Storm Drain Condition Assessment Report

Appendix D
W 32\textsuperscript{nd} AVENUE and E. 33\textsuperscript{rd} AVENUE UPGRADES

STORM DRAIN CONDITION ASSESSMENT

AUGUST 2017

Prepared By:

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Memorandum

To: Matt Edge P.E., CRW Engineering Group LLC
From: Russ Porter, P.E., Stephl Engineering LLC
Date: August 15, 2017
Re: W. 32ND and E. 33RD Avenue Upgrades-Storm Drain Condition Assessment

This memorandum presents the results of the pipe inspections and storm drain structure inspections by Stephl Engineering LLC (Stephl) in July 2017.

1.0 Background

The purpose of this condition assessment report is to describe the condition of the existing storm drain structures and piping on 32ND Avenue and 33RD Avenue between Arctic Boulevard and Denali Street. Figures showing the project area, pipes and structures inspected are included in Appendix A.

2.0 Inspection Procedures

2.1 Pipe Inspection Procedure

The pipe inspection work was completed by Stephl. Stephl used a Quickview Camera to perform the pipe inspection work. A Quickview Camera is a pole mounted “zoom” camera. The Quickview Camera is inserted into a storm drain structure and takes a video of the pipe from the storm drain structure. The Quickview Camera does not enter and travel along the pipe. It uses the camera’s zoom capabilities to observe the pipe and record a video image of the inside of the pipe. The Quickview Camera can observe between 10 to 300 feet of pipe depending on existing pipe condition, slope and pipe diameter. Below are some images of the Quickview Camera in operation.
Where existing CMP pipe entered storm drain structures the bottom half of the CMP pipe was probed from the ground surface with a metal bar and moderate force to check for weak/metal on the existing CMP pipe. No structures were manually entered during inspection. The only pipes checked for missing/weak invert were the pipes that could be reached from the ground surface with a metal bar. The pipe outside the manhole wall was not probed. Where the metal was soft or missing it was noted in the inspection logs and figures.

The pipe inspection work was documented on inspection logs and DVD recordings. Storm drain structure numbers were obtained from the Municipality of Anchorage’s Department of Maintenance and Operations Stormwater Grid Maps. Grid Map numbers are used to identify the segments of pipe and are also used to identify individual storm drain structures. The pipe inspection logs are contained in this report in Appendix B. The DVD recordings are contained in this report in Appendix C.

2.2 Structure Inspection Procedure

The storm drain structures were inspected by Stephl during July 2017. Storm drain structure characteristics and defects were recorded on written logs and photographs that are contained in this report. The condition of the storm drain structures was obtained by viewing the structures from the top of the storm drain structures. No structures were entered during the inspection of the storm drain system along 32nd Avenue and 33rd Avenue.

The storm drain structures depth, material of construction, pipe connections, general condition and defects were documented. Descriptions are provided in the storm drain structure inspection logs in Appendix B.

When inspecting the storm drain structures, the defects and the overall condition of the structure were scored (between 1 and 5) according to the following grades:

<table>
<thead>
<tr>
<th>Score</th>
<th>Example Defect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = No defect</td>
<td>none</td>
</tr>
<tr>
<td>2 = Minor defect</td>
<td>spalling concrete, offset frame, corrosion on pipe steps</td>
</tr>
<tr>
<td>3 = Moderate defect</td>
<td>damaged concrete, cracks in structure,</td>
</tr>
<tr>
<td>4 = Significant defect</td>
<td>broken concrete, soil visible, large cracks,</td>
</tr>
<tr>
<td>5 = Most significant defect</td>
<td>collapsing structure</td>
</tr>
</tbody>
</table>
3.0 Inspection Results

Figures of the existing storm drain system inspected are included in Appendix A. The figures shows the existing storm drain system on 32\textsuperscript{nd} and 33\textsuperscript{rd} Avenue and the major defects observed during the storm drain inspection work. For a summary of the pipe and storm drain structure condition and inspection logs see Appendix B. See Appendix C for the pipe inspection videos.

3.1 Pipe Inspection Results

Pipe included in the assessment limits consisted of approximately 4,335 linear feet (LF) of storm drain pipe. The existing storm drain system included 1,800 LF Corrugated Polyethylene Pipe (CPEP), 1,680 LF Corrugated Metal Pipe (CMP), 435 LF of Fiberglass Reinforced Pipe (FRP) pipe, 400 LF of pipe unknown due to not being able to inspect, and 20 LF of cast iron. 3,900 LF of storm drain pipe is estimated to have been inspected during the Quickview pipe inspection work. It is estimated that 435 LF of storm drain pipe was not inspected. The estimated portions of the pipe that could be observed are shown in the figure included in Appendix A.

It is likely that where pipe inverts were missing or weak within structures that the pipe outside the manhole wall was also missing or has weak inverts. For this report it is assumed that if the invert within the structure was missing/weak that the invert elsewhere along the pipe alignment was also missing or weak.

The significant defects found during the inspection were:

- Missing/weak inverts were present in almost all the corrugated metal pipe (CMP) pipes in 32\textsuperscript{nd} Avenue between Arctic Blvd and Dawson Street. Pipe inverts were probed where the pipe enters the storm drain structures and were soft and missing. This is approximately 1,520 LF of 12-inch and 15-inch CMP.
- Numerous FRP pipes at the intersection of 32nd Avenue and A street had holes present in the pipe wall.
- The FRP pipe between MH 1630-170 and MH 1630-214 has a large hole and is beginning to collapse. The crown was deformed down approximately 3 inches and soil was visible behind the hole.
- The effluent pipe from MH 1631-131 taps directly into an 18-inch CPEP between MH 1631-132 and MH 1631-090. 12-inch CPEP protrudes approximately 10-inches into the 18-inch CPEP and is blocking flow.
- Approximately 50\% of the pipes had debris and sediment blocking flow in the pipes. The depth of sediment varies between 1-inch to 6-inches.

3.2 Structure Inspection Results

Forty-six storm drain structures were inspected. None of the storm drain structures inspected appeared to be failing at this time. For a summary of the storm drain structure condition see Appendix B.

- Approximately 50 percent of the structures had cracked or missing grout on the pipe penetrations.
- Approximately 20 percent of the structures had cracked bases.
- Approximately 60 percent of the structures had significant sediment buildup (greater than 4 inches) in the structure sumps.

For significant defects see summary inspection logs for pictures and further storm drain structure inspection information (Appendix B).
Appendix A

Storm Drain Figures
Appendix B

Storm Drain Structure and Pipe Inspection Summary Table

and

Storm Drain Structure and Pipe Inspection Logs
### Storm Drain Structure Condition and Pipe Inspection Summary

<table>
<thead>
<tr>
<th>Structure No.</th>
<th>Rim-Invert (in) of effluent pipe</th>
<th>Type</th>
<th>Overall</th>
<th>Cover</th>
<th>Frame</th>
<th>Chimney</th>
<th>Steps</th>
<th>Cone (all eccentric)</th>
<th>Reducing Slab</th>
<th>Base</th>
<th>Connections (Influent)</th>
<th>Connections (Effluent)</th>
<th>Storm Drain Structure Observations</th>
<th>Pipe Inspection Observations (Approx. 10 to 300 feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630-048</td>
<td>41 Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>12-inch effluent pipe partially blocked with debris,</td>
<td>6-inches of sediment buildup in invert, invert of pipe was soft when probed with moderate force</td>
</tr>
<tr>
<td>1630-049</td>
<td>54 Precast Concrete</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>3</td>
<td>3</td>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>Base was cracked near pipe penetrations</td>
<td>Inverts were probed on pipes protruding into structure and were soft when probed with moderate force, Minor root intrusion in pipe</td>
</tr>
<tr>
<td>1630-051</td>
<td>37 Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>3</td>
<td>Chimneys were offset from frame 3-inches</td>
<td>3-inches of sediment buildup in invert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630-052</td>
<td>32 Precast Concrete</td>
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<td>2</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>3</td>
<td>No grout at pipe connection</td>
<td>6-inches of sediment buildup in invert, invert of pipe was soft when probed with moderate force</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630-052A</td>
<td>44 Precast Concrete</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>4</td>
<td>4</td>
<td></td>
<td>3</td>
<td>Reinforcement mesh is visible in reducing slab, cracked base near pipe connections</td>
<td>Up to 3-inches of sediment buildup in inverts, inverts of pipes were soft when probed with moderate force</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630-053</td>
<td>31 Precast Concrete</td>
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<td>N/A</td>
<td>N/A</td>
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<td>2</td>
<td>N/A</td>
<td>4</td>
<td>Frame and cover has metal loss present, grout is cracked and missing at pipe penetration</td>
<td>Up to 2-inches of sediment buildup in invert, invert of pipe was soft when probed with moderate force</td>
<td></td>
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<tr>
<td>1630-054</td>
<td>70 Precast Concrete</td>
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<td>N/A</td>
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<td>2</td>
<td></td>
<td>1</td>
<td>Invert was probed on pipe protruding into structure and was soft when probed with moderate force</td>
<td></td>
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<tr>
<td>1630-055</td>
<td>44 Precast Concrete</td>
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<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td></td>
<td>Metal loss present on frame and cover</td>
<td>Inverts of pipes were soft when probed with moderate force</td>
<td></td>
<td></td>
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<tr>
<td>1630-056</td>
<td>42 Precast Concrete</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td></td>
<td></td>
<td>Asphault is cracked and failing around frame of manhole</td>
<td>Dent observed in pipe, up to 4-inches of sediment buildup in inverts, inverts of pipes were soft when probed with moderate force</td>
<td></td>
<td></td>
</tr>
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<td>1630-057</td>
<td>61 Precast Concrete</td>
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<td>1</td>
<td>2</td>
<td>N/A</td>
<td>2</td>
<td></td>
<td>1</td>
<td>Cracks in chimneys</td>
<td>Up to 5-inches of sediment buildup in invert, invert of pipe was soft when probed with moderate force</td>
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<td></td>
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<td>1630-058</td>
<td>44 Precast Concrete</td>
<td>2</td>
<td>2</td>
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<td>3</td>
<td>N/A</td>
<td>2</td>
<td>1</td>
<td>N/A</td>
<td>1</td>
<td>1/2 inch gap between frame and chimney</td>
<td>Up to 6-inches of sediment buildup in invert, invert of pipe was soft when probed with moderate force</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630-059</td>
<td>43 Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>2</td>
<td>1</td>
<td></td>
<td>2</td>
<td>Small crack in either base or grout near pipe penetration at effluent</td>
<td>Unlikely to inspect due to being paved over in C Street</td>
<td></td>
<td></td>
</tr>
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<td>1630-060</td>
<td>56 Precast Concrete</td>
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<td>1630-061</td>
<td>40 Precast Concrete</td>
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<td>1</td>
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<td>N/A</td>
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<td>1630-062</td>
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<td>1630-063</td>
<td>38 Precast Concrete</td>
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<td>N/A</td>
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<td>1630-064</td>
<td>38 Precast Concrete</td>
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<td>N/A</td>
<td>N/A</td>
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<td>2</td>
<td>N/A</td>
<td>1</td>
<td>Small crack in either base or grout near pipe penetration at effluent</td>
<td>Unlikely to inspect due to being paved over in C Street</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630-065</td>
<td>69 Precast Concrete</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>N/A</td>
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<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630-065A</td>
<td>70 Precast Concrete</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>N/A</td>
<td>1</td>
<td>1</td>
<td></td>
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<td>1</td>
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<td></td>
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<tr>
<td>1630-066</td>
<td>38 Precast Concrete</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>1</td>
<td></td>
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<td>1</td>
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<tr>
<td>1630-067</td>
<td>40 Precast Concrete</td>
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<td>1</td>
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<td>N/A</td>
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<td></td>
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<tr>
<td>1630-101</td>
<td>60 Precast Concrete</td>
<td>2</td>
<td>2</td>
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<td>N/A</td>
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<td>3</td>
<td>N/A</td>
<td></td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>Grout missing on all pipe connections, small crack in cone</td>
<td>Root intrusion in pipe, up to 6 inches of sediment buildup in invert,</td>
</tr>
<tr>
<td>1630-102</td>
<td>18 Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>3</td>
<td>Chimney is cracked, grout is cracked on effluent pipe connection</td>
<td>Invert was probed on pipe protruding into structure and was soft when probed with moderate force, up to 6 inches of sediment buildup in invert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630-109</td>
<td>35 Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td></td>
<td>3</td>
<td>Large hole in chimney approximately 4-inches tall by 10 inches long, multiple cracks in base, grout cracked and missing at pipe penetrations</td>
<td>Large hole in top of pipe with root intrusion between the 10 o’clock and 2 o’clock position, up to 4 inches of sediment buildup in invert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630-158</td>
<td>22 Cast In Place</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td></td>
<td>3</td>
<td>Soil protruding between frame and chimney, separation is approximately 1/2 inch. Frame is offset from chimney and reducing slab approximately 6 inches</td>
<td>Up to 6-inches of sediment buildup in invert, invert of pipe was soft when probed with moderate force, possible hole in pipe at 8 o’clock position with root intrusion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630-170</td>
<td>42 Cast In Place</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td></td>
<td>2</td>
<td>No grout on influent pipe protrusion, soil visible</td>
<td>Potential grade issues in pipe very little of pipe inspected due to pipe alignment into storm drain structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630-203</td>
<td>59 Cast In Place</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td></td>
<td>2</td>
<td>Grit missing on effluent pipe connection</td>
<td>Up to 2 inches of sediment buildup in invert</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Storm Drain Structure Condition and Pipe Inspection Summary

<table>
<thead>
<tr>
<th>Structure No.</th>
<th>Rim- (in) (of effluent pipe)</th>
<th>Type</th>
<th>Overall</th>
<th>Cover</th>
<th>Frame</th>
<th>Chimney</th>
<th>Steps (all eccentric)</th>
<th>Reducing Slab</th>
<th>Base</th>
<th>Connections (Influent)</th>
<th>Connections (Effluent)</th>
<th>Storm Drain Structure Observations</th>
<th>Pipe Inspection Observations (Approx. 10 to 300 feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1630-210</td>
<td>45</td>
<td>Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>Invert of effluent pipe was missing where pipe penetration. Gout cracked between chimney and frame.</td>
<td>Up to 5 inches of sediment build up in invert, invert of pipe entering manhole was corroded and missing</td>
</tr>
<tr>
<td>1630-214</td>
<td>28</td>
<td>Cast in Place</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td>1</td>
<td>Cracks in base of manhole. Hole in effluent pipe.</td>
<td>Pipe is collapsing and existing pipe is failing. Transitions between CMP and fiberglass pipe between pipe segments</td>
</tr>
<tr>
<td>1630-215</td>
<td>42</td>
<td>Cast in Place</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>1</td>
<td>Multiple cracks in chimney, effluent pipe has multiple cracks in the gout.</td>
<td>Could not inspect much of pipe due to alignment of pipe into storm drain structure. Up to 2 inches of sediment build up in invert of pipe.</td>
</tr>
<tr>
<td>1630-216</td>
<td>24</td>
<td>Cast in Place</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>1</td>
<td>No gout on effluent pipe connection, chimney is cracked and pieces are beginning to break.</td>
<td>Up to 2 inches of sediment build up in invert.</td>
</tr>
<tr>
<td>1631-002</td>
<td>55</td>
<td>Precast Concrete</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>N/A</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>Multiple cracks in base of manhole.</td>
<td>Up to 3 inches of sediment build up in invert.</td>
</tr>
<tr>
<td>1631-004</td>
<td>31</td>
<td>Precast Concrete</td>
<td>2</td>
<td>2</td>
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<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>Grout is broken and missing on effluent pipe connection.</td>
<td>Up to 2 inches of sediment build up in invert.</td>
</tr>
<tr>
<td>1631-005</td>
<td>36</td>
<td>Precast Concrete</td>
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<td>2</td>
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<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>Grout is broken and missing on effluent pipe connection.</td>
<td>Up to 2 inches of sediment build up in invert.</td>
</tr>
<tr>
<td>1631-051</td>
<td>46</td>
<td>Cast in Place</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>Frame is broken and missing metal. Chimney is broken. Multiple pieces are missing and crumbling from chimney.</td>
<td>Up to 2 inches of sediment build up in invert.</td>
</tr>
<tr>
<td>1631-051A</td>
<td>55</td>
<td>Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>Chimney is in poor condition. Grout and appears to have been repaired at some point in time.</td>
<td>Root intrusion in pipe.</td>
</tr>
<tr>
<td>1631-089</td>
<td>36</td>
<td>Precast Concrete</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>Grout is missing at pipe connections. Base is cracked at pipe connection points.</td>
<td>Up to 2 inches of sediment build up in invert.</td>
</tr>
<tr>
<td>1631-090</td>
<td>51</td>
<td>Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>Chimney has cracks and gout is missing.</td>
<td>Pipe damaged where connected to structure between the 11 o'clock and 1 o'clock position. Ovally observed in pipe approximately 5%.</td>
</tr>
<tr>
<td>1631-091</td>
<td>55</td>
<td>Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>Cracks in base between pipe connections. Gout is failing and missing on pipe penetrations.</td>
<td>Ovally observed in pipe approximately 5%</td>
</tr>
<tr>
<td>1631-092</td>
<td>53</td>
<td>Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>Small cracks not separated in reducing slab and chimney, small cracks not separated in base.</td>
<td>Ovally observed in pipe approximately 5%</td>
</tr>
<tr>
<td>1631-093</td>
<td>40</td>
<td>Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>Grout is cracked on pipe connection, frame is offset 5 inches from chimneys.</td>
<td></td>
</tr>
<tr>
<td>1631-094</td>
<td>39</td>
<td>Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>Up to 2 inches of sediment build up in invert.</td>
<td></td>
</tr>
<tr>
<td>1631-097</td>
<td>35</td>
<td>Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>Grout is broken and missing on effluent pipe connection.</td>
<td>Pipe leaving 1631-131 connects directly to pipe in Calais Drive between MH 1631-132 and 1631-090 without a storm drain structure.</td>
</tr>
<tr>
<td>1631-131</td>
<td>26</td>
<td>Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>Pipe leaving 1631-131 connects directly to pipe in Calais Drive between MH 1631-132 and 1631-090 without a storm drain structure.</td>
<td></td>
</tr>
<tr>
<td>1631-132</td>
<td>56</td>
<td>Precast Concrete</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>Base has multiple cracks in it near pipe penetrations.</td>
<td>Multiple holes in pipe varying in size, pipe from structure 1631-131 taps directly into pipe between MH 1631-132 and 1631-090 without a storm drain structure.</td>
</tr>
<tr>
<td>1631-140</td>
<td>49</td>
<td>Precast Concrete</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>Cracked gout on effluent.</td>
<td>Small grade breaks in pipe throughout pipe alignment.</td>
</tr>
<tr>
<td>1631-165</td>
<td>52</td>
<td>Precast Concrete</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>N/A</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>Multiple cracks in base, Grout is missing on pipe penetrations. Step is no of use it is under reducing slab.</td>
<td>Ovally observed in pipe approximately 5%. Up to 3 inches of sediment build up in invert.</td>
</tr>
</tbody>
</table>

* N/A = not available, not applicable

**Defect grades:** 1=No Defect, 2=Minor Defect, 3=Moderate Defect, 4=Significant Defect, 5=Most Significant Defect
DATE, INSPECTOR(S), & LOCATION DATA

Date of Inspection: Tuesday, July 11, 2017
Inspector(s): Porter, Bailey

Atmosphere: O2- N/A  LEL- N/A  H2S- N/A  CO- N/A

General Location Features: North Corner of Arctic Blvd and 32nd Avenue

PIPE CHARACTERISTICS

<table>
<thead>
<tr>
<th>In-Effluent Pipe Size/Type/Diameter</th>
<th>Rim to Invert</th>
<th>Depth of Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 12-inch CMP Effluent</td>
<td>41”</td>
<td>6”</td>
</tr>
</tbody>
</table>

Depth of Sum, Depth of Debris in Sump: 12-inch sump, 4-inches debris

MANHOLE CHARACTERISTIC

Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

Overall Structural Condition: 2.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 22x18-inch, CI, with a grade score of 2
Frame: 7 inch tall, CI, with a grade score of 2

Reducing slab: 1-8 inch with a grade score of 2 crack in reducing slab not separated
Base: 1-38-inch with a grade score of 2
Effluent Pipe Connection: 3-inch protrusion grout is flaking grade score of 2
Additional Comment: 12-inch effluent pipe is clogged with debris. Surface corrosion on frame and cover
MH 1630-048 looking northwest

MH looking north

MH frame and inlet

effluent pipe

12-inch effluent

crack in reducing slab not separated
32\textsuperscript{ND} AND 33\textsuperscript{RD} Avenue Upgrades

Structure Number 1630-048

Pipe Inspection Results

Location of Storm Drain Structure: North corner of Arctic Blvd and 32\textsuperscript{nd} Avenue

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

| 1 | Pipe viewing sequence number |

Pipe Observations:

Segment 1-

Pipe type: 12-inch CMP

General Comments

- Up to 6-inches of sediment buildup in invert (see photo)
- Invert soft when probed with moderate force
6-inches of debris in invert blocking flow
32nd and 33rd Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT
Manhole # 1630-049

DATE, INSPECTOR(S), & LOCATION DATA
Date of Inspection: Wednesday, July 12, 2017
Inspector(s): Porter, Bailey
Atmosphere: O₂- N/A  LEL- N/A  H₂S- N/A  CO- N/A
General Location Features: Center of 32nd Avenue in front of Mattress Ranch

PIPE CHARACTERISTICS
In-Effluent Pipe Size/Type/Diameter  Rim to Invert  Depth of Flow
1. 15-inch CMP Influent  54”  Min.
2. 15-inch CMP Effluent  54”  Min.

Depth of Sum, Depth of Debris in Sump: too much debris to determine

MANHOLE CHARACTERISTIC
Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4 =Significant defect, 5=Most significant defect
Overall Structural Condition: 3.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25-inch lid, CI, with a grade score of 2
Frame: 7 inch tall, CI, with a grade score of 2
Chimney 1-6 inch, with a grade score of 2
Cone: 28-inch with a grade score 2
Steps: 2- metal with a grade score 2

Base: Too much debris to determine height of base, with a grade score 3, base is cracked near pipe connections
Influent Pipe Connection: Influent pipe protrudes 6 inches has a grade score of 3, grout is flaking and cracking
Effluent Pipe Connection: Effluent pipe connection protrudes 6 inches grout is flaking and cracking, Grade score of 3.
Additional Comment: frame is offset from chimney, inverts were probed on manhole and all were soft.
MH 1631-049 looking south towards Mattress Ranch

MH frame

offset frame 1-inch from chimney

effluent cracked around pipe connections

pipe 3 influent, sump full of debris

base to cone connection
32\textsuperscript{ND} AND 33\textsuperscript{RD} Avenue Upgrades

Structure Number 1630-049

Pipe Inspection Results

Location of Storm Drain Structure: West of Arctic Blvd in center of 32\textsuperscript{nd} Avenue

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

Pipe Observations:

Segment 1-
- Pipe type: 12-inch CMP
- General Comments
  - 3-inches of debris on invert

Segment 2-
- Pipe type: 15-inch CMP
- General Comments
  - 2-inches of debris in invert
  - Root intrusion in pipe see photo 2
  - Invert soft when probed with moderate force
Photo 1-root intrusion at crown

Photo 2-root intrusion at 4 o’clock
32\textsuperscript{nd} and 33\textsuperscript{rd} Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT

Manhole # 1630-051

\begin{tabular}{lcl}
\textbf{DATE, INSPECTOR(S), & LOCATION DATA} \\
\textbf{Date of Inspection:} Tuesday, July 11, 2017 & \textbf{Inspector(s):} Porter, Bailey \\
\textbf{Atmosphere:} O\textsubscript{2} - N/A & \textbf{LEL} - N/A & \textbf{H\textsubscript{2}S} - N/A & \textbf{CO} - N/A \\
\textbf{General Location Features:} Northeast corner of Bering and 32\textsuperscript{nd} Avenue
\end{tabular}

\textbf{PIPE CHARACTERISTICS}

\begin{tabular}{lll}
\textbf{In-Effluent Pipe Size/Type/Diameter} & \textbf{Rim to Invert} & \textbf{Depth of Flow} \\
1. 12-inch CMP Effluent & 37” & 1”
\end{tabular}

\textbf{Depth of Sum, Depth of Debris in Sump:} sump full of debris, depth undetermined

\textbf{MANHOLE CHARACTERISTIC}

\textit{Defect grades:} 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

\textbf{Overall Structural Condition:} 2.
\textbf{Material of Construction:} Precast
\textbf{Manhole Shape:} Circular
\textbf{Dimensions:} 48-inch
\textbf{Cover/Lid:} 25x18-inch, CI, with a grade score of 2 rolled curb
\textbf{Frame:} 4 inch tall, CI, with a grade score of 2
\textbf{Chimney:} 2-4 inch chimneys, with a grade score of 2
\textbf{Reducing slab:} 1-6 inch, with a grade score of 2
\textbf{Base:} Could not tell height due to sump being full of debris, grade score 2
\textbf{Effluent Pipe Connection:} 5-inch protrusion grout is flaking, grade score of 3
\textbf{Additional Comment:} Frame offset from reducing slab 1-inch
MH 1630-051 looking north

MH looking east

MH frame and inlet

offset frame

12-inch effluent and cracked grout

grout cracked
32\textsuperscript{ND} AND 33\textsuperscript{RD} Avenue Upgrades
Structure Number 1630-051

Pipe Inspection Results

Location of Storm Drain Structure: Northeast corner of 32\textsuperscript{nd} Avenue and Bering Street

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

Pipe Observations:

Pipe viewing sequence number

Pipe type: 12-inch CMP

General Comments
- Up to 3-inches of sediment buildup in invert

Flow direction:

1
Photo 1-6 inches of debris in invert blocking flow
32nd and 33rd Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT
Manhole # 1630-052

DATE, INSPECTOR(S), & LOCATION DATA
Date of Inspection: Monday, July 10, 2017
Inspector(s): Porter, Bailey
Atmosphere: O2- N/A LEL- N/A H2S- N/A CO- N/A
General Location Features: Southeast corner of Bering and 32nd Avenue

PIPE CHARACTERISTICS
In-Effluent Pipe Size/Type/Diameter        Rim to Invert        Depth of Flow
1. 12-inch CMP Effluent                   32”                   5”

Depth of Sum, Depth of Debris in Sump: debris was greater than 6-inches deep could not determine depth of sump.

MANHOLE CHARACTERISTIC
Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect
Overall Structural Condition: 2.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25x18-inch, CI, with a grade score of 2 rolled curb
Frame: 4 inch tall, CI, with a grade score of 2

Chimney: 3-chimneys totaling 10-inches, with a grade score of 2
Reducing slab: 1-6 inch, with a grade score of 2
Base: unable to measure depth due to debris in sump, with a grade score 2
Effluent Pipe Connection: 7-inch protrusion no grout grade score of 4.
Additional Comment: invert was soft when probed with moderate force within manhole.
MH 1630-052 looking east

MH looking south

MH frame and inlet

Effluent pipe

12-inch effluent cracked grout
32\textsuperscript{ND} AND 33\textsuperscript{RD} Avenue Upgrades

Structure Number 1630-052

Pipe Inspection Results

Location of Storm Drain Structure: Southeast corner of Bering Street and 32\textsuperscript{nd} Avenue

Camera type: Quickview Camera

*Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.*

Pipe viewing sequence number

Pipe Observations:

Segment 1-

Pipe type: 12-inch CMP

General Comments

- Up to 6-inches of sediment buildup in invert blocking most of photo (see photo 1)
- Invert soft when probed with moderate force
Photo 1-6 inches of debris in invert blocking flow
32nd and 33rd Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT
Manhole # 1630-052A

DATE, INSPECTOR(S), & LOCATION DATA

Date of Inspection: Wednesday, July 12, 2017
Inspector(s): Porter, Bailey

Atmosphere: O₂- N/A  LEL- N/A  H₂S- N/A  CO- N/A

General Location Features: Center of Bering and 32nd Avenue

PIPE CHARACTERISTICS

<table>
<thead>
<tr>
<th>In-Effluent Pipe Size/Type/Diameter</th>
<th>Rim to Invert</th>
<th>Depth of Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 12-inch CMP Influent</td>
<td>44”</td>
<td>Min.</td>
</tr>
<tr>
<td>2. 15-inch CMP Influent</td>
<td>44”</td>
<td>Min.</td>
</tr>
<tr>
<td>3. 12-inch CMP Influent</td>
<td>44”</td>
<td>Min.</td>
</tr>
<tr>
<td>4. 12-inch CMP Influent</td>
<td>44”</td>
<td>Min.</td>
</tr>
<tr>
<td>5. 15-inch CMP Effluent</td>
<td>44”</td>
<td>Min.</td>
</tr>
<tr>
<td>6. 12-inch CMP Influent</td>
<td>44”</td>
<td>Min.</td>
</tr>
</tbody>
</table>

Depth of Sum, Depth of Debris in Sump: too much debris to determine

MANHOLE CHARACTERISTIC

Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

Overall Structural Condition: 4.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25-inch lid, CI, with a grade score of 2
Frame: 7 inch tall, CI, with a grade score of 2
Chimney 2-totaling 9 inches in height, with a grade score of 2
Reducing Slab: 1-8 inch with a grade score 4, wire mesh on east side of reducing slab is exposed, see photos
Base: Too much debris to determine height of base, with a grade score 4, circumferential crack through pipe connections
Influent Pipe Connection: All influent pipes have a grade score of 3, grout is flaking and cracking.
Effluent Pipe Connection: Effluent pipe connection protrudes 4 inches, grout is flaking and cracking, grade score of 3.
Additional Comment: frame is offset from chimney, inverts were probed on manhole and all were soft.
MH 1631-052 looking north

MH frame

reinforcement exposed in reducing slab

effluent with crack between pipe connections

pipe 3-influent sump full of debris

pipe 5-effluent and pipe 4- influent cracked base
32\textsuperscript{ND} AND 33\textsuperscript{RD} Avenue Upgrades
Structure Number 1630-052A

Pipe Inspection Results

Location of Storm Drain Structure: Center of Bering Street and 32\textsuperscript{nd} Avenue

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

Pipe Observations:

Segment 1-
Pipe type: 12-inch CMP
General Comments
- 3-inches of debris on invert

Segment 2-
Pipe type: 15-inch CMP
General Comments
- 3-inches of debris in invert
- Invert soft when probed with moderate force

Segment 3-
Pipe type: 12-inch CMP
General Comments
- 2-inches of debris invert in pipe.
- Invert soft when probed with moderate force
Segment 4-
   Pipe type: 12-inch CMP
   General Comments
   • 2-inches of debris in invert of pipe

Segment 5-
   Pipe type: 15-inch CMP
   General Comments
   • Invert soft when probed with moderate force.
   • 1-2-inches of debris on invert of pipe

Segment 6-
   Pipe type: 12-inch CMP
   General Comments
   • 2 inches of debris on invert of pipe
DATE, INSPECTOR(S), & LOCATION DATA

Date of Inspection: Monday, July 10, 2017
Inspector(s): Porter, Bailey
Atmosphere: O₂- N/A  LEL- N/A  H₂S- N/A  CO- N/A
General Location Features: Southwest corner of Bering and 32nd Avenue

PIPE CHARACTERISTICS

In-Effluent Pipe Size/Type/Diameter  Rim to Invert  Depth of Flow
1. 12-inch CMP Effluent  31”  none

Depth of Sum, Depth of Debris in Sump: 12-inch, 2-3 inches

MANHOLE CHARACTERISTIC

Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

Overall Structural Condition: 2.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25x18-inch, CI, with a grade score of 3 rolled curb

Frame: 4-inch tall, CI, with a grade score of 3
Reducing slab: 1-2 and 1-4 inch with a grade score of 2
Base: 36-inch grade score 2
Effluent Pipe Connection: 7-inch protrusion no grout with a grade score of 4.
Additional Comment: frame and cover have corrosion that is leading to minor metal loss
MH 1630-053 looking north

MH looking east

MH frame and inlet

missing metal on frame

12-inch effluent

gROUT crackED and missing
32\textsuperscript{ND} AND 33\textsuperscript{RD} Avenue Upgrades

Structure Number 1630-053

Pipe Inspection Results

Location of Storm Drain Structure: Southwest corner of Bering and 32\textsuperscript{nd} Avenue

Camera type: Quickview Camera

*Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.*

Pipe viewing sequence number

Pipe Observations:

Segment 1-

Pipe type: 12-inch CMP

General Comments

- Up to 3-inches of sediment buildup in invert
- Invert soft when probed with moderate force
32nd and 33rd Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT
Manhole # 1630-054

DATE, INSPECTOR(S), & LOCATION DATA
Date of Inspection: Wednesday, July 12, 2017
Inspector(s): Porter, Bailey
Atmosphere: O₂- N/A  LEL- N/A  H₂S- N/A  CO- N/A
General Location Features: Center of Cheekako and 32nd Avenue

PIPE CHARACTERISTICS

<table>
<thead>
<tr>
<th>In-Effluent Pipe Size/Type/Diameter</th>
<th>Rim to Invert</th>
<th>Depth of Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 12-inch CMP Influent</td>
<td>70”</td>
<td>Min.</td>
</tr>
<tr>
<td>2. 15-inch CMP Influent</td>
<td>70”</td>
<td>Min.</td>
</tr>
<tr>
<td>3. 12-inch CMP Influent</td>
<td>69”</td>
<td>Min.</td>
</tr>
<tr>
<td>4. 15-inch CMP Effluent</td>
<td>70”</td>
<td>Min.</td>
</tr>
<tr>
<td>5. 12-inch CMP Influent</td>
<td>70”</td>
<td>Min.</td>
</tr>
</tbody>
</table>

Depth of Sum, Depth of Debris in Sump: too much debris to determine

MANHOLE CHARACTERISTIC

Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

Overall Structural Condition: 2.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25-inch lid, CI, with a grade score of 2
Frame: 7-inch tall, CI, with a grade score of 2
Chimney: 1-5 inch, with a grade score of 2
Reducing Slab: 1-4 inch with a grade score 2
Steps: 3 metal steps with a grade score 2

Base: Too much debris to determine height of base, with a grade score 2
Influent Pipe Connection: All influent pipes have a grade score of 2.
Effluent Pipe Connection: Effluent pipe connection protrudes 6 inches, grade score of 1.
Additional Comment: frame is offset from chimney, inverts were probed on manhole and all were soft.
MH 1631-054 looking north

MH frame

north is up in photo

pipe 1, 2 and 5 influents

pipe 3 influent sump full of debris

pipe 4 effluent and pipe 5 influent
32ND AND 33RD Avenue Upgrades

Structure Number 1630-054

Pipe Inspection Results

Location of Storm Drain Structure: Center of Cheechako Street and 32nd Avenue

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

Pipe Observations:

Segment 1-
Pipe type: 12-inch CMP
General Comments
- No defects observed

Segment 2-
Pipe type: 15-inch CMP
General Comments
- Invert soft when proved with moderate force

Segment 3-
Pipe type: 12-inch CMP
General Comments
- 2-inches of debris invert in pipe
- Dent in top of pipe, see photo 1
Segment 4-
   Pipe type: 15-inch CMP
   General Comments
   • Invert soft when proved with moderate force

Segment 5-
   Pipe type: 12-inch CMP
   General Comments
   • No defects observed

Photo 1-Dent in crown of pipe between 11 o’clock and 1 o’clock
32nd and 33rd Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT

Manhole # 1630-055

DATE, INSPECTOR(S), & LOCATION DATA
Date of Inspection: Monday, July 10, 2017
Inspector(s): Porter, Bailey
Atmosphere: O₂- N/A  LEL- N/A  H₂S- N/A  CO- N/A
General Location Features: Northeast corner of Chechako and 32nd Avenue

PIPE CHARACTERISTICS
In-Effluent Pipe Size/Type/Diameter  Rim to Invert  Depth of Flow
1. 12-inch CMP Effluent  44"  Min.

Depth of Sum, Depth of Debris in Sump: Too full to measure debris and sump depth

MANHOLE CHARACTERISTIC
Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect
Overall Structural Condition: 2.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25x18-inch, CI, with a grade score of 2 rolled curb
Frame: 4-inch tall, CI, with a grade score of 2
Chimney 3-totaling 10-inches with a grade score of 2
Reducing slab: 1-6 inch with a grade score of 2
Base: Could not determine height Grade score 2
Effluent Pipe Connection: 4-inch protrusion grout ok, grade score of 2.
Additional Comment: Invert in effluent pipe soft when probed with moderate force.
MH 1630-055 looking north
MH frame and inlet
MH chimneys
MH effluent
32\textsuperscript{nd} AND 33\textsuperscript{rd} Avenue Upgrades

Structure Number 1630-055

Pipe Inspection Results

Location of Storm Drain Structure: Northeast corner of Cheechako Street and 32\textsuperscript{nd} Avenue

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

Pipe Observations:

Segment 1-

Pipe type: 12-inch CMP

General Comments

- No defects observed
DATE, INSPECTOR(S), & LOCATION DATA

Date of Inspection: Monday, July 10, 2017
Inspector(s): Porter, Bailey
Atmosphere: O₂ N/A  LEL N/A  H₂S N/A  CO N/A
General Location Features: Northwest corner of Cheechako and 32nd Avenue

PIPE CHARACTERISTICS

<table>
<thead>
<tr>
<th>In-Effluent Pipe Size/Type/Diameter</th>
<th>Rim to Invert</th>
<th>Depth of Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 12-inch CMP Effluent</td>
<td>42”</td>
<td>min”</td>
</tr>
</tbody>
</table>

Depth of Sum, Depth of Debris in Sump: debris was greater than 6-inches deep could not determine depth of sump.

MANHOLE CHARACTERISTIC

Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect
Overall Structural Condition: 1
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25x18-inch, CI, with a grade score of 3 rolled curb corrosion present on manhole cover and frame leading to metal loss
Frame: 4-inch tall, CI, with a grade score of 3
Chimney: 2-chimneys totaling 10-inches with a grade score of 2
Reducing slab: 1-6 inch with a grade score of 2
Base: Unable to measure depth due to debris in sump with a grade score 1
Effluent Pipe Connection: 6-inch protrusion no grout grade score of 2.
Additional Comment: invert was soft when probed with moderate force within manhole

Pipe 1
32\textsuperscript{ND} AND 33\textsuperscript{RD} Avenue Upgrades
Structure Number 1630-056

Pipe Inspection Results

Location of Storm Drain Structure: Northwest corner of Cheechako Street and 32\textsuperscript{nd} Avenue

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

Pipe Observations:

Segment 1-

Pipe type: 12-inch CMP

General Comments

• No defects observed
**32nd and 33rd Avenue Upgrades**

**SEWER MANHOLE INSPECTION REPORT**

*Manhole # 1630-057*

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**DATE, INSPECTOR(S), & LOCATION DATA**

Date of Inspection: Wednesday, July 12, 2017
Inspector(s): Porter, Bailey

Atmosphere: O2- N/A  LEL- N/A  H2S- N/A  CO- N/A

General Location Features: Center of Dawson and 32nd Avenue

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**PIPE CHARACTERISTICS**

<table>
<thead>
<tr>
<th>In-Effluent Pipe Size/Type/Diameter</th>
<th>Rim to Invert</th>
<th>Depth of Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 12-inch CMP Influent</td>
<td>59”</td>
<td>Min.</td>
</tr>
<tr>
<td>2. 12-inch CMP Influent</td>
<td>61”</td>
<td>Min.</td>
</tr>
<tr>
<td>3. 12-inch CMP Influent</td>
<td>61”</td>
<td>Min.</td>
</tr>
<tr>
<td>4. 15-inch CMP Effluent</td>
<td>61”</td>
<td>Min.</td>
</tr>
<tr>
<td>5. 12-inch CMP Influent</td>
<td>61”</td>
<td>Min.</td>
</tr>
</tbody>
</table>

Depth of Sum, Depth of Debris in Sump: Too much debris to determine

---

**MANHOLE CHARACTERISTIC**

Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

Overall Structural Condition: 2.

Material of Construction: Precast

Manhole Shape: Circular

Dimensions: 48-inch

Cover/Lid: 25-inch lid, CI, with a grade score of 2

Frame: 7-inch tall, CI, with a grade score of 2

Chimney: 2 totaling 10, with a grade score of 2

Cone: 1-30 inch with a grade score 2

Base: Too much debris to determine height of base, with a grade score 2

Influent Pipe Connection: Pipe 1 and pipe 2 protrude 2-inches and have a grade score of 2. Pipe 3 and pipe 5 protrudes 5-inches and have a grade score of 2, grout is beginning to crack

Effluent Pipe Connection: Effluent pipe connection protrudes 4 inches. Grade score of 1.

Additional Comment: asphalt cracked around frame

Steps: 2 metal steps with a grade score 1
32ND AND 33RD Avenue Upgrades
Structure Number 1630-057

Pipe Inspection Results

Location of Storm Drain Structure: Center of Dawson and 32nd Avenue

Camera type: Quickview Camera

*Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.*

Pipe Observations:

Segment 1-
- Pipe type: 12-inch CMP
- General Comments
  - 2-inch dent in top of pipe between 11 o’clock and 1 o’clock, see photo 1

Segment 2-
- Pipe type: 12-inch CMP
- General Comments
  - 2-inches of debris in invert

Segment 3-
- Pipe type: 12-inch CMP
- General Comments
  - 2-inches of invert in pipe.
  - Invert soft when probed with moderate force
Segment 4-
Pipe type: 15-inch CMP
General Comments
• Invert soft when probed with moderate force

Segment 5-
Pipe type: 12-inch CMP
General Comments
• 4-inches of debris in invert

Photo 1-Dent in crown of pipe between 11 o’clock and 1 o’clock
32\textsuperscript{nd} and 33\textsuperscript{rd} Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT

Manhole # 1630-058

\textbf{DATE, INSPECTOR(S), & LOCATION DATA}

Date of Inspection: Monday, July 10, 2017  
Inspector(s): Porter, Bailey

Atmosphere: \textit{O}_2- N/A  \textit{LEL}- N/A  \textit{H}_2\textit{S}- N/A  \textit{CO}- N/A

General Location Features: Northeast corner of 32\textsuperscript{nd} and Dawson Street

\textbf{PIPE CHARACTERISTICS}

<table>
<thead>
<tr>
<th>In-Effluent Pipe Size/Type/Diameter</th>
<th>Rim to Invert</th>
<th>Depth of Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 12-inch CMP Effluent</td>
<td>44\textquotedbl{}</td>
<td>Minimal</td>
</tr>
</tbody>
</table>

Depth of Sum, Depth of Debris in Sump: debris was greater than 6-inches deep could not determine depth of sump

\textbf{MANHOLE CHARACTERISTIC}

\textbf{Defect grades:} 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

Overall Structural Condition: 2.

Material of Construction: Precast

Manhole Shape: Circular

Dimensions: 48-inch

Cover/Lid: 25x18-inch, CI, with a grade score of 2 rolled curb

Frame: 4-inch tall, CI, with a grade score of 2

\textbf{Chimney}: 4-chimneys totaling 11-inches with a grade score of 3

\textbf{Reducing slab}: 1-6 inch with a grade score of 2

\textbf{Base}: Unable to measure depth due to debris in sump, grade score 1

\textbf{Effluent Pipe Connection}: 7-inch protrusion no grout grade score of 2

Additional Comment: Cracked chimneys, hole in chimneys approximately 3-inches tall and 6 inches long

Pipe 1
MH 1630-058 looking west

MH looking north

MH frame

effluent pipe

cracked chimney with hole
32\textsuperscript{ND} AND 33\textsuperscript{RD} Avenue Upgrades

Structure Number 1630-058

Pipe Inspection Results

Location of Storm Drain Structure: Northeast corner of Dawson Street and 32\textsuperscript{nd} Avenue

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

Pipe viewing sequence number

Pipe Observations:

Segment 1-

Pipe type: 12-inch CMP

General Comments

• 5 inches of debris blocking flow, see photo
Photo 1-6-inches of debris in invert blocking flow
32nd and 33rd Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT

Manhole # 1630-059

DATE, INSPECTOR(S), & LOCATION DATA

Date of Inspection: Monday, July 10, 2017
Inspector(s): Porter, Bailey
Atmosphere: O2- N/A   LEL- N/A   H2S- N/A   CO- N/A
General Location Features: Northwest corner of 32nd and Dawson

PIPE CHARACTERISTICS

<table>
<thead>
<tr>
<th>In-Effluent Pipe Size/Type/Diameter</th>
<th>Rim to Invert</th>
<th>Depth of Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 12-inch CMP Effluent</td>
<td>43”</td>
<td>4-inches</td>
</tr>
</tbody>
</table>

Depth of Sum, Depth of Debris in Sump: debris was greater than 6-inches deep could not determine depth of sump.

MANHOLE CHARACTERISTIC

Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

Overall Structural Condition: 2.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25x18-inch, CI, with a grade score of 2 rolled curb
Frame: 4-inch tall, CI, with a grade score of 2
Chimney: 2-chimneys totaling 9-inches with a grade score of 2
Reducing slab: 1-6 inch with a grade score of 2
Base: Unable to measure depth due to debris in sump with a grade score 1
Effluent Pipe Connection: 6-inch protrusion grade score of 2.
Additional Comment: Invert was soft when probed with moderate force within manhole

Pipe 1
MH 1630-059 looking north

MH frame and inlet

MH frame

Effluent pipe

gap between chimney and frame
32\textsuperscript{ND} AND 33\textsuperscript{RD} Avenue Upgrades

Structure Number 1630-059

Pipe Inspection Results

Location of Storm Drain Structure: Northwest corner of Dawson Street and 32\textsuperscript{nd} Avenue

Camera type: Quickview Camera

*Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.*

Pipe viewing sequence number

Pipe Observations:

Segment 1-

Pipe type: 12-inch CMP

General Comments

- 6 inches of debris blocking flow (see photo 1)
Photo 1-6-inches of debris in invert blocking flow
32nd and 33rd Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT

Manhole # 1630-061

DATE, INSPECTOR(S), & LOCATION DATA

Date of Inspection: Wednesday, July 12, 2017
Inspector(s): Porter, Bailey

Atmosphere: O₂- N/A  LEL- N/A  H₂S- N/A  CO- N/A

General Location Features: Center of Eide Street and 32nd Avenue

PIPE CHARACTERISTICS

<table>
<thead>
<tr>
<th>In-Effluent Pipe Size/Type/Diameter</th>
<th>Rim to Invert</th>
<th>Depth of Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 18-inch CPEP Influent</td>
<td>56”</td>
<td>Min.</td>
</tr>
<tr>
<td>2. 10-inch CPEP Influent</td>
<td>54”</td>
<td>Min.</td>
</tr>
<tr>
<td>3. 10-inch CPEP Influent</td>
<td>54”</td>
<td>Min.</td>
</tr>
<tr>
<td>4. 18-inch CPEP Effluent</td>
<td>56”</td>
<td>Min.</td>
</tr>
<tr>
<td>5. 10-inch CPEP Influent</td>
<td>54”</td>
<td>Min.</td>
</tr>
</tbody>
</table>

Depth of Sum, Depth of Debris in Sump: Too much debris to determine

MANHOLE CHARACTERISTIC

Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

Overall Structural Condition: 1.

Material of Construction: Precast

Manhole Shape: Circular

Dimensions: 72-inch

Cover/Lid: 25-inch lid, CI, with a grade score of 1

Frame: 7-inch tall, CI, with a grade score of 1

Chimney: 15-inches total of chimneys due to grout could not tell individual chimneys, with a grade score of 1

Reducing Slab: 1-8 inch with a grade score 1

Steps: 3 poly steps with a grade score 1

Base: Too much debris to measure depth, with a grade score 1

Influent Pipe Connection: Influent pipe connection protrudes 2 inches, grade score of 1.

Effluent Pipe Connection: Effluent pipe connection protrudes 2 inches, grade score of 1.

Additional Comment: manhole appears to be newly installed.
MH 1631-061 looking south
MH frame

chimney
influent pipes photo taken looking north

influent pipe photo taken looking south
effluent pipe and influent 10-inch cpep photo taken looking west
32ND AND 33RD Avenue Upgrades
Structure Number 1630-061

Pipe Inspection Results

Location of Storm Drain Structure: Center of Eide and 32nd Avenue

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

Pipe Observations:

Segment 1-
- Pipe type: 18-inch CPEP
  - General Comments
  - No defects observed.

Segment 2-
- Pipe type: 10-inch CPEP
  - General Comments
  - No defects observed.
  - Very little of pipe observed due to alignment of pipes into manhole

Segment 3-
- Pipe type: 10-inch CPEP
  - General Comments
  - No defects observed

Segment 4-
- Pipe type: 18-inch CPEP
  - General Comments
No defects observed

Segment 5-

Pipe type: 10-inch CPEP

General Comments

• No defects observed
• Very little of pipe observed due to alignment of pipes into manhole
32nd and 33rd Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT
Manhole # 1630-062

DATE, INSPECTOR(S), & LOCATION DATA
Date of Inspection: Monday, July 10, 2017
Inspector(s): Porter, Bailey
Atmosphere: O2- N/A  LEL- N/A  H2S- N/A  CO- N/A
General Location Features: Northeast corner of 32nd Avenue and Eide Street

PIPE CHARACTERISTICS
In-Effluent Pipe Size/Type/Diameter  Rim to Invert  Depth of Flow
1. 10-inch CPEP Effluent  40”  Minimal

Depth of Sum, Depth of Debris in Sump: 18-inch sump with 2-inches of debris

MANHOLE CHARACTERISTIC
Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect
Overall Structural Condition: 1.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25x18-inch, CI, with a grade score of 1 rolled curb
Frame: 4-inch tall, CI, with a grade score of 1

Chimney: 2-chimneys totaling 8-inches with a grade score of 1
Reducing slab: 1-6 inch with a grade score of 1
Base: 36-inch with a grade score 1
Effluent Pipe Connection: 4-inch protrusion grout grade score of 1.
Additional Comment: Manhole in good condition

Pipe 1
MH 1630-062 looking south

MH 1630-062 looking west

MH frame

chimney and reducing slab

effluent pipe
32\textsuperscript{ND} AND 33\textsuperscript{RD} Avenue Upgrades

Structure Number 1630-062

Pipe Inspection Results

Location of Storm Drain Structure: Northeast corner of Eide Street and 32\textsuperscript{nd} Avenue

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

Pipe viewing sequence number

Pipe Observations:

Segment 1-

Pipe type: 10-inch CPEP

General Comments

• No defects observed
32nd and 33rd Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT
Manhole # 1630-063

**DATE, INSPECTOR(S), & LOCATION DATA**

Date of Inspection: Monday, July 10, 2017
Inspector(s): Porter, Bailey

Atmosphere: O2- N/A  LEL- N/A  H2S- N/A  CO- N/A

General Location Features: Northwest corner of 32nd Avenue and Eureka Street

**PIPE CHARACTERISTICS**

<table>
<thead>
<tr>
<th>In-Effluent Pipe Size/Type/Diameter</th>
<th>Rim to Invert</th>
<th>Depth of Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 10-inch CPEP Effluent</td>
<td>36”</td>
<td>Minimal</td>
</tr>
</tbody>
</table>

Depth of Sum, Depth of Debris in Sump: 18-inch sump with 4-inches of debris

**MANHOLE CHARACTERISTIC**

Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

Overall Structural Condition: 1.
Material of Construction: Precast

Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25x18-inch, CI, with a grade score of 1 rolled curb
Frame: 4-inch tall, CI, with a grade score of 1

Chimney: 3-chimneys totaling 10-inches with a grade score of 1
Reducing slab: 1-6 inch with a grade score of 1
Base: 36-inch with a grade score 1
Effluent Pipe Connection: 7-inch protrusion grout grade score of 1.
Additional Comment: Manhole in good condition
MH 1630-063 looking west

MH 1630-063 looking north

MH frame

chimney and reducing slab

effluent pipe
32ND AND 33RD Avenue Upgrades
Structure Number 1630-063

Pipe Inspection Results

Location of Storm Drain Structure: Northwest corner of Eide Street and 32nd Avenue

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

Pipe viewing sequence number

Pipe Observations:

Segment 1-
  Pipe type: 10-inch CPEP
  General Comments
  • No defects observed
32nd and 33rd Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT

Manhole # 1630-064

DATE, INSPECTOR(S), & LOCATION DATA

Date of Inspection: Tuesday, July 11, 2017
Inspector(s): Porter, Bailey
Atmosphere: O₂- N/A  LEL- N/A  H₂S- N/A  CO- N/A
General Location Features: Southside of the intersection at 32nd Avenue and Eide Street

PIPE CHARACTERISTICS

<table>
<thead>
<tr>
<th>In-Effluent Pipe Size/Type/Diameter</th>
<th>Rim to Invert</th>
<th>Depth of Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 10-inch CPEP Effluent</td>
<td>38”</td>
<td>Minimal</td>
</tr>
</tbody>
</table>

Depth of Sum, Depth of Debris in Sump: 18-inch sump with 4-inches of debris

MANHOLE CHARACTERISTIC

Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

Overall Structural Condition: 1.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25x18-inch, CI, with a grade score of 1 rolled curb
Frame: 4-inch tall, CI, with a grade score of 1

Chimney: 2-chimneys totaling 8-inches with a grade score of 1
Reducing slab: 1-6 inch with a grade score of 1
Base: 36-inch with a grade score 2, small crack in base
Effluent Pipe Connection: 6-inch protrusion grout grade score of 1
Additional Comment: Manhole in good condition crack above effluent pipe is possibly in grout not base could not determine.
MH 1630-064 looking south

MH 1630-064 looking north

MH frame

Small crack in base above effluent pipe

Effluent pipe
32\textsuperscript{ND} AND 33\textsuperscript{RD} Avenue Upgrades

Structure Number 1630-064

Pipe Inspection Results

Location of Storm Drain Structure: South curbline at intersection of 32\textsuperscript{nd} Avenue and Eide Street

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

Pipe viewing sequence number

Pipe Observations:

Segment 1-

Pipe type: 10-inch CPEP

General Comments

- No defects observed
SEWER MANHOLE INSPECTION REPORT
Manhole # 1630-065

DATE, INSPECTOR(S), & LOCATION DATA
Date of Inspection: Wednesday, July 12, 2017
Inspector(s): Porter, Bailey
General Location Features: Center of 32nd Avenue and Eureka Street

Atmosphere: 
- \( O_2 \): N/A
- LEL: N/A
- \( H_2S \): N/A
- CO: N/A

PIPE CHARACTERISTICS

<table>
<thead>
<tr>
<th>In-Effluent Pipe Size/Type/Diameter</th>
<th>Rim to Invert</th>
<th>Depth of Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 10-inch CPEP Influent</td>
<td>53”</td>
<td>Min.</td>
</tr>
<tr>
<td>2. 18-inch CPEP Influent</td>
<td>69”</td>
<td>Min.</td>
</tr>
<tr>
<td>3. 10-inch CPEP Influent</td>
<td>54”</td>
<td>Min.</td>
</tr>
<tr>
<td>4. 18-inch CPEP Effluent</td>
<td>69”</td>
<td>Min.</td>
</tr>
</tbody>
</table>

Depth of Sum, Depth of Debris in Sump: 18-inch sump, 2 inches of debris

MANHOLE CHARACTERISTIC

Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

Overall Structural Condition: 1.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25-inch lid, CI, with a grade score of 1
Frame: 7-inch tall, CI, with a grade score of 1
Chimney: 14-inches total of chimneys due to grout could not tell individual chimneys, with a grade score of 1
Steps: 4 poly steps with a grade score 1

Reducing Slab: 1-6 inch with a grade score 1
Base: 64-inch base, with a grade score 1
Influent Pipe Connection: Influent pipe connection protrudes 3 inches, grade score of 1.
Effluent Pipe Connection: Effluent pipe connection protrudes 4 inches, grade score of 1.
Additional Comment: manhole appears to be newly installed.
32\textsuperscript{ND} AND 33\textsuperscript{RD} Avenue Upgrades

Structure Number 1630-065

Pipe Inspection Results

Location of Storm Drain Structure: Center of Eureka and 32\textsuperscript{nd} Avenue

Camera type: Quickview Camera

*Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.*

Pipe Observations:

Segment 1-
- Pipe type: 10-inch CPEP
- General Comments
  - No defects observed.

Segment 2-
- Pipe type: 18-inch CPEP
- General Comments
  - No defects observed.

Segment 3-
- Pipe type: 10-inch CPEP
- General Comments
  - No defects observed

Segment 4-
- Pipe type: 18-inch CPEP
- General Comments
  - No defects observed
32nd and 33rd Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT
Manhole # 1630-065A

DATE, INSPECTOR(S), & LOCATION DATA
Date of Inspection: Wednesday, July 12, 2017
Inspector(s): Porter, Bailey
Atmosphere: O2- N/A  LEL- N/A  H2S- N/A  CO- N/A
General Location Features: West of manhole 1630-065 Center of 32nd Avenue and Eureka Street

PIPE CHARACTERISTICS
In-Effluent Pipe Size/Type/Diameter  Rim to Invert  Depth of Flow
1. 18-inch CPEP Influent 70”  Min.
2 18-inch CPEP Effluent 70”  Min.

Depth of Sum, Depth of Debris in Sump: 12-inch sump, 2 inches of debris

MANHOLE CHARACTERISTIC
Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect
Overall Structural Condition: 1.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25-inch lid, CI, with a grade score of 1
Frame: 7-inch tall, CI, with a grade score of 1
Chimney: 10-inches total of chimneys due to grout could not tell individual chimneys, with a grade score of 1
Steps: 4 poly steps with a grade score 1
Cone: 26-inch with a grade score 1
Base: 36-inch base, with a grade score 1
Influent Pipe Connection: Influent pipe connection protrudes 3 inches, grade score of 1.
Effluent Pipe Connection: Effluent pipe connection protrudes 3 inches, grade score of 1.
Additional Comment: Manhole appears to be newly installed.
MH 1631-065A looking north
MH frame and lid

chimney and steps
pipe 1 influent

pipe 2 effluent
32\textsuperscript{nd} AND 33\textsuperscript{rd} Avenue Upgrades

Structure Number 1630-065A

Pipe Inspection Results

Location of Storm Drain Structure: Center of Eureka and 32\textsuperscript{nd} Avenue 10 feet to the west of manhole 1630-065

Camera type: Quickview Camera

Quickview camera can observe from 10 to 300 feet of pipe depending on existing pipe condition, slope, and diameter.

Pipe Observations:

Pipe viewing sequence number

Segment 1-
  Pipe type: 18-inch CPEP
  General Comments
  • No defects observed.

Segment 2-
  Pipe type: 18-inch CPEP
  General Comments
  • No defects observed.
32nd and 33rd Avenue Upgrades

SEWER MANHOLE INSPECTION REPORT
Manhole # 1630-066

DATE, INSPECTOR(S), & LOCATION DATA
Date of Inspection: Monday, July 10, 2017
Inspector(s): Porter, Bailey
Atmosphere: O₂- N/A  LEL- N/A  H₂S- N/A  CO- N/A
General Location Features: Northeast corner of 32nd and Eureka Street

PIPE CHARACTERISTICS

<table>
<thead>
<tr>
<th>In-Effluent Pipe Size/Type/Diameter</th>
<th>Rim to Invert</th>
<th>Depth of Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 10-inch CPEP Effluent</td>
<td>38”</td>
<td>Minimal</td>
</tr>
</tbody>
</table>

Depth of Sum, Depth of Debris in Sump: 12-inch sump with 4-inches of debris

MANHOLE CHARACTERISTIC

Defect grades: 1=No Defect, 2=Minor Defect, 3=Moderate defect, 4=Significant defect, 5=Most significant defect

Overall Structural Condition: 1.
Material of Construction: Precast
Manhole Shape: Circular
Dimensions: 48-inch
Cover/Lid: 25x18-inch, CI, with a grade score of 1 rolled curb
Frame: 4-inch tall, CI, with a grade score of 1
Chimney: 2-chimneys totaling 9-inches with a grade score of 1
Reducing slab: 1-6 inch with a grade score of 1
Base: 36-inch with a grade score 1
Effluent Pipe Connection: 3-inch protrusion grout grade score of 1.
Additional Comment: Manhole in good condition
MH 1630-066 looking north

MH 1630-066 looking east

MH frame

chimney and reducing slab

effluent pipe and base