a recommended practice. **(IMAGE 50)**
- The easterly beam runs from the south block wall to the north block wall and bears on the block at each end. There is a 6 x 6 post about midspan of the beam. Some minor sagging of the beam is evident. This beam supports the main floor joists and the main floor ceiling joists. **(IMAGE 46)**
- The crawl space floor joists are 2 x 8 size and run east to west. The joists bear on the concrete block crawlspace walls. The joists do not appear to be secured to the crawlspace walls. **(IMAGE 41)**

Main Floor

The main floor of the building contains the front entry and vestibule, open office area, private office area, break room, rest room, locker room and locker shower. The interior walls are typically 2 x 4 size and support the ceiling joists above. The exterior walls are 2 x 4 size and are balloon framed from the floor to the roof rafters. The exterior balloon framed walls are approximately 32" above the ceiling joists. Wall and ceiling finishes vary from forms of gypsum board, wood paneling and ceramic tile. Floors are ceramic tile. Interior doors are generally wood hollow core with knob handles. Exterior doors are metal insulated doors. The break room has laminate base cabinets and metal upper cabinets. The garage has a concrete slab with 2 x 4 exterior walls and wood roof trusses. There is an insulated overhead metal garage door at the front and rear of the garage. A single insulated metal man door allows access to the garage from the exterior. A man door allows access to the garage from the open office area. The existence of insulation in the exterior walls of the main floor are unknown. A stairway at the north side of the main floor accesses the basement level. Ceilings are generally 8' high.

Main Floor Observations

- The front entry door is an outswing door with hinges exposed to vandalism. **(IMAGE 51)**
- There is a 4" step up from the sidewalk to the vestibule. **(IMAGE 52)**
- There is a 7-1/2" step down to the garage. **(IMAGE 53)**
- The rear door on the north has a 12' step down to grade. **(IMAGE 54)**
- The tile floor is cracking throughout the main level. In many areas the tile is loose and creating a safety hazard. **(IMAGE 55)**
- The ceiling in the break room and shower are showing signs of failure with cracking and sagging. **(IMAGE 56,57)**
- The wall tile in the shower is showing signs of failure due to water and moisture issues. The tile is bowing off of the wall. **(IMAGE 58)**

- Some walls show signs of a slight bow inward, most likely as a result of the top of the balloon framed walls bowing out at the attic.
- Other walls and ceilings are generally in acceptable condition.
- The floors slope from one half inch in four feet to one inch in four feet.
- The floors exhibit significant amounts of “bounce” and deflection.
- The stairway to the basement does not have the proper riser height, tread depth or head clearance as required by code. The handrails also do not meet code. **(IMAGE 59,60)**
- The main level of the building generally does not comply at all with the “Accessible and Usable Buildings and Facilities” code which the State of Michigan utilizes. The main floor, (and site), do not have proper slopes, clearances, fixtures, accessories and access as required by the building code. **(IMAGE 61,62)**
- The newer garage construction is built of 2 x 4 exterior walls with wood roof trusses at 24” on center. Only one end of the roof trusses has hurricane ties installed to connect the truss to the exterior walls. **(IMAGE 63)**
- The garage walls have a vapor barrier (Tyvek) applied directly to the exterior stud face with the exterior board and batten siding applied over the vapor barrier. There is no sub-sheathing installed. **(IMAGE 64)**

Attic

The attic is accessed from an access door in the dormer above the front entrance to the building. The attic is approximately 32” to 36” high at the perimeter walls and slopes up at an approximate 5/12 roof pitch. The walls of the attic are 2 x 4 and a continuation of the balloon framing of the main floor walls. The attic floor is a variety of flat 1 x 6 wood boards nailed to the top of the main floor ceiling joists. Ceiling joists vary in size from 2 x 8 to 2 x 10 with a spacing of 16” to 18” on center where measured. Rafters are 2 x 4 with a spacing between 24” and over 30” on center. Several new collar ties have been installed with no original collar ties visible. Roof boards are 1 x 6 size. Insulation in the ceiling joists varies from 3” to 6” thick where visible. The original cupola has been removed from the roof to reduce load. Nylon straps have been added to pull together opposing walls in the attic.

Attic Observations

- The attic access door is constructed of tongue & groove boards nailed together. The hinge is failing due to the weight of the door. There is no weatherstripping or secure latching system. The door allows the entry of water and insects. **(IMAGE 65)**
- There are many gaps in the exterior siding and framing where daylight is visible through the wall system. **(IMAGE 66,67)**
- The 2 x 4 exterior wall balloon framing is bowing outward at the top of the wall. The amount of outward bow varies from one or two inches to almost five inches at the worst condition. The outward bow is caused by the lateral force of the roof rafters. **(IMAGE 68)**
- The 2 x 4 rafters are severely over-spanned for the rafter spacing, rafter size and span. The rafters exhibit sagging due to the over-span condition. **(IMAGE 69)**
- There are no hurricane ties for the rafters to the exterior walls. **(IMAGE 70)**
- Several vertical posts have been installed to reduce the span of 2 x 4 valley rafters and a failed rafter. **(IMAGE 71,72)**
- The attic has no eave or roof ventilation. **(IMAGE 73,74)**
- The 3” to 6” of attic insulation visible is insufficient to meet current energy code standards.
- The attic is not secure and is easily open to intrusion.

Electrical

The building electrical service is a sub-feed from the community barn across the road and is fed underground. The electric panel is located on the south wall of the basement. A natural gas generator serves as a power

backup for the building and the transfer switch and generator are located on the south side of the building. Electrical wiring in the building is provided by exposed Romex, flexible conduit (MC Cable) and rigid conduit. Phone and internet service is an overhead service to the south wall of the building. The communications system is located on the east wall of the basement.

Electrical Observations

- An electrical load study was not conducted to ascertain the adequacy of the electrical service and backup generator. The building should have its own underground electric service fed from the nearest public utility location to insure secure power to the building.
- A significant amount of exposed Romex wiring is run loosely across the attic floor and the ceiling of the basement and crawl space. This presents a hazard where the wiring could be accidentally pulled free of connections and cause a power disruption, injury or fire. **(IMAGE 75,76,77,78)**
- Some of the flexible conduit (MC Cable) is also loosely run in the attic and basement areas. **(IMAGE 79,80)**
- The electrical fixtures located in the shower are not proper for the location and present an electrical hazard to persons using the shower. **(IMAGE 81)**
- Some light fixtures in the basement have been converted to make-shift outlets to plug in fluorescent light fixtures. **(IMAGE 82)**
- Internet and communications wiring is loosely run in the attic and basement ceilings and is laying on the crawlspace floor and is open to damage. **(IMAGE 83,84)**
- Recessed light fixtures located in the main floor ceiling are not rated for insulation exposure. **(IMAGE 85)**
- The building lacks any type of emergency lighting and exit lighting as required by code. **(IMAGE 86,87)**
- There is what is presumed to be a lightening ground wire hanging loose on the north side of the building. This may have been on the original cupola. **(IMAGE 88)**
- The backup generator is open to vandalism. **(IMAGE 89)**
- The gas piping for the generator is run across the front of the building and is exposed to damage and vandalism. **(IMAGE 90)**
- The electric panel is adequate however the work is sloppy. **(IMAGE 91)**

Heating & Cooling

The building is heated and cooled by a gas, forced air furnace with an air conditioner compressor located outside on the west end of the building. The furnace is located in the basement on the south wall. Ductwork is run through the basement and crawlspace ceiling and is discharged through floor registers. The furnace and air conditioner are newer, standard efficiency units. The furnace discharges exhaust through a metal flue to a chimney box on the roof.

Heating & Cooling Observations

- The furnace and air conditioner are newer units and appear to be in good working order. **(IMAGE 92,93)**
- The adequacy of the heating & cooling system was not analyzed.
- Ductwork in the crawlspace is not insulated. **(IMAGE 94)**
- The exhaust fan in the shower is dangerously mounted in the wall low enough to have water enter and create an electrical hazard to shower users. **(IMAGE 95)**

Plumbing

The plumbing system for the building is copper supply and PVC sanitary piping. Water is supplied via a well located in the open area to the north of the building. The well tank and softener are located in the northeast

corner of the basement. The sanitary system discharges to the septic tank through a pipe located high on the south wall. Hot water is supplied by an electric water heater located on the south wall of the basement.

Plumbing Observations

- The well tank is newer with an installation date of 2018. No issues are known. **(IMAGE 96)**
- The water heater is also newer with an installation date of 2017. No issues are known. **(IMAGE 97)**
- The drain piping for the shower shows signs of leakage, possibly from a failure of the shower membrane. **(IMAGE 98)**
- Plumbing fixtures and installations do not comply with the accessibility code. **(IMAGE 99,100)**

Evaluation Report Summary

The Lake Angelus Police Building is a structure that is showing its age. The building was constructed for a use other than the use as a police facility. There are significant construction and functional issues with the building that need corrective action for the building to meet current building code, energy code, and accessibility code standards.

Structural deficiencies in the building include:

- Basement walls beginning to show bowing & cracking due to lateral soil forces.
- Floor joists improperly bearing on basement walls with no tie-down anchorage.
- Joists have been cut to bear on walls which reduces the effective depth of the joist.
- Joists are over-spanned in some areas.
- Joists do not have the live load bearing capacity of the building code for a commercial building.
- Joists have been cut to accommodate plumbing items reducing their structural capacity.
- Deflection in the floor system is causing failure of the ceramic tile flooring.
- Structural beams are undersized for the loads imposed.
- Modifications to original beams and columns have created loads on a concrete slab that was not designed for the loads.
- Balloon framed exterior walls have suffered significant bending due to lateral loads imposed by the roof system.
- The roof structure is significantly under-designed for the spans and the loads imposed on the rafters.
- Lack of proper roof tie-downs for uplift conditions.
- The structure may require significant modifications to comply with the Michigan Building Code Risk Category IV requirements.

Functional deficiencies in the building include:

- Rotting wood and peeling paint on the exterior.
- Leaking gutters.
- Lack of space for the proper function of the facility.
- Poor and improper lighting levels.
- Lack of exit and emergency lighting.
- Exterior lighting is deficient.
- Dangerous wiring installations.
- Mold and water damage issues at basement walls.
- Tile failures at floors and shower.
- Stairs and handrails that do not meet code.
- Means of egress that do not comply with code requirements.
- Lack of roof ventilation.

- Lack of a foundation drainage system.
- The building does not meet current energy code requirements.
- Security insufficiencies at exterior doors, vestibule, windows and with communications placement. There is no secure area dedicated to police functions.
- Lack of adequate staff and visitor parking.

Accessibility deficiencies with building:

- Entrances and exits at exterior doors require a step up into the building and are not level from interior to exterior. Ramps and rails are required.
- Site access via the drive and walk along the building is too steep and does not meet accessibility code requirements.
- The vestibule does not comply with the accessibility code for size.
- Doors and access ways in the building do not have the proper clearances.
- The restroom, locker room, shower and break room counter do not comply with dimensional and fixture requirements of accessibility code.
- Thresholds at exterior doors exceed the height established by the accessibility code.
- Most door hardware does not comply with accessibility code.
- Counter and window height at vestibule do not comply with code.

Recommendation

In consideration of the findings of the Evaluation Report and Summary, it is my recommendation not to renovate or add on to the existing Lake Angelus Police Building. This recommendation is based on the following facts:

- The significant structural deficiencies in the existing building will be costly to correct and require a significant amount of selective demolition and removal of parts of the existing structure to achieve a code compliant facility.
- The existing placement of structural beams and bearing walls will not facilitate the locations of new loads and room sizes and will therefore need to be removed and replaced with additional structural members.
- The sagging and permanent bows in members of the walls and floors will not be able to be removed and will require new framing members to replace or reinforce the existing members.
- The requirements for modifying the building to be compliant with the Michigan Building Risk Category IV are undetermined at this time but these requirements will impact the extent of renovation work.
- The physical dimensions of the existing building are not conducive to providing a functional police facility. There simply is not enough room to accommodate basic accessibility requirements and required police functions which will fall short of the Space Needs List.
- Utilizing the existing garage as additional office space will require significant modifications to the garage. The garage does not meet energy code standards and a new insulated floor system will need to be installed.
- Existing plumbing, electrical and heating systems will require major modifications to meet the requirements of a police facility. A new electrical service will be required.
- Security for the building will need to be added.
- A significant amount of existing interior materials and finishes will need to be removed and replaced to accommodate a new building layout and code requirements. A partial list of items includes walls, doors, windows, hardware, cabinetry, finish and subfloors, insulation, ceilings, lighting and plumbing fixtures.
- A significant amount of existing exterior materials will need to be removed and replaced to accommodate a new building layout and structural repairs. A partial list includes siding, roofing, gutters, site improvements for ramps, driveway and parking areas.

- The amount of demolition and new work required to facilitate a proper remodel or a remodel with an addition will be as costly and extensive as construction of a new facility.
- Concessions may need to be made in the quality of renovation work or the ability to correct all deficiencies in the building if a renovation is undertaken. Some demolition requirements may not be known until demolition work begins and this may require removing additional portions of the building which were planned to be saved.
- Unknown, hidden and unforeseen conditions that arise during renovation can increase the cost of the work and delay the project.

LAPD Space Needs List & Concept Plans

The LAPD Space Needs List included with the Evaluation Services RFP has been reviewed for content and needs requirements. At this time, preparation of any conceptual plans (renovation of existing building, renovation of existing building with addition, or a new building plan) has not been considered pending clarification from the City of Lake Angelus on the project requirements and project size.

The existing building is 939 square feet in size (812 square feet net usable area less walls), garage excluded (726 square feet). The Space Needs Lists as presented is estimated to require a building footprint of 2,150 square gross (1,715 square feet net) plus a garage of 1,000 square feet. Converting the existing garage to office space will only provide 1,665 square feet gross which is 485 square feet short of the Space Needs List.

The size and requirements noted in the Space Needs List need to be discussed to determine if the Space Needs List is followed or if a maximum building size will be determined and the Space Needs List altered.

Opinion of Construction Cost

Construction costs can vary widely based on market conditions, complexity of the work, owner requirements and competitive bidding conditions. Cost opinions provided generally include labor and materials, contractor general conditions and overhead & profit, and architectural and engineering fees. A contingency amount should be added to all cost opinions to cover unforeseen conditions and changes in the project scope during construction. Cost opinions are based on square foot estimates, similar projects and best guess estimating.

Renovation of the existing 939 square foot building with no increase in size - \$595,000.00.

Renovation of the existing building with conversion of the existing garage to an additional 725 square feet of office (1,665 square feet total office) and construction of a new 3 car garage - \$695,000.00.

New construction of 2,150 square feet with 3 car garage - \$785,000.00.

Thank you for the opportunity to provide this evaluation report to the City of Lake Angelus. I look forward to meeting with the Planning Commission to discuss this report in more detail.

Sincerely,

GEORGE J. HARTMAN ARCHITECTS, P.C.



George J. Hartman, R.A.
President