

BOROUGH OF ZELIENOPLE**PROPOSED STORMWATER IMPROVEMENTS**

August 12, 2019

1. Community Park Stream - \$600,000Observations

- Flooding has occurred in the pool area in the past.
- Direct flows from Route 79 discharge quickly to Borough.

Possible Solutions

- Install a retention device upstream of the pool area.

2. High Street/Beaver Street Stormwater Upgrade - \$400,000Observations

- Two existing pipes exist in the area of High Street that catches debris. When clogged, the overflow runs west on Beaver Street to the existing line between Clay Street and Jefferson Street.

Possible Solutions

- Replace both pipes with an equivalent 54" pipe and route through the Post Office alley to Spring Street. Some of this work can be incorporated in the Streetscape Phase 2 project.

3. Linden Street Culvert Replacement - \$100,000Observations

- The top of the existing pipe has developed a hole and is undersized.

Possible Solutions

- Increase the pipe size from 60" to 84" equivalent.

4. New Castle Street from Market Street to Creek - \$190,000Observations

- Catch basin at Penn Power has 2 incoming 18" pipes and a 24" outgoing pipe.
- The next 2 catch basins proceeding towards the creek appear to be partially plugged and filled with water. Previous testing indicated that the lines are 12" and partially collapsed.
- Four other catch basins are observed to be parking lot drains. These catch basins appear to be functioning properly.

Possible Solutions

- Increase the pipe size from 24" to 36" at the catch basin at Penn Power. Continue to run 36" pipe to creek.
- Install 36" line across railroad tracks

5. Oliver Avenue from East Beaver Street to Alley at Maple Court Apartments - \$32,000

Observations

- Storm water is retained in low area on the west side of Oliver Avenue before the catch basin. Curb is broken along the low area. NOTE: There is a high point on Oliver Avenue just south of the low spot. Water from the high point drains the opposite direction (towards East Spring Street).
- Storm water accumulates at the entrance of the alley at Oliver Street. There is a low spot which prevents water from draining to the adjacent catch basin.
- Catch basin at alley is lower than surrounding grass area. Grass edge acts as a dam preventing water from both the alley and the Maple Courts parking lot from draining into the catch basin.

Possible Solutions

- Mill and repave area along west side of Oliver Avenue allowing storm water to flow to catch basin across from alley.
- Raise top of catch basin at alley flush with grass and re-grade alley adding additional stone as needed. NOTE: Avoid raising the catch basin to a level where the Maple Courts parking lot cannot drain properly as it also drains to this catch basin. An additional catch basin and piping may be needed to drain both the alley and the Maple Courts parking lot properly.

6. Northview Drive from Main Street to Short Street - \$40,000

Observations

- 18" VCP drainage pipe on south side of Northview Drive (which is intended to pick up most storm water run-off) runs under a retaining wall. Less than half of the inlet side of the pipe is exposed. It appears that pavement in the adjacent parking lot has been built up over time covering the bottom half of the drain pipe.
- A newer catch basin on the north side of Northview Drive installed in the parking lot of Hearth and Home appears to be adequate for the smaller area which drains to it.
- Continuing uphill along Northview Drive towards Short Street the south side of the berm is deeply rutted from storm water flow.

- Considerably less storm water erosion is seen along the south side of Northview above House 202 where the property owner has installed a rip-rap channel along the bottom of bank adjacent to the pavement of Northview Drive.

Possible Solutions

- Remove existing pavement, re-grade area and lower pavement to fully expose the 18" VCP at the bottom of Northview Drive near Main Street.
- Install piping and catch basins along the south edge of Northview Drive channeling storm water to the existing 18" VCP.
- To save piping, rip-rap could be installed in some areas along the bottom of bank.

7. Division Street, East Beaver Street to alley between East Spring Street and East New Castle Street at existing catch basin - \$65,000

Observations

- Storm water puddles form on the east (both sides) of Beaver Street at the intersection of Division Street. Puddles form several feet in front of the existing catch basins and remain well after the rain event has stopped.
- Water lays along curb in low areas along the east side of Division Street at House 224 and along the west side at House 219.
- Water overflows existing catch basin (east side of Division) at Spring Street and runs across to second catch basin.
- Water flows behind catch basin (west side of Division at alley) and flows into the driveway directly behind the catch basin.

Possible Solutions

- Storm water puddles at the intersection of Division Street and Beaver Avenue could be eliminated by milling the existing pavement and replacing pavement at the correct slope directing storm water to the existing catch basins. Existing pavement surrounding the catch basins appears to be high preventing water from entering the catch basins.
- Water along the curb line at Houses 224 and 219 could be eliminated by adding catch basins.
- Storm water flow at the alley (on both sides of Division Street) could be improved by milling and repaving the area to direct water to the existing catch basins. Some curb replacement is also necessary on the both sides of Division Street.

8. East Spring Street between Division Street and High Street - \$45,000

Observations

- Storm water from Division Street (which misses the catch basin from Area # 6) flows along East Spring Street.
- Storm water collects at “low” sidewalk just past House 350.
- Storm water runoff from the high point of Pennsylvania Avenue enters East Spring Street on the south side.
- Storm water from Oliver Avenue enters both north and south sides of East Spring Street.
- Garage entrance at House 208 has accumulated sediment and appears to have been flooded in the past.
- Catch basin across High Street on the south side of East Spring Street appears to be too high.

Possible Solutions

It should be noted that East Spring Street was recently paved. The paving has uniform slope (Division Street towards High Street) and drainage appears to be good.

- House 350 the problem could be resolved by repairing the sidewalk.
- House 208 drainage could be improved by installing a rolled curb at the driveway.
- Amount of storm water running down East Spring Street could be reduced by providing catch basins at the intersection of Pennsylvania Avenue and both sides of the intersection at Oliver Avenue.
- Catch basin across the intersection of High Street (south side of East Spring) should be lowered. NOTE: Elevations surrounding this catch basin should be checked prior to making any adjustments.

9. Jefferson Street from West Beaver Street to West Spring Street - \$40,000

Observations

- MH with grate at intersection of Jefferson Street and East Spring Street covered with debris.
- Pavement just upstream of Jefferson/East Spring Street intersection is high preventing storm water from draining properly.
- Edges of all properties along the east side of Jefferson Street show signs of storm water erosion.
- Edges of all properties along the west side of Jefferson Street have been lined with river stone or rip-rap. Stone curbs appear to have been installed by the property owners.

- The two MHs with grates in Jefferson are located towards the center of the road and are therefore not able to act as catch basins. Storm water flows behind these MHs along the edge of each property.

Possible Solutions

- Clean MH with grate at the intersection of Jefferson and East Spring Street. This MH is in a good location and properly drains the intersection of storm water.
- Install curb along the entire eastern edge of Jefferson Street. The western edge could also benefit from curbs as the road has a center crown however the western edge is protected by river stone and rip-rap.
- Modify MHs with grates in Jefferson to allow storm water to drain from the curb line. Either install off-set catch basins directly tying into the MHs or install catch basins and pipe them to the exists MHs.
- Add catch basin at intersection of West Beaver Street and run storm sewer down to existing storm sewer if sanitary sewer is deep enough to clear.

10. West Spring Street just before Jefferson Street - \$15,000

Observations

- Large depression on either side of West Spring Street between Jefferson Street and the existing catch basins on West Spring Street is retaining storm water long after the rain event.

Possible Solution

- Mill and repave West Spring Street from Jefferson Street to the existing catch basins providing proper slope of pavement to allow water to drain to the catch basins.

11. Green Lane from Ziegler Street to Run - \$40,000

Observations

- Storm water erosion visible on both the east and the west side of Green Lane. A large area is washed out along the edge of pavement at House 307 (west side). A drainage ditch has eroded along the edge of pavement on the east side.
- Storm water erosion along the bank (east side) of box culvert at House 210.
- Property owners have taken some measures to control erosion by installing river rock curbing.
- Storm water accumulates in a low spot north of the box culvert where pavement is low.

Possible Solutions

- Drainage problems along Green Lane could be resolved by installing bituminous curb along both sides of Green Lane with catch basin gathering the flow near the box culvert. Piping would have to be installed from the catch basins down the bank to avoid erosion of the slope along the box culvert.
- As an alternate, rock lined storm water drainage ditches could be installed on both sides of Green Lane. Storm water would still have to be piped down the bank to avoid erosion along the box culvert.
- Pavement adjustments are needed on both the north and south side of the box culvert.

12. Front Street from Hazel Street to Glade Run at Sportsman Club - \$150,000

Observations

- Partially buried and/or clogged catch basins observed along the west side of Front Street.
- Ponding of storm water visible in several areas along Front Street due to uneven pavement.
- A vegetated drainage swale is visible along the east side (along railroad tracks) of Front Street.

Possible Solutions

- Ponding can be corrected by milling and repaving areas to create a uniform slope allowing storm water to drain to the catch basins.
- Clean existing catch basins.
- Increase size of existing piping.
- Install catch basins and piping along the east side if drainage swale is found to be inadequate to handle storm water flow.

13. Hazel Street, Peach Street, Pine Street Storm Sewer Line would run through Alley E from Peach Street to Front Street - \$100,000

Observations

- Large accumulation of storm water (long after rain event) was visible on Peach Street starting at Hazel Avenue and extending to Alley E.

Possible Solution

- Install catch basins along Peach Street and run storm sewer along Alley E to Front Street.

14. Oliver Avenue (Henderson Property) to Run at Oliver Avenue - \$32,000

Observations

- A gravel pit approximately 4' in diameter is visible at the bottom of bank on the Henderson property below Oliver Avenue. Exposed piping is not visible at the pit however reports of a previous study of the area indicate that the pit contains an 8" CPP which transports storm water across the Henderson property. At the far end of the Henderson property (dead end of High Street) a catch basin consisting of an 18" CPP on end covered with a grate is found. An accumulation of silt and signs of erosion are visible on the Henderson property indicating that the line size and catch basins may not be adequate.

Possible Solutions

- Remove stone from gravel pit and replace pit with a standard 2' x 4' precast catch basin.
- Remove and replace existing 8" CPP with a larger line, tying into Main Street catch basin.
- Replace "pipe and grate" catch basin with a standard precast catch basin.

15. Green Lane and Halstead Boulevard from New Castle Street to Connoquenessing Creek - \$50,000

Observations

- A low spot in the pavement of Green Lane at New Castle Street retains storm water. Handicap ramps are located at all four corners of the New Castle Street intersection. All ramps appear to be low with respect to the existing pavement and no drainage facilities are observed.
- Storm water has rutted the earth berm on both sides of Green Lane. Stone berms and paved drives appear to be intact.
- A sinkhole has formed along the western edge of Green Lane at the intersection of West Grandview. A traffic cone marks the sink hole which is located in the grass (not the pavement).
- The intersection of West Grandview is flat and no drainage facilities are observed.
- Two catch basins (on either side of a concrete drive) are located on the western side of Halstead Boulevard (past West Grandview). Piping is not visible along the western edge of Halstead Boulevard beyond the catch basins, however a large washout is noted at the railroad tracks. In addition there is storm water erosion along the western edge of Halstead Boulevard to the railroad tracks.
- New 18" CPP is observed under Halstead Boulevard near the railroad tracks and an 18" DIP is observed crossing under the railroad tracks going to a concrete headwall.
- A series of catch basins continues along the eastern edge of Halstead Boulevard to the vacant land just before Connoquenessing Creek.

- Storm water erosion is observed along the western edge of Halstead Boulevard (railroad tracks to creek) where berm areas are not paved.

Possible Solutions

- Mill and repave Green Lane at New Castle Street.
- Grade and install stone berm in bare areas where storm water erosion is occurring.
- Install catch basins (both sides of Green Lane) at West Grandview intersection. Pipe storm water across West Grandview. Possibly connect to existing drainage facilities.
- Provide rip-rap at washout west side of Halstead Boulevard at railroad tracks.
- Re-grade grass areas to allow drainage along western side of Halstead Boulevard between the railroad tracks and Connoquenessing Creek.
- Series of catch basins along eastern side of Green Lane would have to be observed during a rain event to determine if piping is adequate.

16. Spruce Street from Existing Inlets moving westerly to Borough Property at Shady Lane - \$100,000

Observations

- Some ponding observed along both sides of the pavement of Spruce Street.
- Flat area of broken pavement which retains storm water was observed at House 302.
- Accumulation of silt observed at catch basin at House 212.
- Serious drainage problems were not observed on Spruce Street however Market Street between Spruce and Pine Street has a large accumulation of storm water along both sides of the pavement. Storm water cannot get to the catch basins due to the slope of the grass berm and the location of the existing catch basin.

Possible Solutions

- Clean existing catch basins and piping.
- Re-grade grass berm along Market Street and add additional piping and catch basins.

17. Park Lane from Main Street to Short Street - \$40,000

Observations

- Deep ruts caused by storm water erosion are visible along the edge of pavement south side of Park Lane.
- Four catch basins are located on the south side (off the pavement) of Park Lane.
- Catch basins 1 and 2, closest to Main Street are located in the berm. Storm water appears to miss the catch basins and run along the edge of pavement, causing the ruts.

- Catch basin 3 is full of water and appears to be plugged. CB 3 is located such that it picks up storm water flow from the adjacent parking lot but not from the pavement of Park Lane.
- Catch basin 4 is located in the rear of property # 211 and is also flooded.

Possible Solutions

- Install rolled curb along north side of street.
- Re-grade and stone ruttled areas.
- Install 8" pipe to Main Street inlet.

18. Linden Street from Arthur Street to Walnut Street - \$32,000

Observations

- Handicap ramp at Arthur Street is low and retains storm water.
- Pavement at just below Arthur at Chestnut Street and Linden Street is low and retains storm water.
- Storm water is retained in a low lying berm along the western edge of Linden Street across from Arthur Street. Edge of pavement is high compared to the berm which causes storm water to be trapped.
- Drainage swale along east side of Linden Street (along pine row) appears to be flat and shallow. Piping at the end of the swale at Walnut Street appears to be buried.
- Grass lined drainage swale at House 301 is deep and clean and appears to be functioning however storm water accumulates on the pavement just above the outlet pipe of this swale at Walnut Street.

Possible Solutions

- Mill and repave areas at Arthur Street and Chestnut Street.
- Mill and repave high edge at berm. Berm may still require additional stone to drain after pavement is corrected.
- Drainage swales on both east and west side of Linden Street would have to be observed during a heavy rain event to determine if size and shape of both swales and piping is adequate.
- Mill and repave intersection of Linden Street and Walnut Street to direct storm water to existing catch basin.
- Install inlets and piping at Arthur Street to Walnut Street.

19. East New Castle Street at High Street - \$75,000

Observations

- Storm water is retained along the curb in front of House 114 and 106. Deep silt accumulation with grass growth is observed on top of pavement.
- Insufficient slope of pavement allow water to flow to an existing catch basin in the sidewalk just beyond House 106.

Possible Solutions

- Mill and repave allowing storm water to flow along curb line to the existing catch basin.
- Move catch basin out of sidewalk and install along curb line in roadway.
- Add inlet in front of House 114 to collect sump pump discharge and add 8" pipe to intersection.
- Run 15" down New Castle Street to Main Street.

Total All Projects - \$2,056,000