



October 6, 2015

Mr. Robert Young, Stormwater Officer
Village of Horseheads
202 South Main Street
Horseheads, New York 14845

RE: FedEx Ground Distribution Center SWPPP
Village of Horseheads, Chemung County, New York
FE Project #2015-057

Dear Mr. Young:

This letter is a response to comments from the Chemung County Stormwater Coalitions October 1, 2015 review of the stormwater management plan.

Groundwater Elevations, General Site Drainage Items, and Snow Management

1. The Grading Plan should clearly indicate how runoff from the area at the southwest corner of the proposed building shall be conveyed/directed to the proposed stormwater management system.

Response:

The southwest corner of the pavement is a high point that drains east. The south forebay has been expanded to allow any incidental flow from the paved area drain to forebay. A small swale has been added to corner to intercept any incidental flow from the corner. The stormwater is designed to stay on the pavement. A small amount of incidental flow may be directed to the south forebay. The side slope and swale do not require stone lining.

2. Where is the intended overflow/relief point for the proposed stormwater management system? What is the associated elevation of this point? As per the current Grading Plan, it appears that this overflow/relief point may be along the south property line and may direct overflows to the adjacent parcel. This is an important consideration that could impact adjacent and downhill properties. Consideration should be given to this item. Input from the adjacent property owner would seem to be part of this consideration.

Response:

The overflow/relief point is along the south property line. Third Street is being relocated to the southern property line, so the overflow would be directed to the road, not an adjacent property. The adjacent property is vacant, and overflow from the existing conditions is directed to property. The other area to potential overflow/relief is adjacent to the Holding Point Maintenance Building. Overflowing at this point has the potential to direct stormwater directly into their building through their overhead garage doors.

3. On Sheet C3 – Site Plan, “Snow Storage Areas” are noted to within the South Forebay and the West Forebay. The Following questions and comments pertain to this and snow management in general.

- a. The storage of snow in the proposed forebays could act to compromise the performance of the proposed stormwater management system. For example, piled snow within the west forebay could easily block the flow of stormwater.
- b. Areas should be designated for snow piling/storage that would not block the intended flow of stormwater or otherwise compromise the performance of the proposed stormwater management system.
- c. Where is plowed snow from the north parking lot proposed to be stored?

Response:

The notes have been removed from the site plan. We are discussing the potential snow storage areas with the owner. The O & M plan has a statement that snow cannot be stored in the stormwater forebays.

4. In regards to the monitoring well data from monitoring wells on the Schlumberger site that was included in the SWPPP, please reference the original source of this data.

Response:

This has been updated.

5. The subject of the apparent discrepancies in the groundwater elevations that were initially reported by Fagan Engineers and the recent groundwater elevations that were reported by Fagan Engineers was discussed with Fagan Engineers. It was noted by Fagan Engineers that this discrepancy stemmed from rough, inaccurate field measurements that were utilized initially. It was explained that the more recent groundwater elevations are obtained from monitoring wells that have been monitored over a period of several weeks with accurate survey control. Fagan Engineers indicated that the recent groundwater elevations are accurate.

Response:

Fagan Engineers is confident in the groundwater elevations measurements we are using for the infiltration system design.

Stormwater Management Facilities

Water Quality Treatment Units

1. The Site Utility Plan should indicate the location, orientation, and alignment of the proposed Crystal Stream water quality units. These are not shown on the current Utility Plan. The Utility Plan should reference the details shown on sheet C7.

Response:

The Crystal Stream Units are currently labeled on the drawing with dimensions. The units are relatively small, and are smaller than the symbol shown for them on the drawing. Therefore, we are showing the units with a symbol and added the dimensions to the label.

2. As per the submitted Crystal Stream unit sizing information, the proposed water quality unit for the larger drainage area (5.29 acres) is designed for a 25-year storm event. Also, this same unit shall be able to pass the 88-year storm event. The following questions and comments pertain to this item.
 - a. Will flows greater than the Q_{25} result in the wash-out of captured sediment and floatables?

Response:

The area of concern for re-suspension is the "back area" which is on the downstream side of the oil reservoir. We normally design this area to have no more than a 1 fps up flow velocity but the normally accepted maximum value to preclude scouring is 2 fps. The back area of the Model 2056 is 5' x 5' or 25 sf. At a flow velocity of 2 fps this area can pass 50 cfs without re-suspending. The 100-year flow rate for this site is 37.10 cfs which is less than the allowable flow rate for re-suspension so there should be no re-suspension up to and beyond the 100-year storm flow.

- b. Will this water quality unit limit the capacity of the associated collection system to convey the Q_{100} ?

Response:

The CST water quality unit will not restrict the system flow to a greater degree than the average junction box. It can be modeled as a junction box which only has the entrance loss at the outlet pipe. The water has free passage under or over the oil reservoir to the outlet pipe. Due to the large area for flow thus a slow velocity there is virtually no friction loss within the device.

- c. Given the critical nature of reducing/eliminating particulates and floatables to the proposed infiltration system, it seems reasonable to utilize a larger unit to achieve greater treatment efficiency for a larger range of flows.

Response:

The larger the water quality device the more efficient it will be. This is not a linear increase in removal efficiency because as the size of the particles to be removed decreases the size of the device to remove the same reduction increases to a greater degree. It makes sense that the smaller the particle to be removed the greater size of the device is needed. The size ratio is based on the ratio of the sizes of the particles squared. Now specifically, the Model 2056 is designed with a hydraulic loading rate (HLR) of 25.8 gpm/sf to remove 89% of all sizes down to 60 micron particles. If a Model 2466 (our next larger device) is substituted the HLR would be 17.9 gpm/sf and it would be able to remove 89% of all sediments down to 50 microns. The approximate increase in device cost to make this substitution is \$10,000. This only improves the particle removal from 60 micron particles to 50 micron particles. The current unit (Model 2056) does not have a potential for re-suspension at and above the 100-year storm flow. Therefore, we believe the current model is the correct choice for this application.

3. Is X-Tex media proposed to be included as part of the filter system for each of the water quality units?

Response:

The X-Tex media is included in both treatment units. The details have been updated.

Stormwater Forebay Areas & Outlet Structures

1. Calculations demonstrating that the full WQv volumes (as a minimum) are provided in the respective forebays should be provided. Consideration should be given to the accumulation of sediment over time within the forebays, which would act to reduce the effective storage volume.

Response:

The calculations are included in Appendix E. We do not anticipate a large accumulation of sediment, but some volume has been added compensate for sediment buildup.

2. In regards to the Outlet Structure Profile Detail on Sheet C6, the following questions and comments are noted.
 - a. A metal hood is shown in conjunction with a round manhole. Is the specified hood designed to be mounted on a flat wall? This should be reviewed and modifications made, as needed.
 - b. What is the depth of the sump within the proposed outlet structure?

Response:

The outlet structures will be square catch basins with a hood. The trash rack has been eliminated from the design.

3. The following questions and comments pertain to the proposed Concentric Trash Rack and Anti-Vortex Device, as detailed in Sheet C6.
 - a. Although this device may (potentially) screen out larger solids (such as larger sticks and tree limbs), it most likely would not be effective in screening out finer material such as certain trash, paper, and leaves.
 - b. Given the critical nature of protecting the proposed infiltration system, is part of the proposed stormwater management system design to screen out smaller material prior to discharge to the infiltration system?
 - c. Given the relatively short height of the proposed concrete outlet structures (in relation to the bottom of the forebays), is the proposed Concentric Trash Rack and Anti-Vortex Device readily applicable?

Response:

The concentric trash racks have been eliminated from the design. The infiltration system will use isolator rows to control the first flush volume. The isolator rows will be accessible for cleaning and inspection. StormTech has provided an infiltration system design that is included on sheet C11. Two 6" x 12" cutout have been added to the outlet structures as an anti-vortex practice.

4. Could debris, trash, and floatables (including oils) reaching the forebays be introduced to the infiltration system that could negatively impact its long-term performance? What provisions in the design are included to address this issue?

Response:

Isolator rows will be used to control trash and debris. Inspection and cleaning of the isolator rows is included in the O & M Plan.

Stormwater Infiltration System

1. As per Page SWPPP-7 of the SWPPP, lowest elevation of the proposed infiltration area is set at 898.33 (to ensure a 3-foot separation from the seasonal high groundwater level). As

per the Infiltration Area Detail on Sheet C6, the bottom of the infiltration piping is proposed to be 898.33 with a 6-inch (min) layer of stone below this piping. The bottom of the stone bedding should be considered to be the bottom of the infiltration area. As such, the bottom of the infiltration area, as shown, would be below the designated minimum elevation of 898.33. This should be reviewed and addressed.

Response:

The infiltration system has being redesigned using StormTech chambers. The trailer loading/unloading portion of the property is being treated by Crystal Stream FD-1. Therefore, it does not need to be treated again by an isolator row. The 30-inch pipe is entering the infiltration system at the bottom. There is 3-inches of bedding stone at the invert of the pipe. The north forebay is entering the infiltration system at a separate manhole and being directed to an isolator row.

2. Do the proposed HDPE access risers meet appropriate traffic loading criteria?

Response:

The access risers do accept H-20 loading.

3. How will debris and sediment that reaches the infiltration system be removed? Are additional access risers required? What are the diameter of the access risers? Would typical concrete manholes provide better access for long-term inspection and maintenance?

Response:

This has been addressed in the O & M plan. The isolator rows are accessible from a manhole that will allow for inspection and removal of accumulated sediment and trash.

4. Groundwater elevations monitoring wells should be provided in the area of the infiltration system. Associated details should be included on the plans.

Response:

Groundwater monitoring wells are not required by NYSDEC. The NYSDEC requires infiltration trenches to have an observation well that extends to the bottom of the gravel. The two manholes and isolator rows provide the ability to inspect the infiltration system. An inspection port has also been added near the middle of the system. This meets the requirements of the NYSDEC.

5. In regards to the Infiltration Area Detail on Sheet C5, the following questions and comments are noted.

- a. The diameter and type of the piping should be noted on the detail.
- b. A detail showing how the storm sewer connects to the header pipe should be included.

Response:

The connections to the system are shown. Two manholes have been added to connect to the system and to allow access to the isolator rows.

Stormwater Conveyance

1. The design specifics for the proposed drainage swale along Seconds Street (including details and sizing calculations) should be provided. Will this swale require erosion protection?

Response:

The swale calculations are included in Appendix E. The 100-year flow for this area is 24.47 cfs. Only a portion of the employee parking area is conveyed by the swale. The swale has a maximum capacity of 66.94 cfs. At the 10-year peak flow rate the maximum velocity is 3.90 fps. This will allow the channel to be grass lined and not require erosion protection.

2. What is the proposed capacity of the roof gutter and downspout system? What is the proposed size of the roof downspouts?

Response:

There are 17 downspouts per side at a maximum spacing of 42-feet. They are designed to handle the 100-storm peak flow rate.

3. On the Typical Roof Drain Detail on Sheet C6, the type of pipe and joints to be required should be clearly specified, as well as a note that the piping system is intended to maintain pressure to certain elevations.

Response:

The piping will be watertight SDR-35 piping. The truck drain will be watertight HDPE. The detail has been updated to indicate this.

4. Hydraulic and hydrologic calculations pertaining to the sizing and required number of catch basins should be provided (including a short narrative).

Response:

This information is included in Appendix E.

5. In regards to the design and sizing of the rip rap outlet aprons, the following questions and comments are noted.

- a. The rock sizing nomograph pertains to the d50 rock size and not the maximum rock size. This should be considered when selecting a maximum rock size and/or a rock mix/gradation.
- b. It is requested that the nomographs from the current NYS Standards and Specifications for Erosion and Sediment Control be utilized. When sizing the rock, different tailwater conditions should be evaluated.

Response:

This information has been updated in the SWPPP and the drawings.

Miscellaneous

1. The submitted O & M Plan is being reviewed at this time and comments shall be provided in a separate letter.

Response:

The owner will continue to work with the Village of Horseheads to finalize the O & M Plan.

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Mr. Robert Young
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2. Written responses to our September 1, 2015 drainage review letter were not provided by the Applicant's engineers. It was requested that these be provided.

Response:

This response letter has been submitted to the Village of Horseheads.

3. This review pertain to stormwater management. The Applicant is responsible to obtain all necessary approvals, including those from the Village of Horseheads, the Chemung County Sewer District, NYSDEC, and the Chemung County Highway Department.

Response:

The owner understands that other approvals are required.

If you have any questions or comments, please feel free to contact me.

Sincerely,

FAGAN ENGINEERS & LAND SURVEYORS, P.C.

Karl M. Schwesinger, P.E., CPESC
Project Manager

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