



**Mount
Vernon**
IOWA

Douglas Shannon, Chief of Police

Jamie A. Hampton, Mayor

Council:

**Eric Roudabush
Paul Tuerler
Marty Christensen
Scott Rose
Tom Wieseler**

Dear Honorable Mayor Hampton and Honorable Council Members,

1. Attached you will find an updated listing of Pool Renovation items. The items in blue are projects that have been completed this year.
2. The concrete work and basin patching will help with the water loss we have experienced over the past years, but we will not know the full extent of the benefit until next pool season.
3. We recently contracted research work on the pool basin with Terracon and V&K Engineering. I am including those reports with this memo. No significant voids were discovered.
4. We would like Council approval to complete all Priority #1 items this spring. We could run into a timing issue where the pool opening is delayed due to completion of some projects. We would anticipate mid-June to be the latest for completion of projects proposed under Priority #1 items.
5. Priority #2 and #3 items will require discussion at the Council level.

Respectfully submitted,

Matt Siders
Director of Parks and Recreation

Priority	Item	Cost	Running Total
1	Concrete Work / Patch Basin	\$10,000	10,000
1	New Zero Deck Pump	\$7,000	17,000
1	New Controllers and Probes	\$7,000	24,000
1	Roto Rooter - Televiser pipes below deck	\$5,000	29,000
1	LED Lighting exterior of pool house and bath house	\$2,000	31,000
1	Create Storage Closet in Bath House	\$1,000	32,000
1	New locks installed	\$1,000	33,000
1	Paint Pool Basin and Deck	\$1,000	34,000
1	Replace Two Old Filters (2 Dual Cell Filters, Piping, Flow Meter, Valves)	\$80,000	114,000
1	New Plumbing ...all encompassing bath house and pool house	\$20,000	134,000
1	New Deep End Pump	\$15,000	149,000
1	Permits / Design	\$10,000	159,000
1	Remove tile flooring and replace with stained concrete	\$8,000	167,000
1	LED Lighting in Filter Room, new wiring in Bath House/Filter Room	\$2,500	169,500
1	New Security Lights and wiring	\$2,000	171,500
1	New Water Heater for pool house/ concessions	\$1,000	172,500
1	Motion Sensors and Door Alarms for security	\$1,000	173,500
2	Gas Heater for Pool	\$27,000	200,500
2	Solar Blanket	\$3,000	203,500
2	Paint ceiling in shower rooms	\$1,000	204,500
3	New Feature (i.e..Corkscrew Slide (10.7 ft high and 19 ft length)	\$20,000	224,500
3	Replace lockers with new lockers	\$5,000	229,500
3	Large Umbrella for Shade	\$5,000	234,500
3	Extension of Concession Stand to east/ Block Walls	\$5,000	239,500
3	Soffit and Fascia on Pool House	\$1,000	240,500
3	Paint interior of bath house	\$1,000	241,500
X	Contingency	\$24,150	265,650

Priority (1-3)

1= Most Critical

3 = Least Critical

Projects already completed FY 2016 (this fiscal year)



December 2, 2015

City of Mt. Vernon
201 7th Street NE
Mt. Vernon, IA 52314

Attn: Mr. Matt Siders
P: (319) 895-9513
E: msiders@cityofmtvernon-ia.gov

Re: Geophysical Exploration Report
Mt. Vernon Pool – GPR Services
919 2nd Avenue North
Mt. Vernon, Iowa
Terracon Project No. 06153521.02

Dear Mr. Siders:

On November 20, 2015 a representative of Terracon Consultants, Inc. (Terracon) performed direct exploration services at the referenced site. This work was in conjunction with the original report provided on November 6, 2015.

1.0 PROJECT DESCRIPTION

Geophysical exploration was requested to determine the presence of possible voids beneath the concrete slab at the Public Pool in Mt. Vernon, Iowa. Due to concrete and/or soil moisture in the deep end of the pool at the time of the original survey, the presence of voids could not be determined non-destructively via Ground Penetrating Radar. To obtain additional information Terracon returned to the site and used a Bosch 11216EVS SDS Max rotary hammer to drill exploratory holes in the concrete.

2.0 FINDINGS AND CONCLUSIONS

Terracon drilled two holes through the concrete floor in the deep end of the pool in an attempt to identify any possible voids. One hole was drilled approximately half way up the face of the incline on the east side. The concrete in this area drilled unusually easily. It was approximately 7 inches thick in this location. No void was encountered beneath the concrete. The second hole was drilled at the deepest point of basin and approximately at the center of the deep end of the pool. The slab in this area was approximately 10 inches thick. No void was encountered in this area either, though ground water was noted seeping through the drilled hole.

The holes were patched with a construction-grade epoxy upon completion. Due to the water encountered in the deeper hole, it was difficult to successfully plug the hole with the epoxy. It is possible that this plug **will** not set correctly, and could leak water in the future. It is recommended that this hole be inspected and precautions be taken as needed in order to prevent future issues.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted practices. No warranties, either express or implied, are intended or made.

The results presented in this report are based upon the data obtained and from other information discussed in this report. This report does not reflect variations that may occur across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction.

We appreciate the opportunity to work with you on this project. Please do not hesitate to contact the undersigned if you have any questions regarding this information or if we can be of further service to you.

Sincerely,
Terracon Consultants, Inc.



Rob Kramer
Geophysicist



Thomas P. Lisi, P.E., CWI
Senior Project Engineer



November 6, 2015

City of Mt. Vernon
201 7th Street NE
Mt. Vernon, IA 52314

Attn: Mr. Matt Siders
P: (319) 895-9513
E: msiders@cityofmtvernon-ia.gov

Re: Geophysical Exploration Report
Mt. Vernon Pool – GPR Services
919 2nd Avenue North
Mt. Vernon, Iowa
Terracon Project No. 06153521

Dear Mr. Siders:

On October 29, 2015 a representative of Terracon Consultants, Inc. (Terracon) performed geophysical exploration services at the referenced site.

1.0 PROJECT DESCRIPTION

We understood that a non-destructive survey was requested to identify the presence and location of voids and undermining as well as specific structural information at the public pool in Mt. Vernon, Iowa. The survey was performed on the pool walls, floor, and select portions of the surrounding pool deck as instructed by Larry Spellerberg with Veenstra & Kimm, Inc. Mr. Spellerberg arrived on-site prior to our arrival, and did his own investigation of the area. Terracon used ground penetrating radar (GPR) in the areas that he had identified, as well as other areas that he requested further information.

2.0 EXPLORATION METHODS

Terracon used a GPR system consisting of a hand-cart mounted 1600 MHz antenna made by Geophysical Survey Systems, Inc. (GSSI) to perform an upper profile geophysical survey. In general, field data collection follows procedures referenced in ASTM D 6432 Standard. More information on both the general method and collection procedures can be found in this standard as well as the attached Appendix A.

A free-scanning technique was used to scan the floor slab of the pool and the surrounding pool deck as well as the pool walls. This technique involved analyzing the data in the field so that results can be supplied in real-time, without using software to post-process.

Terracon Consultants, Inc. 2640 12th Street SW Cedar Rapids, IA 52404
P [319] 366 8321 F [319] 366 0032 www.terracon.com

3.0 FINDINGS AND CONCLUSIONS

Terracon scanned the entire concrete floor of the pool on an approximate five (5) foot spacing. Line scans were analyzed in the east-west direction approximately every 5 feet on-center. Scanning was also performed on the surrounding pool deck from the pool out to approximately 5 feet. 9 locations within the pool were investigated to determine reinforcing steel spacing, depth, and approximate slab thickness.

The various anomalies that were encountered during the scan as well as the locations of the 9 areas scanned for structural information are shown in the attached Exhibit 1. The structural information is provided in the tables below.

Table 1: Pool Floor

Location	Description	Horizontal Bar Spacing (north-south) (in)	Vertical Bar Spacing (east-west) (in)	Approximate Bar Depth (in)	Approximate Slab Thickness (in)	Other Comments
1	New Floor	12	12	3	5-6	
2	New Floor	12	12	4-5	6	
3	Old Floor	12	12	6	10	
4	Old Floor	12	12	4-5	10	

Table 2: Pool Walls

Location	Description	Horizontal Bar Spacing (north-south) (in)	Vertical Bar Spacing (east-west) (in)	Approximate Bar Depth (in)	Approximate Slab Thickness (in)	Other Comments
5	Old Wall	8	12	2 and 9	12	2 mats of bar in concrete below drain
6	Old Wall	10	12	2 and 9	12	2 mats of bar in concrete below drain
7	Old Wall	8-9	12	2 and 9	12	2 mats of bar in concrete below drain

8	New Wall	20	12	3	12+	Only inside bar detected, but back side of wall not encountered. In bottom 1' of wall, bar encountered every 6" on-center
9	New Wall	12	20	3	12+	Only inside bar detected, but back side of wall not encountered. In bottom 1' of wall, bar encountered every 6-10" on-center. Reinforcing not consistent in this area.

Locations of anomalies observed in the field are presented in the attached Exhibit. Two probable drains were encountered in the older portion of the pool. A utility was also detected that appeared to feed into the mushroom-shaped piece in the new portion of the pool. Anomalies consistent with voids were encountered around most of the pool deck out to 2-3 feet away from the pool. Small holes were drilled in two locations and small 1-2 inch voids were encountered. The holes were patched with an epoxy before leaving the site.

4.0 LIMITATIONS

It should be noted the process relies on instrument signals to indicate physical conditions in the field. Signal information can be affected by on-site conditions beyond the control of the operator, such as, but not limited to, cultural features, concrete/soil types, concrete/soil moisture, groundwater table depth, and/or reinforcing steel spacing. Interpretation of those signals is based on a combination of known factors combined with the experience of the operator and geophysical scientist evaluating the results. Utilizing conventional observation, sampling, and testing of select areas are recommended to confirm the results from the geophysical surveys. As with all geophysical methods, the geophysical results provide a level of confidence, but should not be considered absolute. We cannot be responsible for the misinterpretation of unverified geophysical results by others.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geophysical practices. No warranties, either express or implied, are intended or made.

The results presented in this report are based upon the data obtained from the geophysical surveys and from other information discussed in this report. This report does not reflect variations that may occur in areas inaccessible to the geophysical equipment, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction.

We appreciate the opportunity to work with you on this project. Please do not hesitate to contact the undersigned if you have any questions regarding this information or if we can be of further service to you.

Sincerely,
Terracon Consultants, Inc.

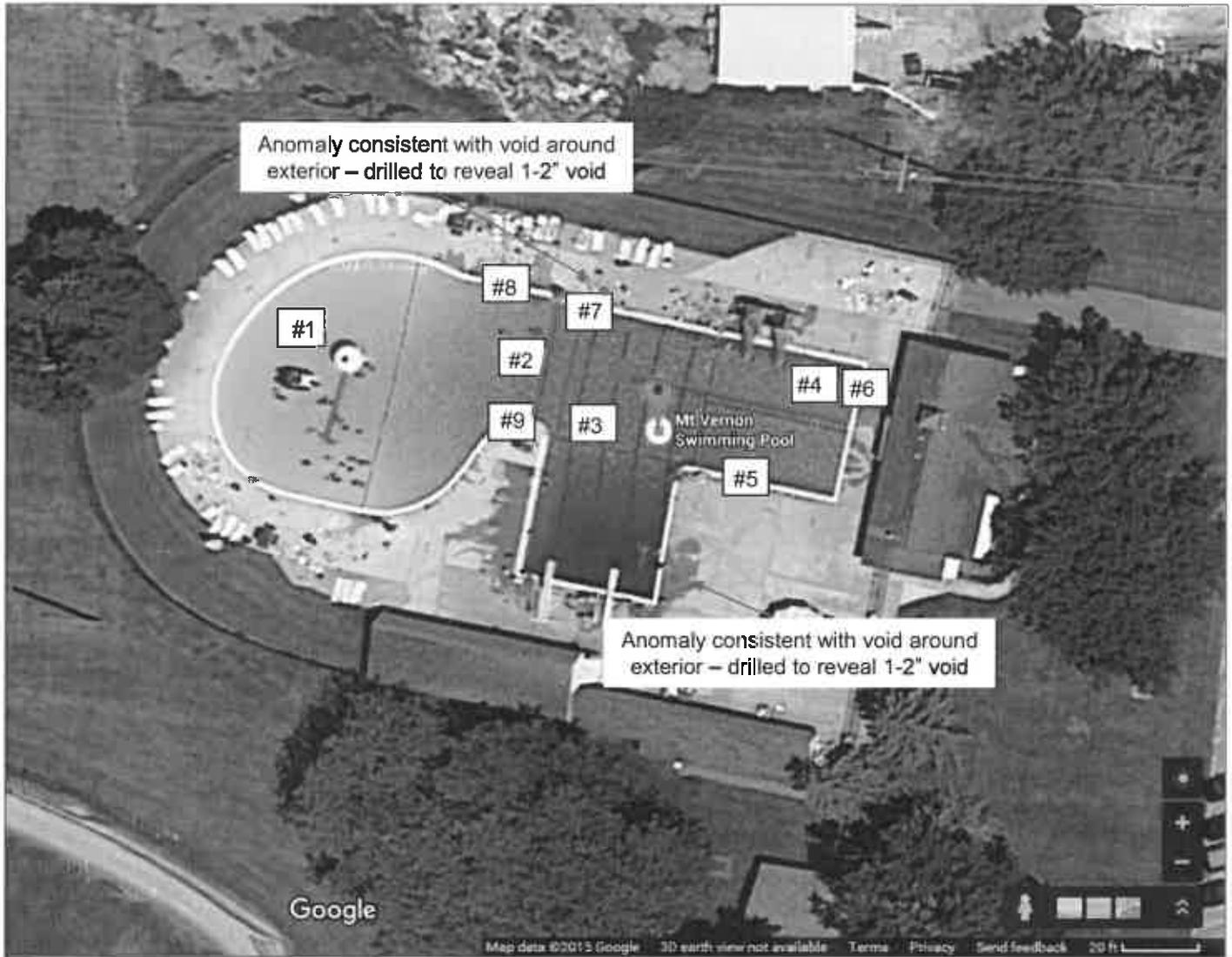


Rob Kramer
Geophysicist



Tom Lisi, P.E., CWI
Senior Project Engineer

Attachment: Exhibits 1: Anomaly Location Diagram
Appendix A: Ground Penetrating Radar Operation



LOCATION CHECKED FOR STRUCTURAL INFORMATION

— ANOMALIES CONSISTENT WITH DRAINS/UTILITIES

● ANOMALIES CONSISTENT WITH VOIDS

Project Manager: RAK	Project No. 06153521
Drawn by: RAK	Scale: N.T.S.
Checked by: TPL	File Name:
Approved by: TPL	Date: NOV 2015

Terracon
Consulting Engineers & Scientists

2840 12th St SW Cedar Rapids, Iowa 52404
PH. (319) 385-8321 FAX. (319) 265-0032

GROUND PENETRATING RADAR
Mt. Vernon Public Pool 919 2 nd Ave N. MT VERNON, IOWA

EXHIBIT
1

Appendix A: Ground Penetrating Radar Operation

GPR utilizes radio waves to detect changes in the subsurface of the area being scanned. Changes in the signal generally indicate material property changes such as, but not limited to, electromagnetic conductivity and dielectric constant, which in some cases can be qualitatively linked to other material properties such as density, moisture, or material type, and can be effective in identifying the presence and location of items such as voids, buried concrete, tanks, underground utilities, and embedded reinforcing steel in concrete and masonry structures, among other things. The instrument is capable of both producing real-time images and recording images for later interpretation.

It should be noted that these processes rely on instrument signals to indicate physical conditions in the field. Signal information can be affected by on-site conditions beyond the control of the operator such as, but not limited to: ground surface cover, concrete/soil types, concrete/soil moisture, and/or reinforcing steel spacing. Interpretation of those signals is based on a combination of known factors combined with the experience of the operator and geophysical scientist evaluating the results. Utilizing conventional observation, sampling and testing ("truthing") of select areas is highly recommended to confirm the results from the geophysical surveys. As with all geophysical methods, the geophysical results provide a level of confidence but should not be considered absolute. Thus, we cannot be responsible for the interpretation of geophysical results by others.

GPR antennas are available in varying frequencies. Care should be taken to select antenna that will best meet the project needs. Lower frequency antennas can penetrate deeper, but have a lower resolution. Conversely, the higher the frequency the better the resolution with shallower penetration. The following table briefly outlines the typical penetration and uses for each antenna.

Appropriate Application	Primary Antenna Choice	Secondary Antenna Choice	Depth Range (Approximate)
Structural Concrete, Roadways, Bridge Decks	2600 MHz	1600 MHz	0-0.3 m (0-1.0 ft)
Structural Concrete, Roadways, Bridge Decks	1600 MHz	1000 MHz	0-0.45 m (0-1.5 ft)
Structural Concrete, Roadways, Bridge Decks	1000 MHz	950 MHz	0-0.6 m (0-2.0 ft)
Concrete, Shallow Soils, Archaeology	900 MHz	400 MHz	0-1 m (0-3 ft)
Shallow Geology, Utilities, UST's, Archaeology	400 MHz	270 MHz	0-4 m (0-12 ft)
Geology, Environmental, Utility, Archaeology	270 MHz	200 MHz	0-5.5 m (0-18 ft)
Geology, Environmental, Utility, Archaeology	200 MHz	100 MHz	0-9 m (0-30 ft)
Geologic Profiling	100 MHz	MLF (16-80 MHz)	0-30 m (0-90 ft)
Geologic Profiling	MLF (16-80 MHz)	None	Greater than 30 m (90 ft)

Table from Geophysical Survey Systems, Inc.

November 12, 2015

Matt Siders
Director of Parks and Recreation/Zoning Administrator
City of Mount Vernon
201 7th Street NE
Mount Vernon, Iowa 52314

MOUNT VERNON POOL STRUCTURAL INVESTIGATION LETTER REPORT

On October 29, 2015 Veenstra and Kimm, Inc. (V&K) completed an on-site investigation of the City's swimming pool. The purpose of the investigation was to visually observe the readily accessible portions of the pool's floor and walls to identify the cause and location of excessive leakage. On the same day a separate related geophysical exploration was conducted by Terracon and the results of their exploration was reported in their Geophysical Exploration Report dated November 6, 2015. This letter report with attached photos is a summary of V&K's observations.

As reported by Mr. Nick Nissen on the date of our site visit, the original pool was constructed in the 1960s with an addition being constructed at the west end of the pool at a later date. Photo 1 is a view the pool from the west. As part of our investigation, the floor and walls of the pool were observed to identify visible cracks where leaking could occur. Photo 2 shows typical cracks that were observed in the floor of the pool. Approximately 265 lineal feet of crack were identified in the floor of the original pool. No cracks were observed in the floor of the more recently constructed addition.

The walls of the pool had relatively few cracks, but the masonry grout at the top of the trough wall was deteriorated where the plastic cover was added. The deteriorated grout is shown in Photo 3. It should be noted that the deteriorated grout would not allow leakage from the pool. At one location along the north wall the plastic cover was removed to allow observation of a crack in the trough wall that had been repaired. The plastic cover was not removed at any other locations so the majority of the trough was not observed.

In addition to our visual observation, the floor and walls were sounded with a chain and/or hammer to identify hollow sounding areas. Hollow sounds can indicate either a void below or behind the floor/wall or delamination of the concrete. Voids can occur where

the underlying soil has settled and this can occur at leaking areas where water can erode the soil. Delamination occurs where expansive force created by corroded steel reinforcement in the concrete causes the exterior surface of the concrete above the reinforcement to break free. The results of the sounding indicated approximately 40 square feet of hollow area exists below the floor and approximately 2 square feet behind the wall. Ground penetration radar (GPR) was used by Terracon to verify the approximate location, size, and depth of the voids/delaminations. Probe holes were also drilled in the deck slab at two locations behind the walls (See Photo 4 for typical probe hole). The results from the sounding, GPR and probe holes did not identify void locations that we could conclude to be the results of leakage.

With the exception of one void below the floor in the deep end of the pool that is approximately 10 square feet in area, the size of the individual voids were not substantial. GPR used at this location was not capable of determining the depth of the void and a sufficient drill bit length was not available to drill a probe hole. It is our understanding that Terracon will drill and probe this location in the future so the depth of the void can be determined.

GPR was also used to determine the approximate location of the steel reinforcement in the floor and walls of the pool and the thickness of the floor and walls. While we could not determine the size of the reinforcement bars, the spacing and floor/wall thicknesses indicate that the design of the floor and walls have sufficient structural capacity.

At the time of the site visit Mr. Nissen indicated that when the pool is empty infiltration of exterior water is observed in the manhole where the below floor piping returns water to the filter building. Mr. Nissen suggested, and we agree, that this could be a location where water is leaking from the pool. The manhole was determined to be a confined space area so the bottom and walls of the manhole were not observed during our site visit.

RECOMMENDATIONS:

The overall structural condition of the concrete walls and floor of the pool appeared to be satisfactory. It is our opinion that with proper maintenance the pool can continue to function properly if the cause of leakage is identified and corrected. No determination has been made to the cause of the leakage based on the level of investigation that has been performed to date. It is our opinion that the following items could help determine the cause of the leakage from the pool:

Drill and probe the hollow area below the floor of the deep end of the pool to determine the depth of the void below the floor.

Matt Siders
November 12, 2016
Page 3

Remove the remainder of the plastic cap at the trough to see if unrepaired cracks exist in the trough.

Observe the manhole where piping enters the filter room to determine if cracks or voids in the manhole are allowing leakage. Proper confined space equipment and procedures must be used.

Mr. Nissen indicated that the cracks in the floor of the pool are repaired at an approximate 5 year interval. The method used for the past repairs should be investigated to determine if a surface caulk or pressure installed epoxy injection was used to repair the cracks. Pressure installed epoxy would be more effective than a surface applied caulk. Depending on the method used for repair, further investigation may be needed to approximate the amount of leakage through the cracks.

The ground penetration radar identified what could be an abandoned pipe that runs east/west below the 4 to 5 foot deep section of the original pool. We recommend that the City contact Charles Halsey or other past workers at the pool to see if they know if a drain pipe or other utility exists at this location. A leaking abandoned pipe could allow/increase leakage if there is a path for water to reach the pipe.

If you have any questions or comments concerning this report, please contact the writer at 515-225-8000.

VEENSTRA & KIMM, INC.
Original Signed by
Larry Spellerberg

Lawrence J. Spellerberg, P.E.

LJS:dml
5131-029
Enclosures



Photo 1 Looking East at Swimming Pool

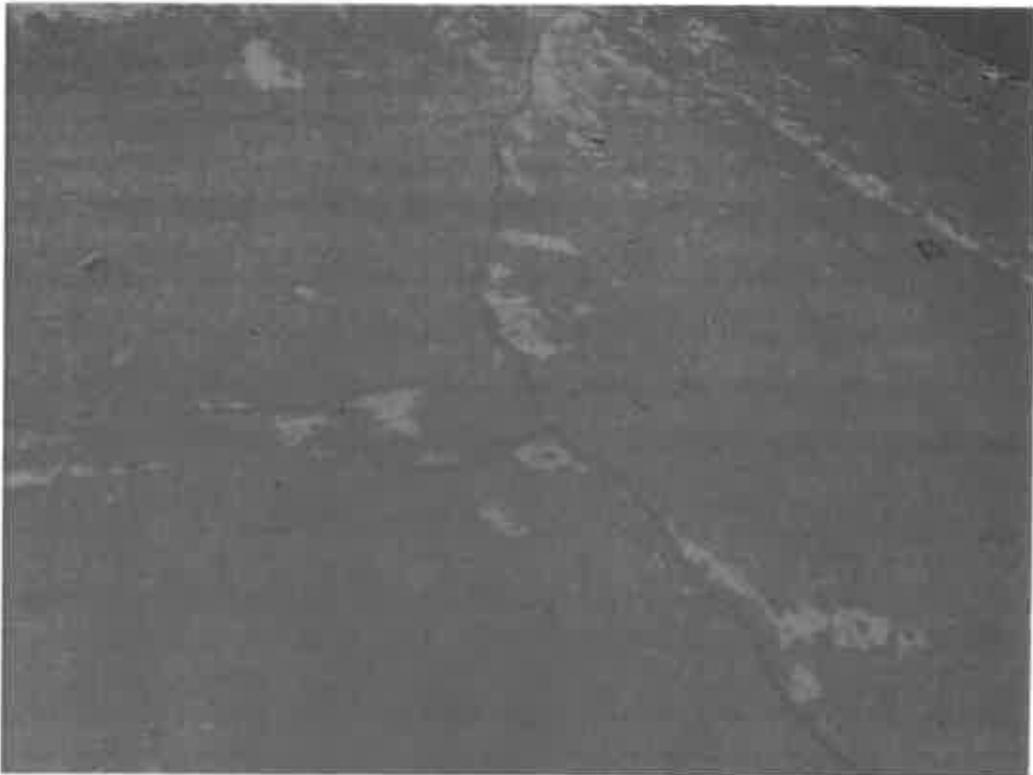


Photo 2 Typical Cracks in Floor

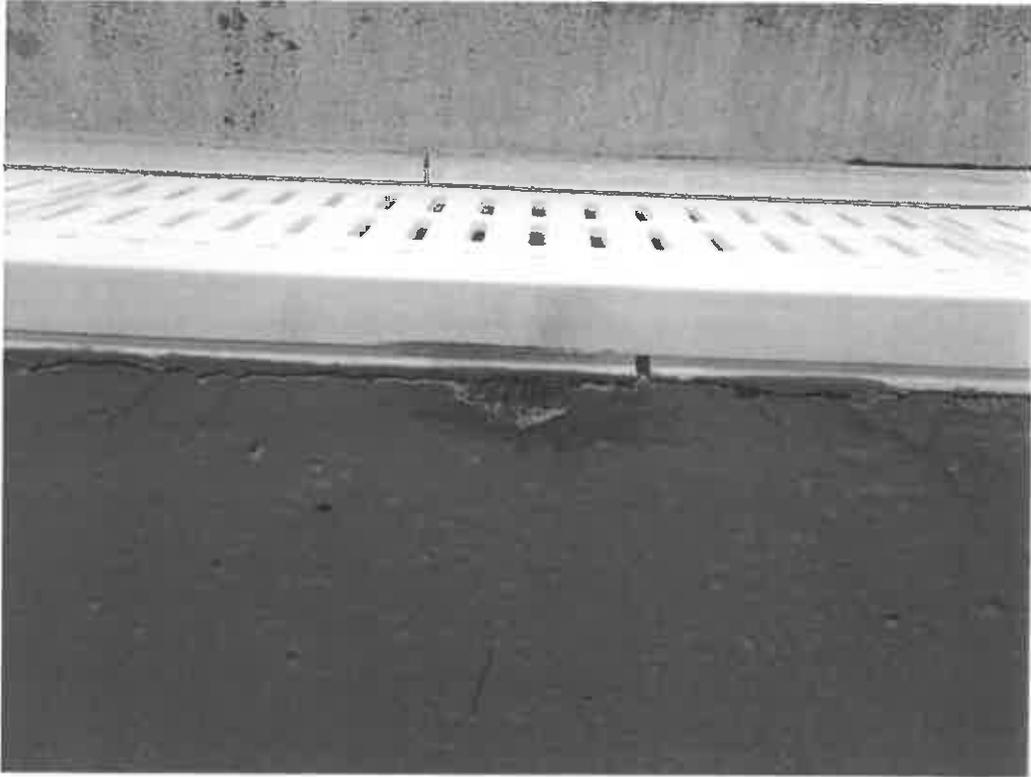


Photo 3 Deteriorated Grout at Trough Below Plastic Cover

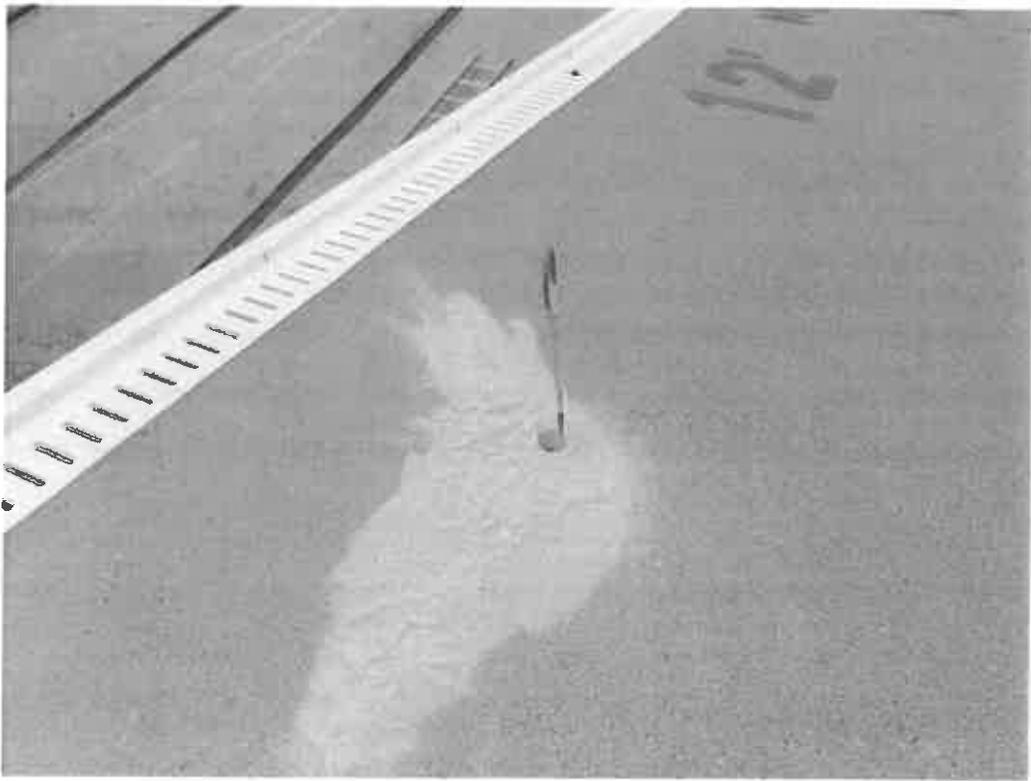


Photo 4 Probe Hole in Deck Behind Wall



Mount
Vernon
IOWA

Michael Beimer, City Administrator
Mark Winder, Chief of Police

Jim Moore, Mayor

Council:

Jamie Hampton
Marianne Taylor
Francesca Thompson
Eric Roudabush

Dear Honorable Mayor Moore and Honorable Council Members,

The Mount Vernon Community Pool has been a very important part of the quality of life in Mount Vernon since 1961, that's 54 years folks. It is amazing to think this pool has survived 54 years through renovations, remodels, additions, etc.

FACTS:

Built 1961

-Bond was for \$75,000...cost to build was a little more than \$75,000 and donations from community helped make up difference

Renovated 1983

-Total remodel cost was \$190,000 (Bond was for \$140,000 / City budget \$50,000)

Renovated 1999

Cost was ??? (zero deck / wading pool removed / etc)
Can not find exact costs at time report was created

Proposed renovation 2015

Bond for up to \$200,000

I have included some article archives from the MV Sun sharing the history of the pool. Some of the pages are hard to read.

The attached spreadsheet shares with you the Projects, their priority as recommended by Parks and Rec, the estimated cost, and a running total if we were to do all of the items. The total of all of the proposed projects sits at \$265,650. We know we will not perform or install all of the projects.

Park and Rec would recommend all of the Priority 1 items be completed and consideration of the Priority 2 items. All of the items are up for discussion, but Priority 2 and Priority 3 items are not essential for the operation of the pool and to be able to meet code. Most of the Priority 1 items are vital in order to continue to operate the pool in the future.



**Mount
Vernon**
IOWA

Michael Beimer, City Administrator
Mark Winder, Chief of Police

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Francesca Thompson
Eric Roudabush

One important element to consider is all of these renovations will need to be communicated to the Iowa Department of Health (IDPH) for approval. Priorities and costs could change slightly if IDPH does not approve our plans.

Respectfully submitted,

Matt Siders
Director of Parks and Recreation