

# Appendix C

Storm Drain CCTV Inspection Forms

## Lois Drive and 32nd Avenue Pathway MOA Pipe #28932 - W. 32nd Ave (west of Minnesota Dr)

### General Inspection Data:

CCTV Date: 4/30/2020

CCTV Completed by: MOA Street Maintenance

CCTV Direction: Upstream

### Pipe Data:

Diameter/Material: 12" CMP

Install Year: 1978

Flow Depth: No flow at time of CCTV

Debris/Obstructions: CCTV abandoned at 24.1 feet due to significant debris in invert, minor to moderate debris from 6.3 feet to 19.7 feet.

Miscellaneous/Defect Notes: Pipe appears to be in good condition, but leaf buildup is restricting flow. Looks like some root intrusion is possible along walls.

### CCTV Images:



# Lois Drive and 32nd Avenue Pathway

## MOA Pipe #12828 - W. 32nd Ave (west of Minnesota Dr)

### General Inspection Data:

CCTV Date: 4/30/2020

CCTV Completed by: MOA Street Maintenance

CCTV Direction: Downstream

### Pipe Data:

Diameter/Material: 15" RCP

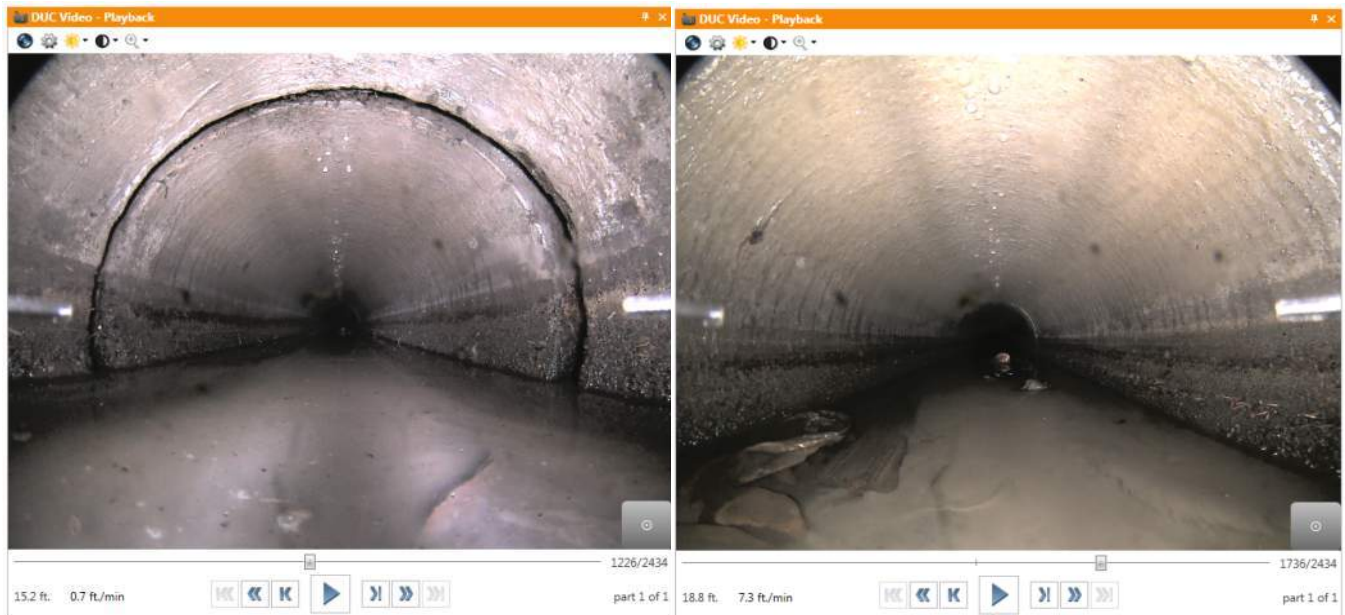
Install Year: 1978

Flow Depth: < 25% of full pipe flow

Debris/Obstructions: CCTV abandoned at 23.6 feet due to significant debris in invert.

Miscellaneous/Defect Notes: Offset joints at 15.5 feet & 21.8 feet. Pipe exceeds 300 foot max. manhole spacing per MASS.

### CCTV Images:



## Lois Drive and 32nd Avenue Pathway MOA Pipe #27764 - Lois Dr (north of W. 31st Ave)

### General Inspection Data:

CCTV Date: 12/19/2019

CCTV Completed by: MOA Street Maintenance

CCTV Direction: Upstream

### Pipe Data:

Diameter/Material: 12" CMP

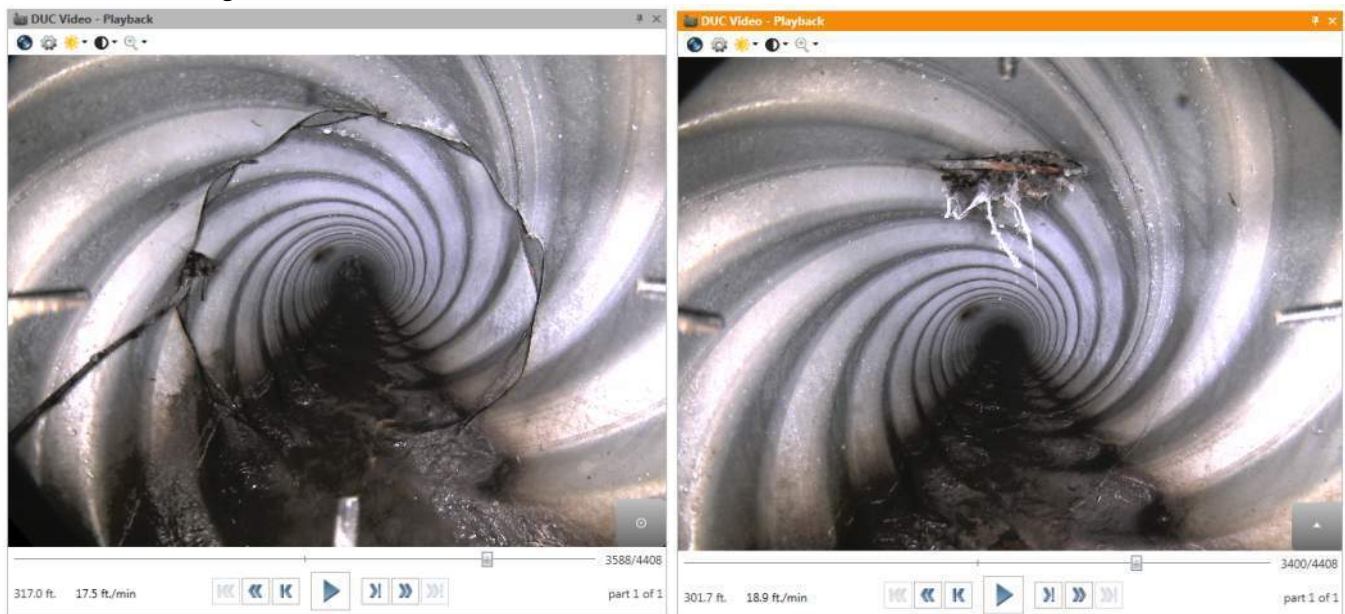
Install Year: 1982

Flow Depth: No flow at time of CCTV

Debris/Obstructions: Minor to moderate debris present throughout length of pipe.

Miscellaneous/Defect Notes: Mineralization/infiltration at pipe joints at 132.1 feet, 197.3 feet & 216.6 feet. Root intrusion at pipe joints at 216.6 feet & 317.0 feet. 1"x4" gouge through pipe at 12 o'clock position at 301.7 feet, soil visible.

### CCTV Images:



## Lois Drive and 32nd Avenue Pathway MOA Pipe #29551 - Lois Dr (south of W. 31st Ave)

### General Inspection Data:

CCTV Date: 4/30/2020

CCTV Completed by: MOA Street Maintenance

CCTV Direction: Upstream

### Pipe Data:

Diameter/Material: 12" CMP

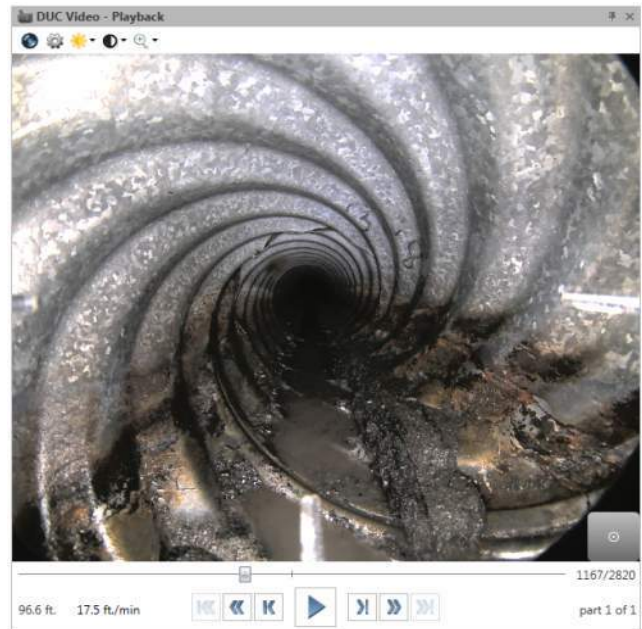
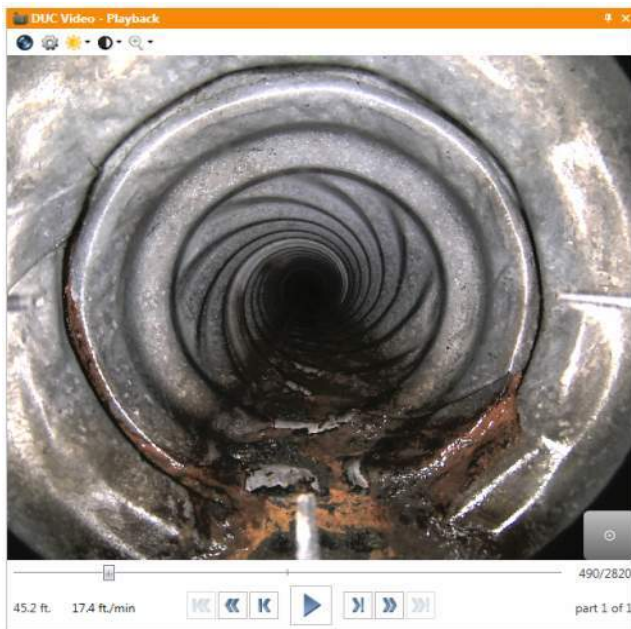
Install Year: 1982

Flow Depth: No flow at time of CCTV

Debris/Obstructions: CCTV abandoned at 98.8 feet due to severe debris in invert, minor to moderate debris present throughout remainder of pipe inspected.

Miscellaneous/Defect Notes: Mineralization/Infiltration at pipe joint at 45.3 feet and 65.4 feet.

### CCTV Images:





## Lois Drive and 32nd Avenue Pathway MOA Pipe #25204 - W. 31st Ave (west of Lois Dr)

### General Inspection Data:

CCTV Date: 12/19/2019

CCTV Completed by: MOA Street Maintenance

CCTV Direction: Upstream

### Pipe Data:

Diameter/Material: 15" CMP

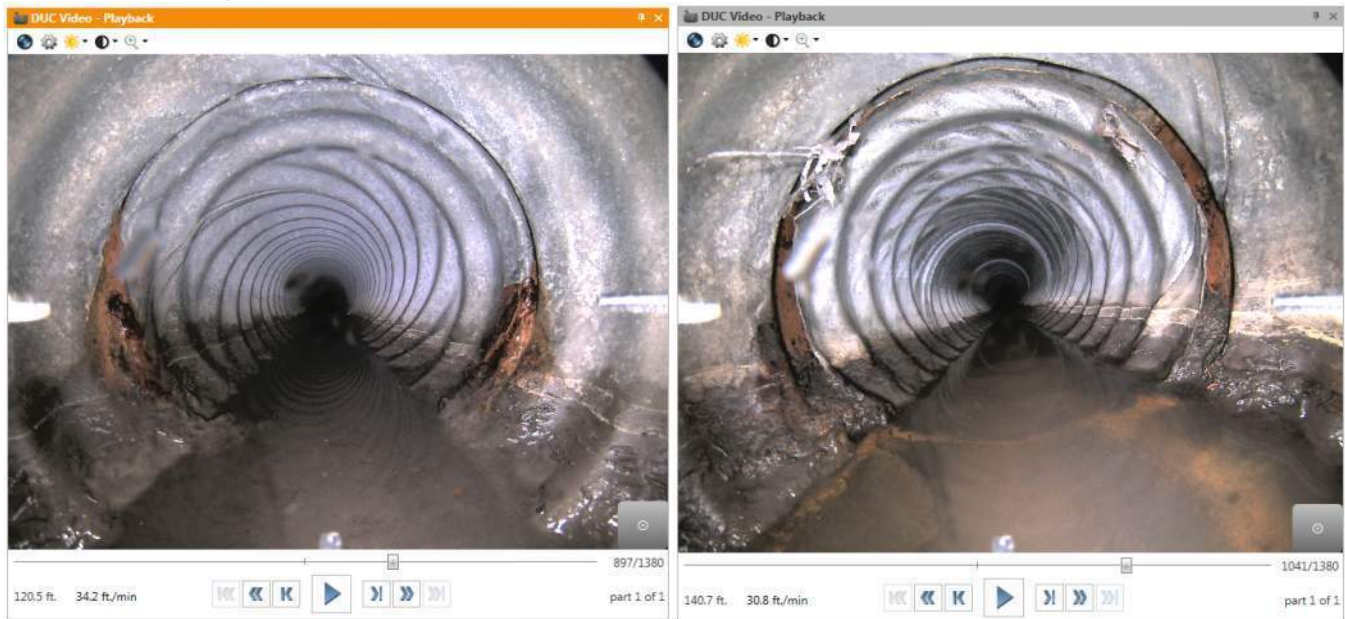
Install Year: 1982

Flow Depth: < 25% of full pipe flow

Debris/Obstructions: Minor to moderate debris present throughout length of pipe.

Miscellaneous/Defect Notes: Mineralization/infiltration at pipe joints at 39.6 feet, 59.9 feet, 120.6 feet & 161.0 feet. Significant joint separation at 140.7 feet.

### CCTV Images:



## Lois Drive and 32nd Avenue Pathway MOA Pipe #30570 - W. 31st Ave (east of Doris St)

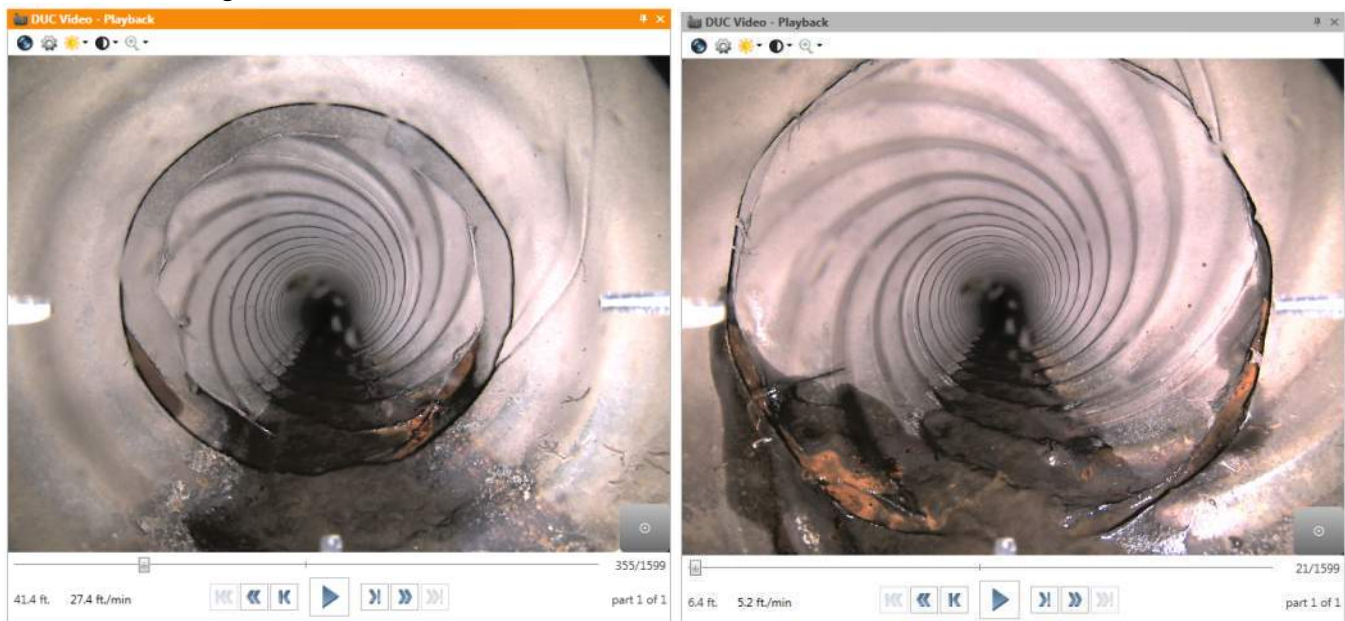
### General Inspection Data:

CCTV Date: 12/19/2019  
CCTV Completed by: MOA Street Maintenance  
CCTV Direction: Downstream

### Pipe Data:

Diameter/Material: 15" CMP  
Install Year: 1982  
Flow Depth: < 10% of full pipe flow  
Debris/Obstructions: Minor debris present throughout length of pipe.  
Miscellaneous/Defect Notes: Minor metal loss/corrosion present throughout length of pipe.  
Offset joint at 152.1 feet. Mineralization/Infiltration at pipe joint at 6.4 feet, 21.5 feet, 72.3 feet and 121.8 feet. Joint separation at 41.7 feet.

### CCTV Images:



## Lois Drive and 32nd Avenue Pathway MOA Pipe #13603 - W. 31st Ave (west of Doris St)

### General Inspection Data:

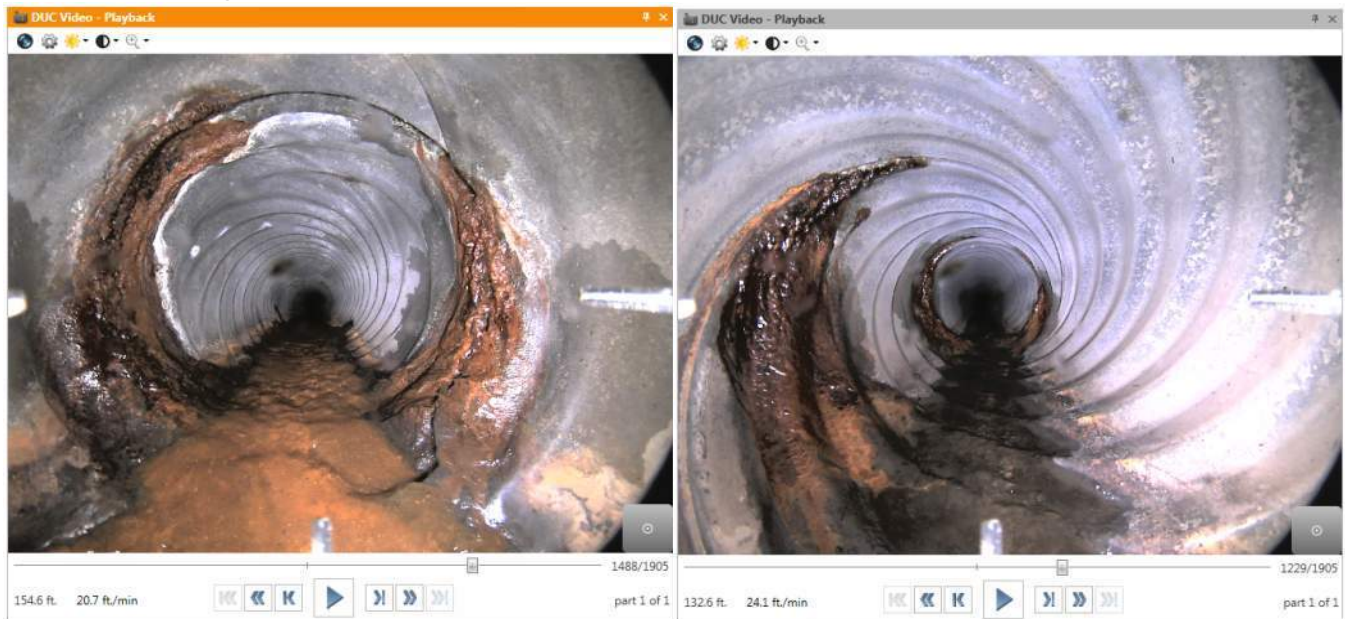
CCTV Date: 12/19/2019  
CCTV Completed by: MOA Street Maintenance  
CCTV Direction: Downstream

### Pipe Data:

Diameter/Material: 15" CMP  
Install Year: 1982  
Flow Depth: < 10% of full pipe flow  
Debris/Obstructions: Minor debris present from 0 feet to 143.1 feet. Moderate to significant mineralization present from 143.1 feet to end of pipe.

Miscellaneous/Defect Notes: Minor metal loss/corrosion present from 0 feet to 143.1 feet. Moderate to significant metal loss/corrosion present from 143.1 feet to end of pipe. Mineralization/infiltration near flow line at 4 o'clock position at 131.1 feet. Mineralization/infiltration near along CMP seam at 9 o'clock position at 132.6 feet. Significant mineralization/infiltration at pipe joints at 114.2 feet, 134.3 feet & 154.9 feet. Surface damage/corrosion at 10 o'clock & 2 o'clock at 55.0 feet.

### CCTV Images:





# Lois Drive and 32nd Avenue Pathway

## MOA Pipe #27885 - Fish Creek Alignment (between Willow St & Doris St)

### General Inspection Data:

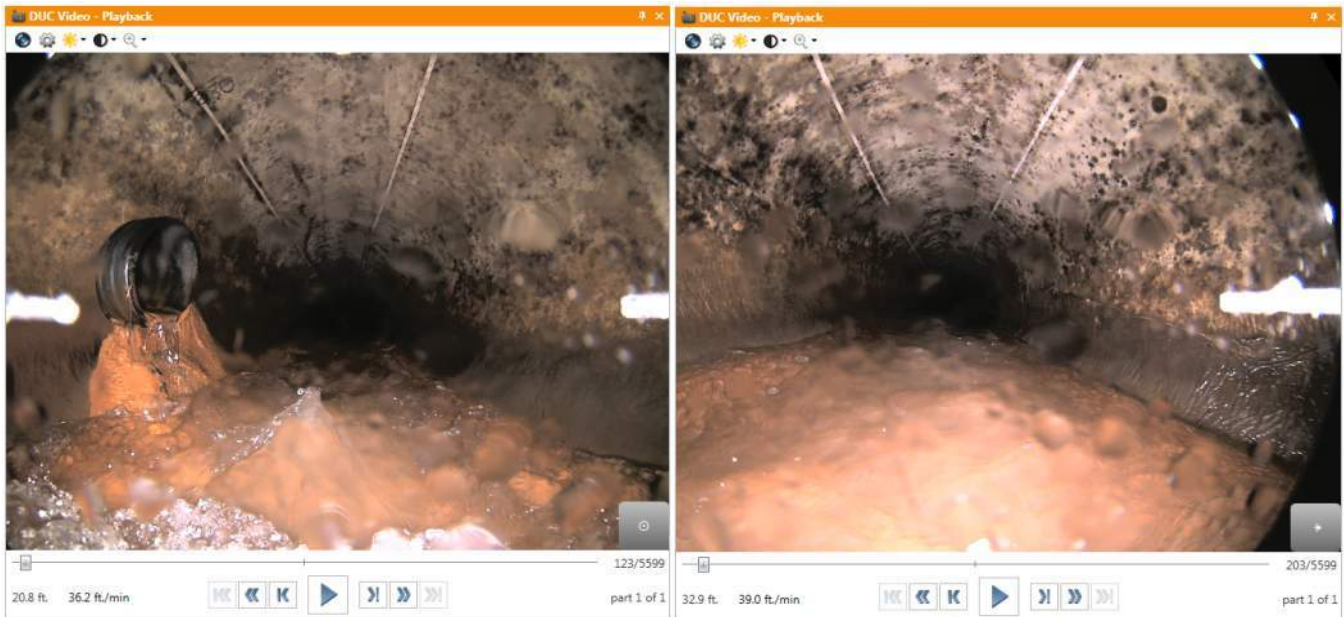
CCTV Date: 5/15/2020  
CCTV Completed by: MOA Street Maintenance  
CCTV Direction: Upstream

### Pipe Data:

Diameter/Material: 48" CMP/Lined  
Install Year: Unknown  
Flow Depth: < 25% of full pipe flow  
Debris/Obstructions: Moderate mineralization present throughout length of pipe.  
Significant debris/blockage at 260.5 feet.

Miscellaneous/Defect Notes: According to CCTV operator, this pipe was previously lined with CIPP. Operator noted lining failures at 32.9 feet, 60.3 feet, 131.6 feet & 182.1 feet. CPEP lateral at 9 o'clock position at 21.3 feet with significant mineralization at discharge point. CMP lateral at 11 o'clock position at 133.2 feet with moderate mineralization at discharge point.

### CCTV Images:



## Lois Drive and 32nd Avenue Pathway MOA Pipe #33747 - Fish Creek Alignment (crosses Willow St)

### General Inspection Data:

CCTV Date: 5/15/2020  
CCTV Completed by: MOA Street Maintenance  
CCTV Direction: Downstream

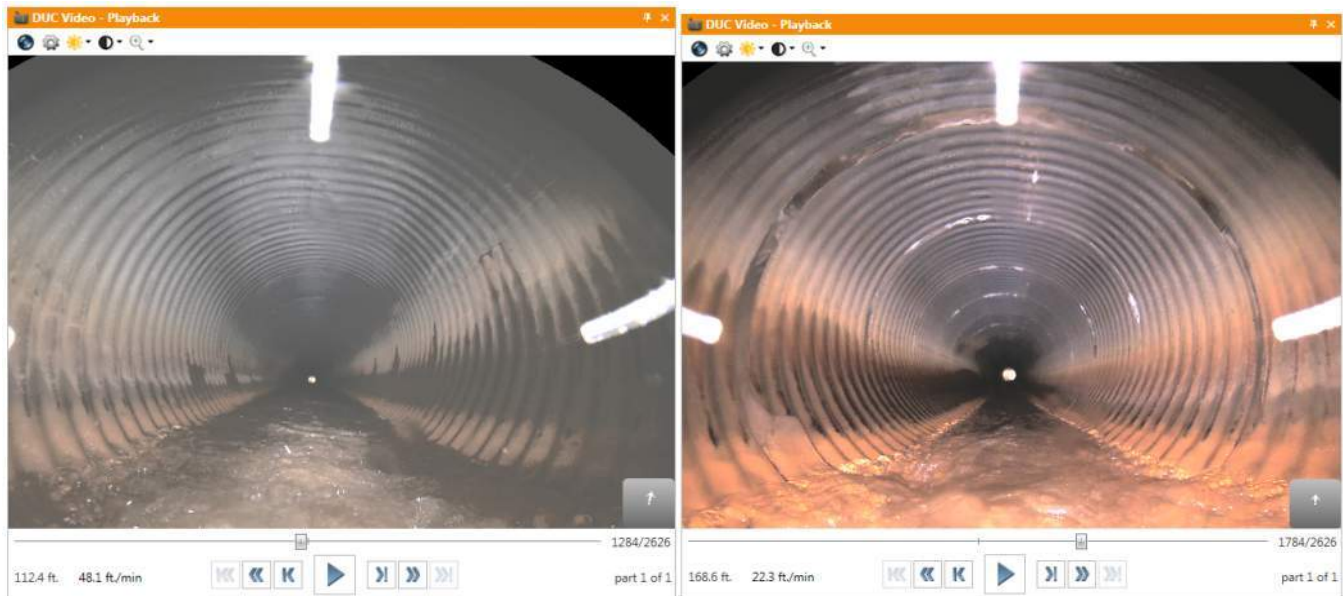
### Pipe Data:

Diameter/Material: 48" CMP  
Install Year: Unknown  
Flow Depth: < 25% of full pipe flow

Debris/Obstructions: Moderate mineralization present throughout length of pipe.

Miscellaneous/Defect Notes: Multiple holes in pipe from 7 to 9 o'clock position at 7.1 to 11.3 feet. Tee connection at 12 o'clock position at 12.9 feet. Hole in pipe at 4 o'clock position at 45.9 feet. Crown of pipe deformed several inches at 112.4 feet. CCTV camera submerged at 129.5 feet. Joint separations at 148.0 feet, 168.6 feet & 189.0 feet. Angle point in pipe at 263.7 feet.

### CCTV Images:



# Appendix D

## Storm Drain Structure Inspection Forms

**CRW ENGINEERING GROUP**  
**STORM DRAIN STRUCTURE FIELD INSPECTION FORM**  
**LOIS DRIVE AND 32<sup>ND</sup> AVENUE PATHWAY (PM&E No. 19-08)**

INSPECTION DATE: 6/10/20

INSPECTION TIME: 9:50 AM

WEATHER: Sunny

INSPECTED BY: Joey & Wayne

MANHOLE NUMBER: CB #028

FIRST PHOTO NUMBER: \_\_\_\_\_

APPROXIMATE LOCATION: Intersection of 32<sup>nd</sup> Ave & unnamed alley, SW corner. 142 feet  
East of 32<sup>nd</sup> Ave & Wyoming Dr Intersection. Inlet lid in unpaved  
alley

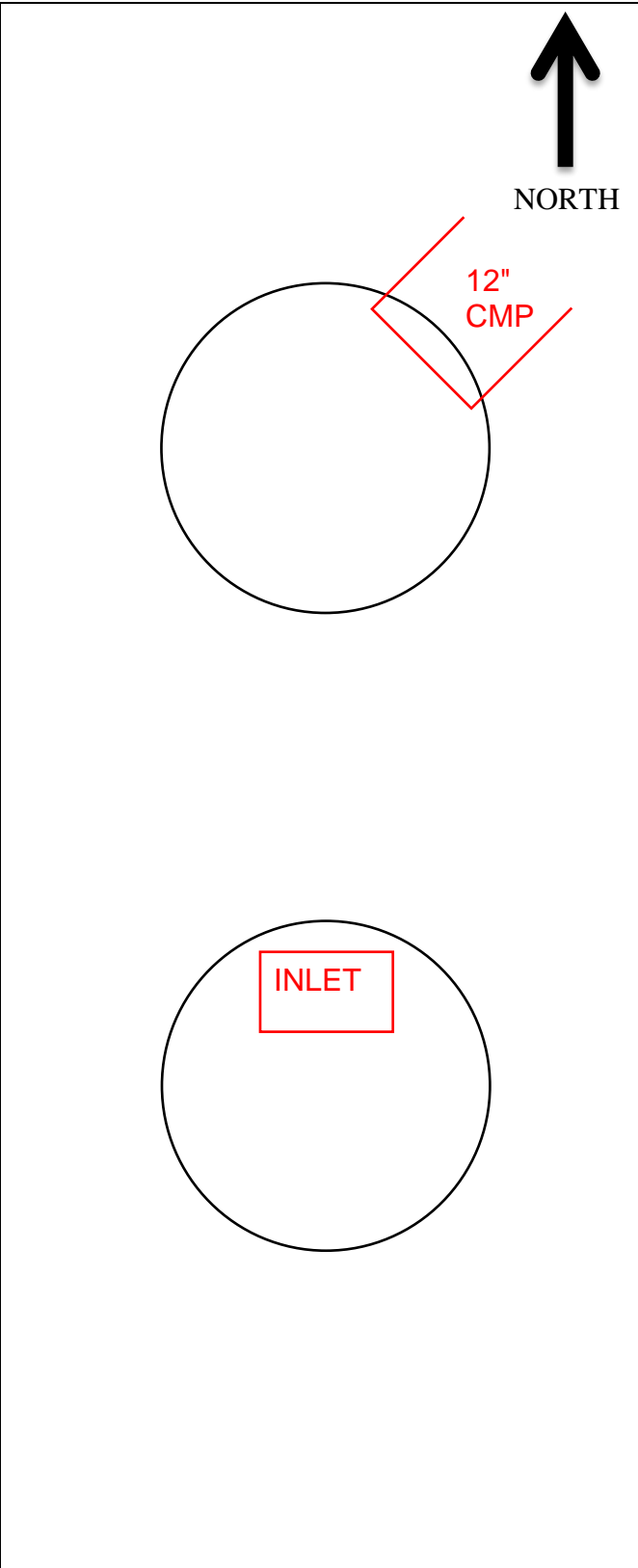
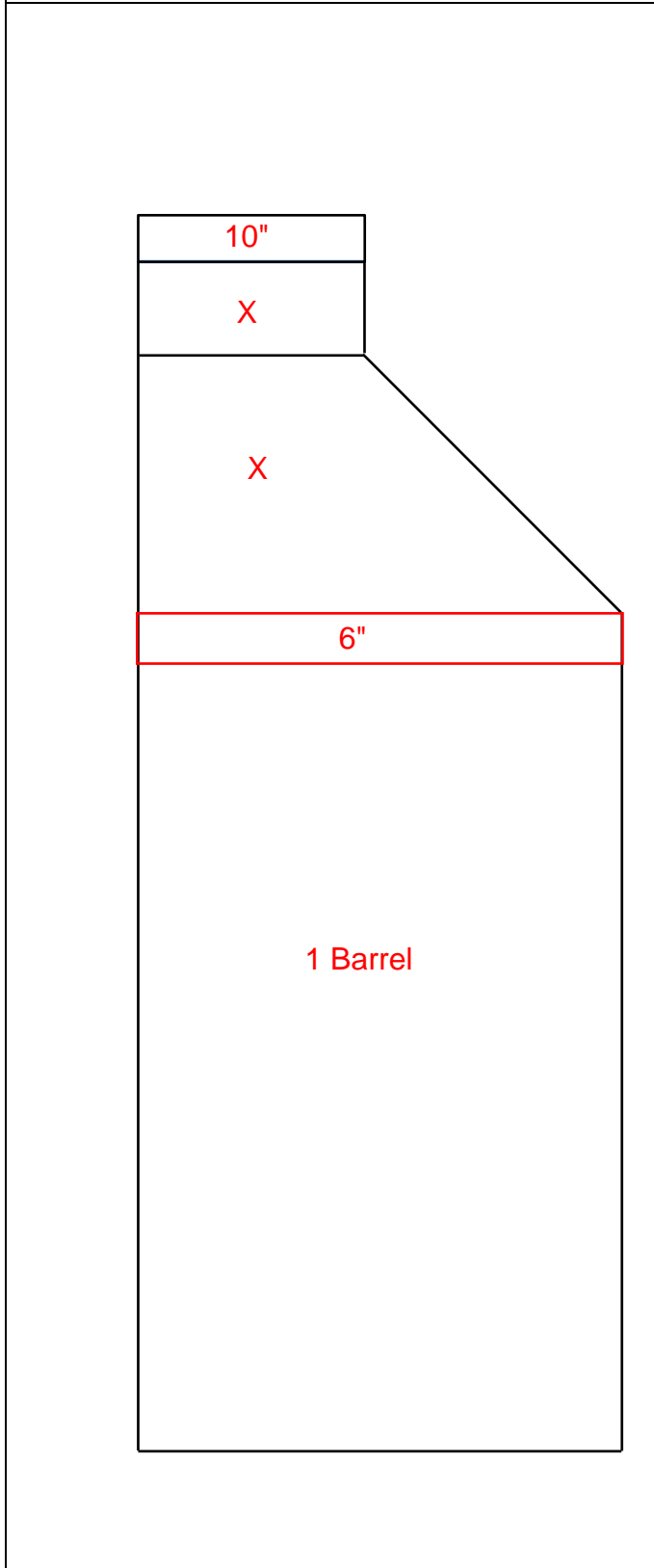
| CONDITION                        | POOR                 | ←—————→      | GOOD                      |
|----------------------------------|----------------------|--------------|---------------------------|
| CONDITION OF LID                 | 1                    | 2            | 3 4                       |
| CONDITION OF GRADE RINGS         | <del>1</del>         | <del>2</del> | <del>3</del> <del>4</del> |
| CONDITION OF BARREL              | 1                    | 2            | 3 4                       |
| CONDITION OF LADDER              | <del>1</del>         | <del>2</del> | <del>3</del> <del>4</del> |
| CONDITION OF PIPE INLETS/OUTLETS | 1                    | 2            | 3 4                       |
| PRESENCE OF SOLIDS OR BUILDUP    | YES                  |              | NO                        |
| PRESENCE OF INFILTRATION/INFLOW  | YES                  |              | NO                        |
| DEPTH/VOLUME OF FLOW:            | <u>No flow</u>       |              |                           |
| DIAMETER OF MANHOLE:             | <u>4' Catchbasin</u> |              |                           |

MANHOLE ASSESSMENT/CONDITION NOTES:

- Grout spalling at pipe penetration
- Non-standard inlet, 11.5" x 15", rectangular, frame depth 10"
- No grade rings, frame placed on reducing slab



MANHOLE SKETCH



PROFILE

PLAN

Lois Drive and 32nd Avenue Pathway (PM&E No. 19-08)

Manhole No. SW1628-028



Photo 1 - Structure Location Map



Photo 2 - Inlet / Surrounding Area



Photo 3 - Frame & Reducing Slab



Photo 4 - Outlet Pipe Penetration

**CRW ENGINEERING GROUP**  
**STORM DRAIN STRUCTURE FIELD INSPECTION FORM**  
**LOIS DRIVE AND 32<sup>ND</sup> AVENUE PATHWAY (PM&E No. 19-08)**

INSPECTION DATE: 6/10/20

INSPECTION TIME: 9:40 AM

WEATHER: \_\_\_\_\_

INSPECTED BY: Joey & Wayne

MANHOLE NUMBER: CB #029

FIRST PHOTO NUMBER: \_\_\_\_\_

APPROXIMATE LOCATION: Intersection of 32<sup>nd</sup> Ave & unnamed alley, NE Corner. 190 feet  
East of 32<sup>nd</sup> Ave & Wyoming Dr Intersection. Inlet lid in  
pavement.

| CONDITION                        | POOR         | ←—————→       |              | GOOD         |
|----------------------------------|--------------|---------------|--------------|--------------|
| CONDITION OF LID                 | 1            | 2             | 3            | 4            |
| CONDITION OF GRADE RINGS         | <del>1</del> | <del>2</del>  | <del>3</del> | <del>4</del> |
| CONDITION OF BARREL              | 1            | 2             | 3            | 4            |
| CONDITION OF LADDER              | <del>1</del> | <del>2</del>  | <del>3</del> | <del>4</del> |
| CONDITION OF PIPE INLETS/OUTLETS | 1            | 2             | 3            | 4            |
| PRESENCE OF SOLIDS OR BUILDUP    | YES          |               |              | NO           |
| PRESENCE OF INFILTRATION/INFLOW  | YES          |               |              | NO           |
| DEPTH/VOLUME OF FLOW:            |              | No flow       |              |              |
| DIAMETER OF MANHOLE:             |              | 4' Catchbasin |              |              |

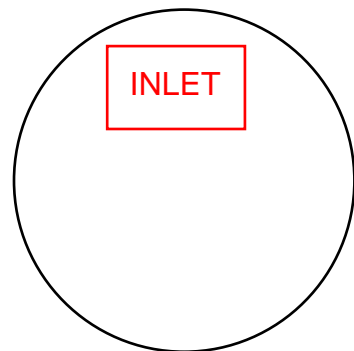
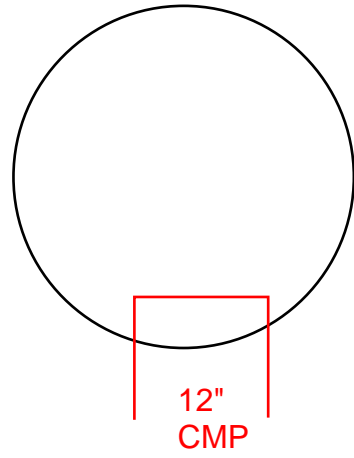
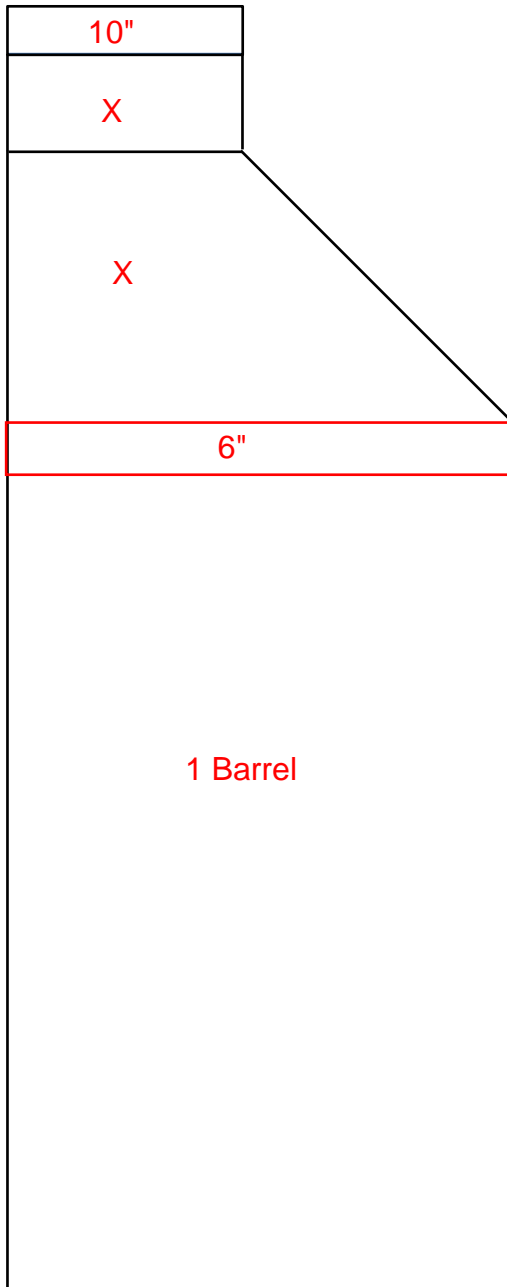
**MANHOLE ASSESSMENT/CONDITION NOTES:**

- Non-standard inlet, 11.5" x 15", rectangular, frame depth 10"
- No grade rings, frame placed on reducing slab
- Grout spalling around pipe penetration
- Metal loss at invert of pipe

MANHOLE SKETCH



NORTH



PROFILE

PLAN



Lois Drive and 32nd Avenue Pathway (PM&E No. 19-08)

Manhole No. SW1628-029

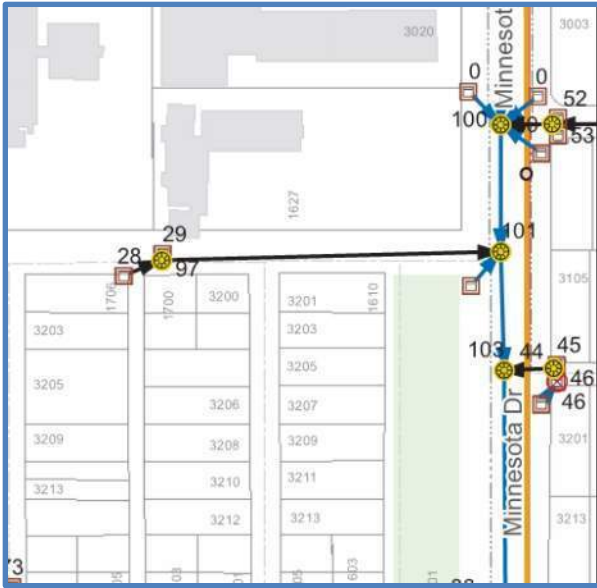


Photo 1 - Structure Location Map



Photo 2 - Inlet / Surrounding Area



Photo 3 - Inlet



Photo 4 - Frame & Reducing Slab

**CRW ENGINEERING GROUP**  
**STORM DRAIN STRUCTURE FIELD INSPECTION FORM**  
**LOIS DRIVE AND 32<sup>ND</sup> AVENUE PATHWAY (PM&E No. 19-08)**

INSPECTION DATE: 6/10/20

INSPECTION TIME: 11:05 AM

WEATHER: \_\_\_\_\_

INSPECTED BY: Joey & Wayne

MANHOLE NUMBER: CB #055

FIRST PHOTO NUMBER: \_\_\_\_\_

APPROXIMATE LOCATION: 335 feet North of Lois Drive & 31<sup>st</sup> Ave, West side of Lois Drive.

Inlet lid in grass road shoulder.

| CONDITION                        | POOR         | ←—————→       |              | GOOD         |
|----------------------------------|--------------|---------------|--------------|--------------|
| CONDITION OF LID                 | 1            | 2             | 3            | 4            |
| CONDITION OF GRADE RINGS         | 1            | 2             | 3            | 4            |
| CONDITION OF BARREL              | 1            | 2             | 3            | 4            |
| CONDITION OF LADDER              | <del>1</del> | <del>2</del>  | <del>3</del> | <del>4</del> |
| CONDITION OF PIPE INLETS/OUTLETS | 1            | 2             | 3            | 4            |
| PRESENCE OF SOLIDS OR BUILDUP    |              | YES           |              | NO           |
| PRESENCE OF INFILTRATION/INFLOW  |              | YES           |              | NO           |
| DEPTH/VOLUME OF FLOW:            |              | No flow       |              |              |
| DIAMETER OF MANHOLE:             |              | 4' Catchbasin |              |              |

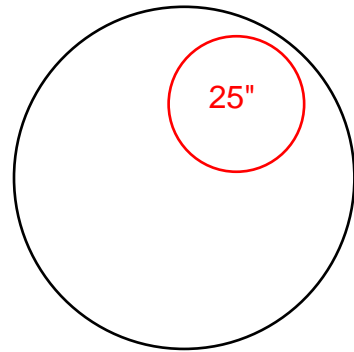
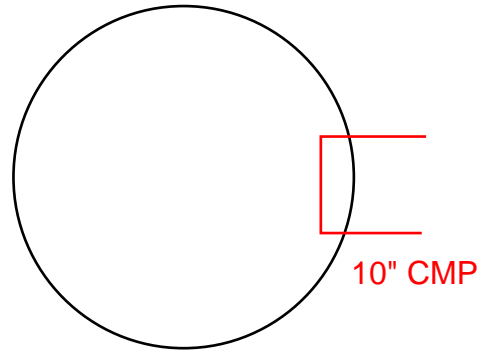
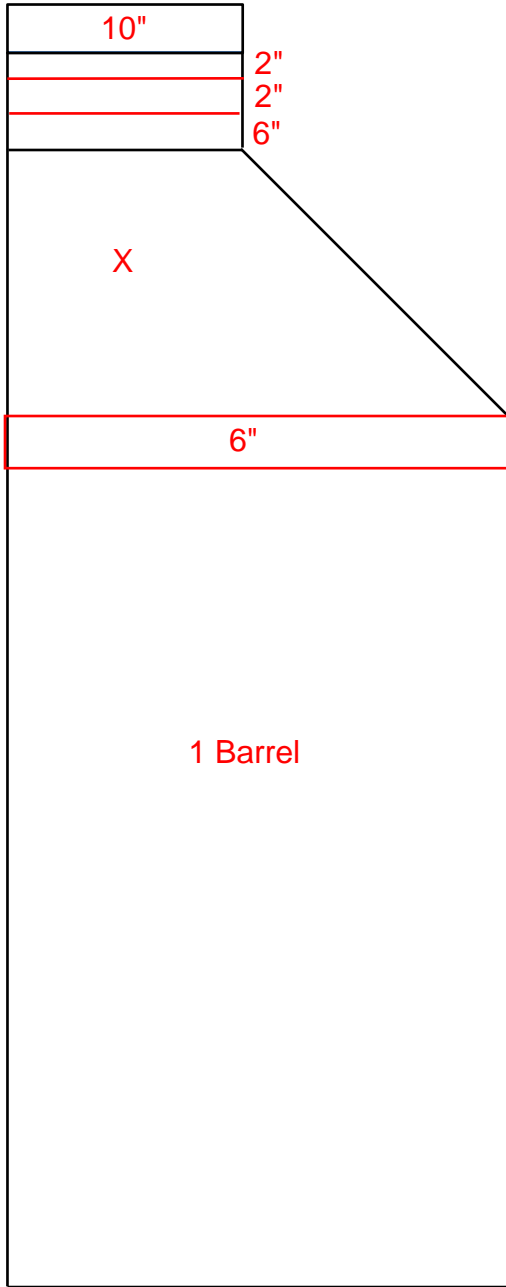
**MANHOLE ASSESSMENT/CONDITION NOTES:**

- Flat intake lid
- Minor vertical cracking in 6" grade ring
- Minor grout spalling in pipe penetration
- Significant debris in sump

MANHOLE SKETCH



NORTH



PROFILE

PLAN

Lois Drive and 32nd Avenue Pathway (PM&E No. 19-08)

Manhole No. SW1628-055

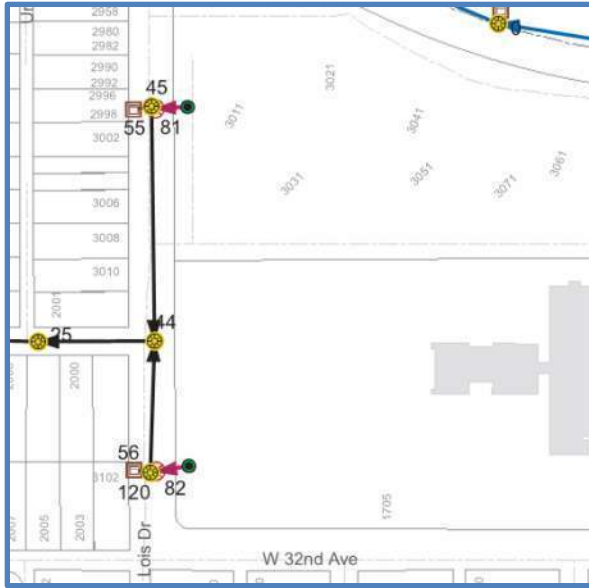


Photo 1 - Structure Location Map



Photo 2 - Inlet / Surrounding Area



Photo 3 - Frame, Grade Rings & Reducing Slab



Photo 4 - Outlet Pipe Penetration



**CRW ENGINEERING GROUP**  
**STORM DRAIN STRUCTURE FIELD INSPECTION FORM**  
**LOIS DRIVE AND 32<sup>ND</sup> AVENUE PATHWAY (PM&E No. 19-08)**

INSPECTION DATE: 6/10/20

INSPECTION TIME: 10:30 AM

WEATHER: \_\_\_\_\_

INSPECTED BY: Joey & Wayne

MANHOLE NUMBER: CB #056

FIRST PHOTO NUMBER: \_\_\_\_\_

APPROXIMATE LOCATION: 190 feet South of Lois Drive & 31<sup>st</sup> Ave, West side of Lois Drive.

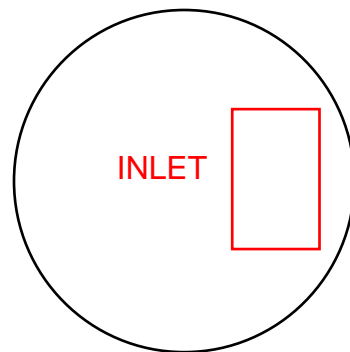
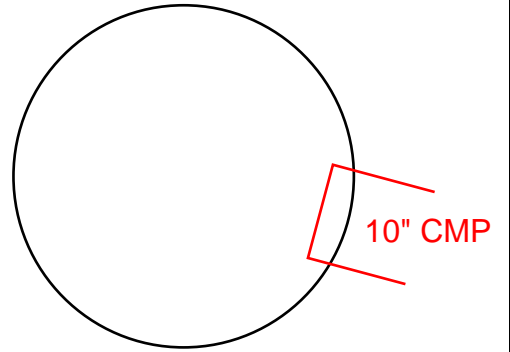
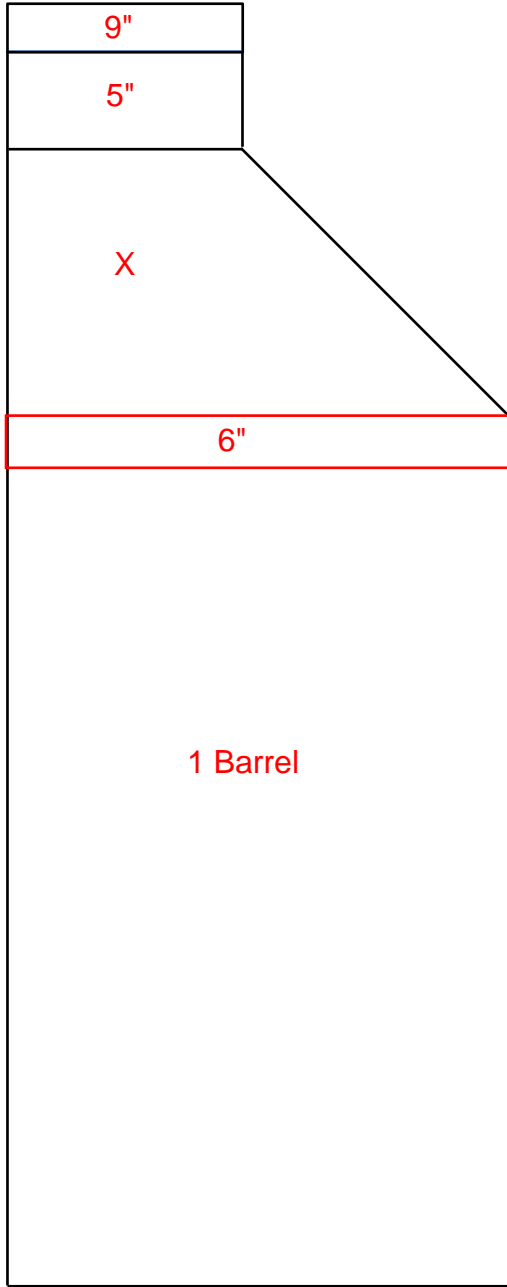
Inlet lid in concrete driveway gutter.

| CONDITION                        | POOR                 | ←————→       | GOOD           |
|----------------------------------|----------------------|--------------|----------------|
| CONDITION OF LID                 | 1                    | 2            | 3 4            |
| CONDITION OF GRADE RINGS         | 1                    | 2            | 3 4            |
| CONDITION OF BARREL              | 1                    | 2            | 3 4            |
| CONDITION OF LADDER              | <del>1</del>         | <del>2</del> | <del>3 4</del> |
| CONDITION OF PIPE INLETS/OUTLETS | 1                    | 2            | 3 4            |
| PRESENCE OF SOLIDS OR BUILDUP    | YES                  |              | NO             |
| PRESENCE OF INFILTRATION/INFLOW  | YES                  |              | NO             |
| DEPTH/VOLUME OF FLOW:            | <u>No flow</u>       |              |                |
| DIAMETER OF MANHOLE:             | <u>4' Catchbasin</u> |              |                |

**MANHOLE ASSESSMENT/CONDITION NOTES:**

- Type 2 curb inlet, 24" x 18"
- Curb inlet is at skewed angle from curb line
- Grade ring placement is offset from frame and reducing slab
- Crack in grout above pipe penetration

MANHOLE SKETCH



PROFILE

PLAN

Lois Drive and 32nd Avenue Pathway (PM&E No. 19-08)

Manhole No. SW1628-056

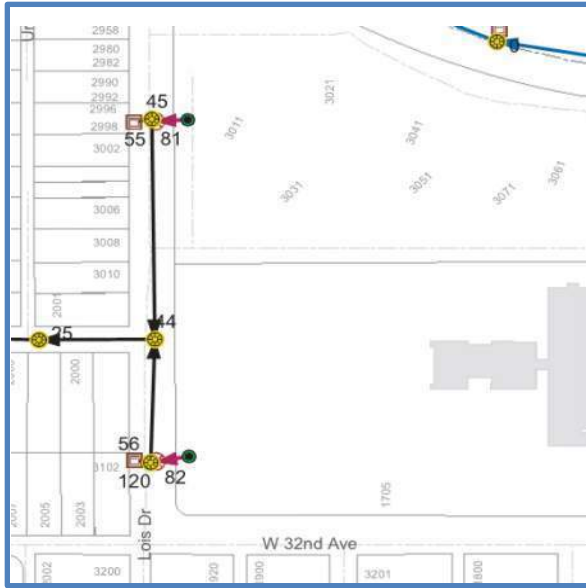


Photo 1 - Structure Location Map



Photo 2 - Inlet / Surrounding Area



Photo 3 - Frame, Grade Rings & Reducing Slab



Photo 4 - Outlet Pipe Penetration

**CRW ENGINEERING GROUP  
STORM DRAIN STRUCTURE FIELD INSPECTION FORM  
LOIS DRIVE AND 32<sup>ND</sup> AVENUE PATHWAY (PM&E No. 19-08)**

INSPECTION DATE: 6/10/20

INSPECTION TIME: 11:00 AM

WEATHER: \_\_\_\_\_

INSPECTED BY: Joey & Wayne

MANHOLE NUMBER: CB #081

FIRST PHOTO NUMBER: \_\_\_\_\_

APPROXIMATE LOCATION: 335 feet North of Lois Drive & 31<sup>st</sup> Ave, East side of Lois Drive.

Inlet lid in grass.

| CONDITION                        | POOR         | ←—————→       |              | GOOD         |
|----------------------------------|--------------|---------------|--------------|--------------|
| CONDITION OF LID                 | 1            | 2             | 3            | 4            |
| CONDITION OF GRADE RINGS         | <del>1</del> | <del>2</del>  | <del>3</del> | <del>4</del> |
| CONDITION OF BARREL              | 1            | 2             | 3            | 4            |
| CONDITION OF LADDER              | <del>1</del> | <del>2</del>  | <del>3</del> | <del>4</del> |
| CONDITION OF PIPE INLETS/OUTLETS | 1            | 2             | 3            | 4            |
| PRESENCE OF SOLIDS OR BUILDUP    | YES          |               |              | NO           |
| PRESENCE OF INFILTRATION/INFLOW  | YES          |               |              | NO           |
| DEPTH/VOLUME OF FLOW:            |              | No flow       |              |              |
| DIAMETER OF MANHOLE:             |              | 4' catchbasin |              |              |

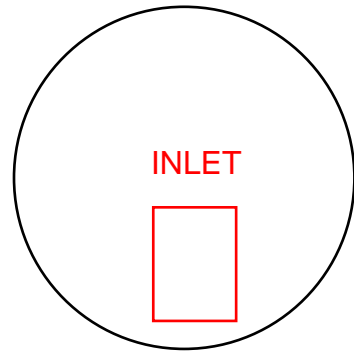
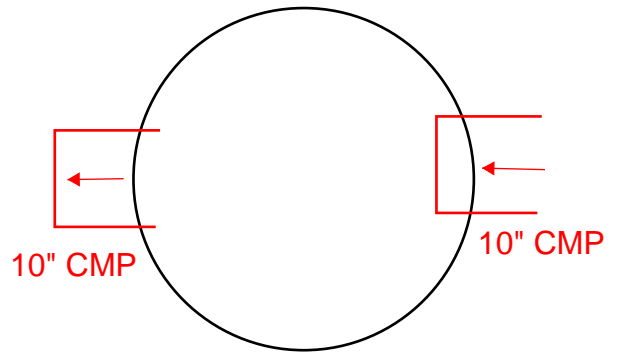
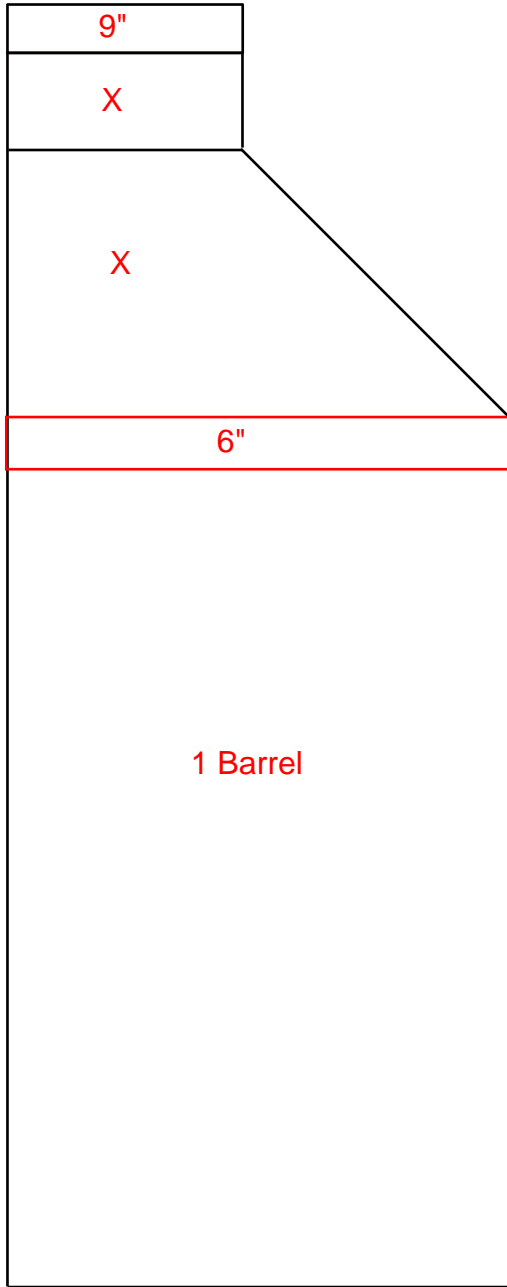
**MANHOLE ASSESSMENT/CONDITION NOTES:**

- Type 2 curb inlet, 24" x 18"
- Significant metal loss in west pipe's invert
- Debris in west pipe's invert

MANHOLE SKETCH



NORTH



PROFILE

PLAN



Lois Drive and 32nd Avenue Pathway (PM&E No. 19-08)

Manhole No. SW1628-081

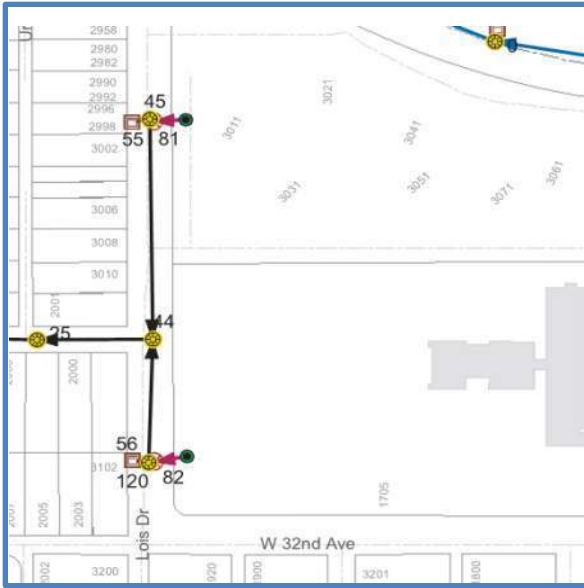


Photo 1 - Structure Location Map



Photo 2 - Inlet / Surrounding Area



Photo 3 - Frame & Reducing Slab



Photo 4 - Outlet Pipe Penetration

**CRW ENGINEERING GROUP**  
**STORM DRAIN STRUCTURE FIELD INSPECTION FORM**  
**LOIS DRIVE AND 32<sup>ND</sup> AVENUE PATHWAY (PM&E No. 19-08)**

INSPECTION DATE: 6/10/20

INSPECTION TIME: 10:10 AM

WEATHER: \_\_\_\_\_

INSPECTED BY: Joey & Wayne

MANHOLE NUMBER: CB #082

FIRST PHOTO NUMBER: \_\_\_\_\_

APPROXIMATE LOCATION: 190 feet South of Lois Drive & 31<sup>st</sup> Ave, East side of Lois Drive.

Inlet lid in gravel shoulder.

| CONDITION                        | POOR                  | ←—————→      |              | GOOD         |
|----------------------------------|-----------------------|--------------|--------------|--------------|
| CONDITION OF LID                 | 1                     | 2            | 3            | 4            |
| CONDITION OF GRADE RINGS         | <del>1</del>          | <del>2</del> | <del>3</del> | <del>4</del> |
| CONDITION OF BARREL              | 1                     | 2            | 3            | 4            |
| CONDITION OF LADDER              | <del>1</del>          | <del>2</del> | <del>3</del> | <del>4</del> |
| CONDITION OF PIPE INLETS/OUTLETS | 1                     | 2            | 3            | 4            |
| PRESENCE OF SOLIDS OR BUILDUP    | YES                   |              | NO           |              |
| PRESENCE OF INFILTRATION/INFLOW  | YES                   |              | NO           |              |
| DEPTH/VOLUME OF FLOW:            | No flow               |              |              |              |
| DIAMETER OF MANHOLE:             | 4' Catchbasin Manhole |              |              |              |

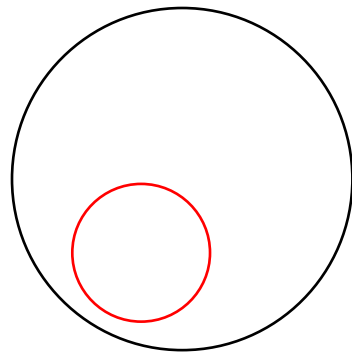
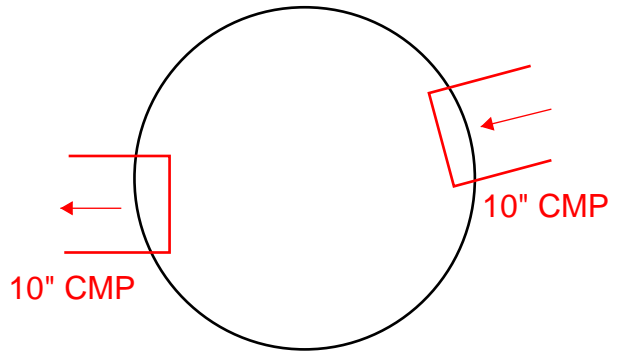
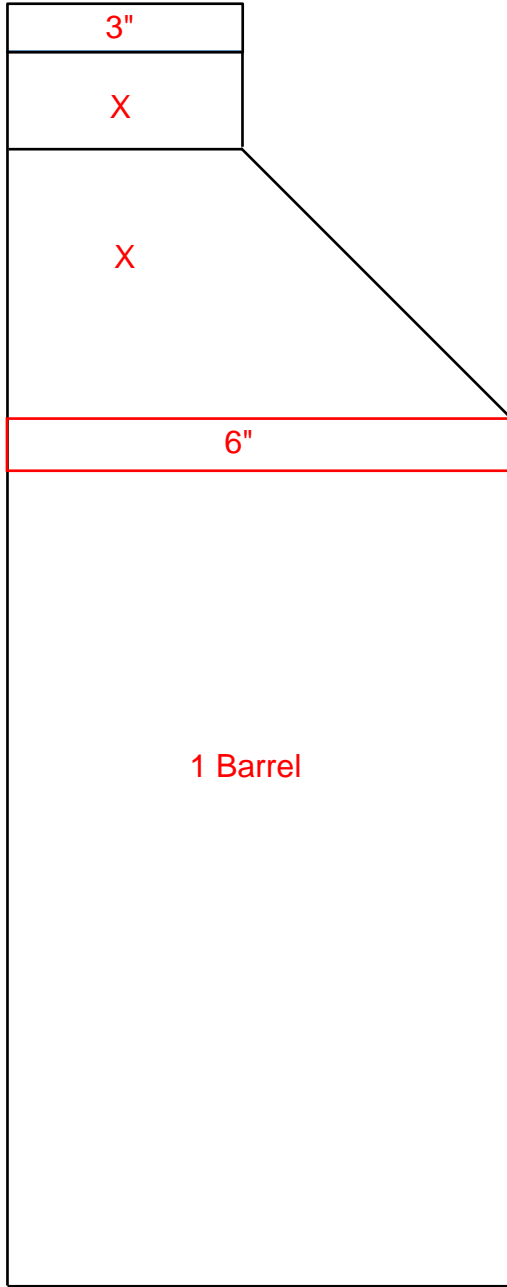
**MANHOLE ASSESSMENT/CONDITION NOTES:**

- Flat intake cover, 25" diameter
- Non-standard frame height 3"
- Minor offset between barrel & reducing slab
- Metal loss in west 10" CMP pipe invert
- East pipe full of debris
- Sump is full of debris

MANHOLE SKETCH



NORTH



PROFILE

PLAN

Lois Drive and 32nd Avenue Pathway (PM&E No. 19-08)

Manhole No. SW1628-082

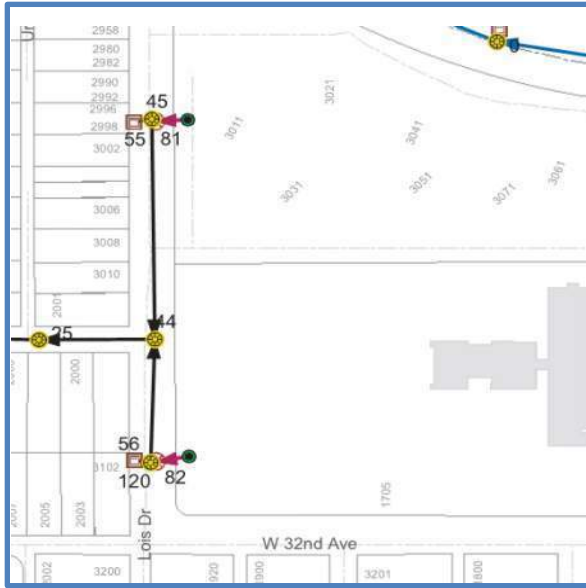


Photo 1 - Structure Location Map



Photo 2 - Inlet / Surrounding Area



Photo 3 - Frame, Reducing Slab & Outlet Pipe



Photo 4 - Inlet Pipe & Pipe Penetration

**CRW ENGINEERING GROUP  
STORM DRAIN STRUCTURE FIELD INSPECTION FORM  
LOIS DRIVE AND 32<sup>ND</sup> AVENUE PATHWAY (PM&E No. 19-08)**

INSPECTION DATE: 6/10/20

INSPECTION TIME: N/A

WEATHER: \_\_\_\_\_

INSPECTED BY: Joey & Wayne

MANHOLE NUMBER: CB #142

FIRST PHOTO NUMBER: \_\_\_\_\_

APPROXIMATE LOCATION: 190 feet South of Lois Drive & 31<sup>st</sup> Ave, East side of Lois Drive.

Inlet lid on private land's grass, 55 feet from Lois Drive's

Edge of pavement.

| CONDITION                        | ←—————→ |     |   |      |
|----------------------------------|---------|-----|---|------|
|                                  | POOR    | 2   | 3 | GOOD |
| CONDITION OF LID                 | 1       | 2   | 3 | 4    |
| CONDITION OF GRADE RINGS         | 1       | 2   | 3 | 4    |
| CONDITION OF BARREL              | 1       | 2   | 3 | 4    |
| CONDITION OF LADDER              | 1       | 2   | 3 | 4    |
| CONDITION OF PIPE INLETS/OUTLETS | 1       | 2   | 3 | 4    |
| PRESENCE OF SOLIDS OR BUILDUP    |         | YES |   | NO   |
| PRESENCE OF INFILTRATION/INFLOW  |         | YES |   | NO   |
| DEPTH/VOLUME OF FLOW:            | _____   |     |   |      |
| DIAMETER OF MANHOLE:             | _____   |     |   |      |

MANHOLE ASSESSMENT/CONDITION NOTES:

- Unable to locate in school yard. Did not assess CB #142.



**CRW ENGINEERING GROUP  
STORM DRAIN STRUCTURE FIELD INSPECTION FORM  
LOIS DRIVE AND 32<sup>ND</sup> AVENUE PATHWAY (PM&E No. 19-08)**

INSPECTION DATE: 6/10/20 INSPECTION TIME: \_\_\_\_\_

WEATHER: \_\_\_\_\_ INSPECTED BY: Joey & Wayne

MANHOLE NUMBER: CB #143 FIRST PHOTO NUMBER: \_\_\_\_\_

APPROXIMATE LOCATION: 335 feet North of Lois Drive & 31<sup>st</sup> Ave, East side of Lois Drive.  
Inlet lid on private land's pavement, 50 feet from Lois Drive's  
Edge of pavement.

| CONDITION                        | ←—————→ |     |   |      |
|----------------------------------|---------|-----|---|------|
|                                  | POOR    | 2   | 3 | GOOD |
| CONDITION OF LID                 | 1       | 2   | 3 | 4    |
| CONDITION OF GRADE RINGS         | 1       | 2   | 3 | 4    |
| CONDITION OF BARREL              | 1       | 2   | 3 | 4    |
| CONDITION OF LADDER              | 1       | 2   | 3 | 4    |
| CONDITION OF PIPE INLETS/OUTLETS | 1       | 2   | 3 | 4    |
| PRESENCE OF SOLIDS OR BUILDUP    |         | YES |   | NO   |
| PRESENCE OF INFILTRATION/INFLOW  |         | YES |   | NO   |
| DEPTH/VOLUME OF FLOW:            | _____   |     |   |      |
| DIAMETER OF MANHOLE:             | _____   |     |   |      |

MANHOLE ASSESSMENT/CONDITION NOTES:

- Catchbasin located on private property. Did not assess CB #143.

**CRW ENGINEERING GROUP**  
**STORM DRAIN STRUCTURE FIELD INSPECTION FORM**  
**LOIS DRIVE AND 32<sup>ND</sup> AVENUE PATHWAY (PM&E No. 19-08)**

INSPECTION DATE: 6/10/20

INSPECTION TIME: 10:45 AM

WEATHER: \_\_\_\_\_

INSPECTED BY: Joey & Wayne

MANHOLE NUMBER: MH #044

FIRST PHOTO NUMBER: \_\_\_\_\_

APPROXIMATE LOCATION: Intersection of Lois Drive & 31<sup>st</sup> Ave, East side.

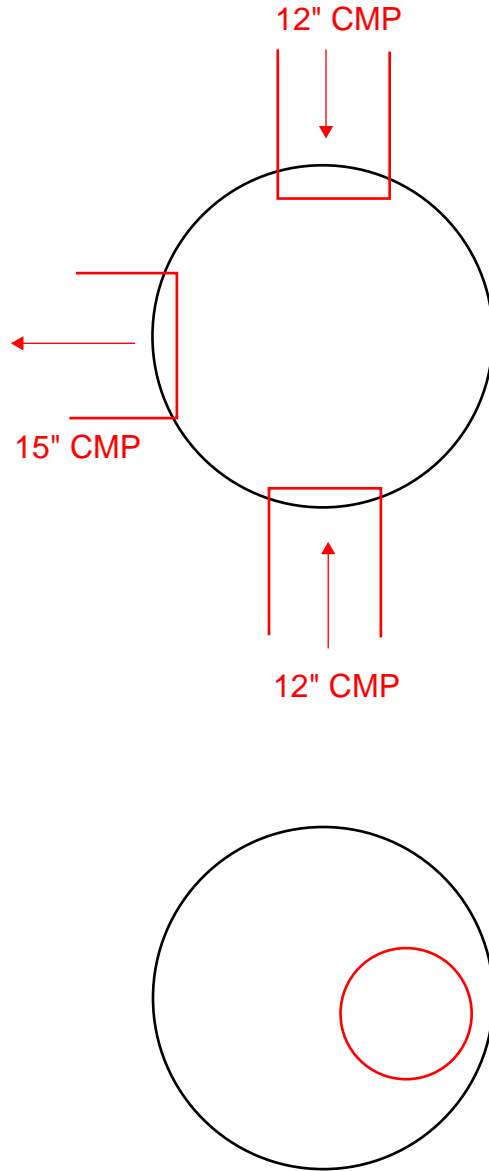
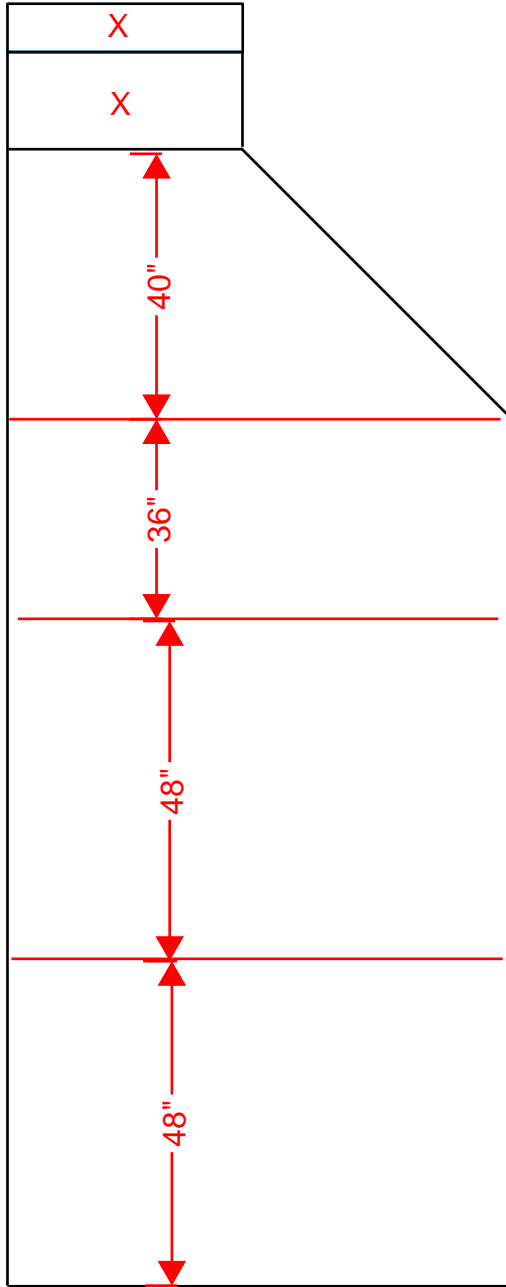
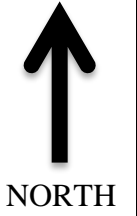
MH lid in gravel shoulder.

| CONDITION                        | POOR         | ←—————→      |              | GOOD         |
|----------------------------------|--------------|--------------|--------------|--------------|
| CONDITION OF LID                 | 1            | 2            | 3            | 4            |
| CONDITION OF GRADE RINGS         | <del>1</del> | <del>2</del> | <del>3</del> | <del>4</del> |
| CONDITION OF BARREL              | 1            | 2            | 3            | 4            |
| CONDITION OF LADDER              | 1            | 2            | 3            | 4            |
| CONDITION OF PIPE INLETS/OUTLETS | 1            | 2            | 3            | 4            |
| PRESENCE OF SOLIDS OR BUILDUP    | YES          |              |              | NO           |
| PRESENCE OF INFILTRATION/INFLOW  | YES          |              |              | NO           |
| DEPTH/VOLUME OF FLOW:            |              | No Flow      |              |              |
| DIAMETER OF MANHOLE:             |              | 4' Manhole   |              |              |

MANHOLE ASSESSMENT/CONDITION NOTES:

- Non-standard lid with 3 angle pieces welded onto lid
- 12 non-standard steel ladder rungs

MANHOLE SKETCH



PROFILE

PLAN

Lois Drive and 32nd Avenue Pathway (PM&E No. 19-08)

Manhole No. SW1628-044

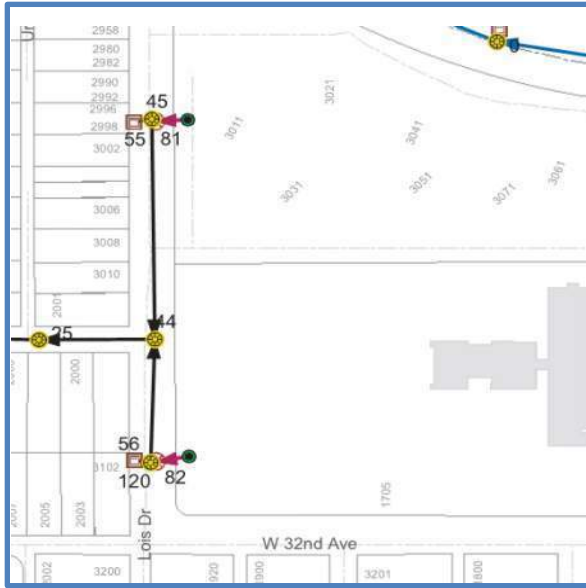


Photo 1 - Structure Location Map



Photo 2 - Manhole Lid / Surrounding Area



Photo 3 - Manhole Lid



Photo 4 - Manhole Cone & Ladder Rungs



Photo 5 - Inlet & Outlet Pipe Penetrations

**CRW ENGINEERING GROUP  
STORM DRAIN STRUCTURE FIELD INSPECTION FORM  
LOIS DRIVE AND 32<sup>ND</sup> AVENUE PATHWAY (PM&E No. 19-08)**

INSPECTION DATE: 6/10/20 INSPECTION TIME: \_\_\_\_\_

WEATHER: \_\_\_\_\_ INSPECTED BY: Joey & Wayne

MANHOLE NUMBER: MH #045 FIRST PHOTO NUMBER: \_\_\_\_\_

APPROXIMATE LOCATION: 335 feet North of Lois Drive & 31<sup>st</sup> Ave, East side of Lois Drive.  
MH lid in gravel shoulder.

| CONDITION                        | POOR  | ←————→ |   | GOOD |
|----------------------------------|-------|--------|---|------|
| CONDITION OF LID                 | 1     | 2      | 3 | 4    |
| CONDITION OF GRADE RINGS         | 1     | 2      | 3 | 4    |
| CONDITION OF BARREL              | 1     | 2      | 3 | 4    |
| CONDITION OF LADDER              | 1     | 2      | 3 | 4    |
| CONDITION OF PIPE INLETS/OUTLETS | 1     | 2      | 3 | 4    |
| PRESENCE OF SOLIDS OR BUILDUP    |       | YES    |   | NO   |
| PRESENCE OF INFILTRATION/INFLOW  |       | YES    |   | NO   |
| DEPTH/VOLUME OF FLOW:            | _____ |        |   |      |
| DIAMETER OF MANHOLE:             | _____ |        |   |      |

MANHOLE ASSESSMENT/CONDITION NOTES:

- Manhole lid is under pavement. Did not assess MH #045.



Lois Drive and 32nd Avenue Pathway (PM&E No. 19-08)

Manhole No. SW1628-045

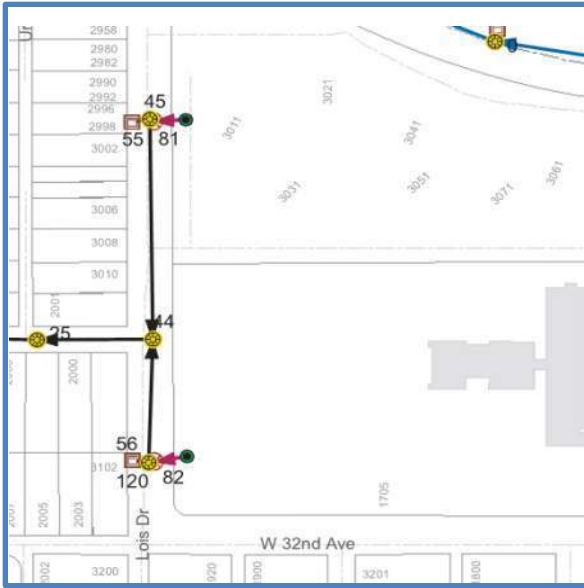


Photo 1 - Structure Location Map



Photo 2 - Manhole / Surrounding Area



Photo 3 - Manhole Lid Under Pavement

**CRW ENGINEERING GROUP**  
**STORM DRAIN STRUCTURE FIELD INSPECTION FORM**  
**LOIS DRIVE AND 32<sup>ND</sup> AVENUE PATHWAY (PM&E No. 19-08)**

INSPECTION DATE: 6/10/20

INSPECTION TIME: 9:20 AM

WEATHER: \_\_\_\_\_

INSPECTED BY: Joey & Wayne

MANHOLE NUMBER: MH #097

FIRST PHOTO NUMBER: \_\_\_\_\_

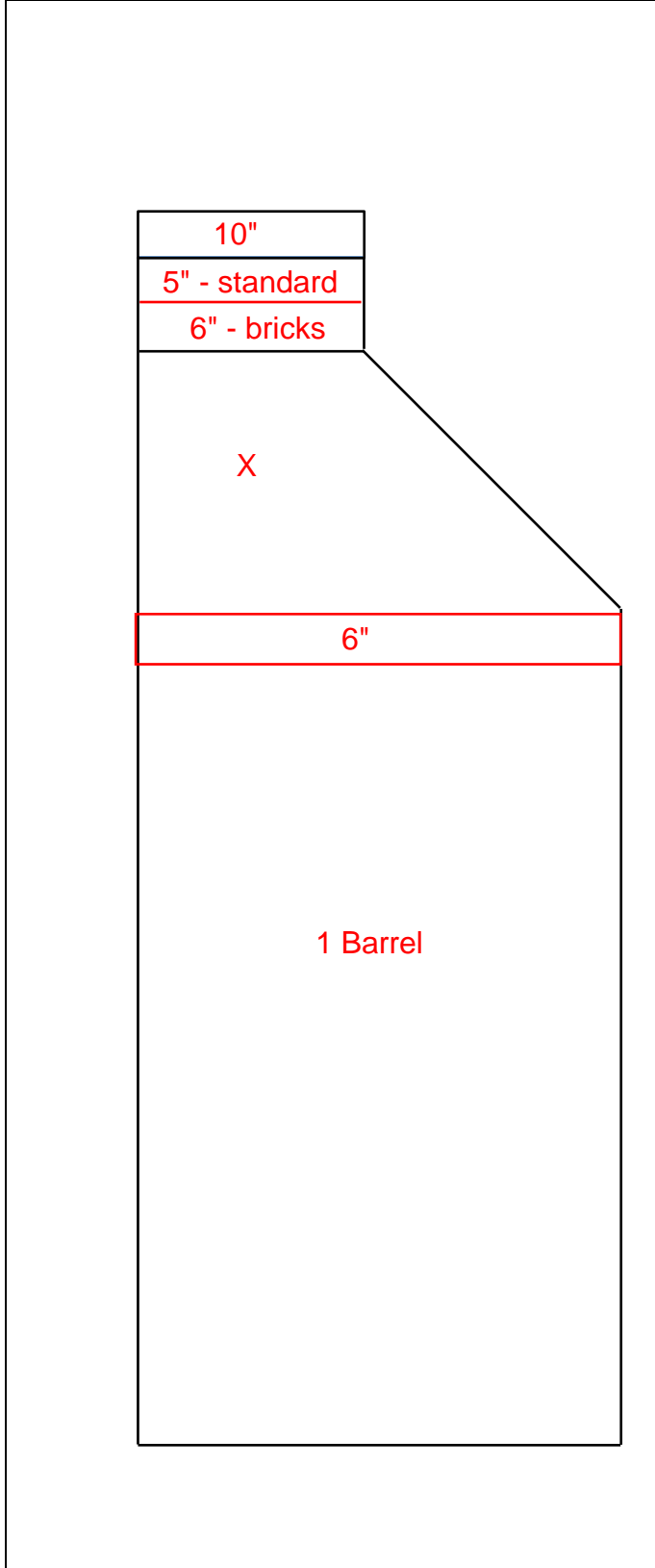
APPROXIMATE LOCATION: Intersection of 32<sup>nd</sup> Ave & unnamed ally, NE corner. 190 feet East of 32<sup>nd</sup> Ave & Wyoming Dr. Intersection. MH lid in pavement

| CONDITION                        | POOR       | ←—————→ | GOOD |    |
|----------------------------------|------------|---------|------|----|
| CONDITION OF LID                 | 1          | 2       | 3    | 4  |
| CONDITION OF GRADE RINGS         | 1          | 2       | 3    | 4  |
| CONDITION OF BARREL              | 1          | 2       | 3    | 4  |
| CONDITION OF LADDER              | 1          | 2       | 3    | 4  |
| CONDITION OF PIPE INLETS/OUTLETS | 1          | 2       | 3    | 4  |
| PRESENCE OF SOLIDS OR BUILDUP    |            | YES     |      | NO |
| PRESENCE OF INFILTRATION/INFLOW  |            | YES     |      | NO |
| DEPTH/VOLUME OF FLOW:            | No flow    |         |      |    |
| DIAMETER OF MANHOLE:             | 4' Manhole |         |      |    |

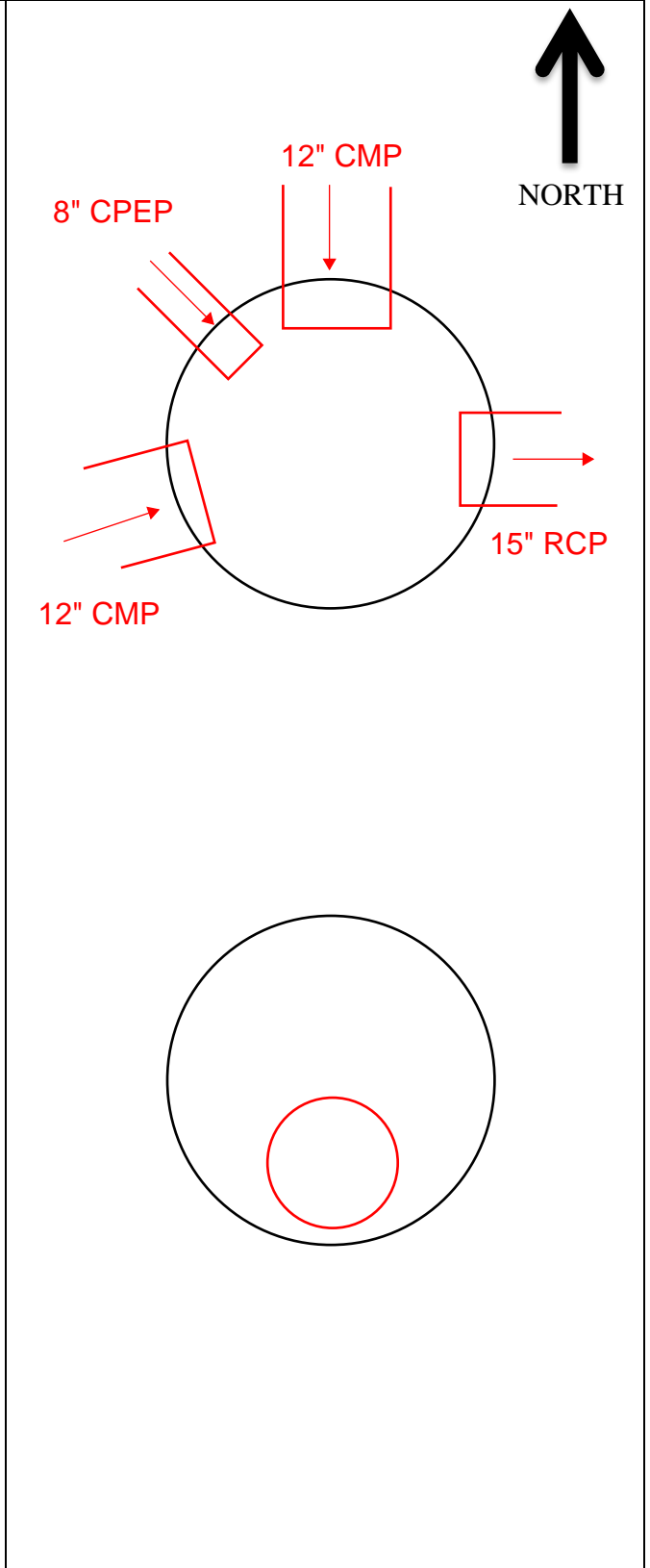
**MANHOLE ASSESSMENT/CONDITION NOTES:**

- 1 layer of non-standard grade ring is composed of bricks (in poor condition)
- No cone, grade rings on reducing slab
- 2 visible non-standard steel ladder rungs, 17" apart
- Non-standard frame with 10" height
- Non-standard lid
- Some sediment buildup in pipes
- Grout cracking at west pipe penetration
- NW pipe (8" plastic) was not shown in MOA record drawings and MOA drainage arcgis map

MANHOLE SKETCH



PROFILE



PLAN

Lois Drive and 32nd Avenue Pathway (PM&E No. 19-08)

Manhole No. SW1628-097

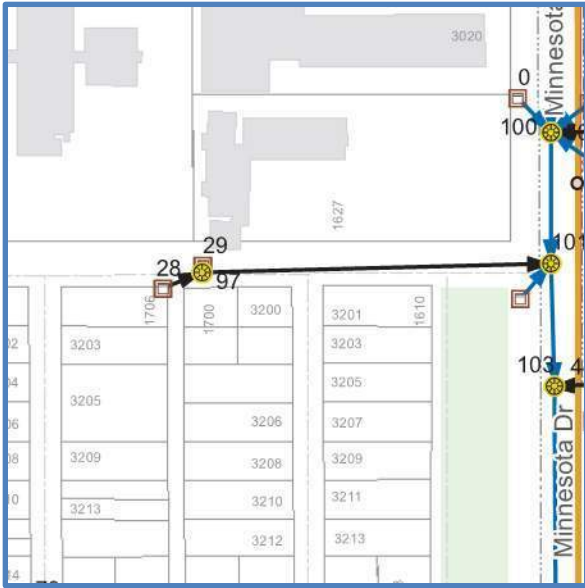


Photo 1 - Structure Location Map



Photo 2 - Manhole / Surrounding Area



Photo 3 – Frame, Brick Grade Ring, Reducing Slab, and Ladder Rung



Photo 4 – West Inlet Pipe, Unidentified Northwest Inlet Pipe & Pipe Penetrations

**CRW ENGINEERING GROUP**  
**STORM DRAIN STRUCTURE FIELD INSPECTION FORM**  
**LOIS DRIVE AND 32<sup>ND</sup> AVENUE PATHWAY (PM&E No. 19-08)**

INSPECTION DATE: 6/10/20

INSPECTION TIME: 10:20 AM

WEATHER: \_\_\_\_\_

INSPECTED BY: Joey & Wayne

MANHOLE NUMBER: MH #120

FIRST PHOTO NUMBER: \_\_\_\_\_

APPROXIMATE LOCATION: 190 feet South of Lois Drive & 31<sup>st</sup> Ave, East side of Lois Drive.

MH lid in

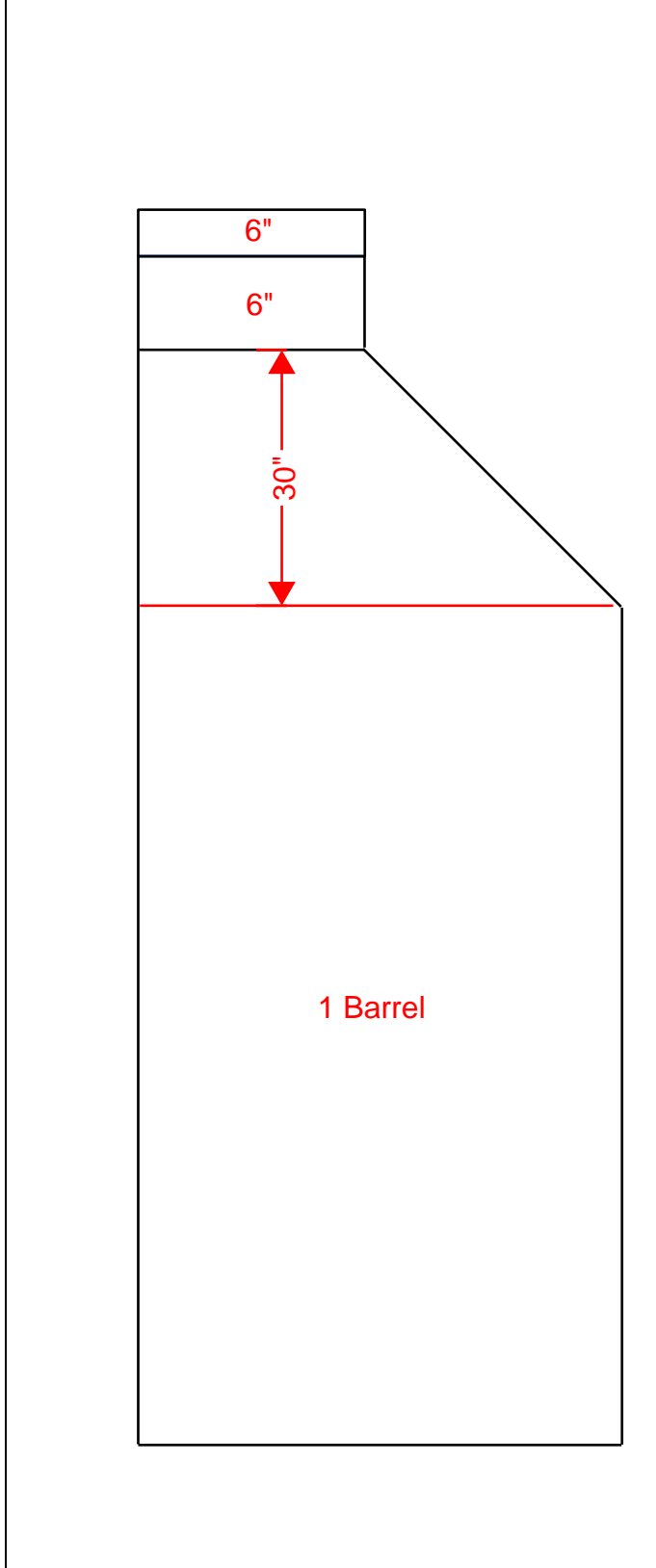
| CONDITION                        | POOR | ←—————→           |   | GOOD |
|----------------------------------|------|-------------------|---|------|
| CONDITION OF LID                 | 1    | 2                 | 3 | 4    |
| CONDITION OF GRADE RINGS         | 1    | 2                 | 3 | 4    |
| CONDITION OF BARREL              | 1    | 2                 | 3 | 4    |
| CONDITION OF LADDER              | 1    | 2                 | 3 | 4    |
| CONDITION OF PIPE INLETS/OUTLETS | 1    | 2                 | 3 | 4    |
| PRESENCE OF SOLIDS OR BUILDUP    |      | YES               |   | NO   |
| PRESENCE OF INFILTRATION/INFLOW  |      | YES               |   | NO   |
| DEPTH/VOLUME OF FLOW:            |      | <u>No flow</u>    |   |      |
| DIAMETER OF MANHOLE:             |      | <u>4' Manhole</u> |   |      |

**MANHOLE ASSESSMENT/CONDITION NOTES:**

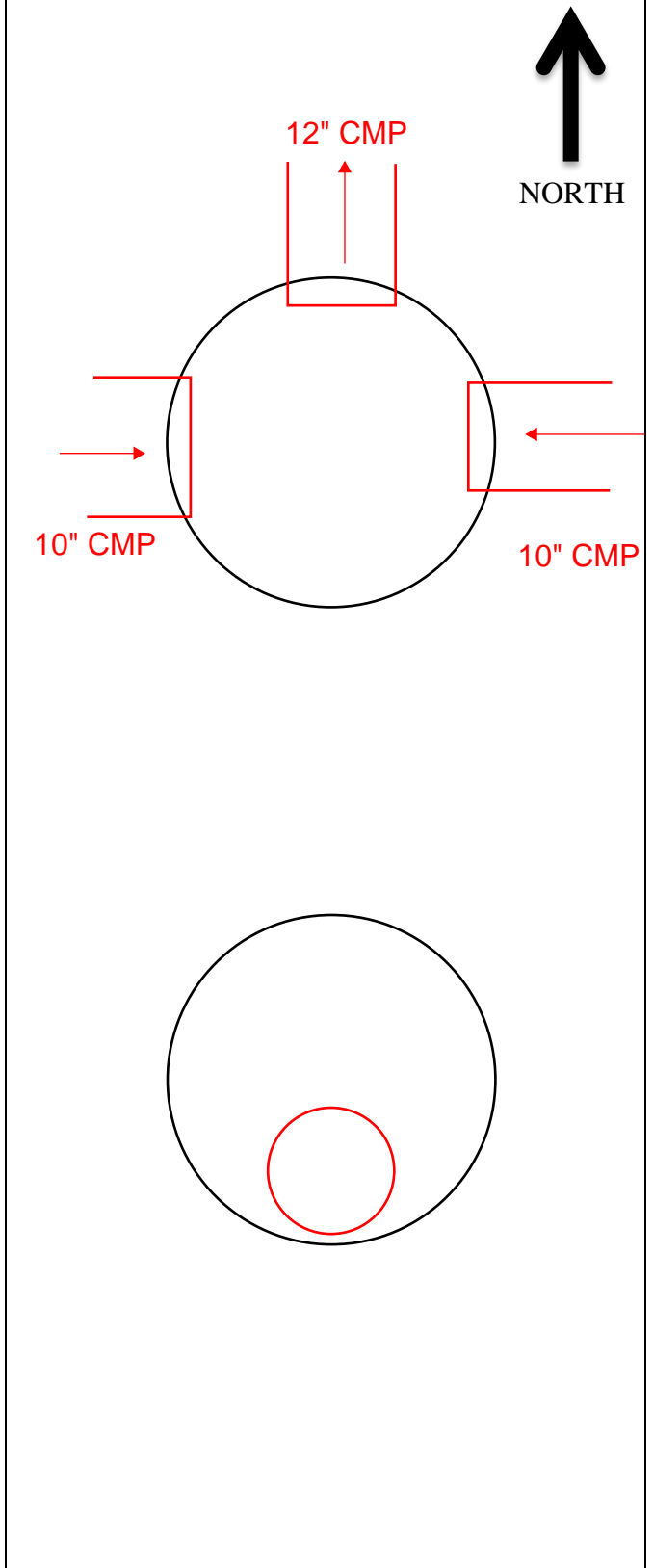
- 4 non-standard steel ladder rungs
- Buried MH cover in gravel
- Vertical cracking in grade ring
- Grade ring placement is offset from cone and frame



MANHOLE SKETCH



PROFILE



PLAN

Lois Drive and 32nd Avenue Pathway (PM&E No. 19-08)

Manhole No. SW1628-120

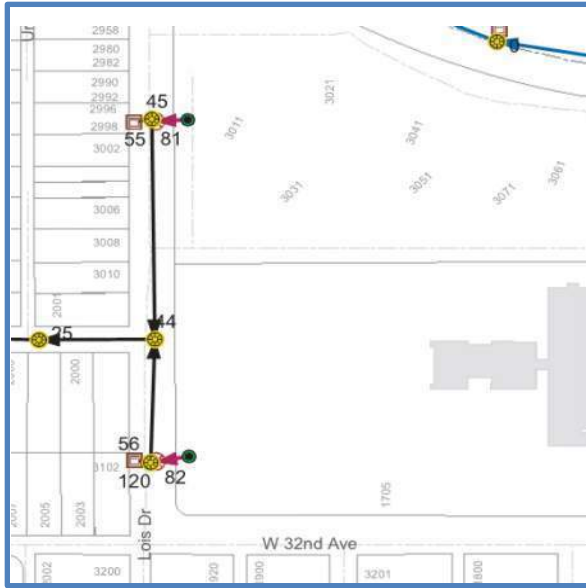


Photo 1 - Structure Location Map



Photo 2 - Manhole / Surrounding Area



Photo 3 - Cracking in Grade Ring



Photo 4 - Frame, Grade Ring & Manhole Cone



Photo 5 - Inlet & Outlet Pipe Penetrations & Ladder Rungs