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CITY CLERK
Kelly Ann Dolland

City of Fraser

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Patrice M. Schornak
David Winowiecki

FRASER CITY COUNCIL – SPECIAL MEETING
THURSDAY – JULY 18, 2019 @ 6:00PM
AGENDA

1. **CALL TO ORDER/ROLL CALL**
2. **PLEDGE OF ALLEGIANCE**
3. **APPROVAL OF AGENDA**
4. **CITIZEN PARTICIPATION ON AGENDA ITEM**
5. **REQUESTS FOR COUNCIL ACTION**
- d. Discussion and Approval of Agreement with the Macomb County Department of Roads to Repair 15-Mile 400 feet east of Hayes
6. **ADJOURNMENT**

(Posted Wednesday, July 17th, 2019 @ 5:30pm)

THE CITY OF FRASER WILL PROVIDE NECESSARY REASONABLE AUXILIARY AIDS AND SERVICES TO INDIVIDUALS WITH DISABILITIES AT THE MEETING UPON FOUR DAYS NOTICE TO: KELLY ANN DOLLAND, CITY CLERK, (586-293-3100 EXT. 110) ~ IT IS THE POLICY OF THE CITY OF FRASER THAT NO PERSON, ON THE BASIS OF RACE, CREED, COLOR, RELIGION, NATIONAL ORIGIN, OR ANCESTRY, AGE, SEX, MARITAL STATUS, OR DISABILITY SHALL BE DISCRIMINATED AGAINST, EXCLUDED FROM PARTICIPATION, DENIED THE BENEFITS OF, OR OTHERWISE SUBJECTED TO DISCRIMINATION.

Honorable Mayor and City Council
Municipal Building
Fraser, MI 48026

July 18, 2019

Re: 15-Mile Repairs

Dear Sirs and Mesdames:

I am sending you an investigative report that was put together for insurance purposes on the history of the repairs made to the 15-mile Interceptor over the decades. It's very informative and does not conclude when the water main was not re-connected as it should have been. There would be no way anyone could know that water main had not been replaced because water was being supplied from two different directions, from the east and from the west thereby removing the "loop" in the system that is desirable if water had to be shut off to isolate a break.

The 15-mile project has not been completed, they came out and saw cut the street and repaired the outside lanes. They still have to replace the inside three lanes. I was contacted asking for the signed agreement yesterday and I let them know about your recent action and the need for the final bill. They indicated that they needed the contract before they would complete the project.

Within the report you will find the details over the years and I highlighted some of the pages for reference.

Page 22. "Prior to December 24, 2016, the 15 Mile Road water main was not connected resulting in two stubbed water mains. One under the south curb line emanating from Hayes Road to the west and the other in the greenbelt emanating from Hidden Pine to the east. From our records and investigation, it cannot be confirmed as to how long this condition existed."

When the prior failures of the interceptor took place going back to the 1970's, the 1990's and early 2000's the repairs were made by the Detroit Water and Sewerage Department. We had nothing to do with it. In fact, the property in which the Senior Activities Center and Senior Apartments are located came from these repairs as the staging area for the re-construction of this system. There are pictures Page 19, that show how the end of the water main by blocked off and it is amazing that it held as long as it did. I wouldn't call this a thrust block.

In addition, there are pictures of a vertical shaft right next to the end of this water main which could have caused it to weaken. So when the water was turned on after all of this construction, it gave way. It's impossible to prove but there is no reason for it to give way when the water was turned on if it had not been disturbed.

Kelly Dolland

From: Wayne O'Neal
Sent: Wednesday, July 17, 2019 3:43 PM
To: Kelly Dolland
Subject: FW: 15 Mile Conc Repair - Fraser
Attachments: 15 Mile Rerpair -2019 PPP Con RLB .pdf

For special council meeting.

From: Nick Schaefer [mailto:nicks@micityoffraser.com]
Sent: Wednesday, July 17, 2019 2:56 PM
To: Wayne O'Neal <wayneo@micityoffraser.com>
Cc: Dave Helzer <daveh@micityoffraser.com>
Subject: FW: 15 Mile Conc Repair - Fraser

Wayne,

This cost agreement for 15 mile road repair consist of all 5 lanes. Both outside lanes were replaced already. In which we noticed cracking in the outside eastbound lane.

Any issues like that will be corrected by the contractor.

Just so everyone is on the same page, the cost of the project and work description attach is all 5 lanes from curb to curb approximately 100'.

Sincerely,

Nick Schaefer
Public Works Interim Superintendent
Nicks@micityoffraser.com



From: Mike Vigneron [mailto:mvgneron@aeawinc.com]
Sent: Wednesday, July 17, 2019 2:31 PM
To: Nick Schaefer (nicks@micityoffraser.com) <nicks@micityoffraser.com>
Subject: FW: 15 Mile Conc Repair - Fraser

Nick,

Please see below and attached for your use.

Michael A. Vigneron, PE, PTOE
Senior Project Engineer

Anderson, Eckstein and Westrick, Inc.
51301 Schoenherr Road, Shelby Twp., MI 48315
Phone: 586-726-1234 Fax No: 586-726-8780
E-mail: mvgneron@aeawinc.com

 Please consider the environment before printing this email.

Connect With Our Team:



From: Robert Blanchard [<mailto:RBlanchard@RCMCWeb.org>]
Sent: Friday, June 07, 2019 3:28 PM
To: Mike Vigneron <mvigneron@aeuinc.com>; Walter Schell <WSchell@RCMCWeb.org>
Cc: 'Nick Schaefer (nicks@micityoffraser.com)' <nicks@micityoffraser.com>
Subject: RE: 15 Mile Conc Repair - Fraser

Please see attached

Thank You,

Robert L Blanchard, P.E.

Project Engineer
Macomb County Department of Roads
117 South Groesbeck Highway
Mt. Clemens, MI 48043
(586) 463-8671, ext 1232
www.macombgov.org

From: Mike Vigneron [<mailto:mvigneron@aeuinc.com>]
Sent: Thursday, May 30, 2019 7:07 AM
To: Robert Blanchard <RBlanchard@RCMCWeb.org>
Cc: 'Nick Schaefer (nicks@micityoffraser.com)' <nicks@micityoffraser.com>
Subject: RE: 15 Mile Conc Repair - Fraser

Robert,

Just wanted to follow up to see if you were able to include this location in the county-wide patch program. Thanks.

Michael A. Vigneron, PE, PTOE
Senior Project Engineer

Anderson, Eckstein and Westrick, Inc.
51301 Schoenherr Road, Shelby Twp., MI 48315
Phone: 586-726-1234 Fax No: 586-726-8780
E-mail: mvigneron@aeuinc.com

 Please consider the environment before printing this email.

Connect With Our Team:



From: Mike Vigneron
Sent: Tuesday, May 21, 2019 10:01 AM
To: 'rblanchard@rcmcweb.org' <rblanchard@rcmcweb.org>
Cc: Nick Schaefer (nicks@micityoffraser.com) <nicks@micityoffraser.com>
Subject: 15 Mile Conc Repair - Fraser

Robert,

Thanks for your time today. Attached are approximate limits based on some work we did for the Public Works office early on in the process. After talking with Chris and Joe in permits, it sounds like they've marked out cracks in about 200' of pavement along the south 3 lanes and it narrows up to maybe 150' or so in the north 2 lanes. Based on the observed settlement, there may have to be some contingency for supplemental agg base. Let me know if this is enough to get you started. Thanks.

Michael A. Vigneron, PE, PTOE
Senior Project Engineer

Anderson, Eckstein and Westrick, Inc.
51301 Schoenherr Road, Shelby Twp., MI 48315
Phone: 586-726-1234 Fax No: 586-726-8780
E-mail: mvigneron@aeuwinc.com



 Please consider the environment before printing this email.

Chronology of the 15 Mile Road Water Main

Prepared for

Macomb Interceptor Drain Drainage District

February 25, 2019

AEW Project No.: 0211-0184-2

Prepared by:



ANDERSON, ECKSTEIN & WESTRICK, INC.
CIVIL ENGINEERS SURVEYORS ARCHITECTS

51301 SCHOENHERR RD. SHELBY TOWNSHIP, MI 48315
www.aewinc.com p(586)726-1234

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EXECUTIVE SUMMARY

Since passage of a Special Assessment District in 1969 and construction in 1974, a City of Fraser 12" diameter water main along 15 Mile Road has been impacted and/or documented by many public agencies and engineering consultants. Anderson, Eckstein and Westrick, Inc. (AEW's) review of historical documentation and conditions observed in the field in 2017 and 2019 have shown available record plans to include inaccuracies.

Further, AEW has reached the following conclusions relative to the condition of the 15 Mile Road water main at time of the December 24, 2016 PCI-12A collapse:

- The 12" diameter water main extending east from the gate valve at Hayes Road, beneath the southerly curb and gutter, terminated approximately 95 feet west of MIDD Structure at STA 83+27. It was not connected to the balance of the 15 Mile Road water main.
- The 12" diameter water main extending west from Hidden Pine terminated between Eberlein Drive and approximately 85 feet west of the MIDD Structure at STA 83+27. The 15 Mile Road water main was not connected to the 12" diameter water main on Hayes Road.

1.0 REPORT BACKGROUND AND PURPOSE

An apparent water main leak on January 15, 2019 resulted cracking across all five lanes of 15 Mile Road. Subsequent freeze thaw cycling revealed a void beneath the pavement and closure of the eastbound curb lane on February 6, 2019. Temporary repairs were made February 6th – 8th and the eastbound curb lane was reopened to traffic the morning of February 11th.

The 15 Mile Road right-of-way is under the jurisdiction of the Macomb County Department of Roads (MDoR) and the water main is a City of Fraser asset. Both Fraser and MDoR contacted the Macomb County Public Works Office (MCPWO) because the break occurred at the location of the 2016 PCI-12A collapse and repair.

The settlement from the 2016 PCI-12A Interceptor Sewer collapse required that all utilities be cut and removed in 2017. The water main was removed for the full length of the influence of the collapse and replaced subsequent to interceptor repair.

The MCPWO directed AEW to draft a report summarizing the known history of the City of Fraser's 15 Mile Road water main. The following provides a chronology of projects and construction in the area of the water main leak.

2.0 CONSTRUCTION HISTORY

2.1 *Original Construction*

The 15 Mile Road water main was approved as part of Special Assessment District S9 & W10 in 1969. 15 Mile Road was two lanes (20 ft wide) of bituminous pavement at the time of construction, estimated to be 1974. A 12" diameter C-76 Class IV reinforced concrete pipe sanitary sewer and a 12" diameter cast iron water main were constructed in the greenbelt south of 15 Mile Road. The sanitary sewer was constructed a consistent 30 feet south of the 15 Mile Road centerline and the water main was 45 feet south of the centerline. No horizontal bends or variance from these lines were noted.

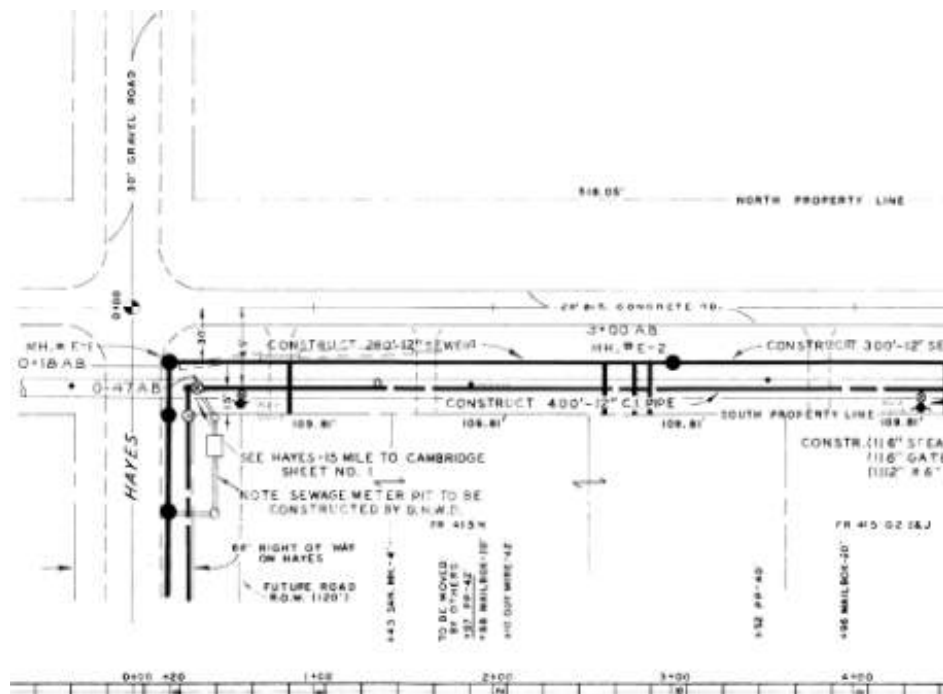


Figure 2.1-1 Original Construction Plan

Applicable sheets from the original construction plans are included in Appendix A.

2.2 1978 PCI-12A Collapse

The 15 Mile Road 12" diameter water main was impacted by the 1978 collapse of the PCI-12A Interceptor at 15 Mile Road and Hayes Road. The Plan and Profile for construction of the 8 foot diameter repair tunnel show the 12" diameter water main was abandoned as part of the repair.

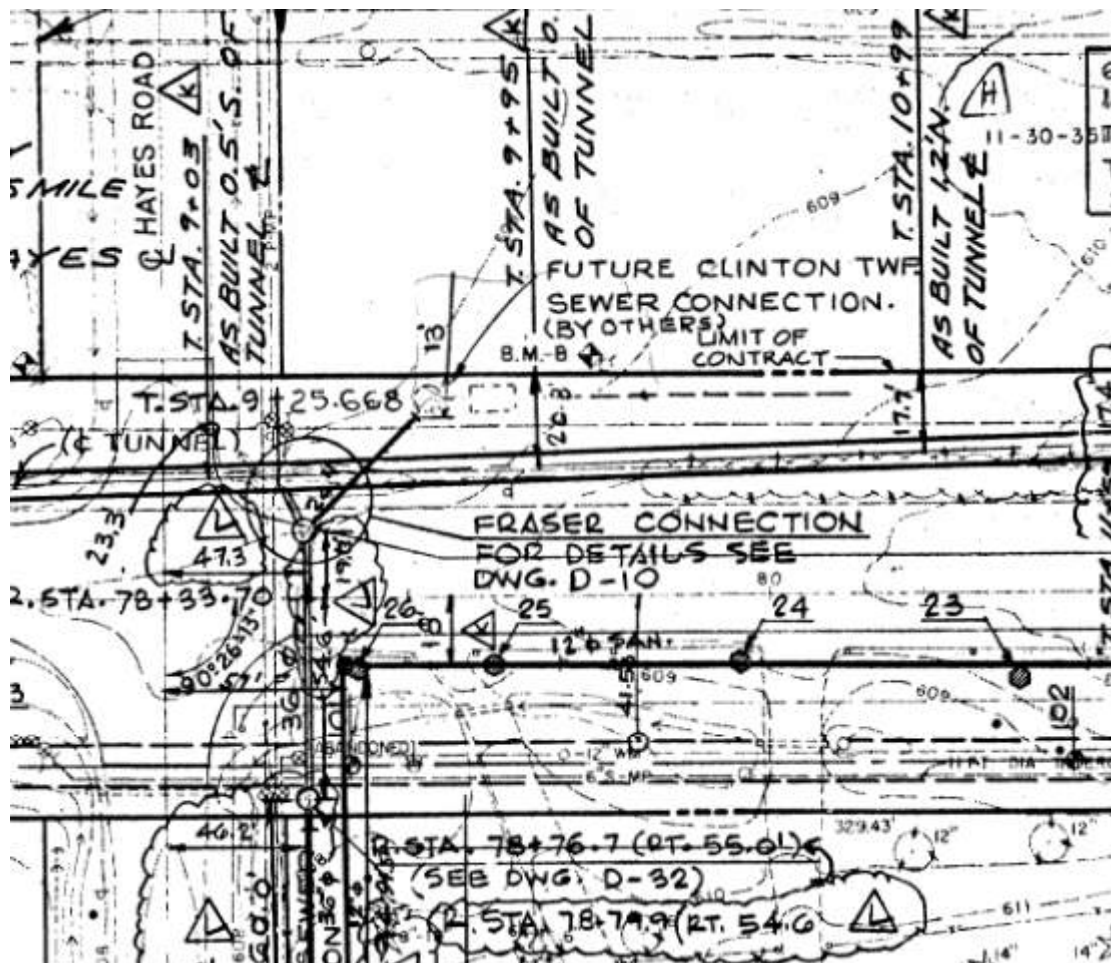


Figure 2.2-1 1978 Collapse – Water Main Abandonment

The alignment of the restored 12" diameter water main is unclear due to the available scan of the utility restoration work being poor quality, but it does indicate the new water main was 12" diameter ductile iron pipe. Applicable sheets from 1985 As-Built drawings of the 1978 collapse repair are included in Appendix B.

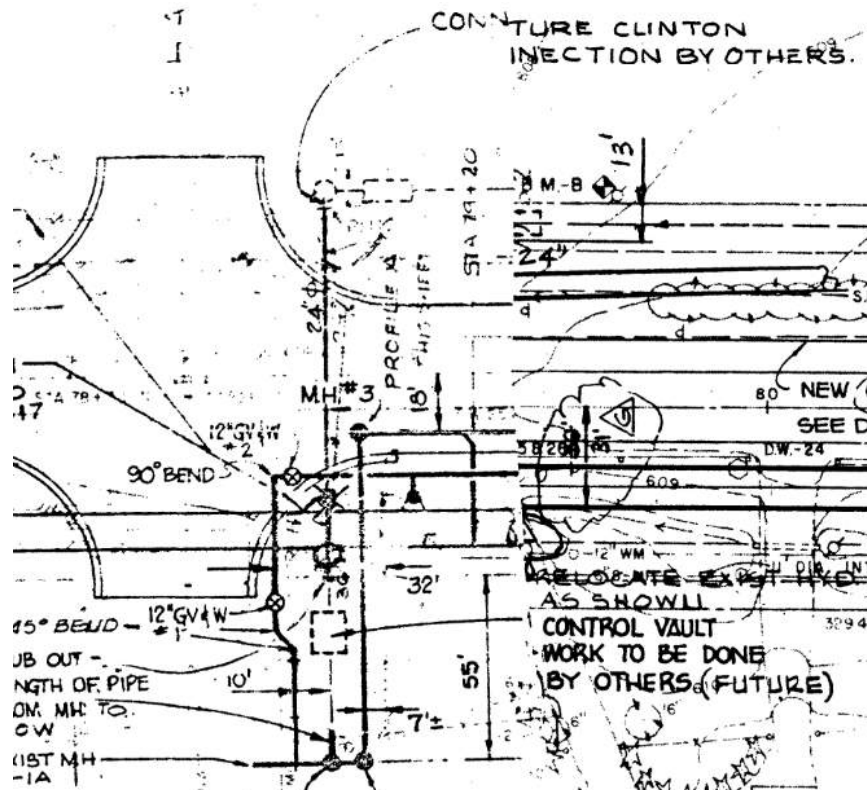


Figure 2.2-2 1978 Collapse – Water Main Repair Alignment

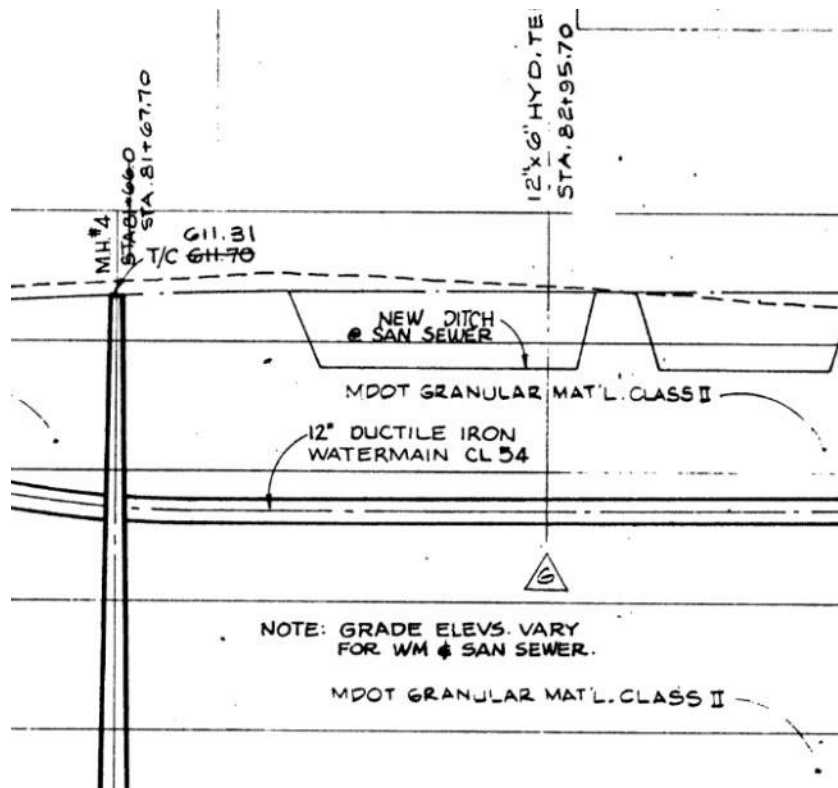


Figure 2.2-3 1978 Collapse – Water Main Repair Material

However, the restoration plans (Appendix B, Sheet D-33) indicate the alignment was shifted from the original alignment at the east limits, north approximately 15 feet, via 45-degree bends at the east property limit of 15370 15 Mile Road. This residence was condemned and demolished during the 2016 PCI-12A collapse repair and these bends, if accurate, would have been within the collapsed area and lost.

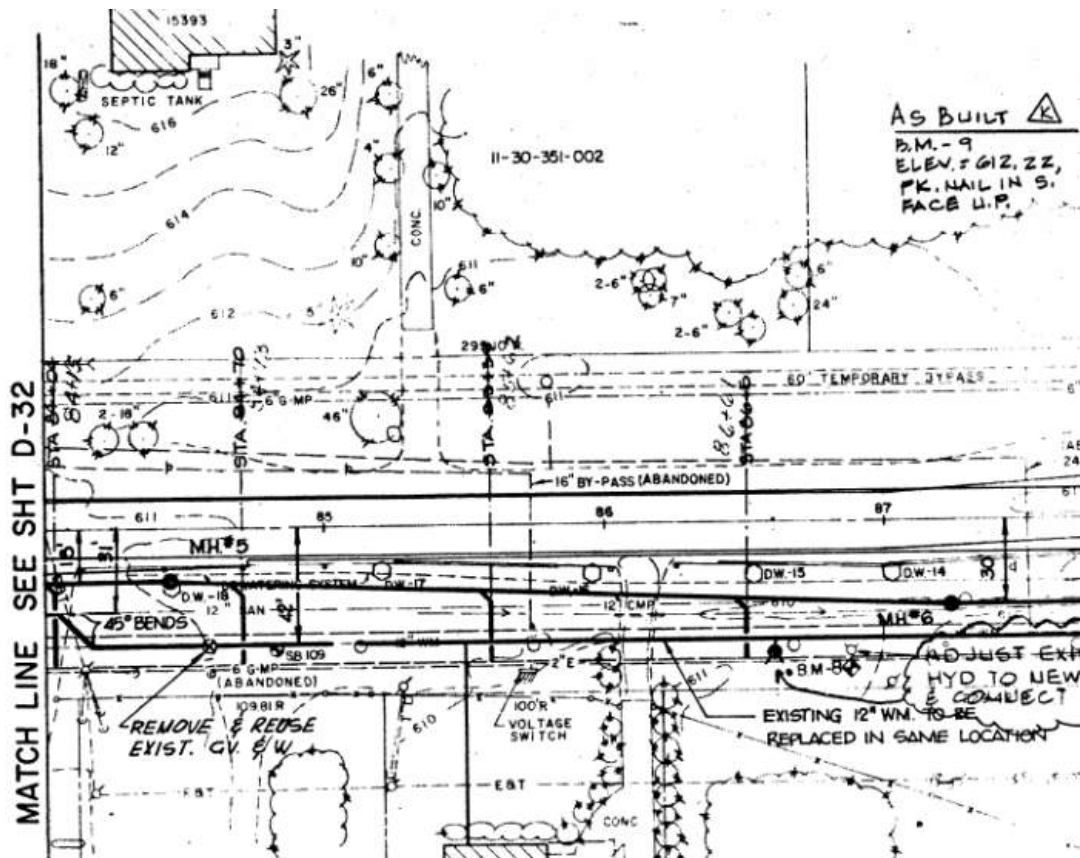


Figure 2.2-4 1978 Collapse – Waster Main Repair Alignment Shift

2.3 1995 15 Mile Road Widening

15 Mile Road was widened in 1995. No work to the 12" diameter water main was proposed as part of this construction, but utilities were shown on the plans. The 15 Mile Road 12" diameter water main was shown extending due east from the gate valve at Hayes Road beneath the new southerly curb and gutter. The water main is now shown as 30 feet south of the 15 Mile Road centerline. Note this is 15 feet north of the original 1974 construction plans. No statement was made as to the material.

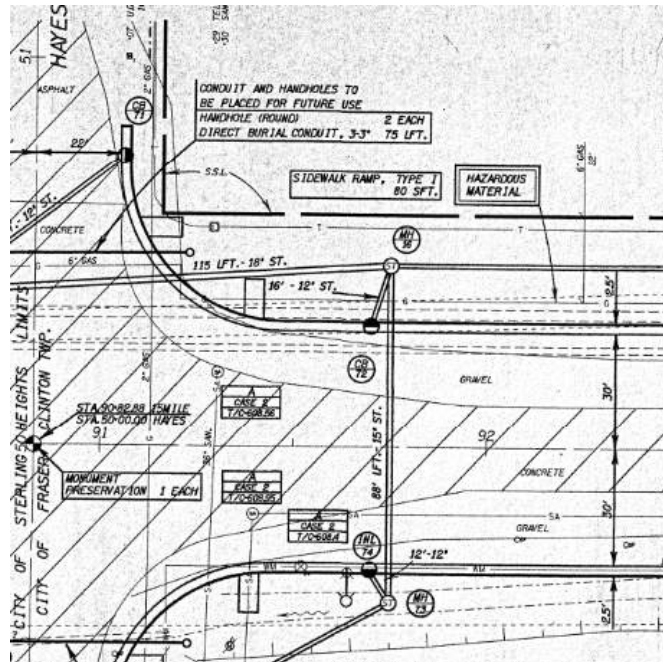


Figure 2.3-1 1995 15 Mile Road Widening – Water Main Alignment at Hayes Road

These 1995 plans also show the 15 Mile Road water main shifting to the north via 45-degree bends, as shown in the 1978 Repair plans (Appendix C, Sheet 19). Again, this residence was condemned and demolished during the 2016 PCI-12A collapse repair and these bends would have been within the collapsed area and lost.

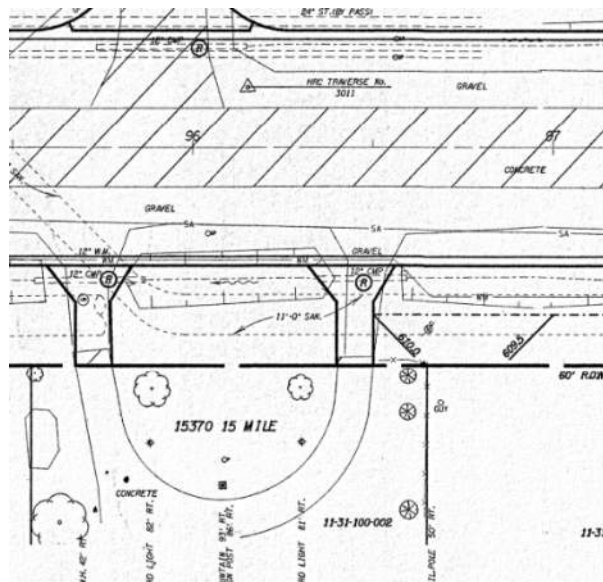


Figure 2.3-2 1995 15 Mile Road Widening – Alignment Shift at 15370 15 Mile Road

Applicable sheets from 1995 15 Mile Road Widening project are included in Appendix C.

2.4 1997 Whispering Pines (Eberlein) Construction

In December 1996 engineering plans were approved for construction of Whispering Pines Subdivision. Development of this site resulted in construction of Eberlein Drive, including a 12" diameter ductile iron water main on Eberlein Drive that connected to the 15 Mile Road 12" diameter water main. The 15 Mile Road water main is shown under the curb and gutter, which conflicts with the alignment shift shown in the 1978 PCI-12A Repair and 1995 15 Mile Road widening plans. Applicable sheets from the Whispering Pines drawings are included in Appendix D.

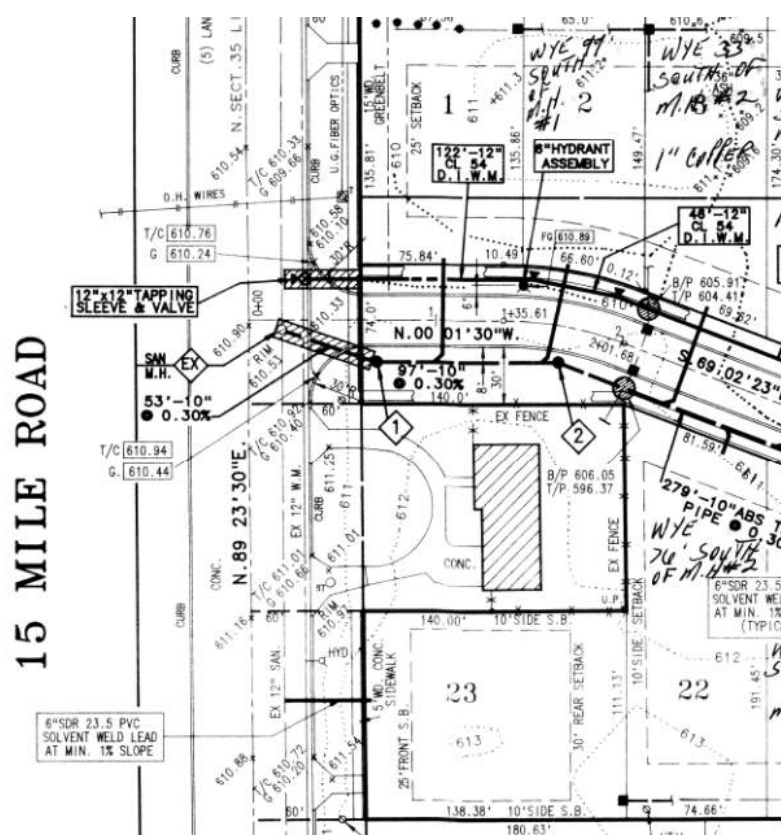


Figure 2.4-1 1997 Whispering Pines Subdivision

2.5 2003 15 Mile & Hayes Retail Center

In June 2003 engineering plans were approved for construction of a retail center at the southeast corner of 15 Mile Road and Hayes Road. This retail center became home to the engineering office during repair of the 2016 PCI-12A collapse. No work was proposed to the 15 Mile Road water main, but the plans showed a 12" diameter water main under the curb and gutter. Water service to the retail center was made by tapping the 12"

diameter water main on Hayes Road. Applicable sheets from the Whispering Pines drawings are included in Appendix E.

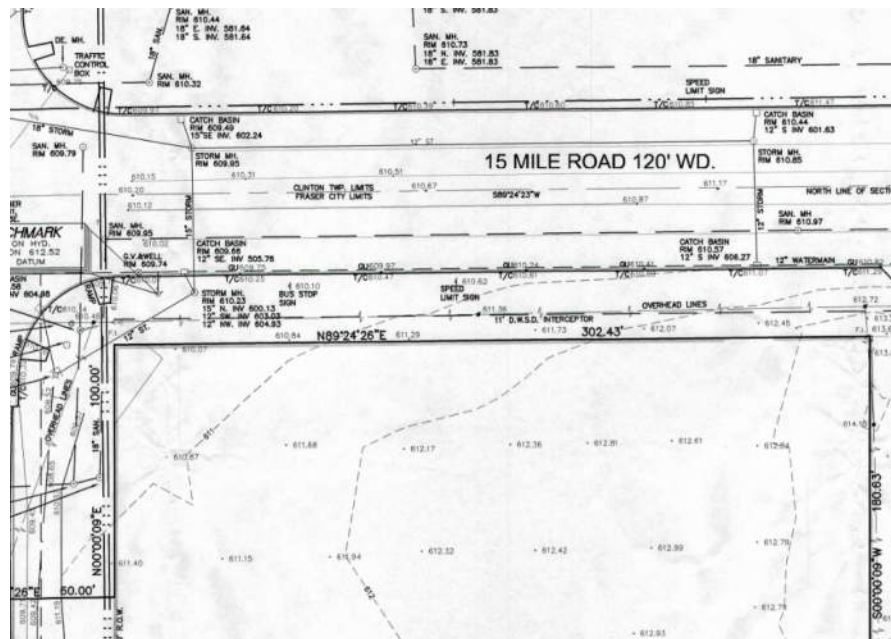


Figure 2.5-1 2003 15 Mile & Hayes Retail Center – Alignment at Hayes Road

Similar to Whispering Pines Subdivision, these plans do not show the alignment shift at the east property limit of 15370 15 Mile Road.

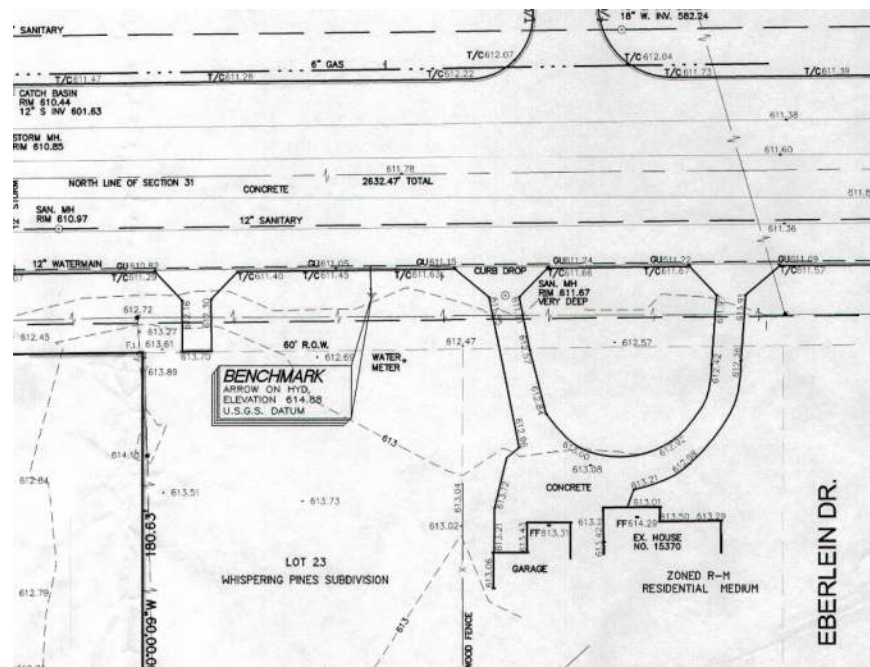


Figure 2.5-2 2003 15 Mile & Hayes Retail Center – Alignment at Eberlein Drive

2.6 2004 PCI-12A Collapse

The 15 Mile Road 12" diameter water main was again impacted by the 2004 collapse of the PCI-12A Interceptor along 15 Mile Road just west of Hayes Road. Two shafts were constructed just east of Eberlein Drive as part of the bypass pumping effort. The Utility Restoration Plan shows the 15 Mile Road 12" diameter water main was replaced from the gate valve at Eberlein Drive to approximately the property line between 34980 Eberlein and the Fraser Senior Center. The alignment is within the greenbelt and a portion was deflected 7 feet north to go around the bypass pumping shafts, which remained as permanent structures. Applicable sheets from the record plan are included in Appendix F.

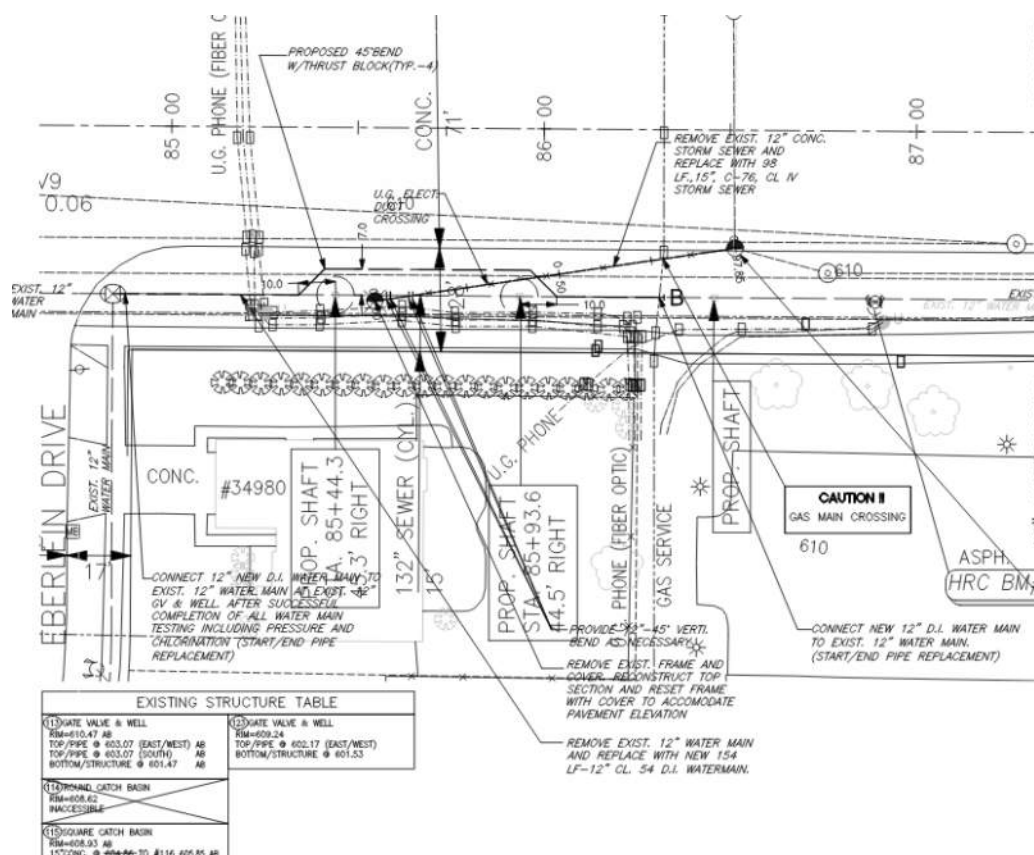


Figure 2.6-1 2004 Collapse – Water Main Repair

Additionally, the topographical survey from repair of the 2004 PCI-12A collapse shows the 12" diameter water main shift from beneath the curb and gutter to the greenbelt immediately east of the gate valve at 15 Mile Road and Hayes Road.

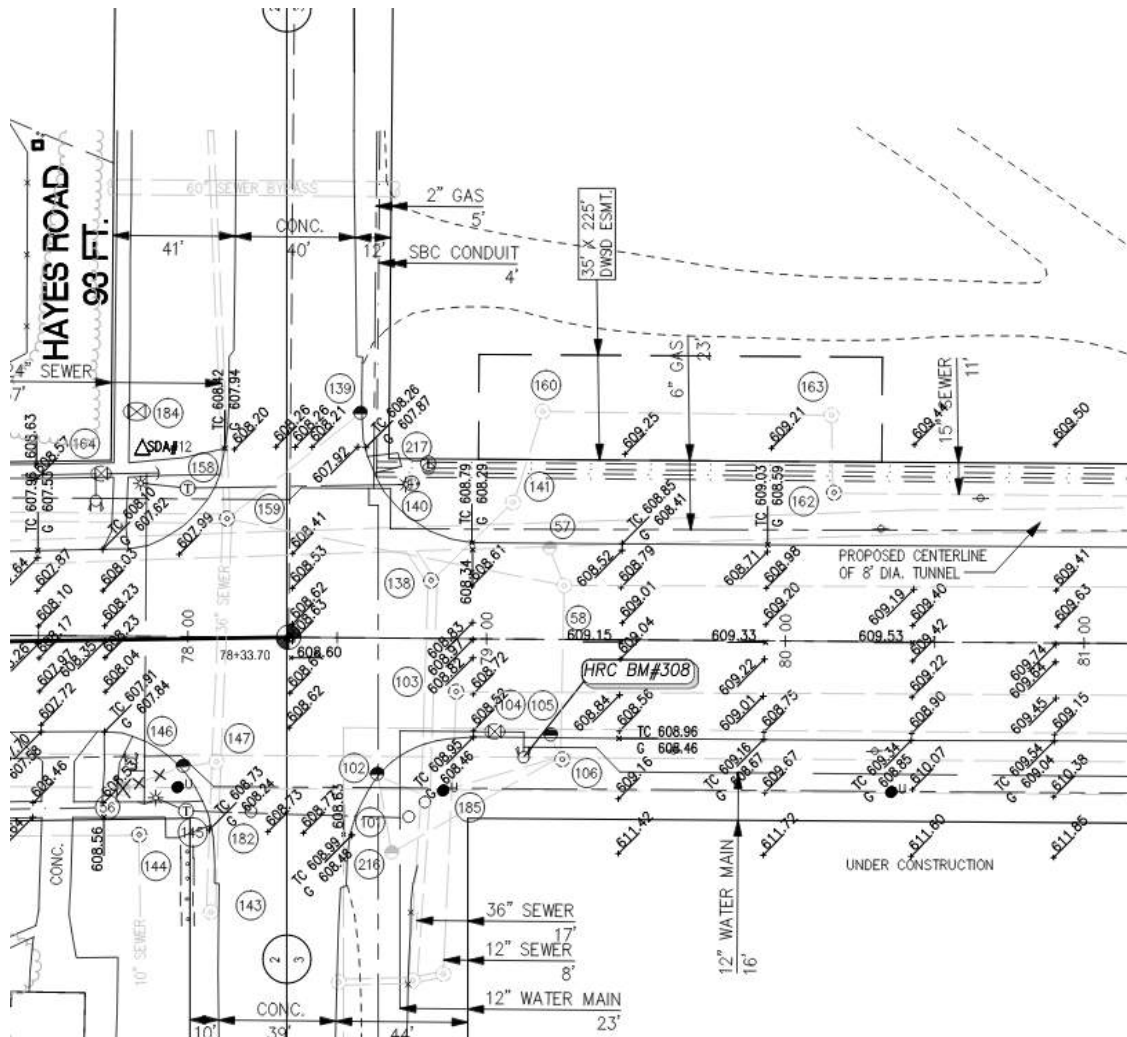


Figure 2.6-2 2004 Collapse – Water Main Alignment at Hayes Road

3.0 2016 PCI-12A COLLAPSE

3.1 Emergency Response Phase

The emergence of a sinkhole at 15 Mile Road and Eberlein Drive the morning of December 24th, 2016 initiated a year-long effort to effect repairs. Eberlein Drive is a cul-de-sac and the location of the sinkhole blocked ingress and egress to the neighborhood and impacted all major utilities in the 15 Mile Road right-of-way. This necessitated the evacuation of 23 residences. Residents were allowed to return after reestablishment of utilities and construction of a temporary access drive.

Fortunately, the 12" diameter water main on Eberlein Drive was part of a looped system. In addition to the connection at 15 Mile Road, the water main was also connected to the water distribution system of the neighborhood immediately south of the Eberlein Drive cul-de-sac by an 8" water main running between 34760 and 34761 Eberlein. However, the water main distribution system needed to be secured from the collapsed area east, south and west of the collapse.

South of the Collapse

On December 31st, 2016, a seven (7) foot section was cut out of the 12" diameter ductile water main on Eberlein Drive seven (7) feet north of the existing fire hydrant. Both ends of the 12" diameter water main were capped with bolted caps secured with retainer glands. The seven (7) foot section of removed water main was driven into the ground adjacent to the south cap (live section of Eberlein water main) as a thrust block and the caps filled and compacted. No pictures of this work were taken. A copy of the Daily Report is included in Appendix G.

East of the Collapse

On January 1st, 2017, a two (2) foot section was cut out of the 12" diameter ductile iron water main on 15 Mile Road. Both ends of the 12" diameter water main were capped with bolted caps fastened to retainer glands. 4" by 4" timbers were wedged between the caps to act as thrust restraint. The location was marked with a 2"x4" painted blue.



Figure 3.1-1 2016 Collapse – East of Sinkhole



Figure 3.1-2 2016 Collapse – 2 Ft Section Cut



Figure 3.1-3 2016 Collapse – Both Ends Capped

This water main was located along the alignment shown in the record plans from the 2004 collapse repair. The water main was 12" diameter ductile iron whereas the original water main construction was cast iron. AEW survey picked up the location of the cut and caps for inclusion in the Recovery Shaft plans and for future locating. Larger photographs and a copy of the Daily Report are included in Appendix G.

West of the Collapse

On January 2nd, 2017, an approximately three (3) foot section was cut out of the 12" diameter ductile iron water main on 15 Mile Road. Both ends of the 12" diameter water main were capped with bolted caps fastened to retainer glands. 4" by 4" timbers were wedged between the caps to act as thrust restraint. The location was marked with a 2"x4" painted blue.



Figure 3.1-4 2016 Collapse – West of Sinkhole



Figure 3.1-5 2016 Collapse – Both Ends Capped



Figure 3.1-6 2016 Collapse – Location Stake

This water main was located along the alignment shown in the record plans from the 2004 collapse repair. The water main was 12" diameter ductile iron whereas the original water main construction was cast iron. AEW survey picked up the location of the cut and caps for inclusion in the Recovery Shaft plans and for future locating. Larger photographs and a copy of the Daily Report are included in Appendix G.

3.2 Restoration of Water Main

Installation of New 12" Diameter Ductile Iron Pipe

Subsequent to repair and restoration of flow through the interceptor, the site was backfilled and the utilities restored. New 12" diameter ductile iron water main was installed on October 10, 2017. A total of 525 feet of new pipe, one 12" diameter gate valve and well, and two hydrants were installed. Caps and blow offs were installed at the east, west and south limits near the capped ends installed and surveyed during the emergency

operations. The new pipe was pressure tested on October 11, 2017 and approved by Nathan Foster from the City of Fraser. The line was then chlorinated. Bacteriological samples were collected by the City of Fraser on October 12th and 13th and approved as safe by the City of Fraser on October 14th. The new water main was connected to the existing distribution system on October 16, 2017. Applicable daily reports, photographs and bacteriological test results are included in Appendix G.

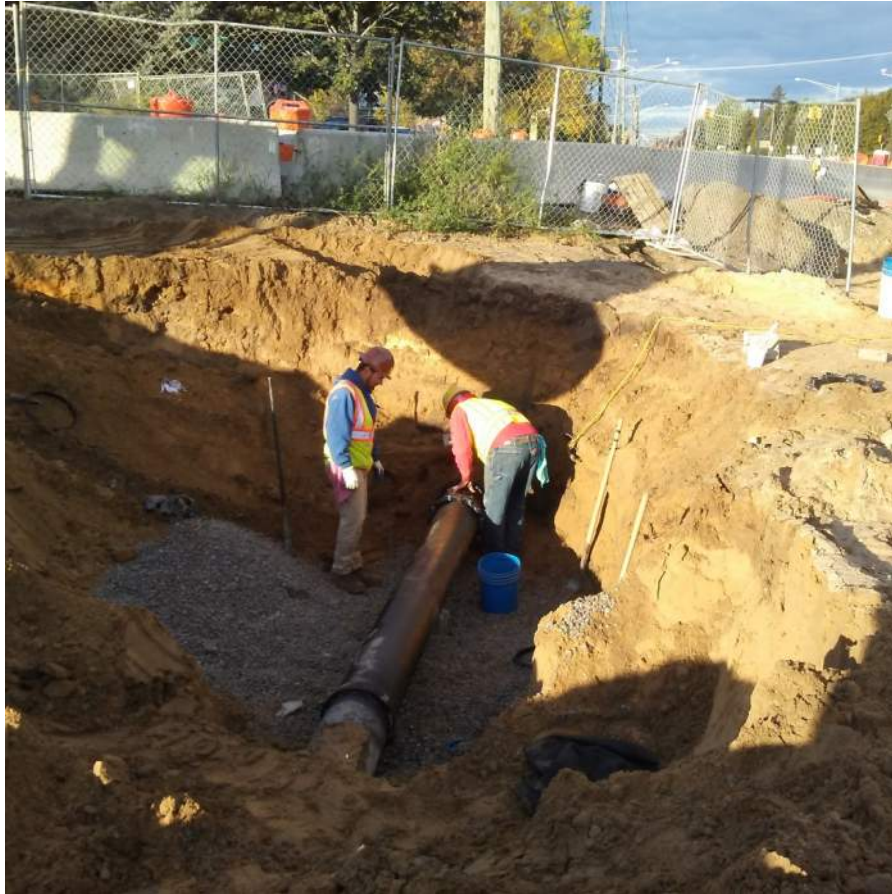


Figure 3.2-1 2016 Collapse – Final Water Main Connection West of the Collapse

October 16, 2017 Water Main Break

Upon completion of the final water main connections, the new main was brought into service by opening the gate valves on Hidden Pine south of 15 Mile Road and 15 Mile Road east of Hidden Pine. The new gate valve on Eberlein Drive, just south of 15 Mile Road, and the existing gate valve on 15 Mile Road at Hayes Road were still closed. Water was immediately observed surfacing at the drive approach to the 15260 15 Mile Road storefront. It was assumed to be a break in the existing water main that had been capped

and isolated for over 10 months. This apparent break was approximately 100 feet west of the new water main connection.



Figure 3.2-2 2016 Collapse – Water Main Break October 16, 2017

The City of Fraser was immediately notified and the gate valves at 15 Mile Road and Hidden Pine were closed again. The Fraser DPW and Miss Dig responded to the site. It was mutually determined the City of Fraser could not make repairs at this time without closing the temporary access road to Eberlein Drive. All parties agreed Dan's Excavating would repair the break under a Field Order, coordinated with planned traffic shifts and removal of the temporary sanitary sewer, so as to not impact the schedule for reopening 15 Mile Road. Applicable daily reports and photographs are included in Appendix G.

Water Main Repair

On November 13th the south two lanes of 15 Mile Road had been poured and Eberlein access had been shifted to the east. This permitted Dan's Excavating to proceed with utility restoration work adjacent to the water main break from October 16th. Upon excavation it was discovered the existing pipe was not connected to the gate valve at

Hayes Road. It was interrupted by a buried casing and each end of the water main was open.



Figure 3.2-3 2016 Collapse – Existing Water Main Open Pipe

The City of Fraser was notified of this discovery and the DPW mobilized to the site November 14th to attempt to trace the water main from Hayes Road. Tracing efforts were inconclusive but seemed to support the 2004 alignment that showed the water main shifting from beneath the curb and gutter to the greenbelt just east of the hydrant at 15 Mile Road and Hayes Road.

All parties agreed that Dan's Excavating would extend the new water main from the point where it had been connected to the existing water main (west of the Recovery Shaft), through the drive approach that was lost due to the October 16th break, and into the greenbelt west of said approach and capped with a thrust block. The buried casing would be cut down to permit the water main to be extended without bends or deflections. The

gate valve at Hayes Road would remain closed and the City of Fraser assumed responsibility for connecting the new water main to the distribution system to the west at a later date. This extension of the new water main was constructed on November 15th.



Figure 3.2-4 2016 Collapse – Removing the Casing to Permit Water Main Extension

The line was then chlorinated and flushed for several days. Bacteriological samples were collected by the City of Fraser on November 20th and 21st and approved as safe by the City of Fraser on November 22nd. Applicable daily reports, photographs and bacteriological test results are included in Appendix G.

4.0 2019 WATER MAIN BREAK

On January 14, 2019 at approximately 11:00 AM the City of Fraser Department of Public Works (DPW) opened the 12" diameter water main gate valve at 15 Mile Road and Hayes Road to energize the hydrant at that location as part of their hydrant inventory process. The hydrant is connected to the 12" diameter water main paralleling 15 Mile Road that had been de-energized as part of the PCI-12A collapse response that began on

December 24, 2016. The 12" diameter gate valve was left closed due to uncertainty regarding the location and length of the Fraser 12" diameter water main between Hayes Road and the west side of the recovery shaft.

Energizing the water main resulted in a leak east of the 15260 15 Mile Road Storefront office approach that elevated the pavement in 15 Mile Road, cracking pavement across five (5) lanes. The water main had reportedly been in service for more than 12 hours before the effects of the leak were apparent. A site visit by MCPWO, MDoR and AEW representatives concluded the pavement was elevated, but did not represent a safety risk to the public. The saturation of the sand backfill, coupled with freezing temperatures, resulted in frost under the pavement. All parties agreed to return after the thaw to reassess the condition of the pavement and further investigate the potential location of the 12" diameter water main running east from Hayes Road.



Figure 4.0-1 2019 Break – Pavement Cracking Across 15 Mile Road

On February 6, 2019 the City of Fraser DPW contacted AEW to report a void under 15 Mile Road at the water main leak location. AEW in turn contacted the MCPWO, MDoR

and all parties met on site. The eastbound curb lane of 15 Mile Road was closed to traffic due to loss of soils under the pavement resulting in an unsafe condition. The MCPWO engaged the contractor Cortis Brothers Trenching and Excavating to remove the pavement, perform an exploratory excavation, and restore the site with temporary pavement until a permanent repair can be made in the spring.

The exploratory excavation revealed a 12" diameter ductile iron water main beneath the curb and gutter. The water main break was determined to be a failed masonry bulkhead installed sometime prior to the PCI-12A collapse. This water main was connected to the Hayes Road gate valve and terminated at this location prior to 2016.



Figure 4.0-2 2019 Break – Termination of Water Main



Figure 4.0-3 2019 Break – Bulkhead

Figure 4.0-4 2019 Break – Bulkhead

A portion of the pipe including the masonry bulkhead was cut and removed during exploratory excavation and a retainer gland and bolted cap were installed. The excavation was backfilled with sand and a temporary concrete patch was poured on February 8, 2019. 15 Mile Road was completely reopened to traffic the morning of February 11, 2019. A map showing the location of the leak, photographs and daily reports are included in Appendix H.

5.0 CONCLUSION

The 15 Mile Road water main has been frequently impacted by adjacent construction activities since its installation in 1974.

- 1974 Original Construction: Installation of 12" diameter cast iron water main, without horizontal bend or deflection, from Hayes Road to Utica Road.
- 1978 PCI-12A Collapse: A portion of the original water main was noted as abandoned and restored with 12" diameter ductile iron water main. The alignment is first brought into question. Restoration plans show connection to the existing water main at the east limits and a deflection to the north is first noted (just west of present day Eberlein Drive) as the water main proceeds west to Hayes Road.
- 1995 15 Mile Road Widening: No work was noted on the water main, but the alignment is shown matching original construction alignment and deflecting north to run under the new southerly curb and gutter just west of present day Eberlein Drive.
- 1997 Whispering Pines Subdivision: Eberlein Drive is constructed along with a 12" diameter ductile iron water main tapping the 15 Mile Road water main. The 15 Mile Road water main is shown under the southerly curb and gutter, contradicting previous references to alignment within the greenbelt at this location and the deflection north just west of Eberlein Drive.
- 2003 15 Mile & Hayes Retail Center: The retail center taps the Hayes Road water main to service the new facility, but the 15 Mile Road water main is shown under

the southerly curb and gutter and also omits reference to the deflection just west of Eberlein Drive.

- 2004 PCI-12A Collapse: Heavy construction operations occurred between Hayes Road and Hidden Pine. The 15 Mile Road water main is shown deflecting from beneath the southerly curb and gutter to the southerly greenbelt immediately after the gate valve at Hayes Road. The alignment is maintained within the greenbelt except for approximately 60 feet that was deflected north 7 feet to route around two new structures that were installed as part of this relief effort.
- 2016 PCI-12A Collapse: As part of the emergency response, the 15 Mile Road water main was cut and capped with mechanical joints east and west of the emerging collapse settlement. 12" diameter ductile iron water main in good condition was found consistent with the alignment shown on the 2004 PCI-12A Collapse drawings. The locations of the caps were surveyed and restoration of the water main, post-repairs, was verified to match these surveyed caps. Upon energizing the repaired 15 Mile Road water main, water immediately surfaced approximately 100 feet west of the restored water main. Repair efforts revealed the 12" diameter ductile iron pipe to be open at that location. This revealed two facts:
 - The connection to the existing water main at the east limits of repair successfully tied to Fraser's distribution system and verified the accuracy of the 2004 PCI-12A collapse drawings at this location.
 - The 2004 PCI-12A collapse drawings were not accurate at some point west of that location.

The water main was extended and capped west of the storefront approach as discussed in the body of this report.

- 2019 Water Main Break: As part of their hydrant inventory process, Fraser DPW opened the 15 Mile Road gate valve at Hayes Road for the first time since late December 2016. This resulted in an apparent water main break in the vicinity of the water main restored as part of the 2016 PCI-12A collapse. Subsequent

investigation identified a 12" diameter water main under the southerly curb and gutter, connected to the gate valve at Hayes Road, that terminated in a brick and mortar bulkhead that was not installed as part of the 2016 PCI-12A collapse. The termination of this water main at a previously installed brick and mortar bulkhead has led AEW to conclude the following:

- At the time of the 2016 PCI-12A collapse, the 15 Mile Road water main running east from the gate valve at Hayes Road under the southerly curb and gutter was not connected to the balance of the 15 Mile Road water main in the greenbelt.
- At the time of the 2016 PCI-12A collapse, the 15 Mile Road water main running west from Hidden Pine must have been cut and capped (or bulkheaded) at some point between Eberlein Drive and where it was cut and capped west of the emerging collapse settlement as part of the 2016/17 repair efforts. The location of this termination would have been within the collapse settlement and was not witnessed in the field. As such, verification has not been possible.
- Prior to December 24, 2016, the 15 Mile Road water main was not connected resulting in two stubbed water mains. One under the south curb line emanating from Hayes Road to the west and the other in the greenbelt emanating from Hidden Pine to the east. From our records and investigation it cannot be confirmed as to how long this condition existed.

APPENDICES

Appendix A

Original Construction

Includes:

- City of Fraser Water Mains & Sanitary Sewers, SAD-S-9 & W-10-74
 - Cover
 - Sheet No. 19
 - Sheet No. 20

Appendix B

1978 PCI-12A Collapse

Includes:

- DWSD PCI-37 Annotated Contract Drawings
 - Cover
 - Sheet No. D-4
 - Sheet No. D-32
 - Sheet No. D-33

Appendix C

1995 15 Mile Road Widening

Includes:

- RCMC/MDOT Fifteen Mile Road Reconstruction, Cathedral Rd to West of Utica Rd
 - Cover
 - Sheet No. 18
 - Sheet No. 19

Appendix D

1997 Eberlein Drive

Includes:

- Whispering Pines Subdivision
 - Cover
 - Sheet No. 4

Appendix E

2003 Commercial Development

Includes:

- 15 Mile & Hayes Retail Center
 - Cover
 - Sheet No. 4
 - Sheet No. 7

Appendix F

2004 PCI-12A Collapse

Includes:

- DWSD Emergency Tunnel Repair Construction, Restoration & Survey
 - Cover
 - Sheet No. R-20
 - Sheet No. R-22
 - Sheet No. S04

Appendix G

2016 PCI-12A Collapse

Includes:

- MIDD PCI-12A Recovery Shaft Sheet No. SR-20
- Inspector's Daily Report (with available photographs)
 - 12/31/16
 - 1/1/17
 - 1/2/17
 - 10/10/17
 - 10/11/17
 - 10/16/17
 - 11/13/17
 - 11/14/17
 - 11/15/17
- Bacteriological Sample Results
 - 10/12/17
 - 10/13/17
 - 11/20/17
 - 11/21/17

Appendix H

2019 Water Main Break

Includes:

- MIDD PCI-12A Recovery Shaft Sheet No. SR-20
 - (Location of 2019 Water Main Break shown with 2017 Water Main Restoration)
 - Photographs from January 17, 2019
- Inspector's Daily Report (with available photographs)
 - 2/6/19
 - 2/7/19
 - 2/8/19

Contract Report with Bids

Contract ID: 2019 PPP Con
Location: County Wide
Description:
Bidder: Bidder: Cipparrone Contracting, Inc.

Project Number: 1769	Project Engineer: Robert Blanchard
Estimate Number: 1	Date Created: 04/24/2019
Project Type: Miscellaneous	Fed/State #:
Location: 24 Mile (Macomb Twp)	Fed Item:
Fairchild to North Ave & Foss to Springdale	Control Section:
Description:	

Project Number: 1770	Project Engineer: Robert Blanchard
Estimate Number: 1	Date Created: 04/24/2019
Project Type: Miscellaneous	Fed/State #:
Location: Shelby Twp	Fed Item:
25 Mile	Control Section:
Description:	

Project Number: 1771	Project Engineer: Robert Blanchard
Estimate Number: 1	Date Created: 06/07/2019
Project Type: Miscellaneous	Fed/State #:
Location: Shelby Twp	Fed Item:
Lakeside Blvd	Control Section:
Description:	

Project Number: 1772	Project Engineer: Robert Blanchard
Estimate Number: 1	Date Created: 04/24/2019
Project Type: Miscellaneous	Fed/State #:
Location: Clinton TWP	Fed Item:

13 Mile - Utica to Gratiot

Control Section:

Description:

Project Number: 1773
Estimate Number: 1
Project Type: Miscellaneous
Location: E.B. 26 Mile
West of Mound

Project Engineer: Robert Blanchard
Date Created: 04/24/2019
Fed/State #:
Fed Item:
Control Section:

Description:

Project Number: 1774
Estimate Number: 1
Project Type: Miscellaneous
Location: Hayes rd (Clinton & Sterling Heights)
17 Mile to 18 Mile

Project Engineer: Robert Blanchard
Date Created: 04/24/2019
Fed/State #:
Fed Item:
Control Section:

Description:

Project Number: 1775
Estimate Number: 1
Project Type: Miscellaneous
Location: 21 Mile (Macomb Twp)
Intersection

Project Engineer: Robert Blanchard
Date Created: 05/24/2019
Fed/State #:
Fed Item:
Control Section:

Description:

Project Number: 1776
Estimate Number: 1
Project Type: Miscellaneous
Location: W.B. 16 Mile (Harrison Twp)
North Pointe Parkway to Crocker

Project Engineer: Robert Blanchard
Date Created: 05/24/2019
Fed/State #:
Fed Item:
Control Section:

Description:

Project Number: 1777
Estimate Number: 1

Project Engineer: Robert Blanchard
Date Created: 05/24/2019

Project Type: Miscellaneous
Location: E.B. 23 Mile (Shelby & Macomb TWP)
M-53 to Romeo Plank
Description: 2 locations:

W of M-53
&
Hayes to Romeo Plank

Fed/State #:
Fed Item:
Control Section:

Project Number: 1778
Estimate Number: 1
Project Type: Miscellaneous
Location: Shelby Twp local Roads 100% Twp
Description: Kelly Ct, Sherwood Ct, Cambridge, & Hawk Dr. Benfranklin Dr & Palmer Dr & Milones, Winston, Glenwood, & Stathmore

Project Engineer: Robert Blanchard
Date Created: 06/07/2019
Fed/State #:
Fed Item:
Control Section:

Project Number: 1779
Estimate Number: 1
Project Type: Miscellaneous
Location: 23 Mile Rd (Shelby Twp) 50/50
Schoenerr to Hayes
Description:

Project Engineer: Robert Blanchard
Date Created: 05/24/2019
Fed/State #:
Fed Item:
Control Section:

Project Number: 1780
Estimate Number: 1
Project Type: Miscellaneous
Location: 15 Mile (100% City of Fraser)
400' E of Hayes Rd
Description: Based on the markings on the existing pavement. there may be more cracking at the time work is to start. There was some cracks in curbing outside the limit of the anticipated work area.

Project Engineer: Robert Blanchard
Date Created: 05/24/2019
Fed/State #:
Fed Item:
Control Section:

Project Number: 1781
Estimate Number: 1
Project Type: Miscellaneous
Location: County Wide Signs
will be used no all jobs as needed
Description: County Wide Signs - will be used no all jobs as needed

Project Engineer: Robert Blanchard
Date Created: 04/24/2019
Fed/State #:
Fed Item:
Control Section:

Line	Breakdown	Pay Item	Description	Quantity	Units	Est Price	Bid Price	Bid Total
Project 1780 (15 Mile (100% City of Fraser) 400' E of Hayes Rd)								
Category: 0000 Uncategorized								
0086	0000	2040020	Curb and Gutter, Rem	100	Ft	\$10.000	\$9.000	\$900.00
0087	0000	3027031	_ Aggregate Base Repair, Modified	200	Ton	\$25.000	\$32.000	\$6,400.00
0088	0000	6030030	Lane Tie, Epoxy Anchored	300	Ea	\$3.000	\$1.850	\$555.00
0089	0000	6037011	_ Pavt Repr, Nonreinf Conc, 9 inch, Modified	750	Syd	\$60.000	\$52.110	\$39,082.50
0090	0000	6037011	_ Pavt Repr, Rem, Modified	750	Syd	\$10.000	\$13.000	\$9,750.00
0091	0000	8027001	_ Curb and Gutter, Conc, Det F5, Modified	100	Ft	\$25.000	\$22.000	\$2,200.00
0092	0000	8167011	_ Turf Establishment	200	Syd	\$10.000	\$2.000	\$400.00
						Category 0000 Total: \$59,287.50 [Est. Total: \$63,900.00]		
						Project 1780 (15 Mile (100% City of Fraser) 400' E of Hayes Rd) Total: \$59,287.50 [Est. Total: \$63,900.00]		

Kelly Dolland

From: Wayne O'Neal
Sent: Wednesday, July 17, 2019 3:40 PM
To: Kelly Dolland
Cc: Nick Schaefer
Subject: FW: 15 Mile & Hayes Water Main Leak
Attachments: 15 Mile Road Water Main Chronology.pdf

For July 18 special meeting.

From: Lou Urban [mailto:lurban@awinc.com]
Sent: Thursday, March 21, 2019 3:41 PM
To: 'stephenjr@nickelsaph.com' <stephenjr@nickelsaph.com>; D. Wayne O'Neal (wayneo@micityoffraser.com) <wayneo@micityoffraser.com>
Cc: Mike Vigneron <mvigneron@awinc.com>; Roy Rose <rrose@awinc.com>
Subject: RE: 15 Mile & Hayes Water Main Leak

Steve,

Pursuant to our conversation yesterday and previous correspondence I am submitting the 15 Mile Road Water main Chronology report for your use. A complete report including all appendices will be made available at your request but is too large for email transmission.

From the report you will see that the water main along 15 Mile road was stubbed from either direction. The City of Fraser was unaware of the stubbed water main and subsequently unaware of the inferior masonry bulkhead. DWSD owned the interceptor sewer and was responsible for the repairs made during the 1978 and 2004 collapses that affected the utilities in 15 Mile Road. The inferior water main work was not performed as part of the 2016-2017 collapse repair and subsequently (in my opinion) is not the responsibility of the MIDDD, MCPWO or the City of Fraser.

The field investigation/exploratory excavation revealed that the water main leak occurred at the masonry bulkhead.

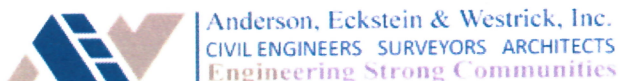
The recommendation for third party notification, in this case the engineer, DWSD, and their contractor would likely result in no claim due to statute of limitations.

It is requested that your review the attached along with the aforementioned considerations.

Thank you,

Louis J. Urban, P.E.

Anderson, Eckstein and Westrick, Inc.
51301 Schoenherr Road, Shelby Twp., MI 48315
Phone: 586-726-1234 Fax No: 586-726-8780 Mobile: 586-855-9708
Email: lurban@awinc.com



 Please consider the environment before printing this email.

From: Stephen Saph Jr [<mailto:stephenjr@nickelsaph.com>]
Sent: Monday, March 04, 2019 10:30 AM
To: 'Wayne O'Neal' <wayneo@micityoffraser.com>; Lou Urban <lurban@awinc.com>
Subject: 15 Mile & Hayes Water Main Leak

After my initial phone call with Mr. Urban, I have not been provided with any additional update on the water main break.

As I do not have a clear understanding of a cause of loss, I have not reported a claim to the City's insurance carrier. I have doubts that any property coverage would be afforded as road surfaces and/or underground infrastructure does not qualify as "building" or "business personal property" under the afforded policy. Limited coverage is afforded for infrastructure that supports a covered building as long as the infrastructure in question is within a 1,000' radius of the covered building.

This commentary is limited to first party property coverages – coverages secured directly by the City for City's owned property.

If you discover that the cause of loss is the responsibility of a third-party, I would recommend that you notify the third-party and pursue either a general liability or professional liability claim.

Should you have any questions, just call. Thank you.

Stephen R. Saph Jr.
Nickel & Saph, Inc. Insurance Agency
586-463-4573
586-463-3135 - FAX
586-747-9315 - CELL
stephenjr@nickelsaph.com