



# CASCADE CHARTER TOWNSHIP

2865 Thornhills SE Grand Rapids, Michigan 49546-7140

## NOTICE OF PUBLIC MEETING VIA VIDEO CONFERENCE

In accordance with Executive Order 2020-75, which declares that public bodies subject to the Open Meetings Act can use telephone and/or video conferencing technology to meet and conduct business during the ongoing COVID-19 pandemic, the Cascade Charter Township Planning Commission will conduct a regular meeting on Monday May 18, 2020 at 7pm utilizing the Zoom video conferencing platform, for the purpose of conducting official business while complying with Executive Order 2020-77 and the Michigan Department of Health and Human Services recommendations designed to help prevent the spread of COVID-19. For up-to-date information regarding the ongoing public health crisis, please visit:

<http://www.Michigan.gov/coronavirus> or <http://www.CDC.gov/coronavirus>

## INSTRUCTIONS FOR ACCESS AND PARTICIPATION

<https://us02web.zoom.us/j/91107218229>

Or iPhone one-tap :

US: +13017158592,,91107218229# or +13126266799,,91107218229#

Or Telephone:

Dial(for higher quality, dial a number based on your current location):

US: +1 301 715 8592 or +1 312 626 6799 or +1 929 205 6099 or +1 253 215 8782 or +1 346 248 7799 or +1 669 900 6833

Webinar ID: 911 0721 8229

International numbers available: <https://us02web.zoom.us/j/91107218229>

*\*\*Members of the public with disabilities may utilize the Michigan Relay System (7-1-1) to participate in the meeting. If other aids or services are needed for individuals with disabilities please contact the Township Deputy Clerk, Padley Gallagher, at [pgallagher@cascadetwp.com](mailto:pgallagher@cascadetwp.com) or 616-949-1500 at least 24 hours prior to the meeting\*\**

## PUBLIC PARTICIPATION

Members of the public will be able to listen to and view all discussion by the Planning Commission and all official materials for this meeting prepared for the Planning Commission will be included in the meeting packet and available to the public on the Township website [www.cascadetwp.com](http://www.cascadetwp.com)

Individuals will be permitted to speak during public comment periods in accordance with the Township Remote Public Meeting Procedure Policy.

If you would like to contact the Township about any matter, on the agenda or otherwise, please do so via email at the addresses below a minimum of 8 hours prior to the meeting. If you wish comments to be read into the public record during the public comment period, you must indicate so and draft communication that can be read in the allotted 3-minute timeframe.

Clerk Sue Slater: [sslater@cascadetwp.com](mailto:sslater@cascadetwp.com)

Manager Ben Swayze: [bswayze@cascadetwp.com](mailto:bswayze@cascadetwp.com)

Comm Dev Dir. Steve Peterson: [speterson@cascadetw.com](mailto:speterson@cascadetw.com)

**AGENDA**  
**Cascade Charter Township Planning Commission**  
**Monday, May 18, 2020**  
**7:00 pm**  
**Cascade Library Wisner Center**  
**2870 Jacksmith Ave. SE**

- ARTICLE 1. Call the meeting to order  
Record the attendance**
- ARTICLE 2. Pledge of Allegiance to the Flag**
- ARTICLE 3. Approve the current Agenda**
- ARTICLE 4. Approve the Minutes of the March 16, 2020 Meeting**
- ARTICLE 5. Acknowledge visitors and those wishing to speak to non-agenda items. (Comments are limited to five minutes per speaker.)**
- ARTICLE 6. Case # 19-3527 Roundhill PUD Amendments – Sentinel Pointe  
Property Address: 3000 Thornhills  
Requested Action: Amend various parts of the Roundhill portion of the Sentinel Pointe P.U.D. including, but not limited to, modifying building envelopes and changes to the storm water system.**
- ARTICLE 7. Case # 20-3581 Christian Korstange  
Property Address: 7561 Whispering Ridge  
Public Hearing  
Requested Action: The Applicant is requesting a Type I special use permit to allow a 6-foot tall fence in the front yard.**
- ARTICLE 8. Case # 20-3582 Michigan Fine Wine and Spirits, LLC  
Property Address: 4923 28th St SE  
Public Hearing  
Requested Action: This is a Type I special use permit to request a change in tenant from Babies R Us (retail) to Total Wine Spirits Beer and More (retail) and a tenant improvement project.**
- ARTICLE 9. Case # 20-3579 BDR Executive Custom Homes  
Property Address: 5510 Cascade Road SE Ste 220  
Requested Action: Develop into a 19 detached single-family site condominium project.**
- ARTICLE 10. Any other business**
- ARTICLE 11. Adjournment**

**Meeting format**

1. **Staff Presentation** *Staff report and recommendation*
2. **Project Presentation-** *Applicant presentation and explanation of project*
  - a. **PUBLIC HEARINGS**
    - i. **Open Public Hearing.** *Comments are limited to five minutes per speaker; exception may be granted by the Chair for representative speakers and applicants*
    - ii. **Close Public Hearing**
3. **Commission Discussion –** *May ask for clarification from applicant, staff or public*
4. **Commission Decision - Options**
  - a. **Table the decision**
  - b. **Deny**
  - c. **Approve**
  - d. **Approve with conditions**
  - e. **Recommendation to Township Board**

**MINUTES**  
Cascade Charter Township  
Planning Commission  
Monday, March 16, 2020  
7:00 P.M.

**ARTICLE 1.** Chairman Rissi called the meeting to order at 7:00 P.M.  
Members Present: Slater, Krieter, Johnson, Moxley, and Rissi  
Members Absent: Noordyke, Katsma, Rapin, and Deering all excused absent.  
Others Present: Community Development Director, Steve Peterson and those listed on the sign in sheet.

**ARTICLE 2. Pledge of Allegiance.**

**ARTICLE 3. Approve the current Agenda.**

**Motion was made by Member Moxley to approve the Agenda. Supported by Member Krieter. Motion carried 5 to 0.**

**ARTICLE 4. Approve the Minutes of the February 24, 2020 Meeting.**

**Motion was made by Member Moxley to approve the minutes of March 5, 2018. Supported by Member Slater. Motion carried 5 to 0.**

**ARTICLE 5. Acknowledge visitors and those wishing to speak to non-agenda items.**

No visitors came forward.

**ARTICLE 6. Case #19-3567 Dennis Brinks  
Public Hearing**

**Property Address: 1596 Buttrick Ave**

**Requested Action:** The Applicant is requesting a special use permit to construct an accessory building over 832 sq ft.

Director Peterson stated that the building is 1,200 square feet, and there is a small bump out, covered porch area. The bump out area is being included in the square footage calculations used by The Township since there are posts on the plan, and it is not just an overhang. Altogether, the building will be just under 1,300 sq ft, and is about 17 feet tall measured to the midpoint. Director Peterson states that this requires a minimum 40-foot setback from the property line. The closest setback they have is 41 feet from the south property line. There is another building on the property that will be coming down once this one is built. Because the property is less than 3 acres, the Applicant is only allowed one accessory building.

Director Peterson describes the building as normal in size and appearance for this area. The Applicant has not indicated any outdoor lighting, but will be notified of outdoor lighting regulations, and that they can not run a business out of this building, or for living space.

Director Peterson recommends approval of the Applicants special use permit with the following conditions:

1. Lighting (if installed) will meet requirements.
2. The building cannot be used for living space or to run a business.
3. They have 30 days to remove the existing accessory building once the new one is complete.

Director Peterson stated that he had one resident come into the Township office that had questions about the building.

Chairman Sperla invited the Applicant to come forward with any comments.

The Applicant did not come forward.

**Motion was made by Member Johnson to open public hearing. Supported by Member Moxley. Motion carried 5 to 0.**

No members of the public wish to speak on this manner.

**Motion was made by Member Johnson to close public hearing. Supported by Member Moxley. Motion carried 5 to 0.**

**Motion was made by Member Johnson to approve the special use permit with the three conditions outlined by Director Peterson as stated above. Supported by Member Moxley. Motion carried 5 to 0.**

**ARTICLE 7. Case #20-3579**

**Property Address: 1370 Buttrick Ave**

**Requested Action:** Presentation of sketch plan to develop into 19 detached single-family site condominium project.

Director Peterson stated that the Applicant is proposing a new subdivision on the corner of Buttrick and Grand River Drive. This property is zoned R1 residential, and the Applicant is attempting to do a subdivision by right, and are not seeking any deviations from Township ordinances. Director Peterson states there have been a couple of subdivisions lately that have gone through this same process.

Director Peterson shows the preliminary plan to Members, and states that it does not have a lot of detail, and is more of an introduction to their project. The next stage is when the Applicant will need approvals from the Health Department, the Township Engineer, Kent County Road Commission, etc.

Member Slater asked Director Peterson if the Planning Commission has any say in the development being built. Director Peterson replied that the Applicant still needs to go the application process, and they are not asking for anything that needs Planning Commission discretion. So their produced plan will either meet requirements, or not.

Chairman Rissi invited the Applicant to come forward with comment.

Mr. Dave Contant (BDR Custom Homes, the Applicant, 5510 Cascade Road) came forward to represent BDR Custom Homes and present this project. Mr. Contant stated that the plan will be developed consistent with all Township ordinances and requirements, and will have significant open and green space along Buttrick Ave.

Member Moxley asked Mr. Contant if the pond on the plan will be a detention or retention pond, and if it will have standing water. Mr. Contant stated that yes, it will be a detention or retention pond, and yes, it will likely have standing water in it.

Member Johnson asked if there is any intention to have a walking path installed down Grand River Drive to connect to the current walking path to their private road. Mr. Contant stated that the plan does not show a path at this time, but that it may be considered in the future.

Member Johnson asked Director Peterson if he knows if Ada has any plans for a path on Grand River Drive, Director Peterson stated that he is unaware of any plans at this time.

Chairman Rissi asked Director Peterson if Cascade Township has plans for a pathway in that area. Director Peterson stated that the Township does not currently have plans for that area, and described that The Lanterns development recently extended the Township pathway to their entrance.

Member Krieter asked Mr. Contant if this will be a gated community, Mr. Contant stated that they would prefer not to put gates in at this time, but if the residents or association wants to at a later date, that would be up to them.

Member Johnson asked if the status of the airport across Buttrick from the property is known. Mr. Contant stated that the airport is active certain times of the year, and is seldom used. Member Johnson inquired about a notice included in the sales agreement of a home stating the area may be noise impacted. Director Peterson stated that for every residential development, that statement is required because of proximity to the Gerald R. Ford Airport.

Member Moxley asked Mr. Contant if there will be septic service. Mr. Contant stated that they plan to have sanitary sewer serviced by Ada Township. Member Moxley asked Mr. Contant if water will be wells, and that electric and communication will be underground, Mr. Contant confirmed that is accurate.

Chairman Rissi asked for clarification near lot 7 regarding a waterbody/watercourse area. Mr. Contant stated there is a wetland area at the back of lot 7, and that area may end up being included as part of the open space area once grading is complete.

There were no more questions, Chairman Rissi thanked Mr. Contant for his presentation.

**ARTICLE 8. Any other business**

None at this time.

**ARTICLE 9. Adjournment**

**Motion was made by Member Moxley to adjourn. Supported by Member Krieter.  
Motion carried 5 to 0. The meeting was adjourned at 7:20 p.m.**

Respectfully submitted,  
Brett Katsma, Secretary

TO: Cascade Charter Township Planning Commission  
FROM: Steve Peterson, Community Development Director  
REPORT DATE: May 13, 2020  
MEETING DATE: May 18, 2020  
CASE: #19-3527/Roundhill PUD Amendments – Sentinel Pointe

**GENERAL INFORMATION**

- A. **Applicant:** Finko LLC
- B. **Status of Applicant:** Owner
- C. **General Location:** East side of Thornhills just south of 28<sup>th</sup> St.
- D. **Requested Action:** Amend various parts of the Roundhill portion of the Sentinel Pointe P.U.D. including, but not limited to, modifying building envelopes and changes to the storm water system.
- E. **Existing Zoning on Subject Parcels:** PUD 55
- F. **Zoning on Adjoining Parcels:**  
N – PUD 36  
S –PUD 55  
E – R2  
W – PUD 38
- G. **Parcel Size:** Approximately 5.2 acre parcel
- H. **Existing Land Use on Subject Parcel:** residential
- I. **Adjacent Area Land Uses:**  
North - Library  
East - Residential  
South - Residential  
West - office

### **STAFF ANALYSIS**

1. The developer was last in front of the Planning Commission at the December 16, 2019 meeting. At that meeting, the Planning Commission tabled the matter and required the developer to address several items (see PC decision letter dated December 18, 2019) before the Planning Commission would take the matter up again.
2. The item that has taken the longest has been the new design for the retaining wall on the south side of the property. The Township engineer has had MTC review the retaining wall and provided comments as well.
3. The developer has now submitted all of the items required from the December 16, 2019 meeting. Your packet includes the following updated plans:
  - a. Landscaping plan.
  - b. Site plan showing setbacks.
  - c. Retaining wall on south side of the property.
  - d. They met with the neighbor, and their attorney, to discuss and develop the retaining wall design.
  - e. They have submitted their required timelines. The Township engineer has stated that these timelines are reasonable provided that the Township Board approves the project in June.
4. This matter has not been noticed for public hearing. The meeting on December 18 was the second public hearing and the Township Board will ultimately hold another public after you make your recommendation.
5. The applicant has received an extension for the SESC permit and it is now good until August of 2020.
6. The major changes to the site involve the civil engineering and the compliance with the stormwater ordinance. The review of the retaining wall was done by MTC and the rest of the civil engineering was reviewed by the Township Engineer Fishbeck. The redesigned site meets our storm water requirements, but the engineer has recommended several safeguards to ensure compliance with the plan.
7. We have already received the performance bond in the amount of \$100,000 and the \$8,200 landscape bond.
8. Due to the ongoing lawsuit in this matter, we will again will have our township attorney at the meeting should you have any legal questions or concerns.

9. The developer has made several mistakes during the development of this project. Most notably, these include constructing some units outside of the approved envelopes, not obtaining a building permit for the deck before construction and not adhering to the approved site engineering. As a result, any approval of the requested changes should include more protections to make sure these problems don't happen again.
10. If the required changes are not approved, there are a few items that will need to be addressed as follows:
  - a. The homes on units 3 and 8 that have been built beyond the approved envelope will have to be modified to comply.
  - b. Remove the deck on lot 8.
  - c. Restore the landscaping, retaining walls and detention pond to the original design.
  - d. Items such as gates, visitor parking, watermain looping and legal descriptions are not items usually reviewed by the Planning Commission.

You will need to decide what you would like restored to the original design and provide a timeframe for the corrections to be made. If you are inclined to deny any or all of the developer requested changes, I would suggest that you issue a tentative denial so that our attorney can construct a set of conditions for you to consider as a part of your motion.

11. You may also decide to table the matter if you feel that you need more information to make a decision.
12. Staff has prepared a PUD Ordinance for your review. Although you have not approved the revisions, we thought it was prudent given the pandemic to have a draft ordinance that you could review beforehand if you want to approve the plan. We have incorporated several comments from the developer as well as the attorney for the neighbor into the draft that is being presented.

**13. Standards**

Section 16.03 of the Zoning Ordinance requires that a Planned Unit Development (or an amendment thereto) must demonstrate that:

Standard	Staff Comment
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<p>Granting of the Planned Unit Development rezoning will result in a recognizable and substantial benefit to the ultimate users of the project and to the community, where such benefit would otherwise be unfeasible or unlikely to be achieved.</p>	<p>The property is already zoned PUD. The changes they are asking for are consistent with the master plan and are consistent with how we treat other residential developments.</p>
<p>In relation to underlying zoning, the proposed type and density of use shall not result in a material increase in the need for public services, facilities and utilities, and shall not place a material burden upon the subject or surrounding land or property owners and occupants or the natural environment</p>	<p>This amendment would not result in a material increase in the need for public services.</p>
<p>The proposed development shall be compatible with the General Development Plan of the Township, and shall be consistent with the intent and spirit of this Chapter</p>	<p>The amendments are consistent with the master plan. The amendments would not substantially change the overall plan that permitted the subdivision.</p>
<p>In relation to underlying zoning, the proposed development shall not result in an unreasonable negative economic impact upon surrounding properties</p>	<p>The new site engineering and revised building envelopes would not result in an unreasonable negative economic impact.</p>
<p>The proposed development shall contain at least as much green area and usable open space as would otherwise be required by this Ordinance with respect to the most dominant use in the development</p>	<p>No change from the original approval.</p>
<p>The proposed development shall be under single ownership or control such that there is a single person or entity having responsibility for completing the project in conformity with this Ordinance. This provision shall not prohibit a transfer of ownership or control, upon due notice to the Planning Director of the Township</p>	<p>Both owners have requested the changes</p>

If approved, you may forward a recommendation the to the Township Board with any changes to the PUD ordinance or have the PUD Ordinance come back for your review at the next meeting so that you can make a

recommendation to the Township Board. The Township Board will hold an additional public hearing to make a final decision.

Attachments: updated site plan dated 4/10/20  
PC decision letter dated December 18, 2019  
Township Engineering letter dated May 12, 2020  
MTC review letter  
Comments from Mr. Rhode's attorney  
Comments from Tom Guisti's attorney

**Steve**

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**From:** Reinhardt, Andrew <areinhardt@kentcountyroads.net>  
**Sent:** Monday, May 4, 2020 1:42 PM  
**To:** Steve  
**Cc:** Beck, David  
**Subject:** RE: SESC permit Roundhill

Steve,

Yes, the permit has been extended until August.

Thank you



**KCRC**

**Andrew Reinhardt**  
*Engineering Inspector*  
o. (616) 242.6901 ext. 6975  
[areinhardt@kentcountyroads.net](mailto:areinhardt@kentcountyroads.net)

**Kent County Road Commission**  
1500 Scribner Avenue NW, Grand Rapids, MI 49504  
[kentcountyroads.net](http://kentcountyroads.net)

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**From:** Steve [mailto:Steve@cascadetwp.com]  
**Sent:** Monday, May 4, 2020 1:17 PM  
**To:** Reinhardt, Andrew  
**Cc:** Beck, David  
**Subject:** RE: SESC permit Roundhill

Any updates on the status of the SESC permit

**From:** Reinhardt, Andrew <areinhardt@kentcountyroads.net>  
**Sent:** Friday, March 20, 2020 6:32 AM  
**To:** Steve <Steve@cascadetwp.com>  
**Cc:** Beck, David <dbeck@kentcountyroads.net>  
**Subject:** RE: SESC permit Roundhill

Steve,

## **NARRATIVE SUMMARY**

*Location:* Round Hill is a single-family PUD in Section 16, Cascade Township, Kent County, Michigan. The PUD covers approximately 5.24 acres.

*Terrain:* Existing elevations on this property vary from an existing high point of 758 feet near the northeast corner of the site to an existing low elevation of 696 feet near the southeast corner of the site.

*Soils:* Soils on the site consist mostly of sandy clay.

*Current Drainage:* The east approximately 1/3 of the site sheet flows toward the southeast corner of the site. Approximately 1.6 acres of off-site area and approximately 1.8 acres within the north and west portion of the site are collected by existing storm sewer within the west portion of the site. This storm sewer currently discharges to enclosed storm sewer within Thornhills Avenue. Approximately 1.73 acres within the south and west portion of the site sheet flows to the existing low spot on the property and flows onto the adjoining parcel to the south, toward the Thornapple Creek.

*Retention Provisions:* Stormwater runoff will be collected via storm sewer and discharged to a retention basin constructed within the existing low spot of the site. The retention basin has been sized for the 100-year storm event. Two (2) soil samples collected from this low area provided an average infiltration rate of 6.9 in/hr. A conservative 3 in/hr infiltration rate was utilized for the stormwater calculations. A spillway with a 100-year capacity was provided along the south side of the retention basin.

A storage volume of 28,206 cu. ft. is required for the 100-year storm event. A storage volume of 31,280 cu. ft. is provided at an elevation equal to the crest of the spillway. The overall water depth within the basin in a 100' year storm event is calculated at 5.00'.

An area of 4,677 sq. ft., representing the area of the retention basin 2' above the bottom of the basin, was utilized as the effective infiltration area. This area conservatively accounts for sidewall infiltration of the basin.

*Storm Sewer Design Standard:* The storm sewer system for the project is designed to collect the 10-year storm runoff from the front yards, roads, roofs, and rear yards. Design flows are calculated with the rational method. Manning's equation is used to determine a hydraulic grade elevation in the system.

*Off-site Flow:* Approximately 0.624 acres of off-site area flows onto the site. The stormwater runoff from this adjoining property is collected within a swale and catch basins located along the north property line. This off-site stormwater discharged into existing storm sewer within the west portion of the site. This existing storm has historically collected this off-site runoff as well as runoff from the central portion of the site. The storm sewer collecting the off-site flow has been appropriately sized to convey the runoff from a 25-year storm event.



Round Hill Condominiums

Developed Rational Coefficient	0.55	
Drainage Area	3.802	ac
Permeability	3.00	in/hr
Infiltration Area	4677	sft
Infiltration Rate	0.325	cfs

T (min)	T (hrs)	I(100) (in/hr)	Q <sub>in</sub> (cfs)	Q <sub>out</sub> (cfs)	Q <sub>in</sub> - Q <sub>out</sub> (cfs)	Storage (cft)
10	0.17	7.74	16.19	0.325	15.86	9516
20	0.33	5.77	12.07	0.325	11.74	14089
30	0.50	4.56	9.54	0.325	9.21	16579
40	0.67	3.80	7.95	0.325	7.62	18291
50	0.83	3.30	6.90	0.325	6.58	19727
60	1.00	2.89	6.04	0.325	5.72	20586
75	1.25	2.50	5.23	0.325	4.90	22062
90	1.50	2.20	4.60	0.325	4.28	23087
105	1.75	1.95	4.08	0.325	3.75	23642
120	2.00	1.78	3.72	0.325	3.40	24460
150	2.50	1.50	3.14	0.325	2.81	25305
180	3.00	1.31	2.74	0.325	2.41	26075
240	4.00	1.05	2.20	0.325	1.87	26937
300	5.00	0.89	1.86	0.325	1.54	27649
360	6.00	0.77	1.61	0.325	1.29	27759
420	7.00	0.69	1.44	0.325	1.12	28170
480	8.00	0.62	1.30	0.325	0.97	27979
540	9.00	0.57	1.19	0.325	0.87	28088
600	10.00	0.52	1.09	0.325	0.76	27445
660	11.00	0.48	1.00	0.325	0.68	26878
720	12.00	0.44	0.92	0.325	0.60	25708
780	13.00	0.43	0.90	0.325	0.57	26871
840	14.00	0.41	0.86	0.325	0.53	26830
900	15.00	0.40	0.84	0.325	0.51	27618
960	16.00	0.38	0.79	0.325	0.47	27050
1020	17.00	0.37	0.77	0.325	0.45	27461
1080	18.00	0.35	0.73	0.325	0.41	26366
1140	19.00	0.34	0.71	0.325	0.39	26401
1200	20.00	0.32	0.67	0.325	0.34	24779
1260	21.00	0.31	0.65	0.325	0.32	24437
1320	22.00	0.29	0.61	0.325	0.28	22288
1380	23.00	0.28	0.59	0.325	0.26	21570
450	7.50	0.655	1.37	0.325	1.04	28206

Round Hill Condos				
STAGE STORAGE TABLE				
ELEV	AREA (sq. ft.)	DEPTH (ft)	INC. VOL. (cu. ft.)	TOTAL VOL. (cu. ft.)
698.00	2341.00	0.00	0.00	0.00
699.00	3481.00	1.00	2911.00	2911.00
700.00	4677.00	1.00	4079.00	6990.00
701.00	5930.00	1.00	5303.50	12293.50
702.00	7240.00	1.00	6585.00	18878.50
703.00	8606.00	1.00	7923.00	26801.50
703.50	9310.00	0.50	4479.00	31280.50

Emergency Spillway

I(100)	6.64
C(Dev)	0.65
T <sub>c</sub>	15
Area	3.802
Q	16.41

Design Equation for Rectangular Weir

$$Q = CLH^{3/2}$$

C = 3.3 for sharp crested weirs (e.g. sheet piling)

C = 3.0 for broad crested weirs (e.g. earth berm)

Q	C	L	H	
16.971	3	16	0.5	Calculate Q
16.41	3	16	0.489	Calculate H
16.41	3	15.471	0.5	Calculate L

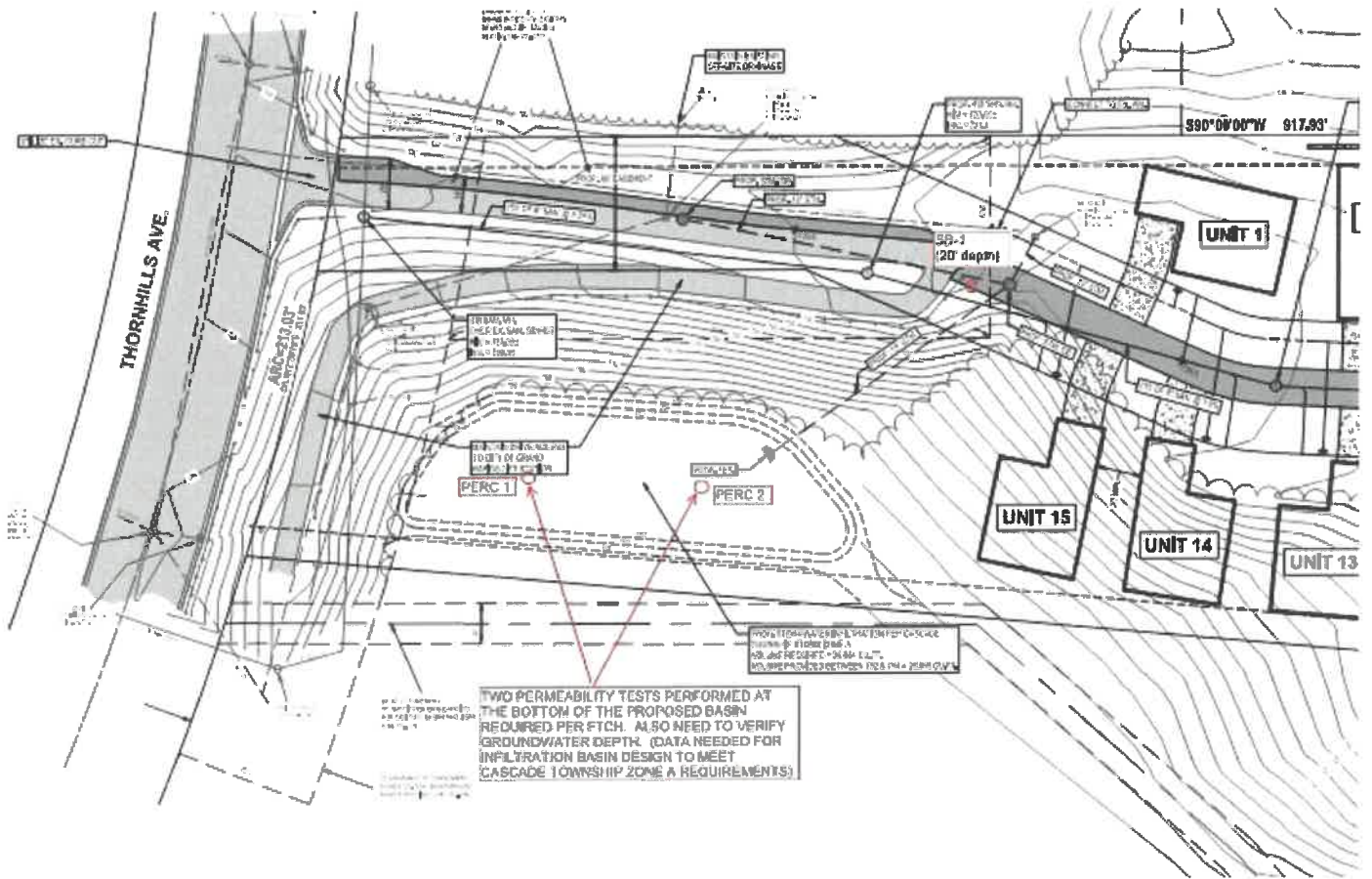
Hula Engineering

11/20/2019

Rev 04 10 2020

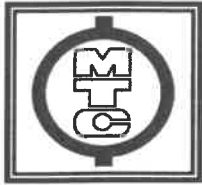
Round Hill Condos  
 As-built  
 10/29/2019  
 Rev 02/27/2020

From	To	New Acres Added	Weighted C	Acum. Acres	Accum. Weighted C	Time (min.)	Intensity (in./hr.)	"D" (cfs) Accum.	Q <sub>cap</sub> (cfs)	Grade (ft./ft.)	K (Q/s <sup>1/2</sup> )	Size (in.)	Velocity (fps)	Length (ft.)	Travel Time (min.)	Upstream Invert	Downstream Invert	Run Number
107	106	0.161	0.50	0.161	0.50	10	4.44	0.36	2.89	0.0056	38.70	12	3.39	160	0.8	724.65	723.76	A7
106	105	0.234	0.51	0.395	0.51	11	4.44	0.89	0.97	0.0006	38.70	12	1.14	111	1.6	723.71	723.64	A6
105	104	0.082	0.76	0.477	0.55	12	4.12	1.08	1.37	0.0013	38.70	12	1.61	88	0.9	723.64	723.53	A5
104	103	0.129	0.63	0.606	0.57	13	4.12	1.41	2.29	0.0035	38.70	12	2.70	74	0.5	723.34	723.08	A4
103	102	0.114	0.76	0.72	0.60	14	4.12	1.77	2.90	0.0056	38.70	12	3.41	82	0.4	722.99	722.53	A3
102	101	0.045	0.72	0.765	0.60	14	4.00	1.85	2.33	0.0036	38.70	12	2.73	72	0.4	722.46	722.20	A2
		0	0.00	0.765	0.60	10	1.00	0.46	3.87	0.0100	38.70	12	4.55	0	0.0			
114	113	0.197	0.37	0.119	0.61	10	4.44	0.32	4.38	0.0128	38.70	12	5.15	118	0.4	739.53	738.02	A14
113	112	0.2	0.44	0.319	0.50	10	4.44	0.71	3.87	0.0100	38.70	12	4.55	88	0.3	737.97	737.09	A13
112	111	0.161	0.55	0.48	0.52	11	4.27	1.07	3.72	0.0092	38.70	12	4.37	93	0.4	737.03	736.17	A12
111	110	0.153	0.76	0.633	0.58	11	4.27	1.56	5.62	0.0211	38.70	12	6.60	112	0.3	735.71	733.35	A11
110	108	0.964	0.62	1.597	0.60	11	4.27	4.11	6.51	0.0283	38.70	12	7.66	102	0.2	733.12	730.23	A10
109	108	0.262	0.59	1.859	0.60	12	4.12	4.84	3.38	0.0076	38.70	12	3.98	127	0.5	730.87	729.90	A9
108	101	0.29	0.68	2.149	0.61	12	4.12	5.42	9.89	0.0654	38.70	12	11.63	114	0.2	729.55	722.10	A8
		0	0.00	2.149	0.61	10	1.00	1.32	3.87	0.0100	38.70	12	4.55	100	0.0			
101	100	3.728	0.56	3.766	0.55	13	4.00	8.35	18.60	0.2361	38.70	12	22.10	100	0.1	721.99	698.38	A1
		0	0.00	3.766	0.55	13	1.00	2.09	3.87	0.0100	38.70	12	4.55	100	0.0			
109	108	0.262	0.59	0.264	0.54	10	4.44	0.63	3.87	0.0100	38.70	12	4.55	102	0.4	730.87	729.90	A9
		0	1.00	0.264	0.54	10	1.00	0.14	3.87	0.0100	38.70	12	4.55	100	0.4			
		0	1.00	0.264	0.54	11	1.00	0.14	3.87	0.0100	38.70	12	4.55	100	0.4			
206	205	0.141	0.22	0.141	0.22	10	5.58	0.17	9.71	0.0630	38.70	12	11.42	77	0.1	740.84	735.99	B5
205	204	0.157	0.22	0.298	0.22	10	5.58	0.37	4.75	0.0151	38.70	12	5.58	87	0.3	735.99	734.68	B4
204	203	0.241	0.22	0.539	0.22	10	5.58	0.66	1.90	0.0024	38.70	12	2.23	58	0.4	733.31	733.17	B3
203	202	0.084	0.22	0.623	0.22	11	5.37	0.74	4.53	0.0137	38.70	12	5.32	84	0.3	733.09	731.94	B2
202	207	0	1.00	0.623	0.22	11	5.37	0.74	9.70	0.0628	38.70	12	11.40	162	0.2	730.57	720.40	B1
207	208	0	1.00	0.623	0.22	11	5.37	0.74	6.73	0.0302	38.70	12	7.91	44	0.1	720.30	718.97	C1
208	2050	0.249	0.83	0.872	0.39	11	5.37	1.85	10.23	0.0698	38.70	12	12.02	128	0.2	719.86	710.92	Exist
2050	Outlet	0.204	0.49	1.076	0.41	12	5.19	2.30	4.41	0.0130	38.70	12	5.19	100	0.3	710.92	709.62	Outlet
		0	1.00	1.076	0.41	12	1.00	0.44	3.87	0.0100	38.70	12	4.55	100	0.4			
		0	1.00	1.076	0.41	12	1.00	0.44	3.87	0.0100	38.70	12	4.55	100	0.4			
		0	1.00	1.076	0.41	13			3.87	0.0100	38.70	12	4.55					



TWO PERMEABILITY TESTS PERFORMED AT THE BOTTOM OF THE PROPOSED BASIN REQUIRED PER FTCH. ALSO NEED TO VERIFY GROUNDWATER DEPTH. (DATA NEEDED FOR INFILTRATION BASIN DESIGN TO MEET CASCADE TOWNSHIP ZONE A REQUIREMENTS)

PROPOSED INFILTRATION BASIN FOR CASCADE TOWNSHIP ZONE A  
 100% PERMEABILITY = 0.001 CM/SEC  
 100% PERMEABILITY = 0.001 CM/SEC



**Materials  
Testing  
Consultants**

www.mtc-test.com • 800.968.8378

Project No.: 141577  
 Test No.: 1  
 Date: 03/12/15

Project: Proposed Round Hill Development  
 Client: RJF Ventures  
 Contractor: \_\_\_\_\_  
 Engineer/Architect: \_\_\_\_\_

**DOUBLE RING INFILTROMETER TEST - SEMCOG METHOD**

PRE-TEST SOAKING DURATION (MIN): 60  
 INNER DIAMETER (IN): 3  
 OUTER DIAMETER (IN): 6

GROUND SURFACE ELEV. (FT): 0  
 TEST ELEV. (FT): -2.75  
 GROUNDWATER ELEV. (FT): NA

SOIL DESCRIPTION: Dark brown poorly graded SAND with silt (SP-SM)

TABLE 1: TEST DATA

TIME (MIN:SEC)	WATER DROP (IN)	TIME INTERVAL (MIN)	PERCOLATION RATE* (IN/HR)
0:00			
10:00	3/4	10	4.5
20:00	3/4	10	4.5
30:00	3/4	10	4.5
40:00	1	10	6.0

REMARKS:

TESTED BY: T. Hanna

REVIEWED BY: A. Vanderhill

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**Materials  
Testing  
Consultants**

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Project No.: 141577  
 Test No.: 2  
 Date: 03/12/15

Project: Proposed Round Hill Development  
 Client: RJF Ventures  
 Contractor: \_\_\_\_\_  
 Engineer/Architect: \_\_\_\_\_

**DOUBLE RING INFILTROMETER TEST - SEMCOG METHOD**

PRE-TEST SOAKING DURATION (MIN): 60  
 INNER DIAMETER (IN): 3  
 OUTER DIAMETER (IN): 6.0

GROUND SURFACE ELEV. (FT): 0  
 TEST ELEV. (FT): -3.0  
 GROUNDWATER ELEV. (FT): NA

SOIL DESCRIPTION: Brown poorly graded SAND with silt (SP-SM)

TABLE 1: TEST DATA

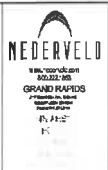
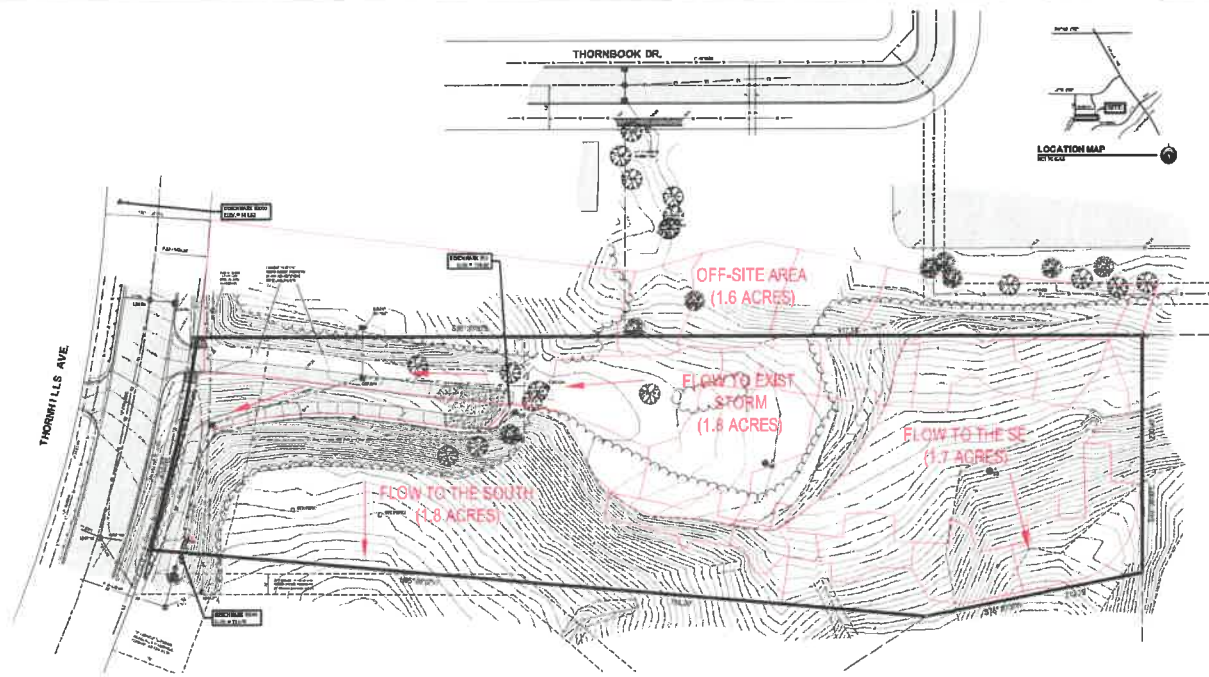
TIME (MIN:SEC)	WATER DROP (IN)	TIME INTERVAL (MIN)	PERCOLATION RATE* (IN/HR)
0:00			
10:00	1.0	10	6
20:00	2.0	10	12
30:00	1.5	10	9
40:00	1.5	10	9
50:00	1.5	10	9
60:00	1.5	10	9

REMARKS:

TESTED BY: T. Hanna

REVIEWED BY: A. Vanderhill

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PREPARED FOR:  
 R.F. Smith, Inc.  
 10000 W. 100th St.  
 Overland Park, MO 66204

REVISIONS:

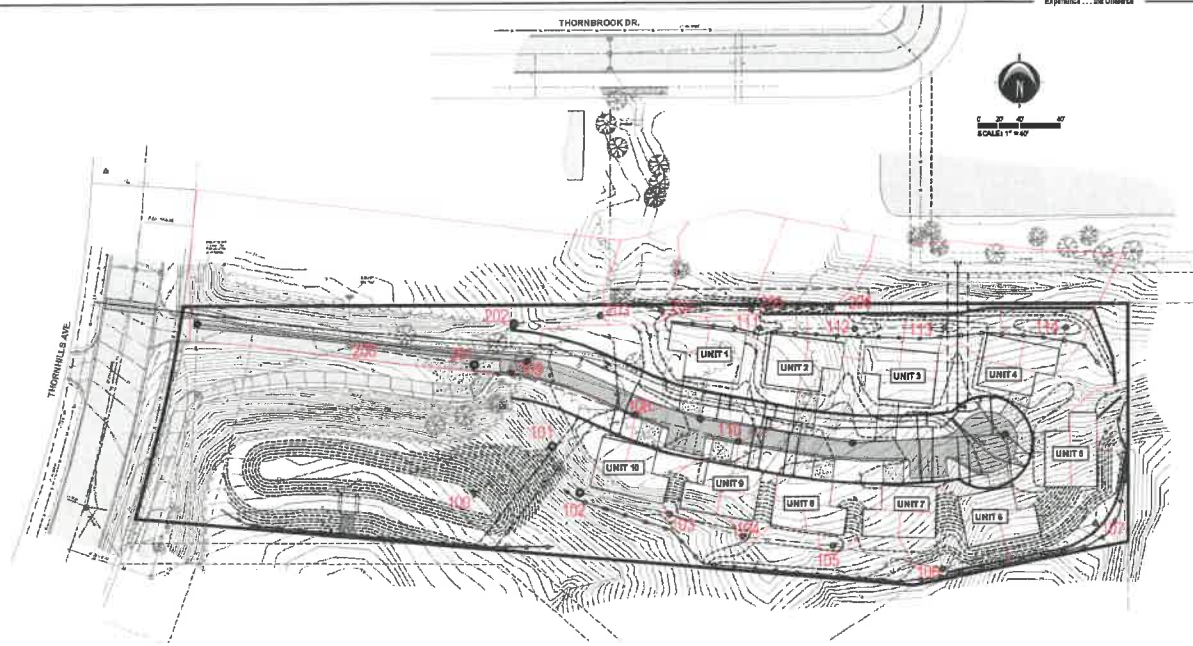
NO.	DATE	DESCRIPTION
1	08/11/11	ISSUED FOR PERMITS
2	08/11/11	ISSUED FOR PERMITS
3	08/11/11	ISSUED FOR PERMITS
4	08/11/11	ISSUED FOR PERMITS
5	08/11/11	ISSUED FOR PERMITS
6	08/11/11	ISSUED FOR PERMITS
7	08/11/11	ISSUED FOR PERMITS
8	08/11/11	ISSUED FOR PERMITS
9	08/11/11	ISSUED FOR PERMITS
10	08/11/11	ISSUED FOR PERMITS

**ROUND HILL**  
 Existing Drainage Map  
 2007/11/14  
 PROJECT NUMBER: 14491325

STAMP:

PROJECT NO:  
 14491325  
 SHEET NO:  
**Exist**  
 SHEET: 1 OF 1





**NEDEVELD**  
 1000 W. 100th St.  
 Suite 100  
 Grand Rapids, MI 49508  
 Phone: 616.221.1111  
 Fax: 616.221.1112  
 www.nedeveld.com

**PREPARED FOR:**  
 RFP No. 14-000  
 P. O. Box 407  
 Grand Rapids, MI 49508

**REVISIONS:**

No.	Description	Date
1	Initial Design	08/14/14
2	Revised Design	08/21/14
3	Final Design	09/02/14

**ROUND HILL**  
**Proposed Drainage Map**  
 PART OF THE NORTHWEST 1/4 OF SECTION 16, T34N R10E S16E SW  
 GRAND RAPIDS, MI CO. 16-00000-00000

**STAMP:**

**PROJECT NO:**  
14492326

**SHEET NO:**  
**Propo**

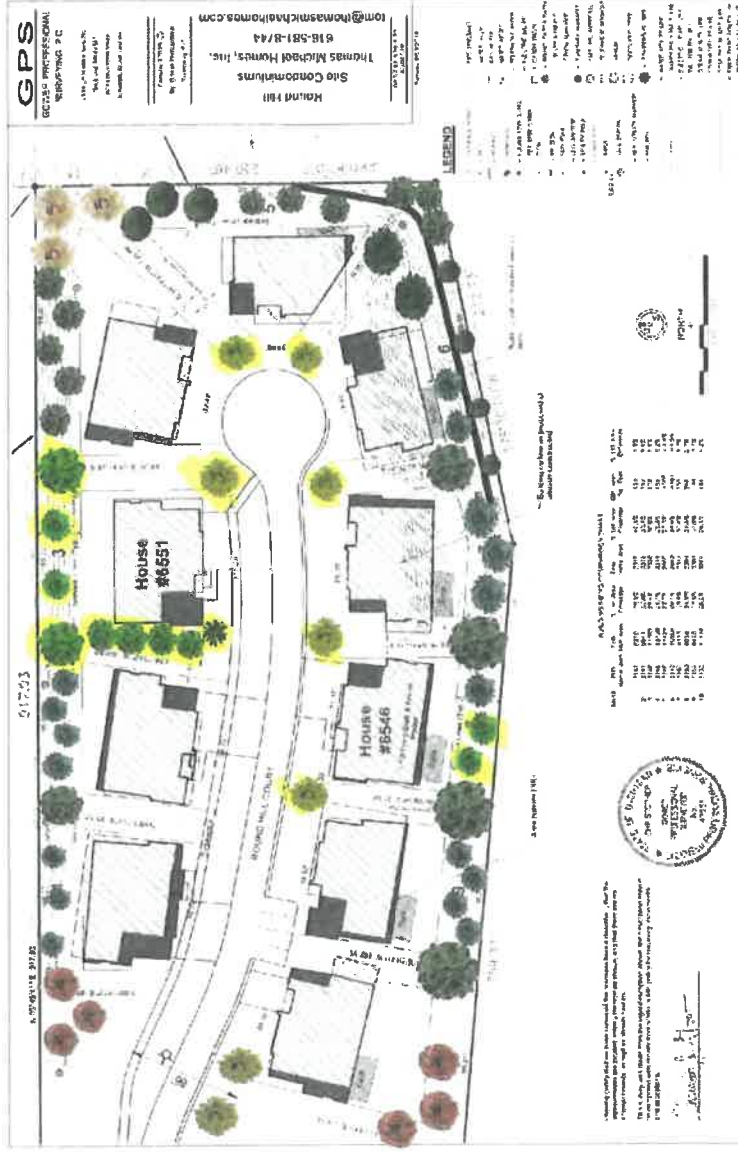
**SHEET:** 1 OF 1

**811** **When you dig below, CALL before you dig.**

811 is a national emergency number for utility services. It is a free service that allows you to report a problem with a utility or to request a service. It is available 24 hours a day, 7 days a week. To learn more about 811, visit www.811.org.



COMMON NAME	QTY	SIZE
TREE, DECIDUOUS		
BIRCH, EUROPEAN WHITE	7	12"
DOGWOOD, PINK FLOWERING	2	12"
MAPLE, ARMSTRONG	8	12"
MAPLE, COMMENORATION	6	12"
OAK, NORTHERN RED	3	12"
TREE, EVERGREEN		
BLUE SPRUCE	2	110 GAL
HEMLOCK, CANADIAN	7	110 GAL
SPRUCE, BLACK HILLS 1	1	12"
SPRUCE, NORWAY	15	110 GAL



**Already planted**

Revision #:

Date: 1/27/2020

Scale:

1/8" = 1'

Landscape Plan:

Round Hill Private

Landscape Design by: Dan Allchin

Scholten Landscape





## Analysis of Redi Rock wall

### Input data

#### Project

Task : Retaining Wall  
Part : 1  
Description : Section 15  
Customer : Tom Giusti  
Author : Daniel L Hula PE  
Date : 3/20/2020  
Project ID : Round Hill

#### Settings

USA - Safety factor

#### Wall analysis

Active earth pressure calculation : Coulomb  
Passive earth pressure calculation : Mazindrani (Rankine)  
Earthquake analysis : Mononobe-Okabe  
Shape of earth wedge : Calculate as skew  
Allowable eccentricity : 0.333  
Internal stability : Standard - straight slip surface  
Reduction coeff. of contact first block - base : 1.00  
Verification methodology : Safety factors (ASD)

Safety factors			
Permanent design situation			
Safety factor for overturning :	$SF_o =$	1.50	[-]
Safety factor for sliding resistance :	$SF_s =$	1.50	[-]
Safety factor for bearing capacity :	$SF_b =$	2.00	[-]
Safety factor for sliding along geo-reinforcement :	$SF_{sr} =$	1.50	[-]
Safety factor for geo-reinforcement strength :	$SF_{st} =$	1.50	[-]
Safety factor for pull out resistance of geo-reinf. :	$SF_{po} =$	1.50	[-]
Safety factor for connection strength :	$SF_{con} =$	1.50	[-]

#### Geometry

No. group	Description	Count	Setback s [in]
1	Block 28	4	1.62
2	Top block 28	1	-

#### Base




##### Geometry

Upper setback  $a_1 = 1.00$  ft  
Lower setback  $a_2 = 1.00$  ft  
Height  $h = 1.00$  ft  
Width  $b = 4.00$  ft

##### Material

Soil creating foundation - Well graded gravel (GW), medium dense

### Basic soil parameters

No.	Name	Pattern	$\phi_{ef}$ [°]	$C_{ef}$ [psf]	$\gamma$ [pcf]	$\gamma_{su}$ [pcf]	$\delta$ [°]
1	Well graded gravel (GW), medium dense		38.50	0.0	133.00	70.50	38.00
2	Clay with low or medium plasticity (CL, CI), stiff consistency, $S_r < 0.8$		22.00	250.0	135.00	72.50	20.00
3	Sand (SP)		32.00	0.0	120.00	57.50	24.00

All soils are considered as cohesionless for at rest pressure analysis.

### Soil parameters

#### Well graded gravel (GW), medium dense

Unit weight :  $\gamma = 133.0$  pcf  
 Stress-state : effective  
 Angle of internal friction :  $\phi_{ef} = 38.50^\circ$   
 Cohesion of soil :  $C_{ef} = 0.0$  psf  
 Angle of friction struc.-soil :  $\delta = 38.00^\circ$   
 Saturated unit weight :  $\gamma_{sat} = 133.0$  pcf

#### Clay with low or medium plasticity (CL, CI), stiff consistency, $S_r < 0.8$

Unit weight :  $\gamma = 135.0$  pcf  
 Stress-state : effective  
 Angle of internal friction :  $\phi_{ef} = 22.00^\circ$   
 Cohesion of soil :  $C_{ef} = 250.0$  psf  
 Angle of friction struc.-soil :  $\delta = 20.00^\circ$   
 Saturated unit weight :  $\gamma_{sat} = 135.0$  pcf

#### Sand (SP)

Unit weight :  $\gamma = 120.0$  pcf  
 Stress-state : effective  
 Angle of internal friction :  $\phi_{ef} = 32.00^\circ$   
 Cohesion of soil :  $C_{ef} = 0.0$  psf  
 Angle of friction struc.-soil :  $\delta = 24.00^\circ$   
 Saturated unit weight :  $\gamma_{sat} = 120.0$  pcf

### Backfill

Backfill is not considered.

### Terrain profile

No.	Coordinates x [ft]	Depth z [ft]
1	0.00	0.00
2	6.00	0.50
3	11.00	0.00
4	23.00	-4.00
5	24.00	-4.00

Origin [0,0] is located in upper right edge of construction.  
Positive coordinate +z has downward direction.

### Input surface surcharges

No.	Surcharge		Action	Mag.1 [lb/ft <sup>2</sup> ]	Mag.2 [lb/ft <sup>2</sup> ]	Ord.x x [ft]	Length l [ft]	Depth z [ft]
	new	change						
1	Yes		permanent	100.0				on terrain

### Verification No. 1

#### Forces acting on construction

Name	F <sub>hor</sub> [lb/ft]	App.Pt. z [ft]	F <sub>vert</sub> [lb/ft]	App.Pt. x [ft]	Design coefficient
Weight - wall	0.0	-3.75	2540.1	2.34	1.000
Weight - earth wedge	0.0	-1.32	38.5	3.58	1.000
Weight - earth wedge	0.0	-8.25	74.9	2.81	1.000
Active pressure	856.3	-3.01	694.1	3.70	1.000
Surch.1 - surface	210.3	-4.00	141.6	3.74	1.000

#### Verification of complete wall

##### Check for overturning stability

Resisting moment  $M_{res} = 9382.9$  lbfft/ft

Overturning moment  $M_{ovr} = 3415.8$  lbfft/ft

Safety factor = 2.75 > 1.50

Wall for overturning is **SATISFACTORY**

##### Check for slip

Resisting horizontal force  $H_{res} = 2264.83$  lbf/ft

Active horizontal force  $H_{act} = 1066.64$  lbf/ft

Safety factor = 2.12 > 1.50

Wall for slip is **SATISFACTORY**

**Overall check - WALL is SATISFACTORY**

### Dimensioning No. 1

#### Forces acting on construction

Name	F <sub>hor</sub> [lb/ft]	App.Pt. z [ft]	F <sub>vert</sub> [lb/ft]	App.Pt. x [ft]	Design coefficient
Weight - wall	0.0	-3.61	2008.1	1.43	1.000
Weight - earth wedge	0.0	-7.25	74.9	1.81	1.000
Active pressure	701.7	-2.47	244.1	2.56	1.000
Surch.1 - surface	162.9	-3.90	70.6	2.69	1.000

#### Verification of block No. 1

##### Check for overturning stability

Resisting moment  $M_{res} = 3811.8$  lbfft/ft

Overturning moment  $M_{ovr} = 2365.5$  lbfft/ft

Safety factor = 1.61 > 1.50

Joint for overturning stability is **SATISFACTORY**

**Check for slip**

Resisting horizontal force  $H_{res} = 1907.24$  lbf/ft

Active horizontal force  $H_{act} = 864.60$  lbf/ft

Safety factor = 2.21 > 1.50

Joint for verification is **SATISFACTORY**

**Bearing capacity of foundation soil**

**Design load acting at the center of footing bottom**

No.	Moment [lbfft/ft]	Norm. force [lbf/ft]	Shear Force [lbf/ft]	Eccentricity [-]	Stress [psf]
1	1011.5	3489.32	1066.64	0.072	1020.2

**Service load acting at the center of footing bottom**

No.	Moment [lbfft/ft]	Norm. force [lbf/ft]	Shear Force [lbf/ft]
1	1011.5	3489.32	1066.64

**Verification of foundation soil**

Stress in the footing bottom : trapezoid

**Eccentricity verification**

Max. eccentricity of normal force  $e = 0.072$

Maximum allowable eccentricity  $e_{atw} = 0.333$

Eccentricity of the normal force is **SATISFACTORY**

**Verification of bearing capacity**

Max. stress at footing bottom  $\sigma = 1251.7$  psf

Bearing capacity of foundation soil  $R_d = 4000.0$  psf

Safety factor = 3.20 > 2.00

Bearing capacity of foundation soil is **SATISFACTORY**

**Overall verification - bearing capacity of found. soil is SATISFACTORY**

## Analysis of Redi Rock wall

### Input data

#### Project

Task : Retaining Wall  
Part : 1  
Description : Section 15  
Customer : Tom Giusti  
Author : Daniel L Hula PE  
Date : 3/20/2020  
Project ID : Round Hill

#### Settings

USA - Safety factor

#### Wall analysis

Active earth pressure calculation : Coulomb  
Passive earth pressure calculation : Mazindrani (Rankine)  
Earthquake analysis : Mononobe-Okabe  
Shape of earth wedge : Calculate as skew  
Allowable eccentricity : 0.333  
Internal stability : Standard - straight slip surface  
Reduction coeff. of contact first block - base : 1.00  
Verification methodology : Safety factors (ASD)

Safety factors			
Permanent design situation			
Safety factor for overturning :	SF <sub>o</sub> =	1.50	[-]
Safety factor for sliding resistance :	SF <sub>s</sub> =	1.50	[-]
Safety factor for bearing capacity :	SF <sub>b</sub> =	2.00	[-]
Safety factor for sliding along geo-reinforcement :	SF <sub>sr</sub> =	1.50	[-]
Safety factor for geo-reinforcement strength :	SF <sub>st</sub> =	1.50	[-]
Safety factor for pull out resistance of geo-reinf. :	SF <sub>po</sub> =	1.50	[-]
Safety factor for connection strength :	SF <sub>con</sub> =	1.50	[-]

#### Geometry

No. group	Description	Count	Setback s [in]
1	Block 28	4	1.62
2	Top block 28	1	-

#### Base




##### Geometry

Upper setback  $a_1 = 1.00$  ft  
Lower setback  $a_2 = 1.00$  ft  
Height  $h = 1.00$  ft  
Width  $b = 4.00$  ft

##### Material

Soil creating foundation - Well graded gravel (GW), medium dense

**Basic soil parameters**

No.	Name	Pattern	$\varphi_{ef}$ [°]	$c_{ef}$ [psf]	$\gamma$ [pcf]	$\gamma_{su}$ [pcf]	$\delta$ [°]
1	Well graded gravel (GW), medium dense		38.50	0.0	133.00	70.50	26.00
2	Clay with low or medium plasticity (CL, CI), stiff consistency, $S_r < 0.8$		22.00	250.0	135.00	72.50	20.00
3	Sand (SP)		32.00	0.0	120.00	57.50	24.00

All soils are considered as cohesionless for at rest pressure analysis.

**Soil parameters**

**Well graded gravel (GW), medium dense**

Unit weight :  $\gamma = 133.0$  pcf  
 Stress-state : effective  
 Angle of internal friction :  $\varphi_{ef} = 38.50^\circ$   
 Cohesion of soil :  $c_{ef} = 0.0$  psf  
 Angle of friction struc.-soil :  $\delta = 26.00^\circ$   
 Saturated unit weight :  $\gamma_{sat} = 133.0$  pcf

**Clay with low or medium plasticity (CL, CI), stiff consistency,  $S_r < 0.8$**

Unit weight :  $\gamma = 135.0$  pcf  
 Stress-state : effective  
 Angle of internal friction :  $\varphi_{ef} = 22.00^\circ$   
 Cohesion of soil :  $c_{ef} = 250.0$  psf  
 Angle of friction struc.-soil :  $\delta = 20.00^\circ$   
 Saturated unit weight :  $\gamma_{sat} = 135.0$  pcf

**Sand (SP)**

Unit weight :  $\gamma = 120.0$  pcf  
 Stress-state : effective  
 Angle of internal friction :  $\varphi_{ef} = 32.00^\circ$   
 Cohesion of soil :  $c_{ef} = 0.0$  psf  
 Angle of friction struc.-soil :  $\delta = 24.00^\circ$   
 Saturated unit weight :  $\gamma_{sat} = 120.0$  pcf

**Backfill**

Backfill is not considered.

**Terrain profile**

No.	Coordinates x [ft]	Depth z [ft]
1	0.00	0.00
2	6.00	0.50
3	11.00	0.00
4	23.00	-4.00
5	24.00	-4.00

Origin [0,0] is located in upper right edge of construction.  
Positive coordinate +z has downward direction.

### Input surface surcharges

No.	Surcharge		Action	Mag.1 [lb/ft <sup>2</sup> ]	Mag.2 [lb/ft <sup>2</sup> ]	Ord.x x [ft]	Length l [ft]	Depth z [ft]
	new	change						
1	Yes		permanent	100.0				on terrain

### Verification No. 1

#### Forces acting on construction

Name	F <sub>hor</sub> [lb/ft]	App.Pt. z [ft]	F <sub>vert</sub> [lb/ft]	App.Pt. x [ft]	Design coefficient
Weight - wall	0.0	-3.75	2540.1	2.34	1.000
Weight - earth wedge	0.0	-1.32	38.5	3.58	1.000
Weight - earth wedge	0.0	-8.25	74.9	2.81	1.000
Active pressure	856.3	-3.01	694.1	3.70	1.000
Surch.1 - surface	210.3	-4.00	141.6	3.74	1.000

#### Verification of complete wall

##### Check for overturning stability

Resisting moment  $M_{res} = 9382.9$  lbfft/ft

Overturning moment  $M_{ovr} = 3415.8$  lbfft/ft

Safety factor = 2.75 > 1.50

Wall for overturning is **SATISFACTORY**

##### Check for slip

Resisting horizontal force  $H_{res} = 2264.83$  lb/ft

Active horizontal force  $H_{act} = 1066.64$  lb/ft

Safety factor = 2.12 > 1.50

Wall for slip is **SATISFACTORY**

Overall check - WALL is **SATISFACTORY**

### Dimensioning No. 1

#### Forces acting on construction

Name	F <sub>hor</sub> [lb/ft]	App.Pt. z [ft]	F <sub>vert</sub> [lb/ft]	App.Pt. x [ft]	Design coefficient
Weight - wall	0.0	-3.61	2008.1	1.43	1.000
Weight - earth wedge	0.0	-7.25	74.9	1.81	1.000
Active pressure	701.7	-2.47	244.1	2.56	1.000
Surch.1 - surface	162.9	-3.90	70.6	2.69	1.000

#### Verification of block No. 1

##### Check for overturning stability

Resisting moment  $M_{res} = 3811.8$  lbfft/ft

Overturning moment  $M_{ovr} = 2365.5$  lbfft/ft

Safety factor = 1.61 > 1.50

Joint for overturning stability is **SATISFACTORY**

**Check for slip**

Resisting horizontal force  $H_{res} = 1907.24$  lbf/ft

Active horizontal force  $H_{act} = 864.60$  lbf/ft

Safety factor = 2.21 > 1.50

Joint for verification is **SATISFACTORY**

**Bearing capacity of foundation soil**

Design load acting at the center of footing bottom

No.	Moment [lbfft/ft]	Norm. force [lbf/ft]	Shear Force [lbf/ft]	Eccentricity [-]	Stress [psf]
1	1011.5	3489.32	1066.64	0.072	1020.2

Service load acting at the center of footing bottom

No.	Moment [lbfft/ft]	Norm. force [lbf/ft]	Shear Force [lbf/ft]
1	1011.5	3489.32	1066.64

**Verification of foundation soil**

Stress in the footing bottom : trapezoid

**Eccentricity verification**

Max. eccentricity of normal force  $e = 0.072$

Maximum allowable eccentricity  $e_{alw} = 0.333$

Eccentricity of the normal force is **SATISFACTORY**

**Verification of bearing capacity**

Max. stress at footing bottom  $\sigma = 1251.7$  psf

Bearing capacity of foundation soil  $R_d = 4000.0$  psf

Safety factor = 3.20 > 2.00

Bearing capacity of foundation soil is **SATISFACTORY**

Overall verification - bearing capacity of found. soil is **SATISFACTORY**

**Slope stability analysis**

**Input data**

Project

Settings

USA - Safety factor



Stability analysis

Earthquake analysis : Standard




Verification methodology : Safety factors (ASD)

Safety factors		
Permanent design situation		
Safety factor :	$SF_s =$	1.50 [-]

**Soil parameters - effective stress state**

No.	Name	Pattern	$\phi_{ef}$ [°]	$c_{ef}$ [psf]	$\gamma$ [pcf]
1	Well graded gravel (GW), medium dense		38.50	0.0	133.0
2	Clay with low or medium plasticity (CL, CI), stiff consistency, $S_r < 0.8$		22.00	250.0	135.0
3	Sand (SP)		32.00	0.0	120.0

**Soil parameters - uplift**

No.	Name	Pattern	$\gamma_{sat}$ [pcf]	$\gamma_s$ [pcf]	$n$ [-]
1	Well graded gravel (GW), medium dense		133.0		
2	Clay with low or medium plasticity (CL, CI), stiff consistency, $S_r < 0.8$		135.0		
3	Sand (SP)		120.0		

**Soil parameters**

**Well graded gravel (GW), medium dense**

Unit weight :  $\gamma = 133.0$  pcf  
 Stress-state : effective  
 Angle of internal friction :  $\phi_{ef} = 38.50^\circ$   
 Cohesion of soil :  $c_{ef} = 0.0$  psf  
 Saturated unit weight :  $\gamma_{sat} = 133.0$  pcf

**Clay with low or medium plasticity (CL, CI), stiff consistency,  $S_r < 0.8$**

Unit weight :  $\gamma = 135.0$  pcf  
 Stress-state : effective  
 Angle of internal friction :  $\phi_{ef} = 22.00^\circ$   
 Cohesion of soil :  $c_{ef} = 250.0$  psf  
 Saturated unit weight :  $\gamma_{sat} = 135.0$  pcf

**Sand (SP)**

Unit weight :  $\gamma = 120.0$  pcf  
 Stress-state : effective  
 Angle of internal friction :  $\phi_{ef} = 32.00^\circ$   
 Cohesion of soil :  $c_{ef} = 0.0$  psf  
 Saturated unit weight :  $\gamma_{sat} = 120.0$  pcf

**Rigid bodies**

No.	Name	Sample	$\gamma$ [pcf]
1	Wall material		120.0

**Surcharge**

No.	Type	Type of action	Location z [ft]	Origin x [ft]	Length l [ft]	Width b [ft]	Slope $\alpha$ [°]	Magnitude q, q <sub>1</sub> , f, F	q <sub>2</sub>	unit
1	strip	permanent	on terrain	x = 0.00	l = 32.80		0.00	100.0		lb/ft <sup>2</sup>

**Water**

Water type : No water

**Tensile crack**

Tensile crack not input.

**Earthquake**

Earthquake not included.

**Settings of the stage of construction**

Design situation : permanent

**Results (Stage of construction 1)**

**Analysis 1**

**Circular slip surface**

Slip surface parameters			
Center :	x =	-65.95 [ft]	Angles :
	z =	987.23 [ft]	
Radius :	R =	269.32 [ft]	
			$\alpha_1 =$ 18.00 [°]
			$\alpha_2 =$ 18.87 [°]
The slip surface after optimization.			

**Slope stability verification (Bishop)**

Sum of active forces :  $F_a = 123.3$  lb/ft

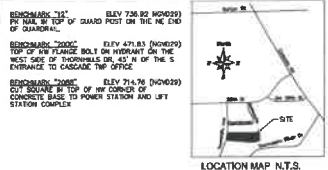
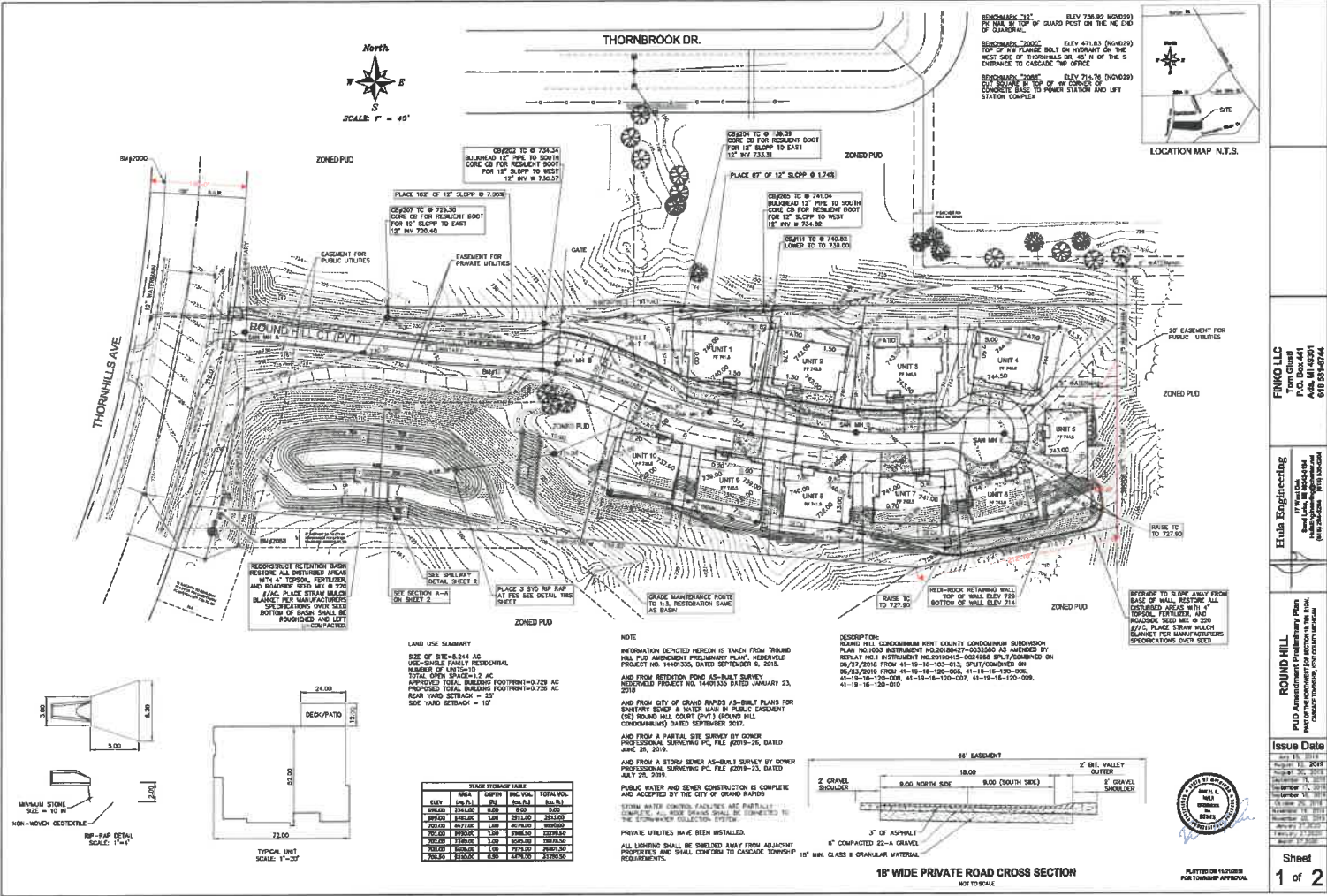
Sum of passive forces :  $F_p = 231.2$  lb/ft

Sliding moment :  $M_a = 33210.9$  lbft/ft

Resisting moment :  $M_p = 62260.0$  lbft/ft

Factor of safety = 1.87 > 1.50

**Slope stability ACCEPTABLE**



OSPEX TO @ 734.34  
 BULLHEAD 12" PIPE TO SOUTH  
 CORE CB FOR RESIDENT BOOT  
 FOR 12" SLOPP TO WEST  
 12" R/W # 734.53

OSPEX TO @ 738.30  
 CORE CB FOR RESIDENT BOOT  
 FOR 12" SLOPP TO EAST  
 12" R/W # 738.48

OSPEX TO @ 741.04  
 BULLHEAD 12" PIPE TO SOUTH  
 CORE CB FOR RESIDENT BOOT  
 FOR 12" SLOPP TO WEST  
 12" R/W # 734.82

OSPEX TO @ 740.00  
 LINED TO TO 739.00

EASEMENT FOR  
 PUBLIC UTILITIES

EASEMENT FOR  
 PRIVATE UTILITIES

RECONSTRUCT RETENTION BASIN  
 IN 4" TOPSOIL, FERTILIZER  
 AND ROADSIDE SEED MIX @ 200  
 LBS/AC. PLACE STRAW MULCH  
 BLANKETS PER MANUFACTURER'S  
 SPECIFICATIONS OVER SEED  
 BOTTOM OF BASIN. SHALL BE  
 POWDERED AND LEFT  
 UNCOMPACTED.

SEE SCHEDULE  
 DETAIL SHEET 2

PLACE 3 STD RIP RIP  
 AT PLS SEE DETAIL SHEET

GRADE MAINTENANCE ROUTE  
 TO "A" RESTORATION SLOPE  
 AS BASH

HAIR TO  
 TO 727.90

REVERSE TO SLOPE AWAY FROM  
 BASE OF WALL. RESTORE ALL  
 DISTURBED AREAS WITH 4"  
 TOPSOIL, FERTILIZER, AND  
 ROADSIDE SEED MIX @ 200  
 LBS/AC. PLACE STRAW MULCH  
 BLANKETS PER MANUFACTURER'S  
 SPECIFICATIONS OVER SEED

LAND USE SUMMARY

SIZE OF SITE = 0.244 AC

USE = SINGLE FAMILY RESIDENTIAL

MINIMUM OF UNIT 5'S

APPROX TOTAL BUILDING FOOTPRINT = 0.228 AC

PROPOSED TOTAL BUILDING FOOTPRINT = 0.228 AC

REAR YARD SETBACK = 20'

SIDE YARD SETBACK = 10'

GRADE	DEPTH	REL. VOL.	TOTAL VOL.
ELV. 734.34	20"	46.84	936.8
ELV. 734.53	8.00"	5.00	100.00
ELV. 738.30	1.00"	211.00	211.00
ELV. 738.48	1.00"	279.00	279.00
ELV. 740.00	1.00"	249.00	249.00
ELV. 741.04	1.00"	658.00	658.00
ELV. 742.00	1.00"	279.00	279.00
ELV. 743.00	1.00"	279.00	279.00
ELV. 744.00	1.00"	279.00	279.00
ELV. 745.00	1.00"	279.00	279.00
ELV. 746.00	1.00"	279.00	279.00
ELV. 747.00	1.00"	279.00	279.00
ELV. 748.00	1.00"	279.00	279.00
ELV. 749.00	1.00"	279.00	279.00
ELV. 750.00	1.00"	279.00	279.00
ELV. 751.00	1.00"	279.00	279.00
ELV. 752.00	1.00"	279.00	279.00
ELV. 753.00	1.00"	279.00	279.00
ELV. 754.00	1.00"	279.00	279.00
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ELV. 756.00	1.00"	279.00	279.00
ELV. 757.00	1.00"	279.00	279.00
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ELV. 762.00	1.00"	279.00	279.00
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ELV. 764.00	1.00"	279.00	279.00
ELV. 765.00	1.00"	279.00	279.00
ELV. 766.00	1.00"	279.00	279.00
ELV. 767.00	1.00"	279.00	279.00
ELV. 768.00	1.00"	279.00	279.00
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ELV. 774.00	1.00"	279.00	279.00
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ELV. 776.00	1.00"	279.00	279.00
ELV. 777.00	1.00"	279.00	279.00
ELV. 778.00	1.00"	279.00	279.00
ELV. 779.00	1.00"	279.00	279.00
ELV. 780.00	1.00"	279.00	279.00
ELV. 781.00	1.00"	279.00	279.00
ELV. 782.00	1.00"	279.00	279.00
ELV. 783.00	1.00"	279.00	279.00
ELV. 784.00	1.00"	279.00	279.00
ELV. 785.00	1.00"	279.00	279.00
ELV. 786.00	1.00"	279.00	279.00
ELV. 787.00	1.00"	279.00	279.00
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ELV. 789.00	1.00"	279.00	279.00
ELV. 790.00	1.00"	279.00	279.00
ELV. 791.00	1.00"	279.00	279.00
ELV. 792.00	1.00"	279.00	279.00
ELV. 793.00	1.00"	279.00	279.00
ELV. 794.00	1.00"	279.00	279.00
ELV. 795.00	1.00"	279.00	279.00
ELV. 796.00	1.00"	279.00	279.00
ELV. 797.00	1.00"	279.00	279.00
ELV. 798.00	1.00"	279.00	279.00
ELV. 799.00	1.00"	279.00	279.00
ELV. 800.00	1.00"	279.00	279.00

NOTE

INFORMATION DEPICTED HEREIN IS TAKEN FROM ROUND HILL PUD AND IS SUBJECT TO THE CITY OF GRAND RAPIDS PROJECT NO. 1440333, DATED SEPTEMBER 8, 2015.

AND FROM RETENTION POND AS-BUILT SURVEY. PROJECT NO. 1440333 DATED JANUARY 23, 2016.

AND FROM CITY OF GRAND RAPIDS AS-BUILT PLANS FOR SANITARY SEWER & WATER MAIN & PUBLIC CASING (S) ROUND HILL COURT (PVT) (ROUND HILL CONDOMINIUM) DATED SEPTEMBER 2017.

AND FROM A PARTIAL SITE SURVEY BY GOMER PROFESSIONAL SURVEYING PC, FILE 6009-26, DATED JUNE 28, 2016.

AND FROM A STORM SEWER AS-BUILT SURVEY BY GOMER PROFESSIONAL SURVEYING PC, FILE 6009-26, DATED JULY 29, 2016.

PUBLIC WATER AND SEWER CONSTRUCTION IS COMPLETE AND ACCEPTED BY THE CITY OF GRAND RAPIDS.

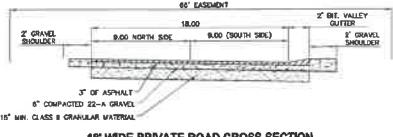
STORM WATER CONTROL FACILITIES ARE PARTIALLY COMPLETE. ALL ROOF DRAINS SHALL BE CONNECTED TO THE STORMWATER COLLECTION SYSTEM.

PRIVATE UTILITIES HAVE BEEN INSTALLED.

ALL LIGHTING SHALL BE SHIELDED AWAY FROM ADJACENT PROPERTIES AND SHALL CONFORM TO CADIZO TOWNSHIP REQUIREMENTS.

DESCRIPTION:

ROUND HILL CONDOMINIUM WITH COUNTY CONDOMINIUM SUBDIVISION PLAN NO. 10533 INSTRUMENT NO. 20160427-0032860 AS AUTHORIZED BY RES. 1441 INSTRUMENT NO. 20160427-0032860 COMBINED ON 06/27/2016 FROM 41-19-16-103-013, SPLIT/COMBINED ON 02/24/2018 FROM 41-19-16-103-013, 41-19-16-103-006, 41-19-16-120-000, 41-19-16-120-007, 41-19-16-120-009, 41-19-16-120-010.



16' WIDE PRIVATE ROAD CROSS SECTION  
 NOT TO SCALE

**FINCO LLC**  
 Tom Chast  
 P.O. Box 441  
 Ada, MI 49301  
 616 231 0216

**Etus Engineering**  
 1777 W. Oak  
 Ada, MI 49301  
 616 231 0216

**ROUND HILL**  
 PUD Assessment & Preliminary Plan  
 1440333  
 CADIZO TOWNSHIP & COUNTY RECORDS

**Issue Date**

NO.	DATE	DESCRIPTION
1	08/11/2016	ISSUED FOR PERMIT
2	08/11/2016	ISSUED FOR PERMIT
3	08/11/2016	ISSUED FOR PERMIT
4	08/11/2016	ISSUED FOR PERMIT
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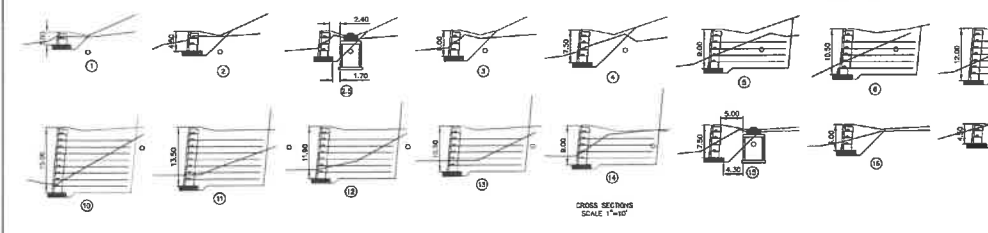
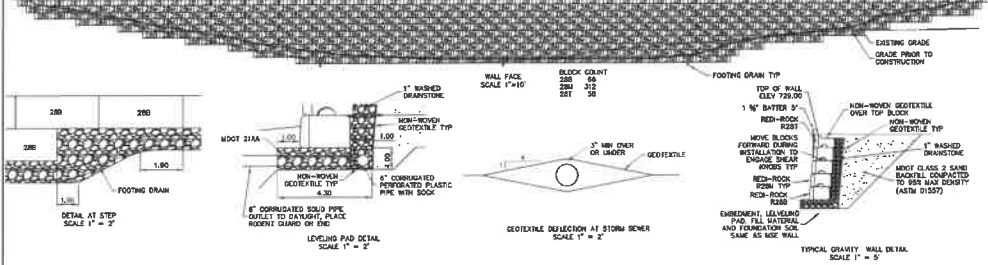
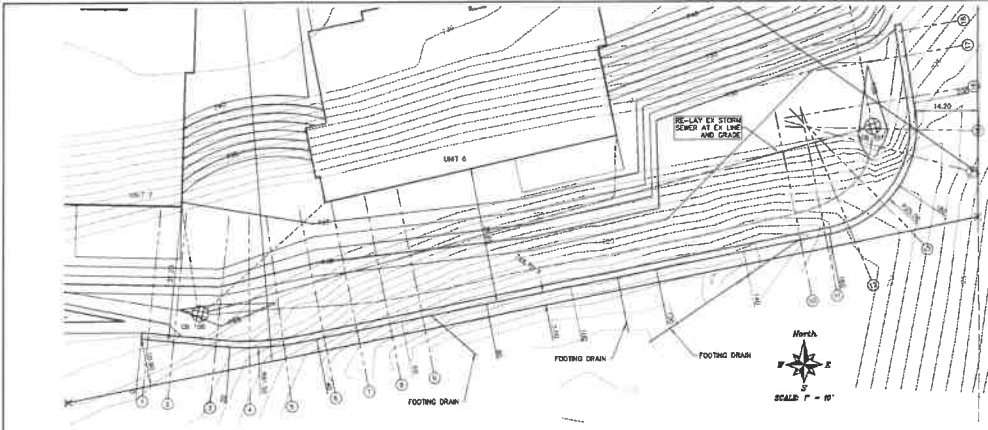
Sheet  
 1 of 2

# THOMAS MICHAEL HOMES LLC

PO BOX 441  
ADA, MI 49301  
616-581-8744

## WORK TIMELINE AT ROUNDHILL

- Completion of the Redi-rock retaining wall. 7/30/20
- Basin emergency overflow. 7/30/20
- Re-building and repair of retention basin. 7/30/20
- Installation of required landscaping. 7/15/20
- North property line grading and catch basin repair 7/15/20



**REINFORCEMENT "A"** ELEV 736.92 (W/200) 1/2" DIA. @ 24" ON CENTER ON THE END OF QUADRANT.

**REINFORCEMENT "B"** ELEV 474.61 (W/200) TOP OF THE FLANGE BOLT OR WEDGEMAN ON THE WEST SIDE OF DIVISION IS TO BE 85' N OF THE S ENTRANCE TO CASCADE TYP OFFICE.

**REINFORCEMENT "C"** ELEV 714.76 (W/200) 1/2" DIA. @ 24" ON CENTER AT THE CENTER OF CONCRETE BASE TO POWER STATION AND LEFT STATION COMPLEX.

**Type 1AT Connection**  
(Anchored Tail)

See drawings for 2. Anchor...  
See drawings for 3. Anchor...  
See drawings for 4. Anchor...  
See drawings for 5. Anchor...

**INSTALLATION STEP 1**  
Place gravel on block and the drainage...  
**INSTALLATION STEP 2**  
For the geotextile use the drainage mat...  
**INSTALLATION STEP 3**  
Place the drainage mat on top of the geotextile...

**DETAIL AT STEP SCALE 1" = 2"**

**LEVELING PAD DETAIL SCALE 1" = 2"**

**GEOTEXTILE DEFLECTION AT STORM SEWER SCALE 1" = 2"**

**TYPICAL GRAVITY WALL DETAIL SCALE 1" = 5"**

**TYPICAL MSE WALL DETAIL SCALE 1" = 5"**

**CROSS SECTIONS SCALE 1" = 10"**

**LOCATION MAP N.T.S.**

**FINCO LLC**  
Tom Glatt  
P.O. Box 441  
Add. #1 48001  
710 237 0704

**Huls Engineering**  
Brent L. Huls, P.E.  
1100 23rd Street, Suite 100  
Mesa, AZ 85205

**ROUND HILL**  
Retaining Wall  
1100 23rd Street, Suite 100  
Mesa, AZ 85205

**Issue Date**  
March 18, 2020  
Revised: N/A

**Sheet 1 of 1**



# CASCADE CHARTER TOWNSHIP

2865 Thornhills SE Grand Rapids, Michigan 49546-7140

December 18, 2019

Tom Guisti  
PO Box 441  
Ada MI 49301

RE: Case No. 19-3527 – Roundhill PUD – Proposed Amendments

Dear Tom:

Please consider this letter as notice of the December 16, 2019 Planning Commission meeting results. At that meeting, the Planning Commission tabled your project in order for you to provide the following information and do the following:

1. Revised landscape plan. This should resemble the original approved landscape plan.
2. Your engineer proposed an MSE earth tiered retaining wall (in lieu of a cement wall) along the south side of the site to address the storm water issues. Include any changes to the storm water system as a result of including the MSE wall.
3. Mr. Rhode agreed to meet with you to come up with a design of the earth wall that would provide an acceptable solution to both of you. It is our expectation that you will meet with Mr. Rhode as soon as possible.
4. The Township engineer will also need to review and approve the design of the earth wall and any other storm water related changes before the plans are presented to the Planning Commission.
5. You also tentatively agreed to all of the following proposed conditions:
  - a. A site survey showing the corners of the proposed home for every approved building permit to ensure that the approved plan is adhered to during construction.
  - b. A new performance bond of \$100,000 as indicted in the Township engineering report.
  - c. Written verification from the design engineer that the detention pond has been cleaned and is functioning per the approved design prior to every building permit.

- d. The developer to provide a design and detail of the storm water outlet protection to the satisfaction of the Township Engineer. This would be needed prior to any new building permit being issued.
- e. The swale near units 9 and 10 needs to be completed to the satisfaction of the Township engineer prior to units 9 and 10 being built.
- f. Provide \$20,000 in escrow to the Township so that the Township engineer can inspect the site on a regular basis to ensure continued compliance. The escrow will continue until 3 years after the last house is completed.
- g. Provide a detailed schedule of the work to be completed, including milestone dates for the major items of work noted in the Township engineer review letter.
- h. The retention basin shall be rebuilt and repaired as reported by the Township engineer.
- i. You shall comply with all of the requirements of the Township engineer as specified in the Township engineer's December 10, 2019 letter.
- j. A sidewalk shall be built on each unit/lot and completed no later than the certificate of occupancy for the house on the unit involved.
- k. The Township must approve time limits for completion of all of the following:
  - i. The completion of the earthen retaining wall.
  - ii. The rebuilding and repair of the retention basin.
  - iii. The installation of the required landscaping.

Once you have completed items number 1, 2, 3, 4 and 5.g and k, I will schedule the project again for the first available meeting with the Planning Commission. If you have any questions, please call me at 949-0224.

Sincerely,  
CASCADE CHARTER TOWNSHIP



Steve Peterson,  
Community Development Director

cc: Township Attorneys  
Aileen Leipprandt, Esq.

May 12, 2020  
Project No. 170168

Steve Peterson  
Township Planner  
Cascade Charter Township  
2865 Thornhills Avenue  
Grand Rapids, MI 49546

### **Round Hill, 3000 Thornhills Avenue Site Plan Review**

Dear Steve:

We have reviewed the revised site plan for the Round Hill development located at 3000 Thornhills Avenue prepared by Hula Engineering. The current revised site plan and the basis of this review is dated April 10, 2020.

A previous site plan for this location was approved in 2016 with construction onsite occurring since that time. The developer did not construct several elements according to the approved 2015 site plan. The current site plan resembles the previously approved site plan; however, there are several changes that have occurred since 2016. We believe that most people involved with this site plan are aware of the number of changes and history with the site; therefore, we will attempt to limit our review to the changes and updated site plan and provide some history only where necessary for clarification purposes.

The developer last appeared before the Planning Commission in December of 2019 where the site plan was tabled so that changes could be made to the site plan most notably the inclusion of a retaining wall near the south property line. Since December, there have been several revisions to the site plan mostly related to the retaining wall, but also other items we had noted in our December of 2019 review letter as we reviewed and provided comments.

### **Non-Reviewed Items**

The following items are not part of this engineering review because they have either been resolved previously or are reviewed by others.

1. The water main has been accepted by the City of Grand Rapids. It should be noted that there was a change from the original 2015 site plan on the east end due to easement issues with the Township Thornapple River Drive utility project. This change was not at the request of the developer.
2. The sanitary sewer has been accepted by the City of Grand Rapids.
3. The private roadway appears to have been constructed according to the 2015 site plan.
4. Sidewalk and parking area locations.
5. Lot sizes, setback of buildings, changes in building envelope sizes or any other zoning items unless there is an impact to the grading or other site elements as noted, below.

## Items being Reviewed

The site plan submittal package for engineering review had a number of different items to be reviewed by either Fishbeck or Materials Testing Consultants (MTC) who was reviewing the retaining wall. Keeping all the revisions clear with only some portions being updated was a challenge. To be clear, this review was based on the following information that was submitted:

1. Package of narrative, calculations, drawings, and supporting information received as a PDF on May 5, 2020.
2. Storm water calculations dated April 10, 2020.
3. PUD Amendment Preliminary Plan dated April 10, 2020 consisting of Sheets 1 of 2 and 2 of 2.
4. Work timeline with no current date. Identified by July 30 and July 15 task completion dates.
5. Retaining Wall plan sheet dated March 27, 2020.
6. Other supporting information was submitted in the package that was undated.

## Storm Sewer System and Grading along North Property Line

The as-built survey identified that portions of the storm sewer along the north property line designed to capture offsite runoff were not constructed according to the 2015 approved plan. This storm sewer and grading are critical to the design and function of the retention basin. The site plan includes two sections of storm sewer (MH 202 to MH 207 and CB 205 to CB 204), as well as grading around existing structures CBs 203, 204, 205, and 206. The plan as shown is acceptable and should accomplish the original goal of routing the offsite runoff around the new retention basin provided the grading work is constructed properly. This was unchanged since the December 2019 review.

## Retention Basin

The current retention basin was not constructed according the 2015 approved plan. Upon inspection, the slopes were steeper than 1:3, the overflow spillway erosion mat was not in place and the restoration was non-existent. The original 2015 site plan required a maximum of 1:3 slopes to allow the basin to be maintained. The developer has redesigned the basin to include the 1:3 slopes with a 1:3 route down to the basin for maintenance purposes. The developer revised the calculations for the new layout of the basin. Those calculations were reviewed and are acceptable. The April 10, 2020 site plan includes a note about how the bottom of the basin should be roughened and left uncompacted. The Maintenance route is also identified on the current site plan. This addresses two items we identified during our December 2019 review.

## Storm Sewer Outlet at Retention Basin

The storm sewer between MH 101 and Flared End Section 100 was placed with a steeper slope than on the original 2015 site plan resulting in higher velocities than expected. Those high velocities have the potential for increased erosion at the outlet which will require future maintenance. The April 10, 2020 site plan includes an outlet detail identifying the rip rap pad dimensions, depth and minimum stone size. This addresses the outlet erosion item we identified in our December 2019 review letter.

## Basin Emergency Overflow

The revised plan includes details for the overflow spillway for the retention basin. It should be noted the basin is designed for the 100-year rain event and if functioning properly the spillway would only be needed in the rare 100-year or larger event. The developer proposed a permanent turf reinforcement mat with riprap at the bottom of the slope. This design was acceptable on the December 2019 site plan and has not been changed. We are comfortable with their approach provided the details are followed during construction.

## **Retaining Wall on Unit 5, 6, and 7**

The revised site plan shows a Redi-Rock concrete block retaining wall for the entire length of Lot 6 and extending partially on to Lots 5 and 7. There is a swale graded behind the wall (Best shown on the cross sections of the wall plan) that is designed to capture the runoff from this area and direct it to the retention basin.)

It is our understanding that the applicant met with the adjacent neighbor and their attorneys during the development of the wall option. We have not heard of any objection from the neighbor on this most recent wall layout and design.

The retaining wall design has been reviewed for the Township by MTC and their review letter is being provided. There were a number of iterations of this design and additional information that MTC required for their review. With MTC being satisfied with the design of the wall we are also satisfied. However, it is critical that the wall be built according to the approved plan.

One thing to note, since this is a large wall that is only 3 feet from the property line the developer will likely need to at least occupy a portion of the adjacent property to construct the wall. The neighbor should be made aware of this and be in agreement with the temporary use of their property. It is reasonable to limit the developer's contractor to a specified amount of time (four weeks) and a reasonable amount of area (20-foot-wide strip) to complete their work. All area disturbed from construction of the wall should be restored to the neighbor's satisfaction.

The addition of the wall and drainage swale behind the wall should also address the neighbor concern regarding runoff from this area and also results in a drainage design that is similar to the originally approved site plan.

## **Landscaping Plan**

The landscape plan that was included with the packet was dated January 27, 2020. The plan shows trees south of the retaining wall on Units 5, 6, and 7. The retaining wall is planned to be 3 feet from the property line so it is likely these trees will be planted at least partially on the adjacent property.

## **Work Timeline**

The applicant submitted a basic work timeline for completion of the retaining wall and other site improvements. The timeline indicates that the retaining wall, basin emergency overflow and rebuilding and repair of the retention basin will be complete by July 30, 2020. The required landscaping and north property line grading and catch basin repair work will be complete by July 15, 2020.

At this time, it is unknown when they might receive final approval from the Township Board to proceed with the work. Their submitted timeline seems reasonable if they are approved to proceed in early June and they have competent contractors lined up and ready to begin the work soon after approval. They should also be in communication with the wall block supplier regarding lead times for the blocks.

One concern with vegetation restoration work in the heat of summer is getting enough water to allow the vegetation to establish and prevent erosion. The applicant should be prepared provide the maintenance and water necessary to result in stable vegetation.

## **Conclusion**

The developer has completed the revisions we requested from our December 2019 review and has also included a retaining wall along the south side of the property. As history has proven, we can recommend approval of a site plan; however, that does not guarantee the site will be constructed according to the approved site plan.


We suggest the following requirements if the current site plan is approved:

1. The developer maintains a SESC permit and satisfies the KCRC requirements with respect to the SESC permit.
2. The developer should be prepared to water the critical sloped areas of site after restoration is complete until there is stable vegetation that prevents erosion. The critical areas would include slopes adjacent to neighboring parcels and any slopes that runoff directly to the retention basin. Any other SESC requirements required under the county permit should also be followed.
3. The developer must provide a bond to the Township in case the work is not completed according to the approved plan within a specified time frame. Timing of the construction is critical in order to obtain acceptable vegetative growth and reduce the amount of sediment entering the retention basin. We recommend a \$100,000 bond at a minimum.
4. The site improvements should be inspected by the Township on a regular basis until final completion. There is no way to ignore the fact that the site was not constructed according to the 2015 approved site plan. Given the history, we would not be comfortable recommending an approval without some sort of additional oversight. That oversight can be completed by Township staff or if Fishbeck is expected to provide that oversight, then an escrow account should be established similar to what is done for City utility inspections. We suggest a minimum of \$30,000 be placed in the escrow. If the developer follows the approved plan, then the costs should be minimal. If the plan is not followed, then additional funds will need to be placed in escrow or the performance bond can be used for inspections and completing the construction work according to the plan.
5. Once the basin is regraded and vegetation is established, we recommend infiltration tests on the bottom of the basin to confirm the design conditions. If the test results are not consistent with the design requirements, then the developer will need to agree to amend the soil and achieve the desired test results and function of the basin as designed before additional construction can continue.

We recognize that these requirements are more comprehensive than is typical for a site plan approval. However, this developer has proven in the past to ignore approved plans and details. In our opinion, there needs to be something in place to ensure that they complete the work in accordance with the approved plan and other requirements.

If you have any questions or require additional information, please contact me at 616.464.3927 or [mberrevoets@fishbeck.com](mailto:mberrevoets@fishbeck.com).

Sincerely,



**Michael L. Berrevoets, PE**

Vice President/Senior Civil Engineer

By email

Copy: Tom Guisti – Finko LLC  
Dan Hula – Hula Engineering



## MATERIALS TESTING CONSULTANTS

April 2, 2020  
Project No. 191767

Cascade Charter Township  
2865 Thornhills Avenue  
Grand Rapids, Michigan 49546

Attention: Steve Peterson  
Township Planner

Reference: Round Hill Development, 3000 Thornhills Avenue  
Redi-Rock Retaining Wall Review  
Cascade Charter Township, Michigan

Dear Steve:

We have reviewed the revised design package PDF titled "RH Combined PDF 3-27" prepared by Mr. Dan Hula, P.E., specifically, Pages 13 through 22 and Page 25 which provide design calculations for the proposed Redi-Rock wall system and a plan sheet titled "Round Hill Retaining Wall" dated March 27, 2020.

As described in our February 7, 2020 email addressed to Mr. Michael Berrevoets, P.E. with Fishbeck, our scope of service consists of providing an independent review on behalf of Cascade Charter Township for the Redi-Rock retaining wall design performed by Mr. Hula. Other aspects of the project outside of the retaining wall were not reviewed by MTC and will be the responsibility of others to do so.

### MTC Review Timeline Summary

- February 7, 2020  
Initial review performed by MTC of Redi-Rock Mechanically Stabilized Earth (MSE) wall design calculations and plan sheets (dated January 27, 2020) prepared by Mr. Hula. A lack of subsurface information was identified, and additional soil borings were requested to evaluate the subsurface conditions below the proposed wall.
- March 2, 2020  
Updated wall design considerations, calculations and plans received following the performance of additional soil borings by Job Site Services. MTC review comments provided on March 4, 2020 in an email. Comments provided were generally associated with required minimum factors of safety, soil strength considerations, detail clarification, drainage requirements and conformance with Redi-Rock standards amongst other things.
- March 9, 2020  
Meeting between MTC and Mr. Hula to discuss MTC review comments, minimum design considerations and feasible wall systems.



- March 10, 2020  
Revised retaining wall plans received for a Redi-Rock gravity retaining wall system in lieu of the originally proposed MSE wall.
- March 11, 2020  
MTC requested to communicate with Dan Hula directly regarding wall design considerations and design parameters. Additional comments provided to Mr. Hula in an email dated March 11, 2020 expressing concern with respect to the gravity wall system supporting 15 ft of retained soil height based on both feedback received from Redi-Rock as well as an independent MTC evaluation of wall stability. MTC recommended Mr. Hula consider an MSE wall system where the greatest retained soil height will occur.
- March 12, 2020 through March 18, 2020  
Continued email and telephone correspondence with Mr. Hula regarding design and wall stability considerations.
- March 20, 2020  
Revised design calculations and plans received for a combined Redi-Rock MSE and gravity wall system. Additional MTC comments provided on March 23, 2020 followed by email correspondence with Mr. Hula regarding MTC comments. Mr. Hula confirmed that the “Engineer in Responsible Charge” determined the consideration of surcharge loading behind the wall was not necessary when evaluating wall stability.
- March 26, 2020  
Revised design plans provided with additional MTC comments provided on March 27, 2020 regarding lack of non-woven fabric surrounded open-graded aggregate.
- March 27, 2020  
Telephone conversation with Mr. Hula regarding additional MTC comments.
- March 31, 2020  
Final revised design calculations and plans received and reviewed.

#### Proposed Retaining Wall System

Based on the referenced retaining wall plans dated March 27, 2020, a combined Redi-Rock MSE and gravity block retaining wall is proposed retaining a maximum soil height of 15 ft between approximately Stations 0+65 to 1+00 transitioning to essentially no retained soil near the wall limits (approximately Stations 0+00 and 2+30). The MSE portion of the retaining wall will be present at locations where the retained soil height is greater than 7.5 ft with a gravity block wall considered for retained heights equal to or less than 7.5 ft. In general, applicable R28 Redi-Rock blocks are proposed for both wall systems with continuous Miragrid 8XT reinforcement proposed in MSE areas. The plans indicate required materials and performance criteria for the wall system to satisfy the design intent.



### Conclusions

Based on the final revised design submittal received on March 31, 2020, Mr. Hula has completed design and plan revisions requested by MTC. Although no exceptions are taken with respect to the final wall design, we recommend part-time observation of wall construction and applicable testing be performed to help minimize the risk of future wall instability due to unintended construction practices. Independent observation and testing are anticipated to consist of the following:

- Material verification including, but not necessarily limited to, Redi-Rock blocks, geogrid reinforcement, geotextile fabric, leveling pad material, wall backfill materials, drainage, etc. We recommend gradation testing (ASTM D6913 and D1140) be performed on samples of the leveling pad and wall backfill to confirm acceptable material gradation.
- Subgrade observation and bearing capacity evaluation of foundation subgrade soil.
- Nuclear density testing (ASTM D6938) of MDOT 21AA leveling pad material and MDOT Class II wall backfill material to confirm performance requirements are met.

Based on a construction schedule of 6 weeks for the wall and part-time observation and testing services (4 hours per day), we estimate a testing budget on the order of \$8,500 be considered. The actual effort and fee will be a direct function of the contractor's schedule.

We appreciate the opportunity to provide this service to you on this project. Should you have any questions or require further assistance, please contact our office.

Sincerely,

**MATERIALS TESTING CONSULTANTS, INC.**

Todd D. Munger, P.E.  
Geoenvironmental Department Manager

cc: Mr. Michael Berrevoets, P.E. – Fishbeck (mberrevoets@fishbeck.com)

CASCADE CHARTER TOWNSHIP

Ordinance \_\_\_\_ of 2020

AN ORDINANCE TO Amend the  
**Sentinel Pointe**  
**Ordinance #1 of 1980**  
**as amended by Ordinance No. 6 of 1984**  
**as further amended by Ordinance No. 1 of 2016**  
PLANNED UNIT DEVELOPMENT PROJECT

CASCADE CHARTER TOWNSHIP (the “Township”) ORDAINS:

SECTION I. AN AMENDMENT TO THE CASCADE CHARTER TOWNSHIP ZONING ORDINANCE.

The application received from Finko, LLC, a Michigan limited liability company (hereinafter referred to as the “Developer”), is to further amend the Sentinel Pointe Planned Unit Development and to amend the earlier amendment from 2016 for a ten unit/lot single family residential development (the “Revised Project”). The Revised Project was recommended by the Cascade Charter Township Planning Commission for approval on \_\_\_\_\_, 2020 to amend the current PUD, Planned Unit Development. Approval of the proposed PUD amendment requires an amendment to the Cascade Charter Township Zoning Ordinance and Zoning Map to incorporate the Planning Commission’s recommendations and the final actions of the Cascade Charter Township Board on \_\_\_\_\_, 2020.

SECTION II. LEGAL DESCRIPTION.

1. Ten unit/lot single family residential project – Roundhill - the Revised Project, now known as Round Hill Condominium, a Kent County Subdivision, Subdivision Plan No. 1053:

PART OF NW 1/4 COM AT NW COR OF SEC TH 90D 00M 00S E ALONG N SEC LINE 1475.51 FT TO E LINE OF LOT 7 OF ARDEN HILLS PLAT EXT N TH S 0D 08M 00S E ALONG SD EXT E LOT LINE & SD E LOT LINE & SD E LOT LINE EXT S 0D 08M 00S E 1125.46 FT TO BEG OF THIS DESC - TH S 78D 30M 00S W 212.73 FT TH N 85D 00M 00S W 759.30 FT TO ELY LINE OF THORNHILLS AVE /100 FT WIDE/ TH NLY ALONG ELY LINE OF SD AVE TO A PT 895 FT S FROM N SEC LINE TH E PAR WITH N SEC LINE

TO E LINE OF SD LOT 7 EXT S TH S 0D 08M 00S E ALONG SD EXT E LOT LINE TO BEG \* SEC 16 T6N R10W 5.24 A.

2. Existing 154 unit retirement home (Sentinel Pointe):

411916103012 PART OF NW 1/4 COM AT NW COR OF SEC TH 90D 00M E ALONG N SEC LINE 1475.51 FT TO E LINE OF LOT 7 OF ARDEN HILLS EXT N TH S 00D 08M E ALONG SD EXT E LOT LINE TO CL OF THORNAPPLE RIVER DR TH S 63D 15M 32S W 234.98 FT TH S 46D 34M 38S W 129.5 FT TO BEG OF THIS DESC- TH N 45D 00M W 275.0 FT TH N 49D 00M E 175.0 FT TH N 57D 00M E 187.47 FT TH N 85D 00M W 759.30 FT TO ELY LINE OF THORNHILLS AVE /100 FT WIDE/ TH SWLY ALONG SD ELY LINE TO A PT 288.21 FT N FROM E&W 1/4 LINE TH E 10 FT TH S 24.21 FT TO N LINE OF S 264 FT OF NW 1/4 TH E ALONG SD N LINE TO CL OF THORNAPPLE RIVER DR TH NELY ALONG SD CL TO BEG \* SEC 16 T6N R10W 18.25 A.

SECTION III. GENERAL PROVISIONS.

The conditions, requirements, and regulations contained in this document shall apply to the Revised Project in addition to those requirements and regulations contained in Chapter XVI of the Cascade Charter Township Zoning Ordinance (Ordinance No. 11 of 1988, as amended). Except as expressly modified by this Ordinance, Ordinance No. 1 of 2016, as recorded with the Kent County Register of Deeds records on January 22, 2020 at Document 202001220006534 (as well as any and all requirements and conditions contained therein), remains unchanged and in full force and effect.

SECTION IV. PURPOSE.

The Revised Project occupies approximately 5.24 acres of land that is to be developed as a 10 unit/lot single family residential development. The Planned Unit Development technique has been chosen by the Developer to provide more control over the development's aesthetics and appearance.

The conditions, requirements, and regulations contained in this document are established to ensure high quality single family residential development of the Revised Project. Additionally, they are designed to achieve integration of this development with adjacent and area land uses.

SECTION V. APPROVAL LIMITATIONS AND CONDITIONS.

- A. The provisions of this Ordinance/Ordinance amendment ("this Ordinance") are not intended as a substitute for the Cascade Charter Township Zoning Ordinance and the General Development Plan, nor do they in any way relieve the Developer from obtaining all approvals and permits required by the Township, except as otherwise expressly provided herein. In the event that a development issue or site plan element is not expressly addressed by this Ordinance, the specifications and requirements of the Cascade Charter Township Zoning Ordinance shall apply. Furthermore, all other applicable Cascade Charter Township ordinances (including Ordinance No. 1 of 2016, as amended) shall still govern the Revised Project where applicable.

- B. Except as expressly otherwise provided herein, the Developer and its assigns must meet all applicable provisions, ordinance requirements, and regulations of Cascade Charter Township, as well as federal, county, and state law, and must obtain all necessary approvals from state and county governmental agencies that are required for construction, operation, or use.
- C. This PUD amendment approval is expressly contingent upon all conditions of approval herein remaining fully effective and valid. If any condition imposed herein is determined to be invalid, illegal or contrary to law as a result of a successful legal challenge by the Developer or its assigns, or any other party, the Township reserves the right to review the entire Revised Project under the PUD provisions of the Cascade Charter Township Zoning Ordinance, and further, to withdraw its approval of this PUD amendment (and earlier amendments) if the Township finds that, absent the effect of any condition imposed herein, the PUD no longer meets the standards for PUD approval contained in the Zoning Ordinance.
- D. All conditions contained herein and in the final approved revised site plan (the "Approved Revised Site Plan") shall be binding upon the Developer, as well as its successors, creditors, tenants, transferees, heirs, co-owners, unit owners, agents, contractors, and assigns, and the Round Hill Condominium Association, all of which are collectively called "Developer Successors." The conditions may be modified or amended only pursuant to a formal amendment of the PUD approval, the Approved Revised Site Plan, and any ordinance amendments. The Revised Project must be constructed, operated and maintained, and all properties therein used, in strict compliance with the PUD approval (including this Ordinance and the Approved Revised Site Plan), and no deviations can occur without prior formal written approval by the Township. So-called minor deviations shall not occur or be made unilaterally by the Developer or the Developer Successors. Any deviation without prior formal written approval by the Township will constitute a violation of this Ordinance and the Cascade Charter Township Zoning Ordinance.
- E. This Ordinance shall be recorded with the Kent County Register of Deeds by the Developer prior to any further construction occurring on the Revised Project and shall run with and bind the lands involved, including Round Hill Condominium, a Kent County Condominium, Subdivision Plan No. 1053. A copy of this recorded document shall be supplied by the Developer to the Cascade Charter Township Clerk.
- F. Failure to comply with the Approved Revised Site Plan or any condition of approval herein shall be deemed to be both a nuisance per se and a violation of the Cascade Charter Township Zoning Ordinance.
- G. Prior to recording a copy of this document as specified in Section V(E) hereof, the Developer shall type the following statement onto the end of this document (or add an additional page to the document) as follows, and shall sign and date the same:

“Finko, LLC has fully read the above PUD ordinance amendment document, understands its provisions and fully agrees with all requirements and conditions contained in the same, on behalf of it and its assigns, creditors, successors, heirs, agents, contractors, and transferees in and to the property involved.”

- H. Before this document is recorded with the Kent County Register of Deeds, a property owner’s association (the “Homeowners Association”) shall be created and exist forever comprised of all of the owners and all of the lots/units in the Revised Project. The Homeowners Association shall keep and build up and administer a reserve fund (based on annual dues or assessments from the owners of each of the lots/units in the Revised Project), which shall be used for any use permitted under the Michigan Condominium Act, including, but not limited to: (i) to monitor, inspect, repair and clean out the storm water and water drainage facilities within the Revised Project, including the retention/detention ponds and related piping; (ii) to inspect, repair and maintain the Retaining Wall described in Section XIII below; and (iii) to repair and repave the private road as necessary. The annual assessment or dues for such fund shall be at least \$300 per year per each lot or unit within the Revised Project and shall be adjusted no less than every five years based on the federal Consumer Price Index (or comparable successor federal index). Upon a written request by the Township, the Homeowners Association shall provide the Township with the then-current balance of total monies in that fund.
- I. All of the conditions, requirements and obligations contained in this Ordinance/ordinance amendment shall pertain to and run with the lands involved, and shall benefit and burden not only the Developer, but also the Developer Successors.
- J. Except as stated below, the private road within the Revised Project shall not be obstructed nor shall free passage by vehicles on and along that private road ever be interfered with in any way. No parking is allowed on the paved portion of the private road, except for temporary parking that does not obstruct vehicle traffic and does not occur overnight. Notwithstanding the foregoing, the installation of a gate to limit public access to the Revised Project shall be permitted and temporary parking, including overnight parking, shall be permitted in the designated parking area located West of Unit 1 of the Revised Project as depicted on the Approved Revised Site Plan. The Cascade Fire Department shall at all times have access to and through the gate including any access codes or keys that may be necessary.
- K. Except as expressly amended by this Ordinance/ordinance amendment, Ordinance No. 1 of 2016 remains in effect and shall be fully complied with.
- L. The Homeowners Association and all unit/lot owners in the Revised Project shall be deemed to be the successors of the Developer (jointly and severally) for purposes

of compliance with this document and the Zoning Ordinance once the Developer no longer owns any lot or unit within the Revised Project.

SECTION VI. PERMITTED USES.

The permitted uses for the Sentinel Pointe PUD are as follows:

- A. 10 Single Family Residences – Roundhill (the Revised Project).
- B. The Existing 154 unit retirement facility – Sentinel Pointe.
- C. All signs for the Revised Project shall conform with Section 6.02 of the Cascade Charter Township Sign Ordinance (Ordinance 14 of 1997, as amended).

SECTION VII. DESIGN GUIDELINES, REQUIREMENTS AND LIMITATIONS.

The Revised Project shall be developed in exact accordance with the Approved Revised Site Plan (dated 4/10, 2020) as approved by the Township. No alterations, expansions or additions may occur as to the Revised Project without a formal amendment to this Ordinance, unless expressly otherwise authorized herein.

- A. Maximum Number of Residential Units/Lots.
  - 1. Roundhill – Ten (10) single-family detached condominium units/lots.
  - 2. Existing retirement facility – 154 (Sentinel Pointe).
- B. Maximum Building or Structure Height
  - 1. Roundhill – 35 feet or two and a half stories whichever is less.
  - 2. Existing retirement facility – as constructed (Sentinel Pointe).
- C. Setback and Building Permit Requirements
  - 1. Roundhill – Front - 0  
Side – 10 feet  
Rear – 25 feet
  - 2. Existing retirement facility – as constructed (Sentinel Pointe)
- D. A site survey by a professional surveyor or engineer shall be filed with the Township for each proposed dwelling before a building permit is issued, showing

all of the corners of the proposed dwelling to ensure that the Approved Revised Site Plan is adhered to during construction and thereafter. The corners shall be physically staked for each unit/lot.

- E. Written verification shall be filed with the Township from a certified engineer that the detention pond has been cleaned and is functioning in accordance with the Township-approved design prior to any building permit being issued.
- F. The swale near units 9 and 10 shall be completed to the satisfaction of the Township engineer prior to building permits being issued for units 9 and 10.
- G. A sidewalk shall be built on the lots shown on the Approved Revised Site Plan dated 4/10/20 and completed no later than the certificate of occupancy for the house on the unit involved.
- H. The retention pond shall be revised and constructed according to the approved design no later than (see schedule from applicant)
- I. The Basin emergency overflow repair shall be fully completed no later than (see schedule from applicant)
- J. The North property line grading and catch basin repair shall be fully completed no later than (see schedule from applicant)
- K. Except for the Retaining Wall described in Section XIII hereof, no deck, patio, or other structure shall be placed within or extend into any setback area.
- L. Minimum Floor Area
  - 1. Roundhill – Each dwelling shall contain a minimum of:
    - (a) One Story: 1300 square feet on the main floor, finished livable area above grade level, exclusive of garages, decks, porches and breezeways.
    - (b) Two Story: 1600 square feet, with a minimum of 800 square feet on the first floor, finished livable area above grade level, exclusive of garages, decks, porches and breezeways.
  - 2. Existing retirement facility
    - (a) As constructed (Sentinel Pointe).

SECTION VIII. PRIVATE STREET DEVELOPMENT - ROUNDHILL.

- A. The private street within the Revised Project shall be designed, built and maintained pursuant to requirements of Ordinance No. 1 of 2016 and in full compliance with the Approved Revised Site Plan dated 4/10, 2020.
- B. In accordance with Section G of the “Cascade Charter Township Engineering Design Requirements and Standards for Private Streets,” the Developer of the Revised Project shall provide a disclosure statement on all property deeds to all unit/lot owners of the private street, all those who utilize the private street and all persons securing a building permit to construct a building or structure served by the private street, stating that by applying for and securing a building permit for construction of a building or structure that utilizes the private street, all such persons shall use the private street at their own risk and the Township (and its employees, officials, officers, and agents) shall not be responsible for any aspect of the private street.
- C. In accordance with Section I of the “Cascade Charter Township Engineering Design Requirements and Standards for Private Streets,” it shall be the responsibility of the Developer and its successors or the individual property owners to fully maintain and keep the private street in good condition and repair at all times and to ensure that snow and ice is removed in a timely fashion during the winter.

SECTION IX. TEMPORARY BUILDINGS.

No structure of a temporary nature, including, but not limited to, any trailer, tent or construction shack shall be constructed, placed or maintained within the Revised Project except lawfully accessory to and during construction of any building or infrastructure improvement.

SECTION X. UTILITIES.

- A. Water and Sewer – The individual units/lots in the Revised Project will be served by both public water and public sewer. Such systems shall be designed, installed, and approved by Cascade Charter Township and the City of Grand Rapids.
- B. Stormwater Drainage –

The Project is located within Zone A of the Cascade Township Stormwater Ordinance. In lieu of requiring that an Act 433 agreement or a drainage district be established with the Kent County Drain Commissioner, Cascade Charter Township has agreed to approve the Approved Revised Site Plan for the Revised Project so long as the Revised Project (and any and all portions thereof) always fully complies with the Cascade Charter Township Stormwater Ordinance (as that ordinance may be amended from time to time, as well as any successor ordinance or ordinances). Accordingly, the Homeowners Association and all landowners within the Revised Project (“Co-Owners”) are required to ensure the proper installation and permanent maintenance of any and all storm drainage and water retention systems, pipes,

ponds, Retaining Wall and associated drain system, and all facilities for the Project (collectively, the “Facilities”) shown on the Approved Revised Site Plan or as otherwise required by the Cascade Charter Township Stormwater Ordinance (as that ordinance may be amended from time to time, as well as any successor ordinance or ordinances, all of which shall collectively be referred to hereinafter as the “Stormwater Ordinance”). Such requirements and obligations of the Homeowners Association and Co-Owners (jointly and severally) include, but are not necessarily limited to, the following:

1. Maintenance and repair regarding the following items shall be done on a regular basis and in such fashion as to ensure that all components of the Facilities function properly at all times:
  - (a) Sediment removal.
  - (b) Erosion control.
  - (c) Ensuring constant structural integrity of the physical systems.
  - (d) Designate access to the Facilities.
  - (e) Cleaning of catch basin sumps.
  - (f) Sediment and debris removal from the infiltration basin.
  - (g) Landscape maintenance of the infiltration basin to maintain the design volume and ensure the system is operating as designed.
  - (h) Other maintenance procedures as outlined by the applicant’s engineer in their letter dated June 4, 2015.
2. The Township (including its designated officials, officers, agents, and contractors) shall have the right to physically inspect all aspects of the Facilities at all reasonable times, or any other times if, in the opinion of the Township, there is a threat to the public health, safety, or welfare.
3. Buildings, structures, landscaping, trees, or similar items shall not be installed, planted, or placed within or over any portion of the Facilities except in accordance with the Approved Revised Site Plan, or if not identified in the Approved Revised Site Plan without prior written Township approval.
4. The Township shall be supplied with an engineer’s “as-built” certification by the Developer to certify that the Facilities as constructed and installed

matches the approved revised design. The Township shall also be supplied with a reduced copy of the Approved Revised Site Plan graphically showing the Facilities, together with any and all easements therefor.

5. The Township shall be supplied with a permanent easement or irrevocable license allowing the Township (as well as its designated officials, officers, agents, and contractors) to have access between the public road right-of-way and to any and all portions of the Facilities.
6. Should the Facilities not be properly installed, maintained, and/or repaired, in full compliance with all of the requirements of this Subsection X.B hereof, the Approved Revised Site Plan, and the Stormwater Ordinance (whether due to the fault or neglect of the Developer, the Homeowners Association, and/or the Co-Owners), and any such noncompliance or deficiency shall not have been fully remedied within 30 days of the date when the Township has given the Homeowners Association written notice of any such noncompliance or deficiencies, the Township, at its sole option and discretion, shall have the right and authority to perform any and all installations, replacements, repairs, and/or maintenance which is reasonably required and charge back all of the costs thereof to the Homeowners Association and also the Co-Owners (together with reasonable administrative costs and legal fees). Should any challenge occur regarding the Township's actions, the following shall be applicable:
  - (a) Establishment of a Special Assessment District. The Township may establish a special assessment district for the Revised Project to pay for and/or reimburse the Township for any and all such costs and expenses (as well as to ensure future required repairs and maintenance) pursuant to whichever state statute the Township desires to utilize. In such event, all of the Co-Owners and the Homeowners Association shall all be deemed to have fully consented to and agreed with the establishment, implementation and enforcement of such a special assessment district.
  - (b) Proceeding to Collect Pursuant to the Master Deed and Condominium Documents or Deed Restrictions. Alternately, the Township shall also have the authority to collect or require reimbursement for any and all such costs and expenses from the Homeowners Association and the Co-Owners as if such obligations of the Homeowners Association and the Co-Owners were in the form of a permanent deed restriction or covenant on the Revised Project. Should the Township pursue this remedy, the Township would have any and all rights attributable to the Homeowners Association when collecting dues or assessments from the Co-Owners. Additionally, such costs shall also be a lien on each of the

units or lots, which shall be enforceable in accordance with Act No. 94 of the Public Acts of 1933, as amended from time to time. Any such charges which are delinquent for six (6) months or more may be certified annually to the Township Treasurer, who shall enter the lien on the next tax roll against the applicable unit or lot, and the costs shall be collected and the lien shall be enforced in the same manner as provided for in the collection of taxes assessed upon the roll in the enforcement of a lien for taxes. In addition to any other lawful enforcement methods, the Township shall have all remedies authorized by Act No. 94 of the Public Acts of 1933, as amended. The Master Deed or deed restrictions shall be amended accordingly.

The above alternate remedies (being (a) and (b)) shall be deemed to be in addition to any and all other remedies for the Township provided for elsewhere in the deed restrictions or master deed or condominium documents or at law or equity. The Township shall have the sole authority and discretion to determine whether or not to proceed pursuant to (a) or (b) or both, above.

7. The Developer shall establish an escrow fund with the Township, in accordance with Section XIV hereof, that shall remain in place until 3 years after a permanent certificate of occupancy is issued for the last house constructed in the Revised Project. At no time shall the escrow funds deposited by the Developer with the Township fall below \$5,000. When and if the sum in the escrow account falls below \$5,000, the Developer shall replenish the escrow account back up to \$30,000 within 15 days of the date that the Township provides written notice to the Developer. The escrow funds may be used by the Township for any and all of the following uses:
  - a. Any fees or costs from the Township's engineer regarding inspections, reports and/or enforcement relating to the Revised Project's Facilities, drainage facilities, retention/detention pond facilities, Retaining Wall, private road and any other common improvement within the Revised Project.
  - b. Any enforcement efforts or proceedings by the Township with regard to this Ordinance or any of the conditions of approval for the Revised Project, including, but not limited to, attorney fees, court costs, township planner fees and township engineering fees.
  - c. Any zoning proceedings.
8. The Developer shall comply with the Cascade Township Stormwater Ordinance. The on-site storm sewer system and infiltration basin shall

collect all of the stormwater runoff from the developed and graded portions of the property. Also, the Developer shall prevent any storm water or water run off flowing onto the adjoining properties at amounts, volumes, rates, frequency, intensity or velocity to a greater degree than occurred prior to January 1, 2016.

9. Once the Revised Project has been fully developed and completed and the Developer no longer owns any lots/units within the Revised Project, the Homeowners Association and the individual owners of all of the lots/units within the Revised Project shall be jointly and severally responsible and liable for ensuring compliance with all of the terms and conditions of this Ordinance/ordinance amendment and zoning conditions of approval for the Revised Project, including compliance with all applicable Cascade Charter Township ordinances and codes.

- C. Before construction recommences on any unit/lot within the Revised Project, the Developer shall provide to the Township (and any other applicable governmental units and utilities) all necessary permanent easements within the Revised Project for telephone, telecommunications, electricity, gas and cable television to the appropriate utility provider without cost. Said easements shall be recorded with the Kent County Register of Deeds and provided to each utility provider for their records.

#### SECTION XI. LANDSCAPE PLAN

The landscaping along the perimeter of the site shall be installed and maintained at all times and shall include at a minimum all of the plantings that are shown on the approved amended landscaping plan dated 1/27, 2020. These plantings shall be installed no later than (see schedule submitted by applicant). The Developer shall maintain these plantings and shall remove and replace any dead or dying trees until the Developer no longer owns any lot or unit within the Condominium. Thereafter, such plantings shall be maintained by the Developer Successors.

#### SECTION XII. SOIL EROSION CONTROL REQUIREMENTS.

The Developer shall submit an updated soil erosion control plan to the Township showing all temporary and permanent soil erosion control measures to be taken before, during, and after construction on the Revised Project. This plan shall be reviewed and approved by the Township Engineer prior to the Developer recommencing any excavation on the site. The Developer shall comply with any and all licenses, approvals, or permits issued regarding soil erosion control requirements and measures.

#### SECTION XIII. RETAINING WALL.

The Approved Revised Site Plan shows a Redi-Rock retaining wall to be installed south of Units 5, 6 and 7 of the Revised Project (collectively, the "Retaining Wall"). Such Retaining Wall shall

be installed by the Developer in full compliance with the Approved Revised Site Plan, Cascade Township ordinances, and any other applicable law. The following shall also be applicable to the Retaining Wall:

- A. The Retaining Wall, its component parts and systems and all drains shall be kept in good working condition and repair at all times.
- B. The Retaining Wall shall be completed no later than (see schedule form applicant).
- C. The Developer shall designate the Retaining Wall in the Round Hill Condominium Master Deed and Site Plan as a General Common Element and record an Amended Master Deed and Site Plan in accordance with Section XVI hereof.

The installation of the Retaining Wall is contingent upon the Developer obtaining (and supplying to the Township) a temporary written license from the owner of the adjacent land to the southeast for encroaching equipment and supplies during the construction of the Retaining Wall.

SECTION XIV. PERFORMANCE GUARANTEE AND ESCROW FUNDS.

- A. To ensure compliance with this Ordinance, the Cascade Township Zoning Ordinance, and any conditions and requirements herein, the Township may require reasonable performance guarantees to ensure completion of improvements such as, but not limited to, landscaping, ponds, drainage, retaining walls and structures, lighting, roads, and utilities. The Township Board, Engineer, or Planning Department may require such guarantees at any time they deem reasonably necessary to ensure completion of the improvements. The form (including the bank or surety involved), duration, and amount of the performance guarantee shall be approved by the Township.
- B. The Developer shall provide the Township with all of the following security to assure and guarantee the following:
  - 1. Performance Guaranty. Provide an irrevocable letter of credit for \$100,000 to ensure that the site is developed as approved. The irrevocable letter of credit shall remain in place until a permanent certificate of occupancy is issued for the last house constructed within the Revised Project and provided that all other improvements shown on the Revised Site Plan are completed.
  - 2. Landscaping Guaranty. Provide an irrevocable letter of credit for \$8,200 to ensure the installation of the required landscaping. The irrevocable letter of credit shall remain in place for two years following the completed installation of all required landscaping.

3. Township Inspection & Compliance Cost Guaranty. As provided in subsection X.B.7 hereof, the Developer shall provide \$30,000 in escrow to the Township so that (among other matters) the Township engineer can inspect the site on a regular basis to ensure continued compliance. The escrow will continue until 3 years after a permanent certificate of occupancy is issued for the last house constructed.
4. Remediation. Developer shall restore the adjoining property owned by the Mark D. Rohde Unified Credit Trust and Gayle Cary Rohde Unified Credit Trust, (collectively, "Rohde") located to the southeast of Round Hill Condominium caused by the Developer's violation of Ordinance No. 1 of 2016 due to stormwater run off, silt flow and tree and vegetation loss. Such restoration shall occur on or before September 1, 2020. To ensure such remediation, the Developer shall file with the Township an irrevocable letter of credit in the amount of \$50,000 for the purpose.
5. The wording for the letters of credit shall be approved by the Township Attorney.

#### SECTION XV. THE GERALD R. FORD INTERNATIONAL AIRPORT.

Within the recorded master deed or deed restrictions, the Developer shall expressly disclose in writing that the Revised Project is located in the vicinity of the Gerald R. Ford International Airport and that there may be noise, vibration, and property valuation impacts associated with such location.

#### SECTION XVI. CONSISTENCY OF THE MASTER DEED AND/OR DEED RESTRICTIONS/COVENANTS WITH THE PUD APPROVAL.

- A. If the Revised Project will be a condominium project (in whole or in part), the master deed or amended master deed (and attachments) shall be reviewed and approved by the Township Attorney prior to final recording to ensure consistency with this Ordinance. If some or all of the Revised Project will be governed by new or amended deed restrictions/restrictive covenants apart from a condominium master deed, such deed restrictions/ restrictive covenants or amendments shall also be reviewed and approved by the Township Attorney before recording to ensure consistency with this Ordinance.
- B. If the Master Deed or deed restrictions have already been recorded, the Developer shall record a binding amendment thereto which conforms to the requirements of this Ordinance. The Developer shall identify the Retaining Wall as a General Common Element in the Master Deed and Site Plan. The Developer shall amend the Bylaws of Round Hill Condominium to state that Round Hill Condominium and each individual condominium unit shall conform to the Requirements of the Cascade Township Ordinance and this PUD Ordinance No. \_\_\_\_ of 2020 and such

amended Bylaws shall be recorded as part of an Amended Master Deed. These amendments shall be approved by the Township Attorney prior to final recording to ensure consistency with this Ordinance and the Zoning Ordinance. Such amendments shall be recorded within seven days following receipt of the Township Attorney's approval of the Amended Master Deed and Amended Bylaws.

SECTION XVII. CONSISTENCY WITH PLANNED UNIT DEVELOPMENT (PUD) STANDARDS.

- A. The amended Planned Unit Development will result in a recognizable benefit to the ultimate users of the Revised Project and to the community. Current and future residents will recognize the benefits of a residential development that offers a low-density land use.
- B. When constructed and maintained in full accordance with the Cascade Township Ordinance and this Ordinance, in relation to the underlying zoning (PUD), the Township finds the Revised Project will not result in a material increase in the need for public services, facilities and utilities and will not place a material burden upon the subject property and the surrounding properties. The Revised Project is not anticipated to cause undo impact to the stormwater drainage of the surrounding area. All stormwater and soil erosion control plans have been approved by the Township Engineer and the appropriate County and State agencies.
- C. The Revised Project has been determined by the Township to be compatible with the 2009 Comprehensive Plan of the Township and with the spirit and intent of the Planned Unit Development Chapter of the Zoning Ordinance. The Revised Project has been determined to be a "Residential" use, which is consistent with the Cascade Township Comprehensive Plan.
- D. When constructed and maintained in full accordance with the Cascade Township Ordinance and this Ordinance, the Township finds that the Revised Project will not result in an unreasonable negative economic impact upon surrounding properties.
- E. The Township finds that the Revised Project will have at least the same amount of green areas and usable open space than would typically be required by the Zoning Ordinance.
- F. This Ordinance also incorporates and adopts the staff comments and conclusions on pages 3-4 of the staff report dated May 13, 2020, the requirements of the Fishbeck letter stated May 12, 2020 and the Materials Testing Consultants letter of April 2, 2020 as additional findings and requirements by the Township Board.
- G. Finally, the Township recognizes that the Revised Project will be under single ownership or control. The Township recognizes that the Developer or its assigns will retain ownership and control of parts of the premises until a majority of the site condominium units/lots are purchased for single family residential purposes at

which point the Homeowners Association shall manage and control the Revised Project. However, this shall not lessen any obligation of the Developer pursuant to this Ordinances and other applicant Township ordinances.

SECTION XVIII. EFFECTIVE DATE.

This Ordinance/Ordinance amendment shall become effective upon the expiration of seven (7) days after publication of this document (or a summary thereof) in the *Grand Rapids Press*, a newspaper of general circulation within Cascade Charter Township.

The foregoing Ordinance/Ordinance amendment was offered for adoption by Township Board Member \_\_\_\_\_ and was supported by Township Board Member \_\_\_\_\_, with the roll call vote being as follows:

YEAS: \_\_\_\_\_  
\_\_\_\_\_

NAYS: \_\_\_\_\_

ABSENT: \_\_\_\_\_

ORDINANCE/ORDINANCE AMENDMENT DECLARED ADOPTED.

**CERTIFICATION**

I hereby certify the foregoing to be a true copy of an Ordinance/Ordinance amendment adopted at a regular meeting of the Cascade Charter Township Board on the \_\_\_ day of \_\_\_\_\_, 2020.

\_\_\_\_\_  
Susan Slater  
Cascade Charter Township Clerk

\* \* \*

Finko, LLC has fully read the above PUD ordinance amendment document, understands its provisions and fully agrees with all requirements and conditions contained in the same, on

behalf of it and also its assigns, creditors, successors, heirs, agents, contractors, and transferees in and to the property involved.

Date: \_\_\_\_\_, 2020

Signature: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
Managing Member of Finko, LLC



220 Lyon St, NW, Suite 410 • Grand Rapids, Michigan 49503  
Office 616.458.3600 • Fax 616.284.3067 • hilgerhammond.com

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[cnnyenhuis@hilgerhammond.com](mailto:cnnyenhuis@hilgerhammond.com)  
\*Also admitted in Wisconsin

May 8, 2020

Cascade Township Planning Commission  
c/o Steve Peterson  
Cascade Township Supervisor  
2865 Thornhills SE  
Grand Rapids, Michigan 49546-7140

**Re: May 18, 2020 Cascade Township Planning Commission Meeting**

Dear Mr. Peterson:

Thank you for considering the Rohdes' comments on the revised Roundhill PUD Ordinance and keeping the dialogue open in anticipation of the May 18, 2020 Planning Commission meeting. This letter responds to your May 4, 2020 communication, in which you attached the Township's current version of the Revised Ordinance and requested that we send any comments to you.

Our comments on the Revised PUD Ordinance are minimal—but critical. Fundamentally, as it appears the Developer will finally install the retaining wall shown on the approved 2016 site plan and storm water control site plan, our remaining principal concern is that the Township require the Developer to repair the damage it caused to the Rohde property. If the Township does not enforce its Ordinance, we may remain embroiled in litigation, which is certainly not the Rohdes' preferred method of addressing the damage done. We have been attempting to craft a resolution directly with the Developer/Builder, however and respectfully, the Developer has not responded to our overtures.

**Comments on Revised PUD**

Again, we thank you for soliciting our comments on the proposed PUD.

1. **Paragraph X.B.7: Please revise this provision for drafting and substantive consistency with XIV-B-4 which requires a \$20,000 escrow.**
2. **Former paragraph XIV.B.4: Please restore this paragraph.**

The 2016 PUD required the Developer to post a \$50,000 bond principally for the purpose of addressing the Township Board's serious concern about potential soil erosion control problems. As this saga has revealed, that bond is critical to ensuring damages that the Development causes are timely remedied. As you may recall, during its January 13, 2016 meeting, the Township Board remanded consideration of the PUD to the Planning

Commission to require a bond “to further control erosion” and to “beef up” the Site Development Maintenance Agreement to provide “more protection” long term. During its February 1, 2016 meeting the Planning Commission accepted the Board’s guidance and adopted the Township engineer recommendation that the Developer obtain such a bond in the amount of \$50,000.<sup>1</sup>

Most unfortunately, the Developer never obtained the bond. If the Bond had been in place, the damages to adjoining property could have been avoided, mitigated, or remediated years ago by calling on the surety to perform Developer’s responsibilities. The last four years have demonstrated that such a bond is a critical component to securing the rights of the Township and protecting adjoining property owners, precisely the purpose behind the Township’s Storm Water Maintenance Ordinance.

**3. Paragraphs V.M. and XIV-B-4 should remain in place, with a Performance Warranty in an amount no less than \$122,000.**

We appreciate including the condition that the Developer remediate the damage that the Development has caused to the Rohdes’ property (V.M.) and require a Remediation Guaranty to secure that performance (XIV-B-4). It is fair and reasonable for the Developer to clean up its mess before proceeding with the Development and the Township has the authority to require such action. Further, a remediation provision is the best way to correct the damage that the Development has caused the Rohdes’ property, restore highly visible land along Thornapple River Drive, and end the current litigation against the Township.

The Township’s Storm Water Ordinance (SWO) gives the Township the authority to require the Developer to remediate the damages it caused. The SWO recognizes that flooding is a “danger to the lives and property of the public” and “a danger to the natural resources of the Township.” (§1.02-2). The SWO recognizes that land development increases “storm water runoff rates and volumes, increased flooding, increased stream channel erosion, and increased sediment transport and deposition.” (§1.02-3)

Among other things, the Storm Water Ordinance requires the Developer to:

- Prevent soil from being eroded and discharged and deposited onto *adjacent property*, in this case the property of Mr. and Mrs. Rohde. (§3.05-1, emphasis added)
- Prevent damage to *adjacent or nearby property*, in this case the property of Mr. and Mrs. Rohde. (§3.05-2e, emphasis added)
- Maintain all soil and sedimentation controls to comply with the SWO. (§3.05-2h)
- Promptly remove all soil and other materials dumped on *any land*. (§3.05-2i)
- Refrain from grading lands at locations near other *private property* without adequate measures to protect such property from damages. (§3.05-2j)

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<sup>1</sup> Copies of the January 13, 2016 Township Board meeting and February 1, 2016 Planning Commission meeting are enclosed.

The SWO gives the Township the right and the power to order the Developer to comply with the Ordinance, and if the Developer refuses, the Township can perform the work and record a lien against the Developer's property. (See Article VI – Enforcement). That is, the Ordinance provides the mechanism to enforce developer's obligation to protect adjacent property and repair the damages to such property.

In this instance, the Developer violated the Ordinance, very badly. Consequently, the three points raised above are critical to the Rohdes for purposes of moving forward and finally resolving this matter. As to the rationale for the Rohdes' position on these points, rather than repeat all of the information previously submitted to the Planning Commission, we direct you to the numerous reports of the Kent County Road Commission documenting failures of soil erosion control measures and insisting that the retaining wall be built, photographs, and other information previously submitted to the Planning Commission in Rohde's August 6, 2019 Letter to the Township Board, August 14, 2019 Letter to Messrs. Swayze and Peterson, August 27, 2019 Letter to the Township Board and Mr. Swayze, and December 13, 2019 Letter to the Planning Commission.

According to the engineering firm, Fleis & VandenBrink, the Development caused 238 cubic yards of sediment to flow onto the Rohdes' property. That's over 23 dump trucks of dirt. Enclosed is a diagram that Fleis & VandenBrink prepared showing the flow of the sediment. The Development also caused stormwater to flow through the Rohdes' property, under Thornapple River Drive, and into the Thornapple River. Along the way, the sediment and stormwater runoff caused mature trees to topple, allowed invasive oriental bittersweet vines to thrive, and carved a ravine on the way to the Thornapple River. Enclosed are photos of some of the damage.

In October 2019, the Rohdes hired Vic Foerster, of Arbor Consultants, to inspect the damage to the Rohdes' property, ascertain the cause, and estimate the cost to remediate the damage. Mr. Foerster is an extremely well-regarded arborist and forestry expert, with more than 35 years of experience. Enclosed is Mr. Foerster's report, which includes additional pictures of the damage. The report concludes that the erosion from the Development is cutting off oxygen to the trees on the Rohdes' property. This has either killed trees or put them under severe stress, which will ultimately kill more. The Development also caused oriental bittersweet vines to take over the area and, by clear cutting the surrounding property, created a wind tunnel that has blown over other trees. Mr. Foerster estimated the current and future damage to the Rohdes' property to be \$212,335.00. This does not include the cost to remove the 238 cubic yards of sediment that flowed onto the Rohdes' property.

Since October, the Rohdes have persistently tried to seek a resolution with the Developer /Builder to remediate the damage done. Unfortunately, the Developer has largely failed to meaningfully engage in finding a remediation solution. To that end, the Rohdes' obtained and presented to the Developer a compromise solution. Even though the damage to their property was much more, the Rohdes presented a remediation option that would cost \$122,000. A copy of that estimate is enclosed. Despite the Rohdes' willingness to reduce the amount that they are owed by almost \$100,000, the Developer has never responded to the Rohdes' plan and offer to compromise.

Accordingly, the Rohdes request that Section XIV.B.4 of the Revised PUD Ordinance provide that the Developer contribute \$122,000 into an escrow account, to implement the compromise remediation plan. Including such a provision is the best way to remedy past harm to the Rohdes' property, revitalize a highly visible section of Thornapple River Drive, and end the current litigation.

Thank you and the Planning Commission for your consideration. We are happy to discuss any questions that you may have in advance of the Planning Commission meeting. Otherwise, we look forward to making our presentation at the May 18 meeting. Very truly yours,

**HILGER HAMMOND**



Christopher E. Nyenhuis

Enclosures

cc: Clifford Bloom  
David Otis  
Mark Rohde

## SCOPE OF WORK

Arbor Consultants is to provide an estimate for the following services:

### **Tree & Stump Removal:**

**Projected Cost: \$35,000.00**

- Provide an estimate for the removal of all dead and dying trees in the valley north of the home – to include the trees on the Round Hill Development property that is beside the Rhode property.
- Provide an estimate for removing the blown over trees.
- Provide an estimate for the cleanup of the logs and brush on the ground.
- Provide an estimate for the grinding of stumps.
- Provide an estimate for the removal of the root balls from the heaved-over trees.
- A cost to repair site damages caused by tree & stump removal services.

All tree and stump removal services include the complete removal of all wood, brush and stump chippings.

### **Estimates for Oriental Bittersweet Eradication:**

**Projected Cost: \$12,000.00**

- Provide an estimate for Oriental bittersweet eradication.
- Services to include a two-year treatment plan that contains two treatments per year.
- The treatment plan is to include severing vines and dabbing stems with herbicide and/or spraying the foliage with only a foliar uptake herbicide.

### **Replanting valley to re-establish the woodland habitat:** **Projected Cost: \$75,000.00**

- Planting of approximately one hundred woodland trees and woody understory plants.
- Application of mulch, planting soil – where needed, and provide support staking and gator bags.
- Application of short woodland mix – 3/4acre
- Application of cover crop – 3/4 acre.
- Erosion control blanket
- Silt fence to protect drainage swale
- Fill gator bags twice a month for 7 months.

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**Total Projected Cost: \$122,000.00**

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**MR. AND MRS. MARK RHODE  
TREE / PROPERTY DAMAGE ASSESSMENT  
REPORT**

October 31, 2019



For

Hilger Hammond, PC  
Attorneys at Law  
Chris E. Nyenhuis

220 Lyon St. NW, Suite 410  
Grand Rapids, Michigan 49503

By

Arbor Consultants  
Vic Foerster

P.O. Box 151455  
Grand Rapids, MI 49515

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TREE APPRAISAL FIELD NOTES – POTENTIALLY DAMAGED TREES



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**MR. AND MRS. MARK RHODE  
TREE / PROPERTY DAMAGE ASSESSMENT  
REPORT**

October 31, 2019

**INTRODUCTION**

In early September, I was contacted by Ms. Aileen M. Leipprandt, an attorney with the Hilger Hammond Law Firm, representing Mr. & Mrs. Mark Rhode. During our phone conversation and later email correspondences, Ms. Leipprandt retained the services of Arbor Consultants to assess the tree and property damages to the Rhode residence located at 3087 Thornapple River Drive in Grand Rapids, Michigan.

On September 13<sup>th</sup>, 2019, I met with Mr. Mark Rhode for a preliminary meeting to discuss damages done to his property. During our meeting, we reviewed the design and construction history of the Round Hill Development located. Mr. Rhode also provided me with photographs and documents related to the damages caused to his property.

On September 16<sup>th</sup>, 2019, a meeting was held at the Rhode home where I met Mrs. Rhode, the family's attorneys, and engineers to discuss moving forward with assessing damages incurred. We also performed a site visit.

**PERSONAL BACKGROUND**

I have testified in several courts throughout the State of Michigan as a tree expert witness. I am a long-standing Certified Arborist – the 14<sup>th</sup> so designated within Michigan. I am a twenty-year member of the American Society of Consulting Arborists. I've worked in the tree care profession since September of 1974.

In 2019, I was selected by the Arboricultural Society of Michigan as the recipient of the Professional Award in recognition for outstanding contributions to the urban forestry and arboricultural profession.

I've served as an advisor or board of director for several environmental, municipal and state-wide tree care organizations. I served as Chairman for the Michigan Department of Natural Resources Urban Forestry Advisory Council, served as a member of the City of Grand Rapids Urban Forestry Advisory Council, which is recognized as one of the most respected and progressive urban forestry programs in the country by the American Forests Association and the Arbor Day Foundation. I am a founding board of director for the West Michigan Nursery and Landscape Association. I have also served as a tree preservation instructor for the West Michigan Home Builders Association.

I have the privilege of working with several municipal, commercial and residential clients; including the City of Grand Rapids, the City of Holland, Grand Valley State University, Cornerstone University, Muskegon Community College, Herman Miller Inc., as well as by many estates, condominiums developments and single family homes, one of which includes caring for Mrs. Mary Jane Dockery's flowering crab tree – my toughest client.

Recent contributions of note are two critically acclaimed authored books, "Naked in the Stream, Isle Royale Stories" and "Hidden in the Trees, An Isle Royale Sojourn."

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## **SCOPE OF WORK**

Arbor Consultants is to provide the following information:

- Identify and describe the cause of damages to Mr. and Mrs. Rhodes' woodland as a result of the Round Hill Development Project.
- Provide a financial appraisal of the damages.
  - To include a separate financial appraisal for the projected damages if the soil erosion, windthrow, and siltation problem is not corrected soon.
- Write a remediation plan. The plan is to include:
  - Proper clean-up and removal of the damaged and destroyed trees and vegetation.
  - Resolve the increased spread of the invasive vine, Oriental bittersweet.
  - Include a restoration plan for the lost trees and vegetation. Establish a financial cost for those reparations.
  - Include additional plantings to help secure the soil and remediate erosion issues. Establish a financial cost for those reparations.

- Forecast future damages to the Rhode property if the soil erosion problem and windthrow is not corrected. Establish a financial cost for possible future reparations.

## **GENERAL SITE OBSERVATIONS**

### The Rhode Residence

The Mr. & Mrs. Mark Rhode residence is located at 3087 Thornapple River Drive in Grand Rapids, Michigan. The home is situated on an approximately three-acre wooded parcel zoned single family residential. The landscape surrounding the home is well established and attractive. The landscape and lawn are very well maintained.

Surrounding the home and formal landscape is a wooded parcel that contains mixed hardwoods. The trees range in age from young saplings to approximately 90-year-old trees. The tree species include red and white oak, sugar maple, red maple, American basswood, black cherry, ironwood, American beech, American elm, hickory, hackberry, white and red pine, and box elder.

The property slopes from north to south toward the Thornapple River, which is located across the road from the Rhode residence. There is a woodland valley located in the east section of the Rhode property. The valley sometimes carries water at its bottom. The water flows through a culvert under Thornapple River Drive where the water eventually flows into the river.

The damages incurred to the Rhode property by the Round Hill Development Project are primarily in this wooded valley. The damaged area measures approximately 210 feet wide and 260 feet long. (Site Maps Enclosed)

### The Round Hill Development Property

The Round Hill Development is located uphill and directly behind the Rhode property. (See Site Maps) Prior to development, the Round Hill property was mostly wooded and similar in nature to the Rhode woodlot. The site has been almost completely cleared of trees and vegetation for the development.

When I inspected the development property, there were ten available building sites on a single cul-de-sac street. Three condominiums were built or under construction at the time of my inspection. Little landscaping had been installed. The site primarily consists of bare earth that has been graded flat, presumably for the building of the street and future homes.

Lots six and seven abuts the Rhodes' property. At the rear of the two lots, the land has been graded into a steep bank at the back-property line. (Appendix A)

The bank's grade falls toward the Rhode property at approximately 45-degrees. A recently installed siltation control fence with bales of straw and straw mats were placed on the slope. Water seeped under the erosion control measures.

## **GENERAL DAMAGE DESCRIPTION**

I visited the Rhode property several times during the months of September and October of 2019. During my site visits, I observed the following damages to the Rhode property.

- Several trees are dead, dying and/or blown over in the wooded valley. A list of the damaged trees is in the enclosed Tree Damage Appraisal Work Sheets.
- Much of the undergrowth has died in the valley.
- Soil is washing down from the Round Hill Property across the Rhode's wooded valley and is burying the root collars and root fields of several trees, as well as the undergrowth.
- More trees are in jeopardy if the soil erosion problem isn't resolved. A list of the potentially damaged trees is in the enclosed Potential Tree Damage Appraisal Work Sheets.
- An Oriental bittersweet infestation has aggressively spread throughout the wooded valley.
- A windthrow situation has occurred due to the clear-cutting of the trees for the Round Hill Development.

## **CAUSE OF DAMAGES**

### **1. SOIL EROSION**

Soil is washing onto the Rhode property from the Round Hill Property. The excess soil is being deposited in the wooded valley and burying trees to the point of cutting off oxygen to their roots. Several trees have died or are under severe stress. (Photos Enclosed)

At Issue:

Tree roots are far shallower in the soil profile than is generally understood. Tree roots of even the largest of trees grow primarily within the top one-to-two feet of earth. The reason tree roots grow this shallow is that tree roots need to breathe as well as absorb water, nutrients and anchor the tree.<sup>i</sup>

The deeper in the soil profile roots penetrate, the less oxygen there is due to the weight of the earth compacting the soil. Below approximately two feet, the air spaces between soil granules becomes so compressed the air gaps are squeezed closed, cutting off air supply to plant roots.<sup>ii</sup>

Tree roots also remain shallow because the top six inches of the soil profile is where the most organic material is located. Organic material – leaf, wood, and animal litter are rich in nutrients and contain micro-organisms that greatly assist tree roots to absorb nutrients and water.<sup>iii</sup>

\*

Several inches of soil have accumulated in the Rhode valley due to the lack of soil erosion control for the construction of the Round Hill development. It takes only a few inches of added soil to make a big difference to the viability of tree roots.

The increase of soil is a deceptive problem for the general public. It is not commonly known that when trees are backfilled, for any reason, trees don't normally immediately die or show symptoms of stress. Symptoms may take two-to-seven years to appear as trees can survive on their stored sugars for several years. Due to the time delay in symptoms appearing, the general public doesn't always connect tree decline with past construction activities.

## 2. ORIENTAL BITTERSWEET

The loss of so many trees in the valley has increased sunlight to the once wooded valley. The increased sunlight has caused Oriental bittersweet to aggressively spread throughout the valley. (Photos enclosed)

At Issue:

Oriental bittersweet is an invasive, exotic vine that can overwhelm woodland habitats. The foliage from the vines can block all sunlight to the leaves of existing trees, shrubs and ground cover plants.<sup>iv</sup>

If allowed to spread, the vine can completely take over a landscape or forest. Oriental bittersweet has been compared to the Kudzu vine epidemic in the Southeast region of the United States.

Control of Oriental bittersweet is labor intensive and difficult. Proper control is administered by cutting each vine and dabbing the freshly cut stems with a non-selective herbicide. The herbicide then translocates through the plant's vascular system to eradicate the plant. Complete control takes several applications over the course of several years to accomplish.

Careful disposal of the severed vines is recommended.

### 3. WINDTHROW

With the removal of the trees for the Round Hill Development, a windthrow<sup>v</sup> situation has been created for the Rhode woodlands. (Photos Enclosed)

At Issue:

Prior to construction, the Round Hill Development was mostly wooded. With the removal of the trees for the development, the wind protection their trees once provided to the Rhodes' trees is gone.

The Rhode trees, particularly those along the border, have not adapted to withstanding the full strength of the wind. The tree roots have not had adequate time to adjust to full exposure and thus, the roots are not strong enough to support the tree.

The death of tree roots due to the previously mentioned soil erosion caused backfill has also made the Rhode's trees susceptible to windthrow.

Several large trees have blown over. The fallen trees have then fallen into other trees, knocking them down as well. Tree damage has occurred in a domino fashion.

In addition, the still standing dead and dying trees will eventually fall over. More damage will occur if the dead and dying trees are not properly removed to avoid further tree damage.

The uprooted trees have created crater-shaped holes. (see photos) The exposed soil adds to the erosion problem.

\*\*\*

## FINANCIAL APPRAISALS

### TREE LOSSES

Forty-two trees, three inches in trunk diameter and larger, have been lost or are severely damaged due to the Round Hill Development Project. Each tree has been inventoried, assessed by Certified Arborists, and appraised. The dead and severely damaged trees are appraised at \$25,635.00.

Details of the tree appraisals for each damaged tree is in the Damaged Tree Appraisal Work Sheets.

## TREE APPRAISAL METHODOLOGY

When appraising trees, several factors are considered. Those factors include a tree's size, its species, condition, and location.

Size: In general, the larger a tree, the more valuable it is. To adequately take into account the value of trees too large to be replaced with an equal size tree, the International Society of Arborists has established the 'Guide for Plant Appraisal, 9<sup>th</sup> Edition', to assist plant appraisers to calculate appropriate large tree values. When coupled with regional guides, such as the 'The Michigan Tree Valuation Guide, Eleventh Edition,' reasonable financial values for mature trees can be determined.

Species: A tree's species must be considered to accurately appraise a tree. In Michigan, sugar maples are considered more valuable than ash trees. White oaks are considered more valuable than box elders. For the purposes of this report, the Michigan Supplement was used to apply the appropriate tree species values for the Rhode tree appraisals.

Condition: The condition of a tree is considered. Since healthy trees are more valuable than unhealthy trees, each of the damaged trees were examined for its condition prior to the onset of the Round Hill Project. Tree condition assessments were performed by Certified Arborists familiar with the growth habits of each tree species.

Location: A tree's location is also important to its value. For example, a single maple tree located in the front lawn of a suburban residential home is considered more valuable than one set in a grove at the back of a wooded property. Conversely, a lone willow tree set by a distant pond may be more valuable than the same willow tree that hangs over a swimming pool and creates a maintenance problem for a homeowner.

The damaged trees in the woodland valley on the Rhode property provided a wind buffer, a visual screen, wildlife habitat and soil erosion control. The trees also created a wooded landscape backdrop for the home.

## POTENTIAL TREE LOSSES

Thirty-three trees, three inches in trunk diameter and larger, are at significant risk of being lost or severely damaged due to the Round Hill Development Project. The cause of future damages is identical to those of the current damaged trees. Each potentially damaged tree has been inventoried, assessed, and appraised. The trees at risk are appraised at \$17,433.00.

The tree appraisal methods used for the potential tree losses are identical to the methods used for the damaged trees.

Details of the tree appraisals for the potentially damaged trees are in the Potential Damaged Tree Appraisal Work Sheets.

#### **COSTS FOR CLEAN UP AND DISPOSAL OF DEAD, DYING AND DAMAGED TREES AND VEGETATION**

Estimates were received for the appropriate clean-up, removal, and proper disposal of fallen, dead and damaged trees on the Rhode property as a result of the Round Hill Development Project.

Where appropriate, a cost for stump grinding or cost for removal of the upheaved stumps is also included.

Approximate total projected clean-up costs are \$25,000.00.

#### **ORIENTAL BITTERSWEET REMEDIATION APPRAISAL**

Treatment consists of cutting the vines and treating the freshly cut stems with a non-selective herbicide or treating the foliage of active plants with Round-up®. Successful treatment requires repeated treatments. One-to-two treatments per year for three years will be required. (Endnote IV)

Proper clean-up of cut vines is necessary.

Projected costs for Oriental bittersweet remediation are \$17,000.00.

#### **REMEDICATION PLANTINGS**

To resolve the soil erosion problem in the valley and to properly begin restoration of the woodlands to their pre-existing condition, appropriate numbers and selection of tree species, woody plants and ground covers need to be installed and maintained.

Due to the extensive plant losses, portions of the woodland valley are now bare earth. The exposed soil will wash away without being secured with new plants and trees. The remediation planting should occur as soon as possible to reduce further erosion, which in turn, would cause further damages.

Current remediation planting and maintenance costs are projected to be \$94,700.00.

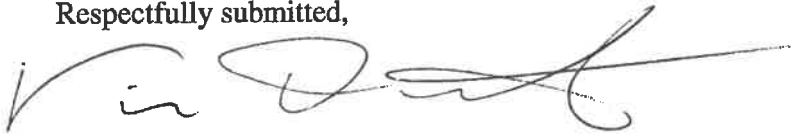
The cost of plant remediation will need to be increased if replanting efforts do not begin by the Spring of 2020.

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**Total appraised value of the current tree and vegetation damages to the Mark Rhode property are \$162,335.00.**

**Projected appraised value for potential future tree and vegetation damages are approximately \$50,000.00.**

Respectfully submitted,



Vic Foerster  
Certified Arborist, MI-0014  
ASCA, Member

Encls:

VF:an

## END NOTES

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<sup>i</sup> The Morton Arboretum,  
Tree Root Problems Bulletin

<sup>ii</sup> The Minnesota Department of Natural Resources  
Tree Care / Maintenance Bulletin

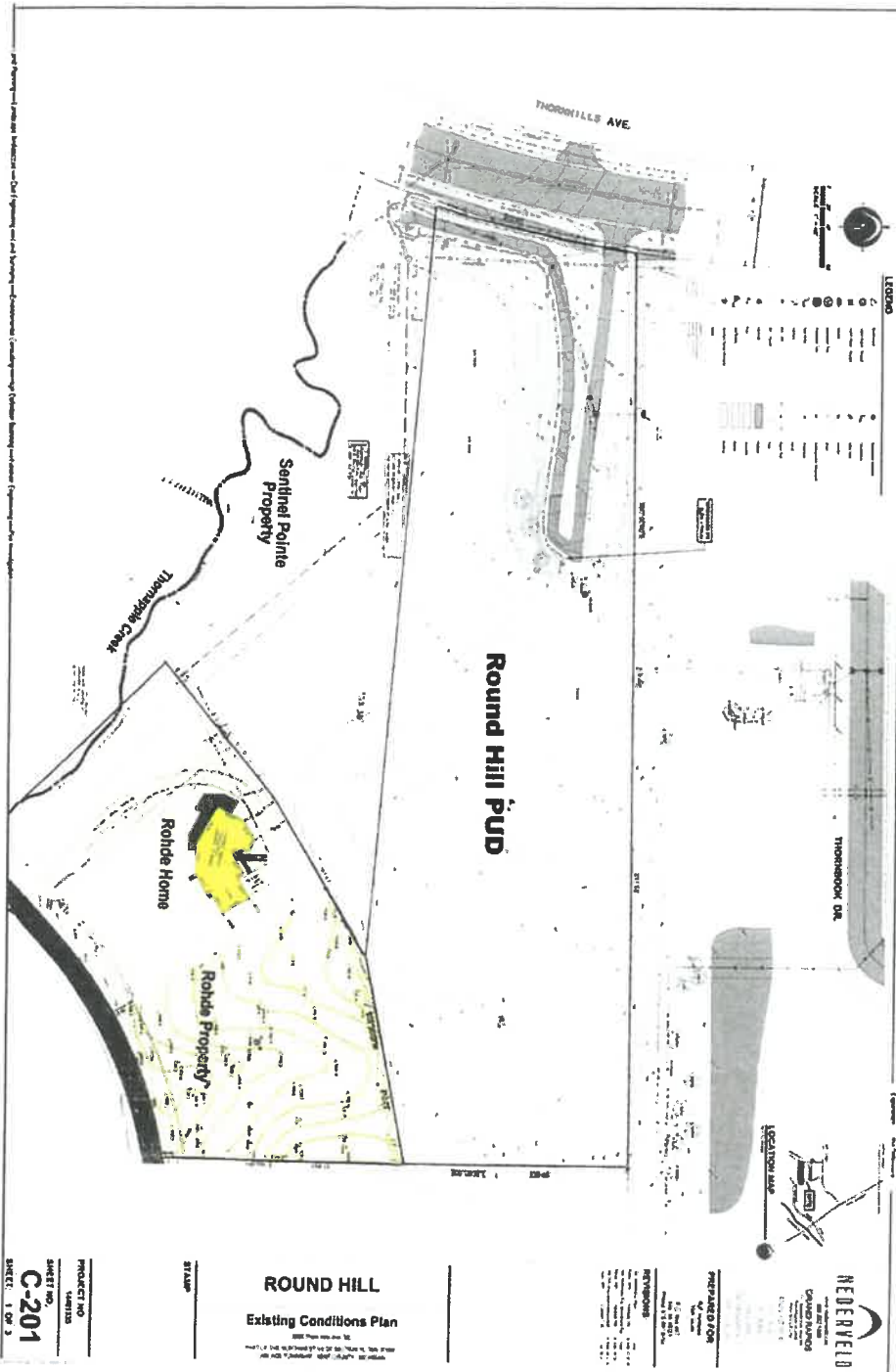
<sup>iii</sup> Tree Roots Facts and Fallacies  
Thomas Perry, Arnold Arboretum, 1989 Articles

<sup>iv</sup> Michigan Department of Natural Resources  
Invasive Species – Best Control Practices, February 2012

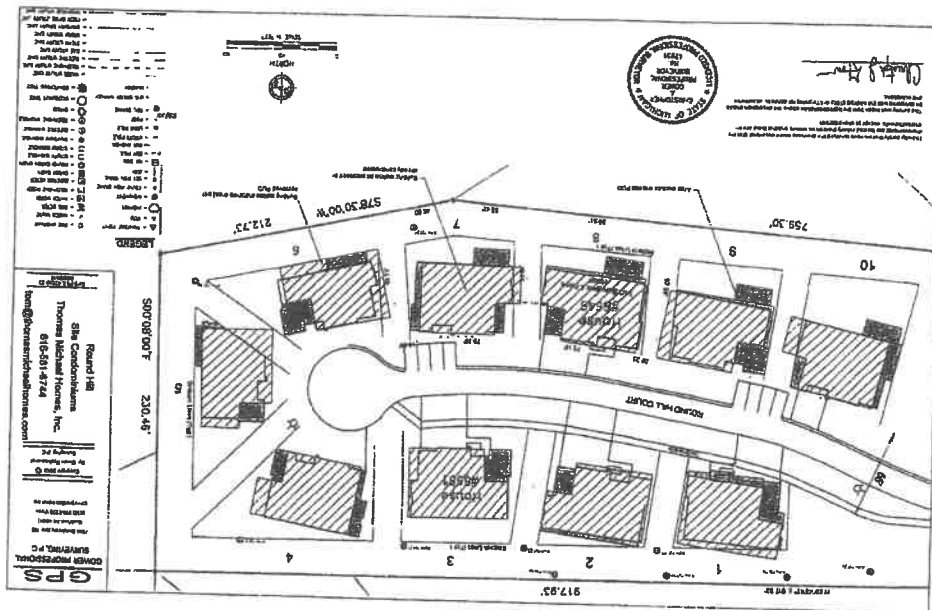
<sup>v</sup> Windthrow of Trees, Storm or Management  
Greg Moore, International Society of Arboriculture Conference, Florida, August 2015

# PLAT MAPS

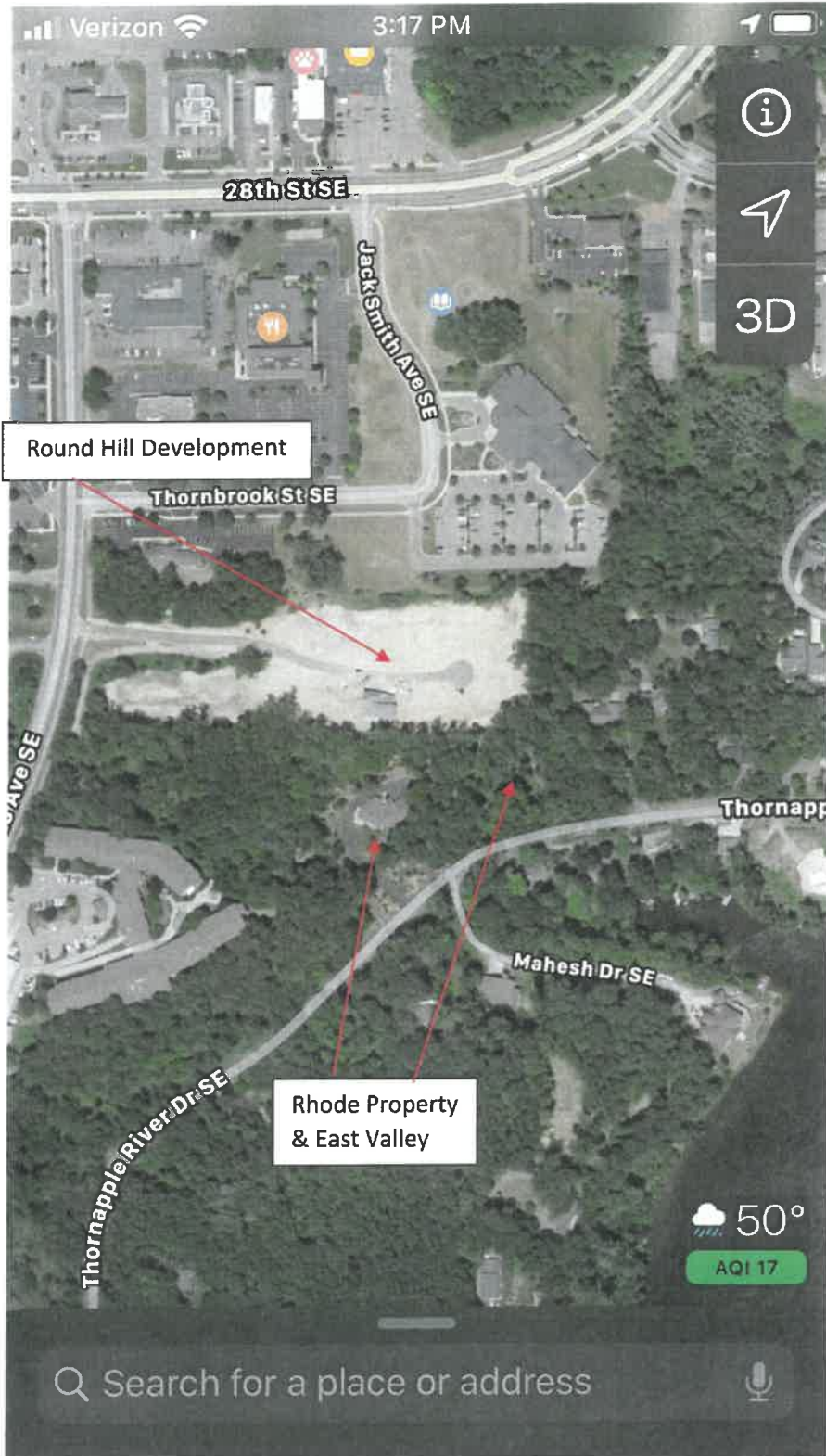
## RHODE PROPERTY / ROUND HILL DEVELOPMENT



# ROUND HILL DEVELOPMENT



**AERIAL VIEW**



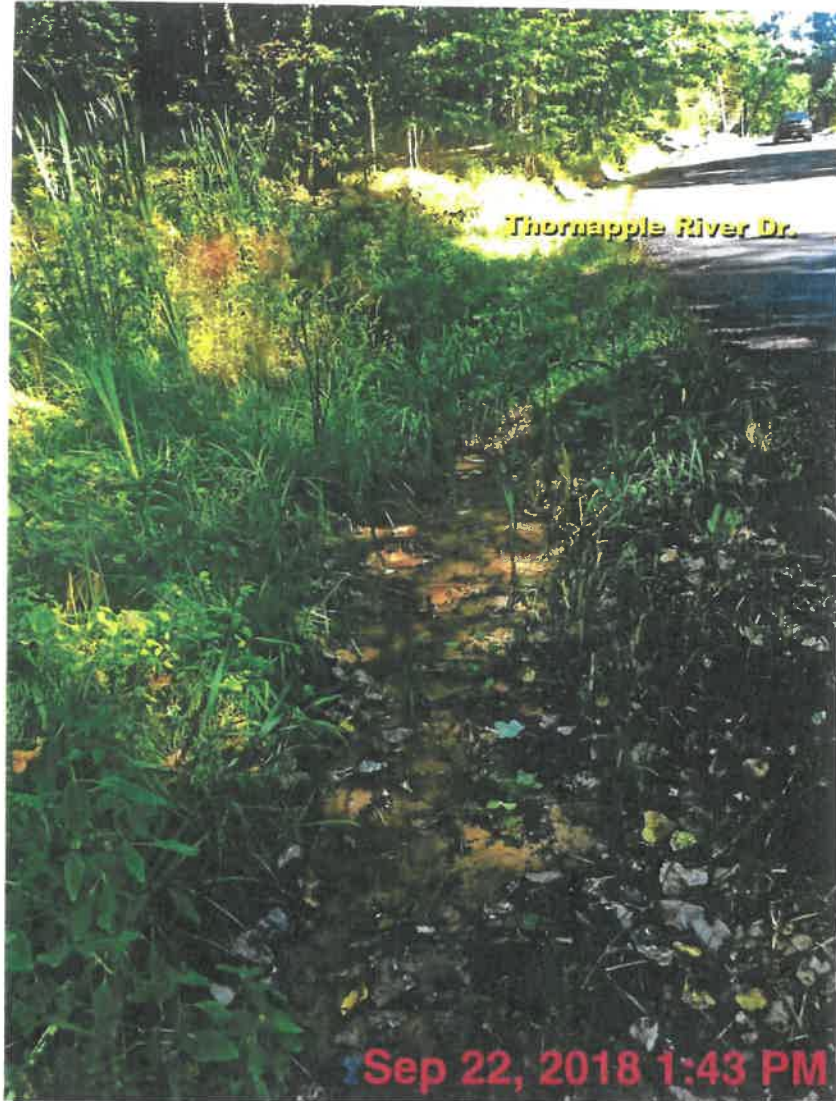
**EROSION PHOTOS**

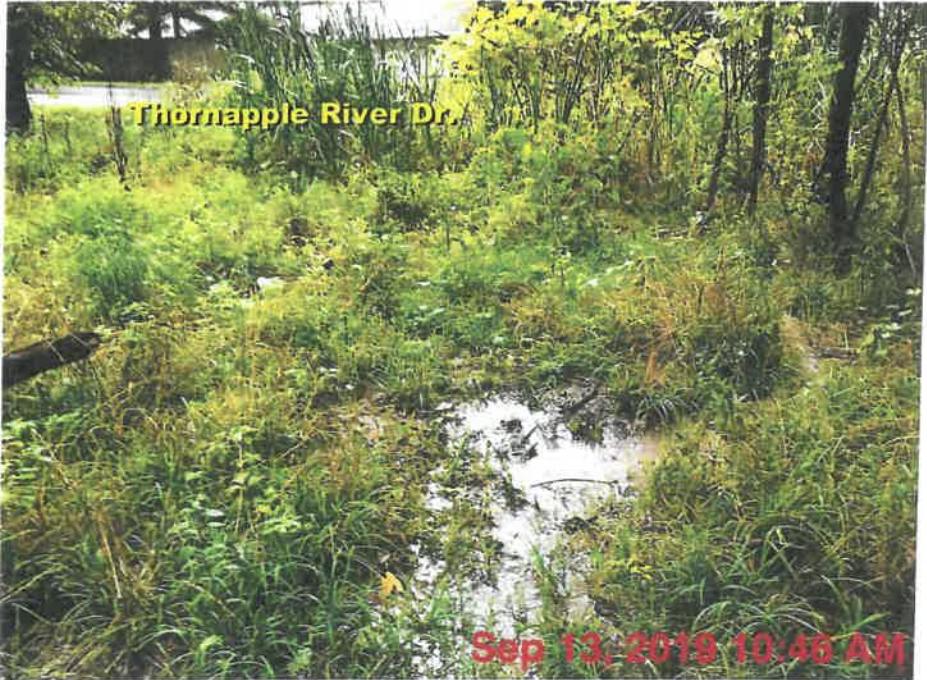
**BACKFILL & TREE ROOT, VEGETATION  
DAMAGES**















**PHOTOS**  
**ORIENTAL BITTERSWEET INFESTATION**





Sep 22, 2018 1:39 PM



Sep 13, 2019 10:44 AM





# Oriental bittersweet

*Celastrus orbiculatus*

Oriental bittersweet is an invasive, non-native vine that is native to China, Japan and Korea. It was introduced into the United States around 1860 as an ornamental plant. Its fruiting stems are cut in fall and used for decoration, which unfortunately facilitates its spread. Hybridization with the native American bittersweet has been observed in the laboratory but it is not clear how commonly this occurs in the wild.

Oriental bittersweet poses a significant threat to native plant communities. It grows rapidly and can shade out the vegetation that supports it. It girdles trees and shrubs, cutting off the flow of water and nutrients. Weakened trees, burdened with the weight of massive woody vines and leaves, are particularly vulnerable to damage from ice and windstorms. Oriental bittersweet can spread from tree to tree in the forest canopy. When one tree falls or is cut down, attached trees may be pulled down, also.

Although it is most productive in full sun, bittersweet germinates readily in low light. It responds to increased light and maximizes stem growth to reach the forest canopy.

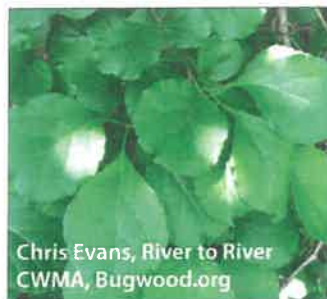
## Identification

### Habit:

Oriental bittersweet is a deciduous, woody, twining vine that may reach 30 m (98.5 ft) in length and 18 cm (7 in) in diameter. It climbs by coiling around trees, shrubs and any other available support. It has a deep, extensive root system.

### Leaves:

Oriental bittersweet's leaves are alternate, glossy and finely toothed. They are often rounded but are variable in shape. They range from 5 to 13 cm (2 to 5 in) long and have pointed tips. They turn yellow in fall, and retain their leaves late in the season.



Chris Evans, River to River CWMA, Bugwood.org

### Bark/Stems:



Max Williamson, USDA FS, Bugwood.org

Bittersweet's stems are light or medium brown, with white pith. They often have noticeable light horizontal marks. Stems may climb up to 18 m (60 ft) high in trees. Roots are a bright orange.



James R. Allison, Georgia DNR, Bugwood.org

### Flowers:

Oriental bittersweet has small, greenish yellow, five-petaled flowers that are clustered in the leaf axils. Male and female flowers usually occur on separate plants and sometimes male flowers are at the tip of the branch. They bloom in May and June.



Nancy Loewenstein, Auburn University, Bugwood.org

### Fruits/Seeds:



James R. Allison, Georgia DNR, Bugwood.org

Bittersweet has conspicuous bright fruits. The yellowish-orange outer skin covers a fleshy scarlet aril, with 3 to 6 seeds. The fruits are clustered in leaf axils of female plants and persist through winter.

### Habitat:

Oriental bittersweet occurs in grasslands, open woods, woodland edges, closed-canopy forest, roadsides and fence rows. It also has become a problem on beaches and dunes in some states. Although it is most productive in full sun, its seedlings are extremely shade-tolerant.

## Similar species

### American bittersweet

The native American bittersweet (*Celastrus scandens*) has elliptical rather than rounded leaves. The flowers and fruit of the female plants occur in a single clump at the tips of the stems rather than spread along the stems. Male flowers of the native may occasionally occur along the stems but will not produce fruit.



American bittersweet can also be distinguished from Oriental bittersweet by its leaves when they are just beginning to emerge from the bud. Oriental bittersweet leaves are folded flat along the midvein. American bittersweet leaves curl along the edges toward the midvein and look like a rolled up scroll in cross-section.

American bittersweet is protected under the Natural Resources and Environmental Protection Act 451 of 1994, Section 324, Part 529. It cannot be cut or transported without a bill of sale or proof of ownership under Michigan law. It is also listed as a Species of Special Concern in Michigan.

### Bristly greenbriar



Bristly greenbriar (*Smilax tamnoides*) and other members of the *Smilax* genus have leaves with conspicuous parallel leaf veins, running the length of the leaf. They lack sharp teeth. Their fruits are dark purple and arranged in a ball. Many have thorns or

bristles (at least at their bases) and attach with fine tendrils.

## Reproduction/Dispersal

Oriental bittersweet reproduces by seed and vegetatively by spreading underground roots that form new stems. Large clones can develop from one or a few seedlings. Bittersweet also sprouts from the root crown, and even small root fragments can regenerate. Most plants bear either male or female flowers but a few will also produce perfect flowers with both male and female parts. Plants mature quickly, and both male and female plants can produce flowers at two years of age. Mature female plants produce prolific fruit, and fruit production is highest in full sun.

Bittersweet fruit is eaten by birds and small mammals. Although it is nutritious, it is not eaten until late in winter. The seed is retained in the gut of birds for a long time, aiding in long-distance dispersal of the species. In one Japanese study, the seed remained in the gut of birds for 14-42 days. Humans are also a significant vector for dispersal when they

plant the species or compost ornamental wreaths composed of its fruiting stems.

The seed is able to germinate under conditions with very low light levels. Plants growing in shade persist until a little more light becomes available and then rapidly grow up to reach the forest canopy before producing much fruit. Once they have access to increased light levels, fruit production increases accordingly.

Germination rates may be higher on mineral soils or sites with sparse leaf litter but a thick leaf litter will not prevent all germination. Areas with exposed mineral soils such as beaches or newly burned sites are particularly vulnerable. Plants growing in open areas can form dense clones and spread over relatively large areas.

Most seed germinates within one year. Because so much of the seed germinates immediately, there is only a short-lived seedbank, although there are conflicting reports regarding this in the literature. Because seeds are retained in birds' stomachs for so long they can disperse relatively long distances and plants up to a kilometer away can easily provide a seed source for re-invasion.

## Planning a control program

Resources for invasive species control invariably fall short of the actual need, so it is important to prioritize sites for treatment and plan carefully. Assessing both the scope of the problem and any available resources is a critical first step:

- Map known populations. Is the species widely distributed throughout the region? Or is it just beginning to appear?
- Does it occur on high value sites? Important hunting or recreational lands? High quality natural areas? Sites with high cultural value?
- How is it distributed? Is it sparsely scattered in otherwise native vegetation? Does it cover large expanses of low quality habitat?
- Is there evidence of hybridization?

Given this information, develop a strategy for control:

1. Prioritize high value sites where success can be achieved for treatment.
2. Choose appropriate control methods, given site conditions and available resources.
3. If using herbicide, be sure to read the product label before finalizing plans. Is there potential for harm to non-target species? Have you made adequate provisions to minimize damage?
4. Do these control methods require any permits (i.e. herbicide application in wetlands, prescribed burning)?
5. Prevent further spread; focus on mature plants, particularly plants in full sun with abundant fruit.
6. Eradicate smaller satellite populations.

7. Treat larger core infestations of lower value as resources permit.
8. Monitor treated sites to prevent re-invasion.
9. Adapt management to improve success.

### Best survey period

Oriental bittersweet is easiest to locate for mapping or control in late fall. Its leaves turn a conspicuous yellow and persist into November, after the leaves of most native species have fallen. Monitoring should encompass an area up to a kilometer or more from the focal area of management, because of this species' potential for long distance dispersal. The fruit on female plants is also conspicuous.

### Documenting occurrences

In order to track the spread of an invasive species on a landscape scale, it is important to report populations where they occur. The Midwest Invasive Species Information Network (MISIN) has an easy-to-use interactive online mapping system. It accepts reports of invasive species' locations from users who have completed a simple, online training module for the species being reported. MISIN can also accept batch uploads of large quantities of data for any species.

Herbaria also provide an authoritative record of plant distribution. The University of Michigan Herbarium's database can be searched online for county records of occurrence, for example.

When Oriental bittersweet is first encountered in a county where it had not been known previously, specimens should be submitted to the Herbarium to document its presence. Check the "Online Resources" section for links to both of these resources.

## Control

Preventing seed production and dispersal is critical in controlling this species, but stopping its destructive impacts on the trees and shrubs that support it is also extremely important. A combination of mechanical and chemical methods are useful in meeting all of these goals.

In addition, because of this species' potential for long distance spread, monitoring lands within at least a kilometer surrounding the managed site to determine the location of source populations is highly recommended. Where abundant seed sources are present nearby and cannot be eradicated, monitoring may be required indefinitely.

### Mechanical control

Mechanical controls alone will not eradicate established Oriental bittersweet infestations but can effectively prevent further damage to the trees and shrubs that support its vines at least temporarily. In combination with herbicide treatment, they can provide effective control of established populations over time.

### Hand-pulling/Digging

Hand pulling established Oriental bittersweet can be difficult, particularly with the largest vines. Roots run long distances with stems emerging along the way, even in young plants. It can be hard to remove most of the root, especially in some soils. Repeated hand pulling in an area will eventually achieve control, but requires commitment and follow through.

Oriental bittersweet seedlings are easiest to remove when the soil is moist and the population is small. Pull steadily and slowly to minimize soil disturbance and tamp down the soil afterwards. In small infestations, larger plants can also be removed by digging if care is taken to remove all roots. This is not practical for larger infestations, however.

It is important to verify whether young shoots are actually seedlings or sprouts from an established plant with extensive roots. If it is the latter, chemical control methods should be used if the entire plant cannot be readily removed by digging.

Once the initial bittersweet infestation is eradicated, hand pulling may be used to remove seedlings discovered during routine monitoring.

### Cutting/Mowing

Cutting bittersweet will not provide effective control as it stimulates resprouting. It will, however, reduce its destructive effects on the trees and shrubs it is growing on for a while. Vines that are left hanging in the canopy will deteriorate and eventually fall down in two or three years.

In general, mowing will stimulate root sprouting in Oriental bittersweet. If it is repeated weekly, it may eventually exhaust the plant's energy reserves. Cutting only two or three times a season, however, will stimulate resprouting and increase the extent of the infestation.

## Chemical control

In most cases, effective control of established Oriental bittersweet populations requires the use of herbicide. Factors that should be considered when selecting an herbicide for use on a particular site include proximity to water or wetlands, presence or absence of desirable native vegetation, potential for erosion and the effectiveness of the herbicide under consideration on bittersweet. Because its leaves persist much later than many native species, fall treatment may minimize damage to desirable broadleaf plants.

### General considerations

Anyone applying herbicides as part of their employment must become a certified pesticide applicator. In addition, certification is required for the use of some herbicides under any circumstances. The certification process is administered by the Michigan Department of Agriculture and Rural



Development and a link to their website is included in the "Online Resources" section.

A permit from the Michigan Department of Environmental Quality is usually required to apply herbicide where standing water is present—in wetlands, along streams, rivers or lakes, or over open water. A link to their website is included in the "Online Resources" section.

A number of adjuvants or additives may be used with herbicides to improve their performance including mixing agents, surfactants, penetrating oils and dyes. Some are included in premixed products while others must be added. Adjuvants do not work with all products; consult the product label to determine which adjuvants may be used with a specific herbicide formulation.

Dyes are useful in keeping track of which plants have been treated and making spills on clothing or equipment apparent. Some premixed herbicide include them or they can be added to others. Clothing dyes such as Rit® can be added to water soluble herbicides, while other products require oil-based dyes. Consult the product label for specific instructions.

Crop Data Management Systems, Inc. (CDMS) maintains a database of agro-chemicals that includes herbicide labels for specific products. Herbicide labels contain information on application methods and rates, specific weather conditions, equipment types, nozzles etc. to provide the desired coverage and minimize the potential for volatilization or drift. They also contain critical information about the potential for damage to valuable non-target species. A link to the CDMS website is included in the "Online Resources" section.

**Read the entire pesticide label before use. Follow all directions on the label.**

### Herbicide specifics

Glyphosate (e.g., Roundup®, Rodeo®, Accord®) can provide effective control of bittersweet both as a foliar spray and for cut surface treatments. It is most effective for cut surface treatment while plants are fully leafed and actively growing. It should not be used in spring, while leaves are emerging and sap is flowing upward as it is not effective at this time. Glyphosate is not selective and will kill desirable non-target species.

Triclopyr provides effective control of broad-leaved plants but does not kill grasses or some conifers. It is available in both amine (e.g., Garlon 3A®) and ester (e.g., Garlon 4 Ultra®) formulations. The amine formulation can be safely used in wetlands. Some authors note that it results in better root kill than glyphosate.

Triclopyr can be used as a foliar spray once Oriental bittersweet is fully leafed out in spring until just before it changes color in fall. The ester formulation should be used with a vegetable oil based multi-purpose adjuvant (e.g. Spray-

Tech® Oil) and the amine formulation should be used with a wetland-approved non-ionic surfactant (e.g., Cygnet Plus®).

Triclopyr can also be used in conjunction with cut surface treatments. Treatments may be applied throughout the year including when snow is present, however control may be reduced in early spring when the sap is beginning to flow or during periods of drought in summer.

Ester formulations are particularly effective for root or stem-sprouting species such as bittersweet because the triclopyr persists in the plant until it dies. The ester formulation should be used with a penetrating oil (e.g., AX-IT®), which improves effectiveness and increases the amount of time after cutting in which treatment can occur. Penetrating oil also facilitates absorption in basal bark treatment.

In non-target plants, triclopyr residues in the soils can damage non-target species via root uptake. Use caution in high-quality forests.

In wetlands or other sensitive areas, the amine formulation of triclopyr may be used for cut-surface treatments but must be painted onto the cut surface immediately. It can also be used for injection techniques.

### Foliar application

Foliar application of herbicide can be useful on sites with extensive bittersweet clones and few desirable natives. It is also useful for treating resprouts, where bittersweet vines have been cut early in the season to prevent fruiting.

Herbicide should be applied after spring sap flow to actively growing plants, although during periods of drought or other stress, it may not be effective. It can be applied to bittersweet foliage with squirt bottles or backpack sprayers.

Herbicide labels contain information on specific weather conditions, application modes, equipment types, nozzles etc. to provide the desired coverage and minimize the potential for volatilization or drift.

The herbicide applicator is responsible for managing drift and damage to non-target vegetation. Wind speeds between 3 and 10 miles per hour are best for foliar herbicide spraying. At higher wind speeds, herbicide may be blown onto adjacent vegetation or water bodies.

At lower wind speeds, temperature inversions can occur, restricting vertical air movement. Under these conditions, small suspended droplets of herbicide can persist in a concentrated cloud and be blown off-target by variable gusts of wind. Ground fog indicates the presence of a temperature inversion, but if no fog is present, smoke movement on the ground can also reveal inversions. Smoke that layers and remains trapped in a cloud at a low level indicates an inversion, while smoke that rises and dissipates indicates good air mixing.

In hot, dry weather, herbicide can evaporate rapidly. Setting

equipment to produce large droplets can help compensate for this. In general, follow all directions on the label of the specific herbicide being used, in order to prevent damage to non-target vegetation or water bodies.

### **Cut-stump**

Cut-stump treatment may be used in any season except during periods of heavy sap flow in spring, when sap is flowing upwards. Some chemicals are less effective at lower temperatures or when plants are dormant. Refer to the herbicide label for specific details. Product labels list what adjuvants may be used to increase effectiveness of the herbicide; penetrating oils only work with ester formulations, for example. Similarly, dyes, which are useful in keeping track of which stems have been treated, work with specific herbicide formulations.

Cut-stump treatment is useful for species like bittersweet that normally resprout after cutting. After the stems have been cut, they are painted with concentrated herbicide, using a squirt bottle or wicking applicator. Small stems can be cut several inches above the ground so that both the sides and the cut surface may be treated. On larger stems, only the cambium—the thin layer where active growth occurs, just inside the bark—should be treated.

Treated plants should be monitored for at least a year as they may still resprout. New stems may be treated with a foliar spray, or cut and retreated.

### **Basal bark**

Basal bark treatment can be used on stems that are less than one inch in diameter at any time of year except during heavy sap flow in spring. It should not be used when snow or water prevent herbicide from being applied at the ground level or when stems are saturated. It is most useful during the dormant season. Typically, ester formulations of triclopyr are used with penetrating oils. Some herbicide formulations may already include basal oils or dyes—refer to the product label for specifics.

In basal bark treatment, concentrated herbicide is applied to a band of bark around stems extending up 18 inches from the ground. Basal bark treatment is most effective on younger stems with thin bark.

### **Injection**

Injection techniques may be useful on larger stems, particularly on sensitive sites. They can be used any time of year except during spring sap flow. Specialized injection tools are available to inject herbicide pellets below the bark. They are precise and require little preparation or clean-up. They are expensive, however and may be unwieldy in dense brush.

Because concentrated herbicide is used, it is very easy to exceed the annual per acre amount that is allowed for a given product. Consult the product label for specifics.

## **Prescribed burning**

In fire-adapted communities, prescribed burning may enhance control of Oriental bittersweet, but should be considered as part of an integrated site management plan.

### **General considerations**

A permit is required before implementing a prescribed burn. The Michigan Department of Natural Resources (DNR) is responsible for issuing burn permits in the Upper Peninsula and Northern Lower Peninsula unless a municipality wishes to do so. Municipalities located in the Southern Lower Peninsula issue burn permits under authority of the state law. A link to the DNR local fire contacts web page is included in the “Online Resources” section. In the Southern Lower Peninsula, contact the local Fire Marshall for permits and more information. Some municipalities require insurance coverage before a permit is issued, to cover the cost of damages if the fire should escape.

Before initiating a program of prescribed burning, a written burn plan establishing the criteria necessary for starting, controlling, and extinguishing a burn is required. The burn plan includes details such as specific weather conditions, locations of control lines, ignition pattern, equipment and personnel needed, contingency plans, and important phone numbers. The burn plan is essentially the “prescription” for how to conduct the burn safely while accomplishing the management objectives.

If other invasive species that are stimulated by burning are present on the site, planning should incorporate additional control methods to eradicate them.

### **Prescribed burning specifics**

Prescribed burning alone will not control Oriental bittersweet, as it can resprout from the root crown. Increased light levels and nutrient flush following a burn will actually stimulate its growth, and provide exposed mineral soils, enhancing germination. Bittersweet can act as a ladder and carry fire up into forest canopy.

In fire-adapted communities, prescribed burning is still a useful management tool, when adequate fuels are present. It top kills even large vines and can reduce fruit production in the canopy. Vigorous root sprouting makes foliar herbicide treatment at the ground level more accessible and effective. Oriental bittersweet control should be initiated prior to implementing a program of prescribed fire.

## **Biological control**

No biological controls have been reported for Oriental bittersweet in the United States to date.

## Disposal of plant parts

If fruit is not present, cut vines can be left in place to decay. Stems and roots that have been pulled can also be left on site as long as the roots are left in a position where they will dry out and have no chance of re-rooting, e.g., draped over a branch. Fruit should be incinerated or bagged and disposed of in a landfill.

Although landscape waste cannot generally be disposed of in land fills, Michigan law permits the disposal of invasive species plant parts. See the “Online resources” section for a link to the relevant legislation.

---

## Online resources:

### CDMS - herbicide labels:

<http://www.cdms.net/LabelsMsds/LMDefault.aspx?t=>

### Fire Effects Information System, *Celastrus orbiculatus*

<http://www.fs.fed.us/database/feis/plants/vine/celorb/all.html>

### Invasive.org, Oriental bittersweet

<http://www.invasive.org/browse/subinfo.cfm?sub=3012>

### Invasipedia at BugwoodWiki, *Celastrus orbiculatus*

[http://wiki.bugwood.org/Celastrus\\_orbiculatus](http://wiki.bugwood.org/Celastrus_orbiculatus)

### Invasive Plant Atlas of New England, Oriental bittersweet

[http://www.eddmaps.org/ipane/ipanespecies/vines/Celastrus\\_orbiculatus.htm](http://www.eddmaps.org/ipane/ipanespecies/vines/Celastrus_orbiculatus.htm)

### Midwest Invasive Species Information Network, Oriental Bittersweet

<http://www.misin.msu.edu/facts/detail.php?id=19>

### The Michigan Department of Agriculture and Rural Development—Pesticide Certification

[www.michigan.gov/pestexam](http://www.michigan.gov/pestexam)

### The Michigan Department of Environmental Quality—Aquatic Nuisance Control

[www.michigan.gov/deq/inlandlakes](http://www.michigan.gov/deq/inlandlakes)

[http://www.michigan.gov/deq/0,4561,7-135-3313\\_3681\\_3710---,00.html](http://www.michigan.gov/deq/0,4561,7-135-3313_3681_3710---,00.html)

### Michigan Department of Natural Resources—Local DNR Fire Manager contact list

[http://www.michigan.gov/dnr/0,4570,7-153-30301\\_30505\\_44539-159248--,00.html](http://www.michigan.gov/dnr/0,4570,7-153-30301_30505_44539-159248--,00.html)

### Michigan's Invasive Species Legislation

Natural Resources and Environmental Protection Act 451 of 1994, Section 324.4130

<http://legislature.mi.gov/doc.aspx?mcl-324-41301>

### Michigan Legislation—landscape waste, disposal of invasive species plant parts

Natural Resources and Environmental Protection Act 451 of 1994, Section 324.11521, 2 (d)

<http://legislature.mi.gov/doc.aspx?mcl-324-11521>

### The Nature Conservancy's Weed Control Methods Handbook: Tools and Techniques for Use in Natural Areas

<http://www.invasive.org/gist/handbook.html>

### University of Michigan Herbarium - Michigan Flora Online

<http://michiganflora.net/>



## Quick reference - Oriental bittersweet

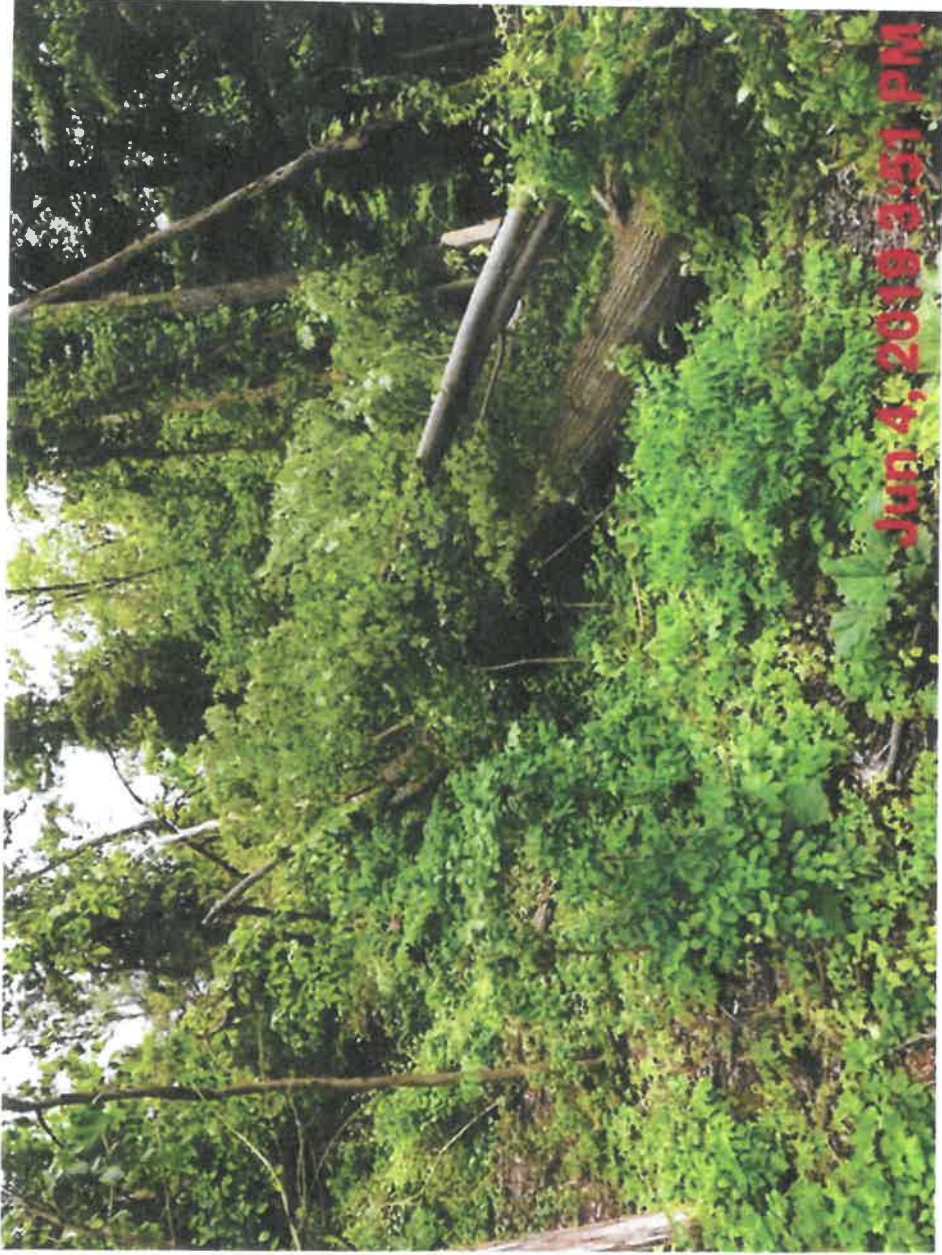
This chart has been provided as a convenience, to summarize the pros and cons of each herbicide and to present details on adjuvants, concentrations, etc. that do not fit into the discussion in the preceding sections. Although every attempt has been made to ensure accuracy, the product labels for the listed herbicides are the ultimate authority for their usage. Where there are conflicts, always follow the label directions. Techniques are listed in order of general preference by MDNR Wildlife Division staff but not all are suitable for wetlands or sensitive sites. Site conditions vary—choose a method that is best suited to conditions on the site being treated.

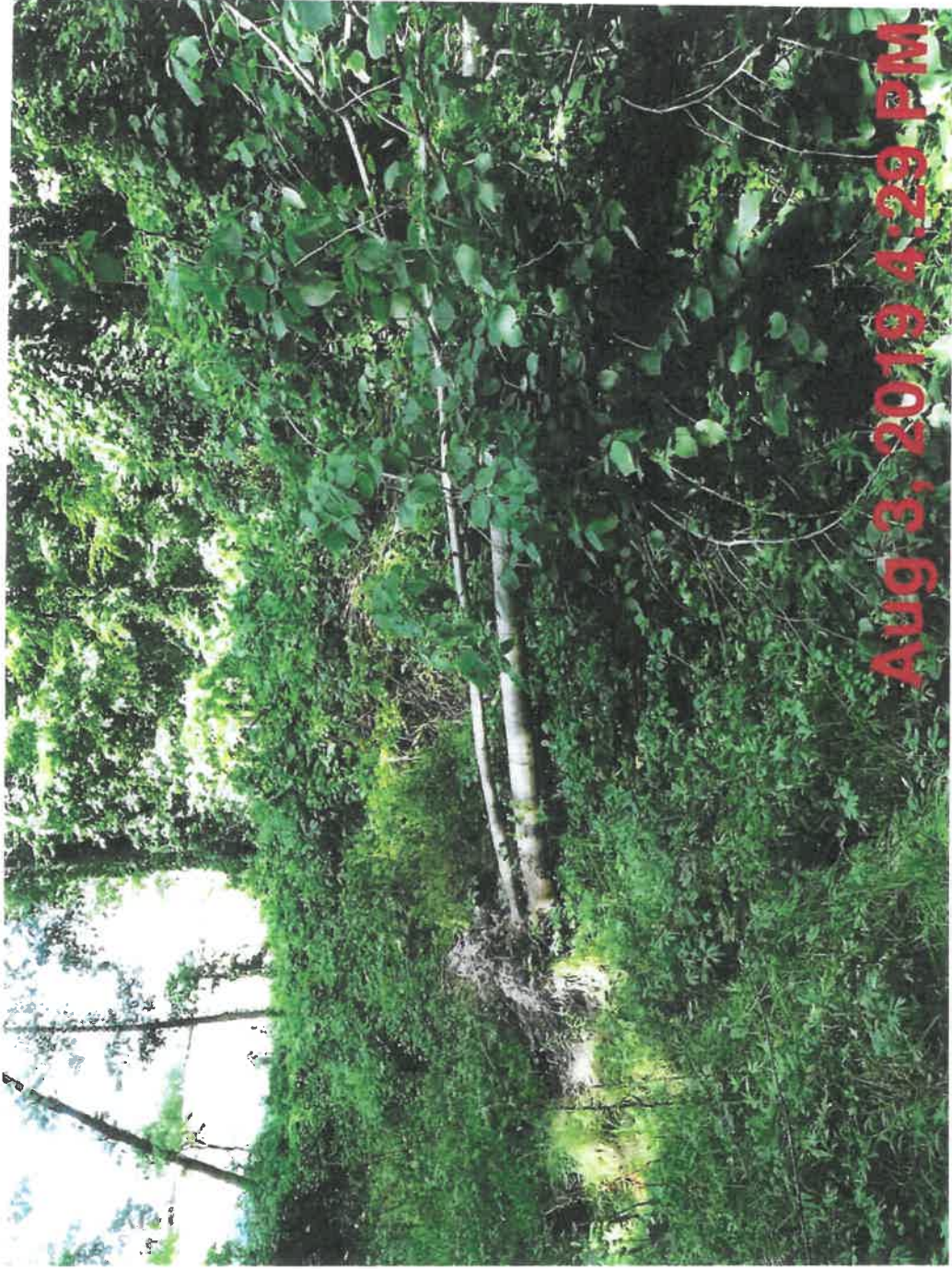
Anyone using herbicides in the course of their employment is required to be a certified pesticide applicator. Treatment in wetlands or over open water requires a permit from the Michigan Department of Environmental Quality.

These chemicals are available in a variety of formulations and concentrations. Concentration is listed below as a percentage of the active ingredient (AI) to facilitate use of different products. Always follow all directions on the product label including mixing instructions, timing, rate, leaf coverage and the use of personal protective equipment.

Herbicide	% A.I.	Adjuvant	Timing	Pros	Cons
<b>Triclopyr ester</b> (e.g., Garlon 4 Ultra®)	27%	Use a penetrating oil (e.g., AX-IT®), unless it is already included in product, e.g. Michigan blend.	For plants LESS than 1 inch in diameter.  Use any time of year, including winter months EXCEPT during heavy spring sap flow  OR when snow or water prevent application at ground level  OR when stems are saturated.	Relatively selective herbicide and technique.	Since stems have a small diameter, the sides must be treated so that enough herbicide will be absorbed.  Not approved for use in wetlands.
<b>Triclopyr ester</b> (e.g., Garlon 4 Ultra®)	27%	Use a penetrating oil (e.g., AX-IT®), unless it is already included in product, e.g. Michigan blend.	For plants GREATER than 1 inch in diameter cut stems about 6 inches high and apply to outside of stem also.  Use any time EXCEPT spring, while sap is flowing upward.	Relatively selective herbicide and technique.	Labor intensive.  Not approved for use in wetlands.
<b>Triclopyr amine</b> (e.g., Garlon 3A®, Renovate®)	27%		Use any time EXCEPT during spring sap flow.  (Inject 5 ml into cambium at 3-4 inch intervals around entire stem at any convenient height.)	Extremely selective herbicide and technique.  Safe for use in wetlands, sensitive areas.	Somewhat labor intensive.
<b>Triclopyr amine</b> (e.g., Garlon 3A®, Renovate®)	2-3%	Some products already contain a surfactant—if not, add one (e.g. Cygnet Plus®, Nu-Film IR®).	After spring sap flow while plant is actively growing but before leaves change color.	Safe for use in wetlands.  Broad-leaf specific—will not harm sedges and grasses.	Since it must be used during the growing season, it is not a suitable technique for high-quality sites with many broad-leaf natives.

**WINTHROW DAMAGE  
PHOTOS**







**ARBOR CONSULTANTS**

**TREE APPRAISAL FIELD NOTES**

**INFORMATION FOR REPLACEMENT COST AND/OR TRUNK FORMULA METHOD**

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**Basic Value = Replacement Cost + (Basic Price X [TA<sub>A</sub> - TA<sub>R</sub>])**

For a replacement-size tree use Replacement Cost (1) adjusted by Condition (7) and Location (8) to obtain the Appraised Value (9).

**Date: October, 2019**

**SEVERELY DAMAGED TREES**

Tree#	Street Address	Species	Trunk Dia./Cir. In./cm	Replacement Cost (1)	Species % (5)	Condition % (7)	Location % (8)	Appraised Value (9)	Additional Notes
1	3087	pin oak	19"	\$7,604.00	70%	60%	35%	\$1,118.00	
2	3087	red maple	7"	\$1,674.00	70%	50%	35%	\$205.00	Inside silt fence
3	3087	pin oak	24"	\$10,835.00	70%	40%	35%	\$1,061.00	Edge Tree / inside silt fence
4	3087	pin oak	20"	\$8,219.00	70%	60%	35%	\$1,208.00	
5	3087	pin oak	16"	\$5,861.00	70%	60%	35%	\$862.00	
6	3087	sugar maple	4"	\$717.00	80%	60%	35%	\$120.00	Edge Tree
7	3087	red oak	9"	\$2,450.00	70%	60%	35%	\$360.00	
8	3087	red maple	10"	\$2,050.00	70%	70%	35%	\$352.00	
9	3087	red maple	12.5"	\$2,450.00	70%	40%	35%	\$240.00	Inside silt fence
10	3087	red maple	14.5"	\$4,787.00	70%	40%	35%	\$469.00	Edge Tree / inside silt fence

**CERTIFICATION**

**Total = \$5,995.00**

I certify that all the statements of fact in this Field Report Guide are true, complete and correct to the best of my knowledge and belief, and are made in good faith.

Signature of Appraiser \_\_\_\_\_

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**Date: October, 2019**

**SEVERELY DAMAGED TREES**

Tree#	Street Address	Species	Trunk Dia./Cir. In./cm	Replacement Cost (1)	Species % (5)	Condition % (7)	Location % (8)	Appraised Value (9)	Additional Notes
11	3087	red maple	5"	\$1,005.00	70%	50%	35%	\$123.00	Edge Tree
12	3087	red maple	5"	\$1,005.00	70%	60%	35%	\$148.00	Edge Tree / inside silt fence
13	3087	pin oak	11"	\$3,321.00	70%	70%	35%	\$570.00	Edge Tree / inside silt fence
14	3087	red maple	16"	\$5,861.00	70%	70%	35%	\$1,005.00	Edge Tree
15	3087	red maple	3"	\$463.00	70%	70%	35%	\$79.00	Edge Tree
16	3087	basswood	13"	\$4,278.00	60%	80%	35%	\$719.00	
17	3087	hickory	4.5"	\$857.00	70%	60%	35%	\$126.00	
18	3087	red oak	11"	\$3,321.00	70%	70%	35%	\$570.00	
19	3087	red oak	25"	\$11,527.00	70%	0%	35%	\$1,412.00	Blown over
20	3087	red maple	9"	\$2,450.00	70%	60%	35%	\$360.00	

**CERTIFICATION**

**Total = \$5,112.00**

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Signature of Appraiser \_\_\_\_\_

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**INFORMATION FOR REPLACEMENT COST AND/OR TRUNK FORMULA METHOD**

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For a replacement-size tree use Replacement Cost (1) adjusted by Condition (7) and Location (8) to obtain the Appraised Value (9).

**Date: October, 2019**

**SEVERELY DAMAGED TREES**

Tree#	Street Address	Species	Trunk Dia./Cir. In./cm	Replacement Cost (1)	Species % (5)	Condition % (7)	Location % (8)	Appraised Value (9)	Additional Notes
21	3087	black cherry	10"	\$2,874.00	50%	0%	35%	\$251.00	Blown over
22	3087	black cherry	7"	\$1,674.00	50%	40%	35%	\$117.00	
23	3087	red maple	9"	\$2,450.00	70%	0%	35%	\$300.00	Blown over
24	3087	red maple	31"	\$15,970.00	70%	70%	35%	\$2,739.00	
25	3087	elm	5"	\$1,005.00	50%	60%	35%	\$106.00	
26	3087	elm	6"	\$1,325.00	50%	60%	35%	\$139.00	
27	3087	black walnut	19"	\$7,604.00	50%	50%	35%	\$665.00	Edge Tree
28	3087	pin oak	30"	\$15,196.00	70%	50%	35%	\$1,862.00	Severely damaged
29	3087	ironwood	6"	\$1,325.00	70%	0%	35%	\$162.00	
30	3087	black cherry	12"	\$3,789.00	50%	0%	35%	\$332.00	Blown over

**CERTIFICATION**

**Total = \$6,673.00**

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Signature of Appraiser \_\_\_\_\_

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**INFORMATION FOR REPLACEMENT COST AND/OR TRUNK FORMULA METHOD**

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For a replacement-size tree use Replacement Cost (1) adjusted by Condition (7) and Location (8) to obtain the Appraised Value (9).

**Date: October, 2019**

**SEVERELY DAMAGED TREES**

Tree#	Street Address	Species	Trunk Dia./Cir. In./cm	Replacement Cost (1)	Species % (5)	Condition % (7)	Location % (8)	Appraised Value (9)	Additional Notes
31	3087	black cherry	13"	\$4,278.00	50%	0%	35%	\$374.00	Blown over
32	3087	black cherry	5"	\$1,005.00	50%	10%	35%	\$18.00	
33	3087	red cedar	8"	\$2,050.00	70%	0%	35%	\$251.00	Blown over
34	3087	black cherry	19"	\$7,604.00	50%	80%	35%	\$1,064.00	
35	3087	black cherry	8"	\$2,050.00	50%	80%	35%	\$287.00	
36	3087	basswood	11"	\$3,321.00	60%	0%	35%	\$349.00	
37	3087	black cherry	9.5"	\$2,659.00	50%	70%	35%	\$326.00	
38	3087	white oak	16"	\$5,861.00	90%	80%	35%	\$1,477.00	
39	3087	red maple	13"	\$4,278.00	70%	70%	35%	\$734.00	
40	3087	black cherry	12"	\$3,789.00	50%	80%	35%	\$530.00	Damaged
40	3087	black cherry	22"	\$9,497.00	50%	30%	35%	\$499.00	

**CERTIFICATION**

**Total = \$5,909.00**

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Signature of Appraiser \_\_\_\_\_

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**Date: October, 2019**

**SEVERELY DAMAGED TREES**

Tree#	Street Address	Species	Trunk Dia./Cir. In./cm	Replacement Cost (1)	Species % (5)	Condition % (7)	Location % (8)	Appraised Value (9)	Additional Notes
41	3087	basswood	9.5"	\$2,659.00	60%	80%	35%	\$447.00	
42	3087	red oak	26"	\$12,233.00	70%	0%	35%	\$1,499.00	
	3087						35%		
	3087						35%		
	3087						35%		
	3087						35%		
	3087						35%		
	3087						35%		
	3087						35%		
	3087						35%		
	3087						35%		
	3087						35%		

**CERTIFICATION**

**Total = \$1,946.00**

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Signature of Appraiser \_\_\_\_\_

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Date: October, 2019

**POTENTIALLY DAMAGED TREES**

Tree#	Street Address	Species	Trunk Dia./Cir. In./cm	Replacement Cost (1)	Species % (5)	Condition % (7)	Location % (8)	Appraised Value (9)	Additional Notes
100	3087	red maple	3.5"	\$585.00	70%	90%	35%	\$129.00	
101	3087	red maple	3"	\$463.00	70%	90%	35%	\$102.00	
102	3087	red oak	12"	\$3,789.00	70%	80%	35%	\$743.00	
103	3087	red maple	4.5"	\$857.00	70%	90%	35%	\$189.00	
104	3087	red oak	17"	\$6,425.00	70%	80%	35%	\$1,259.00	
105	3087	red oak	14"	\$4,787.00	70%	90%	35%	\$1,056.00	
106	3087	red maple	5"	\$1,005.00	70%	90%	35%	\$222.00	
107	3087	red maple	17"	\$6,425.00	70%	80%	35%	\$1,259.00	
108	3087	red maple	8"	\$2,050.00	70%	60%	35%	\$301.00	
108	3087	pin oak	17"	\$6,425.00	70%	80%	35%	\$1,259.00	
109	3087	red maple	15"	\$5,314.00	70%	90%	35%	\$1,172.00	

**CERTIFICATION**

**Total = \$7,691.00**

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Date: **October, 2019**

**POTENTIALLY DAMAGED TREES**

Tree#	Street Address	Species	Trunk Dia./Cir. In./cm	Replacement Cost (1)	Species % (5)	Condition % (7)	Location % (8)	Appraised Value (9)	Additional Notes
110	3087	red cedar	6"	\$1,325.00	70%	70%	35%	\$227.00	
111	3087	elm	16"	\$5,861.00	40%	90%	35%	\$738.00	
112	3087	black cherry	6"	\$1,325.00	50%	80%	35%	\$186.00	
113	3087	red maple	6"	\$1,325.00	70%	80%	35%	\$260.00	
114	3087	red maple	6"	\$1,325.00	70%	90%	35%	\$292.00	
115	3087	ironwood	4"	\$717.00	70%	80%	35%	\$141.00	
115	3087	black cherry	9"	\$2,450.00	50%	80%	35%	\$343.00	
116	3087	ironwood	4"	\$717.00	70%	80%	35%	\$141.00	
117	3087	sugar maple	16"	\$5,861.00	80%	90%	35%	\$1,477.00	
118	3087	box elder	3.5"	\$585.00	40%	70%	35%	\$57.00	
120	3087	red maple	7"	\$1,674.00	70%	70%	35%	\$287.00	

**CERTIFICATION**

**Total = \$4,149.00**

I certify that all the statements of fact in this Field Report Guide are true, complete and correct to the best of my knowledge and belief, and are made in good faith.

Signature of Appraiser \_\_\_\_\_

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**CTLA's Sponsoring Organizations**

American Association of Nurserymen • 1250 I Street, N.W. • Suite 500 • Washington, DC 20005 • (202) 789-2900

American Society of Consulting Arborists • 5130 West 101<sup>st</sup> Circle • Westminster, CO 80030-2314 • (303) 466-2722

Associated Landscape Contractors of America • 12200 Sunrise Valley Drive • Suite 150 • Reston, VA 22091 • (703) 620-6363

International Society of Arboriculture • P. O. Box GG • Savoy, IL 61874 • (217) 355-9411

National Arborist Association • P. O. Box 1094 • Amherst, NH 03031 • (603) 673-3311

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**ARBOR CONSULTANTS**

**TREE APPRAISAL FIELD NOTES**

**INFORMATION FOR REPLACEMENT COST AND/OR TRUNK FORMULA METHOD**

**Appraised Value = Basic Value x Condition X Location**

**Basic Value = Replacement Cost + (Basic Price X [TA<sub>A</sub> - TA<sub>RP</sub>])**

For a replacement-size tree use Replacement Cost (1) adjusted by Condition (7) and Location (8) to obtain the Appraised Value (9).

**Date: October, 2019**

**POTENTIALLY DAMAGED TREES**

Tree#	Street Address	Species	Trunk Dia./Cir. In./cm	Replacement Cost (1)	Species % (5)	Condition % (7)	Location % (8)	Appraised Value (9)	Additional Notes
121	3087	red maple	3"	\$463.00	70%	80%	35%	\$91.00	
122	3087	hickory	10"	\$2,874.00	70%	80%	35%	\$563.00	
123	3087	red maple	13"	\$4,278.00	70%	90%	35%	\$943.00	
124	3087	black cherry	30"	\$15,196.00	50%	30%	35%	\$798.00	
125	3087	ironwood	3.5"	\$585.00	70%	90%	35%	\$129.00	
126	3087	red maple	11"	\$3,321.00	70%	80%	35%	\$651.00	
127	3087	black cherry	9.5"	\$2,659.00	50%	80%	35%	\$372.00	
128	3087	ironwood	4"	\$717.00	70%	90%	35%	\$158.00	
129	3087	ironwood	4"	\$717.00	70%	90%	35%	\$158.00	
130	3087	ironwood	3"	\$463.00	70%	90%	35%	\$102.00	

**CERTIFICATION**

**Total = \$3,965.00**

I certify that all the statements of fact in this Field Report Guide are true, complete and correct to the best of my knowledge and belief, and are made in good faith.

Signature of Appraiser \_\_\_\_\_

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**ARBOR CONSULTANTS**

**TREE APPRAISAL FIELD NOTES**

**INFORMATION FOR REPLACEMENT COST AND/OR TRUNK FORMULA METHOD**

**Appraised Value = Basic Value x Condition X Location**

**Basic Value = Replacement Cost + (Basic Price X [TA<sub>A</sub> - TA<sub>R</sub>])**

For a replacement-size tree use Replacement Cost (1) adjusted by Condition (7) and Location (8) to obtain the Appraised Value (9).

**Date: October, 2019**

**POTENTIALLY DAMAGED TREES**

Tree#	Street Address	Species	Trunk Dia./Cir. In./cm	Replacement Cost (1)	Species % (5)	Condition % (7)	Location % (8)	Appraised Value (9)	Additional Notes
131	3087	red maple	17"	\$6,425.00	70%	80%	35%	\$1,259.00	
132	3087	hackberry	7"	\$1,674.00	70%	90%	35%	\$369.00	
	3087								
	3087								
	3087								
	3087								
	3087								
	3087								
	3087								
	3087								

**CERTIFICATION**

**Total = \$1,628.00**

I certify that all the statements of fact in this Field Report Guide are true, complete and correct to the best of my knowledge and belief, and are made in good faith.

Signature of Appraiser \_\_\_\_\_

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**MINUTES OF THE  
CASCADE CHARTER TOWNSHIP  
REGULAR BOARD MEETING**  
Wednesday, January 13, 2016  
7:00 P.M.

- Article 1.** Supervisor Beahan called the meeting to order at 7:00 p.m.  
Present: Supervisor Beahan, Clerk Goodyke, Treasurer Peirce, Trustee Koessel,  
McDonald and Lewis.  
Absent: Trustee Goldberg  
Also Present: Manager Swayze, Community Development Director Peterson,  
Fire Chief Sigg and those listed in Supplement #1.
- Article 2.** Supervisor Beahan led the Pledge of Allegiance to the Flag.
- Article 3.** Motion was made by Trustee Koessel and supported by Trustee Lewis to approve  
the agenda as presented. Motion carried.
- Article 4.** **Presentations/Public Comments (limit comments to 3 minutes)**  
Scott Rissi, 7238 Cascade Rd., commented on “riverfront property” purchased on  
Thornapple River regarding creating more access to the river.  
Chris Becker, candidate running for Kent County Prosecutor was present to  
introduce himself to the Board.  
Ron Young, 2747 Cascade Springs, questions regarding the “Tassell Park”  
expansion.  
Kier Breckon, 2925 Cascade Springs, commented on “riverfront property”.  
Nancy Eardley, 1441 Sandy Point Ave., addressed the Board regarding the  
“riverfront property” and asked that several questions be answered in writing.
- Article 5.** **Approval of Consent Agenda**  
a. Receive and File Various Meeting Minutes  
1. Regular Township Board Minutes for 12/16/15.  
b. Receive and File Reports  
1. Treasurer’s Department Monthly Report for October, 2015.  
2. Fire Department Monthly Reports for Nov., 2015.  
c. Education Requests  
1. Denise M. Biegalle – Labor & Employment Conference – Plymouth,  
MI – April 14-15, 2016.  
d. Receive and File Communications  
1. Letters from Comcast – re: Channel Lineups.  
Motion was made by Clerk Goodyke and supported by Trustee McDonald to  
approve the Consent Agenda as presented. Motion carried.
- Article 6.** **Financial Actions**  
a. **Consider Pay Draw #6 for the Museum Gardens Project.**  
Motion was made by Trustee Koessel and supported by Trustee Lewis to  
approve the Pay Draw #6 for the Museum Gardens Project in the amount of  
\$13,119.06. Motion carried.
- Article 7.** **Unfinished Business**

**Article 8. New Business  
001-2016**

**a. Public Hearing – Amend P.U.D #55 to permit 10 Unit Single Family Detached homes for Roundhill.**

Community Development Director reviewed the request to permit 10 Unit Single Family Detached homes for Roundhill. Discussion followed. Motion was made by Trustee Koessel and supported by Clerk Goodyke to move into public hearing. Motion carried.

Mark Rohde, 3087 Thornapple River Dr., S.E. , representing himself and Sentinel Pointe addressed the Board regarding the “blighted visual nightmare” for adjacent property owners and other issues.

Cliff Bloom, Township Attorney was asked to publicly address some of the issues Mr. Rohde brought up.

Andy Mayer, 3003 Thornapple River Dr., voiced a few of his concerns and some “glossing overs” to the Board regarding this project.

Ron Young, 2747 Cascade Springs, had concerns regarding the “retaining walls”.

Jeff Dionne, 2984 Thornapple River Dr., had several comments regarding the “civil” cases within his neighborhood and also issues regarding “water runs downstream”.

Ron McCollum, 7550 Cascade Rd., voiced concern regarding protecting the Thornapple Drain.

Discussion followed regarding the “boring tests” with the Township Engineering.

Kyle Wilson, Nederveld Associates the Engineering Firm on the Project was present to review the process taken regarding the soil borings, infiltration basin and perk data.

Kerry Gorsuch, 3044 Thornapple River Dr., must be really careful with the drainage...periodically dredge the bayou.

Motion was made by Trustee McDonald and supported by Trustee Koessel to reconvene into regular session. Motion carried.

**b. Consider Approval of Ordinance to Amend P.U.D #55 to permit 10 Unit Single Family Detached homes for Roundhill.**

Trustee McDonald stated his reservation regarding the landscaping (i.e., replacement of any trees being taken down).

Kyle Wilson, Nederveld stated the developer has considered and is willing to do some buffering...he intends to provide some buffering and “dress it up”. Additional discussion followed regarding the buffering.

Cliff Bloom stated the landscaping plan is not a requirement, but the Township does have the authority as a “condition of approval” to require a landscaping plan.

Trustee Koessel questioned the erosion issue is a significant one. Is it reasonable to also make a recommendation that a bond be provided in order to further control the erosion...if it should occur, even after they get the soil erosion permit from the County.

Cliff Bloom stated that the Township has full authority to provide security and/or to ask the Planning Commission to look at that.

Trustee Koessel stated he felt this property was zoned for this use. It has met all the ordinance standards; however, it is a unique situation...soil erosion being one. I am also sensitive to the buffering. I think it would be wise for us to remand this back to the Planning Commission to consider the developer provide a detailed landscape plan as well as have the Planning Commission discuss this issue of "bonding" for the soil erosion (during construction) and/or beefing up the maintenance agreement. Motion was made by Trustee Koessel and supported by Trustee Lewis to table this item and remand it back to the Planning Commission for consideration for the following three points: Landscaping Plan (buffer), bonding during construction and the review of the maintenance agreement to see if it could be amended such that it provides a little more protection long term. Motion carried.

Ayes – 5      Nays – 1 (Peirce)      Absent – 1

**002-2016**

**Consider Approval of Resolution to Adopt 2016 Poverty Exemption Policy and Guidelines.**

Motion was made by Clerk Goodyke and supported by Trustee McDonald to approve the Resolution to Adopt 2016 Poverty Exemption Policy and Guidelines. Motion carried by roll call vote.

**003-2016**

**Consider Approval of Fire Chiefs Vehicle.**

Chief Sigg was present to address the Board regarding the purchase of a new Fire Chiefs vehicle. Motion was made by Trustee Koessel and supported by Trustee McDonald to approve the purchase of a Chevrolet Tahoe from Tinney Chevrolet in the amount of \$37,512.40 with additional emergency equipment costing \$7,000 for a total estimated purchase price of \$44,512.40. Motion carried.

**004-2016**

**Consider Approval of Resolution of Support for Liquor License for Blue Sky Brewing, LLC at 6262 28<sup>th</sup> St., S.E.**

Manager Swayze reviewed the request being made by Blue Sky Brewing, LLC. Discussion followed. Motion was made by Trustee Lewis and supported by Trustee Koessel to approve the Resolution of support for a Liquor License for Blue Sky Brewing, LLC at 6262 28<sup>th</sup> St., S.E. Motion carried by roll call vote.

**005-2016**

**Consider Approval of Dog Park Naming Application.**

Manager Swayze reviewed the process of naming rights within Cascade Township. Cascade Hospital for Animals/ Dr. Siegle has committed to donating \$25,000 towards the cost of constructing the dog park. Motion was made by Treasurer Peirce and supported by Clerk Goodyke to approve the application to Request a Name for a Township Asset to name the Recreation Park Dog Park the "Cascade Hospital for Animals Dog Park" and accept the gift of \$25,000 from Dr. Richard Seigle to be utilized for construction of the Dog Park. Motion carried.

**006-2016**      **Consider Approval of Resolution to Recognize the Pine Ridge Elementary PTO as a Non-Profit Organization.**  
Manager Swayze reviewed the request. Motion was made by Trustee Koessel and supported by Trustee McDonald to approve the Resolution to recognize the Pine Ridge Elementary PTO as A Non-Profit Organization. Motion carried by roll call vote.

**Article 9.      Public Comments on any other matters. (limit comments to 3 minutes)**  
Mark Rhode, 3087 Thornapple River Dr., thanked the Board for the Thornapple Drain restoration budget for 2016.  
Ellen Waalkes, 7346 Ventura, voiced her concern on the development of the DeKoster property into a park.  
Nancy Eardley, 1441 Sandy Point Ave., questioned the total cost of the Museum Gardens project. Manager Swayze responded with \$318,000.00.  
Jeff Dionne, 2984 Thornapple River Dr., it was nice to see the Board address everyone's concerns tonight. It was nice to witness how government should work. Thank you.

**Article 10.      Manager Comments**  
Manager Swayze offered the following comments:

- Budget books were passed out tonight.
- Had a meeting today at the Chamber of Commerce to talk about the dispatch authority.
- We are anticipating by the end of this month on getting word on the Disaster Resiliency Grant.
- We did have the ribbon cutting for the bus this week. The bus is now running up and down 28<sup>th</sup> St. This was held at the YMCA.

**Article 11.      Board Member Comments**  
Trustee Koessel offered the following comments:

- Looking for an update on the infamous "no right turn" lane on Thornapple River Dr. Manager Swayze commented there is no update.
- Right at Riverton and Bridgewater there are some pretty significant potholes in the road...can the County come and hot patch those until they can be fixed.

Trustee Lewis offered the following comments:

- Talked about the subcommittee structure within the Board. Talked about the possibility of getting an "at large" subcommittee member that the Chairman of the different subcommittees can call to get his quorum back up to (3) board members. I would like to see us go in that direction and appoint some subcommittee "at large" members.

Treasurer Peirce offered the following comments:

- The Township was well represented at the Bus dedication. Ben, Steve, Ron, myself and Rob attended. Supervisor Beahan did an excellent job in representing the Township with his comments before the group.

Trustee McDonald offered the following comments:

- Related to the bus issue, the ZBA approved a bus shelter at Meijer.

Supervisor Beahan offered the following comments:

- Received a comment from the Disability Advocate Group they were very appreciative of having bus service in Cascade.
- Longtime member of our Zoning Board of Appeals Jack Neal passed away on December 25<sup>th</sup>. Also a previous member of our Planning Commission Gary Burns passed away this past week. The Township sends their condolences to the families.

**Article 12. Adjournalment**

Motion was made by Treasurer Peirce and supported by Trustee McDonald to adjourn. Motion carried.

Meeting adjourned at 9:30 p.m.



Rohde Property

Round Hill

Stormwater  
coming from  
under silt fence

Jan 11, 2020 11:23 AM



**Secondary silt fences allowed  
by Rohde at request of KCRC**

**Stormwater going South  
to Thornapple River**

**Rohde Property**

**Jan 11, 2020 11:23 AM**



**Stormwater going south  
to Thornapple River**

**Rohde Property**

**Jan 11, 2020 11:23 AM**

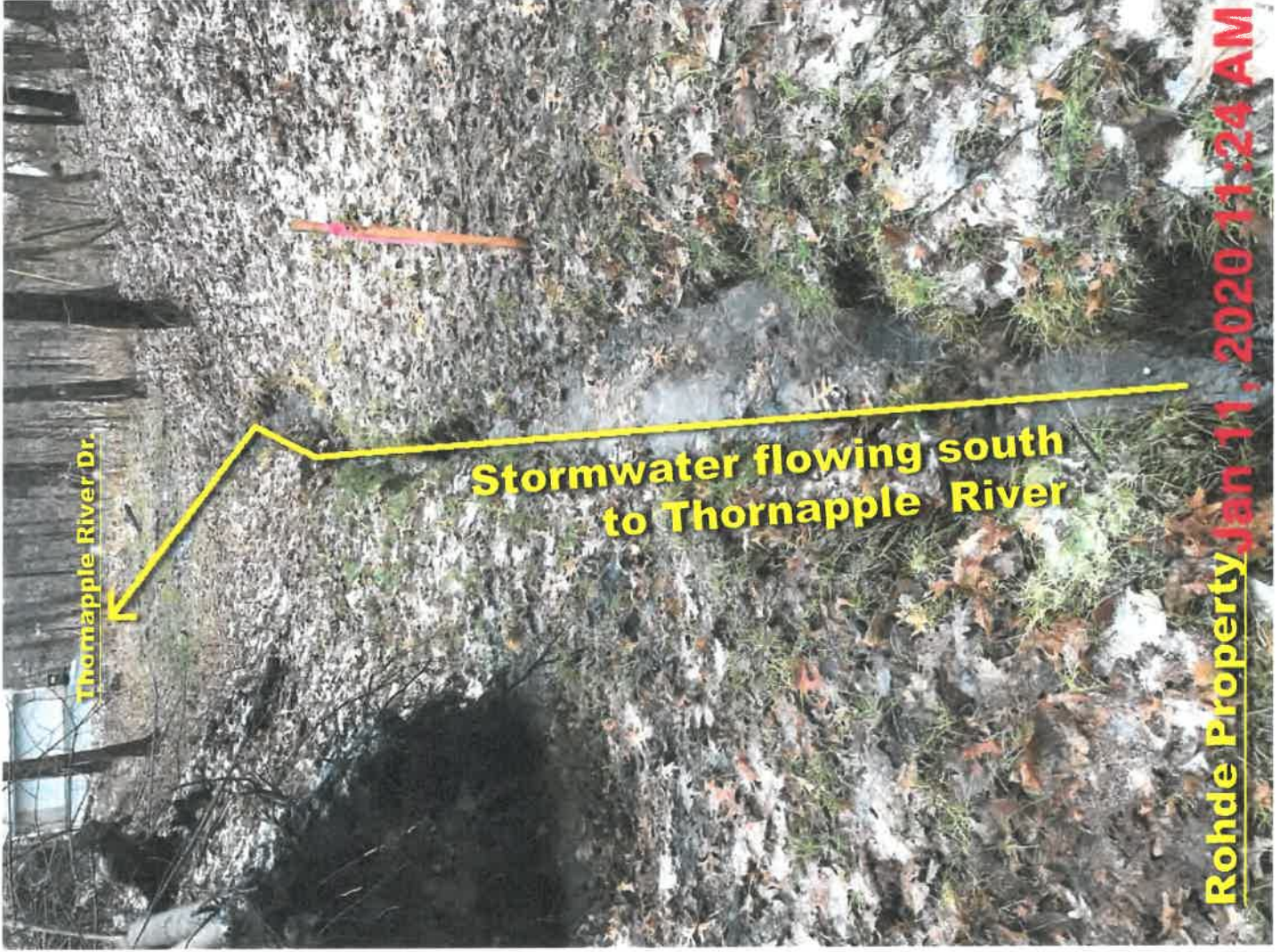


Thornapple River Dr.

Stormwater going south  
to Thornapple River

Rohde Property

Jan 11, 2020 11:24 AM



Thornapple River Dr

Stormwater flowing south to Thornapple River

Rohde Property Jan 11, 2020 11:24 AM



**Thomapple River Dr.**

**30" deep revine  
caused by  
stormwater**

**Rohde Property Jan 11, 2020 11:24 AM**



Thornapple River Dr.

← 30' width of open water →

Rohde Property

Jan 11, 2020 11:25 AM



Thornapple River Dr.

**Stormwater going into  
culvert and into the  
Thornapple River**

Rohde Property

**Jan 11, 2020 11:25 AM**



**Thornapple River Dr.**

**Stormwater going into  
culvert and into the  
Thornapple River**

**Rohde Property**

**Jan 11, 2020 11:25 AM**

## MINUTES

Cascade Charter Township Planning Commission  
Monday, February 01, 2016  
7:00 P.M.

**ARTICLE 1.** Chairman Waalkes called the meeting to order at 7:00 PM.  
Members Present: Katsma, Mead, Pennington, Rissi, Sperla, Waalkes Williams  
Members Absent: Lewis (Excused) Robinson (Excused)  
Others Present: Community Development Director, Steve Peterson, and others listed on the sign in sheet.

**ARTICLE 2.** **Pledge of Allegiance to the flag.**

**ARTICLE 3.** **Approve the current Agenda.**

**Motion by Member Pennington to approve the Agenda. Support by Member Mead. Motion carried 7-0.**

**ARTICLE 4.** **Approve the Minutes of the January 11, 2016 meeting.**

**Motion by Member Sperla to approve the minutes of the January 11, 2016 meeting as written. Support by Member Mead. Motion carried 7-0.**

**ARTICLE 5.** **Acknowledge visitors and those wishing to speak to non-agenda items (Comments are limited to five minutes per speaker.)**

No one wished to speak on a non-agenda item.

**ARTICLE 6.** **Case #15-3229 RJ Ventures**

**Property Address: 3000 Thornhills Avenue SE**

**Requested Action: The Township Board has remanded this project back to the Planning Commission for further review.**

Director Peterson presented the case. The Township Board sent this case back to the Planning Commission for clarification on a few points:

- Landscaping around the perimeter of the site
- Storm Water Maintenance Agreement
- **Performance Bond during construction**

While the Township Board could have made these changes they remanded back to the Planning Commission so that there would not be any surprises by the changes.

The Applicant has provided a Landscaping Plan which includes a buffer around the perimeter of the site. Buffer yards are not required but if we are including one

we should request a Landscaping Bond of \$8,200. The language in the PUD Ordinance states that the landscaping will be completed in accordance with the plan.

Cliff Bloom, Attorney - Law Weathers is representing the Township in this case. He has taken a look at the Storm Water Maintenance Agreement and it has been modified slightly and he has improved the language.

The need for a Performance Bond was discussed for soil erosion control mechanisms and processes. The Road Commission has taken a look at their soil erosion plan. They have not issued a permit yet but they seem agreeable. A Soil Erosion Bond of \$5,000 would be required by the KCRC. Our Township Engineer was asked what the worst case scenario damage would cost to clear the site. They have recommended a \$50,000 Performance Bond. This Bond would be in place just during the construction phase of the project and once the site was stabilized the Bond would be released. It would not be in place during home construction. The county could require individual soil erosion permits for each house.

The Township Board modified the language of the new PUD Ordinance slightly to incorporate a sentence that states the Ordinance incorporates and adopts Staffs comments and the conclusions from the Staff report.

There is communications in the packet from Mr. Rohde and his Attorney requesting that the case be reheard but the purpose of tonight is to look at the three items the Township Board requested. I did also put into the packet a private communication between Mr. Rohde and Member Lewis that we are publicly disclosing.

The Planning Commission has a couple of options before them:

- The recommendation can be sent back as originally presented to the Board.
- The recommendation may be amended to the Board to include all the changes.
- The recommendation may contain a combination.

Staff is comfortable with the new Landscaping Plan, the new Storm Water Maintenance Agreement and the Performance Bond the Township Engineer has recommended.

Member Sperla asked if Mr. Rohde and his counsel had a chance to review the new Storm Water Maintenance Agreement. I saw that there were changes that I have not seen in the past and I really like that the new enforcement provisions are stronger and I would like to see this in future Storm Water Agreements. I

would be interested to know if you have received any feedback from Mr. Rohde on the new language in this Storm Water Agreement. Director Peterson stated that he had not received any feedback. We did not specifically send the new Storm Water Maintenance Agreement to Mr. Rohde but it was available on-line. Member Sperla stated that he liked the provisions, it provides a lot more clout and enforcement rights. I know if I was sitting in Mr. Rohde's shoes, I would feel pretty good about this Agreement.

Member Pennington asked Director Peterson to highlight the changes to the Storm Water Maintenance Agreement. Director Peterson stated that he would defer to Mr. Bloom the Township Attorney.

Cliff Bloom, Township Attorney came forward with comments.

There were no substantive changes on pages one and two. On page three the important provision is just above B. The Maintenance Agreement as it existed was quite good for most municipalities. As Member Sperla stated, this nails it down more. We wanted to make it clear that the obligation to maintain the storm water retention/detention facility doesn't stop with the developer. It runs with the land. This language makes it clear that not only is the developer responsible while it's involved, but thereafter the Association is responsible and the individual units are also. For if some reason the Association went bankrupt than it would be an obligation of the unit owners and there would be a lien on the property. Member Sperla stated that this would be a recorded instrument for any prospective purchasers within the development. Mr. Bloom concurred stating that this document would be recorded so that everyone will know when they purchase a unit within the condominium. Statement B states that if the Township has to enforce the agreement and prevails in court, it can recover its attorney fees which normally you cannot do in absence of a contract.

In the middle of the Special Assessment District, if for whatever reason the Township wants to clean up the site and doesn't want to go against the unit owners they can agree ahead of time for the creation of a Special Assessment District. The benefit is that it simply goes on the tax rolls automatically and is easier to collect.

A disclosure was added to alert the homeowners that in the event the Association went defunct that they would be held responsible individually.

Number five (5) made it clear that this Agreement does not negate the requirements that they comply with all laws: state, county and federal.

**Chairman Waalkes asked anyone with comments to come forward.**

Tim Newhouse, Attorney on behalf of Mark Rohde, 3087 Thornapple River Drive came forward with comments. Mr. Newhouse stated that he had the opportunity to review the Storm Water Maintenance Agreement. In the packet is the correspondence from Mr. Rohde stating his objections to the proposed amendment to the PUD, as well as, my outline as to why we feel this amendment does not comply with your Zoning Ordinance. I realize that you have already approved the proposed amendment to the Township Board and they have returned it for three items. The new Landscaping Plan is designed to cover up one of the bigger issues Mr. Rohde believes prevents this plan from being adopted. The other main issue is the retention pond and the Maintenance Agreement. The drainage plan in this proposed amendment diverts most of the water to the retention pond on the SW corner. This parcel is now split into two different parcels with competing interests. By approving this amendment, you are potentially diverting all of the storm water and runoff from the retention pond onto Sentinel Pointe's property. Sentinel Pointe has indicated that they do not approve of this particular amendment. They are part of this PUD. I think the proper approach would be to amend the PUD to remove this 40 acre parcel and then propose their development. In my opinion, they would then have to get an easement for the drainage over the Sentinel Pointe property.

Member Sperla asked if Mr. Newhouse was aware that Mr. Rohde was the original developer of Sentinel Pointe, in two phases, he was not only the Owner but the Engineer as well. It seems a little problematic that somebody that causes the split and sells it to someone else, still wants to retain control over how it is developed. If he wanted that why didn't he just continue to own the property? He sold it to someone and they obviously were going to make some use of it which is contrary to what the Sentinel Pointe original PUD ordinance provided for. Mr. Newhouse states, when he sold the property there were two attempts, as I understand it, to have an elderly facility proposed there that didn't make it past the Planning Commission because of drainage issues. Member Sperla states that seems to me that he turned around and sold the property knowing that some use was going to be made of that property, it was not going to be part of the Sentinel Pointe development in accordance to the approved plan that had a Phase A and Phase B. Mr. Newhouse said that he looked for the original PUD through a FOIA request, but it was not found. Member Sperla reiterates that if he wanted to control how it was developed he should not have sold it. When he sold the property he gave up the right of ownership and control over what could be built on the property. He had to know that the property was going to be developed at some point and most likely not to his liking. If you want to control it, you have to own it. But again, he gave up that control when he sold the property. Mr. Newhouse states that Mr. Rohde would probably agree with that and regrets that decision. Mr. Newhouse says the maintenance agreement with the overflow is not going to happen. Mr. Bloom made a comment that it is going to be stated that the Unit owners will be aware of their requirements to maintain this

retaining pond. The only time anything will happen is if there is an event and then it is too late. There will be no dredging, the home owners association will probably have it in their dues that it be maintained, but nobody will do anything about it. The water will be spilling over into other people's property and because, in our opinion, the storm ordinance is not followed with its borings, there may be potential liability on the Township and we would like to prevent that from happening.

Chairman Waalkes asked anyone with comments to come forward.

Tom Giusti, representing RJ Ventures the proposed developer. Mr. Giusti states that the comments regarding trees being cleared and moving forward developing the property is not correct, we will not touch the property until we get the proper permitting and approval from the Township. Secondly, as Director Peterson mentioned, the Kent County Road Commission suggested that on top of their Bond, we have provided a landscape plan with screening. Each of the Units will be required to have a soil erosion permit at the time of construction, so there will be two layers of protection. The landscape plan shows all the deciduous and evergreen trees around the whole perimeter. We also have shrubs protecting the retaining wall on the south and north side. We also do not need permission from any of the adjoining neighbors because we will not be on any of their properties for these retaining walls.

Cherie Grunske, 3056 Thornapple River Dr., our property is downstream from the property in question. Our concern with this is that there will now be hard surfaces and possibly sand and could cause a problem with this coming downstream.

Chairman Waalkes stated that all the hard surface paving is draining directly to that pond, as it is a retention pond. It is a 100 percent infiltration. This could be an improvement to the problem.

Mr. Giusti states that it seems there has been negligence in prior developments, there are safety valves put in and are stringent on what we are going to be required to do, to not allow any erosion and sedimentation into the river. We are doing everything possible to not disturb the people downstream or anyone around this particular piece of property. Nederveld has taken their time and done their due diligence on the retention pond and complied with the Township and Fishbeck's requirements on what they need to have.

Ron McCollum, 3010 Thornapple River Dr., the one thing that I am concerned about is this is not a 100 percent retention pond, as it does have an emergency spill way. Mr. Giusti said they did everything that Nederveld and Fishbeck asked as far as the retention pond, but the two soil borings weren't done as demanded

to be done by Fishbeck. I am also concerned that this pond doesn't drain properly and is a spill way, when you have a hundred year rain it may spill over. If it is sand and can handle it, that's great. But if it does go over, it will dump sand and erosion in the Cascade Bayou. We have a petition to look into dredging the Bayou and would like to look into plunge pits. Down by the river ideally there could be a plunge pit that could be dug out. We just don't want any more sediment coming down on our properties.

Kenneth Carey, 2929 Thornapple River Dr., it is quite humorous how they think they can catch all this water, but nobody knows more than I do the things that can go wrong. Over the past 5 years I have dealt with problems from the Summit. Attorney's fees and Engineering Fees and everything else that has gone along with this excluding Attorney and Engineering Fees from the Township, have easily exceeded \$100,000.00. Mr. Bloom has said, so eloquently at the last meeting, that if things go wrong there is a civil remedy. And by a civil remedy it means that you are going to have to get an Attorney and sue. You are going to have to go through the same five years that my wife and I have gone through, along with tens of thousands of dollars' worth of damage. If you lay the Summit over the drawing, my home is directly down from the homes here. All the drainage from the non-porous structures, including the driveways in front of the homes and all roof structures. The driveways were all angled and dumped off the back of the hill, focus drainage. I know how Mr. Bloom feels about focus drainage, he is well published and I had a conversation over the phone with him. He told me he solved this problem, and I believe he was upset when another home was built and allowed to dump off the back of the property. This has cost me tens of thousands of dollars in damages and I have had a law suit going for a year and a half. You tell me there is going to be no problems here, but I know differently. The civil remedy that Mr. Bloom talks about is devastating to the people involved. The people that live in the Bayou and below now is the time to settle this. Not years from now when everyone is going to have to pay up. The only reason this came to a forefront is because I had Legal and engineering coverages for this lawsuit otherwise this would never have happened. They know this. They count on the fact that people do not have the resolve or the financial reserves to fight this. They counted wrong on my part when it came to me. This is what you are dealing with here. It all looks fine and dandy when it's presented to you but the plans will not be followed. Now Mr. Peterson at the last meeting January 13, 2016, indicated that there were a lot of problems here and that's not going to happen again. Well, when the trees came down in this area for that latest home that was built in the Summit, I raised the concerns early, and I was always assured that things were going to be done properly. Even though at the time he knew they would not be and that is where I am right now, I had to settle for reduced damages. The man who built the home is ready to tear his hair out. He trusted people and he trusted the wrong people. I warned him that if you pursue you will be in court. This is what you guys have to decide. I did not deserve this. We

voiced our concerns early and they said nothing was going to go wrong, but it did. It went terribly wrong. Good luck to the residents because they are not going to have the financial reserves to fight this and you guys are all counting on that.

Tom Giusti stated that he feels bad for this gentleman for what he has gone through and I am not minimizing it and it is unfortunate. We have to take what we have here and do the best we can with engineers and the process to capture rain water, roof water, driveway and street water and put it all in retention and do the best we can to make this the best solution. It is unfortunate that someone's negligence in the past has caused hardship. We are trying not to do that and to do our best to make everything the best that we can to do this right.

Member Williams asked if the borings had been done as suggested. Mr. Guisti stated that Nederveld had confirmed with Fishbeck that we had performed the appropriate tests and in line with the Township requires for a retention basin.

Member Pennington asked the Board to focus on the three items the Planning Commission was asked to review and not the drainage aspect as this had been approved at the last meeting.

Member Mead asked if the Storm Water Maintenance Agreement and adding additional language to it, I question the ability to further enforce this down the road. I continue to hear that we are adding to a problem that is existing, do we have an existing Storm Water Agreement that covers this PUD as a whole and is it being fully enforced today? Director Peterson stated that we do not have such an Agreement. The Storm Water Maintenance Agreement is a relatively newer tool that we use. The Storm Water Ordinance is new as well and was not in effect when the original Sentinel Pointe was built. The Storm Water Maintenance Agreement only addresses the property that is under development. Some of the issues that people are speaking about and the problems around it are really separate. Some of the work that is planned to be done are not really coming from areas here but rather west of Thornhills. That is what the Township has been studying with the Township Engineer to see what can be done for a long term fix. Our engineer pointed out that they are quite confident in this site meeting the current standards for our Storm Water Ordinance which are much more stringent than any of the sites around it.

Member Mead stated if it is safe to say that by this proposed development we are taking the water runoff that is freely running as of today and trying to capture it and divert it to the infiltration basin. Director Peterson stated that this was correct. The water would now seep into the ground rather than running down the hill. Member Mead stated that in theory this development could alleviate some of the problems this PUD is having on the surrounding environment. Director Peterson stated that little things can contribute a great deal to water

runoff, such as tree growth or reshaping a yard can have a significant impact over time on how water reacts on site. Certainly the intent of a Storm Water Ordinance is to minimize the impact from the water runoff created by a development. Our standards are not getting easier but rather tougher. This developer is meeting and exceeding our requirements.

Member Sperla stated that we can't hold a developer on a defined piece of property to correct every problem that exists coming from other parcels. All they can do is put before us what their proposed plan is, the detention ponds. The Storm Water Ordinance came into existence in 2005 and I have had my own issues in the past and have looked at it quite extensively. You cannot impose newly adopted Ordinances on developments that took place 15-20 years ago. Nor can you ask a developer or an owner of another piece of property to correct problems in other parts of the Township unless it's part of the original plan. I don't believe this was. I believe part of the problem they have created themselves. I do believe that this is in an area where it has the most stringent requirements, it says when possible they require 100% infiltration. That does not mean there can't be a spillway. There is a big hill and it goes into the river but the design of this pond is 100% infiltration. The Engineer has stated that this will occur and we have to be careful of trying to impose burdens on other parties that really did not create the pre-existing problems that existed prior to the Storm Water Ordinance being adopted in 2005.

Chairman Waalkes stated for clarification, we are reviewing the Landscaping Plan with its associated Landscape Bond, the slight revision in the PUD that references the Landscape Plan, the revised Storm Water Maintenance Agreement and the \$50,000 Performance Bond during construction.

Member Rissi asked if it was typical to see a Landscaping Plan that shows the landscape around the perimeter but not around the individual units. Director Peterson stated that it would be unusual to see the landscaping around the homes. The borings that were requested at the last meeting the developer addressed and was it satisfactory to our Ordinance.

Member Pennington stated that typically we do not require a landscape buffer for residential builds and I am fine with what we previously approved but if the Planning Commission wanted to include these requirements, I would support that too.

Chairman Waalkes stated that he is in agreement with Member Pennington but he is willing to support the additional requirements.

**Member Sperla made a motion to approve the changes that have been outlined in the Staff report and to forward a positive recommendation to the Township Board to include the following:**

- Landscaping around the perimeter of the site
- Landscaping Bond of \$8,200
- Updated Storm Water Maintenance Agreement
- **Performance Bond during construction of \$50,000**

**Support by Member Mead. Motion carried 7-0.**

**ARTICLE 7. Case #16-3293 John Slagboom**

**Property Address: 5210 52<sup>nd</sup> Street**

**Requested Action: The Applicant is requesting site plan approval for a 4,800 sq. ft. warehouse addition.**

Director Peterson presented the case. South side of 52<sup>nd</sup> Street with existing warehouse. When we approved this Special Use, approximately 10 years ago, they had several other buildings planned as well as outdoor storage. They have only built the few buildings up front and a few smaller buildings than originally planned. In reference to Storm Water, the site was designed and constructed to accommodate much more construction. We have approved a few smaller building administratively but we are to the point where any further additions must come before the Planning Commission. The Applicant has indicated that the addition will be used for storage and light maintenance and repair. It fits within the purview of the industrial zoning and their Special Use Permit for their project. The Township Engineer looked at the plans and the site can already accommodate the addition. The Township Fire Department did not have any issues or comments. This is pretty straightforward and I am recommending approval of their site plan. They will have to do a Storm Water Maintenance Agreement that essentially would be agreeing to what they have already done.

Member Pennington asked if the original proposal requesting more singular buildings or one large building. Director Peterson stated that the original plan was to continue the larger buildings and it has evolved as they have used the site.

**Chairman Waalkes asked the Applicant to come forward with comments.**

John Slagboom, 5210 52<sup>nd</sup> Street came forward as the Applicant.

The Applicant stated that the original plan was for nine (9) buildings similar to the first three buildings.

Member Sperla asked if there was going to be water and electric to the building. The Applicant stated that there would be electrical for lights only.

**Member Rissi made a motion for Site Plan Approval on Case #16-3293- John Slagboom for a 4,800 sq. ft. warehouse addition with the condition that they sign the Storm Water Maintenance Agreement. Support by Member Williams. Motion carried 7-0.**

**ARTICLE 8. Case #15-3295 Cascade Township  
Accessory Building Zoning Requirements Discussion**

Director Peterson presented the case. I have provided a summary of accessory buildings from 2010-2015. This gives a sense of the size of the buildings that have come before the Board. What is important to remember is that the accessory buildings that we are seeing are much larger than 832 sq. ft. on average. The 832 sq. ft. correlates to the size of the attached garage that you are allowed. That size can then increase based on the size of your house. Director Peterson stated that he is comfortable with the 832 sq. ft. and that if we raise the allowed square footage too much it could cause a few issues in some of our neighborhoods if we were permitting larger buildings with just a staff review. It seems we would open up a whole new set of issues. After reviewing the data I really like what we have.

Member Sperla stated that we have a unique position in Cascade having the airport, industrial parks around the airport, we have agricultural areas, high-end neighborhoods and some older neighborhoods. We have a real conglomeration of underlying uses. I have been thinking about building an accessory building and I think 832 sq. ft. is reasonable. If you need a bigger building it makes sense that you apply for a Special Use Permit given the challenges that are unique to the Township. Director Peterson concurred that we have some neighborhoods that are completely different from one another and we have some very unique areas in the Township. We are one of the very few Townships that do not arbitrarily limit the size of an accessory building. We have a threshold that once you go over the limit you apply for a Special Use Permit.

Member Pennington stated that when he built his accessory building he built it right to 832 sq. ft. and if he had been allowed to build it bigger he would have. In retrospect he realizes that the building would not have fit into his neighborhood and would potentially have caused problems with his neighbors.

Member Rissi stated that he had studied the summary and feels that 832 sq. ft. is a good number. The only possible way of changing it in my mind, is that in the agricultural/conservation zoned district you have an arrangement that you can go up to 50% of the size of the home on a multiple acre site. You start to get into charts and may open a large can of worms.

Member Sperla stated it gets complex and you can't look at the circumstances surrounding you. You have to have enough authority to take into consideration the property owners adjacent to the property. Member Rissi stated we are not doing an extreme amount of them.

Member Mead stated that the requests we had in 2015 were substantially larger than the 832 sq. ft. allowed. At least half of these cases would have had to come before the Planning Commission even if we allowed a 1,500 sq. ft. building.

Member Katsma stated that we need to have some level of protection to be able to hear neighbor's concerns in the situation where one neighbor has no consideration of his neighbor's concerns. This gives us a level of protection while still approving larger accessory buildings where they fit into the neighborhood.

Chairman Waalkes stated that it sounds like everyone feels that the data supports our current accessory building requirements. All Members were in agreement.

**ARTICLE 9. Any other business**

There was no new business.

**ARTICLE 10. Adjournment**

**Motion made by Member Sperla to Adjourn. Support by Member Mead. Motion carried 7-0. Meeting adjourned at 8:14 PM.**

Respectfully submitted,  
Aaron Mead, Secretary  
Ann Seykora/Julie Kutchins – Planning Administrative Assistant



**Steve**

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**From:** Jason S. Schnelker <jason.schnelker@srmlawyers.com>  
**Sent:** Thursday, May 7, 2020 3:29 PM  
**To:** Cliff Bloom; Steve  
**Cc:** Tom Giusti  
**Subject:** Round Hill PUD edits  
**Attachments:** Cascade Charter Twp - Roundhill PUD (PC meeting may 18)\_Round Hill Edits\_REDLINE.pdf; Cascade Charter Twp - Roundhill PUD (PC meeting may 18)\_Round Hill Edits\_CLEAN.docx

Cliff and Steve,

In follow up to Steve's message to Tom of earlier this week, attached are our final proposed edits to the Round Hill PUD Amendment. A few comments regarding them:

1. We have removed the references to the remediation of Rohde's property and the related performance bond for any such remediation. We have done this for several reasons:
  - a. To the extent Rohde has been damaged (which we dispute) his claims are a private cause of action and should not be referenced in a PUD that will govern this development for years to come.
  - b. Even if it was appropriate to include a reference in the PUD, Finko's liability to Rohde is disputed and has not been proven.
  - c. We are working hard to resolve matters with Rohde, but if we are unable to do so, it should not hold up further progress at Round Hill. Rohde's claims are not jeopardized by the approval of the amended PUD and continuance of the project. His claims are his claims and there is no reason to further involve the township or the development itself in that aspect of the dispute. Litigation on any damages Finko may or may not have caused Rohde can continue independent of the approval of the amended PUD, which now rectifies Rohde's concerns about the PUD itself.
2. We modified the reference to storm water runoff. I don't know how we could quantify what runoff levels existed prior to 1/1/16. We prefer to simply require that the Revised Project comply with the Stormwater Ordinance.

Let me know if you have any questions or wish to discuss.

Thanks.

-J

Jason S. Schnelker, Esq.

**STAFF REPORT**

STAFF REPORT: Case #20-3581/Korstange  
REPORT DATE: May 4, 2020  
PREPARED FOR: Cascade Charter Township Planning Commission  
MEETING DATE: May 18, 2020  
PREPARED BY: Brian Hilbrands, Planner

APPLICANT:  
Christian Korstange  
7561 Whispering Ridge  
Grand Rapids, MI 49546

STATUS  
OF APPLICANT: Property Owner

REQUESTED ACTION: The applicant is requesting a Type I special use permit to allow a 6-foot-tall fence in the front yard.

EXISTING ZONING OF  
SUBJECT PARCEL(S): R-1, Residential

GENERAL LOCATION: NW corner of Cascade Rd and Whispering Ridge

PARCEL SIZE: 0.6 acres

EXISTING LAND USE  
ON THE PROPERTY: Residential

ADJACENT AREA  
LAND USES: All Residential

ZONING ON  
ADJOINING PARCELS: All R-1

**STAFF COMMENTS:**

1. The applicant is requesting a Type I special use permit to allow for a taller fence in the front yard.
2. They would like to install a 6-foot-tall wooden fence in the front yard along Cascade Rd and in the side yard along the north property line. Fences in the front yard are limited to 4 feet tall unless the Planning Commission approves a special use permit.

3. The property owner has indicated that they would like to install the 6-foot-tall fence to maintain some privacy since the tree line that is in the ROW is being removed by the township to accommodate the pathway along Cascade Rd.
4. The fence is planned to be a solid wood fence.
5. The 6-foot-tall fence will be stopped about 40 feet short of the intersection with Whispering Ridge. This is in compliance with our clear vision corner requirements of a 20-foot radius clear of anything over 30 inches.
6. The applicant will be removing a section of existing fence that is currently in the ROW along Cascade Rd.
7. Fences do not require a building permit but are required to comply with Section 4.30 of the Zoning Ordinance.
8. We have granted other permits for 6-foot-tall fences in front yards on major streets like Buttrick Ave and Thornapple River Dr.
9. We have granted other permits for taller fences in the front yards before when it has not created a vision problem.
10. With a Type I special use permit the Planning Commission may allow the height of the fence to increase to 8 feet, however they are only asking to increase to 6 feet. I have copied for you the section from our ordinance that provides the criteria for you to evaluate the taller fence request.

**Conditions for Special Use Permit Approval**

Amended by Ord No 5 of 2012 (7/25/12)

Due to the unusual circumstances related to the property location or use of the fence, the height of a fence may be increased to a height of eight (8) feet as measured from final grade in all agricultural, office and residential zoning districts and up to ten (10) feet, as measured from average grade in all other zoning districts. Upon review of a special use permit for additional fence height the Planning Commission shall consider the following:

Standard	Comment
To what extent the impact of additional height has on adjoining neighbors.	Little if any for a 6-foot-tall fence.
Whether the additional height severely impacts light and ventilation from flowing onto the adjoining properties.	I do not believe this would be an issue for a 6-foot-tall fence.
Whether the increased height creates a traffic hazard.	The additional height would not create a traffic hazard.
Whether the increased height creates a fire, safety hazard.	Chief Magers has indicated that the increase in height would not create a fire hazard.

Whether the increased height violates any known property restrictions (i.e. plat restrictions, deed restrictions, covenants, etc.).	The Township is unaware of any deed restrictions that would prohibit this fence.
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Staff recommends that the Planning Commission approve the 6-foot-tall fence in the front yard as proposed.

Attachments: application package, Section 4.30 of the zoning ordinance



# CASCADE CHARTER TOWNSHIP

2865 Thornhills SE Grand Rapids, Michigan  
49546-7140

## PLANNING & ZONING APPLICATION

APPLICANT:

Name: CHRISTIAN KORSTANGE  
Address: 7561 WHISPERING RIDGE ST  
City & Zip Code: GRAND RAPIDS, MI 49546  
Telephone: (616) 334-6415  
Email Address: KORSTANGE@SRCGLOBAL.NET

OWNER: \* (If different from Applicant)

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City & Zip Code: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Email Address: \_\_\_\_\_

NATURE OF THE REQUEST: (Please check the appropriate box or boxes)

- |                                     |                             |                          |                                 |
|-------------------------------------|-----------------------------|--------------------------|---------------------------------|
| <input type="checkbox"/>            | Administrative Appeal       | <input type="checkbox"/> | Administrative Site Plan Review |
| <input type="checkbox"/>            | Deferred Parking            | <input type="checkbox"/> | P.U.D. - Rezoning *             |
| <input type="checkbox"/>            | P.U.D. - Site Condominium * | <input type="checkbox"/> | Rezoning                        |
| <input type="checkbox"/>            | Site Plan Review *          | <input type="checkbox"/> | Sign Variance                   |
| <input checked="" type="checkbox"/> | Special Use Permit          | <input type="checkbox"/> | Subdivision Plat Review *       |
| <input type="checkbox"/>            | Zoning Variance             | <input type="checkbox"/> | Other: _____ *                  |

*\* Requires an initial submission of 5 copies of the completed site plan*

BRIEFLY DESCRIBE YOUR REQUEST:\*\*

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(\*\*Use Attachments if Necessary)  
-SEE OTHER SIDE-

LEGAL DESCRIPTION OF PROPERTY\*\*:

LOT 23 - THORNAPPLE WOODS

(\*\*Use Attachments if Necessary)

PERMANENT PARCEL (TAX) NUMBER: 41-19 - 22 - 126 - 021

ADDRESS OF PROPERTY: 7561 WHISPERING RIDGE DR SE

PRESENT USE OF THE PROPERTY: PRIMARY RESIDENCE

NAME(S) & ADDRESS(ES) OF ALL OTHER PERSONS, CORPORATIONS, OR FIRMS HAVING A LEGAL OR EQUITABLE INTEREST IN THE PROPERTY:

Name(s)	Address(es)
_____	_____
_____	_____

SIGNATURES

I (we) the undersigned certify that the information contained on this application form and the required documents attached hereto are to the best of my (our) knowledge true and accurate. I (we) also agree to reimburse the Cascade Charter Township for all costs, including consultant costs, to review this request in a timely manner. I (we) understand that these costs may also include administrative reviews which may occur after the Township has taken action on my (our) request.

I (we) the undersigned also acknowledge that the proposed project does not violate any known property restrictions (i.e. plat restrictions, deed restrictions, covenants, etc.)

Owner – Print or Type Name  
(\*If different from Applicant)

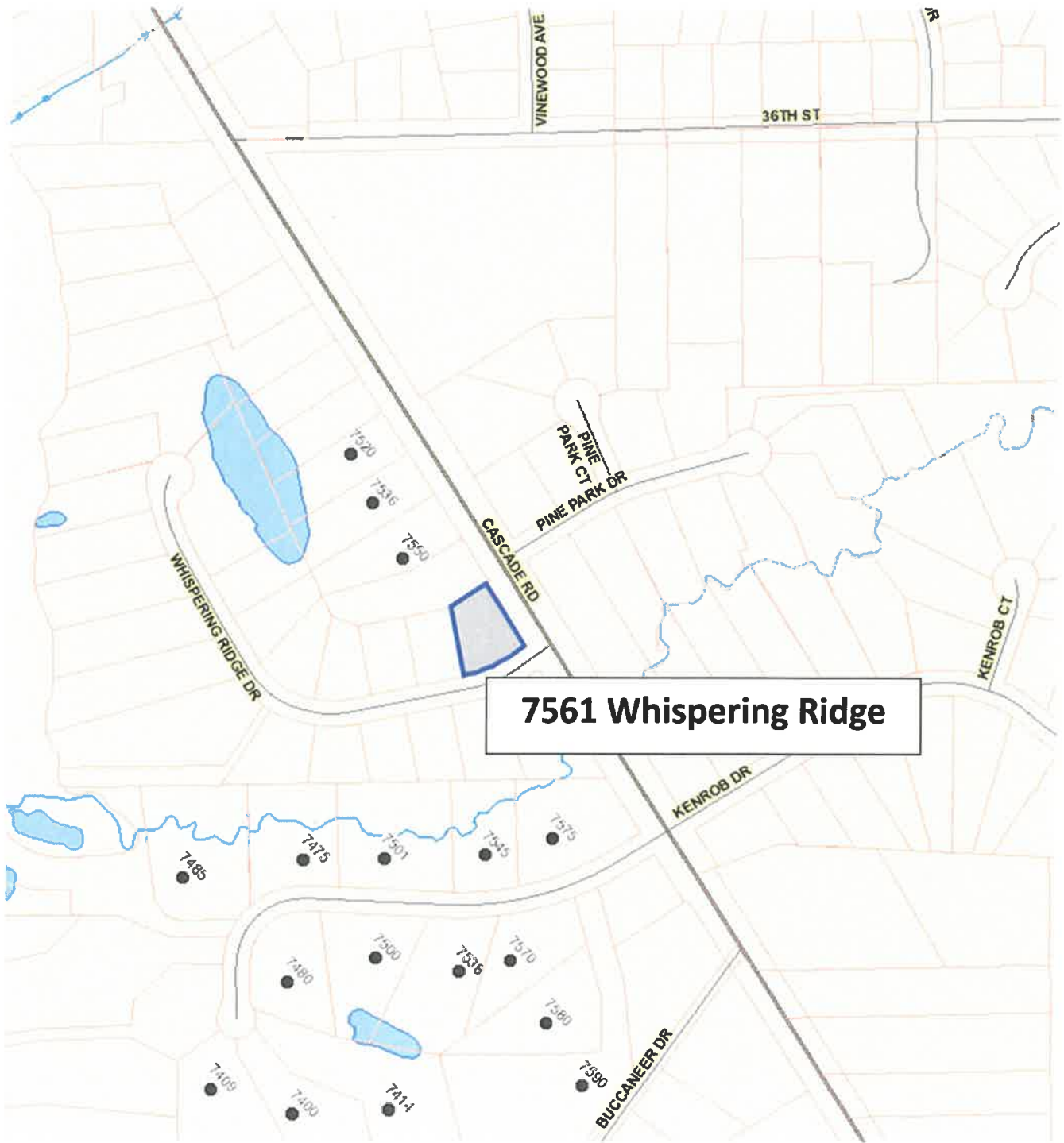
\* \_\_\_\_\_  
Owner’s Signature & Date  
(\*If different from Applicant)

CHRISTIAN KORSTANGÉ  
Applicant – Print or Type Name

  
Applicant’s Signature & Date 3/5/2020

PLEASE ATTACH ALL REQUIRED DOCUMENTS NOTED IN THE PROCESS REVIEW SHEET – THANK YOU

The Cascade Pathway is extending along our property, along Cascade Road. In order to install the pathway, Consumers energy had to move a utility pole, which resulted in them clear cutting all of the White Pine trees within the right-of-way and our private easement. The trees provided a visual screen and sound barrier to Cascade Road. We would like to reestablish our privacy by constructing a new 6' tall wooden fence along Cascade Road, and along a portion of our northern property line. At this point in time there is an existing 6' tall fence in place. The fence was already in place when we moved in during 2006. We would remove the existing fence and reset a new corner post on our property line. The current corner post puts the fence well within the public right-of-way.



**7561 Whispering Ridge**

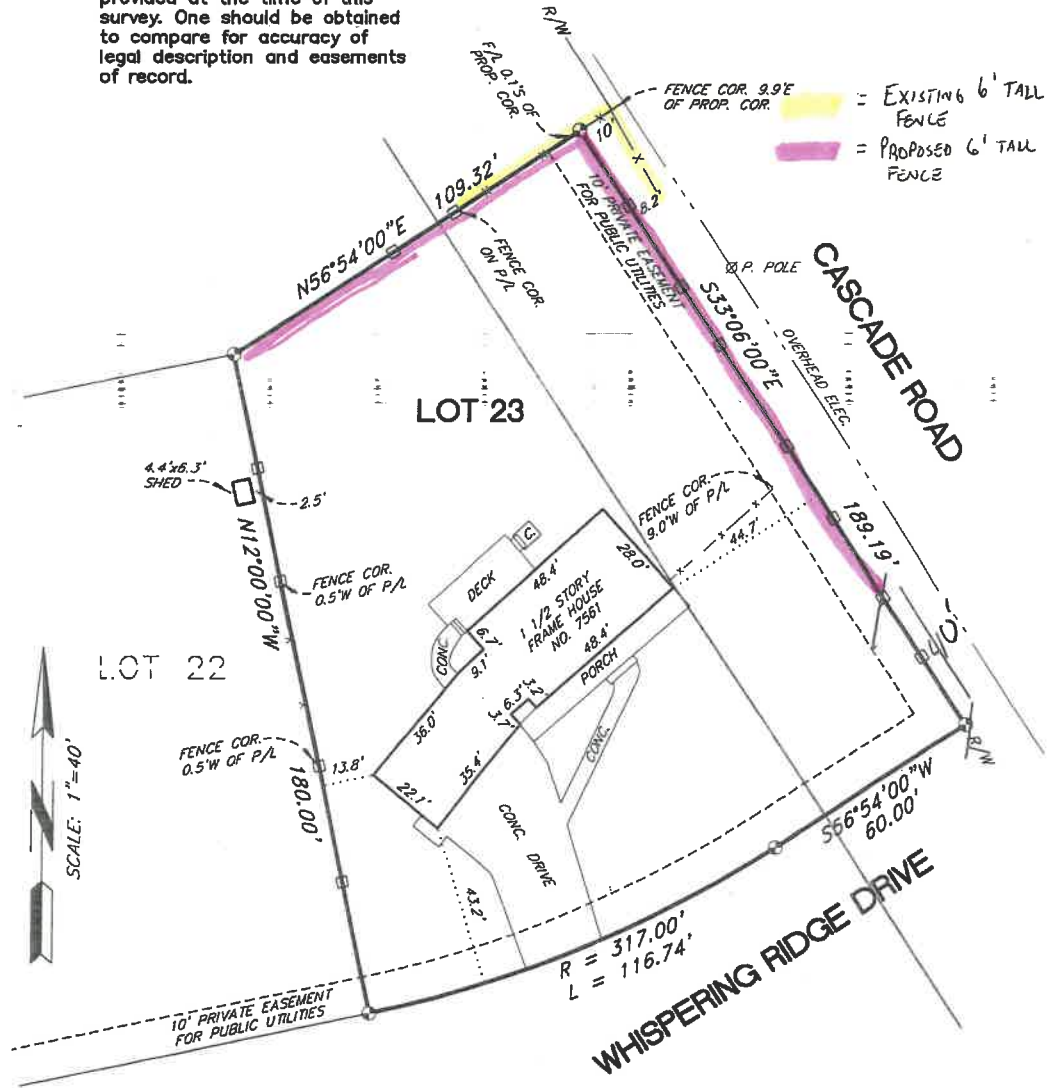
Project No. 200017  
 Date: January 17, 2020  
 For: Christian Korstange  
 7561 Whispering Ridge Dr SE  
 Grand Rapids, MI 49546

Prop. Address: 7561 Whispering Ridge Dr SE

**LEGAL DESCRIPTION FROM TAX RECORDS**

Lot 23, Thornapple Woods, Cascade Township, Kent County, Michigan, according to the recorded plat thereof.

**NOTE:**  
 A title insurance policy was not provided at the time of this survey. One should be obtained to compare for accuracy of legal description and easements of record.

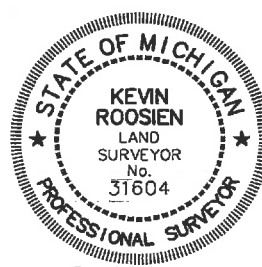


I hereby certify that the buildings and improvements are located entirely thereon and that said buildings and improvements are within the property lines and that there are no existing encroachments upon the lands and property described unless otherwise shown hereon.

**LEGEND**

- o - IRON STAKE - SET
- - IRON FOUND
- D - WOOD STAKE
- R - RECORDED DIMENSION
- D - DEED DIMENSION
- P - PLATTED DIMENSION
- M - MEASURED DIMENSION
- CL - CENTERLINE
- xx - FENCE LINE

**Roosien & Associates**  
 SURVEYING AND ENGINEERING  
 5055 PLAINFIELD AVENUE, NE  
 GRAND RAPIDS, MICHIGAN 49525  
 TELE. (616) 361-7220  
 FAX (616) 361-1822



BY *Kevin Roosien*

# CHAPTER 4 General Provisions

of all excavation sites shall be sloped at a grade of not less than 2.5 feet horizontal to 1 foot vertical.

- b. Complete extent of areas which will be backfilled and depth of backfill shown with spot elevations.
  - c. Areas and depth of areas to be restored with top soil and other overburden.
  - d. Areas which will contain either standing or runoff water and measures which will be taken to avoid stagnation and erosion.
  - e. Phasing diagram(s) for reclamation.
  - f. A complete landscape plan indicating location and type of proposed and existing landscape features.
  - g. Description of the proposed final use of the site, with discussion of how the proposed use relates to the General Development Plan and zoning districts within the vicinity of the property.
  - h. Estimated timetable clearly expressing the maximum time required for various phases of the reclamation plan.
9. **Financial Guarantee** The Township may require the posting of a financial guarantee consistent with Section 21.09 of this Ordinance.
10. **Existing Mineral Resource Extraction Sites-** Mineral Resource Extraction sites which are actively mined or which have been actively mined within 180 days of enactment of this Section shall be limited to the lot on which the activity exists at the date of enactment of this Section. Further, all existing mineral resource extraction sites which are currently being mined shall be required to submit a reclamation plan consistent with the requirements of this Section within one hundred eighty (180) days following the adoption of this Section. (New Section added by Ordinance #19 of 1990)

## Section 4.29 Traffic Visibility Across Corners:

In any residential, business, or industrial district on any corner, no fence, structure or planting over thirty (30) inches in height shall be erected or planted within a twenty foot radius of the corner property lines so as to interfere with traffic visibility across the corner.

## Section 4.30 Walls and Fences:

This Section shall apply to all boundary fences, walls, hedges, gatehouses and entrance gates which are not specifically exempted herein. This Section shall not apply to seawalls as regulated by the Michigan Department of Natural Resources.

### 1. Construction

- a. All fences and walls shall be of sound construction.
- b. No barbed wire, spire tips, sharp objects, or electrically charged fences shall be erected in or abutting any residentially zoned district.
- c. Bona fide agricultural uses may use barbed wire or charged fences to control livestock when located in the ARC, Agricultural Rural Conservation zoning district.
- d. Fence posts and vertical supports must be inside of the fence and facing inside of the property on which the fence is located.

### 2. Location and Height

- a. Agricultural, Office and Residential Zoning Districts - Unless specifically exempted by a Type I special Use Permit, all walls or fences in the front yard shall be limited to a maximum height of four (4) feet at final grade. The maximum fence or wall height in the side yard or rear yard shall be limited to six (6) feet in height as measured from average grade.
- b. All Other Zoning Districts - Unless specifically exempted by a Type I special Use Permit, all walls or fences in these zoning districts shall be limited to a maximum heights of eight (8) feet. The use of barbed wire strands is permitted provided the strands be restricted to the uppermost portion of the fence and shall not extend lower than a height of six (6) feet from the average grade.
- c. Architectural Features - Fences, walls and hedges for residential, office or commercial use may include architectural features such as columns, cupolas, fountains, parapets, etc. at a height not exceeding 1.5 times the permitted height wall or fence height. Such features must be compatible with the project and abutting properties.



Definitions

General Provisions

Development Review

Zoning Districts

Special Uses

Planned Unit Development

Height, Area, & Placement

Parking & Access

Landscaping

# CHAPTER 4 General Provisions

3. **Location Requirements** - Except as specified below, fences, walls and hedges may be erected, placed and maintained along any property line provided:
  - a. It shall be unlawful to construct any wall or fence in any public right-of-way or within the right-of-way easement for private roads.
  - b. No wall, fence, structure or planting over thirty (30) inches in height shall be erected or planted within a twenty (20) foot radius of the corner property lines so as to interfere with traffic visibility across the corner.
4. **Additional Requirements for Commercial, Office and Industrial Areas** - All commercial, office and industrial uses shall provide a continuous visual screen of at least eight (8) feet in height along any lot line abutting a residential use. Such screen shall be installed by the non-residential user and shall be maintained in a sightly manner.
  - a. An entrance gate or gatehouse not approved as part of a Planned Unit Development (PUD) may be permitted by right for security purposes to any development provided the gate or gatehouse is:
    - 1) Not located on a public street or right-of-way; and
    - 2) Located a minimum of one hundred (100) feet back from any public right-of-way or easement; or
    - 3) Designed in such a manner that a minimum of three (3) vehicles can pull safely off the public street while waiting to enter; or
    - 4) The development provides a deceleration-turning lane adjacent to the existing pavement for a minimum distance of three hundred (300) feet leading into the access road, unless more stringent requirements are specified by the Kent County Road Commission.
  - b. Access for emergency vehicles shall be provided. Should an emergency necessitate the breaking of an entrance gate, the costs of repairing the gate and the emergency vehicle (if applicable) shall be the responsibility of the owner and/or operator of the gates.

## 5. Conditions for Special Use Permit Approval

Due to the unusual circumstances related to the property location or use of the fence, the height of a fence may be increased to a height of eight (8) feet as measured from final grade in all agricultural, office

and residential zoning districts and up to ten (10) feet, as measured from average grade in all other zoning districts. Upon review of a special use permit for additional fence height the Planning Commission shall consider the following:

- a. To what extent the impact of additional height has on adjoining property owners.
- b. Whether the additional height severely impacts light and ventilation from flowing onto the adjoining properties.
- c. Whether the increased height creates a traffic hazard.
- d. Whether the increased height creates a fire, safety hazard.
- e. Whether the increased height violates any known property restrictions (i.e. plat restrictions, deed restrictions, covenants, etc.). (New Section added by Ordinance #5 of 2012).

## Section 4.31 Residential Front Yard Averaging:

In any ARC, R1 or R2 zoning district where the average front yard setback of two (2) or more buildings within two hundred (200) feet of the lot or parcel in question and on the same side of the street is less than, or greater than, the minimum front yard setback prescribed for the specific zoning district, then the required front yard setback of such lot or parcel shall not be less than the average existing front yard setback or such buildings. In any event, the front yard setback on any lot or parcel shall not be less than ten (10) feet. (New Section added by Ordinance #14 of 1989).

## Section 4.32 Resubmission of Applications

No application for a rezoning, planned unit development, special use permit, site plan approval, variance or other zoning approval or project shall be submitted to the Township or be formally considered by a Township board or official (i.e. Township Board, Zoning Board of Appeals, Planning Commission or Planning Director) where such application or project has been previously denied or turned down by the Township unless the new application or project is substantially changed from the prior one. With regard to whether or not substantial changes have occurred since the prior application or project was denied, the Planning Director shall make the determination in the first instance. If the applicant disagrees with the Planning Director's determination, the applicant shall have thirty (30) days to appeal the Planning Director's determination



Definitions

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Height, Area, & Placement

Parking & Access

Landscaping

**STAFF REPORT**

STAFF REPORT: Case #20-3582  
REPORT DATE: April 10, 2020  
PREPARED FOR: Cascade Charter Township Planning Commission  
MEETING DATE: May 18, 2020  
PREPARED BY: Brian Hilbrands, Planner

APPLICANT:

Michigan Fine Wine and Spirits, LLC  
6600 Rockledge Drive #150  
Bethesda, MD 20817

STATUS

OF APPLICANT: Tenant

REQUESTED ACTION: This is a change in tenant from Baby's R Us (retail) to Total Wine Spirits Beer & More (retail) and a tenant improvement project.

EXISTING ZONING OF SUBJECT PARCEL(S): PUD 30

GENERAL LOCATION: North side of 28<sup>th</sup> St just west of Patterson Ave.

PARCEL SIZE: Approximately 6.5 acres

EXISTING LAND USE ON THE PROPERTY: Commercial

ADJACENT AREA LAND USES:  
N – Industrial  
S – Commercial  
E – Commercial  
W – Commercial

ZONING ON ADJACENT PARCELS:  
N – I  
S – PUD 30  
E – B-2  
W – B-2

**STAFF COMMENTS:**

1. The applicant is requesting a Type I Special Use Permit for a change in tenant from Baby’s R Us (retail) to Total Wine Spirits Beer & More (retail) and a tenant improvement project.
2. PUD Ordinance – Sports and Recreation #4 of 1995 requires that in relation to any future retail user, all uses found in Section 8.03 and Section 10.03 of the Zoning Ordinance would be allowed provided that the user is first reviewed by the Planning Commission as a Type I Special Use Permit under the general approval standards found in Section 17.06 of the Zoning Ordinance.
3. The use would fall under “Generally recognized retail businesses” which is an allowed use in Section 8.03 of the Zoning Ordinance.
4. They will be the second tenant along with Bed Bath & Beyond in an approximately 73,000 square foot building.
5. The applicant will be performing an interior tenant improvement project of an existing space for retail use. The existing exterior of the building’s finishes will remain unchanged.

Section 17.06 of the zoning ordinance requires the Planning Commission to review several standards before approving a special use. I have listed those items for your consideration followed by my comments for each.

Standard	Comment
Be designed, constructed, operated and maintained so as to be harmonious and appropriate in appearance with the existing or intended character of the area in which the use is proposed.	The retail use would be appropriate for the area. There will be minimal changes to the exterior of the existing building.
Be adequately served by essential facilities and services such as highways, streets, police and fire protection, drainage, refuse disposal, water and sewer facilities and schools.	It will be adequately served.
Not create excessive additional requirements at public cost for public facilities and services.	This use would not create excessive additional requirements at the expense of the public.
Not cause traffic congestion, conflict or movement in greater proportion to that normally prevailing for the use in the particular zoning district.	This use will not greatly increase the traffic flow in the area.
Not involve uses, activities, processes, materials, equipment or conditions of operation that will be detrimental to any persons, property, or the general welfare by	There should not be any detrimental products of this use.

reason of noxious or offensive production of noise, smoke, fumes, glare, vibration, odor or traffic.	
--	--

**STAFF RECOMMENDATION**

Staff recommends that the Planning Commission approve the special use permit.

Attachments: application package, Section VII of the PUD Ordinance – Sports and Recreation #4 of 1995, Section 17.06 of the zoning ordinance.

# SITE PLAN REVIEW PROCESS



## Planning & Zoning Application

**APPLICANT:** Name: Michigan Fine Wine and Spirits, LLC  
Address: 6600 Rockledge Drive, #150, Bethesda, MD 20817  
Telephone: 301-795-1000  
Facsimile: \_\_\_\_\_

**OWNER:\*** Name: Edmark IV, LLC  
Address: 161 Ottawa NW #104, Grand Rapids, MI 49503  
Telephone: 616-575-6051  
Facsimile: \_\_\_\_\_

*(\*If different from the Applicant)*

NATURE OF THE REQUEST (Please check the appropriate box or boxes)	
<input type="checkbox"/> Administrative Appeal	<input type="checkbox"/> Administrative Site Plan Review
<input type="checkbox"/> Deferred Parking	<input type="checkbox"/> P.U.D. – Rezoning **
<input type="checkbox"/> P.U.D. – Site Condominium **	<input type="checkbox"/> Rezoning
<input type="checkbox"/> Site Plan Review **	<input type="checkbox"/> Sign Variance
<input checked="" type="checkbox"/> Special Use Permit	<input type="checkbox"/> Subdivision Plat Review **
<input type="checkbox"/> Zoning Variance	<input checked="" type="checkbox"/> Other: <u>Type I Special Use Permit **</u>

*(\*\*Requires an initial submission of 5 copies of the completed site plan)*

### BRIEFLY DESCRIBE YOUR REQUEST:\*\*\*

This is a change in tenant from Baby's R Us (retail) to Total Wine Spirits Beer & More (retail).  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*(\*\*\*Use Attachments If Necessary)*

# SITE PLAN REVIEW PROCESS



**LEGAL DESCRIPTION OF PROPERTY\*\*\*:**

See attached Site Plan

(\*\*\*Use Attachments if Necessary)

**PERMANENT PARCEL (TAX) NUMBER:** 41-19- 07-353-022

**ADDRESS OF PROPERTY:** 4923 28th Street, SE, Grand Rapids, MI 49512

**PRESENT USE OF THE PROPERTY:** Retail

**NAME(S) & ADDRESS(ES) OF ALL OTHER PERSONS, CORPORATIONS, OR FIRMS HAVING A LEGAL OR EQUITABLE INTEREST IN THE PROPERTY:**

Name(s)	Address(es)
None known.	

**SIGNATURES**

*I (we) the undersigned certify that the information contained on this application form and the required documents attached hereto are to the best of my (our) knowledge true and accurate. I (we) also agree to reimburse the Cascade Charter Township for all costs, including consultant costs, to review this request in a timely manner. I (we) understand that these costs may also include administrative reviews which may occur after the Township has taken action on my (our) request.*

*I (we) the undersigned also acknowledge that the proposed project does not violate any known property restrictions (i.e. plat restrictions, deed restrictions, covenants, etc.)*

Edmark IV, LLC

Owner – Print or Type Name  
(\*If different from Applicant)

\*

Owner's Signature & Date  
(\*If different from Applicant)

Michigan Fine Wine and Spirits, LLC

Applicant – Print or Type Name

Applicant's Signature & Date  
By: Thomas A. Haubenstricker, as Treasurer/Secretary of LLC Manager of Applicant

PLEASE ATTACH ALL REQUIRED DOCUMENTS NOTED IN THE PROCESS REVIEW SHEET – THANK YOU!



**MICHIGAN FINE WINE AND SPIRITS, LLC**

**CASCADE TOWNSHIP SPECIAL USE PERMIT APPLICATION**

**STATEMENT**

- A. Summary of the proposed use requiring the Special Use Permit.

**Response:** Applicant is a wine, beer and spirits retailer. No prepared food will be consumed on premises. Wine classes provide tastings at which palate cleanse will be with water. There will be samples of beer and wine at stations on the sales floor where single use throw-away cups will be used.

- B. Summary explaining how the proposed use will be "designed, constructed, operated and maintained" to be harmonious with the existing character of the surrounding area.

**Response:** This is a tenant improvement project (interior only). Therefore, the existing exterior of the building's finishes will remain unchanged.

- C. If the operation procedures of the proposed use involve the emission of noise, smoke, fumes, glare, vibration, odor or increased traffic, please explain how these items will be reduced or mitigated to assure they are not detrimental to the surrounding area.

**Response:** The operations of Total Wine Spirits Beer & More will not result in any emission of noise, smoke, fumes, glare, vibration, odor or increased traffic.



4923 28<sup>th</sup> Street

WOODCREEK CT

STARR ST

PATTERSON AVE

28TH ST

Exit 43

Exit 44



Section VII and the Design Guidelines, Requirements and Limitations contained in Section VIII of this Ordinance.

#### Section VII. Permitted Uses

The permitted uses for the Sports & Recreation, Inc. PUD are as follows:

A. One (1) sporting goods store (Grand Rapids Sports) or one (1) future retail user subject to the conditions listed in Section VII ( C ) (1-2) below.

B. Two (2) freestanding restaurants (Grady's American Grill and On The Border). These restaurants have the right to change "themes" or "types" as the Property Owner(s) may determine to adjust to market conditions.

#### C. One (1) future retail user adjacent to Grand Rapids Sports.

1. In relation to any future retail user, all uses found in Section 8.03 and Section 10.03 of the Zoning Ordinance (as may be amended) would be allowed provided the user is first reviewed by the Planning Commission as a Type I Special Use Permit under the general approval standards found in Section 17.06 of the Zoning Ordinance (as may be amended).

2. The following uses are specifically prohibited from occupying any future retail space within this PUD:

- a) funeral homes
- b) lodge halls and clubs
- c) theaters
- d) wholesale clubs
- e) outdoor sales
- f) automobile service stations and mini food mart stations
- g) auto repair shops and car washes
- h) child or adult day care centers
- i) mineral resource extraction
- j) drive in or drive through services for business, including restaurants
- k) lumber yards and new building materials sales
- l) outdoor recreation centers
- m) adult entertainment establishments

# Chapter 17 Special Uses

hearing is to be held before the Township Board. A decision rendered by the Township Board shall be final unless such decision is reversed or modified by a court of competent jurisdiction.

## Section 17.05 Zoning Board of Appeals Action:

Owing to the discretionary nature of the decision to approve or deny a request for special use the Zoning Board of Appeals is without jurisdiction to accept appeals or grant variances from the General Standards set forth in Section 17.06 and the decision of the Planning Commission or Township Board with respect to the approval or denial of special uses.

## Section 17.06 Special Use Approval Standards - General:

In formulating recommendations or approving any special use, the Planning Commission and Township Board shall require that the following general standards be satisfied.

1. Upon review of each application there shall be a determination as to whether each use on the proposed site will:
  - a. Be designed, constructed, operated and maintained so as to be harmonious and appropriate in appearance with the existing or intended character of the area in which the use is proposed.
  - b. Be adequately served by essential facilities and services such as highways, streets, police and fire protection, drainage, refuse disposal, water and sewer facilities and schools.
  - c. Not create excessive additional requirements at public cost for public facilities and services.
  - d. Not cause traffic congestion, conflict or movement in greater proportion to that normally prevailing for the use in the particular zoning district.
  - e. Not involve uses, activities, processes, materials, equipment or conditions of operation that will be detrimental to any persons, property, or the general welfare by reason of noxious or offensive production of noise, smoke, fumes, glare, vibration, odor or traffic.
2. All applicable federal, state and local licensing regulations shall be complied with. Initial and annual

proof of such compliance shall be a condition of special use approval and the continuance thereof.

3. As a minimum or unless specifically modified by the provisions in Section 17.07 the dimensional standards and landscape, buffering and parking regulations otherwise applicable to the use and/or zoning district shall be maintained as outlined within the other various applicable chapters of this Ordinance. For uses permitted by right in one district, but which require special use approval in another district, the standards relating to the district in which the use is permitted by right shall serve as the minimum standards to which the site shall be designed. In such cases where there the conflicting standards, the most restrictive shall apply, unless specifically modified by the provisions of Section 15.07 or the approving body.
4. Upon review, the Planning Commission or Township Board as appropriate may stipulate such additional conditions and safeguards deemed necessary for the protection of individual property rights and values, the general welfare and for insuring that the intent and objectives of this Ordinance are observed.
5. Upon finding that any condition, safeguard or requirement has been breached, the Township Board may automatically invalidate the special use approval.

## Section 17.07 Type II Special Use Design Standards:

The specific requirements set forth in this Section are requirements which must be met by certain Type II special uses in addition to the general standards outlined or referenced in the above Section 17.06.

1. As a condition of approval each of the following uses must be situated such that the proposed site has direct primary access on at least one collector or arterial street as classified by the Major Street Plan.
  - a. Public, parochial and other private elementary, intermediate and high schools.
  - b. Public or private parks and recreation and activity centers including swimming pools, tennis courts, baseball fields, community center, libraries and similar facilities intended to serve areas beyond the immediate neighborhood.
  - c. Child or adult day care centers as defined in Chapter 3, whether free standing or in conjunction with a principal permitted use.



Definitions  
General Provisions  
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Zoning Districts  
Special Uses  
Planned Unit Development

Height, Area, & Placement  
Parking & Access  
Landscaping

## STAFF REPORT

TO: Cascade Charter Township Planning Commission  
FROM: Brian Hilbrands, Planner  
REPORT DATE: May 7, 2020  
MEETING DATE: May 18, 2020  
CASE: #20-3579/ 1370 Buttrick Ave

GENERAL INFORMATION  
BDR Executive Custom Homes  
5510 Cascade Rd SE  
Suite 200  
Cascade MI 49546

- A. Applicant: BDR
- B. Status of Applicant: Developer
- C. General Location:  
The property is located on the Southeast corner of Buttrick and Grand River Dr.
- D. Requested Action:  
Develop into 19 detached single-family site condominium project.
- E. Existing Zoning on Subject Parcels: R1
- F. Zoning on Adjoining Parcels:  
S, W - R1  
E - PUD  
N - AG (Ada Twp)
- G. Parcel Size: Approximately 23 acres
- H. Existing Land Use on Subject Parcel: Residential/Horse Farm
- I. Adjacent Area Land Uses:  
E, S, W - Residential  
N - Ada Township Park

## STAFF ANALYSIS

- A. The applicant is requesting Tentative Preliminary approval in order to develop a new subdivision on approximately 23 acres for a Site Condominium. This subdivision would consist of 19 single-family site condo units on a new private street.
- B. The property is zoned R1 and is Master Planned as Suburban Residential.
- C. The applicant has provided a tentative preliminary plat showing how the property could be developed with 19 lots using 25% open space with public sewer or public water. This method requires a minimum of 30,000 sq ft per lot. They are proposing to extend public sewer and utilize private wells. The lots range in size from 30,000 sq ft to just under 33,000 sq ft.
- D. The plan meets our subdivision ordinance for density and lot size requirements.
- E. They will need approval from the KCHD for the wells. The sewer is being extended from Ada Township. This will require approval from not only Ada Township but will require approval from the Utility Advisory Board to allow the Ada system to serve this property in Cascade. This is similar to what we have done recently with The Learning Center (day care) on Cascade and Hall and the Leisure Living (assisted living) project on Spaulding.
- F. The development will be utilizing a new private street. The developer will need to comply with our private street ordinance. The location of the curb cut will also need to be approved by the KCRC. We allow private streets to serve up to 19 homes before a second access is required.
- G. The Township Engineer will need to approve the plan before Final Preliminary approval is given.
- H. The project includes a 5' sidewalk along the private street and the extension of the pedestrian pathway from Buttrick to the new private street along Grand River. There is also an easement provided for future pathway extensions from the private street to the east property line. The township would be responsible for the maintenance and the upkeep of the pathway.
- I. The process follows our platting process which is a little different than the PUD rezoning process. The platting process does not require a public hearing but does require the applicant submit more detailed information at each stage. For this stage you are providing a recommendation to the Township for their consideration.
- J. As with all our residential developments, an airport recognition statement will be required. This will need to be incorporated into the master deed and/or bylaws.

- K. The applicant has not yet submitted the master deed and bylaws. These documents will need to be reviewed by the township to ensure there are no inconsistencies with township ordinances.
- L. The development of this property will require the removal of several buildings that are now used for the horse farm. The applicant should indicate the timing of the removal of these buildings as well as the fencing.
- M. Tentative Preliminary Approval shall guarantee that the general terms and conditions under which approval was granted will not be changed by the Township, and further, shall confer upon the subdivider approval of lot sizes, lot orientation, and street layout for a period of one (1) year from the date of tentative approval. Such tentative approval may be extended if applied for by the subdivider and granted by the Township Board in writing.

**STAFF RECOMMENDATION**

Staff believes this project meets the requirements for tentative preliminary plat approval of our subdivision ordinance and is consistent with the Master Plan. Staff Recommends approval of the plan with the following conditions:

1. Indicate timing of the removal of the existing buildings and fencing.
2. Submit the required information for Final Preliminary Plat approval.
3. Submit a copy of the proposed deed restrictions and bylaws, including the airport recognition statement.

If you approve the plan the development will go before the Township Board for tentative preliminary approval. Once approved by the Township Board, it will come back to you again with the additional information for final preliminary plat approval.

Attachments: Application  
Location Map  
Site Plan



# CASCADE CHARTER TOWNSHIP

2865 Thornhills SE Grand Rapids, Michigan  
49546-7140

## PLANNING & ZONING APPLICATION

**APPLICANT:** Name: BDR Executive Custom Homes  
 Address: 5510 Cascade Road SE Suite 200  
 City & Zip Code: Grand Rapids, MI 49546  
 Telephone: 616.458.8505 ext 8  
 Email Address: dcontant@bdrinc.com

**OWNER: \* (If different from Applicant)**  
 Name: BDR Acquisitions, LLC  
 Address: See above.  
 City & Zip Code: \_\_\_\_\_  
 Telephone: \_\_\_\_\_  
 Email Address: \_\_\_\_\_

### NATURE OF THE REQUEST: (Please check the appropriate box or boxes)

- |   |  |
|---|--|
| <input type="checkbox"/> Administrative Appeal                  | <input type="checkbox"/> Administrative Site Plan Review |
| <input type="checkbox"/> Deferred Parking                       | <input type="checkbox"/> P.U.D. - Rezoning *             |
| <input checked="" type="checkbox"/> P.U.D. - Site Condominium * | <input type="checkbox"/> Rezoning                        |
| <input type="checkbox"/> Site Plan Review *                     | <input type="checkbox"/> Sign Variance                   |
| <input type="checkbox"/> Special Use Permit                     | <input type="checkbox"/> Subdivision Plat Review *       |
| <input type="checkbox"/> Zoning Variance                        | <input type="checkbox"/> Other: _____ *                  |

**\* Requires an initial submission of 5 copies of the completed site plan**

BRIEFLY DESCRIBE YOUR REQUEST:\*\*

Please see Attachment 1.

(\*\*Use Attachments if Necessary)

**-SEE OTHER SIDE-**

LEGAL DESCRIPTION OF PROPERTY\*\*:

Please see Attachment 2.

(\*\*Use Attachments if Necessary)

PERMANENT PARCEL (TAX) NUMBER: 41-19 - 03 - 215 - 004

ADDRESS OF PROPERTY: 1370 Buttrick Avenue

PRESENT USE OF THE PROPERTY: Single family residential and equestrienne.

NAME(S) & ADDRESS(ES) OF ALL OTHER PERSONS, CORPORATIONS, OR FIRMS HAVING A LEGAL OR EQUITABLE INTEREST IN THE PROPERTY:

Name(s)	Address(es)
BDR Acquisitions, LLC	
via recorded purchase agreement	

SIGNATURES

I (we) the undersigned certify that the information contained on this application form and the required documents attached hereto are to the best of my (our) knowledge true and accurate. I (we) also agree to reimburse the Cascade Charter Township for all costs, including consultant costs, to review this request in a timely manner. I (we) understand that these costs may also include administrative reviews which may occur after the Township has taken action on my (our) request.

I (we) the undersigned also acknowledge that the proposed project does not violate any known property restrictions (i.e. plat restrictions, deed restrictions, covenants, etc.)

BDR Acquisitions, LLC

Owner - Print or Type Name  
(\*If different from Applicant)

\*  3/4/20

Owner's Signature & Date  
(\*If different from Applicant)

BDR Inc.

Applicant - Print or Type Name

Applicant's Signature & Date

PLEASE ATTACH ALL REQUIRED DOCUMENTS NOTED IN THE PROCESS REVIEW SHEET - THANK YOU

## **Attachment 1**

BDR Executive Custom Homes  
Planning and Zoning Application  
March 4, 2020

### Briefly describe your request:

BDR proposes to redevelop the property at 1370 Buttrick for single family residential use. Property to include nineteen (19) single family home sites, each to be served by municipal sanitary sewer service from Ada Township. The site will offer well water service.

The proposed development plan includes access off Grand River Drive as well as common area green space. The plan shows home sites varying from .69 acres to 1.16 acres, subject to final engineering review.

We look forward to the opportunity to review the site plan and discuss our request to rezone the property with Cascade Charter Township.

Thank you.



1370 Buttrick Ave

21

E FULSON ST

MOY-WATER

GERARD

GRAND RIVER DR

WINDY CT

DOVERWOOD WILLOW DR  
101 100 900  
SPEC

THORNAPPLE CUNING

RED BLAKE CT

OAK HILL DR

BUILDING ROCK DR

GLIM FOREST DR

30 THORNAPPLE DR

LOBAL PINES DR

TAMERBAUNDI

LEAH HOLE LN

FOR HANSEN CT

BEER OAK DR

1370 Buttrick Ave

BUTTRICK AVE

BUTTRICK AVE

PAULINE DR

WINDY DR

BRIDE PATH CT

WINDFIELD LN

BRIMCLIFFE DR

BRETTWOOD DR

ST. MICHAEL DR

STONEYBROOK LN

BRIMCLIFFE DR

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