To: Jess Barley, Kohler Co.

From: Excel Engineering, Inc.

Date: January 23, 2015
Revised: June 5, 2013

Subject: Storm Water Management Technical Memorandum– Town of Wilson Golf Course

In accordance with your request, Excel Engineering has investigated the storm water management requirements associated with constructing an 18-hole golf course, club house and maintenance facility on Kohler Co. property in the Town of Wilson. Based upon the requirements identified, the proposed project and the physical characteristics of the property, we have also developed an engineering strategy to meet those requirements. The requirements and strategy are detailed below.

Storm Water Management Requirements – Storm water management must be provided for the project which meets or exceeds the requirements of the Town of Wilson (Town), Department of Natural Resources (DNR). Each agency's regulations are as follows.

- Town of Wilson – The Town's storm water management code requires post-development storm water peak flow reduction, total suspended solids removal and mandates storm water infiltration facilities be provided. Specifically, the Town requires post-development peak flow rates for the 2, 10 and 100-year storms not exceed their corresponding pre-development peak flow rates. The Town also requires 80% of the total suspended solids (TSS) be removed from post-development runoff and that the quantity of post-development storm water that is infiltrated exceed 60% of what infiltrated prior to development.
- Department of Natural Resources – Similar to the Town, the DNR has requirements for post-development storm water peak flow reduction, total suspended solids removal and infiltration. Specifically, the DNR requires post-development peak flow rates for the 1 and 2-year storms not exceed their corresponding pre-development peak flow rates. They also require 80% of the TSS be removed from post-development runoff and that the quantity of post-development storm water that is infiltrated exceed 90% of what infiltrated prior to development.

In addition to the requirements listed above, the following general requirements apply to the overall project.

- Impervious surfaces must be kept out of protective areas to the maximum extent practicable.
- Storm water runoff from parking areas and roadways must be treated for TSS removal prior to infiltration.

- Storm water runoff from fueling and maintenance areas is prohibited from being infiltrated. These areas shall have BMP's designed, installed, and maintained to reduce petroleum in the runoff.
- A separation of five feet must be provided from the bottom of any infiltration device collecting storm water from a roadway or parking lot to the seasonal high ground water elevation.
- A separation of one foot must be provided from the bottom of any infiltration device collecting storm water from a roof top to the seasonal high ground water elevation.

Storm Water Management Strategies – As was mentioned above, storm water management strategies have been developed to meet the expected regulatory requirements for the project. The strategies proposed are similar to those designed and approved for the Tented Forest project and are based upon the site's sandy soils and high infiltration rates (see Appendix A for infiltration testing results from the Tented Forest project and Appendix B for Tented Forest storm water approvals). The bulk of the storm management plan consists of filter strips which treat most impervious areas for quality and quantity prior to infiltrating and discharging to any nearby surface waters. For those areas that require more treatment (maintenance building), biofiltration areas and oil/water separators may also be required to treat areas with concentrated flow that cannot drain to filter strips. These are depressed areas with three feet of engineered soil, mulch, and wetland type plantings. All treatment areas are planned to be constructed 5 feet above the anticipated high groundwater elevation or achieve 80% TSS removal prior to infiltrating. See Figure 1 for concept drainage plan summary. A geo-technical report is attached as exhibit C.

Golf Course

The construction of the golf course will require treatment of storm water for all the previously listed requirements. All storm water requirements are expected to be met by utilizing the high infiltration rate of the site's sandy soils. The disturbed golf course areas are expected to be drained off the main fairways, tee boxes, and greens through the use of swales and natural filter strips. Existing natural depressions are expected to be utilized to help detain and treat runoff. See Figure 1A for example.

Drives and Cart Paths

Drives and cart paths are anticipated to be treated with natural filter strips similar to the Tented Forest access roads. To treat storm runoff from roadways a 12-15 foot wide sheet draining filter strip is expected while a 5-10 foot filter strip would be expected for cart paths. In areas where a filter strip is not possible, treatment with swales leading to a biofiltratoin area designed to discharge through infiltration. In this case, depth to groundwater will need to be verified for required separation distances. Drives in close proximity to wetlands would need to utilize a curb and gutter system to convey runoff to a sumped catch basin for treatment of storm water. If possible, this runoff would be directed to a dry detention area to treat for quantity control. See Figure 1B for example.

Club House, Parking Lot, and Practice Range

It is suggested that these areas be treated with natural filter strips, where possible, and the majority of the area directed to biofiltration areas. Runoff will need to be directed to a storm treatment area prior to discharging to wetlands. Use of swales for additional treatment is recommended. Depth to groundwater will need to be verified for required separation distances. See Figure 1C for example.

Maintenance Facility

This area is expected to generate a higher level of runoff volume and sediment loading. It is suggested that this area be treated with natural filter strips, where possible, and the majority of the area directed to biofiltration areas. Runoff will need to be directed to a storm treatment area prior to discharging to wetlands. Additional measures will be required to treat oil/grease from this area prior to infiltration. Biofiltration and filtered, sumped catch basins would be expected. Depth to groundwater will need to be verified for required separation distances. See Figure 1D for example.

POST CONSTRUCTION OPERATION AND MAINTENANCE

See Figure 2 for typical best management practices.

The owner of the property affected shall inspect and maintain the following stormwater management systems frequently, especially after heavy rainfalls, but at least on an annual basis unless otherwise specified.

STORMWATER FACILITY	**TYPE OF ACTION**
1. Lawn and Landscaped Areas	All lawn areas shall be kept clear of any materials that block the flow of stormwater. Rills and small gullies shall immediately be filled and reestablished with native vegetation.
2. Swales	All swales showing signs of erosion, scour, or channelization shall be repaired, reinforced, and revegetated immediately. All swales shall be repaired to the original plan requirements.
3. Filter Strips (Existing Soils)	The area directly over the infiltration areas draining impervious areas shall be inspected for any type of settling or clogging that may take place. Any failed areas showing signs of degradation shall be restored to the original plan requirements.
4. Biofiltration Basin	During the first 2-3 months of establishment, the garden will require, at a minimum, watering on a weekly basis depending on weather. Visual inspections of the garden shall be performed annually at a minimum. Maintenance shall be required when standing water occurs 3 days after a rain event. Maintenance shall consist of the removal of sediment, and a 2 foot undercut. Replace the undercut material with 1/3 topsoil, 1/3 compost, and 1/3 sand. Restoration of plant material shall be by plugging 1 native perennial per square foot, not by seeding. In the spring of each growing year, dead vegetation shall be removed to allow for new growth. At least 2 times during the growing season, the garden should be weeded and additional hardwood mulch shall be added as needed to assist in weed suppression.
5. Catch Basin/Curb Inlet Grates	The grate openings to these structures must be cleared of any clogging or the blocking of stormwater flow from getting into the stormwater conveyance system of any kind.
6. Catch Basin/Curb Inlet Sumps	Sumps shall visually be inspected every 3 months. Siltation shall be removed and disposed of offsite when the sump depth is within 3” of the outlet pipe invert elevation. The removal of siltation should occur a minimum of once per year.
7. Oil/Grease Filter Insert	Maintenance shall be in accordance with the manufacturer’s guidelines, which at a minimum shall be 3 inspections per year, 3

	cleanings per year, and 1 filter replacement per year. More specifically, debris shall be removed and the filter medium shall be replaced any time the filter medium appears to be 50% coated with oil and grease.
8. Record of Maintenance	The operation and maintenance plan shall remain onsite and be available for inspection when requested by Town of Wilson or WDNR. When requested, the owner shall make available for inspection all maintenance records to the department or agent for the life of the system.

Conclusion – The storm water management strategies proposed are expected to meet the regulatory requirements for the project. They are similar to those designed and approved for the Tented Forest project which utilized the site's sandy soils and high infiltration rates. It is expected that these concepts will be used during design of the golf course. Typical Erosion Control Speculations are included in Appendix D.

Attachments:
Appendix A: Infiltration Testing Results
Appendix B: Tented Forest Storm Water Permit Approvals
Appendix C: Geo-Technical Report
Appendix D: Erosion Control Specifications
Figure 1: Overall Report
Figure 1A: Typical Golf Hole Drainage
Figure 1B: Typical Road Drainage
Figure 1C: Clubhouse/Parking Lot Drainage
Figure 1D: Maintenance Facility
Figure 2: Typical Best Management Practices
Figure 3A: Storm Water Management Map 1
Figure 3B: Storm Water Management Map 2

Appendix A
Infiltration Testing Results

midwest engineering services, inc.

geotechnical environmental materials engineers

821 Corporate Court
Suite 102
Waukesha, WI 53189-5010
262-521-2125
FAX 262-521-2471
www.midwestesng.com

December 22, 2011

Mr. Eric Drazkowski, P. E.
Excel Engineering
100 Camelot Drive
Fond du Lac, WI 54935

Subject: Double-Ring Infiltrometer Testing and Infiltration Evaluation
Tented Forest Parcel
Town of Wilson, Sheboygan County, Wisconsin
MES Project No. 7-113182

Dear Mr. Drazkowski,

INTRODUCTION

In accordance with your request, Midwest Engineering Services, Inc. (MES) has performed modified double-ring infiltrometer testing to provide a preliminary evaluation of the soil infiltration rates for four (4) specific locations on the Tented Forest Parcel, located in the Town of Wilson, Sheboygan County, Wisconsin, which is situated along Lake Michigan. A fifth test was eliminated due to access issues in that area of the site. The results of these tests are summarized in this report. Hard copies of this report can be provided upon request.

These recent services were performed in accordance with an agreement (MES Proposal No. 7-11341, dated December 14, 2011) between MES and Excel Engineering and signed by Mr. Jeffrey Quast, President of Excel Engineering, on December 22, 2011. The general conditions for the performance of the work were referenced in the proposal. This infiltration evaluation report has been prepared on behalf of, and exclusively for the use of the Excel Engineering. The information contained in this letter report may not be relied upon by any other parties without the written consent of MES, and acceptance by such parties of MES General Conditions.

PURPOSE

The purpose of the infiltometer tests was to aid in assessing the average rate of infiltration of water into the vegetated surface soils at predetermined locations on the Tented Forest Parcel.

SCOPE

The scope of services included a site reconnaissance, field observations of the existing surface conditions, performance of infiltrometer tests, and an evaluation and analysis of the

data obtained. The double ring tests were performed in the general locations specified by Excel Engineering. Initially, a total of five (5) tests were to be completed. However, due to the inaccessible nature of one (1) of the test locations (Test Location 1), it was eliminated from the scope. In addition, three other tests (Test Locations 3, 4 and 5), which were initially located near Lake Michigan on existing sand dunes, were relocated to western locations due to encountered surface condition access issues at the predetermined locations. Further, no soil sampling services were performed.

The field work for the performance of the infiltration tests were in general accordance with the guidelines expressed in the WDNR modified procedures for performing a double ring infiltrometer test per ASTM D3385. The design of the proposed swales and other devices was beyond the scope of services for this project. .

SITE AND PROJECT DESCRIPTION

The project area is located within the Town of Wilson, Sheboygan County, Wisconsin. It consists of a large, heavily wooded area along Lake Michigan and south of the Timber Lake Subdivision, north of the Kohler-Andrae State Park and east of the Black River. The topography of the site is considered to be rolling with dunes along Lake Michigan. It is understood that the site development will consist of twelve (12) tented structures (Mongolian Yurts), a restaurant, a recreation tent structure, and a picnic area on the sand dunes along Lake Michigan; a maintenance building with a parking area in the southwest corner; and a reception structure with a guest parking area in the northwest corner. It is also understood that the site development will also attempt to maintain the site infiltration as natural as possible and any constructed impervious areas and any roof runoff will be designed to drain into the existing vegetated areas with no stormwater runoff leaving the site. Five (5) separate locations were initially proposed to be evaluated for this project and were anticipated to be accessible with a support truck. However, the area of Test Location 1, which was proposed to be located in the northwest portion of the site, was inaccessible with a support truck and was eliminated by Excel. Further, the initial locations of Test Locations 3, 4 and 5 were also inaccessible and were subsequently relocated to accessible locations of the site. The test locations are shown on the attached location diagram.

It is understood that the scope of the project is to evaluate the existing vegetated areas regarding infiltration rates to assist in the design of any proposed stormwater management devices.

FIELD CONDITIONS AND INFILTROMETER TESTING PROCEDURES

As proposed, MES performed field double ring infiltrometer tests in general accordance with WDNR modified procedures based upon ASTM D3385 standards. These tests were performed at four (4) specific locations on the parcel. The double ring method consists of placing two open-ended cylinders into the ground at the test location, with one cylinder inside the other. The rings were set approximately 4 to 6 inches into the vegetated surface. Per the

WDNR standard, the grass was not removed during the test procedures. Both of the rings are then filled with clean water. Once an equal depth of water is obtained within each ring, the water level within the inner ring is allowed drop to a predetermined depth, typically one inch. The time it takes the water to drop the predetermined depth is recorded. Per WDNR requirements, these test procedures were performed until an apparent uniform infiltration rate was achieved or for a minimum of two (2) hours. The volume of water added to the inner ring is that which infiltrates into the soils. The maximum steady-state infiltration velocity is equal to the infiltration rate.

In general, the vegetated surfaces of the test locations consisted of a thin layer of about 1 to 3 inches of root mat with fine sand. Some unvegetated areas were observed on the site, but generally in the areas of the eastern sand dunes.

SOIL SURVEY MAP REVIEW

The USDA Soil Conservation Survey for Sheboygan County, Wisconsin, dated January 1978, indicated the near surface soils in the vicinity of Test Location 1 (which was eliminated due to area access issues) and Test Location 2, consist of the Oakfield Loamy Fine Sand (OaB), while the near surface soils in the vicinity of Test Location 3, 4, and 5 consist of Dune Land (Dn). The Oakville soils generally consist of shallow loamy fine sand with underlying sand. Estimated permeability (infiltration rate) was indicated to be 6 to 20 inches per hour for the loamy fine sand and greater than 20 inches per hour for the sand. Though no estimated infiltration rates were indicated for the Dune Land soils due to its variable consistency, its description in the Soil Survey document indicated that these soils are excessively drained medium and fine sand with a very rapid permeability.

CONCLUSIONS OF INFILTROMETER TESTING

The following table summarizes the test location, surface condition, and the measured average infiltration rate. Results of the individual field infiltrometer test are also attached to this letter report.

Test Location	Date Tested	Test Depth	Surface Description	Average Infiltration Rate (in./hour)
#2	12-16-11	At grade	Sparsely Vegetated Loamy Fine Sand	26
#3	12-16-11	At grade	Sparsely Vegetated Fine Sand	33
#4	12-19-11	At grade	Sparsely Vegetated Fine Sand	41
#5	12-19-11	At grade	Sparsely Vegetated Fine Sand	52

In general, the infiltration rate is based on the average incremental infiltration velocity measured from the inner ring. The outer ring is to promote one-dimensional flow beneath the inner ring; therefore outer ring measurements were not collected. However, water was periodically added to the outer ring to maintain a general equal water level with the inner ring. It should be recognized that the infiltration rate could be affected by such factors as the condition of the soil surface, soil structure/layering, percentage of gravel or larger material, degree of saturation, and depth to the water table or bedrock. In summary, it should be recognized that the infiltration rates at these specific locations are expected to be somewhat variable depending upon the uniformity, and the in-place density of the subsoils below the individual infiltration areas.

At test locations, the average measured infiltration rates ranged from 26 to 52 inches per hour. However, it is indicated within the ASTM description of the Double Ring Standard (ASTM D3385), that the "test method is difficult to use or the resultant data may be unreliable, or both, in very pervious or impervious soils (soils with a hydraulic conductivity greater than about 14 inches per hour or less that about 0.0014 inches per hour)." The measured rates are greater than 14 inches per hour and must therefore be used with extreme caution when performing stormwater management area design. It may therefore be advisable to utilize either a limiting value of 14 inches per hour, or the infiltration rates provided for these soil textures in the NRCS Survey for Sheboygan County, when conducting the stormwater management area design. These rates expressed in the NRCS Survey document ranged from 6 to 20 inches per hour for the shallow soils around Test Locations 1 and 2, and to potentially greater than 20 inches per hour for the surface soils around Test Locations 3, 4, and 5.

GENERAL COMMENTS

The limited evaluation has been prepared on the basis of the conditions encountered at the test locations discussed above. Preliminary recommendations presented herein are based on available information and test data collected. This study has been conducted in the manner consistent with that level of care ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. The findings and opinions contained herein have been promulgated in accordance with general accepted practices in the fields of soil mechanics and engineering geology. No other representations, expressed or applied, and no warranty or guarantee is included or intended in this report.

After you have had the opportunity of reading this report, please call at any time with any questions or comments you may have. MES appreciates the opportunity to be of service on this project.

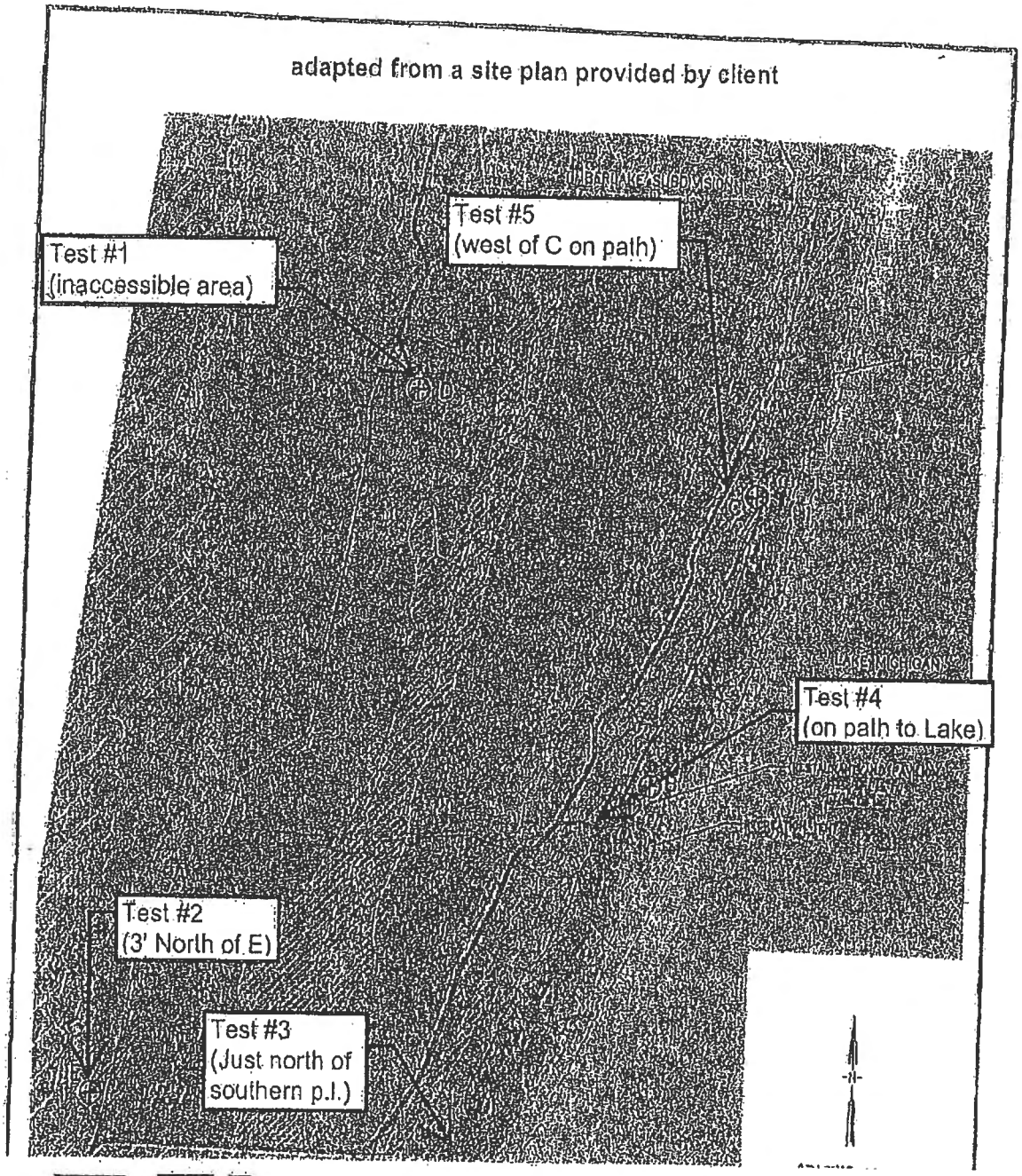
Sincerely yours,

MIDWEST ENGINEERING SERVICES, INC.

Patrick J. Patterson, P.E., P.G.
Project Engineer
Geotechnical Services

Bradley Broback, P.E.
Project Engineer
Geotechnical Services

Enclosures: Approximate Double Ring Test Location Diagram (1);
Field Notes of Double Ring Infiltrometer Tests (2);
General Notes (1)



midwest engineering services, inc.

geotechnical • environmental • materials engineers

Approximate Double Ring Test Location Diagram
Tented Forest Parcel
Town of Wilson
Sheboygan County, Wisconsin

Field Notes

Project Name: Tented Forest
Project Location: Town of Wilson, Wisconsin
MES Project No: 7-113182

Test Location : **Test #2** Date: **12/16/11**

Time	Elapsed Time	Δ Water Level	Total Time
11:30 am	2 min 19 sec	1"	
11:34 am	2 min 19 sec	1"	4 minutes
11:39 am	2 min 18 sec	1"	9 minutes
11:43 am	2 min 19 sec	1"	13 minutes
11:49 am	2 min 20 sec	1"	19 minutes
11:54 am	2 min 16 sec	1"	24 minutes
11:59 am	2 min 17 sec	1"	29 minutes
12:07 pm	2 min 15 sec	1"	37 minutes
12:11 pm	2 min 23 sec	1"	41 minutes
12:16 pm	2 min 17 sec	1"	46 minutes
12:21 pm	2 min 19 sec	1"	51 minutes
12:25 pm	2 min 20 sec	1"	55 minutes

Average Elapsed Time: **2 min 18.5 sec (0.0385 hours)**

Average Infiltration Rate: **26 in/hr**

Test Location : **Test #3** Date: **12/16/11**

Time	Elapsed Time	Δ Water Level	Total Time
2:35 pm	1 min 46 sec	1"	
2:38 pm	1 min 50 sec	1"	3 minutes
2:41 pm	1 min 49 sec	1"	6 minutes
2:44 pm	1 min 49 sec	1"	9 minutes
2:48 pm	1 min 50 sec	1"	13 minutes
2:51 pm	1 min 49 sec	1"	16 minutes
2:55 pm	1 min 48 sec	1"	20 minutes
2:59 pm	1 min 49 sec	1"	24 minutes
3:02 pm	1 min 50 sec	1"	27 minutes
3:05 pm	1 min 47 sec	1"	30 minutes
3:09 pm	1 min 46 sec	1"	34 minutes
3:13 pm	1 min 50 sec	1"	38 minutes
3:17 pm	1 min 48 sec	1"	42 minutes

Average Elapsed Time: **1 min 48.5 sec (0.0301 hours)**

Average Infiltration Rate: **33 in/hr**

Field Notes

Project Name: Tented Forest
Project Location: Town of Wilson, Wisconsin
MES Project No: 7-113182

Test Location : **Test #4** Date: **12/19/11**

Time	Elapsed Time	Δ Water Level	Total Time
11:45 am	1 min 32 sec	1"	
11:48 am	1 min 32 sec	1"	3 minutes
11:51 am	1 min 30 sec	1"	6 minutes
11:54 am	1 min 30 sec	1"	9 minutes
11:57 am	1 min 29 sec	1"	12 minutes
12:00 pm	1 min 31 sec	1"	15 minutes
12:04 pm	1 min 29 sec	1"	19 minutes
12:07 pm	1 min 28 sec	1"	22 minutes
12:11 pm	1 min 28 sec	1"	26 minutes
12:14 pm	1 min 27 sec	1"	29 minutes
12:17 pm	1 min 26 sec	1"	32 minutes
12:20 pm	1 min 25 sec	1"	35 minutes
12:24 pm	1 min 26 sec	1"	39 minutes
12:30 pm	1 min 25 sec	1"	45 minutes

Average Elapsed Time: **1 min 28.4 sec (0.0246 hours)**

Average Infiltration Rate: **41 in/hr**

Test Location : **Test #5** Date: **12/19/11**

Time	Elapsed Time	Δ Water Level	Total Time
1:47 pm	1 min 7 sec	1"	
1:50 pm	1 min 10 sec	1"	3 minutes
1:53 pm	1 min 8 sec	1"	6 minutes
1:56 pm	1 min 10 sec	1"	9 minutes
1:59 pm	1 min 9 sec	1"	12 minutes
2:03 pm	1 min 10 sec	1"	15 minutes
2:06 pm	1 min 10 sec	1"	18 minutes
2:10 pm	1 min 9 sec	1"	22 minutes
2:14 pm	1 min 10 sec	1"	26 minutes
2:17 pm	1 min 10 sec	1"	29 minutes
2:20 pm	1 min 8 sec	1"	32 minutes
2:24 pm	1 min 7 sec	1"	36 minutes
2:28 pm	1 min 10 sec	1"	40 minutes
2:35 pm	1 min 9 sec	1"	45 minutes

Average Elapsed Time: **1 min 9.1 sec (0.0192 hours)**

Average Infiltration Rate: **52 in/hr**

Appendix B
Tented Forest Storm Water Permit Approvals

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
Southeast Region Headquarters
2300 N Dr ML King Drive
Milwaukee, WI 53212

Scott Walker, Governor
Cathy Stepp, Secretary
Eric Nitschke, Regional Director
Telephone (414) 263-8500
FAX (414) 263-8716
TDD (414) 263-8713

November 21, 2013

Jess Barley
Kohler Co. Site
444 Highland Drive
Kohler WI 53044

SUBJECT: Coverage Under WPDES General Permit No. WI-S067831-04: Construction Site Storm Water Runoff

Permittee Name: Kohler Co. Site
Site Name: Tented Forest
FIN: 48140

Dear Permittee:

The Wisconsin Department of Natural Resources received your Water Resources Application for Project Permits or Notice of Intent, on February 22, 2013, for the Tented Forest site and has evaluated the information provided regarding storm water discharges from your construction site. We have determined that your construction site activities will be regulated under ch. 283, Wis. Stats., ch. NR 216, Wis. Adm. Code, and in accordance with Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit No. WI-S067831-04, Construction Site Storm Water Runoff. All erosion control and storm water management activities undertaken at the site must be done in accordance with the terms and conditions of the general permit.

The **Start Date** of permit coverage for this site is March 24, 2013. The maximum period of permit coverage for this site is limited to 3 years from the **Start Date**. Therefore, permit coverage automatically expires and terminates 3 years from the Start Date and storm water discharges are no longer authorized unless another Notice of Intent and application fee to retain coverage under this permit or a reissued version of this permit is submitted to the Department 14 working days prior to expiration.

A copy of the general permit along with extensive storm water information including technical standards, forms, guidance and other documents is accessible on the Department's storm water program Internet site. To obtain a copy of the general permit, please download it and the associated documents listed below from the following Department Internet site:
http://dnr.wi.gov/topic/stormwater/construction/forms.html

- Construction Site Storm Water Runoff WPDES general permit No. WI-S067831-04
- Construction site inspection report form
- Notice of Termination form

If, for any reason, you are unable to access these documents over the Internet, please contact me and I will send them to you.

To ensure compliance with the general permit, please read it carefully and be sure you understand its contents. Please take special note of the following requirements (This is not a complete list of the terms and conditions of the general permit.):

1. The Construction Site Erosion Control Plan and Storm Water Management Plan that you completed prior to submitting your permit application must be implemented and maintained throughout construction. Failure to do so may result in enforcement action by the Department.

2. The general permit requires that erosion and sediment controls be routinely inspected at least every 7 days, and within 24 hours after a rainfall event of 0.5 inches or greater. Weekly written reports of all inspections must be maintained. The reports must contain the following information:

a. Date, time, and exact place of inspection;
b. Name(s) of individual(s) performing inspection;
c. An assessment of the condition of erosion and sediment controls;
d. A description of any erosion and sediment control implementation and maintenance performed;
e. A description of the site's present phase of construction.

3. A **Certificate of Permit Coverage** must be posted in a conspicuous place on the construction site. The Certificate of Permit Coverage (WDNR Publication # WT-813) is enclosed for your use.

4. When construction activities have ceased and the site has undergone final stabilization, a Notice of Termination (NOT) of coverage under the general permit must be submitted to the Department.

It is important that you read and understand the terms and conditions of the general permit because they have the force of law and apply to you. Your project may lose its permit coverage if you do not comply with its terms and conditions. The Department may also withdraw your project from coverage under the general permit and require that you obtain an individual WPDES permit instead, based on the Department's own motion, upon the filing of a written petition by any person, or upon your request.

If you believe that you have a right to challenge this decision to grant permit coverage, you should know that the Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review must name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. All requests for contested case hearings must be made in accordance with s. NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with s. NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30-day period for filing a petition for judicial review.

Thank you for your cooperation with the Construction Site Storm Water Discharge Permit Program. If you have any questions concerning the contents of this letter or the general permit, please contact me at (414) 263-8535.

Sincerely,

Brooke Yanke

Brooke Yanke
Southeast Region
Storm Water Management Specialist

ENCLOSURE: Certificate of Permit Coverage

CERTIFICATE OF PERMIT COVERAGE

UNDER THE
WPDES CONSTRUCTION SITE STORM WATER RUNOFF PERMIT
Permit No. WI-S067831-04

Under s. NR 216.455(2), Wis. Adm. Code, landowners of construction sites with storm water discharges regulated by the Wisconsin Department of Natural Resources (WDNR) Storm Water Permit Program are required to post this certificate in a conspicuous place at the construction site. This certifies that the site has been granted WDNR storm water permit coverage. The landowner must implement and maintain erosion control practices to limit sediment-contaminated runoff to waters of the state in accordance with the permit.

EROSION CONTROL COMPLAINTS

should be reported to the WDNR Tip Line at

1-800-TIP-WDNR (1-800-847-9367)

Please provide the following information to the Tip Line:

WDNR Site No. (FIN): 48140

Site Name: Tented Forest

Address/Location: E. of Black River, W. of Lake Michigan, S. of Timber Lake Road, Town of WILSON

Additional Information:

Landowner: Kohler Co. Site

Landowner's Contact Person: Jess Barley

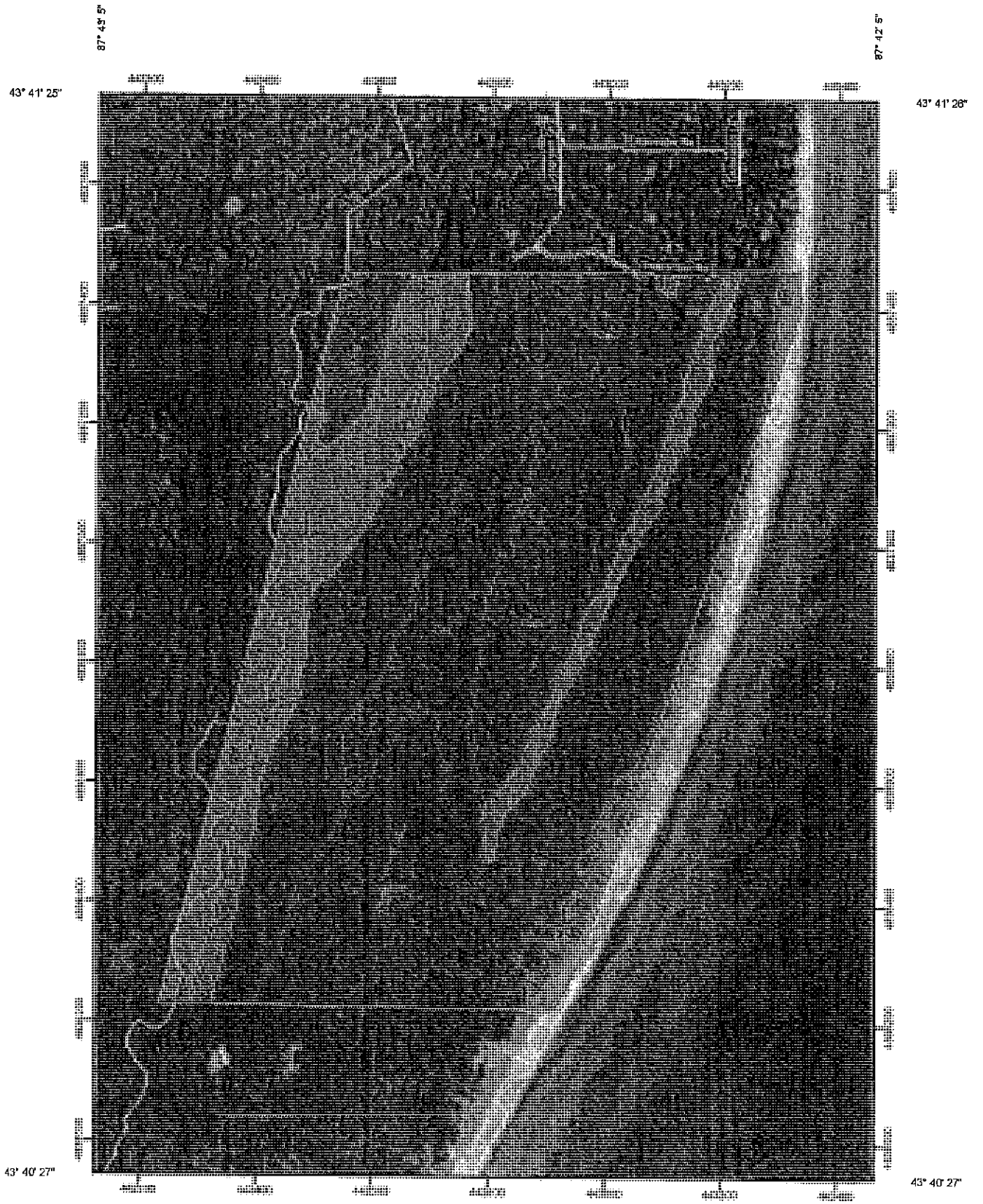
Contact Telephone Number: (920) 457-4441

Permit Start Date: March 24, 2013

By: Brooke Yonke

WDNR Publication # WT-813 (10/11)

Appendix C
Geo-Technical Report


87° 43' 5"
87° 42' 5"
43° 41' 25"
43° 41' 26"
43° 40' 27"
43° 40' 27"
87° 43' 4"
87° 42' 4"
N
Map Scale: 1:8,610 if printed on A size (8.5" x 11") sheet.
Meters
0 50 100 200 300
Feet
0 300 600 1,200 1,800

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:8,610 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sheboygan County, Wisconsin
Survey Area Data: Version 7, Aug 26, 2011

Date(s) aerial images were photographed: 6/2/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group—Summary by Map Unit — Sheboygan County, Wisconsin (WI117)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Ag	Adrian muck	A/D	12.3	5.4%
Bd	Beaches, sandy	A	6.8	3.0%
Dn	Dune land	A	72.0	31.4%
Gb	Granby loamy fine sand	A/D	18.8	8.2%
Hu	Houghton muck	A/D	12.7	5.5%
OaB	Oakville loamy fine sand, 0 to 6 percent slopes	A	68.2	29.8%
OaC	Oakville loamy fine sand, 6 to 12 percent slopes	A	37.9	16.5%
W	Water		0.0	0.0%
Subtotals for Soil Survey Area			**228.7**	**99.8%**
Totals for Area of Interest			**229.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

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December 13, 2010

10-1-18529 50-500

Mr. Troy Opgenorth
Kohler Company
444 Highland Drive
Kohler, WI 53044

Subject: **Geotechnical Exploration - Tented Forest**
Section 14, Town of Wilson, Sheboygan County, Wisconsin

Dear Mr. Opgenorth:

Six copies of our *Geotechnical Exploration Report* for the subject site are enclosed and a pdf copy has been emailed to you. The work described in this report was completed in accordance with our *Proposal* dated October 20, 2010, which was authorized by Kohler Company Purchase Order number 1245140.

At your request, Miller Engineers & Scientists is available to review foundation plans, perform excavation observations, and provide quality assurance testing of earthwork and concrete. We appreciate the opportunity to provide geotechnical engineering services for you.

If you have any questions or comments, your call or letter will receive our prompt response.

Sincerely,

MILLER ENGINEERS & SCIENTISTS

Roger G. Miller, P.E.
Chairman

Peter G. Pittner, P.S.S.
Vice President

RGM/tls

Enclosures

cc:

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Geotechnical Exploration Report for

Tented Forest

Section 14, Town of Wilson
Sheboygan County, Wisconsin

PREPARED FOR:

Mr. Troy Opgenorth
Kohler Company
444 Highland Drive
Kohler, WI 53044
920-457-4441

PREPARED BY:

Miller Engineers & Scientists
5308 South 12th Street
Sheboygan, WI 53081
Telephone (920) 458-6164
Fax (920) 458-0369

Project No. 10-1-18529 50-500

December 10, 2010

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12/13/2010

EXECUTIVE SUMMARY

Five manual soil exploration borings were performed on December 1, 2010 in specific areas of the proposed Tented Forest Complex planned to sparsely occupy the eastern 2,500 feet of the northern half of Section 14 along the Lake Michigan Shoreline in the Town of Wilson. This undeveloped forest is bounded by the Timberlake Subdivision to the north, the Black River and state owned property to the west, and Kohler-Andrae State Park to the south. Boring locations are depicted on the *Boring Location Plan* in the Appendix of this report.

The Tented Forest is conceived as twelve small "glamour camping" duplexes located within the wooded shoreline of the lake, including a small Restaurant and Pavilion building exclusive to them. The "tents" will consist of wood framed construction, perhaps elevated one or more feet above the ground, that are surrounded externally by timber posts and beams supporting exterior canvas to give them a tent appearance. They will all have exterior eastern decks close to existing grade, as well as approach walkways and small decks on the west side typically at least several feet above grade.

A small Reception Building is planned in the northwest corner of the Forest that will provide guest access via private road extension from existing public road right of way at the west end of the Timberlake Subdivision. A Maintenance Building will be located in the southwest corner of the property, a short distance NNW of Kohler-Andrae State Park's maintenance building. All buildings will be connected by a rustic service and emergency vehicle access road and some trails.

Borings were performed at the southwest and northeast corners of the Restaurant building footprint on top of the easternmost wooded (former) dune. Another boring was performed just west of the northernmost "tent" duplex (#11) in the low spot in a natural swale, and a boring was also performed in each of the clearings recently made for the Reception and Maintenance buildings. Depths of borings ranged from 7.5 to 9 feet, which turned out to be the practical limit for manual (uncased) borings in the sand soils below the water table.

All borings revealed a similar soil profile; **fine-grained sand that is very loose to loose near the surface and trends to medium dense below six feet depth.** The water table was not encountered in the Restaurant borings. That building, and all of the "tent" units, will be on the relatively high grade of the easternmost forested dune. The water table is presently about three feet below the surface in the low spot in the swale just west of unit #11, which is the northernmost "tent" duplex. We recommend that any cut and cover underground utilities be designed above whatever is the current ground water table at the time of construction. Years beyond 2011 are likely to see considerably higher ground water levels as the lake levels cycle back through the typical range. The lake is currently near historical low levels.

In order to allow convenient checking of the water table depth in preparation for construction, a 10' long section of small diameter pvc pipe was installed in all borings except those for the Restaurant. The Restaurant borings terminated well above the water table. While taking ground water level readings on December 7, we found that the pvc pipe that we had placed in Boring C (just west of unit #11) had been torn out, presumably by a trespasser.

The water table at the location of the Reception Building is about three feet below natural surface grade at that location and a little over five feet deep at the Maintenance Building site. Water levels are expected to vary seasonally and after heavy rain and can persist several feet above the present depths during periods of future high lake water levels.

Conventional spread footings proportioned for 1,500 psf and bearing at four feet depth below final grade are recommended for the Restaurant. At present low ground water levels, construction of conventional footings may also be feasible for the Reception and Maintenance buildings. This may require that their floors be planned several feet above existing surface grades. Construction of monolithic, thickened-edge foundation/floors slabs are feasible at both the Reception and Maintenance building sites irrespective of ground water levels. This may be a particularly attractive option for a building such as the type of the Maintenance Building, but may also be considered for the Reception Building considering the relatively shallow ground water table at that location.

Due to unique topographic variations at each of the "tent" units and the loose upper soils, we recommend that these structures be supported on post foundations bearing at least five feet below the natural surface grades. These may consist of either timber posts or concrete caissons proportioned for 12,000 psf working load end bearing capacity. Conventional spread footings would require customized design for each unit and cause considerably more site disturbance.

The body of this report provides specific recommendations on these issues, as well as considerations for earthwork, pavements, and underground utilities.

1. PROJECT DESCRIPTION

The purpose of this exploration was to describe the soil and ground water conditions at the site of the proposed buildings and "tents", to analyze and evaluate these conditions with respect to the proposed project, and to present recommendations for design and construction of foundations and earthwork.

The Tented Forest will consist of twelve small, wood structure duplexes located within the wooded shoreline of the lake and a small Restaurant amongst them. Because of the undulating topography where these will be located, the floor level of a number of the "tents" will be several feet above the natural grade at the back (west) side. These structures will be surrounded externally by timber posts and beams supporting exterior canvas to give them a tent appearance. They will all have exterior eastern decks close to existing grade, as well as approach walkways and small decks on the west side typically at least several feet above grade.

A small Reception Building is planned in the northwest corner of the Forest that will provide guest access via private road extension from existing public road right of way at the west end of the Timberlake Subdivision. A Maintenance Building will be located in the southwest corner of the property, a short distance NNW of Terry Andrae State Park's maintenance building. All buildings will be connected by a rustic service and emergency vehicle access road and some trails.

2. FIELD EXPLORATION

Five manual soil exploration borings were performed on December 1, 2010, the locations of which are shown on the Boring Location Plan is in the Appendix. Borings were performed at the southwest and northeast corners of the Restaurant building footprint on top of the easternmost wooded (former) dune. Another boring was performed just west of the northernmost "tent" duplex (#11) in the low spot in a natural swale, and a boring was also performed in each of the clearings recently made for the Reception and Maintenance buildings. Depths of borings ranged from 7.5 to 9 feet, which turned out to be the practical limit for manual (uncased) borings in the sand soils below the water table.

The latitude and longitude coordinates listed on the bottom of each log is based on hand held navigational GPS, not of land survey accuracy. The elevations of these borings have not been surveyed, but the lath marking them should be shot in during any subsequent surveying. In the meantime, elevations of the borings noted to coincide with numbered existing lath can be deduced from Kohler Company preliminary surveys.

Drilling was performed using a manual auger and sampling was performed with a standard 2-inch O.D. split-barrel (split-spoon) sampler per ASTM D1586 which was driven into the soil by dropping a 30 pound fence post hammer 24 inches. Since the *Standard Penetration Test (STP)* using a drill rig drops a 140 pound hammer 30 inches with about 85% efficiency the number of blows using the 30 pound manual hammer was divided by 5 to provide the interpretation of STP (N values) shown on the Boring Logs.

A field log was prepared for each boring during exploration. The soil samples were visually classified in the field, sealed in containers to prevent loss of moisture, and transported to our laboratory. See *Final Logs* in the Appendix for a graphical display of soil samples obtained. The *Final Logs* contain both factual and interpretive information. We emphasize that our recommendations are based only on the *Final Logs*.

3. LABORATORY TESTING PROGRAM

To classify the recovered samples and to determine their engineering properties, the following laboratory soil tests were performed:

	No. of Tests
Visual Classification (ASTM D2487)	33
Moisture Content (ASTM D2216)	33
Gradation Analysis (ASTM D422)	2
Hydraulic Conductivity (falling head)	1

The hydraulic conductivity test was performed on a composite of samples from three to five feet depth from Boring D (at the Reception Building location), indicating a result of 2.9E-03 feet/minute. All other test results are presented graphically in the Appendix, or arrayed on the *Final Logs* in the Appendix, which present our conclusions based on the field exploration and laboratory testing.

4. SUBSURFACE CONDITIONS

All of this land is comprised of former lake bed which developed sand dunes over which forest succeeded after an abrupt drop of 12' to 14' in the lake water level that occurred about 4,500 years ago. As such, the soil covering the entire area east of the Black River consists of fine grained beach sand with very little topsoil development. This soil allows direct infiltration of storm water, so the topography has no internal surface water drainage patterns. The Black River drains northward along the west edge of the property but does not receive significant runoff from the property. The water table in this area persists at or slightly above the current lake and river water level, which for the last 4,500 years has erratically varied throughout a range of about six feet in response to multi-year variations in regional precipitation. Over the last century water, levels have ranged between 576.6 and 582.9 feet (N.G.V.D.). Presently, as for much of the last decade, the lake water level has seasonally fluctuated plus or minus about a foot near the low end of its natural range, averaging around elevation 578 to 579 feet N.G.V.D. Lake levels can be expected to rise several feet in the years ahead, and considerably higher ground water levels can be expected as the lake level cycles back through its typical range.

There are only several inches of organic matter at the ground surface in the areas of planned construction and all borings revealed a similar soil profile; **fine-grained sand that is very loose to loose near the surface and trends to medium dense below six feet depth.** The water table was not encountered in the Restaurant borings due to the relatively high ground level at the top of this wooded dune. All of the "tent" units will be built on similar high ground. The water table is presently about three feet below the ground surface in the low spot in the swale just west of unit #11, which is the northernmost "tent" duplex.

In order to allow convenient checking of the water table depth in preparation for construction, a 10' long section of small diameter pvc pipe was installed in all borings except those for the Restaurant. The Restaurant borings terminated well above the water table. While taking ground water level readings on December 7, we found that the pvc pipe that we had placed in Boring C (just west of unit #11) had been torn out, presumably by a trespasser.

The water table at the location of the Reception Building is about three feet below natural surface grade at that location and a little over five feet deep at the Maintenance Building site. Water levels

are expected to vary seasonally and after heavy rain and can persist several feet above the present depths during periods of future high lake water levels.

5. CONCLUSIONS AND RECOMMENDATIONS

The site sandy soils are suitable for support of conventional foundations and concrete slab on grade floors, provided the subgrade is first adequately compacted. Soil conditions are also well-suited for post foundations of either timber or concrete caissons. Below the relatively shallow water table, the sand is expected to yield quantities of ground water beyond the capacity of conventional sump pumps. Therefore, basements are not recommended. Excavations in the fine-grained sand below the water table for installation of underground utilities are not expected to be stable. The loose sand soil at the ground surface is generally considered to provide good performance of pavements after it is adequately compacted. Based on our understanding of the type of construction planned and the data obtained from field exploration, we make the following recommendations.

5.1 Site Preparation and Grading

1. After the relatively thin layer of surficial organic matter is removed, the upper foot of soil exposed below structures and pavements should be compacted to at least 98% of the Standard Proctor (ASTM D698) Maximum Dry Density prior to placing any fill, casting footings, or placing road or trail materials.

2. All tree roots should be removed from underneath spread footings and concrete slabs. Roots of trees need not be removed adjacent to timber post or concrete caisson foundations, and roots of living trees can be left below roads and trails that are constructed in accordance with the recommendations in Section 5.8.

3. Any fill in areas of buildings, structures, pavements, or walks should consist of compacted granular material conforming to *Envelope A* (in the Appendix). Granular fill should be compacted to at least 98% of the Standard Proctor (ASTM D698) Maximum Dry Density. Fill material should be free of frozen, organic, or corrosive materials and should not contain oversized pieces which may prevent uniform compaction and create concentrated stresses on proposed structures, or interfere with grading. Fill should be placed in lifts of 12 inches or less and compacted to provide uniform support to structures and pavements.

4. To minimize disturbance of fine-grained sand exposed in excavations at and below the water table, we recommend a layer of uniform drainage aggregate be placed that is separated from the natural subgrade with non-woven geotextile fabric.

5.2 Foundations

Conventional spread footings proportioned for 1,500 psf and bearing at least four feet below final grade are recommended for the Restaurant. At current ground water levels, construction of conventional footings proportioned for 1,500 psf may also be feasible for the Reception and Maintenance buildings. This may require that their floors be planned several feet above existing surface grades. **Construction of monolithic, thickened-edge foundation/floors slabs are feasible at both the Reception and Maintenance building sites irrespective of ground water levels.** This may be a particularly attractive option for a building such as the type of the

Maintenance Building, but may also be considered for the Reception Building considering the relatively shallow ground water table at that location.

Due to unique topographic variations at each of the "tent" units and the loose upper soils, we recommend that these and associated structures be supported on post foundations bearing at least five feet below the natural surface grades. These may consist of either timber posts or concrete caissons proportioned for 12,000 psf working load end bearing capacity. Conventional spread footings would require customized foundation elevations for each "tent" unit and require considerably more site disturbance.

In any case, we recommend that the bottom of any type of footing be planned at least a foot above the current water table at the time of construction. In all cases, the natural sand subgrade should be compacted in accordance with the recommendations contained in the body of this report before footings or floor slabs are cast.

5.3 Seismic Classification

Central Wisconsin has historically had a very low incidence and magnitude of seismic activity. The 2% probability of exceedance within 50 years of short period (0.2 second) spectral response is mapped by USGS to be about 8% g (acceleration of gravity). That same probability of long period (1 second) spectral response is mapped at about 4% for this area. Because the sand subgrade is medium dense at planned footing levels, we recommend Site Class D (stiff soil profile) of Table 1615.1.1 be used to determine design spectral seismic response parameters in accordance with the 2000 International Building Code (IBC). This information can be used by the structural engineer, using the procedures outlined in Section 1615.1.2 of the IBC, to estimate the design spectral response in consideration of the fundamental period of the structure, including its different portions.

5.4 Floor Slabs

1. We recommend a minimum of 6 inches of compacted granular fill conforming to Item 2 of Section **5.1 Site Preparation and Grading**, or free-draining gravel (ASTM C33, Size 57 concrete aggregate), be located immediately beneath any floor slabs to break the rise of capillary water and provide uniform load support. **The exposed subgrade should be compacted to at least 98% of the Standard Proctor (ASTM D698) Maximum Dry Density prior to placing granular fill or free-draining gravel over floor slab subgrades.** A layer of non-woven geotextile fabric should be placed over the compacted subgrade before any drainage aggregate is placed in order to maintain separation.

2. Concrete floor slabs should be designed (thickness and reinforcement) in accordance with current American Concrete Institute (ACI) 302.1R80 practice. We recommend a minimum thickness of at least 5 inches. The sand subgrade of the site is expected to have a modulus of subgrade reaction (K) of approximately 300 pci if prepared in accordance with Section 5.1. We recommend this value be used in designing any concrete slabs that will be subject to heavy, concentrated loads.

3. Crack control joints in unfinished floor areas should be provided in accordance with ACI 302.1R80, Chapter 2.3. Control joints may not be needed where flooring covers concrete slabs with adequate fiber reinforcement.

4. Potential for slab curling is reduced by using water-reducing agents to provide workability while minimizing the mix water/cement ratio. Covering or sealing the concrete surface and maintaining uniform temperature from top to bottom will also help. Unless otherwise determined necessary by point load analysis, we recommend compressive strength be in the range of 3,000 to 3,500 psi by 56 days age. For Type I Portland Cement mixes at room temperature this will typically correspond to 2,850 to 3,300 psi at 28 days.

5.5 Exterior Concrete Flatwork

1. Any exterior concrete walks or pads should be supported on at least 6 inches of aggregate base course conforming to WDOT Dense Graded Aggregate Base (3/4" maximum size), compacted to at least 95% of the Modified Proctor (ASTM 1557) Maximum Dry Density.

2. Exterior concrete should be sloped at least 2% (1/4 inch per foot) to provide adequate surface drainage.

3. Concrete exposed to weather should be air-entrained in accordance with ACI 318 to minimize frost damage. Deicing salt should be avoided during the initial few years after construction.

5.6 Underground Utilities

We recommend that any cut and cover underground utilities be designed above whatever is the current ground water table at the time of construction. Directionally drilled installation, which is most practical for small diameter force main sewers, natural gas, and even water supply lines, does not have this limitation.

1. Buried water bearing utilities should be located below frost depth. We recommend that sanitary sewers have at least 4 feet of protective overburden and water supply lines at least 6 feet, unless protected by insulation. Frost penetration in road areas may be greater; therefore, we recommend sewers under pavements have at least 6 feet of cover.

2. Bedding material for conduits should be selected and placed in accordance with the recommendations of the pipe manufacturers and in accordance with Chapter 8.43 of *Standard Specifications for Sewer and Water Construction in Wisconsin*, Sixth Edition.

3. Utility trench backfill should be compacted to at least 90% of the Standard Proctor (ASTM D698) Maximum Dry Density from 1 foot above the top of the conduit up to final surface grade to minimize subsidence. **Under structures and pavements, compaction should be at least 98% of the Standard Proctor (ASTM D698).**

   Trench backfill should be placed in lifts of 12 inches or less. Excavated soils may be used for trench fill if practical, but site soils may be difficult to compact if not near the optimum moisture content (ASTM D698). In that case, we recommend granular material conforming to *Envelope A,* be used for utility trench backfill or granular material described in Table 37, Chapter 8.43.4, of the current edition of the *Standard Specifications for Sewer and Water Construction in Wisconsin.*

5.7 Storm Water Management

Site soils consist of uniformly graded, fine-grained sand has a moderately high hydraulic conductivity (permeability), which we measured in our lab at 2.9E-03 feet/minute. The soil's textural classification within Table 2 of WDNR *Site Evaluation for Stormwater Infiltration (1002)* is **SAND**, which supports a Design Infiltration Rate of 1.4 inches/hour to which a Table 3 Correction Factor of 2.5 has already been applied. This value can be used for surface infiltration, except in low lying areas that have accumulated some fine-grained soils at the surface. The measured permeability of 2.9E-03 feet/minute should be used in proportioning any infiltration trenches, considering trench width to depth ratio and the depth of the trench in relation to the expected range of water table variations.

We recommend that buildings on conventional spread footings or monolithic, thickened-edge slabs be provided with rain gutters and downspouts that direct water to shallow infiltration trenches or natural low areas located at least ten feet away from buildings. Structures supported on post foundations do not require rain gutters, but roof runoff should be planned to avoid icing on the ground at inconvenient or unsafe locations around them.

5.8 Pavement Considerations

Since development is intended to minimize impact, pavements should be planned to avoid excavation as much as possible in order to avoid damaging tree roots. Since the site's sand soil has high infiltration capacity, planning the edges of pavement surfaces at least six inches above the adjacent natural grades in combination with effective grade design of roads will provide adequate drainage. This can be done by filling where necessary with sand soil. Conventional ditches are generally not necessary provided close attention is paid to drainage planning and execution.

5.8.1 Asphalt Pavement

We recommend the following pavement sections for any asphalt pavement:

Automobile Access Areas and Parking	Auto Access and Parking	Truck Traffic
HMA (WDOT Type E 0.3) **Total Thickness**:	**3 inches**	**4 inches**
Surface Course	1 1/4 inches	1¾ inches
Binder Course	1 3/4 inches	2¼ inches
Granular Base Course	6 inches	8 inches

Preparation of the subgrade and flexible pavements should be in accordance with the current edition of the State of Wisconsin DOT *Standard Specifications for Highway and Structure Construction*. Dense graded aggregate base should consist of crushed stone, gravel, concrete, asphalt mix, or mixtures thereof processed to meet the ¾" (19 mm) maximum aggregate size grading band, compacted to at least 95% of the Modified Proctor (ASTM D1557) Maximum Dry Density.

Asphaltic binder and surface courses should meet the requirements of Sections 455 and 460 of the State of Wisconsin DOT *Standard Specifications for Highway and Structure Construction* according to the mixture requirements in column E-0.3 (the lowest traffic classification) of Table 460-2. Asphalt pavements are not recommended for areas where

trucks will turn frequently or be parked, or in areas where other high point loads are expected (such as where dumpsters will be stored). Asphaltic pavement may deform and fail prematurely under such high point load areas.

5.8.2 Concrete Pavement

Based on the previously mentioned subgrade value, and the *Wisconsin Concrete Pavement Association Design Guide*, for a 35-year design life, the following rigid pavement section thicknesses are recommended for high point load traffic areas:

Truck Parking and Turning Areas (10 Design Daily 18,000 pound ESALs)	
Concrete Pavement	6 inches
Granular Base Course	6 inches

Paved areas are recommended to be constructed with attention to final grades to facilitate surface and subsurface drainage. Asphalt and concrete pavements should be sloped at least 2% (1/4 inch per foot) to provide adequate surface drainage.

5.8.2 Access and Service Roads

Access and service roads can be gravel paved with at least 8" thickness of Dense Graded Base (WDOT Std Specs Section 305) of 3/4" (19 mm) maximum aggregate size placed directly over the sand subgrade that is prepared in accordance with Section 5.1. Alternatively, access and service roads may consist of a six inch thick layer of recycled asphalt pavement that is crushed to form a well-graded material with maximum size particles of ¾". Recycled asphalt has much less tendency to develop pot holes. Either material should be compacted to at least 98% of its Standard Proctor (ASTM D698) Maximum Dry Density. Pavement surfaces should have at least 2% side slope or crown to shed water.

5.8.2 Trails and Cart Paths

The natural sand subgrade is suitable for low traffic foot trails and also provides good drainage under chipped wood/bark. Higher traffic foot trails and cart paths can either be gravel, crushed limestone, or recycled asphalt of four inches thickness that is compacted to at least 95% of its Standard Proctor (ASTM D698) Maximum Dry Density.

5.9 Quality Assurance Testing

1. **Foundation excavations should be observed by a geotechnical engineer from our office prior to placing fill or constructing footings.** The purpose of this observation is to determine if subsoils are consistent with conditions revealed in the borings. It also allows the geotechnical engineer to provide site specific recommendations if unsuitable subgrade conditions are encountered (such as any loose or soft soils that may be present in the subgrade, but not found in the borings).

2. **Quality assurance testing of fill and base course should be performed during construction.** A sample of each material should be submitted to our laboratory at least one week prior to use on site to allow testing for conformance with recommendations and laboratory Proctor tests. Density testing of materials should be performed on a routine basis during placement to verify proper compaction and compliance with recommendations.

3. **Concrete should be sampled and tested during placement on a routine basis** to determine if the mix, as delivered, complies with project specifications. Tests should include slump and compressive strength, as well as air content for air-entrained mixes.

6. CONSTRUCTION CONSIDERATIONS

Except for select cutting of trees as directed by the Kohler Company Forester, live trees and their roots should not be disturbed. Other than in low areas where construction should be avoided, the site typically has only several inches of surficial organic matter that should be removed from underneath building footprints having spread footings and concrete slabs. Roots need not be removed adjacent to timber post or concrete caisson foundations and live tree roots should be left under roads and trails if constructed in accordance with the recommendations in Section 5.8. The ground surface underneath any "tent" units that are elevated one or more feet above the ground surface need not be disturbed other than to accomplish any necessary grading and to install underground utilities.

Excavations into sand soils at and below the water table are not expected to be stable and soil conditions may "quicken" with minor amounts of disturbance. Soils in the bottom of the foundation excavation, building, and pavement areas should be protected against any changes in condition, such as traffic disturbance, rain, and/or freezing. Surface water should be drained away from excavations and should not be allowed to pond.

Foundations should be placed as soon as practical after excavation to minimize opportunity for disturbance and accumulation of water. Accumulation of small amounts of soft or loose soil due to construction foot/equipment traffic during foundation form placement should be removed from the bottom of footing trenches.

Subgrade soils exposed in foundation excavations, as well as any soils that become loose or disturbed should be compacted in accordance with Items 1 and 2, Section 5.1 Site Preparation and Grading. The bottom of holes made to accommodate timber post or concrete caisson foundations should be thoroughly tamped by raising the post/caisson about a foot and dropping it several times before it is backfilled.

Foundation drains are not necessary on this site. Backfill around foundation walls should be maintained at approximately equal height on both sides of the wall, during placement, to prevent unbalanced lateral earth pressures at unrestrained locations. **Holes for post or caisson foundations should be backfilled with sand or gravel that is firmly tamped with a heavy metal bar. They should not be filled with concrete**, which tends to "jack" out of the ground due to frost heave. We recommend that **the buried portion of all timber post foundations** (even cedar, redwood, as well as treated timber) for any buildings, walks, and decks **be coated with liquid asphalt** to increase their longevity.

Trench/excavation spoil, heavy equipment, and heavy vibrating machinery should not be permitted within a lateral distance of the depth of the trench/excavation or 3 feet, whichever is greater. We anticipate that the sidewalls of excavations, and any utility line excavations to depths greater than 4 feet below surrounding grades, may cave to 1 vertical to 1.5 horizontal or flatter. Excavation safety is the excavation contractor's responsibility and should be conducted in strict adherence to OSHA and other applicable codes.

Special precautions should be taken for earthwork during winter months. Footings or fills should not be placed on frozen soils. Exposed subgrade soil should be adequately protected with insulating blankets or hay.

7. CLOSURE

This report was prepared for the exclusive use of our client and project design professionals for evaluation of the site and for design and construction planning purposes only. Our recommendations are applicable only to the project as described and conditions disclosed by our borings. It was not prepared for uses or parties other than those specifically named or for applications other than those enumerated herein. For purposes or uses other than those specifically named, this report may contain information that is insufficient or inaccurate.

We appreciate participating in this project with you. Please call if you have any questions or comments pertaining to our work.

Prepared by,

MILLER ENGINEERS & SCIENTISTS

Roger G. Miller, P.E.
Chairman

Peter G. Pittner, P.S.S.
Vice President

RGM/tls

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Appendix

I:\DATA\2010\18000\10-1-18529 KOHLER CO - SEC 14 LAKE PROP\50-500 SUB INV\REPORTS\GRT.DOC

General Conditions—Soil Report

This report has been prepared to aid in the evaluation of this property for the intended use described herein, and to assist in the design or planning of this project. In the event any changes in the design as outlined herein, or changes in the vertical position or horizontal location of the facility are planned, the conclusions and recommendations contained in this report shall not be considered valid unless such changes are reviewed and the conclusions of this report modified in writing by Miller Engineers & Scientists, hereinafter referred to as "THE ENGINEER", who prepared this report.

The analysis and recommendations submitted in this report are our opinions based on the data obtained and subsurface conditions noted from the field investigation described at the locations indicated on the accompanying map and diagram. This report does not reflect any variations which may occur between, beyond, or below the depths of these test pits or borings. The nature and extent of such variations may not become evident until excavation and construction begins. If variations then appear evident, it will be necessary for a re-evaluation of the recommendations of this report to be made after performing on-site observations during the construction period and noting the characteristics of any variations.

The soil and foundation engineering report has been prepared for this project by Miller. This report is only for the purposes stated in the contract and may not be sufficient to prepare an accurate bid.

The Engineer is responsible for the conclusions and opinions contained herein based on the supplied data relative only to the specific project and location outlined in this report. In the event conclusions or recommendations are made by others, such conclusions or recommendations are not the responsibility of the Engineer.

It is recommended that the Engineer be provided the opportunity to review designs, plans, and specifications using the conclusions of this report, to determine whether any change in concept may have any affect on the validity of the recommendations contained in this document. If the Engineer is not accorded the privilege of this review, he can assume no responsibility for misinterpretation or misapplication of these recommendations or for their validity in the event changes have been made in his understanding of the project and/or design content. Review of the design, plans, and specifications will be noted in writing by the Engineer upon client's request and will become a part of this report.

There is the possibility that variations in soil conditions will be encountered during construction. In order to permit correlation between soil data in this report and the actual soil conditions encountered during construction, it is recommended that the soil and foundation engineer be retained to perform periodic review during the excavation and foundation construction phases of the work. The soil and foundation Engineer assumes no responsibility for construction compliance with the design concepts, specifications, or recommendations unless he has been retained to perform on-site review during the course of construction.

General Conditions—Soil Report (Continued)

As a part of the above review, it is recommended that the Engineer review all areas where fills are to be placed, test, and approve each class of fill material to be used. The fills should be tested by performing grain-size analyses (ASTM D421, D422, or D1140) and by performing laboratory control-moisture density (proctor) tests (ASTM D698 or D1557) on representative samples prior to their delivery and placement. The fills should be field tested for degree of compaction. Fills receiving foundation structures such as footings, slabs-on-grade, frost walls, or piers should be tested for bearing capacity.

The presence of our field representative, if such services are requested by the client, will be for the sole purpose of providing record observations and field soils testing. Our work does not include supervision, management, or direction of the actual work of the contractor, his employees, or agents. The contractor for this project should be so advised. The contractor should also be informed that neither the presence of our field representative nor the observation and testing by our firm shall excuse him in any way for defects discovered in his work. It is understood that our firm will not be responsible for job or site safety.

This report was prepared in accordance with generally accepted soil and foundation engineering practices and makes no other warranties, either expressed or implied, as to the professional advice provided under the terms of the agreement between the Engineer and his client, included in this report. The report has not been prepared for uses or parties other than those specifically named, or for uses or applications other than those enumerated herein. The report may contain insufficient or inaccurate information for other purposes, applications, building sites, or other uses.

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General Conditions—Data Collection

Field sampling techniques were employed in this investigation to obtain the data presented in the Final Logs, and in the Report, in accordance with ASTM D420, D1452, D1586 (where applicable), and D1587 (where applicable).

Sampling in cohesionless (granular) soils was typically accomplished driving a standard split-barrel tool (split-spoon) with a 140 pound weight falling 30 inches. The number of blows required to advance the tool in two 6-inch increments following 6 inches of seating were recorded on the Final Logs under "N" column, referring to the standard penetration test (ASTM D1586).

Sampling in cohesive soils may also be performed by hydraulically pushed steel sharpened-edge thin walled tube samplers at a uniform rate. Tubes were advanced below the tip of the lead auger at least 30 inches, to retrieve a sample, in accordance with ASTM D1587. The tubes are equipped with pressure-releasing ports to allow water to escape as the tube is advanced. The sampling methods are indicated by symbols on the Final Logs.

Samples were brought to the surface, examined by the drilling foreman, and sealed in containers (or sealed in the tubes) to reduce loss of moisture. They were returned to our laboratory for final classification per ASTM D2487 methods. Some samples were subjected to tests as described in the text of the report.

A field log was prepared for each boring by the drilling foreman during on-site operations in order to record field occurrences, sampling intervals, and ground water observations. The field logs and laboratory test data sheets are available for inspection at the Engineer's office. They are not included in this report because they do not represent the Engineer's final opinions or interpretations.

A Final Log of each test pit or boring was prepared by the writer of the report or the Engineer's staff. Each Final Log contains the writer's interpretation of field conditions or changes in substrata between recovered samples based on the field data received along with the laboratory test data obtained following the field work or on subsequent site observations. The Final Logs were prepared by assembling and analyzing field and laboratory data. Therefore, the Final Logs contain both factual and interpretive information. Our opinions are based on the Final Logs, not the field logs.

The Final Logs list boring methods, sampling methods, depths of sampling, amounts of recovery in sampling tools, indications of the presence of subsoil types, and ground water level observations. Results of laboratory tests are arrayed on the Final Logs at the appropriate depths below grade. The horizontal lines on the Final Logs which designate the interface between successive layers represent approximate boundaries. The transition between strata was typically gradual.

We caution that the Final Logs alone do not constitute the report, and as such they should not be excerpted from the other appendix exhibits nor from any of the written text. Without the written report it is possible to misinterpret the meaning of the information reported on the Final Logs. If the report is to be reproduced for bidding or reference purposes, the entire numbered report and appendix

General Conditions—Data Collection (Continued)

exhibits should be bound together as a separate document or as a section of a specification booklet, including all maps.

Pocket penetration tests taken in the field or on samples examined in the laboratory are listed on the Final Logs in a column marked "pp". These tests were performed only to indicate relative stiffness in consistency between successive layers of cohesive soil. It is not recommended that the listed values be used to determine allowable bearing capacities. Bearing capacities of soils are determined by the Engineer using laboratory testing methods as described in the text of the report.

Ground water observations were made with tape measurements in the open drill holes by field personnel at the times and dates stated on the Final Logs. It must be noted that fluctuations may occur in the ground water level due to variations in rainfall, seasonal temperature, nearby site improvements, underdrainage, wells, severity of winter frosts, overburden weights, and the permeability of the subsoils. Because variations may be expected, final designs and construction planning should allow for the need to temporarily or permanently dewater excavations or subsoils.

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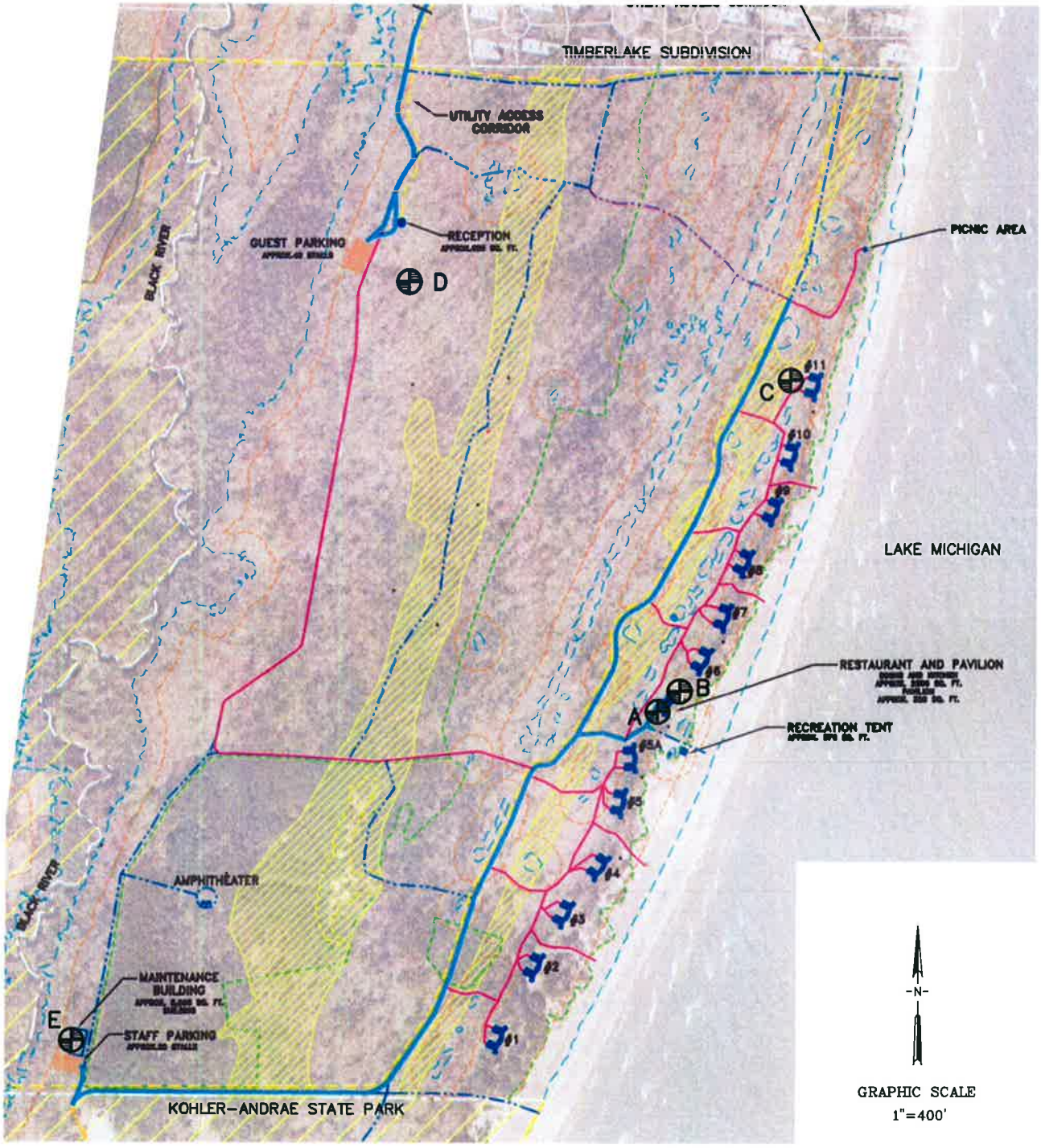

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www.startwithmiller.com

DATE	BY
12-9-10	SMW
JOB	CK
18529-B	RGM

KOHLER CO.
TENTED FOREST
TOWN OF WILSON
SHEBOYGAN COUNTY, WISCONSIN

BORING LOCATION PLAN

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

ASTM Designation: D 2487 – 69 AND D 2488 – 69

(Unified Soil Classification System)

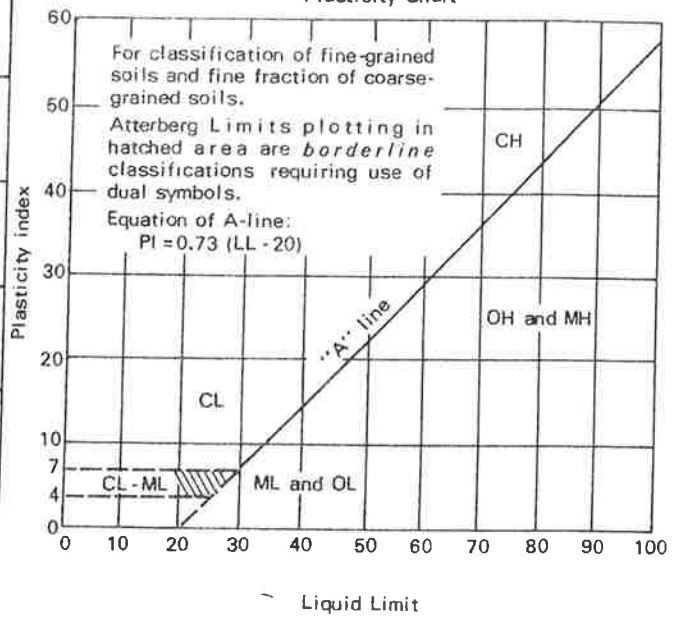
Major divisions			Group symbols	Typical names	Classification criteria
Coarse-grained soils: More than 50% retained on No. 200 sieve*	Gravels: 50% or more of coarse fraction retained on No. 4 sieve	Clean gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_Z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines	Not meeting both criteria for GW
		Gravels with fines	GM	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
	Sands: More than 50% of coarse fraction passes No. 4 sieve	Clean sands	SW	Well-graded sands and gravelly sands, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_Z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sands and gravelly sands, little or no fines	Not meeting both criteria for SW
		Sands with fines	SM	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
Fine-grained soils: 50% or more passes No. 200 sieve*	Silts and clays: Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and clays: Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly organic soils		Pt	Peat, muck and other highly organic soils	

Classification on basis of percentage of fines
Less than 5% pass No. 200 sieve . . . . . GW, GP, SW, SP
More than 12% pass No. 200 sieve . . . . . GM, GC, SM, SC
5 to 12% pass No. 200 sieve . . . . . *Borderline* classifications requiring use of dual symbols

Atterberg limits plotting in hatched area are *borderline* classifications requiring use of dual symbols

Atterberg limits plotting in hatched area are *borderline* classifications requiring use of dual symbols

Plasticity Chart



*Based on the material passing the 3 in. (76 mm) sieve.

LOG OF TEST BORING
GENERAL NOTES

Descriptive Soil Classification

GRAIN SIZE TERMINOLOGY

Soil Fraction	Particle Size	U.S. Sieve Size
Boulders	Larger Than 12"	Larger Than 12"
Cobbles	3" to 12"	3" to 12"
Gravel: Coarse	3/4" to 3"	3/4" to 3"
Fine	4.76mm to 3/4"	#4 to 3/4"
Sand: Coarse	2.00mm to 4.76mm	#10 to #4
Medium	0.42mm to 2.00mm	#40 to #10
Fine	0.074mm to 0.42mm	#200 to #40
Fines	Less Than 0.074mm	Smaller Than #200
Silt	0.005mm to 0.074mm	Smaller Than #200
Clay	Smaller Than 0.005mm	

(Plasticity characteristics differentiate between silt and clay.)

COMPOSITION TERMINOLOGY (ASTM D2487)

Primary Constituent: Gravel	Sand	Fines (Silt or Clay)
with sand...>=15% sand	with gravel.....>=15% gravel	with gravel....15-29% gravel
with silt.....5-12% silt	with silt.....5-12% silt	gravelly.....>=30% gravel
with clay.....5-12 clay	with clay.....5-12% clay	with sand.....15-29% sand
silty.....>12% silt	silty.....>12% silt	sandy.....>=30%sand
clayey.....>12% clay	clayey.....>12% clay	

RELATIVE DENSITY
COHESIONLESS SOILS

Term	"N" Value
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	over 50

The penetration resistance, N, is the summation of the number of blows required to affect two successive 6" penetrations of the 2" split-barrel sampler. The sampler is driven with a 140 lb. weight falling 30" and is seated to a depth of 6" before commencing the standard penetration test (ASTM 1586).

CONSISTENCY
COHESIVE SOILS

Term	pp (tons/sq. ft.)	"N" Value
Very Soft	0.00 to 0.25	<2
Soft	0.25 to 0.50	2-4
Medium	0.50 to 1.00	4-8
Stiff	1.00 to 2.00	8-15
Very Stiff	2.00 to 4.00	15-30
Hard	over 4.00	>30

PLASTICITY

Term	Plasticity Index
None to slight	0 to 4
Slight	5 to 7
Medium	8 to 22
High to Very High	over 22

SYMBOLS

DRILLING AND SAMPLING

CS--Continuous Sampling
RC--Rock Coring: Size AW, BW, NW, 2" W
RQD--Rock Quality Designator
RB--Rock Bit
FT--Fish Tail
DC--Drove Casing
C--Casing: Size 2 1/2", NW, 4", HW
CW--Clear Water
DM--Drilling Mud
HSA--Hollow Stem Auger
FA--Flight Auger
HA--Hand Auger
SS--2" Diameter Split-Barrel Sample
2ST--2" Diameter Thin-Walled Tube Sample
3ST--3" Diameter Thin-Walled Tube Sample
PT--3" Diameter Piston Tube Sample
AS--Auger Sample
PS--Pitcher Sample
NR--No Recovery
VS--Vane Shear Test

LABORATORY TESTS

pp--Penetrometer Reading, tons/sq.ft.
qu--Unconfined Strength, tons/sq. ft.
MC--Moisture Content, %
LL--Liquid Limit, %
PL--Plastic Limit, %
PI--Plasticity Index, %
SL--Shrinkage Limit, %
LI--Loss on Ignition, %
D--Dry Unit Weight, lbs./cu. ft.
pH--Measure of Soil Alkalinity or Acidity
FS--Free Swell, %
HNu--ppmv as Benzene
TLV--ppmv as Hexane
TPH--Total Petroleum Hydrocarbons, ppm

WATER LEVEL MEASUREMENTS

▼--Water Table Interpretation

Note: Water level measurements recorded in notes on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

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Project:	**Tented Forest**	Job No:	**10-1-18529 50-500**	Boring No:	**A (SW crnr restaurant)**
Client:	**Kohler Company**	Drilled By:	**Miller Engineers and Scientists**	Elevation:	**Same as lath #2184**
Location:	**Town of Wilson**	Drilling Begun:	**12/1/10**	Drilling Completed:	**12/1/10**

SAMPLE TYPE: 1" Geoprobe | No Recovery | Grab Sample | Auger Sample | 3" Shelby Tube | 2" Split Spoon

ELEV. / DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	RECOVERY (in.)	SPT (N)	SOIL DESCRIPTION	USC
0	1		20	4	2" of fibrous organic matter SAND, uniformly graded, fine grained, moist, loose, light yellowish brown (10YR 6/4)	SP
	2		18	3	... very loose, pale brown (10YR 6/3)	SP
5	3		17	10	... medium dense, very pale brown (10YR 7/3)	SP
	4		14	14	... light yellowish brown (10YR 6/4)	SP
					Boring Terminated at 9 feet	
10					NOTE: GPS coordinates N 43 degrees 40.821 minutes, W87 degrees 42.430 minutes	

PLASTIC M.C. LIQUID (10 20 30 40)

■ UNCONFINED COMPRESSION (tsf) 1.0 2.0 3.0 4.0

▲ POCKET PEN (tsf) ▲ 1.0 2.0 3.0 4.0

● BLOW COUNT (N) ● 10 20 30 40

ELEV. / DEPTH (ft)

GEOTLOG GINT GPJ MLLR_ENG GDT 12/13/10 16:06

MILLER ENGINEERS SCIENTISTS

Water Level	Date	Time		Cave-in Depth	
	Date **12/1/10**	Time **10:15**	**None** ft.	**8** ft.	
	Date	Time	ft.	ft.	
	Date	Time	ft.	ft.	

Borehole Abandonment
Date: **12/1/2010**
Material: **On-Site Sand**

Crew: **RGM, WGF**
Rig: **NONE**
Method: **Manual Auger**

Project: **Tented Forest**	Job No: **10-1-18529 50-500**	Boring No: **B (NE crnr restaurant)**
Client: **Kohler Company**	Drilled By: **Miller Engineers and Scientists**	Elevation: **Same as lath #2195**
Location: **Town of Wilson**	Drilling Begun: **12/1/10**	Drilling Completed: **12/1/10**

SAMPLE TYPE: 1" Geoprobe | No Recovery | Grab Sample | Auger Sample | 3" Shelby Tube | 2" Split Spoon

ELEV. DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	RECOVERY (in.)	SPT (N)	SOIL DESCRIPTION	USC
0	1		18	3	2" of fibrous organic matter SAND, uniformly graded, fine grained, moist, very loose, brown (10YR 5/3)	SP
	2		20	4	... loose, pale brown (10YR 6/3)	SP
5	3		13	20	... medium dense, coarse gravel at 7.5 feet, brown (10YR 5/3)	SP
	4		12	30	... coarse gravel at 8 feet	SP
					Boring Terminated at 8.5 feet	
10					NOTE: GPS coordinates N43 degrees 40.827 minutes, W87 degrees 42.413 minutes	

PLASTIC M.C. LIQUID (10 20 30 40)

■ UNCONFINED COMPRESSION (tsf) 1.0 2.0 3.0 4.0

▲ POCKET PEN (tsf) ▲ 1.0 2.0 3.0 4.0

● BLOW COUNT (N) ● 10 20 30 40

ELEV. DEPTH (ft) 0 5 10

MILLER ENGINEERS SCIENTISTS

Water Level	Date	Time		Cave-in Depth
	12/1/10	12:00	None ft.	8 ft.
			ft.	ft.
			ft.	ft.

Borehole Abandonment
Date: 12/1/2010
Material: On-Site Sand

Crew: RGM, WGF
Rig: NONE
Method: Manual Auger

GEOTLOG GINT GPJ MLLR_ENG.GDT 12/7/10 14:25

Project: **Tented Forest**	Job No: **10-1-18529 50-500**	Boring No: **C (32 ft W lath #2108)**
Client: **Kohler Company**	Drilled By: **Miller Engineers and Scientists**	Elevation: **Low spot in topography**
Location: **Town of Wilson**	Drilling Begun: **12/1/10**	Drilling Completed: **12/1/10**

SAMPLE TYPE: 1" Geoprobe | No Recovery | Grab Sample | Auger Sample | 3" Shelby Tube | 2" Split Spoon

ELEV. DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	RECOVERY (in.)	SPT (N)	SOIL DESCRIPTION	USC
0	1		18	2	5" of fibrous organic matter	
					SAND, uniformly graded, fine grained, moist, very loose, yellowish brown (10YR 5/4)	SP
	2		18	9	... loose, gravelly, wet ▽	SP
5	3		24	12	... medium dense, brown (10YR 4/3)	SP
					Boring Terminated at 7.5 feet	
					10' long, 1/2" dia. PVC open ended pipe inserted in boring at completion. Top of PVC is 3.3 feet above grade.	
					On 12/7/10 PVC has been removed, presumably by a trespasser.	
10					NOTE: GPS coordinates N43 degrees 41.102 minutes, W87 degrees 42.679 minutes	

PLASTIC M.C. LIQUID (10 20 30 40)

■ UNCONFINED COMPRESSION (tsf) 1.0 2.0 3.0 4.0

▲ POCKET PEN (tsf) ▲ 1.0 2.0 3.0 4.0

● BLOW COUNT (N) ● 10 20 30 40

ELEV. DEPTH (ft)

MILLER ENGINEERS SCIENTISTS

	Date	Time	Water Level	Cave-in Depth
	12/1/10	12:15	4.2 ft.	N.A. ft.
	12/7/10	12:20	3.2 ft.	3.2 ft.
			ft.	ft.

Borehole Abandonment

Date: **12/1/2010**

Material: **On-Site Sand**

Crew: **RGM, WGF**

Rig: **NONE**

Method: **Manual Auger**

GEOTLOG GINT.GPJ MLLR_ENG.GDT 12/7/10 14:25

Project: **Tented Forest**	Job No: **10-1-18529 50-500**	Boring No: **D (reception bldg)**
Client: **Kohler Company**	Drilled By: **Miller Engineers and Scientists**	Elevation:
Location: **Town of Wilson**	Drilling Begun: **12/1/10**	Drilling Completed: **12/1/10**

SAMPLE TYPE: 1" Geoprobe | No Recovery | Grab Sample | Auger Sample | 3" Shelby Tube | 2" Split Spoon

ELEV. / DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	RECOVERY (in.)	SPT (N)	SOIL DESCRIPTION	USC
0	1		22	4	SAND, uniformly graded, fine grained, damp, loose, dark yellowish brown (10YR 4/4)	SP
	2		20	6	... wet ▽	SP
5	3		24	7	... grayish brown (10YR 5/2)	SP
					Boring Terminated at 8.5 feet	
10					10' long, 1/2" dia. PVC open ended pipe inserted in boring at completion. Top of PVC is 20" above grade.	
					NOTE: GPS coordinates N43 degrees 41.102 minutes, W87 degrees 42.679 minutes	

PLASTIC M.C. LIQUID — 10 20 30 40

■ UNCONFINED COMPRESSION (tsf) 1.0 2.0 3.0 4.0

▲ POCKET PEN (tsf) ▲ 1.0 2.0 3.0 4.0

● BLOW COUNT (N) ● 10 20 30 40

ELEV. / DEPTH (ft): 0, 5, 10

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Water Level		Cave-in Depth	
Date 12/1/10	Time 14:45	5.9 ft.	N.A. ft.
Date 12/7/10	Time 12:20	3.3 ft.	N.A. ft.
Date	Time	ft.	ft.

Borehole Abandonment

Date: 12/1/2010

Material: On-Site Sand

Crew: RGM, WGF

Rig: NONE

Method: Manual Auger

GEOTLOG GINT.GPJ MLLR_ENG.GDT 12/7/10 14:25

Project: **Tented Forest**	Job No: **10-1-18529 50-500**	Boring No: **E (W. cntr maint. bldg)**
Client: **Kohler Company**	Drilled By: **Miller Engineers and Scientists**	Elevation: **Between 2140 & 2142**
Location: **Town of Wilson**	Drilling Begun: **12/1/10**	Drilling Completed: **12/1/10**

SAMPLE TYPE: 1" Geoprobe | No Recovery | Grab Sample | Auger Sample | 3" Shelby Tube | 2" Split Spoon

ELEV. / DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	RECOVERY (in.)	SPT (N)	SOIL DESCRIPTION	USC
0	1		21	3	SAND, uniformly graded, fine grained, moist, very loose, dark yellowish brown (10YR 3/4)	SP
	2		22	7	... yellowish brown (10YR 5/4)	SP
5					... wet	
	3		24	10	... medium dense, dark grayish brown (10YR 4/2)	SP
					Boring Terminated at 8.5 feet	
10					10' long, 1/2" dia. PVC open ended pipe inserted in boring at completion. Top of PVC is 6" above grade.	
					NOTE: GPS coordinates N43 degrees 40.607 minutes, W87 degrees 42.947 minutes	

PLASTIC M.C. LIQUID — 10 20 30 40

■ UNCONFINED COMPRESSION (tsf) — 1.0 2.0 3.0 4.0

▲ POCKET PEN (tsf) ▲ — 1.0 2.0 3.0 4.0

● BLOW COUNT (N) ● — 10 20 30 40

ELEV. / DEPTH (ft): 0, 5, 10

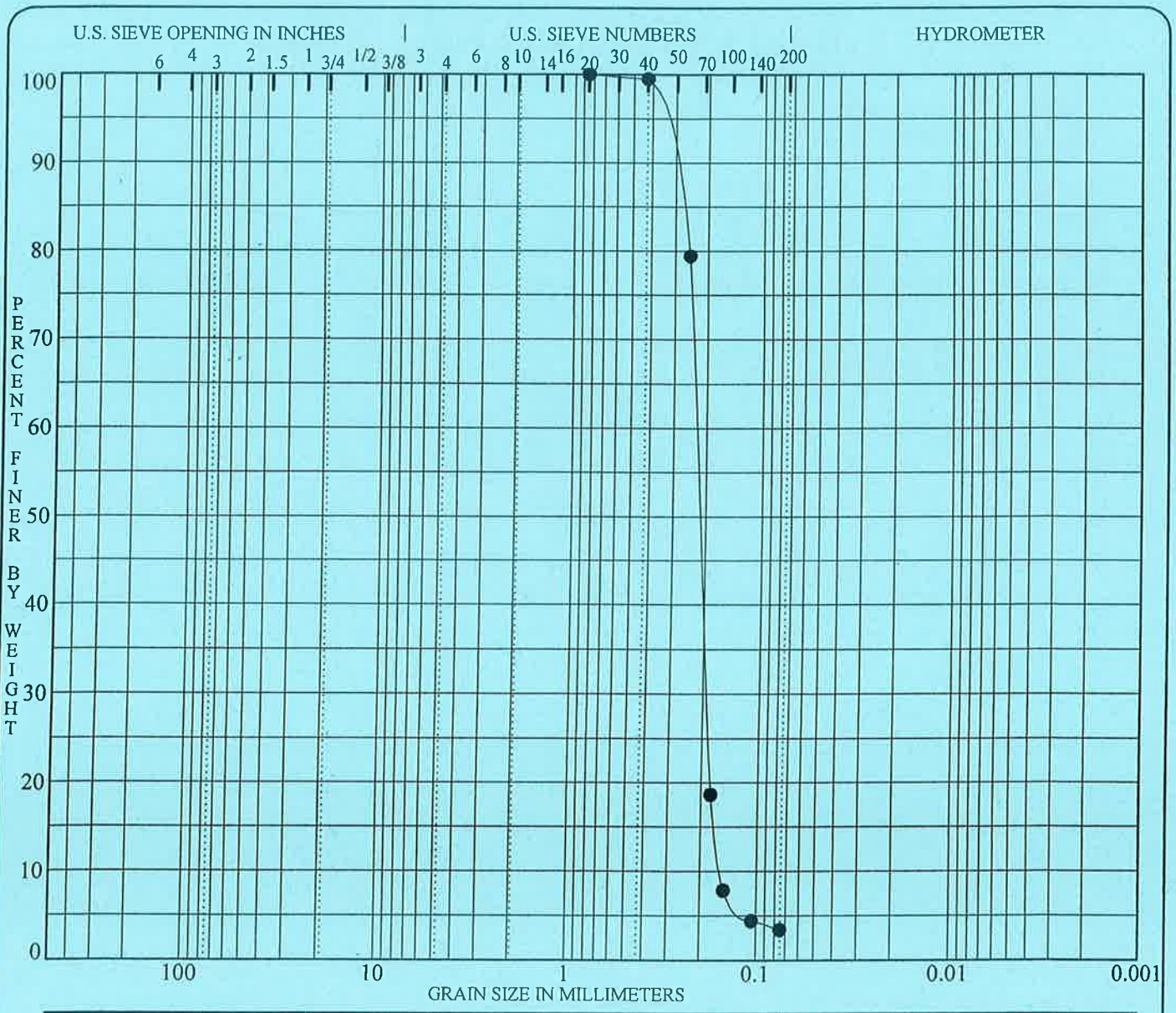
MILLER ENGINEERS SCIENTISTS

Water Level	Date	Time		Cave-in Depth	
	12/1/10	15:30	7.4 ft.	N.A.	ft.
	12/7/10	11:50	5.3 ft.	N.A.	ft.
			ft.		ft.

Borehole Abandonment
Date: 12/1/2010
Material: On-Site Sand

Crew: RGM, WGF
Rig: NONE
Method: Manual Auger

GEOTLOG GINT.GPJ MLLR_ENG.GDT 12/13/10 11:07



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	MC%	LL	PL	PI	Cc	Cu
● **D2-Mid**	**POORLY GRADED SAND(SP)**					**1.03**	**1.4**
LAB ID:**(reception bldg)**							

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **D2-Mid**	**0.85**	**0.22**	**0.190**	**0.1552**	**0.0**	**96.6**	**3.4**	

CLIENT : **Kohler Company**
PROJECT: **Tented Forest**

JOB NO.: **10-1-18529 50-500**
TEST DATE: **12/13/10**
SOURCE: **Boring D, 4' depth**
SAMPLED BY: **Miller Eng.**
TESTED BY: **RGM**
REVIEWED BY:**RGM**

MILLER ENGINEERS SCIENTISTS

GRAIN SIZE ANALYSIS
ASTM D422

GRAFSIEV GINT.GPJ MLLR_ENG.GDT 12/13/10 09:10

GRADATION ANALYSIS

CLIENT:	Kohler Company	JOB NO.:	10-1-18529 50-500
PROJECT:	Tented Forest		
LAB ID:	D (reception bldg)	TEST DATE:	12/13/10
SPECIFICATION:		TESTED BY:	RGM
SAMPLED BY:	Miller Eng.	REVIEWED BY:	RGM
SPECIMEN IDENTIFICATION:	D2-Mid	SOURCE:	Boring D, 4' depth

TOTAL WEIGHT OF SAMPLE (g): 20.40

SIEVE TEST ANALYSIS (ASTM D422)

SIEVE SIZE	%FINER	REQUIRED SPECS	
		MIN	MAX
#200	3.4		
#140	4.4		
#100	7.8		
#80	18.6		
#60	79.4		
#40	99.5		
#20	100.0		

TABLE_SIEVE GINT.GPJ MLLR_ENG.GDT 12/13/10 09:11

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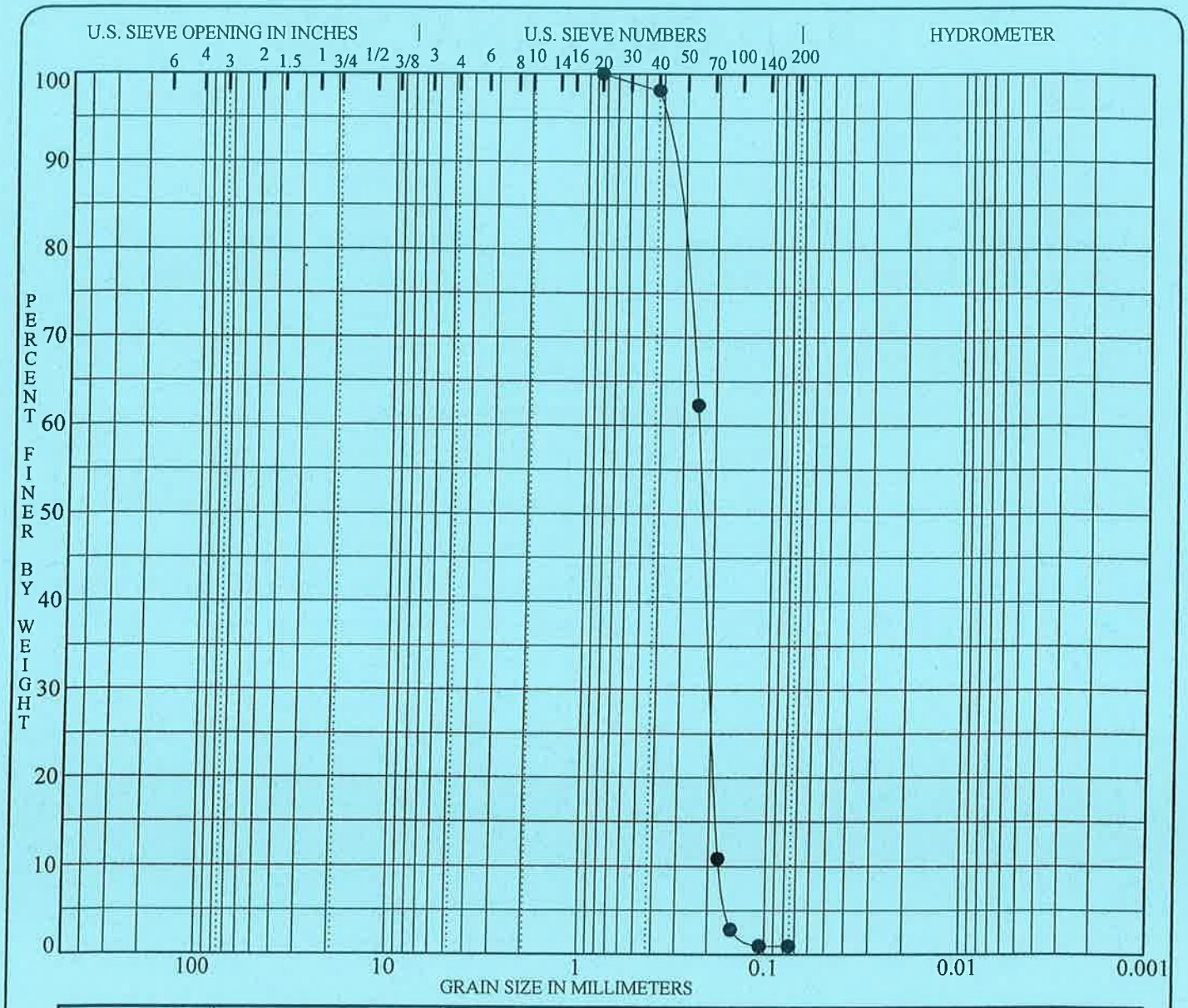
ENGINEERS
SCIENTISTS



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	MC%	LL	PL	PI	Cc	Cu
●	**E2, top**	**POORLY GRADED SAND(SP)**					**0.95**	**1.4**
	LABEL(E. cntr maint. bldg)							

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**E2, top**	**0.85**	**0.25**	**0.202**	**0.1748**	**0.0**	**99.1**	**0.9**	

CLIENT: **Kohler Company**
PROJECT: **Tented Forest**

JOB NO.: **10-1-18529 50-500**
TEST DATE: **12/13/10**
SOURCE: **Boring E, 3.5' Depth**
SAMPLED BY: **Miller Eng.**
TESTED BY: **RGM**
REVIEWED BY: **RGM**

MILLER ENGINEERS SCIENTISTS

GRAIN SIZE ANALYSIS
ASTM D422

GRAFSIEV GINT.GPJ MLLR_ENG.GDT 12/13/10 09:10

GRADATION ANALYSIS

CLIENT:	Kohler Company	JOB NO.:	10-1-18529 50-500
PROJECT:	Tented Forest		
LAB ID:	E (E. cntr maint. bldg)	TEST DATE:	12/13/10
SPECIFICATION:		TESTED BY:	RGM
SAMPLED BY:	Miller Eng.	REVIEWED BY:	RGM
SPECIMEN IDENTIFICATION:	E2, top	SOURCE:	Boring E, 3.5' Depth

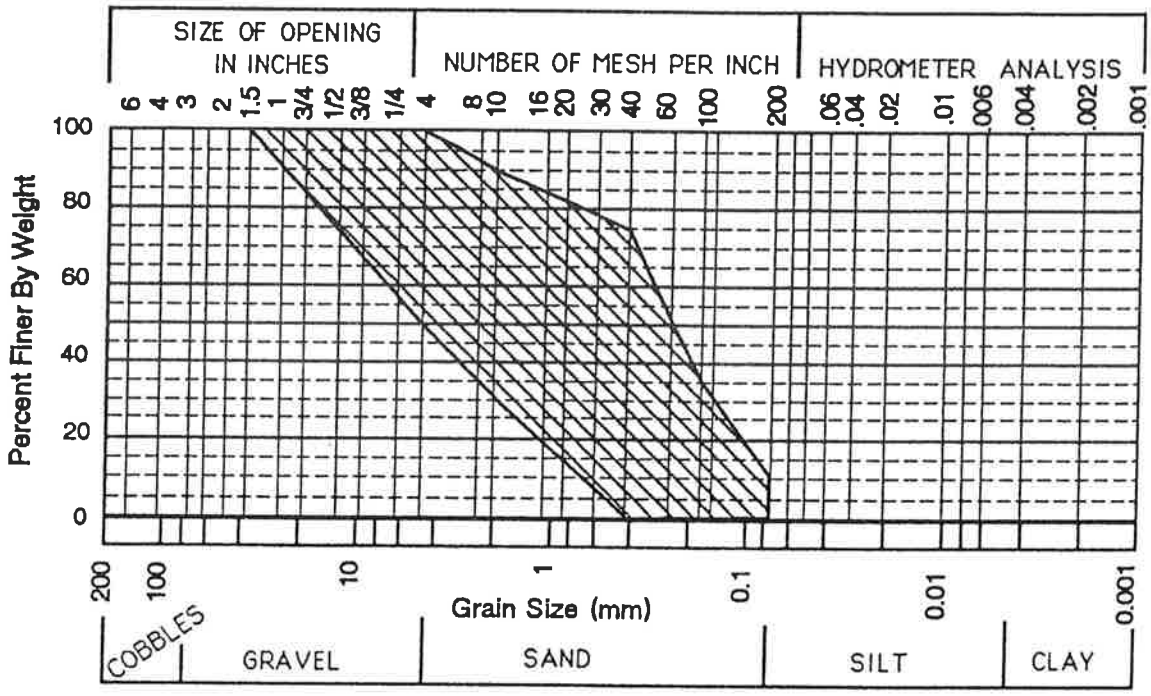
TOTAL WEIGHT OF SAMPLE (g): 21.20

SIEVE TEST ANALYSIS (ASTM D422)

SIEVE SIZE	%FINER	REQUIRED SPECS	
		MIN	MAX
#200	0.9		
#140	0.9		
#100	2.8		
#80	10.8		
#60	62.3		
#40	98.1		
#20	100.0		

STRUCTURAL GRANULAR FILL

ENVELOPE "A"



SIEVE	PERCENT FINER
1 1/2"	100%
#4	50 - 100%
#10	30 - 90%
#40	0 - 75%
#100	0 - 35%
#200	0 - 10%

MILLER
ENGINEERS
SCIENTISTS

Appendix D
Erosion Control Specifications

Eosion Control Specifications

31 30 00 EROSION CONTROL/STORMWATER MANAGEMENT

A. THE DESIGN ENGINEER SHALL PREPARE A SITE SPECIFIC EROSION CONTROL AND A STORMWATER MANAGEMENT PLAN PURSUANT TO NR 216.46 AND NR 216.47. THE DESIGN ENGINEER SHALL ALSO FILE A CONSTRUCTION NOTICE OF INTENT WITH THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES PURSUANT TO NR 216.43 OR TO AN AUTHORIZED LOCAL PROGRAM PURSUANT TO NR 216.415 TO OBTAIN COVERAGE UNDER THE GENERAL WPDES STORM WATER PERMIT.

B. THE CONTRACTOR SHALL KEEP THE NOTICE OF INTENT PERMIT, APPROVED EROSION CONTROL AND STORMWATER MANAGEMENT PLANS, AND PLAN AMENDMENTS ON THE CONSTRUCTION SITE AT ALL TIMES UNTIL PERMIT COVERAGE IS TERMINATED.

C. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL LOCAL EROSION CONTROL PERMITS.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE MONITORING, MAINTENANCE, AND REPORTING REQUIREMENTS OF NR 216.48. INSPECTIONS OF IMPLEMENTED EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES MUST AT A MINIMUM BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS AFTER A PRECIPITATION EVENT OF 0.5" OR MORE. A PRECIPITATION EVENT MAY BE CONSIDERED TO BE THE TOTAL AMOUNT OF PRECIPITATION RECORDED IN ANY CONTINUOUS 24-HOUR PERIOD. THE CONTRACTOR SHALL REPAIR OR REPLACE EROSION AND SEDIMENT CONTROL AS NECESSARY WITHIN 24 HOURS OF AN INSPECTION OR AFTER A DEPARTMENT NOTIFICATION WHERE REPAIR OR REPLACEMENT IS REQUESTED.

E. THE CONTRACTOR SHALL MAINTAIN, AT THE CONSTRUCTION SITE, WEEKLY WRITTEN REPORTS OF ALL INSPECTIONS CONDUCTED. WISCONSIN DNR CONSTRUCTION SITE INSPECTION REPORT FORM 3400-187 SHALL BE USED. WEEKLY INSPECTION REPORTS SHALL INCLUDE ALL OF THE FOLLOWING:
   1. THE DATE, TIME, AND EXACT LOCATION OF THE CONSTRUCTION SITE INSPECTION.
   2. THE NAME OF THE INDIVIDUAL WHO PERFORMED THE INSPECTION.
   3. AN ASSESSMENT OF THE CONDITION OF THE EROSION AND SEDIMENT CONTROLS.
   4. A DESCRIPTION OF ANY EROSION AND SEDIMENT CONTROL IMPLEMENTATION AND MAINTENANCE PERFORMED.
   5. A DESCRIPTION OF THE PRESENT PHASE OF LAND DISTURBING CONSTRUCTION ACTIVITY AT THE CONSTRUCTION SITE.

F. EROSION AND SEDIMENT CONTROL IMPLEMENTED DURING CONSTRUCTION SHALL STRICTLY COMPLY WITH THE GUIDELINES AND REQUIREMENTS SET FORTH IN WISCONSIN ADMINISTRATIVE CODE (W.A.C.) NR 151, THE STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES RUNOFF MANAGEMENT PERFORMANCE STANDARDS. TECHNICAL STANDARDS PUBLISHED BY THE WISCONSIN DNR SHALL ALSO BE UTILIZED TO IMPLEMENT THE REQUIRED PERFORMANCE STANDARDS. THE METHODS AND TYPES OF EROSION CONTROL WILL BE DEPENDENT ON THE LOCATION AND TYPE OF WORK INVOLVED. ALL SEDIMENT CONTROL

MEASURES SHALL BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION, AND INSTALLED PRIOR TO ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL. BELOW IS A LIST OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES TO ACHIEVE THE PERFORMANCE STANDARDS REQUIRED.

1. SILT FENCE SHALL BE PLACED ON SITE AT LOCATIONS SHOWN ON THE EROSION CONTROL PLAN. SILT FENCE SHALL ALSO BE PROVIDED AROUND THE PERIMETER OF ALL SOIL STOCKPILES. FOLLOW PROCEDURES FOUND IN WISCONSIN DNR TECHNICAL STANDARD 1056.

2. DITCH CHECKS SHALL BE PROVIDED TO REDUCE THE VELOCITY OF WATER FLOWING IN DITCH BOTTOMS. PLACE AT LOCATIONS SHOWN ON THE EROSION CONTROL PLAN. FOLLOW PROCEDURES FOUND IN WISCONSIN DNR TECHNICAL STANDARD 1062

3. STONE TRACKING PADS SHALL BE PLACED AT ALL CONSTRUCTION SITE ENTRANCES AND SHALL BE INSTALLED PRIOR TO ANY TRAFFIC LEAVING THE CONSTRUCTION SITE. SEE THE EROSION CONTROL PLAN FOR LOCATIONS. THE AGGREGATE USED SHALL BE 3 TO 6 INCH CLEAR OR WASHED STONE, AND SHALL BE PLACED IN A LAYER AT LEAST 12 INCHES THICK. THE STONE SHALL BE UNDERLAIN WITH A WISDOT TYPE R GEOTEXTILE FABRIC. THE TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT, AND SHALL BE A MINIMUM OF 50 FEET LONG. SURFACE WATER MUST BE PREVENTED FROM PASSING THROUGH THE TRACKING PAD. FOLLOW PROCEDURES FOUND IN WISCONSIN DNR TECHNICAL STANDARD 1057.

4. STORM DRAIN INLET PROTECTION SHALL BE PROVIDED FOR ALL NEW AND DOWNSTREAM STORM CATCH BASINS AND CURB INLETS. TYPE B OR C PROTECTION SHOULD BE PROVIDED AND SHALL BE IN CONFORMANCE WITH WISCONSIN DNR TECHNICAL STANDARD 1060.

5. DUST CONTROL MEASURES SHALL BE PROVIDED TO REDUCE OR PREVENT THE SURFACE AND AIR TRANSPORT OF DUST DURING CONSTRUCTION. CONTROL MEASURES INCLUDE APPLYING MULCH AND ESTABLISHING VEGETATION, WATER SPRAYING, SURFACE ROUGHENING, APPLYING POLYMERS, SPRAY-ON TACKIFIERS, CHLORIDES, AND BARRIERS. SOME SITES MAY REQUIRE AN APPROACH THAT UTILIZES A COMBINATION OF MEASURES FOR DUST CONTROL. FOLLOW PROCEDURES FOUND IN WISCONSIN DNR TECHNICAL STANDARD 1068.

6. THE USE, STORAGE, AND DISPOSAL OF CHEMICALS, CEMENT, AND OTHER COMPOUNDS AND MATERIALS USED ON SITE SHALL BE MANAGED DURING THE CONSTRUCTION PERIOD TO PREVENT THEIR TRANSPORT BY RUNOFF INTO WATERS OF THE STATE.

7. CONTRACTOR SHALL PROVIDE AN OPEN AGGREGATE CONCRETE TRUCK WASHOUT AREA ON SITE. CONTRACTOR TO ENSURE THAT CONCRETE WASHOUT SHALL BE CONTAINED TO THIS DESIGNATED AREA AND NOT BE ALLOWED TO RUN INTO STORM INLETS OR INTO THE OVERLAND STORMWATER DRAINAGE SYSTEM. WASHOUT AREA SHALL BE REMOVED UPON COMPLETION OF CONSTRUCTION.

8. TEMPORARY SITE RESTORATION SHALL TAKE PLACE IN DISTURBED AREAS THAT WILL NOT

BE BROUGHT TO FINAL GRADE OR ON WHICH LAND DISTURBING ACTIVITIES WILL NOT BE PERFORMED FOR A PERIOD GREATER THAN 14 DAYS AND REQUIRES VEGETATIVE COVER FOR LESS THAN ONE YEAR. THIS TEMPORARY SITE RESTORATION REQUIREMENT ALSO APPLIES TO SOIL STOCKPILES. PERMANENT RESTORATION APPLIES TO AREAS WHERE PERENNIAL VEGETATIVE COVER IS NEEDED TO PERMANENTLY STABILIZE AREAS OF EXPOSED SOIL. PERMANENT STABILIZATION SHALL OCCUR WITHIN 3 WORKING DAYS OF FINAL GRADING. TOPSOIL, SEED, AND MULCH SHALL BE IN GENERAL CONFORMANCE WITH TECHNICAL STANDARDS 1058 AND 1059 AND SHALL MEET THE SPECIFICATIONS FOUND IN THE LANDSCAPING AND SITE STABILIZATION SECTION OF THIS CONSTRUCTION DOCUMENT. ANY SOIL EROSION THAT OCCURS AFTER FINAL GRADING AND/OR FINAL STABILIZATION MUST BE REPAIRED AND THE STABILIZATION WORK REDONE.

9. IF SITE DEWATERING IS REQUIRED TO REMOVE SEDIMENT FROM CONSTRUCTION SITE STORMWATER PRIOR TO DISCHARGING OFF-SITE OR TO WATERS OF THE STATE, FOLLOW PROCEDURES FOUND IN TECHNICAL STANDARD 1061.

10. ALL OFF-SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF CONSTRUCTION WORK OR A STORM EVENT SHALL BE CLEANED UP BY THE END OF EACH WORKING DAY. FLUSHING SHALL NOT BE ALLOWED.

G. EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL THE AREA(S) SERVED HAVE ESTABLISHED VEGETATIVE COVER.

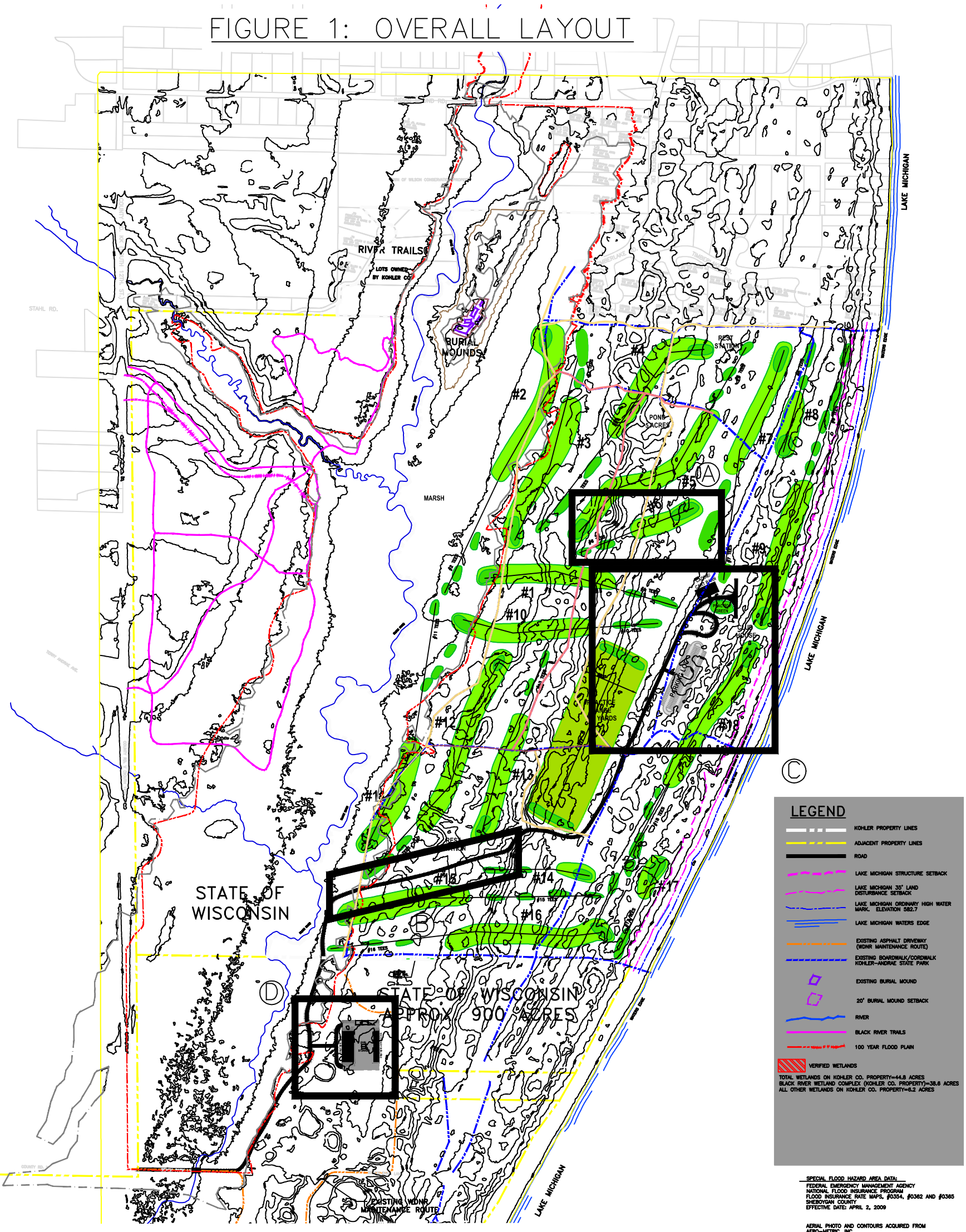
H. ONCE THE CONSTRUCTION SITE HAS BEEN FULLY STABILIZED AND TEMPORARY EROSION CONTROL BEST MANAGEMENT PRACTICES HAVE BEEN REMOVED, THE CONTRACTOR SHALL FILE A CONSTRUCTION NOTICE OF TERMINATION WITH THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES.

I. AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL GIVE THE OWNER COPIES OF THE EROSION CONTROL AND STORM WATER MANAGEMENT PLANS, AMENDMENTS TO PLANS, SUPPORTING PLAN DATA, AND CONSTRUCTION SITE EROSION CONTROL INSPECTION REPORTS. THE OWNER SHALL RETAIN THESE FOR A PERIOD OF 3 YEARS FROM THE DATE OF TERMINATING COVERAGE UNDER WPDES GENERAL PERMIT.

J. ALL POST CONSTRUCTION STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES SHALL BE CONSTRUCTED BEFORE THE SITE HAS UNDERGONE FINAL STABILIZATION.

Figures

FIGURE 1: OVERALL LAYOUT



AREA	USE	BEST MANAGEMENT PRACTICE	PROTECTIVE AREAS
A	GOLF COURSE	SWALES FILTER STRIPS NATURAL DEPRESSIONS	WETLANDS RIVER/LAKE DEPTH TO GROUNDWATER
B	DRIVES/ CART PATHS	SWALES FILTER STRIPS BIOFILTRATION SUMPED CATCHBASINS	WETLANDS RIVER/LAKE DEPTH TO GROUNDWATER
C	CLUB HOUSE PARKING LOT PRACTICE RANGE	SWALES FILTER STRIPS BIOFILTRATION	WETLANDS LAKE DEPTH TO GROUNDWATER
D	MAINTENANCE FACILITY	SWALES FILTER STRIPS BIOFILTRATION CATCHBASIN W/ FILTER	WETLANDS RIVER DEPTH TO GROUNDWATER

SPECIAL FLOOD HAZARD AREA DATA:
FEDERAL EMERGENCY MANAGEMENT AGENCY
NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAPS, #0354, #0362 AND #0365
SHEBOYGAN COUNTY
EFFECTIVE DATE: APRIL 2, 2009

AERIAL PHOTO AND CONTOURS ACQUIRED FROM
AERO-METRIC, INC.
DATE OF PHOTO: APRIL 2009
DATE OF CONTOUR MAPPING: APRIL 2009
DRAWING IS IN SHEBOYGAN COUNTY COORDINATES

NOTES:
PROPERTY LINES ARE APPROXIMATE.
STORM WATER REQUIREMENTS TO BE DETERMINED
PROPERTY IS WITHIN THE SANITARY SEWER SERVICE AREA
NO MUNICIPAL WATER - WELLS
WETLANDS DELINEATION COMPLETED IN MAY 2014

BENCHMARK INFORMATION:
USC AND GS MONUMENT - BRASS CAP IN CONCRETE POST LOCATED 20' SOUTH OF CITY LIMIT (WEEDEN CREEK ROAD) AND ABOUT 100' WEST OF 18TH STREET.
MONUMENT WAS SET BY THE WISCONSIN DEPARTMENT OF TRANSPORTATION AND THE CAP IS STAMPED "1983 ELEV. 616.46 NAVD 88, AID DE7502 WISCONSIN/SHEBOYGAN, USGS QUAD SHEBOYGAN SOUTH (1994)

REFERENCE DRAWINGS:

CIVIL AERIAL PHOTO TOWN OF WILSON, R23E, T14N	9999-702-010-1016
TOPOGRAPHY-SECTIONS 11, 14 AND 23 TOWN OF WILSON, R23E, T14N	9999-702-020-1056
SURFACE FEATURES-SECTIONS 11, 14 AND 23 TOWN OF WILSON, R23E, T14N	9999-702-050-1032

ACAD# 9999-702-9088-C700-C-SWM

NO MANUAL REVISIONS ARE TO BE MADE TO THIS DRAWING WITHOUT FIRST CONTACTING C.A.D. PERSONNEL.
TECHNICAL SERVICES

N NORTH W-E
0 100' 200' 400'

PRELIMINARY

KOHLER CO.
KOHLER, WIS., U.S.A.

SUBJECT
DRAINAGE PLAN SUMMARY
PETE DYE LAYOUT
PROPOSED GOLF COURSE
TOWN OF WILSON
SHEBOYGAN COUNTY

MADE BY: EMP	DATE FINISHED: 06/05/2015
CHECKED BY: J. BARLEY	APPROVED BY: J. HOEKSTRA
CONTROL NO.: 2014-03-0011	THIS BAR IS 2" LONG WHEN DRAWING IS PRINTED FULL SIZE
SCALE: 1"=200'	
DRAWING NO.: 9999-702-9088-SWC	SHEET NO.

A EMP 07/11/2014 \2014-03-0011 REVISED COURSE LAYOUT	B JDO 07/14/2014 \2014-03-0011 REVISED HOLE #5 AND CHART	C JDO 07/18/2014 \2014-03-0011 REVISED ENTRANCE ROAD AND MAINTENANCE LOCATION OPTIONAL LOCATIONS	D JDO 07/21/2014 \2014-03-0011 ADDED OPTIONS FOR MAIN ENTRANCE ROADS REMOVED SUMMARY OF ENVIRO.	E EMP 07/22/2014 \2014-03-0011 ADDED WETLANDS AND FLOODPLAIN	F JDO 09/04/2014 \2014-03-0011 ADDED/REVISED ROAD OPTIONS ADDED ENDANGERED PLANT AREAS ADDED WETLANDS WEST OF BLACK RIVER	G EMP 08/18/2014 \2014-03-0011 REMOVED ROAD OPTIONS	H EMP 10/8/2014 \2014-03-0011 ADDED ROAD OPTIONS	J EMP 10/14/2014 \2014-03-0011 MOVED MAINT. FACILITIES FOR ROADS 2 & 5	K EMP 10/24/2014 \2014-03-0011 MOVED MAINT. FACILITIES FOR ROADS 3 & 4	L JDO 11/05/2014 \2014-03-0011 REVISED VERIFIED WETLANDS

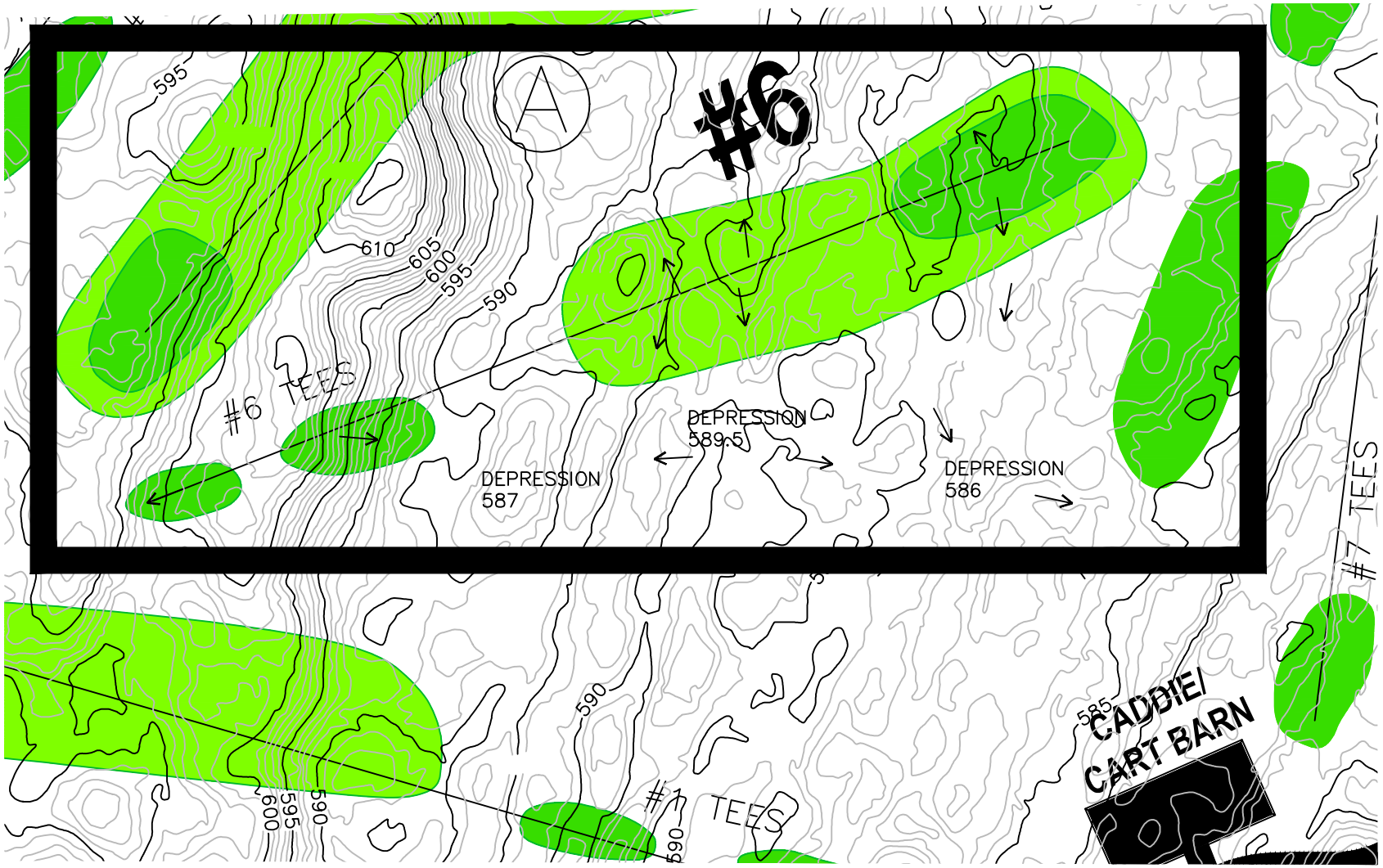


FIGURE 1A: TYPICAL GOLF HOLE DRAINAGE

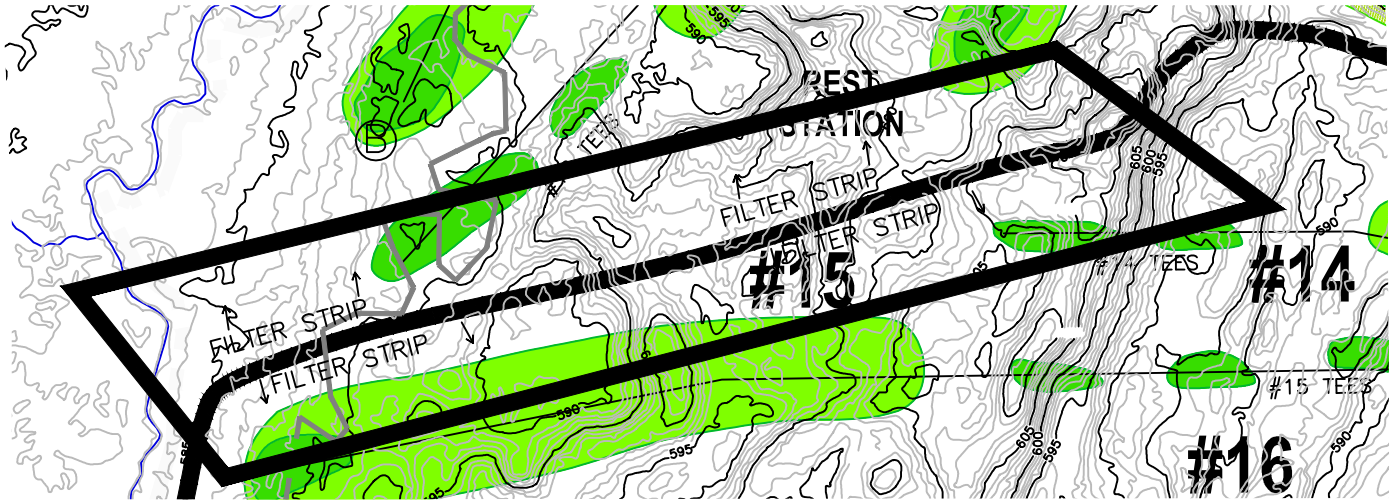


FIGURE 1B: TYPICAL ACCESS ROAD DRAINAGE

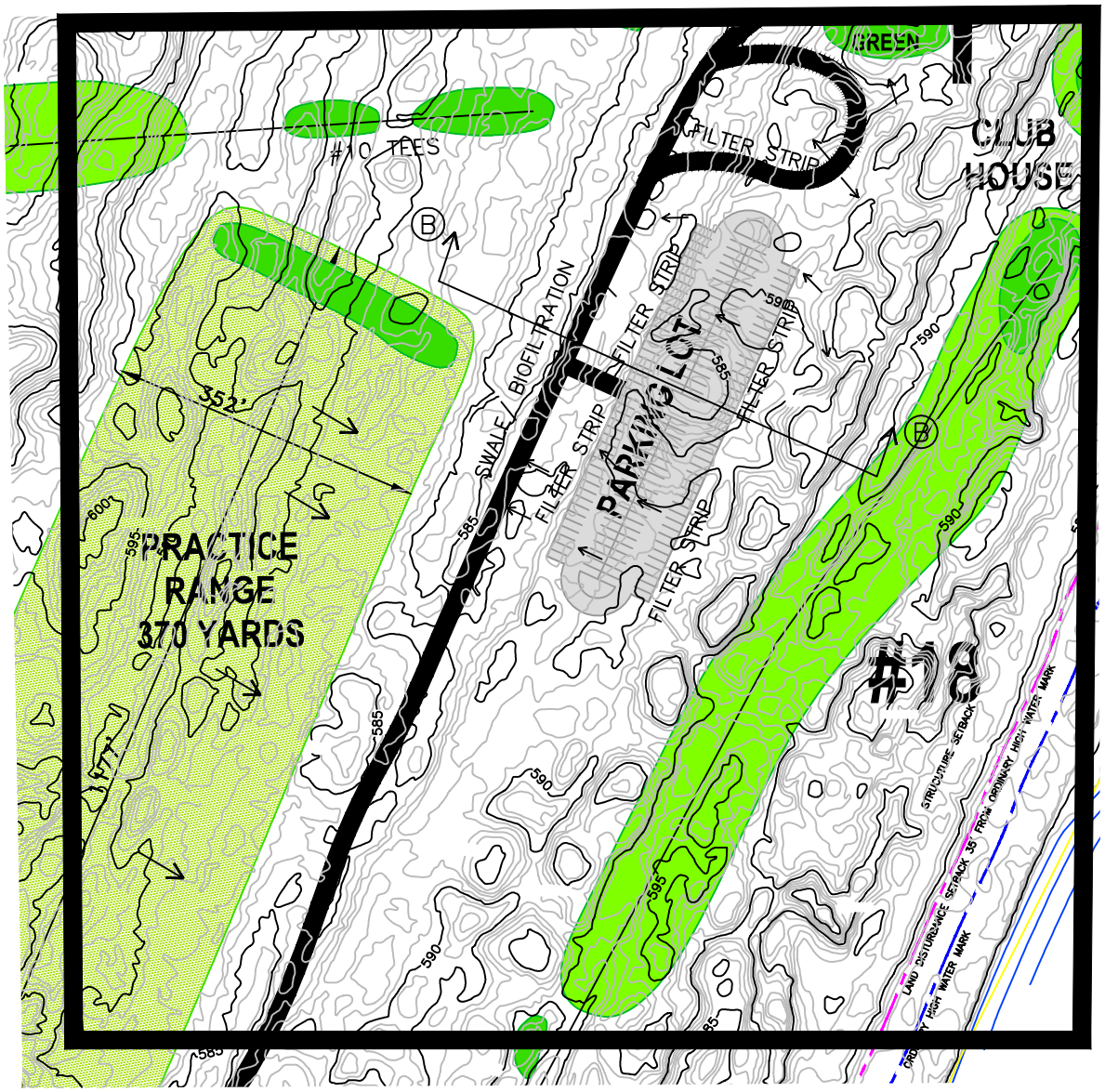
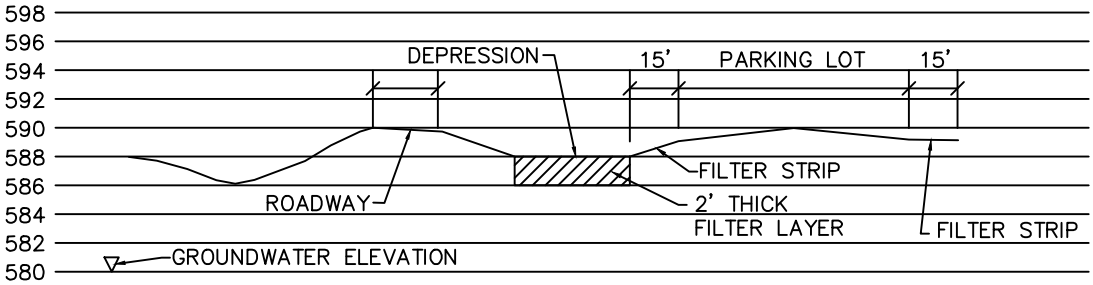


FIGURE 1C: CLUBHOUSE, PARKING LOT DRAINAGE



SECTION B–B

NOT TO SCALE

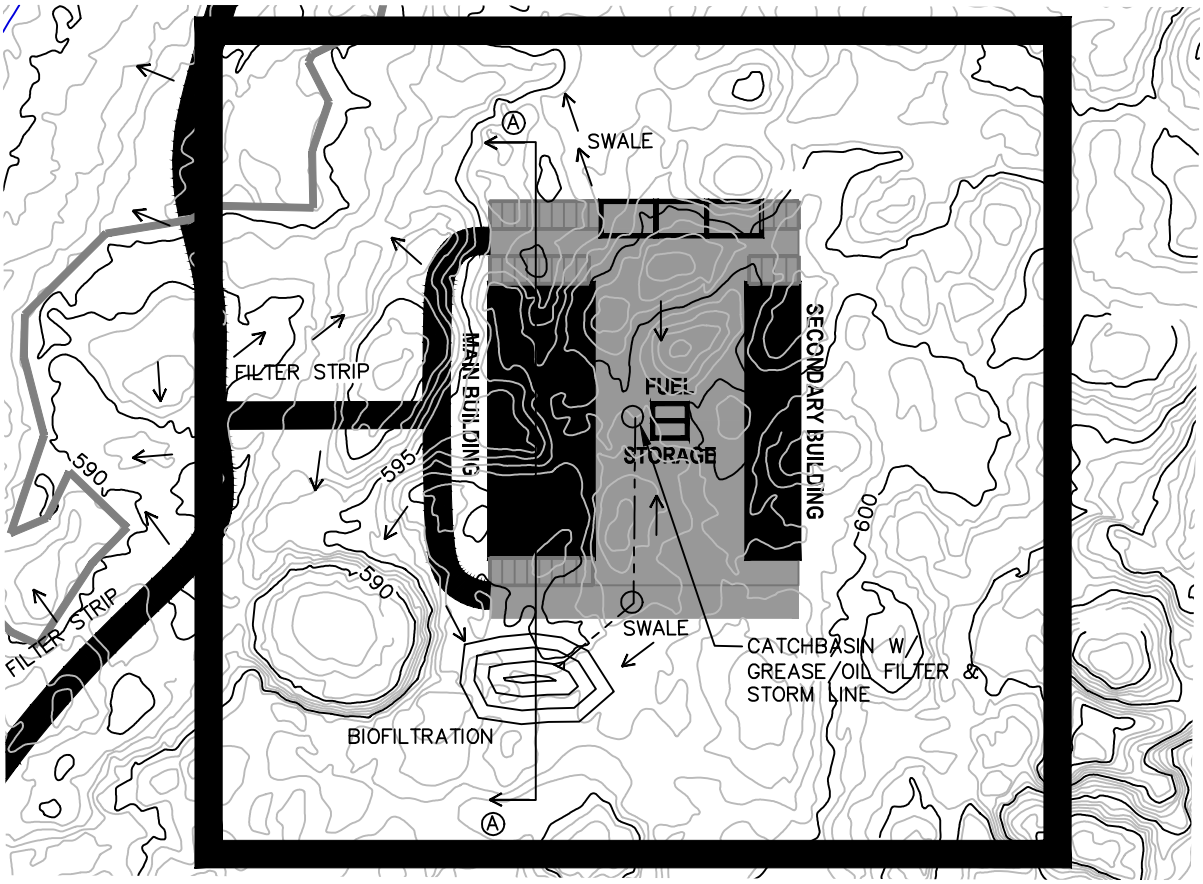
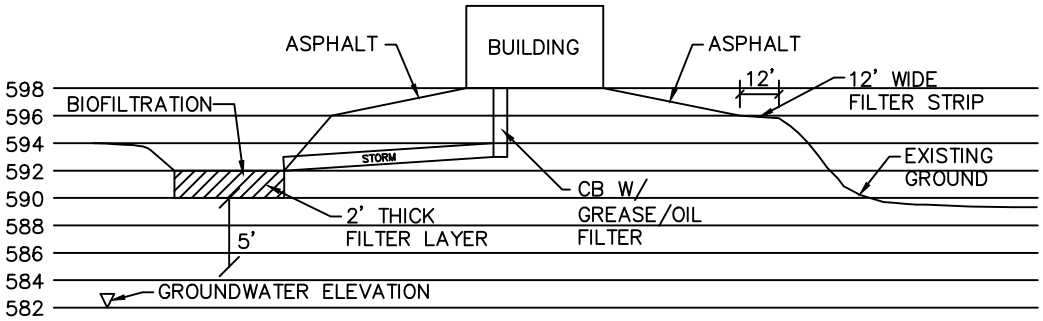


FIGURE 1D: MAINTENANCE FACILITY DRAINAGE



SECTION A–A

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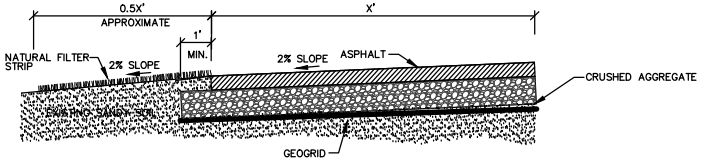
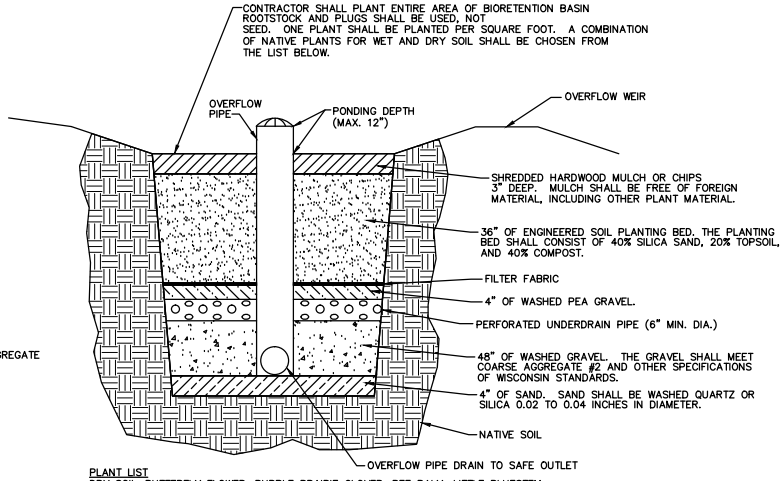


TYPICAL FILTER STRIP SECTION SECTION

NO SCALE



PLANT LIST

DRY SOIL–BUTTERFLY FLOWER, PURPLE PRAIRIE CLOVER, BEE BALM, LITTLE BLUESTEM SPIDERWORT, WHITE FALSE INDIGO, VIRGINIA WATERLEAF, SWEET BLACK-EYED SUSAN, GAYFEATHER, BIG BLUSTEM, CUP PLANT, COMMON IRONWEED.

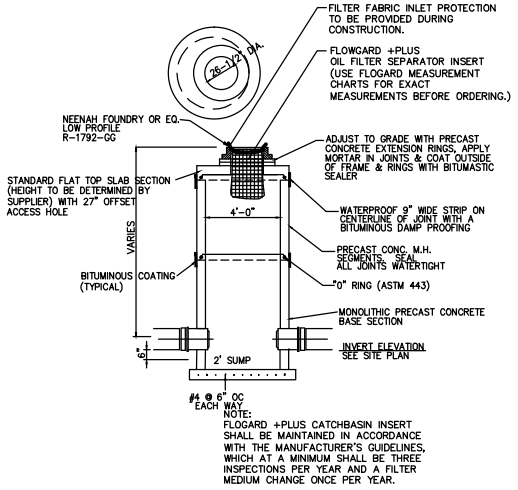
WET SOIL–GIANT HISSOP, CANADA ANEMONE, MARSH MILKWEED, NEW ENGLAND ASTER, TURTLEHEAD, JOE-PYE WEED, BONESET, BLUEFLAG IRIS, GREAT BLUE LOBELIA, SWITCHGRASS OBEDIENT PLANT, MOUNTAIN MINT, TALL MEADOW RUE, CULVER'S ROOT, GOLDEN ALEXANDER.

ENGINEERED SOIL

THE SILICA SAND SHALL BE WASHED USDA SAND, 0.02 TO 0.04 INCHES IN DIAMETER. THE TOPSOIL COMPONENT SHALL BE A USDA CLASSIFIED SANDY LOAM, LOAMY SAND, OR LOAMY TEXTURE. THE COMPOST COMPONENT SHALL MEET THE REQUIREMENTS OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES SPECIFICATION S100.

BIORETENTION INFILTRATION BASIN

NO SCALE

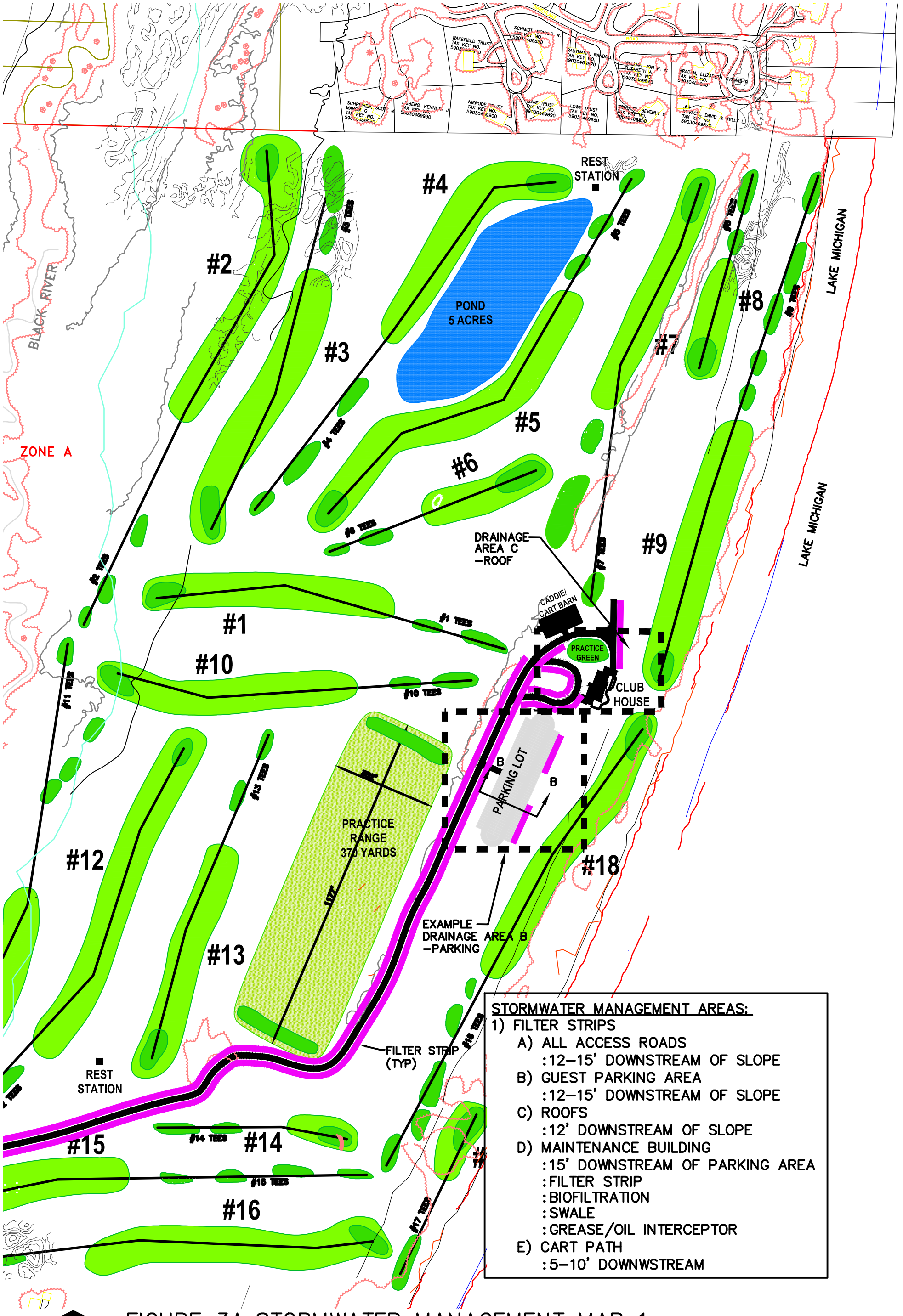


NOTE:
FLOGARD +PLUS CATCHBASIN INSERT SHALL BE MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES, WHICH AT A MINIMUM SHALL BE THREE INSPECTIONS PER YEAR AND A FILTER MEDIUM CHANGE ONCE PER YEAR.

CATCH BASIN DETAIL W/ OIL SEPARATOR

NO SCALE

FIGURE 2: TYPICAL BEST MANAGEMENT PRACTICES



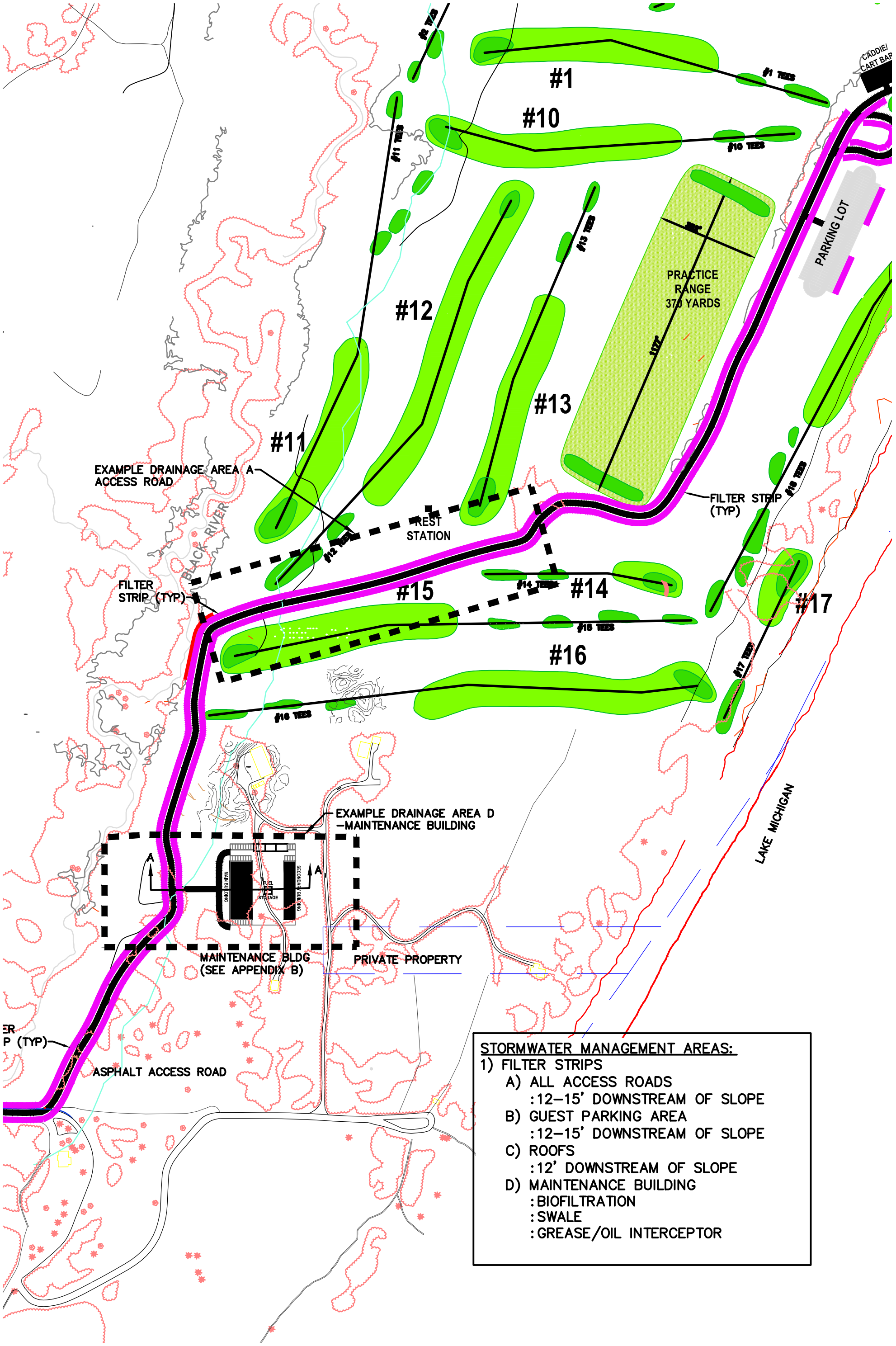
STORMWATER MANAGEMENT AREAS:

1) FILTER STRIPS
   - A) ALL ACCESS ROADS
     :12–15' DOWNSTREAM OF SLOPE
   - B) GUEST PARKING AREA
     :12–15' DOWNSTREAM OF SLOPE
   - C) ROOFS
     :12' DOWNSTREAM OF SLOPE
   - D) MAINTENANCE BUILDING
     :15' DOWNSTREAM OF PARKING AREA
     :FILTER STRIP
     :BIOFILTRATION
     :SWALE
     :GREASE/OIL INTERCEPTOR
   - E) CART PATH
     :5–10' DOWNWSTREAM

NORTH

FIGURE 3A: STORMWATER MANAGEMENT MAP 1

SCALE: 1"=300'



NORTH

FIGURE 3B: STORMWATER MANAGEMENT MAP 2

SCALE: 1"=300'