

## Crestlake Subdivision Drainage Memo

**To:** Crestlake Subdivision  
**From:** Clark Dietz  
**Date:** March 12, 2018  
**Subject:** Drainage Summary for the Crestlake Subdivision  
**Copies:** Village of St. Joseph, Crestlake HOA (Danny Wilson), File

The purpose of this memo is to provide a summary of the drainage system that was constructed to serve the Crestlake Subdivision in the Village of St. Joseph. The overall subdivision was constructed in 8 parts and designed with two primary outfalls. One outfall is to the south and primarily serves the final two additions and the other outlet is to the northwest serving a majority of the development. There are also 7 retention ponds that detain flows and limit the impacts of the development on the downstream stormwater management system.

### Watershed Boundaries

The entire watershed area is shown in Exhibit "A" and is generally bounded on the south by Warren Street/US Route 150, on the west by Rosewood Drive, and on the north by Interstate 74 and on the east by the Community Park. The watershed area is a fully developed residential area with approximately 128 acres draining to the west and 40 acres to the south. The stormwater management system is discussed in detail in the following section.

### Existing Conditions

#### Crestlake Subdivision No. 8

The eastern most development of the Crestlake Subdivision is Crestlake Subdivision No. 8, which is located east of the Sportsman Club Road and defines the upstream most areas of the subdivision. Glover Court and Grand Avenue, east of Sportsman Club Road are served by a storm sewer network that collects runoff and conveys the flows to the retention pond (Glover Lake) south of Grand Avenue. Additionally, there is an 18-inch diameter storm sewer that collects offsite runoff from the Community Park and directs the flow into Glover Lake. This pond has a normal pool elevation of 677.60, a 100-year water elevation of 680.25, and a bottom of 667.60. The elevation of the emergency overflow weir is 680.50 and so the pond was designed to only discharge through the outlet structure.

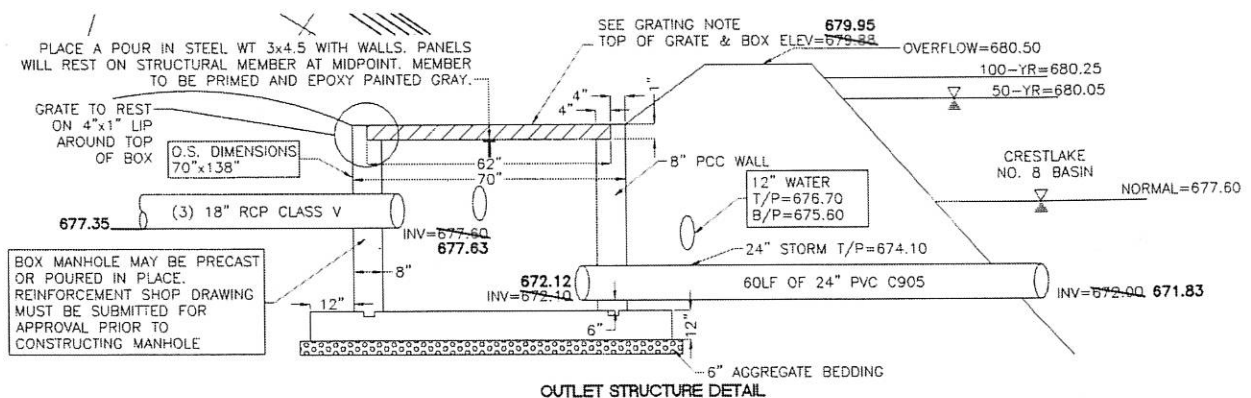


Figure 1 – Glover Lake Outlet Structure

This outlet structure not only intercepts flow from the 24-inch pipe from Glover Lake, but also a 15-inch storm sewer from the north and 12-inch storm sewer from the south that collects stormwater runoff from the

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drainage swales along the east side of Sportsman Club Road. The triple 18-inch storm sewer from this outlet structure crosses Sportsman Club Road and discharges into the Crestlake Subdivision No. 7 east pond.

*Crestlake Subdivision No. 7*

The Crestlake Subdivision No. 7 is comprised of the development along Hawthorne Drive (south of Grand Avenue), Apple Tree Court and Cypress Court and is divided into two distinct halves, which each drain into a separate pond. The larger of the two ponds is the north pond (Hawthorne Lake North) along Sportsman Club Road, which collects stormwater runoff from the eastern 12.3 acres of the development, as well as the Crestlake Subdivision No. 8. This flow is then discharged through an 18-inch pipe to the south into the ditch along US Route 150. The pond discharge flows to the west and is eventually discharged through a 2'x2' box culvert under the roadway to the south. The western 6.0 acres of the Crestlake Subdivision No. 7 discharges into the south pond (Hawthorne Lake South) that has a normal pool elevation of 677.40 and a 100-year high water elevation of 678.76. The 8-inch outlet pipe flows to the northwest and discharges into an 18-inch storm sewer along Locust Drive that was previously installed as part of Crestlake Subdivision No. 4.

*Crestlake Subdivision No. 6*

Crestlake Subdivision No. 6 includes Sycamore Drive and Hawthorne Drive (north of Grand Avenue), as well as Grand Avenue and Magnolia Avenue between Sycamore Drive and Hawthorne Drive. This development doesn't include any stormwater retention ponds and so this area is predominately drained via a 30-inch storm sewer into the retention pond that was installed in Crestlake Subdivision No. 5, with the remaining area drained through an 8-inch rear yard drain tile along Interstate 74. The downstream stormwater retention that was installed in previous developments to the west were oversized to properly account for the additional development associated with this addition.

*Crestlake Subdivision No. 5*

Winston Drive (north of Grand Avenue), Grand Avenue between Winston Drive and Sycamore Drive, and Magnolia Avenue between Winston Drive and Sycamore Drive compose the boundaries of the Crestlake Subdivision No. 5 addition. There are two primary components of the stormwater management system in this area, the stormwater retention pond (Magnolia Lake) and the stormwater trunk sewer. Magnolia Lake is sized to collect runoff from Grand Avenue and Magnolia Avenue through small, local storm sewers, as well as the runoff from the entire Crestlake Subdivision No. 6 area. The discharge from this pond is through a 15-inch pipe, that eventually becomes an 18-inch and then a 21-inch pipe before discharging into the storm sewer that was installed as part of Crestlake Subdivision No. 2.

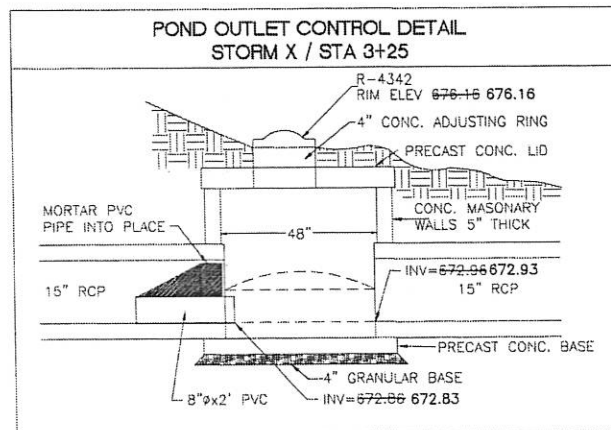


Figure 2 – Magnolia Lake Outlet Structure

The Magnolia Lake outlet structure (as shown above) is throttled by an 8-inch diameter orifice, which sets the normal pool elevation at 672.93 and the 100-year high water elevation at 674.9. The 8-inch orifice is designed for a peak outflow of 1.9 cfs during the 50-year event and 2.2 cfs during the 100-year event.

*Crestlake Subdivision No. 4*

Crestlake Subdivision No. 4 includes Winston Drive, south of Grand Avenue, as well as Juniper Court and Catalpa Court. The stormwater infrastructure for this subdivision addition is composed of local collection



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The lake expansion was designed to better serve the Chestnut Drive area, as well as future development to the east, but the critical design improvements were to the outlet sewer. This outlet sewer would be the primary stormwater outlet for most of the Crestlake Subdivision and so would need to dewater the upstream lake system. The manhole that is approximately 200 feet south of Grand Avenue is designed with 18 and 24-inch influent pipes, as well as 15 and 30-inch outlet pipes during normal conditions, with the 30-inch pipe reversing flow during the pond dewatering. The 15-inch pipe (shown in Figure 4) flows to the north along the rear yards between Chestnut Drive and Sherwood Drive to the 15-inch pipe along Park Avenue.

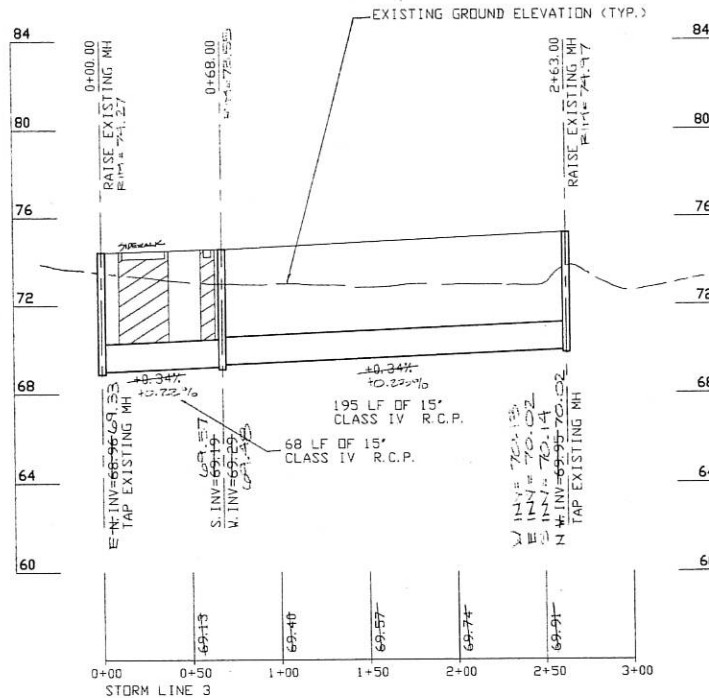


Figure 4 - Grand Lake Outlet Sewer