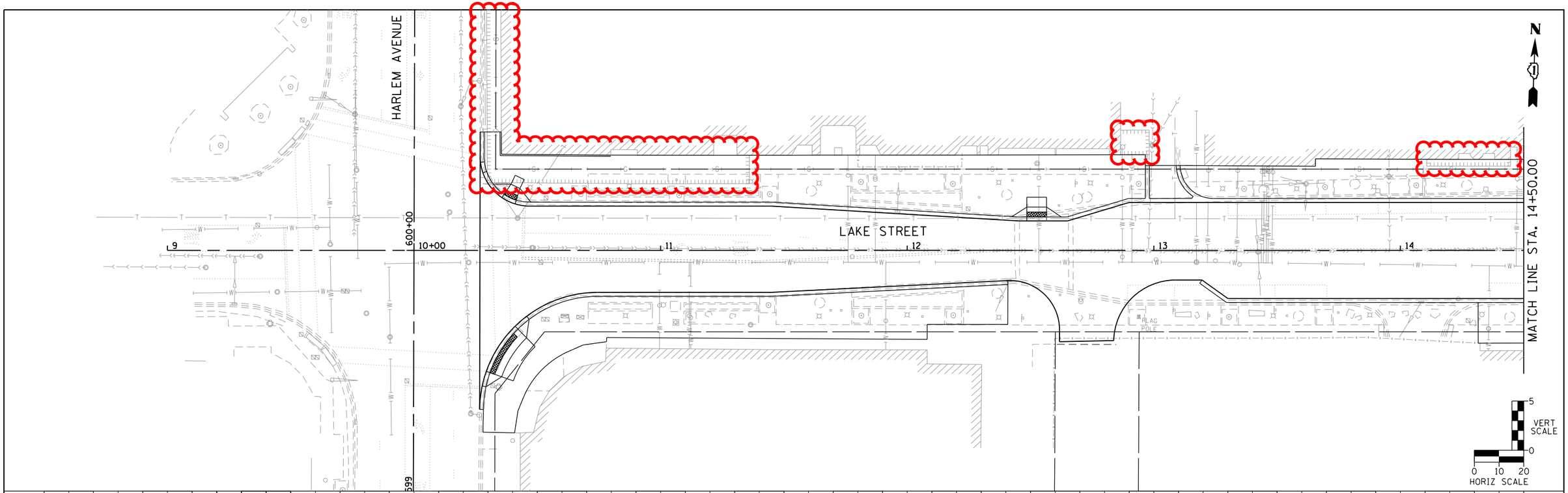

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Area 01
1144 Lake St
NW Corner of Lake and Harlem
Believed to be a private vault

TEG Inspection:
Not identified for inspection

GPRS Vault Survey:
West dimensions = 5.75' E-W x >198' N-S
South dimensions = 106' E-W x 11.5' N-S
Depth 1: 0" to 6"/7" = concrete above vault roof
Depth 2: 6"/7" to 15"/16" = vault roof

Area 02
1128 Lake St
Chipotle Mexican Grill
Believed to be a private vault

TEG Inspection:
Identified as #7 (Day 1), inspected and entered
Houses many utilities so filling not an option
Metal interior roof

GPRS Vault Survey:
Dimensions = 11.6' E-W x 10' N-S
Depth 1: 0" to 5"/7" = vault roof

Area 03
1116 Lake St / 1114 Lake St
Professional Eye Center / Fitness Formula Club
Believed to be a private vault if it is a vault *

TEG Inspection:
Not identified for inspection

GPRS Vault Survey:
Dimensions = 34' E-W x 2.75' N-S
Depth 1: 0" to 7" = concrete or vault roof *
Depth 2: 10" = anomaly may require further investigation *

65 60 55 50 45 40 35 30 25

52.09 53.01 52.67 52.73 52.46 52.09 52.04 52.09 51.98 51.71 51.60

9+50 10+00 10+50 11+00 11+50 12+00 12+50 13+00 13+50 14+00 14+50

FILE NAME = Lake St P&P-01.dgn

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USER NAME = jmh	DESIGNED -	REVISED -
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PLOT SCALE = 40.0000 ' / in.	CHECKED -	REVISED -
PLOT DATE = 7/7/2017	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LAKE STREET
PLAN AND PROFILE

SCALE: 1"=20' | SHEET OF SHEETS | STA. TO STA.

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		CONTRACT NO.		
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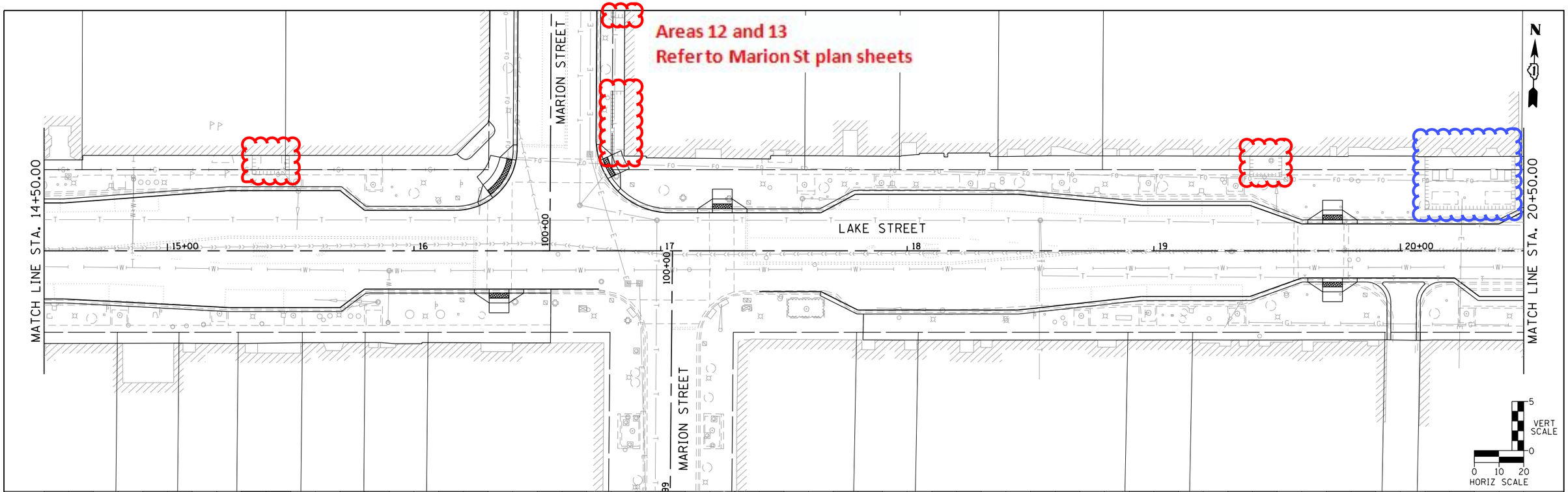

Area 04
1100 Lake St
NW Corner of Lake and Marion (Shaker Building)
Believed to be a private vault

TEG Inspection:
Not identified for inspection

GPRS Vault Survey:
Dimensions = 15' E-W x 7.75' N-S
Depth 1: 0" to 7"/8" = vault roof
ADA Issue: existing three-sided ramp up to door

Area 05
1022 Lake St
West of Lake St Theater entrance
Believed to be a private vault
Review 1/29/2017 email about possible second vault

TEG Inspection:
Identified as #1, inspected but not entered

GPRS Vault Survey:
Dimensions = 13' E-W x 8.25' N-S
Depth 1: 0" to 7"/8" = vault roof

Area 06
1022 Lake St
East of Lake St Theater entrance (Fannie May)
Believed to be a utility vault

TEG Inspection:
Identified as vault, inspected but not entered

GPRS Vault Survey:
Dimensions = 36.6' E-W x 21.5' N-S
Depth 1: measurements not possible due to excessive reinforcement

STREET PROFILE

65
60
55
35
30
25

51.60 51.62 51.41 51.22 51.06 50.89 50.92 50.97 51.06 51.06 50.82 50.85 50.94

14+50 15+00 15+50 16+00 16+50 17+00 17+50 18+00 18+50 19+00 19+50 20+00 20+50

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LAKE STREET
PLAN AND PROFILE

SCALE: 1"=20' | SHEET OF SHEETS | STA. TO STA.

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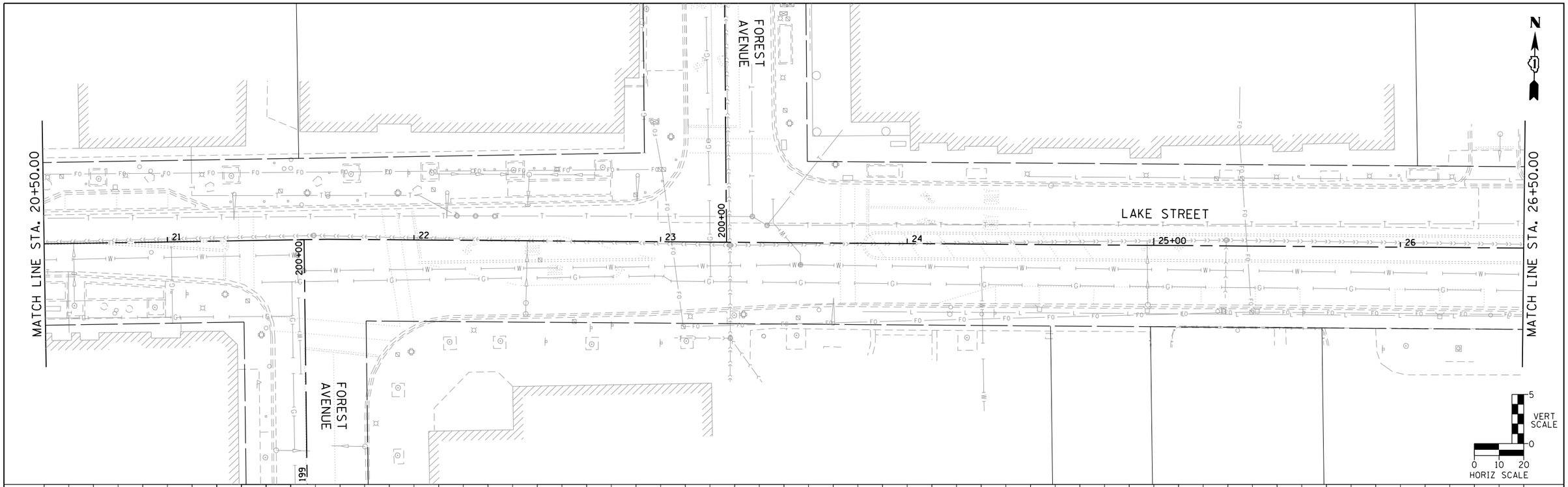

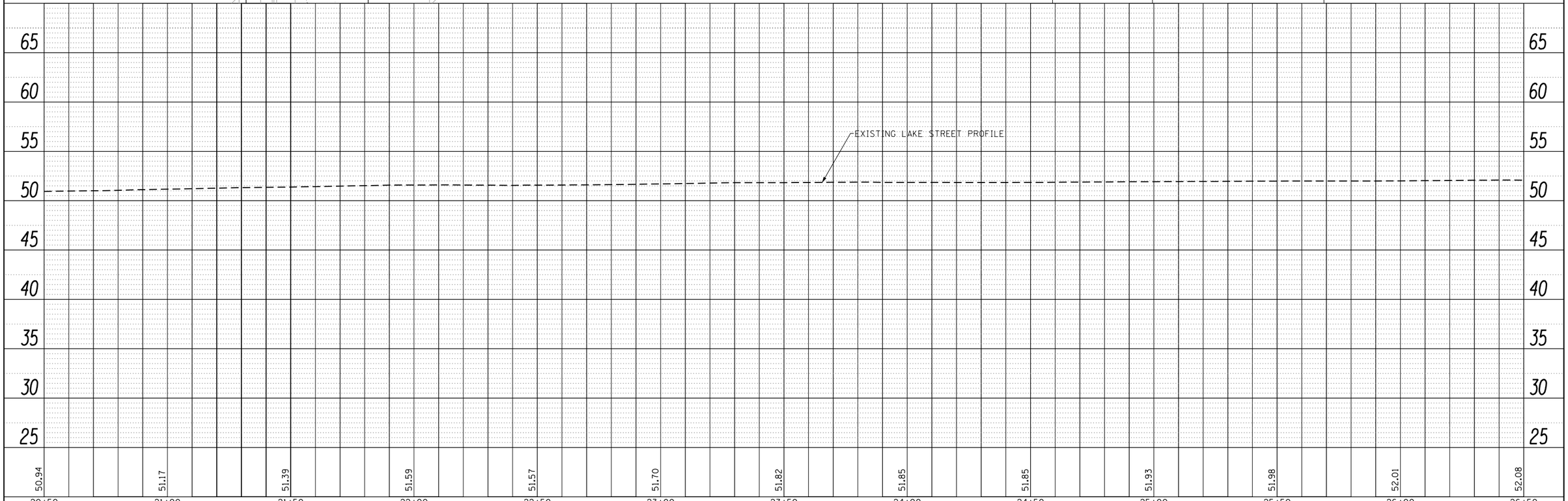

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LAKE STREET
PLAN AND PROFILE

SCALE: 1"=20' | SHEET OF SHEETS | STA. TO STA.

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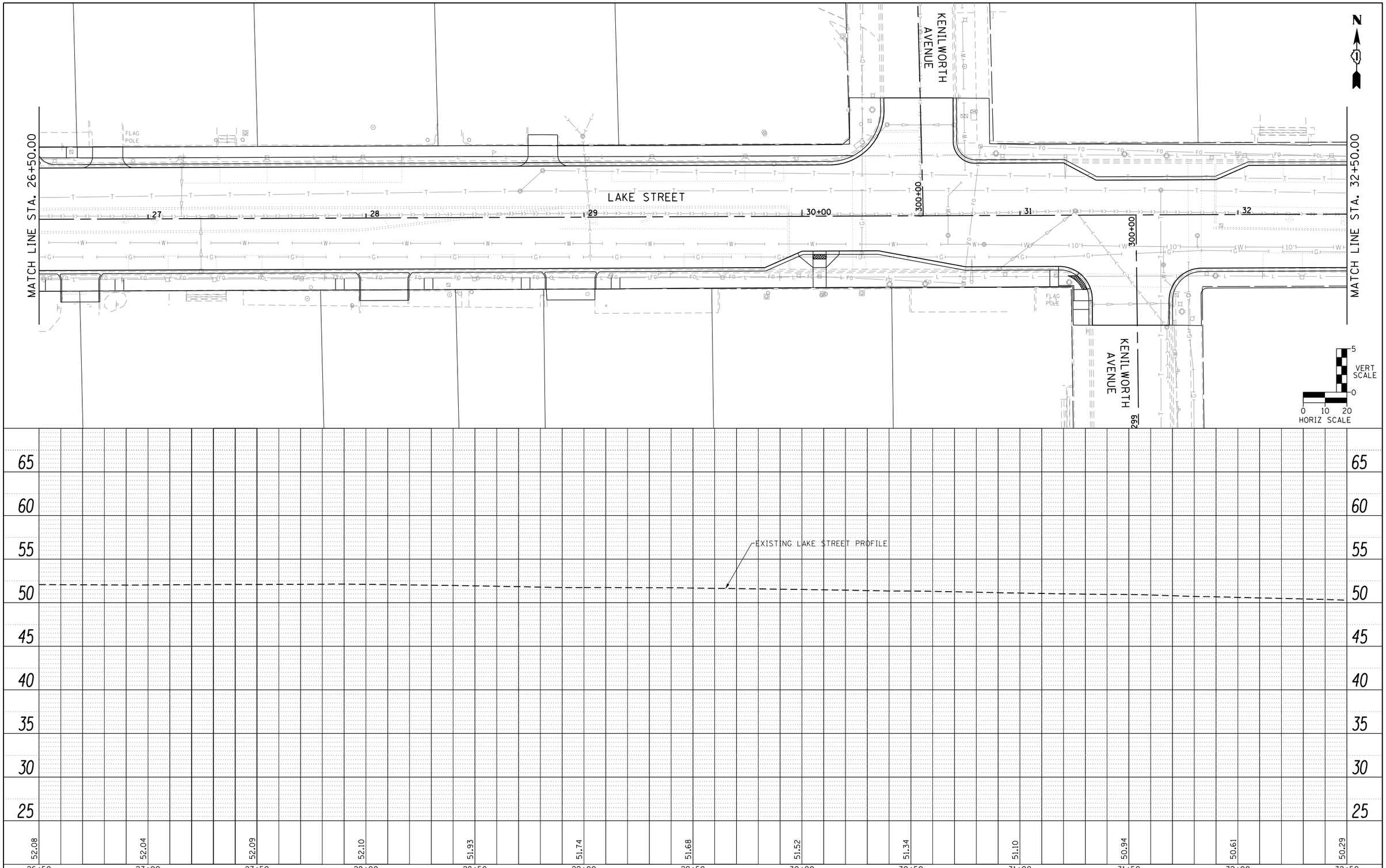

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FILE NAME = Lake St P&P-04.dgn

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LAKE STREET
PLAN AND PROFILE

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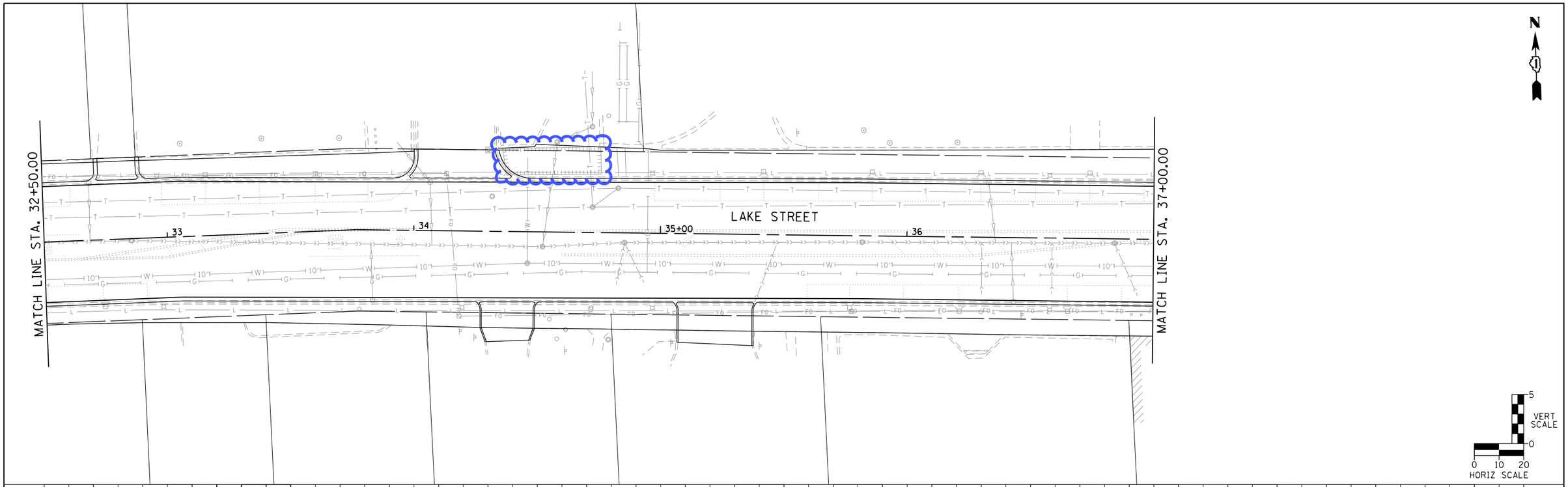

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Area 07
834 Lake St
Oak Park Public Library
Believed to be a utility vault or special sidewalk construction *

TEG Inspection:
Not identified for inspection

GPRS Vault Survey:
Dimensions = 39' E-W x 11' N-S
Depth 1: 0" to 5"/6" = concrete or vault roof *
This area may require further investigation *
If this is a vault, there appears to be no access point *

60 55 50 45 40 35 30 25 20

50.29 49.85 49.37 48.75 48.02 47.23 46.33 45.47 44.74 44.20

32+50 33+00 33+50 34+00 34+50 35+00 35+50 36+00 36+50 37+00

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LAKE STREET
PLAN AND PROFILE

SCALE: 1"=20' | SHEET OF SHEETS | STA. TO STA.

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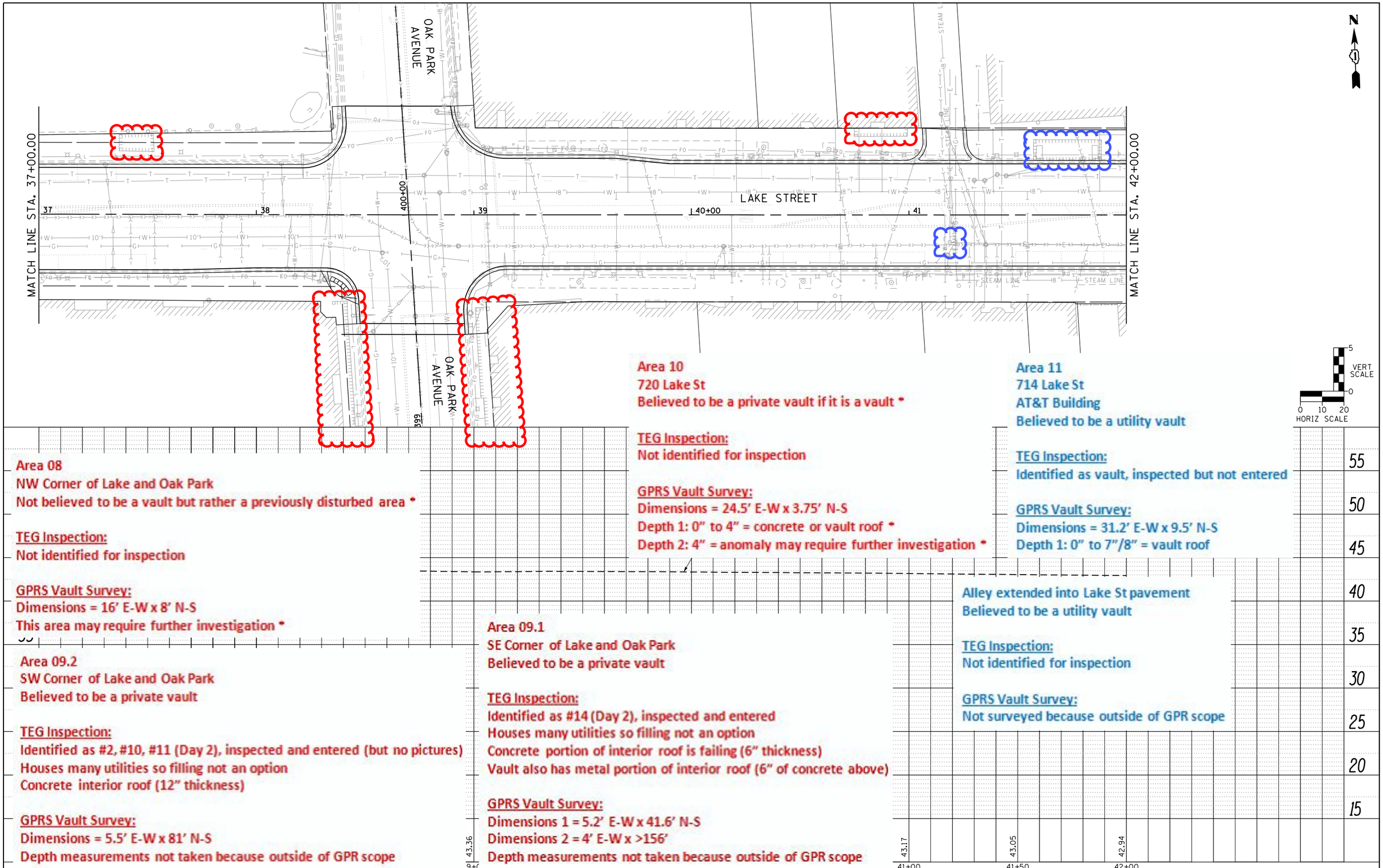

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FILE NAME = Lake St P&P-06.dgn

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STATE OF ILLINOIS
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LAKE STREET
PLAN AND PROFILE

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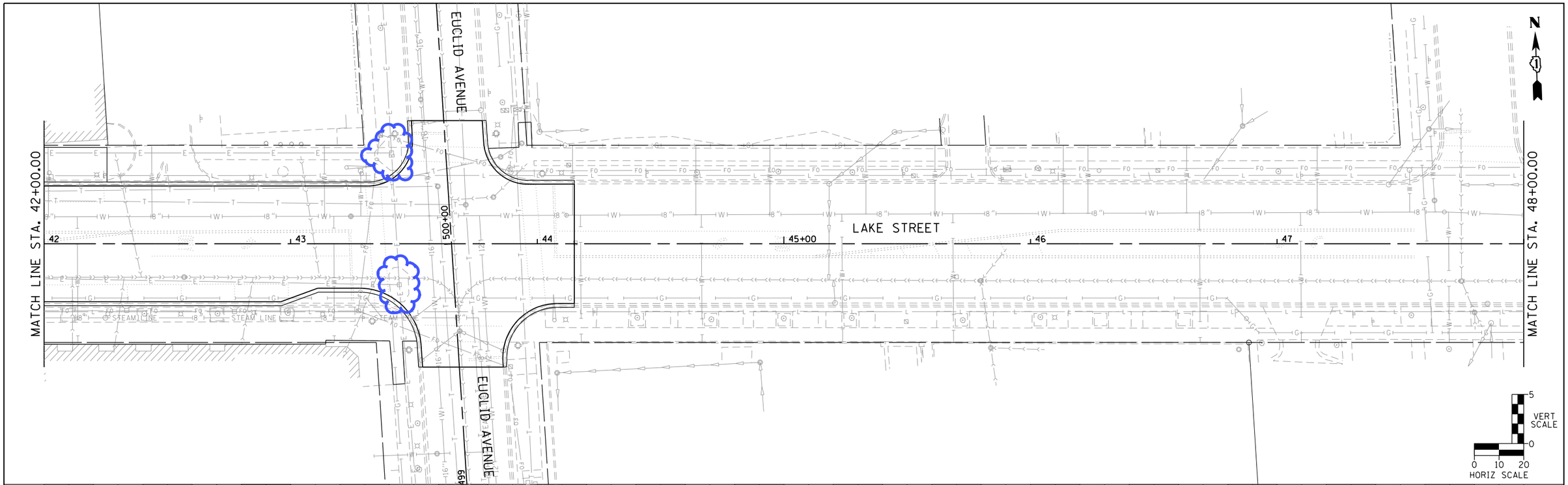

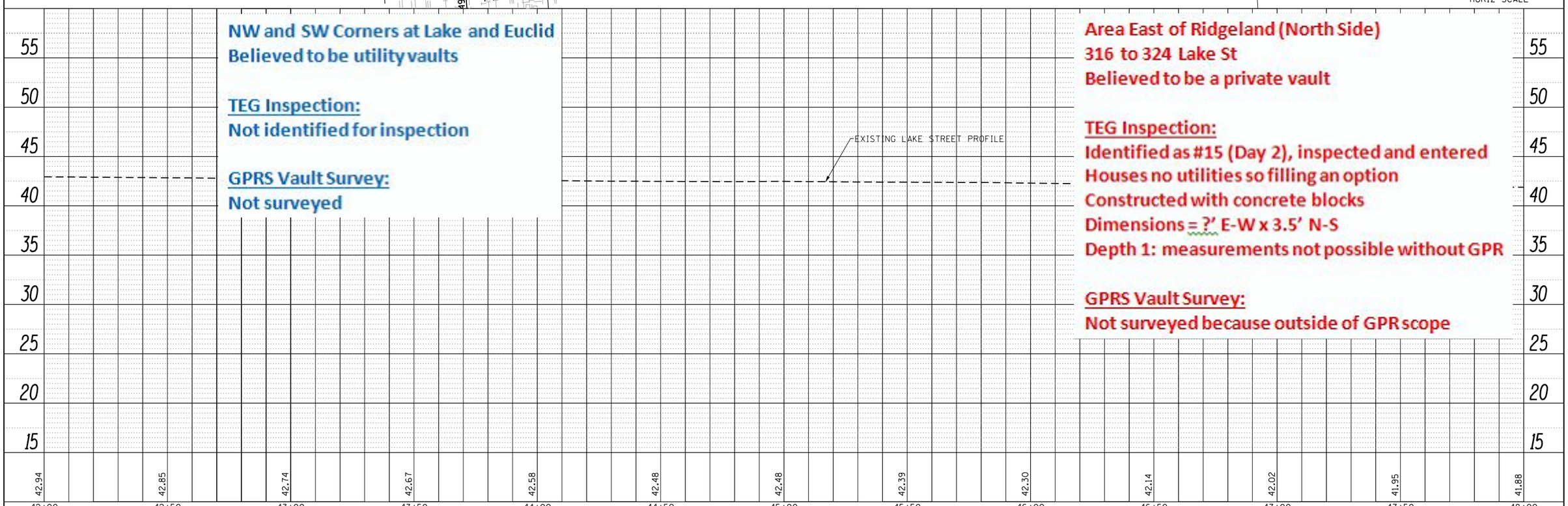

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LAKE STREET
PLAN AND PROFILE

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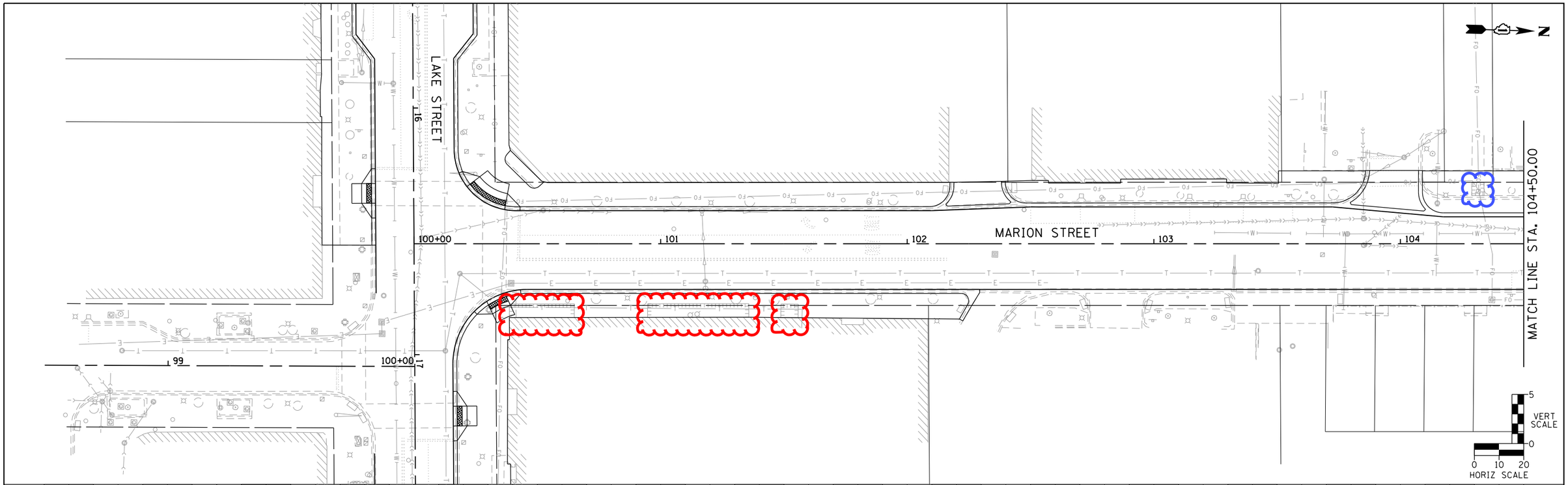


Area 13a, 13b, 13c (moving north to south)
Marion St (southern area)
Believed to be private vaults

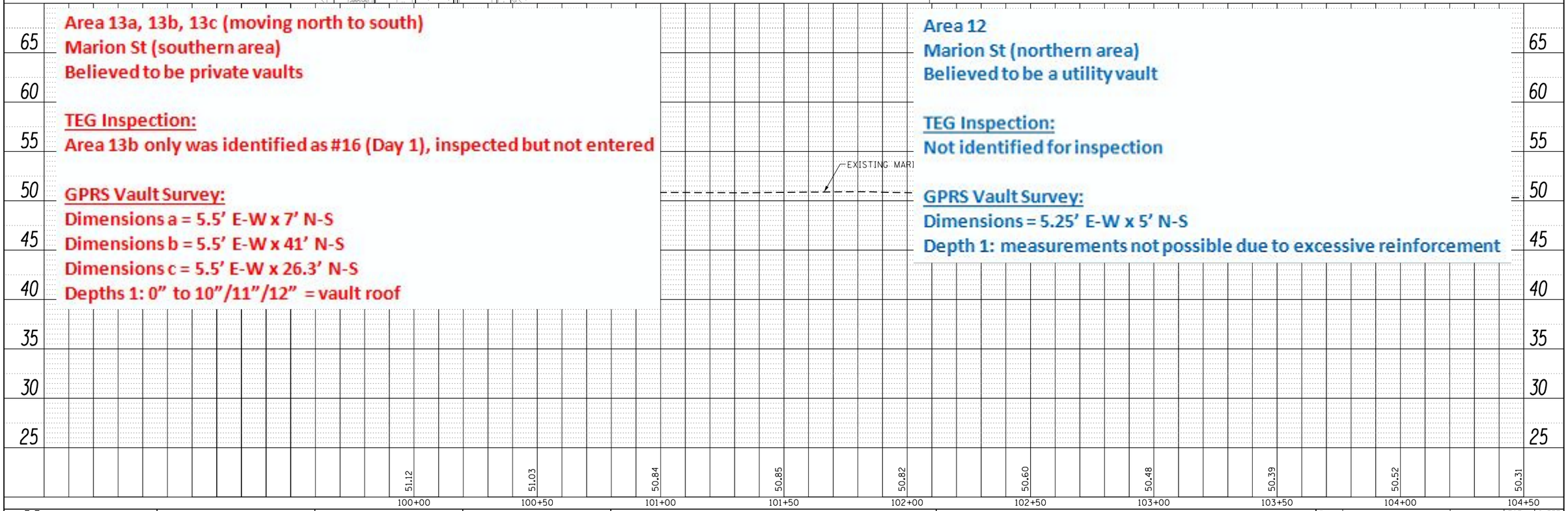
TEG Inspection:
Area 13b only was identified as #16 (Day 1), inspected but not entered

GPRS Vault Survey:
Dimensions a = 5.5' E-W x 7' N-S
Dimensions b = 5.5' E-W x 41' N-S
Dimensions c = 5.5' E-W x 26.3' N-S
Depths 1: 0" to 10"/11"/12" = vault roof

Area 12
Marion St (northern area)
Believed to be a utility vault

TEG Inspection:
Not identified for inspection

GPRS Vault Survey:
Dimensions = 5.25' E-W x 5' N-S
Depth 1: measurements not possible due to excessive reinforcement



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FILE NAME = Marion St P&P-01.dgn

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STATE OF ILLINOIS
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LAKE STREET
PLAN AND PROFILE

SCALE: 1"=20' | SHEET OF SHEETS | STA. TO STA.

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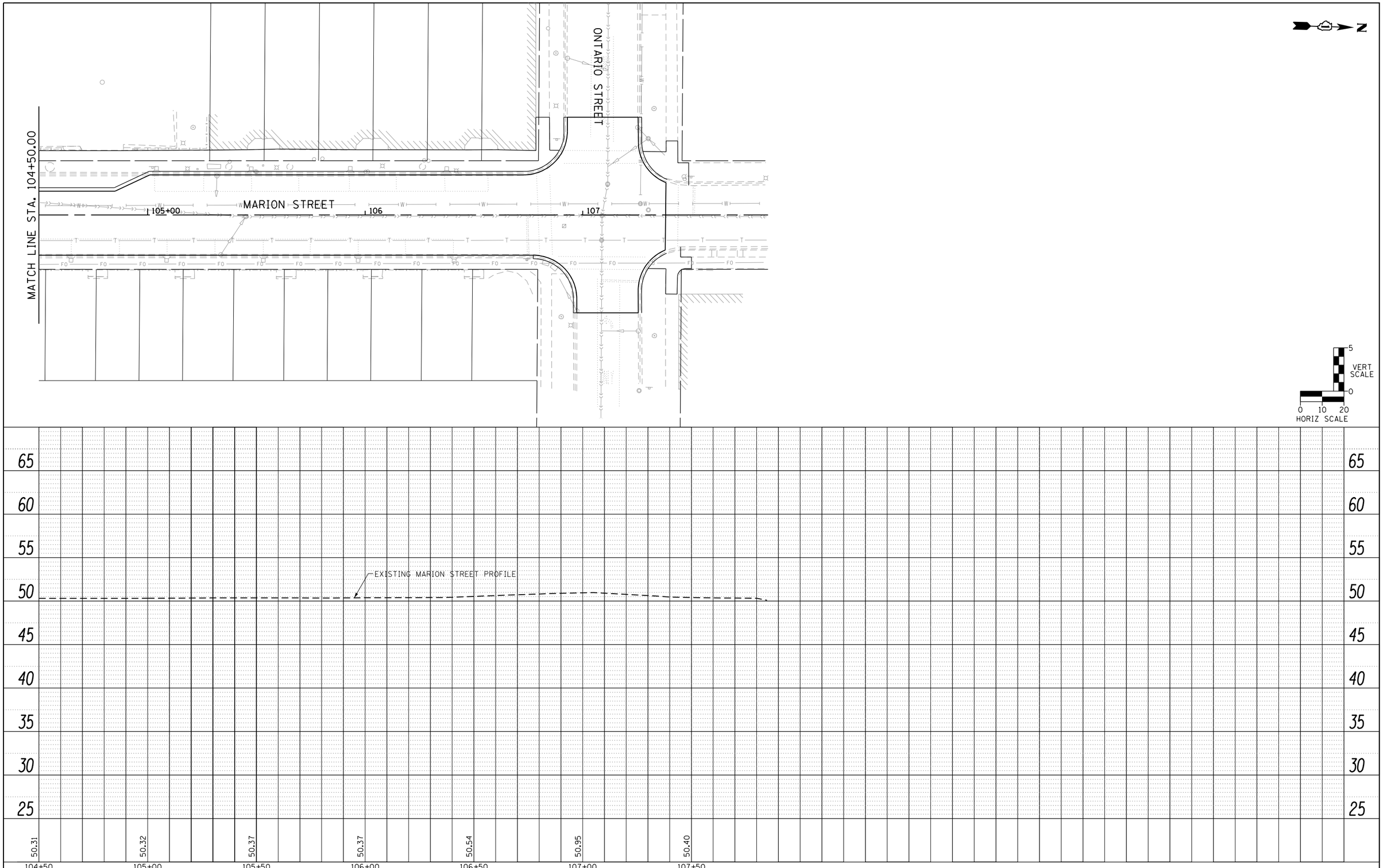

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FILE NAME = Marion St P&P-02.dgn

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LAKE STREET
PLAN AND PROFILE

SCALE: 1"=20' | SHEET OF SHEETS | STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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		CONTRACT NO.		
		ILLINOIS FED. AID PROJECT		

June 28, 2017

Bill McKenna, P.E.
Village Engineer
Village of Oak Park
201 South Boulevard
Oak Park, IL 60302

Subject: Ground Penetrating Radar (GPR) scanning at downtown area Oak Park, IL street scape extending along Lake St from Harlem to Euclid Ave and Marion Street from Lake Street to Ontario Street.

Lead Technician: John Lause
Ground Penetrating Radar Systems, Inc.
312-485-7725
John.Lause@gp-radar.com

Table of Contents

1. Overview of GPR

Ground Penetrating Radar (GPR) is a non-destructive testing technology that sends a series of radar pulses into the surface which reflect back off of anomalies below. As the radar pulses pass through the ground, the waves bend slightly when encountering a material with differing physical properties, particularly density and conductivity. Thousands of pulses are sent and received in a small area, and the received signals are combined to form a real-time image of what is in the ground. The various places where the radar waves bend are displayed as anomalies which can be interpreted as steel pipes, PVC conduits, underground storage tanks, voids, foundations, etc. One of the many advantages of the technology is the ability to locate non-metallic objects as well as determining depth to the object. GPR data acquisition is very fast and results are available immediately, allowing any discovered anomalies to be marked directly in the field. Although sometimes confused with X-Ray, GPR uses no radiation emissions and is perfectly safe to work with human presence in close proximity.

2. Equipment and Capabilities

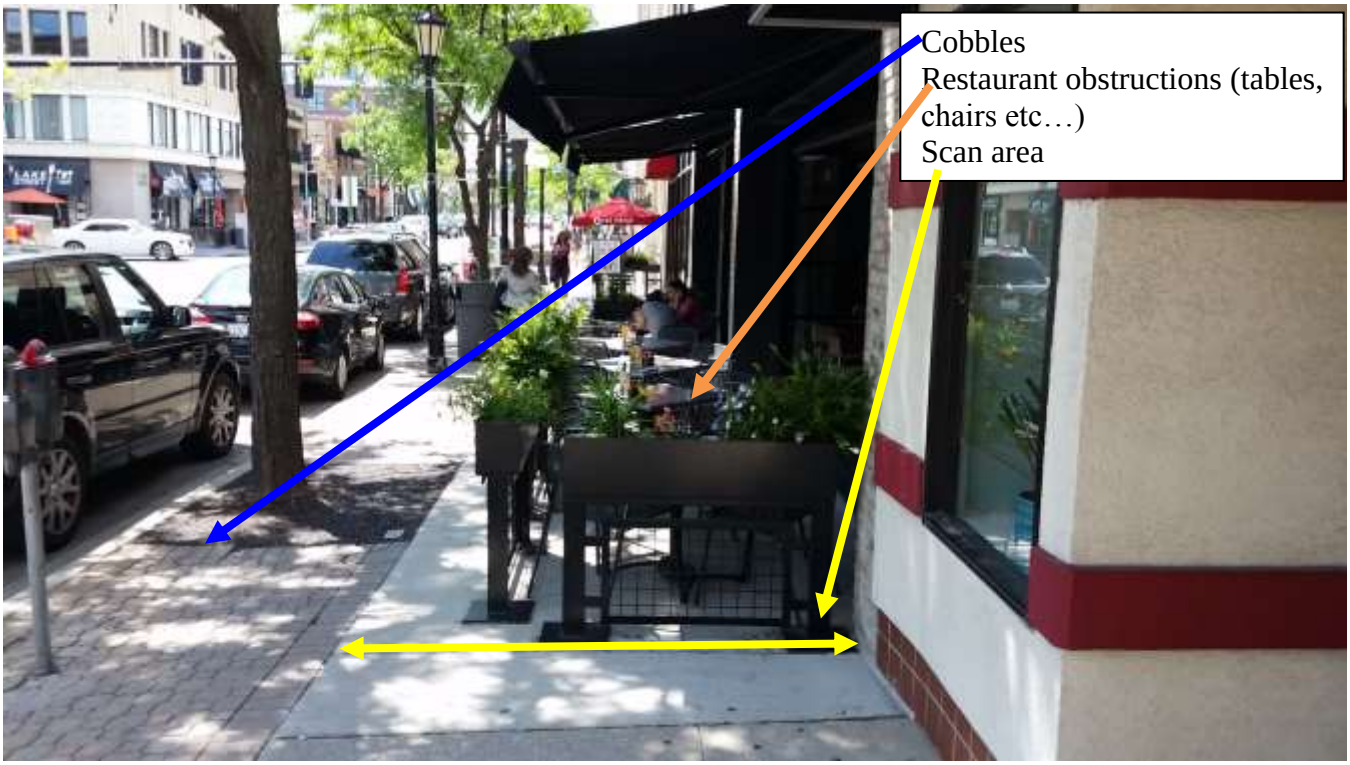
Ground Penetrating Radar (GPR)

- **GSSI SIR – 4000**
  - GPRS uses a Geophysical Survey Systems Inc (GSSI) SIR-4000 Radar unit. This is the most advanced GPR available. It allows for onsite interpretation, as well as stores data for later processing. This equipment is self-calibrating, allowing more precise depth and location measurements.
  - GSSI is the world's leading GPR designer and manufacturer. Information can be found at www.geophysical.com
  - he most recent and up to date version available.
- **1600 MHz GSSI antenna**
  - For portions of this project involving concrete scanning, a 1600 MHz antenna was used with the GPR. This antenna allows data collection to a maximum depth of approximately eighteen inches, depending on the condition of the concrete.

3. Site Description

The site of this scanning was at the downtown Oak Park, IL street scape project. Scan areas were determined by Thomas Engineering field personnel and per project drawings. Scanning was done from face of buildings away towards the street in an area of approximately eight to ten feet depending on placement of concrete. Scanning was not done in the cobble areas along the path unless those areas came up to the building face. In these areas scanning was made difficult by the uneven surface of the cobbles and depth and quality of data was lost here. In places along the downtown area restaurants are in business with seating along the street. In these areas where sitting could not be moved or moved with difficulty scanning was done in the open spaces along the building and between obstructions.

Date: Wednesday, Thursday, Friday and Monday May 17th 18th 19th and 22nd, 2017



This image shows some of the obstructions found along the scanning path.

4. Inspection Methods

The primary purpose of this scanning was to locate vaults (basements extending under the sidewalk from the businesses) along several sections of sidewalk in Oak Park, IL.

The inspection method for this project consisted of conducting a GPR scan of the designated area. Scanning was performed in a grid pattern where the GPR could be used. The GPR can not scan within 4 inches from walls, pipes and obstructions. This included building walls, landscaping, tables, chairs and other typically found obstructions along a city street. In these cases the most complete scanning that was able to be performed was done. The GPR detects differences in physical properties such as conductivity and density; metallic objects are most clearly visible, but it can also detect PVC, concrete (especially reinforced), and often old excavations if the backfill is different from native soil.

As each scan progresses, the GPR presents a sub-surface image in real time, allowing conduits, and other significant anomalies to be marked out directly in the field. Whenever an anomaly relevant to this project was detected, its location was marked directly on the surface.

5. Findings/6. Radar Data

The areas were scanned as best as possible and based upon the data at the site several possible vault areas were located along Lake St. between Harlem and Euclid Ave and Marion Street from Lake Street to Ontario Street.

The sections of sidewalk scanned in front of the older buildings the data was not typical of what was found in the surrounding areas. The data in these sections appeared to have possible multiple layers of subgrade changes.

This data is not believed to consistent with that of a vault. Further investigation of findings may be required to confirm vault presence.

GPRS did not locate any public utilities along any of the scan areas, however GPRS did notice in previously marked utility areas possible traffic or lighting was as shallow as 5 inches. Further investigation may need to be performed if concrete demolition is to take place.

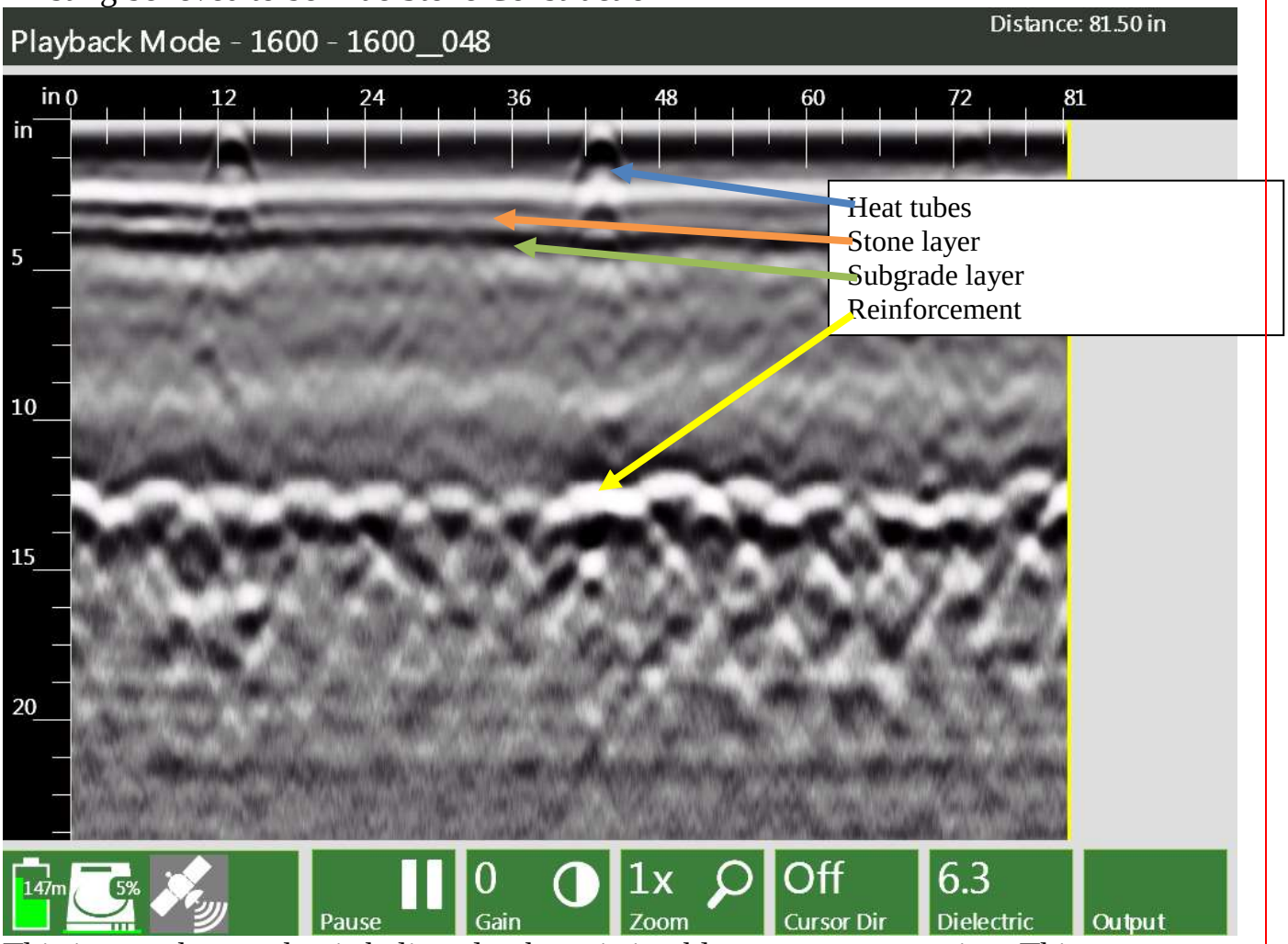
Existing blue stone construction was found to have heating tubes and reinforcement present, not believed to be a vault. This area was found along the south leg of Marion Street

GPRS confirmed the presence of vaults along the intersection of Oak Park and W Lake St.

It should not be assumed that everything was able to be located in the scan areas. GPRS located what we were able to locate given site conditions/obstructions, scanning constraints and equipment limitations.

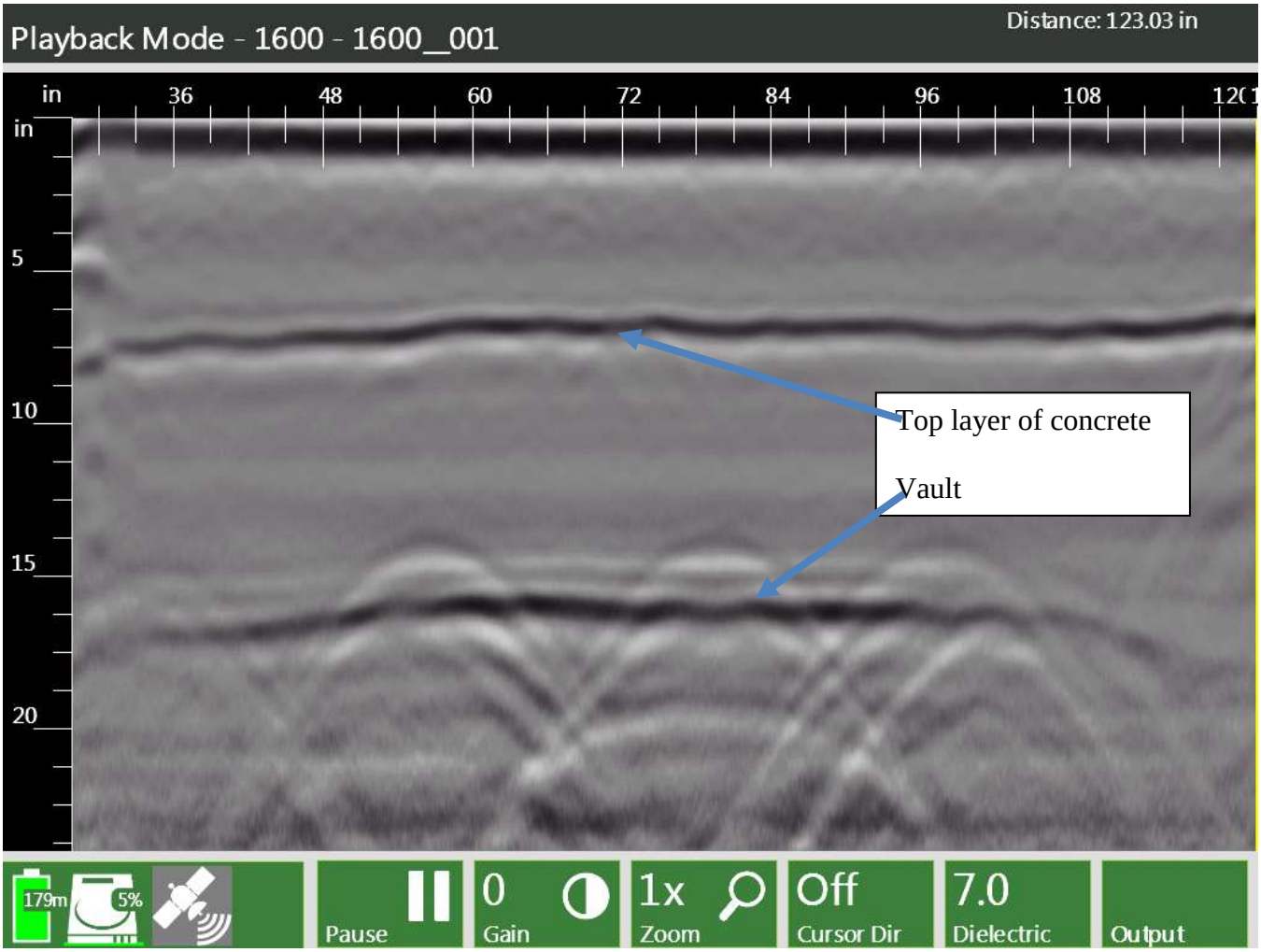
Due to unknown field difficulties several images did not save correctly, therefore some areas only have one image

Existing believed to be Blue Stone Construction

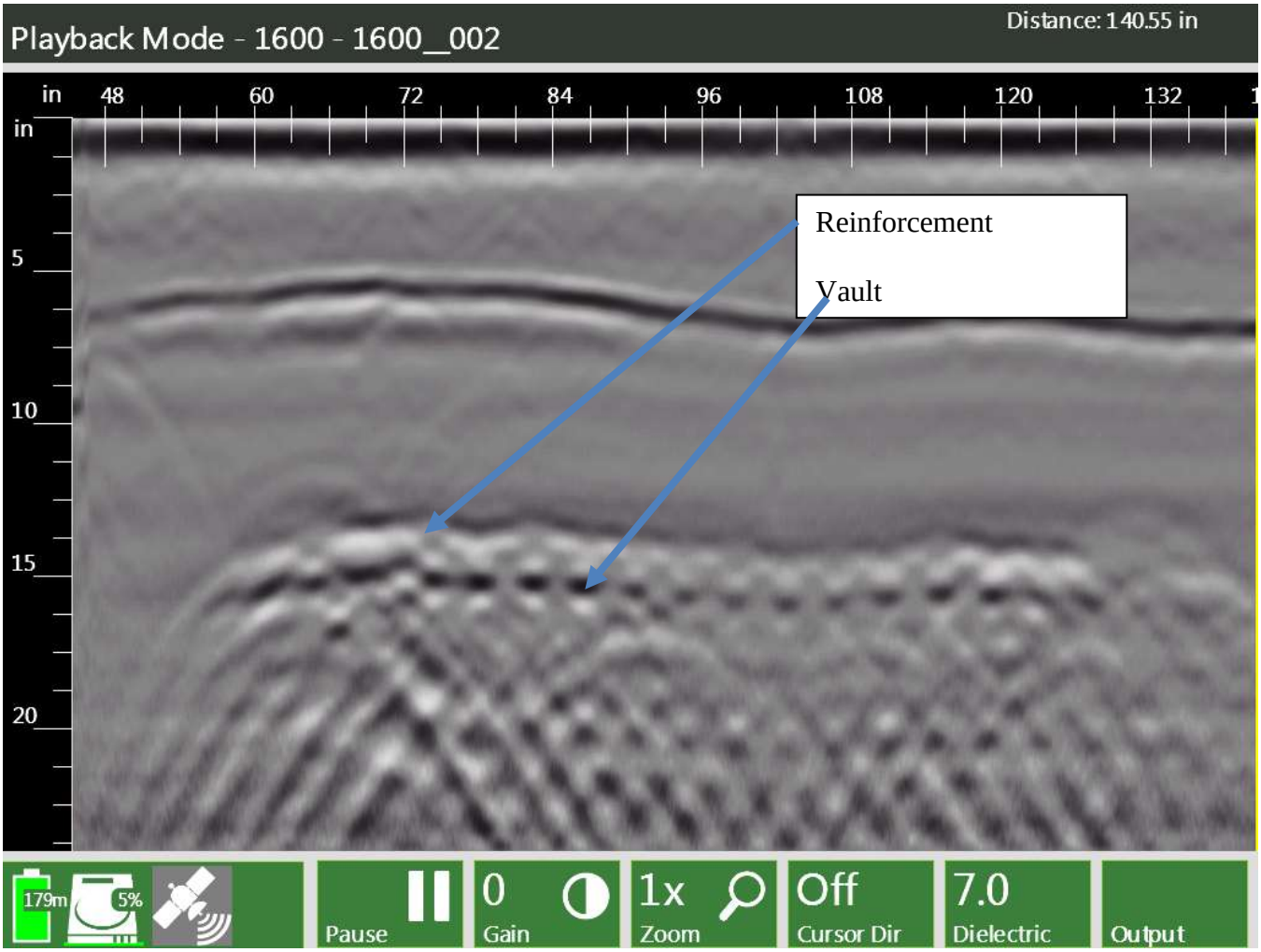


This image shows what is believed to be existing blue stone construction. This area was found along the south leg of Marion St

Area 1
1144 W Lake St.
Suspect area believed to a vault based on the data and the size was 12’ x by full length of building along south and west sides

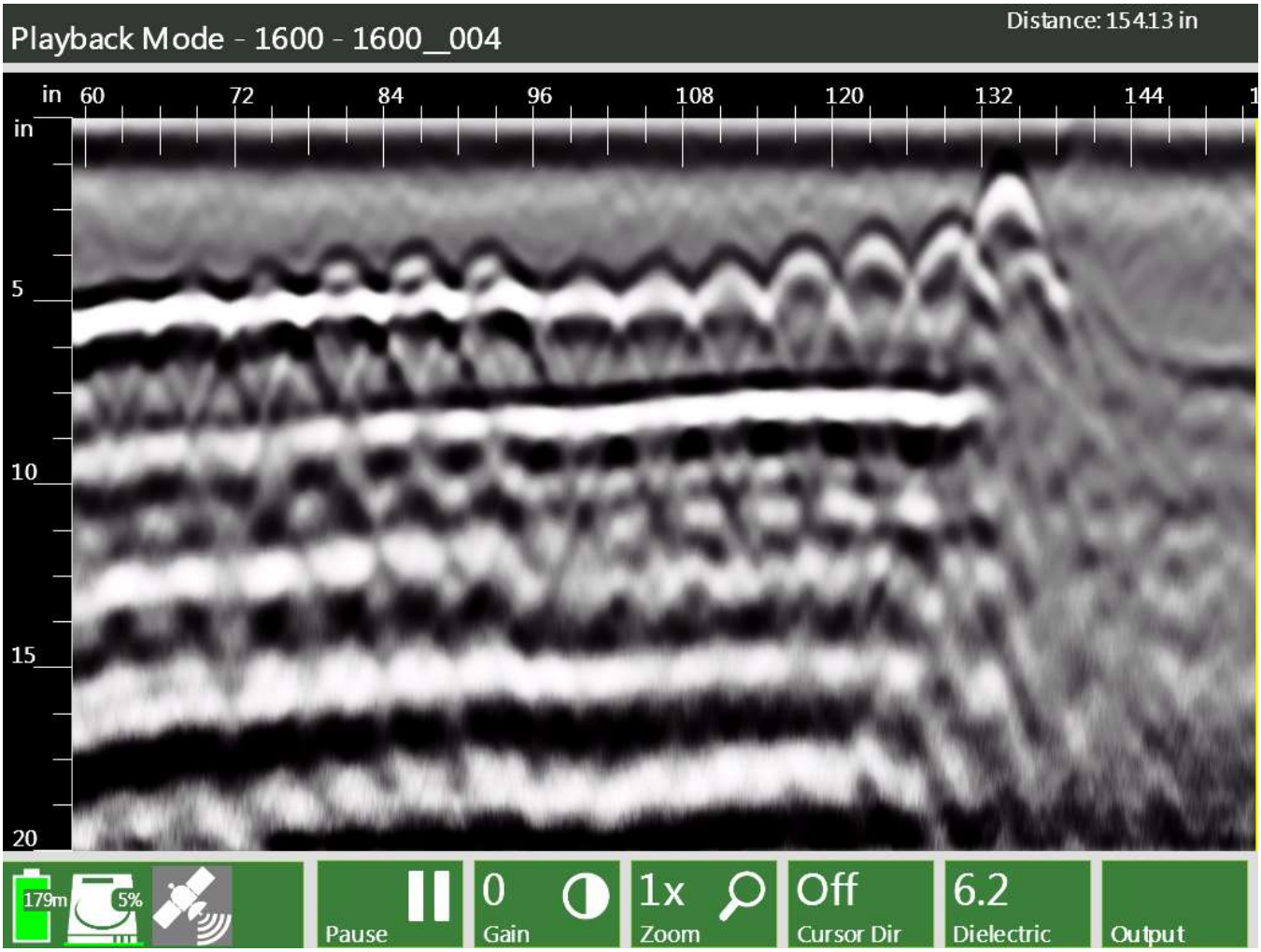


This image is in the north to south scan direction. The top layer of concrete appears to be 6 to 7 inches thick and the bottom of the vault is at approximately 16 inches. Depth scale on the left

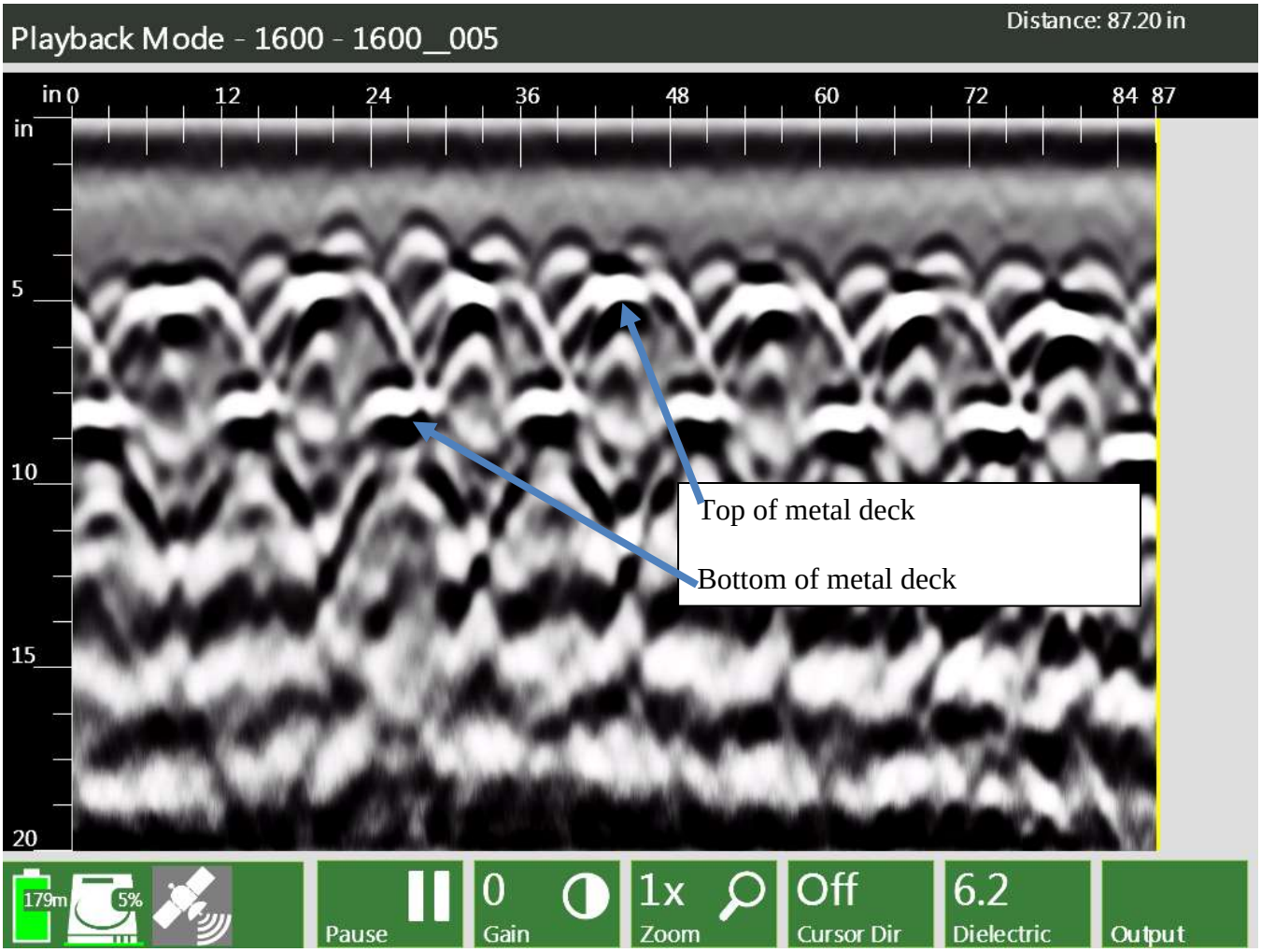


This image is from the scan in the east to west direction

Area 2
1128 W Lake St (Chipotle)
Suspect area believed to a vault based on the data and the size was 10 x 12 feet

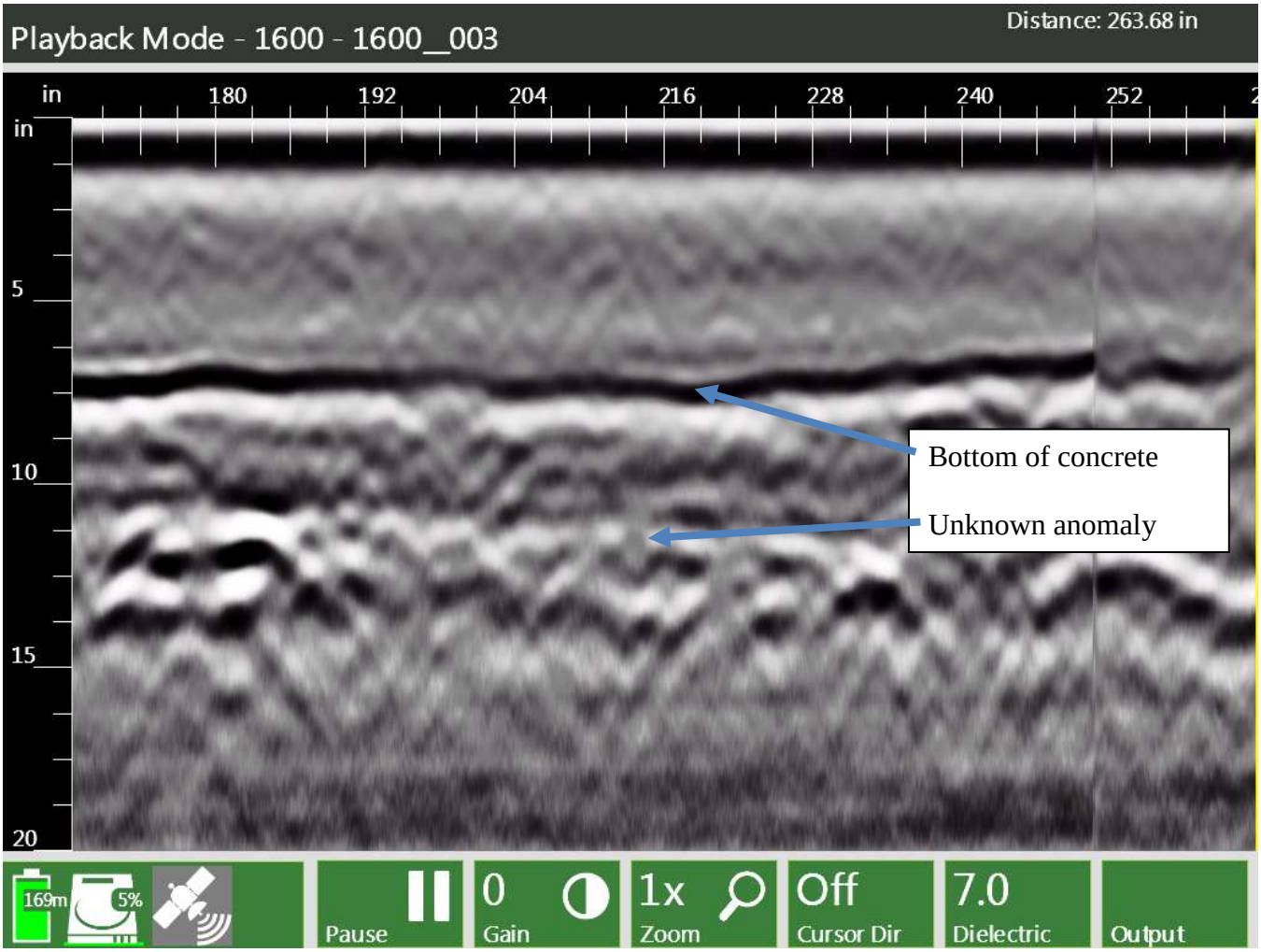


This image is from the north to south scan direction . Concrete appears to be approximately 5 to 6 inches thick



This image is the east west direction. Concrete appears to be a pan deck construction with top of concrete approximately 5 inches and bottom approximately 7 inches.

Area 3
1116 W Lake St
Suspect area based upon the data unknown anomaly was present, anomaly may be vault or other unknown the size was 3 x 33 feet

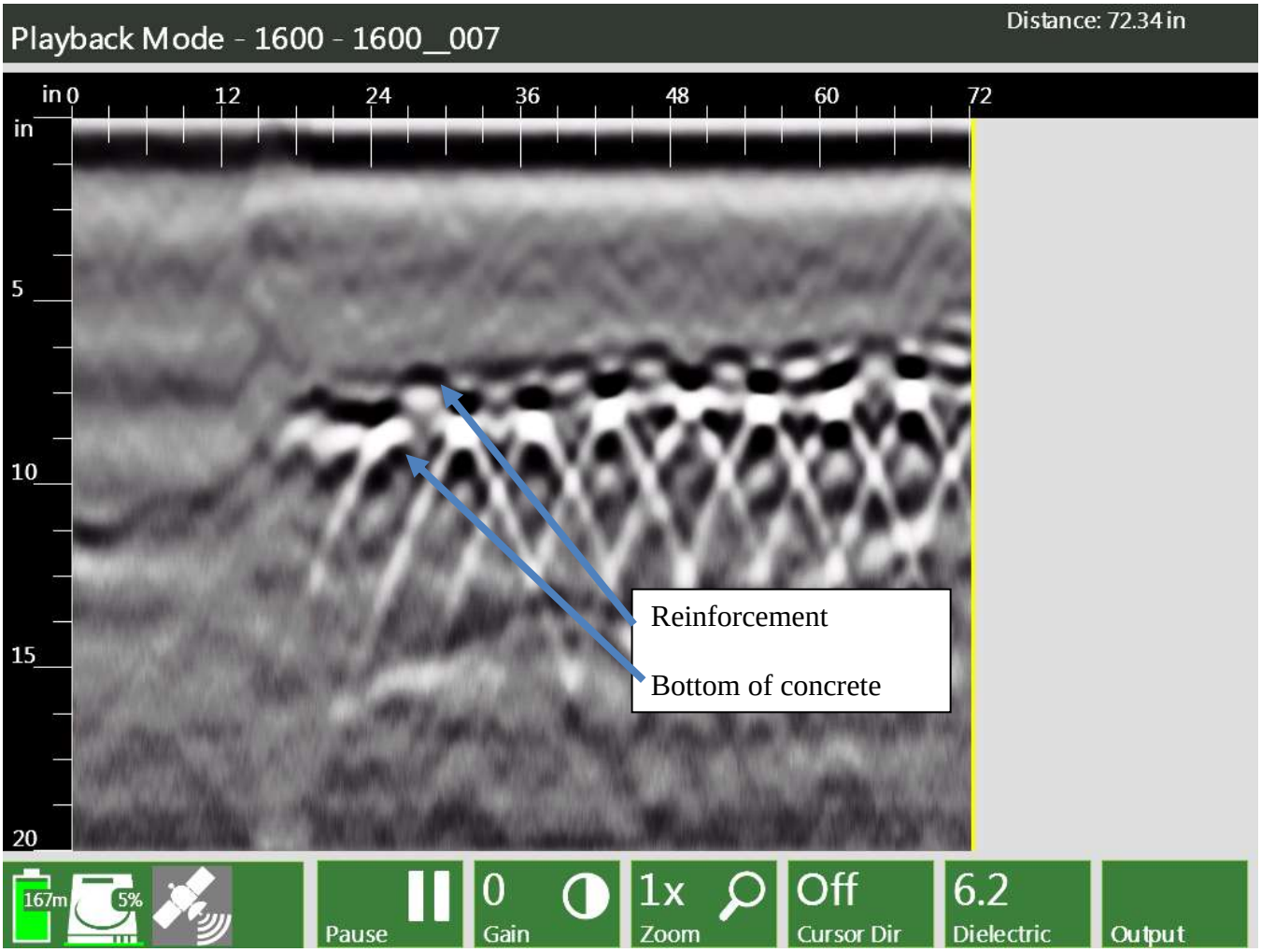


This image shows data of an unknown anomaly. The top of the anomaly is at 10 inches in depth. Unclear if the anomaly is a vault or some other unknown. In this area further investigation may be required.

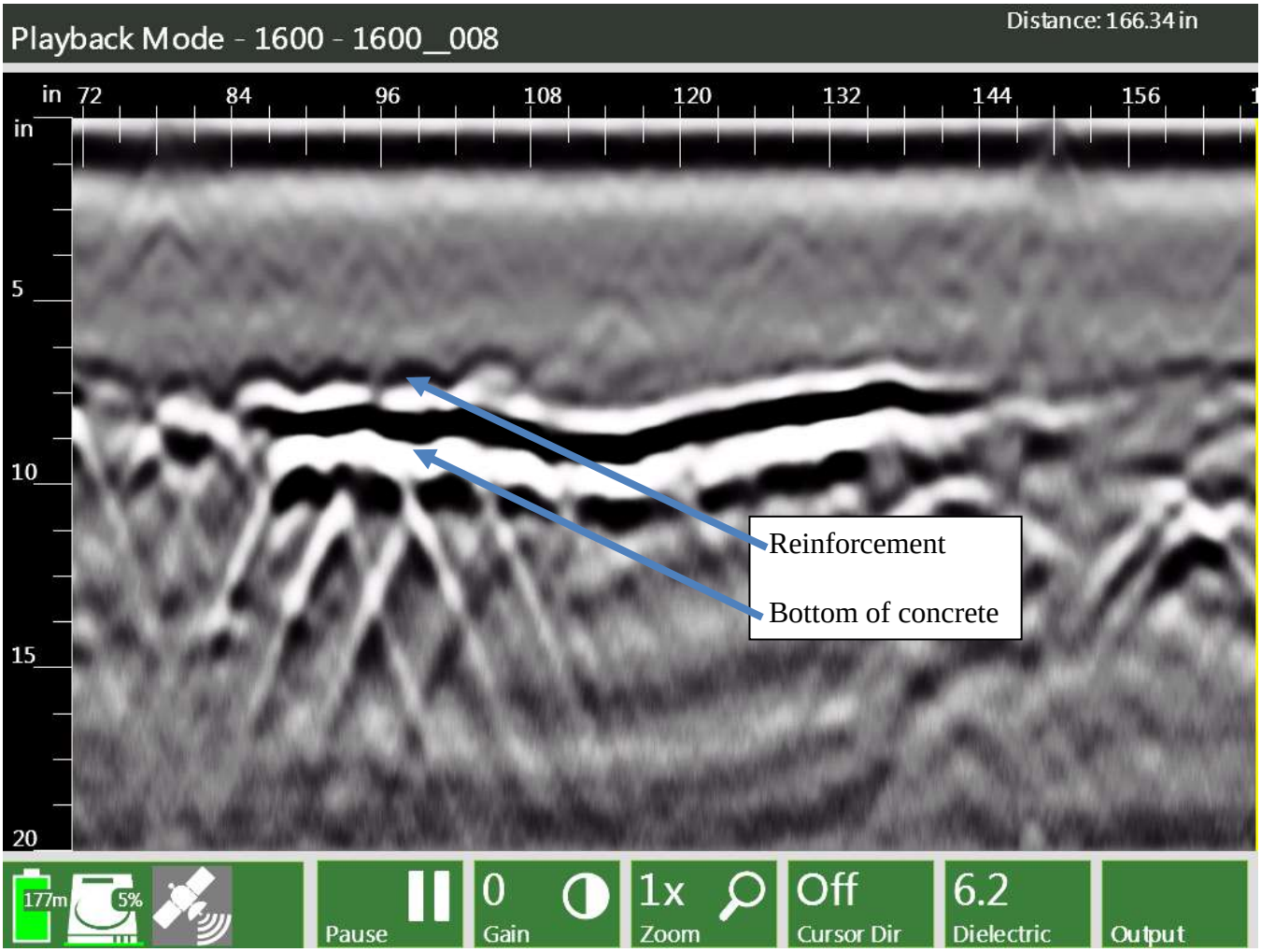
Area 4

1100 W Lake St (Shaker building)

Suspect area believed to a vault based on the data and the size was 9 x 15 feet

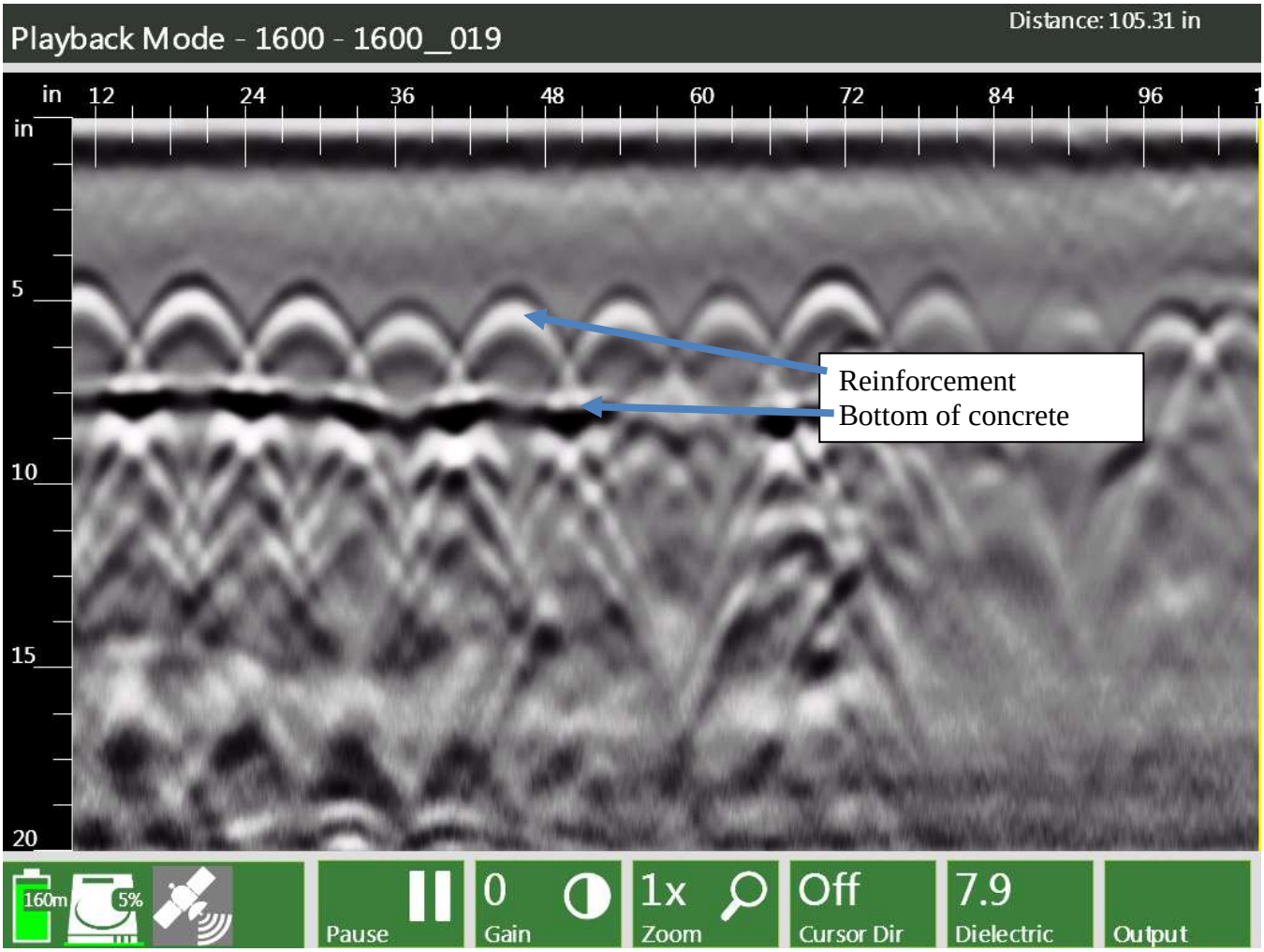


This image is in the north to south direction. Bottom of concrete is approximately 7 to 8 inches.



This image is in the east west direction.

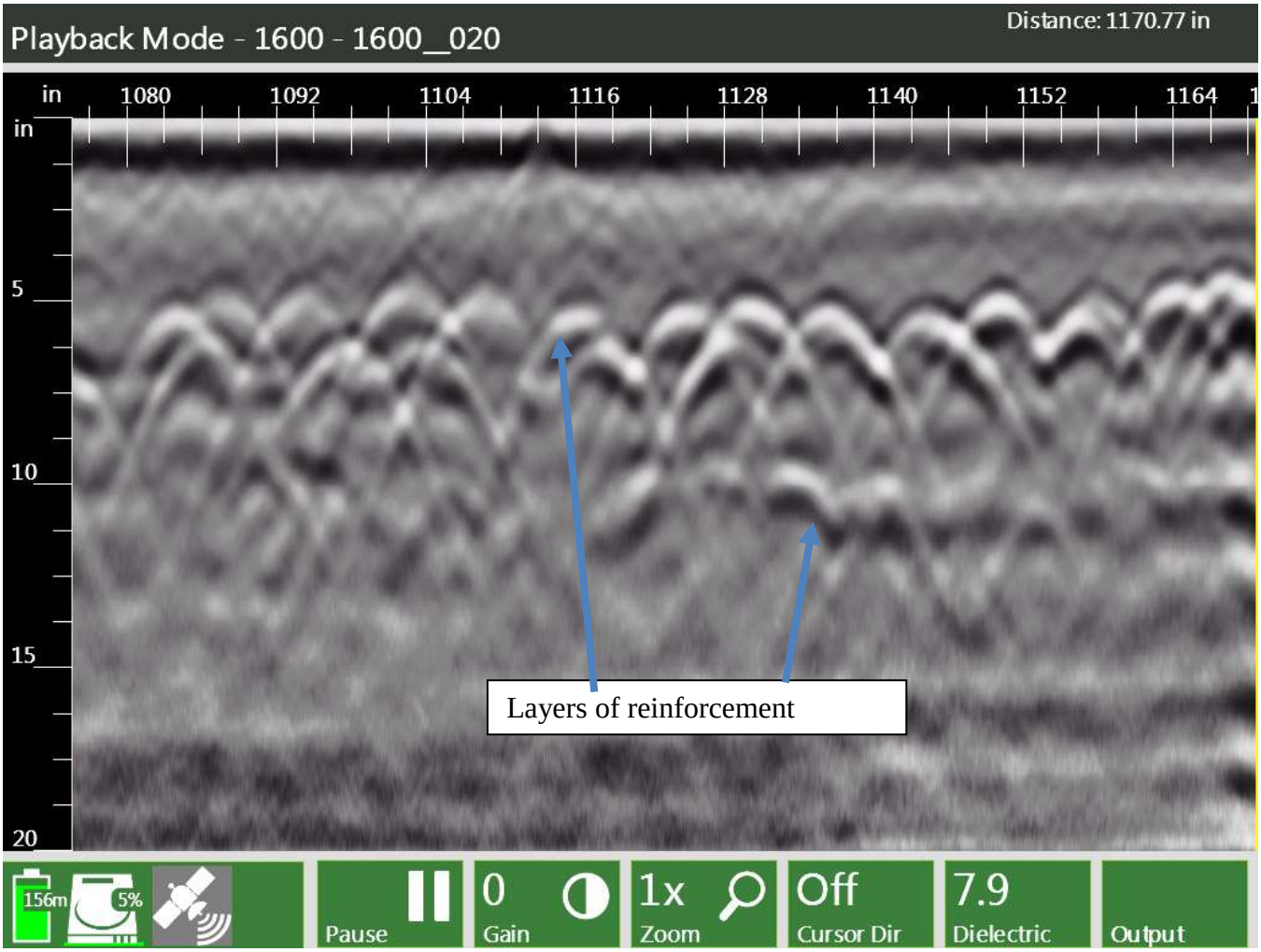
Area 5
1022 W Lake St (theater)
Suspect area believed to a vault based on the data and the size was 8 x 12 feet



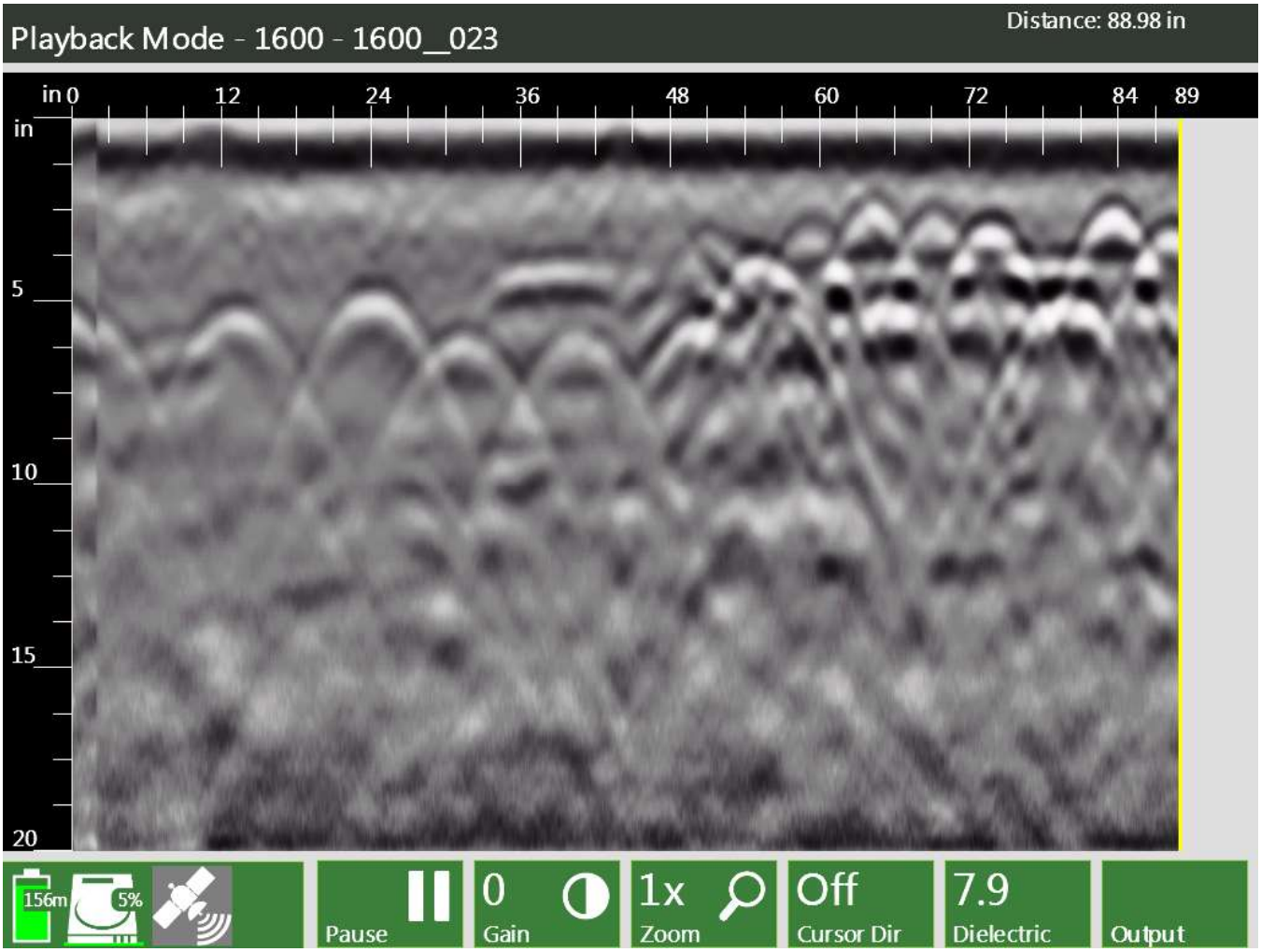
This image is the north south scan direction. Concrete is approximately 7 to 8 inches thick.

East to west scan direction did not save from the field

Area 6
1022 W Lake St (theater)
Suspect area believed to a utility vault based on the data and the size was 21 x 33 feet

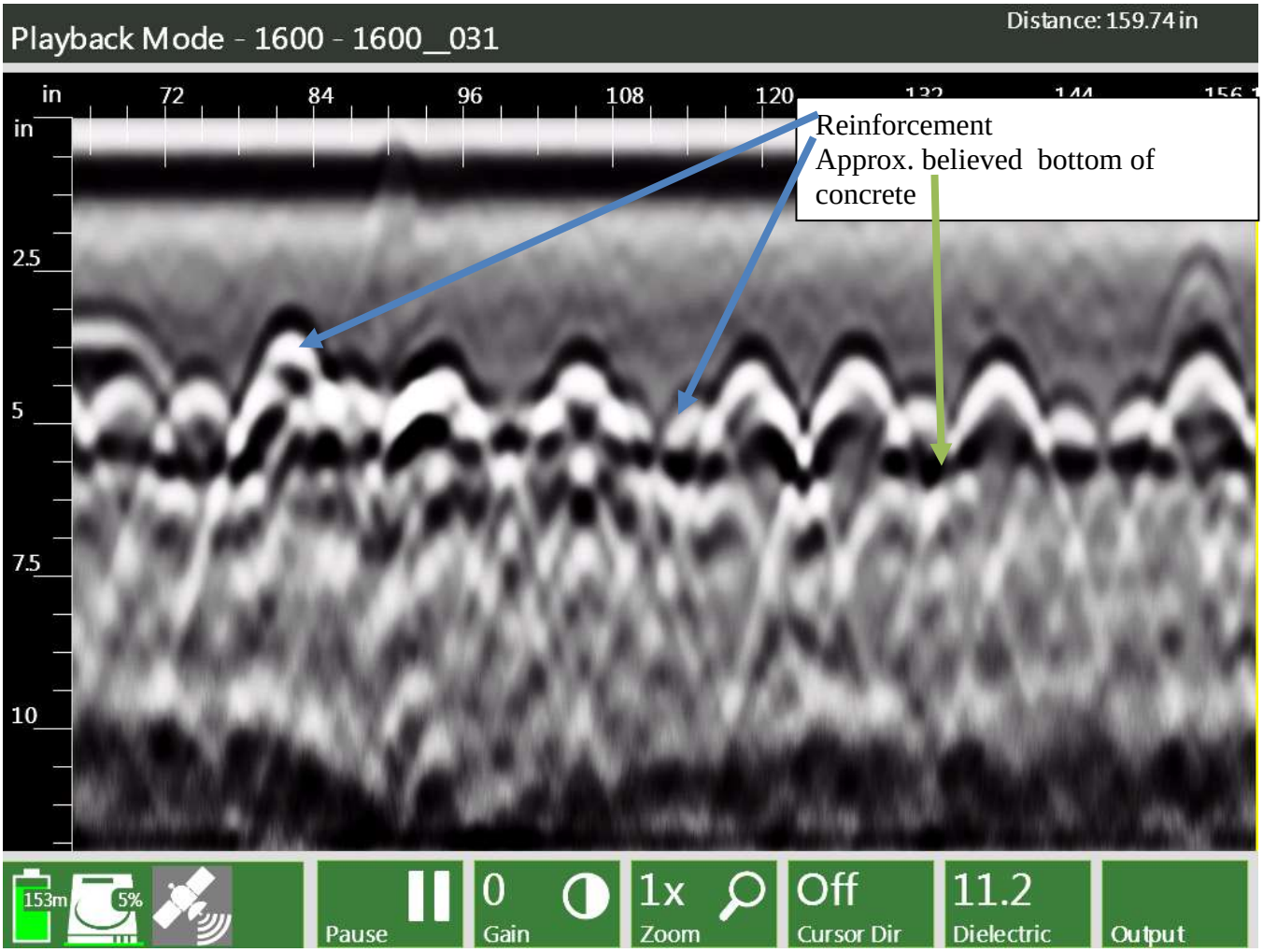


This image is from the north south direction. This is the utility vault area. There are several layers of reinforcement present and due to this the bottom of the concrete could not be determined.

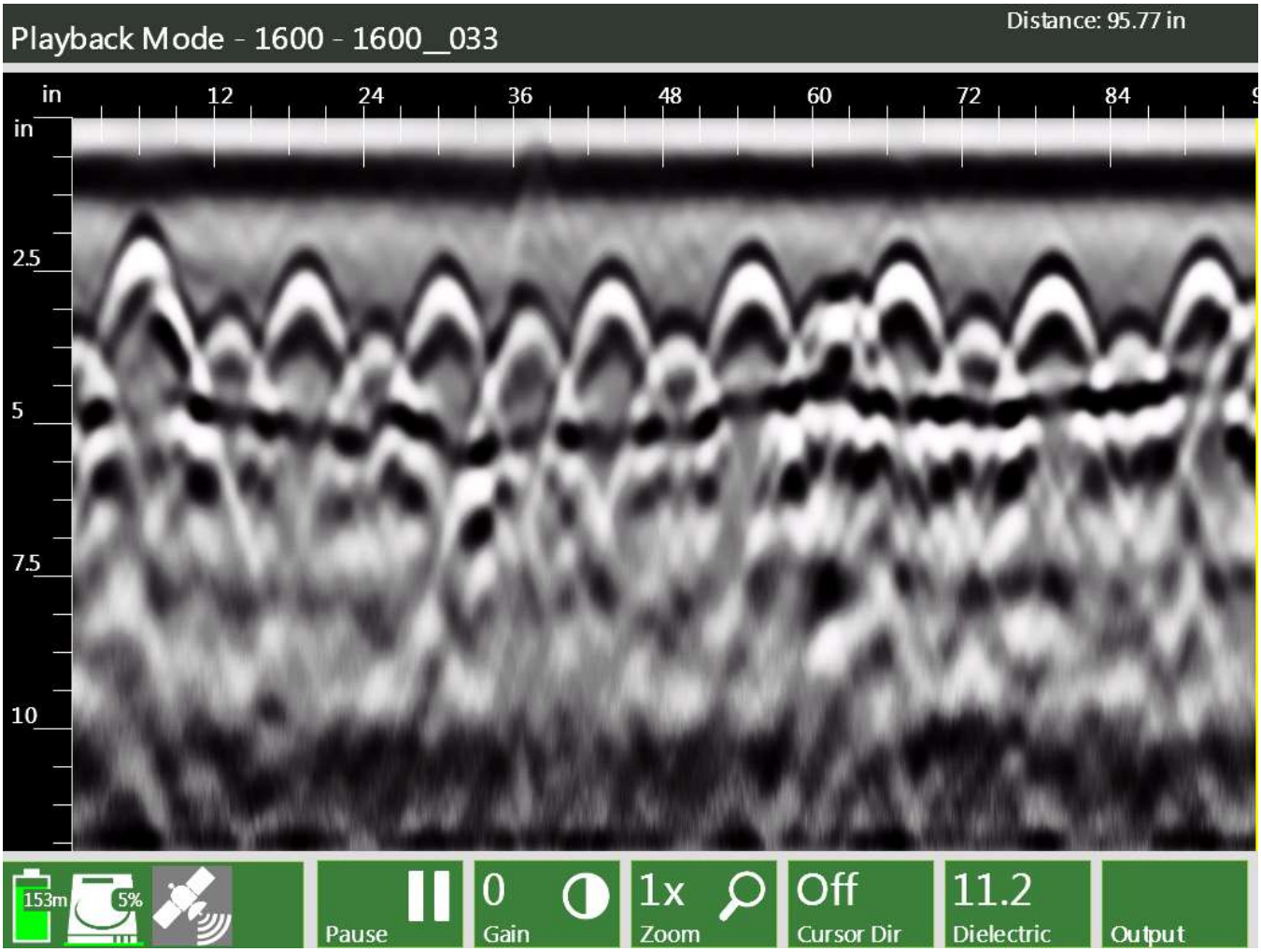


This image is from the east west direction. This is the utility vault area. There are several layers of reinforcement present and due to this the bottom of the concrete could not be determined.

Area 7
Library
Suspect area believed to a vault based on the data and the size was 10 x 36 feet. Area had several layers of reinforcement from wire mesh and rebar. The area may be a utility vault or extra reinforcement present due to the sidewalk construction.



This image is the north south direction. Two layers of reinforcement are present. Concrete thickness is approximately 5 to 6 inches**.**



This image is the east west direction. Two layers of reinforcement are present. Concrete thickness is approximately 5 to 6 inches**.**

Area 8

This area is not a vault, but the soil under the sidewalk appears to be disturbed. Area may be a possible excavation or unknown. Further investigation maybe required here

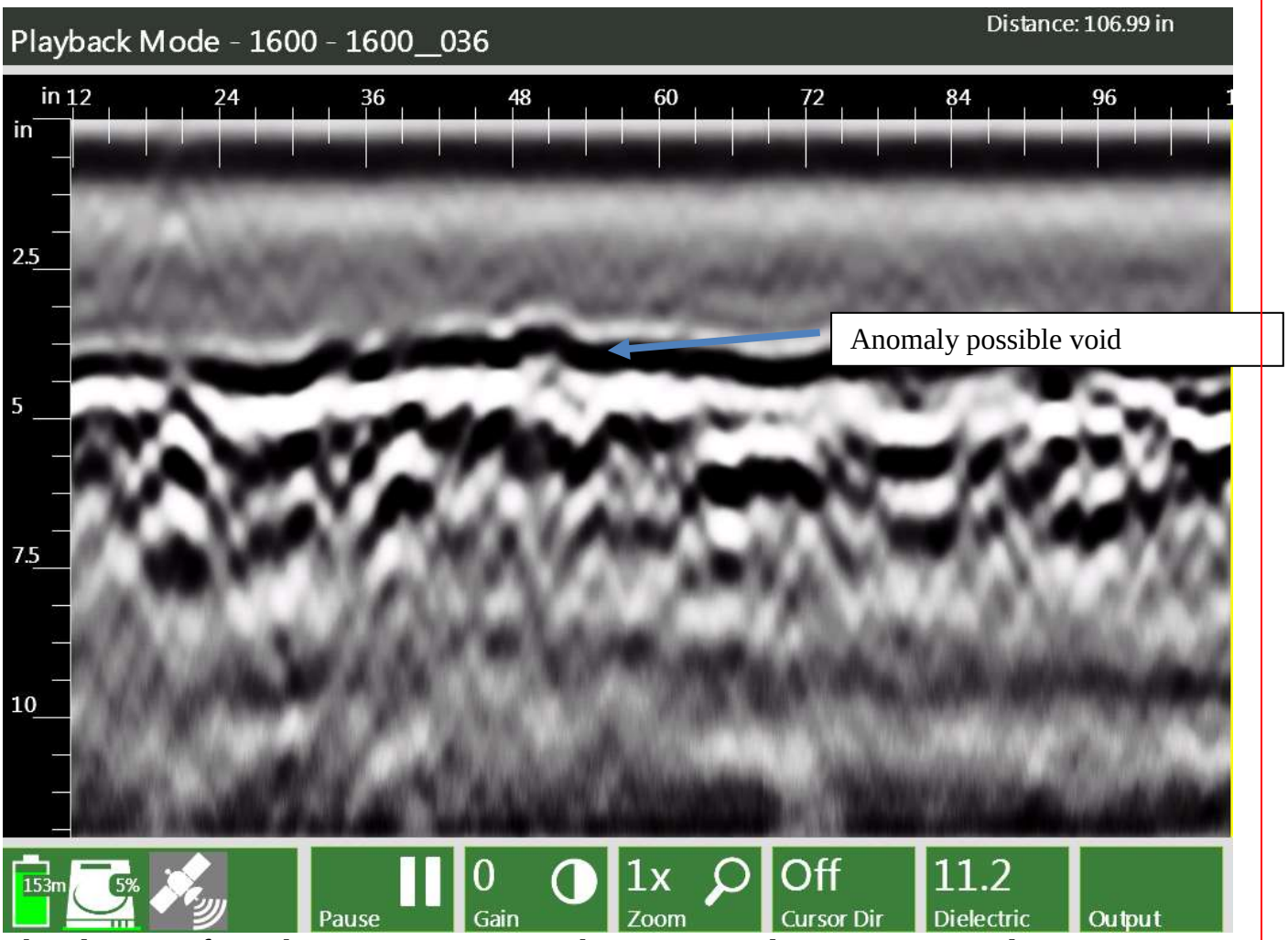
Area 9

Known vaults along the south east and west leg of Oak Park Ave.

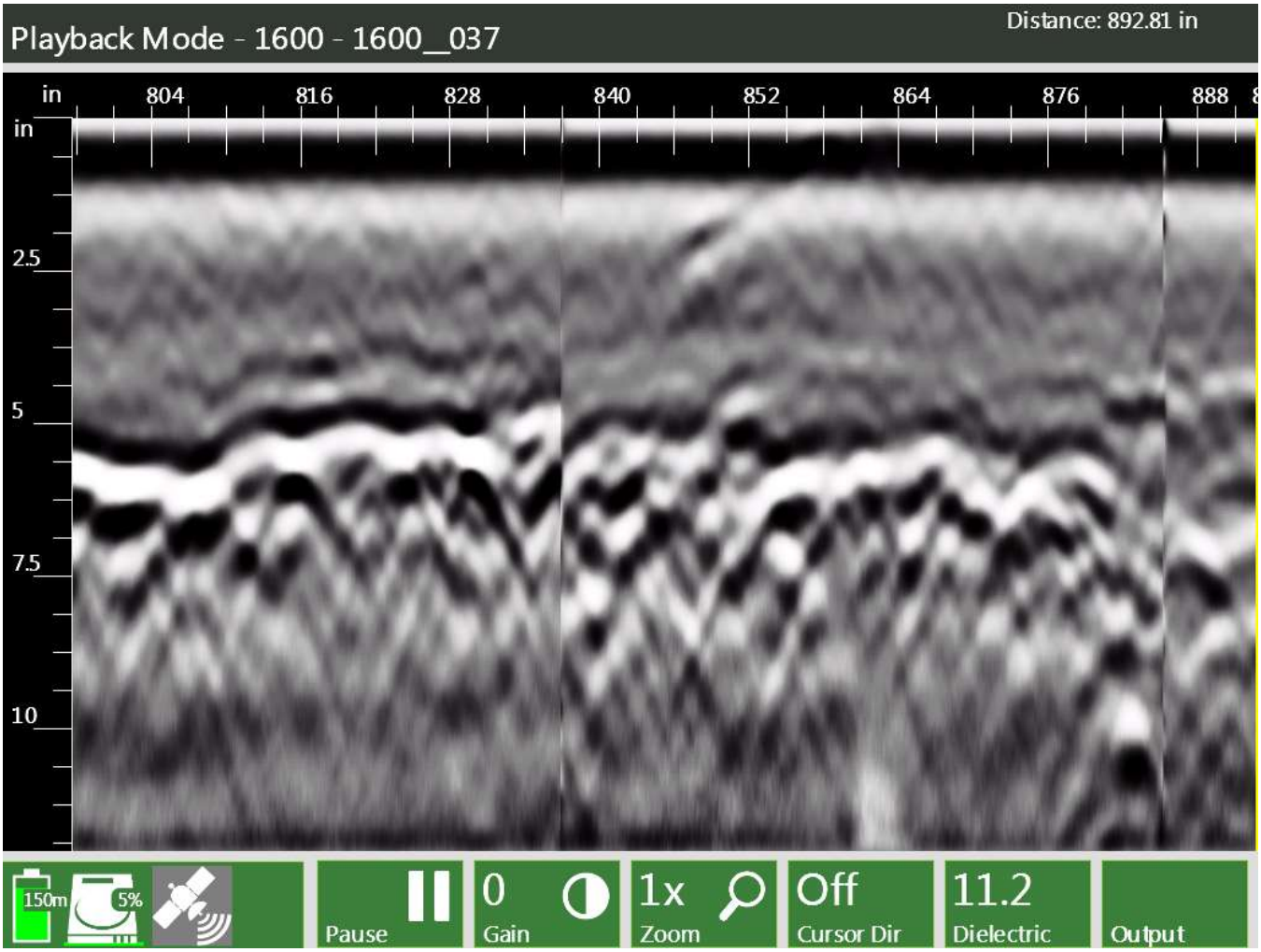
South east side of the street

South west side of the street.

Area 10
720 W Lake St
Suspect area based upon the data unknown anomaly was present, anomaly may be vault or other unknown the size was 4 x 24 feet

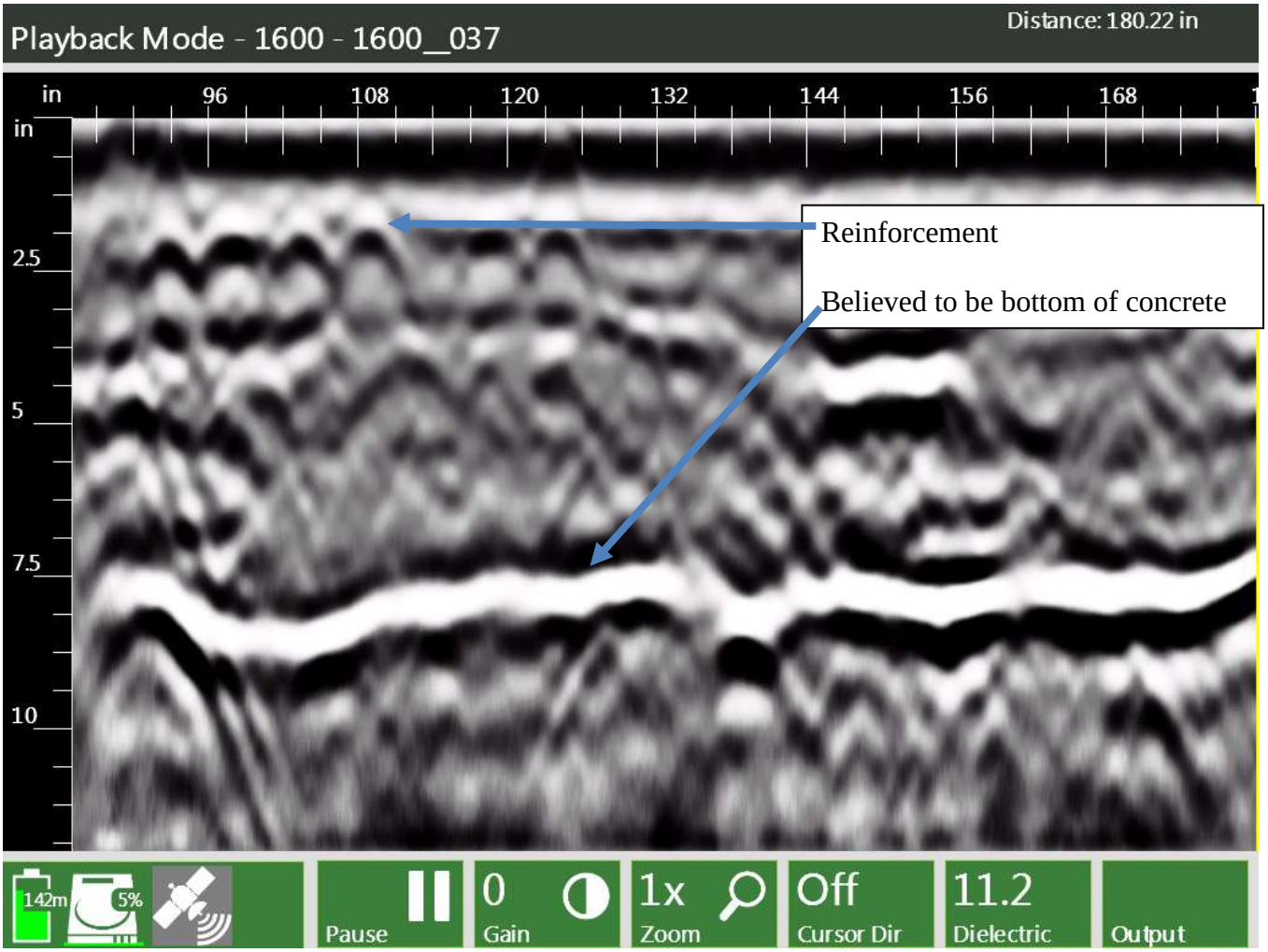


This data was from the east to west scan, there is anomaly at approximately 4 inches consistent with that of a void, no reinforcement is present. Anomaly may be a change in soil type or other unknown. If the anomaly is a vault the surface would be the top of the concrete sidewalk. Further investigation will be required to determine what anomaly is.



This data was from the north to south scan, there is anomaly at approximately 4 inches consistent with that of a void, no reinforcement is present. Anomaly may be a change in soil type or other unknown. Further investigation will be required to determine what anomaly is.

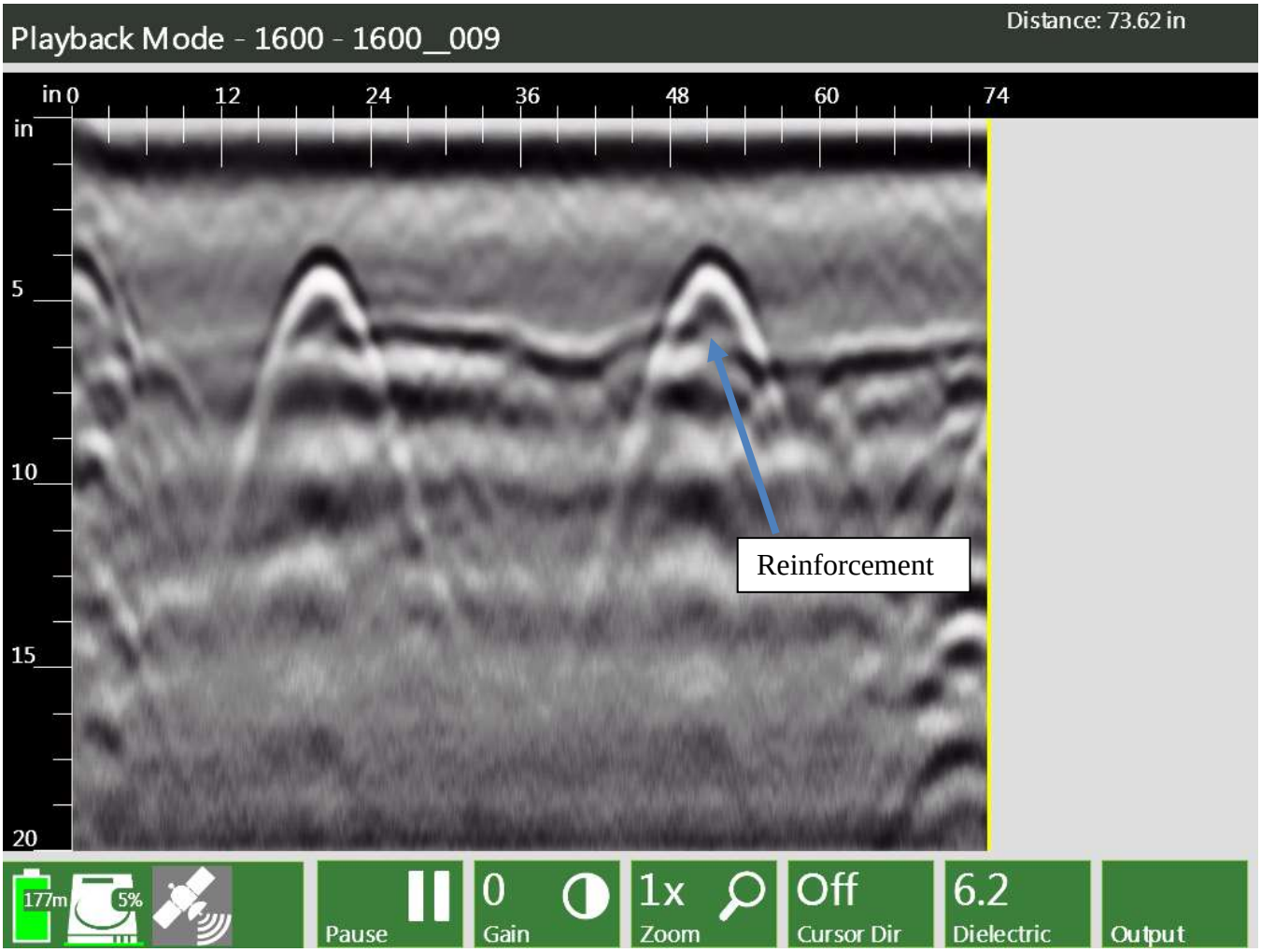
Area 11
714 W Lake St
Suspect area believed to a utility vault based on the data and the size was 8 x 30 feet.



This image is the north south direction. There is reinforcement and the concrete appeared to be 7 to 8 inches thick

East to west scan direction did not save from the field

Area 12
Marion St
Suspect area believed to a utility vault based on the data and the size was 5 x 5 feet.



This is the north south direction around the utility vault. There is reinforcement present; depth of concrete was unable to be identified here

East to west scan direction did not save from the field

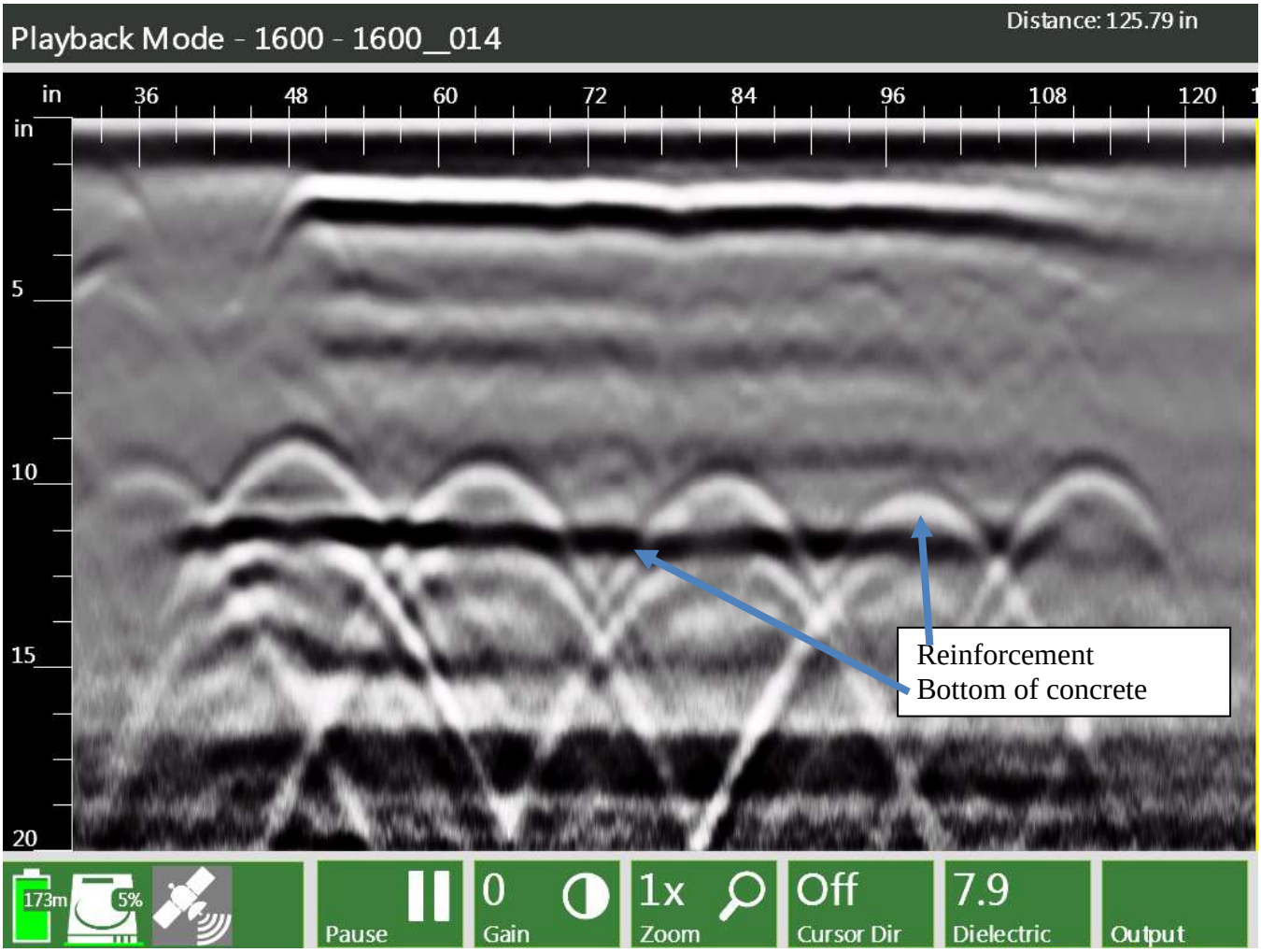
Area 13

Chase Vaults along Marion St believed to be three areas of concern

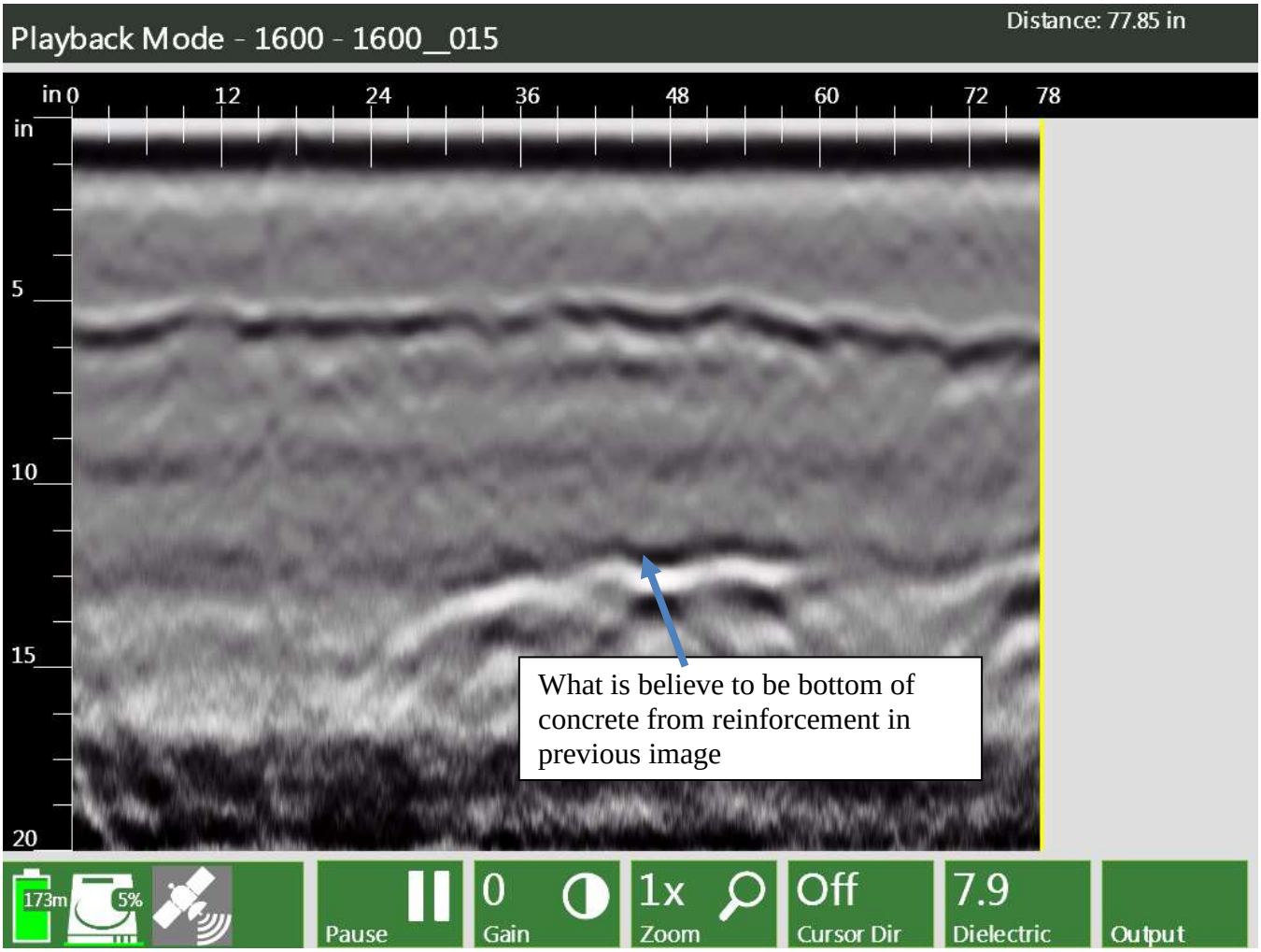
Suspect area believed to a vault based on the data and the size was North end 5 x 6 feet Middle 5 x 40 feet and South end 5 x 25 feet.

North End

South End



This image was the north to south scan direction. Concrete thickness is thought to be approximately 10 to 11 inches. This type of image was found at all three locations.



This image is the east west direction. The anomaly is at approximately 11 to 12 inches. There appears to be a possible void at that depth possibly related to a potential vault. Further investigation maybe required.

7. Qualifications

Ground Penetrating Radar Systems, Inc. (GPRS) was founded in October 2001 by Matt Aston, who engrained a philosophy of client service and data accuracy. Matt's primary intent in starting the business was to give contractors a reliable way to scan into concrete and foundational slabs in order to avoid cutting embedded electrical conduits and critical reinforcing steel. These are immensely important services in the construction business as it helps to maintain structural integrity and avoid major human error leading to increasing costs and man hours. Obviously, in a field with such dramatic implications, reliability and credibility are the cornerstones. While GPRS performs this type work on a regular basis, there are many other applications in which our services can be deployed and as we have grown over the past decade, we have become industry leaders in the nuances of GPR in specific circumstances, including the scanning of cemeteries and burial plots.

Since our inception, GPRS has grown to a nationwide enterprise and to complete over 36,000 projects per year as seen in 2016. This success is due to our high level of customer service coupled with our unique market position. Unlike many other companies that provide GPR services, GPRS offers no ancillary services and therefore our field operators are able to dedicate 100% of their time and effort in perfecting this particular tradecraft. Indicative of our dedication to this function is the fact that we are the only national GPR Company specializing solely in this service. We perform GPR services every day in a variety of complex and often unique environments. This gives us familiarity with environments and in situations that other firms would find foreign. Further, this is not something we do once in a while; our technicians are in the field every day. We are very proud of this dedication to our craft and of our performance record. To statistically quantify our reliability, we have had a reported incident of error on less than one percent of the projects we have completed. Our customers have expressed a high level of satisfaction, as evidenced by the fact that in 2012 nearly 80% of our business was either repeat clients or referred by our customers. To demonstrate our environmental experience, GPRS has been involved in projects ranging from small residential jobs to major construction projects with values in excess of $4 Billion.

8. Closing

Thank you for the opportunity to serve you on this project. I hope this report has answered all the questions you had regarding this scanning. However if there is anything you have questions about or feel was omitted, please do not hesitate to call.

Thank you,

John Lause
Ground Penetrating Radar Systems
312-485-7725 Phone
866-851-8247 Fax
John.Lause@gp-radar.com