

# **NORTH OLMSTED WASTEWATER ANNUAL REPORT FOR 2016**



## **DEPARTMENT SUMMARY:**

2016 was an unusually dry year for the wastewater department. This allowed us to allocate extra time for process control and analysis in the wastewater treatment plant. The Maintenance Division worked diligently on the retrofit at Moen Lift Station and the dry weather allowed the Collections Division to focus on additional preventative and correctional maintenance in the sanitary sewer mains and manholes around the City of North Olmsted. In addition to optimization and maintenance the following areas were also addressed:

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## **WASTEWATER TREATMENT PLANT**

- The energy curtailment program with Enternoc ended after increased regulation from the federal government. A cost analysis showed that upgrading the City's generators for compliance would exceed the benefits of the program. If and when federal regulations change, this program will be revisited.
- Polymer analysis and testing found 2 lower cost alternatives to the previously used polymer. (approx. \$64,800 in polymer savings)
- Worked to minimize chemical usage for the precipitation of phosphorus. Sodium aluminate feed point was relocated to sludge storage and changes were made to increase the efficiency of the biological process. (approx. \$6,600 in savings)
- Added new concrete pad for the disposal bin for stormwater and catch basin cleaning. Black-water discharge from this bin is now directed to the WWTP.
- Poured new pad and relocated 20-ton tier scale to SW corner of the flag pole. The scale measures all loads leaving the WWTP and is available for other City departments to use, and avoid overweight loads.
- Replaced third story roof on Zimpro area and removed 3 large penetrations.
- Replaced roof on lab building
- Started construction on an addition to the maintenance building, west side.
- Added roll up door to building number 7, allows for a future demo of micro-screens.
- Retrofitted and upgraded all lighting in NOWWTP administration building to LED lighting.

- Removal of radioactive material, Cesium 137
  - Decommissioned and removed old boiler/heat exchanger at WWTP lab building and replaced with baseboard heating. Abated asbestos on all piping, registers, and boilers
  - SCADA upgrade to plant Historian.
  - Replaced roof on Laboratory Services Building.
  - 2015 chemical usage and UV:
    - Sodium Hypochlorite –(odor and filter) \$7,259
    - Sodium Aluminate –\$17,960.39
    - Sodium Hydroxide (odor and cleaning) - \$9,993
    - Citric Acid (cleaning odor) – \$6,040
    - Centrifuge Polymer –\$67,195
    - UV disinfection \$31,783
  - During the year 2016, the N.O.W.W.T.P. had no bypass of the disinfection process and no measurable bypass of the tertiary filtration process.  
(Note: the N.O.W.W.T.P. no longer has the ability to "bypass" untreated wastewater)
  - The Treatment Plant Division had no turnover in 2016. However, CJ Wowk increased from a level 2 to level 3 certification with OEPA. The staffing for 2017 remains at the same level as 2016 with 1 manager, 6 plant operators, and 1 operations laborer.
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## **NOWWTP PRETREATMENT**

- Inspected over 100 commercial food establishments (fats, oils, grease)
  - Inspected all SIUs (categorical industry and non-categorical).
  - Assisted 3 restaurants with compliance after exceeding the pretreatment standard of 100mg/l of FOG. Including the retrofit and installation of a new grease trap at one location
  - Additional training: attended 4 pretreatment seminars hosted by Ohio EPA (topics included mercury standards and inspections, FOG control, TMDL and changes to stream nutrient loading, stormwater pollution prevention).
  - Assisted stormwater division with autumn leaf and green waste inspections.
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## **NOWWTP FLOW / PERMITTING / BIOSOLIDS**

- During the year 2016, the City of North Olmsted WWTP treated 1.9577 Billion gallons of wastewater from North Olmsted, Olmsted Township, and Fairview Park, for an average daily flow of 5.3636 million gallons per day.
  - Flow from Fairview Park accounted for approximately 117.6 million gallons.
  - Flow from Olmsted Township (measured at Vita, Mackenzie, Elizabeth, Pebble Brooke) accounted for approximately, 333.7 million gallons.
  - The estimated peak flow at the WWTP was 19.268 MGD, on April 15<sup>th</sup>, 2016.
  - During 2016 the plant used approximately 70.328 million gallons of non-potable water, providing substantial saving vs. paying for water from Cleveland Division of Water.
  - During the 2016 year 198.12 dry tons of biosolids were hauled to the landfill; 773.92 dry tons were transferred to Quasar's French Creek and Collinwood (Methane Generation) Green Waste Facilities, we hauled 100% of all biosolids internally for 2016.
  - In 2016 we spent \$190,922 on disposal of biosolids and \$21,604 on transportation costs. In 2015 we spent \$172,468.22 on disposal of biosolids and 17,689.16 on transportation costs.
  - Flow at the wastewater plant Achieved 99% compliance with the current National Pollutant Discharge Elimination System permit from January 1, 2016, through December 31, 2016. The treatment plant entered a state of non-compliance three times during the year, up once from the preceding year. Two non-compliances were for Total Nitrogen (due to low flow during dry weather) in May and June and one was for Mercury in December of 2016.
  - The wastewater treatment accepted a minor permit modification for Orthophosphate in 2016 (the plant already samples for Total Phosphorus) under the NPDES operating permit 3PD00016\*MD.
  - The Compliance Division (pretreatment and storm water inspection) had no changes in staffing 2016.
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## NOWWTP MAINTENANCE

The maintenance division is responsible for monthly, quarterly, and semiannual preventative maintenance and all reactive/emergency maintenance at the treatment plant and in the collection system.

The maintenance department cooperatively assists in many projects (lists above) but also takes the leads on various projects in both the treatment plant and collection system. Projects in which the lead role was assigned to the maintenance division include:

- Moen lift station upgrades
    - Installed new pump motors and drives.
    - Reconfigured piping and installed new valves with additional bypass pump capabilities.
    - Placed new panels and supervised installation of electrical controls.
    - Installed all safety guards and controls.
    - Supervised and tested new generator installation.
    - Assisted with P.L.C. and telemetry upgrades.
    - Building upgrades including HVAC, lighting, structural modifications, fencing, and bollards installation.
  - Completed Broxbourne lift station generator relocation and upgrade (started in 2015)
  - Asbestos abatement
    - including boiler, radiators and associated piping
    - window asbestos abatement for broken windows
  - Removal and decommissioning of boiler, piping, and vent stack
  - LED lighting upgrades for Admin Building and Building 14 (fluorescent and halogen bulbs replaced with more efficient units)
  - Building 7, Removal of large air exchange heating system, replaced with more efficient non-exchange system
  - Relocate scale system, re-design as drive over system
  - Install street sweeps dumpster pad, debris runoff into plant not into storm sewers
  - Install wear plates onto walls of dump pit, extend life of the dump pit system
  - The maintenance division saw the hiring of two employees, maintenance helpers, Thomas Kerper and Adam Humphrey. The projected staffing for 2016 remains the same as the previous year with 1 supervisor and 4 mechanics.
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## SANITARY SEWER SYSTEM OPERATIONS

Along with normalized duties found in the Sewer Master Plan; as well as, specialized service during major rain events, the system crew completed the following projects:

- Responded to 172 sewer service requests – there are approximately 12,000 total sanitary sewer system connections in North Olmsted.
- Sanitary mains televised 23.86 miles.
- Sanitary laterals televised, Lateral Launch– 43.
- Sanitary laterals televised See Snake- 31.
- Sanitary mains cleaned with sewer jet – 26.61 miles.
- Sanitary manhole sealed – 96 manholes.
- Sanitary manholes rebuild or repaired 17.
- Trenchless Sewer Main Pipe Patch Repairs 39.
- Laterals repaired with trenchless patches 2
- Sewer lining 487 feet.
- Assisted with Moen Pump Station retrofit of existing pipes, valves, motors, pumps, guards, and gauges. All work performed in-house with maintenance and collection system staff.
- Moen Pump Station supervised upgrades to electrical service, electrical transfer, stand-by generator, electrical controls, and telemetry.
- Bradley Pump Station- Initiated bypass pumping at Bradley LS. Full clean out of all channels and wet wells for future upgrades to the station in 2017.
- Bradley Pump Station - completed design and RFP for the station under the guidance of CT Consultants and awarded a construction contract to North Bay Construction with full station upgrade to start in the beginning of 2017.
- Broxbourne Pump Station- completed final connections and install of generator purchased in 2015.
- Cleaned and inspected wet wells at Dover and Broxbourne Lift stations and both equalization tanks at Dover and Lebern service areas.



- Rebuilt and replaced two DIP sewer drop lines in manholes on Windsor and South Columbia Roads with PVC lines, work done by maintenance and collection system staff.
  - Sewer mains cracks, offsets, breaks, and repairs were located by our CCTV crews. All repairs were done in-house with our trenchless technology patch equipment. Sewer lining done at 3 locations in 2016 was done by Lake County Sewer.
  - Zero Sewer System Overflows for 2016.
  - Staffing remained constant for the collections division in 2016. The staffing for 2017 remains the same as the previous year at 1 manager, 1 supervisor, and 2 maintenance technicians and 6 operators.
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## **NOWWTP LAB**

- All reports were prepared and submitted on time to the Ohio EPA as mandated under our current NPDES permit:
  1. Completed Priority Pollutant Scan including enforcement of local industrial user limitations to prevent the introduction of pollutants into the WWTP which will interfere with the operation of the WWTP, pass-through the WWTP, or limit sludge application.
  2. Completed the USEPA thirty DMRQA Study – USEPA determined that the City's Laboratory performance was accurate for all tested parameters.
  3. Completed all monthly EDMRs and noncompliance follow-up reports.
  4. Completed all pretreatment quarterly and annual reports
  5. Completed all quarterly and annual collection system reports
- Normal QC/QA and control study were completed to generate defensible data.
- Performed Chronic and Acute Toxicity tests to determine compliance with OEPA WET testing.
- Purchased new analytical balance.
- Purchased new drying oven.
- Purchased new Laboratory service vehicle (SUV).
- Assisted in polymer study with extra samples and analysis.
- Assisted with process control sampling for plant profiles on Orthophosphate and Ammonia to help best determine plant optimization.
- Relocated existing sample storage and sample refrigerators from the Zimpro Area to (sludge) odor control area.

- Reorganized all flammable and corrosive storage containers and cabinets. Moved empty bottle storage to former operators control area.
  - Assisted with new PPE storage and safety cabinet design and stocking.
  - Staffing for 2016 remained constant with 1 Chemist and 1 Laboratory Technician. 2017 staffing projects a possible retirement of the Lab Technician
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## **NOWWTP STORMWATER CONVEYANCE**

- During the year 2016, the Wastewater Department cleaned, cut and removed debris from 36.87 miles of open ditches and creeks inside the City of North Olmsted. Many times revisiting those ditches on more than one occasion.
  - Hand re-graded the ditch on Gessner road between Columbia and Walter.
  - Cleaned out and re-graded the entrance to 12 (box) culverts.
  - Made site visits to each of the 30 hot spot locations after each major rainfall (15).
  - Received grant funding to remove extra debris along stream embankments and in wooded areas after the ditch service season but completed the work anyways. Grant funding should be available for 2017.
  - Issued 35 violation letters for stormwater dumping and placed 50 door-hangers for light or marginal green waste (leaf) dumping.
  - Assisted with 14 private property stormwater sewer inspections (CCTV lateral launch).
  - Two residential inspections and recommendations completed jointly with Cuyahoga County Soil and Water Conservation District. Two full ditch inspections, profiles, and recommendations provided under CCSWCD guidelines, at residential request.
  - Completed the purchase of a mini-excavator and trailer.
  - Staffing for the 2016 storm crew was constant for 2016 with 5 seasonal employees and one supervisor (temporally transferred from the Collection Systems).
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# NOWWTP OPTIMIZATION

Part of our focus each year is on optimization, in 2016 optimization efforts included:

## PLANT OPTIMIZATION

- Sludge Storage: Focus on centrate removal, to pre-thicken sludge before dewatering; saves money on polymer usage. Odor control Sludge Storage: Change sludge mixing and aeration operation times.
- Biological treatment optimization: V.L.R. / and blower operation: Focus on O.R.P. values, blowers in-service and blower output: for Phosphorus, Ammonia removal and reduced electrical, chemical and equipment costs.
- Centrifuge Operation / Polymer Usage: Focus on optimization and centrifuge adjustments to reduced polymer costs, reduced electrical costs, reduced equipment wear and tear, reduced trucking and tipping fees.

## ODORS REDUCTION OPTIMIZATION

The treatment plant uses several mechanisms to reduce odor including mixing, oxidation, and sequencing to help minimize odor or regulate releases. All odor complaints are investigated and each complaint leads eventually to a solution or change in the process. Odor sources at the plant include: the incoming sewage, the biological process, sludge production and storage, street sweep storage, catch basin cleaning (which may contain decaying organic or biological material). In addition in 2016, a large hole was open in the secondary/overflow influent line leading to an odor release in the months of August through October. Optimization for Odors in 2016 included:

- Cleaning and washing out sludge hauling dumpsters after each use.
- Keeping all bins tarped and covered.
- Cleaning and solids handling in the plant dump pit.
- Keeping all sludge in an aerobic state.
- Adjusting the timing of mixing and aeration to early AM, hours.
- Properly maintain and operate odor control equipment.
- Keep all buildings and doors, closed that may have offensive odors.
- Smoke testing influent line(s) and grounds of the WWTP
- CIPP lining of the influent secondary line.

## STORMWATER POLLUTION PREVENTION OPTIMIZATION

The storm water outfall for the NOWWTP is located inside the Cleveland Metroparks Rocky River Nature Center, creating a higher priority for this area. SWPPP Optimization include:



- Purchase of new spill kits.
- Sealing storm grating during chemical unloading.
- Cleaning wheels inside the dump pit to reduce tracking.
- Cleaning equipment and vehicles in designated areas.
- Having useable spill kits in various, accessible locations.
- Training employees on housekeeping and spill prevention/reaction techniques.
- Having a clear contingency plan(s).

## **:SANITARY SEWER YEARLY AVERAGES:**

### **SANITARY SEWER MAINS CLEANED W/JET**

2006 : 10.6 Miles	2011: 33.1 Miles	2016: 26.6 Miles
2007 : 12.8 Miles	2012: 39.4 Miles	
2008 : 17.1 Miles	2013: 22.3 Miles	
2009 : 22.6 Miles	2014: 26.7 Miles	
2010 : 25.6 Miles	2015: 25.9 Miles	

### **SANITARY SEWER SERVICE CALLS**

2006 : 249	2011: 162	2016: 172
2007 : 273	2012: 174	
2008 : 263	2013: 177	
2009 : 205	2014: 268	
2010 : 191	2015: 216	

### **SANITARY SEWER HOUSE LATERALS T.V.ed**

2006: 91	2011: 62	2016: 71
2007: 100	2012: 57	
2008: 97	2013: 127	
2009: 76	2014: 193	
2010: 91	2015: 138	

### **SANITARY SEWER MAINS TELEVISED**

2006: 2.0 Miles	2011: 10.1 Miles	2016: 23.86 Miles
2007: 2.1 Miles	2012: 12.7 Miles	
2008: 5.0 Miles	2013: 7.9 Miles	
2009: 6.1 Miles	2014: 9.8 Miles	
2010: 11.3 Miles	2015: 19.7 Miles	

### **SANITARY MANHOLES SEALED FOR I&I**

2015: 36    2016: 96

# **STORM DITCH CLEANING 2016**

SOUTH SIDE OF LORAIN RD 16.02 MILES

NORTH SIDE OF LORAIN RD. 20.67 MILES

DUG OUT DITCH ON GESSNER RD  
BETWEEN COLUMBIA AND WALTER RD

CUT UP AND REMOVED 6 TREES THAT  
FELL INTO THE FLO-LINE OF LARGE  
DITCHES AND REMOVED

TELEVISED STORM SEWERS FOR TEE OR  
LATTERAL LOCATIONS 14 LOCATIONS

CHECKED STORM TROUBLE SPOTS ON  
LOG SHEET AFTER EVERY SIGNIFICANT  
RAINFALL FOR A TOTAL THIS YEAR OF  
15 VISITS. THERE ARE 30 LOCATIONS ON  
THE LOG SHEET

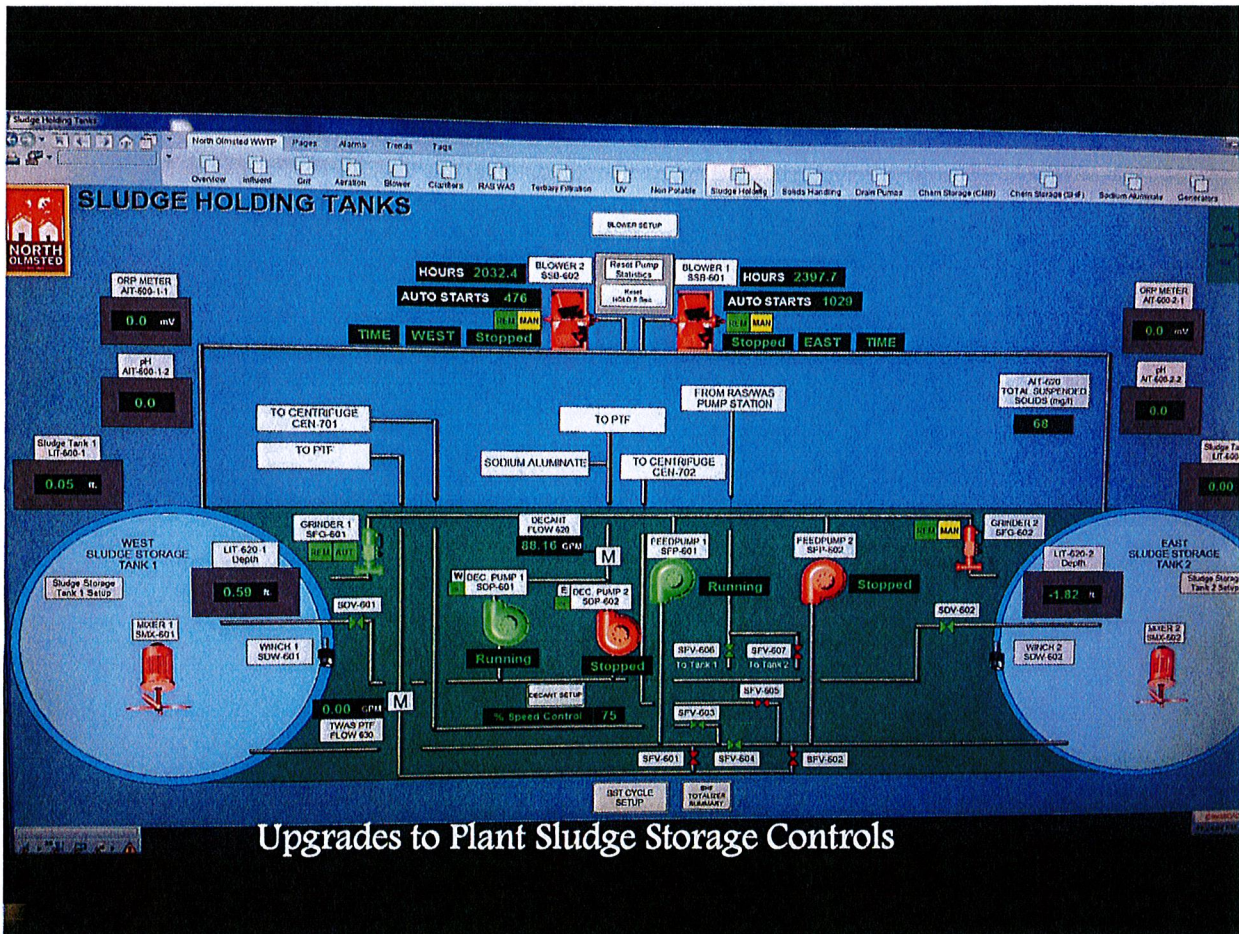




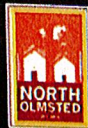
# NORTH OLMSTED WASTEWATER ANNUAL REPORT

## 2016 PROJECT PHOTOS

### SCADA UPGRADES WWTP and Collections







# NORTH OLMSTED PUMP STATION MONITORING

01-18-17 12:48 PM

- MAIN MENU
- LEBERNE
- CLAGUE PARK
- DOVER
- BROXBOURNE
- BRADLEY
- ESTER
- MOEN
- ALARMS

LEBERNE

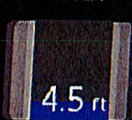
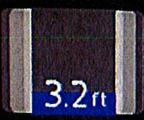
CLAGUE PARK

DOVER

BROXBOURNE

BRADLEY

MOEN



Pump Status



Pump Status



Pump Status



Pump Status



Pump Status



Pump Status



ESTHER

381.6 gpm

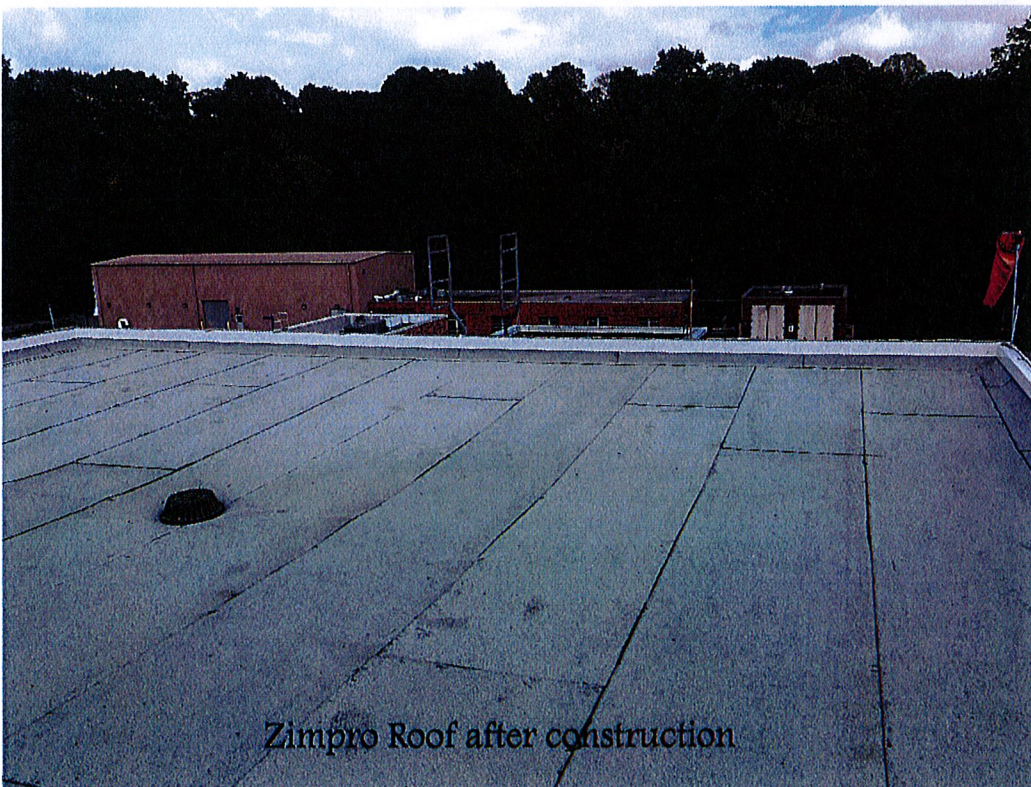
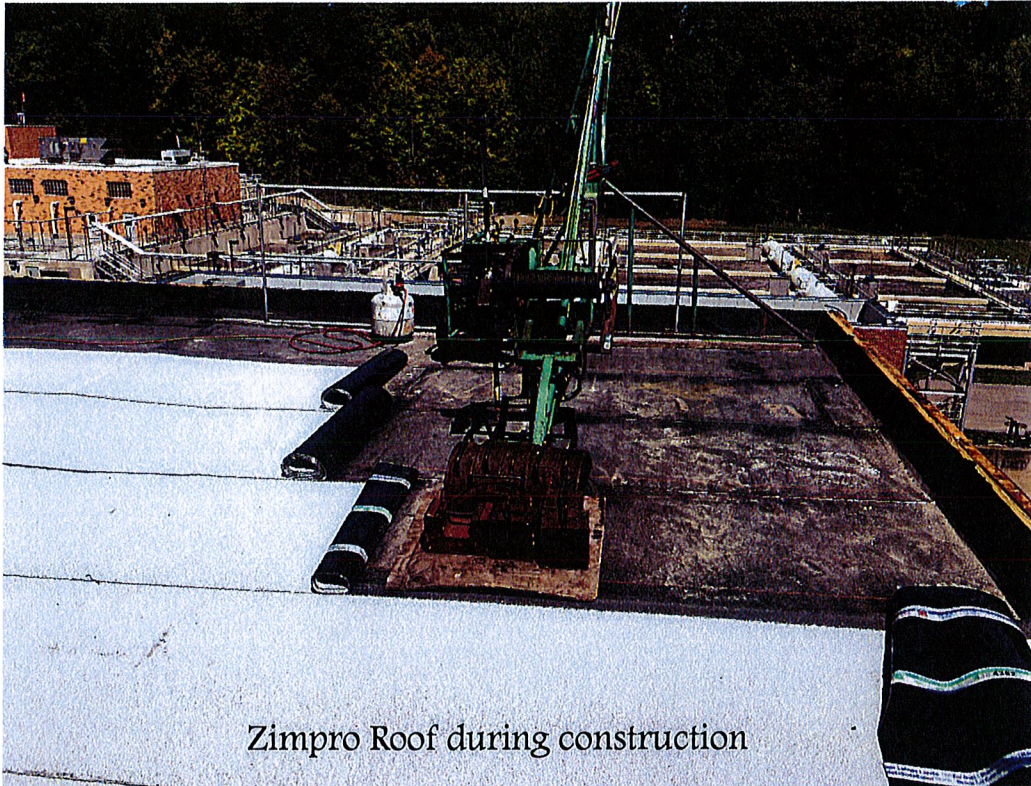


Call-Out  
Alarm  
Acknowledge

001/001 01-18-17 11:52 AM BROXBOURNE GENERATOR RUNNING



## Zimpro ROOF Replacement Project

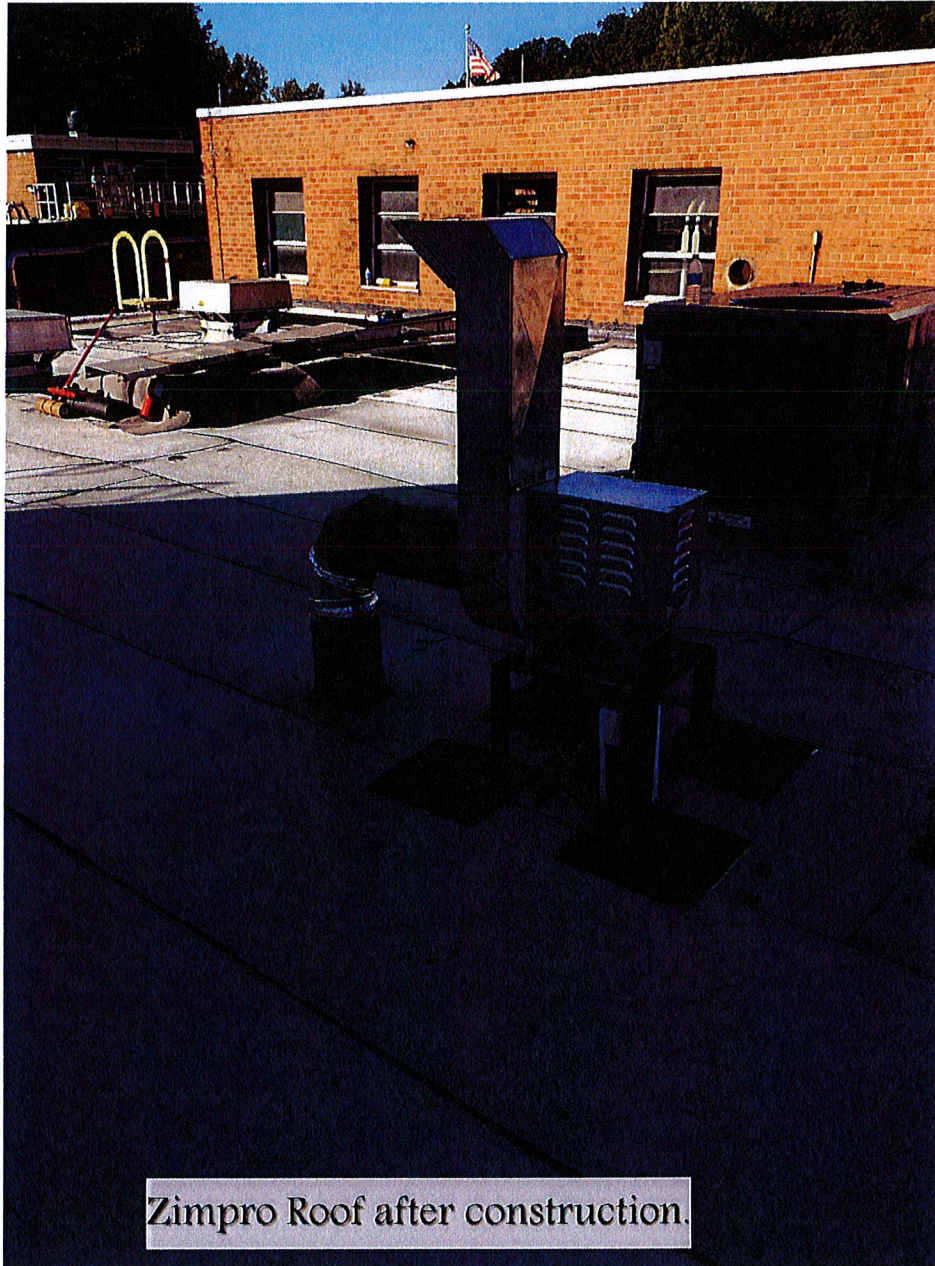




## Lab ROOF Replacement Project







Zimpro Roof after construction.



## Scale Relocation Project





New Roll-up door added to building 7



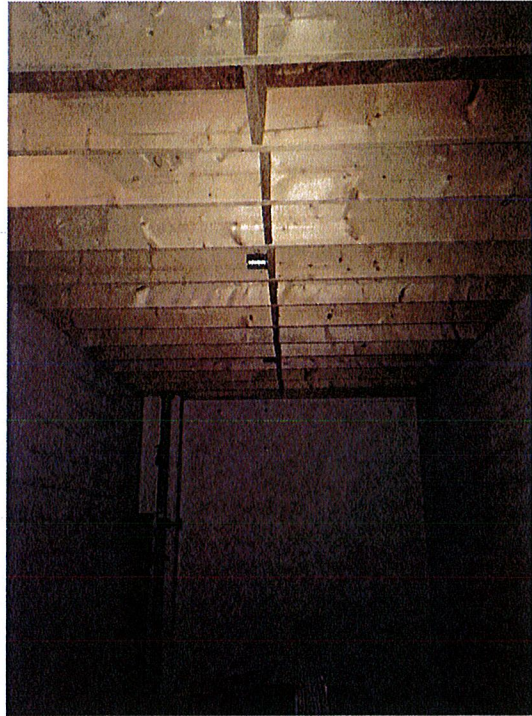


Car 57 (replace with utility vehicle)



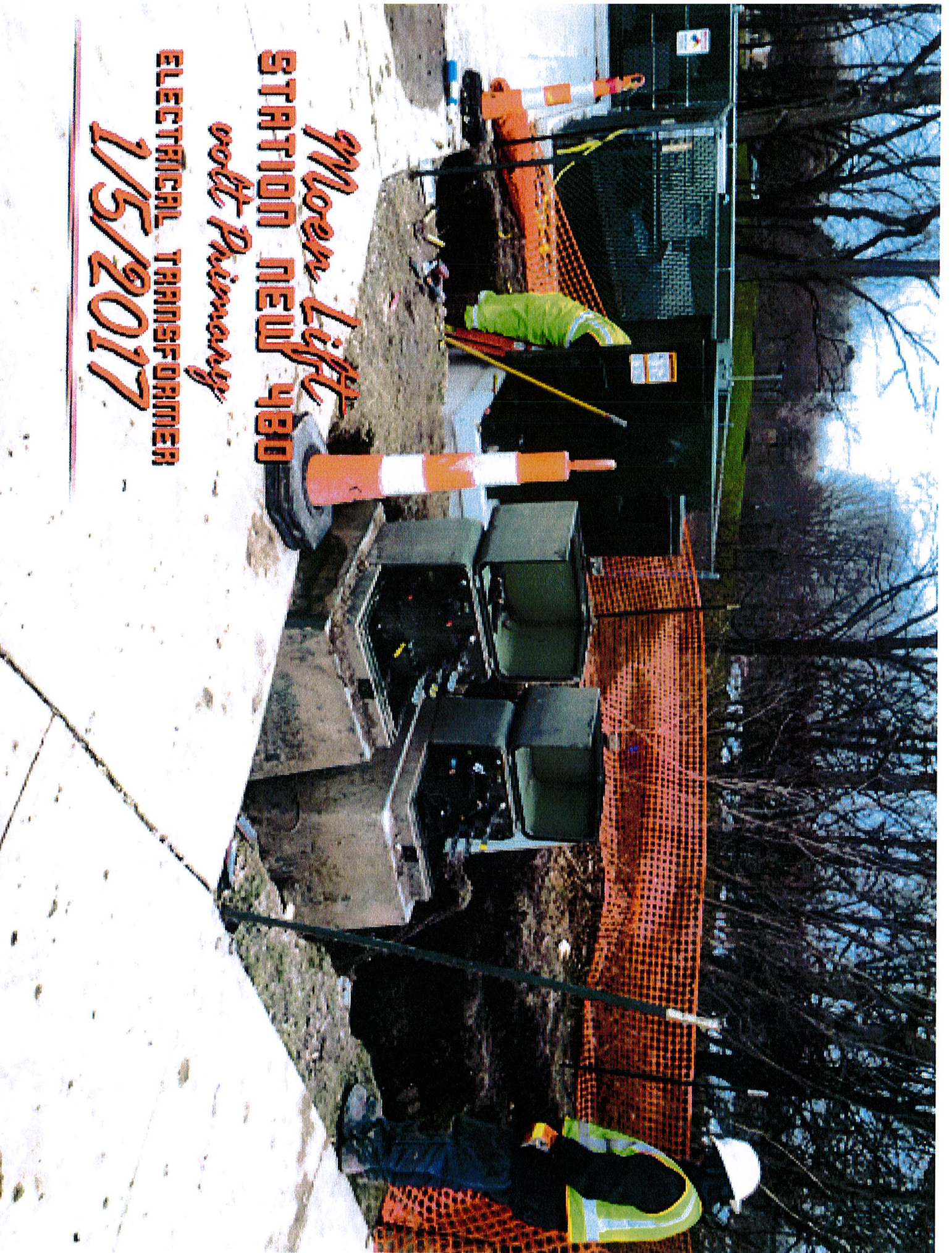


New crew show and locker room under construction

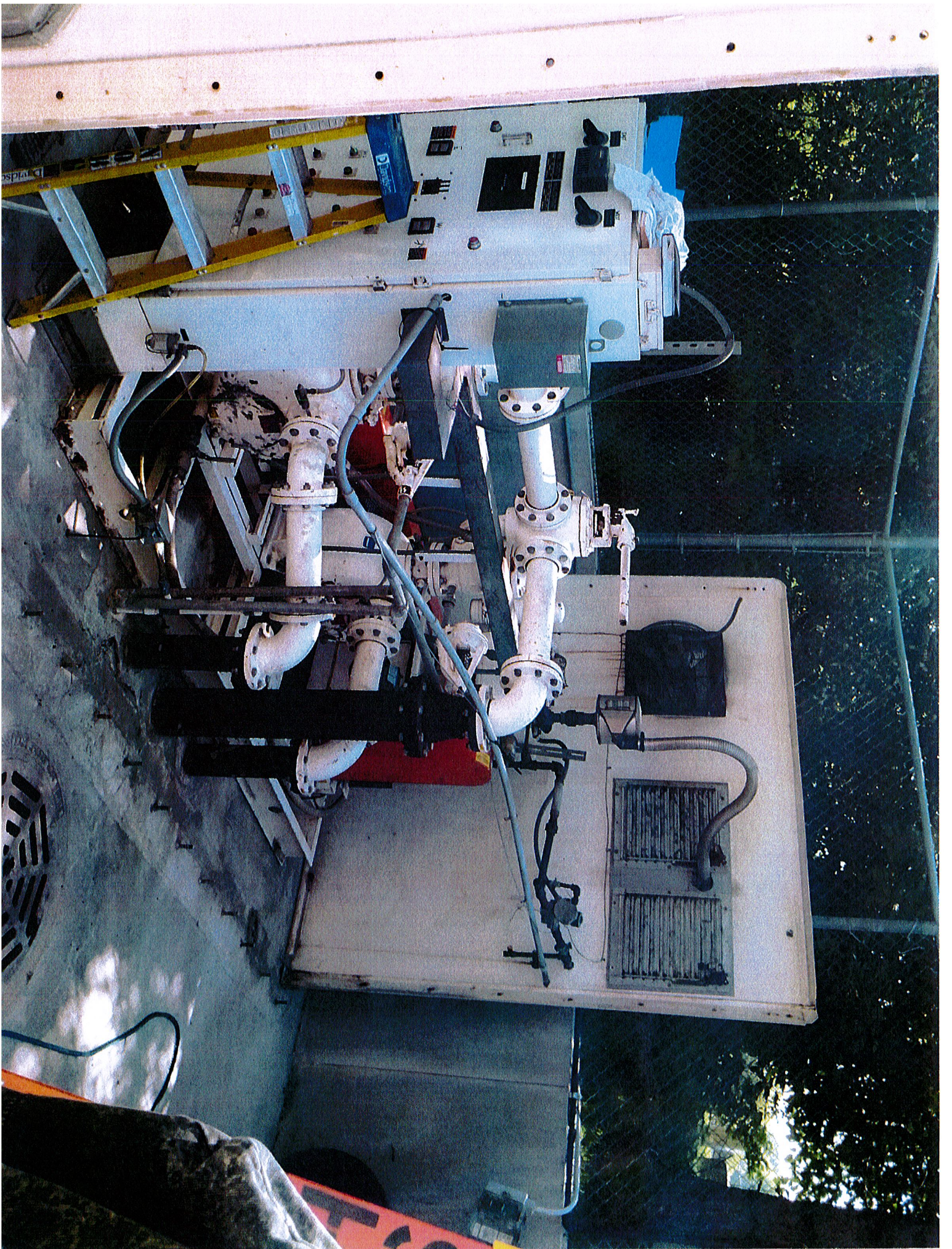




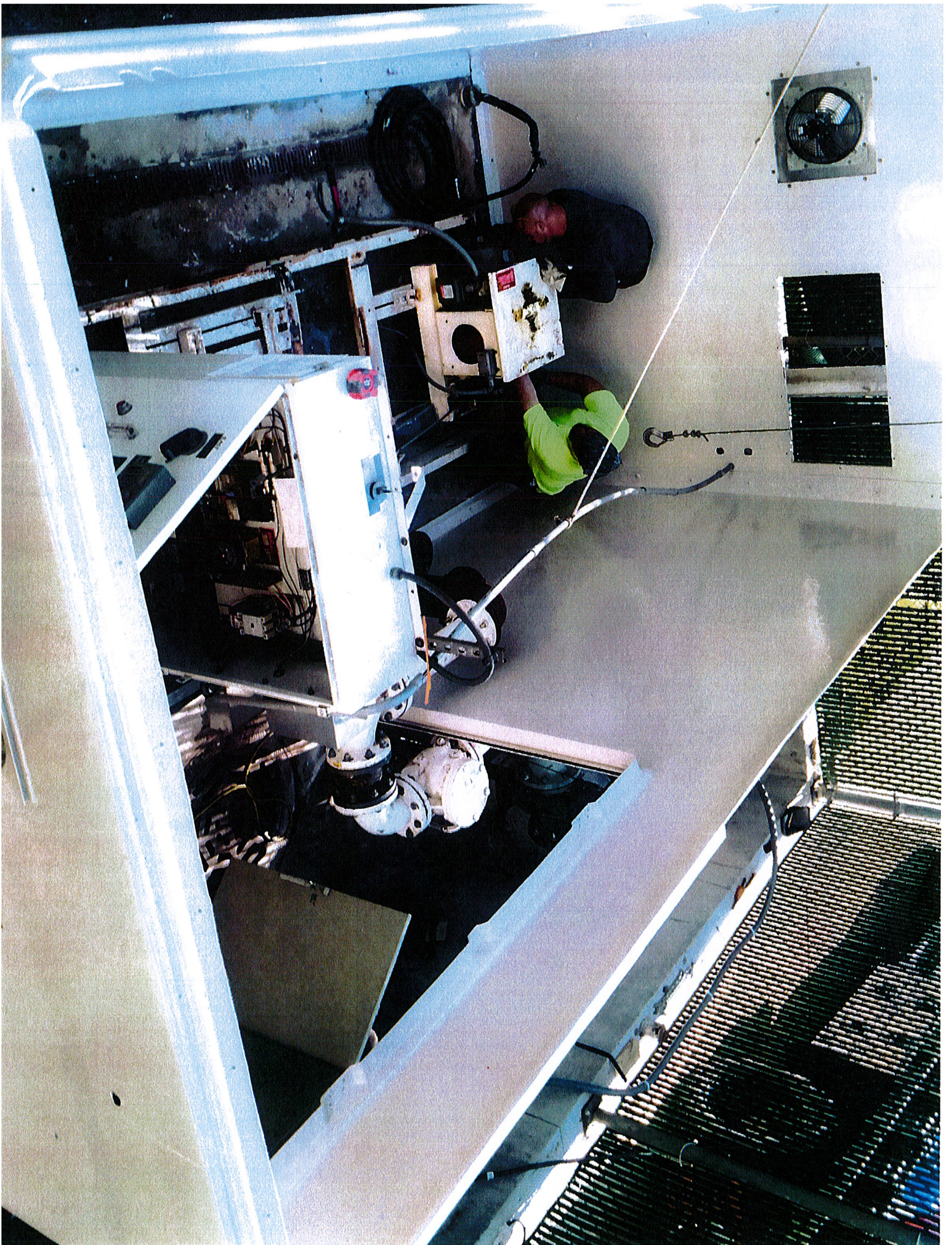
*Moore Lift*  
**STATION NEW 480**  
*with Primary*  
**ELECTRICAL TRANSFORMER**  
**1/5/2017**



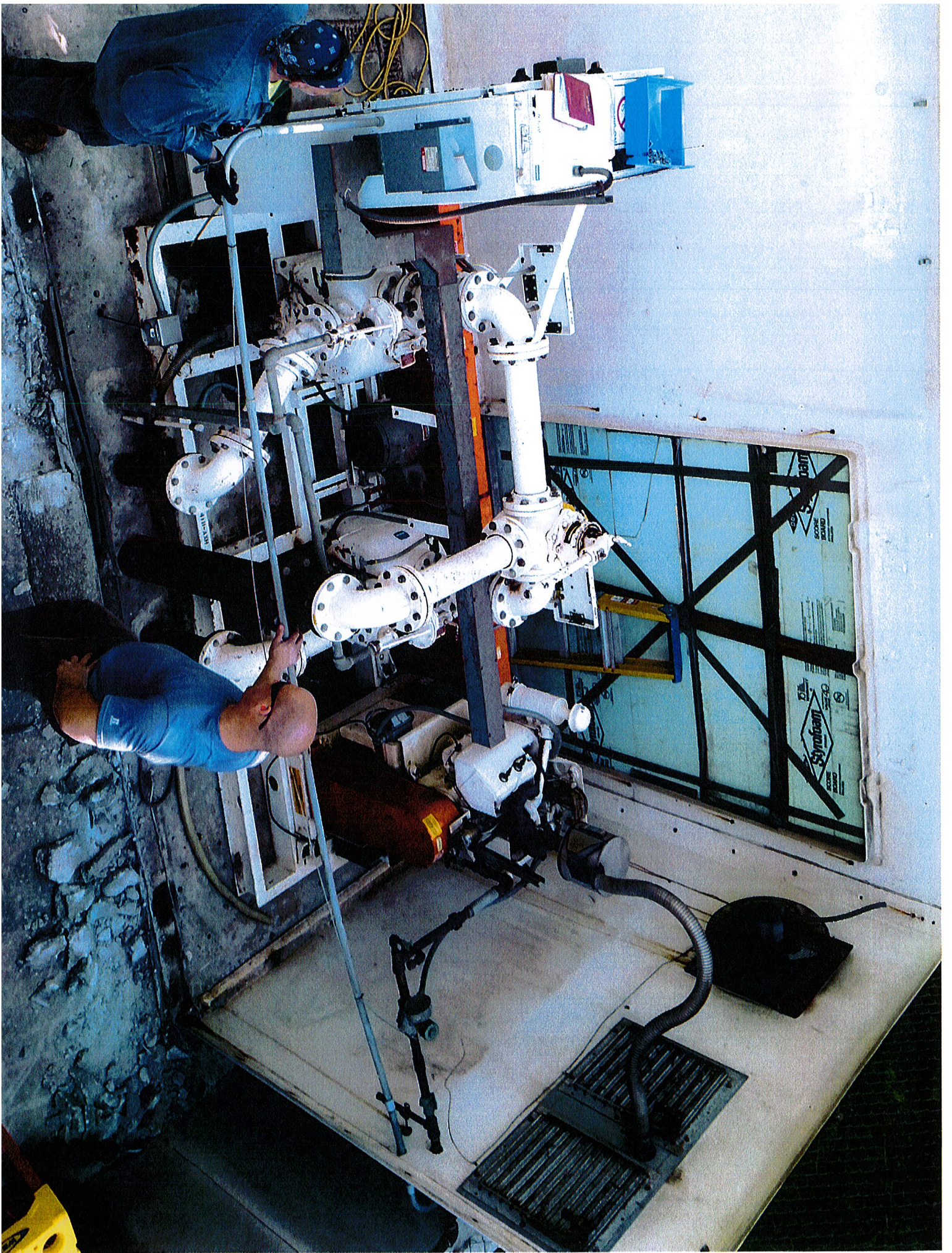










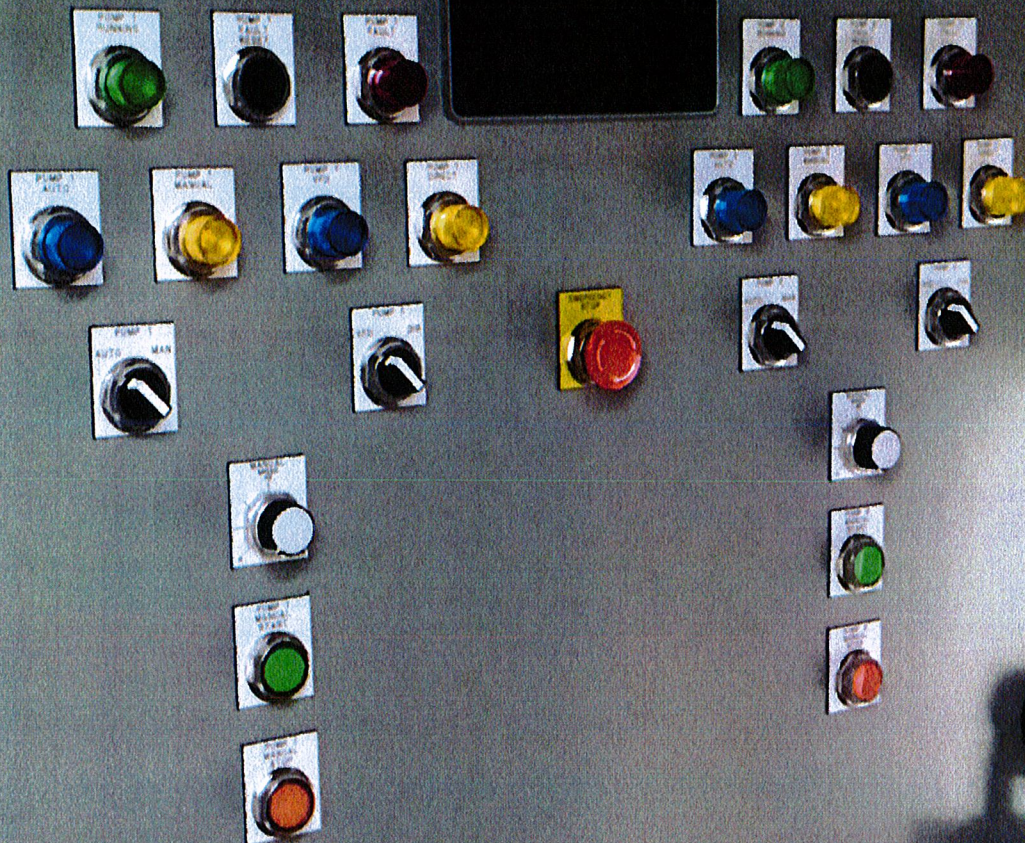








MOEN LIFT STATION  
NEW PUMP CONTROL PANEL 12/06/2016

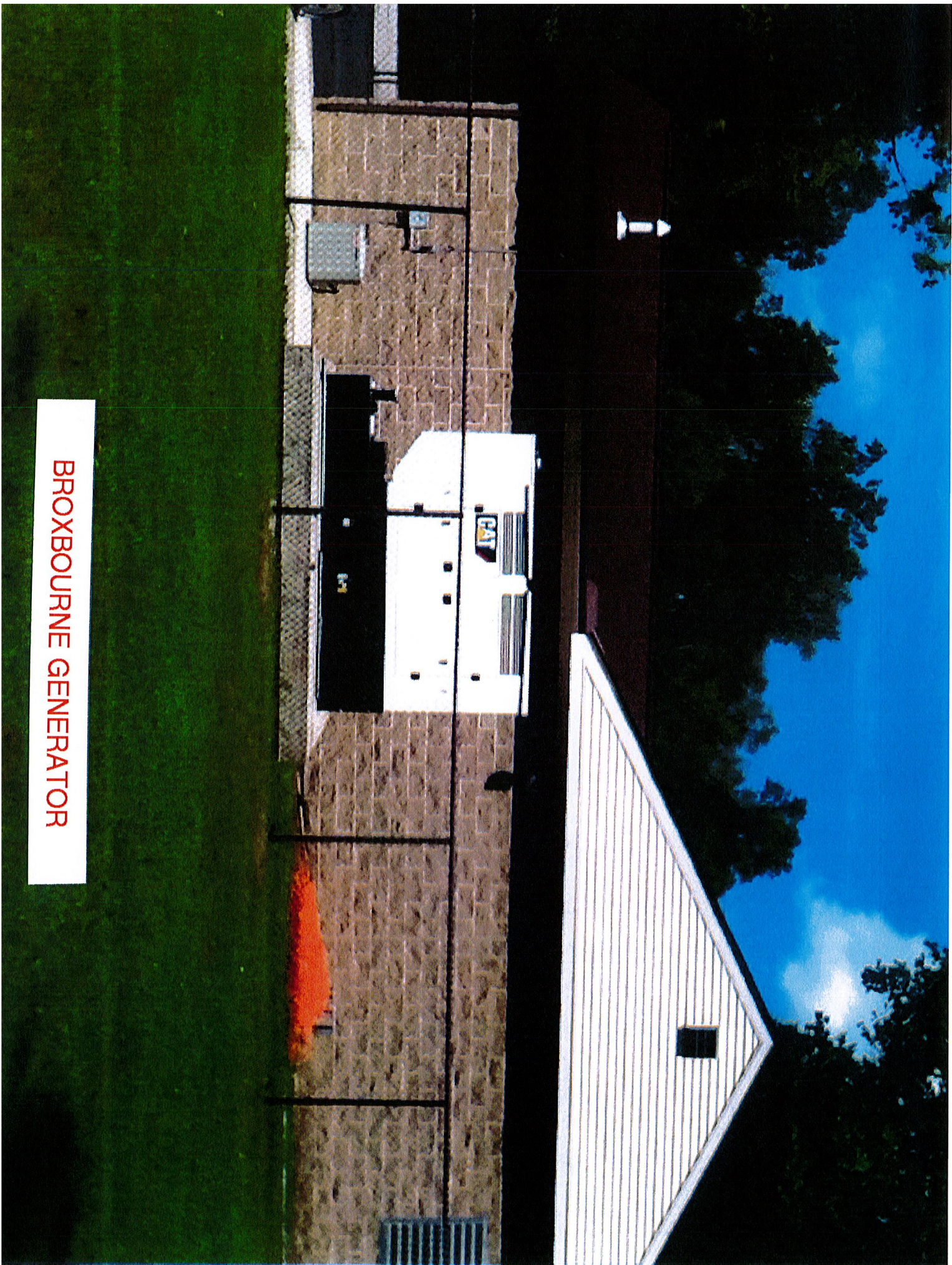






CIP LINING WWTP INFLUENT LINE

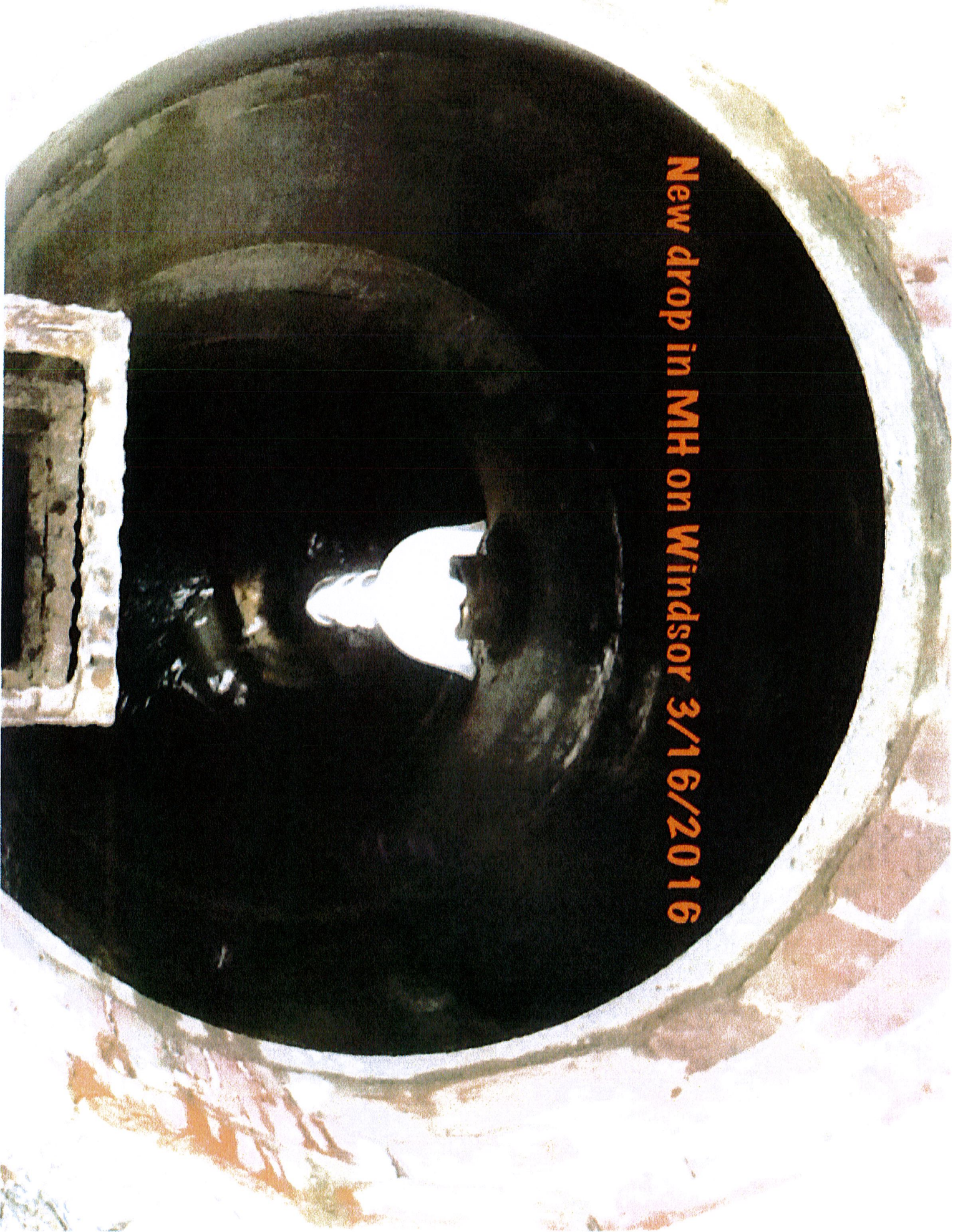




BROXBOURNE GENERATOR



**New drop in MH on Windsor 3/16/2016**





3/20/16

M.H. #

3-22603---6369

Applied F - 121

Hastings / Somerset





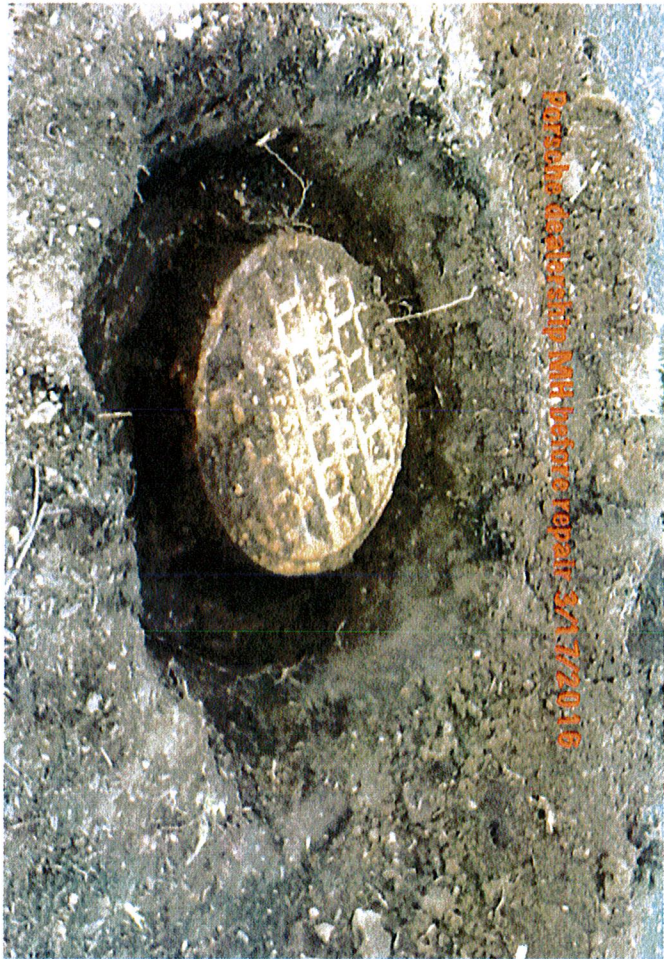
4085 Canterbury MH during repair 3/22/2016



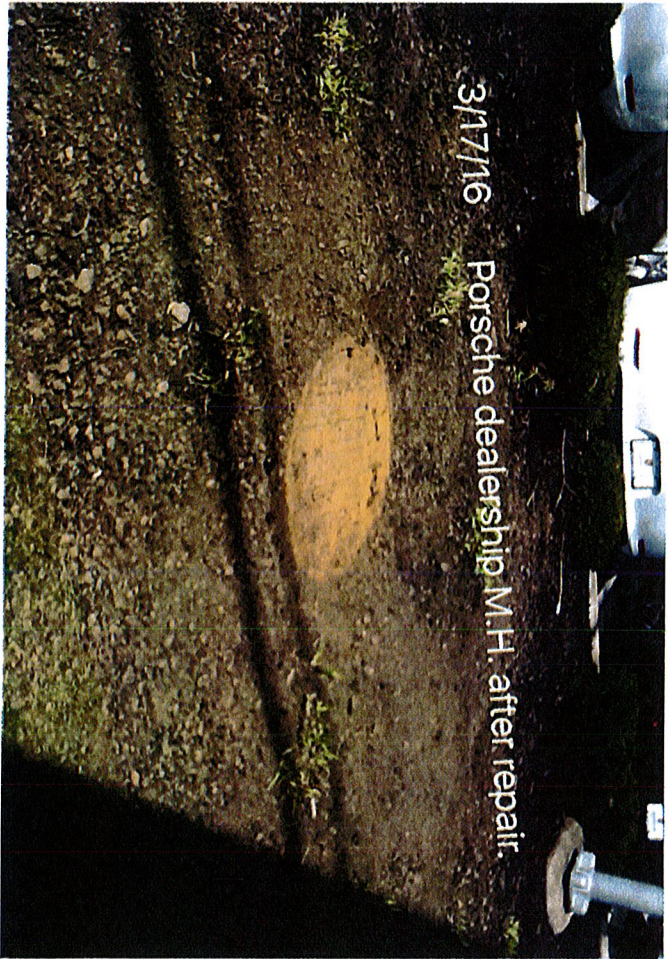
4085 Canterbury MH rebuild complete 3/22/2016







Porsche dealership M.H. before repair 3/17/2016



3/17/16 Porsche dealership M.H. after repair.



Porsche dealership after 6" of rise 3/17/2016



5156 Berkshire sanitary main repair 4/13/2016

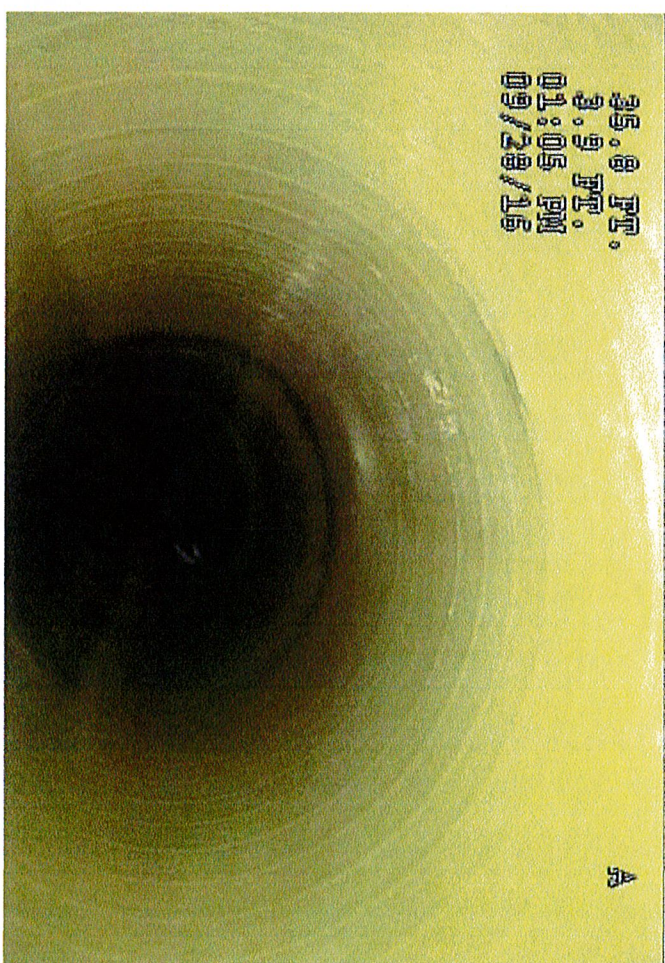
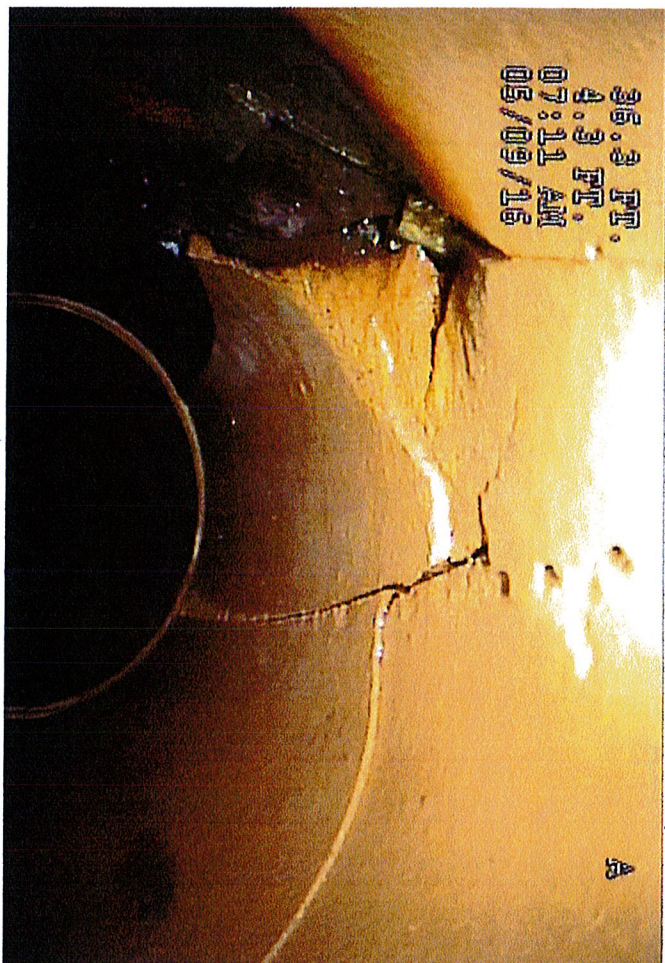




# PIPE PATCH INSTALLATION

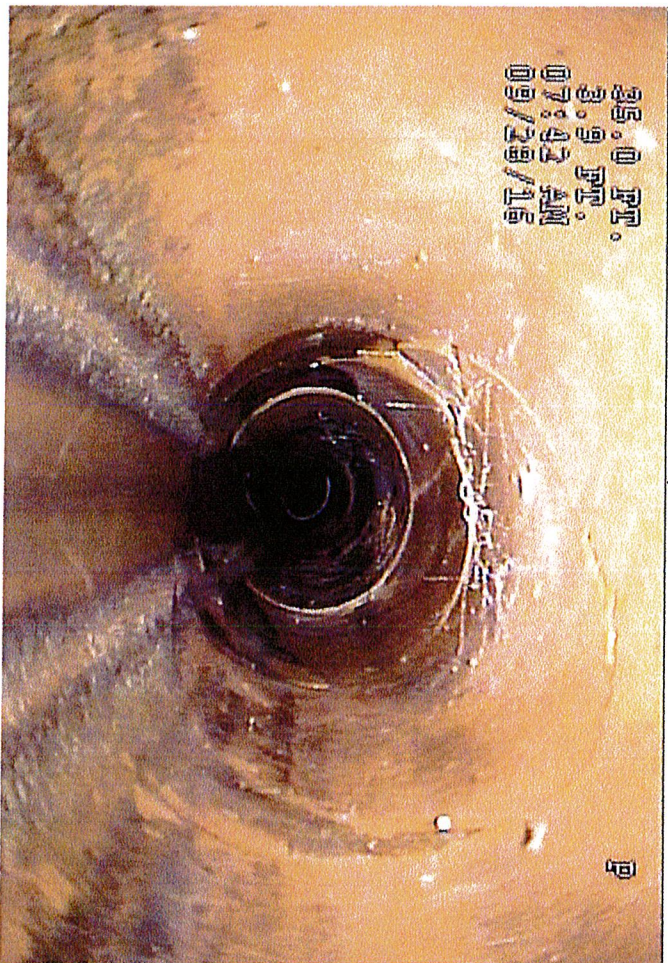
28887 LORAIN RD MH# 3-13104 TO MH# 3-13103

7/28/16



BEFORE

AFTER





24118 NOREEN 70 NOREEN/HAWKINS  
UPSTREAM 1-14301 DOWNSTREAM 1-14402A

4/26/16



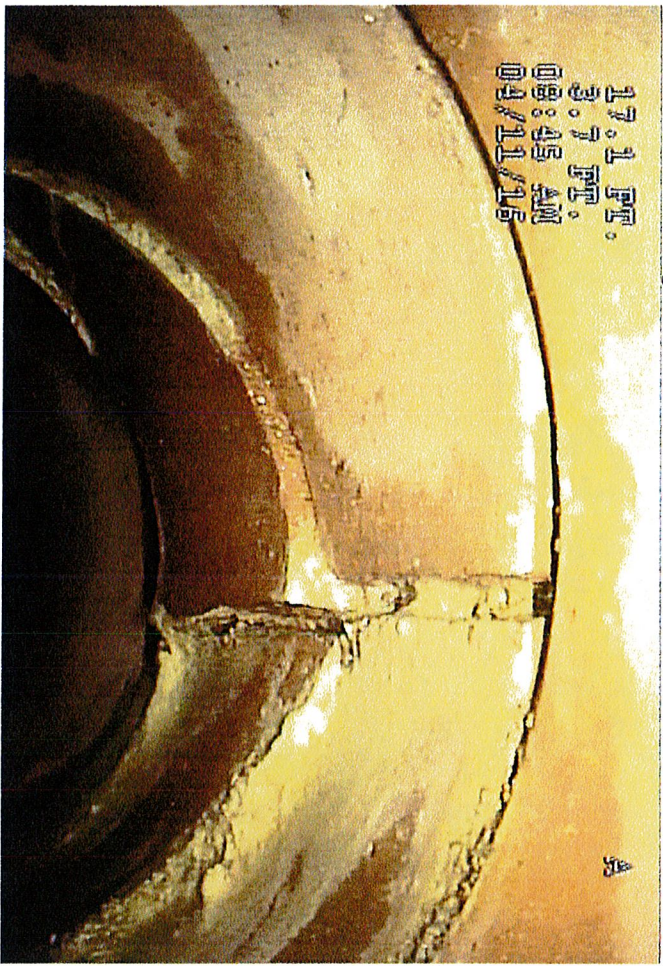
BEFORE

AFTER



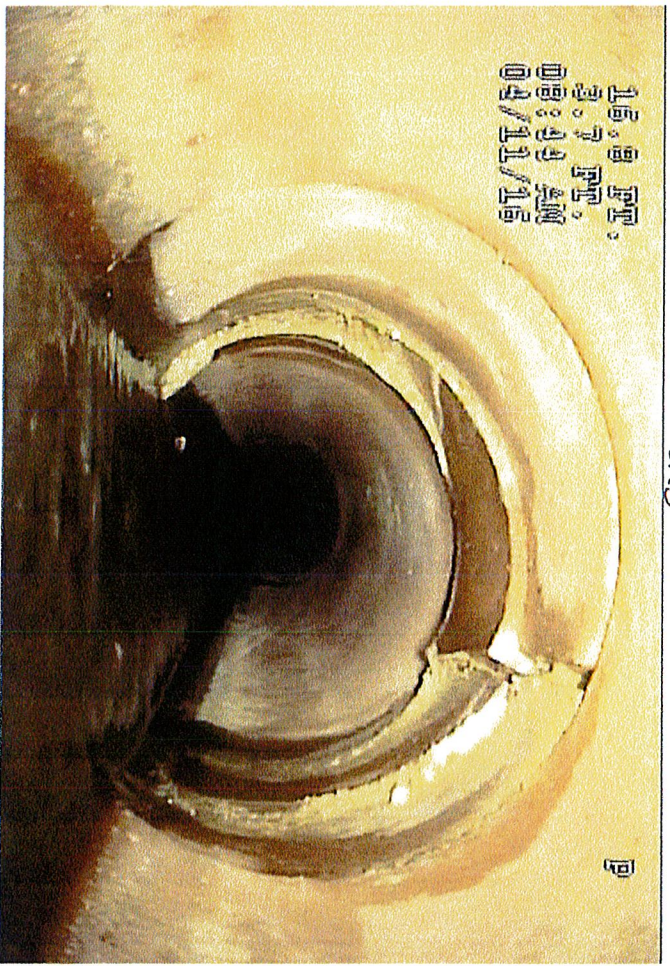


24276 NOREEN  
 MH# 1-14303 TO 24278 NOREEN  
 MH# 1-14302



13.1 FT.  
 3.7 FT.  
 08:45 AM  
 04/11/16

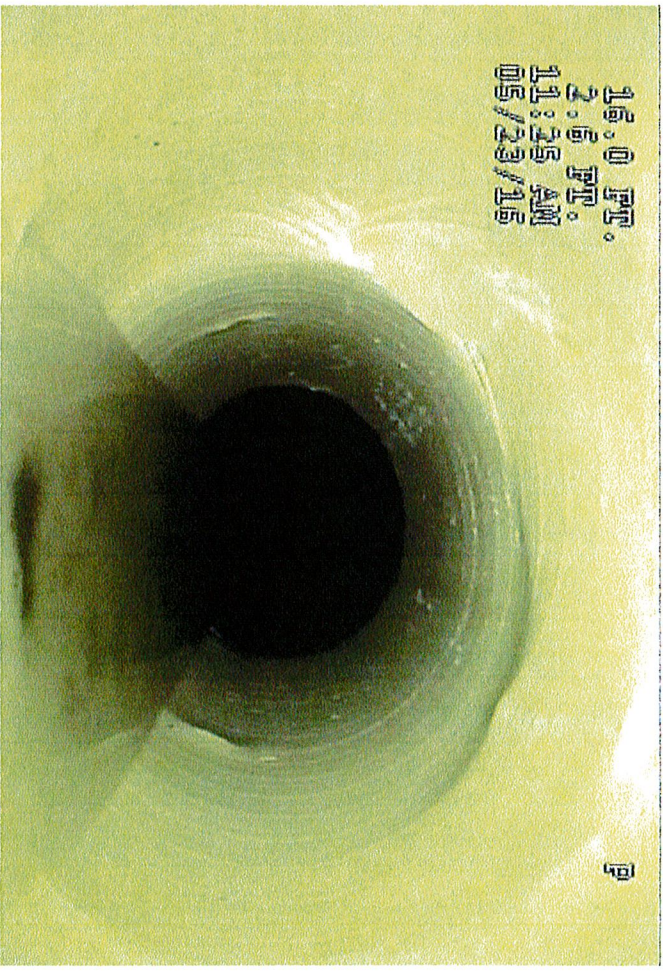
BEFORE



15.8 FT.  
 3.7 FT.  
 08:49 AM  
 04/11/16

PIPE PATCH

5/23/16



15.0 FT.  
 3.6 FT.  
 11:35 AM  
 05/23/16

AFTER



13.6 FT.  
 2.4 FT.  
 11:24 AM  
 05/23/16



5778 PARK RIDGE DR. 5804 PARK RIDGE DR  
MH 3-20401 To MH 3-20402

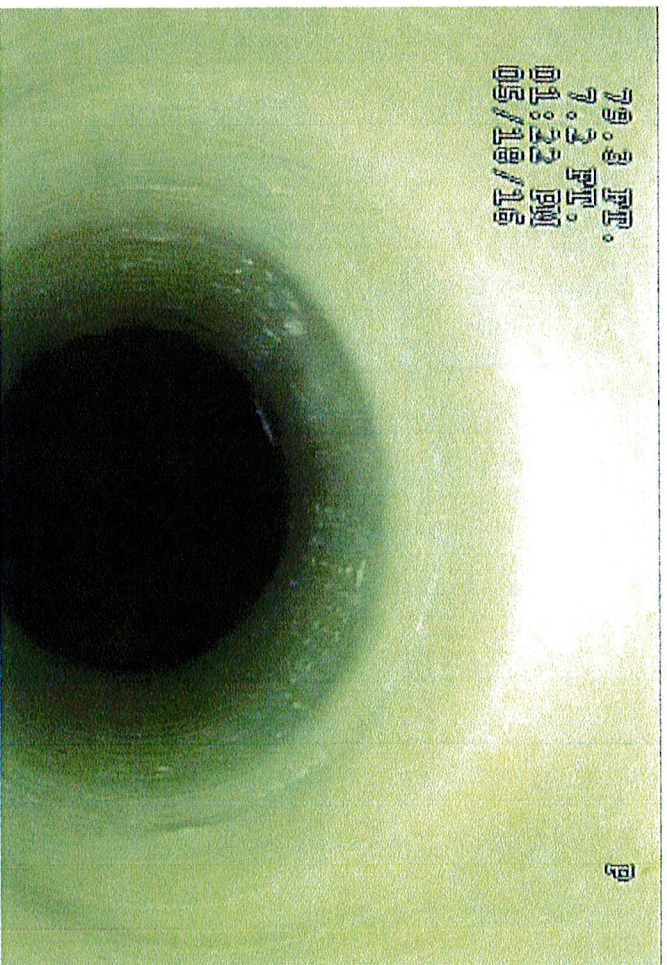


BEFORE



PIPE HATCH

5/18/16



AFTER

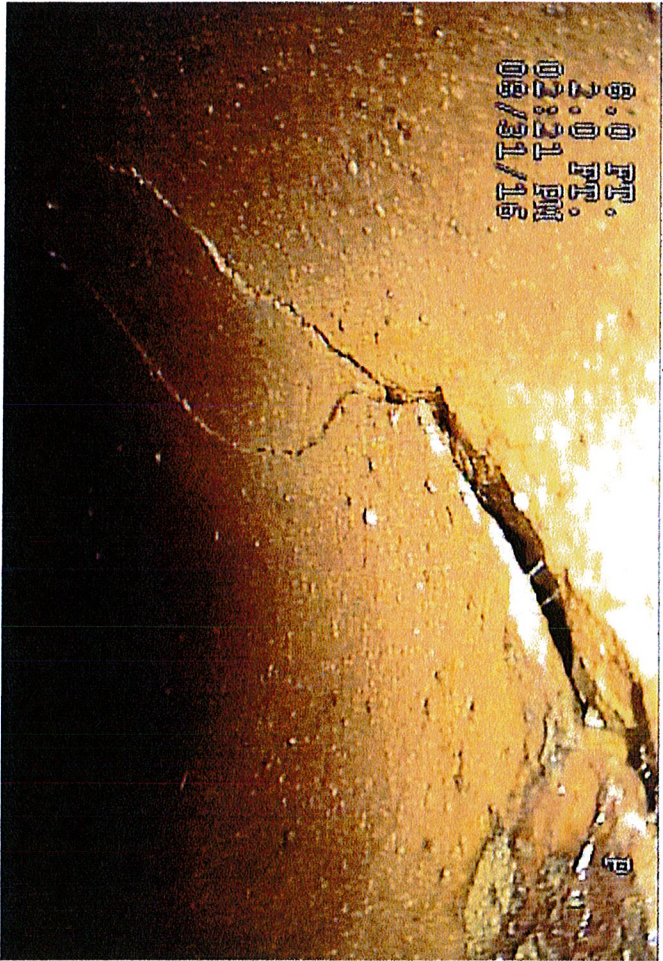




TYPE HATCH INSTALLATION

23418 MASTICK MH # 1-1203 TO MH # 1-1202

7/21/16



BEFORE



AFTER





# BLOCKHAGE

10 SIBERIAN BIRCH FENCE RD REMOVED

12/13/2016

