City of Muscatine

Agenda Item

IN-DEPTH ITEM – CITY COUNCIL

DATE: 4/8/2021

STAFF: Brian Stineman, Jerry Ewers, Nancy Lueck, Brett Talkington

SUBJECT FOR DISCUSSION

East Hill Multi-Use Facility Direction for Design Consultant

EXECUTIVE SUMMARY

The purpose of this item is to present and gather City Council's feedback on the proposed East Hill Fire Station Design Options.

GENERAL DIRECTION SOUGHT AND SPECIFIC QUESTIONS TO BE ANSWERED

1. Does City Council have feedback on the East Hill Facility Assessment?

2. Does City Council support staff's recommendation to proceed to the next phase of design for a new Fire Station #3?

BACKGROUND/DISCUSSION

In 2018 City Council approved purchase of the site from the Iowa Department of Transportation for $610,000 with the primary goals of creating a fire station, providing equipment and material storage space for the Public Works, Parks and Recreation and Police Departments, and stormwater management projects to alleviate flooding issues on Lake Park Boulevard and 2nd Avenue.

Stormwater management was discussed with City Council in October 2019. The presentation given to Council that evening has been attached to this memo. Staff has budgeted for a detailed watershed assessment for the Lake Park Boulevard area which encompasses the East Hill site and areas surrounding it. Funds for this project will come from the FY 2021-2022 budget.

In August 2020, Legat Architects was awarded the contract for a Fire Station Facility Assessment Conceptual Plan. This work included an existing condition assessment of the site and all buildings, cost benefit analysis to construct new or renovate to create a fire station, and a conceptual building design for a new stand-alone fire station or renovation of the existing building into a fire station.

The initial deliverables of the facility assessment and cost analysis have been received and attached to this memo. We are at the point where direction is needed from the Council to direct the consultant to provide a design for a new building or a renovation.

The benefits received from adding a fire station in this area of town include: improved response times, improved patient outcomes, and reduction in losses from fire. Additional fire department coverage improves the City's Public Protection Classification (PCC) which will lead to a 3 to 15% reduction in property owner insurance rates. Overall the addition of a fire station in this area will maximize public safety as well as fire fighter safety.

FINANCIAL IMPACTS

When considering any capital project, the estimated impacts on future operating budgets need to be taken into consideration. For the proposed Fire Station #3, the estimated impacts are as follows:

Staffing (assumes FY 23 wages rates with FY 22 pension and benefit rates):

$167,200	Wages and benefits for two fire fighter positions originally approved for the FY 21 budget but deferred due to the pandemic
257,000	Wages and benefits for three additional firefighter positions
17,600	Wages and benefits for the promotion of 3 firefighters to Lieutenants
$441,800	**Estimated annual staffing cost increase**
1,200	Building maintenance supplies
2,100	Building service contracts (sprinkler system, alarm panel, hood system, fire extinguishers, generator inspection, etc.)
3,100	Utilities (gas)
1,400	Insurance
$449,600	**Total Estimated Annual Impact on Future Operating Budget**

Notes:
1. If the originally budgeted 2 firefighters had not been deferred, the increased annual costs would be $282,400
2. With the additional personnel costs, an increase is expected in GEMT revenues (preliminary estimate is $35,000 annually)
3. The Fire department can consider making an application for SAFER grant funds which would assist with personnel costs for 3 years

Financing Options

- If the City Council sees fit, a fire station project can be declared to be an urban renewal project.
- This opens up the possibility of authorizing GO debt for its funding by use of the reverse referendum petition process without regard to the maximum principal amount proposed.
- You do NOT have to use TIF to avail yourself of this possibility.

Impact on 2022 Bond Issue and Future Debt Service Tax Rates if this Project Would Proceed

- When the FY 22 Budget was adopted, based on estimated project costs at that time, the City was looking at bond funding for capital projects of $5.5 million to be included in the May 2022 bond issue.
- Bids for the Grandview Avenue Reconstruction project were received in March and came in over $2 million less than the engineer's estimate.
- The estimated project cost for the proposed Fire Station #3 is $3.5 million.
- With the $2 million reduction for Grandview and if the Fire Station was added at $3.5 million, the estimated bond funding for projects would total $7 million.
- The City's financial consultant, PFM, prepared a preliminary debt service and tax rate analysis using a $7 million issue in May of 2022.
- Based on PFM's analysis, the Fire Station #3 project could be financed without an increase in the debt service tax levy rate.
- This preliminary bond analysis was based on adding this project to the May 2022 bond issue; the actual timing of bond financing would depend on when a decision is made to move forward with this project.
- The City will monitor the availability of any grant funding for this type of project from the federal or State government (American Rescue or future grant programs).

Attachments:

1. East Hill Fire Station Proposal Final
2. Facility Assessment
3. Facility Assessment Exhibits
4. Estimate of Probable Costs
5. Legat Project Scope
6. Lake Park Flooding

East Hill Fire Station Discussion

APRIL 8, 2021

BRIAN STINEMAN, JERRY EWERS, NANCY LUECK

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Direction Sought

Does City Council have feedback on the East Hill Facility Assessment?

Does City Council support staff's recommendation to proceed to next phase of design of new construction for Fire Station #3?

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Agenda

1. Presentation of History and Background Information
2. Discussion of Needs and Benefits of Fire Station
3. Discussion of Financial Impacts

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Background

Site purchased in 2018 for $610,000 from Iowa DOT
Building was built in 1970
Primary Goals:

- East Hill Fire Station
- Public Works and Parks & Recreation Storage
- Muscatine Special Operations Response Team (MSORT) storage and meeting space
- Stormwater management for Lake Park Blvd. and 2nd Avenue

8/6/20 Award of contract to Legat Architects for Fire Station facility assessment conceptual plan
1/8/21 Facility assessment and initial cost estimates completed and accepted by city staff

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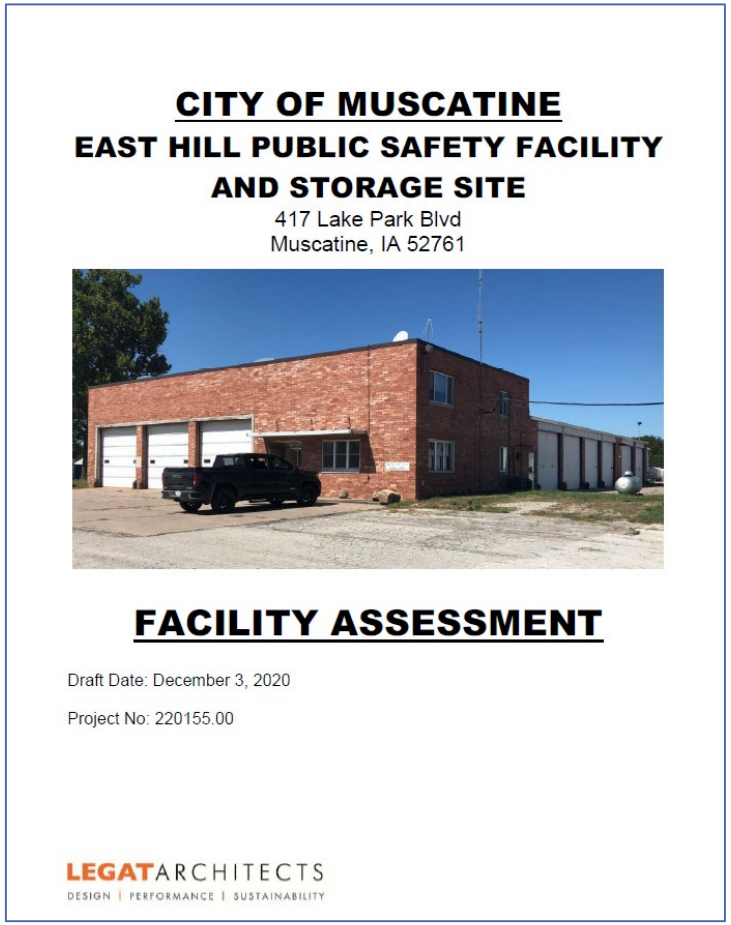
Facility Assessment Summary



CITY OF MUSCATINE

EAST HILL PUBLIC SAFETY FACILITY AND STORAGE SITE

417 Lake Park Blvd
Muscatine, IA 52761

Areas Assessed on Main Building:

- Exterior envelope (roof, walls, windows, doors)
- Interior finishes (floors, ceilings, restrooms)
- Mechanical, electrical, plumbing systems
- Structural review

Acceptable condition for current use

Significant upgrades needed to meet current building codes if renovated to fire station

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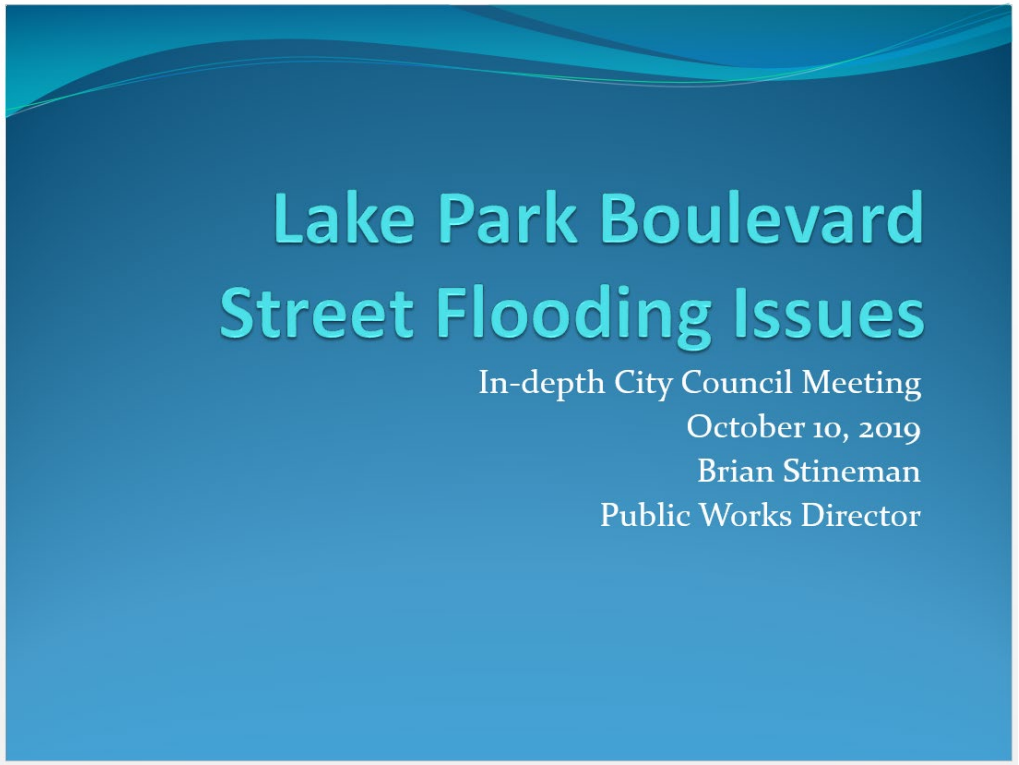
Summary of Stormwater Issues



East Hill site provides area for stormwater management

Does not appear to provide enough area to eliminate all issues on Lake Park Boulevard

A separate study has been commissioned to study the entire Lake Park Blvd. watershed and recommend solutions

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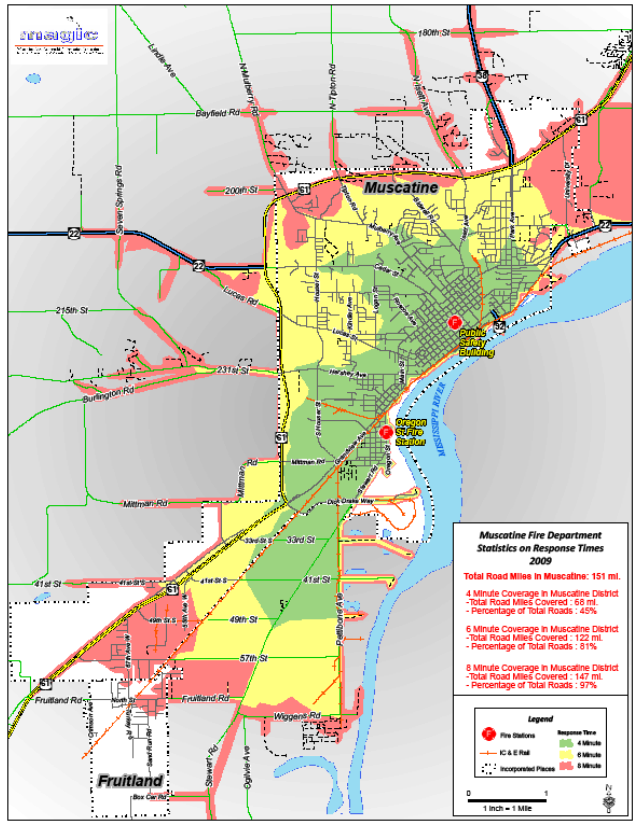
The Needs & Benefits



Need appropriate allocation of public safety resources in City (*Stations / Apparatus / Personnel*)

Improved response times

Improved patient outcomes

Reduction in fire loss

Insurance Services Office (ISO) – Public Protection Classification (PCC) Rating Improvement (Est. 3 – 15% decrease in Ins.)

Maximize public safety and fire fighter safety

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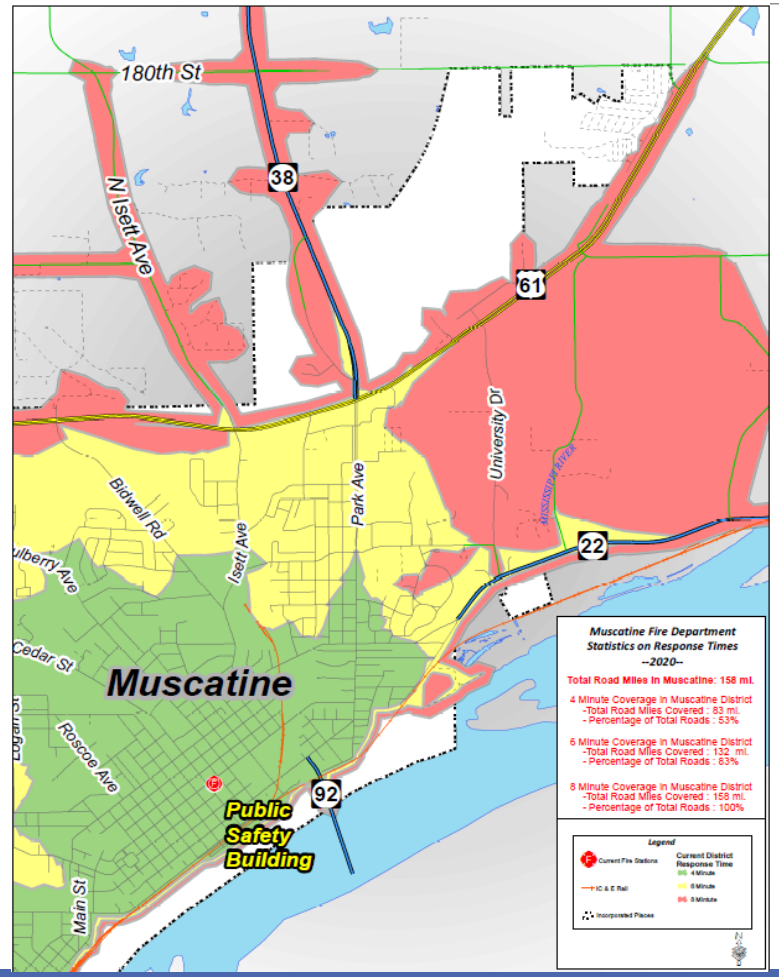
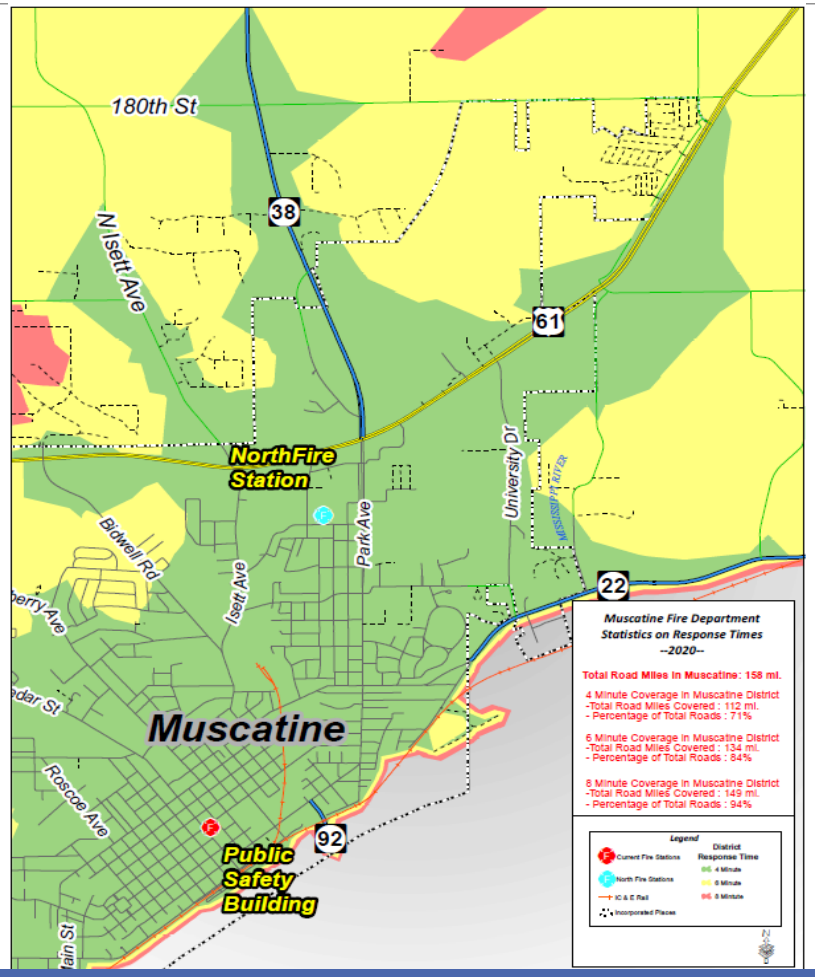
Maps – Response Time Coverage





4 Min

6 Min

8 Min

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Response Time is Critical

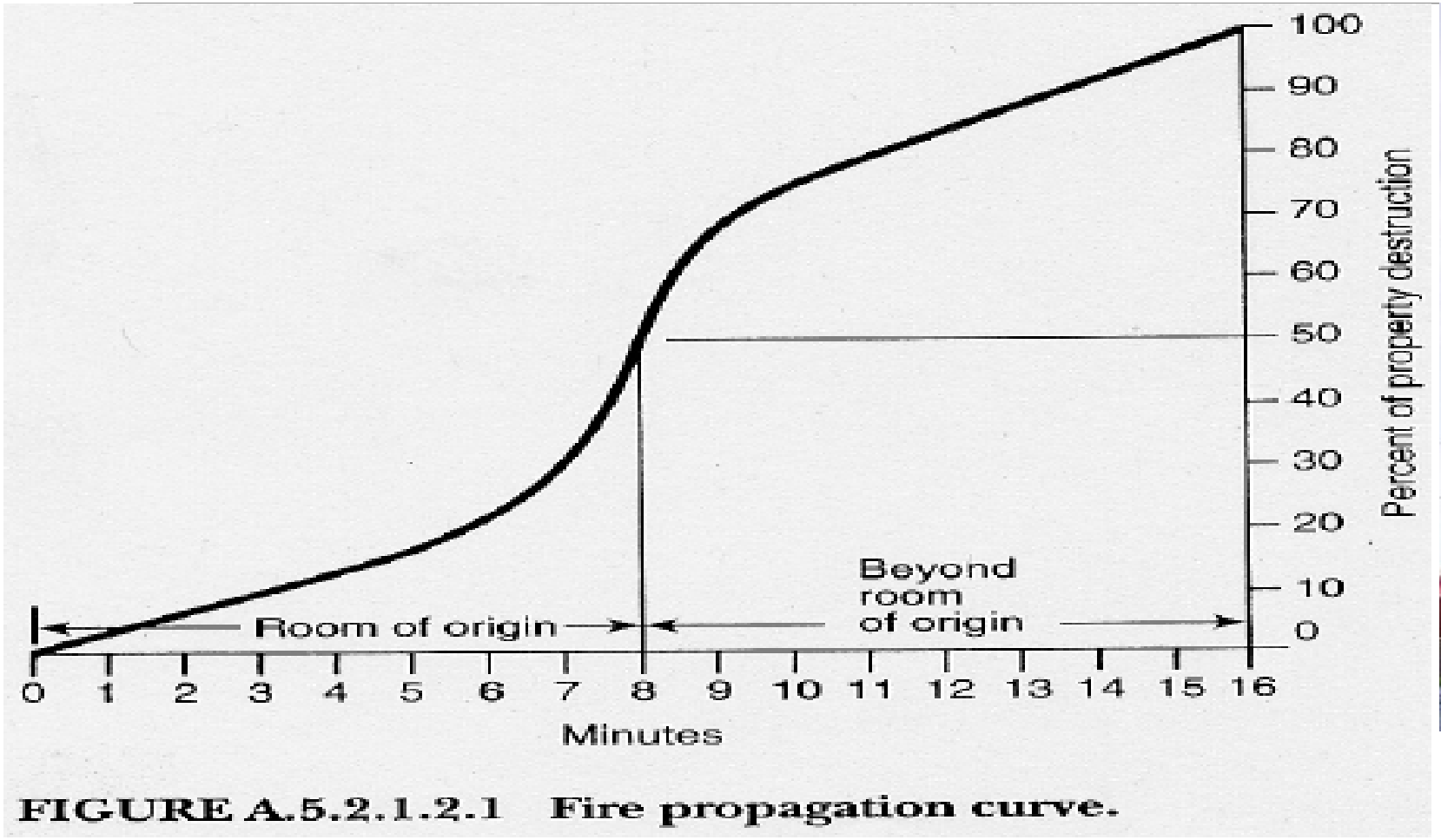

FIGURE A.5.2.1.2.1 Fire propagation curve.

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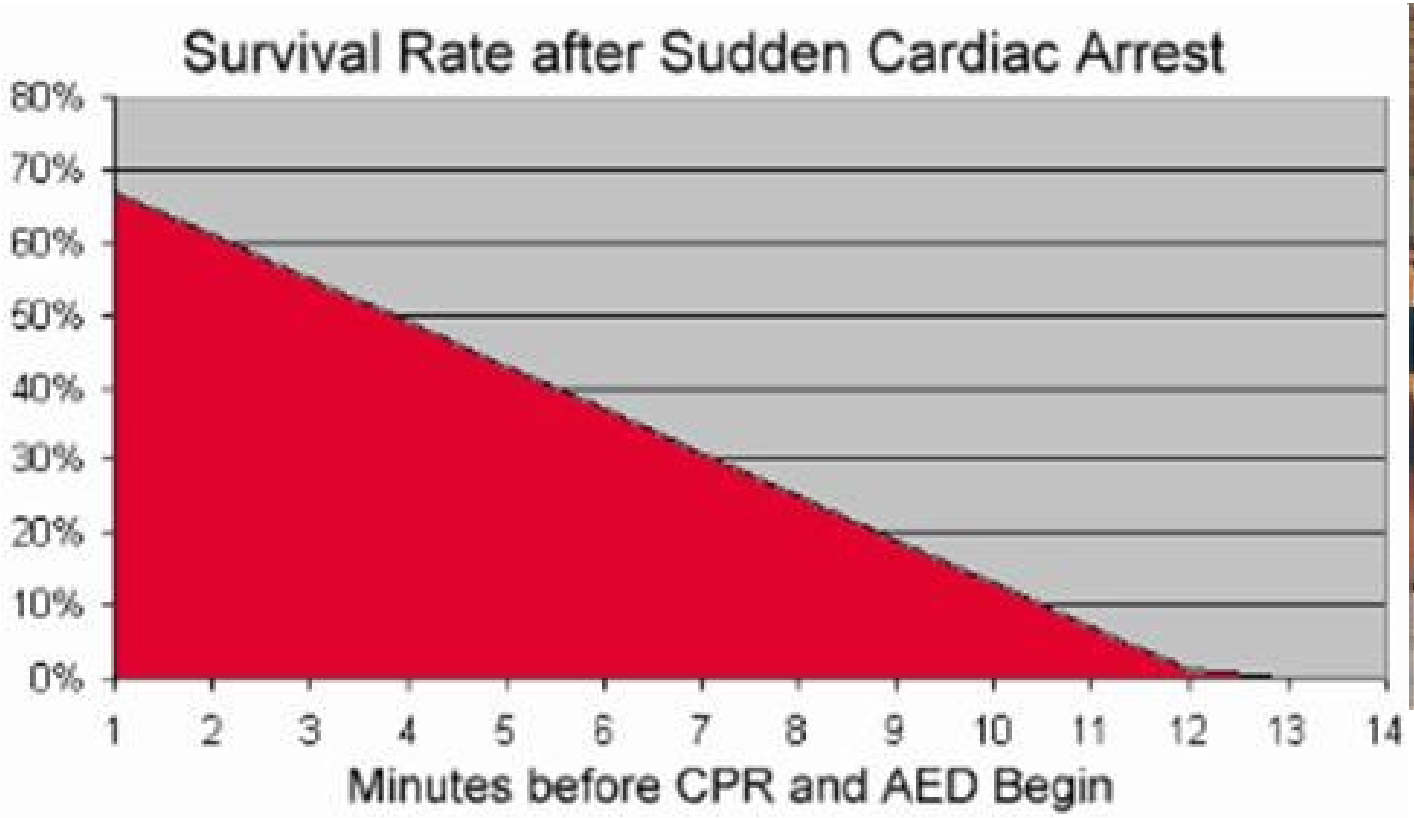
Response Time is Life Saving



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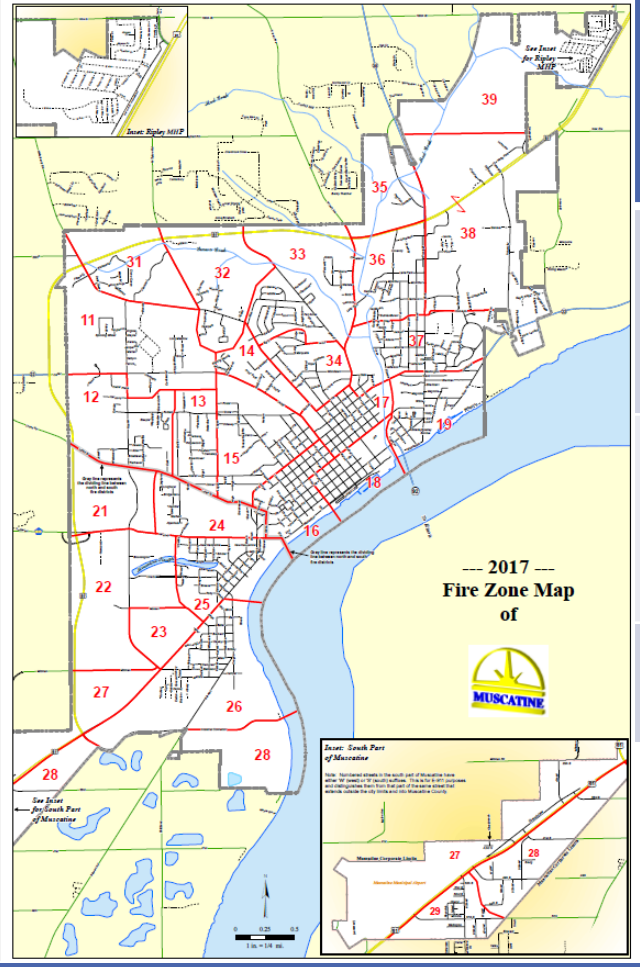
Coverage Area Breakdown



Station	Call Demand	Structures Protected	Population Served
Public Safety Building (Station 1)	58.15%	4,863	12,480
Station 2	14.28%	1,881	4,097
Proposed Station 3	18.13%	3,074	7,092

NOTE: Currently Public Safety Building is covering call demand for Proposed Station 3 Territory

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Station 1

Station 2

Station 3

Muscatine Fire Department

Future State

Shift Staffing 16

Daily Max = 16

Daily Min = 13

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Estimated Operating Costs

When considering any capital project, the estimated impacts on future operating budgets need to be taken into consideration.

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Estimated Operating Costs (continued)

$1,200	**Building maintenance supplies**
$2,100	**Building service contracts (sprinkler system, alarm panel, hood system, fire extinguishers, generator inspection, etc.)**
$3,100	**Utilities (gas)**
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Notes:

1. **If the originally budgeted 2 firefighters had not been deferred, the increased annual costs would be $282,400**
2. **With the additional personnel costs, an increase is expected in GEMT (Ground Emergency Medical Transportation) revenues (preliminary estimate is $35,000 annually)**
3. **The Fire department can consider making an application for SAFER grant funds which would assist with personnel costs for 3 years**

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Financing Options

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Cost Opinions: Renovation vs. Construction

Total Estimate of Probable Cost for RENOVATION:	
$3,451,102.53	
Potential Escalation Costs:	
Year 1 (3%)	$3,554,635.61
Year 2 (3%)	$3,661,274.68
Year 3 (3%)	$3,771,112.92

Total Estimate of Probable Cost for NEW CONSTRUCTION:	
$3,345,250.00	
Potential Escalation Costs:	
Year 1 (3%)	$3,445,607.50
Year 2 (3%)	$3,548,975.73
Year 3 (3%)	$3,655,445.00

Cost Difference: $105,852.53 *LESS* to build new vs. renovation
Primary difference is cost to meet codes, contingency for unforeseen issues in older building

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Three Options

Option 1 Proceed to the next phase of design for a new fire station on current site

(Keep existing building as storage for vehicles, equipment, MSORT)

$ 3,345,250.00

Option 2 Proceed to the next phase of design to renovate existing building for fire station (lose current storage)

$ 3,451,102.53

Option 3 Do nothing at this time (est. project cost increase 3% each year)

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Option 1 Design New		Option 2 Design Renovation		Option 3 Do Nothing	
BENEFIT	COST	BENEFIT	COST	BENEFIT	COST
Meets service & response time goals	New Construction cost of $3,345,250	Meets service & response time goals	Renovation cost of $3,451,102.53	No capital expenditure at this time	Service & response time goals not met
Retains existing building for current usage	Ongoing operational costs	Will solve some stormwater issues	Lose building for current use by other departments	Maintain current use of building by other departments	Design and construction costs escalate yearly by 3%
Lower cost than renovation	Will not solve all stormwater issues	Insurance rate reduction for property owners	Cost more than new construction		
Will solve some stormwater issues			Will not solve all stormwater issues		
Insurance rate reduction for property owners			Ongoing operational costs		
Can build without raising debt levy rate					

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Staff Recommendation: Option 1

Proceed to the next phase of design for a new fire station on current site (*Does not include FFE*) (**$ 105,852.53 less** than renovating old building)

Retain existing building for storage for Public Works & other Depts. (*currently building is full*)

Future project(s): modify or remodel south end of building for Muscatine Special Operations Response Team (MSORT) storage, update restrooms and create meeting space, and equipment storage rooms

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Direction Sought

Does City Council have feedback on the East Hill Facility Assessment?

Does City Council support staff's recommendation to proceed to next phase of design of new construction for Fire Station #3?

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CITY OF MUSCATINE

EAST HILL PUBLIC SAFETY FACILITY AND STORAGE SITE

417 Lake Park Blvd
Muscatine, IA 52761

FACILITY ASSESSMENT

Draft Date: December 3, 2020

Project No: 220155.00

LEGAT ARCHITECTS
DESIGN | PERFORMANCE | SUSTAINABILITY

TABLE OF CONTENTS

PREFACE

The following assessment is a general non-destructive visual assessment of the existing East Hill Municipal facility located at 417 Lake Park Blvd, Muscatine, IA 52761. This visual assessment focuses on the following items:

- Primary Building:
  - Overall exterior building envelope (roof, walls, windows, and doors).
  - Overall interior finishes.
  - Overall mechanical, electrical, and plumbing systems.
  - Overall structural feedback.

- Out Buildings and Site:
  - Overall exterior building envelope (roof, walls, windows, and doors).
  - Overall site improvements based off renovation or addition of existing buildings on site and building new structures on site.

Image: Aerial Site Plan

CHAPTER 1

CIVIL SURVEY

GENERAL INFORMATION

Martin & Whitacre Surveyors & Engineers, Inc. (MW) performed a site visit on the afternoon of Wednesday, September 2, 2020 to investigate the existing conditions of the future East Hills Fire Station. The site is located on the former IDOT 9.23 acre property north of Lake Park Boulevard, west of Grand Avenue, and east of 2nd Avenue in Muscatine, Iowa. Exhibits have been prepared and are attached to this document summarizing the improvements recommended for the site, pictures of the site, and a cost opinion of the repairs with priorities given to each recommendation.

The existing site has four existing main buildings and other minor structures with sphalt, concrete, and rock parking areas throughout the site (see attachment). All existing pavements are in bad shape and are need of replacement or repair. The existing site has one access off Lake Park Boulevard at the southeast corner of the site. It is recommended that this access be widened and radii improved for fire trucking turning movements and that a second entrance be added at the southwest side of the site. Handicap accessibility does not meet ADA requirements and needs to be improved for the existing main south building. In addition, water main improvements with fire hydrants need to be added to the property to meet fire protection requirements of the City.

The north 3 acres of the site has previously been used for storage and has an existing drainageway draining through it which is an unnamed tributary of Mad Creek. Lake Park Boulevard and Mad Creek experiences severe flooding downstream so storm water management improvements should be considered on the site to improve this situation. Recommended improvements include installing an oxbow channel and dry detention pond adjacent to the existing ditch draining north from Lake Park Boulevard to said ditch through the property. There are also some erosion issues in the existing ditch requiring maintenance such as riprap installation.

Based on the attach supporting documents, MW recommends that up to an approximately $801,000 of civil site improvements be completed on the site when the new fire station is constructed.

Engineering and surveying cost are not included in the estimated costs but would typically be in the range of 5% to 10% of the construction costs. The estimated amount will vary if any existing buildings will be removed or expanded and the parking lot areas are adjusted.

EAST HILLS FIRE STATION MASTER PLAN ASSESSMENT - MUSCATINE, IOWA
PRELIMINARY COST OPINION
MARTIN & WHITACRE SURVEYORS & ENGINEERS, INC. JOB # 8547.20

9/22/2019

ESTIMATED PROJECT QUANTITIES

ITEM	ITEM	TOTAL	PRIORITY
A	REMOVE EXISTING ASPHALT PAVEMENT AND REPLACE WITH 9" PCC PAVEMENT W/ 6" ROCK	$245,500.00	MEDIUM
B	REMOVE EXISTING ROCK SURFACING AND REPLACE WITH 9" PCC PAVEMENT W/ 6" ROCK	$307,500.00	MEDIUM
C	ROUT AND SEAL CONCRETE PAVEMENT CRACKS	$1,000.00	LOW
D	CURB CUT, REMOVE STORM SEWER, AND REGRADE DITCH TO DRAIN NORTH	$9,000.00	MEDIUM
E	INSTALL OXBOW CHANNEL, INSTALL WETLAND PLANTINGS, AND STABILIZE SLOPES	$12,000.00	LOW
F	INSTALL DETENTION POND AND SEED, FERTILIZE, AND MAT/MULCH	$120,000.00	HIGH
G	INSTALL RIPRAP IN ERODED STREAM DITCH AREA	$2,500.00	HIGH
H	INSTALL NEW PCC ENTRANCE AND REPLACE EXISTING ENTRANCE	$59,500.00	HIGH
I	INSTALL BERM AND 36 INCH STORM SEWER AND 2 FES	$9,000.00	HIGH
J	INSTALL 6" WATER MAIN, 6" GATE VALVE, AND 2 FIRE HYDRANTS	$32,000.00	HIGH
K	ADA IMPROVEMENTS SOUTH OF MAIN BUILDING	$3,000.00	HIGH
		$801,000.00	

Picture 1: Asphalt pavement at existing entrance. Looking south.

Picture 2: Asphalt pavement and concrete drive south of existing main building. Looking northwest.

Picture 3: Asphalt pavement south of existing main building. Looking west.

Picture 4: Edge of existing asphalt parking / rock surfacing area west of main building. Looking north.

Picture 5: Cracked concrete west of main building. Looking north.

Picture 6: Rock surfacing west of main building. Looking north.

Picture 7: Eroded ditch and fence post footing. Looking northeast.

Picture 8: Existing grass area on east side of the site that could be regraded for a ditch draining north from Lake Park Boulevard to the existing drainageway on the north end of the property. Looking south.

Picture 9: Existing rock and asphalt surfacing east of the main building. Looking west.

EXHIBITS

1. EX-1 – EXISTING CIVIL SITE PLAN SURVEY

CHAPTER 2

ARCHITECTURAL SYSTEMS

GENERAL INFORMATION

The original East Hill Public Safety Facility and Storage Site, constructed in 1970, consists of a brick 2-story structure (approximately 3,200 sq. ft.) with a connected warehouse/vehicle storage space (approximately 9,000 sq. ft.). The original construction appears to be CMU bearing wall with brick veneer on concrete foundation walls. The exterior façade is primarily a masonry brick cavity wall construction with areas of corrugated metal paneling above the overhead sectional doors. The windows appear to be vinyl with stone sills. The roof of the 2-story structure consists of structurally sloped steel joists with a metal deck, rigid insulation, and an elastomeric coating over the existing modified bitumen single-ply roof that connects to roof drains piped through the building.

The roof of the warehouse/vehicle storage space consists of structurally sloped steel beams with a metal deck, rigid insulation, and an elastomeric coating over the existing modified bitumen single-ply roof that connects to gutters and downspouts to grade. The overhead sectional doors in the addition appear to be insulated steel sectional doors.

Image: Original Building – View from southeast

Image: East Addition – View from northeast

ROOF SYSTEM

EXISTING CONDITIONS:

There are two existing roof systems. The 2-story brick structure has a low sloped EPDM roofing system. The existing EPDM system was installed about 9 years ago and is in good condition. The roof pitches to roof drains. One of the roof drains is piped to drain to the lower pitched roof to the north. The warehouse building to the north is a low-pitched (1:12) gabled roof with an elastomeric coated membrane roofing system. This system was also installed about 9 years ago and is in good condition. The roof pitches to gutters and downspouts which discharge stormwater onto grade. The elastomeric coated roofing system was applied directly to the existing EPDM system. The flashings for both roofs are in good condition. The gutters are in good condition, except for one area that was damaged by a truck. Some of the downspouts should be replaced.

RECOMMENDATIONS:

- Some of the downspouts should be replaced as they have been damaged. The damaged section of gutter should be replaced
- If the building is to be repurposed to a Fire Station, renovated, and remodeled then the roofing system will need to be removed and replaced with the appropriate insulation thickness to meet current energy code standards (R-30 insulation).

EXTERIOR WALLS

EXISTING CONDITIONS:

The exterior walls of the two-story structure at the south and the warehouse/vehicle storage to the north is constructed of face brick, CMU, stone trim, and corrugated metal panel. In general, the face brick is in fair condition and the stone elements are in good condition, with minor spalling. The CMU on the north elevation is stack bond has been painted. There are many cracks in the mortar joints of the CMU. The face brick at the east and west ends of the wall is pulling away from the CMU. There are some areas at the corners of the lintels above the sectional doors where the face brick has cracked or spalled, which is allowing water to enter the wall cavity. All steel lintels are showing signs of rusting and have caused gaps to form between the mortar joints of the brick where the lintel is supported in the wall. The corrugated metal panel siding above the sectional doors is in poor condition. Many of the panels are pulling away at the base and causing rust stains to appear on the sectional doors below. On the west side a portion of the paneling has been torn off.

RECOMMENDATIONS:

- Face brick should be tuckpointed within the next 5 years.
- CMU should be tuckpointed within the next 3 years. Control joints should be cut in the CMU. The wall should be repainted or covered with a metal panel.
- Stone banding and trim joints should be ground out and replaced with sealant. We suggest this be completed when the tuckpointing is done.
- Steel lintels should be scraped clean, primed, and painted.

- Corrugated metal panel siding above the sectional doors should be repaired and replaced
- If the building is to be repurposed to a Fire Station, renovated, and remodeled then the exterior face brick will need to be removed to properly install continuous insulation between the face brick and CMU block to meet current energy code standards (R-11.4 continuous insulation). Refer to Chapter 4: Structural Feedback for additional reinforcement that would be required.
- The north CMU block wall is only a single layer of CMU block. This would require the same continuous insulation R-value to be installed, as well as a new exterior wall/siding system to enclose and protect the newly installed insulation.

EXTERIOR DOORS AND WINDOWS

EXISTING CONDITIONS:

On the south elevation, the main entry door is an aluminum door and frame with single pane glazing set in an aluminum framed storefront system with a sidelight and transom. The 3-bay window to the east of the main entry is a vinyl window, in good condition. The three overhead sectional doors to the west of the main entry appear to be newer doors and are in good condition.

On the west elevation, is another 3-bay vinyl window in good condition. The aluminum door adjacent to the window is an older door that is showing wear on both the exterior and interior. Farther to the north along the west elevation is a series of six overhead sectional doors. Three of them appear to be newer insulated doors in good condition while the remaining three are older and are showing signs of rusting and additional wear along the base and jambs of the doors.

On the north elevation is a single aluminum door that is showing wear on both the exterior and interior.

The east elevation is like the west elevation. At the north end of the east elevation is a series of six overhead sectional doors. Three of them appear to be newer insulated doors in good condition while the remaining three are older and are showing signs of rusting and additional wear along the base and jambs of the doors. Adjacent to the overhead sectional doors is a newer aluminum door that is in good condition. To the south of the aluminum door are four vinyl windows varying in sizes that appear to be in good condition.

On the east and west elevations are louvers and exhausts fans that have gaps or missing sealant around the unit allowing for water to enter the wall cavity.

RECOMMENDATIONS:

- Sealant around the frames of the windows, doors, louvers, and exhaust fans around the entire building should be removed and replaced.
- Older rusting overhead sectional doors should be replaced with new insulated sectional doors.
- Older aluminum doors should be replaced with new thermally broken aluminum doors with insulated glazing.
- All overhead door operators are nearing the end of their useful life. Recommend replacing these soon.

INTERIOR FINISHES

EXISTING CONDITIONS:

First Floor Office Area:

This area appears to be used only for storage and restroom use currently.

- VCT flooring is dated and worn and is nearing the end of its useful life.
- Interior masonry walls are in good condition with typical wear.
- The 2x4 acoustic ceiling tiles in the corridor and mechanical room are in good condition with minor sagging.
- Interior doors and frames are hollow metal and appear to all be in working order. A couple doors have minor rust stains and typical wear.
- Countertops are in good condition but may be considered by some to be dated. One of the countertops impedes upon the ADA clearance of the hallway as well as the door access while the other one doesn't seem to serve a purpose any longer.
- Current restroom fixtures and partitions are in poor condition and don't meet code requirements. Also, there is only one bathroom in the facility. Depending on future use and occupant load at least two separate restrooms, both with ADA fixtures, will be required.
- Main entry door enters directly into corridor and doesn't have the required panic egress hardware.

Recommendations:

- Replace all VCT flooring.
- Replace rusted door.
- Remove existing countertops.
- Paint all interior walls.
- Remove existing toilet partitions, toilet fixtures, lavatory, and shower stall and replace with ADA toilets, lavatories, and shower stall(s). Refer to RTM report for more information.
- Provide panic hardware on all egress doors.

Second Floor Office Area: This level appears to be used as a conference room and storage area.

- Flooring is dated and worn and is nearing the end of its useful life.
- Interior masonry walls are in good condition with typical wear.
- The 2x4 acoustic ceiling tiles in conference room are in fair condition with minor sagging and a handful of tiles missing.
- Interior doors and frames are hollow metal and appear to all be in working order.
- Staircase
    - The stair treads are a rubber tread with an anti-slip tread tape that has worn out in the center of most of the treads.

    - A proper landing isn't provided at the base of the stairs.
    - A handrail isn't provided on both sides of the staircase. Both handrails to extend beyond top riser minimum of 12" and beyond the bottom riser by one full tread depth.
    - The guardrail around the stair in the conference room needs to be 42" high and not have a gap larger than a 4" sphere.
- Storage Rooms
    - Existing wooden shelves used for storage are built along 3 of the 4 walls. Built in system is in good condition.

Recommendations:

- Replace all VCT flooring.
- Replace missing ceiling tiles.
- Paint all interior walls.
- Replace existing stair treads with new anti-slip tread tape at stair nosings.
- Remove existing handrail and guardrail and replace with new painted steel handrail and guardrail to meet code required minimum.
- Provide landing at base of the staircase. Door and hallway will need to be adjusted/reworked to meet code required minimums.

MSORT Vehicle Bays: This area is used as the vehicle and equipment storage area for the Muscatine Police Department MSORT (Muscatine Special Operations Response Team).

- The flooring is exposed concrete, in good condition. Floor drains are located in the center of the room.
- Interior masonry walls are in good condition, with typical wear and tear.
- The ceiling consists of exposed painted metal deck and bar joists all in good condition.
- Interior doors and frames are hollow metal and appear to all be in working order. The door between the MSORT Bays and the Vehicle Storage Bays is rusting at the frame base and along the face of the door.

Recommendations:

- Replace door and frame between MSORT and Vehicle Storage Bay.

Vehicle Storage & Storage Bays: This area is used as the vehicle and equipment storage area for the Muscatine Public Works Department and Parks and Recreation Department

- The flooring is exposed concrete in good condition. Floor drains are located approximately 15' in from the overhead sectional doors.
- Interior masonry walls are in good condition, with typical wear and tear. The steel columns are in good condition but have rust stains around the base and up the column approximately 2'.

- The ceiling consists of exposed painted metal deck, steel moment frames, and steel purlins.
- Interior doors and frames are hollow metal. The door between the Vehicle Storage Bay and Storage Bay has rusted at the base of the frame significantly and the door itself is in poor condition and should be replaced.

Recommendations:

- Replace door and frame between Vehicle Storage Bay and Storage Bay.
- Scrape, prime, and paint existing steel columns.

OUT BUILDINGS

EXISTING CONDITIONS & RECOMMENDATIONS:

Out-Building 1 (Brine Mixing Building): This building currently houses tanks for Brine Operation. The base of the building consists of wooden wall planks that are in good condition, minus a few planks that have been cracked/broken. Plastic membrane walls/roof is in good condition. Flooring is compacted gravel. The overhead sectional door has significant rusting occurring on the framing inside the building and should be replaced. The exterior man-door is beginning to rust at the bottom of the door and frame as well as the face of the door and should be replaced.

Recommendations:

- Replace the overhead sectional door and exterior man-door.
- Replace any cracked/broken wooden planks around the base of the structure with pressure treated lumber.

Out-Building 2 (White Garage/Shed): This building is currently being used as an equipment storage space. The walls of the building are a typical wood framed structure with plywood backing and vinyl siding all in good condition. The roof is a typical asphalt shingle roof with a plywood subsurface all in good condition. The overhead sectional garage door, window, and exterior man-door are in good condition.

Recommendations:

- None.

Out-Building 3 (Plywood Pole Building): This building currently houses roadway salt. The walls of the building are a typical wood framed pole structure with painted plywood wall sheathing that has split or rotted in many spots. The roof is a typical asphalt shingle roof with a plywood subsurface all in good condition. The sliding wooden barn doors are in poor condition with cracked and rotting wood and should be replaced.

Recommendations:

- Remove the current exterior painted plywood sheathing and replace with a new weather tight system like that of Out-Building 4, the metal pole building.
- Replace the sliding wooden barn doors with overhead sectional doors.

Out-Building 4 (Metal Pole Building): This building is currently being used as storage for the Public Works Department and Parks and Recreation Department. The walls of the building are a typical wood framed pole structure with metal siding. The building is the newest structure on the site and as such in great condition. The roof is a typical metal roof with wooden rafters and purlins. The overhead sectional garage doors and exterior man-doors are in great condition.

Recommendations:

- None.

EXHIBITS

2. EXISTING SITE PLAN
3. EXISTING FIRST FLOOR PLAN
4. EXISTING SECOND FLOOR PLAN
5. PHOTOS

CHAPTER 3

MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS

GENERAL INFORMATION

Kathryn Duytschaever and Joe Duehlmeyer with RTM & Associates walked the Muscatine East Hill Fire Station site and buildings on September 2nd, 2020 The existing mechanical, plumbing, fire alarm and electrical systems were observed and the following report contains their conditions.

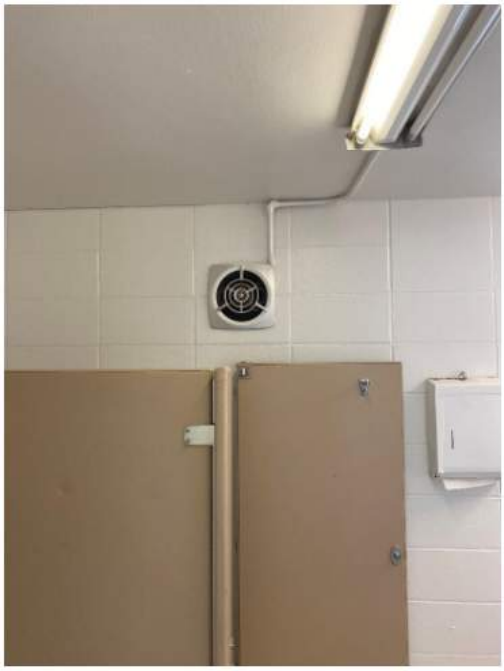
EXISTING MECHANICAL SYSTEMS

SITE OVSERVATION AND RECOMMENDATIONS:

Office / Training Area

- The existing building is served by a gas fired furnace with DX “A” Coil above it to deliver tempered air via ductwork throughout the office and training area. The Furnace portion of the system has a 1,000 CFM blower fan within it. The A coil is a 2.5 ton coil system with a remote 2.5 ton condensing unit outside. The system has 2014 manufacturing dates on them. The units are not even at 50% life yet. The system does seem undersized for the age of the building (envelope efficiency) and it’s predicted load calculation. The building utilizes operable windows for ventilation and not mechanical ventilation which is allowable by code. Depending upon future use of the space and occupancy load, system may have to be upsized before the equipment maxes out it’s life expectancy. The CSST gas line to the furnace needs to be grounded, which can easily be done to the incoming water service next to the furnace. Unit is currently controlled with a 7-day programmable Honeywell thermostat. This can’t be accessed remotely. Recommend a Honeywell WIFI thermostat at minimum if BAS won’t be used in the future for remote alarms and temperature change and monitoring

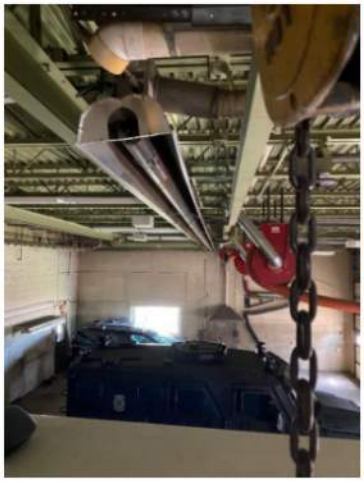
- Toilet exhaust fan is powered from light fixture and is through wall exhaust to turn on with lights turn on. This can make the room cold / hot depending upon outside temperature. It would be recommended to have a ducted ceiling mounted unit go out through the wall to give a back draft damper and more ductwork length to help keep the space conditioned. How it's installed is allowable by code though.



- There is an existing 2 ton condensing unit next to our HVAC condensing unit that appears to be over 10 years old from it's weathering. No name plate could be read on the unit. It's feeding what appears to be a training process contraption. As it's not HVAC related, this condensing unit is noted, but not assessed.

Garage Bays

- The secured garage with 3 bay doors currently has vehicle exhaust reels and is heated via infrared gas fired units at the ceiling level. The garage has exhaust fans serving the vehicle exhaust as well as the garage in general, and there is a hood within the space that is exhausted outside. The vehicle exhaust reels appear to be in good working order. The infrared heaters need some repair at exhaust and intake connections at minimal. The current state of the units are nearing life expectancy looking at burner tail pipes and reflective fins. Recommendation would be to replace infrared heaters in this garage bay.




- The additional garage additions off of the main building one with 4 bays and one with 2 bays each have a perimeter loop of infrared gas fired heaters and then two intake louvers with motorized dampers and two exhaust louvers on motorized dampers. The exhaust and intake system appear to be newer (date not found) and in working order. The infrared heaters were also still nicely intact and appears to be newer in comparison to the secured garage. Other than reacting to any change in storage use or the addition of vehicle exhaust as there appeared to be an oil changing station for the fleet in this garage.


It's noted that there is a compressed air loop throughout these garage bays, however the large air compressor has been disconnected and removed. There is exhaust for above the air compressor where the ductwork connections and fan remain. It's recommended to install a new air compressor, compressed air dryer and exhaust system for the heat generated off of the air compressor. This isn't code required but rather recommended for functionality of the building. Existing compressed air piping and valves would need to be pressure tested.

Brine Mixing Building

- There is an electric unit heater within the brine mixing building. Appears to be in working order. Unit is mounted high on wooded supports which we would need to review if that's allowable per manufacturer for the heat transfer.

- There is a propane tank on site with gas piping going underground, and then up along side the building to serve the generator. The generator had a ducted exhaust tail pipe, as well as a motorized louver to open in side of the building when unit is running.

ELECTRICAL GENERAL

SYSTEM CHARACTERISTICS

General:

- Building Supply Voltage: 120/240V
- Nominal Voltage: 120/240V
- Amperage: 400 AM
- Phase and Frequency: 1-Phase / 60Hz

ELECTRICAL DISTRIBUTION

Distribution Observations:

The existing main building is served by a pole mounted utility transformer located on the East property line (below left). The utility pole has a 400A main disconnect (below right) mounted in front of it.

The main service conductors are fed underground from the 400A disconnect located on the pole to the meter and main 120/240V, 1-phase, 400A, Square D switchboard located in the main corridor in main existing building. The 400A Square D fused switchboard feeds panelboards A, B, C, and D. Panelboards A, B, C, and E, the main electrical meter, and the 400A fused switchboard are all located on the West wall of the main corridor.

Panelboard D (below left) is located on the North wall of the main garage area. It serves the garage area and also feeds the 100A panelboard (below right) located near the two sheds on the North part of the compound.

The shed located on the West part of the complex is fed with a 100A panelboard (below) fed from panelboard B.

There is an emergency 12.5kVA Onan generator (below) located on the second floor of main building. It serves an automatic transfer switch located on the same West wall as the other electrical equipment. This emergency generator looks to be a secondary source of power for panel A. Panels A loads include the buildings emergency lights, a diesel pump, and some other general loads.

Distribution Recommendations:

The existing service was observed to be sufficient but at capacity.

The existing 400A main disconnect is corroded and was told is not functioning properly. This should be replaced, either with a new 400A disconnect or by a main breaker if the 400A Square D fused switchboard is desired to be replaced.

The existing meter and CT cabinet is located inside the building. If work is done to replace the existing service or building electrical equipment the meter and CT cabinet should be relocated to outside the building.

The main 400A fused switchboard looks to be sufficient for the building. However, the fused switchboard no longer has the capability to be upgraded due to its age and the product is no longer supported by Square D. The fused switchboard, adjacent panels, and surface mounted electrical troughs have been indicated to get hot with constant equipment usage. If the heat and flexibility is a concern, RTM would recommend replacing the existing electrical gear on this existing wall with new, providing a new junction box (hat) on top of the new electrical gear to replace all the electrical troughs. The replacement of the existing electrical gear is not code required.

The existing sub fed panelboards located at North and West sheds seem to be in good working order.

The existing generator has not been confirmed to be in working order. If it is not in working order, the existing generator should be either serviced and fixed, replaced with new, or removed from the building. If removed from the building the emergency lighting should be powered by some form of battery powered lighting equipment.

LIGHTING

General:

- The existing buildings have 120V/1PH/60HZ lighting throughout.
- All of the interior lighting throughout the buildings is fluorescent or incandescent.
- The light fixtures were mostly 2’ X 4’ fluorescent troffers (below) in the garage areas with either (5) T8 or T5 lamps.

- The office/general area of the main building used a mixture of surface mounted (2) lamp 1’ x 4’ (below right) and recessed (4) lamp 2’ X 4’ (below left).

- The exterior of the main garage building had some jelly jar incandescent style fixtures, some metal halide wall packs and flood lights.

- The West garage building looked to have pendant mounted industrial fixtures (below left), the exterior fixtures were wall mounted metal halide fixtures. (below right).


- Most of the interior spaces had on/off rocker switches. A few areas had wall mounted push button occupancy sensors. The exterior fixtures looked to turn on via time of day control with contactor switches.
- The building had adequate exit sign coverage.

Lighting Recommendations:

RTM recommends that the existing lighting and lighting controls should be upgraded; however, this is not a code requirement. Our recommendation would be to replace the existing lighting with more efficient LED fixtures. It is also recommended that new lighting controls be added in order to automatically shut off fixtures when a space becomes unoccupied, conserving energy.

FIRE ALARM SYSTEM

Observations:

The existing buildings do not have a fire alarm system in place. If the building use and occupancy would remain the same a fire alarm system would not be code required.

Fire Alarm Recommendations:

No fire alarm system is required at this time. It would be good practice to install stand-alone fire detectors in storage rooms. A new fire alarm detection and notification system should be evaluated if a renovation was to take place to the existing main building.

PLUMBING

INCOMING SERVICE AND WATER HEATING

Incoming Service:

- Incoming water service is intact and it's galvanized steel. It's per code with backflow and blow down. No changes seen to be made.

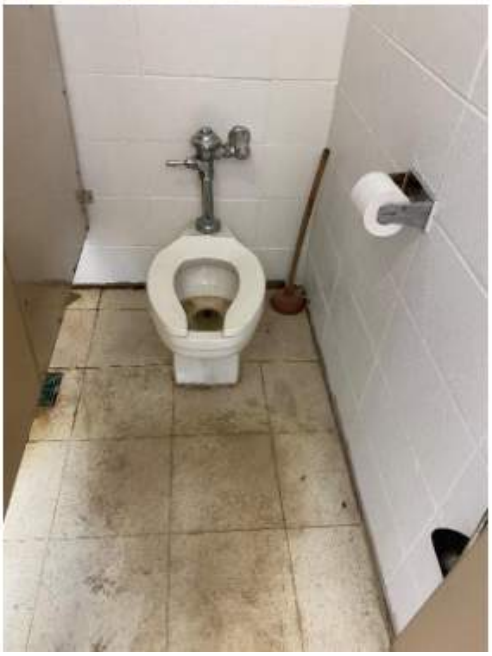
- Existing water heater was manufactured in 2012. It has roughly 5 years left on it's life expectancy. It's an electric water heater with an upper and lower element. With gas piping so close to the unit, I'm surprised that a gas fired unit wasn't installed. When the department choses to replace the water heater, I'd recommend looking to replacing with a gas fire heater for lower utility costs.

PLUMBING FIXTURES

Plumbing Fixtures Observations and Recommendations:

- The existing plumbing fixtures are in rough shape and should be replaced with new. It's also noted that there is one bathroom for the facility. Depending upon occupancy counts, two will probably be required, both with ADA toilets and lavatories. Drinking fountain provides water flow, but no cooling of water. Slop sink on second floor could be replaced and there is a condensate drain line down to the unit that should be routed to an open site drain.

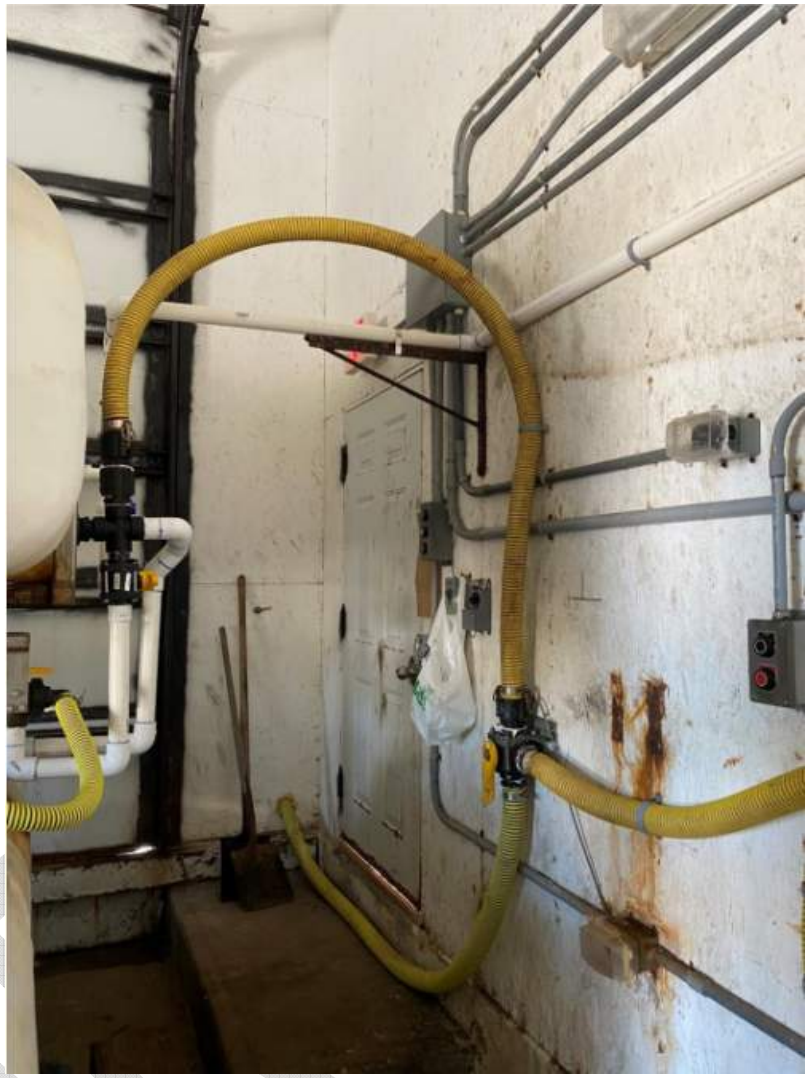


BRINEMIXING OUT BUILDING

Observations and Recommendations:

- Brine building is told to be in good working order. Process pipes are in tact, and as code will not dictate the process hook up, it'd documented what this building is used for. There are sufficient doors for ventilation in the room if the room is to be occupied.



CHAPTER 4

STRUCTURAL FEEDBACK

GENERAL INFORMATION

Select Structural Engineering (SSE) has been contracted by Legat Architects to perform a structural assessment of the buildings on the property at the address listed above. This assessment has two aims:

- The primary building is to be turned into a fire station. This building will be assessed to determine what structural upgrades will be required to fulfill its new role.
- The four secondary out-buildings will be inspected to determine what structural deficiencies are present (if any) and recommend repairs as necessary.

The buildings are identified in Figure 1.

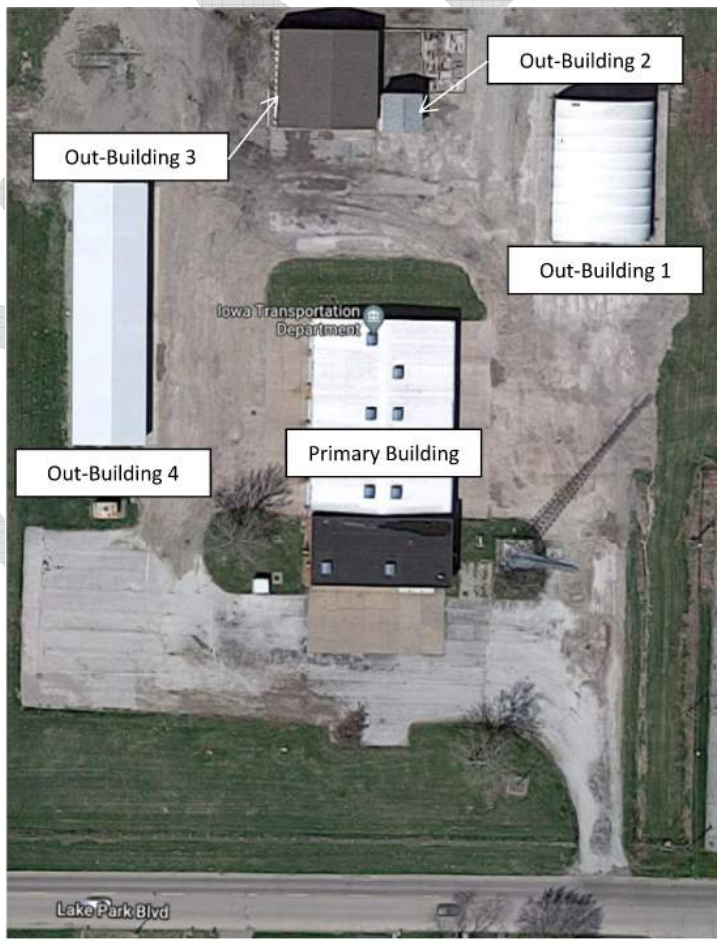


Figure 1. Site Layout

PRIMARY BUILDING

The primary building consists of two distinct structural systems, possibly built at different times (see Figure 2 and Figure 5). A general layout and a framing layout of the primary building have been included in the Appendix for reference.

Figure 2. Primary Building - Front View

Figure 3. Primary Building - Southwest Corner

Figure 4. Primary Building - Northwest Corner

Figure 5. Primary Building - Northeast Corner

The southern portion of the building consists of a steel bar joist and metal deck roof structure supported on masonry exterior bearing walls, a configuration commonly referred to as “conventional framing” (see Figure 6).

Figure 6. Metal Bar Joists and Roof Decking

The eastern half of this southern portion of the building consists of a two story space, with office and bathroom facilities on the first floor and a conference room and storage rooms on the second floor. The floor structure is a 6” to 8” concrete slab with a posted load rating of 150 psf (see Figure 7). The western half of the building is a three bay garage structure (see Figure 6).

Figure 7. Second Floor Load Rating

The southern structure consists of a pre-engineered metal building (PEMB) with a combination of steel bar joists and purlins spanning north-south between evenly spaced bays consisting of either steel moment frames or masonry walls (see Figure 8).

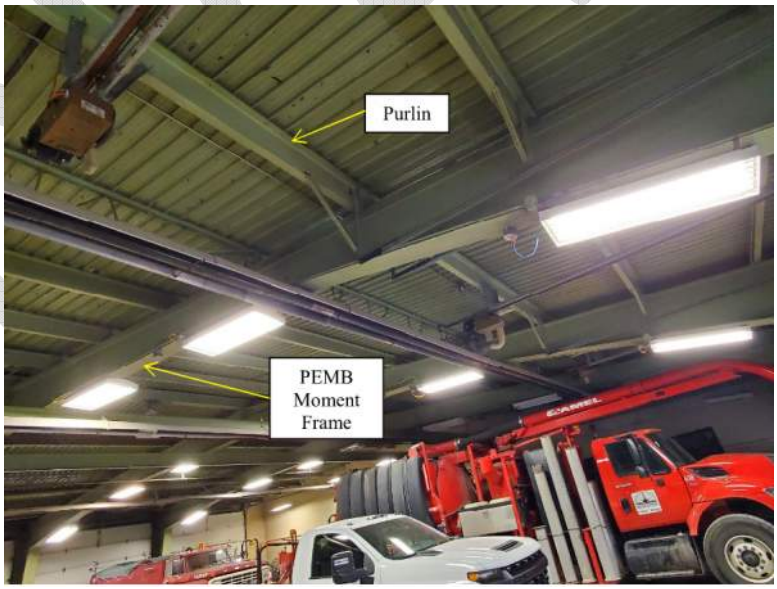


Figure 8. PEMB Roof Framing

The building is in very good condition, and no obvious structural deficiencies were noted. However, in changing the building usage from a Department of Transportation garage facility to a fire station, the risk category for structural design loading increases from a Risk Category II to a Risk Category IV building. This acts to increase the structural loading requirements for the structure, either through additional assumed loading or through additional detailing requirements.

Gravity loading requirements for the roof structure are increased due to loading from snow, ice, and rain loading requirements. However, ice and rain requirements rarely control in this region. Therefore, only snow loading has been investigated. The minimum uniform snow loading for roof, bearing walls, and foundation elements have increased from 20 psf to 24 psf, an increase of 20%.

Analysis of the bar joists supporting the roof over the southern section of the building has been performed using rough measurements from the field. A ladder could not be located to take more precise measurements thus a more in depth analysis is recommended. However, the initial findings show that it is likely that the bar joist supported section of roof can support the additional snow loading requirements without reinforcement. Also, it is highly likely that the roof bar joists are sufficiently braced to resist additional wind uplift forces on the roof structure due to the higher wind loading.

Analysis of the roof purlins and moment frames in the northern portion of the building was performed with rough field measurements and assumptions as well. A lift will be required for a more in depth analysis to be performed as the members are 15’ to 20’ above the floor slab. Given the measurements recorded, however, it is likely that this portion of the building will require significant reinforcement of its roof framing members. This result is expected since PEMBs are often designed with minimal margins of safety beyond those outlined in the building code.

RECOMMENDATIONS:

- The Adding additional roof purlins between the existing purlins in place.
- Welding additional plate to the bottom flanges of the main moment frames as well as stiffener plates to the webs of the moment frames.

Wind loading requirements for the structure increase the base pressure from 26.0 psf to 28.3 psf, an increase resulting in approximately 9% additional stress to the lateral force resisting system of the structure. It is highly likely that more in depth analysis will show that the masonry shear walls and metal decking roof diaphragm currently used as part of the primary load path are capable of supporting the additional loading and additional structural support is not required.

The moment frames in the PEMB section of the building resist not only the additional snow loading mentioned above but also resist the additional lateral loading required by the increased wind requirements. Therefore, this additional stress will also need to be factored into the additional reinforcement of the steel moment frames recommended above.

The seismic structural loading requirements affect the building in two ways. First, the required lateral loading on the structure increases 50%. However, due to the low magnitude of equivalent lateral

acceleration and relatively low weight of the building, it is unlikely that these force requirements will be larger than the lateral loading requirements due to wind loading.

However, due to the risk category IV designation, the building has been upgraded from a seismic design category “A” structure to a seismic design category “C” structure. This places more stringent requirements on the buildings structural detailing as well as prohibiting the use of certain types of construction. Of greatest concern is the use of masonry used throughout the building in both bearing and shear walls. It is a possibility that these walls are unreinforced, a condition that prohibits their use. Therefore, reinforcement of these systems may be required. An X-ray of the existing walls is recommended to determine the existence and spacing of reinforcing bars.

RECOMMENDATIONS:

Reinforcement of the walls can be accomplished two ways:

- Reinforcement bars can be installed in the wall by breaking out the face of the required CMU cores, placing vertical reinforcement bars in the now-exposed cores, and filling the cavity with solid grout. This option will need to be considered in locations where only one face of the CMU wall is readily accessible.
- Fiber-reinforced polymer (FRP) strips can be applied to properly prepared surface to provide the lateral resistance required by the wall. This option is applicable to any wall where both faces of the CMU wall are accessible.

OUT-BUILDING 1

The roof of out-building 1 consists of a plastic membrane roof supported on steel arches with walls consisting of wood planking spanning between wood posts (see Figure 9).

Figure 9. Out-Building 1

Cracked wall planks were noted all-around the structure (see Figure 10 and Figure 11). This is most likely due to a combination of the lateral pressure exerted on the planks from the granular material stored inside the building and the additional lateral loading generated by loading equipment (skid loader or front end loader) pushing on the walls when filling their buckets.

Figure 10. Out-Building 1 Broken Wall Plank

Figure 11. Out-Building 1 Broken Wall Plank

Deterioration was also noted in the wall planks themselves. The planks have rotted on the exterior face, leaving a “hairy” or “furry” texture (see Figure 12). This is often explained by a heavy exposure to salts, and it is likely that this building could have been used for road de-icing salts at one time or another. However, it does not appear that the planks have rotted to worrying degree at this point in time.

Figure 12. Out-Building 1 Plank Deterioration

RECOMMENDATIONS:

- Replace the broken planks with new, pressure-treated members. This assumes that the building will not be used for salt or loose granular storage again.
- Once the interior granular material has been removed, thoroughly inspect the condition of the wall plank interior faces and replace any board as necessary.

OUT-BUILDING 2

Out-building 2 consists of a conventionally framed wood structure with a large garage door on the southern face (see Figure 13).

Figure 13. Out-Building 2

The building is surrounded by a concrete containment wall, encompassing the building and the small tank farm to the north of the building. Cracking was noted at several locations along the foundation/containment wall (see Figure 14 and Figure 15).

Figure 14. Out-Building 2 Foundation Cracking

Figure 15. Out-Building 2 Foundation Cracking

RECOMMENDATIONS:

- If the tank farm is to be removed or will no longer need containment, determine if the wall is integral to the building foundation and remove the walls if found to be separate from the building foundation.
- If the tank farm is to be removed or will no longer need containment, patch the cracks in the exposed faces of the wall to prevent further crack growth.
- If the wall is to remain and is necessary for containment, excavate to expose the entire wall depth for the entire perimeter, inspect for further cracks, and repair the cracks in the wall with a sealing concrete or epoxy.

OUT-BUILDING 3

Out-building 3 consists of a wooden pole building with plywood sides and a wood sheathed roof supported by wooden roof trusses. The building has a two bay sliding barn door on the south side and has been used for salt storage for a number of years.

The plywood sheathing/siding has split, cracked, and rotted in many locations around the structure (see Figure 16 and Figure 17).

Figure 16. Cracking/Bowing Siding

Figure 17. Cracked/Damaged Siding and Door

Further, the same “furry” or “hairy” rotting of out-building 1’s wall planks is noted on the lower portion of the sheathing and the main building poles (see Figure 18).

Figure 18. Salt Deterioration on Siding and Poles

However the roof framing is fully exposed and appears to be in very good shape (see Figure 19).

Figure 19. Out-Building 3 Interior Framing

RECOMMENDATIONS:

- Remove the exterior sheathing and replace with a weather proof system on the exterior side of the wall framing.
- Remove the salt piles and thoroughly inspect the interior face of the structure to verify that limited deterioration of the building structure has occurred. Repair or replace any items seeing significant damage.

OUT-BUILDING 4

Out-building 4 is a wooden pole building with metal siding (see Figure 20).

Figure 20. Out-Building 4

The building is relatively new and, as such, is in very good condition. However, during inspection, an animal burrow was discovered beneath the building slab on the building's west side (see Figure 21). This cavity in the soil beneath the slab can undermine the floor slab, reducing its strength resulting in undesirable cracking and settlement.

Figure 21. Out-Building 4 Animal Burrow

The condition of the base board running around the exterior of the building has begun to deteriorate, exposing the load-bearing poles to the elements (Figure 22 and Figure 23).

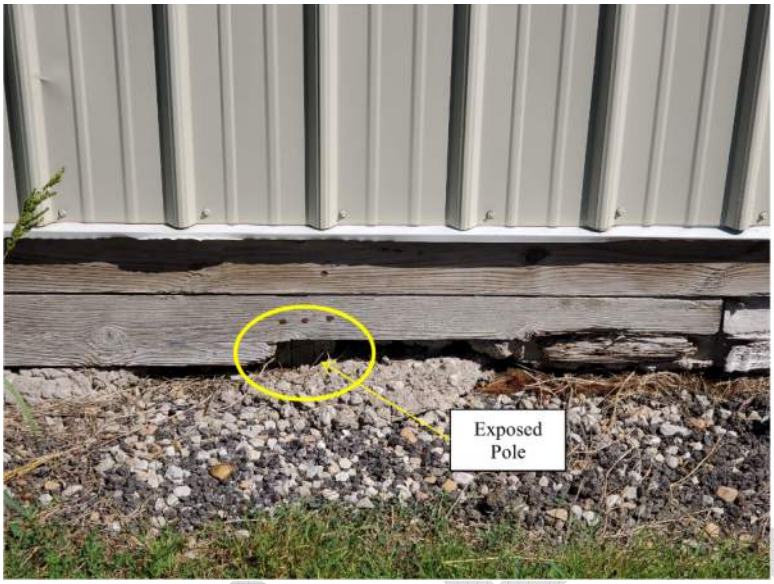


Figure 22. Out-Building 4 Rotting Base Board with Exposed Pole

Figure 23. Out-Building 4 Rotting Base Board with Exposed Pole

RECOMMENDATIONS:

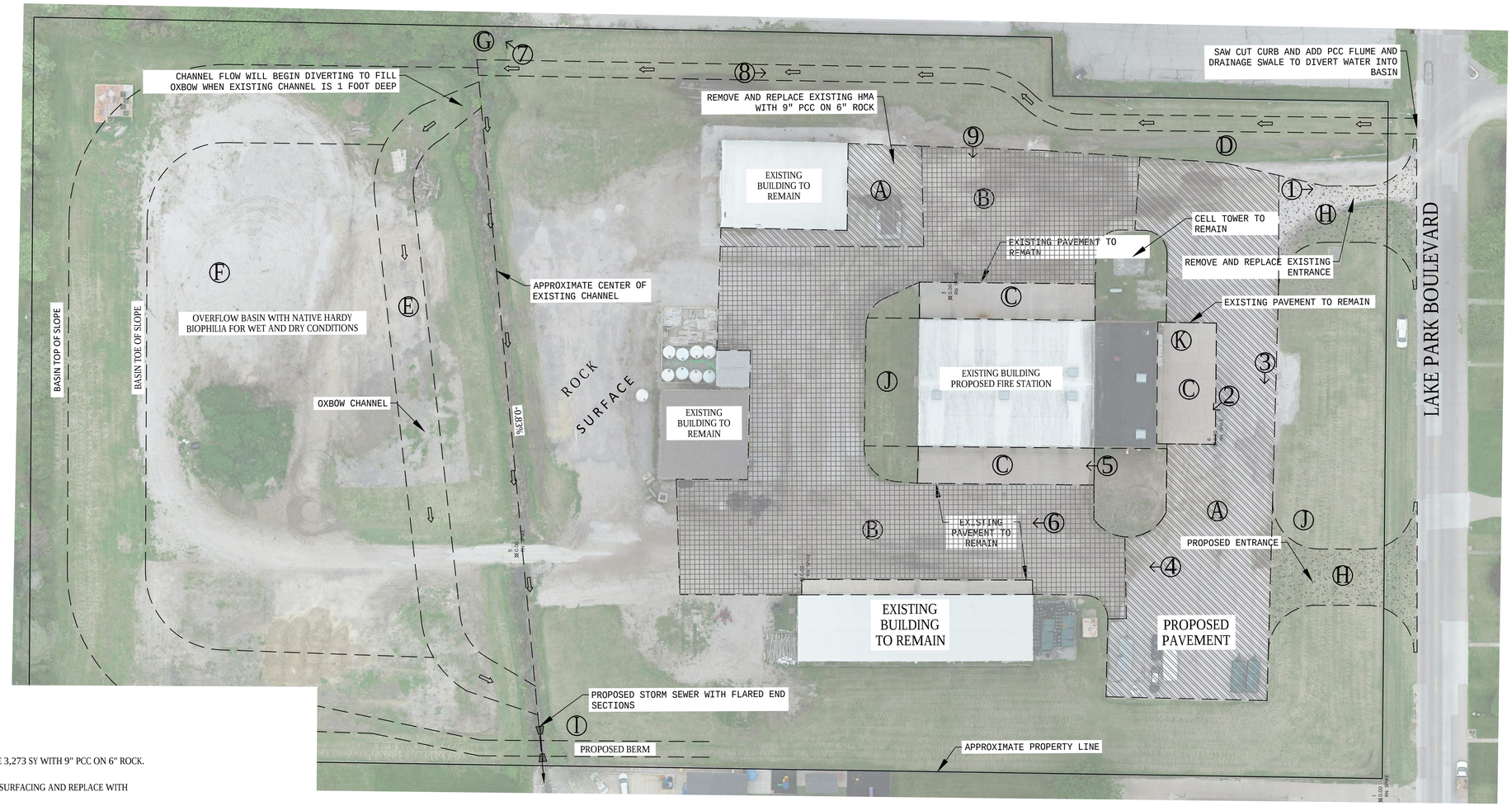
- Remove the animal from the burrow and fill in the cavity with a flowable concrete fill.
- Replace the damaged base boards with pressure-treated, ground-contact rated lumber or add additional concrete around the building base to enclose the poles and protect them from the elements.

EXHIBITS

6. EXISTING STRUCTURAL DIAGRAMS – FIRST AND SECOND FLOOR

EXHIBITS

1. EX-1 – EXISTING CIVIL SITE PLAN SURVEY
2. EXISTING SITE PLAN
3. EXISTING FIRST FLOOR PLAN
4. EXISTING SECOND FLOOR PLAN
5. PHOTOS
6. EXISTING STRUCTURAL DIAGRAMS – FIRST AND SECOND FLOOR



AREAS OF CONCERN:

- (A) EXCESSIVE ASPHALT CRACKING. REMOVE AND REPLACE 3,273 SY WITH 9" PCC ON 6" ROCK.
- (B) HARD SURFACING REQUIRED. REMOVE 4,716 SY ROCK SURFACING AND REPLACE WITH 9" PCC ON 6" ROCK.
- (C) LONGITUDINAL CONCRETE PAVEMENT CRACKS. ROUT AND SEAL CRACKS - 300 LF.
- (D) FLOODING ISSUE: LAKE PARK BOULEVARD - REMOVE SECTION OF CURB AND GUTTER (6 LF) AND REMOVE STORM SEWER (20 LF). REGRADE DITCH TO DRAIN TO DRAIN NORTH TO EXISTING DITCH (400 CY).
- (E) FLOODING ISSUE: LAKE PARK BOULEVARD & MAD CREEK - INSTALL OXBOW CHANNEL FOR FLOODING AND WATER QUALITY PURPOSES (1,100 CY), AND INSTALL WETLAND PLANTINGS (0.25 AC).
- (F) FLOODING ISSUE: LAKE PARK BOULEVARD & MAD CREEK - INSTALL DRY DETENTION POND TO PROVIDE 300,000 CF OF STORAGE (10,000 CY).
- (G) EROSION CONTROL ISSUE: ERODED STREAMBANK AND FENCE POSTS. INSTALL RIPRAP (60 TONS).
- (H) ACCESS ISSUE: ENTRANCE TOO NARROW AND SECOND ENTRANCE NEEDED. INSTALL 9" PCC ON 6" ROCK (916 SY)
- (I) FLOODING ISSUE: LAKE PARK BOULEVARD & MAD CREEK. INSTALL BERM AT DOWNSTREAM END OF DITCH (300 CY), AND 36" RCP STORM SEWER (30 LF), WITH 2-36" FLARED END SECTIONS.
- (J) FIRE PROTECTION ISSUE: NO FIRE HYDRANTS ON SITE. EXTEND NEW 6" WATER THROUGH SITE AND ADD 2 FIRE HYDRANTS. (420 LF 6" WATER, WITH 2 FIRE HYDRANTS).
- (K) ADA IMPROVEMENTS REQUIRED: REMOVE AND REPLACE 231 SF EXISTING SIDEWALK AND INSTALL PEDESTRIAN RAMP.

LEGEND:

- ←(1) NUMBERED PICTURE
- (A) AREA OF CONCERN
- REMOVE EXISTING ASPHALT AND REPLACE WITH PCC
- REMOVE EXISTING ROCK SURFACING AND REPLACE WITH PCC
- PROPOSED ENTRY DRIVEWAY

N

40 0 40

DRAFT

#	DATE	DESCRIPTION	BY

DESIGNED BY: MWJ
DRAWN BY: RAM
PROJECT ENGR: MWJ

Martin & Whitacre Surveyors & Engineers, Inc.
P.O. BOX 413 MUSCATINE, IOWA
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MUSCATINE PUBLIC SAFETY
CITY OF MUSCATINE
MUSCATINE, IOWA

EAST HILLS FIRE STATION
MASTER PLAN ASSESSMENT
MUSCATINE, IOWA

PROJ NO: 8547
CONST PROJ: 000
SCALE: AS NOTED
DATE: 9/21/2020

DRAWING NO: EX-1
SHEET NO: 1 OF 1

F:\CIVIL\3D PROJECTS\8547 LEGAT ARCHITECTS INC\20 DESIGN DRAWINGS\PRE-LIMINARY DESIGN.DWG PLOTTED:9/21/2020

1 EXISTING SITE PLAN
1" = 160'-0"

REQUIRED WORK

1. HANDRAIL EXTENSIONS ARE REQUIRED AT THE TOP AND BOTTOM OF STAIR
2. PROVIDE ADDITIONAL HANDRAIL AT STAIR
3. PROVIDE LANDING AT BASE OF STAIR
4. PROVIDE 42" GUARDAIL AT STAIR
5. PROVIDE PANIC HARDWARE ON EXIT DOOR
6. REMOVE EXISTING TOILET PARTITIONS AND FIXTURES, LAVATORY, AND SHOWER STALL AND REPLACE WITH ADA COMPLIANT FIXTURES AND PARTITIONS.
7. PROVIDE NEW ANTI-SLIP TREAD TAPE AT STAIR NOSINGS
8. RELOCATE DRINKING FOUNTAIN TO PROVIDE PROPER ADA CLEARANCE AT DOOR JAMB
9. REMOVE EXISTING COUNTERTOP TO MAINTAIN ADA CLEARANCE AT DOOR JAMB
10. REMOVE EXISTING ROOFING SYSTEM TO INSTALL CODE REQUIRED R-30 MINIMUM INSULATION AND NEW ROOFING SYSTEM.
11. REMOVE EXISTING FACE BRICK TO INSTALL CODE REQUIRED R-11.4 MINIMUM CONTINUOUS INSULATION. REINFORCE PER STRUCTURAL RECOMMENDATIONS. INSTALL NEW FACE BRICK.
12. INSTALL CODE REQUIRED R-11.4 MIN. CONTINUOUS INSULATION. INSTALL NEW EXTERIOR WALL/SIDING SYSTEM

RECOMMENDED WORK

1. REPLACE CRACKED AND SETTLED CONCRETE
2. PATCH AND REPAIR CRACKED STONE
3. REPLACE CRACKED OR SPALLED BRICK
4. REPLACE SEALANT AROUND WINDOW
5. REPLACE SEALANT AROUND DOOR
6. REPLACE SEALANT AROUND LOUVERS
7. SCRAPE, PRIME, AND PAINT EXISTING STEEL LINTELS
8. REPLACE RUSTED DOOR AND FRAME ASSEMBLY
9. REPLACE DAMAGED DOOR
10. REPLACE RUSTED OVERHEAD SECTIONAL DOOR
11. REPLACE MISSING CEILING TILES
12. REPLACE FLOOR TILE
13. PAINT INTERIOR WALLS
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16. REPLACE CRACKED/BROKEN WOOD PLANKS
17. REPLACE EXTERIOR PLYWOOD SHEATHING WITH NEW WEATHER TIGHT SYSTEM
18. REPLACE SLIDING WOODEN BARN DOOR WITH OVERHEAD SECTIONAL DOOR
19. REPLACE CORRUGATED METAL SIDING
20. REPLACE OVERHEAD DOOR OPERATOR

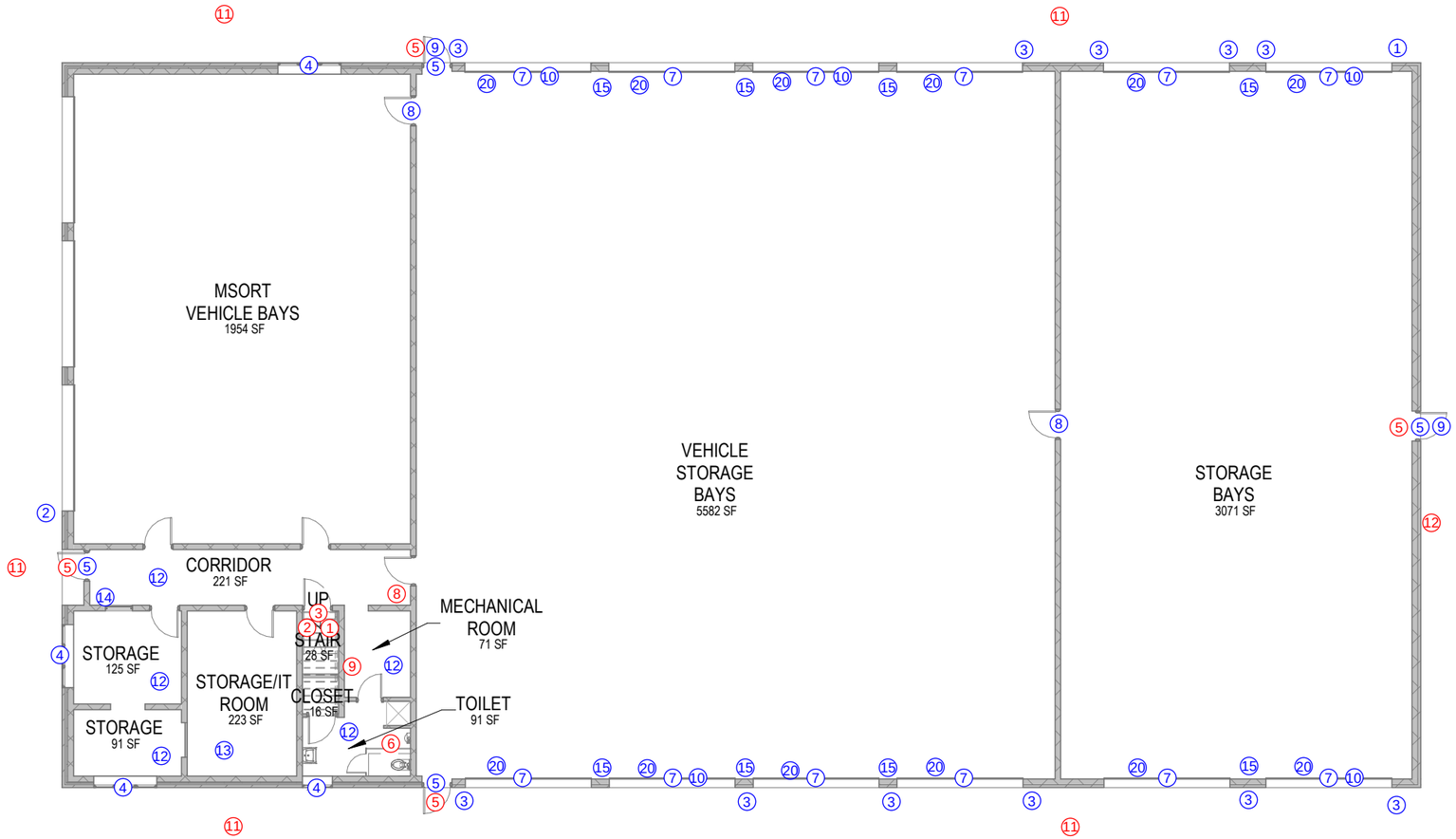
N
1" = 160'-0" 12.03.2020

EAST HILL PUBLIC SAFETY FACILITY AND STORAGE SITE ASSESSMENT

DRAFT

CITY OF MUSCATINE

LEGAT ARCHITECTS
DESIGN | PERFORMANCE | SUSTAINABILITY



1 EXISTING FIRST FLOOR PLAN
1/16" = 1'-0"

REQUIRED WORK

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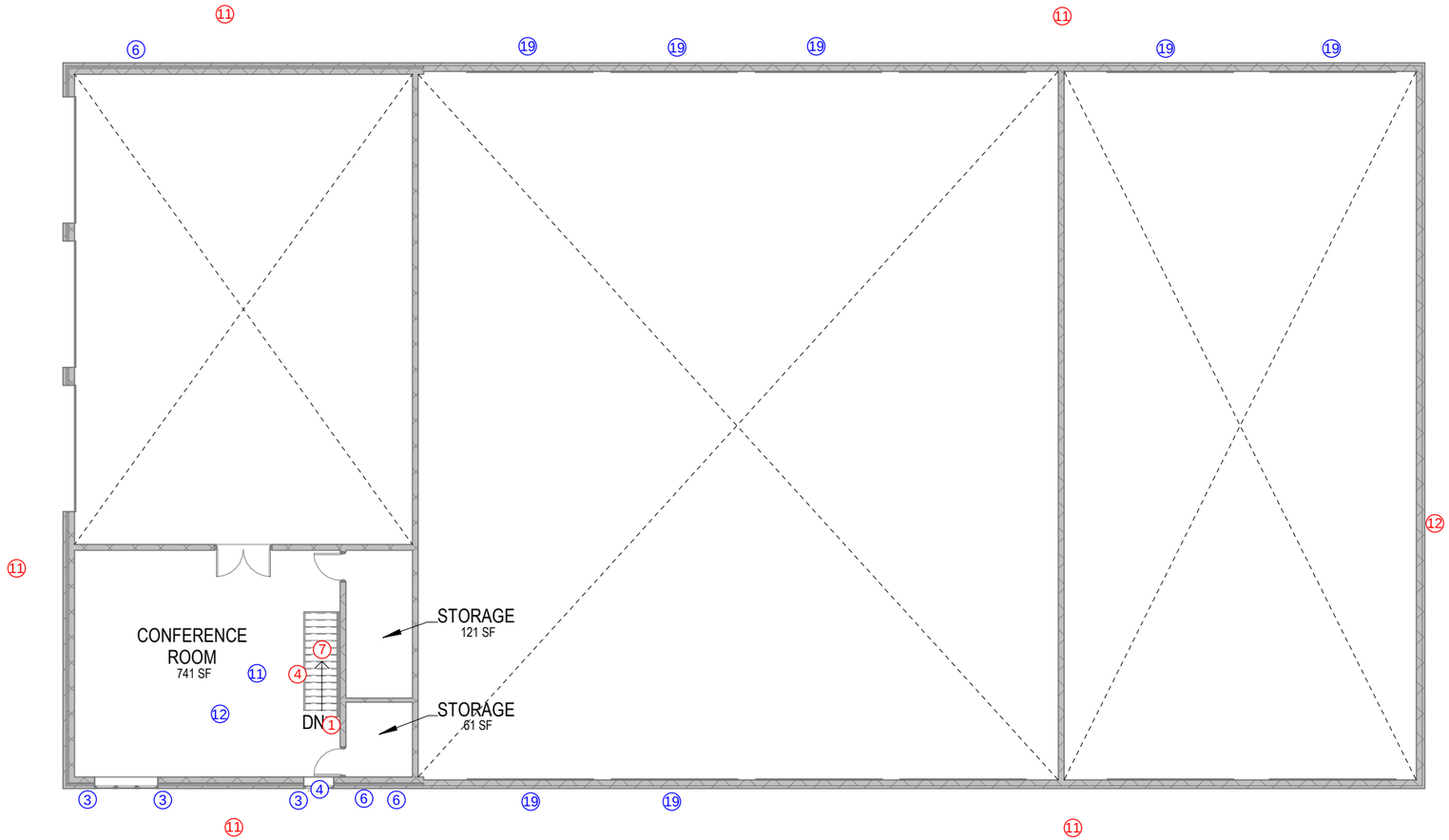
EAST HILL PUBLIC SAFETY FACILITY AND STORAGE SITE ASSESSMENT

DRAFT

1/16" = 1'-0" N 12.03.2020

CITY OF MUSCATINE

LEGAT ARCHITECTS
DESIGN | PERFORMANCE | SUSTAINABILITY



1 EXISTING SECOND FLOOR PLAN
1/16" = 1'-0"

REQUIRED WORK

1. HANDRAIL EXTENSIONS ARE REQUIRED AT THE TOP AND BOTTOM OF STAIR
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20. REPLACE OVERHEAD DOOR OPERATOR

EAST HILL PUBLIC SAFETY FACILITY AND STORAGE SITE ASSESSMENT

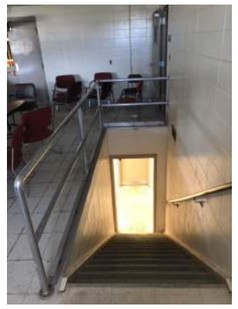
DRAFT

1/16" = 1'-0" 12.03.2020

CITY OF MUSCATINE

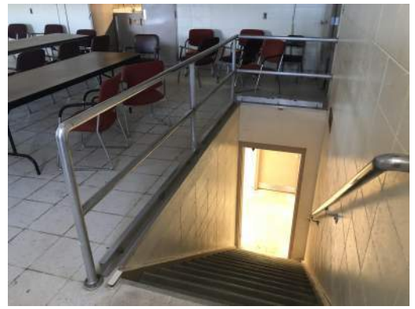
LEGAT ARCHITECTS
DESIGN | PERFORMANCE | SUSTAINABILITY

① HANDRAIL EXTENSIONS ARE REQUIRED AT THE TOP AND BOTTOM OF STAIR



② PROVIDE ADDITIONAL HANDRAIL AT STAIR

③ PROVIDE LANDING AT BASE OF STAIR



④ PROVIDE 42" GUARDAIL AT STAIR

⑤ PROVIDE PANIC HARDWARE ON EXIT DOOR

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⑨ REMOVE EXISTING COUNTERTOP TO MAINTAIN ADA CLEARANCE AT DOOR JAMB

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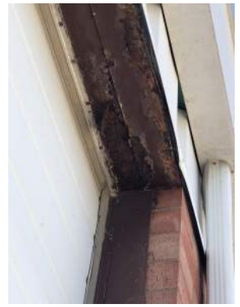

⑦ SCRAPE, PRIME, AND PAINT EXISTING STEEL LINTELS

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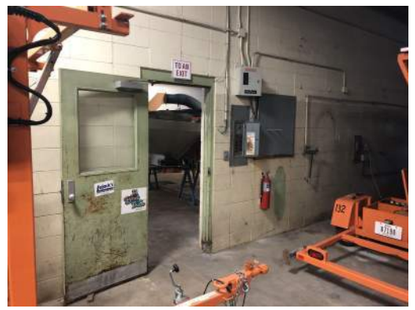

⑧ REPLACE RUSTED DOOR AND FRAME ASSEMBLY

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⑨ REPLACE DAMAGED DOOR

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⑩ REPLACE RUSTED OVERHEAD SECTIONAL DOOR

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⑪ REPLACE MISSING CEILING TILES

⑫ REPLACE FLOOR TILE

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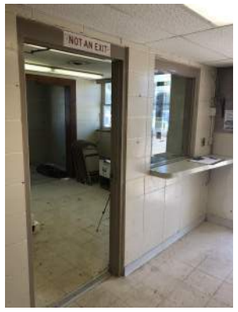
⑫ REPLACE FLOOR TILE

⑬ PAINT INTERIOR WALLS



⑭ REMOVE EXISTING COUNTERTOP

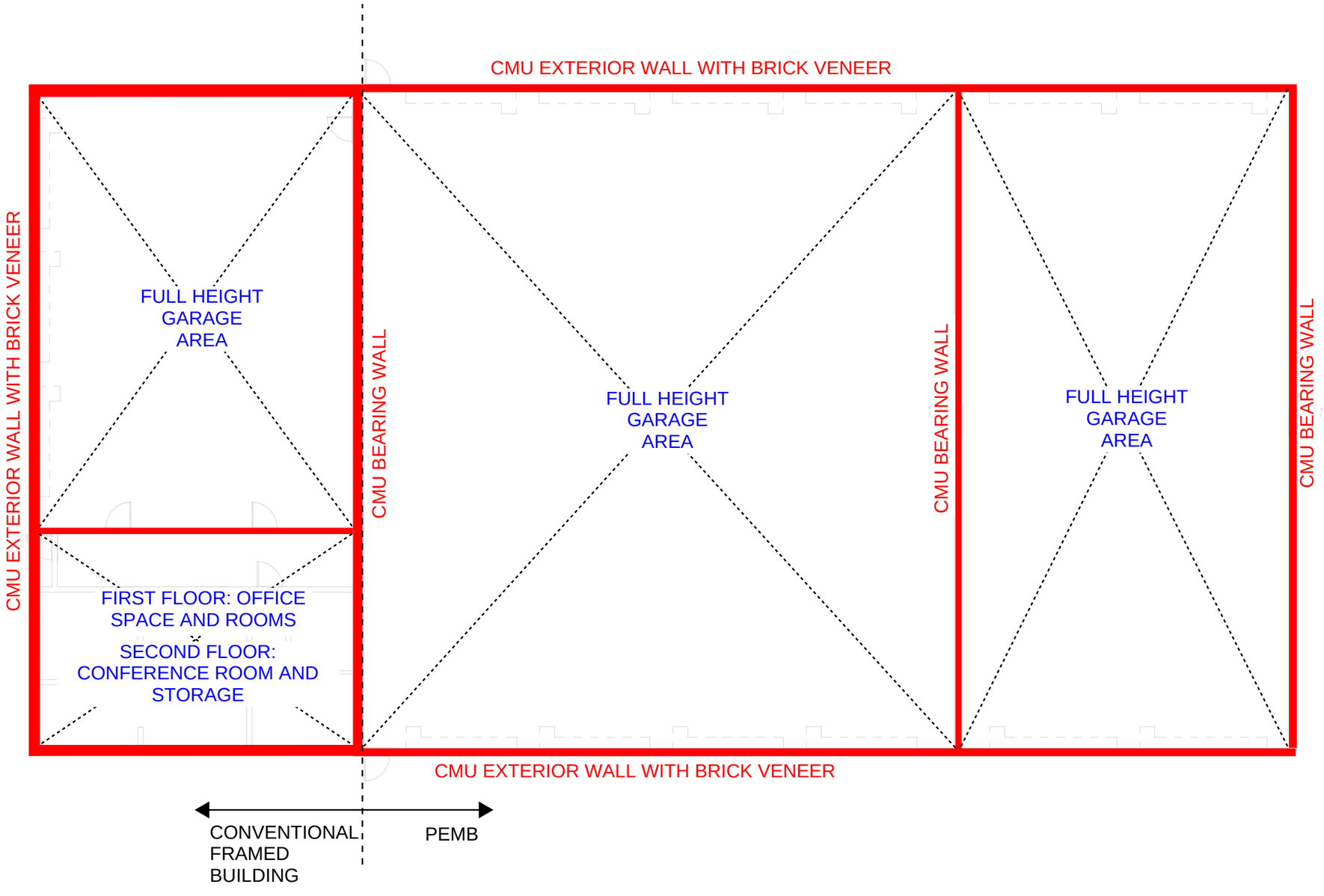
⑮ SCRAPE, PRIME, AND PAINT RUSTING STEEL COLUMN BASE

⑯ REPLACE CRACKED/BROKEN WOOD PLANKS

⑰ REPLACE EXTERIOR PLYWOOD SHEATHING WITH NEW WEATHER TIGHT SYSTEM

⑱ REPLACE SLIDING WOODEN BARN DOOR WITH OVERHEAD SECTIONAL DOOR

⑲ REPLACE CORRUGATED METAL SIDING



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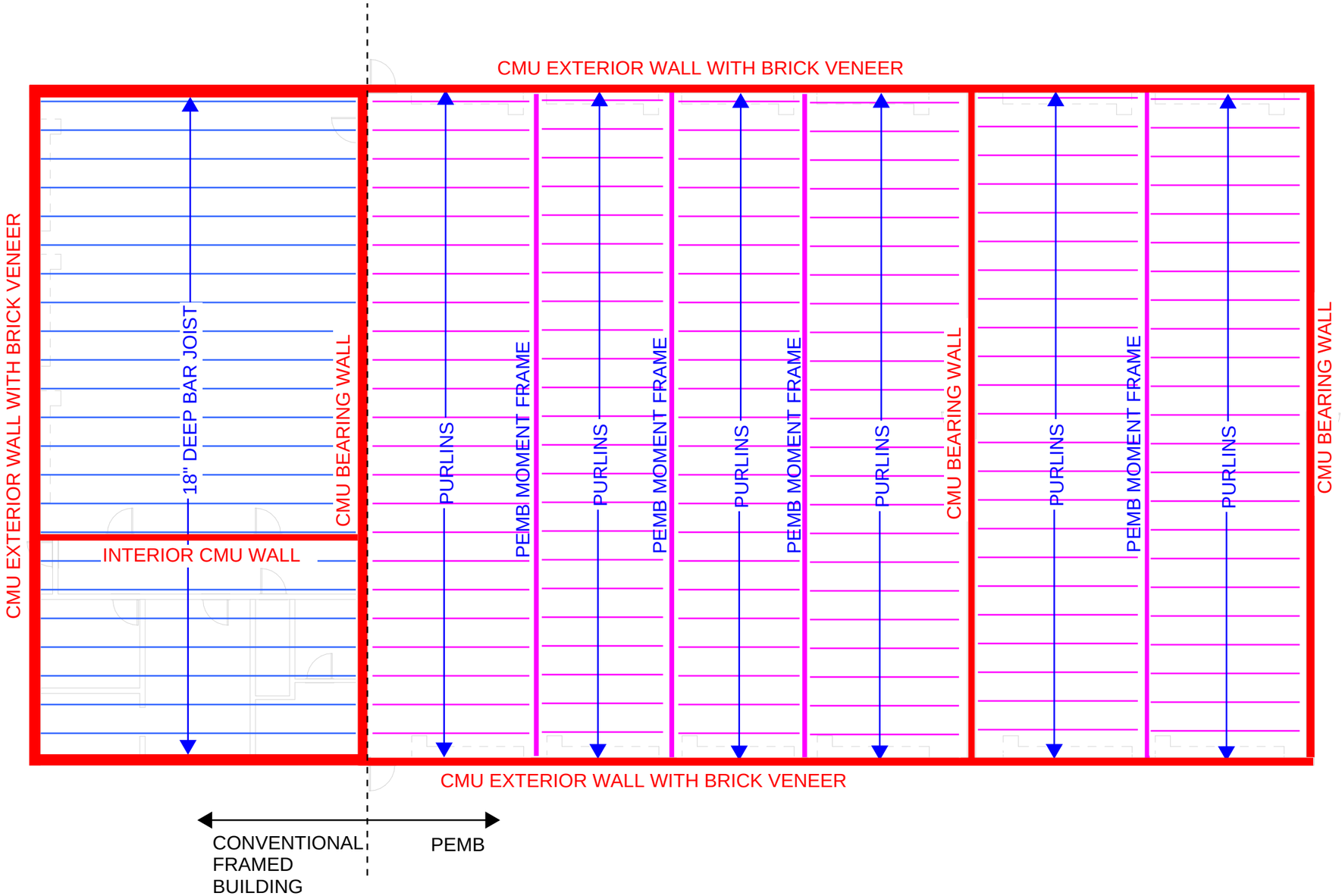
EXISTING STRUCTURAL DIAGRAM - FIRST FLOOR PLAN

DRAFT



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EXISTING STRUCTURAL DIAGRAM - SECOND FLOOR PLAN

DRAFT

Estimate of Probable Cost - Renovate Existing

OWNER	City of Muscatine
PROJECT TITLE	East Hill Public Safety Facility and Storage Site Facility Assessment
PROJECT NUMBER	220155.00
DATE	1/28/2021

ITEM NO.	WORK ITEM DESCRIPTION	TOTAL COST
CONSTRUCTION COSTS		
1.	General Requirements	$231,860.00
2.	Division 2 - Sitework - Only for Building	$61,466.40
3.	Division 3 - Concrete	$29,500.00
4.	Division 4 - Masonry	$162,500.00
5.	Division 5 - Metals	$124,500.00
6.	Division 6 - Carpentry & Casework	$33,200.00
7.	Division 7 - Thermal and Moisture Protection	$171,150.00
8.	Division 8 - Doors and Windows	$197,300.00
9.	Division 9 - Finishes	$170,100.00
10.	Division 10 - Specialties	$16,316.50
11.	Division 14 - Elevator	$124,500.00
12.	Division 22 - Plumbing	$65,600.00
13.	Division 23 - HVAC	$108,800.00
14.	Division 26 - Electrical	$85,700.00
15.	Add Fire Suppression System	$49,576.00
16.	Sitework for Entire Property	$801,000.00
Sub-Total:	(Amount of Construction Contract)	**$2,433,068.90**
	Contractor Fee	$65,000.00
	Construction Testing Allowances	$25,000.00
	Construction Contingency (20% for Renovation)	$486,613.78
Total:	(Amount of Construction Contract)	**$3,009,682.68**
OWNER COSTS		
17.	Estimated Environmental Remediation (Not in contract)	$100,000.00
18.	Furniture, Fixtures & Equipment (Not in contract)	$0.00
19.	Permit Costs	$5,000.00
20.	Utility Tap-On Fees	$10,000.00
21.	Printing Costs	$500.00
22.	Professional A/E Base Services Design Fees	$285,919.85
23.	Professional Civil Engineering Services	$30,000.00
24.	Soil Borings	$0.00
25.	Topographical Survey	$0.00
26.	Landscaping	$10,000.00
		$0.00
Sub-Total:	(Amount of Owner's Costs)	**$441,419.85**

TOTAL ESTIMATE OF PROBABLE COST: $3,451,102.53

For project planning, we have included potential escalation costs below.

Escalation Year 1 (3%)	$	3,554,635.61
Escalation Year 2 (3%)	$	3,661,274.68
Escalation Year 3 (3%)	$	3,771,112.92

1. Costs per square foot are based on Means Building Construction Cost Data and local contractor feedback.
2. Construction costs include building and sitework costs only including general contractor OH&P and related contingencies.
3. The Owner shoud anticiapte other owner costs that are not listed above.

Estimate of Probable Cost - New Building

OWNER City of Muscatine
PROJECT TITLE **East Hill Public Safety Facility and Storage Site Facility Assessment**
PROJECT NUMBER 220155.00
DATE 1/28/2021

ITEM NO.	WORK ITEM DESCRIPTION	TOTAL COST
CONSTRUCTION COSTS		
1.	New Precast Structure with basic finishes	$2,050,000.00
2.	Entire Property Sitework	$700,000.00
	Sub-Total: (Amount of Construction Contract)	**$2,750,000.00**
	Contractor Fees	$110,000.00
	Construction Allowances	$25,000.00
	Construction Contingency (5%)	$137,500.00
	Total: (Amount of Construction Contract)	**$3,022,500.00**
OWNER COSTS		
3.	Environmental Remediation (Not in contract)	$0.00
4.	Furniture, Fixtures & Equipment (Not in contract)	$0.00
5.	Permit Costs	$5,000.00
6.	Utility Tap-On Fees	$10,000.00
7.	Printing Costs	$500.00
8.	Professional A/E Design Fees	$261,250.00
9.	Professional Civil Engineering Services	$30,000.00
10.	Soil Borings	$6,000.00
11.	Topographical Survey	$0.00
12.	Landscaping	$10,000.00
13.	Demolition of existing structure (Not in Contract)	$0.00
		$0.00
	Sub-Total: (Amount of Owner's Costs)	**$322,750.00**
	TOTAL ESTIMATE OF PROBABLE COST:	**$3,345,250.00**

For project planning, we have included potential escalation costs below.

Escalation Year 1 (3%)	$	3,445,607.50
Escalation Year 2 (3%)	$	3,548,975.73
Escalation Year 3 (3%)	$	3,655,445.00

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3. The Owner shoud anticiapte other owner costs that are not listed above.

1.0 Project Parameters

1.1 Project Objective: Facility master planning services in the following phases;
- 1.1.1 Phase 1 - Facility Condition Assessment
- 1.1.2 Phase 2 - Building Program Development
- 1.1.3 Phase 3 - Conceptual Building Design

2.0 Architect's Scope of Services

2.1 Phase 1: Facility Conditions Assessment
- 2.1.1 Obtain existing building drawings and documentation.
- 2.1.2 Site investigation:
  - 2.1.2.1 Non-destructive visual inspection of the primary facility to identify systems-level deficiencies and life-cycle conditions.
  - 2.1.2.2 Non-destructive cursory review of the 3 accessory structures on the site to identify existing conditions and apparent deficiencies.
  - 2.1.2.3 Disciplines included: Architectural, Civil, Structural, Mechanical, Electrical and Plumbing.
- 2.1.3 Provide a narrative document describing the existing conditions of each facility including documented photographic evidence of deficiencies, and opinion of probable cost to address each deficiency.
- 2.1.4 Attend 1 site visit and 1 in person meeting during this phase.

2.2 Phase 2: Building Program Development
- 2.2.1 Coordinate 1 collaborative meeting with stakeholders to develop desired building spaces for potential new building or renovation into existing building.
- 2.2.2 Analyze the existing building capacity versus the developed new building program.
- 2.2.3 Provide recommendations with associated cost opinion for renovation of the existing building and/or building a new building.
- 2.2.4 Provide compiled document with building program, new vs existing building analysis and cost opinion.
- 2.2.5 Attend 2 meetings during this phase.

2.3 Phase 3: Conceptual Building Design
- 2.3.1 Coordinate 1 collaborative meeting with stakeholders to develop conceptual level floor plans based upon Owner direction. (New standalone building or renovation to existing building)
- 2.3.2 Develop 2 conceptual floor plan options for Owner consideration.
- 2.3.3 Present conceptual options to Owner for feedback. Select consensus option.
- 2.3.4 Refine consensus option for final deliverable.
- 2.3.5 Attend 3 meetings during this phase.

Lake Park Boulevard Street Flooding Issues

In-depth City Council Meeting

October 10, 2019

Brian Stineman

Public Works Director

The Issue:

#1 Flooding of the street causes traffic and safety concerns during major rainfall events

#2 Flooding of houses at 723, 719, 715 Lake Park Boulevard during major rainfall events


English
Congregation Of
Jehovah's Witness
701
Lake Park Blvd
McArthur
703
708
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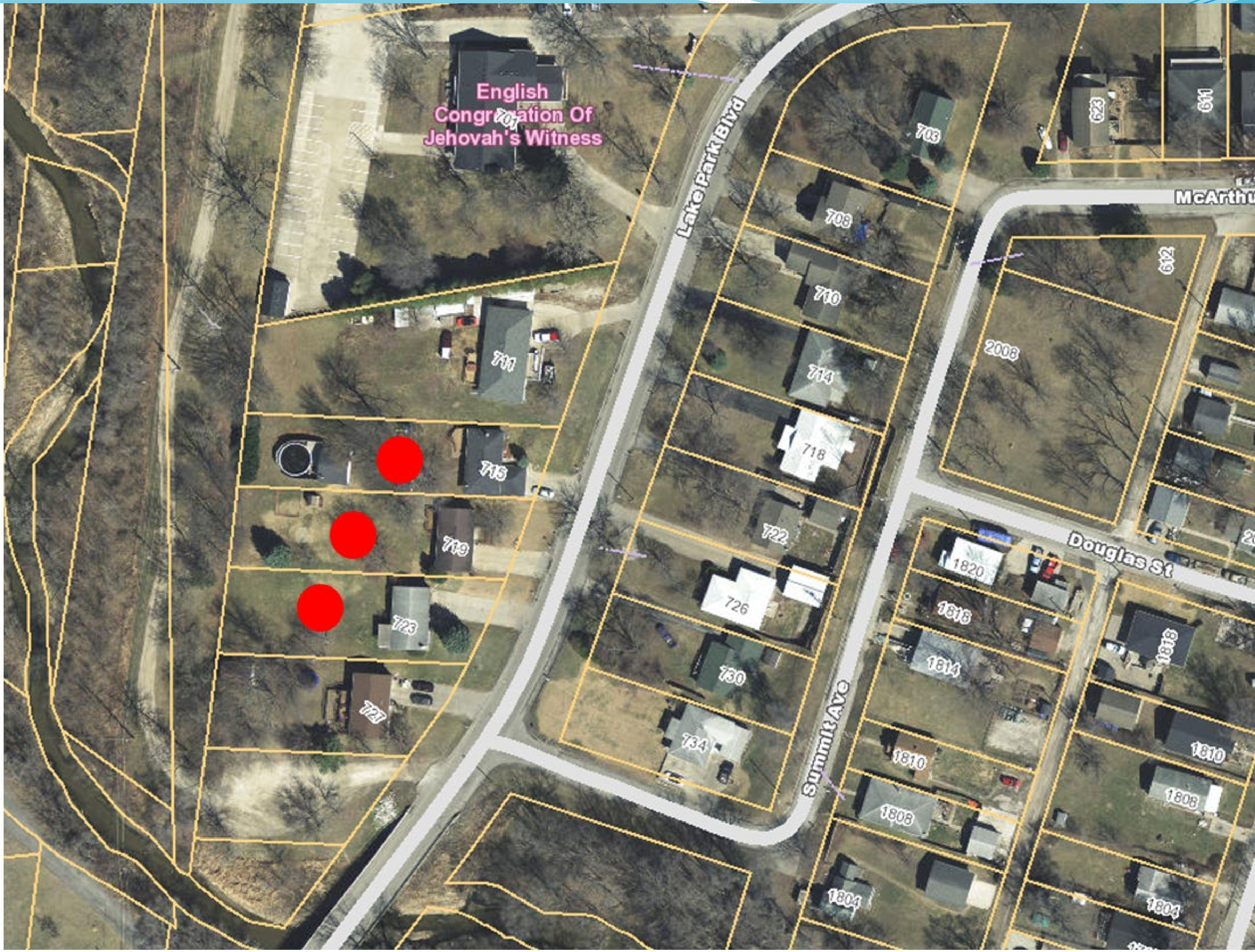
English
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English
Congregation Of
Jehovah's Witness
Lake Park Blvd
McArthur
Douglas St
Summit Ave
1978-79
1960


Historic Aerial Photo Projec
Basemaps
Measure
Map Info
Help
Current Aerial: 1960
Blaine St
Oak Park
Webster St
4th Ave
Scott St
Lake Park Blvd
Lath Ave
Allsted
2nd Ave
Iowa DOT
Grand Ave
Pard Ave
US-61-BR N
US-61-BR S
Park Ave
Fizza Ranch
Happy Joe's
Lake Park Blvd
Lincoln Blvd
McArthur St
Douglas St
Summit Ave
Michigan St
Bryan Ave
1st Ave
Madison School
US Bank
Family Restaurant
Harrison St
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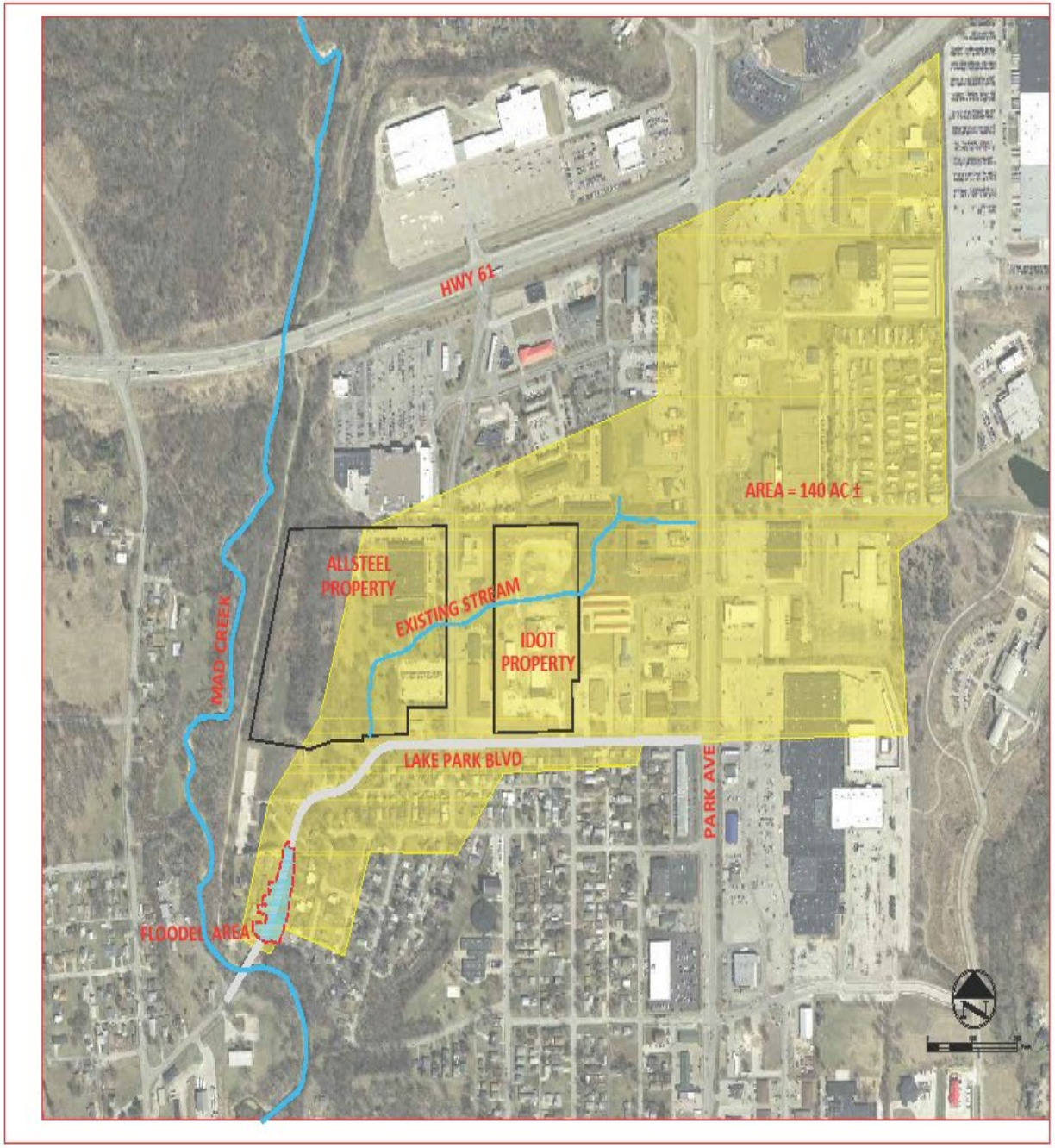

EXISTING CONDITIONS:

- 140 AC± DRAINAGE AREA MADE UP OF 2 PARTS:
  * EX. STREAM (100 AC±)
  * LAKE PARK BLVD STORM SEWER (40 AC±)

- FLOODED AREA FLOWS OVERLAND TO MAD CREEK DURING HEAVY RAINFALL.

- FLOODED AREA STAYS FLOODED FOR ABOUT 3 HOURS DURING A 100-YEAR STORM EVENT.

- FLOW IS ABOUT 550 CFS AT PEAK OF 100-YEAR STORM (200 CFS ARE IN THE 48" STORM PIPE)

- OPEN THROAT INLET CAN PASS 5 - 10 CFS.

- WOULD NEED 35 - 70 ADDITIONAL INLETS PLUS ADDITIONAL PIPES TO CARRY WATER TO CREEK.

-NOT ENOUGH ROOM.

Option 1

- Status Quo (do nothing)
  - Not every rain causes flooding
  - Should public funds be used for private property?
  - Estimated cost $0.00

Option 2

- Acquire Property at 719 Lake Park Blvd.
  - Remove the house and build excess stormwater passageway.
  - Would not prevent street flooding
  - Would mitigate flooding of adjacent properties by lowering water levels
  - Cannot guarantee other properties won't flood during future major rainfall event
  - Estimated Cost $351,000

English Congregation Of Jehovah's Witness
701
Lake Park Blvd
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623
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McArthur
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Douglas St
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Summit Ave
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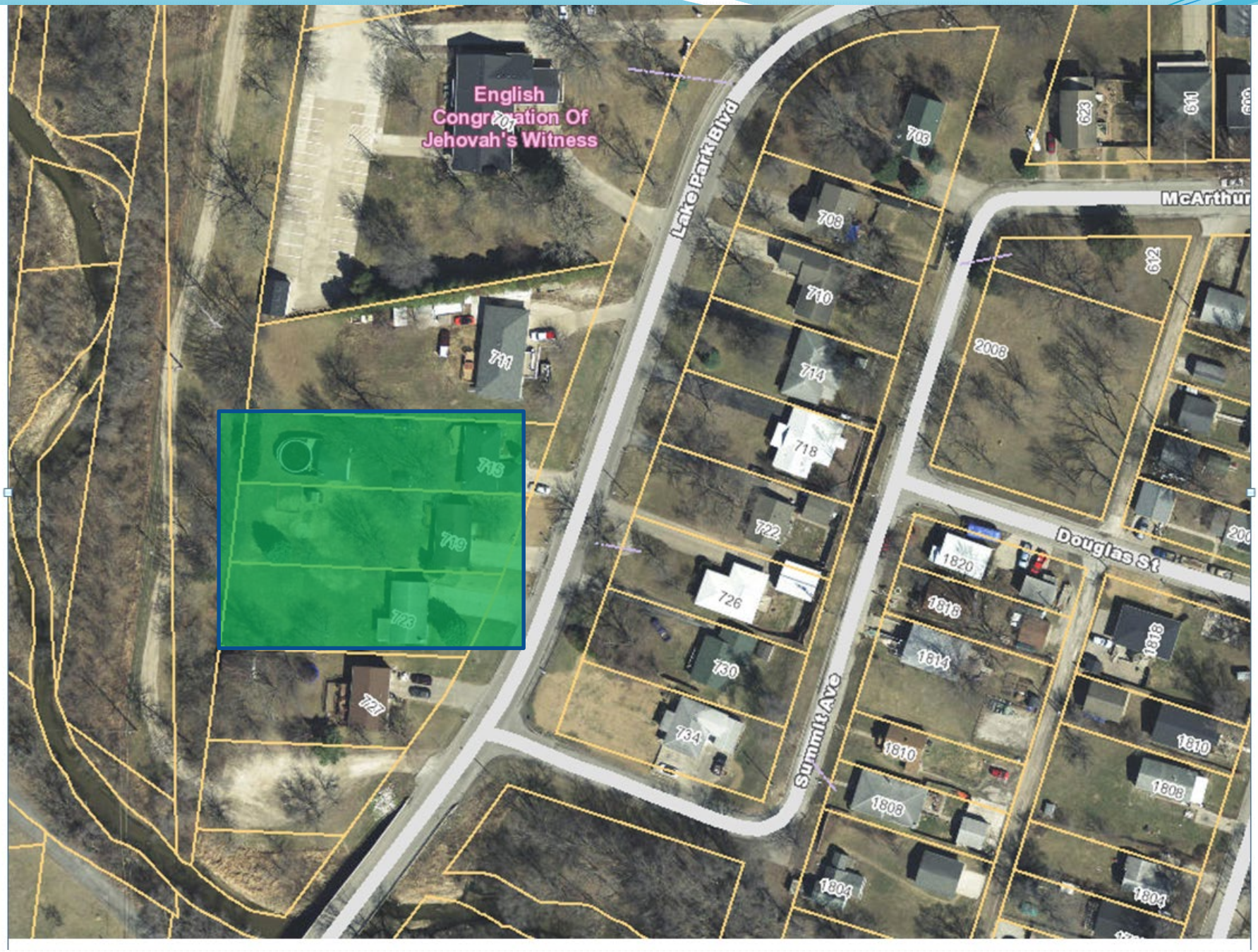
1804

Option 3

- Acquire Property at 719, 715 & 723
  - Remove all three houses and build excess stormwater passageway.
  - Would not prevent street flooding
  - Would eliminate flooding of properties by eliminating houses.
  - Estimated Cost $630,000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Jehovah's Witness
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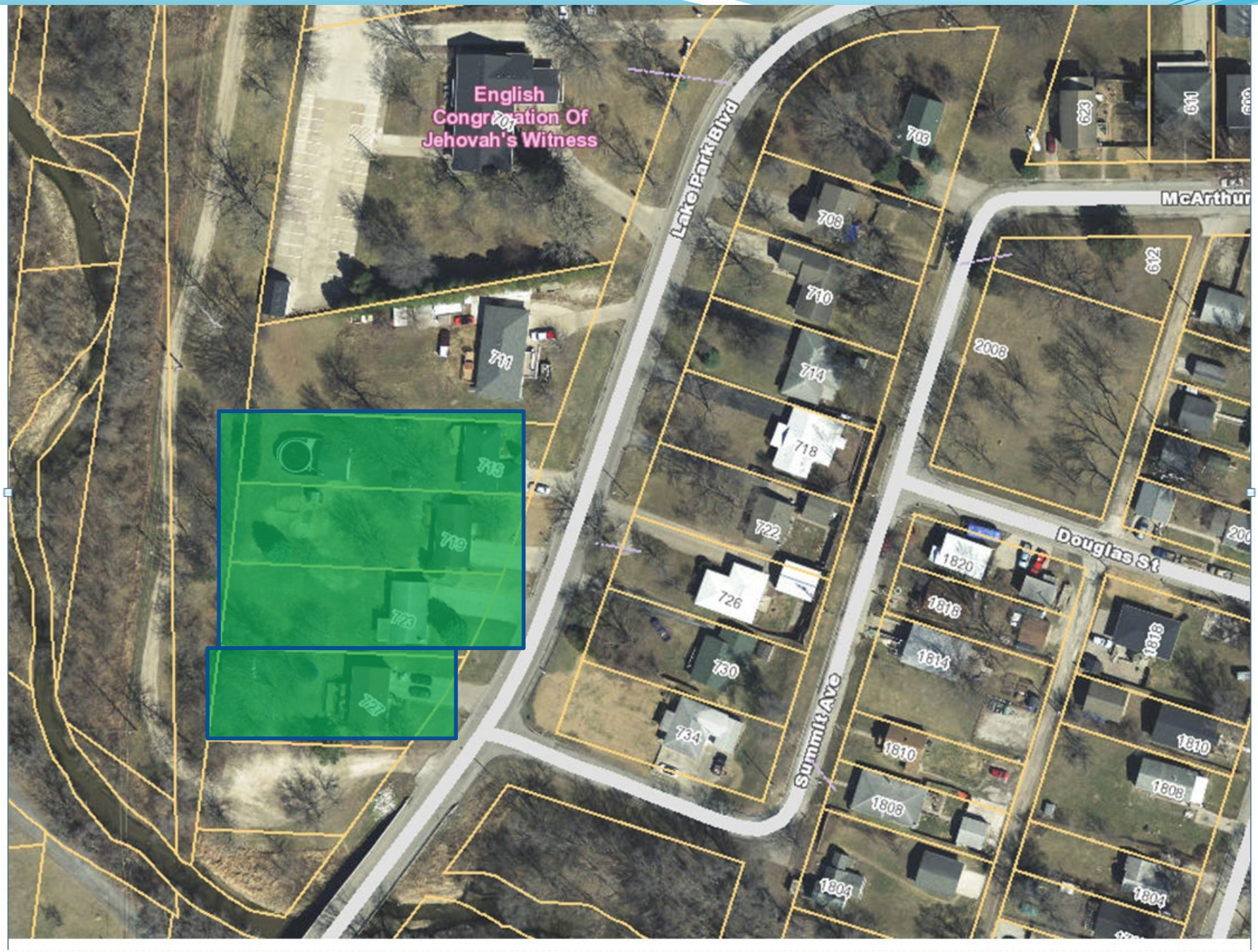
Option 4

- Acquire Property at 719, 715 & 723 AND 727
  - If going to acquire three houses, may as well acquire the fourth and create space for public use.
  - Would not prevent street flooding
  - Would eliminate flooding of properties by eliminating houses.
  - Estimated cost $870,000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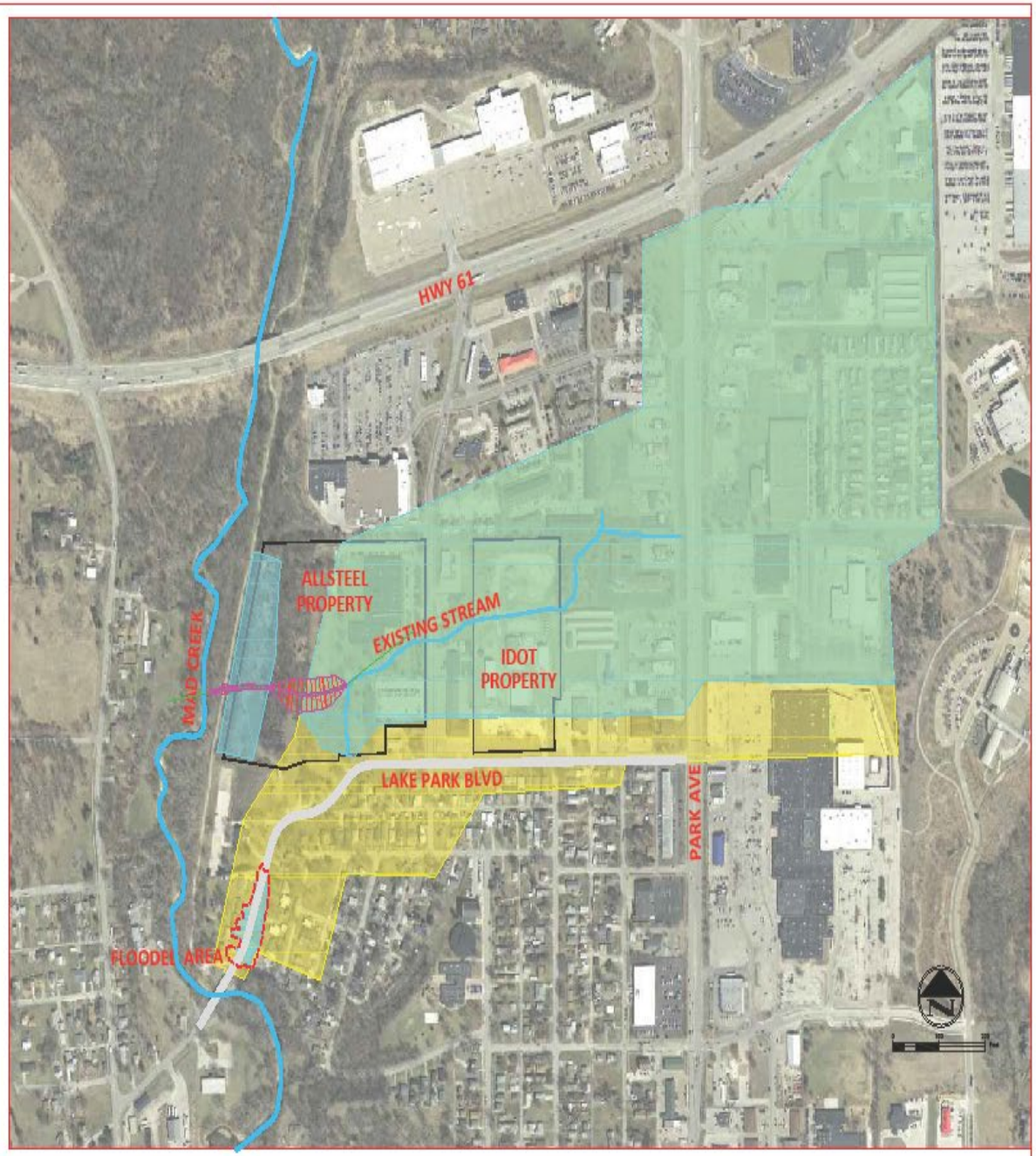
Option 5

- "Allsteel Proposal"
  - Design & construction of stormwater project on Allsteel property
  - Would prevent some water from getting to low point
  - Would not eliminate street flooding
  - Would reduce depth & duration of street flooding
  - Estimated Cost $490,000



DIVERSIONARY CHANNEL:

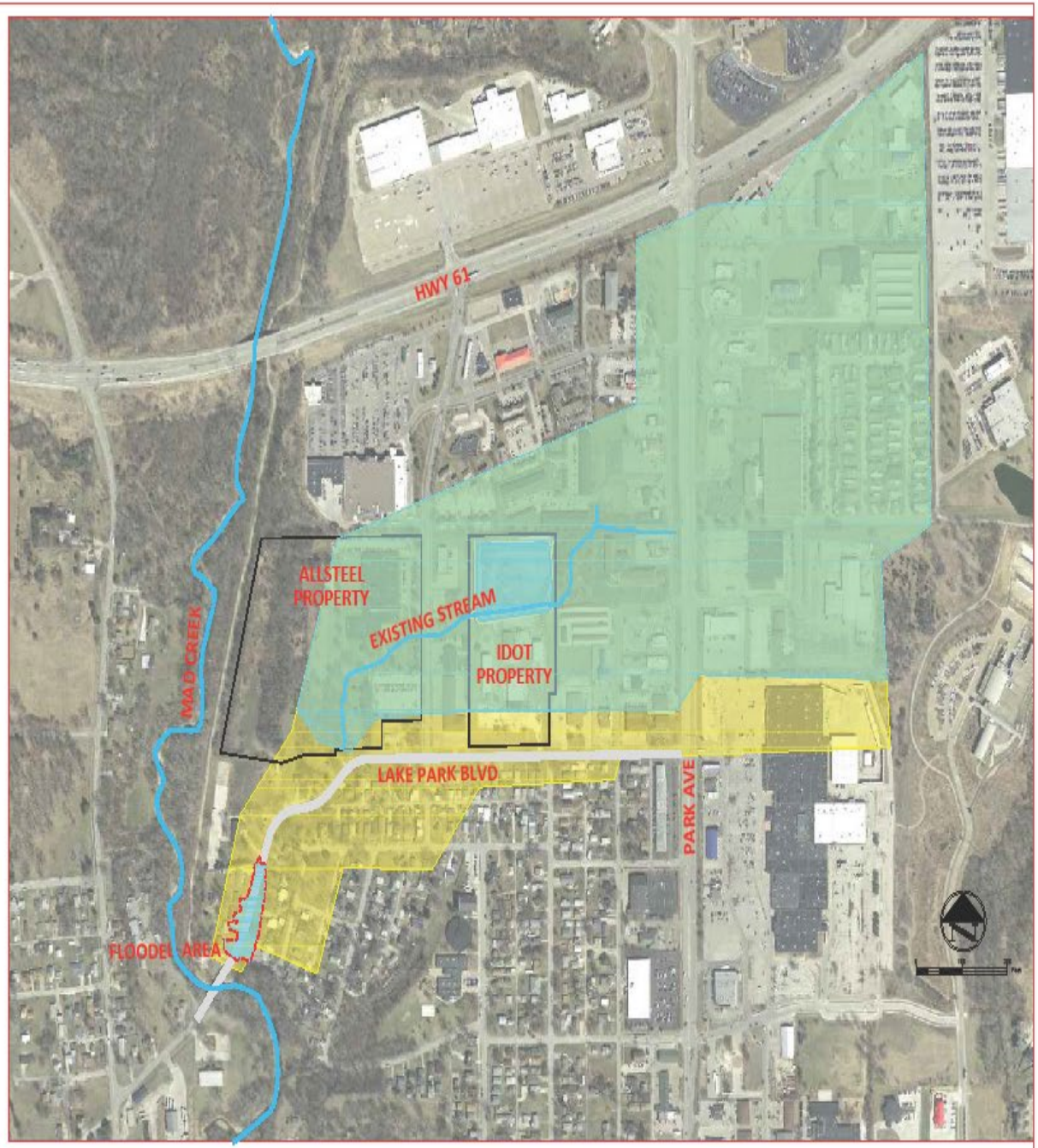
- FLOODED AREA IS LOWER THAN EXISTING CONDITION BY ABOUT 1 FOOT AND NEVER REACHES OVERFLOW.

- FLOODED AREA STAYS FLOODED FOR ABOUT 30 MINUTES.

- APPROXIMATE PROJECT COST: $490,000

Option 6

- DOT Detention Basin
  - Design & construction of stormwater project on former DOT property
  - Would reduce some water going to Allsteel and storm sewer on Lake Park Blvd.
  - Would not eliminate street flooding
  - Would reduce depth & duration of street flooding but not as much as Option 5
  - Estimated Cost $350,000



DETENTION POND:

- 80 AC± UPSTREAM OF DOT PROPERTY WOULD FLOW TO POND

- FLOODED AREA STILL FLOWS OVERLAND TO MAD CREEK.

- FLOODED AREA STAYS FLOODED FOR ABOUT 4 HOURS.

- APPROXIMATE PROJECT COST: $350,000

Option 7

- Diversion Ditch on Lake Park Blvd.
  - Design & construction of stormwater project on east side of Lake Park Blvd.
  - Would reduce some water on Lake Park Blvd.
  - Would not eliminate street flooding
  - Would reduce depth & duration of street flooding
  - Estimated Cost $100,000

ROADSIDE DITCH:

- FLOODED AREA IS THE SAME AS EXISTING CONDITION.

- FLOODED AREA STAYS FLOODED FOR ABOUT 20 MINUTES.

- APPROXIMATE PROJECT COST: $100,000

Recommendation

- Any combination of options will NOT prevent flooding of Lake Park Boulevard.
- Options 2-4 provide reduction in property damage because of house removal
- Options 5-7 help reduce the amount of flooding but do NOT eliminate it.
- Option 6 will be implemented on DOT property in near future.

Recommendation

- Staff recommends Option 1

Staff understands that this is a hot button issue and our response will be judged and discussed at length. The “do nothing” approach does not solve this issue but we feel that to truly solve it requires expenditure of public funds that we cannot justify. There are pre-existing conditions in this area including the low roadway and the houses that are affected should not have been constructed where and how they were. When the buyers purchased these houses they took the responsibility for what happens to them. If the previous owners did not disclose the flooding to the new owners that is a civil matter between the private entities and the city should not be involved. We don’t feel that the city should be responsible to mitigate issues that are out of our control and that the property owners should be responsible to protect their own property at their expense.

Purchasing these properties would eliminate the potential to flood the houses but we don't feel the cost for this is justified and also feel that it sets a precedent that we don't want to encourage. Projects can be designed to reduce the level of flooding on the street in this area but not eliminate it. The only way to positively eliminate water on the road is to go up the hill on Lake Park Boulevard approximately 1,000 feet and raise the road and install new storm sewer. This project would still require purchase of the houses on the west side of the street and is roughly estimated to cost between two and three million dollars. Again we can't justify this expense.

Public Works staff are willing to assist the home owners with technical information about cost-effective measures that each owner could employ to protect their homes from flooding. Public Works, in association with other departments, can also close the street with barricades to prevent vehicles from trying to drive through the flood water which will protect motorists and also remove wave action that could impact the homes and their protective measures.