



Village of Menomonee Falls
 W156 N8480 Pilgrim Road
 Menomonee Falls, WI 53051-3140
 Telephone: (262) 532-4200

STORMWATER MANAGEMENT FACILITIES OPERATION AND INSPECTION REPORT

Quarter Section NW ¼ Sec 4 Name of Business/Subdivision Lot 200 CSM 7648 – Crossroads
 Property Tax ID Number MNFV0014990 Address of Property N95 W18345 County Line Road
 Date December 10, 2014

Dry Pond	X
Wet Pond	
Other	

Location of Pond SE corner of JC Penny entrance and County Line Road

Pond ID: SWA 2012-05 (Permit #)
Dry detention pond

Year Pond Constructed 1980's Year of Last Certification 2014

Compliance Verification	Design	Actual	Compliant		Comments (Condition of Structure)
			Yes	No	
Primary Outlet Pipe					
Opening Diameter (inches)	10"	10"	X		12" Concrete pipe with 10" PVC set inside. In 2013, the 12" outlet was reduced by the installation of a 10" pvc to reduce flows as part of the Pick-n-Save redevelopment.
Upstream Invert	856.59	856.59	X		
Downstream Invert	856.00	856.00	X		
Length (feet)	56'	56'	X		
Slope (%)	1.05%	1.05%	X		
Secondary Outlet Pipe (If Applicable)					
Opening Diameter (inches)					Not applicable
Upstream Invert					
Downstream Invert					
Length (feet)					
Slope (%)					
Riser (If Applicable)					
Opening Diameter (inches)					Not applicable
Elevation					
Upper Discharge Control (If Applicable)					
Opening Diameter (inches)					Not applicable
Elevation					

Compliance Verification	Design	Actual	Compliant Yes No		Comments	
Lower Discharge Control	(If Applicable)					
Opening Diameter (inches)	10"	10"	X			
Elevation	856.59	856.59	X			
Other (Description)						
Opening Type and Size (inches)					Not applicable	
Elevation						
Emergency Spillway						
Elevation	865.00	865.0	X			
Length of spillway (feet)	178'	49'	X		The spillway length was adjusted as part of the as-built analysis. The length was reduced but the peak discharge from the pond remained below the allowable release rate.	
Embankment	Present Yes no		Comments/Maintenance Requirements			
Unauthorized Plantings, trees, or woody vegetation		X				
Animal burrows or slope erosion		X				
Storm Sewer Outfalls	Type & Size		Location		Comments	
Outfall 1	12" conc		Pond to MH		Drains the system	
Outfall 2						
Outfall 3						
Storage Properties	Design	Actual	Compliant Yes No		Not Applicable	Equipment Used
Normal Water Elevation (Wet Ponds)	NA	NA			X	Survey total station for elevations and a tape measure to check depths. Pondpack computer program to check volumes.
Design High Water Elevation	865.39	865.69	X			
Area at Normal Water Elevation (Ac) (Wet Ponds)	NA	NA			X	
Area at Design High Water Elevation (Ac)	0.52 ac	0.53 ac	X			
Active Storage Available (Ac-Ft)*	3.29 acft	3.29 acft	X			
Lowest Elevation at Top of Embankment (If Applicable)	866.0	866.0	X			
Average Elevation at Top of Embankment (If Applicable)	866.0	866.0	X			
Maximum Bottom Elevation	856.07	856.07	X			
Average Pond Bottom Elevation	856.4	856.4	X			
Pond Bottom Area (Ac)	0.16 ac	0.16 ac	X			
Maximum Pond Depth	9.9'	9.9'	X			
Average Pond Depth	9.6'	9.6'	X			
Average Permanent Pool	NA	NA			X	

Depth (Wet Ponds)

*To Determine Active Storage $V=H/3(A1+A2+(A1 \times A2)^{1/2})$

Wet Ponds Use H = Height of Section , $A1$ = area at normal water elevation, $A2$ =area at top section

Dry Ponds Use H = Height of Section, $A1$ = pond bottom area, $A2$ =area at top section

Sketch Outlet or Attach to Document

Attached

Place Photograph of Pond or Attach to Document

Attached

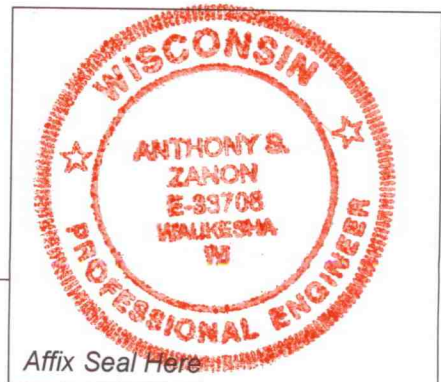
Place Photograph of Pond or Attach to Document

Attach As-built Survey to the Document for the first report submission

Inspection Firm: Jahnke & Jahnke Associates
Phone Number: 262-542-5797
Address: 711 West Moreland Blvd
Waukesha, WI 53188

Inspector Name : Robert Thomas
Inspection Date: 10/30/14 and 12/09/14

Certifying Professional Name: Anthony S. Zanon, PE
Phone Number: 262-542-5797



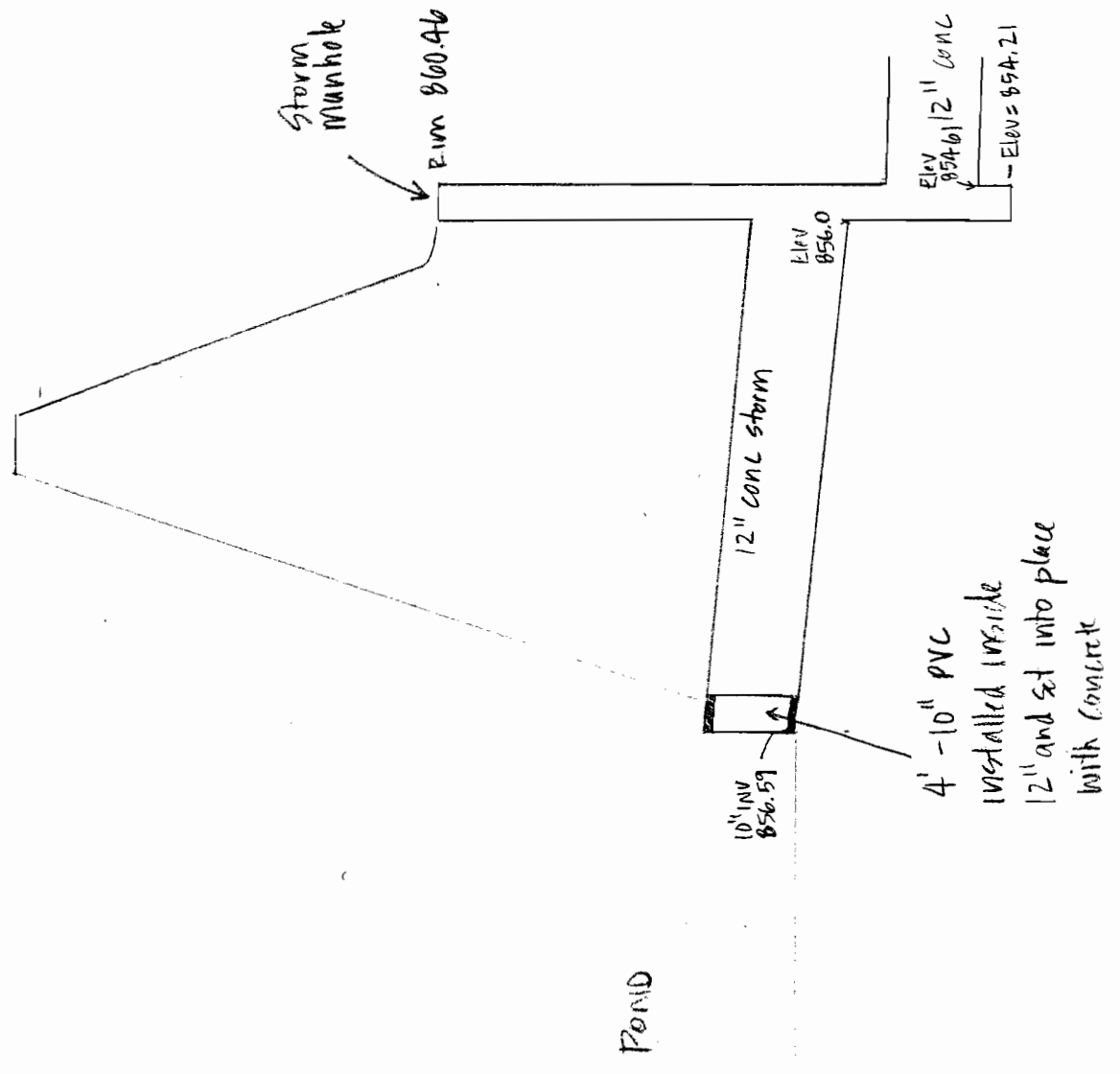
Date: 12/10/2014

Signature: Anthony S Zanon

Affix Seal Here

Detention
Pond
Outlet Detail

1" = 20' hor
1" = 2' vert



Storm
Manhole

Elev 860.46

12" conc storm

Elev
856.0

Elev
854.61 12" conc

- Elev = 854.21

10" INV
856.59

4" - 10" PVC
installed inside
12" and set into place
with concrete

POND

From Summary -
 SWMP last revised 6/29/2012

new drainage areas, time of concentration and runoff curve numbers were calculated. To provide detention to address the water quantity requirements, the existing pond was reviewed to determine if it could be expanded to provide the storage needed. The pond is surrounded by existing development on all sides and bedrock was an issue when the pond was originally constructed. Based on these conditions, pond expansion was not an effective option. However, the top of the berm of the pond will be regraded to elevation 865 to provide some additional volume and the outlet pipe will be reduced from a 12" pipe to a 10". The outlet pipe is a concrete pipe with end section. A 10" pvc will be set in the 12" pipe to reduce the outlet size. The change to the berm height and outlet size will provide some additional storage volume within the pond.

Since the existing pond could not be expanded, soil tests were completed across the site. Potential issues for other stormwater devices included the presence of bedrock and seasonal high groundwater. Based on the borings (section 2 of the report) it was determined that underground detention was an option in the north parking lot within the area that is being reconstructed. The proposed plan is to install a corrugated metal pipe (cmp) underground detention system using 102" diameter pipe. In the area of the parking lot where the underground system would be installed, an existing storm sewer will be rerouted into the underground system and then back into the storm sewer before reaching the existing pond. The underground system was designed to provide just under 30,000 cf of storage. The lowest 9,500 cf will be the wet portion of the system to address water quality. The top 20,500 cf is detention storage. This underground system was included in the proposed computer model and the proposed flows were calculated. The following is a summary of the results:

	as-built results					
Underground system:	2		↓		Storm Event	
					10	100
Peak inflow (cfs)	12.55 ✓				20.04 ✓	36.37 ✓
Peak outflow (cfs)	8.31	8.35			13.10 13.11	21.68 21.37
Peak elevation	871.06	870.92			871.88 871.72	874.73 874.44
Pond:	2		↓		Storm Event	
					10	100
Peak inflow (cfs)	47.43	47.45			79.68 79.70	148.25 148.10
Peak outflow (cfs)	5.07 ✓				6.36 ✓	143.99 147.68
Peak elevation	861.94 ✓				864.87 ✓	865.39 865.69
Allowable release rate (cfs)	5.94				---	147.98

The addition of the underground storage system along with the berm and outlet pipe change in the pond provide enough storage to reduce the 2 year and 100 year storm event release rates to required rates.

Water Quality

The final requirement to meet for this redevelopment project is 40% TSS removal from the parking lots and roads within the redevelopment area. This requirement is per Wisconsin DNR NR 151.

