

## BUILDING AND SITE INSPECTION

### A) Site

#### Overview:

The total fully developed site is approximately 1.16 acres and is fairly compact. There are two surface parking lots. There is a 45 car lot on the east side of the property and a 20 car lot on the west side of the property near the police department building. We have excluded the West parking lot from this report analysis as it has been improved when the public safety building was built in 2003. The lot slopes and as a result the west lot is approximately 7' lower than the east lot.

There are a significant number of brick/masonry retaining walls for both vegetation and walks/stairs due to the sloping nature of the site.

There are mature trees and vegetation along the front and rear slopes of the property.

#### Observations:

- Asphalt:

The asphalt surface has failed and has significant structural cracking throughout. A complete asphalt pavement replacement is recommended. The stone base could be reused, provided it passes a Proof Roll and is of sufficient depth.  
(Reference Pictures #1-8)

## A) Site Continued:

### Observations Continued:

- Sidewalks/curbs:

As shown in the pictures, there is significant settlement causing unlevel walking conditions. The concrete surface shows signs of significant wear and partial failure as well. In order to meet ADA standards it is recommended that all sidewalks and curbs be replaced to current ADA standards. (Reference Pictures #27, 29-37)

- Masonry Retaining Walls

The masonry retaining walls are experiencing many levels of building material and construction failure.

- Face Delamination
- Structural cracking
- Water migrations and freeze thaw cracking
- Salt damage
- Settling
- Wall cap mortar and caulk degradation
- Mortar joint cracking and age degradation

Due to the broad array of masonry problems we are recommending a complete removal and replacement of all retaining walls. This would include removal of the footing as well. (Reference Pictures #10-27)

Once subsoil below the footings is exposed it will be tested and amended to meet appropriate compaction and bearing test requirements. Only after meeting the engineer's design criteria, will the new walls be constructed.

## A) Site Continued:

### Observations Continued:

- Exterior concrete steps

The exterior concrete steps need various degrees of repair. Due to other factors, discussed later in this report, the steps should be removed and replaced along with the all of the other site concrete.

## B) Building Envelope

### Overview:

The building superstructure is a structural steel frame with cast-in-place concrete foundation walls. The elevated floors and roof deck are pre-cast concrete Double “T” planks with a concrete topping ware surface. The exterior wall system is also a precast concrete wall panel, with an exposed aggregate exterior finish.

The current roof is a ballasted Ethylene Propylene Diene Monomer (EPDM) rubber membrane roof.

### Observations:

- Roof

Research states that the EPDM, ballasted, membrane roof was installed in 1997. Upon a physical inspection, our core samples showed an original tar based mop down roof over the concrete deck under the EPDM roof. There are 2 layers of 2” ISO board over the original roof and then the EPDM membrane was followed by the stone ballast.

(Drawing SK-2) (Reference Pictures #56-57)

Due to age and conditions of all other roof elements, roof curbs, fresh air intake, horn system, wall caps and flashing we recommend full replacement.

Complete removal of ballast and EPDM roof, inspection of all insulation board, installation of appropriate code compliant insulation plus recovery board is recommended before new white, fully adhesive, Thermoplastic Polyolefin (TPO), single-ply roof membrane is installed.

- Note: The white TPO reflects sunlight and is reported to be more energy efficient due to the fact that it absorbs less heat.

## B) Building Envelope continued:

Observations continued:

- Roof continued:

The current calculated R-value for the existing roof system varies from R-26 to R-28 based on how much light weight concrete leveling surface was applied (Drawings indicate 4”-6” light weight concrete). For the new roof system we would look to achieve an R-38, which is current minimum standard.

- Precast/ Concrete Wall Panels

All wall panels were found to be in sound condition and only the replacement of expansion joint caulk is recommended to this exterior panel. (Reference Picture #45)

The exterior wall system is significantly lacking in a proper insulation barrier.

There is only a 1” insulation board installed on a portion of the exterior wall. Picture (46) clearly shows that there is literally no exterior wall insulation above the ceiling and between floors.

The calculated R value at the wall section where there is insulation is approximately R-4.24 and approximately R-0.24 at the wall section where there is not insulation. Current insulation minimum standards require:

- Typical wall section requires R-19
- Typical roof requires R-38

## B) Building Envelope continued:

Observations continued:

- Precast/ Concrete Wall Panels continued:

This lack of proper wall insulation is problematic for 2 reasons:

#1) There is significant energy loss through the wall, either heat gain or loss depending upon the season.

#2) Dew point condensate forms on the inside of the concrete panel and induces water/moisture into the living space side of the wall which in turn promotes mold growth.

The recommendation is to strip and remove all existing interior wall systems along the building perimeter and install a properly insulated wall system (Drawing SK-4, Drawing SK-2)

- Cast-in-place concrete basement walls

Mastic waterproofing is noted on the original drawing for the exterior side of the basement cast-in-place concrete walls. Two random locations were inspected and no evidence of waterproofing mastic was found. Whether it was installed or not installed, there is clear evidence that water/moisture has been entering the building on a frequent basis. This is a chronic issue that is one of the major sources for mold growth in the basement.

Pictures # 104, 107, 109, 110, and 119, show locations of long term corrosion in metal studs and track. The same locations exhibit significant mold growth.

## B) Building Envelope continued:

Observations continued:

- Cast-in-place concrete basement walls continued:

An additional complication in the basement is the installation of vinyl wall covering on the original drywall. This vinyl wall covering (VWC) essentially created a vapor and moisture barrier trapping this water/moisture in the wall system. In some locations of the basement, drywall was actually applied over the existing VWC and the original drywall creating a “mold sandwich”. (Drawing SK-3)

Clearly the migration of water/moisture through the foundation walls needs to be addressed.

The recommended solution:

- 1) Excavate around the entire building and clean exterior foundation wall. (Drawing WL-1)
- 2) Install waterproofing membrane on wall
- 3) Install drainage mat and drain tile to relieve any water pressure against basement wall.
- 4) Back fill with proper drainage material to further alleviate water pressure against foundation wall.
- 5) Remove interior wall along perimeter foundation and water proof inside wall as well. (Drawing WL-2)
- 6) Install new perimeter wall with appropriate insulation and finish with painted drywall.

## B) Building Envelope Continued:

### Observations Continued:

- Exterior windows and glass entrances

All windows appear to be original single pane aluminum commercial windows. Many seals are broken and most are causing some level of moisture to enter the building. This is due to the lack of thermal insulation or thermal breaks and caulking failures.

Aluminum entry doors are also single pane with the weather stripping in various stages of deterioration.

These doors and windows are recommended to be replaced with insulated glass and UV rated thermally broke commercial window and door assemblies to bring windows up to current code standards.

Significant energy loss can be attributed to these un-insulated units. (Reference Pictures #38-46, 48, 51, 131, 148, 149, 150)

There are currently 30 windows in the occupied portion of the building. The common “public” area has 5 large window assemblies.

## C) Mechanical/Electrical/Plumbing

### Overview:

The Mechanical, Electrical, and Plumbing systems have had various upgrades and modifications over the years. However, no system has been completely upgraded or has had recent, significant work done.

There have been partial ADA plumbing modifications made and some of the Electrical subpanels have been replaced. Out of all of these systems the Mechanical system is in the worst condition.

- 3 Main Air Handlers 28 years old (useful life 20-25 yrs)
- Boiler 31 years old (useful life 20-25 yrs)
- Chiller 14 years old (useful life 20-25 yrs)
- **The Mechanical system provides virtually NO fresh air to the occupants, making it completely non compliant with current codes and health standards**

### Observations:

- Mechanical System:

The main Mechanical Delivery System was changed in 1986 from 2 packaged, rooftop air handling units to 3 interior air handling units with a boiler and chiller hydronic system. Unfortunately the retrofit caused multiple problems.

- 1) Created constricted ductwork runs
- 2) Eliminated a fresh air intake/supply
- 3) Brought significant mechanical noise to the interior work area

## C) Mechanical/Electrical/Plumbing Continued:

Observations continued:

- Mechanical System continued:
  - 4) Added boiler and chiller equipment along with associated piping needs are in spaces never designed for them.
  - 5) Added complications with retro fit controls system which does not currently function properly.

Given the Mechanical system's energy deficiencies coupled with its age and condition, we are recommending a complete replacement of this system.

The new system will meet or exceed all current energy code standards and be designed by a license professional Mechanical Engineer in the State of Indiana.

- Electrical System:

The Electrical Power Distribution System will be analyzed by a licensed professional Electrical Engineer to determine what equipment could remain and what equipment should be replaced. Generally, if a major renovation is going to take place all gear and equipment over 25 years old will be replaced.

## C) Mechanical/Electrical/Plumbing Continued:

### Observations Continued:

- The Lighting System:

The lighting system has had some upgrades. Many of the lights were upgraded to T-8 lamps however; there are still T-12s in operation. Original ballasts were not replaced nor are there motion sensors in every room. We found no evidence of the utilization of highly efficient lighting such as Induction or LED fixtures.

Because the acoustic ceilings will be removed for the mold abatement and HVAC replacement, it creates the ideal opportunity to do a whole scale energy efficient lighting upgrade. All current energy codes will be met or exceeded.

By upgrading your light fixtures to be energy efficient you will also see lower electrical utility expenses.

- Phone and Network Wiring:

Due to lack of adequate space, the phone and network wiring has been run through less than ideal locations. Some examples would be closets, open offices, and open corridors. One of the server banks was installed in the 2<sup>nd</sup> floor corridor. Clearly this is not a well protected or a secure location.

The building will require a new network distribution and delivery system to meet both today's needs as well as the foreseeable future.

## C) Mechanical/Electrical/Plumbing Continued:

### Observations Continued:

- Life Safety Standards:

A preliminary review of Life Safety Standards indicates that the building does not meet current standards and codes. All current codes will be met with a systems wide upgrade. Smoke detectors, exit signs, strobes, emergency lights, pull stations, and fire extinguishers will all be upgraded as necessary.

The single biggest Life Safety Standard addition to the building will be the addition of a fire sprinkler system. Currently the existing building has no fire sprinkler system. In order to accommodate the volume of water needed for the sprinkler system, a new water service will need to be added to the building.

- The Plumbing System:

The plumbing system will be brought up to current standards in a couple of ways.

- 1) Toilet and urinals will be added to achieve a proper fixture count for the building.
- 2) A redesigned first floor and second floor ADA compliant bathroom layout will be accomplished by expanding the footprint for the main public bathrooms. (Drawing SK-1)

## C) Mechanical/Electrical/Plumbing Continued:

### Observations Continued:

- The Plumbing System Continued:
  - 3) Low water volume and automatic flush valves to meet correct codes will be installed throughout the building. This will then create a building standard so that maintenance and repair becomes much simpler.
  - 4) The main piping network will be inspected and deficiencies will be repaired or replaced. Pipe insulation will be upgraded to meet correct standards.

## D) Finishes and Space Usage:

### Overview:

75% of the public areas are original finishes (44 years old). Some examples of this are paneling in the council chamber, vinyl wall covering (VWC) in stairs, acoustic ceilings in corridors, open web stairs and aluminum hand rails, exposed brick at the monumental stair, vinyl asbestos tile (VAT) flooring in stairwells, etc.

Some areas have had cosmetic updates, for instance, the second floor development offices, basement office and conference space, lunch room, and basement toilets.

## D) Finishes and Space Usage Continued:

# WEST LAFAYETTE CITY HALL INSPECTION REPORT

## Overview Continued:

The building is also significantly under serviced for storage needs. To make matters worse, usable square footage in many instances is disjointed and not conducive to efficient office layouts. As the services and staffing provided by the City change over time, so do the city's space needs. The space that was designed in 1970 does not match the space plans needed of the 21<sup>st</sup> century technology driven city building.

In many instances work spaces are cramped, meeting space is at a premium and office layouts are more make-shift rather than by any type of design and planning.

## D) Finishes and Space Usage Continued:

### Observations:

- City Staff Space:

A quick review of public use space vs. city staff use space indicates that overall building square footage may also be an issue of concern. (Drawing WL-3)

Square footage available for City staff operational use (I.E. not public space)

Basement:	+/-	3300 SF
First Floor:	+/-	2470 SF
Second Floor:	+/-	<u>3705 SF</u>
TOTAL:	+/-	9475 SF

Calculated square footage needs of current staff (36)

Storage/Records:	+/-	2550 SF
*Office/Open Work Areas:	+/-	7180 SF
Internal Circulation:	+/-	<u>860 SF</u>
TOTAL:	+/-	10,590 SF

By using these preliminary calculations the building calculates to be too small for current staff by over 1100 SF or just about 10%. Note that this leaves no room for expansion of any kind.

*\*Note: These calculations includes the former Board of Works Meeting Space*

## D) Finishes and Space Usage Continued:

### Observations Continued:

- Mold/Asbestos/Lead Paint:

Testing for these materials was performed; reference separate section labeled “Environmental” for detailed information on mold, asbestos, and lead paint.

- Finishes:

There are finishes or finish related elements that need to be upgraded due to either mold remediation or by the need to bring the building up to correct code. They include:

- 1) Acoustical ceilings
- 2) Carpeting
- 3) Fire stairs and monumental main stair
- 4) All perimeter drywall and some interior wall drywall
- 5) VAT Floor Tile
- 6) Exterior windows
- 7) Door Hardware
- 8) Bathroom “Suites”
- 9) Vinyl Wall Coverings (VWC)

## D) Finishes and Space Usage Continued:

### Observations Continued:

- Interior Design/Office Layout:

Dated interior design and inefficient office layout are not code violations. Therefore, further interior and exterior “Finishes” renovation work past what has been described are strictly an owner decision.