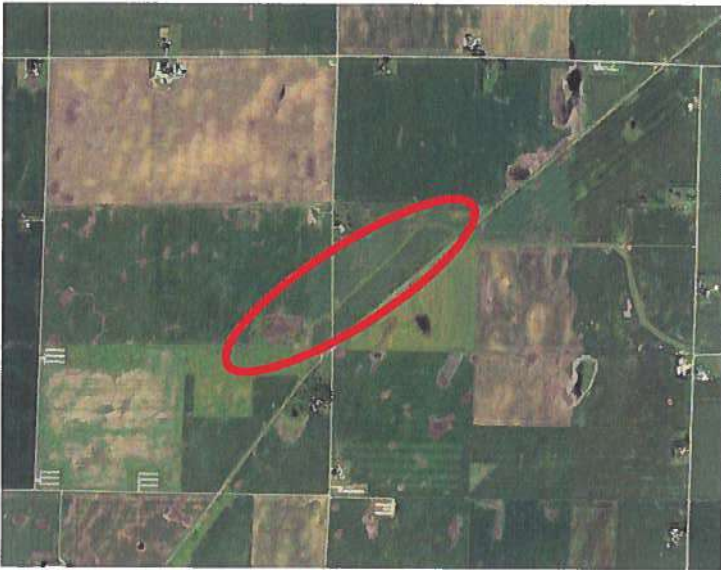
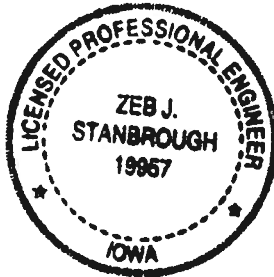


HARDIN COUNTY, IOWA

2021



**ENGINEER'S REPORT
ON REPAIRS AND
IMPROVEMENTS TO
THE MAIN TILE
DRAINAGE DISTRICT
NO. 3
HARDIN COUNTY,
IOWA**



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA

ZEB J. STANBROUGH, P.E.

DATE

LICENSE NUMBER: 19957
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2021
PAGES OR SHEETS COVERED BY THIS SEAL:
SHOWN ON TABLE OF CONTENTS

5-17-2021



CLAPSADDLE-GARBER ASSOCIATES OFFICE LOCATIONS

16 East Main Street, PO Box 754 | Marshalltown, IA 50158
1523 S. Bell Avenue, Suite 101 | Ames, IA 50010
5106 Nordic Drive | Cedar Falls, IA 50613
739 Park Avenue | Ackley, IA 50601
511 Bank Street | Webster City, IA 50595

Project Office
739 Park Avenue
Ackley, IA. 50601
Phone: 641-847-3273
Fax: 641-847-2303

**Engineer's Report on Repairs and Improvements
to the Main Tile, Drainage District No. 3
Hardin County, Iowa**

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Engineer's Report on Repairs and Improvements To the Main Tile, Drainage District No. 3 Hardin County, Iowa

1.0 INTRODUCTION

- **SCOPE OF WORK** – The District Trustees, requested Clapsaddle-Garber Associates to investigate and report concerning repairs and improvements to the Main Tile of Drainage District No. 3. This report will detail the feasibility of said repairs and improvements, and present opinions of probable construction costs associated with said repairs and improvements. In November 2020, the District Trustees requested Clapsaddle-Garber Associates to move ahead with an investigation and report concerning repairs and improvements to the Main Tile after deficiencies with had been identified.

- **LOCATION** – The area of investigation was limited to a portion of Main tile. Said Main tile is located in Sections 27 and 28, Township 89 North (T89N), Range 21 West (R21W), Hardin County, Iowa. Specifically, the downstream limit of investigation for the Main tile is upstream of the railroad right of way in Section 27 approximately ½ mile west of I Avenue and ½ mile south of the 140th Street. Going upstream, the tile then proceeds northwesterly for a short run before turning southwesterly across Section 27. It crosses I Avenue approximately 1 mile south of 140th Street. The tile then continues southwesterly across Section 28 for ¼ mile and then turns westerly, with the upstream limits of the investigation being approximately ¼ mile west of I Avenue. For reference, a map showing the limits of investigation is included in Appendix B.

2.0 DISTRICT HISTORY – The following is a brief summary of the pertinent history of Drainage District No. 3 as obtained from the Hardin County Engineer’s Field Books and the Hardin County Auditor’s drainage minutes and records.

- 1906, Mar. 5 Original petition filed in the County Auditor's Office.
- 1906, Aug. 7-14 "The Iowa falls Sentinel" published Notice of petition.
- 1906, Sept. 4 Hearing
- 1906, Oct. 13 "THE SEMI-WEEKLY HERALD" published Notice for Drain District.
- 1906, Nov. 12 Hearing for damages
- 1907, Jan. 21 Amended and substituted petition was filed for a Drainage District No. 3.
- 1907, Feb. 2 Engineer's Report by Geo L. Mechem was filed.
- 1907, Nov. 7 Board of Supervisors - resolved to establish Drainage District No. 3.
- 1908, Mar. 4 Board of Supervisors rerecorded November 7, 1907 minutes, proceedings, and resolutions to fix errors in the establishment of Drainage District No. 3.
- 1908, Mar. 20 Commissioner Report of the permanent survey of Drainage District No. 3
- 1908, Apr. 23 Notice to Contractors for construction of Drainage District No.3 - Total Cu.Ydr. 209,654.
- 1908, Jun. 28 C.H. Sternbery & Sons Drainage Contractors bid submitted.
- 1908, Jun. 30 Indiana Drainage County bid submitted.
- 1908, Jul. 22 Northern Construction Company request to withdraw bid
- 1908, Jul. 23 Letter from County Auditor's Office to Elkhart Ind. stating they could not consider their bid.
- 1908, Oct. 14 Notice of assessment for Drainage District No. 3.
- 1908, Nov. 9 Awarded Construction Contract to Dilley & Berdine
- 1908, Nov. 14 Hearing for assessment for Drainage District No. 3.
- 1908, Dec. 11 Contract with Dilley & Berdine signed.
- 1912, Aug. 3 Letter from Clerk of the District Court to E.L. Marriage about fixing the upper end of the Drainage Ditch.
- 1913, Jan. 7 Engineer's Report by S.B. Gardner - Drainage Ditch needs to be deepened to drain properly.
- 1913, Aug. 3 Petition to change upper end of Drainage District from Station 352 to Station 476.
- 1913, Aug. 9 Drain Bound - Bond for Costs
- 1913, Oct. 7 Engineer's Report by S.B. Gardner - Cleaning from Station 80 to Station 338+50 and from Station 338+50 to Station 485.
- 1913, Nov. 28 Notice published in "HARDIN COUNTY CITIZEN" to convert the upper end of the Drainage District No. 3 from open ditch to tile.
- 1913, Dec. 16 Claim of Damages - \$1000
- 1913, Dec. 17 Claim of Damages - \$1000
- 1913, Dec. 22 Claim of Damages - \$300
- 1913, Dec. 22 Claim of Damages - \$500
- 1913, Dec. 22 Claim of Damages - \$1000
- 1913, Dec. 22 Claim of Damages - \$1000
- 1913, Dec. 22 Claim of Damages - \$200
- 1913, Dec. 27 Hearing for the notice for drain district and drain to convert the upper end of the Drainage District No. 3 from open ditch to tile.
- 1913, Dec. 29 Received list of damages for the reconstruction of the Drain District No. 3.
- 1914, Jan. 7 Engineer's Report by S.B. Gardner - Clean ditch from Station 80 to Station 315 & open ditch converted into closed drain from station 351 to station 185

1914, Jan. 7 Specifications for Drainage District No. 3. Improvements
 1914, Jan. 7 Agreement to Pay Damages on Account of Ditch.
 1914, Jan. 12 Notice to Contractors for reconstruction of Drainage District No. 3.
 1914, Jan. 15-22 Notice to Contractors for reconstruction of Drainage District No. 3 published
 in "The Eldora Herald"
 1914, Feb. 3 Bids to be open for reconstruction of Drainage District No. 3
 1914, Feb. 3 Contract for Construction of Drains
 1914, Feb. 3 Proposal Bond \$2300 from Lion Bonding Surety Co.
 1914, Feb. 21 Tile Contract - What Cheer Clay Products Company - \$11607.50
 1914, Mar. 7 Loin Bonding & Surety County Bond No. 26218 - \$1000
 1914, Mar. 7 Drain Tile Bond - \$2902
 1914, Jun. 3 Letter to William & Huff, Attorneys from What Cheer Clay Products
 1914, Jun. 3 Letter to O.L. Olson (winning bidder for drainage work) from Williams &
 Huff (attorneys)
 1914, Jun. 11 Letter to O.L. Olson (winning bidder for drainage work) from William & Huff
 (attorneys) - demanding work to start on the 20th or forfeit the contract.
 1915, Jan. 13 Notice of Labor Lien on improvement in Drainage District No. 3.
 1915, Feb. 8 Final Settlement with What Cheer Clay Products having completed their
 contract.
 1915, Feb. 15 O.L. Olson has sublet a portion of his contract to Hogan & Badgerow.
 1915, Apr. 1 Warrant Issued.
 1915, Mar. 12 O.L. Olson assign \$768.00 to E.P. Davis for completion of Contract.
 1915, Mar. 20 Notice of Claim and Lien by H.A. Kline on Drainage Ditch No. 3.
 1915, Apr. 1 Lion Bonding & Surety County No. 12775 - \$1000
 1915, Apr. 21 S.B. Gardner resigns as Engineer in charge
 1915, May 5 E.W. Edwards (civil engineer), William Dunning and J.B. Starr Jr. were
 appointed Commissioners to assess benefits on the repair of drainage district
 No. 3
 1915, Jul. 2 Official Bond No. 38488 - \$1000 - the Fidelity & Deposit Company of
 Maryland.
 1915, Jul. 2 Final Report by Engineer G.B. Gardner - E.W. Edwards appointed engineer in
 charge.
 1915, Sep. 29 Subcontract accepted from O.L. Olson to Hogan & Badgerow.
 1915, Oct. 18 Engineer (E.W. Edwards) does not recommend that the work be accepted and
 steps need to taken to make him complete the work.
 1915, Dec. 16 E.W. Edwards resigns as Engineer for Drainage District.
 1915, Dec. 17 W.S. Porter was appointed Engineer for Drainage District.
 1916, Jan. 1 Official Bond - W.S. Porter Construction Engineer \$500
 1916, Apr. 17 Commission to inspect Drainage District - W.S. Porter
 1916, Jun. 8 Notice to Proceed with work on "Cleanout Work " to O.L. Olson (principal
 contractor) or show cause why the work should not be relet.
 1916, Jun. 13 O.L. Olson was request to appear before the board to show cause why the
 work should be delayed, if not it would be relet for bid.
 1916, Jun. 16 Notice to Contractors for reconstruction of Drainage District No. 3.
 1916, Jun. 29 Notice to Contractors for reconstruction of Drainage District No. 3 published
 in "The Eldora Herald"
 1916, Jul. 10 Proposal on Drainage District No. 3 - received.
 1916, Jul. 12 Notice to Contractors for reconstruction of Drainage District No. 3.
 1916, Jul. 13-7 Notice to Contractors for reconstruction of Drainage District No. 3 published
 in "The Eldora Herald"

1916, Jul. 27 Proposal on Drainage District No. 3 - received.

1916, Jul. 27 Contract for Construction of Drains - A.S. White - \$10,150.00

1916, Jul. 27 Contractor's Drainage Bond - A.S. White - \$2,536.00

1916, Dec. 28 Engineer's Report - W.S. Porter - Bulk-head at tiles ends is being undermined and needs to be replaced.

1916, Dec. 28 Engineer's Report - W.S. Porter - C.R.I & P Railway put piling through 28" tile line and destroyed the drain. Company to attend to this matter at once.

1916, Dec. 29 District Court of Iowa - Lion Bonding & Surety Co. pay \$1,724.00 for bond NO. 27618

1917, Aug. 6 Engineer's Report - W.S. Porter - Reconstruction work by A.S. White has been completed - full payment of \$10,150.00

1917, Aug. 8 Official Bond - W.S. Porter - Preliminary Engineer - \$1000 - for Drainage District No. 3.

1917, Aug. 17 Petition for Drainage District and Drain - Sections 31 & 32, Township 89 North, Range 20 West.

1917, Nov. 8 Engineer's Report - W.S. Porter - unfinished construction on the land of Mr. Geo. Robertson, to be fix at once.

1918, May 25 Court Decree - Plaintiffs: Lois W. Bloomquist and Fannie W. Emeny VS. Board of Supervisors and Drainage District No. 3 - Findings - Reduce assessments by 33 1/3%

1932, Jul. 30 Engineer's Report - J.R. Mahur - repairs need for Drainage District No. 3 in Section 27, Township 89 North, Range 21 West. - Remove trees, fix tiles and Bulk heads.

1943, Jul. 21 Request for Drainage Repairs - The open ditch from the tile outlet be cleaned.

1945, Apr. 3 Contract - Drainage Cleanout - Howard O. Young (contractor) - \$4,000.00

1956, Dec. 17 Engineer's Report - F.J. Reigles - Recommend tree removal, stumps be sprayed and some clean out work be done - estimate \$2,000.00.

1956, Dec. 18 Notice to Bidders - Clearing trees, brush and cleaning out Drainage District No. 3.

1956, Dec. 28 Notice published in "THE HARDIN COUNTY INDEX" for Bidders on Clearing trees, brush and cleaning out Drainage District No. 3.

1957, Jan. 9 Minutes of Board Meeting - Accepted A.L. Bock bid of \$3,802.87 solely for trees and Brush removal and did not include cleaning out the ditch.

1957, Dec. 23 Contract for Excavation- Wesley McDaniel - Excavate 800 Cubic Yards in Section 7, Township 88 North, Range 20 West - \$480.00

1958, Feb. 3 Contract for Excavation - Wesley McDaniel - Excavate 500 Cubic Yards in Section 8, Township 88 North, Range 20 West - \$375.00

1958, Mar. 4 Minutes of Board Meeting - \$6,000.00 was deemed necessary to pay for completion of repairs to Drainage District No. 3 and assessment of 30%.

1983, Apr. 1 Notice of Drainage Hearing - Hollis E. Ryken (Engineer) - recommends repairs or improvement to Drainage District.

1983, Jun. 30 Notice for Construction of Drainage Repair - (Main Open Channel) Clear, spray and dispose of all brush and trees in drainage ditch.

1983, Jun. 30 Notice published in "THE ACKLEY WORLD-JOURNAL" for Construction of Drainage Repair of Drainage District No. 3.

1983, Oct. 19 Engineer's Report - Hollis E. Ryken - Repairs are needed to Drainage District No. 3

1983, Nov. 28 Notice of Report by Hollis E. Ryken (Engineer) - regarding repairs of Drainage District No. 3.

- 1983, Dec. 7 Notice published in "THE IOWA FALLS CITIZEN" regarding repairs of Drainage District No. 3.
- 1984, Jan. Notice to Contractors - for restoration of 0.4 miles to Drainage District No. 3.
- 1984, Jan. 18-25 Notice published in "THE IOWA FALLS CITIZEN" regarding construction repairs to Drainage District No. 3 - restoration of 0.4 miles.
- 1984, Apr. 7 Petition - Request to proceed to advertise for bids on the repairs that Hollis E. Ryken stated in his October 19, 1983 Engineer's Report.
- 1984, Apr. 12 Proceeding of Trustees - No bids were received for construction repairs to Drainage District No. 3 - "Latch Outlet" in Section 8, low bid was Robert Gherke \$2,750.00
- 1984, Apr. 25 Drainage District No. 3 Clerk's Record, Proceedings of Trustees
 - Center of Section 7 - Blown out tile lines, Trees growing over tile & surface water cutting ground - Robert Gherke to repair for \$1,500-\$1,700
 - Bank wash out repair on the M.G. Clark farm at district expense
 - tree cutting is into penalty period
 - DD #149 has received no bids and would have to use other less expensive means.
- 1996, Aug. 19 Board of Trustees Meeting Held - maintain 5-year interval spraying the ditch
- 1997, Dec. 22 Board of Trustees Meeting Held
 - Sub 1 repairs made on Bernie Miller farm
 - Main tile checked for cotton wood roots (found) - \$280.41
 - Repair blow out D.D. 3 main tile - Meade Martlett farm Section 28, Alden Township - \$341.54
 - Removing Silt for D.D. 3 main ditch at Sub 149 main tile outlet - \$525.0
 - Bill from Control Services Inc. Spraying brush along length of D.D. 3 - \$3,900.00
 - Assess D.D. 3 \$8,000 to pay outstanding bills.
- 1998, Dec. 17 Board of Trustees Meeting Held
 - Repair Blow sub district #111 - \$234.60
 - Tile repair of sub district #64 - \$745.35
 - Place Concrete rip-rap on Main ditch bank of D.D. 3 Thelke farm Section 1, Ellis Township - \$1,672.5
 - Purchase 15 feet of tile to repair sub district #64 - \$70.50
 - Levy sub district #64 \$1,100.00

3.0 **INVESTIGATION** – Review of the district history indicates that the Main tile of Drainage District 3 has had few previous repairs. It is assumed that there have been more repairs, but the details of them have just been lost to time. The field investigation for this report was performed at the request of the Drainage District Trustees. Said investigation was limited to visual observation (with limited excavation) along with survey data, and pictures gathered. During the investigation, there were 5 sinkholes found on the Main tile along with the Main tile being in various states of collapse over the course of 4,745± feet. For reference, a copy of the observation report with pictures is included in Appendix A and a map showing the investigation limits is included in Appendix B.

4.0 DISCUSSION AND CONCLUSIONS – Based on the above, it is obvious that the existing Main tile, in the area of investigation is in various states of collapse and is restricting drainage capacity in the area. If repairs or improvements are not performed, the Main tile will continue to have poor drainage performance, the upstream landowners will continue to experience overland flow, ponding, and additional sinkholes will form over the Main tile. This will continue to affect productivity of the farmed ground upstream of these issues and will get worse as the tile ages. When all these issues are combined, it will lead to further reduced drainage and liability exposure by the drainage district.

5.0 REPAIR METHOD – To repair the existing Main tile, the following option is the most straight forward available:

Partial Tile Replacement

- Remove and replace the entire Main tile for the entire investigation limits with new Main tile of equal or comparable size.
- Typically, the replacement Main tile would be in the same location as the existing Main tile in order to locate and reconnect private tile and district lateral tile. For reference, the route and locations are shown on the map included in Appendix B.

With the above-mentioned repair method, the following should be noted:

- The pipe sizes used are those that are currently manufactured that most closely meet or exceed the current Main tile size.
- The Partial Tile Replacement option would allow for lower maintenance costs in the future as the entire Main tile is new.
- The Partial Tile Replacement option would remove all soil and debris in the existing Main tile.
- Repairs have historically been viewed as not having an impact on jurisdictional wetlands. As such, individual landowners should consult with applicable staff at the Hardin County NRCS offices to verify the existence of said jurisdictional wetlands and that there will be no impact on them.

Per Iowa Code Chapter 468.126, any of the above actions that do not increase capacity would be considered a repair. As such, Subsection 1, paragraph c of Chapter 468.126 states "If the estimated cost of the repair does not exceed fifty thousand dollars, the board may order the work done without conducting a hearing on the matter. Otherwise, the board shall set a date for a hearing. . ." The opinion of probable construction cost contained in the next section of this report exceeds said \$50,000 limit. Therefore, a hearing will be required. Per Iowa Code Chapter 468.126.1.g, the right of remonstrance does not apply to the proposed repairs.

6.0 IMPROVEMENT METHOD – To improve the drainage capacity for the existing Main tile, the following option is the most straight forward available:

Open Ditch

- Remove and replace 4,745± feet of the Main tile with a Main Open Ditch.
- Typically, the Main Open Ditch would be in the same location as the existing Main tile in order to locate and outlet private tile and district lateral tile. For reference, the route and locations are shown on the map included in Appendix B.
- Outlet all private and lateral tile encountered to discharge into the Main Open Ditch.

With the above-mentioned possible improvement, the following should be noted in addition to the notes in repair methods section:

- This option would probably involve obtaining of right of way.
- The replacement of the Main tile with a Main Open Ditch increases drainage capacity, which has traditionally fit the Iowa Code definition of improvement. However, the replacement is not being suggested to increase drainage capacity, but is being offered solely to extend the lifecycle of the district facility and the original design for the Main in this area was an open ditch. Legal counsel should be consulted to provide advice concerning this.
- If this option is deemed a repair by legal counsel, repairs have historically been viewed as not having an impact on jurisdictional wetlands. As such, individual landowners should consult with applicable staff at the Hardin County NRCS offices to verify the existence of said jurisdictional wetlands and that there will be no impact on them.
- If this option is deemed an improvement by legal counsel, improvements have historically been viewed as having an impact on jurisdictional wetlands. As such, individual landowners should consult with applicable staff at the Hardin County NRCS offices to verify the existence of said jurisdictional wetlands and what said impact may be on them.

If legal counsel considers the above option a repair, it is our opinion that the following is applicable. Subsection 1, paragraph c of Chapter 468.126 states "If the estimated cost of the repair does not exceed fifty thousand dollars, the board may order the work done without conducting a hearing on the matter. Otherwise, the board shall set a date for a hearing. . ." The opinion of probable construction cost contained in the next section of this report exceeds said \$50,000 limit. Therefore, a hearing will be required. Per Iowa Code Chapter 468.126.1.g, the right of remonstrance does not apply to the proposed repairs.

If legal counsel considers the above option an improvement, it is our opinion that the following is applicable. Subsection 4, paragraph c of Chapter 468.126 states "If the estimated cost of the improvement does not exceed fifty thousand dollars, the board may order the work done without conducting a hearing on the matter. Otherwise, the board shall set a date for a hearing on whether to construct the proposed improvement and whether there shall be a reclassification of benefits for the cost of the proposed improvement." The opinion of probable construction cost contained in the next section of this report exceeds said \$50,000 limit. Therefore, a hearing will be required. Per Iowa Code Chapter 468.126.4.e, the right of remonstrance may apply to the proposed improvements.

7.0 OPINION OF PROBABLE CONSTRUCTION COSTS – Using the above methods of repair and improvement, an itemized list of project quantities and associated opinions of probable construction cost for each option were compiled and are included in Appendices C and D of this report. A summary of said costs are as follows:

METHOD	TOTAL COST	CONSTRUCTION COST	ROAD CROSSING COST
Repair - Partial Tile Replacement	\$479,758.44	\$444,395.94	\$35,362.50
Improvement - Open Ditch	\$584,667.19	\$409,780.94	\$174,886.25

It should be noted that said costs include materials, labor, and equipment supplied by the contractor to complete the necessary repair or improvement and include applicable engineering, construction observation, and project administration fees by Clapsaddle-Garber Associates. However, said costs do not include any interest, legal fees, county administrative fees, crop damages, other damages, previous repairs, engineering fees to date, wetland mitigation fees, or reclassification fees (if applicable). As always, all costs shown are opinions of Clapsaddle-Garber Associates based on previous lettings on other projects. Said costs are just a guideline and are not a guarantee of actual costs.

8.0 OWNERSHIP AND CLASSIFICATIONS – Any and all information concerning ownership of lands and classifications of said lands within Drainage District No. 3 can be obtained from the Hardin County Auditor’s office.

It should be noted that Iowa Code Chapter 468.65 states “When, after a drainage . . . district has been established . . .” and “. . . a repair . . . has become necessary, the board may consider whether the existing assessments are equitable as a basis for payment of the expense of . . . making the repair . . .” and “If they find the same to be inequitable in any particular . . . they shall . . . order a reclassification . . .” Based on this, it is our opinion that a reclassification may be required if the repair were to move forward.

It should also be noted that Iowa Code Chapter 468.131 states “When an assessment for improvements . . . exceeds twenty-five percent of the original assessment and the original or subsequent assessment . . . did not designate separately the amount each tract should pay for the main ditch and tile lateral drains then the board shall order a reclassification . . .” Based on this, it appears that a reclassification separating laterals may be required if any of the above options were deemed to be an improvement, said improvement were to move forward, and the laterals had not already been separated. Since the proposed project does not involve the laterals, it is not clear if this portion of code is applicable, and it is our recommendation that the District Trustees seek advice from their legal counsel.

9.0 RECOMMENDATIONS – There is a definite need to perform one of the above-mentioned actions. The actions would remove the current restrictions to the Main tile and extend the lifespan of the same. Therefore, it is recommended that the District Trustees, should take action to accomplish the following:

- Approve the Engineer’s Report as prepared by Clapsaddle-Garber Associates.
- Seek advice from legal counsel as to whether the Open Ditch alternative is a repair or improvement.
- Hold the required hearing on the proposed repair or improvement.
- Adopt one of the recommendations of the Engineer’s Report.
- Direct plans and specifications for the proposed repair or improvement be prepared by Clapsaddle-Garber Associates.
- Proceed with receiving bids from interested contractors by Clapsaddle-Garber Associates.
- Award contract to the lowest responsible contractor.
- If desired or required by Iowa Code, proceed with reclassification proceedings after seeking legal advice concerning the same.

CONSTRUCTION ENGINEERING
OBSERVATION REPORT

DATE:

11-17-20

DAYS OF WEEK:

S M T W T F S

SHEET NO.

1 OF

PROJECT NUMBER:

6490.4

COUNTY, ROUTE, ROAD:

I Ave & 155th

LOCATION:

Hardin County DD # 3

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB NAME, ITEM NO. AND LOCATION

10:30 a.m. = Arrived at job site after locating control points and setting up GPS on C.P.T # 34. Checked into C.P.T # 38. Horizontal was good but vertical was off 0.23.

10:44 a.m. = Crew was exposing tile at Northern most sink hole, in surface ditch. 26" VCP removed, 1 section, took pictures upstream and down and shot top pipe. GPS Pt # 5550. Contractor replaced tile and placed fabric over joints.

11:00 a.m. = Met foreman at southern most sink hole, which had been excavated previously. Point # ~~5551~~⁵⁵⁵¹, took pictures, tile was completely collapsed upstream and downstream.

11:34 a.m. = Contractor is excavating approximately 100' +/- North west of Northern most sink hole West of I Ave. Pt. # 5552, Tile is broken and egg shaped upstream and downstream.

Shot top of tile at sink hole # 5553, could not get pictures.

1:30 p.m. = Crew removed tile at Pt # 5554, tile 24" ? broke into 3 pieces. 24" VCP upstream and downstream broke, and beginning to collapse.

1:35 p.m. = Crew is excavating further West, 24" VCP at Point # 5555 is oval shaped upstream and downstream. Took pictures.

2:00 p.m. = Discovered another sink hole, South of fence line and West of Pt # 5555. shot top of pipe # 5556 and took pictures.

2:30 p.m. = Crew excavated West of # 5556. Located tile end removed 1 section, Pt # 5557. 24" VCP appears to be in good condition looking West, possible 1 section cracked, the rest are in good condition as far as I could see. Looking East 24" VCP is oval shaped as far as visible. Not collapsing.

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature:

James Van Hove

Date Prepared:

11-18-20

Reviewed by:

Engineer

Date Reviewed

CONSTRUCTION ENGINEERING
OBSERVATION REPORT

DATE:

11-17-20

DAYS OF WEEK:

S M T W T F S

SHEET NO.

2 OF

PROJECT NUMBER:

6490.4

COUNTY, ROUTE, ROAD:

I Ave & 155th

LOCATION:

Hardin County DD #3

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB NAME, ITEM NO. AND LOCATION

2:45 p.m. = Shot pts # 5558 and # 5559 directly south west of intake structure with sink hole around. GPS shots are top of 24" and 18" VCP connected to structure which has settled 0.5' to 0.75'. Structure is in very bad shape, may have originally had a bee hive intake now missing.

3:45 p.m. = shot top of pipe at sinkhole. Pt # 5560, could not get pictures.

4:00 p.m. = Crew exposed tile west of railroad ROW, and removed 1 section, section was cracked and broke into several pieces during removal. Pt # 5561 top 28" VCP, VCP is oval shaped both directions from # 5561, as far as C.O. could see. Crew repaired tile with 24" dual wall HDPE, placed fabric over joints and tile bats over new tile.

left for day and tore down G.P.S.

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature:

James Van Hove

Date Prepared:

11-18-20

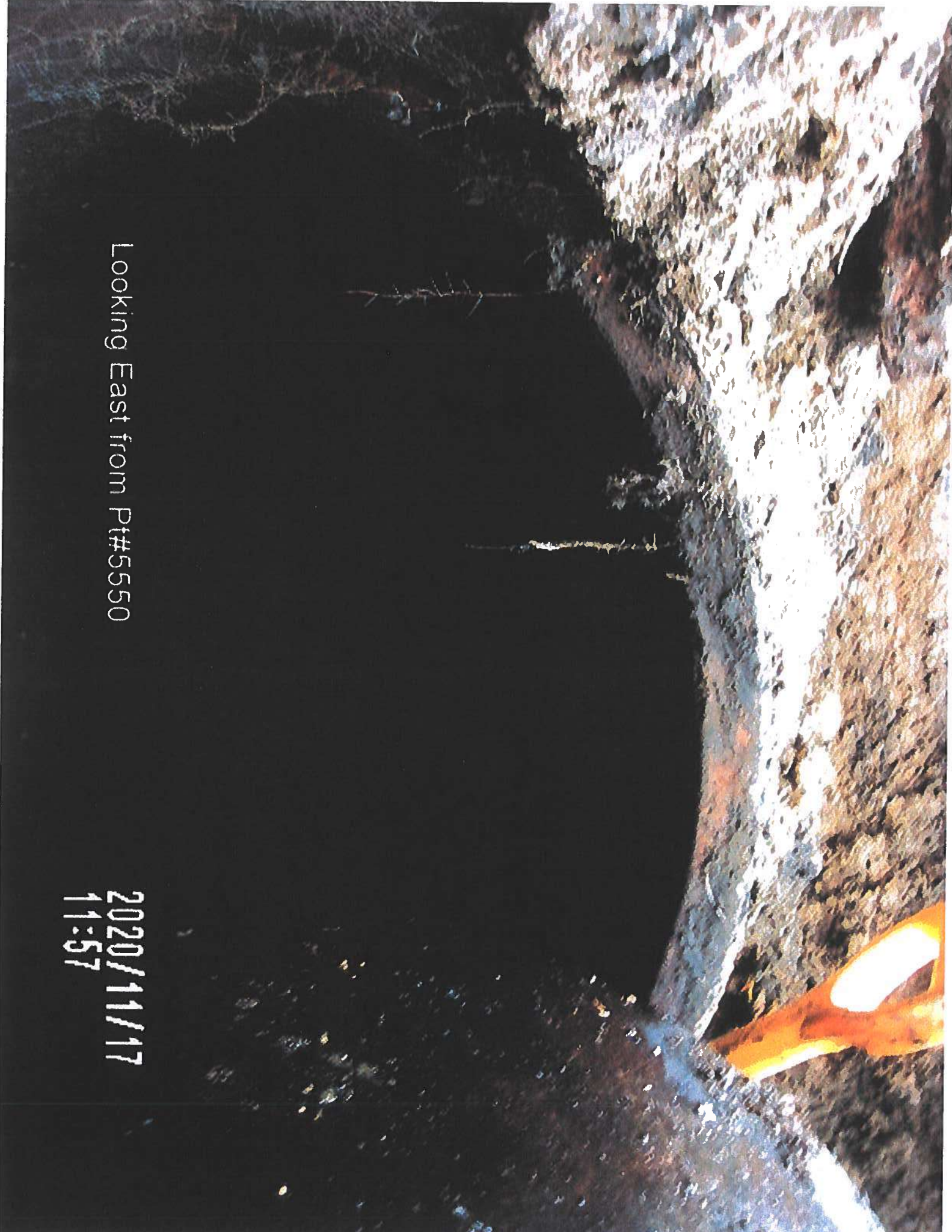
Reviewed by:

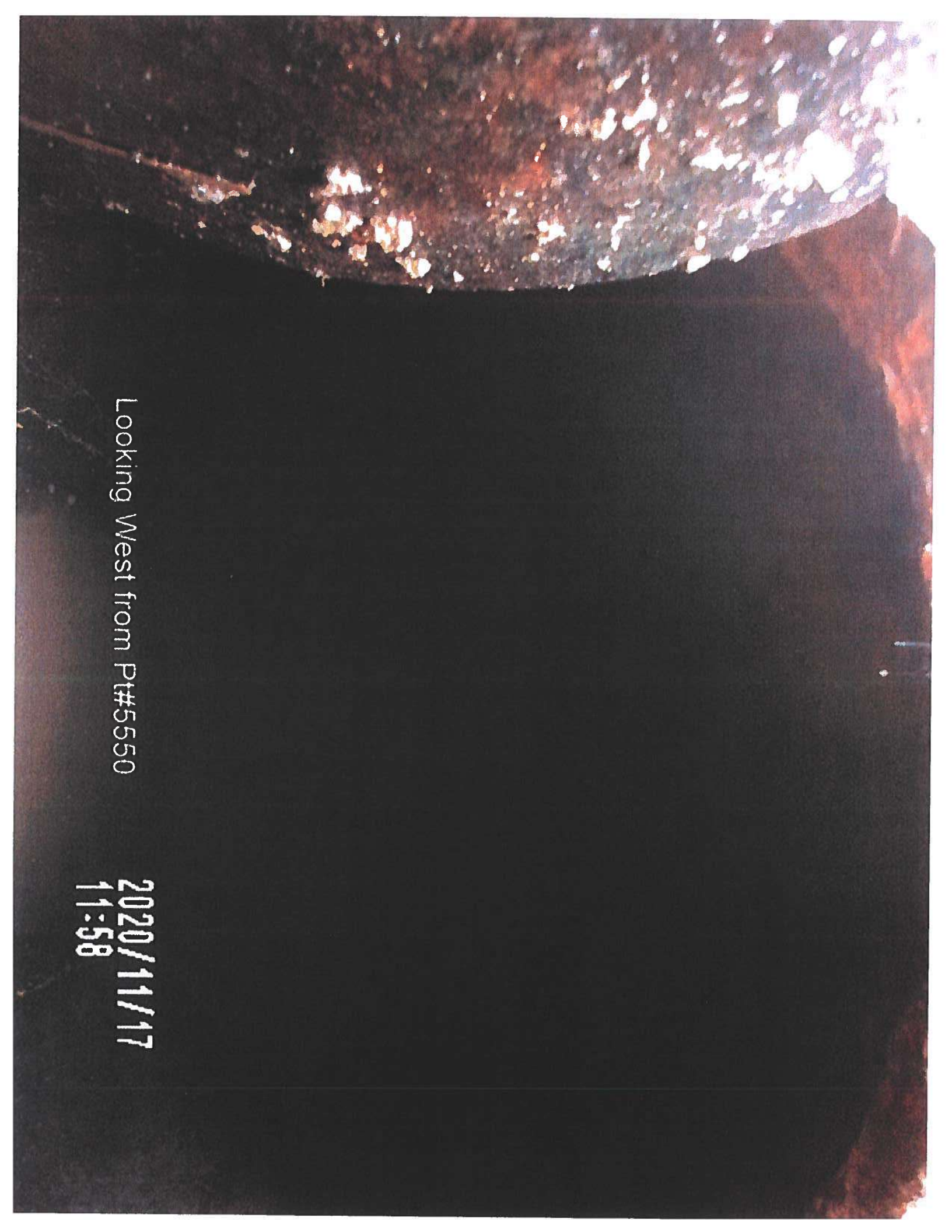
Engineer

Date Reviewed

Looking East from Pt#5550

2020/11/17
11:57





Looking West from Pt#55550

2020/11/17
11:58

Looking West from Pt#5550

2020/11/17
11:59



Looking West from Pt#5550

2020/11/17
11:59

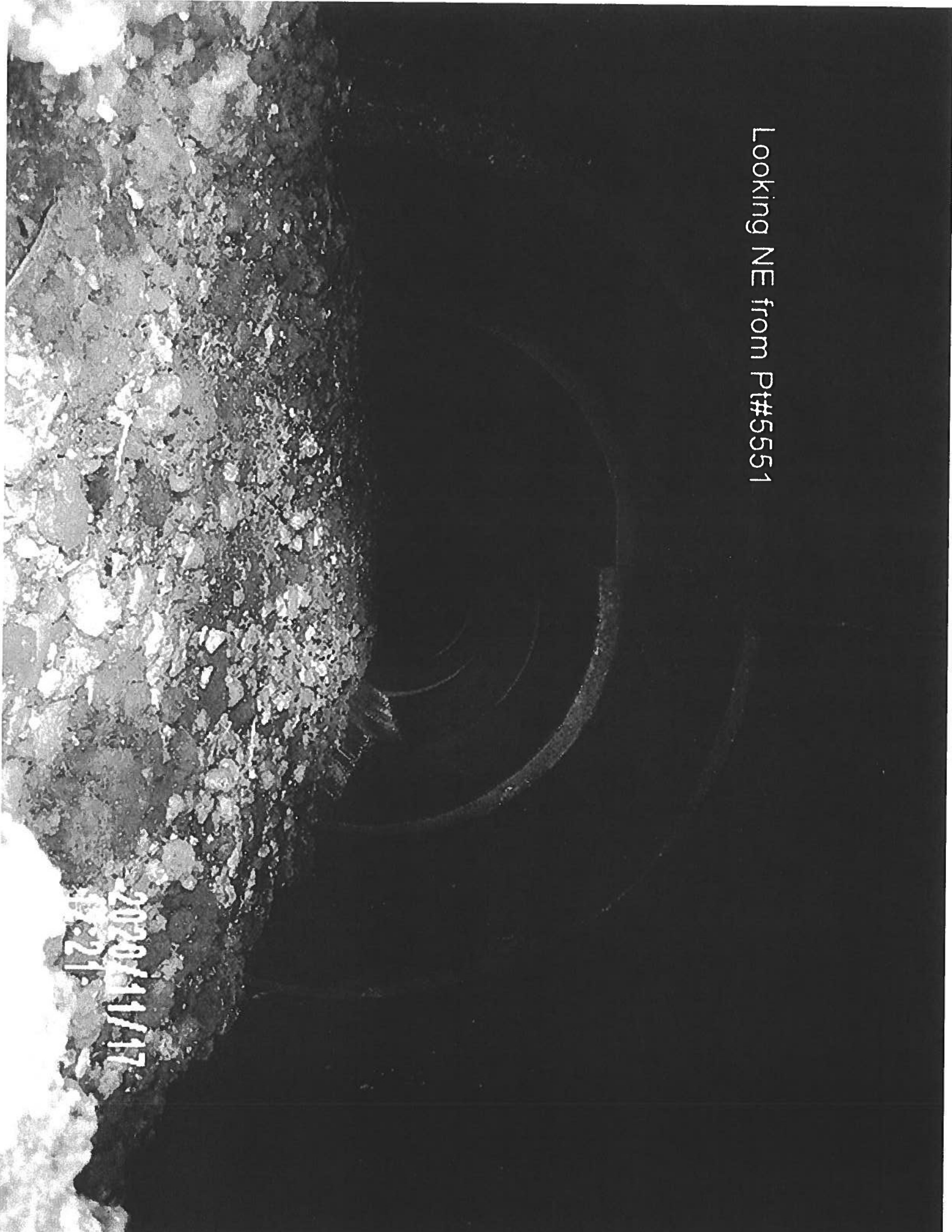
Looking NE from Pt#5551



2020/11/17
12:29

Looking NE from Pt#5551

2020/11/17
14:21

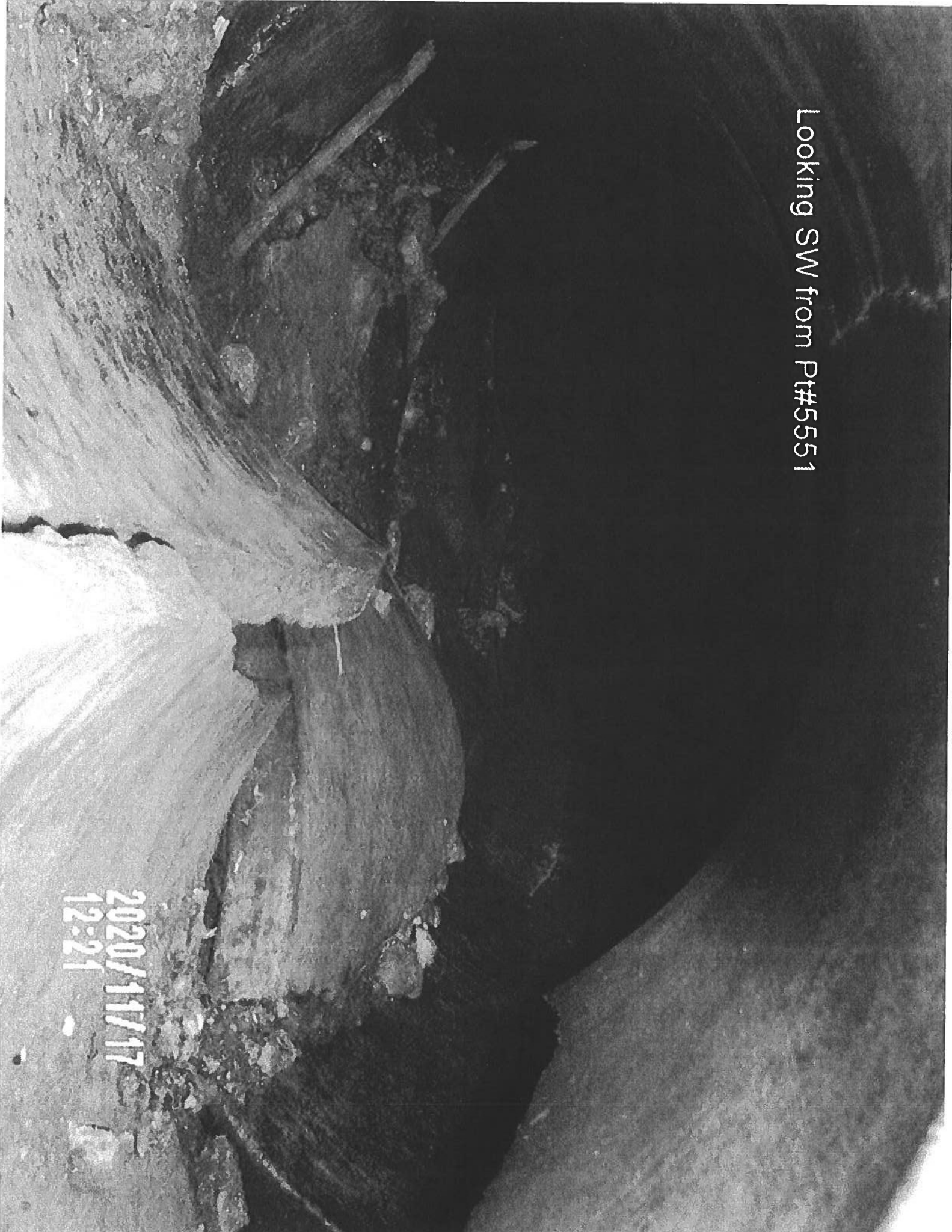


Looking SW from Pt#5551

2020/11/17
12:21

Looking SW from Pt#5551

2020/11/17
12:21



Looking SW from Pt#55553



Looking NE from Pt#5553

2020/11/17
12:25

Looking Ne from Pt#5553

2020/11/17
12:26



Looking West from Pt#5554

2020/11/17
12:53

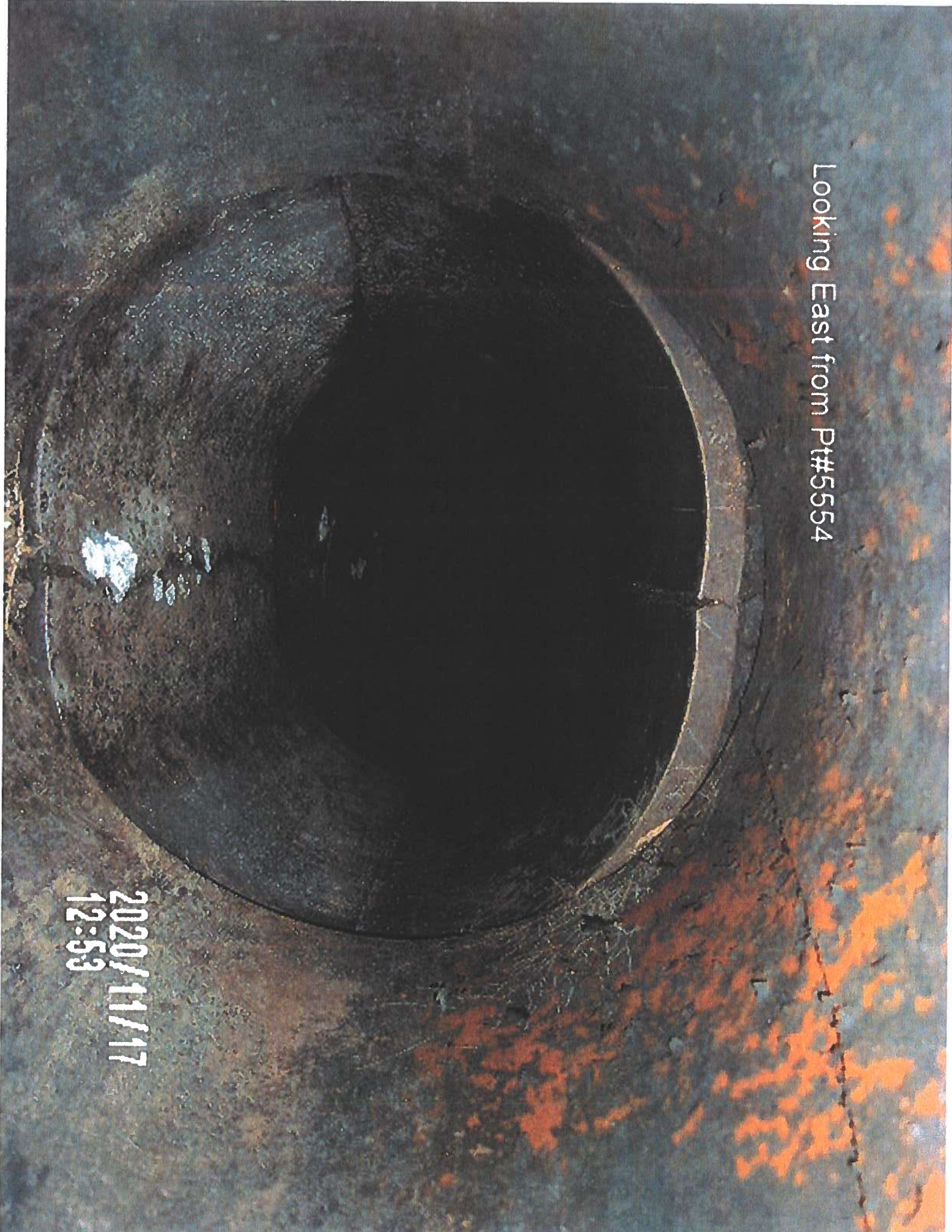
Looking West from Pt#5554

2020/11/17
12:53



Looking East from Pt#55554

2020/11/17
12:53



Looking East from Pt#55554

2020/11/17
12:53

Looking East from Pt#55555

2020/11/17
14:26



Looking East from Pt#55555

2020/11/17
Pt#26

Looking West from Pt#55555

2020/11/17
14:26

Looking West from Pit#5555

2020/11/17
14:26



Looking East from Pt#55556

2020/11/17
14:48



Looking East from Pt#55556

2020/11/17
14:48

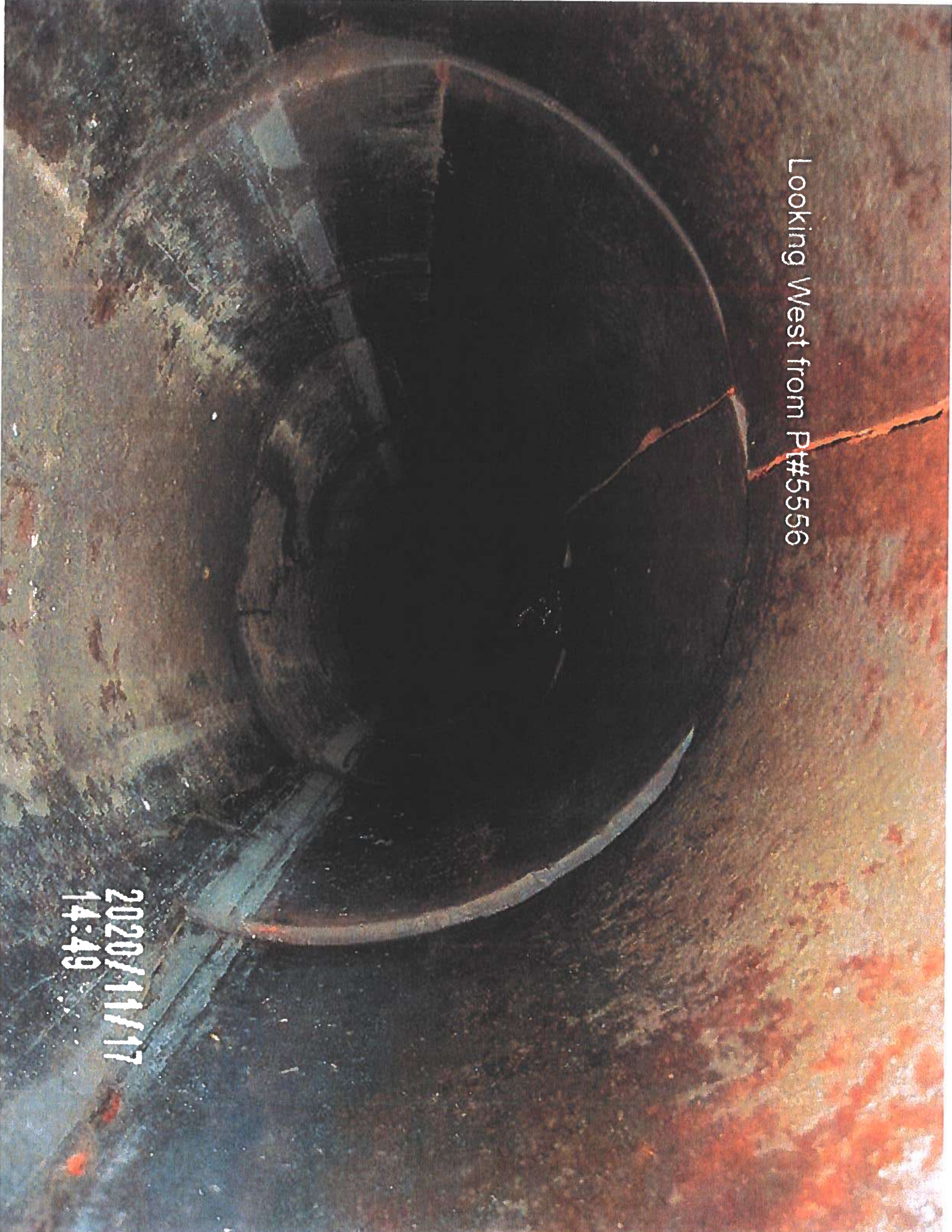


Looking West from Pt#55556

2020/11/17
14:48

Looking West from Pt#55556

2020/11/17
14:49



Looking East from Pt#5557

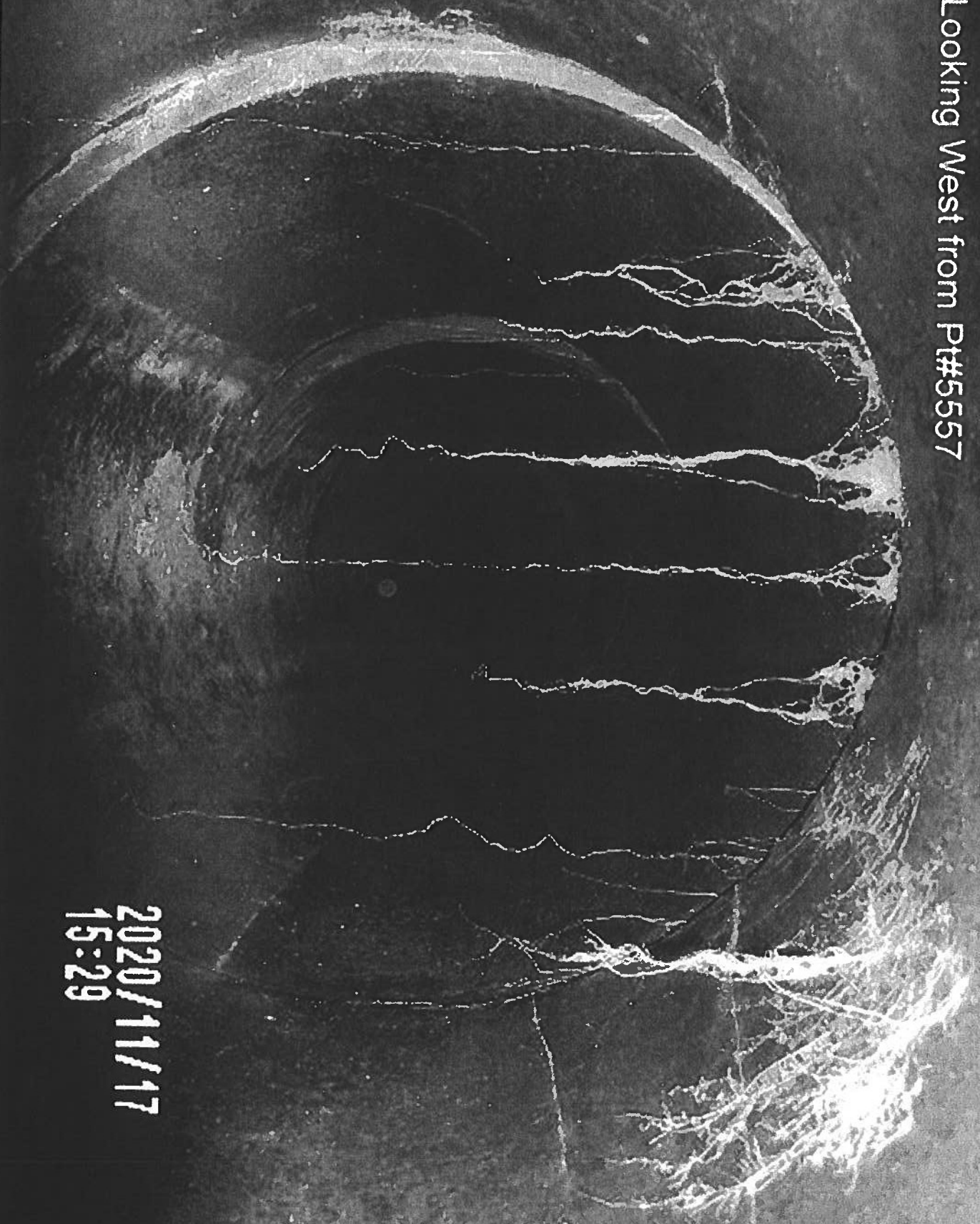
2020/11/17
15:28

Looking East from Pt#55557

2020/11/17
15:28

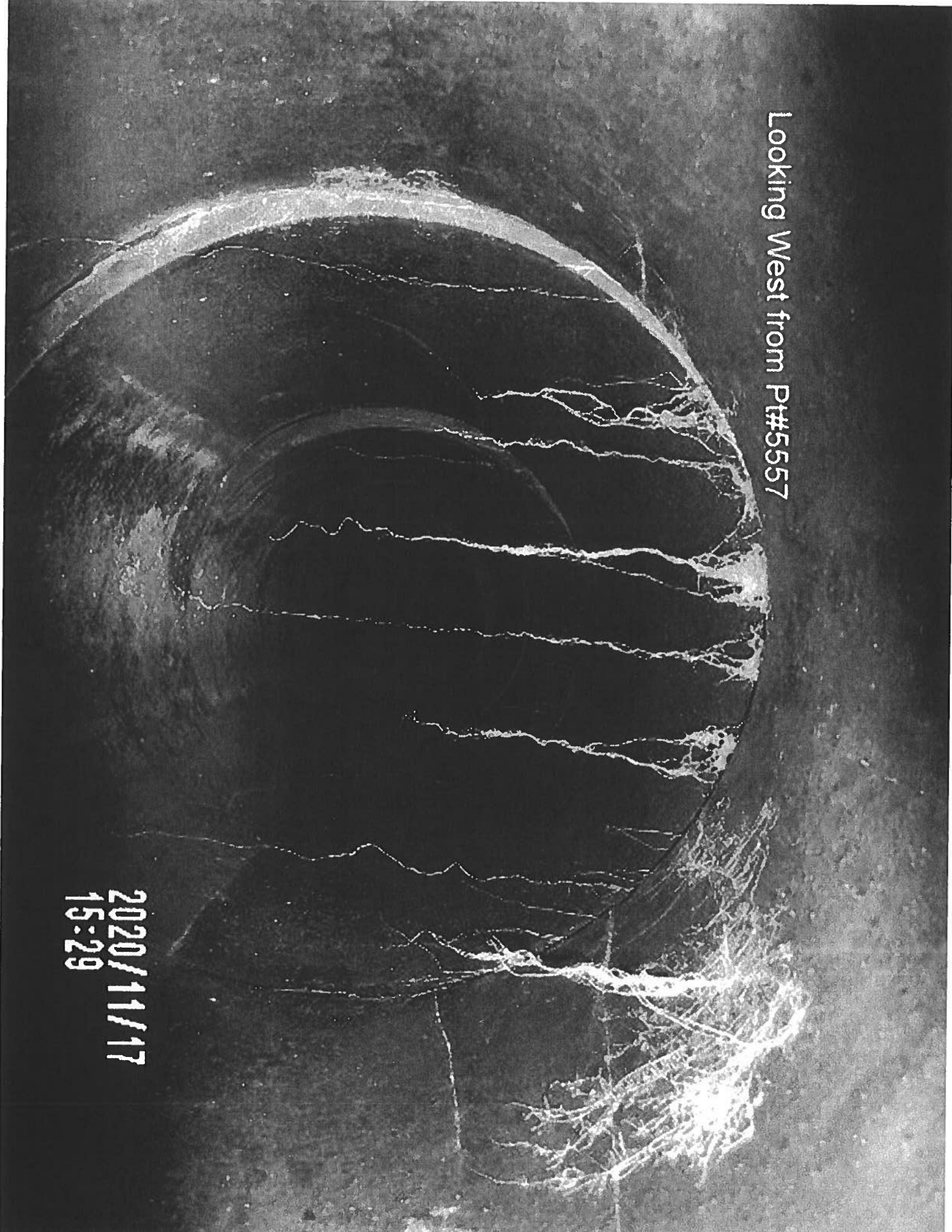
Looking West from Pt#5557

2020/11/17
15:29



Looking West from Pt#55557

2020/11/17
15:29



Top of intake maybe beehive by PI 5558

2020/11/17
15:55



Hydake structure at P#55558

2020/11/17
15:55



Intake structure at Pt#5559

2020/11/17
15:55



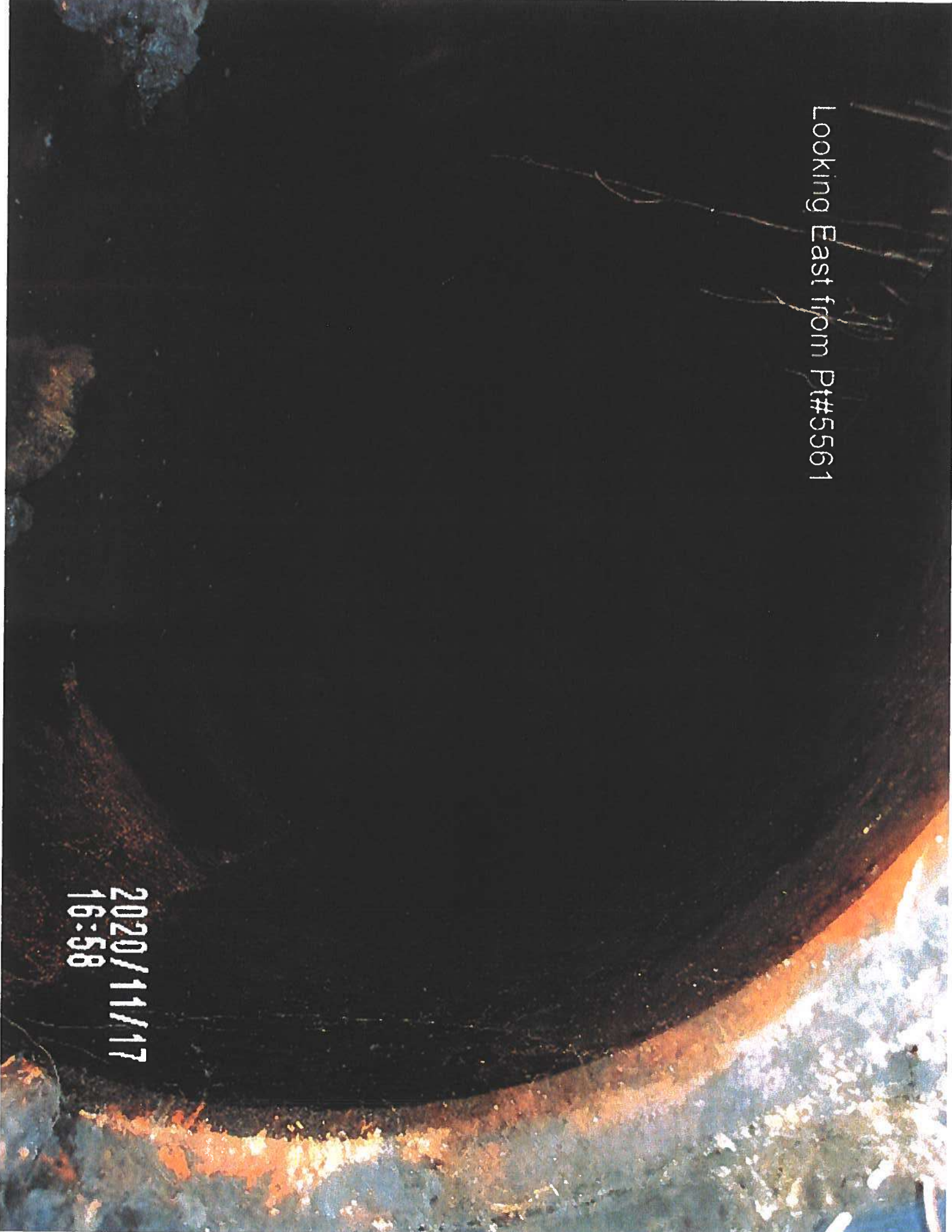
Intake structure at Pt#5558

2020/11/17
15:55



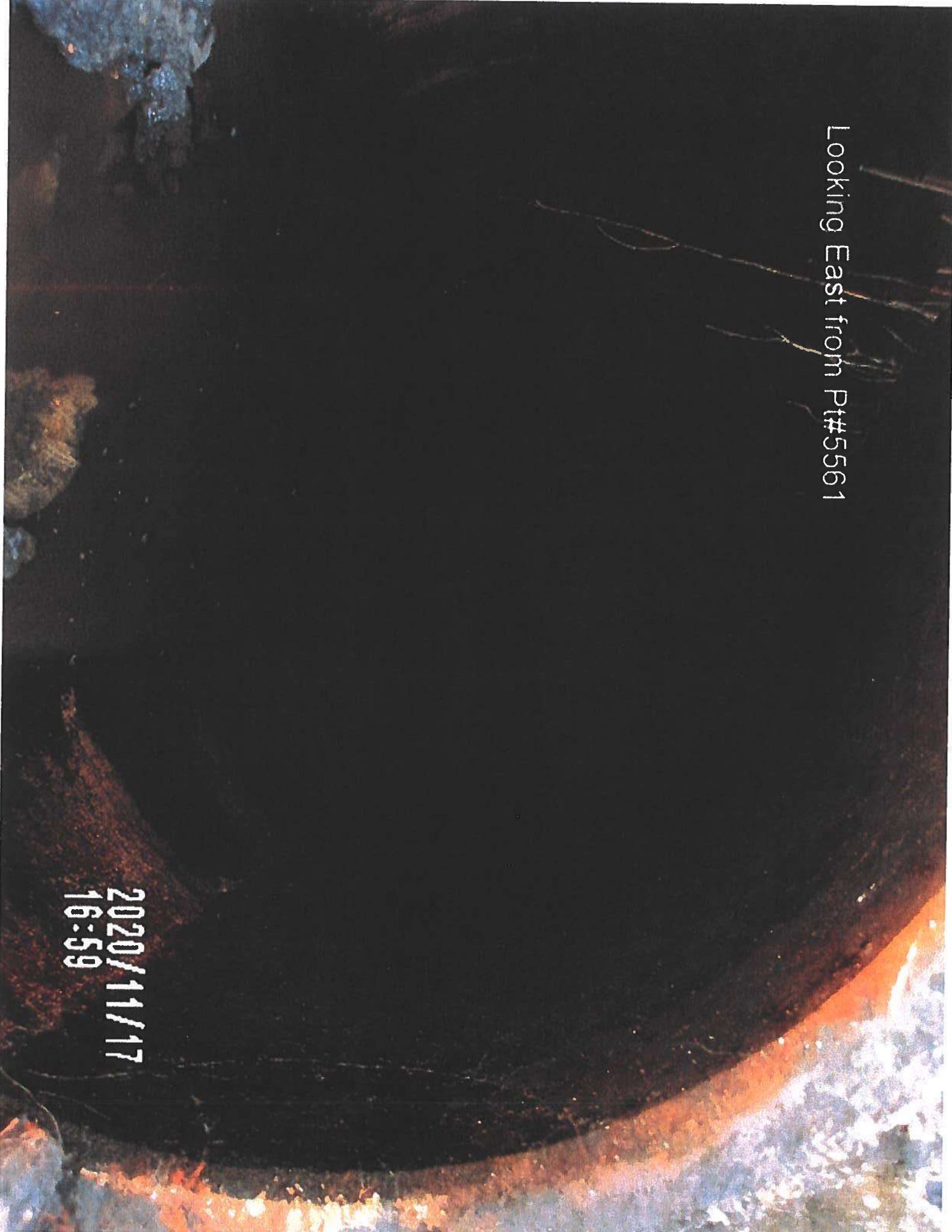
Looking East from Pt#5561

2020/11/17
16:58



Looking East from Pt#5561

2020/11/17
16:59

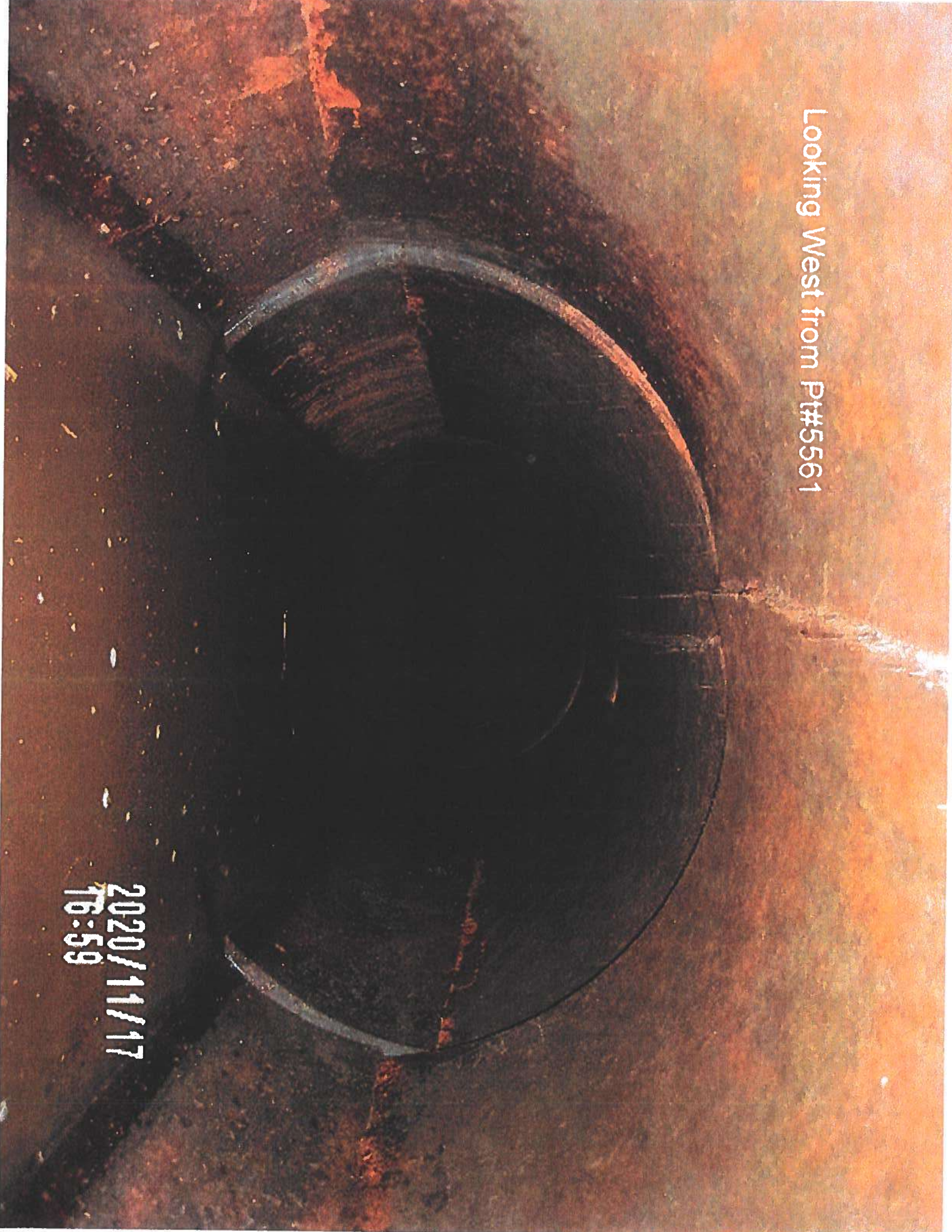


Looking West from Pt#5561

2020/11/17
16:59

Looking West from Pt#5561

2020/11/17
16:59



Tile repair at Pt#55561

2028/11/17
17:16

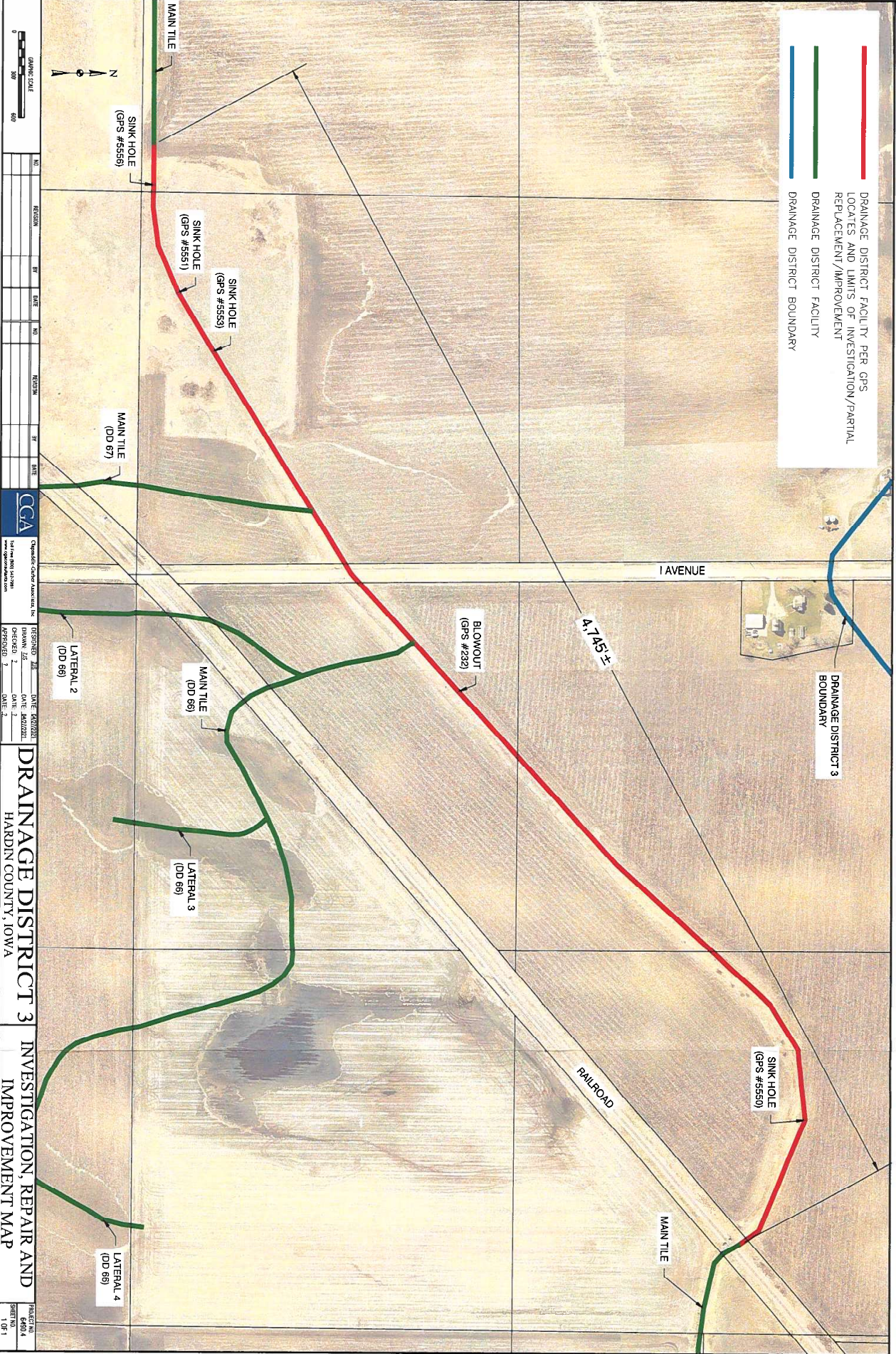




Tile repair at Pt#5561

2020/11/17
17:21

— DRAINAGE DISTRICT FACILITY PER GPS
— LOCATES AND LIMITS OF INVESTIGATION/PARTIAL
— REPLACEMENT/IMPROVEMENT
— DRAINAGE DISTRICT FACILITY
— DRAINAGE DISTRICT BOUNDARY



NO.	REVISION	BY	DATE	NO.	REVISION	BY	DATE



CONSULTANT: Cady & Associates, Inc.
 101 E. 800 S. Suite 200
 Des Moines, Iowa 50319

DESCRIPTION	DATE	DESIGNED	CHECKED	DATE	DATE
DESIGN					
CHECK					
APPROVE					

DRAINAGE DISTRICT 3
HARDIN COUNTY, IOWA

**INVESTIGATION, REPAIR AND
IMPROVEMENT MAP**

PROJECT NO. 6490
 SHEET NO. 1 OF 1

Engineer's Opinion of Probable Construction Cost
Project: Main tile Repair for D.D. #3
 Location: Sections 27 and 28, T89N, R21W, Hardi County, Iowa

ITEM #	DESCRIPTION	Unit Cost	Units	Quantity	Units	Total Cost
CONSTRUCTION COSTS						
101	30" RCP OR DUAL WALL TILE	\$ 60.00	FT	3536	FT	\$ 212,160.00
102	24" RCP OR DUAL WALL TILE	\$ 40.00	FT	1143	FT	\$ 45,720.00
103	30" x 24" RCP OR DUAL WALL REDUCER	\$ 1,250.00	EA	1	EA	\$ 1,250.00
104	RCP OR DUAL WALL LATERAL CONNECTIONS	\$ 1,600.00	EA	2	EA	\$ 3,200.00
105	PRIVATE TILE CONNECTIONS	\$ 600.00	EA	20	EA	\$ 12,000.00
106	CONCRETE COLLARS	\$ 400.00	EA	4	EA	\$ 1,600.00
107	REMOVAL OF EXISTING TILE	\$ 7.00	LF	4745	LF	\$ 33,215.00
CONSTRUCTION SUBTOTAL						\$ 309,145.00
Contingency (15%)						\$ 46,371.75
CONSTRUCTION TOTAL						\$ 355,516.75
Engr. & Const. Observation (25%)						\$ 88,879.19
TOTAL COST						\$ 444,395.94
ROAD CROSSING CONSTRUCTION COSTS						
108	30" RCP OR DUAL WALL TILE (1 AVE.)	\$ 90.00	LF	66	LF	\$ 5,940.00
109	TILE REMOVAL	\$ 10.00	LF	66	LF	\$ 660.00
110	HICKENBOTTOM INTAKE	\$ 1,500.00	EA	2	EA	\$ 3,000.00
111	PERMANENT SEEDING AND WARRANTY	\$ 1,500.00	LOC	2	LOC	\$ 3,000.00
112	TRAFFIC CONTROL	\$ 4,000.00	LOC	3	LOC	\$ 12,000.00
CONSTRUCTION SUBTOTAL						\$ 24,600.00
Contingency (15%)						\$ 3,690.00
CONSTRUCTION TOTAL						\$ 28,290.00
Engr. & Const. Observation (25%)						\$ 7,072.50
TOTAL COST						\$ 35,362.50

Note: Per Iowa Code, road crossings (highlighted red) are not typically district expense



By: Z.J.S.
 Date: 5/1/2021
 Checked By: L.O.G.
 Date: 5/3/2021

Engineer's Opinion of Probable Construction Cost
Project: Main tile Improvement for D.D. #3
 Location: Sections 27 and 28, T89N, R21W, Hardin County, Iowa

ITEM #	DESCRIPTION	Unit Cost	Units	Quantity	Units	Total Cost
OPEN DITCH CONSTRUCTION COSTS						
201	OPEN DITCH CONSTRUCTION	\$ 2,000.00	STA	46.55	STA	\$ 93,100.00
202	30" CMP OUTLET WITH RODENT GUARD	\$ 80.00	LF	40	LF	\$ 3,200.00
203	30" CMP INLET	\$ 75.00	LF	40	LF	\$ 3,000.00
204	30" CMP FLARDED END	\$ 500.00	EA	1	EA	\$ 500.00
205	SHEET PILE HEADWALL	\$ 35,000.00	EA	1	EA	\$ 35,000.00
206	RIP-RAP	\$ 50.00	TN	250	TN	\$ 12,500.00
207	SURFACE DRAINS	\$ 2,000.00	EA	12	EA	\$ 24,000.00
208	PRIVATE TILE OUTLETS	\$ 1,500.00	EA	20	EA	\$ 30,000.00
209	LATERAL TILE OUTLETS	\$ 2,000.00	EA	2	EA	\$ 4,000.00
210	PERMANENT SEEDING AND WARRANTY	\$ 1,000.00	STA	46.55	STA	\$ 46,550.00
211	TILE REMOVAL	\$ 7.00	LF	4745	LF	\$ 33,215.00
CONSTRUCTION SUBTOTAL						\$ 285,065.00
Contingency (15%)						\$ 42,759.75
CONSTRUCTION TOTAL						\$ 327,824.75
Engr. & Const. Observation (25%)						\$ 81,956.19
TOTAL COST						\$ 409,780.94
ROAD CROSSING CONSTRUCTION COSTS						
212	RCP BOX CULVERT (1 AVE.)	\$ 2,000.00	LF	50	LF	\$ 100,000.00
213	TILE REMOVAL	\$ 10.00	LF	66	LF	\$ 660.00
214	SURFACE DRAINS	\$ 2,000.00	EA	4	EA	\$ 8,000.00
215	PERMANENT SEEDING AND WARRANTY	\$ 3,000.00	LOC	1	LOC	\$ 3,000.00
216	TRAFFIC CONTROL	\$ 10,000.00	LOC	1	LOC	\$ 10,000.00
CONSTRUCTION SUBTOTAL						\$ 121,660.00
Contingency (15%)						\$ 18,249.00
CONSTRUCTION TOTAL						\$ 139,909.00
Engr. & Const. Observation (25%)						\$ 34,977.25
TOTAL COST						\$ 174,886.25

OPEN DITCH REPLACEMENT

Note: Per Iowa Code, road crossings (highlighted red) are not typically district expense