



Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Bassett Creek 2017 Flood Control Project Inspection
Date: December 13, 2017
Project: 23270051.38 2017 4065

In accordance to the Operation and Maintenance Manual for the Bassett Creek Flood Control Project, an annual inspection is required to review the condition of the Flood Control Project (FCP) features. The FCP was turned over to the local sponsor during 2002. Therefore, inspection of the FCP features was initialized during the fall of 2002, which was the first formal inspection by the BCWMC. Except as noted, the annual inspections have been performed during the years 2002-2017. Inspections were not performed during 2003, 2011, and 2013 due to BCWMC budget considerations. Some of the municipalities have performed independent inspections of several of the FCP structures. The municipalities are responsible for routine maintenance and repair of the BCWMC FCP features located within their city (see Table 1 at the end of this memo). The municipalities are also responsible for submitting the completed Bassett Creek Flood Control Project Maintenance Record from the previous year's inspection. It is important that the BCWMC receive these records, as the inspection and reporting are essential to ensure the BCWMC maintains its eligibility to receive federal funds to repair or replace FCP features in the event of a catastrophe.

The municipalities may request reimbursement from the BCWMC for maintenance and repairs that exceed \$25,000. However, the municipalities must perform regular, routine maintenance and submit the required reporting before requesting and receiving BCWMC reimbursement. This will help prevent the situation wherein the BCWMC pays for maintenance work over \$25,000 because the municipalities neglected routine maintenance for several years. The BCWMC expects the municipalities to inform the Commission in advance (e.g., two years) of their request for reimbursement.

The BCWMC will consider adding maintenance and repair projects that are more than \$100,000 to the BCWMC CIP. Table 1 (at the end of this memo) provides examples of maintenance and repairs that are major or could be major.

In addition, the cities (or other road authority) where the FCP features are located are responsible for maintenance, repair and replacement of road crossings, and their corresponding conveyance structures, that were installed as part of the FCP.

Following are the 2017 inspection comments and recommendations:

Plymouth Features

Inspection Date: October 16, 2017

Personnel: Patrick Brockamp & Josh Phillips (Barr)

1. Plymouth Creek Fish Barrier (Constructed 1987)

- a. The water flow over the weir structure was 0.23 feet. The staff gage was at 1.35 feet.
- b. The overall condition of the structure was satisfactory and the concrete appeared to be in good condition. There are three vertical fractures in the downstream portion of the east (left) wing wall, one crack on the downstream portion of the west (right) wing wall, and some surface aggregate visible on both downstream wing walls. There is a gap in the expansion joint in the middle of the west (right) abutment wall measuring approximately $\frac{3}{4}$ inch. These observations are consistent with previous inspections.
- c. Sediment has accumulated in the pool upstream of the structure and has formed a delta/island with vegetation growing on it. The deposited sediment is generally forcing the creek to the east (left) bank, although it appears high flows may also flow along the west (right) bank.
- d. The upstream end of the railing on both sides of the structure has deteriorated due to rust below the water line and not connected to the concrete. The railing is functional but should be repaired.
- e. Some riprap on the west (right) slope downstream of the structure has slid, exposing the filter fabric underlayment. This observation is consistent with previous inspections. The downstream slopes appear generally stable and vegetation has established on both sides.

Recommended Action:

- Remove accumulation of sediment from upstream pool (coordination with MPCA and DNR will be necessary). We understand the MPCA did not support or permit sediment removal during the 2010 channel restoration project.
- Repair metal railings on both sides of the structure.
- Monitor west downstream slope and replace riprap, as necessary.
- Monitor concrete cracks, fractures, and width of joint opening during future inspections.

2. Medicine Lake Outlet Structure (Constructed 1996)

- a. The overall condition of the structure was satisfactory and the concrete appeared to be in good condition.

Note: references to "right" and "left" are with respect to facing downstream.

- b. The channel between the lake and the dam was full and water was flowing 0.67 feet over the weir. The staff gage was at 1.20 feet.
- c. Upstream of the outlet structure, the east (left) bank contains a large tree, partially under an existing chain link fence, that is leaning away from the channel and exposing soil and roots. If the tree falls, it will leave a void in the bank. This observation is consistent with previous inspections.
- d. Runoff from the road has caused some minor erosion around the east (left) end of the dam where the dam ties into the east (left) bank of the creek. This observation is consistent with previous inspections.
- e. Private green chain link fence on west end of structure is damaged and missing top rail. This observation is consistent with previous inspections.

Recommended Action:

- Remove large tree upstream of the outlet structure the tree that is falling over on the east bank along with the root ball, stabilize the bank, and replace the chain link fence.
- Monitor erosion around the east (left) end of the weir.

Golden Valley Features

Inspection Date: October 16, 2017

Personnel: Patrick Brockamp, Josh Phillips (Barr), & Tom Hoffman (City of Golden Valley)

1. Wisconsin Ave. Control Structure (Constructed 1987)

- a. The overall condition of the structure was satisfactory.
- b. The staff gage was at 881.7 feet both upstream and downstream of the culvert.
- c. The flood gate was in the down-position at the time of the inspection. Minor rust and some peeling paint on the bottom of the flood gate was observed in previous inspections, however the bottom of the flood gate was under water during this year's inspection and could not be evaluated.
- d. The culvert appears to have settled approximately 3-4 inches directly under Wisconsin Avenue. Some minor longitudinal and circumferential cracks were observed in the culvert during the inspection. These observations are consistent with previous inspections.
- e. Some of the gabion baskets upstream and downstream of the culverts have deteriorated or broken and riprap has fallen out of the baskets at some locations. Although the gabion baskets

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are no longer functioning as installed, no significant erosion was observed. This observation is consistent with previous inspections.

- f. The railings at the upstream and downstream ends of the culvert are in good condition.
- g. Small trees and brush are growing around the downstream end of the culvert.

Recommended Action:

- Cut and remove trees and brush near culvert ends. Chemically treat stumps with Garlon 3A herbicide (or other specialty herbicide for use in wetland sites and waterways) to prevent regrowth.
- Sand, prime and paint lower portion of gate and other steel members, as necessary.
- Monitor gabion baskets and potential erosion during future inspections.

2. Golden Valley Country Club—Includes Box Culvert, Overflow Weir, D/S Channel (Constructed 1994)

- a. The channel from Pennsylvania Avenue to downstream of the box culvert was satisfactory. Some erosion was noted on the left bank just downstream of the culvert under Pennsylvania Ave. Riprap is generally in place along the channel, although some riprap has collected in the channel bottom. Weeds and grass that have grown in the riprap in the lower part of the channel have been mowed by golf course maintenance staff. No debris, trees or brush have accumulated in the channel.
- b. The box culvert structure was satisfactory. No debris was found around the structure to obstruct the flow. The box culvert was not inspected this year due to high water flow.
- c. The handrails at each end of the box culvert appeared to be in good condition.
- d. The overflow weir (earth berm) was in good condition and has been maintained by the country club staff as manicured fairway turf.

Recommended Action:

- None

3. Westbrook Road Crossing (Constructed 1993)

- a. The overall condition of the structure was satisfactory.
- b. There is some exposed rebar around the storm sewer pipe entering the Bebo culvert on the west (left) side. This observation is consistent with previous inspections.
- c. The last Bebo culvert section on the downstream end has separated at the top of the section. The joint gap appears to be wider between the last two sections and there are signs of pressure points

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where the last section has pushed against the top of the two wing walls. Some concrete has fractured and fallen from the structure. These observations are consistent with previous inspections.

- d. There is some spalled concrete at multiple locations at the top of the wing wall sections upstream and downstream of the Bebo culvert and in one location near a railing connection on the downstream side. These observations are consistent with previous inspections.
- e. There are some minor cracks in the top of the Bebo culvert throughout the culvert. This observation is consistent with previous inspections.

Recommended Action:

- Repair/patch exposed rebar at storm sewer connection entering Bebo section on west (left) side of culvert. Place grout or mortar over exposed rebar to form better seal.
- Monitor cracks in the Bebo arch sections and the road surface during future inspections.
- Monitor spalling on top of the concrete headwall near wing walls and railing connections.

4. Regent Ave. Crossing (Constructed 1981–1984)

- a. The overall condition of the structure was satisfactory.
- b. The interior of the Bebo culvert was not fully inspected due to high water levels.
- c. Cracks were observed throughout the crown of the Bebo culvert. This is consistent with previous inspections.
- d. Some scour/erosion was observed around the end of the north (left) downstream bank and at the upstream south (right) wing wall. The riprap is missing and the filter fabric is exposed on the upstream south (right) end of the culvert.
- e. The top of the upstream north (left) wing wall has minor spalling along end section joint. This is consistent with previous inspections.
- f. There is a diagonal crack near the top of the upstream north (left) wing wall. This is consistent with previous inspections.
- g. There is a diagonal crack near the top of the downstream south (right) wing wall. This is consistent with previous inspections.
- h. Some small trees are growing around the upstream and downstream side of the structure, along the concrete wing walls.

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Recommended Action:

- Repair erosion at upstream south (right) wing wall by adding new fabric/filter and riprap on creek bank.
- Cut and remove trees and brush near culvert ends. Chemically treat stumps with Garlon 3A herbicide (or other specialty herbicide for use in wetland sites and waterways) to prevent regrowth.
- Monitor bank erosion at downstream north (left) wing wall and consider repair of bank with riprap.
- Monitor bed elevation at upstream end of culvert for possible scouring.

5. Noble Ave. Crossing (Constructed 1981–1984)

- a. The overall condition of the structure was satisfactory.
- b. Cracks were observed throughout the crown of the Bebo culvert. This is consistent with previous inspections.
- c. Previously observed spalling has exposed some plastic joint material in some of the culvert sections near the downstream end and along the cracks approximately two feet either side of center. The cement paste covering the plastic joint material is separating and exposing the plastic. This is consistent with previous inspections.
- d. The downstream south (right) wing wall is tilted toward creek. This is consistent with previous inspections.
- e. Spalled concrete and cracking was observed at the top of the north (left) downstream wing wall. This is consistent with previous inspections.
- f. Erosion has occurred along the outside edge of the upstream south (right) wing wall and the filter fabric is exposed. This may, in part, because the creek is entering the Bebo arch culvert at an angle. This observation is consistent with previous inspections.
- g. Bank erosion has occurred on both sides of the downstream wing walls. This is consistent with previous inspections.
- h. Storm sewer pipe on the north (left) side entering the Bebo arch under the road has spalled concrete and exposed rebar. This is consistent with previous inspections.
- i. The paint on the hand rails is chipping and coming off in a number of locations.

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Recommended Action:

- Repair/patch storm sewer connection entering Bebo section on north side of culvert.
- Repair erosion at upstream wing wall by adding riprap.
- Monitor cracks, spalling and scour during future inspections, especially at the downstream left wing wall.
- Monitor erosion at downstream wing walls.
- Monitor cracks in crown exposing plastic expansion material to determine if spalling is from weathering or movement of the Bebo sections.
- Monitor bed elevation at upstream end of culvert for possible scouring.

Golden Valley/Minneapolis Features

Inspection Date: October 16, 2017

Personnel: Patrick Brockamp & Josh Phillips (Barr)

1. Highway 55 Control Structure (Constructed 1987)

- a. The overall condition of the structure was satisfactory.
- b. Erosion was observed around both the east and west sides of the structure from water flowing along the sides of the structure that runs off the bituminous path from above the structure. The erosion on the east side is more significant and appears to be worsening. Some gravel was dumped off the trail down the east side along the structure wall in previous years, but the gravel has not stopped the erosion.
- c. There is a small crack in the left wall of the inlet structure. The crack is positioned in the middle of the wall extending full height. This is consistent with previous inspections.

Recommended Action:

- Add riprap and filter to each side of the structure.
- Monitor cracks and erosion during future inspections.

Note: references to "right" and "left" are with respect to facing downstream.

Crystal Features

Inspection Date: October 16, 2017

Personnel: Patrick Brockamp & Josh Phillips (Barr)

1. 36th Ave. & Hampshire Ave. Crossing/Markwood 8 ft. x 6 ft. Box Culverts (Constructed 1981–1984)

- a. The overall condition of the structure was satisfactory.
- b. Some riprap was observed in the box culverts. Riprap was most prevalent before the first bend of the culverts, but present throughout the culvert. Both culverts have some sediment buildup mostly in the downstream half of the culvert. The south (right) culvert has more sediment than the north (left) culvert.
- c. There is a crack in the top right of the south (right) culvert. This is consistent with previous inspections.
- d. On both culverts, the fifth joint from the downstream end had a 2 ½ inch gap, which is a larger gap than the rest of the joints. This is consistent with previous inspections and does not appear to be worsening.
- e. Natural boulder riprap in the channel downstream of the culverts appears undersized and has been redistributed somewhat by high flows. This is consistent with previous inspections.

Recommended Action:

- Monitor cracks and joint gaps during future inspections.
- Monitor sediment and riprap buildup in the culverts.

2. Markwood Open Channel (Constructed 1981–1984)

- a. The overall condition of the channel was satisfactory.
- b. Channel banks were cleared of brush and trees prior to the 2015 inspection. Substantial regrowth of small trees, shrubs, and brush along the banks is occurring. The bottom of the channel is mostly free of vegetation.
- c. Erosion exists at the toe of both channel banks along most of the channel, cutting a vertical wall 2 to 3 feet up from the bottom of the channel. This erosion does not appear to have significantly changed since the last inspection.
- d. Some retaining walls and fences (likely installed by homeowners) along the channel are leaning toward the channel and, in some cases, appear to be failing. This is consistent with previous inspections and an ongoing concern at this location.

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- e. The CMP storm sewer discharging into the channel between 6833 and 6825 Markwood Drive is in poor condition – the pipe bottom is corroded and there is erosion and undercutting around the pipe end. This is consistent with previous inspections.

Recommended Action:

- Although not part of flood control project, City may want to consider CMP storm sewer repairs.
- Although not part of flood control project, retaining walls should be inspected on regular basis in case they fail and impede the channel flow.
- Monitor erosion along the toe and channel banks.

3. Markwood Channel Gabion Section (Constructed 1981–1984)

- a. The overall condition of the gabions was satisfactory. No woody vegetation of significant size was noted growing through the gabion baskets.

Recommended Action:

- None.

4. Markwood D/S Overflow (Constructed 1981–1984)

- a. The inlet to the overflow was in satisfactory condition.
- b. There is a slight build-up of sediment and debris (branches, leaves, etc.) at the inlet to the overflow.

Recommended Action:

- Monitor sediment and debris at inlet to the overflow to ensure pipe capacity is maintained.

5. Markwood 8 ft. x 4 ft. Box Culvert (Constructed 1981–1984)

- a. The culvert was only visually inspected from the outside at the downstream end. Sediment accumulation in the pipe less than previous inspections. The overall condition was satisfactory.

Recommended Action:

- None.

Note: references to “right” and “left” are with respect to facing downstream.

6. Georgia Ave. Crossing (Constructed 1981–1984)

- a. The overall condition of the two culverts was satisfactory.
- b. The riprap on the downstream end appears undersized and has been redistributed somewhat by high flows. This is consistent with previous inspections.
- c. Some small trees are growing around upstream and downstream ends of the culverts.

Recommended Action:

- Remove trees near culvert ends, as necessary. Chemically treat stumps with Garlon 3A herbicide (or other specialty herbicide for use in wetland sites and waterways) to prevent regrowth.

7. Edgewood Embankment (Constructed 1981–1984)

- a. The overall condition of the culvert and embankment was satisfactory.
- b. There is a small amount of erosion on the upstream north (left) side of the culvert at the embankment. This is consistent with previous inspections.
- c. There is no visible settlement along the embankment.
- d. The pool on the downstream side of the culvert and the downstream creek banks were repaired and new natural boulder riprap was installed in 2014. These areas appear to be in good condition.

Recommended Action:

- None

8. Douglas Drive Crossing (Constructed 1981–1984)

- a. The overall condition of the structure was satisfactory.
- b. Grouted riprap installed on either side of the box culvert outlet has started to deteriorate, and a gap has opened between the grout and the wall of the box culvert.

Recommended Action:

- Monitor grouted riprap at the downstream end of the box culvert.

Note: references to “right” and “left” are with respect to facing downstream.

9. 34th Ave. Crossing (Constructed 1981–1984)

- a. The overall condition of the structure was satisfactory.
- b. The natural boulder riprap upstream and downstream of the culvert was generally in good condition. Some riprap from the upstream end has washed into the culvert.
- c. The invert of the culvert generally has 2-6 inches of accumulated sediment with some areas as deep as 12 inches.
- d. The tie rods are rusty and flaking near the center section of the culvert. This is consistent with previous inspections.

Recommended Action:

- Monitor sediment accumulation in culvert.

10. Brunswick Ave, Crossing (Constructed 1981–1984)

- a. The overall condition of the structure appeared satisfactory.
- b. There is spalled concrete on both sides of the downstream end of the south (right) culvert with exposed rebar.
- c. On the south culvert, the fourth pipe joint from the downstream side, and the location of the slope transition, has two broken ties and was previously re-grouted by the City. There is now a gap between the pipe joint and the new grout.
- d. There are a number of joints that were cracking or spalling. Some of the grout that was placed to fill the separating joints has started to detach due to joint movement and is falling out. On the south culvert, the third joint from the downstream side, there is a crack on the bell end of the pipe, which extends across the top of the pipe.
- e. There are cracks in the pavement over the culverts. There appeared to be an additional crack observed during the inspection, which was not present in previous inspections.
- f. There are small and medium-sized trees growing near the upstream and downstream ends of the culvert. There is also a willow tree growing in a sediment delta just downstream.

Recommended Action:

- Repair or replace pipe ties, weld new rods on pipe ties.
- Remove small and medium sized trees growing near upstream and downstream ends of the culvert, and in the channel downstream. Chemically treat stumps with Garlon 3A herbicide (or other specialty herbicide for use in wetland sites and waterways) to prevent regrowth.

Note: references to "right" and "left" are with respect to facing downstream.

- Monitor concrete pipe joints condition during future inspections.
- Monitor cracks in the pavement.

11. 32nd Ave. Crossing (Constructed 1981–1984)

- a. The overall condition of the structure was satisfactory.
- b. The natural boulder riprap upstream and downstream of the culvert was generally in good condition. Some riprap on the downstream end has been displaced by high flows.
- c. Brush was cleared on the upstream and downstream sides of the culvert in 2015. Some brush has started growing back in both locations.

Recommended Action:

- Remove brush growing near the upstream and downstream ends of the culvert as part of continued maintenance. Chemically treat with Garlon 3A herbicide (or other specialty herbicide for use in wetland sites and waterways) to prevent regrowth.

12. Bassett Creek Park Pond and Outlet (Constructed 1995)

- a. The overall condition of the outlet pipes was satisfactory.
- b. The creek stabilization along the reach where the pond outlet culvert discharges to Bassett Creek is in good condition.
- c. There is a large amount of sediment that has accumulated in the northwest corner of the pond where the creek enters the pond; small and large trees, brush and vegetation is growing in these areas on the sediment deltas. This is consistent with previous inspections.
- d. Most of the shoreline of the pond was in good condition. Previously noted locations on the south side of the pond, near the outlet pipes, where some bank erosion was observed were well vegetated during this year's inspection.

Recommended Action:

- Dredging of Bassett Creek Park Pond and upstream channel improvements (BCP-2) is included in the BCWMC CIP Table 5-3. The BCWMC completed a feasibility study for the dredging of Bassett Creek Park Pond and Winnetka Ponds. The City of Crystal has initiated final design of the Winnetka Pond Dredging Project (November 2017). Construction is anticipated to start November 2018. Bassett Creek Park Pond Dredging is included in future CIP planning, pending funding.

Note: references to "right" and "left" are with respect to facing downstream.

13. Detention Pond and Outlet Structure

- a. The overall condition of the outlet structure was satisfactory.
- b. Although the pond appears in good condition from the surface, a survey is needed to assess accumulated sediment.

Recommended Action:

- Pond should be surveyed in future to determine if it has accumulated sediment from Highway 100, which would reduce treatment volume.

Crystal/Golden Valley Features

Inspection Date: October 16, 2017

Personnel: Patrick Brockamp & Josh Phillips (Barr)

1. Highway 100 Double Box Culverts

- a. The overall condition of the control inlet structure was satisfactory. Some minor debris at the inlet was removed during the inspection.
- b. The improvements to the creek channel upstream of the structure are in good condition.
- c. The large cracks and transition joint damage as noted in previous inspections were repaired by Mn/DOT in 2007. The repairs are mostly in good shape, but numerous cracks are visible around the patching and some of the concrete patching has become dislodged at the top of the culvert.
- d. Sediment has accumulated in the north (left) box culvert. The sediment is approximately 12 to 24 inches deep. In previous years the sediment had collected downstream of the right angled bend in the northern culvert and is now progressing further upstream in the culvert up to the Mn/DOT storm sewer connection. Although the inlet structure controls the flow into the double box culverts, the accumulated sediment in the north culvert is reducing the capacity of the twin culvert section.
- e. The overall condition of the outlet portion of the structure was satisfactory.

Recommended Action:

- Monitor accumulated sediment in north (left) box culvert and consider future removal.

Note: references to "right" and "left" are with respect to facing downstream.

Minneapolis Features

Inspection Date: October 16, 2017

Personnel: Patrick Brockamp & Josh Phillips (Barr)

1. Inlet Structure

- a. The overall condition of the inlet structure was satisfactory.
- b. The overall condition of the fence and railing was satisfactory.
- c. Minor cracks were noted in the concrete, especially where handrail posts were embedded. Some spalling was noted on the back of the south wing wall. This is consistent with previous inspections.
- d. There was a significant amount of debris collected on the inlet structure grate at the time of the inspection. Debris included logs, leaves, sticks, and trash. A portion of the debris was removed to facilitate inspection of the upstream channel.
- e. The creek channel was partially inspected this year. The banks are generally covered with brush and trees about 3-4 feet above the channel bottom. Below the level of the trees and brush, the banks are bare soil on both sides for most of the length of the channel. No obvious signs of bank erosion were noted.

Recommended Action:

- Monitor for debris and as needed.
- The BCWMC completed a feasibility study for the 2017 Bassett Creek Main Stem Erosion Repair Project (CIP 2017 CR-M) in May 2016, and ordered construction of the project at their September, 2016 meeting. The resultant construction project should address the noted erosion issues.

2. Debris Barrier and Open Channel

- a. The debris barrier cable is missing in the center portion of the channel. The cable is supposed to be continuous from end to end, attached at each post, but has come detached and/or broken off of the wood poles and needs to be reinstalled or replaced.
- b. Barrier is partially full of debris. Trees, logs and other debris was recently removed from the channel and placed at the top of the slope for future removal from the site.

Recommended Action:

- Repair/replace steel cable on debris barrier.

Note: references to "right" and "left" are with respect to facing downstream.

- Monitor for debris and as needed.

3. Double Box Culvert

- The 5-year double box culvert inspection was last performed on December 9-10, 2014. In cooperation with the City of Minneapolis, a separate report was prepared. The next inspection will be performed in 2019.

4. Third Avenue and Second Street Tunnel

- Inspection of the Third Avenue and Second Street deep tunnel are on a 10 year inspection interval. The inspection of the deep tunnel was last performed during 2008. The next inspection will be performed in 2018.

Table 1 Routine vs. Major Maintenance and Repair Items

Routine vs. Major Maintenance and Repairs – as Recommended by the TAC ¹ and approved by the BCWMC ²	
Routine	
1	Vegetation: removal of trees, removal of brush, chemical treatment of stumps, control of noxious weeds, establish vegetation on bare areas
2	Removal of debris: woody debris, riprap, trash from channel, inlets, culverts
3	Repair erosion; channels, inlet and outlet structures, culvert ends
4	Repair/replace riprap: on inlet and outlet ends of culverts, channels, banks
6	Remove sediment from channels, structures, culverts, etc.
10	Repair/maintain guard rails, hand rails and fencing: remove rust, prime and paint, repair damaged rails and posts, replace rusted-out sections, repair cables, replace posts, repair chain link fence
12	Repair concrete pipe: repair joints, tie-bolts, spalling, connection to culverts, breakage
13	Repair/replace catch basins, manholes, casting assemblies, grates
14	Repair/maintain debris barrier: removal of debris, repair cables, replace poles
15	Repair/maintain tunnel inlet trash rack: repair/replace trash rack rods (loose or broken, vandalized, bent)
16	Street repairs: pavement, curb and gutter, cracks, depressions, settlement
Major	
5	Repair/replace gabion baskets
7	Remove sediment/dredge ponds, basins, etc.
17	Tunnel repairs: concrete and other repairs to the new Bassett Creek tunnel
Could be major depending on extent	
8	Repair scouring/undercutting at structures and culvert outlets
9	Repair concrete structures: cracking, spalling, breakage
11	Culverts/Bebo sections: joints, settlement, separation, concrete spalling, wing walls – movement and breakage

¹ Based on needed repairs identified during 2016 FCP inspection.

² Per BCWMC actions at their May 19, 2016 and July 21, 2016 meetings.

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Attachment

Photographs of Bassett Creek Flood Control Project Features

October 16, 2017

Plymouth Creek Fish Barrier (Plymouth)



Medicine Lake Outlet (Plymouth)



Wisconsin Ave. Control Structure (Golden Valley)



Golden Valley Country Club Control Structure (DS Channel)



Golden Valley Country Club Control Structure (US Channel)



Westbrook Road Crossing (Golden Valley)



Regent Ave. Crossing (Golden Valley)



Noble Ave. Crossing (Golden Valley)



Highway 55 Control Structure (Golden Valley/Minneapolis)



Markwood Box Culverts and Channel Improvements (36th Ave. and Hampshire Ave. Crossing - Crystal)



Markwood Box Culverts and Channel Improvements (Crystal)



Markwood Box Culverts and Channel Improvements (Crystal)



Markwood Box Culverts and Channel Improvements (Crystal)



Georgia Ave. Crossing (Crystal)



Edgewood Embankment and Ponding Area (Crystal)



Douglas Drive Crossing (Crystal)



34th Ave. Crossing (Crystal)



Brunswick Ave. Crossing (Crystal)



32nd Ave. Crossing (Crystal)



Bassett Creek Park Pond (Crystal)



Bassett Creek Park Pond (Crystal)



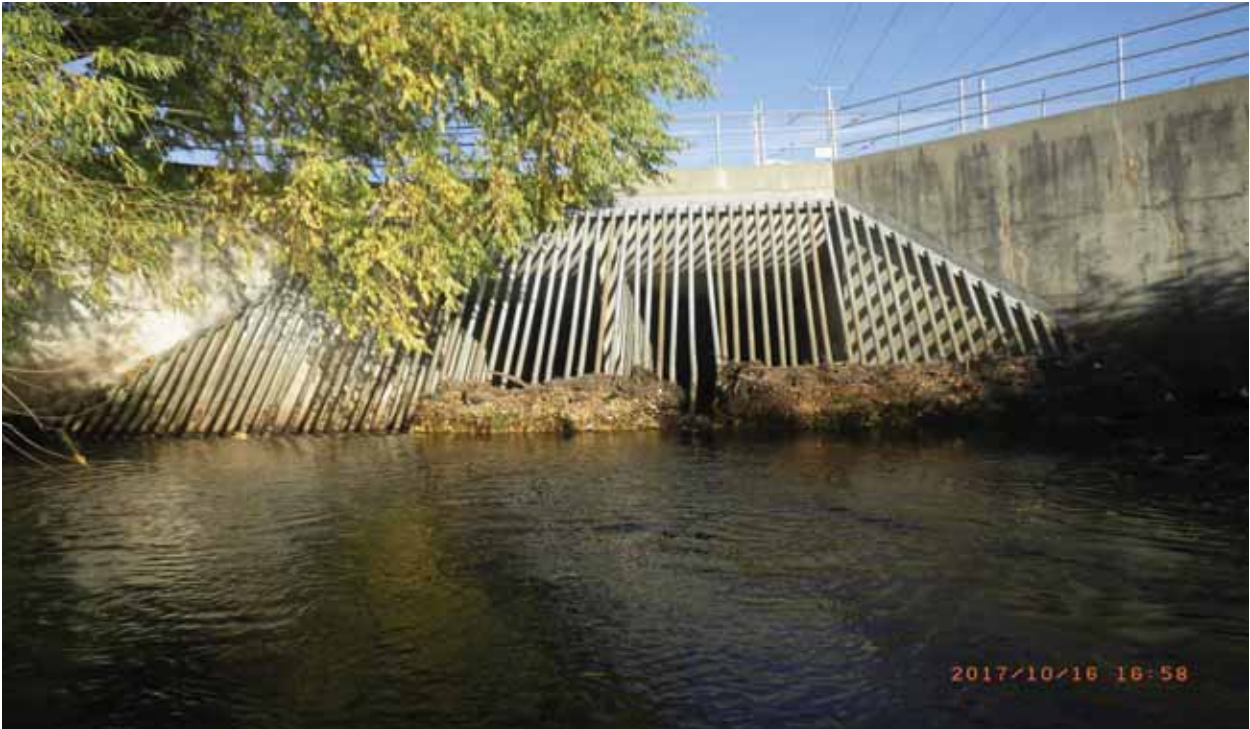
Detention Pond Outlet Structure (Crystal)



Highway 100 Double Box Culvert (Crystal/Golden Valley)



Inlet Structure (Minneapolis)



Debris Barrier (Minneapolis)



Open Channel (Minneapolis)

