MARSHALL MUNICIPAL UTILITIES

75 EAST MORGAN
MARSHALL, MISSOURI 65340-2198

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FAX: 660/886-6724
Email: mmu@mmumo.net
Homepage: www.mmumo.net

January 16, 2025

Marshall Municipal Utilities (MMU) is requesting bids for the reconstruction of four (4) sections of sewer main. The project will consist of approximately 3,677 ft. of 8" clay pipe.

To arrange to see the sections of sewer main, call Grant Piper at 660-886-6966.

Bids are due by 1:30 p.m., February 19, 2025.

Bid #07-25-UF

Specifications and General Provisions for Sewer Main Rehabilitation Using the Cured-in-Place Pipe Method

PART 1: SCOPE

It is the intent of this specification to provide for the reconstruction of pipelines by the installation of a cured-in-place pipe (CIPP), consisting of a thermosetting resin-impregnated flexible felt tube coated on one side with an impermeable plastic which is inverted into the original pipe by the use of a hydrostatic head or pressurized air. Curing is accomplished by circulating hot water or controlled steam throughout the length of the inverted tube to cure the resin into a hard impermeable pipe with the plastic coating on the internal surface of the pipe. The final product shall extend the entire length of the original pipe segment providing a continuous tight-fitting and jointless pipe.

PART 2: LOCATION OF SECTIONS

(see section description, segment description & maps on pages **2 - 51**)

SECTION: 1

DESCRIPTION: CONSISTS OF 1 SEGMENT OF 8" PIPE. SEGMENT IS LOCATED IN THE ROAD ON S. ODELL AVE. BETWEEN E. VEST ST. AND E. YERBY ST. SEGMENT IS LOCATED ON A DAILY HEAVY TRAFFIC ROAD WITH A SCHOOL IN AREA. MAY REQUIRE BY-PASS PUMPING.


576 S ODELL AVE
209 E VEST ST
225 E VEST ST
570 S ODELL AVE
SM0623
MH0465
MH1155
653 S ODELL AVE
652 S ODELL AVE
220 E VEST ST
667 S ODELL AVE
660 S ODELL AVE
JEFFERSON AVE
666 S ODELL AVE
SM0858
669 S ODELL AVE
668 S ODELL AVE
673 S ODELL AVE
672 S ODELL AVE
675 S ODELL AVE
101 E YERBY ST
217 E YERBY ST
223 E YERBY ST
SM0832
MH0131
SM0875
122 E YERBY ST
754 S ODELL AVE
224 E YERBY ST
MH1225
759 S ODELL AVE
761 S ODELL AVE
N
W
E
S

SEGMENT:

1

LOCATION:

IN PAVEMENT OF S. ODELL AVE. BETWEEN E. VEST ST. AND E. YERBY ST.

SEWER MAIN #: 858 DIRECTION OF FLOW: SOUTH

SIZE: 8" FOOTAGE: 466' DIRECTION OF FLOW: SOUTH

UPPER MANHOLE #: 1155 DEPTH: 8' 4"

MANHOLE LOCATION: INTERSECTION OF S. ODELL AVE. AND E. VEST ST.

LOWER MANHOLE #: 131 DEPTH: 8.67'

MANHOLE LOCATION: INTERSECTION OF S. ODELL AVE. AND E. YERBY ST.

LIVE TAPS: 14 DEAD TAPS: 16

OTHER: MANHOLES ARE LOCATED IN THE PAVEMENT OF S. ODELL AVE. S. ODELL AVE. HAS DAILY HEAVY TRAFFIC WITH AN SCHOOL IN THE AREA. MAY REQUIRE BY-PASS PUMPING.

Print Form

Sewer Main Inspection

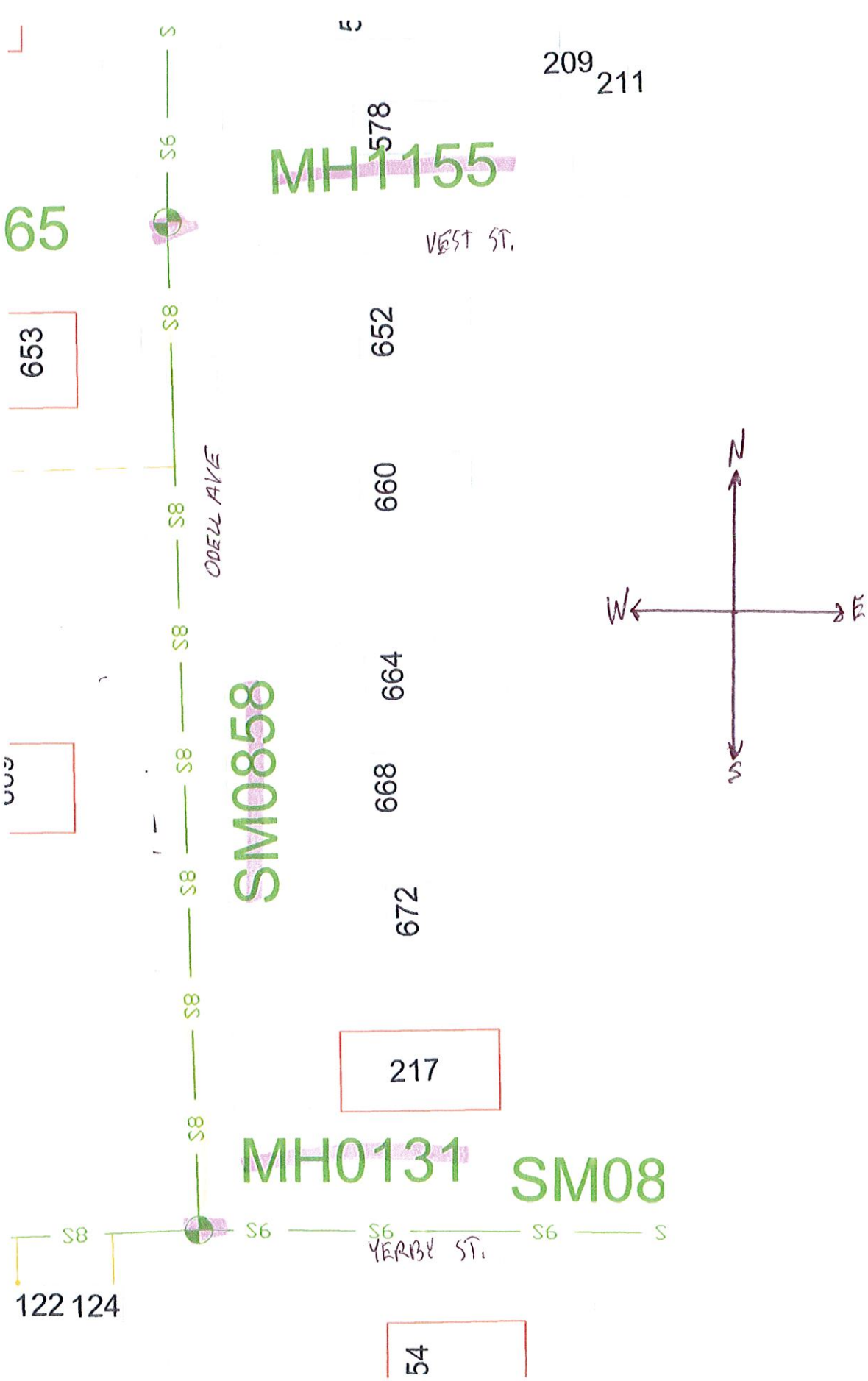
Date: Apr 22, 2024

Sewer Main Number:	858		
Manhole Starting:	1155	**Depth:**	8' 4"
Manhole Ending:	131	**Depth:**	8.67'
Street Intersection	ODELL AVE. & VEST ST.		
Direction of Flow:	South		
Main Size:	8"		

Distance Remarks

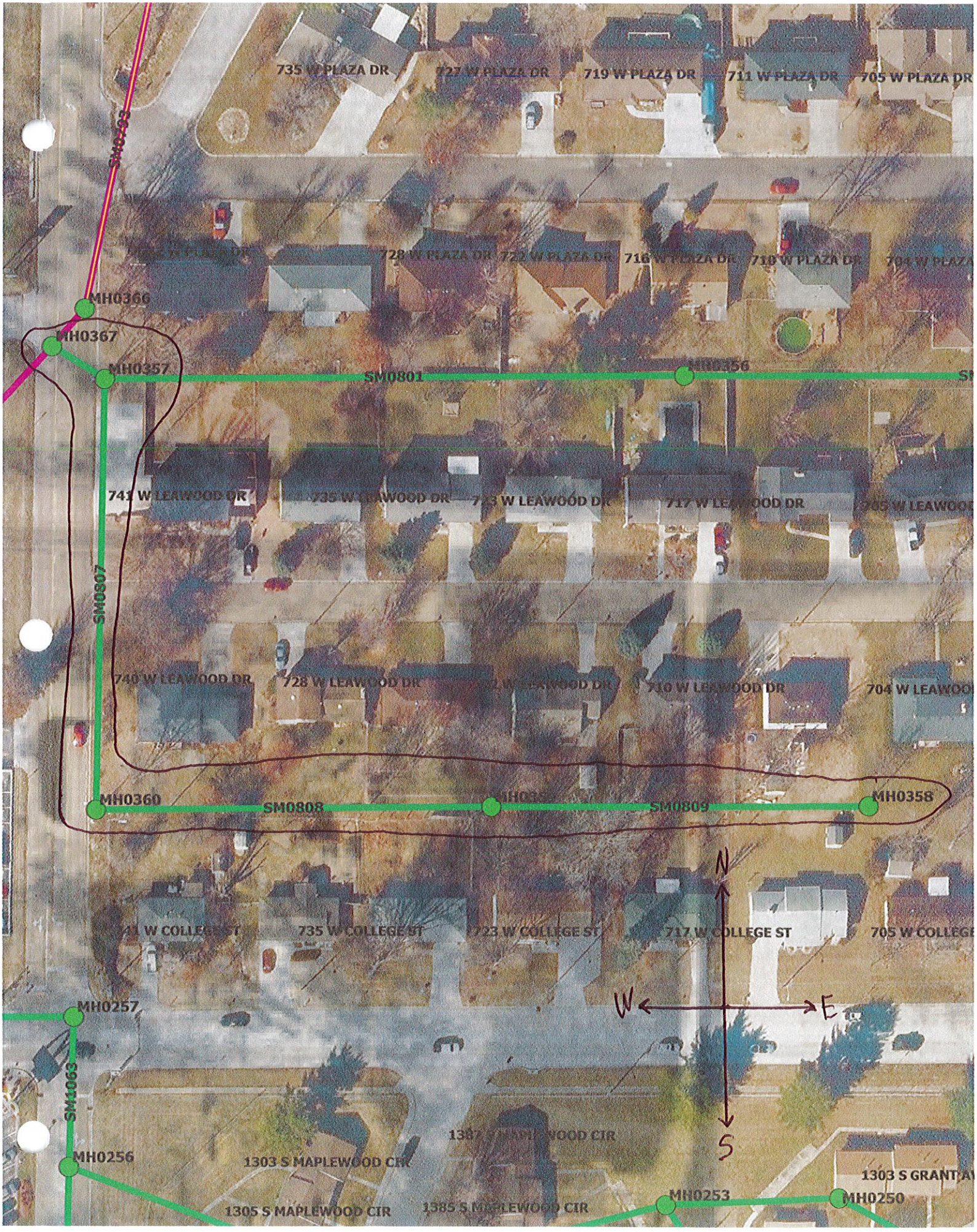
3' T.C.	DEAD		E.S.
6' T.C.	DEAD		E.S.
7' T.C.	DEAD	ON TOP	
10' T.C.	DEAD		W.S.
12' T.C.	DEAD		W.S.
14' T.C.	DEAD		E.S.
16' T.C.	DEAD		W.S.
18' T.C.	DEAD		W.S.
20' T.C.	DEAD		W.S.
22' T.C.	DEAD	ON TOP	
25' T.C.	DEAD		E.S.
26' T.C.	DEAD		E.S.
89' T.L. T.O. S.P.			E.S.
99' T.L. T.O.			W.S.
122' T.L. T.O. S.P.			E.S.
165' T.C.	DEAD		E.S.
167' T.L. T.O.			W.S.
172' T.L. T.O.			W.S.
220' T.C.	DEAD		W.S.
240' T.L. T.B.			E.S.
243' T.L. T.O.			E.S.
266' T.L. T.O.			E.S.
286' T.L. T.B.			W.S.
301' T.L. T.B.			E.S.
303' T.L. T.B.			E.S.
324' T.L. T.O.			W.S.
366' T.C.	DEAD		W.S.
386' T.L. T.O.			E.S.
419' T.C.	DEAD		W.S.
465' T.L. T.O.			E.S.

466' END OF RUN	
** COMMENTS **	
* JOINT OFFSET MEDIUM AT 120' POINT REPAIR	
CAMERA WILL PASS THROUGH W/ 8" TRACKS	
* SEVERAL JOINT CRACKS	
* SEVERAL LOW SPOTS	
* PIPE HOLE	
* FEW PIPE CIRCULAR CRACKS	
* SEVERAL OFFSET JOINTS	
* MAIN IN POOR CONDITION	


209
211
MH1155
578
65
VEST ST.
653
652
660
ODELL AVE
664
SM0858
668
672
217
MH0131
SM08
S8
S6
YERBY ST.
122 124
54
N
W
E
S

SECTION: 2

DESCRIPTION: CONSISTS OF 4 SEGMENTS OF 8" PIPE IN THE SAME DRAINING AREA. SEGMENTS ARE LOCATED ON S. MIAMI AVE. BETWEEN W. COLLEGE ST. AND W. PLAZA DR. SEGMENTS ARE LOCATED IN BACKYARDS AND THE PAVEMENT WITH LIMITED ACCESS. ROADS HAS DAILY HEAVY TRAFFIC WITH A SCHOOL IN THE AREA. MAY REQUIRE BY-PASS PUMPING.


735 W PLAZA DR
727 W PLAZA DR
719 W PLAZA DR
711 W PLAZA DR
705 W PLAZA DR
SM0799
728 W PLAZA DR
716 W PLAZA DR
710 W PLAZA DR
MH0366
MH0367
MH0357
SM0801
MH0356
741 W LEAWOOD DR
735 W LEAWOOD DR
723 W LEAWOOD DR
717 W LEAWOOD DR
SM0807
740 W LEAWOOD DR
728 W LEAWOOD DR
710 W LEAWOOD DR
704 W LEAWOOD
MH0360
SM0808
SM0809
MH0358
N
735 W COLLEGE ST
723 W COLLEGE ST
717 W COLLEGE ST
705 W COLLEGE
W
E
MH0257
SM1063
S
MH0256
1303 S MAPLEWOOD CIR
1305 S MAPLEWOOD CIR
1385 S MAPLEWOOD CIR
MH0253
1303 S GRANT AV
MH0250

CIPP

SEGMENT:

1

LOCATION:

BETWEEN S. GRANT AVE. AND S. MIAMI AVE. NORTH OF W. COLLEGE ST. IN BACKYARDS.

SEWER MAIN #: 809 DIRECTION OF FLOW: WEST

SIZE: 8" FOOTAGE: 248' DIRECTION OF FLOW: WEST

UPPER MANHOLE #: 358 DEPTH: 12.07'

MANHOLE LOCATION: GRASSY AREA IN BACKYARD OF 705 W. COLLEGE ST.

LOWER MANHOLE #: 359 DEPTH: 13.85'

MANHOLE LOCATION: GRASSY AREA IN BACKYARD OF 723 W. COLLEGE ST.

LIVE TAPS: 8 DEAD TAPS: 0

OTHER: MANHOLES ARE LOCATED IN BACKYARDS WITH LIMITED ACCESS. S. MIAMI AVE. AND W. COLLEGE ST. HAVE DAILY HEAVY TRAFFIC. MAY REQUIRE BY-PASS PUMPING.

Good

Sewer Main Inspection

Date 2-18-16

Sewer main number 809
Manhole Starting 358
Manhole Ending 359
Street Intersection N. of College W. of Grant
Direction of Flow WEST

	Distance	Remarks			
1	1'	PRB		18	
2	2'	TL TO SP	NS	19	
3	3'	TL TO SP RSH	SS	20	
4	4'	PRG		21	
5	5'	RSL		22	
6	36'	TL TO	SS	23	
7	56'	TL TO SP SCP	NS	24	
8	122'	TL TB RSL SCP	NS	25	
9	149'	RSL		26	
10	150'	TL TO RSH	SS	27	
11	220'	TL TO RSH	NS	28	
12	235'	TL TB PB RSH	SS	29	
13	244'-248'	PLCPPLPB		30	
14	248'	END OF RUN		31	
15				32	
16				33	
17				34	


742 W PLAZA DR
728 W PLAZA DR
722 W PLAZA DR
716 W PLAZA DR
710 W PLAZA DR
704 W PLAZA D
MH0366
MH0367
MH0357
SM0801
MH0356
SM0
741 W LEAWOOD DR
735 W LEAWOOD DR
723 W LEAWOOD DR
717 W LEAWOOD DR
705 W LEAWOOD D
SM0807
740 W LEAWOOD DR
728 W LEAWOOD DR
722 W LEAWOOD DR
710 W LEAWOOD DR
704 W LEAWOOD
MH0360
SM0808
MH0359
SM0809
MH0358
MIAMI AVE
741 W COLLEGE ST
735 W COLLEGE ST
723 W COLLEGE ST
717 W COLLEGE ST
705 W COLLEGE S
N
W
E
MH0257
COLLEGE ST.
SM1063
1387 S MAPLEWOOD CIR
MH0256
1303 S MAPLEWOOD CIR
1303 S GRANT AVE
MH0253
MH0250
1305 S MAPLEWOOD CIR
1385 S MAPLEWOOD CIR
SM1061
1309 S GRANT AVE
SM1057
MH0254
1381 S MAPLEWOOD CIR
1311 S GRANT AVE
1309 S MAPLEWOOD CIR
1379 S MAPLEWOOD CIR
1049
1315 S GRANT AVE
1311 S MAPLEWOOD CIR
1375 S MAPLEWOOD CIR
1317 S GRANT AVE
1313 S MAPLEWOOD CIR
1373 S MAPLEWOOD CIR

SEGMENT:

2

LOCATION:

BETWEEN S. GRANT AVE. AND S. MIAMI AVE. NORTH OF W. COLLEGE ST. IN BACKYARDS.

SEWER MAIN #: 808 DIRECTION OF FLOW: WEST

SIZE: 8" FOOTAGE: 257' DIRECTION OF FLOW: WEST

UPPER MANHOLE #: 359 DEPTH: 13.85'

MANHOLE LOCATION: GRASSY AREA IN BACKYARD OF 723 W. COLLEGE ST.

LOWER MANHOLE #: 360 DEPTH: 12.25'

MANHOLE LOCATION: GRASSY AREA IN BACKYARD OF 741 W. COLLEGE ST.

LIVE TAPS: 6 DEAD TAPS: 0

OTHER: MANHOLES ARE LOCATED IN BACKYARDS WITH LIMITED ACCESS. S. MIAMI AVE. AND W. COLLEGE ST. HAVE DAILY HEAVY TRAFFIC. MAY REQUIRE BY-PASS PUMPING.

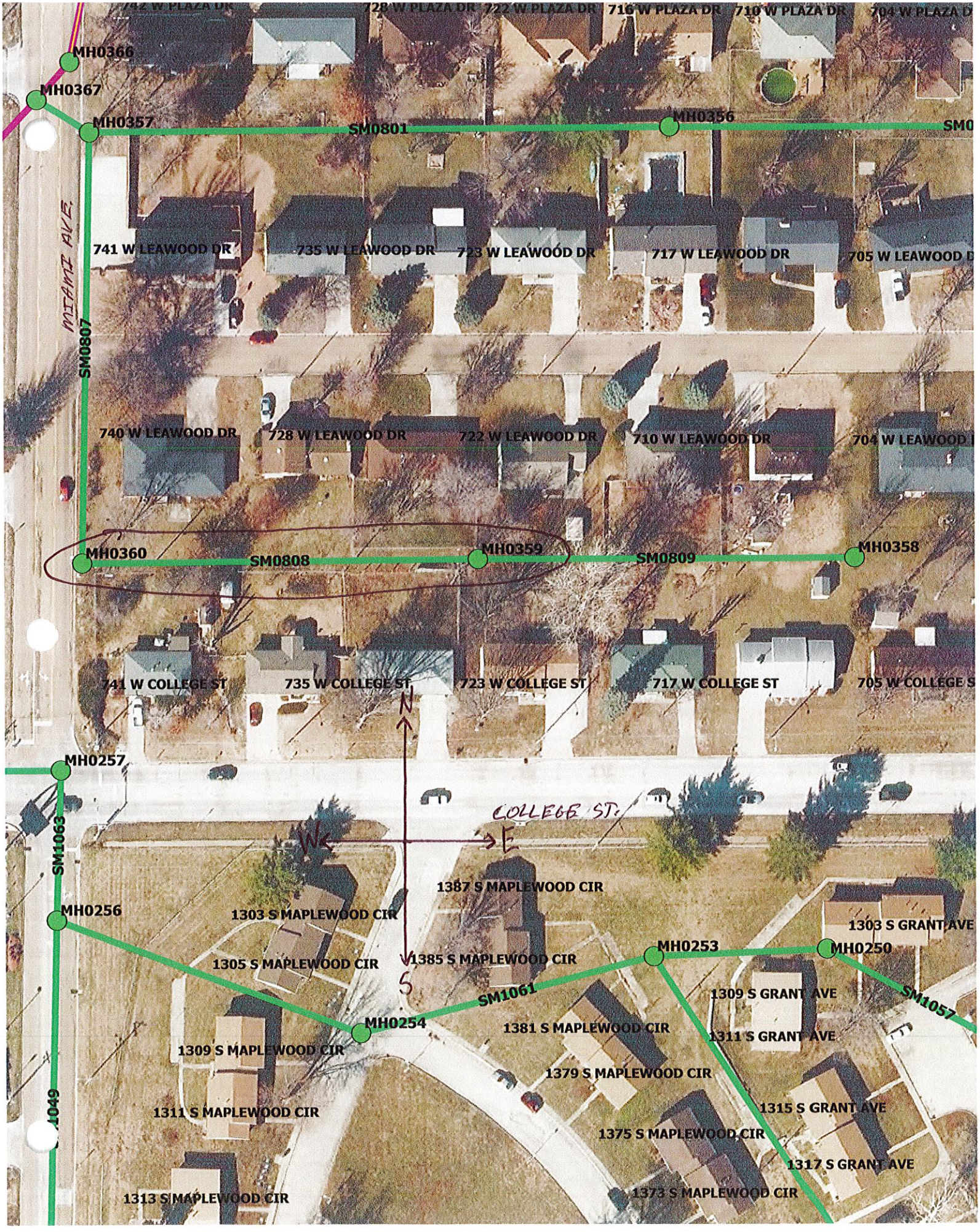
Good

Sewer Main Inspection

Date 2-17-16

Sewer main number 808
Manhole Starting 360
Manhole Ending 359
Street Intersection N. of College E. of Miami
Direction of Flow WEST

	Distance	Remarks			
1	12'	RJL	NS	18	
2	13'	TL TO RSH	SS	19	
3	44'	TL TO RSH		20	
4	104'	TL TB SB PPC	SS	21	
5	138'	TL TO RSH	NS	22	
6	145'	RJL		23	
7	160'	RJL		24	
8	204'	TL TO SP	NS	25	
9	206'	TL TO SP RSL PPC	SS	26	
10	213'	PPC		27	
11	230'	RJL		28	
12	253'-257'	PPC PLC PB	PP?	29	
13	257'	END OF RUN		30	
14				31	
15				32	
16				33	
17				34	


MH0366
MH0367
MH0357
SM0801
MH0356
SM0
741 W LEAWOOD DR
735 W LEAWOOD DR
723 W LEAWOOD DR
717 W LEAWOOD DR
705 W LEAWOOD D
SM0807
740 W LEAWOOD DR
728 W LEAWOOD DR
722 W LEAWOOD DR
710 W LEAWOOD DR
704 W LEAWOOD
MH0360
SM0808
MH0359
SM0809
MH0358
741 W COLLEGE ST
735 W COLLEGE ST
723 W COLLEGE ST
717 W COLLEGE ST
705 W COLLEGE S
MH0257
SM1063
COLLEGE ST.
W
E
S
1387 S MAPLEWOOD CIR
MH0256
1303 S MAPLEWOOD CIR
1303 S GRANT AVE
MH0253
MH0250
1305 S MAPLEWOOD CIR
1385 S MAPLEWOOD CIR
1309 S GRANT AVE
SM1061
SM1057
MH0254
1381 S MAPLEWOOD CIR
1311 S GRANT AVE
1309 S MAPLEWOOD CIR
1379 S MAPLEWOOD CIR
1049
1311 S MAPLEWOOD CIR
1315 S GRANT AVE
1375 S MAPLEWOOD CIR
1317 S GRANT AVE
1313 S MAPLEWOOD CIR
1373 S MAPLEWOOD CIR

SEGMENT:

3

LOCATION:

BETWEEN W. COLLEGE ST. AND W. PLAZA DR. ON EAST SIDE OF S. MIAMI AVE. IN GRASSY AREA.

SEWER MAIN #: 807 DIRECTION OF FLOW: NORTH

SIZE: 8" FOOTAGE: 279' DIRECTION OF FLOW: NORTH

UPPER MANHOLE #: 360 DEPTH: 12.25'

MANHOLE LOCATION: GRASSY AREA IN BACKYARD OF 741 W. COLLEGE ST.

LOWER MANHOLE #: 357 DEPTH: 10.5'

MANHOLE LOCATION: GRASSY AREA IN BACKYARD OF 741 W. LEAWOOD DR.

LIVE TAPS: 0 DEAD TAPS: 0

OTHER: MANHOLES ARE LOCATED ON EAST SIDE OF S. MIAMI AVE. IN GRASSY AREA. S. MIAMI AVE. HAS DAILY HEAVY TRAFFIC WITH A SCHOOL IN THE AREA. MAY REQUIRE BY-PASS PUMPING.

Good

Sewer Main Inspection

Date 2-17-16

Sewer main number 807
Manhole Starting 360
Manhole Ending 357
Street Intersection E. of Miami College to Lenwood
Direction of Flow NORTH

	Distance	Remarks
1	28'	JI
2	88'	RJL
3	138'	JI
4	153'	JI
5	279'	END OF RUN
6		MH# 357 ROOTS & I&I
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
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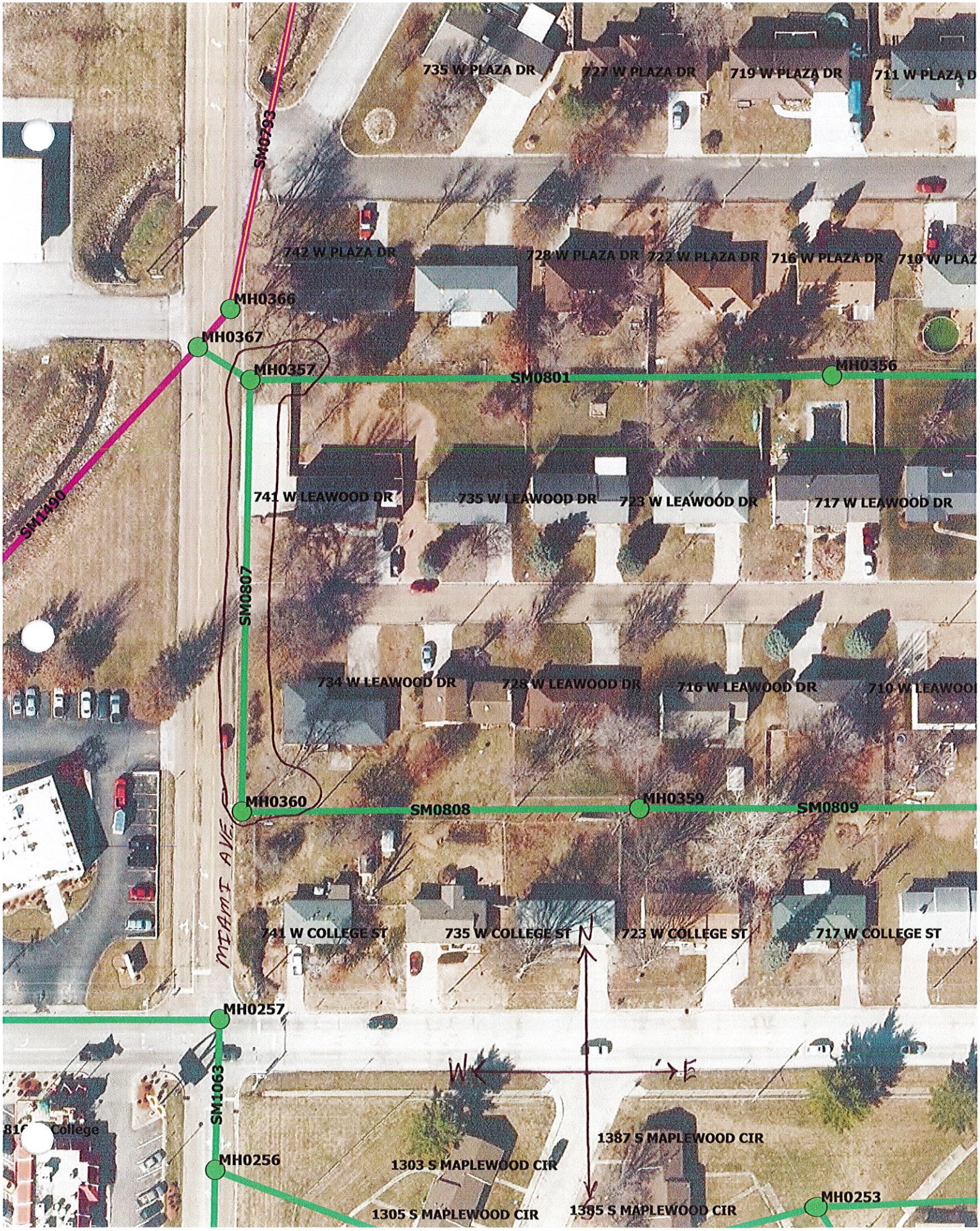
33		
34		


735 W PLAZA DR
727 W PLAZA DR
719 W PLAZA DR
711 W PLAZA D
SM0793
742 W PLAZA DR
728 W PLAZA DR
722 W PLAZA DR
716 W PLAZA DR
710 W PLAZ
MH0366
MH0367
MH0357
SM0801
MH0356
SM1490
741 W LEAWOOD DR
735 W LEAWOOD DR
723 W LEAWOOD DR
717 W LEAWOOD DR
SM0807
734 W LEAWOOD DR
728 W LEAWOOD DR
716 W LEAWOOD DR
710 W LEAWOOD
MH0360
SM0808
MH0359
SM0809
MIAMI AVE
741 W COLLEGE ST
735 W COLLEGE ST
723 W COLLEGE ST
717 W COLLEGE ST
MH0257
SM1063
College
MH0256
1303 S MAPLEWOOD CIR
1387 S MAPLEWOOD CIR
1305 S MAPLEWOOD CIR
1385 S MAPLEWOOD CIR
MH0253
W
E

SEGMENT:

4

LOCATION:

IN PAVEMENT OF S. MIAMI AVE. BETWEEN W. LEAWOOD DR. AND W. PLAZA DR.

SEWER MAIN #: 800 DIRECTION OF FLOW: NORTHWEST

SIZE: 8" FOOTAGE: 35' DIRECTION OF FLOW: NORTHWEST

UPPER MANHOLE #: 357 DEPTH: 10.5'

MANHOLE LOCATION: GRASSY AREA IN BACKYARD OF 741 W. LEAWOOD DR.

LOWER MANHOLE #: 367 DEPTH: 12.25'

MANHOLE LOCATION: IN PAVEMENT OF S. MIAMI AVE.

LIVE TAPS: 0 DEAD TAPS: 0

OTHER: MANHOLES ARE LOCATED ON S. MIAMI AVE. AND IN BACKYARD WITH LIMITED ACCESS. S. MIAMI AVE. HAS DAILY HEAVY TRAFFIC WITH A SCHOOL IN THE AREA. MAY REQUIRE BY-PASS PUMPING.

Excellent

Sewer Main Inspection

Date 12/17/10

Sewer main number 800
Manhole Starting 367
Manhole Ending 357
Street Intersection Miami, between Lenwood / Plaza
Direction of Flow west

	Distance	Remarks
1	35'	END OF RUN
2		
3		
4		
5		
6		
7		
8		
9		
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11		
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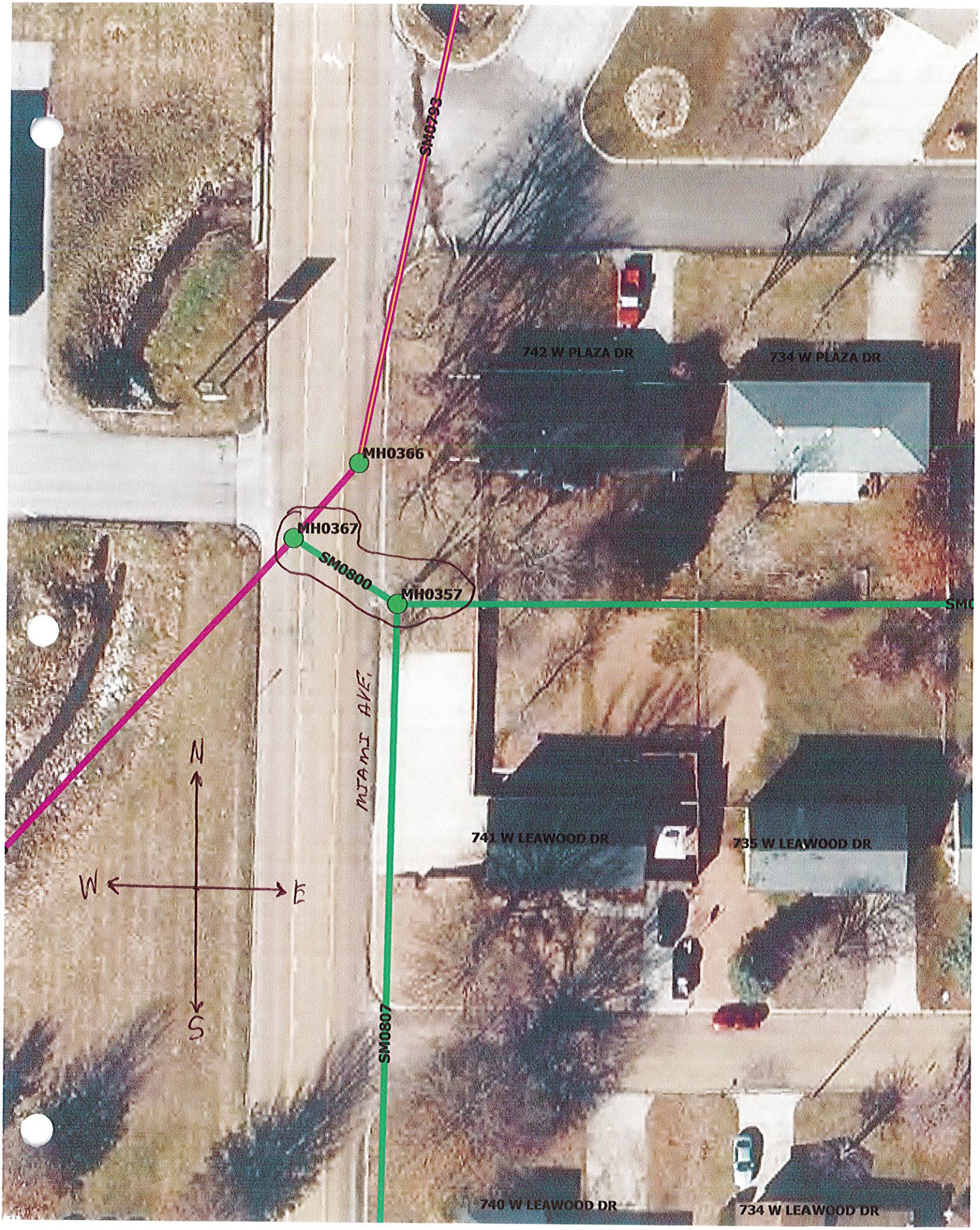
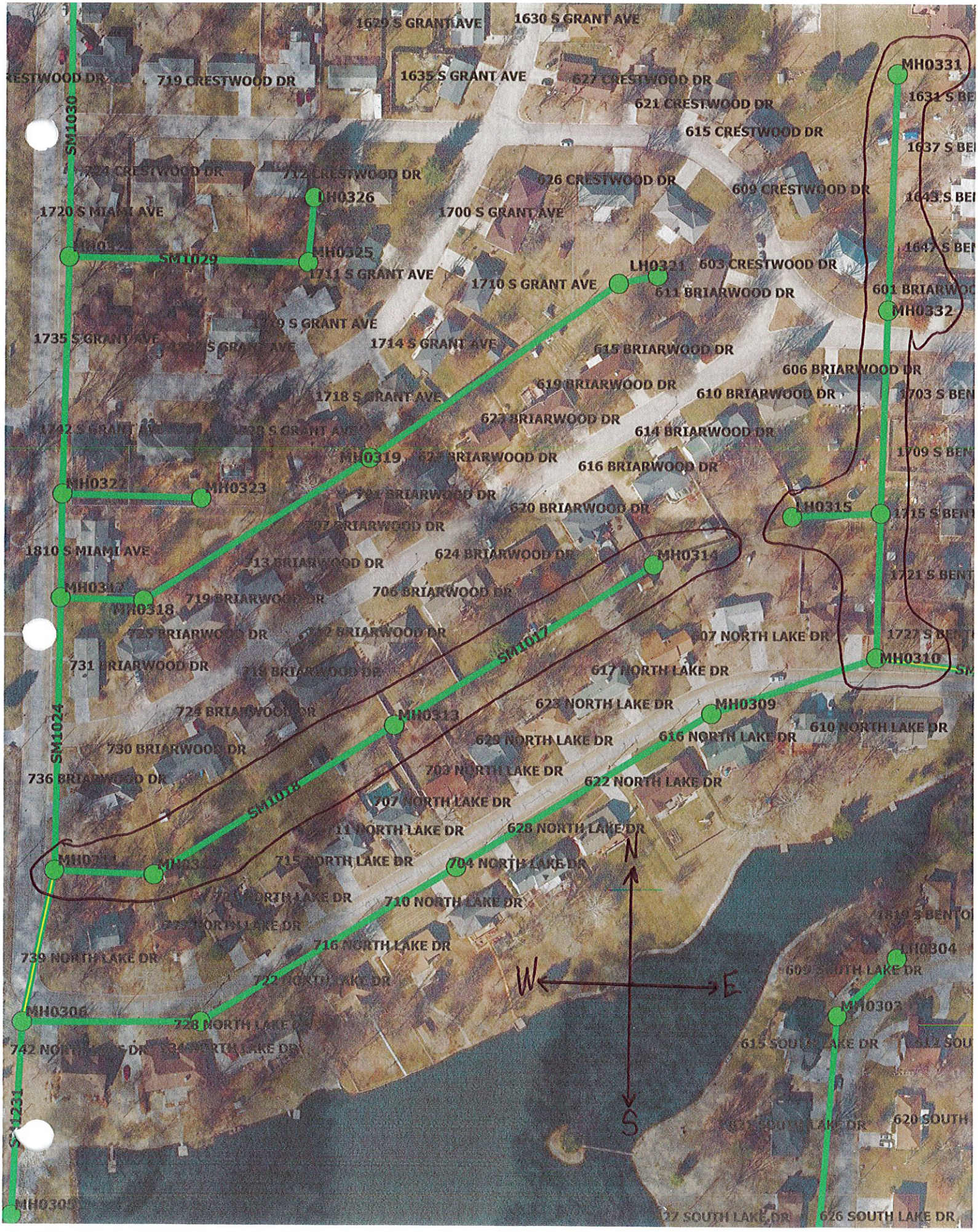
25		


SM0793
742 W PLAZA DR
734 W PLAZA DR
MH0366
MH0367
SM0800
MH0357
MIAMI AVE.
N
W
E
S
741 W LEAWOOD DR
735 W LEAWOOD DR
SM0807
740 W LEAWOOD DR
734 W LEAWOOD DR

SECTION: 3

DESCRIPTION: CONSISTS OF 7 SEGMENTS OF 8" PIPE IN THE SAME DRAINING AREA. SEGMENTS ARE LOCATED BETWEEN S. MIAMI AVE. AND S. BENTON AVE. AND NORTH OF NORTH LAKE DR. IN THE BACKYARDS WITH LIMITED ACCESS. MAY REQUIRE BY-PASS PUMPING.


1629 S GRANT AVE
1630 S GRANT AVE
719 CRESTWOOD DR
1635 S GRANT AVE
627 CRESTWOOD DR
621 CRESTWOOD DR
615 CRESTWOOD DR
712 CRESTWOOD DR
626 CRESTWOOD DR
609 CRESTWOOD DR
LH0326
1720 S MIAMI AVE
1700 S GRANT AVE
SM1030
SM1029
MH0325
1711 S GRANT AVE
1710 S GRANT AVE
LH0321
603 CRESTWOOD DR
611 BRIARWOOD DR
1735 S GRANT AVE
1714 S GRANT AVE
615 BRIARWOOD DR
606 BRIARWOOD DR
619 BRIARWOOD DR
610 BRIARWOOD DR
1718 S GRANT AVE
623 BRIARWOOD DR
614 BRIARWOOD DR
MH0319
616 BRIARWOOD DR
MH0322
MH0323
620 BRIARWOOD DR
LH0315
1810 S MIAMI AVE
624 BRIARWOOD DR
MH0314
MH0317
MH0318
706 BRIARWOOD DR
731 BRIARWOOD DR
SM1017
617 NORTH LAKE DR
MH0310
SM1024
724 BRIARWOOD DR
MH0313
623 NORTH LAKE DR
MH0309
730 BRIARWOOD DR
629 NORTH LAKE DR
616 NORTH LAKE DR
610 NORTH LAKE DR
736 BRIARWOOD DR
703 NORTH LAKE DR
622 NORTH LAKE DR
SM1018
707 NORTH LAKE DR
628 NORTH LAKE DR
715 NORTH LAKE DR
704 NORTH LAKE DR
710 NORTH LAKE DR
716 NORTH LAKE DR
739 NORTH LAKE DR
LH0304
MH0306
728 NORTH LAKE DR
MH0307
615 SOUTH LAKE DR
SM1021
620 SOUTH
626 SOUTH LAKE DR
MH0308
MH0331
1631 S BE
1637 S BE
1643 S BE
1647 S BE
601 BRIARWOO
MH0332
1703 S BEN
1709 S BEN
1715 S BENT
1721 S BENT
1727 S BENT
N
W
E
S

CIPP

SEGMENT:

1

LOCATION:

EAST OF S. MIAMI AVE. BETWEEN NORTH LAKE DR.
AND BRIARWOOD DR. IN THE BACKYARDS.

SEWER MAIN #: 1017 DIRECTION OF FLOW: SOUTHWEST

SIZE: 8" FOOTAGE: 390' DIRECTION OF FLOW: SOUTHWEST

UPPER MANHOLE #: 314 DEPTH: 4.58'

MANHOLE LOCATION: IN BACKYARD OF 616 BRIARWOOD DR.

LOWER MANHOLE #: 313 DEPTH: 11'

MANHOLE LOCATION: IN BACKYARD BEHIND SHED OF 712 BRIARWOOD DR.

LIVE TAPS: 6 DEAD TAPS: 4

OTHER: MANHOLES ARE LOCATED IN BACKYARDS WITH LIMITED ACCESS.
MAY REQUIRE BY-PASS PUMPING.

Excellent

Sewer Main Inspection

Date 7-2-14

Sewer main number 1017
Manhole Starting 314
Manhole Ending 313
Street Intersection BETWEEN BRIARWOOD & NORTH LAKE
Direction of Flow WEST

	Distance	Remarks	
1	1'	RJL	
2	11'	TL TO RSM	NS
3	57'	PRG START	
4	58'	TL TO SP	NS
5	59'	PRG END	
6	88'	TC	NS
7	90'	RJL PPC	
8	100'	PRG START	
9	104'	PRG END	
10	133'	TL TO RSL	NS
11	185'	TC	NS
12	225'	TL TO	NS
13	282'	TC	NS
14	340'	TL TO RSL	NS
15	355'	TL TB I&I	SS
16	381'	TC	NS
17	386'	JB	
18	390'	End of Run	
19			
20			
21			
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24			
25			
26			
27			
28			
29			
30			
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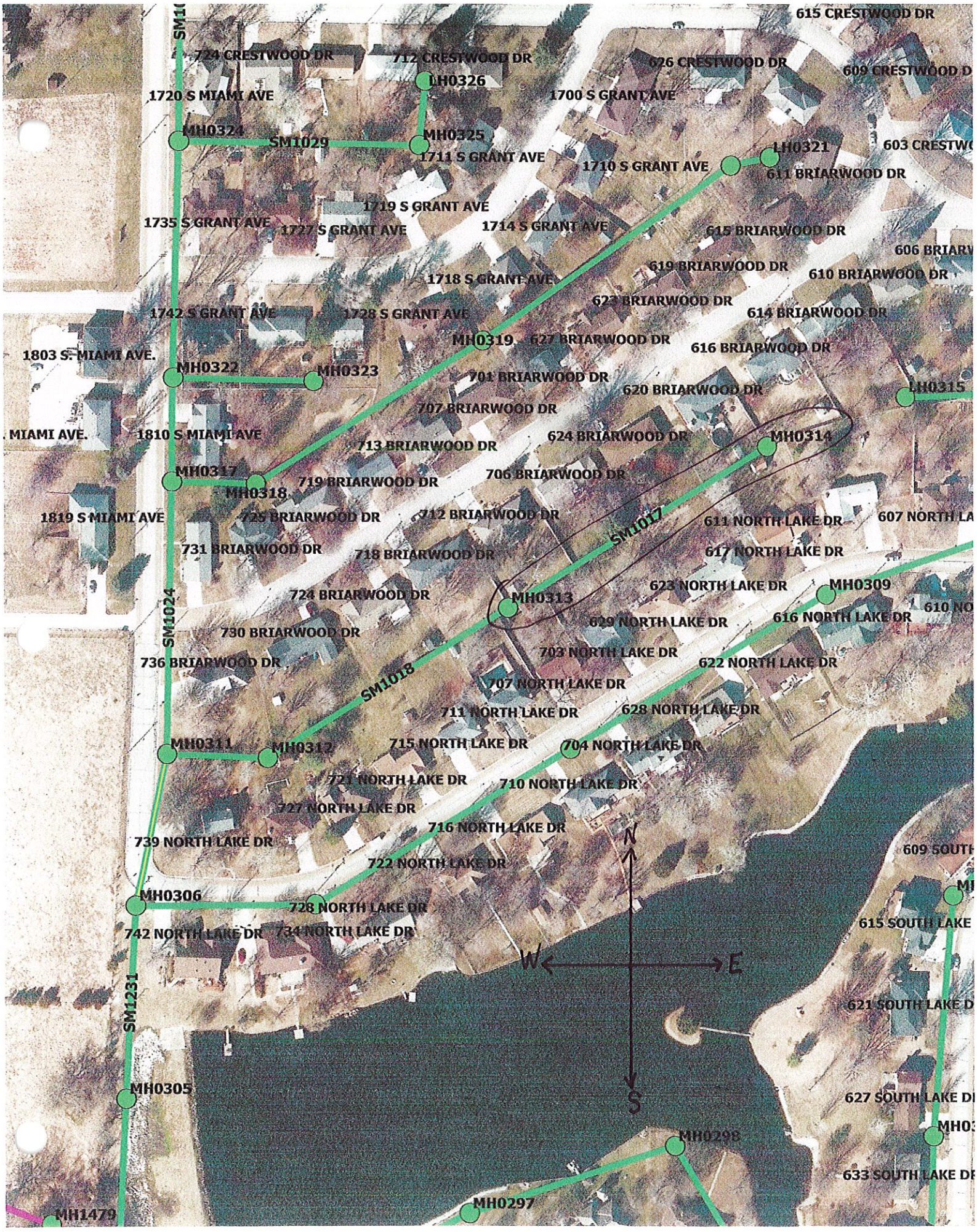
32			
33			
34			


615 CRESTWOOD DR
724 CRESTWOOD DR
712 CRESTWOOD DR
626 CRESTWOOD DR
609 CRESTWOOD D
LH0326
1720 S MIAMI AVE
1700 S GRANT AVE
MH0324
SM1029
MH0325
1711 S GRANT AVE
LH0321
603 CRESTW
1710 S GRANT AVE
611 BRIARWOOD DR
1719 S GRANT AVE
1735 S GRANT AVE
1727 S GRANT AVE
1714 S GRANT AVE
615 BRIARWOOD DR
606 BRIARW
619 BRIARWOOD DR
610 BRIARWOOD DR
1718 S GRANT AVE
623 BRIARWOOD DR
1742 S GRANT AVE
1728 S GRANT AVE
614 BRIARWOOD DR
MH0319
627 BRIARWOOD DR
616 BRIARWOOD DR
1803 S. MIAMI AVE.
MH0322
MH0323
701 BRIARWOOD DR
620 BRIARWOOD DR
LH0315
707 BRIARWOOD DR
MIAMI AVE.
1810 S MIAMI AVE
713 BRIARWOOD DR
624 BRIARWOOD DR
MH0314
MH0317
719 BRIARWOOD DR
706 BRIARWOOD DR
MH0318
1819 S MIAMI AVE
725 BRIARWOOD DR
712 BRIARWOOD DR
611 NORTH LAKE DR
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SM1017
731 BRIARWOOD DR
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724 BRIARWOOD DR
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730 BRIARWOOD DR
703 NORTH LAKE DR
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MH1479

CIPP

SEGMENT:

2

LOCATION:

EAST OF S. MIAMI AVE. BETWEEN NORTH LAKE DR.
AND BRIARWOOD DR. IN THE BACKYARDS.

SEWER MAIN #: 1018 DIRECTION OF FLOW: SOUTHWEST

SIZE: 8" FOOTAGE: 382' DIRECTION OF FLOW: SOUTHWEST

UPPER MANHOLE #: 313 DEPTH: 11'

MANHOLE LOCATION: IN BACKYARD BEHIND SHED OF 712 BRIARWOOD DR.

LOWER MANHOLE #: 312 DEPTH: 10.67'

MANHOLE LOCATION: IN BACKYARD OF 736 BRIARWOOD DR.

LIVE TAPS: 2 DEAD TAPS: 0

OTHER: MANHOLES ARE LOCATED IN BACKYARDS WITH LIMITED ACCESS.
MAY REQUIRE BY-PASS PUMPING.

Sewer Main Inspection

Print Form

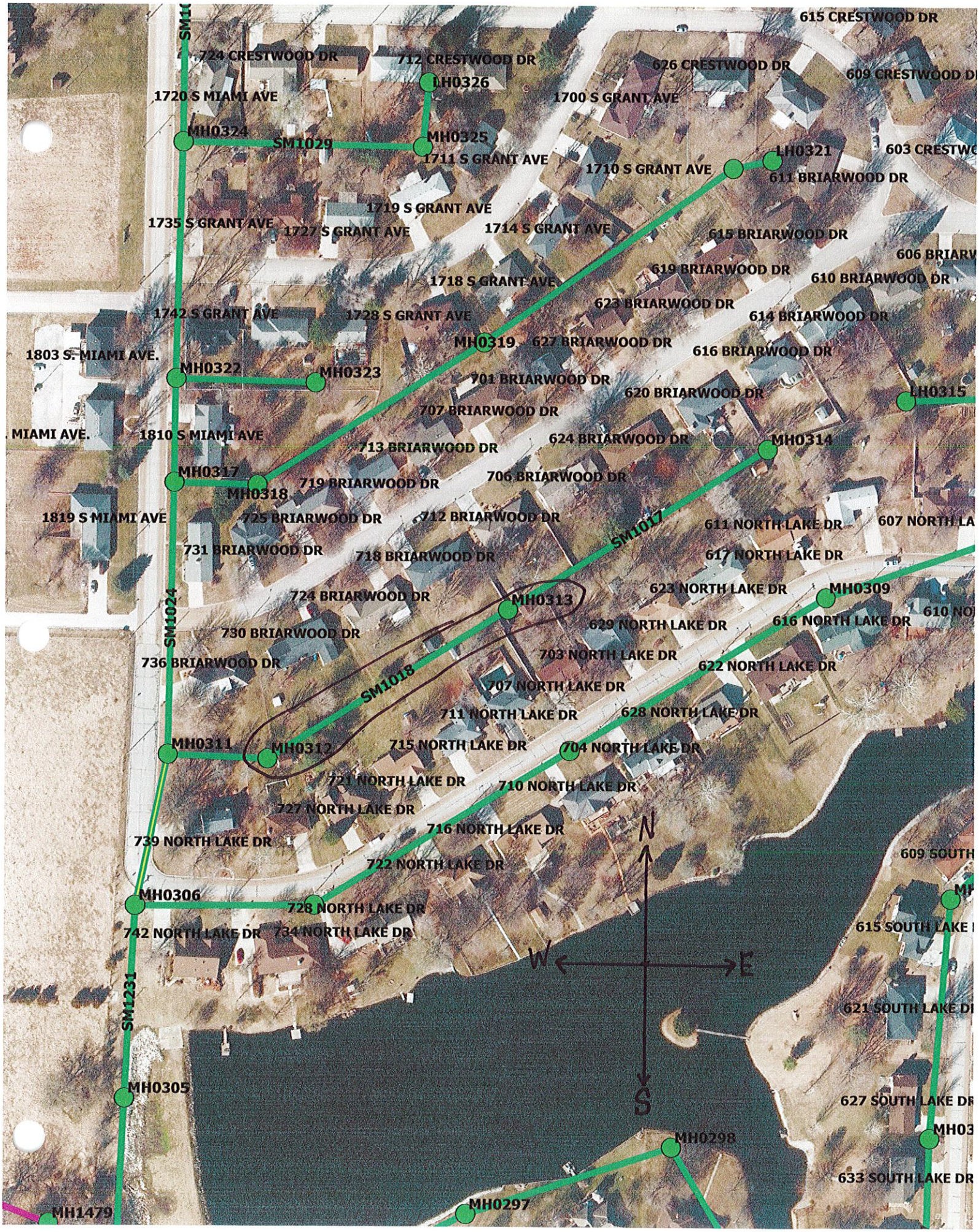
GOOD

Date: Feb 26, 2020

Sewer Main Number:	1018		
Manhole Starting:	312	**Depth:**	10' 6"
Manhole Ending:	313	**Depth:**	11'
Street Intersection	Miami between N Lake Dr and Briarwood		
Direction of Flow:	West		
Main Size:	8"		

Distance Remarks

30' T.C		N.S.
42' T.L T.O S.P	730 BRIARWOOD DR.	N.S.
189' TC.	DEAD	N.S.
193' T.L. T.O.	724 BRIARWOOD DR.	N.S.
292' T.C.	DEAD	N.S.
323' T.L. T.O. I&I RJL	718 BRIARWOOD	N.S.
382' END OF RUN		


615 CRESTWOOD DR
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712 CRESTWOOD DR
626 CRESTWOOD DR
609 CRESTWOOD DR
LH0326
1720 S MIAMI AVE
1700 S GRANT AVE
MH0324
SM1029
MH0325
1711 S GRANT AVE
LH0321
603 CRESTWO
1710 S GRANT AVE
611 BRIARWOOD DR
1719 S GRANT AVE
1735 S GRANT AVE
1727 S GRANT AVE
1714 S GRANT AVE
615 BRIARWOOD DR
606 BRIARW
619 BRIARWOOD DR
610 BRIARWOOD DR
1718 S GRANT AVE
623 BRIARWOOD DR
1742 S GRANT AVE
1728 S GRANT AVE
614 BRIARWOOD DR
MH0319
627 BRIARWOOD DR
616 BRIARWOOD DR
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MH0322
MH0323
701 BRIARWOOD DR
620 BRIARWOOD DR
LH0315
707 BRIARWOOD DR
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624 BRIARWOOD DR
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633 SOUTH LAKE DR
MH0297
MH1479

CIPP

SEGMENT:

3

LOCATION:

EAST OF S. MIAMI AVE. BETWEEN NORTH LAKE DR.
AND BRIARWOOD DR. IN THE BACKYARDS.

SEWER MAIN #: 1019 DIRECTION OF FLOW: WEST

SIZE: 8" FOOTAGE: 126' DIRECTION OF FLOW: WEST

UPPER MANHOLE #: 312 DEPTH: 10.67'

MANHOLE LOCATION: IN BACKYARD OF 736 BRIARWOOD DR.

LOWER MANHOLE #: 311 DEPTH: 13.67'

MANHOLE LOCATION: IN BACKYARD OF 736 BRIARWOOD DR.

LIVE TAPS: 2 DEAD TAPS: 0

OTHER: MANHOLES ARE LOCATED IN BACKYARDS WITH LIMITED ACCESS.
MAY REQUIRE BY-PASS PUMPING.

Sewer Main Inspection

Print Form

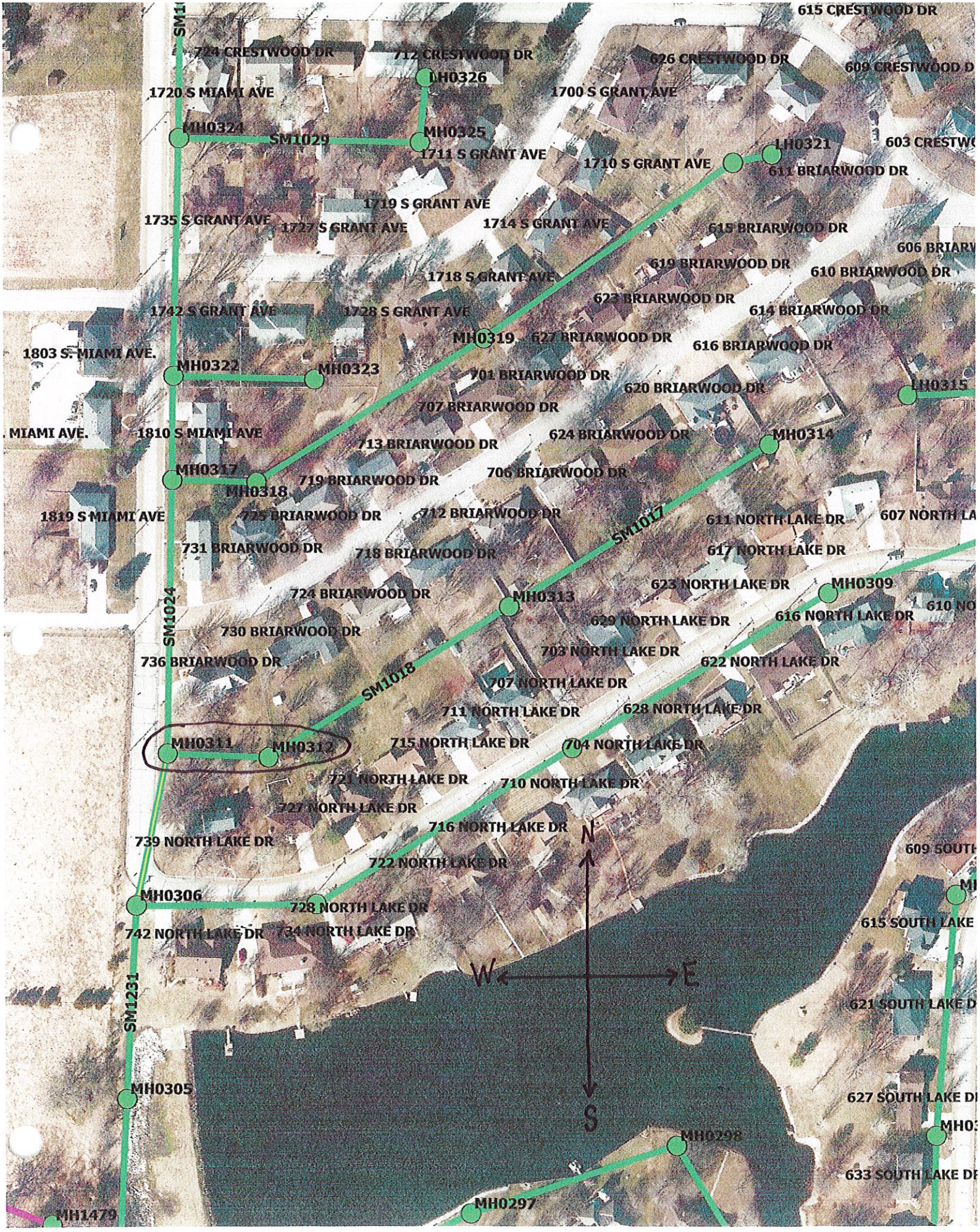
GOOD

Date: Feb 26, 2020

Sewer Main Number:	1019		
Manhole Starting:	311	**Depth:**	13' 2"
Manhole Ending:	312	**Depth:**	10' 6"
Street Intersection	Miami between North Lake and Briarwood		
Direction of Flow:	West		
Main Size:	8"		

Distance Remarks

1' R.J.M J.C		
32' R.J.H		
40' T.L R.S.H	739 N Lake Dr	S.S.
49' R.J.L		
75' T.L T.O S.P	736 W Briarwood	N.S.
126' END OF RUN		


615 CRESTWOOD DR
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712 CRESTWOOD DR
626 CRESTWOOD DR
609 CRESTWOOD D
LH0326
1720 S MIAMI AVE
1700 S GRANT AVE
MH0324
SM1029
MH0325
LH0321
603 CRESTW
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611 BRIARWOOD DR
1719 S GRANT AVE
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1727 S GRANT AVE
1714 S GRANT AVE
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1718 S GRANT AVE
623 BRIARWOOD DR
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620 BRIARWOOD DR
LH0315
707 BRIARWOOD DR
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706 BRIARWOOD DR
MH0318
1819 S MIAMI AVE
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712 BRIARWOOD DR
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607 NORTH LA
SM1017
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623 NORTH LAKE DR
MH0309
724 BRIARWOOD DR
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616 NORTH LAKE DR
SM1024
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703 NORTH LAKE DR
736 BRIARWOOD DR
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SM1018
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SEGMENT:

4

LOCATION:

NORTH OF BRIARWOOD DR. BETWEEN S. BENTON AVE. AND CRESTWOOD DR.

SEWER MAIN #: 1008 DIRECTION OF FLOW: SOUTH

SIZE: 8" FOOTAGE: 311' DIRECTION OF FLOW: SOUTH

UPPER MANHOLE #: 331 DEPTH: 10' 9"

MANHOLE LOCATION: IN BACKYARD OF 1631 S. BENTON AVE.

LOWER MANHOLE #: 332 DEPTH: 8' 6"

MANHOLE LOCATION: SOUTHWEST OF 601 BRIARWOOD DR. IN GRASSY AREA

LIVE TAPS: 11 DEAD TAPS: 7

OTHER: MANHOLES ARE LOCATED IN BACKYARDS WITH LIMITED ACCESS. MAY REQUIRE BY-PASS PUMPING.

Excellent

Sewer Main Inspection

Date: 8-2-17

Sewer main number	1008
Manhole Starting	332
Manhole Ending	331
Street Intersection	Briarwood & crestwood
Direct of Flow	South
Main Size	8"

Distance Remarks

1	1' P.P.C.		18	304' TC	WS
2	2' T.L.T.B P.B.	ES.	19	307' TL TO	ES
3	11' T.C.	ES.	20	309' TL TO	WS
4	33' T.C.	W.S.	21	310' PPC	
5	34' R.J.L.		22	311' End of run	
6	50' T.L.T.O. R.S.H. OB.	WS.	23		
7	75' T.L.T.O. R.S.H	E.S.	24		
8	95' T.C.	E.S.	25		
9	130' T.L.T.B. S.C.P. R.S.L.	E.S.	26		
10	173' T.C.	E.S	27		
11	175' T.C.	W.S.	28		
12	179' T.L.T.B. R.S.M. P.B.	W.S.	29		
13	194' T.L.T.B. S.C.P.	E.S.	30		
14	257' T.C.	W.S.	31		
15	267' T.L.T.O. S.C.P. Major	E.S.	32		
16	275' TL TO RSL	ES	33		
17	295' TL TO SP	WS	34		


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MH0330
1615 S. BENTON AVE.
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1616 S BENTON AVE
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1631 S BENTON AVE
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609 CRESTWOOD DR
620 CRESTWOOD DR
603 CRESTWOOD DR
LH0321
611 BRIARWOOD DR
601 BRIARWOOD DR
545 BRIARWOOD DR
MH0332
615 BRIARWOOD DR
606 BRIARWOOD DR
610 BRIARWOOD DR
1703 S BENTON AVE
1702 S BENTON AVE
SM1009
614 BRIARWOOD DR
1709 S BENTON AVE
1708 S BENTON AVE
LH0315
MH0316
1715 S BENTON AVE
1714 S BENTON AVE

SEGMENT:

5

LOCATION:

WEST OF S. BENTON AVE. BETWEEN BRIARWOOD DR. AND NORTH LAKE DR. IN THE BACKYARDS.

SEWER MAIN #: 1009 DIRECTION OF FLOW: SOUTH

SIZE: 8" FOOTAGE: 262' DIRECTION OF FLOW: SOUTH

UPPER MANHOLE #: 332 DEPTH: 8' 6"

MANHOLE LOCATION: SOUTHWEST OF 601 BRIARWOOD DR. IN GRASSY AREA

LOWER MANHOLE #: 316 DEPTH: 8.83'

MANHOLE LOCATION: IN BACKYARD OF 1715 S. BENTON AVE.

LIVE TAPS: 3 DEAD TAPS: 3

OTHER: MANHOLES ARE LOCATED IN BACKYARDS WITH LIMITED ACCESS. MAY REQUIRE BY-PASS PUMPING.

Excellent

Sewer Main Inspection

Date: 8-2-17

Sewer main number	1009
Manhole Starting	332
Manhole Ending	316
Street Intersection	West of Benton
Direct of Flow	South
Main Size	8"

	Distance	Remarks		Distance	Remarks
1	114'	T.L.T.B.P.B.R.S.L E.S.	18		
2	130'	T.C. E.S.	19		
3	174'	T.L.T.O.R.S.M. W.S.	20		
4	205'	T.L.T.O.R.S.H. E.S.	21		
5	207'	T.C. - E.S.	22		
6	209'	T.C. T&I W.S.	23		
7	262'	END OF RUN	24		
8			25		
9			26		
10			27		
11			28		
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13			30		
14			31		
15			32		
16			33		
17			34		


615 CRESTWOOD DR
1624 S BENTON AVE
1637 S BENTON AVE
609 CRESTWOOD DR
1630 S BENTON AVE
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1643 S BENTON AVE
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603 CRESTWOOD DR
LH0321
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601 BRIARWOOD DR
611 BRIARWOOD DR
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1703 S BENTON AVE
1702 S BENTON AVE
SM1009
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16 BRIARWOOD DR
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MH0316
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1714 S BENTON AVE
SM1078
MH0314
1721 S BENTON AVE
1722 S BENTON AVE
SM1011
611 NORTH LAKE DR
607 NORTH LAKE DR
1727 S BENTON AVE
1728 S BENTON AVE
MH0310
617 NORTH LAKE DR
SM1012
SM1013
MH0309
610 NORTH LAKE DR
604 NORTH LAKE DR

SEGMENT:

6

LOCATION:

WEST OF S. BENTON AVE. BETWEEN BRIARWOOD DR. AND NORTH LAKE DR.

SEWER MAIN #: 1010 DIRECTION OF FLOW: EAST

SIZE: 8" FOOTAGE: 119' DIRECTION OF FLOW: EAST

UPPER MANHOLE #: LH 315 DEPTH: UNKNOWN

MANHOLE LOCATION: IN BACKYARD OF 614 BRIARWOOD DR.

LOWER MANHOLE #: 316 DEPTH: 8.83'

MANHOLE LOCATION: IN BACKYARD OF 1715 S. BENTON AVE.

LIVE TAPS: 2 DEAD TAPS: 2

OTHER: MANHOLES ARE LOCATED IN BACKYARDS WITH LIMITED ACCESS. MAY REQUIRE BY-PASS PUMPING.

Excellent

Sewer Main Inspection

Date: 8-2-17

Sewer main number	1010
Manhole Starting	316
Manhole Ending	LH315
Street Intersection	S. of Briarwood
Direct of Flow	South
Main Size	8"

Distance Remarks

1	64' T.C. N.S.	18	
2	65' T.L.T.O.I&I N.S.	19	
3	106' T.C. N.S.	20	
4	109' T.L.T.O.S.P. N.S.	21	
5	119' End of Run	22	
6		23	
7		24	
8		25	
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11		28	
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13		30	
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LH0321
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545 BRIARW
MH0332
615 BRIARWOOD DR
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1703 S BENTON AVE
1702 S BENTON AV
SM1009
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1709 S BENTON AVE
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LH0315
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MH0310
617 NORTH LAKE DR
SM1012
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610 NORTH LAKE DR
604 NORTH LAKE DR
1804 S BENTON AVE
1808 S BENTON AVE

SEGMENT:

7

LOCATION:

WEST OF S. BENTON AVE. BETWEEN BRIARWOOD DR. AND NORTH LAKE DR.

SEWER MAIN #: 1011 DIRECTION OF FLOW: SOUTH

SIZE: 8" FOOTAGE: 188' DIRECTION OF FLOW: SOUTH

UPPER MANHOLE #: 316 DEPTH: 8.83'

MANHOLE LOCATION: IN BACKYARD OF 1715 S. BENTON AVE.

LOWER MANHOLE #: 310 DEPTH: 9' 8"

MANHOLE LOCATION: SOUTHEAST OF 607 NORTH LAKE DR. IN DRIVEWAY

LIVE TAPS: 2 DEAD TAPS: 4

OTHER: MANHOLES ARE LOCATED IN BACKYARD AND DRIVEWAY WITH LIMITED ACCESS. MAY REQUIRE BY-PASS PUMPING.

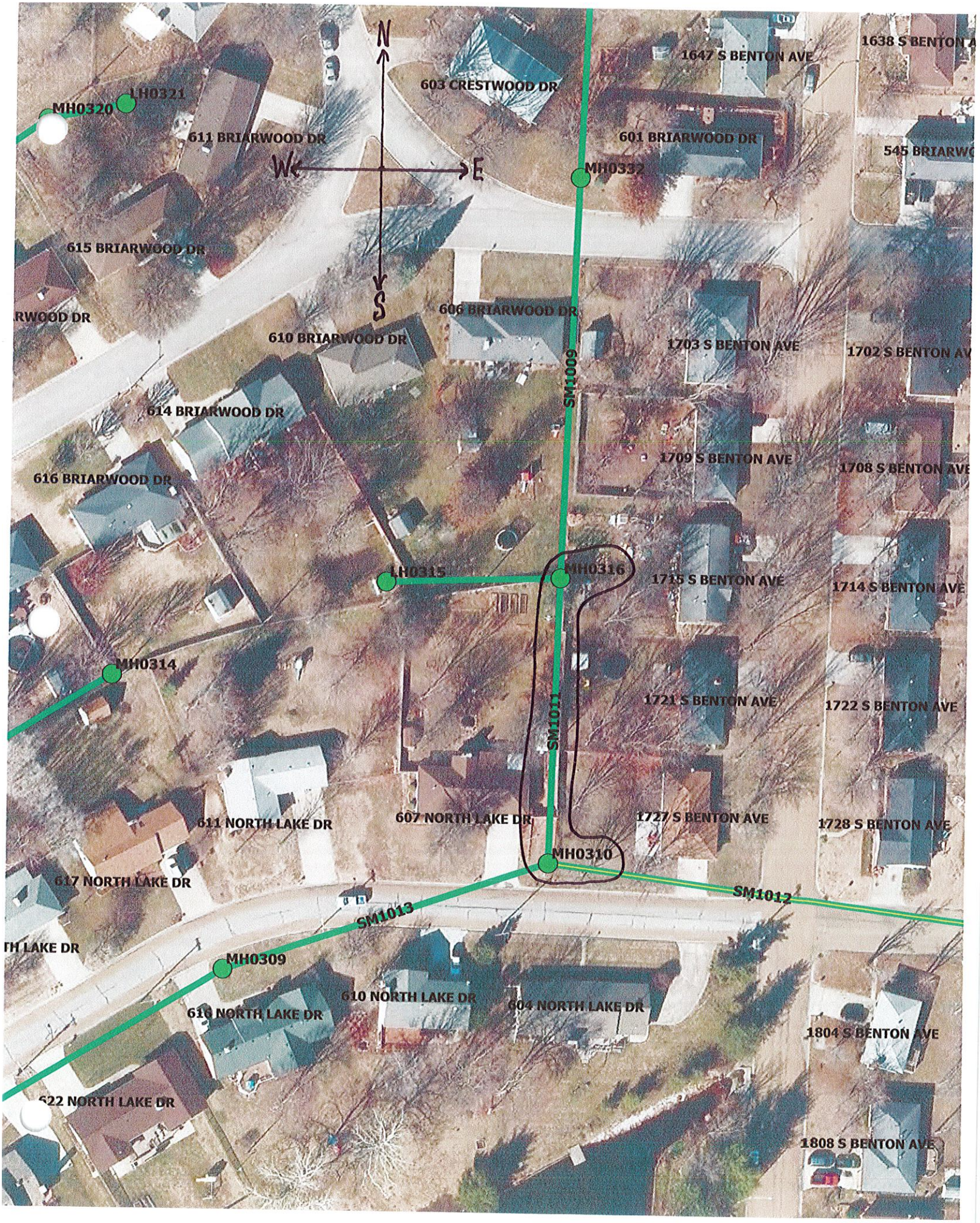
Excellent

Sewer Main Inspection

Date: 8-2-17

Sewer main number	1011
Manhole Starting	316
Manhole Ending	310
Street Intersection	W. of Benton
Direct of Flow	South
Main Size	8"

	Distance	Remarks		Distance	Remarks
1	22'	T.C. E.S.	18		
2	42'	T.L.T.Q. E.P. E.S.	19		
3	99'	T.L.T.O. R.S.H. E.S.	20		
4	104'	T.C. E.S.	21		
5	116'	R.J.M.	22		
6	177'	T.C. E.S.	23		
7	178'	T.C. W.S.	24		
8			25		
9	185'	R.J.L. J.B.	26		
10	187'	P.P.C. Roots L	27		
11	188'	End of Run	28		
12			29		
13			30		
14			31		
15			32		
16			33		
17			34		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SM1009
614 BRIARWOOD DR
1709 S BENTON AVE
1708 S BENTON AVE
616 BRIARWOOD DR
LH0315
MH0316
1715 S BENTON AVE
1714 S BENTON AVE
MH0314
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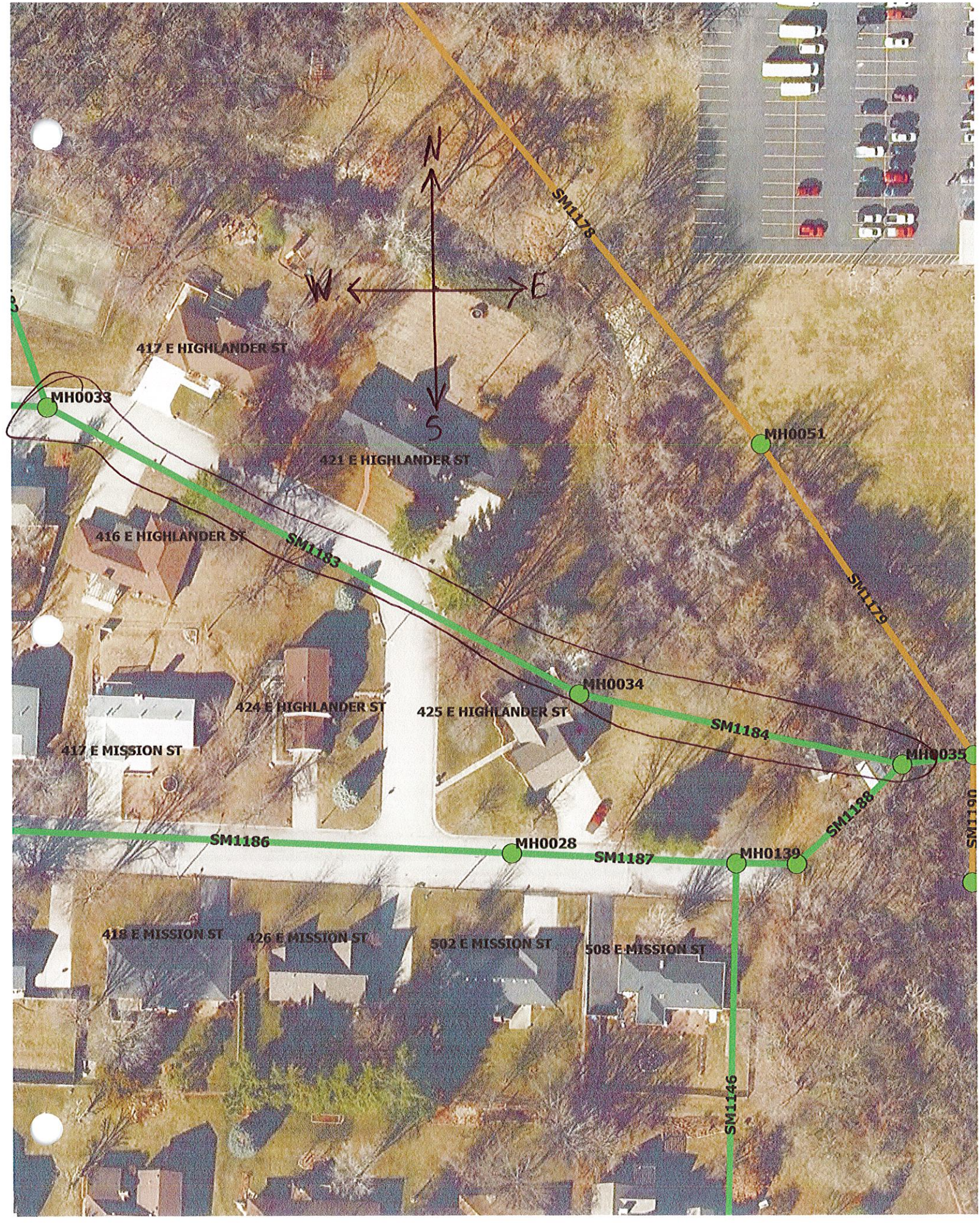
SM1011
611 NORTH LAKE DR
607 NORTH LAKE DR
1727 S BENTON AVE
1728 S BENTON AVE
MH0310
617 NORTH LAKE DR
SM1012
SM1013
MH0309
610 NORTH LAKE DR
604 NORTH LAKE DR
616 NORTH LAKE DR
1804 S BENTON AVE
1808 S BENTON AVE

SECTION: 4

DESCRIPTION: CONSISTS OF 2 SEGMENTS OF 8" PIPE IN THE SAME DRAINING AREA. SEGMENTS ARE LOCATED BETWEEN E. HIGHLANDER ST. AND E. MISSION ST. IN THE ROAD AND ALSO IN BACKYARDS WITH LIMITED ACCESS. MAY REQUIRE BY-PASS PUMPING.


N
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417 E HIGHLANDER ST
MH0033
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421 E HIGHLANDER ST
416 E HIGHLANDER ST
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SM1179
MH0034
424 E HIGHLANDER ST
425 E HIGHLANDER ST
SM1184
417 E MISSION ST
MH0035
SM1188
SM1190
SM1186
MH0028
SM1187
MH0139
418 E MISSION ST
426 E MISSION ST
502 E MISSION ST
508 E MISSION ST
SM1146

SEGMENT:

1

LOCATION:

BETWEEN E. HIGHLANDER ST. AND E. MISSION ST. IN THE ROAD AND BACKYARD.

SEWER MAIN #: 1183 DIRECTION OF FLOW: SOUTHEAST

SIZE: 8" FOOTAGE: 399' DIRECTION OF FLOW: SOUTHEAST

UPPER MANHOLE #: 33 DEPTH: 10' 8"

MANHOLE LOCATION: IN THE ROAD IN FRONT OF 410 E. HIGHLANDER ST.

LOWER MANHOLE #: 34 DEPTH: 6' 2"

MANHOLE LOCATION: IN BACKYARD OF 425 E. HIGHLANDER ST.

LIVE TAPS: 4 DEAD TAPS: 0

OTHER: MANHOLES ARE LOCATED IN THE ROAD AND BACKYARDS WITH LIMITED ACCESS. MAY REQUIRE BY-PASS PUMPING.

Print Form

Sewer Main Inspection

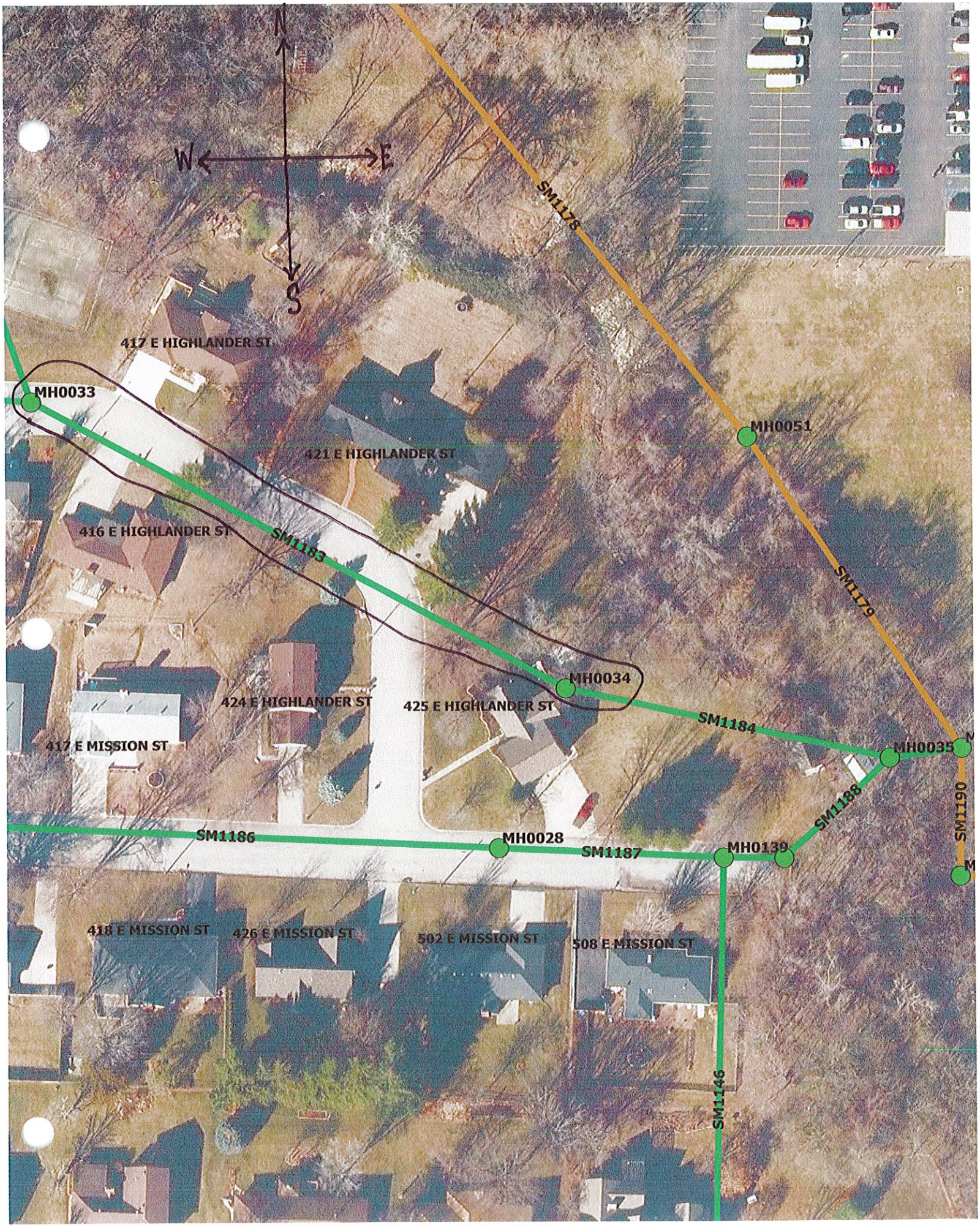
Date: Dec 31, 2020

Sewer Main Number:	1183		
Manhole Starting:	0033	**Depth:**	10' 8"
Manhole Ending:	0034	**Depth:**	6' 2"
Street Intersection	E. HIGHLANDER ST.		
Direction of Flow:	East		
Main Size:	8"		

Distance Remarks

43' T.L. T.O.	417 E. HIGHLANDER ST.	N.S.
106' T.L. T.O. S.C.P.	416 E. HIGHLANDER ST.	S.S.
144' T.L. T.O. R.S.H.	421 E. HIGH LANDER ST.	N.S.
294' R.J.H. J.B.		
383' T.L. T.O.	425 E. HIGHLANDER ST.	S.S.
399' END OF RUN		

CUT ROOTS IN JOINT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417 E HIGHLANDER ST
MH0033
MH0051
421 E HIGHLANDER ST
416 E HIGHLANDER ST
SM1183
SM1179
MH0034
424 E HIGHLANDER ST
425 E HIGHLANDER ST
SM1184
417 E MISSION ST
MH0035
SM1188
SM1190
SM1186
MH0028
SM1187
MH0139
418 E MISSION ST
426 E MISSION ST
502 E MISSION ST
508 E MISSION ST
SM1146

CIPP

SEGMENT:

2

LOCATION:

BETWEEN E. HIGHLANDER ST. AND E. MISSION ST. IN BACKYARDS.

SEWER MAIN #: 1184 DIRECTION OF FLOW: EAST

SIZE: 8" FOOTAGE: 215' DIRECTION OF FLOW: EAST

UPPER MANHOLE #: 34 DEPTH: 6' 2"

MANHOLE LOCATION: IN BACKYARD OF 425 E. HIGHLANDER ST.

LOWER MANHOLE #: 35 DEPTH: 2.5'

MANHOLE LOCATION: IN BACKYARD OF 425 E. HIGHLANDER ST.

LIVE TAPS: 0 DEAD TAPS: 0

OTHER: MANHOLES ARE LOCATED IN BACKYARDS WITH LIMITED ACCESS. MAY REQUIRE BY-PASS PUMPING.

Excellent

Sewer Main Inspection

Date 8-17-16

Sewer main number 1184
Manhole Starting 34
Manhole Ending 35
Street Intersection Highlander
Direction of Flow EAST

	Distance	Remarks
1	134'	R.J.M
2	138'-144'	P.R.G.
3		
4	174'	R.J.L.
5	192'-196'	P.R.G.
6	215'	End OF RUN
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
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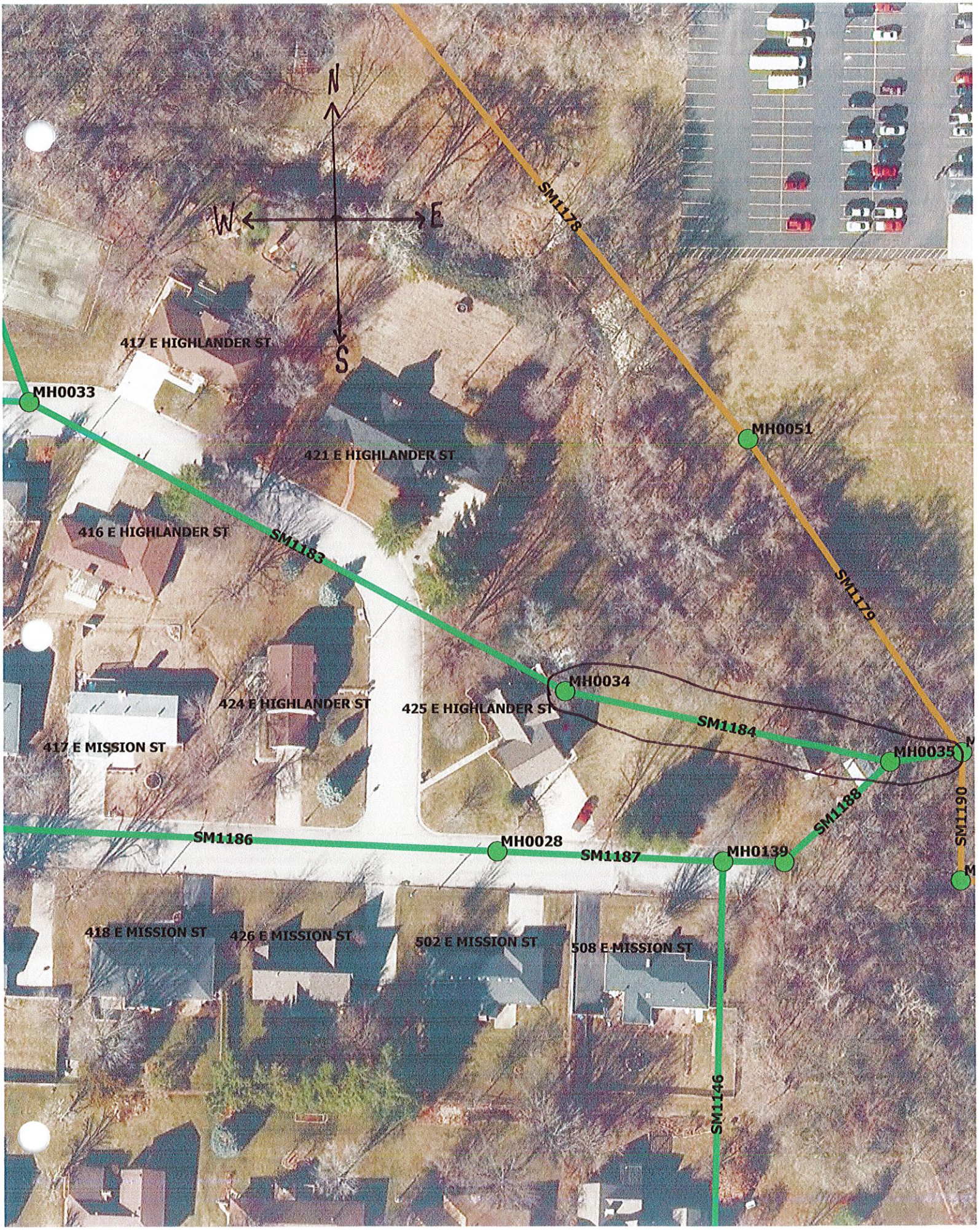
31		
32		
33		
34		


N
W
E
S
SM1178
417 E HIGHLANDER ST
MH0033
MH0051
421 E HIGHLANDER ST
416 E HIGHLANDER ST
SM1183
SM1179
MH0034
424 E HIGHLANDER ST
425 E HIGHLANDER ST
SM1184
417 E MISSION ST
MH0035
SM1188
SM1186
MH0028
SM1187
MH0139
SM1190
418 E MISSION ST
426 E MISSION ST
502 E MISSION ST
508 E MISSION ST
SM1746

PART 3: SEWER LINE CLEANING

A. Sewer Cleaning Equipment: The designated sewer manhole segments shall be cleaned using hydraulically propelled, high-velocity jet, or mechanically powered equipment. Selection of the equipment used shall be based on the conditions of lines at the time the work commences. The equipment and methods selected shall be satisfactory to the Owner's Representative. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the sewer lines and manholes.

1. Hydraulically Propelled Equipment
    a. Movable dam type equipment shall be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. The movable dam shall be equal in diameter to the pipe being cleaned and shall provide a flexible scraper around the outer periphery to insure removal of grease.
    b. If sewer cleaning balls or other equipment which cannot be collapsed is used, special precautions to prevent flooding of the sewers and public property shall be taken.

2. High-Velocity Jet (Hydrocleaning) Equipment
    a. All high-velocity sewer cleaning equipment shall be constructed for ease and safety of operation.
    b. The equipment shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from fifteen (15) to forty-five (45) degrees in all size lines designated to be cleaned.
    c. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floor. The gun shall be capable of producing flows from a fine spray to a solid stream.
    d. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel. Coordinate with the Owner the location for obtaining water. If fire hydrants are used they must remain accessible.

3. Mechanically Powered Equipment
    a. Bucket machines shall be in pairs with sufficient power to perform the work in an efficient manner.
    b. Machines shall be belt operated or have an overload device.
    c. Machines with direct drive that could cause damage to the pipe will not be allowed.
    d. A power rodding machine shall be either a sectional or continuous rod type capable of holding a minimum of 750 feet of rod. The rod shall be specifically heat-treated steel.
    e. To insure safe operation, the machine shall be fully enclosed and have an automatic safety clutch or relief valve.

PART 4: SEWER FLOW CONTROL

A. Plugging or Blocking: The temporary sewer plug shall be so designed that all or any portion of the held back sewage can be released if needed to avoid sewer overflows.

B. Pumping and Bypassing: The bypass system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm.

PART 5: VIDEO INSPECTION EQUIPMENT

A. The camera used for the inspection shall be one specifically designed and constructed for such inspection.

   1. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe.

   2. The camera shall be operative in 100% humidity conditions.

   3. The camera shall be a colored system with pan and tilt capabilities

B. The camera, monitor, and other components of the video system shall be capable of producing picture quality to the satisfaction of the Owner and if unsatisfactory, equipment shall be removed and no payment will be made for an unsatisfactory inspection.

PART 6: CURED-IN-PLACE PIPE INSTALLATION

A. The liner tube shall meet the requirements of ASTM F1216, Section 5.1 and shall not contain fiberglass continuous strand matt. The main sewer liner tube shall be constructed to withstand inversion pressures and shall invert smoothly around bends. All liners shall have sufficient strength to bridge missing pipe and stretch to fit irregular pipe sections.

   1. The wet-out tubes shall have a uniform thickness that, when compressed at installation pressures will meet or exceed the design thickness.

   2. The tube shall be so sized that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during inversion, where applicable.

   3. The outside layer of the tube (before wet-out) shall be polyethylene coated, a translucent flexible material that clearly allows inspection of the resin impregnation (wet-out) procedure. The plastic coating shall hold the resin inside the tube without leakage, accommodate inversion where applicable, stretch to size, and shall not delaminate before, during or after curing of the CIPP. Other coatings can be used if compatible to the system and meet the ASTM guidelines.

   4. The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No material shall be included in the tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be evident.

   5. The wall color of the interior pipe surface of the CIPP after installation shall be a light reflective color so that a clear detail examination with video equipment may be made.

   6. Any seams in the tube shall be stronger than the unseamed liner material. Where the length requires joining, the joint shall not be perpendicular to the long axis but spirally formed and sewn.

   7. The outside of the tube shall be marked for distance at regular intervals along its entire length, not to exceed twenty-five (25) ft., such markings shall include the Manufacturer's name or identifying symbol.

B. The minimum length shall be that deemed necessary by the Contractor to effectively span the distance from the inlet to the outlet of the respective manholes unless otherwise specified.

   1. The Contractor shall verify the lengths in the field before impregnation.

   2. Individual inversion runs can be made over one (1) or more manhole sections as determined in the field by the Contractor and approved by the Owner.

C. The resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system that meets the requirements of ASTM F1216 and the physical properties herein.

D. Structural Requirements:

   1. The CIPP shall be designed as per ASTM F1216, Appendix X1.
      a. The CIPP design shall assume no bonding to the original pipe wall.
      b. The Long-term flexural modulus of the material to be used shall be verified by independent testing (such as provided by the Trenchless Technology Center at Louisiana Tech University). Such long-term modulus shall not exceed 50% of the short-term values given in Table A.
      c. CIPP thickness shall not be less than that which is computed from the dimension ratios given in Table A for resin systems with the physical properties shown. Note: All pipes indicated for CIPP shall be considered “fully deteriorated” (FD).

TABLE A

CIPP THICKNESS DESIGN - BASED ON ASTM F1216					
Pipe Size	Existing Pipe Condition	Ovality	Pipe Depth (Groundwater ½ depth)	CIPP Dimensional Ratio (DR) DR = Diameter/Thickness	
				Min. Flex. Modulus E= 250,000 psi per ASTM F1216	Resin with Flex Mod. E = 400,000 psi
6" - - 48"	FD**	0 - 2%	4' - 8'	58.8	68.8
		2 - 5%		49.3	57.6
		5 - 10%		36.7	42.9
6" - - 48"	FD	0 - 2%	9' - 16'	42.7	49.9
		2 - 5%		35.7	41.8
		5 - 10%		26.6	31.1
6" - - 48"	FD	0 - 2%	17' - 24'	33	38.5
		2 - 5%		27.6	32.3
		5 - 10%		20.5	24
54" - - 96"	FD	0 - 2%	9' - 16'	48.9	57.2
		2 - 5%		40.9	47.9
		5 - 10%		30.5	35.7
54" - - 96"	FD	0 - 2%	17' - 24'	38.1	44.5
		2 - 5%		31.8	37.2
		5 - 10%		23.7	27.7
54" - - 96"	FD	0 - 2%	25' - 32'	32.6	38.1
		2 - 5%		27.3	31.9
		5 - 10%		20.3	23.8
*FD - Fully Deteriorated, no strength to be assigned to the existing pipe; supply a fully structural pipe.					

Example:

Soil Modulus = 700 psi
Soil density = 120 lb / cu. ft.
Live load = HWY H20, 16,000 lbs.
12" dia. pipe, FD Pipe, 2 % ovality, 8' deep
E = 400,000 psi
Read DR = 68.8 from table
For CIPP wall thickness divide diameter by DR
CIPP wall thickness, t = 12 / 68.8 = 0.174"

2. The layers of the cured CIPP shall be uniformly bonded.
   a. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers.
   b. If separation of the layers occurs during testing of field samples, new samples will be cut from the work. Any reoccurrence may cause rejection of the work.

3. The cured pipe material (CIPP) shall conform to the structural standards, as listed below.

	Test Method	Test Result	
		Minimum Value Resin per ASTM F 1216	Resin With 400,000 psi Properties
Flexural Modulus of Elasticity	ASTM D-790	250,000	400,000 psi
Flexural Stress	ASTM D-790	4,500	4,500 psi

E. Approved Materials are:

1. Applied Felts with Interplastic Resin
2. CIPP Corporation Applied Felts with Ashland Resin
3. Liner Products Polyester Felts with Hexion Resin
4. InsituTube by Insituform
5. National Liner Applied Felts with Vipel Resin
6. Owner approved equal

PART 7: SUBMITTALS

The Contractor shall submit the following:

A. Project Record Documents as specified herein.

B. Trenchless Replacement or Cured-in-Place Pipe Rehabilitation information

1. Work Plan: Prior to the pre-construction conference, the Contractor shall submit a work plan for review and acceptance by the Owner. The following items shall be addressed in the work plan, as a minimum:
   a. Written description of construction procedures, including bypassing of sewage flow and reconnection of service laterals.
   b. The locations, dimensions, and number of equipment staging areas, insertion, machine or access pits, and the width and length of working area.
   c. Presence of other utilities which may be affected.

2. Product data for review by Owner
   a. Catalog data and manufacturer's technical data with complete information on material composition, physical properties, and dimensions of pipe and fittings and/or cured-in-place pipe material.

3. Certificates
    a. Certifications on all materials.
    b. Certification by the trenchless replacement or cured-in-place system manufacturer that Contractor is a licensed installer of that system.
    c. Certification of training for each pipe installation crew member.

C. Warranty Information.

PART 8: PROJECT RECORD DOCUMENTS

A. Main Segment Testing Records

1. Video recordings of the pre and post inspections shall be provided digitally for the Owner.

2. Digital images to be labeled with date, company and project

B. Service Lateral Records: Complete records shall be kept of laterals connected or reconnected in each manhole segment. The records shall identify the following:

1. The manhole segment in which the connection or reconnection was done, and

2. The location (footage from manhole), diameter and orientation of each lateral connected or reconnected.

PART 9: SAFETY

A. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

all employees on the work and other persons and organizations who may be affected thereby;

all the work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and underground facilities not designated for removal, relocation or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of underground facilities and utility owners when prosecution of the work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in the paragraphs above caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the work or anyone for whose acts any of them may be liable, shall be remedied by Contractor.

Contractor's duties and responsibilities for the safety and protection of the work shall continue until such time as all the work is completed.

C. Contractor shall designate a responsible representative at the site whose duty shall be the prevention of accidents.

Contractor shall supply and require the use of personal protection equipment as necessary.

Contractor must furnish Owner with appropriate hazard information on all chemicals brought on site, including labels and material safety data sheets.

Contractor shall furnish Owner with a copy of the Contractor's safety and health program and Workers' Compensation experience modification rate. This shall be submitted with the Contractor's bid.

If during the course of work, the Contractor observes the existence of asbestos, or asbestos-bearing materials, the Contractor shall immediately stop further work in the area and notify the Owner of the condition. The Owner will determine a further course of action.

D. In emergencies affecting the safety or protection of persons or the work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from Owner, is obligated to act to prevent threatened damage, injury or loss.

PART 10: EXECUTION

A. Sewer Line Cleaning: The intent of sewer line cleaning is to remove foreign materials from the lines and restore the sewer to a minimum of 95% of the original carrying capacity. Since the success of the other phases of work depends a great deal on the cleanliness of the lines, the importance of this phase of the operation is emphasized. It is recognized that there are some conditions such as broken pipe and major blockages that prevent cleaning from being accomplished or where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered, the Contractor will not be required to clean those specific manhole segments. If in the course of normal cleaning operations, damage does result from preexisting and unforeseen conditions such as broken pipe, the Contractor will not be held responsible. If cleaning of an entire segment cannot be successfully performed from one manhole, the equipment shall be set up on the other manhole and cleaning again attempted. If, again, successful cleaning cannot be performed or the equipment fails to traverse the entire manhole segment, it will be assumed that a major blockage exists and the cleaning effort shall be abandoned. In any of these cases, Contractor is to notify Owner immediately to determine further action to be taken.

1. Cleaning Precautions: During sewer cleaning operations, satisfactory precautions shall be taken in the use of cleaning equipment.
    a. When hydraulically propelled cleaning tools (which depend upon water pressure to provide their cleaning force) or tools which retard the flow in the sewer line are used, precautions shall be taken to insure that the water pressure created does not damage or cause flooding of public or private property being served by the sewer.
    b. When possible, the flow of sewage in the sewer shall be utilized to provide the necessary pressure for hydraulic cleaning devices.

c. When additional water from fire hydrants is necessary to avoid delay in normal work procedures, the water shall be conserved and not used unnecessarily. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant. Fire hydrants shall only be accessed after coordination with the Owner.

2. Root Removal: Roots shall be removed in any sections where root intrusion is a problem. Special attention should be used during the cleaning operation to assure almost complete removal of roots from the joints. Any roots which could prevent the seating of the packer or could prevent the proper application of chemical sealants shall be removed.
   a. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines, winches using root cutters and porcupines, and other equipment such as high-velocity jet cleaners.
   b. Chemical root treatment may be used at the option of the Contractor.

3. Chemical Root Treatment: To aid in the removal of roots and at the option of the Contractor, manhole segments that have root intrusion may be treated with an approved herbicide.
   a. The application of the herbicide to the roots shall be done in accordance with the manufacturer's recommendations and specifications in such a manner as to preclude damage to surrounding or wastewater treatment system vegetation. Any damaged vegetation so designated by the Owner shall be replaced by the Contractor at no additional cost to the Owner.
   b. All safety precautions, as recommended by the manufacturer, shall be adhered to concerning handling and application of the herbicide.

4. Material Removal: All sludge, dirt, sand, rocks, grease, and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream manhole of the segment being cleaned. Passing material from manhole segment to manhole segment, which could cause line stoppages, accumulations of sand in wet wells, or damage pumping equipment, shall not be permitted.

5. Disposal of Materials:
   a. Removal from the site and proper disposal of all solids or semisolids resulting from the cleaning operations shall be the responsibility of the Contractor.
   b. All materials shall be removed from the site no less often than at the end of each workday. Under no circumstances will the Contractor be allowed to accumulate debris, etc., on the site of work beyond the stated time, except in totally enclosed containers and as approved by the Owner.

6. Final Acceptance: Acceptance of sewer line cleaning shall be made upon the successful completion of the video inspection and shall be to the satisfaction of the Owner.
   a. If video inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to reclean and reinspect the sewer line until the cleaning is shown to be satisfactory.
   b. If internal sealing is to follow the video inspection, particular attention should be given to the adequacy of the cleaning to insure that proper seating of the sealing packer can be achieved.

B. Sewer Flow Control: When sewer line depth of flow at the upstream manhole of the manhole segment being worked is above the maximum allowable for video inspection, joint testing and/or sealing; the flow shall be reduced to the level shown below by operation of pump stations, plugging or blocking of the flow, or by pumping and bypassing of the flow as

specified. If sewage backup occurs and enters buildings, the Contractor shall be responsible for clean-up, repair, property damage cost, and claims.

1. Flow Control Precautions: When flow in a sewer line is plugged, blocked or bypassed sufficient precautions must be taken to protect the sewer lines from damage that might result from sewer surcharging. Further, precautions must be taken to insure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.

2. Depth of flow shall not exceed that shown below for the respective pipe sizes as measured in the upstream manhole when performing video inspection.
   a. Maximum Depth of Flow - Camera Inspection

6" - 10" Pipe	20% of pipe diameter
12" - 24" Pipe	25% of pipe diameter
27" & up Pipe	30% of pipe diameter

3. Plugging or Blocking: A sewer line plug shall be inserted into the line upstream of the segment being worked. During video inspection, testing and sealing operations, flow shall be reduced to within the limits specified above. After the work has been completed, flow shall be restored to normal.

4. Pumping and Bypassing: When pumping and bypassing is required the Contractor shall supply the pumps, conduits, and other equipment to divert the flow of sewage around the manhole segment in which work is to be performed.
   a. The Contractor will be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system.
   b. If pumping is required on a twenty-four (24) hour basis, engines shall be equipped to keep noise to a minimum.

C. Video Inspection: After cleaning, the manhole segments shall be visually inspected by video camera. The inspection will be done one manhole segment at a time and the flow in the segment being inspected will be suitably controlled as specified (see Sewer Flow Control).

1. The camera shall be moved through the line in either direction at a moderate rate, stopping when necessary to permit proper documentation of the sewer's condition. In no case will the camera be pulled at a speed greater than thirty (30) feet per minute.

2. Manual winches, power winches, video cable, and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line.
   a. When manually operated winches are used to pull the camera through the line, telephones or other suitable means of communication shall be set up between the two manholes of the segment being inspected to insure good communications between members of the crew.

3. If, during the inspection operation, the camera will not pass through the entire manhole segment, the Contractor shall set up the equipment so that the inspection can be performed from the opposite manhole.

4. If, again, the camera fails to pass through the entire manhole segment, the inspection shall be considered complete and no additional inspection work will be required. The Owner shall be immediately notified of any such occurrence.

5. Measurement: The importance of accurate distance measurements is emphasized.
    a. Measurements for locations of defects shall be recorded from the mechanical or digital counter on the camera.
    b. If exact measurements are required, then cable should be marked and the measurement taken above ground.

D. Trenchless Repair: As indicated on the drawings sewer main segments shall be rehabilitated utilizing cured-in-place pipe processes.

1. Pre-installation Requirements:
    a. The Contractor shall submit a work plan to the Owner for review and acceptance, as specified herein under submittals.
    b. Pre-installation video inspection: Contractor shall be responsible for performing cleaning and video inspection of all manhole segments, as specified herein, prior to developing the plan of operations. Documentation shall be provided as specified herein.
    c. Sags in Line: If pre-installation video inspection indicates a sag in the existing line and, in the Owner's opinion, this sag may be unacceptable for final alignment of the repaired sewer pipe, the location and estimated degree of the sag shall be recorded. Upon completion of liner installation, post-installation video inspection recordings will be compared with the originals to determine the degree of repair or realignment required, if any. The Contract price for such "point repairs" will be agreed upon by both parties before work commences.

2. Sewer Flow Control shall be in accordance with this section.

3. Manholes: All manholes modified, damaged or destroyed as a result of Contractor's insertion process shall be repaired or replaced at the Contractor's expense.

E. Cured-in-Place Pipe Installation: As indicated on the Drawings, sewer segments may be rehabilitated utilizing cured-in-place pipe rehabilitation as described herein. The process (materials, methods, workmanship) must be proven through previous successful installations in sanitary sewer collection systems to an extent and nature satisfactory to the Owner and commensurate with the size of the project under the proposed contract. Only proposals for listed products will be read. The Contractor, the proposed method of reconstruction, and the product manufacturer's name shall be clearly identified in bid document.

1. Public Notification - A public notification program shall be implemented and shall, as a minimum, require the Contractor to be responsible for contacting each home or business connected to the sanitary sewer, informing them of the work to be conducted and when the sewer will be off-line. The Contractor shall also provide the following:
    a. Written notice to be delivered to each home or business describing the work, schedule, how it affects them, and a local telephone number of the Contractor they can call to discuss the project or any problems which could arise.
    b. Attempt personal contact and provide written notice the day prior to the beginning of work being conducted on the section relative to the residents affected.
    c. Personal contact with any home or business which cannot be reconnected within the time stated in the written notice.

2. Pre-installation Requirements:

a. The Contractor shall submit a work plan to the Owner for review and acceptance, as specified herein under Submittals.
b. Pre-installation video inspection: Contractor shall be responsible for performing cleaning and video inspection of all manhole segments, as specified herein, prior to developing the plan of operations. Documentation shall be provided as specified herein.
c. The Contractor, when required, shall remove all internal debris out of the sewer line that will interfere with the installation of CIPP.
   (1) The Contractor shall make arrangements for a dump site for all debris removed from the sewers during the cleaning operation.
   (2) Any hazardous waste material encountered during this project will be considered a changed condition.
d. The Contractor, when required, shall provide for the flow of sewage around the section or sections of pipe designated for repair.
   (1) The bypass shall be made by plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system.
   (2) The pump and bypass lines shall be of adequate capacity and size to handle the flow.
   (3) The Owner may require a detail of the bypass plan to be submitted.
e. Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles and service connections with video recording equipment.
   (1) The interior of the pipeline shall be carefully inspected to determine the location of any conditions which may prevent proper installation of CIPP into the pipeline, and they shall be recorded thus that these conditions can be corrected.
   (2) A video recording and suitable log shall be kept for later reference and be submitted to the Owner.

3. Intent: It is the intent of this specification to provide for the reconstruction of sanitary sewer lines by the installation of resin-impregnated flexible tubes. For main line installation, the tubes shall be inverted into the existing sewer line by use of a hydrostatic head or air pressure.
   a. Curing shall be accomplished by circulating hot water or other approved method to cure the resin into a hard, impermeable pipe.
   b. When cured, the new material should extend over the length of the repair in a continuous, tight-fitting, watertight pipe-within-a-pipe.

4. General Corrosion Requirements: The finished pipe in place shall be fabricated from materials which, when cured, will be chemically resistant to withstand internal exposure to domestic sewage.

5. Installation Procedures:
   a. Tube insertion: The wet-out tube shall be positioned in the pipeline by using the inversion or a pull-in method. The tube should be inverted through an existing manhole or approved access point and fully extend to the next designated manhole or termination point. Hydrostatic head or pressurized air can be used to invert the wet-out tube.
   b. Resin Impregnation: The Contractor shall designate a location where the reconstruction tube will be vacuum impregnated prior to installation.
      (1) The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization

shrinkage and the loss of resin through cracks and irregularities in the original pipe wall.

(2) A vacuum impregnation process shall be used. To insure a thorough wet-out the point of vacuum shall be no further than twenty-five (25) feet from the point of initial resin introduction.

(3) After vacuum in the tube is established, the vacuum points shall be no further than seventy-five (75) feet from the leading edge of the resin. The leading edge of the resin slug shall be as near to perpendicular as possible.

(4) A roller system shall be used to uniformly distribute the resin throughout the tube.

c. The Contractor shall allow the Owner to inspect the materials and "wet-out" procedure.

d. The wet-out reconstruction tube shall be inserted through an existing manhole or other approved access by means of an inversion process and the application of a hydrostatic head or air pressure sufficient to fully extend the tube to the next designated manhole or termination point.

e. For main line rehabilitation, the reconstruction tube shall be inserted into the vertical inversion standpipe with the impermeable plastic membrane side out. At the lower end of the inversion standpipe, the reconstruction tube shall be turned inside out and attached to the standpipe so that a leak-proof seal is created. The inversion head will be adjusted to be of sufficient height to cause the impregnated tube to invert from manhole to manhole.

f. The inversion head or otherwise applied internal pressure shall be sufficient to hold the tube tight to the pipe wall, produce dimples at side connections and flared ends at the termination point.

g. Curing:

(1) After inversion is completed the Contractor shall supply a suitable heat source and water recirculation equipment.

(a) The equipment shall be capable of delivering hot water throughout the section by utilizing water under hydrostatic pressure to uniformly raise the water temperature above the temperature required to affect a cure of the resin. This temperature shall be determined by the resin/catalyst system employed.

(b) The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing water supply. Another such gauge shall be placed between the impregnated reconstruction tube and the pipe invert at the remote manhole to determine the temperatures during cure. Water temperature in the line during the cure period shall be recommended by the resin manufacturer.

(c) If recommended by the CIPP tube manufacturer, steam may be used for the curing process in lieu of water. Installer must follow all manufacturers' recommendations.

(2) Initial cure shall be deemed to be completed when inspection of the exposed portions of cured pipe appear to be hard and sound and the remote temperature sensor indicates that the temperature is of a magnitude to realize an exotherm.

(3) The cure period shall be of a duration recommended by the resin manufacturer, as modified for the cured-in-place inversion process, where applicable, during which time the recirculation of the water or steam and cycling of the heat exchanger to maintain the temperature continues.

h. Cool-down: The Contractor shall cool the hardened pipe to a temperature below 100ºF before relieving the static head inside the pipe.
    a. Cool-down may be accomplished by the introduction of cool water into the inversion standpipe to replace water being drained from a small hole made in the downstream end.
    b. Care shall be taken in the release of the static head so that a vacuum will not be developed that could damage the newly installed pipe.
i. Finish: The finished pipe shall be continuous over the entire length of an inversion run and be as free as commercially practicable from visual defects such as foreign inclusions, dry spots, pinholes and delamination. It shall also meet the leakage requirements or pressure test specified below.

6. Sewer Flow Control: In accordance with this section.

7. Connection to Manholes: Connection to manholes shall be made in accordance with the specifications and manufacturer's recommendations.

8. Service Laterals and Connections: The Contractor shall make every effort to maintain service usage throughout the duration of the project. In the event that a service lateral will be temporarily out of service, the maximum amount of time of no service shall be twelve (12) hours for any property served by the sewer. The Contractor shall be required to notify the Owner and all affected property owners whose service laterals will be out of commission and to advise against water usage until the sewer main is back in service. Such notification shall be provided to the Owner at least one (1) week prior to service disconnection.
    a. The Contractor shall be responsible for confirming the locations of all branch service connections prior to inversion or installing and curing the CIPP.
    b. Service Connections: After the new pipe has been cured in place, the Contractor shall reconnect the existing active service connections as designated by the Owner.
        (1) This shall be done without excavation from the interior of the pipeline by means of a video camera and a cutting device that reestablishes the service connection. The Contractor shall certify he has a minimum of two (2) complete working cutter units plus spare key components on the site before each inversion. No additional payment will be made for excavations for the purpose of reopening connections and the Contractor will be responsible for all costs and liability associated with such excavation and restoration work.
        (2) Services remaining off-line for an extended period of time or any connections required to remain off-line to protect the user, as deemed necessary by the Owner, shall be by-pass pumped until such time that they can be connected and placed in service.

9. Testing:
    a. CIPP samples shall be prepared and physical properties tested in accordance with ASTM F1216, Section 8.1 using either method proposed. The flexural modules must meet or exceed the value used in design in PART 3, D4. Structural Requirements for the dimensional ratio furnished in Table A.
    b. One CIPP sample will be tested for every 2000 feet of liner. Samples will be tested by an independent testing facility. Results will be sent to both the contractor and the owner.
    c. Leakage testing of the CIPP shall be accomplished during cure while under positive head. CIPP products in which the pipe wall is cured while not in direct contact with

the pressurizing fluid (e.g., a removable bladder) must be tested by an alternative method approved by the Owner.

d. After the work is completed, the Contractor will provide the Owner with video inspection documentation as specified herein showing the completed work Manhole Segment Testing Records as described under PROJECT RECORD DOCUMENTS.

10. Clean-up: Upon acceptance of the installation work and testing, the Contractor shall reinstate the project area affected by the operations.

11. Quality Assurance: During the warranty period any defects which will affect the integrity or strength of the pipe shall be repaired at the Contractor's expense.

PART 11: REFERENCES

The following publications form a part of these specifications to the extent indicated by references thereto. Only the most recent revisions of these publications shall be used.

A. ASTM D - 1248 Polyethylene Plastics Molding and Extrusion Materials

B. ASTM D - 3350 Polyethylene Plastics Pipe and Fittings Materials

C. ASTM F - 714 Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter

D. ASTM F - 1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube

PART 12: DEFINITIONS

A. BYPASS: An arrangement of pipes and valves whereby the flow may be passed around a hydraulic structure or appurtenance. Also, a temporary setup to route flow around a part of a sewer system.

B. BYPASS PUMPING: The transportation of wastewater flows around a specific sewer pipe/line section or sections via any conduit for the purpose of controlling wastewater flows in the specified section or sections without flowing or discharging onto public or private property.

C. CURED-IN-PLACE PIPE REHABILITATION: A method of sewer rehabilitation whereby existing pipe is renewed through the installation of resin-impregnated liner that conforms to the inside of the existing pipe.

D. DEBRIS: Soil, rocks, sand, grease, roots, etc., in a sewer line excluding items mechanically attached to the line such a protruding service connections, protruding pipe, joint materials, and the like.

E. EXFILTRATION: The leakage or discharge of flows being carried by sewers out into the ground through leaks in pipes, joints, manholes, or other sewer system structures; the reverse of "infiltration."

F. EXISTING LINEAR FEET: The total length of existing sewer pipe in place within designated sewer systems as measured from center of manhole to center of manhole from maps or in the field.

G. FLOW CONTROL: A method whereby normal sewer flows or a portion of normal sewer flows are blocked, retarded, or diverted (bypassed) within certain areas of the sewer collection system.

H. HYDRAULIC CLEANING: Techniques and methods used to clean sewer lines with water, e.g.: waste pumped in the form of high-velocity spray and water flowing by gravity or head pressure. Devices include high-velocity jet cleaners, cleaning balls, and hinged-disc cleaners.

I. INFILTRATION: The water entering a sewer system, including building sewers, from the ground, through such means as defective pipes, pipe joints, connections, or manhole walls. Infiltration does not include, and is distinguished from, inflow.

J. INFILTRATION/INFLOW: A combination of infiltration and inflow wastewater volumes in sewer lines, with no way to distinguish either of the basic sources, and with the same effect of usurping the capacities of sewer systems and facilities.

K. INFLOW: The water discharged into a sewer system, including service connections, from such sources as roof leaders; cellar, yard, and area drains; foundation drains; cooling water discharges; drains from springs and swampy areas; manhole covers; cross connections from storm sewers, combined sewers, catch basins; storm waters; surface runoff; street washwaters; or drainage. Inflow does not include and is distinguished from infiltration.

L. INSPECTOR: The Owner's on-site representative responsible for inspection and acceptance, approval or rejection of work performed as set forth in these specifications.

M. INTERNAL PIPE INSPECTION: The video inspection of a sewer line segment. A video camera is moved through the line at a slow rate and a continuous picture is transmitted to an aboveground monitor (see also PHYSICAL PIPE INSPECTION).

N. INVERT: The floor, bottom or lowest point of a conduit.

O. JOINTS: The means of connecting sectional lengths of sewer pipe into a continuous sewer line using various types of jointing materials. The number of joints depends on the lengths of the pipe sections used in the specific sewer construction work.

P. LINEAR FOOT: Being one foot. In these specifications, use to denote the unit of measurement relating to the length of a sewer line.

Q. MANHOLE SEGMENT: The length of sewer pipe connecting two adjacent manholes.

R. MECHANICAL CLEANING: Methods used to clean sewer lines of debris mechanically with devices such as rodding machines, bucket machines, winch-pulled brushes, etc.

S. OVERFLOW: (1) The excess water that flows over the ordinary limits of a sewer, manhole, or containment structure. (2) An outlet, pipe, or receptacle for the excess water.

T. PHYSICAL PIPE INSPECTION: The crawling or walking through manually accessible pipe lines. The logs for physical pipe inspection record information of the kind detailed under INTERNAL PIPE INSPECTION. Manual inspection is only undertaken when field conditions permit this to be done safely. Precautions are necessary.

U. REGULATOR: A devise for controlling the quantity of wastewater and storm water admitted from a combined sewer collector line into an interceptor sewer, pump station, or treatment

facility, thereby determining the amount and quality of the flows discharged through an overflow device to receiving waters or other points of disposal.

V. SANITARY SEWER: A sewer intended to carry only sanitary or sanitary and industrial wastewaters from residences, commercial buildings, industrial parks, and institutions.

W. SEWER CLEANING: The utilization of mechanical or hydraulic equipment to dislodge, transport, and remove debris from sewer lines.

X. SEWER PIPE: A length of conduit, manufactured from various materials and in various lengths, that when joined together can be used to transport wastewaters from the points of origin to a treatment facility. Types of pipe include: Acrylonitrile-butadiene-styrene (ABS); Asbestos-Cement (AC); Brick Pipe (BP); Concrete Pipe (CP); Cast Iron Pipe (CIP); Polyethylene (PE); Polyvinyl chloride (PVC); Reinforced Concrete (RC); Reinforced Plastic Mortar (RPM); Steel Pipe (SP); Vitrified Clay (VC).

Y. SITE: Any location where work has been or will be done.

Z. SUBCONTRACTOR: An individual, firm or corporation having a direct contract with the Contractor or with a lower-tier Subcontractor for performance of part of the work.

PART 13: INSURANCE

Without limiting any of the other obligations or liabilities of the Contractor, the Contractor shall secure and maintain at its own cost and expense, throughout the duration of this Contract and until the Work is completed and accepted by Marshall Municipal Utilities, insurance of such types and in such amounts as may be necessary to protect it and the interests of Marshall Municipal Utilities against all hazards or risks of loss as hereunder specified or which may arise out of the performance of the Contract Documents. The form and limits of such insurance, together with the underwriter thereof in each case, are subject to approval by Marshall Municipal Utilities. Regardless of such approval, it shall be the responsibility of the contractor to maintain adequate insurance coverage at all times during the term of the Contract. Failure of the Contractor to maintain coverage shall not relieve it of any contractual responsibility or obligation or liability under the Contract Documents.

The certificate of insurance, including evidence of the required endorsements hereunder or the policies, shall be filed with Marshall Municipal Utilities within ten (10) days after the date of the receipt of Notice of Award of the Contract to the Contractor and prior to the start of work. All insurance policies shall provide thirty (30) days written notice to be given by the insurance company in question prior to modification or cancellation of such insurance. Such notices shall be mailed, certified mail, return receipt requested, to:

Marshall Municipal Utilities
75 East Morgan Street
Marshall, MO 65340

The minimum coverages for the insurance referred to herein shall be in accordance with the requirements established below:

(A) Workers' Compensation:	Statutory
Employer's Liability:	Unlimited
	(as per R.S.Mo. 287.010 et seq)
(B) Liability Insurance, Including Premises, Operations, Products and Completed Operations, Contractual Liability, Broad Form Property Damage, Independent Contractors, Explosion, Collapse and Underground Property Damage; Such Coverage Shall Apply to Bodily Injury and Property Damage With a Combined Single Limit of:	$1,000,000
(C) Automobile Liability Insurance Covering Bodily Injury and Property Damage for Owned, Non-owned and Hired Vehicles With a Combined Single Limit of:	$1,000,000

Contractor shall require any and all subcontractors with whom he enters into a contract to perform Work on this Project, to protect, through insurance, against applicable hazards or risks and shall, upon request of Marshall Municipal Utilities, provide evidence of such insurance.

Contractor shall be liable for all deductible amounts from such insurance and shall indemnify and hold Marshall Municipal Utilities harmless therefrom.

INSTRUCTIONS TO BIDDERS

WE REQUIRE THAT YOUR PRICE BE OFFERED ON THE FORMS PROVIDED so that an accurate comparative evaluation can be made.

Inspection: After completion of work, MMU will make final inspection and advise bidder whether or not the work appears to be acceptable in accordance with the bid. If not acceptable, MMU will identify the apparent defects in writing. Bidder shall immediately take such measures as are necessary to remedy all defects.

Application for Payment: After bidder has remedied all defects, if any, to the satisfaction of MMU, furnished all special services and delivered all maintenance and operating instructions, schedules, guarantees, certificates of inspection, and other documents (all as required by the bid documents) bidder may then make application for payment.

Payment: If, on the basis of the final inspection and review of the Application for Payment and accompanying documentation, MMU is satisfied that the work is in accordance with the bid documents, that special services have been furnished as required and that bidder's other obligations under the bid documents have been fulfilled, MMU shall, within thirty days after receipt thereof, pay bidder the amount of the bid awarded.

The Board reserves the right to accept or reject any or all bids and to make all decisions for the benefit of the Municipal Utilities, acting as sole and undisputed judge of what is beneficial to the Municipal Utilities.

NOTE: Companies providing bids must comply with Sections 285.525 through 285.550 RSMO and Section 292.675 RSMO (please refer to the documents provided with this request for bids).

A license/permit may be required by the City of Marshall by vendors providing services in Marshall. It is the responsibility of the vendor to get this information from the City.

If you have any questions, please contact Grant Piper at 660-815-1553.

Bids are due by 1:30 p.m. February 19, 2025.

BID
 # 07-25-UF

"In response to this request, I certify that I understand all of the above and attached specifications, that I have read them carefully, and that I will furnish all services stated and listed in the specifications and within the time frame specified unless otherwise indicated in written form."

MMU is exempt from Missouri sales tax. A sales tax exemption form will be provided upon request.

Price of Section 1, 466 ft of 8" pipe $_____

Price of Section 2, 819 ft of 8" pipe $_____

Price of Section 3, 1,778 ft of 8" pipe $_____

Price of Section 4, 614 ft of 8" pipe $_____

Total Cost of All Sections, Approx. 3,677 total ft of pipe $_____

Price of testing five samples by an independent lab $_____

List Manufacturer Product _____

Method of CIPP Installation _____

Contractors Installing CIPP _____

Addition or deduction cost per foot if adjustments are needed in approximate footage:

Cost of 8" pipe per linear foot _____

This project will be initiated within _____ days after notice of award and completed within 270 days after Notice of Award.

_____ _____
Name of Company Address of Company

_____ _____
Phone Signature of Authorized Representative

_____ _____
Email Printed Name of Authorized Representative

_____
Date

Quoted price(s) will be good for 60 days.

Please seal and return these specifications complete with this form by **1:30 p.m., February 19, 2025**, to:
Board of Public Works
75 East Morgan
Marshall, MO 65340

Mark envelope "Proposal #07-25-UF" Bids received after the opening time will not be opened.
NOTE: Mail delivery, including U.S. Postal Service Overnight Express and UPS, to the address above is not guaranteed to arrive by 1:30 p.m. **Faxed or emailed bids are not accepted.**

Notice and Instructions to Bidders/Vendors
Regarding Sections 285.525 through 285.550, Effective January 1, 2009
and Section 292.675 RSMO, Effective August 28, 2009

Effective January 1, 2009, and pursuant to the State of Missouri's RSMO 285.530 (1), no business entity or employer shall knowingly employ, hire for employment, or continue to employ an unauthorized alien to perform work within the state of Missouri. As a condition for the award of any contract or grant in excess of five thousand dollars ($5,000) by the state or by any political subdivision of the state (e.g., Saline County, Mo.) to a business entity, the business entity (Company) shall, by sworn affidavit and provision of documentation, affirm its enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services. Every such business entity shall sign an affidavit affirming that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services. [RSMO 285.530 (2)]

RSMO 285.530 pertains to all solicitations for services over $5,000. RSMO 285.530 does not apply to solicitations for goods only. If a solicitation is for services and goods, RSMO 285.530 applies if the services portion of the solicitation is over $5,000.

Effective August 28, 2009, and pursuant to the State of Missouri's RSMO 292.675, contractors and subcontractors who sign a contract to work on public works projects must provide a 10-hour OSHA construction safety program, or similar program approved by the Department of Labor and Industrial Relations, to be completed by their on-site employees within sixty (60) days of beginning work on the construction project. Contractors and subcontractors in violation of this provision will forfeit to the public body $2,500 plus $100 a day for each employee who is employed without training. Public bodies and contractors may withhold assessed penalties from the payment due to those contractors and subcontractors.

In order to comply with Sections 285.525 through 285.550 and 292.675 RSMO, the City of Marshall, Board of Public Works, requires the following bid and contract documents:

1. **Affidavit for Service Contracts over $5,000 (US) —** Effective 1/1/2009, Company shall comply with the provisions of Section 285.525 through 285.550 RSMO. Contract award is contingent on Company providing an acceptable notarized affidavit stating:

    a. That Company is enrolled in and participates in a federal work authorization program with respect to the employees working in connection with the contracted services; and

    b. That Company does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.

2. **Affidavit for any Public Works Project Contract —** Effective 8/28/09, Company shall comply with the provisions of Section 292.675 RSMO. Within 60 days of issuance of Notice to proceed, Company shall provide an acceptable notarized affidavit stating that Company has verified the completion of a 10-hour construction safety program with respect to the employees working in connection with the contracted services.

3. Additionally, Company must provide documentation evidencing current enrollment in a federal work authorization program (e.g. electronic signature page from E-Verify program's Memo of Understanding (MOU). *See attached sample*

The City of Marshall, Board of Public Works, encourages companies that are not already enrolled and participating in a federal work authorization program to do so. E-Verify is an example of this type of program. Information regarding E-Verify is available at http://www.dhs.gov/files/programs/gc_1185221678150.shtm or by calling 888/464-4218.

If you have any questions, please contact MMU's Administrative Services Department at 660/886-6966.

Affidavit of Compliance with Section 285.500, RSMO, et seq.
For All Agreements Providing Services in Excess of $5,000
Effective January 1, 2009

STATE OF _____)
) ss.
COUNT OF _____)

Before me, the undersigned Notary Public, in and for the County of _____, State of _____, personally appeared _____(*name*) who is _____(*title*) of _____ (*name of company*), a (*circle one*) corporation, partnership, sole proprietorship, limited liability company, and is competent and authorized to make this affidavit, and being duly sworn upon oath deposes and says as follows:

(1) that said company is enrolled in and participates in a federal work authorization program with respect to the employees working in connection with the contracted services; and

(2) that said company does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.

The terms used in this affidavit shall have the meaning set forth in Section 285.500 RSMO, et seq.

Documentation of participating in a federal work authorization program is attached to this affidavit.

_____
Signature

_____
Print Name

Subscribed and sworn to before me this _____ day of _____, _____.

_____
Notary Public

My commission expires: _____

Company ID Number: XXXXXX

The foregoing constitutes the full agreement on this subject between the SSA, DHS (Department of Homeland Security), and the Employer.

The individuals whose signatures appear below represent that they are authorized to enter into this MOU on behalf of the Employer and DHS respectively.

To be accepted as a participant in E-Verify, you should only sign the Employer's Section of the signature page. If you have any questions, contact E-Verify Operations at 888-464-4218.

Employer, Your Company Name

John Doe

Name (Please type or print)	Title
Electronically Signed	**01/01/2009**
Signature	Date

Verification

Department of Homeland Security – Division

USCIS Verification Division

Name (Please type or print)	Title
Electronically Signed	**01/01/2009**
Signature	

Affidavit of Compliance with Section 292.675 RSMO, Et Seq.
For any Public Works Project Contract
Effective August 28, 2009

STATE OF _____)
) ss.
COUNT OF _____)

Before me, the undersigned Notary Public, in and for the County of _____, State of _____, personally appeared _____(*name*) who is _____(*title*) of _____ (*name of company*), a (*circle one*) corporation, partnership, sole proprietorship, limited liability company, and is competent and authorized to make this affidavit, and being duly sworn upon oath deposes and says as follows:

(1) that said company has verified the completion of a 10-hour construction safety program with respect to the employees working in connection with the contracted services.

The terms used in this affidavit shall have the meaning set forth in Section 292.675 RSMO, et seq.

_____
Signature

_____
Print Name

Subscribed and sworn to before me this _____ day of _____, _____.

_____
Notary Public

My commission expires: _____