HUNT

ENGINEERS, ARCHITECTS & LAND SURVEYORS, P.C.
AIRPORT CORPORATE PARK
100 HUNT CENTER
HORSEHEADS, NEW YORK
TEL: 607-358-1000
FAX: 607-358-1800

Meeting Minutes

Date: October 31, 2016
To: Ms. Nancy Ruscio, Superintendent of Homer Schools
From: Robert M. Drew (Hunt)
Copy: Jeff Robbins (Hunt); Lee Stepp (LeChase CM)
Project: Homer CSD CP
Project No.: 2503-014
Re: Stormwater Report of Flooding of School's Vocal Music Room

On the night of October 20-21, 2016 the School's Vocal Music Room received water damage from excess stormwater that entered the room through a doorway located at the southwest corner of the room. The precipitation event that contributed to this damage was identified to have resulted in over 2.5 inches of rain according to local input.

On October 21, 2016 Jeff Robbins of HUNT surveyed the damage and began the investigation as to what caused the flooding and offer assistance to the school in their ongoing cleanup. On October 26, 2016 Robert M. Drew further investigated the situation in an attempt to determine the cause of flooding. With the help of Streeter's Associates Mr. Drew completed the following operations to gain information as to what may have caused the flood:

1. Liquid dye was placed into the pumping chamber to determine the connection of the pumping system with stormwater drywell NO 29 that was installed to infiltrate runoff from the new footer drain that was installed along the wall of the new music room addition. After the dye was introduced and the pump energized, dye was observed to enter the structure No 29 (see attached map) through a small hole in the structure. Although dye was seen entering the structure the pressure pipe that was installed between the pumping system and the structure was not visible from inside the structure. It is believed the pressure pipe ends within the gravel outside the structure and not core drilled through the side of the structure according to HUNT's design. The presence of the dye indicates that the pumping system is hydraulically (in-directly) connected to the pump and the majority of the stormwater from the pumping system will enter the drywell.

2. After the dye testing of the pumping system was complete, dye was introduced into the 6-inch floor drain located outside of the building entrance. Water and dye was introduced to this floor drain to determine if said floor drain was connected to drywell No 22 as indicated in HUNT's utility drawing HS-L5.1 and detail 5 on sheet HS-L7.3. After approximately 4-5 minutes, dye was noticed entering into drywell 22 through the holes within the side of the drywell structure. Again the drain pipe from the floor drain was not observed penetrating through the side of the structure as indicated in HUNT's utility drawings. The presence of dye coming through the side of structure 22 indicated that there was a hydraulic connection between the floor drain and the drywell.

3. Drywell 22 was inspected for installation and it was observed that the 17 x 13-inch aluminized drain pipe that enters the structure as anticipated.

4. Further investigation of the site included a search of the grass with a metal detector area between New York State Route 281 and the schools parking lot to locate what is believed to be existing stormwater structures that were placed in this area and previously used to convey stormwater from the area that would have caused flooding of the schools music room. No structures were located during the search.

5. During the site investigation Lee Stepp, of LeChase CM, indicated that the site contractor who installed the utilities, including drywell 22 and 29, reported that they had found an undocumented large drain pipe that extended across NYS Route 281and terminated where structure 22 was installed. Further investigation of the area revealed that there was a large swale (grass ditch) directly across from where structure 22 was installed. The swale is located on the south side of a driveway for the state trooper's barracks. The swale is sloped to NYS Route 281 and ends at a depression along the roadway. While no outlet pipes to this swale or basin are visible, it is highly likely that this pipe hydraulically interconnects the pond to the area where drywell structure 22 was installed. Upon reviewing aerial and topographic mapping of the region, it is believed this swale/drainage basin captures stormwater runoff from a sizeable area which may have introduced previously unintended stormwater to the schools stormwater drainage system.

6. After reviewing the available information that was provided by LeChase CM and Streeter Associates and the installation of the stormwater structure, it appears stormwater was forced back through the floor drain, causing ponding in the building entryway and ultimately drained through the doorway, down a flight of stairs, and onto the floor of the music room. There are number of items that contributed to the flooding of the music room and the first item is the incomplete construction of the pumping system. The pumping system was installed to remove groundwater from the footer drain that is placed around the outer foundation walls of the music room. Removing the ground water from the outer foundation wall is very important because the music room is approximately 13-feet below the outer finish grade and removing groundwater from this outer wall helps to reduce hydrostatic pressure and seepage of water into the building. Secondly, the unknown drainage pipe extending across NYS Route 281 is believed to have hydraulically overloaded the schools drainage system. Drywell structure 22 was designed to infiltrate stormwater captured by the schools driveway culvert and not from areas outside the schools site. The addition of outside stormwater hydraulically overloaded the system and the existing soil infiltration rates and resulted in the unforeseen condition of water discharging out the floor drain near the building entrance. The outlet to the floor drain is located at an elevation of 1141.0 and the drywell has a bottom elevation of 1134.4, therefore, the floor drain will not overflow until the water within the drywell reaches elevations greater than 1141.00 or 6.6 feet above the bottom of the structure. Examination of the structure indicates water reached nearly to the top of the structure. The excess stormwater within the structure caused unplanned head pressure on the drain pipe connecting the floor drain and drywell together. The excess head pressure caused water to flow in reverse from which it was designed and onto the concrete slab of the stairway and eventually into the music room.

7. Subsequent to learning of the aforementioned drain pipe that hydraulically interconnects the off-site stormwater management area with the schools drainage system, HUNT recently issued a revised drawing that removes the connection of drywell 22 and the floor drain. The pipe that drains the floor drain will be moved to drywell No 29 that is located to the south of drywell 22 and was installed to infiltrate groundwater from the new pumping system. In addition, a second connection of the floor / roof drain to the adjacent pump station can be added to further protect the school from such a future event. Installing the second connection, or overflow from the floor / roof drain, will provide excess stormwater water a second path in the event the floor drain piping is clogged or hydraulically adversely impacted or future changes on the site or surrounding lands change the drainage conditions. The second connection will pipe the roof water to the nearby pumping system and keep it from backing up and out of the floor drain.