CHARTER TOWNSHIP OF ORION PLANNING COMMISSION REGULAR MEETING AGENDA WEDNESDAY, JULY 20, 2022 - 7:00 PM ORION TOWNSHIP MUNICIPAL COMPLEX BOARD ROOM 2323 JOSLYN ROAD LAKE ORION, MI 48360

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In the spirit of compliance with the Americans with Disabilities Act, individuals with a disability should feel free to contact Penny S. Shults, Clerk, at (248) 391-0304, ext. 4001, at least seventy-two hours in advance of the meeting to request accommodations.

CHARTER TOWNSHIP OF ORION PLANNING COMMISSION **** A G E N D A *****

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1. OPEN MEETING

2. ROLL CALL

3. MINUTES

- A. 7-6-22, Planning Commission Regular Meeting Minutes
- B. 7-6-22, Planning Commission Public Hearing Minutes for PPC-22-18,3850 Joslyn Rd., Special Land Use for a Gas Station with a Drive-Thru

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8. UNFINISHED BUSINESS

A. PC-2021-07, 5-Year Master Plan Update

9. PUBLIC COMMENTS

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11. PLANNERS REPORT/EDUCATION

A. Article on Agrihoods and Agritourism

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13. FUTURE PUBLIC HEARINGS

- A. 08-03-22 at 7:05 p.m., PC-22-28, GM Orion BET 2, Special Land Use Request Public Hearing to expand an automotive manufacturing facility located at 4555 Giddings Road (parcels 09-34-200-006 and 09-34-400-011).
- B. 08-03-22 Joint Public Hearing with the Board of Trustees on PC-22-29 (immediately following the PC-22-28 public hearing at 7:05 p.m.) Baldwin Village Planned Unit Development (PUD) Concept and Eligibility Plan, located at 4410 & 4408 S. Baldwin Rd. (parcel 09-32-301-001), an unaddressed parcel 09-32-301-014 located at the NW corner of Morgan and S. Baldwin Roads, an unaddressed parcel 09-32-151-020 located north of 4408 S. Baldwin, and 4292 S. Baldwin (parcel 09-32-151-021).

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CHARTER TOWNSHIP OF ORION PLANNING COMMISSION ****** MINUTES ****** REGULAR MEETING, WEDNESDAY, JULY 6, 2022

The Charter Township of Orion Planning Commission held a regular meeting on Wednesday, July 6, 2022, at 7:00 p.m. at the Orion Township Municipality Complex Board Room, 2323 Joslyn Road, Lake Orion, Michigan 48360.

PLANNING COMMISSION MEMBERS PRESENT:

Don Walker, PC Rep to ZBA

Joe St. Henry, Secretary

Don Gross, Vice Chairman

Derek Brackon, Commissioner

Jessica Gingell, Commissioner

Kim Urbanowski, BOT Rep to PC

PLANNING COMMISSION MEMBERS ABSENT:

Scott Reynolds, Chairman

1. OPEN MEETING

Acting Chairman Gross opened the meeting at 7:00 p.m.

2. ROLL CALL

As noted above.

CONSULTANTS PRESENT:

Rod Arroyo (Township Planner) of Giffels Webster Mark Landis (Township Engineer) of Orchard, Hiltz, and McCliment, Inc. Tammy Girling, Township Planning & Zoning Director

OTHERS PRESENT:

Sandy Walker Bruce Calhoun
Jonathan Forrest Tina Hein
Kayin Brasilia

Kevin Breslin Kathryn Kennedy Lisa Garrett Ed Morawski

Pam Daily

3. MINUTES

A. 6-15-22, Planning Commission Regular Meeting Minutes

B. 6-16-22, Planning Commission Public Hearing Minutes PPC-2022-22, Township Initiated Text Amendment to Zoning Ordinance #78 Industrial Complex (IC).

Moved by Trustee Urbanowski, seconded by Commissioner Brackon to **approve** the minutes as presented. **Motion carried**

4. AGENDA REVIEW AND APPROVAL

Acting Chairman Gross stated that the Master Plan Public Hearing, which is not scheduled for this evening, is scheduled for their next meeting on July 20, 2022, at 7:05 p.m. He added that there had been some misinformation communicated that the Public Hearing was supposed to be this evening. That is not the case the actual notice of Public Hearing is set for July the 20th, in two weeks. They will take public comments at that scheduled meeting as required by the statute. They have received some written comments previously, six of them, from the Oakland County Economic Development Department, the Road Commission for Oakland County, the Water Resources Commission, Gary Roberts, Donnie Steele, and Katherine Kennedy. Those written comments will be reviewed by the Planning Commission at that Public Hearing on July 20th.

Moved by Trustee Urbanowski, seconded by Commissioner Brackon, to **approve** the agenda as presented. **Motion carried**

5. BRIEF PUBLIC COMMENT - NON-AGENDA ITEMS ONLY

None.

6. CONSENT AGENDA

None.

Acting Chairman Gross recessed the regular meeting and opened the Public Hearing at 7:05 p.m. for case PPC-22-18, 3850 Joslyn Rd., Special Land Use for a Gas Station with a Drive-Thru, located at 3850 Joslyn Rd. parcel 09-28-376-031.

Chairman Reynolds closed the PPC-22-22 Public Hearing at 7:21 p.m. and reconvened the regular Planning Commission meeting at 7:21 p.m.

7. NEW BUSINESS

A. PPC-22-18, 3850 Joslyn Rd., Special Land Use request for a gas station with a drive-thru and Site Plan, located at 3850 Joslyn Rd., parcel #09-28-376-031.

Acting Chairman Gross asked the Township Planner to read through his report.

Planner Arroyo read through his review date stamped June 21, 2022.

Engineer Landis read through his review date stamped June 22, 2022.

Secretary St. Henry said that their engineer brought up 14 issues of concern. Their planner brought up another 10 or a dozen of concerns. The variances are significant, some of the largest variance requests he has ever heard of in seven years with the Commission. At the very least they need to come back with a cleaned-up plan to address all those issues before he is going to approve anything.

Acting Chairman Gross stated that with the demo of the building it is almost like they are starting with a brand-new site. It is hard to imagine with a brand-new site, looking at all these different waivers that are being proposed. It is something that the Zoning Board of Appeals would have to justify in terms of making waivers on a site like that. This is a gasoline service station it is a gas only station there is no service. He asked if they know what type of restaurant that is suggested? Mr. Ford replied that it is a gas station and convenience store only, and they don't know for sure on the end cap, possibly a Tropical Smoothie if approved.

Acting Chairman Gross asked if they know if there will be a dine-in or if it is drive-thru only? Mr. Ford said it would be both. Acting Chairman Gross said they have to take into account the type of parking that would be required to accommodate the restaurant as well as the service station area.

Mr. Ford said the one they do have now in Ortonville with the Tropical Smoothie they do about 90% drive-thru. There is not that much dining anymore, but they are not sure yet what would be there.

Mr. Ford stated they are putting a lot of money and investing into this, and it has been something they have been trying to work on for years to try to get the funds together. Having the end cap helps provide them the ability to do that.

Acting Chairman Gross asked regarding the canopies being proposed, they are going to take down the existing ones and put-up new ones? Mr. Ford said that they haven't spoken to a contractor on that yet, on what they would do. He didn't know the answer. He did know that their architect did ask about the measurement of it.

Acting Chairman Gross said his concern on that is the lighting that would be coming in with the canopies and how late they would be on. Mr. Calhoun said they would adhere to the new lighting ordinance, with the existing canopy or a new canopy. What they are proposing right now is just to extend the existing canopy. The Fire Marshal mentioned that he wanted it to be 13.6 or 14-ft. at the lowest end, and as it approaches south it gets higher. As far as the lighting they would adhere to whatever standards are required.

Mr. Calhoun said when they do a lease space on a building, they really don't know what is going to go into that, even if they do know what is going to go in there today doesn't mean they are going to be there tomorrow. It always goes back to the Planning Department, and they review that to make sure whatever is going to go in there adheres to the parking. Right now, they have the right amount of parking except for the three that would require a variance.

Commission Brackon asked if they are adding a fourth island in the proposal? Mr. Calhoun replied to the north of the site yes. Commissioner Brackon asked if that was going to involve another gas underground tank being added? Mr. Ford replied no sir, all the tanks underground are staying those were replaced a few years ago, so no additional tanks are added.

Commissioner Brackon asked if the fourth island was going to drain from the existing? Mr. Ford replied that all the underground pipes will connect to the existing underground tank.

Acting Chairman Gross said that some of their parking counts have included the space at the pump island. He asked if that was what they have done in the past? The 30 spaces include around 10 spaces at the pump islands. Planning & Zoning Director Girling replied that is what they believe had been done a Speedway when that redeveloped. They did allow those spaces because those cars are utilizing part of the parking count. Mr. Calhoun said the reason behind that is because they figure that the person that is going into the convenience store is also the person that is filling up their gas tank.

Commissioner Walker said that they indicated that wastewater and discharge that there is no trap for it at this time. Mr. Calhoun replied at this time no it just flows right off the site into the road. Commissioner Walker asked Engineer Landis if that was correct. Engineer Landis said to clarify the current site is hooked up to a sanitary sewer for municipal discharge. The stormwater runoff currently just sheet flows off the site into the roadside ditches. Commissioner Walker asked if that was allowed in past practices? Engineer Landis replied at some point in time, yes. Commissioner Walker said sounds like what they are going to do is going to fix that at least. They have a lot of moving parts here.

Mr. Calhoun said they have a lot of moving parts, but the problem is they have an existing piece of land and to improve the site they will be encroaching on those little areas that do involve variances.

Commissioner Walker thought that Mr. Calhoun was a very competent architect, he knows what he is getting into. He is not coming here saying oh my goodness look what we found, he says what it was going to be like. They are going to be asking them and the Zoning Board of Appeals to grant them a lot of stuff. Mr. Calhoun stated that they are asking for a lot of stuff, again it is an existing site, they can't just go in and build a new building to replace the existing one and not

improve the site in a way that is going to justify it, they must ask to improve and expand to improve the site.

Mr. Calhoun said one other thing they must look at too is as far as site lighting, they will be shielding that. They are trying to improve things and trying to make it nice, but they do need circulation on the site, and they also need parking.

Commissioner Walker asked regarding parking does that include parking for the restaurant also? Mr. Calhoun replied yes it does. He apologized that they are deficient as far as the amount of stuff that was required from the Planner and the Engineer. They know they must get a lot of variances and to do all those things at this point, there would be an awful amount of money to be spent, they are already about 16-20 thousand dollars into it right now. If they don't get the variances, then that is all gone. They know that those things are deficient on the plan, but it is things that they do for a final plan that will be reviewed by the Engineer.

Trustee Urbanowski asked what the best option was because they need to go in front of the Zoning Board of Appeals first to get the variances. She knew that in the past they have denied unless the ZBA approved however, they have a lot of outstanding issues, and they need to see it back. They have a lot of moving parts that are not in place yet. She wouldn't say deny unless the ZBA approves the variances so that they are good to go. Can they postpone it until after a ZBA meeting and then see it back here if they get those approvals? Acting Chairman Gross thought that they had the option to deny it outright and then the applicant would go to the Zoning Board of Appeals and then they would have to resubmit after the Zoning Board of Appeals approved or denied certain items, or they could postpone without a date to allow the applicant to go to the Zoning Board of Appeals. There is a laundry list of items that they must work on and then come back to them without having to resubmit a new application.

Planner Arroyo said it was his understanding that their past practice when they have a situation like this with these variances that it is denied because that is what the ZBA is looking for to have it so that it becomes an appeal then it goes to them, and then they can act on those variance items. If they get those variance items, then they come back to them with a new plan that has everything up to date and reflects the variances that were granted.

Planning & Zoning Director Girling said it is not considered a new application. Their denial in the past has been a denial for those items that are deficient to give them the right to go to the Zoning Board of Appeals. If they get those variances or even if they don't they could come back with a plan that met those if they didn't meet them. They are still the same application because they didn't deny the whole thing, and they just denied the sections that they didn't meet. They have paid for two reviews, one review has been done, they go for a side course to the ZBA depending on what happened with that they would resubmit the plans be rereviewed and be in front of them again.

Acting Chairman Gross said one of his concerns is that as he had indicated at the beginning that they are talking about the demolition of the site. They are looking basically at except for the existing pumps a brand-new building which he thought was a plus but is the building too large on the site because of the number of variances that are being requested that could be alleviated by a smaller building of some kind.

Secretary St. Henry said if they deny this based on the specific outstanding issues that must be addressed. They go before the ZBA, see what happens with the variances, they update the plan, depending on what the ZBA decides. They come back with a new plan, with the changes they have requested, also recognizing any variance that was perhaps granted. It is the same application and then they decide then.

Secretary St. Henry said he is familiar with the piece of property and understood what they wanted to do. If this building is completed it will be an improvement to what is there now, but they do have to follow the process. The building footprint is something that will have to be addressed at the ZBA with the variances they are requesting. He thought that if they follow that process that they just outlined to him that is the fairest approach to this at this point.

Moved by Secretary St. Henry, seconded by Commissioner Brackon, that the Planning Commission postpone the Special Land Use request, and deny the Site Plan based on the outstanding issues that were presented today by the Township Engineer and the Township Planner, for plans date stamped received April 21, 2022, for the following reasons: the applicant should go before the Zoning Board of Appeals to address a number of variance issues, and also address the outstanding issues that were presented, and then return to the Planning Commission with an updated plan reflecting any changes that are necessitated by the Zoning Board of Appeals decisions and reflecting the corrections per the Engineer and Planners, then a decision will be made on the site plan at that time.

Discussion on the motion:

Commissioner Walker asked if they could include the suggestion about the size of the building. Before these folks go to the Zoning Board of Appeals this might give them another opportunity to think about that. That perhaps if they shrunk the size of that building some of those variances might not be necessary or certainly wouldn't be as large as they are requesting which might induce the ZBA to look more favorably on it.

Trustee Urbanowski thought that it had been addressed but it shouldn't be in the motion. She was hearing what he was saying but was hoping that they were hearing it as well, from a ZBA member's mouth. Considering that size but wasn't sure about putting it in the motion.

Planner Arroyo said that the Zoning Board of Appeals is there to make those determinations on ordinance modification. It was his suggestion that they leave the motion and let them make that determination based upon what they believe is appropriate. That is what their specific role is to address whether there is a practical difficulty.

Planning & Zoning Director Girling said that they forward the meeting minutes when they come from Planning Commission and go to the Zoning Board of Appeals, so they will be provided with the minutes which are close to verbatim minutes. Any conversation that was conducted here would be within the minutes.

Planning & Zoning Director Girling thought they should add to the motion that upon return before appearing at the Planning Commission those plans will be rereviewed by the consultants.

Secretary St. Henry amended his motion, Commissioner Brackon re-supported that before appearing at the Planning Commission those updated plans will be rereviewed by the consultants.

Roll call vote was as follows: Gross, yes; St. Henry, yes; Urbanowski, yes; Walker, yes; Gingell, yes; Brackon, yes. Motion carried 6-0 (Reynolds absent)

8. UNFINISHED BUSINESS

A. PC-2021-07, 5-Year Master Plan Update

Acting Chairman Gross thought that this was a result of a letter from the Planning & Zoning Director relative to some property designations on the Master Plan.

Planning & Zoning Director Girling stated that she received a phone call from someone alerting her to the fact that they felt in their proposed Future Land Use Map that they had an error in what they were proposing. There is an area that currently is zoned Railroad Freight Yard (RFY) and a portion of it is owned by the railroad, to the south of it is owned by an individual landowner and they have the proposed future land use as utility-owned. To have it as a future land use of utility-owned, they felt was an incorrect proposed distinction. She told them that she would put it before them this evening for discussion. Acting Chairman Gross asked if this was a correction reflecting existing ownership and land use, that would be just a map clarification? Planner Arroyo said there are a couple of issues here, there is a railroad track that is currently not operational that is adjacent to this property. There has been discussion that potentially in the future it will be used again, they don't know for sure, but there is the possibility that it could be. As they recall they went through section by section, they changed this because when they looked at the zoning it is currently zoned on the zoning map for Railroad Freight Yard (RFY). The Master Plan previously had a different designation on there. The issue is if it was zoned that way there must have been a reason why no one has come forward asking to rezone the property. The thought was it was adjacent to what could potentially be a future operating rail line. The question is should it just remain as it is or may be going back to what the previous designation was which was single-family medium density, or something different. That is before them for discussion, they have someone that has identified that with Planning & Zoning Director Girling, and this is something for discussion.

Commissioner Brackon asked if there is an issue with a parcel being zoning recreational as well? Planning & Zoning Director Girling replied that when she looked at the area, and in front of them is an areal map it was given to them in their Boardbook, and there are three parcels. There is one that fronts on Silverbell that has an oval configuration to it and that is the one that is currently zoned Railroad Freight Yard (RFY) and the proposed Future Land Use had as utilityowned. That is the piece that she received the phone call saying that the utility company doesn't own it, they own it as a private piece of the land and thought that they had an error here. There is a middle piece in the aerial that looks like it might have some railroad lines through it and that is currently zoned Railroad Freight Yard (RFY), and it is owned by the railroad company. Then there is a piece further up that is above those to the north that they can almost see a power grid to that is owned by a utility company, but the Future Land Use has as recreational. While they were looking in that area that was not the one, they received the call on it was the one to the south but when she looked at the whole area, she thought perhaps the one to the north that they can see the utility should also be utility-owned instead of recreation. Commissioner Brackon stated that it was technically zoned correctly the map is wrong. Planning & Zoning Director Girling said they are talking about the Future Land Use Map. Commissioner Brackon asked if they were rezoning anything or proposing to rezone anything? Planning & Zoning Director Girling replied, no. She said within their Master Plan update that they are working on right now there is a map that is called Future Land Use Map and in there it has it as recreation and it is utility-owned.

Planner Arroyo stated that all the green areas to the north of that on the Zoning Map are recreational. So, the Master Plan aligns with the zoning because that is all showing REC-2. Planning & Zoning Director Girling said that might be what they wanted but since they were already talking about this and the three were kind of stacked on top of each other and were three different things, privately owned, utility-owned, and Recreational, let's talk about all three if

they are talking in this area. The only one she received the phone call on was the one furthest to the south that is privately owned by somebody, and it is not a utility company.

Commissioner Brackon stated the one to the north is owned by a utility company but zoned recreational and listed as recreational according to what Planner Arroyo just said. Planner Arroyo said correct, he was looking at the Zoning Map and it is all Recreational on that property to the north. Trustee Urbanowski asked if it was the 008? Planning & Zoning Director Girling replied yes.

Commissioner Brackon asked if they would recommend changing that? Planner Arroyo said he didn't see a reason to change any of the recreational areas at this point because no one has come and requested that they change that, so there is no overriding reason unless they see that there is an overriding reason, but it has been zoned recreational for a considerable amount of time. Certainly, nothing resent that has occurred. If someone were to come to them and present something that would be different from that they would evaluate it at that time to determine whether there have been conditions that have changed but that is the current zoning. All that would do would align with the Master Plan because maybe one is really the one to ultimately follow which is their Master Plan. If it looks like they got an existing zoning situation that reflects something that might continue, they might what to amend their Master Plan to reflect that. That is what they were doing when they were studying that. He thought that the parcel to the south is more interesting in terms of the fact that it's in private ownership it does not appear to be for the most part controlled by a railroad and potentially that could develop under something different. But then again if the railroad becomes active maybe it might go in a totally different direction.

Secretary St. Henry said right now somebody owns that property. Planner Arroyo said that person, to his understanding, is not coming before them and saying they would like to have this classification, a particular classification, they have not made a request for the Planning Commission to consider something different. They have just identified this issue but have not come to them and said they would like to have this designation on their property. Planning & Zoning Director Girling replied correct.

Acting Chairman Gross asked what was the current zoning on that one? Planning & Zoning Director replied Railroad Freight Yard (RFY). Acting Chairman Gross asked if that was the current zoning? Planning & Zoning Director Girling replied yes. Planner Arroyo said it was utility on the Future Land Use Map which would incorporate a similar use.

Secretary St. Henry said it was zoned that way because of the possibility that it becomes a working railroad. Planning & Zoning Director Girling replied that she believed that the parcel used to be owned by the railroad and then they did a split. She recalls when she was in assessing years ago that there was a split in this area that came up with this weird, shaped parcel. She believed at that time it probably sold and it became private ownership, and no one ever sought to rezone it.

Commissioner Brackon said the concern is, is that the private owner builds something on there with it being zoned utility. Acting Chairman Gross said they wouldn't be able to. Planning & Zoning Director Girling said it was just a random phone call from somebody studying Future Land Use Map saying they see this property and they knew it was privately owned and thought it was unusual that their Future Land Use shows utility-owned. She double-checked and found it was privately owned and said she would present it for them to determine whether that is the way they wanted it to stay or whether it should be something else.

Planner Arroyo said that the previous classification on the Master Plan was residential single-family, medium density. That could be an approach to going back to what the previous Master

Secretary St. Henry wondered if that is the ulterior motive to get that rezoned to what it was before. Planning & Zoning Director Girling said they are not rezoning it; they are talking about Future Land Use. Planner Arroyo said they would then have to come in and ask for a rezoning on the property. Planning & Zoning Director Girling said whoever owns it if they don't want to do a use in Railroad Freight Yard (RFY) then they are going to have some type of rezoning and they would be looking at the Future Land Use and they would see that the Future Land Use says (RFY), or utility-owned.

Commissioner Walker thought it might seem simpler to just revert back to what it was in the previous Master Plan.

Secretary St. Henry said if they want to do something they can come back to them and get the property rezoned.

Acting Chairman Gross said he didn't think this required a motion just a consensus. Planner Arroyo said yes.

Acting Chairman Gross asked if there was a consensus to retain the current Master Plan designation for that parcel of property. All agreed.

Planner Arroyo stated that there were several letters that they received some from the County and some from others that identified some corrections that would need to be made, more like factual corrections, not policy changes. He just wanted to let them know that they will make those in the draft that they will see for the Public Hearing, and they will give them a list of those changes that are being made so those are incorporated. That is being taken care of and will be in that draft and they will have that so they will update it. These are just information like if a right-of-way was supposed to be 66 instead of 60, those types of things, they are making those kinds of changes, and those will be in their file draft.

9. PUBLIC COMMENTS

Plan had.

Ms. Kathryn Kennedy from 690 Rochester Dr. Lake Orion said she attended the Oakland County Coordinated Zoning Committee Meeting this morning at 11 a.m. where two members voted to move and second the Orion Township Master Plan despite her letting them know that the Orion Township citizens had not yet had a Public Hearing about the plan which she found extremely disconcerting. This plan needs to be rejected in its entirety. It is based on the urbanization of their region against what the citizens what. People did not participate; the everyday citizens were not invited to participate in the development of this project sufficient to make it valid to what the community wants or needs. She FOIA'd documents that she has been declined by the County because in an unrecorded Democratic Caucus meeting is when she found out that they had changed the entire tax foreclosure process to online only through a different contractor and expected to be done by August 12th. Any community that had not already participated in a first right of refusal with Oakland County could expect all their foreclosed properties to be sold at that auction unless they had such an agreement with the County. It is an online company she has never heard about; it is very concerning. She even attended a Global Detroit webinar this past week where they are teaching people to use our resources, even HUD to house the refugees and rent to the refugees even if they don't have social security not to worry the resettlement groups will fund them for five years as they get comfortable since their priority is jobs and housing. They even specifically mentioned the rental program that was adopted on August 24, 2021, where if you rent to people that would not be

eligible to be rented to the County taxpayers will pay each landlord \$3,000 each if they have damages. In this webinar, they even suggested that some people are reluctant to rent to people before they have social security numbers because then they don't have a way to collect if there is an issue, maybe they should just reduce the lease to 3 months. She finds that entire attitude appalling and she finds so much of what is encompassed in this Master Plan caters to the World Economic Forum. Global Detroit which is an arm of the World Economic Forum they have been picked as the guinea pigs for the region to demonstrate this social experiment that if they implement the poor into the other neighborhoods then they can make it all equal and that the UN version of green energy which Oakland County has adopted after hiring Acom to determine that they should see no poverty as the number one way to fix climate change environment. illogical totally but that is what they are dealing with. They must reject this entire plan because it enables the takeover of our region for the globalist's agenda it is the globalization of our area. They don't care about the wetlands; they don't care about the woodlands. If they go to pages 124 and 125 of the thoroughfares plans for the roads, they can't get a highway on Lapeer. They have highways where there isn't a place to put a highway. They already had a problem with Buckhorn Lake where they put the road too far into where the lake used to be. For the first time since 1998 it flooded, and they were pumping water out of the lake to put in the sewer system. This is a displacement issue they can't put concrete where there used to be cement, you can't build wetlands and fill it in, and they get a flood zone, it is common sense god had it right please leave it alone we need to protect it.

Ms. Tina Hein 630 N. Blocki Ct. stated that Lake Orion since she has lived here basically you get two in one, we have the rural and kind of like a city. She felt that they needed to keep it that way, they do not want too much. The Board is very familiar with Lapeer and just driving on that road if they are not driving 60, 70, sometimes even higher you are going to get run over. Last year they had a huge problem with flooding, they had a freak storm last year where they had 7-inches of rain in a 1.5-hour period. Basements flooded, the schools were a nightmare, a bus flooded, and Lapeer Rd. was all flooded over. In the area where she lives people had to pump out their basements. The Buckhorn Lake overflowed onto Lapeer and Clarkston. She has seen those signs up, so she is assuming where they have the zoning changes proposed is where they plan on doing this. She spoke with a lady that said they are going to put duplexes and stuff there, and she didn't think that was a good idea. She thought that they had enough, she thought they should keep it where they get that kind of city feel and the rural two in one.

Mr. Ed Morawski 2587 Orbit said the comment he had, and he may be coming late to the party for this Master Planning, but he thought that he should be able to come into this meeting and see something on the board of what is really going on. The Board is discussing things and there is no way for somebody like himself to see what is happening. Something should be passed at the time they come in, they should have something on the Board for any of the public to come in and see. He thought it felt like a closed party, them talking and they don't know what is going on. Acting Chairman Gross said there were public sessions where the public was invited, they had the Boards just as he was talking about available. Unfortunately, he was not made aware of that. Mr. Morawski said if they could get it on a computer here that would be great.

Secretary St. Henry stated that Mr. Morawski came into the meeting a little late today. There was a mistake in the notification of the public hearing for the Master Plan. It is taking place on July 20th. At that time the Township Planner who worked with us closely to develop the Master Plan will be making a presentation reflecting the very current version of the plan and all the amended changes that have taken place over the last few weeks. Planning & Zoning Director Girling said that there was not an error in the public hearing notice, the public hearing notice said that the public hearing was on the 20th which is when it is.

Mr. Ray Malskis 333 W. Greenshield asked regarding the first women that spoke that said they have approved the Master Plan? Have they answered that question? Planner Arroyo said this was the County Coordinating Council this is a group that is made up of the County. The way that the state statute works is that before they approve the Master Plan if it is a township it must go to the county and the county must act and then they can, in fact, make suggestions. They don't approve their plan per se, but they make suggestions about how they feel about issues that might affect bordering communities or county policies. In accordance with state statute, it went there before they acted upon it because that is what the state statute requires. Then they made a recommendation to them which they have and that is part of the normal process. It is part of that 63-day review period where surrounding communities, as well as various reviewing entities, are given the opportunity to review the draft Master Plan, and then they will have all that information before their hearing on the 20th. This is in accordance with the state law, nothing

Mr. Morawski asked what does that mean that the County has said they approve this overall plan it is now up to the locality, Orion Township, to decide how they want to amend or accept that plan? Planner Arroyo replied that the County's action is that it is not inconsistent with County policies. They are not a body that approves the Township's plan, the Township approves its own plan. What they do is look at does it conflict with County policies and are there any issues with bordering communities. They found that there were no issues other than the three suggestions that they made, in the letter that is in the packet tonight.

was done out of order. Commissioner Brackon stated that nothing has been approved.

Mr. Morawski asked when they have the hearing on the 20th than any kind of suggestions, or changes, can be included in the final Master Plan? Planner Arroyo replied that the Master Plan is under the Planning Commission, and it is up to them to approve it and adopt it as it currently exists, or they can amend it if they feel fit. Mr. Morawski said the bottom line is when they come here on the 20th and make comments they are not just spitting in the wind. Does the Public Hearing have any kind of teeth? Secretary St. Henry said if they are asking if they pay attention to the public comments whether it is about the Master Plan or about any other case that comes before them where there is a public hearing opportunity. If they have watched them over the last several years you would have seen that they take public comment very seriously. Planner Arroyo said that one of the things that they will learn at the next meeting at the Public Hearing is all the opportunities for public input that have been presented to this community throughout this process so that will also be covered in the presentation.

Mr. Morawski asked if there is anything that can be looked upon by them, either online, book, picture, or anything to have an idea of what they are talking about. Planning & Zoning Director Girling said that it has been on the website for 63 days. Mr. Morawski said he went on the website and all he could find is Master Plan 2019 is that it? Planning & Zoning Director Girling said that is when they started it in 2019. Mr. Morawski said where does he go to get that? Trustee Urbanowski said oriontownship.org, on the front page of the website if you scroll down, you will see 4 tiles, one says election information, one says master plan update, one says public notices, and one says online payments. If you click Master Plan update and scroll down you will find a link at the bottom of ways to get involved, draft master plan, click that link, and the entire thing is there.

Trustee Urbanowski said she has gone over all the emails that have been sent to her. They all read them, and she also reads them for the Board of Trustees meeting because she is the rep to the Board of Trustees, she reads all of them. They have had hundreds of pages that they have gone through. She wanted to address one thing that was said, someone said that doing the 5-year Master Plan without getting any public opinion is wrong. In 2021 they had workshops at 6 p.m. together that were open to the public there were meeting notices that went out to the Orion Review they were put out on the website in various places. Their workshops where they

talked specifically about the Master Plan, and she listed all the dates that the workshops had occurred. They were all one-hour meetings before their Planning Commission meetings. They had an Open House on June 16th at the Orion Center which was the first Open House and that was a couple of hours before a Planning Commission meeting after that they immediately launched an online participation option. All of these have always been listed on the front page of oriontownship.org and then again on the Planning & Zoning site, those have always been there. If they have social media, they have been on Facebook. The Township Supervisor Chris Barnett has announced at two different State of Township addresses that they are in the process of doing this. The last Open House that they had was here on May 18th. They have been begging people to help them with this, they have always wanted input. They have given amble opportunity; they even have talked about outside of the Workshops within Planning Commission meetings. They are open to hearing suggestions. It breaks her heart that people think that they don't care about input because they have been asking for a year and a half. She wanted to clarify that comment and that email. They have been working very hard, she has taken home hard copies of this plan and has marked them up with pens and other people have looked at it. They have taken their personal time outside of Planning Commission to read this stuff, they really have been asking for input. To hear people, say that they haven't listened or asked for it really breaks her heart because they have on multiple occasions. There are other things within these letters that she is frankly confused about. She doesn't know what some of this stuff they are talking about is. None of them work with the County they work here in this Township, and they have been doing this for a long time. The stuff they are talking about on Baldwin Rd. has been going on since 2016 and has nothing to do with the current administration at Oakland County. They have been talking about development in this capacity in this way for a long time. She circled things in the letters like external influences, WEF, Globalist of World Economic Forum, she has children at home she doesn't have time to sit and talk about World Economic Forum stuff, she doesn't focus on that when she is doing this. She lives in Keatington and she is not personally involved in any of that stuff she doesn't even know what it is it has no bearing on the things that she has been thinking about and making this plan. She has only been here for 25 years; Secretary St. Henry has been here for 40 years. They all care about this as much as they do, but there are things that they are bound by, people own land they are allowed to build on it. They are doing their best to make sure that everybody is going to be happy with the compromise that they are tasked with making. She saw a lot of things in here about apartments, and density, she is going to remind them that just recently that they sent a recommendation for denial for a large complex on Waldon, and it went to the Board, and she knew that some of them were in that meeting, and they heard the Board deny it was well. It didn't fit it was too dense they weren't ok with it, so they are thinking about them and their opinions.

Mr. Morawski asked what percentage of people in Lake Orion get the Lake Orion Review? Trustee Urbanowski said all of them do now because it was just bought out by another organization. Mr. Morawski didn't think that was a good venue. Trustee Urbanowski said it was also in the Quarterly Magazine, the Orion Living Magazine that is mailed to every household in this Township and it is free to everybody, and it comes in their mailbox.

Secretary St. Henry said this year there was also a story in the Oakland Press about the Master Plan and the opportunities for the public, he placed it himself.

Planning & Zoning Director Girling showed the public how to get to the Master Plan on the Orion Township website.

Ms. Sandy Walker 2565 Mueller Rd. said she was sorry if they got offended by what these folks have said. They appreciate everything that they go, you read things, you take it home, and she understands that she ran for these positions before, and she has been here her whole life and

she has seen this whole Township change in 60 years. She wanted them to know that they do thank them, and she was sorry that she didn't know all about this until recently. She still works all the time, so she did not keep up with what was going on here. She will read that and will be back on July 20th, and she will have a letter, so they all have it in the book that they have. She will tell her neighbors about this what she just found out, but she felt like she got offended and she didn't mean to offend anybody by giving their comments or lack of knowledge. It is kind of like when your neighbor comes up and says, what you didn't know about this or that, because they read it on Facebook. They just didn't know, and they are sorry. Trustee Urbanowski said she wasn't offended. She ran for office, and she is doing this job because she has kids that are in were marching band and she is the Interim Executive Director at the Chamber of Commerce right now, she gets it. She was not offended and didn't want anyone else to think that she is vilifying anyone for not knowing because that is not what she is doing. Communication is key and if they want to know email them. She read all of them they have concerns. There are other concerns here too that they can address. She was not offended and didn't want them to be either.

Secretary St. Henry said don't believe everything you see on social media, if they have a question about something contact the folks at the Township. If they see one of them ask them. Not everything on Facebook is factual truth all the time.

Secretary St. Henry said Ms. Kennedy has made comments multiple times about the World Economic Forum, they started this process in 2019 it is now July of 2022, and not once has the World Economic Forum in name, organization, or what they stand for has had any influence on them whatsoever as they have developed this Master Plan. This is about and is only about their community and no outside organization like that had any influence whatsoever on what is in the plan today. He stands by the plan 100%. He has lived here a long time and he understands the challenges, concerns, frustrations, and challenges they all face when they try to balance progress with the tradition and historical character of their community. It is a matter of compromising as much as possible while still respecting personal property rights and the law. They do always welcome everyone's comments and input, not just when they are doing the Master Plan but also doing public opportunities when they are looking at cases, they take it very seriously.

Ms. Katheryn Kennedy said she is very concerned and didn't want to offend them, but she believed that even the Commissioners do not have the full handle of what is going on because ADHOC committees are not recorded. Democratic Caucus Committees are not recorded even though they act entirely as executive committees at Oakland County. Unless they figure out those things and attend these different ADHOC committees or create a team of citizens that she has apparently by accident, they have no idea what is going on at that level because it is not recorded. She had a real concern with transparency at the Oakland County level. She has been paying attention to meetings since April 28, 2021, when it caught her attention when they were leasing a building in Pontiac for over \$12,000 a month to store PPE and other government functions that the citizens would not be allowed to know. They have an airport lease that the citizens pay 100% for in Waterford and it is a 10-year lease to US Board Patrol, they said it normally costs them \$50,000 a year to operate it so they should be fine within that. They just said that the money is in the budget. There is no accounting for it, yet it was approved by a committee that can't approve something more than \$250,000. In her calculation even if it is only \$50,000 cost, which she didn't believe, a 10-year lease is \$500,000. They double their authority, but they will just push it in a meeting while they have so much confusion because they did a mask mandate the same day, they changed all the systems, August 24, 2021. Not only did they create a rental program for people that couldn't qualify, or maybe they didn't have credit. After hearing a webinar from Global Detroit about how not to worry that is one of the barriers for the refugees to resettle in their area. They have even created a MISHDA database

that they could type in the city if they are a refugee to see what city they want to live in. Someone even said she thought it was a resettlement agency, said don't worry they can work it out they will make sure to be with them so they don't have to worry about if you are a landlord, they will make sure they can cover because they will fund them for the first 5-years to ensure a smooth settlement. This is a real problem for her she has no problem with legal immigration some of her closest friends are immigrants from other countries. But she does have a problem with an illegal invasion that is being funded at their backs with their taxpayers paying the price, as they are entering into a recession. She felt they are at a very big risk right now.

10. COMMUNICATIONS

None.

11. PLANNERS REPORTS

A. Flyer regarding MTA Events at the Bavarian Inn Lodge in Frankenmuth, MI

Planning & Zoning Director Girling said she put that under there, she thought that maybe it was mailed to them but encouraged it. Some of them are direct topics that affect them. Bavarian Inn in Frankenmuth is close, so she encouraged it. If ever you are not able to attend a class but sounds like a good topic a lot of times, she is able to get the information to view at their leisure.

12. COMMITTEE REPORTS

None.

13. PUBLIC HEARINGS

A. 07-20-22 at 7:05 p.m. PC-2021-07, 5-Year Master Plan Update

14. CHAIRMAN'S COMMENTS

None.

15. COMMISSIONERS' COMMENTS

Trustee Urbanowski said she was not offended and didn't want to offend anyone.

16. ADJOURNMENT

Moved by Trustee Urbanowski, seconded by Commissioner Walker, to adjourn the meeting at 8:35 p.m. **Motion carried.**

Respectfully submitted,	
Debra Walton PC/ZBA Recording Secretary	
Charter Township of Orion	Planning Commission Approval Date

CHARTER TOWNSHIP OF ORION PLANNING COMMISSION MINUTES PPC-22-18, 3850 JOSLYN RD., SPECIAL LAND USE FOR A GAS STATION WITH A DRIVE-THRU PUBLIC HEARING – WEDNESDAY, JULY 6, 2022

The Charter Township of Orion Planning Commission held a Public Hearing on Wednesday, July 6, 2022, at 7:05 p.m. at the Orion Township Municipal Complex Board Room 2323 Joslyn Road, Lake Orion, MI 48360.

PLANNING COMMISSION MEMBERS PRESENT:

Don Walker, PC Rep to ZBA

Derek Brackon, Commissioner

Don Gross, Vice Chairman

Joe St. Henry, Secretary

Kim Urbanowski, BOT Rep to PC

Jessica Gingell, Commissioner

PLANNING COMMISSION MEMBERS ABSENT:

Scott Reynolds, Chairman

CONSULTANTS PRESENT:

Rod Arroyo, (Township Planner) of Giffels Webster Mark Landis (Township Engineer) of Orchard, Hiltz, and McCliment, Inc. Tammy Girling, Township Planning & Zoning Director

OTHERS PRESENT:

Sandy Walker Bruce Calhoun

Jonathan Forrest Tina Hein

Kevin Breslin Kathryn Kennedy

Lisa Garrett Ed Morawski

Pam Daily

PPC-22-18, 3850 Joslyn Rd., Special Land Use request for a gas station with a drive-thru and Site Plan, located at 3850 Joslyn Rd. parcel 09-28-376-031.

Acting Chairman Gross asked the applicant to make a presentation.

Mr. Bruce Calhoun with Creekwood Architecture, 1111 Creekwood Trail, Burton, Ml. He also introduced Keith Ford, the owner of the gas station. He wanted to let Mr. Ford give a brief synopsis of what he is looking to do at the affiliate station then they would address all the concerns that were written up by the Planners.

Mr. Keith Ford, owner of 3850 Joslyn Rd. He was looking to redevelop the site to a brand-new site with a drive-thru. He felt it would be great for the community and the Township and felt it would be a big improvement.

Mr. Calhoun showed the Board the existing gas station with 3 pump islands. There is a screen wall located around the property on the north and west side and a greenbelt that runs along the west side of their side of that screen wall.

Mr. Calhoun said what they are proposing to do is add a larger convenience store and a lease space, and the lease space would have a drive-thru, for possibly a coffee shop or something along those lines. They are adding a pump island and extending the canopy. With that, they are paving into the greenbelt, but they are staying on their side of the screen wall for the drive-thru lane and the loading coming along the backside. They would be making major site improvements with the building, demolishing the existing one, and provide a whole new building. He showed the Board the elevations of what it is going to look like in a floor plan. They are also adding additional parking.

Mr. Calhoun stated that through the plan review they got a few comments from the Planners and Engineers, and he would address those one at a time. The first one from the OHM review, they would like to delay the detention calculations, they wanted then for have preliminary detention calculations. They provided a detention area at the lower south side of the site, and it pretty much encompasses that whole

asphalt area, and that would be underground detention. They wanted them to provide detention for the entire site, not just the new, which he has never had to do before usually, it is just the new. The reasoning behind it was all the water just went out onto the road. So, they would be detaining that water and reducing it to a restricted amount. It would then go into a Barracuda which is an oil separator that if there is an oil spill or something like that would take care of that, which the site doesn't have now. Then it would discharge into the drainage ditch and go across the road, and they believed from there it would go to the east across the road.

Mr. Calhoun said that the site because it is so low, and the ditches are so shallow there is a catch basin structure to the north, but it is also very shallow. They would have to drain these into a pumping system that would then pump them out and take them over across the road.

Mr. Calhoun noted that the second part is they requested that they have a traffic study. Because they are required to have so many variances on this, they wanted to hold off having the traffic study until they obtain the variances. It is approximately an 8-to-10-thousand-dollar item. They felt that the traffic study no matter what it came back resulting from it would result in the driveways and not anything internally on the site.

Mr. Calhoun said that for the sidewalks for ADA ramps they requested that they put ADA textile ramps at each one of the sidewalk locations. The sidewalks are all pretty much flush with the drives, so they just put the textile ramps on there and that is all noted on the site plan now.

Mr. Calhoun said that they have provided the Barracuda stormwater.

Mr. Calhoun stated that they asked about the grease trap they wanted a grease interceptor shown from the restaurant that would provide a GB-50 which is a grease interceptor. They are just doing a preliminary sizing on that because they really don't know what is going into the lease space. That would dictate the size that a grease trap would be.

Mr. Calhoun said that the pavement sections have been updated per their recommendations. Sidewalks were revised at the front of the store, they shortened the parking spaces to 20-ft. then made the sidewalks 8-ft., they were only requesting 7-ft. He would place some bummer blocks ahead of the ramp going into the sidewalk. They wanted a revised ADA ramp which they did, they took it two different ways.

Mr. Calhoun stated that the drive-thru lane they requested that they widen the drive-thru lane to 11-ft. typically they only make the 9-ft., they wanted 11-ft. which they did and just shortened the by-pass lane.

Mr. Calhoun said they located the water and sanitary sewers from the new building out to the property line. It is a preliminary design at this point.

Mr. Calhoun stated that he had the wrong location map on the cover sheet which they updated.

Mr. Calhoun said that the existing survey, they were utilizing an existing survey that was done a few years back. The company that did the survey is no longer in business so they can't have them update the survey with the benchmarks. They would be required to have a whole new survey once they get into all the engineering as far as, the detention, with benchmarks and everything else that they would require to build it. That again is about a 10-thousand-dollar item they just wanted to delay that because of the variances.

Mr. Calhoun stated that the water main was also verified as a 12-inch.

Mr. Calhoun said regarding the landscaping, the apple trees that he had on the west side of the site, he thought would be a maintenance issue for the neighbor, so they changed those to arborvitae and doubled the quality because arborvitaes are smaller and located those on the west side of the existing fence.

Mr. Calhoun said the speaker box on the menu board would be located right on the menu board and depending on the tenant when that lease space gets developed, they will make sure that the decibels are not over 60.

Mr. Calhoun noted that a variance is required for the parking and the setback along the screening wall, which gives them 31 cars required, and 31 provided, including the spaces at the pump. He said that the building coverage on the lot is 13.2% which is well within the guidelines. The existing asphalt to property line there is no room for trees out in the right-of-way because it is all existing, they would have to cut away asphalt and they wouldn't have any circulation around the pump islands if they did that. They had provided some trees in the right-of-way at one point which would have required permission from the Road Commission, but they suggested that they just remove those, so they did. There is really no room for interior landscape and there is none provided now. They do have a strip of landscaping on the south side of the building between the drive-thru and the parking. That is the only landscape area that they have within that. There is another one on the north side from the parking to the screen wall. The light poles have cut-offs so that none of the light spread will go beyond the property line, and they also have the screen wall along that property line which also aids in cutting that off. There would be a timing panel put on the electrical site for the lighting once they get into the final design of the electrical. Trash enclosures were raised to a foot above the dumpster itself and the receptacles will have lids on them.

Mr. Calhoun thought that they were definitely improving the site not only aesthetically, but they are also improving the site as far as the engineering on the site because right now it all just drains out into the road, so they will be making a much better development in the long run. In order to do that they have to obtain the variances. Right now, they are looking for their approval on the conceptual site and then they move on for the variances.

Acting Chairman Gross asked if there was anyone from the public that wanted to speak on this request? He asked them to state their name and address for the record.

Ms. Sandy Walker 2565 Mueller Rd. lives right behind this project. She stated that her property has a creek running through it that comes off of Judah Lake. She was concerned about grease interceptors, grease traps, and pump stations. She asked where all of this stuff is going to go? It is not going to go into Judah Lake, right? She wanted to say that this is a statement, she is blinded by driving up Baldwin and Joslyn these days, the lights everywhere are so big and bright and giant. She was asking the Planning Commissioners to consider that; the lights are so bright everywhere you go now where she lives. She thought this would be nicer than what is there, they all go there as a neighborhood but wanted to make sure that none of this stuff is going to go into the lake and then coming down the creek into her property and hitting the wetlands on Baldwin and Maybee Rd.

Ms. Katheryn Kennedy from Rochester/Lake Orion. She was actually concerned about expansions of gas stations, at all, next to wildlife and wetlands. She was very disappointed when the Firestone was built on Lake Orion right across from the Kroger recently when the County has Brownfields money being used to fix the oil change system that was at the Kmart location. There are hundreds of thousands of dollars that were spent to clean that up and that is actually on the other side of the lake, this is actually closer to the lake than that. She knew that they had to grandfather and protect what was there, she didn't think that they should be expanding any oil change business or things that would have any type of issue where they require controlling things that could do permanent damage to their natural habitat and wildlife that they enjoy and treasure around here. She thought that it really needs to be west of Joslyn, it is very sensitive and she assumed it was on that side but was surprised that there was some building going on right at the very edge of Joslyn and didn't expect it right up against Judah Lake. That actually needs to be protected and she would really prefer that they would start establishing some land conservancies for those areas, so they don't become invaded by other regions taking over our area. They really need to protect it themselves and the only way she sees they are able to do so long-term for the future generations is to

make sure that those areas that are sensitive are already captured in a land conservancy to benefit the citizens of this community.

Mr. Calhoun said that both of those concerns, he thought that the Township Engineers are very sensitive to those situations because of the requirements that they are putting on them for detaining the water that is now just running off the site with no restriction whatsoever and no protection whatsoever. They are now going to have to detain that and hold it back and reduce it at a lesser rate. Also, have protection devise on there so if there is a spill that they can detain that and not just let it free flow into who knows where.

Mr. Calhoun stated with those improvements there are a lot of costs to do those improvements, and they need to offset that with the building and an extra pump island that will pay for that down the road.

Mr. Calhoun thought what they were doing is 100% improvement from what is there because there is no protection whatsoever there now. If it just kept going down the road like it is right now it would just continue to be what it is.

Trustee Urbanowski said she just had one comment about a grease trap or a grease interceptor, she owned a commercial kitchen, and it is to catch that stuff, so it doesn't get into our sewer systems, and it is handled in a completely different way.

Acting Chairman Gross closed the public hearing at 7:21 p.m.

Respectfully submitted,

Debra Walton
PC/ZBA Recording Secretary
Charter Township of Orion

Planning Commission Approval Date



Planning & Zoning Department

Phone: (248) 391-0304, ext. 5000

TO: The Charter Township of Orion Planning Commission

FROM: Tammy Girling, Planning & Zoning Director

DATE: July 15, 2022

RE: PC-22-26, Rigel Terrace Wetland & Site Plan

As requested, I am providing suggested motions for the abovementioned project. Please feel free to modify the language. The verbiage below could substantially change based upon the Planning Commissions' findings of facts for the project. Any additional findings of facts should be added to the motion below.

Wetland Permit (Ordinance No. 107)

Motion 1: I move that the Planning Commission **approves/denies** the wetland permit for PC-22-26, Rigel Terrace Wetland, located at 2410 S. Lapeer Rd. (parcel 09-23-301-005) & unaddressed parcels 09-23-301-012 & 09-23-301-013 (which are located between 2410 and 2600 S. Lapeer Rd.) for plans date stamped received June 29, 2022. This **approval/denial** is based on the following findings of facts:

- a. The action or use **is not/is** likely to or **will not/will** pollute, impair, or destroy a Wetland (insert findings of facts).
- There are no/are feasible or prudent alternatives to the proposed action (insert findings of facts)
- c. The approval is/is not consistent with public interest, in light of the stated purposes of the ordinances (insert findings of facts).

If approved the approval is based on the following conditions:

Motion maker to insert any conditions.

Covered Trash Enclosure Waiver (Ord. No. 78, Section 7.03, I)

Motion 2: I move that the Planning Commission **grants/does not grant** a waiver from the requirement for a covered trash receptacle because the applicant **did/did not** demonstrate that based on the nature of the operation being proposed the amount of trash generated can be adequately disposed of without use of an outside trash receptacle.(**motion make to insert findings of facts**).

Site Plan (Ord. No. 78, Section 30.01)

Motion 3: I move that the Planning Commission grants site plan **approval** PC-22-26, Rigel Terrace Site Plan, located at 2410 S. Lapeer Rd. (parcel 09-23-301-005) & unaddressed parcels 09-23-301-012 & 09-23-301-013 (which are located between 2410 and 2600 S. Lapeer Rd.) for plans date stamped received June 29, 2022 based on the following findings of facts (**motion make to insert findings of facts**).

This approval is based on the following conditionso

- (Motion maker to list any unresolved issues related to the Township Planner's review letter).
- (Motion maker to list any unresolved issues related to the Township Engineer's review letter).
- (Motion maker to list any unresolved issues related to the Fire Marshall's review letter)
- (Motion maker to list any additional conditions).

Or

I move that the Planning Commission **denies** site plan approval for PC-22-26, Rigel Terrace Site Plan, located at 2410 S. Lapeer Rd. (parcel 09-23-301-005) & unaddressed parcels 09-23-301-012 & 09-23-301-013 (which are located between 2410 and 2600 S. Lapeer Rd.) for plans date stamped received June 29, 2022. This **denial** is based on the following reasons (insert findings of facts).

Or

I move that the Planning Commission **postpones** site plan approval for PC-22-26, Rigel Terrace Site Plan, located at 2410 S. Lapeer Rd. (parcel 09-23-301-005) & unaddressed parcels 09-23-301-012 & 09-23-301-013 (which are located between 2410 and 2600 S. Lapeer Rd.) for plans date stamped received June 29, 2022 for the following reasons (motion maker to indicate outstanding items to be addressed from the Planner's, Fire Marshall's, or Engineer's review letter(s)).



RECEIVED

JUL 1 4 2022

Orion Township

Planning & Zoning

ARCHITECTS. ENGINEERS. PLANNERS.

July 13, 2022

Scott Reynolds, Planning Commission Chairperson CHARTER TOWNSHIP OF ORION 2323 Joslyn Road Lake Orion, MI 48360

RE:

Rigel Terrace Wetland - PC-2022-26

Wetland Review

Received:

July 13, 2022 by Orion Township

Dear Mr. Reynolds:

We have completed the first review for the Rigel Terrace wetland submittal. Wetlands on this site were included in the supplemental plans prepared by AEW and were identified in the report provided by Barr Engineering. The USACE/EGLE Joint Permit Application was provided for the Township wetland permit application. The documents were reviewed with respect to the Township's Wetlands Protection Ordinance, No. 107.

EXISTING SITE CONDITIONS:

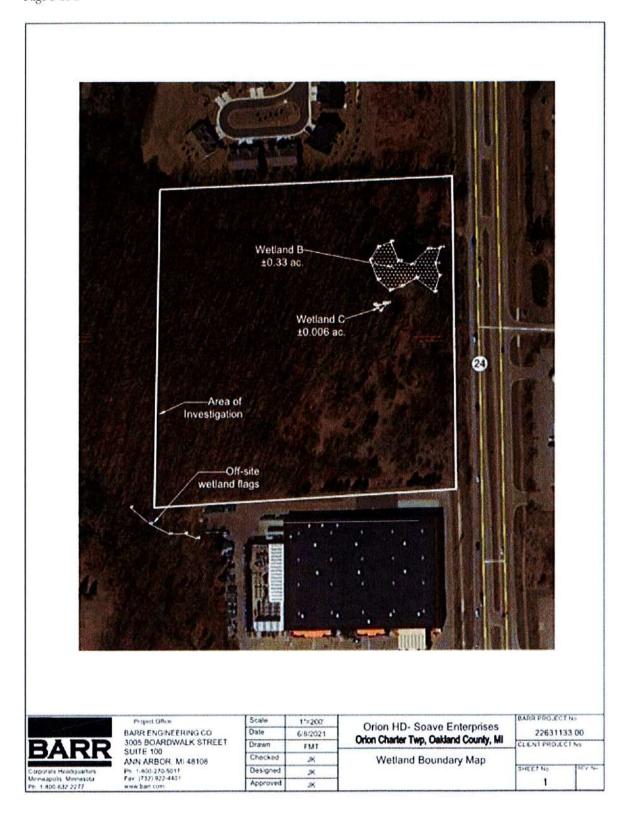
The proposed site is located on the on the west side of Lapeer Rd directly across from Hiram Rd. in the western ½ of Section 23. From our site visit on July 12, 2022, we were able to confirm the delineation provided in the report by Barr Engineering. The site is undeveloped with the exception of a single approach onto M-24. Just south of the approach exists low areas which are identified as Wetlands B and C within the wetland report provided by the applicant. In addition to onsite wetlands, there is a riverine that exists just outside the southwestern border of the site which ultimately connects to Trout Creek and Lower Trout Lake.

Wetland A— see below: Wetland A is recognized as the stream and wetland area located southwest of the site. The National Wetlands Inventory (NWI) identifies Wetland A as a 0.90 acre Riverine and describes it as: Riverine, Unknown Perennial, Unconsolidated Bottom, and Permanently Flooded (R5UBH). Moving southward, Wetland A widens to a Freshwater Forested/Shrub Wetland (5.37 acres), described as: Palustrine, Forested, Broad-Leaved Deciduous, and Seasonally Saturated (PFO1B). The Michigan Resource Inventory System (MIRIS) maps confirm the location and general alignment of this wetland and shows it as part of a larger system that spans across M-24. The Natural Resources Conservation Services (NRCS) Soil Survey map appears to indicate that the soils for this wetland are comprised of Sebewa Loam (19), and Houghton and Adrian Mucks (27) which are both considered hydric soils. In our opinion, Wetland A is an EGLE regulated wetland as it discharges into a larger wetland system and ultimately Lower Trout Lake via contiguous connection. This wetland is also regulated by the Township.

Wetlands B and C- see below: Wetlands B and C are identified on the report as 0.33-acre and 0.006-acre forested wetlands. They are both located south of the approach on the east side of the site. Wetlands B and C are local low points which don't have an available drainage course. The existence of these wetlands prior to 1963 is unclear based on the available historic aerial imagery. It is possible that these wetlands were the result of development to the surrounding parcels or improvements made to M-24. The NWI and MIRIS maps do not appear to have records of

Rigel Terrace Wetland – PC-2022-26 Wetland Review July 13, 2022 Page 2 of 6

existing wetlands in this area, and the NRCS Soil Survey indicates soils of hydrologic soil group A which are considered quality soils for infiltration. However, the report provided by Barr Engineering indicates that the soils within these two wetlands were not consistent with the Soil Survey, as they appeared to be very poorly drained, displaying hydric characteristics. During our site visit, we were able to confirm that the low area is poorly drained and appears to consist of different vegetation than that of the upland area. In our opinion, these wetlands are not regulated by EGLE. These wetlands are regulated by the Township per Ordinance as they provide flood and storm control via storage capacity of the wetlands.





Wetland B, looking eastward



Wetland A (off-site), looking northwest

Rigel Terrace Wetland – PC-2022-26 Wetland Review July 13, 2022 Page 5 of 6

IMPACT OF THE PROPOSED PROJECT ON THE WETLANDS:

A wetland impact plan and updated topographic survey was included in the wetland permit application package. The required 25-foot wetland buffer was not shown on the plan sheets.

Impact A:

Wetland A is located southwest of the site and does not appear to enter the site. No impacts were indicated in the application however, it appears the proposed detention basin outlet will have impacts to both the wetland and 25-foot wetland buffer. The applicant will need to either revise the plans at engineering or amend the application to include these impacts. In addition, since the wetland is EGLE regulated, a permit from EGLE would be needed if revisions to the outlet are not feasible.

Impact B:

The applicant is proposing to fill all 0.33-acres of wetland B and the surrounding buffer. The fill is required to construct the ring road and the majority of building 1.

Impact C:

The applicant is proposing to fill all 0.006-acres of wetland C and the surrounding buffer. The fill is required to construct the ring road and the majority of building 17.

Proposed Mitigation:

No mitigation appears to be proposed by the applicant for the wetland impacts aside from the storm water management system. The Planning Commission should determine if mitigation is required.

Per the Ordinance, the wetland application shall not be approved unless the following exist:

- 1. The action or use is not likely to or will not pollute, impair, or destroy a wetland. While the proposed project does impact all on-site wetlands, it appears these wetlands are only providing storm water management. Since the applicant is proposing to construct a replacement storm water management system, it is our opinion that the function of these wetlands will be mitigated.
- 2. There are no feasible or prudent alternatives to the proposed action. In our opinion, the proposed land use is consistent with the zoning of the property and the proposed minor impacts are consistent with typical developments to provide the required road access, utility networks, and storm water management.
- 3. The approval is consistent with public interest, in light of the stated purposes of this Ordinance. Based on the above findings, it is our opinion the requirements of the Wetlands Protection Ordinance are being met. The applicant is providing the required storm water management facilities and impacting the least amount of wetland area possible given the location of the improvements.

CONCLUSION:

In our opinion, the wetlands submittal for the Rigel Terrace project is in substantial compliance with the Township's Wetlands Protection Ordinance. We ask that any approval include the following:

 The plans be revised to relocate the proposed detention basin outlet from Wetland A and the associated 25foot buffer. Rigel Terrace Wetland – PC-2022-26 Wetland Review July 13, 2022 Page 6 of 6

Please note the soil erosion and sediment control measures will be reviewed during the engineering review phase to ensure that the wetlands are protected from adjacent construction practices. Further measures such as multiple rows of silt fence, outlet filters, and vegetative buffers may be required as part of that review.

Please feel free to contact us with any questions at (248) 751-3108 or joseph.lehman@ohm-advisors.com

Sincerely,

OHM Advisors

Joe Lehman, P.E.

Engineer

Mark A. Landis, P.E.

Project Manager

cc:

Chris Barnett, Township Supervisor David Goodloe, Building Official Jeff Stout, Director of Public Services

Tammy Girling, Director of Planning and Zoning Lynn Harrison, Planning and Zoning Coordinator Dominic Moceri, Rigel Terrace LLC

Stephen Pangori, AEW, Inc.

P.\0101_0125\STTE_OrionTwp\2021\0121211081 Rigel Terrace\MUNI\permits\Wetlands\2022.07.12_Rigel Terrace Wetlands.docx

Digital EGLE/USACE Joint Permit Application (JPA) for Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams, Environmental Areas, High Risk Erosion Areas and Critical Dune Areas

version 1.30

(Submission #: HPK-46XA-FQ8AQ, version 1)

Details

Submission ID HPK-46XA-FQ8AQ

Submission Reason New Status Draft

Form Input

Instructions

To download a copy or print these instructions. Please click this link (recommended).

Contact Information

Applicant Information (Usually the property owner)

First Name Last Name
Dominic Moceri

Organization Name
Rigel Terrace LLC

Phone Type Number Extension

Business 248-340-9400

Email

dominic@moceri.com

Address

3005 UNIVERSITY DR AUBURN HILLS, MI 48326

Is the Property Owner different from the Applicant?

Yes

Property Owner Contact Information

First Name Last Name Joshua Stein

Organization Name

DEI Orion

Phone Type Number Extension

NONE PROVIDED

Email

NONE PROVIDED

Address

9501 E HIGHLAND RD HOWELL, MI 48843

Upload Attachment for Authorization from Property Owners

NONE PROVIDED

Comment

NONE PROVIDED

Has the applicant hired an agent or cooperating agency (agency or firm assisting applicant) to complete the application process?

Yes

Upload Attachment for Authorization from Agent

NONE PROVIDED

Comment

NONE PROVIDED

Agent Contact

First Name Last Name Stephen Pangori

Organization Name

Anderson, Eckstein and Westrick, Inc.

Phone Type Number Extension

Business 5867261234

Email

spangori@aewinc.com

Address

51301 Schoenherr

Shelby, MI 48315

Are there additional property owners or other contacts you would like to add to the application? NONE PROVIDED

Project Location

DEQ Site Reference Number (Pre-Populated)

-44148868944557229

Project Location

42.74524237121287,-83.24709892272949

Project Location Address

INO STREET ADDRESS SPECIFIED

[NO CITY SPECIFIED], [NO STATE SPECIFIED] [NO ZIP CODE SPECIFIED]

County

Oakland

Is there a Property Tax ID Number(s) for the project area?

Yes

Please enter the Tax ID Number(s) for the project location

09-23-301-005

Is there Subdivision/Plat and Lot Number(s)?

Nο

Is this project within Indian Lands?

No

Local Unit of Government (LUG)

Orion Township

Directions to Project Site

West side of M-24(Lapeer Road) north of Waldon Road and just north of the Home Depot store located at 2600 S. Lapeer Road

Background Information

Has the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and/or United States Army Corps of Engineers (USACE) conducted a pre-application meeting/inspection for this project?

Has the EGLE completed a Wetland Identification Program (WIP) assessment for this site?

Environmental Area Number (if known):

NONE PROVIDED

Has the United States Army Corps of Engineers (USACE) completed either an approved or preliminary jurisdictional determination for this site?

No

Were any regulated activities previously completed on this site under an EGLE and/or USACE permit? No

Have any activities commenced on this project?

Νo

Is this an after-the-fact application?

No

Are you aware of any unresolved violations of environmental law or litigation involving the property?

Is there a conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property?

Nc

Are there any other federal, interstate, state, or local agency authorizations associated with this project?

Permit Application Category and Public Notice Information

Indicate the type of permit being applied for.

General Permit for wetlands, lakes, streams, or Great Lakes

If you are applying for a general permit, which project type(s) is being proposed? NO GP CATEGORY (MP Category only)

Project Description

Project Use: (select all that apply - Private, Commercial, Public/Government/Tribal, Receiving Federal/State Transportation Funds, Non-profit, or Other)

Private

Project Type (select all that apply):

Development-Condominium/Subdivision-Residential

Project Summary (Purpose and Use): Provide a summary of all proposed activities including the intended use and reason for the proposed project.

Fill a 0.33 acre and a 0.006 acre wetland for the development of 101 unit residential project on a 15.95 acre site. Work will include tree removal, land balancing, utility installation, street, sidewalks and driveway construction along with the construction of 17 buildings

Project Construction Sequence, Methods, and Equipment: Describe how the proposed project timing, methods, and equipment will minimize disturbance from the project construction, including but not limited to soil erosion and sedimentation control measures.

Prior to the start of construction, silt fence will be installed around the perimeter of the site and tree protection fencing will be installed around tree preservation area. Work will commence as follows:

- 1)Tree removal
- 2)Mass Grading including construction of the storm water detention basin
- 3) Installation of sanitary sewer, storm sewer and water mains
- 4) installation of streets
- 5) Construction of Townhouse units, driveways and sidewalks
- 6) Restoration of disturbed area and landscaping

Project Alternatives: Describe all options considered as alternatives to the proposed project, and describe how impacts to state and federal regulated waters will be avoided and minimized. This may include other locations, materials, etc.

State and Federal regulated waters are not being disturbed on this site. The outlet from the detention basin will need a permit from the EGLE as it will outlet into an inland stream and cross wetlands.

Project Compensation: Describe how the proposed impacts to state and federal regulated waters will be compensated, OR explain why compensatory mitigation should not be required for the proposed impacts. Include amount, location, and method of compensation (i.e., bank, on-site, preservation, etc.)

Mitigation not proposed

Upload any additional information as needed to provide information applicable to your project regarding project purpose sequence, methods, alternatives, or compensation.

NONE PROVIDED
Comment
NONE PROVIDED

Resource and Activity Type

SELECT THE ACTIVITIES from the list below that are proposed in your project (check ALL that apply). If you don't see your project type listed, select "Other Project Type". These activities listed require additional information to be gathered later in the application.

Other Project Type

The Proposed Project will involve the following resources (check ALL that apply).

Wetland

Stream or River

Major Project Fee Calculation Questions

Is filling of 10,000 cubic yards or more proposed (cumulatively) within wetlands, streams, lakes, or Great Lakes?

No

Is dredging of 10,000 cubic yards (cumulatively) or more proposed within streams, lakes, or Great Lakes? (wetlands not included)

No

Is new dredging or adjacent upland excavation in suspected contamination areas proposed by this application?

No

Is a subdivision, condominium, or new golf course proposed?

Yes

Wetland Project Information and Impacts

Has a professional wetland delineation been completed for this site? Yes

Attach a copy of wetland delineation report with data form.

Rigel Terrace Wetland Report 07.08.2022.pdf - 07/12/2022 04:32 PM

Comment

NONE PROVIDED

Total acres of wetland affected by this project.

Category	Affected area (acres)
Permanent	0.336
Temporary	0
	Sum: 0.336

Is filling or draining of 1 acre or more (cumulatively) of wetland proposed?

Νo

Select all wetland types that will be affected by this project:

Forested

If your project includes placing fill in wetland then select the proposed activities from the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:

Path/Sidewalk

Road - New

Driveway

Grading or Mechanical Land Clearing

Parking Area

Complete this table for projects involving Fill. Enter each activity/ location that corresponds with each activity selected in the previous question and enter the dimensions. Activities may be entered in one line of the table if they occupy the same impact footprint and cannot be broken out separately (Example: Activity - Driveway and Riprap slope). Multiple activities in different locations should be listed on different lines of the table.

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Wetland B	170	85	2	14450	28900	1070	14375
Wetland C	27	11	2	297	594	22	260
				Sum: 14747	Sum: 29494	Sum: 1092	Sum: 14635

Source of Fill Material:

On-site (show on plan)

Type of Fill.

Sand

Is riprap proposed?

No

Select from the following list for Excavation/Dredge Activities (if your proposed project is primarily a structure enter the impact as a structure. Only enter an impacted area in one of the impact tables in one impact section):

None of the above

If your project includes STRUCTURES IN WETLAND then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).: Building - residential new

Projects involving Structures:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (Sq. feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
NONE PROVIDED	73	59	2.1	4307	9044.7	335	4228
				Sum: 4307	Sum: 9044.7	Sum: 335	Sum: 4228

If your project includes Other Activities in WETLAND not listed in this section, then select from the proposed activities in the following list. If your activity in Wetland has not been listed in this Wetland Section, then select "Other" and enter a description of your activity. Only enter an impacted area in one of the impact tables (do not duplicate impact entries). If you selected a Fill, Excavation/Dredging, or Structure activity above in this section, but do not have an activity listed as Other, then select None of the Above for this question.

None of the above

Is Wetland Mitigation being proposed as part of this proposed project?

No

Explain why no mitigation is proposed.

Stream Project Information (1 of 1)

Please provide a name for the stream, river, channel:

NONE PROVIDED

Stream Water elevation reference* (show elevation on plans with description):

NONE PROVIDED

Ordinary High Water Mark (OHWM) elevation (feet):

NONE PROVIDED

Date of observation (M/D/Y)

NONE PROVIDED

What length (feet) does the project activity(ies) extend waterward of the OHWM?

NONE PROVIDED

What length (feet) does the project activity(ies) extend landward of the OHWM?

NONE PROVIDED

Is the drainage area upstream of the proposed project area greater than 2 sq. miles?

NONE PROVIDED

What is the the width (feet) of the stream where the water begins to overflow its banks. This is called the Bankfull width.

NONE PROVIDED

Will a turbidity curtain be used during the proposed project?

NONE PROVIDED

Inland Lakes, Great Lakes and Stream Impacts (1 of 1)

The following impact description applies to: (select only one at a time, duplicate this entire section if there are impacts to multiple waterbody types):

NONE PROVIDED

Select from the following list all Fill Activities (select all that apply to this waterbody impacted):

NONE PROVIDED

Activities Involving Dredging or Excavation: Select from the following list for Excavation/Dredge Activities (select all that apply to this waterbody impacted):

NONE PROVIDED

If your project includes STRUCTURES then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:

NONE PROVIDED

If your project includes Other Activities not listed in this section, then select from the proposed activities in the following list. If your activity has not been listed in this Section, then select "Other" and enter a description of your activity. Only enter an impacted area in one of the impact tables (do not duplicate impact entries). If you selected a Fill, Excavation/Dredging, or Structure activity above in this section, but do not have an activity listed as Other, then select None of the Above for this question.

Upload of Proposed Site Plans

Required on all Site Plan uploads. Please identify that all of the following items are included on your plans that you upload with this application.

Site Plan Features	Existing and Proposed Plan Set
Scale, Compass North, and Property Lines	NONE PROVIDED
Fill and Excavation areas with associated amounts in cubic yards	NONE PROVIDED
Any rivers, lakes, or ponds and associated Ordinary High Water Mark (OHWM)	NONE PROVIDED
Exterior dimensions of Structures, Fill and Excavation areas associated with the proposed project	NONE PROVIDED
Dimensions to other Structures and Lot Lines associated with the project	NONE PROVIDED
Topographic Contour Lines from licensed surveyor or engineer when applicable	NONE PROVIDED

Upload Site Plans and Cross Section Drawings for your Proposed Project

NONE PROVIDED
Comment
NONE PROVIDED

Additional Required and Supplementary Documents

NONE PROVIDED
Comment
NONE PROVIDED

Fees

	Major Project Fee	
+\$2000.00		

Total Fee Amount:

\$2000.00

Is the applicant or landowner a State of Michigan Agency? NONE PROVIDED

Attachments

Date	Attachment Name	Context	User
7/12/2022 4:32 PM	Rigel Terrace Wetland Report 07.08.2022.pdf	Attachment	Stephen Pangori

Rigel Terrace LLC Attn: Dominic Moceri 3005 University Drive Auburn Hills, MI 48326

Re: Wetland Delineation Report - Orion Township HD- Orion Township, Oakland County, Michigan

Dear Mr. Stollman:

At your request Barr Engineering Co. (Barr) conducted a wetland delineation at the above-referenced site. The purpose of this wetland delineation report is to summarize the results of the wetland delineation conducted on June 8, 2021.

1.0 Area of Investigation Description

The Area of Investigation (AOI, Figure 1) included parcel numbers 09-23-301-005, 09-23-301-013 and 09-23-301-012 located in Orion Township, Oakland County, Michigan. Surrounding land uses and cover types include residential, forest, and commercial. The AOI is generally dominated by forested areas, with a small open area along Lapeer Road (US-24).

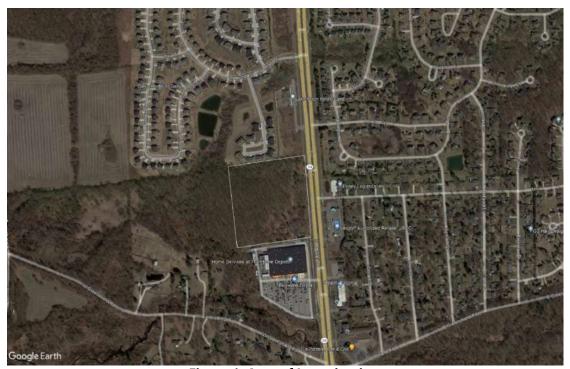


Figure 1. Area of Investigation

1.1 Desktop Review

Barr conducted a desktop review to evaluate aerial imagery, topography, soil types, and mapped wetlands within the AOI prior to the wetland evaluation. As part of the desktop review, Barr staff reviewed resources such as the Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS; Figure 2), Michigan Final Wetlands Inventory (MFWI; Figure 3), and aerial photography.

According to the WSS, the AOI includes well drained Marlette sandy loam (10B); well drained Oshtemo-Boyer loamy sands (13B), 0 to 6 percent slopes; and well drained Oshtemo-Boyer loamy sands with 12 to 40 percent slopes (13E). None of the soils identified on the Web Soil Survey are hydric (wetland) soil.

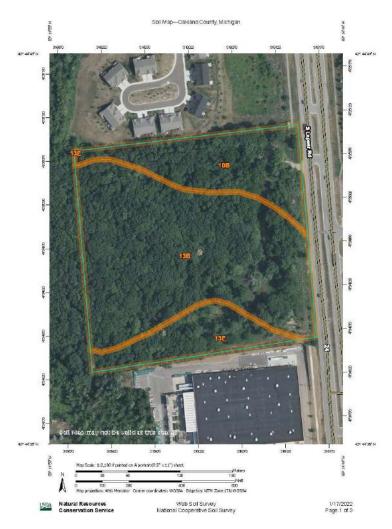


Figure 2. NRCS Web Soil Survey

The MFWI shows a small wetland along northern edge of the property that was identified on the National Wetlands Inventory (NWI) and the Michigan Resource Information System (MIRIS), however, wetlands were not found in this area during the delineation. The MNFI also shows wetland and a soil are which includes wetland soils almost immediately outside of the AOI near the southwest portion of the site.



Figure 2. Michigan Final Wetlands Inventory

1.2 Methodology

The wetlands were delineated by Barr on June 8, 2021 with lettered and numbered pink flagging tape. The flag locations were subsequently mapped using a Trimble GPS capable of sub-meter accuracy.

1.3 Results

Wetland A is an offsite wetland boundary that was delineated with flags numbered A1-A9 to determine whether or not it was on the subject site or its proximity to the subject site. There are two wetland areas within the AOI. Both wetlands are predominantly forested. Figure 4 below shows the delineated wetland boundaries, with the flag numbers being B1-B14 and C1-C5.



Figure 4. Wetland Boundary Map

Wetland B and Wetland C

Wetland A is an off-site forested wetland area (PFO). Wetland B and Wetland C are also forested wetlands and they contain similar plant species. Wetland B is 0.33 acres in size and is located on the eastern side of the property, just south of the existing driveway off Lapeer Road. Wetland C 0.006 acres in size and is located 39

south of the western portion of Wetland B. The vegetation identified within these wetlands includes species such as silver maple (*Acer saccharinum*), eastern cottonwood (*Populus deltoides*), red maple (*A. rubrum*), green ash (*Fraxinus pennsylvanica*), sensitive fern (*Onoclea sensibilis*), and fowl manna grass (*Glyceria striata*). Primary and secondary hydrology indicators were identified within the wetlands. The soils within these two wetlands were not consistent with the descriptions provided on the Web Soil Survey, as they appeared to be very poorly drained, displaying hydric characteristics.

In contrast, the adjacent upland areas included species such as black cherry (*Prunus serotina*), bur oak (*Quercus marcrocarpa*), red oak (*Q. rubra*), common prickly ash (*Zanthoxylum americanum*), multiflora rosa (*Rosa muliflora*), riverbank grape (*Vitis riparia*), and Virginia creeper (*Parthenocissus quinquefolia*) with no observed evidence of wetland hydrology or hydric soils.

1.4 Conclusions

Based on observations of topography, vegetation, soil, and indicators of hydrology, Barr has determined that wetland habitat is present within the AOI. These wetland areas were identified as PFO habitat types. According to Part 303, Wetlands Protection, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, wetlands regulated by the State of Michigan as administered by the Department of Environment, Great Lakes and Energy ("EGLE") include wetlands that are:

- 1. Located within 500 feet of, or having a direct surface water connection to, an inland lake, pond, river, or stream; or
- 2. Greater than 5 acres in size; or
- 3. Located within 1,000 feet of, or having a direct surface water connection to, the Great Lakes or Lake St. Clair; or
- 4. A water of the United States as that term is used in section 502(7) of the Federal Water Pollution Control Act, 33 USC 1362; or
- 5. Known to have a documented presence of an endangered or threatened species under Part 365 of State of Michigan 1994 PA 451, as amended or the Federal Endangered Species Act of 1973, Public Law 93-205; or
- 6. Rare or imperiled.

Wetland A appears to be contiguous to (within 500 feet of) Trout Creek off-site to the west and would therefore be regulated under Part 303. Wetland B and Wetland C do not appear to be regulated under Part 303 as they are smaller than five acres in size and do not appear to be within 500 feet of, or have a direct surface water connection with, an inland lake, pond, river or stream (non-contiguous).

Orion Township has a Wetlands Protection ordinance which references a Wetland Inventory Map. The wetlands on the subject site are not shown on the 2015 Natural Features map for the Township (enclosed) which includes wetlands nor are the wetlands shown on the draft dated 02-10-2022 of the Township Wetlands and Special Flood Hazard Areas map (enclosed). The location of subject site has been added to each map.

The Orion Township Wetlands Protection ordinance can regulate non-contiguous wetlands less than two acres in size such as Wetlands B and C if the Township determines the protection of the wetland is essential to the preservation of the natural resources of the Township from pollution, impairment, or destruction, and provided that the Township has made a determination that the wetland meets at least one of the criteria set forth in Section 5.00 (b) (1-10) of the ordinance. The ten criteria and our assessment of their application to the two wetland areas is as follows:

- The site supports State or Federal endangered or threatened plants, fish, or wildlife appearing on a list specified in Section 6 of the Endangered Species Act of 1974, Act. No. 203 of the Public Acts of 1974, being Section 299.226 of the Michigan Compiled Laws. No known occurrence or observation of protected species.
- 2. The site represents what is identified as a locally rare or unique ecosystem. **The wetland** contain species common to forested wetland species in the area.
- 3. The site supports plants or animals of an identified local importance. **No known occurrence or observation of what could be considered locally important plant or animal species.**
- 4. The site provides groundwater recharge documented by a public agency. **None known.**
- 5. The site provides flood and storm control by the hydrologic absorption and storage capacity of the wetland. *Not significant given wetland size and proposed storm water management.*
- 6. The site provides wildlife habitat by providing breeding, nesting, or feeding grounds or cover for forms of wildlife, waterfowl, including migratory water fowl and rare, threatened, or endangered wildlife species. Not significant given wetland size. No known occurrence or observation of protected species.
- 7. The site provides protection of subsurface water resources and provision of valuable watersheds and recharging groundwater supplies. *Not significant given wetland size.*
- 8. The site provides pollution treatment by serving as a biological and chemical oxidation basin. **Not significant given wetland size.**
- 9. The site provides erosion control by serving as a sedimentation area and filtering basin, absorbing silt and organic matter. *Vegetated site has minimal erosion*.
- 10. The site provides sources of nutrients in water cycles and nursery grounds and sanctuaries for fish. *No connection to surface water body.*

Given the small size of the wetlands and their isolation from other wetlands and surface water features, it does not appear likely they are essential to the preservation of the Township from pollution, impairment or destruction.

Please be advised that EGLE and Orion Township have regulatory authority regarding the wetland boundary location(s) and jurisdictional status of wetlands on this site. Barr's wetland determination was performed in general accordance with accepted procedures for conducting wetland determinations. Barr provides no warranty, guarantee, or other agreement in respect to the period of time for which this wetland determination will remain valid. Barr's conclusions reflect our professional opinion based on the site conditions within the AOI observed during the site visits. Discrepancies may arise between current and future wetland determinations and delineations due to changes in vegetation and/or hydrology as the result of land use practices or other environmental factors, whether on-site or on adjacent or nearby properties. In addition, wetland delineations performed outside the growing season, from late-October until late-April, may differ from those performed at the same site during the growing season due to the presence of snow cover or frozen ground conditions. We recommend our wetland boundary determination and jurisdictional opinion be reviewed by EGLE prior to undertaking any activity within any identified wetlands.

Thank you for the opportunity to provide this wetland delineation. If you have any questions, please contact either Jeff King at 248-207-6996 (email jking@barr.com) or me at your convenience at 734-558-9288 (email wheld@barr.com).

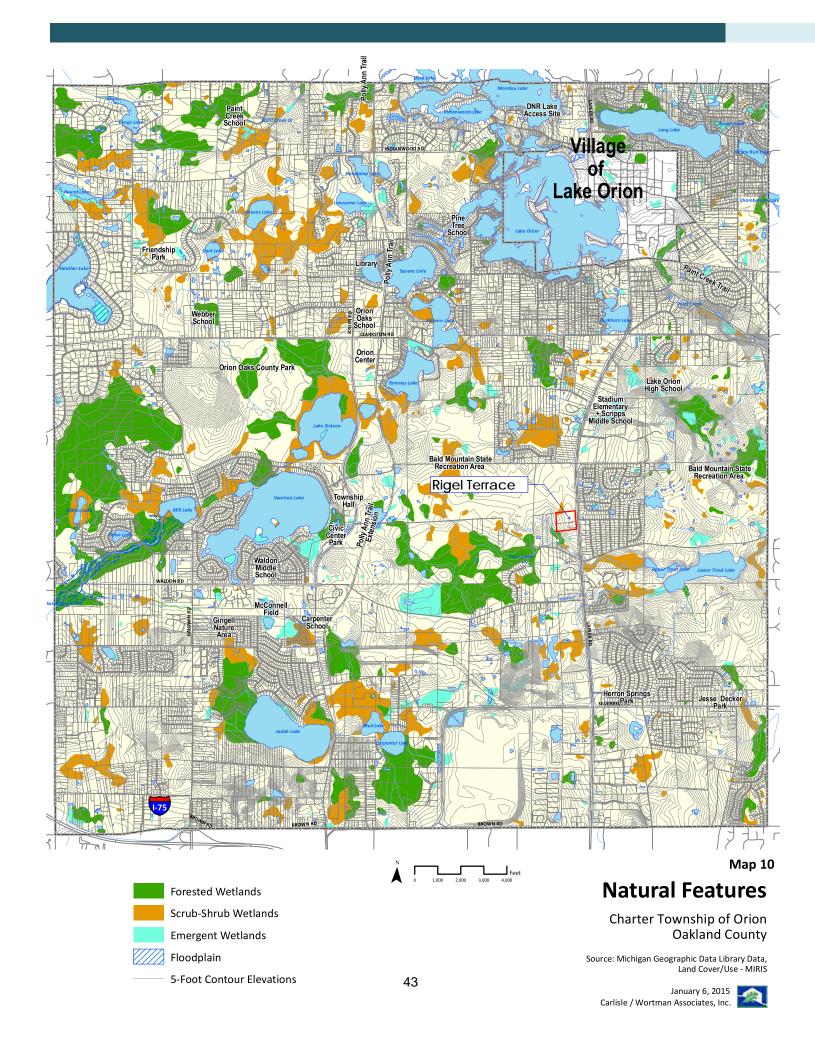
Sincerely,

BARR ENGINEERING CO.
Woody L Held

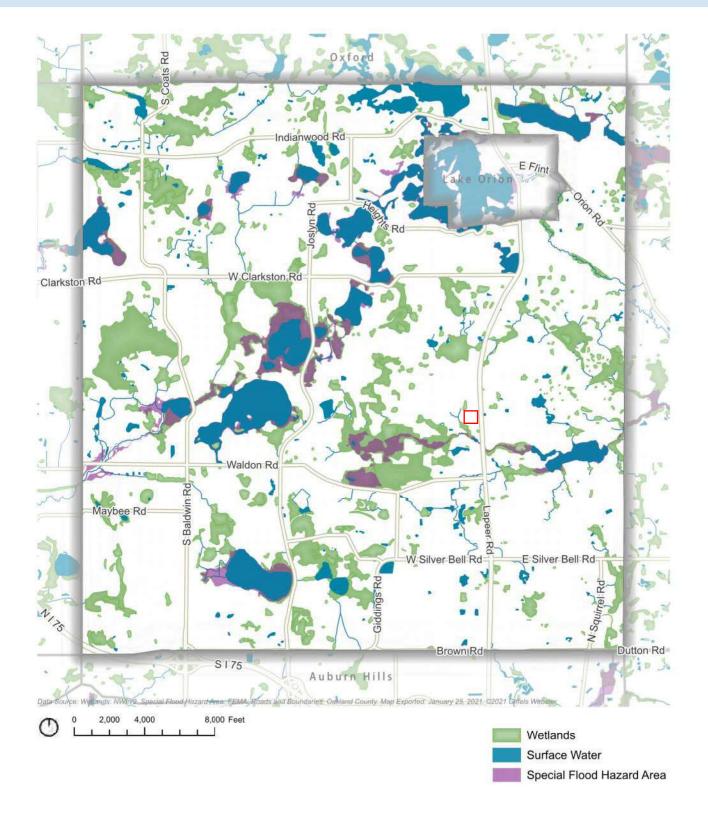
Woody L. Held

Senior Environmental Consultant

Enclosures



MAP 10: WETLANDS AND SPECIAL FLOOD HAZARD AREAS





Wetlands and Special Flood Hazard Areas

ORION TOWNSHIP

DRAFT (02-10-2022) 54

RECEIVED

July 14, 2022

JUL 15 2022

Orion Township Planning Commission 2525 Joslyn Road Lake Orion, MI, 48360

Orion Township Planning & Zoning

Site Plan Review no. 1 Rigel Terrace

Case Number: PC-2022-26

Plan Date:

Address:

2410 Lapeer Road

RM-2 Zoning:

Parcel ID:

09-23-301-005, -012 & -013

Reviewer:

Area:

15.95 AC

Matt Wojciechowski Rod Arroyo

Applicant:

Dominic J Moceri

Dear Planning Commission Members:

We have reviewed the above application and site plan, landscape plan, and tree survey and a summary of our findings is below. Items in bold require specific action by the Planning Commission. Items in italics can be addressed administratively.



Project Summary

The applicant is proposing to construct 101 townhouse units on the west side of Lapeer Road, north of W. Greenshield Road. The units are situated within 17 buildings ranging from four to eight units per building, with each unit providing three bedrooms. Access to the internal drive (Celeste Circle) is proposed via a divided boulevard-style drive off of Lapeer Road, and units are then accessed via a 27' wide private drive. Internal sidewalks will be provided on both sides of the internal drive, in addition to a wood chip path within the open space in the center of the site.

SUMMARY OF REVIEW

Revisions & Additional Information

- 1. The Applicant should consider a common visitor space lot(s). When someone has more than two vehicles visiting, they can't use another driveway apron without blocking access to another garage.
- 2. Applicant shall confirm underground utilities
- 3. A performance guarantee is required
- 4. Buildings 3, 6, 11 & 16 appear to exceed 200' in length (approx. 205')
- 5. Applicant shall add site coverage to site plan
- 6. Buildings 3, 4, 9 & 10 appears to have porches or balconies projecting 6' 6" into the side setback
- 7. Building 11 appears to have a porch/balcony projecting 6' 6" into the front setback
- Applicant shall provide final open space tree requirement calculation based on the tree survey submitted
- A tree removal permit required per 27.12. Applicant should provide replacement tree details based on the d.b.h requirements

Planning Commission Waivers

 Individual trash cans to be stored in garages are requested in lieu of dumpster areas



Date: July 14, 2022

Project: Rigel Terrace - SPR no. 1

Page: 3

Zoning Ordinance Compliance Tables

2. **RM-2** District Standards. Multiple Family dwellings are permitted uses within the RM-2 district. The following standards apply:

	RM-2 (Article XXXIV)							
Section		Requirement	Proposed	Comment				
7.01 Uses		Multiple Family dwellings	101 Townhome units	Permitted				
7.03 Required	B.	Minimum parcel size of 5 acres	Compliant					
Conditions		1. Minimum of two parking spaces per unit	4 per unit	Compliant				
Conditions	C.	2. One visitor space for every three units	Each unit has two additional driveway spaces for the unit, plus 34 on street (no overnight) parking spaces	The Applicant should consider a common visitor space lot(s). When someone has more than two vehicles visiting, they can't use another driveway apron without blocking access to another garage.				
		1. Landscaping per 27.05 (see pg. 3)		gs. 5-6				
	D.	2. 10' perimeter greenbelt	20+	Compliant				
		Screened from view of adjacent single-family zoning or use (Applies to north and west property lines)	50'-60' greenbelt plus existing	Compliant				
		1. Lighting plan per 27.11						
7.03 Required	F.	2. Exterior site lighting shielded down	Lamp Style	Compliant				
Conditions		3. Site lighting not to exceed 0.3 at residential property lines	0.0	Compliant				
	G.	1. Access to major thoroughfare	Lapeer Road	Compliant				
		7. Twenty-two-foot (22') min drive width	27'	Compliant				
	Н.	Utilities required underground	Applicant to confirm					
	1.	Covered trash receptacles required	Individual trash cans to be stored in garages	Waiver requested				
	K.	Performance guarantee per 30.09	Applicant to confirm					

Date: July 14, 2022 Project: Rigel Terrace – SPR no. 1 Page: 4

8		A paved outdoor patio area of not less than one hundred fifty (150) square feet may be provided for each dwelling unit	Patios and porches proposed	See pg. 5 for projections
		2.a. Hard-surfaced sidewalks shall be provided throughout the development so as to provide a complete pedestrian circulation system	5' internal sidewalks	Compliant
ı	L	3.a. Recreation open space shall be provided and shall be equal to an area of not less than five hundred (500) square feet per dwelling unit	4.78 acres proposed	Compliant
		3.b. The required recreation open space shall be located conveniently in relation to the majority of dwelling units intended to be served by such facility, and shall not include a wetland area	Internal and perimeter open space proposed	Compliant
7.03 Required Conditions		3.c. Uses permitted within the required recreation open space shall include playground and park space, play equipment, tennis courts, shuffleboard courts, basketball courts, and/or similar facilities, or any structure for which a building permit must be issued.	Walking paths shown	Compliant
		3.e. Safety path along Lapeer Road	8' wide path	Compliant
	A.	Min lot size of five acres	15.95 acre	Compliant
	В.	Maximum building height of 35 and max. building length of 200'	Buildings 3, 6, 11 & 16 appear to exceed 200'	Applicant shall revise
	C.	Maximum 8 dwelling units per acre	6.33 units per acre	Compliant
7.04 Area and Bulk Requirements	D.	Min floor area of 900 square feet	Min of 1,799 square feet	Complaint
		Max site coverage 25%	Applicant shall provide	
	(+	1.a. 100' front perimeter setback	100' provided	Compliant
		1.b. 50 side and rear yard exterior setback	50' side setbacks	Compliant
	E.	2. 75' setback when abutting residential	75' rear setback	Compliant
		3. End to end interior building setback of 30' required	30' min	Compliant

Date: July 14, 2022

Project: Rigel Terrace – SPR no. 1

Page: 5

3. **General Provisions**. The standards in the table below are a summary of the applicable Zoning Ordinance standards in Article XXVII; please refer to the individual sections referenced herein for the full Zoning Ordinance text

General Provisions (Article 27)							
Condition	Requirement	Proposed	Comment				
27.03	The following projections shall be permitted when located in the required yards as specified:						
	1. All yards. Awnings, canopies & steps	None shown					
	Building 11 appears to have 2. Front yards. Open, paved terraces not exceeding 3' above grade projecting 6' 6" into the front setback		Applicant				
	3.a. Rear Yards. Balconies and porches allowed 3' into setback	Building 6 appears to have two decks projecting 6' 6" into the rear setback	should provide details on the type of structure and the dimension of the proposed projection into the setback on the site plan				
	4. Side Yards. Bay windows and architectural features up to 18"	Buildings 3, 4, 9 & 10 appears to have porches or balconies projecting 6' 6" into the side setback					
27.04 Parking	Residential Parking. Off-street parking spaces in single-family residential districts shall consist of a parking strip, driveway, garage, or combination thereof and shall be located on the premises they are intended to serve		Compliant				
27.05 Landscaping	A.3.a.i. All portions of the landscaped area shall be planted with grass, ground cover, shrubbery, or other suitable plant material, except that paved patios, terraces, sidewalks, and similar site features maybe incorporated, with Planning Commission approval.	Grass, shrubbery and trees proposed	Compliant				
	A.3.a.ii. A mixture of evergreen and deciduous trees shall be planted at the rate of one (1) tree for each 3,000 square feet of landscaped open-space area	Not calculated	Applicant shall add to plan based on tree survey provided				
	A.3.a.vi. All landscaped areas shall have an underground irrigation system or shall be provided supply.	None shown	Add to plan				

Date: July 14, 2022

Project: Rigel Terrace - SPR no. 1

Page: 6

	area (including driveways). Such trees shall be located between the abutting right-of-way and the off-street parking area or vehicular use area A.5. Where non-residential uses abut residential uses or where multi-family uses abut single family uses, the Planning Commission may require a	94 provided 10 new, plus existing trees	Compliant PC to confirm	
	greenbelt buffer A minimum of one (1) deciduous tree or evergreen tree shall be planted for each thirty (30) lineal feet (309/30 = 11 required)	(along west property line)		
27.06 Access	F. Safety Pathway required	8' wide	Appears complaint; engineering to confirm	
27.12 Tree & C.1. Requirements		829 trees removed	Tree removal permit required per 27.12	

Staff will be available to discuss this review at the next Planning Commission meeting

Respectfully,

Giffels Webster

Rodney L. Arroyo, AICP

Partner

Matt Wojciechowski, AICP

Mat Vajin

Senior Planner

Date: July 14, 2022 Project: Rigel Terrace – SPR no. 1

Page: 7





July 13, 2022

RECEIVED

Scott Reynolds, Planning Commission Chairperson CHARTER TOWNSHIP OF ORION 2323 Joslyn Road Lake Orion, MI 48360 JUL 1 4 2022

Orion Township Planning & Zoning

RE:

Rigel Terrace, PC-2022-26

Site Plan Review #1, rev1

Received:

June 29, 2022 by Orion Township

Dear Mr. Reynolds:

We have completed our review of Rigel Terrace plan set. The plans were prepared by AEW and were reviewed with respect to the Township's Zoning Ordinance, No. 78, Stormwater Management and Soil Erosion & Sedimentation Control Ordinance, No. 139, and the Township's Engineering Standards.

EXISTING SITE CONDITIONS:

The site is located along on the west side of M-24, opposite Hiram St. within the western half of Section 23 of the Charter Township of Orion. The site is zoned Multi-Family Residential (RM-2) and bound by parcels to the north of the property zoned Planned Unit Development (PUD), parcels to the west zoned Suburban Estates (SE), to the south zoned General Business (GB), and to the east zoned Single Family Residential (R-1), Office and Professional (OP), and Restricted Business (RB).

The existing site is currently undeveloped, with trees and vegetation covering the majority of the site. There appears to be a single existing approach located in line with the turnaround on M-24. According to the ALTA Survey, there are several easements along the M-24 right-of-way. Two (2) are temporary, one (1) 75-foot easement labeled "Possibly Terminated," and one (1) 15-foot easement labeled "temporary." There appear to be existing overhead utilities located on the site. The applicant should confirm that there are no easements associated with these overhead utilities and coordinate with DTE or pole owners regarding relocation of existing poles.

The applicant is proposing a 17-building development with a total of 101 units. The buildings range between four (4) and eight (8) unit buildings. The site layout consists of a boulevard entrance that connects to a looped road (Celeste Circle). Open space areas have been left around the property border as well as a large space between the buildings on the inside of Celeste Circle which features a wood chip path and connections to the proposed site sidewalk.

WATER MAIN AND SANITARY SEWER:

There is 16-inch existing water main located along the west side of M-24, 12-inch main located south of the site that loops around Home Depot, and 8-inch north of the site that extends westward to connect to the water main on Monte Vista Ct. The applicant is proposing to connect to the existing water main in two (2) locations and loop through the site. No size or material information appears to be provided. A 12-foot water main easement is shown centered on the water main. The applicant shall ensure that no existing utility poles are located within the influence

Rigel Terrace, PC-2022-26 Site Plan Review #1 July 13, 2022 Page 2 of 5



of the proposed water main easement. Currently there appears to be an existing pole located within the proposed easement within the M-24 right-of-way. Water main sizing will be required at engineering, and material shall be ductile iron. More information regarding the meter room, FDC, and Knox Box located on each building will be required at engineering. Hydrant spacing appears acceptable, however the gate valves need to be moved to ensure that no more than two (2) hydrants or thirty (30) units could be put out of service at the same time in the event of a break in the line. Currently, buildings 1, 2, 3, 12, and 17 would be out of service along with 3 hydrants if a break were to occur along that section of the water main.

Please note, there appears to be an existing 8-inch water main stub located approximately 90-feet north of the southern property border per GIS records. This stub could be used if existence is verified in the field.

There is existing 8-inch sanitary sewer located along the M-24 right-of-way. The existing sanitary extends on site for a portion of the frontage and is five (5) feet from the right-of-way. A 15-foot easement is provided for the existing sanitary sewer in this location. The manholes located on the ALTA Survey are labeled "Possible Location..." Manhole locations shall be field located prior to final design. The applicant is proposing to extend sanitary sewer along the outside of Celeste Circle and connecting to the existing sanitary sewer at the southeast corner of the site. A 20-foot sanitary sewer easement is proposed around the sanitary sewer and appears acceptable. However, two (2) catch basins and a marketing sign appear to be proposed over the existing sanitary sewer within the proposed boulevard approach. Please relocate these catch basins and sign and ensure that all proposed structures are located outside the sanitary sewer easement. Additionally, the easement at the connection point appears to have only printed on the south side of the proposed sewer. Please correct the discrepancy and show the easement on both sides of the sanitary sewer.

A joint utility easement for franchise utilities shall be shown in the site plan to ensure that there are not conflicts between franchise utilities and public utilities. Otherwise, please provide a note indicating that franchise utilities will not be located within public utility easements (water main and sanitary sewer), nor shall their easements overlap.

Light pole locations should be included on the utility plans to ensure that there won't be utility conflicts between light poles and proposed water main, sanitary sewer, and storm sewer.

STORMWATER MANAGEMENT:

The existing site appears to drain westward on the west half of the site, and eastward on the eastern half of the site, however both sides of the site ultimately end up in the Trout Creek and the Lower Trout Lake after crossing M-24. The applicant is proposing to collect all the storm water on site via a series of eatch basins. The runoff will then be treated in a forebay before being detained and ultimately outlet into the wetland/creek southwest of the site. While the proposed drainage pattern does not match the existing drainage pattern at the site border, they both still ultimately outlet into Trout Creek and Lower Trout Lake, so the existing drainage pattern is being matched.

Per Township and OCWRC Standards, all sites are required to provide Channel Protection Volume Control (CPVC) by retaining the runoff from the 1.3-inch rainfall event to the maximum extent practicable. The applicant must provide adequate infiltration and/or storage/reuse BMP's to provide the calculated CPVC volume unless the measured in-situ infiltration rate is less than 0.24 in/hr, and the soil is unsuitable for infiltration. If the site is unsuitable for infiltration, other Low-Impact Development (LID) features must be implemented to the maximum extent practicable. A geotechnical report with infiltration test results must be provided at engineering by a registered professional engineer in the State of Michigan. Results of the infiltration test may result in changes to the site.

The applicant included preliminary detention calculations and a site C-value. A C-value calculation and impervious area breakdown will be required at engineering. Pervious area shall be included at C-factors based on in-situ hydrologic soil group.

Rigel Terrace, PC-2022-26 Site Plan Review #1 July 13, 2022 Page 3 of 5



Preliminary detention calculations are provided per new Orion Township Engineering Standards. The 100-Year Post Development Runoff Volume, V_{100R}, appears to include a typo in the calculation. The 18,895 multiplier in the equation shall be revised to be 18,985. The proposed detention volume should be called out in the calculations with the Extended Detention, 100-year storage, and the freeboard elevations labeled on or next to the detention and forebay basin volume table. The detention and forebay volume table should be extended to show up to the freeboard elevation.

PAVING/GRADING:

Existing site access consists of a small driveway located near the northern border of the site. The proposed site access is a boulevard approach, with a 20-foot wide ingress aisle, and a 26-foot wide egress aisle.

The pavement slopes provided appear to be acceptable but few are provided. Pavement slopes are to remain between 1% and 6% for drive areas, and between 1% and 4% for parking areas. Proposed pavement sections were not provided in the plan set and are required at site plan. Pavement sections per Township Engineering Standards shall be incorporated into the plan set for the roadway, internal sidewalk, public pathway, and the approach on M-24.

The boulevard green space appears to cut into the sidewalk crossing at the intersection of Hunter Boulevard and Celeste Circle. The curb at the end of this island will need to be dropped so that the sidewalk crossing extends unhindered across Hunter Boulevard. Corner grades for all sidewalk and pathway ramps and landings will be required at engineering to assess ADA compliance.

Proposed grading was provided via minimal spot grades at curb and some storm catch basins, as well as finish grade of the multi-family buildings. More grading information will be required at engineering.

TRAFFIC & CIRCULATION:

The firetruck turning template appears to clip a curb at the boulevard entrance, but the template could be shifted to work. Overall, the Orion Township Fire Truck appears to be able to navigate smoothly throughout the site. The roadway is dimensioned at a 27-foot-wide minimum outside of the boulevard entrance.

Based on our estimates, a Traffic Impact Study was not warranted as the projected trip generation figures were below the threshold of 100 trips in the peak hour or 500 trips per day as outlined in the Ordinance. Regardless, a Traffic Impact Assessment was provided by the applicant and requested it be reviewed. Based on our review, we office the following comments:

The study calculates the trips generated using the average rate plus ½ the standard deviation. Township ordinance requires that trip generation use the average rate plus one standard deviation. The recalculated trips would total 59 AM peak trips. Similarly, the PM peak would total 73 PM peak trips. We note that the number of trips generated is still below the ordinance threshold to require a Traffic Impact Study and would therefore not be necessary for revising and resubmitting the report.

The site plan includes both a safety path along Lapeer Road and an internal network of sidewalks and pathways throughout the development. The plans should include crossings of Celeste Circle and should indicate the locations of ADA ramps.

The planned development includes closely spaced driveways with as little as 20 feet between the garage door and the sidewalk. Detailed driveway grading will need to be designed to maintain an accessible sidewalk across the driveways.

Rigel Terrace, PC-2022-26 Site Plan Review #1 July 13, 2022 Page 4 of 5



LANDSCAPING:

A Landscape plan was included in the plans. Landscape trees appear to be placed with sufficient separation from public utilities. There are multiple locations on site where trees are called out to remain. No retaining walls appear to be proposed as part of this development; however, the engineer should take precautions to avoid impacts to the existing retaining wall located south of the site on the Home Depot property.

NATURAL FEATURES:

Wetlands:

Supplemental information was provided after our initial review confirming the presents of on-site wetlands. There are proposed impacts to the existing wetlands and wetland buffers which will be addressed under separate cover. A Township wetland permit will be required for the proposed impacts.

Woodlands:

A tree survey was included in the plans and appears to identify landmark trees within the site. A summary of trees proposed for removal and replacement is included at the end of the tree survey.

CONCLUSION:

In our opinion, the site plan as submitted is in substantial compliance with the Township's ordinances and engineering standards. We ask that any approval include the following:

- A franchise utility easement should be shown to ensure there are not conflicts with public utilities.
 Otherwise, please provide a note indicating that franchise utility easements will not be located within or overlap water main and sanitary sewer easements.
- Eliminate conflicts with proposed light poles and utilities. Light pole locations should be included on the utility plans to ensure that there won't be utility conflicts between light poles and proposed water main, sanitary sewer, and storm sewer.
- 3. Revise the plans to show the location(s) of proposed infiltration to meet the required Channel Protection Volume Control.
- Revise the plans to include pavement sections per Township Engineering Standards for the roadway, internal sidewalk, and safety path.
- Revise the plans to include sidewalk crossings of Celeste Circle and indicate the locations of ADA ramps.
- 6. Relocate the marketing sign from the existing sanitary sewer easement.
- 7. The engineering plan, designed in accordance with Zoning Ordinance No. 78, Stormwater Management and Soil Erosion & Sedimentation Control Ordinance No. 139, and the Township's Engineering Standards shall be submitted to the Township for review and approval prior to construction. A detailed cost estimate for the improvements shall be submitted with the plans signed and sealed by the design engineer.

The applicant should note the Township may require performance bonds, fees, and/or escrows for a preconstruction meeting and necessary inspections. Please feel free to contact us with any questions at (248) 751-3100 or mark.landis@ohm-advisors.com.

Rigel Terrace, PC-2022-26 Site Plan Review #1 July 13, 2022 Page 5 of 5

Sincerely,

OHM Advisors

Joe Lehman Project Engineer Mark Landis, P.E. Project Manager

cc:

Chris Barnett, Township Supervisor
David Goodloe, Building Official
Jeff Stout, Director of Public Services
Tammy Girling, Director of Planning and Zoning
Lynn Harrison, Planning and Zoning Coordinator
Jeff Williams, Township Fire Marshal
Bill Basigkow, Water and Sewer Superintendent
Dominic Moceri, Rigel Terrace LLC
Steve Pangori, AEW Inc.

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Planning Commission/Planning & Zoning Director

3365 Gregory Rd., Lake Orion MI 48359 www.oriontownship.org

Fire Department

Phone: (248) 391-0304, ext. 2000 Fax: (248) 309-6993

RECEIVED

JUL 08 2022

From: Jeff Williams, Fire Marshal

PC-2022-26, Rigel Terrace Site Plan Re:

Date: 7/8/2022

To:

Orion Township Planning & Zoning

The Orion Township Fire Department has completed its review of Application PC-2022-26 for the limited purpose of compliance with Charter Township of Orion Ordinance's, Michigan Building Code, and all applicable Fire Codes.

Based upon the application and documentation provided, the Fire Department has the following recommendation:

X Approved

Approved with Comments (See below)

Not approved

NONE Comments:

This approval is limited to the application and materials reviewed which at this time do not raise a specific concern with regard to location and/or impact on health and safety. However, the approval is conditioned upon the applicant providing sufficient additional information at time of building permit application that includes data or documents, confirming full compliance with all applicable building codes, fire codes and Township Ordinances.

If there are any questions, the Fire Department may be reached at 248-391-0304 ext. 2004. Sincerely,

Jeffrey Williams Jeff Williams, Fire Marshal

Orion Township Fire Department



Charter Township of Orion

2323 Joslyn Rd., Lake Orion MI 48360 www.oriontownship.org

Public Services Department

Phone: (248) 391-0304, ext. 8500

To:

Tammy Girling

Planning & Zoning Director

JUL 1 4 2022

From:

Jeffery T. Stout

Director, Department of Public Services

Orion Township Planning & Zoning

RECEIVED

Date:

July 14, 2022

Re:

PC-2022-26, Rigel Terrace Site Plan

Dear Tammy,

The Department of Public Services has reviewed the above-mentioned project. We have ample capacity to meet the needs of this expansion.

If you have any questions, please contact me.

Respectfully Submitted,

Jeffery T. Stout Director

Department of Public Services



July 7, 2022

RECEIVED

Lynn Harrison Orion Township Planning & Zoning 2323 Joslyn Road Lake Orion, MI 48360 JUL 07 2022

Orion Township Planning & Zoning

Reference:

Rigel Terrace - CAMS #202200563

Part of the SW 1/4 of Section 23, Orion Township

Dear Ms. Harrison,

This office has received one set of plans for the Rigel Terrace Project to be developed in the Southwest ¼ of Section 23, Orion Township.

Our <u>stormwater system</u> review indicates that the proposed project has no direct involvement with any legally established County Drain under the jurisdiction of this office. Therefore, a storm drainage permit will not be required from this office.

<u>The water system</u> is operated and maintained by Orion Township and plans must be submitted to Orion Township for review.

<u>The sanitary sewer</u> is within the Clinton-Oakland Sewage Disposal System. Any proposed sewers of 8" or larger may require a permit through this office.

Please note that all applicable permits and approvals from federal, state or local authorities, public utilities and private property owners must be obtained.

Any related earth disruption must conform to applicable requirements of Part 91, Soil Erosion and Sedimentation Control of the Natural Resource and Environmental Protection Act, Act 451 of the Public Acts of 1994. An application should be made to Orion Township for the required soil erosion permit.

If there are any questions regarding this matter, please contact Dan Butkus at 248-897-2744.

Sincerely,

Brian Bennett, P.E. Civil Engineer III





Stephen Pangori

From:

Gough, Stacey (MDOT) < goughs@michigan.gov>

Sent:

Friday, June 24, 2022 9:54 AM

To:

dstollman@me.com

Cc:

Gough, Stacey (MDOT); Jackson, Roderick (MDOT); Stephen Pangori

Subject:

63112-85869-22 Trident Orion LLC

CAUTION: External Email

David,

MDOT has reviewed the revised conceptual plan that was uploaded to CPS on 6/23/22 and has the following comments:

- The revised drive approach layout and geometrics are acceptable to MDOT
- As previously indicated the shoulder can't be striped with pavement markings as a right turn lane unless it is full depth pavement x-section
 - You can request as-built plans via FOIA to determine existing x-section <u>Freedom of Information Act</u> (michigan.gov)
 - o If existing x-section is not full depth then you will need to design a full depth turn lane

I will be placing the permit on hold in CPS while we await a full set of plans for review. Please upload full plan set to CPS and resubmit permit (make sure you hit resubmit or I won't be notified).

Thanks, Stacey

Stacey Gough MDOT Oakland TSC Utility & Permit Engineer 800 Vanguard Dr. Pontiac, MI 48341 Cell - 248-895-2558

Tammy Girling

From: Gough, Stacey (MDOT) < goughs@michigan.gov>

Sent: Thursday, June 30, 2022 10:23 AM

To: Tammy Girling

Cc: Gough, Stacey (MDOT)

Subject: RE: PC-2022-26 Rigel Terrace Site Plan

Attachments: 01_SITE PLAN (1).pdf

Got it- applicant has applied for permit and MDOT has reviewed conceptual plan & TIA and find it acceptable(see attached).

One comment on their site plan is that a right turn lane shall be full depth (not just striping of existing shoulder).

I will let you know if our Operations Unit has any additional comments.

Thanks, Stacey

Stacey Gough
MDOT Oakland TSC
Utility & Permit Engineer
800 Vanguard Dr.
Pontiac, MI 48341
Cell - 248-895-2558

From: Tammy Girling <tgirling@oriontownship.org>

Sent: Thursday, June 30, 2022 10:13 AM

To: Gough, Stacey (MDOT) <goughs@michigan.gov>
Subject: RE: PC-2022-26 Rigel Terrace Site Plan

CAUTION: This is an External email. Please send suspicious emails to abuse@michigan.gov

Link on the way.



Tammy Girling
Director
Planning & Zoning
2323 Joslyn Road, Lake Orion, MI 48360

O: 248.391.0304, ext. 5000 **C**: 248.978.2132

W: www.oriontownship.org

From: Gough, Stacey (MDOT) <goughs@michigan.gov>

Sent: Thursday, June 30, 2022 9:43 AM

To: Tammy Girling < tgirling@oriontownship.org> **Subject:** RE: PC-2022-26 Rigel Terrace Site Plan



ANDERSON, ECKSTEIN & WESTRICK, INC. CIVIL ENGINEERS - SURVEYORS - ARCHITECTS

51301 Schoenherr Road, Shelby Township, MI 48315 586.726.1234 | www.aewinc.com

RECEIVED

JUN 2 9 2022

Orion Township Planning & Zoning

MEMORANDUM

TO:

Moceri/Biltmore/Soave 3005 University Drive

Auburn Hills, MI 48326

ATTN: Mr. Moceri

Mr. Stollman Mr. Schultz

FROM:

Mohammad Luffi, P.E., PTOE

Carlie delaPaz

DATE:

May 25, 2022

SUBJECT:

Rigel Terrace at Orion

Orion Township, Michigan Traffic Impact Assessment

This memorandum presents the methodologies, analysis, and result of the Traffic Impact Assessment (TIA) for the Rigel Terrace at Orion. The development is located on the west side of Lapeer Road, across from Hiram Street in Orion Township as illustrated in Figure 1.

The development proposed to include 101 units of multi-family housing (low rise). The proposed development access plan includes 1 proposed drive on Lapeer Road, and is anticipated to open in 2024. The preliminary site plan is shown on Figure 1.1

The Scope of the study was developed based on Anderson, Eckstein & Westrick, Inc. (AEW) knowledge of the study area, understanding of the development program, accepted traffic engineering practice, and methodologies published by the Institute of Transportation Engineer (ITE). Additionally, AEW followed MDOT Geometric Design Guidance for conducting a traffic impact assessment on the proposed project.





Figure 1- Site Location



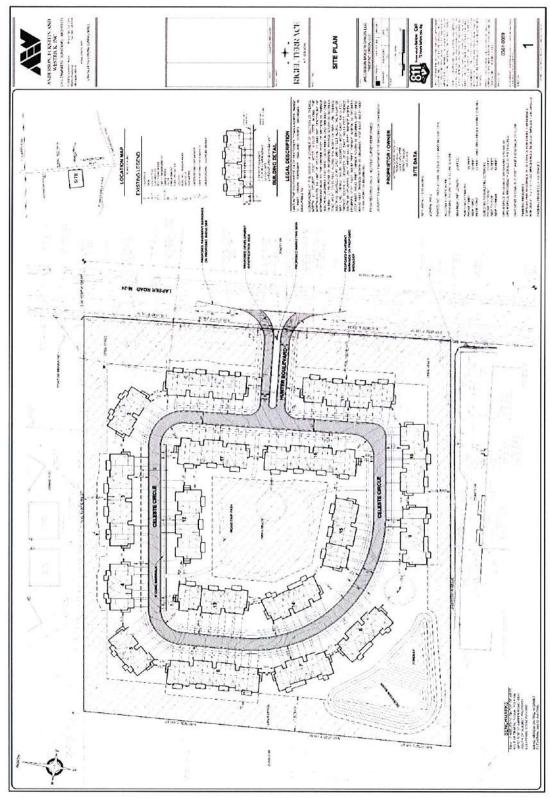


Figure 1.1- Preliminary Site Plan



The purpose of this study is to identify the traffic related impact, if any, of the proposed development on adjacent roads, including the traffic operation at the proposed site driveway. Also, quantifying existing traffic flow and identifying future traffic impacts due to the traffic generated by the new development.

To complete the traffic study, AEW undertook the following tasks:

- Provide a description of the site, study area, proposed development, and roadway characteristics.
- Estimate the trips generated by the proposed land use at full build-out using the techniques in the Institute of Transportation Engineer's (ITE) Trip Generation Manual.
- Distribute site generated traffic to the adjacent roadway network.
- Develop background traffic growth for the future build-out year.
- Conduct an analysis of access management for the site including available sight distances at the site driveways.

Study Area Characteristics

Roadway Characteristics

The Project traffic study area includes:

• Lapeer Road (M-24)

Table 1-Roadway Characteristics, presents the factional classification, controlling jurisdiction, average daily traffic (ADT), posted speed limits and general lane description for each of the study area roadways.

Table 1-Roadway Characteristics

Road	Functional Classification	Controlling Jurisdiction	ADT	Posted Speed	Lane Description	
Lapeer Road (M-24)	Principle Arterial	State	46,640	55 MPH	Divided 4 lane	

(Traffic Sources: 2020 MDOT Traffic Volumes Map and TCRPC National Functional Classification Map)

The lane configuration and traffic control at the study intersection are shown below in Figure 2.



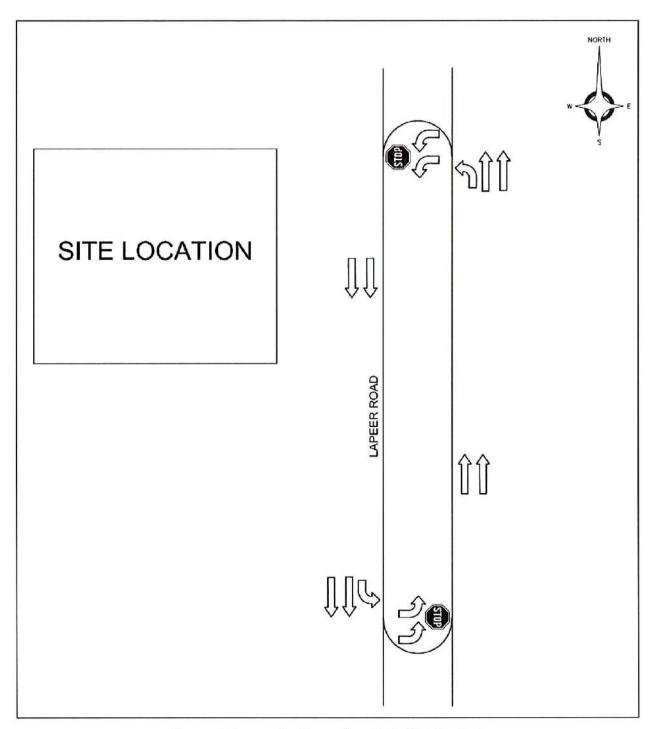


Figure 2-Lane Configuration & Traffic Control



Existing Traffic Counts

Existing traffic volume data obtained on Tuesday, April 19 2022. 2022 data was used in the analysis and are included in Appendix A and the existing AM & PM peak hour volumes are summarized on Figure 3.

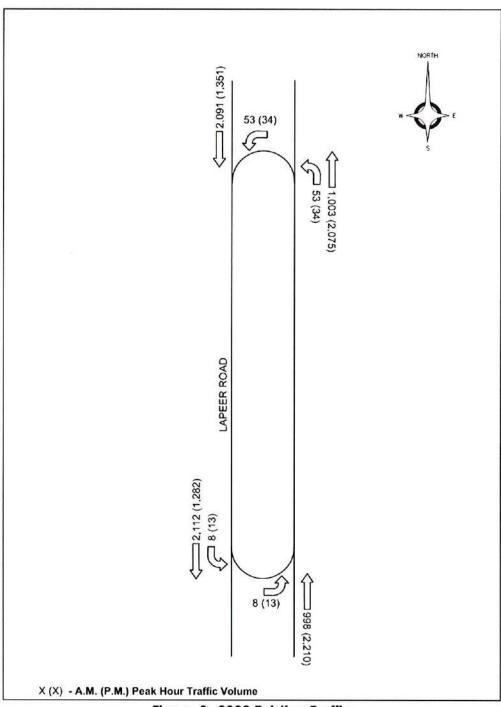


Figure 3- 2022 Existing Traffic



Traffic Operation Analysis Methodology

Trafficware's Synchro 11 was used to perform intersection capacity analysis and assign Levels of Service (LOS) for the study intersections and lane group movements based on the Highway Capacity Manual, 6th Edition (HCM6) methodologies. LOS is a letter grade that describes traffic operations based on the amount of delay experienced by vehicles at an intersection, along an intersection approach (e.g., eastbound, westbound), or in a specific lane group (e.g., eastbound right turn, eastbound through-left). LOS can range from A-F with A representing the conditions in which vehicles experience the least amount of delay, and F representing the conditions in which vehicles experience the most delay. The LOS D is typically used as a threshold for "acceptable" operations and is sometimes described as being "near capacity". The LOS E is often described as operations "at capacity", while LOS F describes conditions "over capacity". Additionally, LOS for the stop-controlled intersections was reported by approach. Table 2 provides information regarding the delay thresholds for LOS.

Table 2-Level of Service Definitions and Criteria

Level-of-Service (LOS)	Signalized Intersections Delay (seconds)	Un-Signalized Intersections Delay (seconds)
Α	< 10.0	< 10.0
В	10.1 – 20.0	10.1 – 15.0
С	20.1 – 35.0	15.1 – 25.0
D	35.1 – 55.0	25.1 – 35.0
E	55.1 - 80.0	35.1 – 50.0
F	> 80.0	> 50.0

LOS C is considered by many traffic safety professionals to be the minimum acceptable condition in rural areas and LOS D is the minimum for urban/suburban areas. Due to the location of the study site the minimum LOS is D.

Background Conditions

In order to determine the applicable growth rate for the existing traffic volumes, the Southeast Michigan Council of Governments (SEMCOG) was referenced. The historical data shows a declining growth rate. Therefore, based on this data, the background traffic volume without the proposed development is assumed to be equal to the existing traffic volume.

Trip Generation

The number of AM and PM peak hour trips that would be generated by both phases were forecast based on data published by ITE in the "Trip Generation Manual", 11th Edition. The number of trips expected to be generated during the weekday AM peak and PM peak was calculated. The trip generation shown represents the trip generation using ITE Land



use code 220, as shown in Table 4. The development is estimated to generate 46 trips in the AM Peak and 59 trips in the PM peak. Figure 4 shows the Trip Generation volumes and the data used can be found in Appendix B – Trip Generation.

Table 4-Trip Generation

Land Use	ITE Code	Units		AM Peak			PM Peak	
Multifamily Housing (Low Rise)	220	101	IN (24%)	OUT (76%)	TOTAL	IN (63%)	OUT (37%)	TOTAL
Average Rate+ 1/2 Stando		0.46			0.585			
Total Trips	11	35	46	38	21	59		

Distribution and Assignment

Traffic expected to be generated by a project must be distributed and assigned to the roadway system so the impacts of the proposed project on roadway links and intersections within the study area can be analyzed. Trips were distributed based on the volume of traffic entering and exiting the study area during the AM and PM peak hours.

The assignment step produces estimates of the amount of site traffic that will use certain access routes between their origin and destination. The directional distribution of the generated traffic was based proportionally on the percentage of traffic volumes on northbound and southbound Lapeer Road. The trip distribution can be found in Figure 4 and the build traffic cane be seen in Figure 6, below.



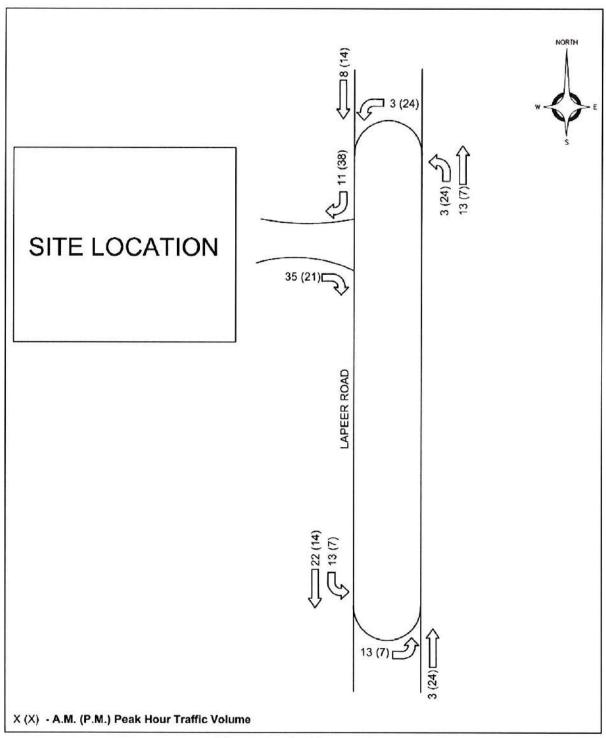


Figure 4- Trip Generation



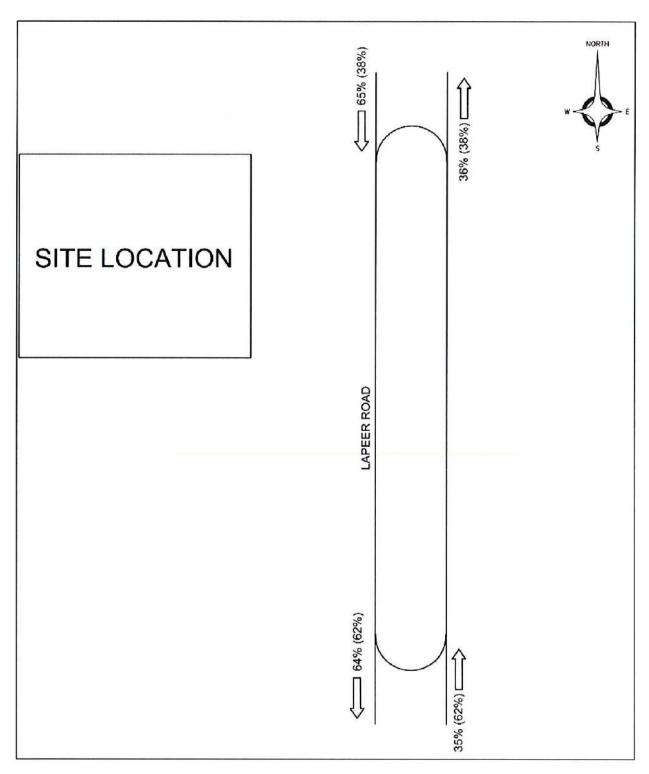


Figure 5-Trip Distribution



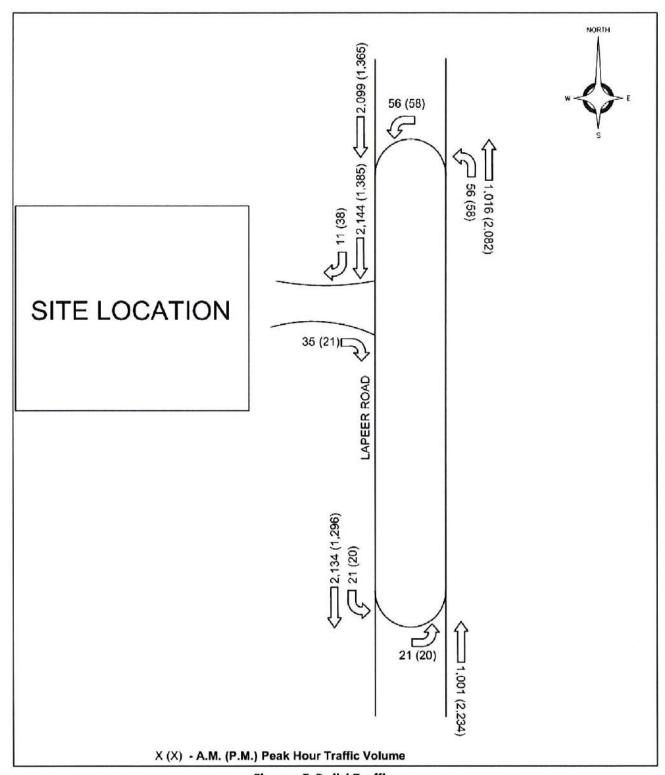


Figure 5-Build Traffic



Build Peak Hour Capacity Analysis

Peak hour levels of service for the No-Build and Build conditions are summarized in Table 5. No-Build and Build Levels of Service was evaluated based on the existing roadway condition although phase I is under construction and expected to be completed in a few months. This phase was included in the background and No-Build condition.

Table 5-Build Level of Service (LOS)

		The second party	Exis	ting	Build C	ondition
Intersection	Approach	Lane Group	AM Peak LOS/Delay	PM Peak LOS/Delay	AM Peak LOS/Delay	PM Peak LOS/Delay
SB Lapeer Road & WB Crossover	Westbound	2-Left	D/26.6	C/15.7	D/27.0	C/16.3
Unsignalized	Southbound	2-Thru	Free Flow	Free Flow	Free Flow	Free Flow
NB Lapeer Road & EB Crossover	Northbound	2-Thru	Free Flow	Free Flow	Free Flow	Free Flow
Unsignalized	Eastbound	2-Left	B/12.7	D/26.1	B/12.9	D/27.1
Lapeer Road &	Eastbound	Right			D/29.1	C/15.9
Proposed Drive Unsignalized	Southbound	2-Thru		TEN SHIPS	Free Flow	Free Flow

The results of the build conditions analysis for the study intersection indicate that the study intersection and approaches currently operate at acceptable LOS D or better. Appendix C present (LOS) Synchro Result.

Right Lane Warrant

An analysis for the need of a right-turn lane or taper was conducted at the development's entering driveway on SB Lapeer Road using the trip generated traffic along with the background growth factor. Since Lapeer Road is under the jurisdiction of MDOT, the warrant for 4-lane highways was used from MDOT Traffic and Safety Note 604A. The driveway meets the requirement for a taper during the AM peak hour. Figure 7, below, shows the analysis of the MDOT right-turn lane or taper warrant.



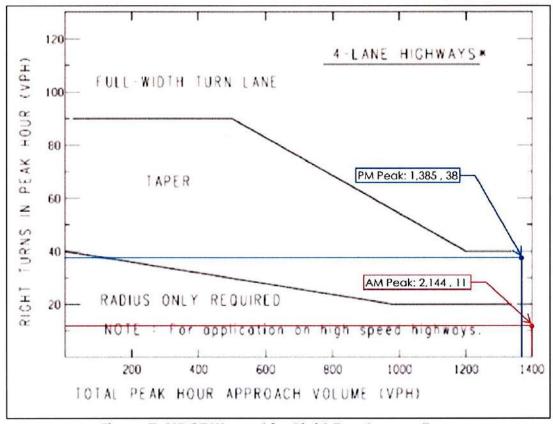


Figure 7: MDOT Warrant for Right-Turn Lane or Tape



Sight Distance Evaluation

Sight distance measurements were performed at the proposed development driveway locations along Lapeer Road in accordance with MDOT and the American Association of State Highway (AASHTO) latest Edition requirements. These measurements indicate that the available sight distance for motorists travelling along Lapeer Road approaching the development's driveways and for motorists exiting the proposed development exceeded the recommended minimum sight distance requirements for a 55 MPH approach speed.

Conclusion

The analysis results under existing conditions show that the study intersections exiting the crossovers currently operate at acceptable levels of service (LOS D or better), and are forecasted to continue to operate at acceptable levels. Therefore, the proposed development will have minimum impact on the roadway network adjacent to the site.

A right-turn lane warrant was conducted for the proposed development's entering driveway off SB Lapeer Road. The MDOT Traffic and Safety Note 604A was evaluated and resulted in a need for a right turn taper during the PM Peak.



Appendix A – Existing Data Collected

Lapeer Rd N Crossover Orion Twp Michigan Tuesday, April 19, 2022

	25										1	AM Peak	Hour												
	I		South	bound			l l		West	bound					North	bound			l		E astb	aund			
Time	U Turns	Left Turns	Straight Through	Right Turns	Crosswelk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Angroach	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Angenach	TOTAL
7:15 AM	0	0	484	0	0	484	0	0	0	0	0	0	15	0	294	0	0	309	0	0	0	0	0	0	793
7:30 AM	0	0	508	0	0	568	0	0	0	O	0	0	19	0	197	0	0	216	0	0	0	0	0	0	724
7:45 AM	0	0	590	0	0	590	0	0	C	0	0	0	11	0	227	0	0	238	0	0	0	0	0	0	828
8:00 AM	0	0	509	0	0	509	0	0	0	0	0	0	8	0	285	0	0	293	0	0	0	0	0	0	802
Peak Hour Total	0	0	2091	0	0	2091	- 0	. 0	0	0	0	0	53	0	10-03	0	0	1056	0	0	0	0	0	Q.	3147
PHF	0.000	0.000	0.886	0.000	0.000	0.886	0.000	0.000	0.000	0.000	0.000	0.000	0.697	0.000	0.853	0.000	0.000	0.854	0.000	0.000	0.000	0.000	0.000	0.000	0.950

	2										P	M Peak	Hour												
	l .		South	bound			ľ		West	bound			2000		North	bound			17		Easth	beund			1
Time	U Turns	Left Turns	Straight Through	Right Turns	Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswell Crossings	Angroach	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	VEHICLE
12:00 PM	0	0	D	0	0	0	0	D	0	0	0	9	0	0	0	O.	0	0	0	0	0	0	0	0	
12:15 PM	0	0	0	0	0	0	0	D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	n	0
12 30 PM	.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	a	
12.45 PM	0	0	0	0	0	0	0	D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	a	0
Peak Hour Total PHF	0 000	0.000	0.000	0.000	0.000	0.000	0.000	0 000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0 000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

	Total Ven	icles On Log	Lawrence 15	5859	
Vehicle Ir	s Enterior	93792		les Exiting reaction	2067
		Southb	ound		
Cors	0	3675	0	0	0
Heavy	0	1.17	0	0	0
Total	0	3792	0	0	0
	R	T	ι	U-TURN	PEC

	Vehicles		Cars	Heavy	Total		
Total	Entering Intersection		0	0	0	PED	
Vehicles on Leg	0	0.00	0	0	0	U-TURN	
0		Eastb	0	0	0	·	Daily Volumes
	Vehicles Exting Intersection		0	0	٥	1	
	0		0	0	0	R	

	Cars	Heavy	Total		Vehicles	
R	0	0	0		Entering Procesection	Total
т	0	0	0	West	0	Vehicles on Leg
i.	0	0	0	ithound	San verse	0
U TURN	0	0	•	10.751	Vehicles Exting Intersection	
PED	0	0	0		0	

	PED	U-TURN	L	T	F
Cars	0	98	0	1932	0
Heavy	0	0	0	135	- 0
Total	0	98	0	2067	0
100.000.00		Northb	ound		
Vehicle	os Enterin ntersection	2165		es Exiting section	3890
	Total Veh	icles On Leg		6055	

Lapeer Rd S Crossover Orion Twp Michigan Tuesday, April 19, 2022 AM Peak Hour

	1		South	bound					West	ound			1		North	bound			12		Eastb	ound			Section 1
Time	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Approach	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings		U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings		U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings		TOTAL
7.15 AM	0	0	484	0	0	484	0	0	0	0	0	0	0	D	294	0	0	294	0	0	0	0	0	0	778
7:30 AM	3	0	518	0	0	521	0	0	0	0	0	0	0	0	197	.0	0	197	0	0	0	D	0	0	718
7.45 AM	2	0	595	0	0	597	0	0	0	0	0	0	0	0	224	0	0	224	0	0	0	0	0	0	821
8 00 AM	3	0	515	0	0	518	0	0	0	0	0	0	0	0	283	0	0	283	0	0	0	0	0	0	801
Peak Hour Total	8	0	2112	.0	0	2120	0	0	0	0	0	0	0	0	998	0	0	998	0	0	0	0	0	e	3118
PHF	0.667	0.000	0.887	0.000	0.000	0.688	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.849	0.000	0.000	0.849	0.000	0.000	0.000	0.000	0.000	0.000	0.949
											F	M Peak I	Hour						25						20
			South	bound					West	ound					North	bound					Eastb	ound			1
Time	U Turns	Left Turns	Straight Through	Right Turns	Crosswelk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings		U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Torns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Fotal	TOTAL
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	o	0	0	0	0	0	0	0	0	0	D	0	0	0
				.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Q	0	0
12:15 PM	0	.0																							
12:15 PM	0	o	D	0	0	0	0	0	0	0	0	0	0	0	0	.0	0	0	0	0	0	0	n	0	
12:30 PM 12:45 PM	0	0	D D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0 0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

200000		ides On Leg	-9100	5951	
Vehicle	s Enterin	9 3865		les Exiting rsection	2086
		Southb	bnuc		
Cars	0	3733	0	18	0
Hoavy	0	114	0	0	0
Total	0	3847	0	18	0
	R	T	4	U-TURN	pe

	Vehicles		Cars	Heavy	Total		
Total	Entering Intersection		0	0		PED	
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	Vehicles Exting Intersection		0	0	0	1 1	
	0		9	0	0	R	

	Care	Неачу	Total		Vehicles	
R	0	0	0		Entering Intersection	Total
T	0	0	0	Westb	a	Vehicles on Leg
r.	0	0	0	90	Vehicles	0
U-TURN	0	0	0	12.77	Exting Extraction	
PEO	0	0	0		0	

Vehic	es Entering ntersection	2068		rs Exiting section	3847
-		Northbo			70
Total	0	0	0	2068	
Heavy	0	0	0	139	-
Cars	0	0	0	1929	(

Lapeer Rd N Crossover Orion Twp Michigan Tuesday, April 19, 2022 AM Peak Hour

	ı		South	SO DE CI					West	ound					North	bound			Eastbound						D
Time	U Turns	Left Turns	Streight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings		U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Annenach	TOTA
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12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	D	0	0	0	0	0	0	0	0	0	0	
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	a	0	
12:45 AM	0	0	0	0	0	0	0	0	0	D	0	0	0	0	0	0	0	0	. 0	0	0	0	0	0	
Peak Hour Total PHF	0.000	0.000	0.000	0.000	0.000	0,000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0 000	0.000
											P	M Peak I	lour												
			South	ound					West	bnuo			2,540,010		North	bound					Easth	ound			1
Time	U Turns	Left Turns	Straight Through	Right Turns	Crosswelk Crossings	Vehicle Approach Total	UTums	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Chrolelet	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straleht		Crosswalk Crossings		TOTAL
Time 4:00 PM	U Turns	Left Turns	Through 388	Right		Approach Total 388	U Turns	Left Turns				Approach	U Turns	Left Turns	Straight	Right		Approach	U Turns	Left Turns 0	Straight	Right			VEHICL TOTAL 584
1:00 PM 4:15 PM	U Turns 0 0	Left Turns 0 0	Through 388 322	Right		Approach Total 388 322	U Turns 0 0	Left Turns 0 0				Approach	U Turns 7 11	Left Turns 0 0	Straight Through	Right		Approach Total 496	U Turns 0 0	Left Turns 0 0	Straight	Right			VI. C. SELSELS
Time 4:00 PM	U Turns 0 0 0	Ceft Turns 0 0 0	Through 388	Right		Approach Total 388	U Turns 0 0	Left Turns 0 0 0				Approach	U Turns 7 11 9	Left Turns 0 0 0	Straight Through 489	Right		Approach Total 496 520	U Turns 0 0	Left Turns 0 0 0	Straight	Right			884 842
4:00 PM 4:15 PM 4:30 PM 4:45 PM	U Turns 0 0 0 0	Ceft Turns O O O O	Through 388 322	Right		Approach Total 388 322	U Turns 0 0 0 0 0	Contractions				Approach	V Turns 7 11 9 7	Left Turns 0 0 0	Straight Through 489 509	Right		Approach Total 496	0 Turns 0 0 0	Left Turns 0 0 0	Straight	Right			584
4:00 PM 4:15 PM 4:30 PM	U Turns 0 0 0 0 0	0 0 0 0 0	388 322 297	Right		Approach Teral 388 322 297	U Turns 0 0 0 0 0	0 0 0 0 0				Approach	U Turns 7 11 9 7	Left Turns 0 0 0 0	Straight Through 489 509 522	Right		Approach Total 496 520 531	0 0 0 0 0	Left Turns 0 0 0 0	Straight	Right			884 842 828

Vehicle	Total Veh s Enterin tersection	icles On Leg 9 2564		6585 les Exiting reaction	4121
		Southb	ound		
Cars	.0	2502	0	0	0
Heavy	D	62	0	0	0
Total	0	2564	0	0	0
	R	T	ı	U-TURN	PEC

Daily Volumes

	Vehicles		Cars	Heavy	Total	1
Total	Entering Intersection		0	0		PED
vehicles on Leg	c	Eastbound	0	0	0	U-TURN
0		Eath	0	٥		L
	Vehicles Exising Intersection		0	0	6	7
	0		0	0		R

- 1	Cars	Heavy	Total		Vehicles	
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т	0	0	0	West	0	Vehicles on Leg
L	0	0	0	etbound	Organia (0
U-TURN	U	0	9	- 72	Vehicles Exting Intersection	
PED	0	0	0	ř.	0	

	PED	U-TURN	t.	T	F
Cars	0	65	0	4053	
Heavy	0	0	0	68	. 0
Total	0	65	0	4121	0
		Northb	ound	distance of the	
Vahicle	es Entering	4186		as Exting section	2629
	Total Vehi	cles On Leg		6815	

Lapeer Rd S Crossover Orion Twp Michigan Tuesday, April 19, 2022 AM Peak Hour

	ı		South	bound					West	bound					North	bound			ı		Eastb	ound			
Time	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings		U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings		U Turns	Left Turns	Straight Through		Crosswalk Crossings		
12:00 AM	0	0	0	0	0	0	0	0	.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Total	0	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2						2				F	M Peak I	lour						277						2
	1		South	bound					West	bound					North	bound			1		Eastb	ound			
Time	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	Vehicle Approach Total	U Tums	Left Turns	Straight Through	Right Turns	Crosswalk Crossings		U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings		U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings		VEHICL
4:45 PM	3	O	339	U	0	342	0	0	0	0	0	0	0	0	563	0	0	563	0	0	0	0	0	0	905
5:00 P.M	3	0	337	C	0	340	0	O	0	0	0	0	0	0	499	0	0	499	0	0	0	0	0	0	839
5:15 PM	3	0	296	0	0	299	0	α	0	0	0	0	0	0	56.5	0	0	565	0	0	0	0	0	0	864
5:30 PM	4	0	310	0	0	314	0	0	0	0	0	0	0	0	583	0	0	593	0	0	0	0	0	0	897
Peak Hour Total	13	0	1282	0	0	1295	- 0	0	0	0	. 0	- 6	0	0	2210	0	0	2210	0	0	0.	0	0	0	3505
PHF		0.000	0.945	0.000		0.947	0.000	0.000		0.000	0.000		0.000	0.000				0.948						0.000	0.968

	Total Veh	ides On Leg		6892	
Vehicle	s Enterin	2544		s Exiting section	4248
Lecondo o		Southb	ound		
Cars	D	2555	0	29	1 0
leavy	.0	60	0	0	1 0
Total	0	2615	0	29	- 0

Daily Volumes

	O G Kinhara		Cars	Heavy	Total	TO DESCRIPT
Total	Vehicles Entering Intersection		0	0		PED
Vehicles on Leg	0	puno	0	0	0	U-TURN
0	Vehicles	Eastbound	0	0	0	I,
	Exting Intersection		0	0	0	Т
	0		0	0		R

- 1	Cars	Heavy	Total		Vetricles	
R	0	.0	0		Entering Intersection	Total
T	0	0	0	West	o	Vehicles on Leg
ı	0	0	0	Westbound		0
LTURN	0	0	0	70	Vehicles Extreg Prossection	
PED	0	0	0		0	

	PED	U-TURN	L	T	R
Cars	0	0	0	4148	0
Heavy	0	- 0	0	71	.0
Total	0	0	0	4219	0
		Northb			
Vahicle In	s Enterin tersection	94219		es Exting section	2615
	Total Veh	icles On Leg		6834	

	1	•	†	1	1	1
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	ሻሻ				THE REAL PROPERTY.	^
Traffic Volume (veh/h)	53	0	0	0	0	2091
Future Volume (Veh/h)	53	0	0	0	0	2091
Sign Control	Stop	MATINES	Free	E-174 (571)		Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	0	0	0	0	2273
Pedestrians	Time Killer		- TIME			TO SERVICE
Lane Width (ft)						DARGERIO DE TESTE MICHI
Walking Speed (ft/s)						
Percent Blockage						CONTRACTOR AND ADDRESS OF THE PERSON AND ADD
Right turn flare (veh)						MANUAL PROPERTY.
Median type	Service of the sail	ALEKS SELECTS	None	ORAL SACRETARIAN		None
Median storage veh)						
Upstream signal (ft)	NA SEE SAN SAN SAN				PARCE AND PROCESS	CONTRACTOR OF STREET
pX, platoon unblocked			NUMBER OF STREET	3 143 144		
vC, conflicting volume	1136	0		NECESSAL INVOLUTION	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol	AND DESCRIPTION OF THE PARTY OF				a Secretary County	
vCu, unblocked vol	1136	0			0	THE REAL PROPERTY.
tC, single (s)	6.8	6.9			4.1	The second second
tC, 2 stage (s)	NAME OF STREET	DESCRIPTION OF RES			NA POYSTAN	PARK DASH
tF (s)	3.5	3.3		ACTIVIDATION OF	2.2	
p0 queue free %	70	100		NAME OF STREET	100	E) NSELS
cM capacity (veh/h)	196	1084		HAMME AND	1622	HEALTH AND SHOP
AND THE RESERVE OF THE PARTY OF					TOZZ	THE PERSON NAMED IN
Direction, Lane #	WB 1	WB 2	SB 1	SB 2		MILETA
Volume Total	29	29	1136	1136	MANAGEMENT OF THE PARTY OF THE	
Volume Left	29	29	0	0		
Volume Right	0	0	0	0	DE CONTRACT	
cSH	196	196	1700	1700		
Volume to Capacity	0.15	0.15	0.67	0.67		
Queue Length 95th (ft)	13	13	0	0		
Control Delay (s)	26.6	26.6	0.0	0.0		
Lane LOS	D	D	WHEN			
Approach Delay (s)	26.6		0.0			
Approach LOS	D		10. 2. 4. 4.			
Intersection Summary						
Average Delay			0.7	TOTAL SERVICE		5.
Intersection Capacity Utiliz	ation	1000000	92.2%	IC	U Level	of Service
Analysis Period (min)			15	PARTY N		(c) (lond)
malysis renou (IIIII)	SALES OF THE SALES		10	STATE OF STREET	Manager 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SHAPP WATER

AM Existing Synchro 11 Report Page 2

Cane Configurations		*	†	ţ	لر	*	4
Cane Configurations	Movement	NBL	NBT	SBT	SBR	NEL	NER
Traffic Volume (veh/h) 0 998 0 0 8 0 Future Volume (Veh/h) 0 998 0 0 8 0 Sign Control Free Free Stop Grade 0 0% 0% 0% 0% Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 Hourly flow rate (vph) 0 1085 0 9 0 Pedestrians -ane Width (ft) Walking Speed (ft/s) Percent Blockage Right turn flare (veh) Median type None None Median storage veh) Upstream signal (ft) XX, platoon unblocked CC, conflicting volume 0 542 0 CC, single (s) 4.1 6.8 6.9 CC, sitage 2 conf vol CC, sitage 3 5.3 3.3 Dqueue free % 100 98 100 EM capacity (veh/h) 1622 3.5 3.3 Direction, Lane # NB 1 NB 2 NE 1 NE 2 Volume Total 542 542 4 Volume Left 0 0 4 4 Volume Right 0 0 0 0 SSH 1700 1700 470 Volume Right 0 0 0 0 Colume to Capacity 0.32 0.32 0.01 0.01 Queue Length 95th (ft) 0 0 1 1 Control Delay (s) 0.0 12.7 Approach LOS B Intersection Summary Average Delay Intersection Summary Average Delay Intersection Capacity Utilization To 0 98 0 To 0 8	Bellinder Harrison and Company of the Company of th	A CONTRACT OF STREET STREET, S				The second second	
Future Volume (Veh/h) 0 998 0 0 8 0 Sign Control Free Free Stop Grade 0% 0% 0% 0% Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 Pedestrians Lane Width (ft) Walking Speed (ft/s) Percent Blockage Right turn flare (veh) Median type None None Median storage veh) Upstream signal (ft) DX, platoon unblocked CC, conflicting volume 0 542 0 CC1, stage 1 conf vol CC2, stage 2 conf vol CC3, stage 2 conf vol CC4, stage 1 conf vol CC5, stage (s) F (s) 2.2 3.5 3.3 D0 queue free % 100 98 100 EM capacity (veh/h) 1622 470 1084 Direction, Lane NB 1 NB 2 NE 1 NE 2 Volume Total 542 542 4 4 Volume Total 542 542 4 4 Volume Total 0 0 0 4 Volume Right 0 0 0 0 SSH 1700 1700 470 470 Volume Left 0 0 0 4 Volume Right 0 0 0 0 SSH 1700 1700 470 470 Volume to Capacity 0.32 0.32 0.01 0.01 Queue Length 95th (ft) 0 0 1 1 Control Delay (s) 0.0 12.7 Approach LOS B ICU Level of Service ICU Level of Service ICU Level of Service		0		0	0		0
Sign Control Free Free Stop							
Caracle		Harry Market Parket		The second secon	ISANGE IN		TO SERVE OF
Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92							
Hourly flow rate (vph) 0 1085 0 0 9 0 Pedestrians ane Width (ft) Walking Speed (ft/s) Percent Blockage Right turn flare (veh) Median type None None Median storage veh) Upstream signal (ft) DX, platoon unblocked CC, conflicting volume 0 542 0 CC1, stage 1 conf vol CC2, stage 2 conf vol CC3, stage (s) F (s) 2.2 3.5 3.3 D0 queue free % 100 98 100 EM capacity (veh/h) 1622 470 1084 Direction, Lane # NB 1 NB 2 NE 1 NE 2 Volume Total 542 542 4 4 Volume Right 0 0 0 0 CSH 1700 1700 470 470 Volume Right 0 0 0 1 1 Control Delay (s) 0.0 0.12.7 Approach Dolay Approach Dolay Intersection Summary Average Delay Intersection Capacity Utilization 37.8% ICU Level of Service		0.92			0.92		0.92
Pedestrians Lane Width (ft) Walking Speed (ft/s) Percent Blockage Right turn flare (veh) Median type Median storage veh) Jpstream signal (ft) XX, platoon unblocked /C, conflicting volume	FILL THE PACKAGE IN MITTHEW STATES AND A STATE OF THE SECOND STATES AND A STATES AND A STATE OF THE SECOND STATES AND A STATES AND					FIRE CONTRACTOR TO BE	
Anne Width (ft) Walking Speed (ft/s) Percent Blockage Right turn flare (veh) Median type None None None None None Median type None None Median storage veh) Dystream signal (ft) DX, platoon unblocked CC, conflicting volume CC, stage 1 conf vol CC2, stage 2 conf vol CC, unblocked vol CC, single (s) C, 2 stage (s) F (s) 2.2 3.5 D0 queue free % 100 98 100 D10 D10 D10 D10 D10 D10 D1		KENTHAKEN IN	MARINE	SAMOUNE			
Walking Speed (ft/s) Percent Blockage Right turn flare (veh) Median type None None Median storage veh) Jpstream signal (ft) DX, platoon unblocked VC, conflicting volume (C1, stage 1 conf vol VC2, stage 2 conf vol VC2, stage 2 conf vol VC2, stage 2 conf vol VC3, stage 2 conf vol VC4, unblocked vol 0 542 0 C, single (s) 4.1 6.8 6.9 C, 2 stage (s) F (s) 2.2 3.5 3.3 D0 queue free % 100 98 100 EM capacity (veh/h) 1622 470 1084 Direction, Lane # NB 1 NB 2 NE 1 NE 2 Volume Total 542 542 4 4 4 Volume Left 0 0 4 4 4 4 Volume Right 0 0 0 0 0 SH 1700 1700 470 470 470 Volume to Capacity 0.32 0.32 0.01 0.01 Queue Length 95th (ft) 0 0 1 1 1 Control Delay (s) 0.0 0.0 12.7 12.7 Lane LOS B B Approach LOS B ICU Level of Service				KIN STANSON			10-12-7/1-2/2-2
Percent Blockage Right turn flare (veh) Median type Median storage veh) Upstream signal (ft) NX, platoon unblocked VC, conflicting volume VC1, stage 1 conf vol VC2, stage 2 conf vol VC2, stage 2 conf vol VC2, stage (s) F (s)							
Right turn flare (veh) Median type		DOMESTIC OF THE PERSON NAMED IN COLUMN	ATMINE SALES	POTON ENGINE	NAME OF TAXABLE		
Median type None None Median storage veh) Upstream signal (ft) DX, platoon unblocked CC, conflicting volume 0 542 0 CC1, stage 1 conf vol CC2, stage 2 conf vol CC3, stage 2 conf vol CC4, unblocked vol 0 542 0 CC5, 2 stage (s) F (s) 2.2 3.5 3.3 D0 queue free % 100 98 100 EM capacity (veh/h) 1622 470 1084 Direction, Lane # NB 1 NB 2 NE 1 NE 2 Volume Total 542 542 4 4 Volume Left 0 0 4 4 Volume Right 0 0 0 0 SSH 1700 1700 470 470 Volume to Capacity 0.32 0.32 0.01 0.01 Queue Length 95th (ft) 0 0 1 1 Control Delay (s) 0.0 0.0 12.7 12.7 Lane LOS B B Approach Delay (s) 0.0 12.7 Approach LOS B Intersection Summary Average Delay ntersection Capacity Utilization 37.8% ICU Level of Service		THE CHEST					ESTABLISMENT I
Median storage veh) Upstream signal (ft) OX, platoon unblocked CC, conflicting volume CC2, stage 1 conf vol CC2, stage 2 conf vol CC3, single (s) CC4, stage (s) F (s) CC5, stage (s) F (s) CC6, stage (s) F (s) CC7, stage 1, stage (s) F (s) CC7, stage 2, stage (s) F (s) CC7, stage 1, stage (s) F (s) CC7, stage 2, stage (s) F (s) CC7, stage 2, stage (s) F (s) CC7, stage 2, stage (s) F (s) CC8, stage 2, stage (s) F (s) CC9, stage 2, sta			None	None			
Description		essayer avete	NOHE	None	HALLOWSHIS IN		
bX, platoon unblocked 60, conflicting volume 0 542 0 CC1, stage 1 conf vol CC2, stage 2 conf vol CC2, stage 2 conf vol CC2, stage 2 conf vol CC2, stage (s) 542 0 CC, single (s) 4.1 6.8 6.9 0 6.8 6.9 C, 2 stage (s) F (s) 2.2 3.5 3.3 3.0 3.3 3.0 3.0 3.0 3.3 3.0 3.0 3.3 3.0 3.0 3.0 3.3 3.3 3.3 3.0 3.0 3.3 3.3 3.0 3.0 3.0 3.3 3.3 3.0 3.0 3.3 3.0 3.0 3.3 3.3 3.0 3.0 3.3 3.0 3.3 3.3 3.0 3.0 3.3 3.3 3.3 3.3 3.0 3.0 3.0 3.8 4.0 <t< td=""><td></td><td></td><td></td><td>REPORTED IN</td><td></td><td></td><td></td></t<>				REPORTED IN			
/C, conflicting volume 0 542 0 //C1, stage 1 conf vol //C2, stage 2 conf vol //C2, stage 2 conf vol //C3, stage 2 conf vol //C4, unblocked vol 0 542 0 //C5, single (s) 4.1 6.8 6.9 //C6, 2 stage (s) //C7, conflicting volume 1 6.8 6.9 //C8, stage 2 0 0.3 5.3 3.3 //C8, stage (s) //C8, stage 2 0 0.0 98 100 //C8, stage 2 0.3.5 3.3 //C8, stage 2 0.3 //C9, stage							
/C1, stage 1 conf vol /C2, stage 2 conf vol /C2, stage 2 conf vol /C2, stage 2 conf vol /C2, stage (s) C, single (s) C, 2 stage (s) F (s) C, 2 stage (s)						E42	
## C2, stage 2 conf vol ## C2, unblocked vol				EDWINNES	NAME OF STREET	342	
Cu, unblocked vol 0 542 0 C, single (s) 4.1 6.8 6.9 C, 2 stage (s) F (s) 2.2 3.5 3.3 D queue free % 100 98 100 CM capacity (veh/h) 1622 470 1084 Direction, Lane # NB 1 NB 2 NE 1 NE 2 Volume Total 542 542 4 4 Volume Left 0 0 4 4 Volume Right 0 0 0 0 CSH 1700 1700 470 470 Volume to Capacity 0.32 0.32 0.01 0.01 Queue Length 95th (ft) 0 0 1 1 Control Delay (s) 0.0 0.0 12.7 12.7 Lane LOS B B Approach Delay (s) 0.0 12.7 Approach LOS B Intersection Summary Average Delay Intersection Capacity Utilization 37.8% ICU Level of Service		Control of the Control			DESCRIPTION		
C, single (s) 4.1 6.8 6.9 C, 2 stage (s) F (s) 2.2 3.5 3.3 D queue free % 100 98 100 CM capacity (veh/h) 1622 470 1084 Direction, Lane # NB 1 NB 2 NE 1 NE 2 Volume Total 542 542 4 4 Volume Right 0 0 0 4 4 Volume Right 0 0 0 0 0 CSH 1700 1700 470 470 Volume to Capacity 0.32 0.32 0.01 0.01 Queue Length 95th (ft) 0 0 1 1 Control Delay (s) 0.0 0.0 12.7 12.7 Lane LOS B B Approach Delay (s) 0.0 12.7 Approach LOS Intersection Summary Average Delay Intersection Capacity Utilization 37.8% ICU Level of Service		0	STEEL STEEL			E40	0
C, 2 stage (s) F (s)				RESERVE HEAVE			
F (s)		4.1	ON THE REAL PROPERTY.	non-existent	DAMATIC BLAND	0.8	0.9
100				(1)			
Marcapacity (veh/h) 1622 470 1084					(Beasivalation of		
Direction, Lane # NB 1 NB 2 NE 1 NE 2						and the second second	
Volume Total 542 542 4 4 Volume Left 0 0 4 4 Volume Right 0 0 0 0 SH 1700 1700 470 470 Volume to Capacity 0.32 0.32 0.01 0.01 Queue Length 95th (ft) 0 0 1 1 Control Delay (s) 0.0 0.0 12.7 12.7 Lane LOS B B B Approach Delay (s) 0.0 12.7 12.7 Approach LOS B B 1.7 Average Delay 0.1 1 1.0 Average Delay 0.1 1.0 1.0 1.0 Average Delay 0.1 1.0 1.0 1.0 1.0 1.0 Average Delay 0.1 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 </td <td>cM capacity (veh/h)</td> <td>1622</td> <td></td> <td></td> <td></td> <td>470</td> <td>1084</td>	cM capacity (veh/h)	1622				470	1084
Volume Left 0 0 4 4 Volume Right 0 0 0 0 SH 1700 1700 470 470 Volume to Capacity 0.32 0.32 0.01 0.01 Queue Length 95th (ft) 0 0 1 1 Control Delay (s) 0.0 0.0 12.7 12.7 Approach Delay (s) 0.0 12.7 12.7 Approach LOS B B Intersection Summary Average Delay 0.1 1 ntersection Capacity Utilization 37.8% ICU Level of Service	Direction, Lane #	the same of the sa	THE PARTY NAMED IN COLUMN			A Story	
Volume Right 0 0 0 0 CSH 1700 1700 470 470 Volume to Capacity 0.32 0.32 0.01 0.01 Queue Length 95th (ft) 0 0 1 1 Control Delay (s) 0.0 0.0 12.7 12.7 Lane LOS B B Approach Delay (s) 0.0 12.7 Approach LOS B B Intersection Summary Average Delay 0.1 Intersection Capacity Utilization 37.8% ICU Level of Service							
SSH	NO CAME AND ADDRESS OF SAME AND ADDRESS OF THE PARTY OF T	0	STATE OF THE PERSON NAMED IN	4	4		
Volume to Capacity 0.32 0.32 0.01 0.01 Queue Length 95th (ft) 0 0 1 1 Control Delay (s) 0.0 0.0 12.7 12.7 Lane LOS B B B Approach Delay (s) 0.0 12.7 Approach LOS B B Intersection Summary Average Delay 0.1 Intersection Capacity Utilization 37.8% ICU Level of Service	Volume Right						
Queue Length 95th (ft) 0 0 1 1 Control Delay (s) 0.0 0.0 12.7 12.7 Lane LOS B B Approach Delay (s) 0.0 12.7 Approach LOS B B Intersection Summary Average Delay 0.1 Intersection Capacity Utilization 37.8% ICU Level of Service	cSH	1700	1700	470	470		
Control Delay (s) 0.0 0.0 12.7 12.7 Lane LOS B B Approach Delay (s) 0.0 12.7 Approach LOS B Intersection Summary Average Delay 0.1 Intersection Capacity Utilization 37.8% ICU Level of Service	Volume to Capacity	0.32	0.32	0.01	0.01		
Lane LOS B B Approach Delay (s) 0.0 12.7 Approach LOS B Intersection Summary Average Delay 0.1 Intersection Capacity Utilization 37.8% ICU Level of Service	Queue Length 95th (ft)	0	0	1	1		
Approach Delay (s) 0.0 12.7 Approach LOS B Intersection Summary Average Delay 0.1 Intersection Capacity Utilization 37.8% ICU Level of Service	Control Delay (s)	0.0	0.0	12.7	12.7		
Approach Delay (s) 0.0 12.7 Approach LOS B Intersection Summary Average Delay 0.1 Intersection Capacity Utilization 37.8% ICU Level of Service	Lane LOS			В	В		
Approach LOS B Intersection Summary Average Delay 0.1 Intersection Capacity Utilization 37.8% ICU Level of Service	Approach Delay (s)	0.0					
Average Delay 0.1 ntersection Capacity Utilization 37.8% ICU Level of Service	Approach LOS	A SECTION OF SECTION O		В	YEAR AND		
ntersection Capacity Utilization 37.8% ICU Level of Service	Intersection Summary						
ntersection Capacity Utilization 37.8% ICU Level of Service	Average Delay			0.1			
		ation	THE PARTY OF THE P		IC	U Level	of Service
Alidivsis reliou (IIIIII)	Analysis Period (min)		0.33,003	15		Yes Ma	

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	1		†	-	1	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	77					^
Traffic Volume (veh/h)	34	0	0	0	0	1351
Future Volume (Veh/h)	34	0	0	0	0	1351
Sign Control	Stop		Free		LESSON OF THE PARTY.	Free
Grade	0%		0%	Scattle and a second		0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	0.52	0.32	0.52	0.52	1468
Pedestrians			SERVICE CON			1400
Lane Width (ft)		WALESTAN	AND AND SHOPE			
Walking Speed (ft/s)		S SAFERON				
Percent Blockage		EPSIGNET				
	A ACTOR AZAGONICO	ODGER SALES				nine data da a
Right turn flare (veh)		AREA WA	Alama			REPORTER
Median type	V/5//279Th 075 V/9		None			None
Median storage veh)						
Upstream signal (ft)	CHEHALAMAN	NAZAMALIA (SIS)	atransas min			
pX, platoon unblocked						
vC, conflicting volume	734	0			0	CONTRACTOR MANAGEMENT
vC1, stage 1 conf vol						English Salah
vC2, stage 2 conf vol	and the second	- The second second				
vCu, unblocked vol	734	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	100			100	
cM capacity (veh/h)	355	1084			1622	
Direction, Lane #	WB 1	WB 2	SB 1	SB 2		
Volume Total	18	18	734	734		
Volume Left	18	18	0	0		
Volume Right	0	0	0	0		
cSH	355	355	1700	1700		
Volume to Capacity	0.05	0.05	0.43	0.43		A STATE OF THE PARTY OF THE PAR
Queue Length 95th (ft)	4	4	0	0		
Control Delay (s)	15.7	15.7	0.0	0.0	CHICAS-SCOROSSIO	PRIVATE STATES AND THE
Lane LOS	С	C				
Approach Delay (s)	15.7	A PORTUGUES OF	0.0	CAPTARENTE		MANUSCRIPTORS
Approach LOS	C			Water State	BANKE	
E T T T T T T T T T T T T T T T T T T T					DEVELOPMENT	English kanting
Intersection Summary						
Average Delay			0.4	DI ROMA	MATERIAL PROPERTY.	PART OF THE
Intersection Capacity Utiliza	tion	TOTAL STREET,	101.4%	IC	U Level	of Service
Analysis Period (min)			15			

Synchro 11 Report Page 2 PM Existing

	4	†	↓	لر	*	4
Movement	NBL.	NBT	SBT	SBR	NEL	NER
Lane Configurations		^			14.14	
Traffic Volume (veh/h)	0	2210	0	0	13	0
Future Volume (Veh/h)	0	2210	0	0	13	0
Sign Control	ore product	Free	Free		Stop	
Grade	SECTION AND DESCRIPTION OF THE PARTY OF THE	0%	0%	MONEGO (OTA	0%	Mariner III
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2402	0.02	0.02	14	0
Pedestrians	MANAGAMAN	NAME OF TAXABLE PARTY.				Shalal liter
Lane Width (ft)	MILLIAN PROPERTY OF					
Walking Speed (ft/s)						
Percent Blockage	SULFAMILIE SUCH	DATE OF THE PARTY				MANAGEMENT
Right turn flare (veh)		estimate and the				
Median type		None	None			
		None	None		STEWN STATEMEN	
Median storage veh)						
Upstream signal (ft)	Managara da Ma		STATE OF STATE OF			
pX, platoon unblocked			Mark Const.		4004	ENTERNA .
vC, conflicting volume	0		GOSTON ANNA STATE		1201	0
vC1, stage 1 conf vol	AUGUST CONTRACTOR	Part of the last	MERITA			
vC2, stage 2 conf vol	rauter en en en en	MARKET AND L	TOTAL PARTY ON THE	ORIGINAL PROPERTY.	1001	
vCu, unblocked vol	0			alle the Vo	1201	0
tC, single (s)	4.1	CHEMINATURE CANAL			6.8	6.9
tC, 2 stage (s)					KANG LA	ARREST LEASE.
tF(s)	2.2	Vaccoustantianos	ADDITION DE BARROSS AL		3.5	3.3
p0 queue free %	100				92	100
cM capacity (veh/h)	1622				177	1084
Direction, Lane #	NB 1	NB 2	NE 1	NE 2		
Volume Total	1201	1201	7	7		
Volume Left	0	0	7	7		
Volume Right	0	0	0	0		
cSH	1700	1700	177	177		
Volume to Capacity	0.71	0.71	0.04	0.04		
Queue Length 95th (ft)	0	0	3	3		
Control Delay (s)	0.0	0.0	26.1	26.1		
Lane LOS	nicke with the said	THE STATE	D	D		达沙里 龙
Approach Delay (s)	0.0		26.1			
Approach LOS			D		i File	
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utiliz	zation	THE PERSON NAMED IN	103.2%	IC	U Level	of Service
Analysis Period (min)			15		WILLIAM STATE	W. Markey

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Appendix B – Trip Generation

Multifamily Housing (Low-Rise)

Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 59

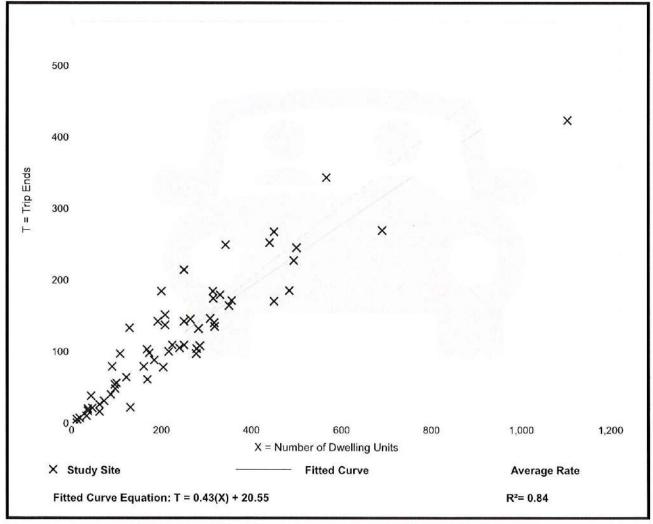
Avg. Num. of Dwelling Units: 241

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation	
0.51	0.08 - 1.04	0.15	

Data Plot and Equation



Trip Gen Manual, 11th Edition

Institute of Transportation Engineers

Multifamily Housing (Low-Rise)

Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 49

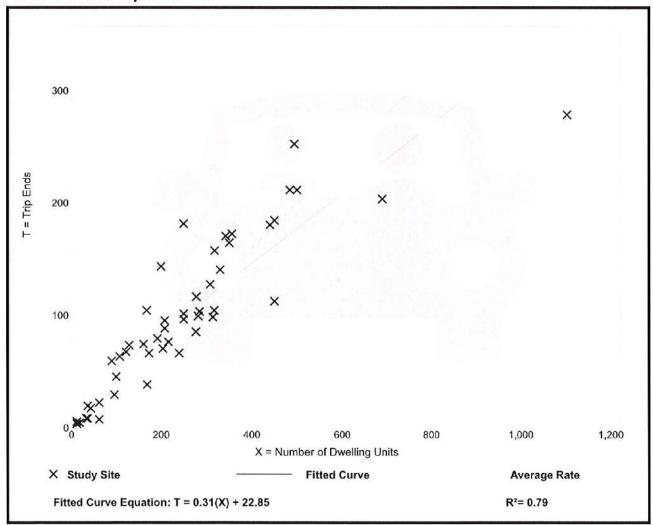
Avg. Num. of Dwelling Units: 249

Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



Trip Gen Manual, 11th Edition

Institute of Transportation Engineers



Appendix C - Build Condition Level of Service

	•	•	1	-	1	Ţ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1/4					^
Traffic Volume (veh/h)	56	0	0	0	0	2099
Future Volume (Veh/h)	56	0	0	0	0	2099
Sign Control	Stop	STATE IN	Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	0	0	0	0	2282
Pedestrians				glede Elisa	MANUSH	
Lane Width (ft)	CONTRACTOR OF STREET					AND DESCRIPTION OF STREET
Walking Speed (ft/s)			WART A			
Percent Blockage		WATER STREET	NAME OF STREET	SEL PROPERTY.	34 A 19 A 1	S S S S S S S S S S S S S S S S S S S
Right turn flare (veh)			A Telephone	SERVICE		
Median type			None		and the same	None
Median storage veh)		THE ROLL	NOTE			NOTE
Upstream signal (ft)				APACH SAND		
pX, platoon unblocked						
vC, conflicting volume	1141	0		TENNENS IN	0	
	1141	EVALUATION OF	ENGINEEZ A		MARKET AV	Lowers
vC1, stage 1 conf vol	WAR PER S					
vC2, stage 2 conf vol	4444	0			0	NUMBER SAN
vCu, unblocked vol	1141	0		MAKE NO	0	ALCOHOLD STATE
tC, single (s)	6.8	6.9	and the same	SOURSHIP	4.1	
tC, 2 stage (s)		2.0		September 11	0.0	
tF(s)	3.5	3.3	What Have reading	ewatera and man	2.2	STOCKED STOCKED
p0 queue free %	69	100			100	
cM capacity (veh/h)	194	1084			1622	
Direction, Lane #	WB 1	WB 2	SB 1	SB 2		
Volume Total	30	30	1141	1141		
Volume Left	30	30	0	0		
Volume Right	0	0	0	0		
cSH	194	194	1700	1700		
Volume to Capacity	0.16	0.16	0.67	0.67		
Queue Length 95th (ft)	14	14	0	0		
Control Delay (s)	27.0	27.0	0.0	0.0	O) ALL LOW OF THE OWNER, THE OWNE	1
Lane LOS	D	D	uva tia		To the state of	
Approach Delay (s)	27.0	HINE LINE	0.0	CHIAN STREET,	SAN LINE BOOK	III CONTRACTOR IN CONTRACTOR I
Approach LOS	D					
Intersection Summary						
Average Delay	27 62 83		0.7		VET GO LAN	
Intersection Capacity Utiliza	ation		92.8%	IC	U Level	of Service
Analysis Period (min)			15	H-Strain	MELTIN	

Synchro 11 Report Page 2 AM Build

	*	†	↓	لر	*	4
Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		44	THE STATE OF		77	The sales of the little
Traffic Volume (veh/h)	0	1001	0	0	21	0
Future Volume (Veh/h)	0	1001	0	0	21	0
Sign Control		Free	Free		Stop	Maria de la compansión de
Grade		0%	0%	INDERSORATION OF THE PERSON NAMED IN	0%	AND REAL PROPERTY SECURITY
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1088	0	0	23	0
Pedestrians	Supra Labora		REFIGUER			
Lane Width (ft)		UIVS-CASESACARII				
Walking Speed (ft/s)						
Percent Blockage	NA COLUMN DESCRIPTION DE LA COLUMN DE LA COL	MARK TO PE				
Right turn flare (veh)				HISTORY		
Median type		None	None		CONTRACTOR	
Median storage veh)		THORSE STATES	STATE OF THE STATE			
Upstream signal (ft)			Table day			
pX, platoon unblocked			SATURDAY OF	TATAL SE		
vC, conflicting volume	0		AND DECEMBER	SHARBOWING	544	0
vC1, stage 1 conf vol	Ole Control of the Control of the	ROW HAD				THE STATE OF THE S
vC2, stage 2 conf vol	HE FOR LINES BY					
vCu, unblocked vol	0				544	0
tC, single (s)	4.1		District Annual Assets of		6.8	6.9
tC, 2 stage (s)	NIVAYARISHISLARIS	MATERIAL DESIGNATION OF THE PARTY OF THE PAR	LATE VALUE OF STREET		0.0	0.9
tF(s)	2.2				3.5	3.3
p0 queue free %	100	DINE AUG	IN AUTO CONTRACT		95	100
cM capacity (veh/h)	1622	OF MAN HOUSE	MATERIAL SAL		469	1084
	100 - 100 - 100	THE RESERVE OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN	terminative state of the state of		409	1004
Direction, Lane #	NB 1	NB 2	NE 1	NE 2		
Volume Total	544	544	12	12	PORTON PORT	THE PERSON NAMED IN COLUMN
Volume Left	0	0	12	12		
Volume Right	0	0	0	0	NOW OF PROPERTY.	vanders make make
cSH	1700	1700	469	469		
Volume to Capacity	0.32	0.32	0.02	0.02		
Queue Length 95th (ft)	0	0	2	2		
Control Delay (s)	0.0	0.0	12.9	12.9		
Lane LOS			В	В		
Approach Delay (s)	0.0		12.9		On the second	
Approach LOS			В			
Intersection Summary				注题 提集等		
Average Delay		(explicit final	0.3			200.30
Intersection Capacity Uti	lization	154745 All The Principle	38.3%	IC	U Level	of Service
Analysis Period (min)			15		THE REAL PROPERTY.	RESERVATION OF
maryolo i Gilou (iliili)			10	SENIOR SEST		TURNS SAIRS

AM Build Synchro 11 Report Page 4

	•	*	1	†	↓	1
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		7			44	
Traffic Volume (veh/h)	0	35	0	0	2144	0
Future Volume (Veh/h)	0	35	0	0	2144	0
Sign Control	Stop		HOSE SERVICE	Free	Free	
Grade	0%		A CONTRACTOR	0%	0%	NAME OF TAXABLE PARTY OF TAXABLE PARTY.
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	38	0	0	2330	0
Pedestrians		MARKA MARK			ENGINEERING PORT	
Lane Width (ft)		DED SERVICES				
Walking Speed (ft/s)						
Percent Blockage	Company of the State of the Sta	PUNCTURE	COLUMN TO SERVICE SERV	AND A COLUMN TO THE ACCOUNT OF THE A	ON THE PERSON NAMED IN	
Right turn flare (veh)					Artin Swall	
Median type				None	None	
Median storage veh)	DASIGNATIVE SALES	toration and		NOILE	None	ESSELLA DELL'A LE
				HASAMA ENT	122	
Upstream signal (ft)		PERMIT	CONTRACTOR OF THE PARTY OF THE	ALE RECORDER	122	DUSTANDONIA
pX, platoon unblocked	2220	1405	2220			
vC, conflicting volume	2330	1165	2330			STUDIO PARAGRAM
vC1, stage 1 conf vol			Marie Sand			
vC2, stage 2 conf vol	0000	4405	0000	SOLATIONS	SATES CONTRACTOR	out of the Alana
vCu, unblocked vol	2330	1165	2330			
tC, single (s)	6.8	6.9	4.1	NAMES OF BRIDE	STATE STATE OF	MANUFUL MANUFU
tC, 2 stage (s)		到短短眼		PERMIT		
tF(s)	3.5	3.3	2.2		TO CAN AREA	
p0 queue free %	100	80	100			
cM capacity (veh/h)	31	187	210			
Direction, Lane #	EB 1	SB 1	SB 2	STAGE.		
Volume Total	38	1165	1165			
Volume Left	0	0	0			
Volume Right	38	0	0			
cSH	187	1700	1700			
Volume to Capacity	0.20	0.69	0.69			
Queue Length 95th (ft)	18	0	0			WASTER LE
Control Delay (s)	29.1	0.0	0.0			ACCOUNT NAME OF THE PARTY OF TH
Lane LOS	D	SELECTION OF THE PERSON OF THE	PAGE 1			scending states
Approach Delay (s)	29.1	0.0	The state of the s	- Company	THE REAL PROPERTY AND ADDRESS OF THE PARTY AND	
Approach LOS	D					
Intersection Summary		113.346			Selection of	
Average Delay		N ave	0.5			
Intersection Capacity Utiliz	ation	and the second	69.3%	10	CU Level	of Service
Analysis Period (min)	NEW YORK		15			A STATE OF THE REAL PROPERTY.
maiyaa renou (IIIII)	No level and the		10	A CONTRACTOR OF STREET		

Synchro 11 Report Page 5 AM Build

Section 1	•	1	1	1	1	ţ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1/4	The second second second		The state of the s	A CONTRACTOR OF STREET	^
Traffic Volume (veh/h)	58	0	0	0	0	1365
Future Volume (Veh/h)	58	0	0	0	0	1365
Sign Control	Stop		Free	REMOUNTED	CHANGE OF	Free
Grade	0%	AND REPORT OF THE PERSON	0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	63	0	0	0	0	1484
Pedestrians		REPRESENTATION OF THE PERSON O				
Lane Width (ft)					HE STATE OF	
Walking Speed (ft/s)						
Percent Blockage	MCKING SELECT		SECURE AND DESCRIPTION OF THE PERSON OF THE			District Co.
Right turn flare (veh)			EAST NEEDS			
Median type			None	HE WALLS	SPINE CIL	None
Median storage veh)		BELEVIA SELECTION	None			None
Upstream signal (ft)		AND DESCRIPTION				
		REAL PROPERTY.				HALFALINI SAYAL
pX, platoon unblocked	740	0			0	
vC, conflicting volume	742	0	PRODUCTION OF THE	SAN AND SERVICE	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol	710		NAME OF TAXABLE PARTY.			SPECIMENTS OF THE PARTY OF THE
vCu, unblocked vol	742	0			0	
tC, single (s)	6.8	6.9	review of the contract of the	and the same of th	4.1	
tC, 2 stage (s)	MARKET SAN		PAR DE		MARKE!	
tF(s)	3.5	3.3		PURITURIOREZON	2.2	NWEST WATER STREET
p0 queue free %	82	100			100	
cM capacity (veh/h)	351	1084			1622	
Direction, Lane #	WB 1	WB 2	SB 1	SB 2		學是對於
Volume Total	32	32	742	742		
Volume Left	32	32	0	0		
Volume Right	0	0	0	0		
cSH	351	351	1700	1700		
Volume to Capacity	0.09	0.09	0.44	0.44		
Queue Length 95th (ft)	7	7	0	0		
Control Delay (s)	16.3	16.3	0.0	0.0	Contraction (Contraction (Contr	A STATE OF THE PARTY OF THE PAR
Lane LOS	C	С		Name of		
Approach Delay (s)	16.3	HALL SHARE STATE	0.0	CHIEF WATER		and the second of the
Approach LOS	С	Maria A	over some	4.48	2000	
Intersection Summary						
Average Delay		d market	0.7	days of a		18/12/E.A
Intersection Capacity Utiliza	ation	ALCOHOLD STREET	102.0%	IC	ULevel	of Service
Analysis Period (min)		VIII SEVE	152.076		STATE OF THE PARTY	J. COI VIOC
miarysis reliou (illiii)		Security Sec	10	THE PARTY OF THE P	AND HOLE	Compassed 8

PM Build Synchro 11 Report
Page 2

	4	†	↓	لِر	*	4
Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		^			ሻሻ	
Traffic Volume (veh/h)	0	2234	0	0	20	0
Future Volume (Veh/h)	0	2234	0	0	20	0
Sign Control		Free	Free		Stop	
Grade	DRUGO AND THE PAR	0%	0%	September 1	0%	HERITAGO MANAGEMENTA
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2428	0	0	22	0
Pedestrians			THE ATTACK			A SHAME
Lane Width (ft)		PERSONAL PROPERTY.				NAC TO A STATE OF THE PARTY OF
Walking Speed (ft/s)				LOWER ST		
Percent Blockage	NAME AND PARTY OF THE PARTY OF					a superior extension care
Right turn flare (veh)						
Median type		None	None			ESSENT CONTRACTOR
Median storage veh)		MARKETO				
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0			WILLIAM SERVICES	1214	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol	SAMPLE STREET					
vCu, unblocked vol	0		MARINE THE	NAME OF THE OWNER,	1214	0
tC, single (s)	4.1	VSE SOLVE LINE			6.8	6.9
tC, 2 stage (s)	MATERIAL PART					MICHINA
tF (s)	2.2	PERREAL			3.5	3.3
p0 queue free %	100	Markow Park	DESCRIPTION OF THE		87	100
cM capacity (veh/h)	1622	Mark Cont.	RECOURT		174	1084
			************		114	1004
Direction, Lane #	NB 1	NB 2	NE 1	NE 2		
Volume Total	1214	1214	11	11	EN HELET AV	
Volume Left	0	0	11	11		
Volume Right	0	0	0	0		Park Toronto
cSH	1700	1700	174	174	BINITERMEN	
Volume to Capacity	0.71	0.71	0.06	0.06	MONEY CONTRACT	ersatersing
Queue Length 95th (ft)	0	0	5	5		
Control Delay (s)	0.0	0.0	27.1	27.1	ASSESSMENT THE PARTY NAMED IN	
Lane LOS			D	D		
Approach Delay (s)	0.0	NACH TO SERVE	27.1		economic and a	autorium von prouc
Approach LOS			D	and the same		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utiliza	ation		104.2%	IC	U Level	of Service
Analysis Period (min)			15			

Synchro 11 Report Page 4 PM Build

	•	•	4	†	ļ	4	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations		7			个个		
Traffic Volume (veh/h)	0	21	0	0	1385	0	
Future Volume (Veh/h)	0	21	0	0	1385	0	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%	APANTANYES VIJELIANI	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	23	0	0	1505	0	MONTHAN
Pedestrians			ANA MENER		SANARALITE		
Lane Width (ft)							
Walking Speed (ft/s)		r de la					
Percent Blockage			OTHER DESIGNATION OF THE PERSON OF THE PERSO	PHONON PAPERSON			Did solver
Right turn flare (veh)			Adda Tak				AL LUCE
Median type		MONING COLUMN	TO THE REAL PROPERTY.	None	None	ADDRESS OF THE R	
Median storage veh)						SALE-ULIS	
Upstream signal (ft)					122		
pX, platoon unblocked							
vC, conflicting volume	1505	752	1505	NAME OF TAXABLE PARTY.			and the second
vC1, stage 1 conf vol		Fakings.	SANCE OF THE				And the
vC2, stage 2 conf vol		DATEDANCE	NOT A POST OF THE				PANA TAKE
vCu, unblocked vol	1505	752	1505		Water St.		
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)		When the last	NAME OF TAXABLE	T-1410-004	QUEEN		
tF(s)	3.5	3.3	2.2	CHECK THE CO	NEW PERSONS		BENTAN
p0 queue free %	100	93	100	MENTAN			
cM capacity (veh/h)	112	353	441	MINISTER AND STREET	WATER THE TAXABLE PARTY.		A SHARE SHARE
		930 330100		DEMOGRATION IN	NAME OF TAXABLE PARTY.	N CHEST OF TAXABLE	MAKEN PARAMENTAL
Direction, Lane #	EB 1	SB 1	SB 2		Bull (C.)		
Volume Total	23	752	752	MARKATINA MILITANI		O/STREWNSON OF THE	ements at
Volume Left	0	0	0				metal de la
Volume Right	23	0	0	SAUTH PROPERTY OF THE PARTY OF		Electric Management (1)	September 1
cSH	353	1700	1700	al lisari			Manual P
Volume to Capacity	0.07	0.44	0.44		THE RESERVE	NAME OF THE OWNER O	omercus and the
Queue Length 95th (ft)	5	0	0				
Control Delay (s)	15.9	0.0	0.0				
Lane LOS	C						
Approach Delay (s)	15.9	0.0				CONTRACTOR & ASSESSED	
Approach LOS	С	Silenes.					
Intersection Summary							
Average Delay			0.2				
Intersection Capacity Utiliza	ation		48.3%	IC	U Level o	of Service	
Analysis Period (min)			15				

Site Walk, 2410 S. Lapeer Road

A site walk was completed July 13th at approximately 5:00pm for Rigel Terrace proposed at 2410 S. Lapeer Road.

The proposed multi-family development is located on an undeveloped parcel west side of M-24 (Lapeer Road.) The parcel is located south of the residential and commercial Pulte development located at the corner of Lapeer and Scripps Road. Home Depot is located directly to the south. A mix of commercial developments are located directly to the east on the northbound side of M-24.

Many trees occupy the existing parcel. A tree survey was not available at the site-walk, but a tree survey should be provided to acknowledge the quantity and quality of trees that exist on the parcel.

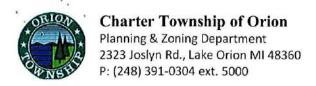
The existing parcel has varying grades especially as you move toward the southern parcel boundary. As a point of reference, the grade in the center of the parcel is well above the roof of Home Depot to the south.

Scott Reynolds, Planning Commissioner Charter Township of Orion sreynolds@oriontownship.org

RECEIVED

JUL 15 2022

Orion Township Planning & Zoning



JUN 2 9 2022

Case # PC-2022 - 26
Meeting Date 7/20/2022

Orion Township Planning & Zoning

Charter Township of Orion Planning Commission Site Plan Approval Application

30.1, **A. Intent:** The site plan review procedures and standards are intended to provide an opportunity for consultation and cooperation between the applicant and the Planning Commission so as to achieve maximum utilization of land with minimum adverse effects on adjoining property. Furthermore, it is the intent of these procedures and standards to allow for review of site plans by the Planning Commission, to provide a consistent and uniform method of review, and to ensure full compliance with the standards contained within Zoning Ordinance 78, and other applicable local ordinances and State and Federal laws.

Pro	ject	Name:	Rigel Terrace								
Nar	ne o	f Develo	oment ifapplicable:								
		Name:_	Dominic J. Moceri Rige	el Terro	ace LLC						
	ant	Address	: 3005 University Drive		City:	Auburn Hil	ls	_State:_	MI	_zip:_4	8326
	Applicant	Phone:_	248-340-9400	_Cell:_	248-860-5519	Fax:_	248-340-9404	(
		Email:_	dominic@moceri.com								
	5]	Name:_	Multiple property owners	s - see	attached sheet						
	vner(Address	·		City:			_State:_		_Zip:	
(*Property Owner(s)	Phone:_		_Cell:_		Fax:_			-,		
	roper	Email:_									
			name on the deed does not m al is the same as the company			rty owner on	this application,	docume	ntation	showin	g the
		Name:_	Anderson, Eckstein and	Westr	ick, Inc., Stephen	V. Pangori I	P.E.				
pare	erson	Address	51301 Schoenherr		City:	Shelby Twp).	_State:_	Mi	_zip:_4	8315
Plan Preparer	Firm/Person	Phone:_	586-726-1234	_Cell:_	586-855-9551	Fax:_	586-726-8780)	_		
Pla	Ē	Email:	spangori@aewinc.com								
		Name:_	Dominic J. Moceri								
ontac	5	Address	: 3005 University Drive		City:	Auburr	Hills	_State:_	М	Zip:4	18326
Project Contact	Person	Phone:_	248-340-9400	_Cell:_	248-860-5519	Fax:_	248-340-940	4	_		
Pro		Email:_	dominic@moceri.com								

	Sidwell Number(s):09-23-301-005, 09-23-301-012	& 09-23-301-013									
iption		Rd., Lake Orion, Mi. 48360									
Descr	Side of Street: West Nearest Intersection: Lapeer and Greenshield										
Property Description	Acreage: 15.95 ac Current Use of Property: Vacant										
Pro	Is the complete legal description printed on the site plan	n? Yes No (if no please attach to theapplication)									
	Subject Property Zoning: RM-2 Adjacen	t Zoning: N. PUD S. Gen. Bus. E. Mult. W. Sub. Estate									
rmation		sed on Township consultant's review)									
Project Information		nt, including the number and size of the buildings or units being 4 Unit buildings, 4 - 5 Unit Buildings, 5 - 6 Unit Buildings,									
Submittal to Outside Agencies	submitted to the each of the following agencies. Pleas of delivery. AT&T 54 Mill St. Pontiac, MI 48342 DTE Energy Co. ATTENTION: NW Planning & Design 1970 Orchard Lake Rd. Sylvan Lake, MI 48320 Michigan Department of Transportation (if applicable) 800 Vanguard Dr. Pontiac, MI 48341	Consumers Power Company 530 W. Willow St. Lansing, MI 48906 Oakland County Health Department Building 34 East 1200 N. Telegraph Rd. Pontiac, MI 48341 Road Commission of Oakland County (if applicable) ssintkowski@rcoc.org (electronic submittal only)									
I/We, t Townsh the abo	hip of Orion Zoning Ordinance; No. 78, Section 30.01, and	te Plan Approval, pursuant to the provisions of the Charter d applicable ordinance requirements. In support of this request ion provided is accurate and the application that has been									
Signatu		Date: 6-24-2022 HORIZED AGENT FOR RIGET TERRACE LLC									
corresp	roperty owner, hereby give permission to the applicant l	isted above to act as my agent in submitting applications, nt permission to the Planning Commission members to visit the									
be prov	vided showing the individual signing this application has	signing rights for the entity): Date:									
(must be Print Na	ame:	97									
Version	4/21/22	Page 2 of 3									

I/We, the undersigned, do hereby submit this application for Site Plan Approval, pursuant to the provisions of the Charter Township of Orion Zoning Ordinance; No. 78, Section 30.01, and applicable ordinance requirements. In support of this request the above facts are provided. I hereby certify that the information provided is accurate and the application that has been provided is complete.

Signature of Applicant: (must be originalink signature)	Date:
Print Name:	
I, the <u>property owner</u> , hereby give permission to the applicant listed ab correspondence and to represent me at all meetings. I also grant permi property, without prior notification, as is deemed necessary.	있는데 그 사는 100m의 전 100m에는 보통하는 보통하는데 보면 100m에 되었다면 보이를 보려면 하면 100m에 되었다면 120mm
Signature of Owner (if the deed of ownership does not show an individual signing this application has signing (must be originalink signature)	
Print Name: JAN CJANT Version 4/21/22	Page 2 of 3
Address: 209/ Delave Riv	Ox Con State: Mlzip: 4837/
Phone: 248-931-60800	Fax:
Email: grentlates tile &	2 Steglobolenet
1	
DAN + JAN CLARK, L.L.C.	

I/We, the undersigned, do hereby submit this application for Site Plan Approval, pursuant to the provisions of the Charter Township of Orion Zoning Ordinance; No. 78, Section 30.01, and applicable ordinance requirements. In support of this request the above facts are provided. I hereby certify that the information provided is accurate and the application that has been provided is complete.

Signature of Applicant: (must be original ink signature)	Date:	
Print Name:		
I, the <u>property owner</u> , hereby give permission to the applicant listed about correspondence and to represent me at all meetings. I also grant permise property, without prior notification, as is deemed necessary.	ove to act as my agent in so ssion to the Planning Comn	ubmitting applications, aission members to visit the
Signature of Owner (if the deed of ownership does not show an individual be provided showing the individual signing this application has signing to (must be original link signature)	rights for the entity):	Co-J2-2022
Print Name: Joshya Star Version 4/21/22 Mang. Member		Page 2 of 3
address: 9501 E- Highland City:	Howell	State:_ <u>WI</u> zip:_ <u>48843</u>
Phone: 248-470-9790 Cell:	Fax:	
mail:		

DET Onion, L.L.C.

RIGEL TERRACE AT ORION

Site Plan

Section 23, T.4N., R.10E., Orion Township, Oakland County, Michigan

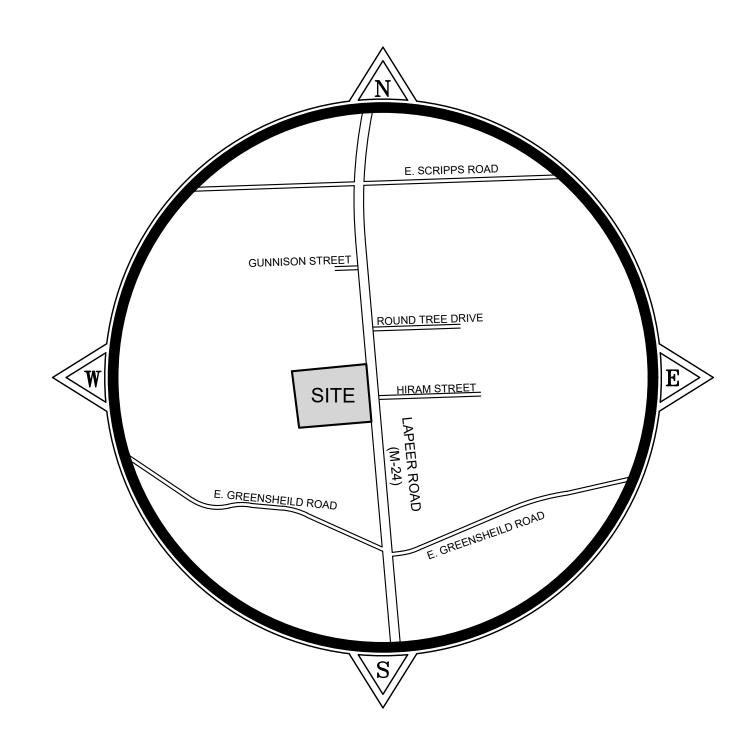
LEGAL DESCRIPTION

LAND IN THE SOUTHWEST 1/4 OF SECTION 23, TOWN 4 NORTH, RANGE 10 EAST, ORION TOWNSHIP OAKLAND COUNTY, MICHIGAN, IS DESCRIBED AS:

COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 23; THENCE NORTH 01 DEGREE 25'30" WEST 3183.28 FEET ALONG THE NORTH-SOUTH 1/4 LINE OF SECTION 23 AND THE CENTERLINE OF NORTHBOUND M-24 TO THE CENTER POST OF SECTION 23; THENCE SOUTH 85 DEGREES 13'30" WEST 120.00 FEET ALONG THE EAST-WEST 1/4 LINE TO THE POINT OF BEGINNING; THENCE SOUTH 05 DEGREES 15'42" WEST 170.35 FEET ALONG THE RIGHT OF WAY LINE; THENCE SOUTH 05 DEGREES 21'41" EAST 298.78 FEET ALONG THE RIGHT OF WAY LINE; THENCE SOUTH 00 DEGREES 48'00" EAST 124.33 FEET; THENCE SOUTH 01 DEGREES 25'30" EAST 165.10 FEET; THENCE SOUTH 85 DEGREES 21'01" WEST 883.06 FEET; THENCE NORTH 00 DEGREES 37'22" EAST 165.62 FEET; THENCE SOUTH 00 DEGREES 38'20" WEST 469.82 FEET; THENCE NORTH 85 DEGREES 13'30" EAST 860.27 FEET TO THE POINT OF BEGINNING

FROM RECORDS ONLY. NO FIELD SURVEY PERFORMED.

SUBJECT TO ANY AND ALL EASEMENTS OF RECORD OR OTHERWISE.



INDEX TO SHEETS

EET	1
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ARY GRADING PLAN	4
PE PLANS AND TREE SURVEY L1 -	L9
ANS AND ELEVATIONS A1-A	15
N RENDERINGSA16-A	17
VEY	S2
TRIC PLAN	

RECEIVED
JUNE 29, 2022
Orion Township
Planning & Zoning

PROPRIETOR

RIGEL TERRACE LLC 3005 UNIVERSITY DRIVE AUBURN HILLS, MICHIGAN 48326 248-340-9400

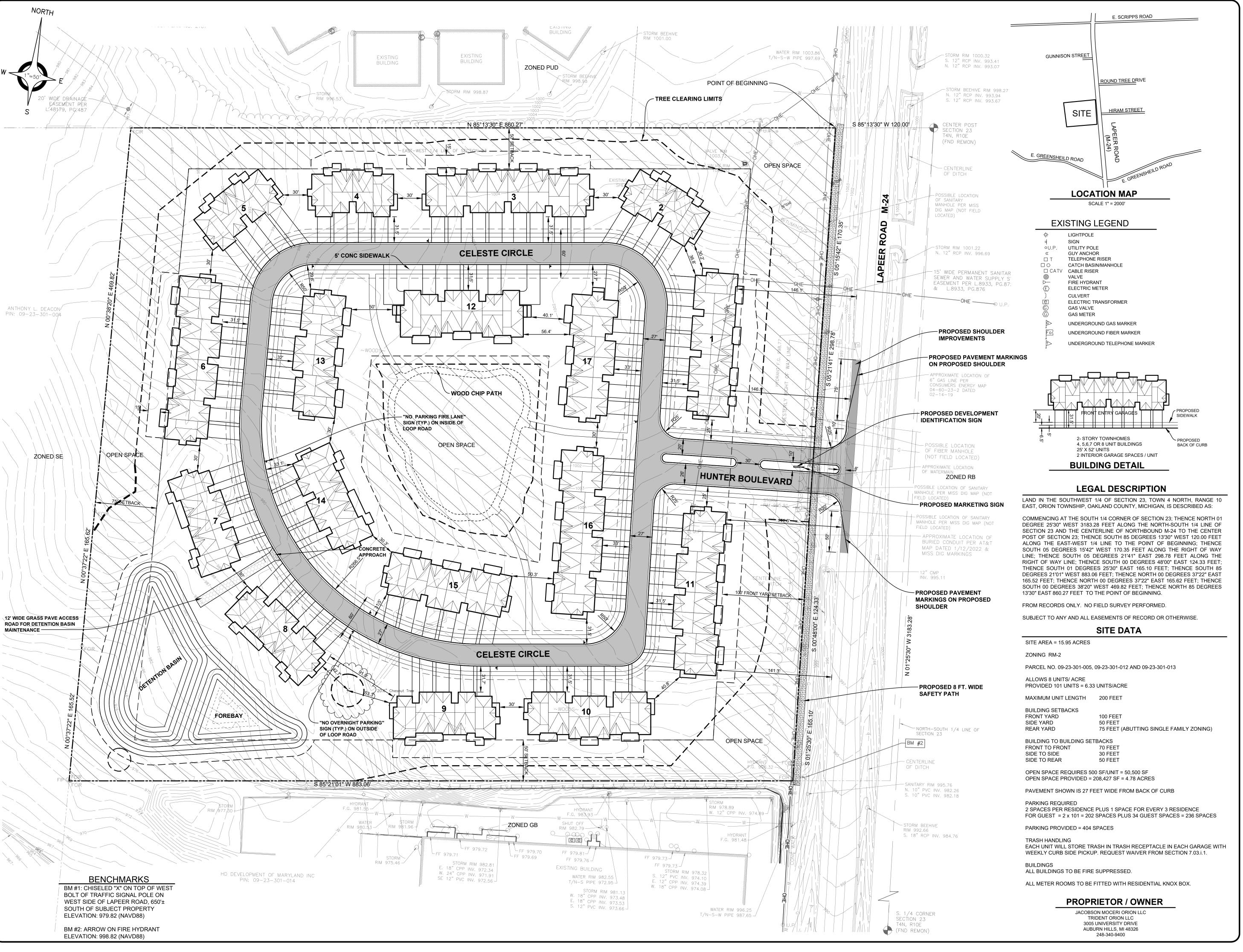
ENGINEER

ANDERSON, ECKSTEIN AND WESTRICK, INC. 51301 SCHOENHERR ROAD SHELBY TOWNSHIP, MI 48315

LANDSCAPE ARCHITECT

ALLEN DESIGN 557 CARPENTER NORTHVILLE, MICHIGAN 48167 248-467-4668







ANDERSON, ECKSTEIN AND WESTRICK, INC.

CIVIL ENGINEERS SURVEYORS ARCHITECTS

 51301 Schoenherr Road
 Phone 586 726 1234

 Shelby Township
 Fax 586 726 8780

 Michigan 48315

www.aewinc.com

ENGINEERING STRONG COMMUNITIES

DATE SUBMITTALS/REVISIONS
PROJECT NAME: 101

SITE PLAN

RIGEL TERRACE

AT ORION

SHEET TITLE:

JACOBSON MOCERI ORION LLC

TRIDENT ORION LLC

PRELIMINARY CONSTRUCTION RECORD

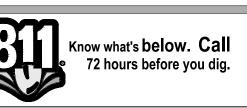
DRAWN BY: CHECKED BY: DATE:

JLA SVP 3-27-2021

SCALE:

1" = 50' HORIZ.

0 25 50 100



UTILITY INFORMATION, AS SHOWN, INDICATES APPROXIMATE LOCATIONS AND TYPES OF EXISTING FACILITIES ONLY, AS DISCLOSED BY RECORDS PROVIDED TO THIS FIRM FROM THE VARIOUS UTILITY COMPANIES. NO GUARANTEE IS GIVEN OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF

VARIOUS UTILITY COMPANIES. NO GUARANTEE IS GIVEN OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF.

PRIOR TO CONSTRUCTION, ALL LOCATIONS AND DEPTHS OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES (IN CONFLICT WITH THE CONSTRUCTION OF THESE PROPOSED IMPROVEMENTS) SHALL BE VERIFIED IN THE FIELD.

CONFLICT WITH THE CONSTRUCTION OF THESE PROPOSED IMPROVEMENTS) SHALL BE VERIFIED IN THE FIELD. DURING THE CONSTRUCTION, THE CONTRACTOR SHALL PROTECT AND SUPPORT ALL UTILITIES THAT ARE ENCOUNTERED. (ALL COSTS FOR UTILITY LOCATION VERIFICATION, SUPPORT AND PROTECTION SHALL BE INCLUDED IN THE PROPOSED PAY ITEM CONFLICTING WITH THAT UTILITY).

DURING CONSTRUCTION, THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN OPERATING NEAR ANY AND ALL OVERHEAD AND / OR BURIED UTILITIES.

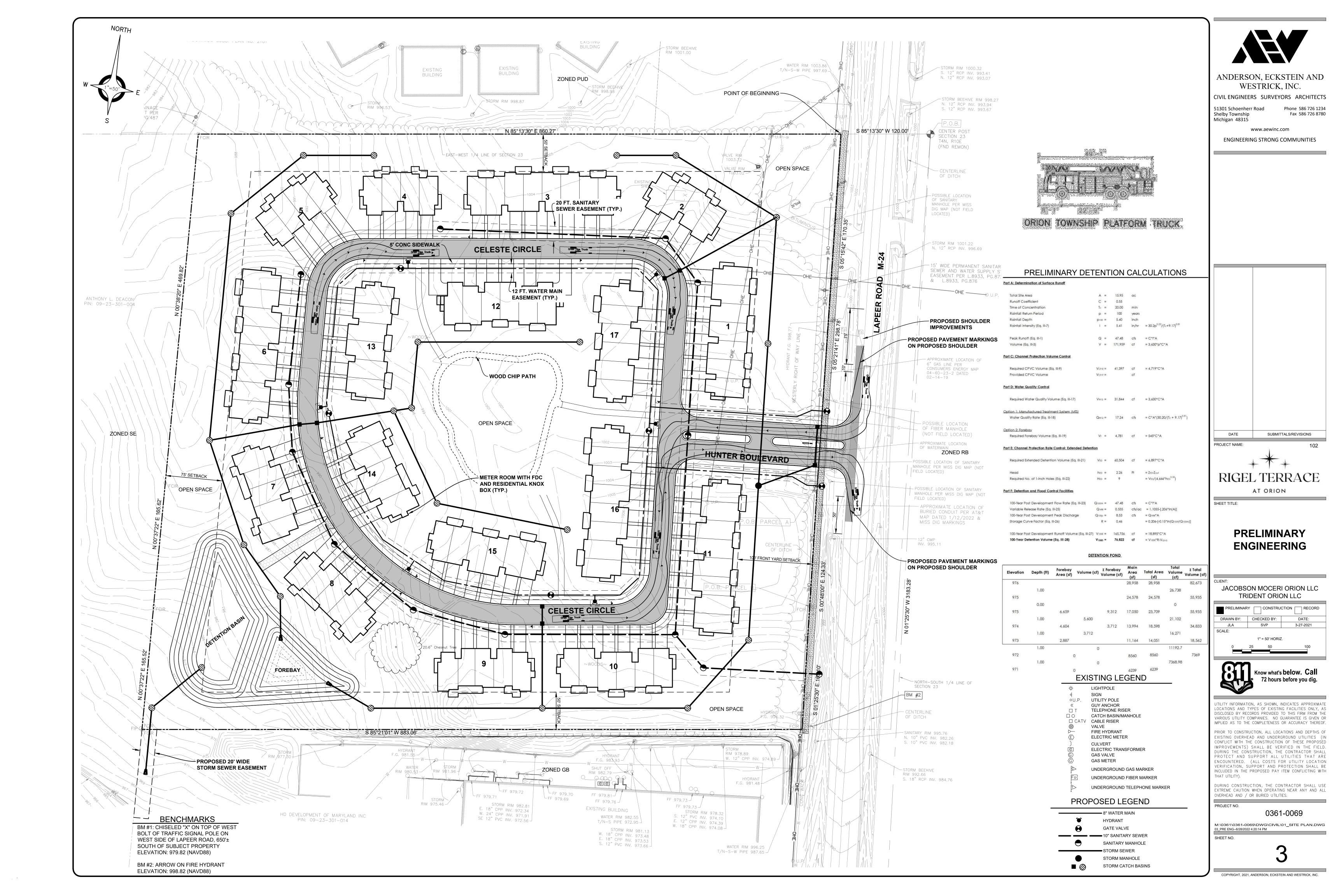
PROJECT NO.

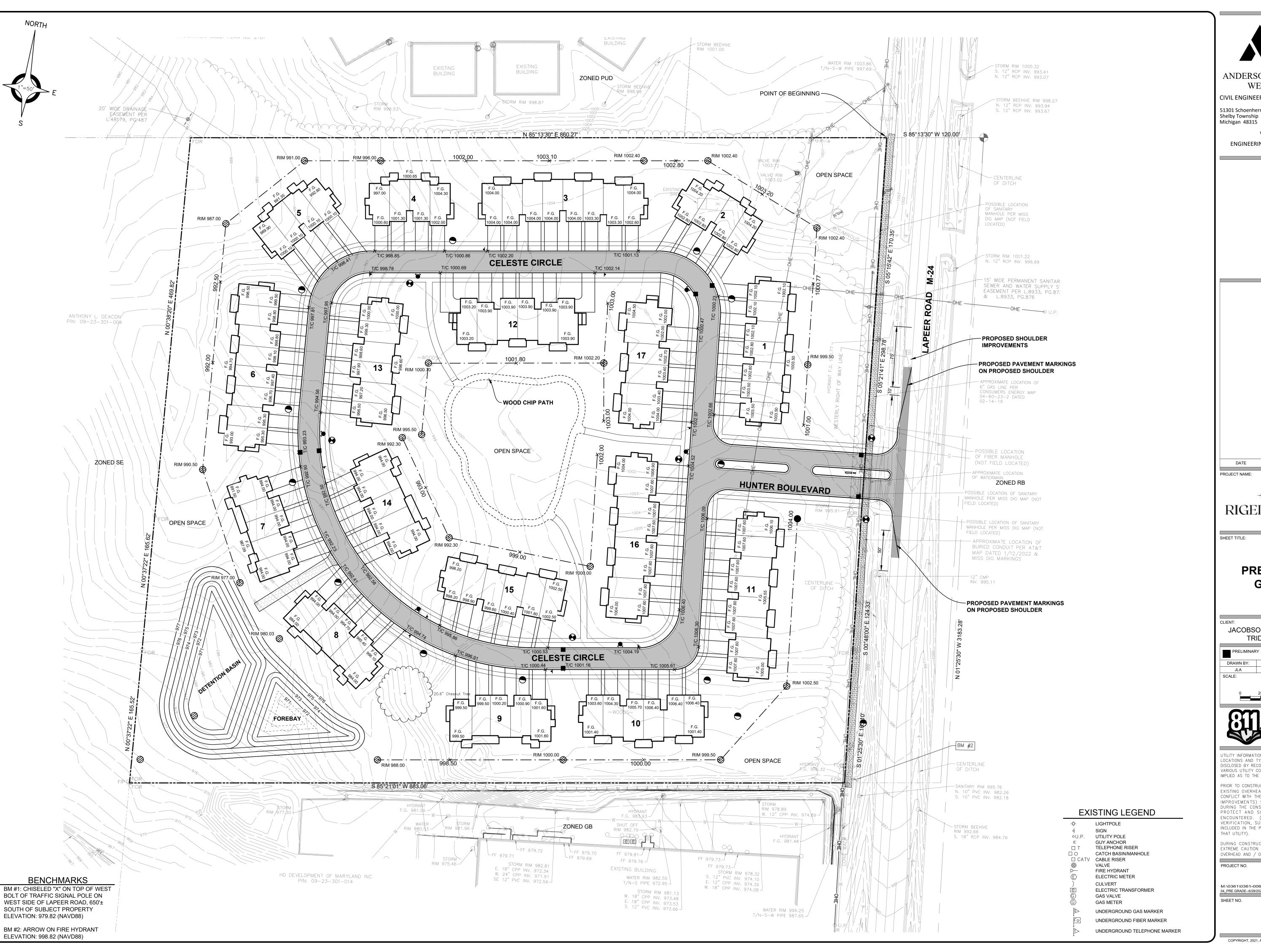
0361-0069

M:\0361\0361-0069\DWG\CIVIL\01_SITE PLAN.DWG 02_SITE PLAN--6/28/2022 4:19:33 PM SHEET NO.

2

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ANDERSON, ECKSTEIN AND WESTRICK, INC.

CIVIL ENGINEERS SURVEYORS ARCHITECTS 51301 Schoenherr Road Phone 586 726 1234

Michigan 48315

www.aewinc.com ENGINEERING STRONG COMMUNITIES

Fax 586 726 8780

SUBMITTALS/REVISIONS PROJECT NAME:

RIGEL TERRACE

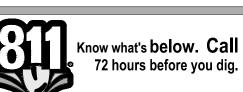
AT ORION

SHEET TITLE:

PRELIMINARY GRADING

JACOBSON MOCERI ORION LLC TRIDENT ORION LLC

PRELIMINARY CONSTRUCTION RECORD DRAWN BY: CHECKED BY: SVP 3-27-2021 1" = 50' HORIZ.



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DURING CONSTRUCTION, THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN OPERATING NEAR ANY AND ALL OVERHEAD AND / OR BURIED UTILITIES.

0361-0069

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104





Seal:

ANES C.
ALEN
Landscape
Architect
Vol 66

Title:

Landscape Plan

Project:

Rigel Terrace
Orion Township, Michigan

Prepared for:

Submission

Jacobson Moceri Orion LLC Trident Orion LLC 3005 University Drive Auburn Hills, Michigan 48326

Revision: Issued:

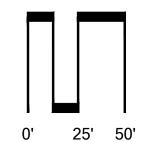
Pre-Application May 25, 2022

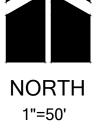
June 19, 2022

Job Number:

21-017

Drawn By: Checked By:





Sheet No.

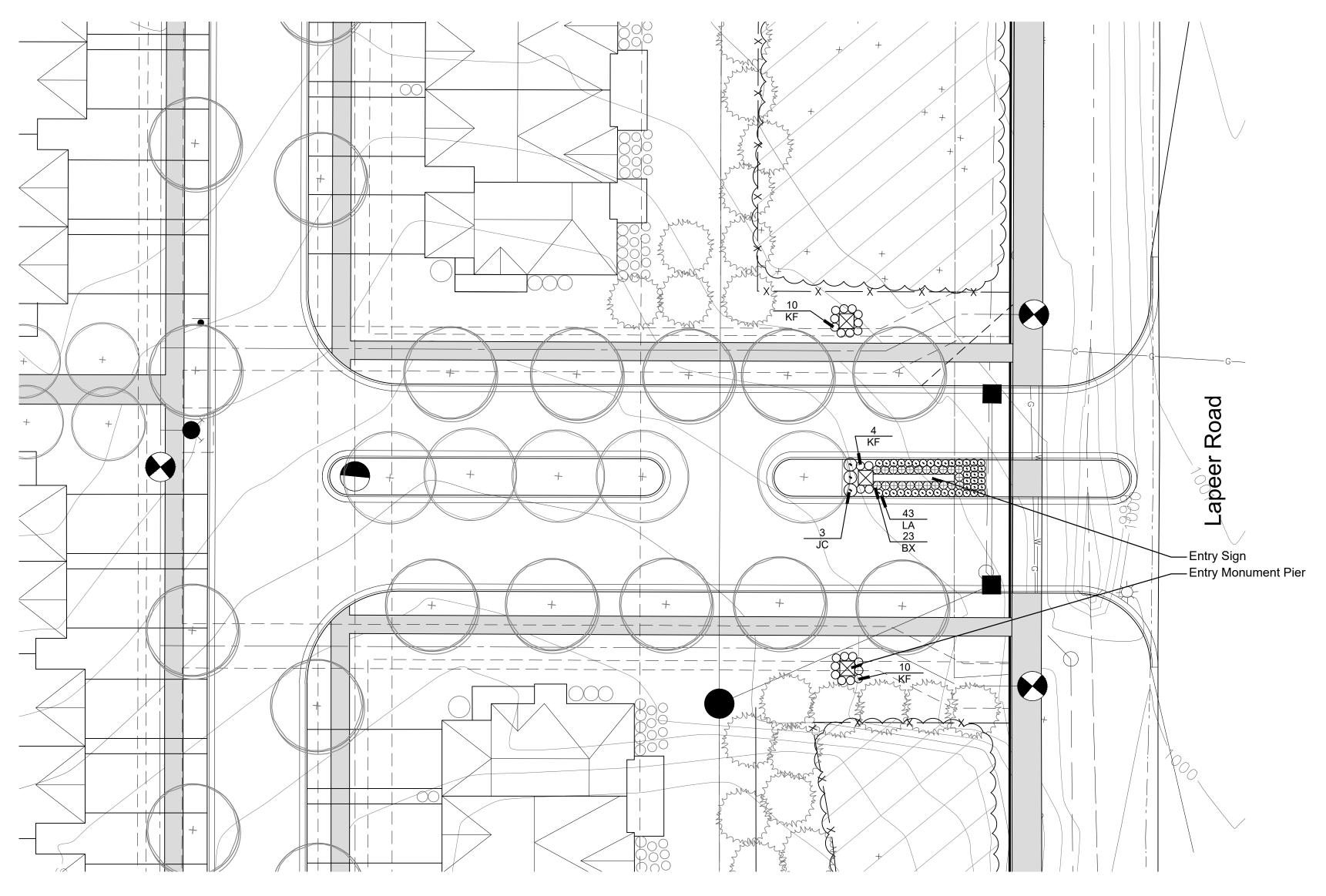
L-1

General Landscaping 695,203 s.f. Net Site Area 225,346 s.f. Less Impervious Area 469,857 s.f. Net Site Area 157 Trees (469,857 / 3,000) Trees Required TBD After Tree Survey is Completed Trees Provided Greenbelt - West Property 309 I.f. (Net of Preserved Vegetation) Greenbelt Length Trees Required 10 Trees (309 / 30') 10 Trees Trees Provided Greenbelt - Lapeer Road Greenbelt Length 116 l.f. (Net of Preserved Vegetation) 4 Trees (116 / 30') Trees Required 4 Trees Trees Provided Street Trees 4,176 l.f. Street Frontage 84 Trees (4,176 / 50) Street Trees Required 84 Trees Street Trees Provided Woodland Replacement Total Replacement Required
595 Trees, 2.0" Deciduous or 6' Evergreen, Regulated
234 Trees, 3.0" Deciduous or 8' Evergreen, Landmark
Replacement Trees Provided
112 Trees, 2.0" Deciduous or 6' Evergreen, Regulated
234 Trees, 3.0" Deciduous or 8' Evergreen, Landmark

Plant List - This Sheet

Landscape Summary

sym.	qty.	botanical name	common name	caliper	spacing	root	height
Greent	elt						
PAG	10	Picea abies	Norway Spruce		as shown	B&B	6'-7'
PGG	4	Picea glauca var. densata	Black Hills Spruce		as shown	B&B	6'-7'
	14	Trees Provided					
sym.	qty.	botanical name	common name	caliper	spacing	root	height
Street	Trees						
AF	10	Acer x. freemanii 'Autumn Blaze'	Autumn Blaze Maple	2.5"	as shown	B&B	
AR	10	Acer rubrum 'October Glory'	Red Maple 'October Glory'	2.5"	as shown	B&B	
AS	7	Acer saccharum 'Green Mountain'	Sugar Maple	2.5"	as shown	B&B	
GT	14	Gleditsia triacanthos var. Inermis	Honey Locust	2.5"	as shown	B&B	
PE	16	Platanus x acerifolia 'Exclamation'	Exclamation London Planetree	2.5"	as shown	B&B	
UP	27	Ulmus america 'Princeton'	Princeton Elm	2.5"	as shown	B&B	
	84	Trees Provided					
sym.	qty.	botanical name	common name	caliper	spacing	root	height
Landm	ark Tre	ee Woodland Replacement					
ARR	20	Acer rubrum 'October Glory'	Red Maple 'October Glory'	3.0"	as shown	B&B	
ASR	18	Acer saccharum 'Green Mountain'	Sugar Maple	3.0"	as shown	B&B	
BNR	6	Betula nigra	Multi-stem River Birch		as shown	B&B	10'
LTR	12	Liriodendron tulipifera	Tulip Tree	3.0"	as shown	B&B	
PAR	44	Picea abies	Norway Spruce		as shown	B&B	8'
PGR	62	Picea glauca var. densata	Black Hills Spruce		as shown	B&B	8'
PSR	50	Pinus strobus	White Pine		as shown	B&B	8'
QRR	10	Quercus rubra	Red Oak	3.0"	as shown	B&B	
TAR	12	Tilia americana 'Redmond'	Redmond Linden	3.0"	as shown	B&B	
	234	Trees Provided					
sym.	qty.	botanical name	common name	caliper	spacing	root	height
Regula	ted Tre	ee Woodland Replacement					
ARI	2	Acer rubrum 'October Glory'	Red Maple 'October Glory'	2.0"	as shown	B&B	
ASI	7	Acer saccharum 'Green Mountain'	Sugar Maple	2.0"	as shown	B&B	
LTI	8	Liriodendron tulipifera	Tulip Tree	2.0"	as shown	B&B	
PAI	22	Picea abies	Norway Spruce		as shown	B&B	6'
PGI	11	Picea glauca var. densata	Black Hills Spruce		as shown	B&B	6'
PSI	30	Pinus strobus	White Pine		as shown	B&B	6'
TAI	3	Tilia americana 'Redmond'	Redmond Linden	2.0"	as shown	B&B	
UPI	29	Ulmus america 'Princeton'	Princeton Elm	2.0"	as shown	B&B	
	112	Trees Provided					



 6" ht. Precast Concrete Cap with 1" drip edge on three sides

30"

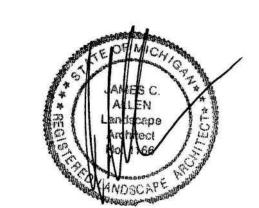


sym.	qty.	botanical name	common name	caliper	spacing	root	height
BX	23	Buxus 'Green Mountain'	Green Mountain Boxwood		as shown	cont	24"
JC	3	Juniperus ch. keteleeri	Keteleeri Juniper		as shown	B&B	6', Hedge to 5
KF	24	Calamagrostis x. a. 'Karl Forester'	Karl Forester Grass		as shown	cont	#2
LA	43	Lavandula X phenomenal	Lavender		as shown	cont	#2





Seal:



Titla

Entry Plan

Project:

Rigel Terrace
Orion Township, Michigan

Prepared for:

Jacobson Moceri Orion LLC Trident Orion LLC 3005 University Drive Orion Township, Michigan 48326

Revision: Issued:

Pre-Application May 25, 2022

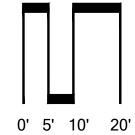
June 29, 2022

Job Number:

21-017

Submission

Drawn By: Checked By:



NORTH 1"=20'

Know what's below.
Call before you dig.

Sheet No.

L-2

© 2022 Allen Design L.L.C.

Entry Monument Sign

8'

Monument Pier

Routed Foam Inset. Font to match sign.

Fieldstone Veneer

Decorative

8" ht. Precast Concrete Cap — with 1" drip edge all sides

 8" ht. Precast Concrete Cap with 1" drip edge all sides.

Decorative Fieldstone

Veneer, typ.

Routed Lettering:
- "F" & "P" are 21" ht.
- Remaining Lettering is 14" ht.
- Font is Castellar

RIGEL TERRACE

 Routed Foam Sign Panel with 6" raised border. Side shall be double sided

1/4" = 1'

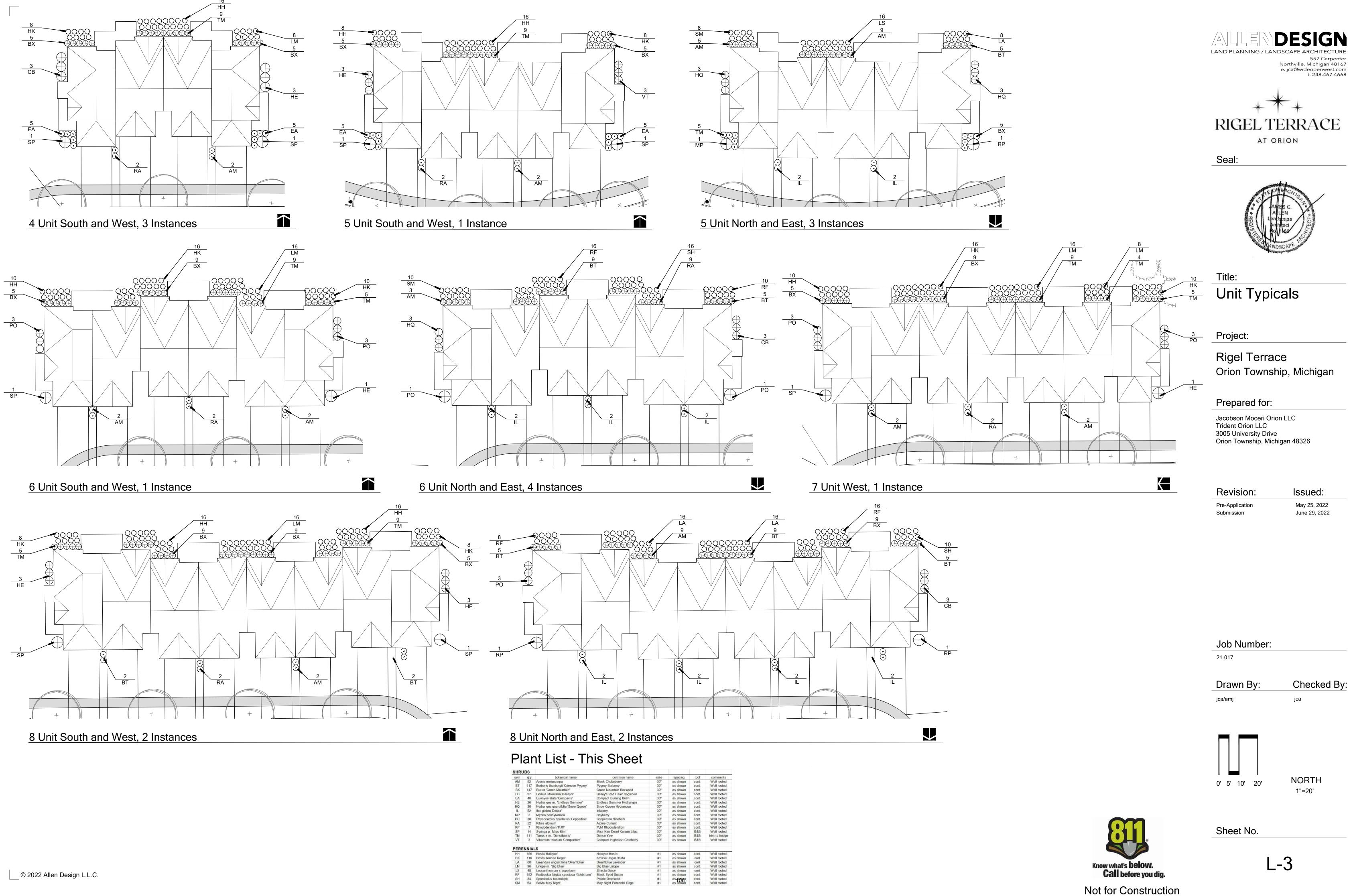
Area used to calculate

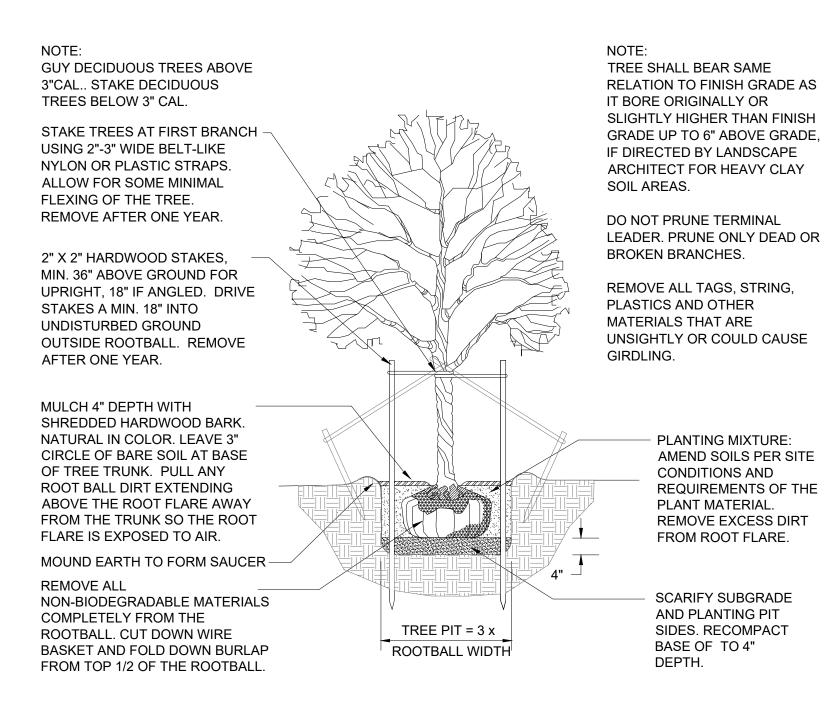
Sign Area

Sign Regulations

Allowable Sign Area: 35 s.f. per Side
Proposed Sign Area: 29.53 s.f. per Side
Allowable Sign Height: 6' ht.
Proposed Sign Height: 6' ht.
Sign Setback 20'

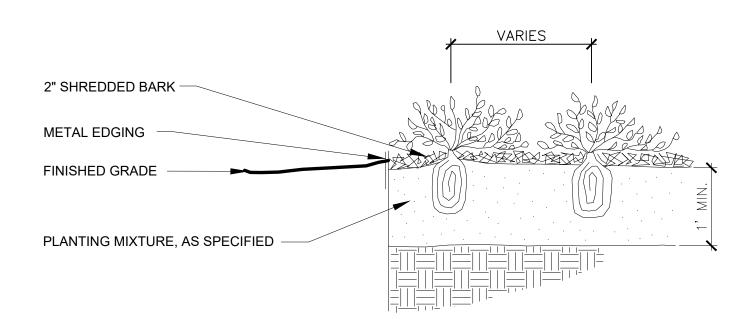
1/4" = 1'



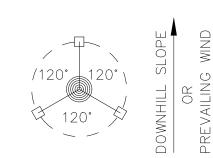


DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE



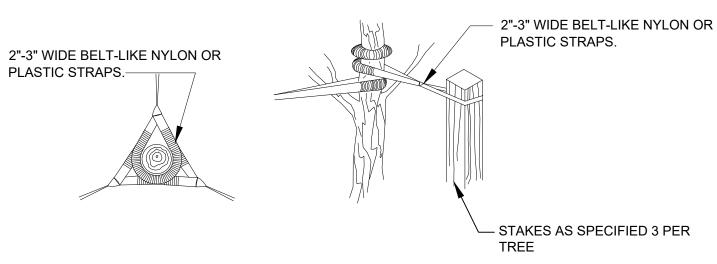
PERENNIAL PLANTING DETAIL



ORIENT STAKING/GUYING TO PREVAILING WINDS, EXCEPT ON SLOPES GREATER THAN 3:1 ORIENT TO SLOPE.

USE SAME STAKING/GUYING ORIENTATION FOR ALL PLANTS WITHIN EACH GROUPING OR AREA

STAKING/GUYING LOCATION



GUYING DETAIL

STAKING DETAIL

TREE STAKING DETAIL

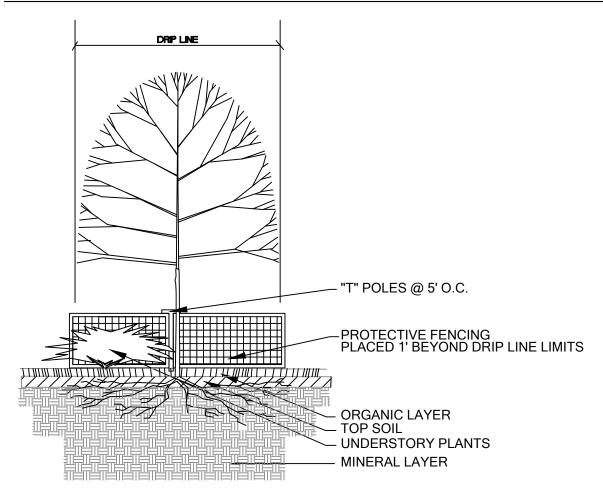
TREE SHALL BEAR SAME **GUY EVERGREEN TREES ABOVE** 12' HEIGHT. STAKE EVERGREEN **RELATION TO FINISH GRADE AS** IT BORE ORIGINALLY OR TREE BELOW 12' HEIGHT. SLIGHTLY HIGHER THAN FINISH STAKE TREES AT FIRST BRANCH GRADE UP TO 6" ABOVE GRADE, USING 2"-3" WIDE BELT-LIKE IF DIRECTED BY LANDSCAPE NYLON OR PLASTIC STRAPS. ARCHITECT FOR HEAVY CLAY ALLOW FOR SOME MINIMAL SOIL AREAS. FLEXING OF THE TREE. REMOVE AFTER ONE YEAR. DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES. 2" X 2" HARDWOOD STAKES, MIN. 36" ABOVE GROUND FOR REMOVE ALL TAGS, STRING, UPRIGHT, 18" IF ANGLED. DRIVE PLASTICS AND OTHER STAKES A MIN. 18" INTO MATERIALS THAT ARE UNDISTURBED GROUND UNSIGHTLY OR COULD CAUSE OUTSIDE ROOTBALL. REMOVE AFTER ONE YEAR. MULCH 4" DEPTH WITH SHREDDED HARDWOOD BARK. NATURAL IN COLOR. LEAVE 3" CIRCLE OF BARE SOIL AT BASE PLANTING MIXTURE: OF TREE TRUNK. PULL ANY AMEND SOILS PER SITE ROOT BALL DIRT EXTENDING CONDITIONS AND ABOVE THE ROOT FLARE AWAY REQUIREMENTS OF FROM THE TRUNK SO THE ROOT THE PLANT MATERIAL FLARE IS EXPOSED TO AIR. REMOVE EXCESS DIRT FROM ROOT FLARE. MOUND EARTH TO FORM SAUCER -REMOVE ALL SCARIFY SUBGRADE AND PLANTING PIT NON-BIODEGRADABLE MATERIALS TREE PIT = 3 x SIDES, RECOMPACT COMPLETELY FROM THE ROOTBALL WIDTH BASE OF TO 4" ROOTBALL. CUT DOWN WIRE BASKET AND FOLD DOWN BURLAP

EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

FROM TOP 1/2 OF THE ROOTBALL.

TREE PROTECTION DETAIL



- 1. Either Plastic or Wood Orange Snow Fencing Shall be Installed at or Beyond the Dripline, Unless More Substantial
- Fencing is Required.
 Stakes Shall be Metal "T" Poles Spaced no Further than 5' on Center.
 Fencing Shall not be Installed Closer to the Tree than the Dripline of Those Trees to be Saved. Special
- rcumstances Shall be Reviewed by the Township. Fencing Shall be Erected Prior to Construction. The Township Shall be Notified Once the Fencing is Instaled for
- Under no Circumstances Shall the Portective Fencing be Removed Without Proper Approval from the Township. No Person Shall Conduct any Activity Within Areas Proposed to Remain. This Shall Include, but not Limited to:

 No Solvents or Chemicals Within Protected Areas.
- No Building Materials or Construction Equipment Within Protected Areas. No Grade Changes, Including Fill, Within Protected Areas.
- No Removal of Vegetation from the Ground Up Without Permission from the Proper Reviewing Authority, Including the Woodlands Review Board.
- e. Any Required Swale Needs to be Directed Around the Protected Areas. Instances Where Swales are Approved Through a Protected Area, the Swales Need to be HAND DUG. Machinery of Any Kind is Prohibited.
 7. Regulated Woodland or Regulated Trees Adjacent to the Property are Also Required to be Protected Whether or not they are Shown on the Plan.

107

MULCH 3" DEPTH WITH BRANCHES. SHREDDED HARDWOOD BARK. NATURAL IN COLOR. PULL BACK 3" FROM TRUNK. PLANTING MIXTURE: AMEND SOILS PER GIRDLING. SITE CONDITIONS AND REQUIREMENTS OF THE PLANT MOUND EARTH TO FORM SAUCER REMOVE COLLAR OF ALL FIBER POTS. POTS SHALL BE CUT TO_ PROVIDE FOR ROOT GROWTH. REMOVE ALL NONORGANIC CONTAINERS COMPLETELY. REMOVE ALL AND PLANTING PIT NON-BIODEGRADABLE MATERIALS SIDES. RECOMPACT COMPLETELY FROM THE

TREE SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 4" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.

REMOVE ALL TAGS, STRING, PLASTICS AND OTHER MATERIALS THAT ARE

SHRUB PLANTING DETAIL

LANDSCAPE NOTES

ROOTBALL. FOLD DOWN BURLAP

FROM TOP ¹/₃ OF THE ROOTBALL

- 1. All plants shall be north Midwest American region grown, No. 1 grade plant materials,
- and shall be true to name, free from physical damage and wind burn.
- 2. Plants shall be full, well-branched, and in healthy vigorous growing
- 3. Plants shall be watered before and after planting is complete. 4. All trees must be staked, fertilized and mulched and shall be guaranteed to exhibit a normal growth cycle for at least two (2) full years following
- City approval. All material shall conform to the guidelines established in the most recent
- edition of the American Standard for Nursery Stock.
- Provide clean backfill soil, using material stockpiled on site. Soil shall be
- screened and free of any debris, foreign material, and stone.
- planting pits before being backfilled.
- Amended planting mix shall consist of 1/3 screened topsoil, 1/3 sand and
- 1/3 compost, mixed well and spread to the depth as indicated in planting details. All plantings shall be mulched per planting details located on this sheet.
- 10. The Landscape Contractor shall be responsible for all work shown on the landscape drawings and specifications.
- No substitutions or changes of location, or plant types shall be made
- without the approval of the Landscape Architect. The Landscape Architect shall be notified in writing of any discrepancies between
- the plans and field conditions prior to installation. The Landscape Contractor shall be responsible for maintaining all plant
- material in a vertical condition throughout the guaranteed period.
- 14. The Landscape Architect shall have the right, at any stage of the installation, to reject any work or material that does not meet the requirements of the plans and specifications, if requested by owner.
- Contractor shall be responsible for checking plant quantities to ensure quantities on drawings and plant list are the same. In the event of a
- discrepancy, the quantities on the plans shall prevail. 16. The Landscape Contractor shall seed and mulch or sod (as indicated on plans)
- all areas disturbed during construction, throughout the contract limits.
- 17. A pre-emergent weed control agent, "Preen" or equal, shall be applied uniformly on top of all mulching in all planting beds.
- 18. Sod shall be two year old "Baron/Cheriadelphi" Kentucky Blue Grass grown in a sod

PRUNE ONLY DEAD OR BROKEN

UNSIGHTLY OR COULD CAUSE

BASE OF TO 4"

DEPTH.

SCARIFY SUBGRADE

Seal:

Landscape Details

LAND PLANNING / LANDSCAPE ARCHITECTURE

RIGEL TERRACE

AT ORION

Northville, Michigan 48167

t. 248.467.4668

Project:

Rigel Terrace Orion Township, Michigan

Prepared for:

Jacobson Moceri Orion LLC Trident Orion LLC 3005 University Drive Auburn Hills, Michigan 48326

Revision: Issued: **Pre-Application** May 25, 2022 June 29, 2022 Submission

Job Number:

Drawn By:

21-017

jca/emj

Checked By:

Know what's **below**.

Call before you dig.

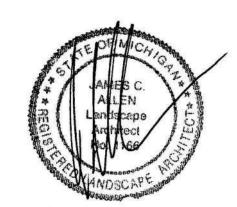
Sheet No.

Zoned PUD Tree Protection Fencing See Sheet L-4 for Detail Zoned SE Lapeer Road Celeste Circle 6278 -Tree Protection Fencing See Sheet L-4 for Detail Zoned GB HD DEVELOPMENT OF MARYLAND INC PIN: 09-23-301-014





Seal:



Woodland Plan

Legend

"X" Denotes Removed Tree

Project:

Rigel Terrace Orion Township, Michigan

Prepared for:

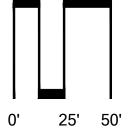
Jacobson Moceri Orion LLC Trident Orion LLC 3005 University Drive Auburn Hills, Michigan 48326

Revision: Issued: May 25, 2022 Pre-Application June 29, 2022 Submission

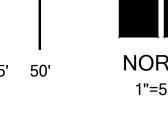
Job Number:

21-017

Drawn By: Checked By:







Sheet No.



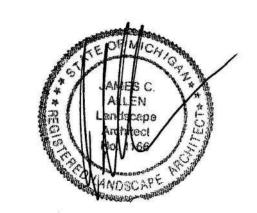
Tree List

ree List				
Tag Scientific Name Tilia americana Tilia americana Acer rubrum Acer rubrum Acer rubrum Acer rubrum Prunus serotina Acer rubrum Cuercus ibioolor Tilia americana Acer saccharum Acer sac	Basswood 14.S Fair Utility White oak 7.4 Fair Remove 1 White oak 8.2 Poor Utility Basswood 13.1 10.7 Fair Street	The comment	Section Communication Co	Part





Seal:



Title:

Tree List

Project:

Rigel Terrace Orion Township, Michigan

Prepared for:

Jacobson Moceri Orion LLC Trident Orion LLC 3005 University Drive Auburn Hills, Michigan 48326

Revision: Issued:

. 155

Pre-Application May 25, 2022 Submission June 29, 2022

Job Number:

21-017

jca

Drawn By: Checked By:

a

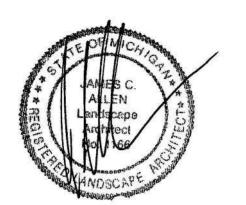
Sheet No.

Tree List															
Tag Scientific Name 1549 Acer rubrum	Common Name Red maple	Trunk 1 Trunk 2 Trunk 3 Condition Landmark Status Regulated Replacements Replacement 4.9 Fair Remove 1	Tag Scientific Name 1708 Prunus serotina	Common Name Black cherry	Trunk 1 Trunk 2 Trunk 3 Condition Landma	k Status Regulated Replaceme	6 I	-	non Name Trunk	1 Trunk 2 Trunk 3 Condition Landmark	Regulated Landmark D&H Replacements Replacement		cientific Name Common Name Trunk 1 Trunk 2 Trunk 3 Con	dition Landmark Status Regulated Replacement	6 I
1550 Acer rubrum 1551 Prunus serotina 1552 Acer rubrum	Red maple Red maple Black cherry Red maple Black cherry	12.2 Fair Remove 1 15.8 Fair Remove 1 4.2 Fair Remove 1	1709 Acer rubrum 1710 Ulmus americana 1711 Prunus serotina 1712 Tilia americana	Red maple American elm Black cherry Basswood	7.6 Fair 5.1 Fair 17.4 Fair 13.8 Fair	Save Save Save Save		1868 Acer rubrum Red 1869 Acer rubrum Red 1870 Prunus serotina Black	d maple S d maple 18.3 k cherry 13.7 rican elm 6.8		Street Street Drive Drive	5029 Pseudo 5030 Ju S031 Thuj	otsuga menziesii Douglas fir 14.5 F uglans nigra Black walnut 14.5 F ja occidentalis Northern white cedar 11.3 F	air Utility air Save air Remove 1	
1553 Prunus serotina 1554 Quercus velutina 1555 Quercus alba 1556 Carya ovata	Black cherry Black oak White oak Shagbark hickory	4.7 Fair Remove 1 11.6 Fair Remove 1 20.6 Fair Remove 1 8 Fair Remove 1	1713 Prunus serotina 1714 Tilia americana 1715 Prunus serotina	Black cherry Basswood Black cherry	20.S Fair 7.8 Fair 13.7 Fair	Save Save Save		1872 Tilia americana Bass 1873 Acer rubrum Red	sswood 7.6 d maple 23.3 sswood 21.1		Drive Remove 1 Remove 1	5033 Acc S034 Acc	rer saccharum Sugar maple 30.2 F rer saccharum Sugar maple 9.6 F	air Remove 1 air x Remove air Building air Remove 1	30.2
1557 Prunus serotina 1558 Acer rubrum 1559 Carya ovata	Black cherry Red maple Shagbark hickory	8.7 Fair Remove 1 4.6 Fair Remove 1 7 Fair Remove 1	1716 Acer rubrum 1717 Prunus serotina 1718 Acer saccharum 1719 Tilia americana	Red maple Black cherry Sugar maple	5.9 Fair 13.9 Fair S 4.9 Fair	Save Save Save Save		1876 Quercus alba Whi 1877 Carya ovata Shagba	ck cherry 11.7 hite oak 5.S ark hickory 8.8	Fair	Drive Remove 1 Drive	S036 Ju 5037 C	uglans nigra Black walnut 18.6 F Carya ovata Shagbark hickory 16.3 F	air Utility air Remove 1 air Remove 1	
1560 Acer rubrum 1561 Acer rubrum 1562 Prunus serotina	Red maple Red maple Black cherry	7 Fair Remove 1 10.8 Fair Remove 1 9.2 Fair Sidewalk	1/19 Tilia americana 1720 Acer rubrum 1721 Tilia americana 1722 Acer rubrum	Basswood Red maple Basswood Red maple	9.2 Fair 24.4 Fair 17.9 Fair	Save Save Save		1879 Prunus serotina Black 1880 Acer rubrum Red	d maple 5.7 ck cherry 18.1 d maple 7.8 ark hickory 12.7	L Fair Fair	Remove 1 Remove 1 Remove 1 Remove 1	\$040 Tili 5041 C	ia americana Basswood 6.4 F Carya ovata Shagbark hickory 17 F	Poor Poor air Remove 1 air Remove 1	
1563 Acer rubrum 1564 Acer rubrum 1565 Quercus alba 1566 Acer rubrum	Red maple Red maple White oak Red maple	4.4 Fair Sidewalk 6.6 Fair Sidewalk 24.8 Fair x Remove 24.8 10.3 Fair Building	1723 Acer rubrum 1724 Prunus serotina 1725 Quercus rubra	Red maple Black cherry Red oak	4.8 Fair 7.2 Fair 18.8 Fair	Save Save		1883 Acer rubrum Red 1884 Acer rubrum Red	nite oak 10.1 d maple 5.8 d maple 5.3	Fair Fair	Remove 1 Remove 1 Drive	S043 Tili 5044 Tili	ia americana Basswood 12.3 Fia americana Basswood 8.3 Fi	air Remove 1	
1567 Prunus serotina 1568 Carya ovata 1569 Acer rubrum	Black cherry 5hagbark hickory Red maple	8.5 Fair Building 19.2 Fair Building 6.8 Fair Drive	1726 Acer rubrum 1727 Tilia americana 1728 Acer rubrum 1729 Acer saccharum	Red maple Basswood Red maple Sugar maple	16.7 Fair 12.1 Fair 19.3 Fair 5.2 Fair	Remove 1 Remove 1 Remove 1 Remove 1		1886 Acer rubrum Red 1887 Acer rubrum Red	ark hickory 11.9 d maple 4.7 d maple 16.2 sswood 16.2	Fair 2 12.9 Fair	Drive Drive Building Building	S046 Ju S047 Que	uglans nigra Black walnut 14.5 F ercus velutina Black oak 11.6 F	air Building air Building air Building	
1570 Acer rubrum 1571 Prunus serotina 1572 Prunus serotina 1573 Acer rubrum	Red maple Black cherry Black cherry Red maple	8 Fair Drive 23.4 Fair Drive 16.2 Fair Utility 14.4 Fair Remove 1	1730 Prunus serotina 1731 Quercus velutina 1732 Acer rubrum 1733 Acer rubrum	Black cherry Black oak Red maple Red maple	10.4 Fair 8.3 Poor 8.4 Fair	Remove 1 Remove 1 Remove 1 Remove 1		1890 Carya ovata Shagba 1891 Tilia americana Bass	sswood 13 ark hickory 9.1 sswood 14.2 k cherry 10	Fair	Remove 1 Remove 1 Building Utility	50S0 Ju 50S1 Ju	uglans nigra Black walnut 16.3 F uglans nigra Black walnut 27.7 F	air Building air Remove 1 air x Building air Building	
1574 Prunus serotina 1575 Acer saccharum 1576 Quercus alba	Black cherry Sugar maple White oak	13.2 Fair Utility 10.5 Fair Drive 18.2 Fair Remove 1	1734 Acer rubrum 1735 Carya ovata 1736 Tilia americana	Red maple Shagbark hickory Basswood	4.8 Fair 11 10.5 Fair 12.4 Fair	Building Remove 1 Remove 1		1893 Tilia americana Bass 1894 Acer rubrum Red	sswood 15.1 d maple 7.4 d maple 15.1	Fair	Utility Utility Save	5053 C S054 Fraxinu	Carya ovata Shagbark hickory 19.1 F us pennsylvanica Green ash 4.8 Ven	air Building Poor Poor air Remove 1	
1577 Acer rubrum 1578 Acer rubrum 1579 Quercus alba 1580 Quercus alba	Red maple Red maple White oak White oak	5.6 Fair Remove 1 5.1 Fair Remove 1 21 Fair Remove 1 12.6 Fair Remove 1	1737 Prunus serotina 1738 Tilia americana 1739 Carya ovata 1740 Quercus alba	Black cherry Basswood Shagbark hickory White oak	10.7 Fair 10.8 Fair 17.4 Fair	Remove 1 Remove 1 Remove 1 Remove 1		1897 Acer rubrum Red 1898 Prunus serotina Black	tk cherry 13.8 d maple 13.7 tk cherry 13.9 sswood 13.6	7 Fair 9 Fair	Save Save Save	S0S7 C S0S8 Que	Carya ovata Shagbark hickory 13.1 F ercus velutina Black oak 12.8 F	air Remove 1 air Remove 1 air Remove 1	
1581 Acer rubrum 1582 Carya ovata 1583 Acer rubrum	Red maple 5hagbark hickory Red maple	14.6 Fair Remove 1 19.4 Fair Building 9 Fair Building	1741 Prunus serotina 1742 Acer rubrum 1743 Acer rubrum	Black cherry Red maple Red maple	17.6 Fair 17.1 Fair 5.1 Fair	Drive Remove 1 Building		1900 Tilia americana Bass 1901 Prunus serotina Black 1902 Acer rubrum Red	sswood 6.7 ck cherry 19.4 d maple 7.7	Fair I Poor Fair	Save Save Save	5060 Pr S061 Pr	runus avium Sweet cherry 4.2 F runus avium Sweet cherry 4.2 F	ood x Utility air Save air Save air Save	
1584 Acer rubrum 1585 Quercus alba 1586 Acer rubrum	Red maple White oak Red maple	8.2 Fair Building 19 Fair Remove 1 4.5 Fair Remove 1	1744 Quercus velutina 1745 Prunus serotina 1746 Acer rubrum 1747 Acer rubrum	Black oak Black cherry Red maple Red maple	13.8 Fair 13.1 Fair 10.2 8.1 Fair 13.1 Fair	Building Building Building Building		1904 Quercus velutina Blad 1905 Acer rubrum Red	sswood 18.5 ack oak 17.7 d maple 6 d maple 10.9	7 Fair Fair	Save Save Save Save	5063 Pr 5064 C	runus avium Sweet cherry 8.6 F Carya ovata Shagbark hickory 4.8 F	air Save air Save air x Save	
1587 Prunus serotina 1588 Carya ovata 1589 Acer rubrum 1590 Prunus serotina	Black cherry 5hagbark hickory Red maple Black cherry	8.6 Fair Remove 1 6 Fair Remove 1 10.3 6.1 Fair Remove 1 15.2 Fair Utility	1748 Tilia americana 1749 Acer rubrum 1750 Carya ovata	Basswood Red maple Shagbark hickory	14.4 Fair 17.3 Fair 12.4 Fair	Remove 1 Building Remove 1		1907 Acer rubrum Red 1908 Acer rubrum Red 1909 Acer rubrum Red	d maple 5.2 d maple 21.4 d maple 5.S	Fair I Fair Fair	Save Save	5067 C S068 Pseudo	otsuga menziesii Douglas fir 9.4 Ven	air Save air Save Poor Poor air Save	
1591 Prunus serotina 1592 Acer rubrum 1593 Prunus serotina	Black cherry Red maple Black cherry	11.2FairStreet14.8FairRemove110.1FairStreet	17S1 Tilia americana 17S2 Tilia americana 17S3 Tilia americana 17S4 Acer rubrum	Basswood Basswood Basswood Red maple	18.1 Fair 24 10.3 Fair 17.8 Fair 9.9 Fair	Drive Drive Drive Drive		1911 Acer rubrum Red 1912 Tilia americana Bass	d maple 17.3 d maple 9.6 sswood 1S d maple 7.5	Fair Fair	Utility Utility Save Save	5070 Que 5071 Q	ercus velutina Black oak 27.6 F Quercus alba White oak 14.6 F	air x Remove air Save air Save	27.6
1594 5assafras albidum 1595 Acer rubrum 1596 Prunus serotina 1597 Carya ovata	Sassafras Red maple Black cherry Shagbark hickory	10.6 Fair 5treet 13 Fair 5treet 12.4 Fair 5treet 7.6 Fair 5treet	17S5 Carya ovata 17S6 Tilia americana 17S7 Carya ovata	Shagbark hickory Basswood Shagbark hickory	10.1 Fair 9.6 Very Poor 7.2 Fair	Street Street Street		1914 Acer rubrum Red 1915 Tilia americana Bass 1916 Tilia americana Bass	d maple 12.6 sswood 5.6 sswood 14.2	5 Fair Fair	Save Save	S074 C 5075 Que	Carya ovata Shagbark hickory 21.5 F ercus velutina Black oak 26.4 F	air Utility air Drive air x Remove	26.4
1598 Acer rubrum 1599 Prunus serotina 1600 Prunus serotina	Red maple Black cherry Black cherry	6 Fair Street 14.9 Fair Street 11.6 Fair Street	17S8 Tilia americana 17S9 Acer rubrum 1760 Acer rubrum 1761 Quercus velutina	Basswood Red maple Red maple Black oak	5./ Fair 8.5 Fair 5.4 Fair 21.3 Fair	Drive Street Street Street		1918 Acer rubrum Red 1919 Acer rubrum Red	d maple 10 d maple 12.6 d maple 4.S d maple 9.2	Fair	Save Save Save Save	S077 Fraxi S078 Q	inus americana White ash 4.1 P Quercus alba White oak 5.4 F	air Remove 1 oor Remove 1 air Building air Remove 1	
1601 Acer rubrum 1602 Prunus serotina 1603 Carya ovata	Red maple Black cherry 5hagbark hickory		1762 Acer rubrum 1763 Quercus alba 1764 Quercus velutina	Red maple White oak Black oak	5.2 Fair 21.4 Fair 19.9 Fair	Street Utility Utility		1921 Acer rubrum Red 1922 Quercus alba Whi 1923 Quercus velutina Blad	d maple 6.2 nite oak 20.7 ack oak 25.3	Fair 7 Fair 3 Fair x	Save Save	S080 Q S081 Tili	Quercus alba White oak 23.9 Fi ia americana Basswood 12.5 Fi ercus velutina Black oak 5.3 Fi	air Remove 1 air Remove 1 air Drive	
1604 Carya ovata 1605 Carya ovata 1606 Carya ovata 1607 Carya ovata	5hagbark hickory 5hagbark hickory 5hagbark hickory 5hagbark hickory	11.7 Fair Drive	1765 Acer rubrum 1766 Quercus alba 1767 Prunus serotina 1768 Acer rubrum	Red maple White oak Black cherry Red maple	5.7 Fair 20 Fair 8.8 Poor 8.7 4 Fair	Utility Utility Utility Utility		1925 Tilia americana Bass 1926 Quercus alba Whi	d maple 12.2 sswood 9.8 nite oak 19.6 d maple 6.3	S.8 Fair Fair	Save Save Save	S084 Que S085 Ulm	ercus velutina Black oak 4.4 F nus americana American elm 19.3 F	air Drive air Drive air Street air Street	
1608 Tilia americana 1609 Juglans nigra 1610 Carya ovata	Basswood Black walnut 5hagbark hickory		1769 Quercus velutina 1770 Tilia americana 1771 Prunus serotina	Black oak Basswood Black cherry	16.2 Fair 13.4 Fair 12.2 Fair	Utility Drive Drive Drive		1929 Tilia americana Bass 1930 Tilia americana Bass	ck cherry 13.8 sswood 10.6 sswood 1S	5 Fair 14.4 Fair	Save Save Save	S087 Ace S088 Qu	per saccharum Sugar maple 13.5 F quercus rubra Red oak 15.4 F	air Utility air Remove 1 air Street	
1611 Prunus serotina 1612 Carya ovata 1613 Tilia americana 1614 Ulmus americana	Black cherry 5hagbark hickory Basswood American elm	16.8 Fair 5ave 10.2 Fair 5ave 7.9 Fair 5ave 8.8 Fair 5ave	1772 Carya ovata 1773 Prunus serotina 1774 Tilia americana 1775 Tilia americana	Shagbark hickory Black cherry Basswood Basswood	16.4 Fair 11.7 Fair 17.4 Fair	Building Building Building		1932 Acer saccharum Sugal 1933 Acer rubrum Red	d maple 22.4 ar maple 5.3 d maple 12.5 d maple 12	Fair Fair	Save Save Save Save	S091 Que S092 C	ercus velutina Black oak 17.4 F Carya ovata Shagbark hickory 11.6 F	air Remove 1 air Street air Remove 1	
1615 Acer rubrum 1616 Ulmus americana 1617 Ulmus americana	Red maple American elm American elm	7.3 Fair 5ave 14.9 Fair 5ave 7.4 Fair 5ave	1776 Prunus serotina 1777 Prunus serotina 1778 Acer rubrum 1779 Quercus velutina	Black cherry Black cherry Red maple Black oak	16.7 Poor 9.5 Fair 6.8 4.4 Fair	Building Building Building Remove 1		1936 Acer rubrum Red 1937 Acer saccharum Sugai	d maple 10.4 d maple 13 ar maple 4.3	Fair	Save Save Save	5094 A S095 A	Acer rubrum Red maple 8.6 F Acer rubrum Red maple 14.5 F	air Building air Building air Remove 1 por Building	
1618 Prunus serotina 1619 Carya ovata 1620 Carya ovata 1621 Carya ovata	Black cherry 5hagbark hickory 5hagbark hickory 5hagbark hickory	11.8 Fair Remove 1	1779 Quercus ventura 1780 Tilia americana 1781 Tilia americana 1782 Acer rubrum	Basswood Basswood Red maple	8.S Fair 15.8 Fair 7.5 Fair	Remove 1 Utility Save		1939 Acer rubrum Red 1940 Tilia americana Bass	sswood 16.6 d maple 5.3 sswood 7 ack oak 13.6	Fair Fair	Save Save Save	S097 Ace 5098 Ulm S099 C	per saccharum Sugar maple 4.2 P nus americana American elm 4.4 F Carya ovata Shagbark hickory 12.9 F	oor Remove 1 air Building air Remove 1	
1622 Carya glabra 1623 Carya glabra 1624 Prunus serotina	Pignut hickory Pignut hickory Black cherry	22.8 Fair Remove 1 4.2 Fair Remove 1 12.3 Fair Utility	1783 Prunus serotina 1784 Acer rubrum 1785 Sassafras albidum 1786 Quercus velutina	Black cherry Red maple Sassafras Black oak	16.9 Fair 6.9 Fair 8.2 Fair	Save Save Remove 1 Building		1943 Acer rubrum Red 1944 Tilia americana Bass	d maple 4.S d maple 5.6 sswood 7.9 ark hickory 9.5	Fair	Save Save Save	S101 Thuj 5102 Ace	ja occidentalis Northern white cedar 7.9 P ver saccharum Sugar maple 21 F	air Remove 1 oor Drive air Remove 1 air Drive	
1625 Acer rubrum 1626 Carya ovata 1627 Carya ovata	Red maple Shagbark hickory Shagbark hickory	7.4 Fair Building	1787 Acer saccharum 1788 Sassafras albidum 1789 Carya ovata	Sugar maple Sassafras Shagbark hickory	8.2 Fair 6.3 Fair 12.7 Fair	Building Building Building		1946 Prunus serotina Black 1947 Acer saccharum Sugar 1948 Acer saccharum Sugar	ck cherry 7.S or Maple 4.7 or Maple 6	Fair	Save Save Save	\$104 Acc 5105 Quer	per saccharum Sugar maple 19.6 F rcus macrocarpa Bur oak 22.3 F	air Utility air Drive air x Drive	
1628 Quercus alba 1629 Acer rubrum 1630 Quercus alba 1631 Quercus alba	White oak Red maple White oak White oak	19.4 Fair Building 9 Fair Building 22.5 Fair Building 25.5 Fair x Remove 25.5	1790 Acer rubrum 1791 Acer rubrum 1792 Quercus alba 1793 Acer rubrum	Red maple Red maple White oak Red maple	6.8 Fair 21.6 Fair 17 Fair 5.6 Fair	Building Building Building Building		19S0 Quercus alba Whi 19S1 Acer rubrum Red	ack oak 19.9 nite oak 13.3 d maple 4.3 rican elm 9.4	B Fair Fair	Save Save Save	5108 Ace 5109 Ace	per saccharum Sugar maple 29.6 F per saccharum Sugar maple 22.1 F	air Utility air x Drive air Street	
1632 Acer rubrum 1633 Acer rubrum 1634 Carya ovata	Red maple Red maple 5hagbark hickory	9.8FairRemove16FairRemove113.8FairRemove1	1794 Acer rubrum 1795 Acer rubrum 1796 Carya ovata	Red maple Red maple Shagbark hickory	17.4 Fair 13.6 Fair 17.5 Fair	Building Remove 1 Building		19S3 Acer rubrum Red 19S4 Tilia americana Bass 19S6 Acer rubrum Red	d maple 10.3 sswood 10.4 maple 8.1	B Fair	Save Save Save	S111 Acc S112 Acc	per saccharum Sugar maple 8.6 F per saccharum Sugar maple 19.1 F	air Utility air Street air Street air Utility	
1635 Quercus alba 1636 Prunus serotina 1637 Quercus alba 1638 Carya ovata	White oak Black cherry White oak 5hagbark hickory	26.6 Fair x 5ave 8.6 Fair 5ave 28 Fair x 5ave 6.4 Fair Utility	1797 Acer rubrum 1798 Acer rubrum 1799 Quercus velutina 1800 Sassafras albidum	Red maple Red maple Black oak Sassafras	4.2 Fair 8.6 Fair 2S Fair x 6.2 Fair	Building Remove 1 Remove Remove 1	25	19S8 Acer rubrum Red 19S9 Quercus alba Whi	ck cherry 7.9 d maple 5.1 nite oak 17.4 ed oak 11.1	Fair I Fair	Save Utility Remove 1 Save	5114 Ace S115 Ace S116 Tili	ter saccharum Sugar maple 21.7 F ter saccharum Sugar maple 5.2 F ia americana Basswood 16.8 6.S F	air Street air Street air Utility	
1639 Carya ovata 1640 Carya ovata 1641 Carya ovata	5hagbark hickory 5hagbark hickory 5hagbark hickory	7.3 Fair Remove 1 9 Fair Remove 1 11.6 Fair 5ave	1801 Prunus serotina 1802 Carya ovata 1803 Tilia americana	Black cherry Shagbark hickory Basswood	9.1 Fair 11.7 Fair 14.7 Fair	Building Building Utility		1961 Acer rubrum Red 1962 Quercus velutina Blad 1963 Acer rubrum Red	d maple 7.2 ack oak 22.5 d maple 15.7	Fair 5 Fair 7 Fair	Save Save	S118 C S119 C	Carya ovata Shagbark hickory 9.1 F Carya ovata Shagbark hickory 4.4 F	air Building air Building air Building air Building	
1642 Quercus alba 1643 Prunus serotina 1644 Quercus rubra 1645 Carya ovata	White oak Black cherry Red oak 5hagbark hickory	22.8 Fair Building 15.4 Fair Utility 8.1 Fair Building 7.6 Fair Sidewalk	1804 Acer rubrum 1805 Carya ovata 1806 Tilia americana 1807 Acer rubrum	Red maple Shagbark hickory Basswood Red maple	1S Fair 8.6 Fair 10.9 9.8 Fair 6.7 Fair	Utility Remove 1 Utility Street		1965Acer rubrumRed1966Acer rubrumRed	d maple 13.6 d maple 8.2 d maple 11 ack oak 26	Fair Fair	Save Save Save Save	5121 C 5122 C	Carya ovata Shagbark hickory 8.3 F Carya ovata Shagbark hickory 7.3 F	air Building air Building air Building	
1645 Carya ovata 1646 Carya ovata 1647 Acer rubrum 1648 Carya ovata	5hagbark hickory Red maple 5hagbark hickory		1808 Carya ovata 1809 Carya ovata 1810 Carya ovata	Shagbark hickory Shagbark hickory Shagbark hickory	10.2 Fair 8.8 Fair 6.5 Fair	Remove 1 Street Street		1969 Acer rubrum Red 1970 Quercus velutina Blad	ar maple 5.6 d maple 5.3 ack oak 23.8	Fair B Fair	Utility Remove 1 Remove 1	5125 Tili \$126 Ace	ia americana Basswood 8.4 F er saccharum Sugar maple 29 F	air Building air Building air x Drive air Street	
1649 Prunus serotina 1650 Juglans nigra 1651 Carya ovata	Black cherry Black walnut Shagbark hickory		1811 Prunus serotina 1812 Prunus serotina 1813 Quercus alba 1814 Quercus velutina	Black cherry Black cherry White oak Black oak	9.3 Fair 20.5 Fair 20.2 Fair	Remove 1 Street Street Street		1972 Acer rubrum Red 1973 Acer rubrum Red	d maple 7.7 d maple 10.8 d maple 5.7 d maple 9.4	3 6.2 Fair Fair	Building Building Building Building	S128 C 5129 Ulm	Carya ovata Shagbark hickory 11.1 F nus americana American elm S.2 F	air Utility air Drive air Drive	
1652 Prunus serotina 1653 Ulmus americana 1654 Carya glabra 1655 Tilia americana	Black cherry American elm Pignut hickory Basswood	15.9 Fair Remove 1 4.6 Fair Remove 1 11.6 Fair Remove 1 8.1 Fair Remove 1	1815 Quercus alba 1816 Acer rubrum 1817 Prunus serotina 1818 Acer rubrum	White oak Red maple Black cherry Red maple	22.6 Fair 8.4 Fair 14.3 Fair	Drive Drive Drive Building		1976 Acer rubrum Red 1977 Acer rubrum Red		3 9.4 Fair 4.3 Fair Fair	Building Building Building Building	S132 Ulm 5133 C	nus americana American elm 6 Carya ovata Shagbark hickory 7.5	air x Drive air Drive air Building	
1656 Carya ovata 1657 Acer saccharum 1658 Prunus serotina	5hagbark hickory 5ugar maple Black cherry	14.4 Fair Remove 1 15.9 Fair Remove 1	1819 Acer rubrum 1820 Acer rubrum 1821 Acer rubrum	Red maple Red maple Red maple Red maple	7.4 Fair 13.4 Fair 5.3 Fair	Remove 1 Remove 1 Drive		1979 Quercus alba Whi 1980 Tilia americana Bass	nite oak 21 sswood 16.1 ack oak 24.6		Building Building Building Building	S135 Q S136 Ace	Quercus alba White oak 14.8 F er saccharum Sugar maple 13.3 F	air x Building air Building air Building air Building	
1659 Prunus serotina 1660 Carya ovata 1661 Prunus serotina 1662 Ulmus americana	Black cherry 5hagbark hickory Black cherry American elm	16.9 Poor 5ave 6.9 Fair Remove 1 13.9 Fair 5ave 7.8 Fair 5ave	1822 Tilia americana 1823 Carya ovata 1824 Sassafras albidum 1825 Acer rubrum	Basswood Shagbark hickory Sassafras Red maple	8.6 Fair 12.3 Fair 12.7 Very Poor 6 Good	Remove 1 Drive Drive Building		1983 Acer rubrum Red 1984 Acer rubrum Red	ack oak 21.3 d maple 8.5 d maple 5.7 sswood 7.5	Fair Fair	Building Remove 1 Utility Remove 1	S138 C S139 Qu S140 Q	Carya ovata Shagbark hickory 6.9 F Juercus rubra Red oak 15.2 12.6 12.S F Quercus alba White oak 14 F	air Remove 1 air Building air Save	
1663 Prunus serotina1664 Quercus velutina1665 Quercus velutina	Black cherry Black oak Black oak	14.4 Fair 5ave 19.2 Poor 5ave 14.6 Fair 5ave	1826 Prunus serotina 1827 Acer rubrum 1828 Tilia americana	Black cherry Red maple Basswood	8.1 Good 12.4 Good 24.4 20.9 Good	Building Building Building		1986 Acer rubrum Red 1987 Acer rubrum Red 1988 Tilia americana Bass	d maple 11.4 d maple 14.2 sswood 14.5	Fair 2 Fair 5 Fair	Save Save Save	5142 Sass \$143 Sass	safras albidum Sassafras 12.3 F safras albidum Sassafras 10.3 F	air Remove 1	
1666 Ulmus americana 1667 Prunus serotina 1668 Prunus serotina 1669 Tilia americana	American elm Black cherry Black cherry Basswood	5.8 Fair 5ave 16.2 Fair 5ave 15.6 Fair 5ave 16.4 Fair 5ave	1829 Acer saccharum 1830 Prunus serotina 1831 Acer rubrum 1832 Carya ovata	Sugar maple Black cherry Red maple Shagbark hickory	6.8 Good 11.3 Very Poor 18.6 Fair 13.5 Fair	Building Building Building Building		1990 Acer rubrum Red 1991 Acer rubrum Red	d maple 8.4 d maple 13.9 d maple 16.4 ed oak 23.7	9 Fair 1 Fair	Remove 1 Remove 1 Building Building	5145 Q 5146 C	Quercus alba White oak 22.5 F Carya ovata Shagbark hickory 14.4 F	air Remove 1 air Sidewalk air Remove 1	
1670 Acer rubrum 1671 Prunus serotina 1672 Tilia americana	Red maple Black cherry Basswood	8 Fair 5ave 13.6 Fair 5ave 7.8 Fair 5ave	1833 Carya ovata 1834 Acer rubrum 1835 Carya ovata	Shagbark hickory Red maple Shagbark hickory	6 Fair 17.6 Fair 6.7 Fair	Remove 1 Remove 1 Remove 1		1993 Acer rubrum Red 1994 Acer rubrum Red 1995 Quercus rubra Red	d maple 6.2 d maple 6.1 ed oak 22.6	Fair Fair 5 Fair	Building Building Building	S149 Q 5150 A	Quercus alba White oak 20.7 F Acer rubrum Red maple 9 F	air x Remove air Building air Building	24.3
1673 Prunus serotina 1674 Tilia americana 1675 Acer rubrum	Black cherry Basswood Red maple	17.4 Fair 5ave 10.4 10.1 Fair 5ave 5 Fair 5ave 6.8 6.1 Fair 5ave	1836 Acer rubrum 1837 Prunus serotina 1838 Carya ovata 1839 Acer rubrum	Red maple Black cherry Shagbark hickory Red maple	11.7 Fair 15.S Fair 7.9 Fair 24 Fair x	Remove 1 Remove 1 Utility Remove	24	1997 Acer rubrum Red 1998 Tilia americana Bass	ack oak 20.6 d maple 7 sswood 9.1 d maple 16.3	6.6 5.2 Fair Fair	Remove 1 Utility Remove 1 Save	S1S2 C S1S3 Ulm	Carya ovata Shagbark hickory 15 F nus americana American elm 9.9 F	air Building air Building air Building air Building	
1676 Acer rubrum 1677 Tilia americana 1678 Prunus serotina 1679 Acer saccharum	Red maple Basswood Black cherry 5ugar maple	6.8 6.1 Fair 5ave 16.2 Fair 5ave 14.5 Fair 5ave 13.2 Fair Remove 1	1840 Prunus serotina 1841 Prunus serotina 1842 Prunus serotina	Black cherry Black cherry Black cherry	11.3 Fair 11.7 Fair 8.8 Fair	Remove 1 save Save		5001 Thuja occidentalis Northern 5002 Quercus velutina Blac	ed oak 16.4 n white cedar 8.6 ack oak 34.1	Fair L Fair x	Save Save	S1S6 Ulm S1S7 C	nus americana American elm 5.9 F Carya ovata Shagbark hickory 6.9 F	air Utility air Remove 1 air Remove 1	
1680 Tilia americana 1681 Ulmus americana 1682 Tilia americana	Basswood American elm Basswood	7.3 Fair Utility 4.7 Fair Utility 22 6.2 Fair Remove 1	1843 Prunus serotina 1844 Tilia americana 1845 Acer rubrum 1846 Prunus serotina	Black cherry Basswood Red maple Black cherry	5.1 Fair 4.S Fair 13.5 Fair	Save Save Save Save		S004 Quercus alba Whi 5005 Prunus serotina Black	nite oak 25.8 nite oak 32.2 :k cherry 26.5 ark hickory 16.2	2 Good x 5 Very Poor x	Save Save Save Remove 1	5159 Qu S160 C	uercus rubra Red oak 5.4 F Carya ovata Shagbark hickory 7.6 F	air Utility air Utility air Utility air Street	
1683 Quercus alba 1684 Tilia americana 1685 Juglans nigra 1686 Tilia americana	White oak Basswood Black walnut Basswood	19.2 Fair 5ave 10.8 Fair Remove 1 24.9 Fair x Building 6.3 Fair Building	1847 Quercus velutina 1848 Prunus serotina 1849 Carya ovata	Black cherry Shagbark hickory	27.8 Fair x 11 Fair 13.4 Fair	Save Save Remove 1		S008 Tilia americana Bass 5009 Quercus alba Whi	sswood 22 sswood 7 nite oak 28.7		Remove 1 Remove 1 Utility	5162 C S163 A	Carya ovata Shagbark hickory 11.8 F Acer rubrum Red maple 6.3 4.6 F nus americana American elm 7.8 F	air Street air Utility air Utility	
1687 Ulmus americana 1688 Prunus serotina 1689 Tilia americana	American elm Black cherry Basswood	9.9 Fair Building 8.2 Fair Remove 1 17.3 6 Fair Remove 1	1850 Acer rubrum 1851 Carya ovata 1852 Quercus rubra 1853 Quercus alba	Red maple Shagbark hickory Red oak White oak	7.6 Fair 17.8 Fair 1S.S Fair	Remove 1 Save Save Save		5011 Quercus alba Whi 5012 Pseudotsuga menziesii Dou 5013 Thuja occidentalis Northem	sswood 10.8 nite oak 27.2 uglas fir 10.5 n white cedar 10.1	2 Fair x 5 Fair L Very Poor	Save Save Save Save	5166 C S167 Q	Carya ovata Shagbark hickory 8.5 F Quercus alba White oak 24.2 F	air Remove 1 air Sidewalk air x Drive	
1690 Prunus serotina1691 Quercus alba1692 Carya ovata	Black cherry White oak 5hagbark hickory White oak	9.8 Fair Remove 1 6.7 Fair Building 5.9 Fair Building 13.3 Fair Building	18S4 Carya ovata 18S5 Acer rubrum 18S6 Acer rubrum	Shagbark hickory Red maple Red maple	16.6 Fair 4.8 Fair 10.5 Fair	Remove 1 Remove 1 Street		5014 Quercus alba Whi 5015 Tilia americana Bass 5016 Quercus alba Whi	nite oak 28.8 sswood 8.5 nite oak 23	B Fair x Fair Fair	Save Save Save	5169 Ulm S170 A	nus americana American elm 7.9	air Drive air Drive air Drive air Utility	
1693 Quercus alba 1694 Quercus alba 1695 Tilia americana 1696 Acer rubrum	White oak White oak Basswood Red maple	14.2FairRemove110.3FairBuilding11.6FairBuilding	1857 Carya ovata 1858 Tilia americana 1859 Prunus serotina 1860 Sassafras albidum	Shagbark hickory Basswood Black cherry Sassafras	25.8 Fair 17 Fair 18.5 Poor	Street Street Drive Drive		5018 Tilia americana Bass 5019 Acer negundo Box 5020 Prunus serotina Black	k walnut 15.8 sswood 14 oxelder 8.6 ck cherry 29.6	Fair Very Poor	Save Save Save Save	S172 Qu 5173 A S174 Ulm	uercus rubra Red oak 22 F Acer rubrum Red maple 8.7 F nus americana American elm S.9 F	air Street air Street air Street	
1697 Tilia americana 1698 Quercus velutina 1699 Tilia americana	Basswood Black oak Basswood	18.4 6.1 5.7 Fair Building 22 Fair Building 17.5 Fair Building	1861 Acer rubrum 1862 Tilia americana 1863 Acer rubrum	Red maple Basswood Red maple	19.4 10.1 7 Fair 16.1 Poor 5.6 Poor	Drive Street Street		S021 Thuja occidentalis Northern 5022 Thuja occidentalis Northern 5024 Prunus serotina Black	n white cedar 10.6 n white cedar 9.5 ck cherry 24	5 Fair Fair Very Poor x	Save Save Save	S176 Q 5177 A	Quercus alba White oak 5.1 F Acer rubrum Red maple 7.1 6.2 F	air x Utility air Utility air Utility air Utility	
1700 Tag not used 1701 Acer saccharum 1702 Carya ovata 1703 Tilia americana	5ugar maple 5hagbark hickory Basswood	Fair 5ave 12 Fair Building 12.6 Fair Remove 1 22.2 7.3 Fair Remove 1	1864 Tilia americana 1865 Tilia americana 1866 Prunus serotina	Basswood Basswood Black cherry	17 Poor 13.2 Poor 10.2 Poor	Remove 1 Drive Street		5026 Ulmus americana Ameri	n white cedar 5.5 rican elm 16.5 rian elm 7.9		Save Save Save	S179 Q S180 C	Quercus alba White oak 4.4 F Carya ovata Shagbark hickory 4.4 F	air Utility air Drive air Drive air Drive	
1704 Tilia americana 1705 Carya ovata 1706 Prunus serotina	Basswood 5hagbark hickory Black cherry	13FairRemove120.6Fair5ave14.2Fair5ave										\$182 Qu \$183 Qu \$184 Tili	guercus rubra Red oak 12.7 F guercus rubra Red oak 9.S F ia americana Basswood 4.6 F	air Utility air Utility air Utility	
1707 Ulmus americana Design L.L.C.	American elm	5.3 Fair 5ave											,	air Utility air Street Not for Co	netructio





Seal:



Title:

Tree List

Project:

Rigel Terrace Orion Township, Michigan

Prepared for:

Jacobson Moceri Orion LLC Trident Orion LLC 3005 University Drive Auburn Hills, Michigan 48326

Revision: Issued:

Pre-Application
Submission

May 25, 2022 June 29, 2022

Job Number:

Drawn By: Checked By:

Sheet No.

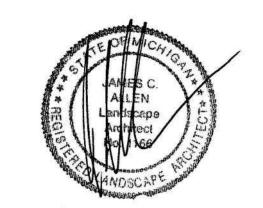
Tree List

Tag Scientific Name Common Name Trunk 1 Trunk 2 Trunk	Replacements Replacement	Tag Scientific Name Common Name Trunk 1 Trunk 2 Trunk 3 Condition Landmark Status Regulated Replacements Replacement Save	Tag Scientific Name Common Name Trunk 1 Trunk 2 Trunk 3 Condition Landmark Status Regulated Replacements Replacement Save	Tag Scientific Name Common Name Trunk 1 Trunk 2 Trunk 3 Condition Landmark Status Regulated Replacements 6161 Quercus velutina Black oak 11.8 Fair Building
Deglare rights Deglare right Deglare rights Deglare right Deglare rights Deglar	Fair Street Fair Fair Street Fair Street Fair Utility Fair Fair Utility Fair Fair Utility Fair Fair Building Fair Fair Swee Fair Swee	December December		5.11





Seal:



Title:

Tree List

Project:

Rigel Terrace Orion Township, Michigan

Prepared for:

Jacobson Moceri Orion LLC Trident Orion LLC 3005 University Drive Auburn Hills, Michigan 48326

Revision: Issued: May 25, 2022

June 29, 2022

Pre-Application Submission

Job Number:

Drawn By: Checked By: jca

Sheet No.

Tree List

re	e List									
								Regulated	Landmark D&H	ì
Tag 6319	Scientific Name Acer saccharum	Common Name Sugar maple	10.6	Trunk 2 Tru	nk 3 Condition Fair	Landmark	Status Utility	Replacements	Replacement	
6320 6321	Castanea dentata Populus tremuloides	American chestnut Quaking aspen	20.6 8.5	0.2	Fair Fair	x	5ave 5ave			
6322 6323	Populus tremuloides Populus deltoides	Quaking aspen Cottonwood	7.6 16.3		Fair Fair		Drive Drive	_		
6324 6325 6326	Populus tremuloides Populus tremuloides Populus tremuloides	Quaking aspen Quaking aspen Quaking aspen	5 9 9.9		Fair Fair Fair		Remove Drive Drive	1		
6327 6328	Populus tremuloides Populus tremuloides Populus tremuloides	Quaking aspen Quaking aspen Quaking aspen	10.8 8.8		Fair Fair Fair		Drive Drive			
6329 6330	Populus tremuloides Populus tremuloides	Quaking aspen Quaking aspen	5.1 9		Fair Fair		Drive Drive			
6331 6332	Populus tremuloides Populus deltoides	Quaking aspen Cottonwood	11.9 16.4		Fair Fair		Utility Utility	1		
6333 6334 6335	Populus deltoides Populus deltoides Populus deltoides	Cottonwood Cottonwood Cottonwood	12.2 5.8 11.7		Fair Fair Fair		Remove Remove Utility	1 1		
6336 6337	Populus deltoides Populus deltoides	Cottonwood Cottonwood	10.4		Fair Fair		Utility Utility			
6338 6339	Populus deltoides Populus deltoides	Cottonwood Cottonwood	4.4 10.4		Fair Fair		Utility Utility Utility			
6340 6341 6342	Populus deltoides Populus deltoides Populus deltoides	Cottonwood Cottonwood Cottonwood	7.8 8.6 8.2	8.3 7.5	Fair Fair Fair		Utility Utility Utility			
6343 6344	Pinus nigra Pinus stobus	Black pine White pine	15.2 7.2	,,,,	Fair Fair		Remove 5ave	1		
6345 6346	Pinus nigra Pinus nigra	Black pine Black pine	11.6 13.4		Poor Poor		5ave 5ave			
6347 6348 6349	Pinus stobus 5assafras albidum 5assafras albidum	White pine 5assafras 5assafras	6.2 4.4 6.9	5	Fair Fair Fair		5ave 5ave 5ave			
6350 6351	5assafras albidum 5assafras albidum	Sassafras 5assafras	10 6.2	· ·	Fair Fair		Remove Remove	1 1		
6352 6353	Acer rubrum Carya ovata	Red maple Shagbark hickory	15.3 6	9.7	Poor Fair		Utility Utility			
6354 6355 6355	Acer rubrum Carya ovata Carya ovata	Red maple 5hagbark hickory Shagbark hickory	5.1 5.7 5.7		Fair Fair Fair		Utility 5ave 5ave			
6356 6356	Quercus velutina Quercus velutina	Black oak Black oak	8.6 8.6		Fair Fair		Remove Remove	1 1		
6357 6358	Prunus serotina Quercus velutina	Black cherry Black oak	12 7.1		Fair Fair		Remove Remove	1 1		
6359 6360 6361	Carya ovata Acer rubrum Acer rubrum	5hagbark hickory Red maple Red maple	12.8 11.2 8.4		Fair Fair Fair		Remove Remove Utility	1 1		
6362 6363	Acer rubrum Acer rubrum	Red maple Red maple	7.2 14.8		Fair Fair		Detention Detention			
6364 6365	Quercus alba Quercus alba	White oak White oak	15 8.5		Fair Fair		Detention Remove	1		
6366 6367 6368	Quercus alba Carya ovata Quercus alba	White oak 5hagbark hickory White oak	16.5 6.2 11.3		Fair Fair Fair		Remove Remove	1 1 1		
6369 6370	Prunus serotina Tilia americana	Black cherry Basswood	9.1 12.7	10 5	Fair 5.9 Fair		Remove Remove	1 1		
6371 6372	Acer saccharum Quercus alba	5ugar maple White oak	7.4 13.4		Fair Fair		5ave Building			
6373 6374 6375	Prunus serotina Quercus alba Acer rubrum	Black cherry White oak Red maple	14.8 7.2	10.1	Fair Fair Fair		Building Building Remove	1		
6376 6377	Prunus serotina Quercus alba	Black cherry White oak	17.8 14.2 8.6	10.1	Fair Fair Fair		Building Building	1		
6378 6379	Populus grandidentata Populus grandidentata	Bigtooth aspen Bigtooth aspen	14 15.5		Fair Fair		Building Building			
6380 6380 6381	Quercus rubra Quercus rubra Ulmus americana	Red oak Red oak American elm	12.2 12.2 7.4		Fair Fair Poor		Building Building Building			
6382 6383	Quercus alba Populus grandidentata	White oak Bigtooth aspen	5.7 15.8		Fair Fair		Building Drive			
6384 6385	Ulmus rubra Ulmus americana	5lippery elm American elm	9.8 14.1		Fair Fair		Drive Utility			
6386 6387 6388	Ulmus americana Acer rubrum Quercus rubra	American elm Red maple Red oak	9.5 11.5 14	8.5	Fair Fair Fair		5treet 5treet 5treet			
6389 6390	Tilia americana Acer rubrum	Basswood Red maple	11.3 8.3	7.8	Fair Fair Fair		5treet Remove	1		
6391 6392	Ulmus americana Acer rubrum	American elm Red maple	12.9 5.4		Fair Poor		Utility Utility			
6393 6394 6395	Carya ovata Ulmus americana Quercus rubra	5hagbark hickory American elm Red oak	7.1 7.9 17		Fair Fair Fair		Utility Drive Drive			
6396 6397	Acer rubrum Quercus rubra	Red maple Red oak	23.1 10.7		Fair Fair		Drive Drive			
6398 6399	Quercus alba Quercus rubra	White oak Red oak	21.8 7.3		Fair Fair		Utility Drive			
6400 6401 6402	Quercus alba Quercus rubra Acer rubrum	White oak Red oak Red maple	23.7 19 6.2	5.9 4	Fair Fair .1 Fair		Building Building Building			
6403 6404	Quercus velutina Quercus velutina	Black oak Black oak	25.2 33.2	5.5	Fair Fair	x x	Building Building			
6405 6406	Ostrya virginiana Quercus alba	Ironwood White oak	4.3 22.5		Fair Poor		Utility Remove	1		
6407 6408 6409	Acer rubrum Ulmus americana Acer rubrum	Red maple American elm Red maple	4.7 4.1 7		Fair Fair Poor		Remove Remove	1 1 1		
6410 6411	Carya ovata Acer rubrum	5hagbark hickory Red maple	20.3 7.5		Fair Fair		Remove Remove	1 1		
6412 6413	Quercus alba Quercus alba	White oak White oak	12.9 12.5		Fair Fair		Remove Remove	1 1		
6414 6415 6416	Acer rubrum Acer rubrum Acer rubrum	Red maple Red maple Red maple	15.2 7.7 6.2		Fair Fair Fair		Remove Utility Remove	1		
6417 6418	Quercus alba Quercus rubra	White oak Red oak	17.2 18.6	5.9	Fair Fair		Building Building			
6419 6420	Acer rubrum Acer rubrum	Red maple Red maple Red oak	11.7 7.5		Fair Fair		Remove Building	1		
6421 6422 6423	Quercus rubra Acer rubrum Quercus velutina	Red maple Black oak	23.8 15.7 20		Fair Fair Poor		Building Remove Remove	1 1		
6424 6425	Acer rubrum Prunus serotina	Red maple Black cherry	6 12.8	4.6	Fair Fair		Remove Remove	1 1		
6426 6427 6427	Carya ovata Acer rubrum Acer rubrum	5hagbark hickory Red maple Red maple	7.5 5.8 5.8		Fair Fair Fair		Remove Remove	1 1 1		
6428 6429	Quercus rubra Quercus rubra	Red oak Red oak	7.5 19		Fair Fair		Remove Remove	1 1		
6430 6431	Quercus velutina Acer rubrum	Black oak Red maple	26.5 7.7		Poor Fair	x	Remove Remove	1	26.5	
6432 6433 6434	Carya ovata Quercus alba Quercus alba	5hagbark hickory White oak White oak	19.9 15.2 9.6		Fair Fair Fair		Remove 5ave Detention	1		
6435 6436	Acer saccharum Quercus alba	5ugar maple White oak	4.4 10.4		Fair Fair		Remove Detention	1		
6437 6438	Prunus serotina Acer rubrum	Black cherry Red maple	13.5 4.8		Fair Fair		Detention Detention	_		
6439 6440 6441	Acer rubrum Quercus alba Acer rubrum	Red maple White oak Red maple	9.1 24.1 11		Fair Fair Fair	x	Remove Detention Remove	1 1		
6442 6443	Carya ovata Carya ovata	Shagbark hickory 5hagbark hickory	4.7 8.7		Fair Fair		Remove Remove	1 1		
6444 6445	Ostrya virginiana Acer rubrum	Ironwood Red maple	5.8 4.5		Fair Fair		Remove Remove	1 1		
6446 6447 6448	Acer rubrum Acer rubrum Quercus velutina	Red maple Red maple Black oak	12.6 11.8 10		Fair Fair Fair		Remove Remove	1 1 1		
6449 6450	Acer rubrum Quercus alba	Red maple White oak	8 11.8	7.3	Fair Fair		Detention Detention	-		
6451 6452	Quercus alba Quercus alba	White oak White oak	7.3 14.6		Fair Fair		Detention Detention	A		
6453 6454 6455	Acer rubrum Acer rubrum Quercus rubra	Red maple Red maple Red oak	8 23.5 4.1		Fair Poor Fair		Remove Remove	1 1 1		
6456 6457	Quercus rubra Quercus alba Ulmus americana	White oak American elm	4.1 18.7 6.1		Fair Fair Fair		Remove 5ave	1		
6458 6459	Ostrya virginiana Acer rubrum	Ironwood Red maple	5 9.2		Fair Fair		5ave Remove	1		
6460 6461 6462	Quercus alba Acer rubrum Quercus alba	White oak Red maple White oak	7.4 6.7 10.7		Fair Fair Fair		Remove Remove	1 1 1		
6463 6464	Acer rubrum Prunus serotina	Red maple Black cherry	5.6 5	4.5	Fair Fair		5ave Remove	1		
6465 6466	Acer rubrum Ostrya virginiana	Red maple Ironwood	10 5.7	7.3	Fair Fair		Remove Remove	1 1		
6467 6468 6469	Acer saccharum Quercus alba Acer rubrum	5ugar maple White oak Red maple	7 15 4.6		Fair Fair Fair		Detention Remove Detention	1		
6470 6471	Prunus serotina Quercus alba	Black cherry White oak	13.7 8.1		Fair Fair		Remove Remove	1 1		
6472 6473	Acer rubrum Prunus serotina	Red maple Black cherry	5.9 4.7		Fair Fair		Remove Remove	1 1		

Tag	Scientific Name	Common Name	Trunk 1	Trunk 2	Trunk 3	Condition	Landmark	Status	Regulated Replacements	Landmark DBH Replacement
6474	Tilia americana	Basswood	5.4	•	•	Fair	•	Remove	1	
6475	Acer rubrum	Red maple	4.5			Fair		Remove	1	
6476	Quercus velutina	Black oak	23.9			Fair		Remove	1	
6477	Ostrya virginiana	Ironwood	8.1			Fair	x	Remove		8.1
6478	Quercus velutina	Black oak	8.7			Fair		Detention		
6479	Acer rubrum	Red maple	5.3	4.7		Fair		Detention		
6480	Acer rubrum	Red maple	6.2			Fair		Detention		
6481	Acer rubrum	Red maple	6.7			Fair		Detention		
6482	Quercus velutina	Black oak	23.6			Fair		Detention		
6483	Quercus alba	White oak	4.4			Fair		Remove	1	
6484	Quercus velutina	Black oak	4.8			Fair		Remove	1	
6485	Quercus alba	White oak	6.1			Fair		Remove	1	
6486	Acer rubrum	Red maple	6.8			Fair		Remove	1	
6487	Acer rubrum	Red maple	9.7			Fair		Remove	1	
6488	Quercus velutina	Black oak	7.6			Fair		Remove	1	
6489	Quercus velutina	Black oak	18.6			Fair		Detention		
6490	Acer rubrum	Red maple	5.7	5		Fair		Detention		
6491	Acer rubrum	Red maple	8.2			Fair		Detention		
6492	Quercus rubra	Red oak	16.5			Fair		Detention		
6493	Quercus alba	White oak	11.8			Fair		Detention		
6494	Acer rubrum	Red maple	7.3			Fair		Remove	1	
6494	Acer rubrum	Red maple	7.3			Fair		Remove	1	
6495	Quercus alba	White oak	9	8		Fair		Remove	1	
6496	Quercus alba	White oak	16.3			Fair		Remove	1	
6497	Quercus rubra	Red oak	24.1			Fair	x	Remove		24.1
6498	Acer rubrum	Red maple	6.3	6	5.9	Fair		Save		
6499	Castanea dentata	American chestnut	13.6			Fair	X	Save		
						_	lated Trees dmark DBH		595	702.7

Woodland Summary

Tree Inventory Performed by Barr Engineering, Inc.

Total Trees	2,094 Trees
Regulated Trees Removed Regulated Trees Replacement Landmark DBH Removed Landmark Replacement Required Total Replacement Required	595 Trees 595 Trees 703" 234 Trees (703 / 3) 595 Trees, 2.0" Deciduous or 6' Evergreen 234 Trees, 3.0" Deciduous or 8' Evergreen

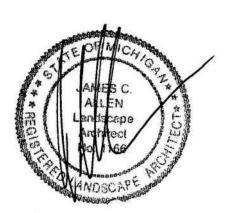
Legend

Tree is Located within a Building Envelope and is Exempt.
Tree is Located within a Detention Pond and is Exempt.
Tree is Located within a Driveway and is Exempt.
Tree Designated at Landmark Status per Ordinance Sec. 27.12(L)
Tree Recommended for Replacement Exemption due to Very Poor or Dead Condition.
Tree is Removed and will be Replaced.
Tree is Located within a Sidewalk.
Tree is Located within a Street and is Exempt.
Tree is Located Over a Utility and is Exempt.
Tree Recommended for Replacement Exemption per Ordinance Sec. 27.12(D)8





Seal:



Tree List

Project:

Rigel Terrace Orion Township, Michigan

Prepared for:

Jacobson Moceri Orion LLC Trident Orion LLC 3005 University Drive Auburn Hills, Michigan 48326

Revision: Issued: May 25, 2022 June 29, 2022 Pre-Application

Submission

Job Number:

21-017

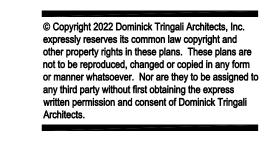
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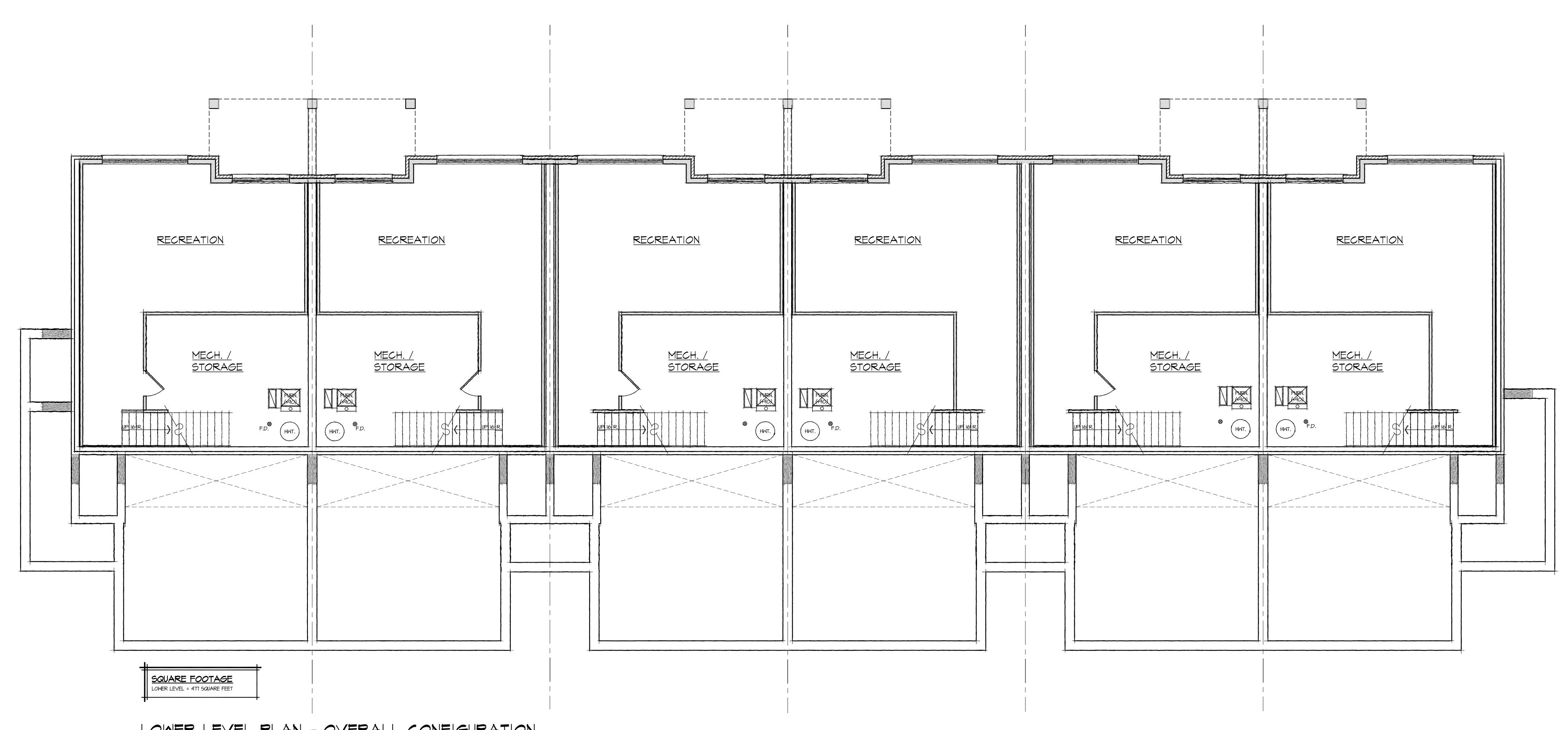
jca

Not for Construction

Sheet No.

L-9





LOWER LEVEL PLAN - OVERALL CONFIGURATION

SCALE: 3/16" = 1'-0"

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ARCHITECTS
3005 University Suite 100 Tel 248 340 9400
Auburn Hills MI 48326

MOCERI RIGEL TERRACE BUILDING # 4-PLEX 2-CAR FRONT ENTRY

Review Set:

Permit:

Final Set: 05/27/22

Revisions:

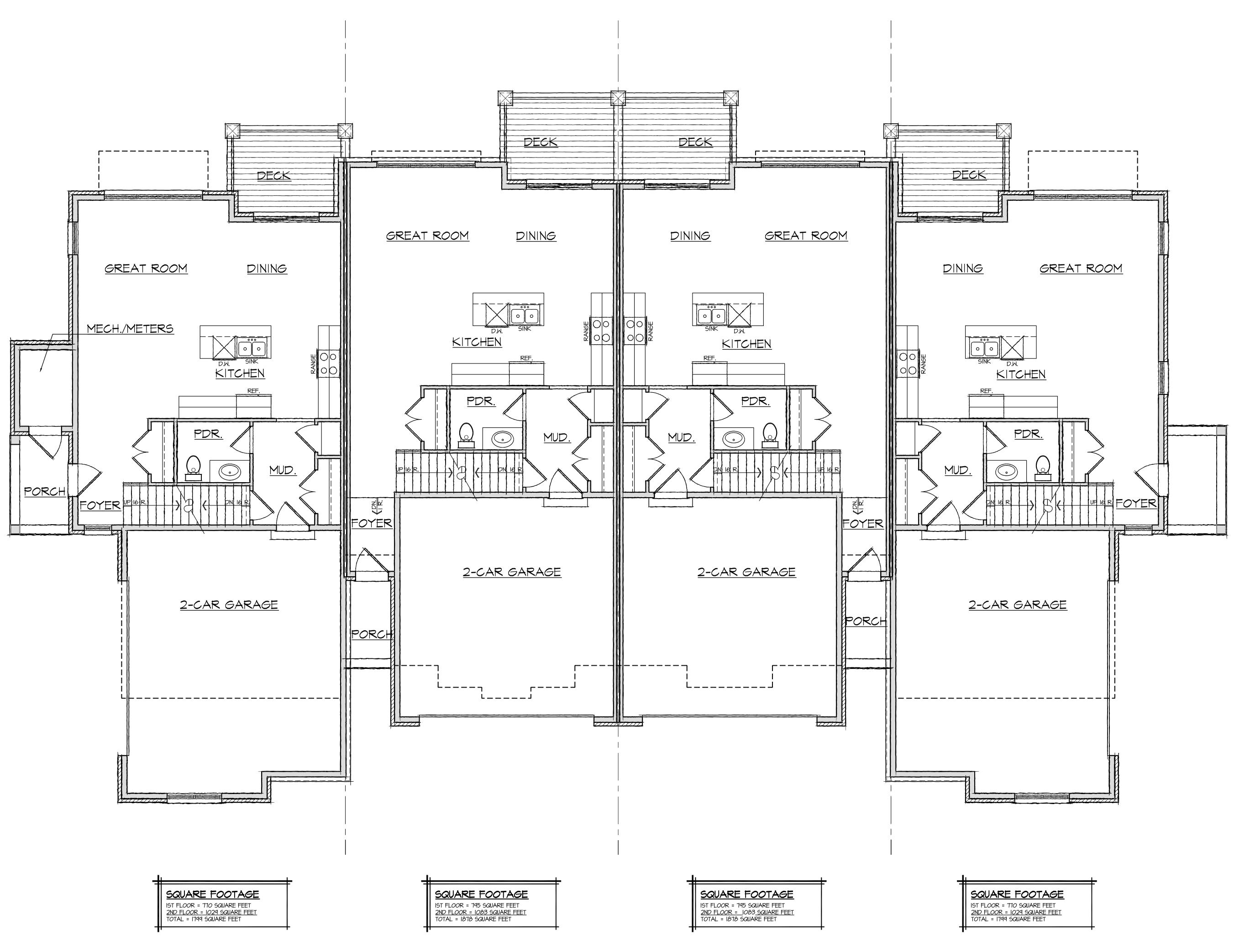
Drwn: B.H., S.C.

Chkd: M.G.

Job No.

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A1



FIRST FLOOR PLAN

SCALE: 1/4" = 1'-0"

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MOCERI RIGEL TERRACE BUILDING # 4-PLEX 2-CAR FRONT ENTRY

Review Set:

Permit:

Final Set: 05/27/22

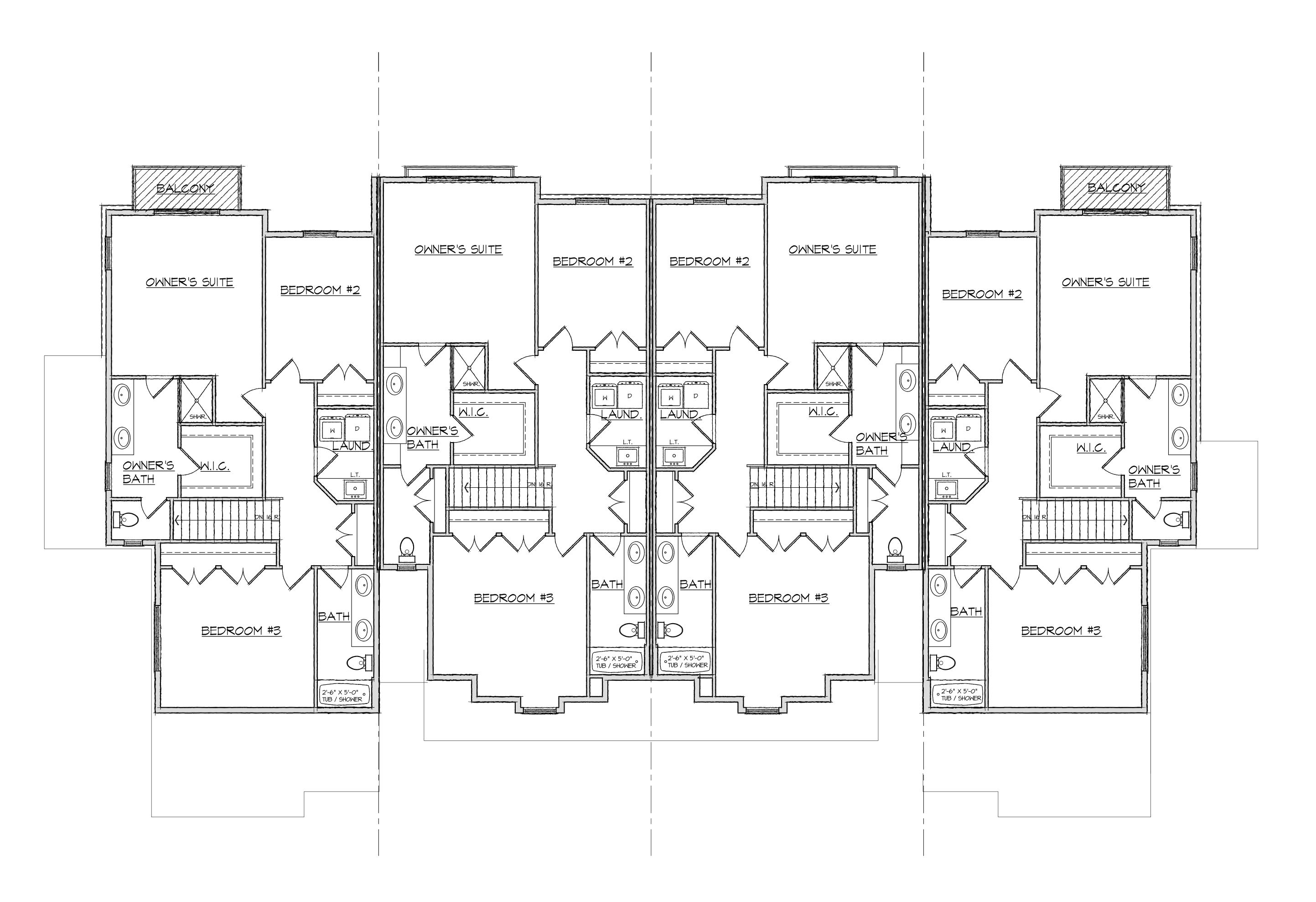
Revisions:

Drwn: B.H., S.C.

Chkd: M.G.

Job No.

et No.



SECOND FLOOR PLAN

SCALE: 1/4" = 1'-0"

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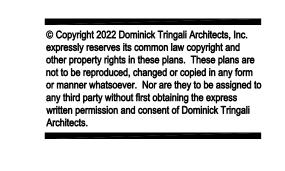
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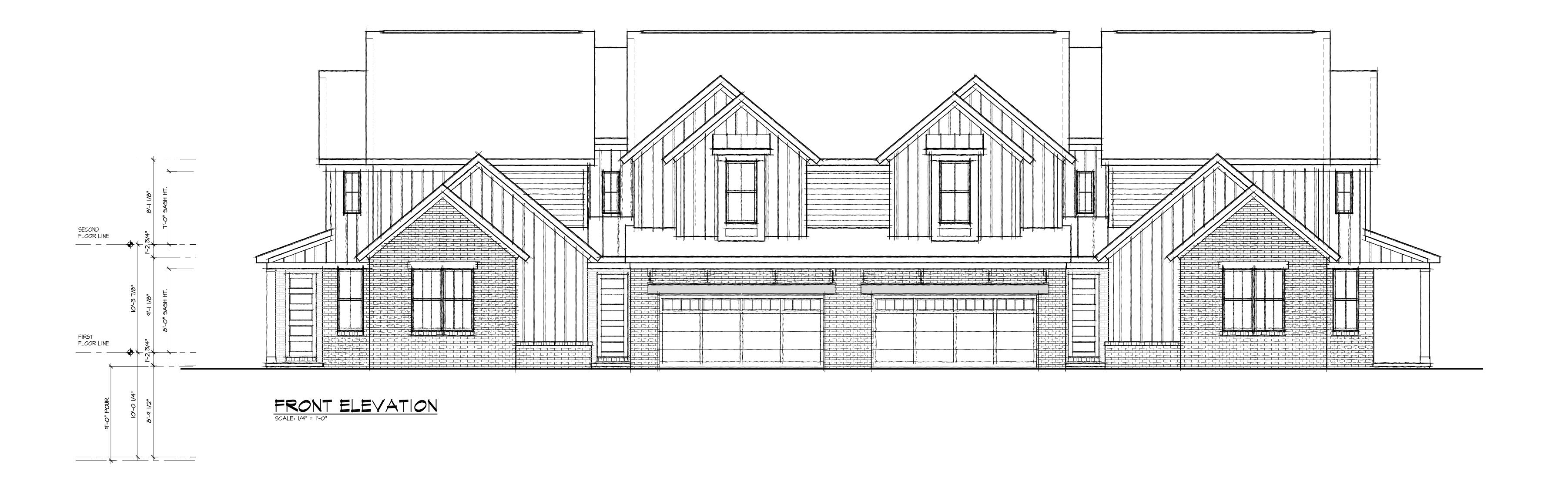
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A3







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MOCERI RIGEL TERRACE BUILDING # 4-PLEX 2-CAR FRONT ENTRY

Review Set:

Permit:

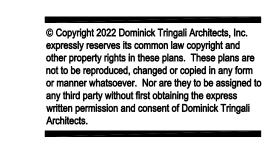
Final Set: 05/27/22

Revisions:

Orwn: B.H., S.C.
Chkd: M.G.

77089

neet No.







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MOCERI RIGEL TERRACE BUILDING # 4-PLEX 2-CAR FRONT ENTRY

Drwn: B.H., S.C.

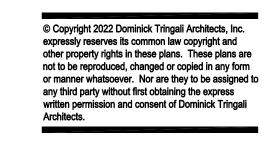
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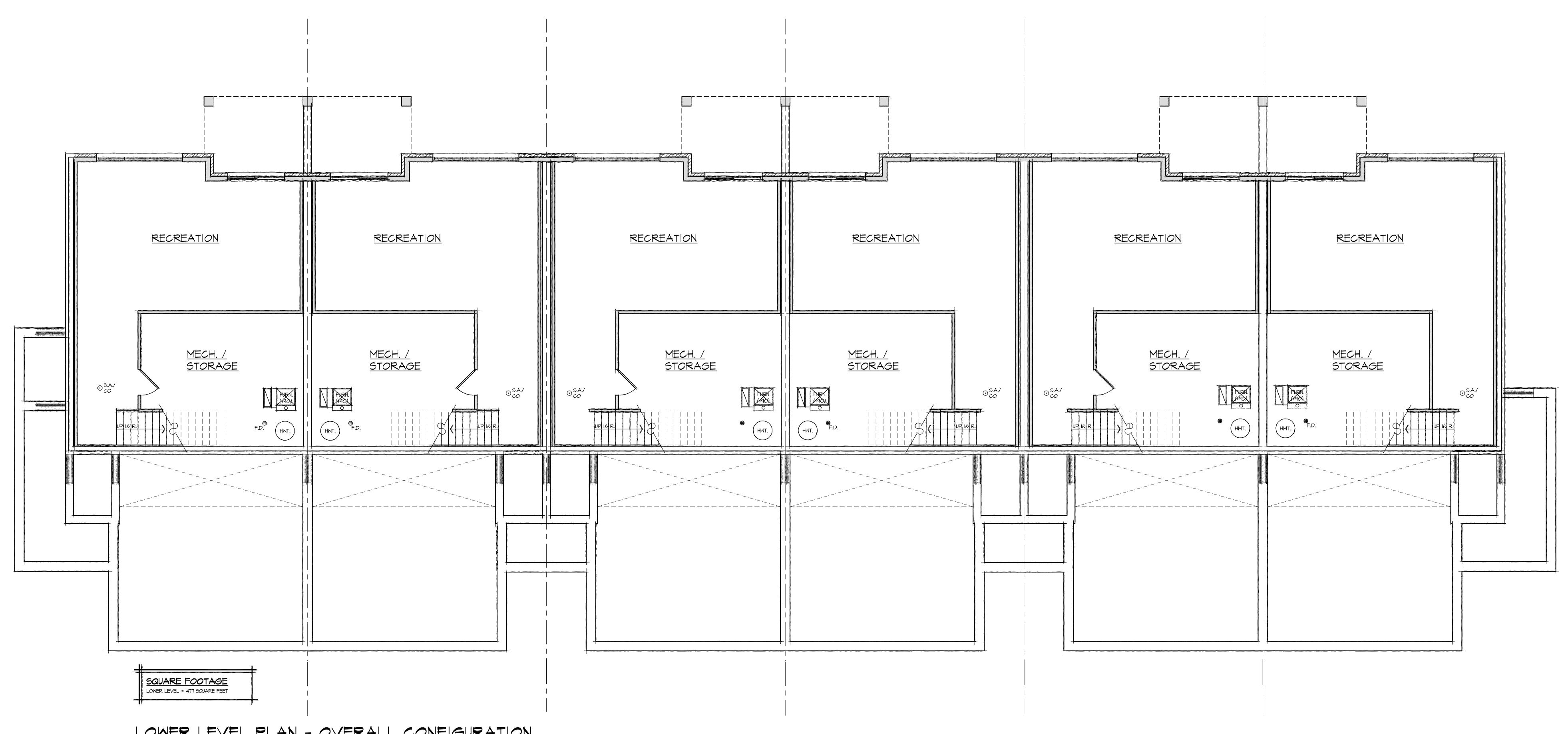
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Sheet No.

A5

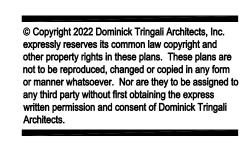


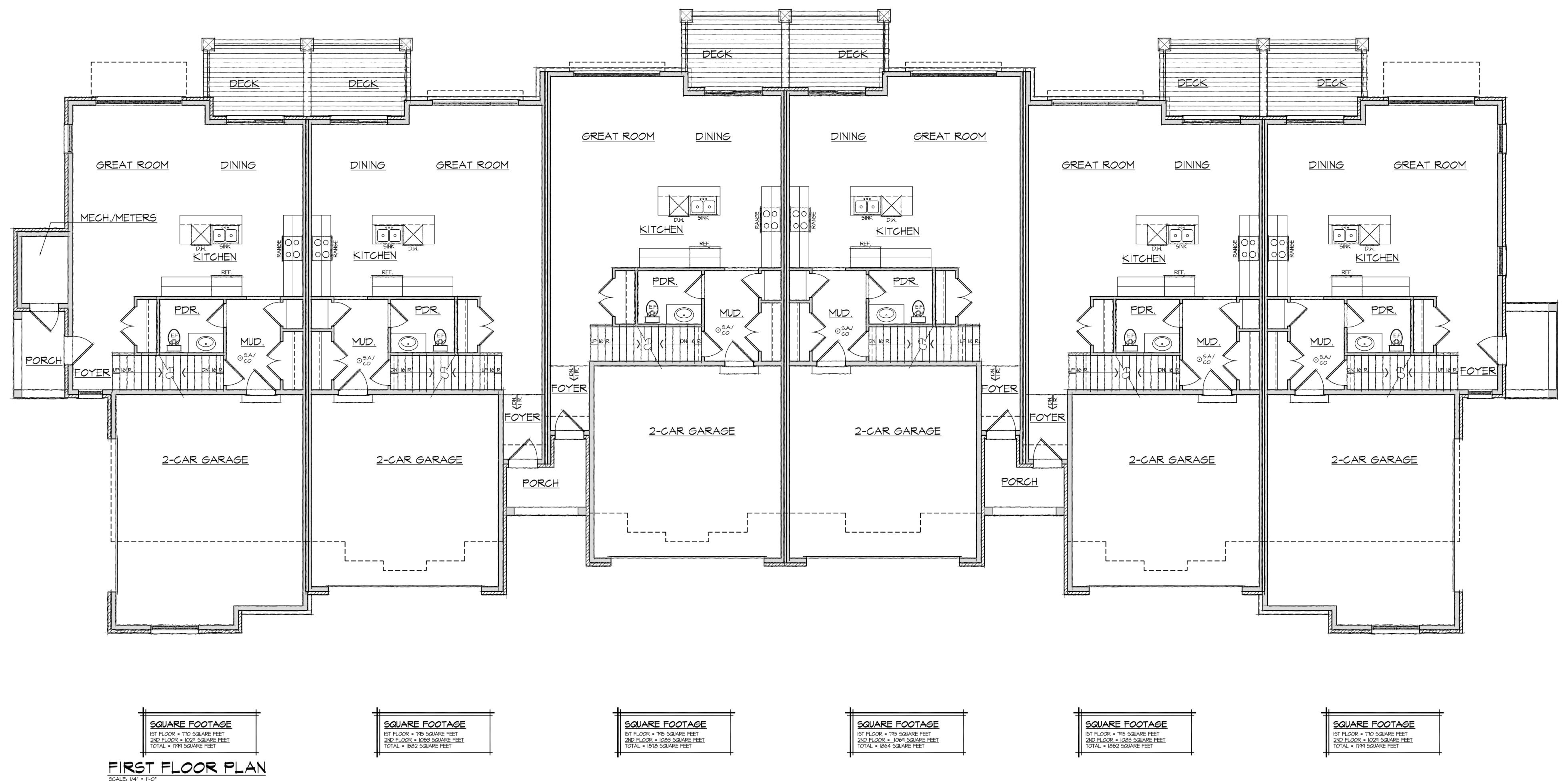


LOWER LEVEL PLAN - OVERALL CONFIGURATION
SCALE: 3/16" = 1'-0"

 $STRUCTURE \cdot INTEGRITY \cdot TRADITION^{\circledcirc}$

MOCERI RIGEL TERRACE BUILDING # 6-PLEX 2-CAR FRONT ENTRY





MOCERI STRUCTURE · INTEGRITY · TRADITION®

DOMINICKTRINGALI
ARCHITECTS
3005 University Suite 100
Tel 248 340 9400
Auburn Hills MI 48326

MOCERI RIGEL TERRACE BUILDING # 6-PLEX 2-CAR FRONT ENTRY

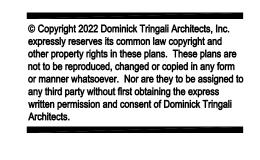
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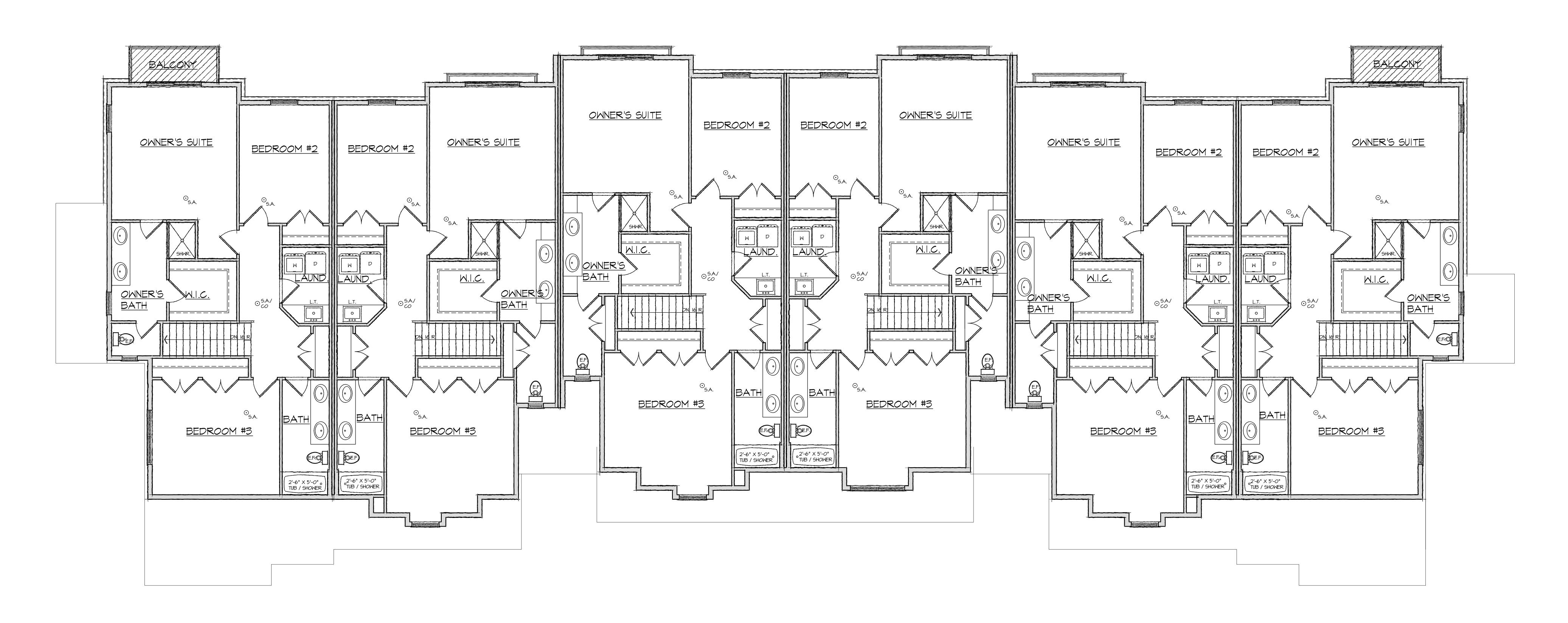
Permit:

Final Set: 05/27/22

Revisions:

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SECOND FLOOR PLAN

SCALE: 1/4" = 1'-0"

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Review Set:

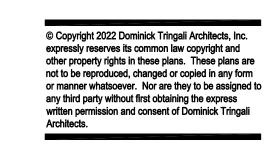
Permit:

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Chkd: M.G.

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LEFT ELEVATION

SCALE: 1/4" = 1'-0"

121

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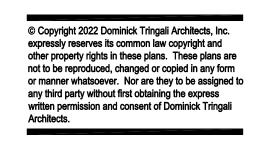
Drwn: B.H., S.C.
Chkd: M.G.

Job No.

22089

Sheet No.

A9





REAR ELEVATION

SCALE: 1/4" = 1'-0"



RIGHT ELEVATION

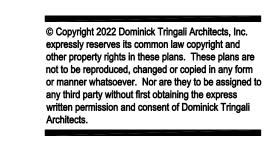
SCALE: 1/4" = 1'-0"

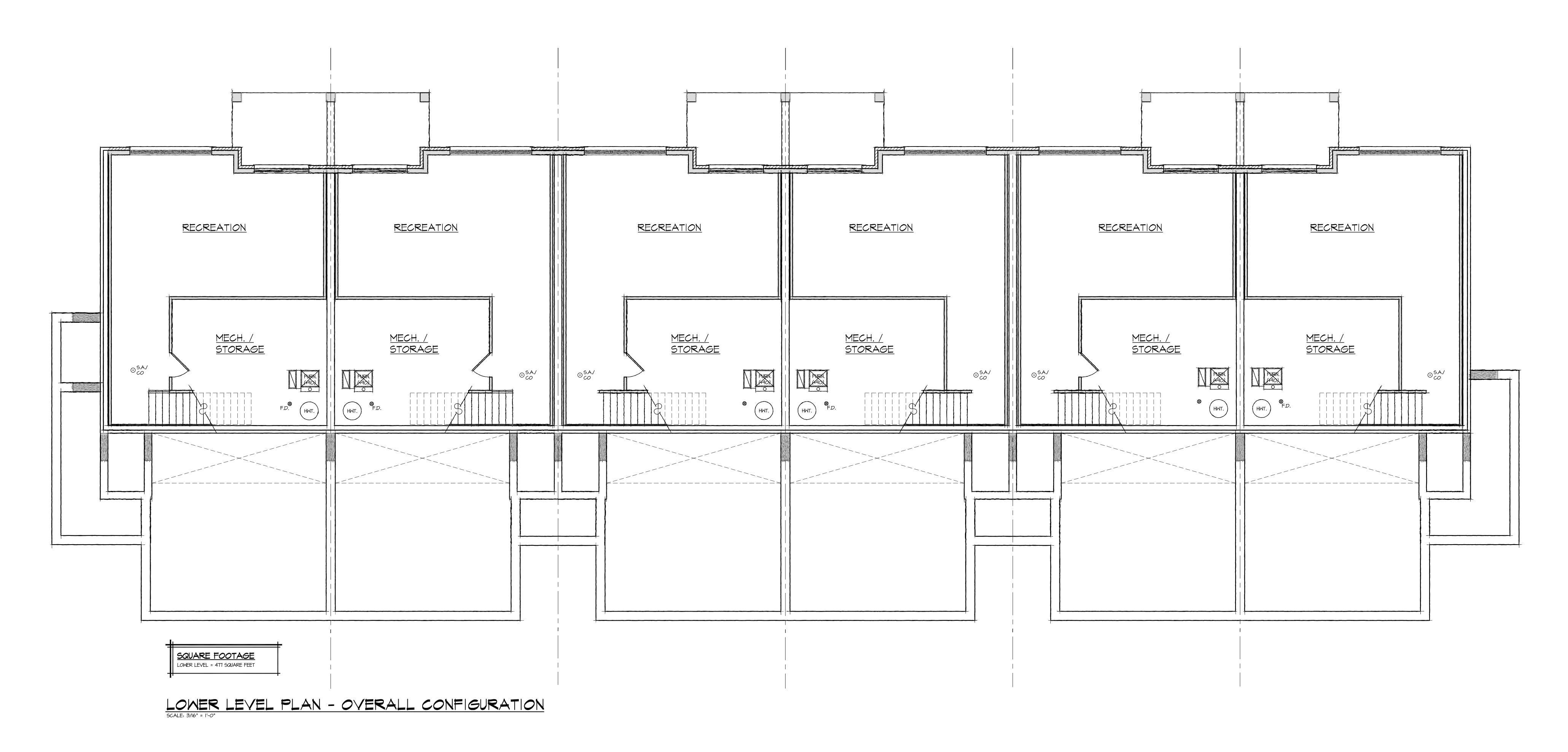
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MOCERI RIGEL TERRACE BUILDING # 6-PLEX 2-CAR FRONT ENTRY

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MOCERI RIGEL TERRACE BUILDING # 6-PLEX 2-CAR FRONT ENTRY

Review Set:

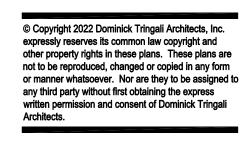
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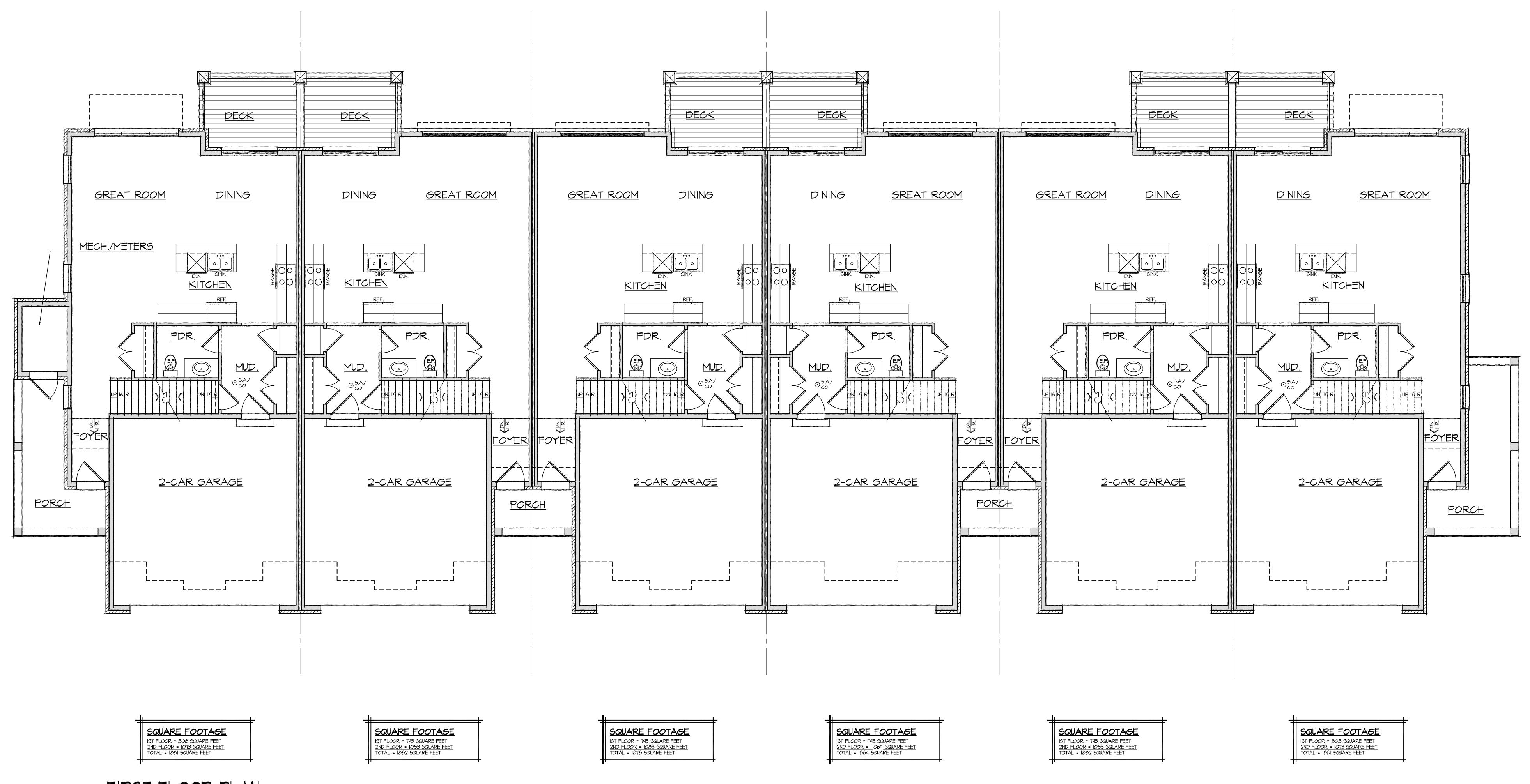
Final Set: 05/21/22

Revisions:

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FIRST FLOOR PLAN

SCALE: 1/4" = 1'-0"

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MOCERI RIGEL TERRACE BUILDING # 6-PLEX 2-CAR FRONT ENTRY

Final Set: 05/27/22
Revisions:

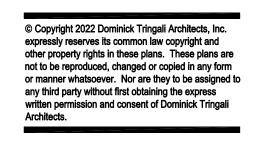
Drwn: B.H., S.C.
Chkd: M.G.

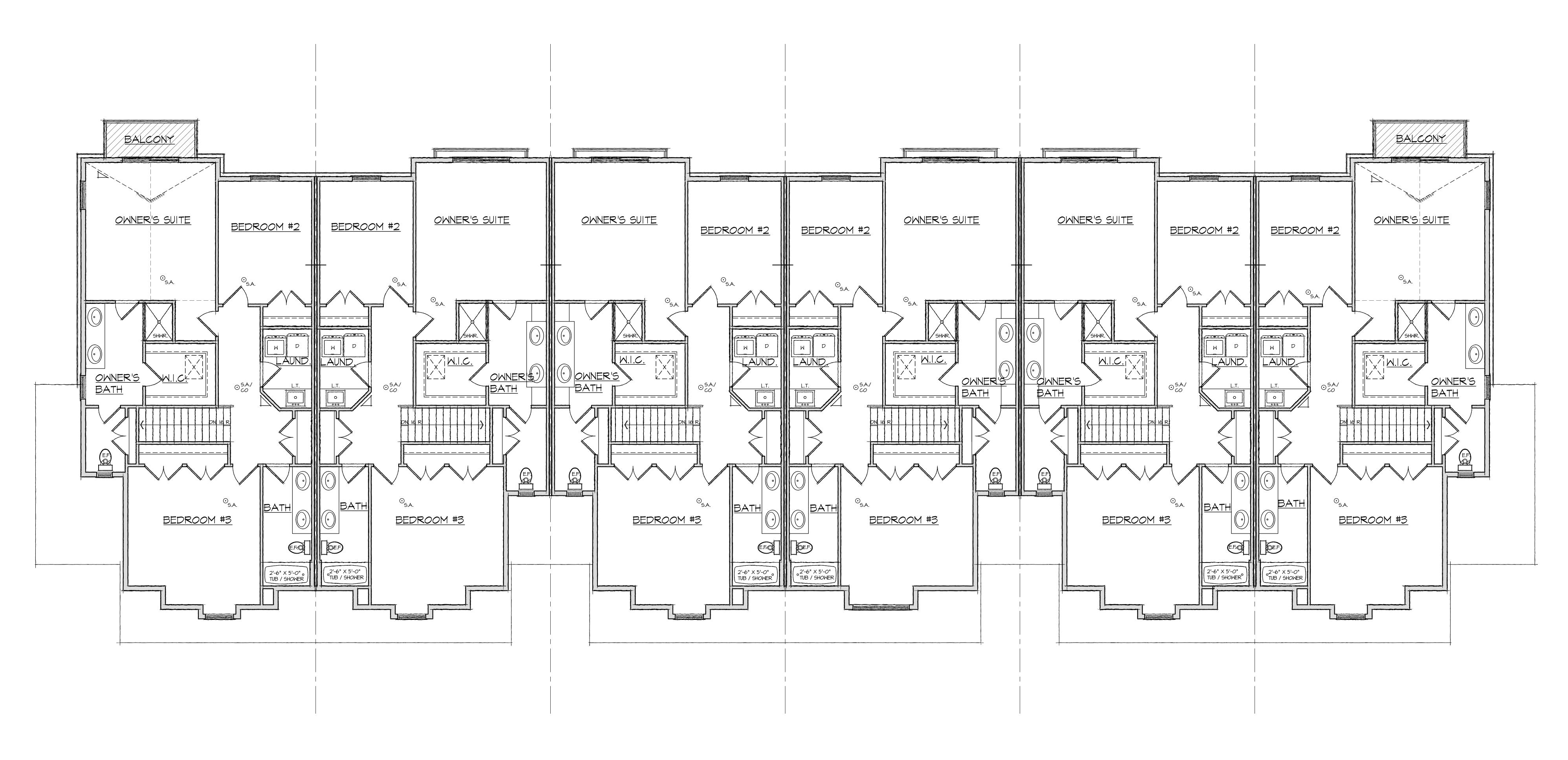
Job No.

22089

Sheet No.

A12





SECOND FLOOR PLAN

SCALE: 1/4" = 1'-0"

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MOCERI RIGEL TERRACE BUILDING # 6-PLEX 2-CAR FRONT ENTRY

Review Set:

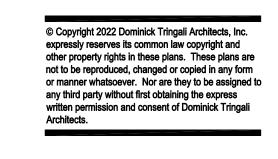
Permit:

Final Set: 05/27/22

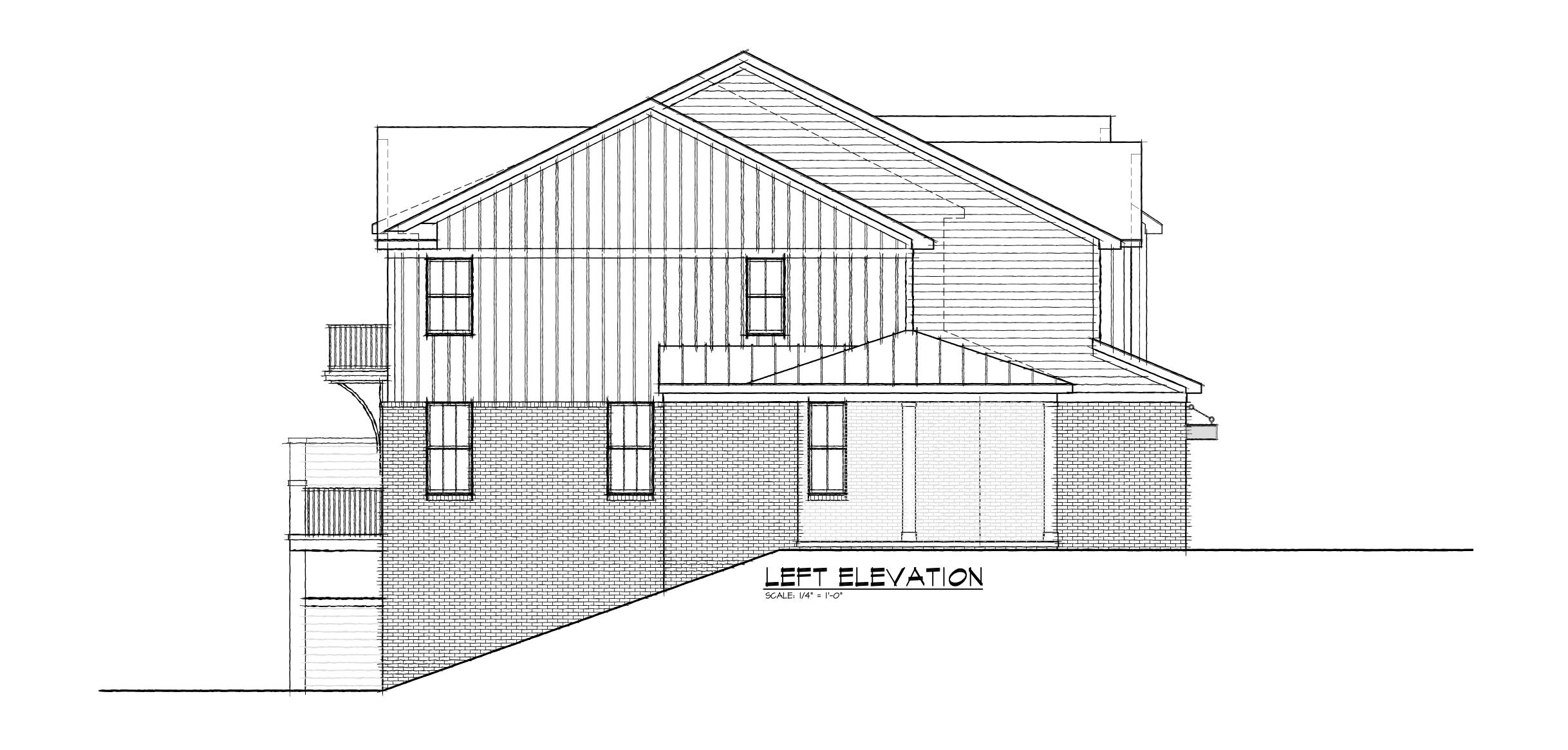
Revisions:

Drwn: B.H., S.C.
Chkd: M.G.
Job No.

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MOCERI RIGEL TERRACE BUILDING # 6-PLEX 2-CAR FRONT ENTRY

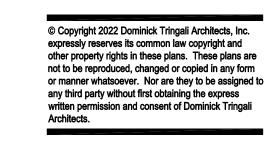
Drwn: B.H., S.C.
Chkd: M.G.

Job No.

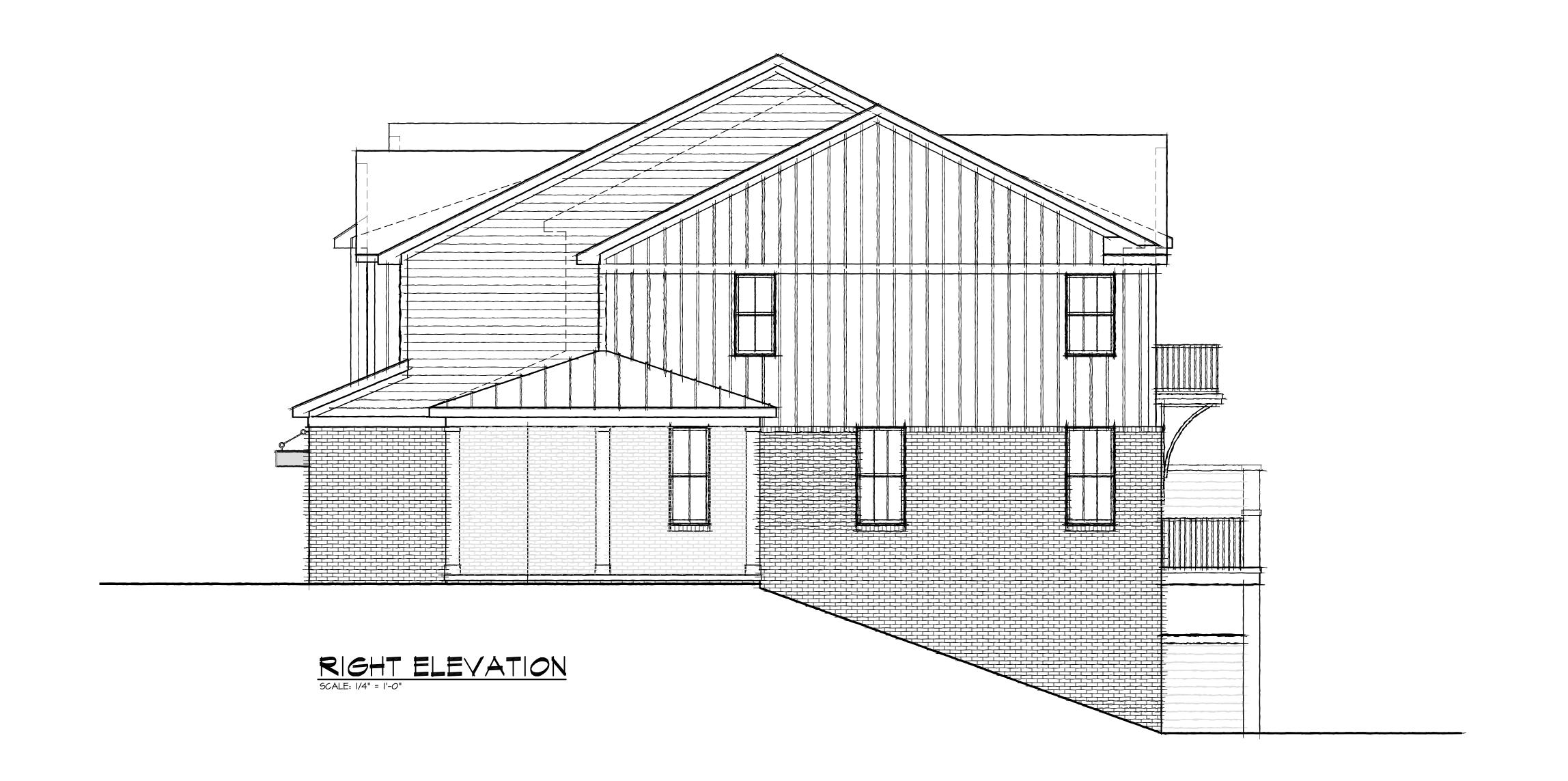
22039

Sheet No.

A14







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MOCERI RIGEL TERRACE BUILDING # 6-PLEX 2-CAR FRONT ENTRY

Drwn: B.H., S.C.
Chkd: M.G.

Job No.

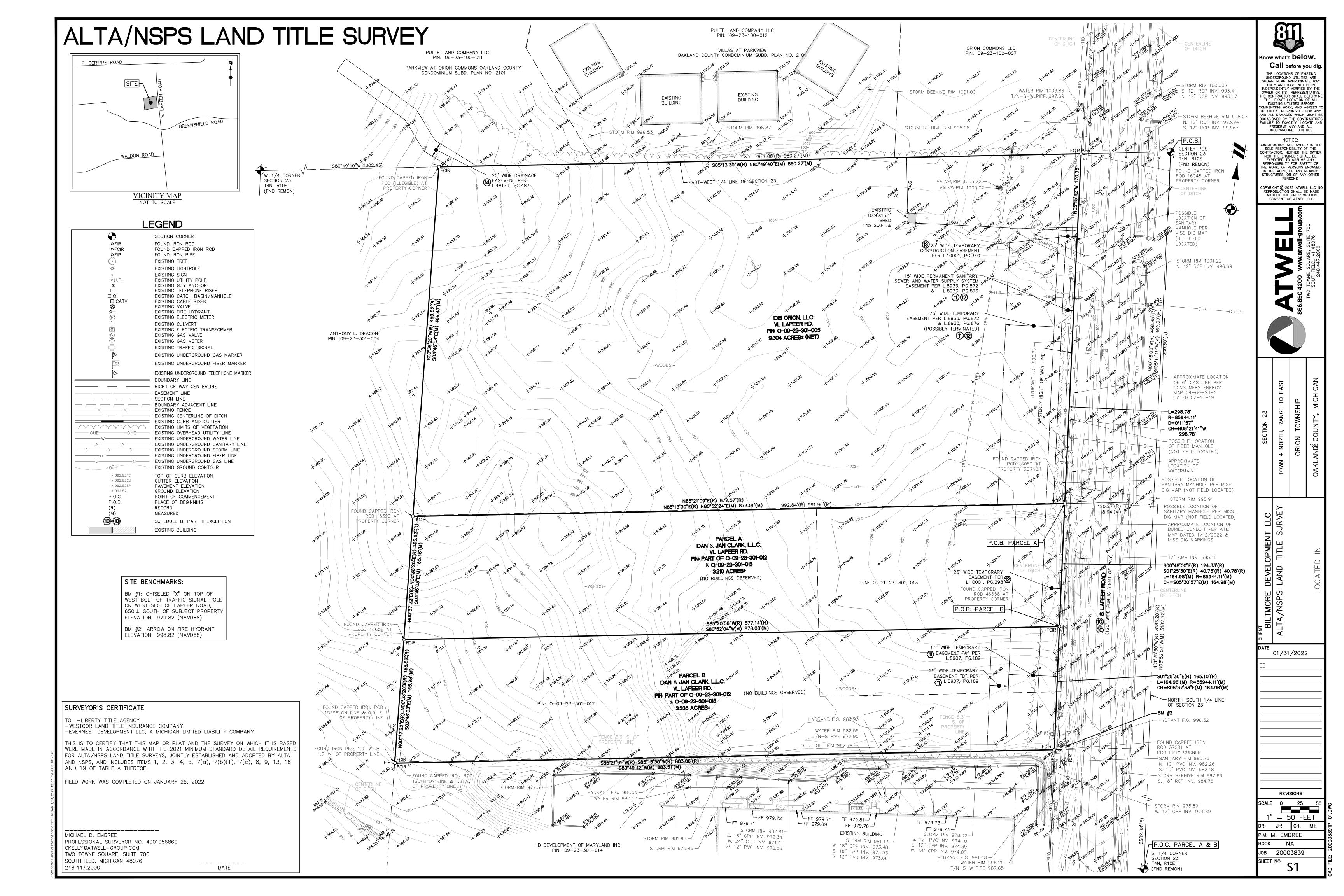
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Sheet No.

A15







ALTA/NSPS LAND TITLE SURVEY

SCHEDULE C DESCRIPTION PER ALTA COMMITMENT FOR TITLE INSURANCE ISSUED BY WESTCOR LAND TITLE INSURANCE COMPANY, ISSUING AGENT: LIBERTY TITLE AGENCY, COMMITMENT NUMBER: LIB150308, REVISION NUMBER: 1, COMMITMENT DATE: 2/5/2021:

THE LAND REFERRED TO IN THIS COMMITMENT IS LOCATED IN THE TOWNSHIP OF ORION, COUNTY OF OAKLAND, STATE OF MICHIGAN, AND DESCRIBED AS FOLLOWS:

PART OF THE SOUTHWEST 1/4 OF SECTION 23, T4N, R10E, BEGINNING AT THE CENTER OF SECTION 23; THENCE SOUTH 85 DEGREES 13'30" WEST 981.00 FEET; THENCE SOUTH 00 DEGREES 38'20" WEST 469.82 FEET; THENCE NORTH 85 DEGREES 13'30" EAST 992.84 FEET; THENCE NORTH OO DEGREES 48'00" WEST 468.85 FEET TO THE POINT OF BEGINNING, EXCEPT THAT PART TAKEN FOR M-24 HIGHWAY.

SCHEDULE B, PART II EXCEPTIONS PER ALTA COMMITMENT FOR TITLE INSURANCE ISSUED BY WESTCOR LAND TITLE INSURANCE COMPANY, ISSUING AGENT: LIBERTY TITLE AGENCY, COMMITMENT NUMBER: LIB150308, REVISION NUMBER: 1, COMMITMENT DATE: 2/5/2021:

- 10. TERMS, CONDITIONS, RESTRICTIONS AND EASEMENTS AS CONTAINED IN HIGHWAY EASEMENT RELEASE, AS RECORDED IN LIBER 3391, PAGE 53, OAKLAND COUNTY RECORDS. RESPONSE: COVERS SUBJECT PROPERTY AND LAND TO SOUTH, RIGHT OF WAY AS SHOWN HEREON.
- 11. EASEMENT IN FAVOR OF COUNTY OF OAKLAND AND TOWNSHIP OF ORION, AS RECORDED IN LIBER 8933, PAGE 872. OAKLAND COUNTY RECORDS. RESPONSE: COVERS SUBJECT PROPERTY, EASEMENTS AS SHOWN HEREON.
- 12. EASEMENT IN FAVOR OF COUNTY OF OAKLAND AND TOWNSHIP OF ORION, AS RECORDED IN LIBER 8933, PAGE 876, OAKLAND COUNTY RECORDS. RESPONSE: COVERS SUBJECT PROPERTY, EASEMENTS AS SHOWN HEREON.
- 13. EASEMENT IN FAVOR OF CHARTER TOWNSHIP OF ORION, AS RECORDED IN LIBER 10001, PAGE 340, OAKLAND COUNTY RECORDS RESPONSE: COVERS SUBJECT PROPERTY, EASEMENT AS SHOWN HEREON.
- 14. STORM DRAINAGE EASEMENT AGREEMENT AND THE TERMS AND PROVISIONS CONTAINED THEREIN, AS RECORDED IN LIBER 48179, PAGE 487, OAKLAND COUNTY RECORDS. RESPONSE: EXHIBIT A EASEMENT AS SHOWN HEREON, EXHIBIT B COVERS SUBJECT PROPERTY.

WATER MAIN, STORM SEWER, SANITARY SEWER AND FRANCHISE UTILITY STRUCTURES HAVE BEEN FIELD LOCATED WHERE VISIBLE. UTILITY AND AS-BUILT MAPS HAVE BEEN REQUESTED AND SOME MAPS HAVE BEEN RECEIVED AT DATE OF THIS SURVEY. FRANCHISE UTILITY MAPS HAVE BEEN REQUESTED FROM THE APPROPRIATE FRANCHISE COMPANIES, BUT NOT ALL MAPS HAVE BEEN RECEIVED AT DATE OF SURVEY.

BEARINGS ARE BASED ON MICHIGAN STATE PLANE COORDINATES (NAD83), SOUTH ZONE, GROUND DISTANCES, INTERNATIONAL FEET. MEASURED BEARINGS DIFFER

THE SITE SHOWN HEREON IS LOCATED WITHIN ZONE X (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO MAP NUMBER 26125C0376F OF THE FLOOD INSURANCE RATE MAP, EFFECTIVE DATE SEPTEMBER

FROM RECORD TITLE BEARINGS VERTICAL DATUM IS BASED ON NAVD88.

NOTE: THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR

- THE SUBJECT PROPERTY HAS NO OBSERVED PARKING STALLS AT THE DATE OF THE SURVEY.
- THERE WAS NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OF BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING
- SNOW AND ICE CONDITIONS EXISTED IN THE FIELD AT THE DATE OF THE FIELDWORK THAT MAY RESULT IN SOME PHYSICAL IMPROVEMENTS NOT BEING VISIBLE AND THEREFORE MAY NOT HAVE BEEN LOCATED AS A PART OF THIS SURVEY.

SCHEDULE C DESCRIPTION PER ALTA COMMITMENT FOR TITLE INSURANCE ISSUED BY WESTCOR LAND TITLE INSURANCE COMPANY, ISSUING AGENT: LIBERTY TITLE AGENCY, COMMITMENT NUMBER: LIB150158, REVISION NUMBER: 0, COMMITMENT DATE: 2/2/2021:

THE LAND REFERRED TO IN THIS COMMITMENT IS LOCATED IN THE TOWNSHIP OF ORION, COUNTY OF OAKLAND, STATE OF MICHIGAN, AND DESCRIBED AS FOLLOWS:

LAND IN THE SOUTHWEST 1/4 OF SECTION 23, TOWN 4 NORTH, RANGE 10 EAST, ORION TOWNSHIP, OAKLAND COUNTY, MICHIGAN, IS DESCRIBED AS: COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 23; THENCE NORTH 01 DEGREE 25'30" WEST 2,582.68 FEET ALONG THE NORTH-SOUTH 1/4 LINE OF SECTION 23 AND THE CENTERLINE OF NORTHBOUND M-24; THENCE CONTINUING ALONG THE NORTH-SOUTH 1/4 LINE NORTH 00 DEGREES 48'00" WEST 600.60 FEET TO THE CENTER POST OF SECTION 23; THENCE SOUTH 00 DEGREES 48'00" EAST 468.85 FEET ALONG THE NORTH-SOUTH 1/4 LINE: THENCE SOUTH 85 DEGREES 21'09" WEST 120.27 FEET TO A POINT ON THE WEST RIGHT-OF-WAY LINE OF M-24 AND THE POINT OF BEGINNING; THENCE SOUTH OO DEGREES 48'00" EAST 124.33 FEET ALONG THE RIGHT-OF WAY LINE; THENCE SOUTH 01 DEGREES 25'30" EAST 40.75 FEET ALONG THE RIGHT-OF-WAY LINE; THENCE SOUTH 85 DEGREES 20'56" WEST 877.14 FEET; THENCE NORTH 00 DEGREES 37'22" EAST AS MEASURED (NORTH 00 DEGREES 38'20" EAST RECORDED) 165.62 FEET; THENCE NORTH 85 DEGREES 21'09" EAST AS MEASURED (NORTH 85 DEGREES 13'30" EAST RECORDED) 872.57 FEET TO THE POINT OF BEGINNING.

LAND IN THE SOUTHWEST 1/4 OF SECTION 23, TOWN 4 NORTH, RANGE 10 EAST, ORION TOWNSHIP, OAKLAND COUNTY, MICHIGAN, IS DESCRIBED AS: COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 23: THENCE NORTH 01 DEGREES 25'30" WEST, 2,582.68 FEET ALONG THE NORTH-SOUTH 1/4 LINE OF SECTION 23 AND THE CENTERLINE OF NORTHBOUND M-24; THENCE CONTINUING ALONG THE NORTH-SOUTH 1/4 LINE NORTH 00 DEGREES 48'00" WEST 600.60 FEET TO THE CENTER POST OF SECTION 23; THENCE SOUTH 00 DEGREES 48'00" EAST 468.85 FEET ALONG THE NORTH-SOUTH 1/4 LINE; THENCE SOUTH 85 DEGREES 21'09" WEST 120.27 FEET TO A POINT ON THE WEST RIGHT-OF-WAY LINE OF M-24; THENCE SOUTH 00 DEGREES 48'00" EAST 124.33 FEET ALONG THE RIGHT-OF-WAY LINE; THENCE SOUTH 01 DEGREES 25'30" EAST 40.78 FEET ALONG THE RIGHT-OF-WAY LINE TO THE POINT OF BEGINNING; THENCE CONTINUING SOUTH 01 DEGREE 25'30" EAST 165.10 FEET ALONG THE RIGHT-OF-WAY LINE; THENCE SOUTH 85 DEGREES 21'01" WEST AS MEASURED (SOUTH 85 DEGREES 13'30" WEST RECORDED) 883.06 FEET; THENCE NORTH 00 DEGREES 37'22" EAST AS MEASURED (NORTH 00 DEGREES 38'20" EAST RECORDED) 165.52 FEET; THENCE NORTH 85 DEGREES 20'56" EAST 877.14 FEET TO THE POINT OF BEGINNING.

SCHEDULE B, PART II EXCEPTIONS PER ALTA COMMITMENT FOR TITLE INSURANCE ISSUED BY WESTCOR LAND TITLE INSURANCE COMPANY, ISSUING AGENT: LIBERTY TITLE AGENCY, COMMITMENT NUMBER: LIB150158, REVISION NUMBER: 0, COMMITMENT DATE: 2/2/2021:

- (10) 10. TERMS, CONDITIONS, RESTRICTIONS AND EASEMENTS AS CONTAINED IN HIGHWAY EASEMENT RELEASE, AS RECORDED IN LIBER 3391. PAGE 55. OAKLAND COUNTY RECORDS. RESPONSE: COVERS SUBJECT PROPERTY AND LAND TO SOUTH, RIGHT OF WAY AS SHOWN HEREON.
- 11. EASEMENT IN FAVOR OF COUNTY OF OAKLAND, AS RECORDED IN LIBER 8907, PAGE 189, OAKLAND COUNTY RECORDS. (PARCELS A AND B) RESPONSE: COVERS PARCELS A AND B, EASEMENTS AS SHOWN HEREON.
- 12. EASEMENT IN FAVOR OF CHARTER TOWNSHIP OF ORION, AS RECORDED IN LIBER 10001, PAGE 298, OAKLAND COUNTY RECORDS. (PARCELS A AND B) RESPONSE: COVERS PARCELS A AND B, EASEMENT AS SHOWN HEREON.

now what's **below**. Call before you dig

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE
SHOWN IN AN APPROXIMATE WAY
ONLY AND HAVE NOT BEEN
INDEPENDENTLY VERIFIED BY THE
OWNER OR ITS REPRESENTATIVE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE DAMENCING WORK, AND AGREES BE FULLY RESPONSIBLE FOR A ID ALL DAMAGES WHICH MIGHT CCASIONED BY THE CONTRACTOR UNDERGROUND UTILITIES.

CONSTRUCTION SITE SAFETY IS T SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNE NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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01/31/2022

REVISIONS

SHEET NO.

DR. JR | CH. ME P.M. M. EMBREE BOOK NA

JOB 20003839

UPC #:014817625189

Finish: Textured Black (TXB)

Features:

1 - LED Integrated Modules 9w Max. 120v - included

· Made from a unique composite material which is engineered a 5-year warranty. · This product is dimmable. · This advanced LED technology is carefully designed an lected to consist of the highest quality LED chipsets for superior performance and reliability Meets Title 24 energy efficiency standard Integrated LED fixtures that meet the high efficacy LED

tandards set forth in Title 24 and are listed in the California

CRI: 90

Material List: 1 Body - StoneStrong - Textured Black Safety Listing: Safety Listed for Wet Location

Part	Material	Finish	Quantity	Item Number	Length	Width	Height	Diameter	Fitter Diameter	Shade Top Length	Shade Top Width	Shade Top Diameter
Panel	Glass	Clear	1			5 1/8	6 1/8					
Panel	Glass	Clear	2			3 1/2	6 1/8	100				

Type	Height / Le	ength	Width	Depth	Diame	ter	Outl	et Box Up	- 1	Outlet Box	Down
Back Plate	6.3/8		6.1/4	3/4	3			7 5/8			
Shipping Inf	ormation:										
Package Type	Product #	Quantity	UPC		Length	Width	Height	Cube	Weight	Frt. Class	UPS Ship
Individual	LO1031TXB-L1	48	0148176	625189	13.7	10.5	9.4	0.783	4.6	175	Yes
NJ Pallet		84	1		48	40	77	85,556	386.4		No

ore right to revise the design or components of any product due to pens availability or change in safety reging standards window assuming any congenior or rectning the manufactured and without notice. This literature depicts a product design that is the sole and exclusive property of Generation Lighting. In compliance with U.S. the sole and exclusive property of Generation Lighting. In compliance with u.S. the sole and exclusive property of Generation Lighting in the property of Generation Lighting. In compliance with u.S. the sole and exclusive property of Generation Lighting. In compliance with u.S.



PUCL2 Utility Taft Series Luminaire Full Cutoff LED2



 Tool-less access with a spring-loaded latch Hidden hinge door allowing the door to swing open and tional internal or external NEMA twist lock photocontrol eceptacle. Housing contains a tempered glass window to w light to reach the cell for internal versions. Mount to slip-fitter that will accept 3" high by 2-7/8" to orative top cover contains stainless steel hinge which cures entry the LED optical chamber ester power coat paint to ensure maximum durability Rigorous multi-stage pre-treating and painting process rields a finish that achieves a scribe creepage rating of 8 per ASTM D1654) after over 5,000 hours exposure to salt

chamber (operated per ASTM B117) on standard and

Heavy grade A360 cast aluminum (<1% copper)

20KV Option meets 20kV/10kA per ANSI C136.2-2015. Quick disconnect connectors for ease of installation and prewired leads for ease of installation monic distortion (THD)

of 20%, >0.90 Power Factor and are ROHS compliant. Minimum operating temperature is -40°C. Electronic driver has an estimated minimum life of 100,000 hours at 25°C. LED circuit board located in the top cover

Asymmetric or Symmetric full cutoff distribution 2700K, 3000K, 4000K, and 5000K CCT

adjusts the light output and input wattage to meet site Factory Programmed Driver (FPDxx) - Customize lumen so other options can also be used

Long Life Photocontrols (PCLL) - 20 Year Life 3 and 7 pin photocontrol receptacles internally (PR3, PR7)

RAL (RALxxxxSDCR) paint colors are Super Durable Corrosion - Ten (10) years minimum experience in manufacturing

FAR, DFARS and DOT. Please refer to www.acuitybrands.com/ Three pole terminal block is standard, with optional 5-year limited warranty. This is the only warranty provided any warranty of any kind. All other express and implies

> ersions of this product may be DLC qualified. Please chec to confirm which versions are qualified. Note: Actual performance may differ as a result of end-user All values are design or typical values, measured under laboratory conditions at 25 °C.
>
> Specifications subject to change without notice.

Maximum Weight - 39 lbs Maximum Effective Projected Area - 1.24 sq. ft. Holophane | 3825 Columbus Rd., Granville, OH 43023 | Phone: 866-HOLOPHANE | www.holophane.com 2018-2022 Acuity Brands Lighting, Inc. All rights reserved. Rev. 04/06/22 Specifications subject to change without notice

Alternates Note THE USE OF FIXTURE ALTERNATES MUST BE RESUBMITTED TO THE CITY FOR APPROVAL.

Ordering Note FOR INQUIRIES CONTACT GASSER BUSH AT

LESS BASE HEIGHT.

QUOTES@GASSERBUSH.COM OR 734-266-6705.

General Note

.. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT. 2. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0"

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIRMENTS DEFINED IN ASHRAE 90.1 2013. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT ASG@GASSERBUSH.COM OR 734-266-6705.

20' WIDE DRAINAGE -EASEMENT PER L.48179, PG.487 \$\dark{\pi}_0.\dar - -___ X ____ *** 0.0 *** 0.0 *** 0.0 *** 0.0 *** 0.0 ** 0 **\begin{align*} \ \dot* \cdot* \cdo* \cdo* \cdot* \cdot* \cdot* \cdot* \cdot* \cdot* \cdot* \cdot* \cdot* **\begin{align*} \dot*\begin{align*} \dot*\begin{align*} \dot*\begin{align*} \dot*\begin{align*} \dot*\begin{align*} \dot*\begin ANTHONY L. DEACON PIN: 09-23-301-004 0.0 + 0.0 + 0.0 + 0.0 + 0.0 + 0.0 + 0.0 + 0.0 + 0.0 0.0 + 0.0 + 0.0 + 0.0 + 0.0 + 0.0 + 0.0 + 0.0 + 0.0 + 0.0 ⁺0.0 + 0.0 + 0.0 + 0.0 + 0.0 + 0.0 + 0.0 + φ.0 + 0.0 + φ.0 + φ.0 + 0.0 + φ.0 + 0.0 + φ.0 + 0.0 + φ.0 + 0.0 + 0.0 + φ.0 + 0. $^{+}0.0$ ⁺0.0 +0.0+0.0+0.0+0.0+0.0+0.0+0.0+0.0+0.0 $\begin{array}{c} +0.0 + 0.0$ ROAD FOR DETENTION BASIN

 $^{+}$ 0.0 $^$ $^{+}0.0$

Mounting Height Note MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE.

POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT

THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY

> Statistics Symbol| Avg | Max | Min |Max/Min|Avg/Min| Avg/Max + 0.0 fc 0.0 fc 0.0 fc N/A + 0.1 fc 2.2 fc 0.0 fc N/A N/A

Schedule				1		
Symbol	Label	QTY	Manufacturer	Description	Lamp	Mounting Height
	Α	233	Lithonia Lighting	OUTDOOR WALL SCONCE	LED	7'-0"
	В	11	Holophane	POST TOP AREA LIGHT	LED	14'-0"

0.0 + 0.0 +

LFF 979.71

RIM 980.53 - RIM 981.96 -

STORM RIM 975.46 —

L_{FF} 979.72

STORM RIM 982.81

E. 18" CPP INV. 972.34 |

W. 24" CPP INV. 971.91

SE 12" PVC INV. 972.56-

BUILDING

+0A+0.3+0.1+0.1+0.0+0.0+0.0

0.3⁺0.1⁺0.0⁺0.0⁺0.0

+0.0+0.0+0.0+0.0+0.0

\$\\\ \frac{1}{2} \\ \

0.8 0.8 0.6 0.5 0.3

/ ⁺0.5 ⁺0.5 ⁺0.5 ⁺0.4 [†]0.2 [†]0.1

+0.4 +0.4 +0.3 +0.3 +0.2 | 0.1

/ /⁺0.3⁺0.4⁺0.4⁺0.3⁺0.2

6+0.6+0.5+0.5+0.5+0.5

7 ~ woobs~ 10

SHUT OFF

RIM 982.79 —

FF 979.81

FF 979.76 ✓

EXISTING BUILDING

WATER RIM 982.55

T/N-S PIPE 972.95 →

STORM RIM 981.13 W. 18" CPP INV. 973.48 E. 18" CPP INV. 973.53

S. 12" PVC INV. 973.66 J

STORM BEEHIVE RIM 998.98

+0.0+0.0+0.0+0.0+0.0

+0.3 +0.4 +0\2 \\ 0\1 \\ \0.1 +0.1 \\ \0.1 \\ \0.1 \\ \0.2 \\ \0.2 \\

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STORM RIM 978.32

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PIN: 09-23-301-014

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BUILDING

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WATER RIM 996.25

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-STORM RIM 1000.32

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STORM BEEHIVE RIM 998.27

N. 12" RCP INV. 993.94

S. 12" RCP INV. 993.67

CENTER POST

(FND REMON)

- CENTERLINE

POSSIBLE LOCATION

DIG MAP (NOT FIELD

-STORM RIM 1001.22 N. 12" RCP INV. 996.69

& L.8933, PG.876

PROPOSED PAVEMENT MARKINGS

APPROXIMATE LOCATION OF

CONSUMERS ENERGY MAP

6" GAS LINE PFR

02 - 14 - 19

IDENTIFICATION SIGN

PROPOSED DEVELOPMENT

POSSIBLE LOCATION
 OF FIBER MANHOLE

APPROXIMATE LOCATION

(NOT FIELD LOCATED)

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-POSSIBLE LOCATION OF SANITARY

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- APPROXIMATE LOCATION OF

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FIELD LOCATED)

INV. 995.11

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NORTH-SOUTH 1/4 LINE OF

SECTION 23

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N. 10" PVC INV. 982.26

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S. 10" PVC INV. 982.18

--|BM #2|

- CENTERLINE

- STORM BEFHIVE

RIM 992.66

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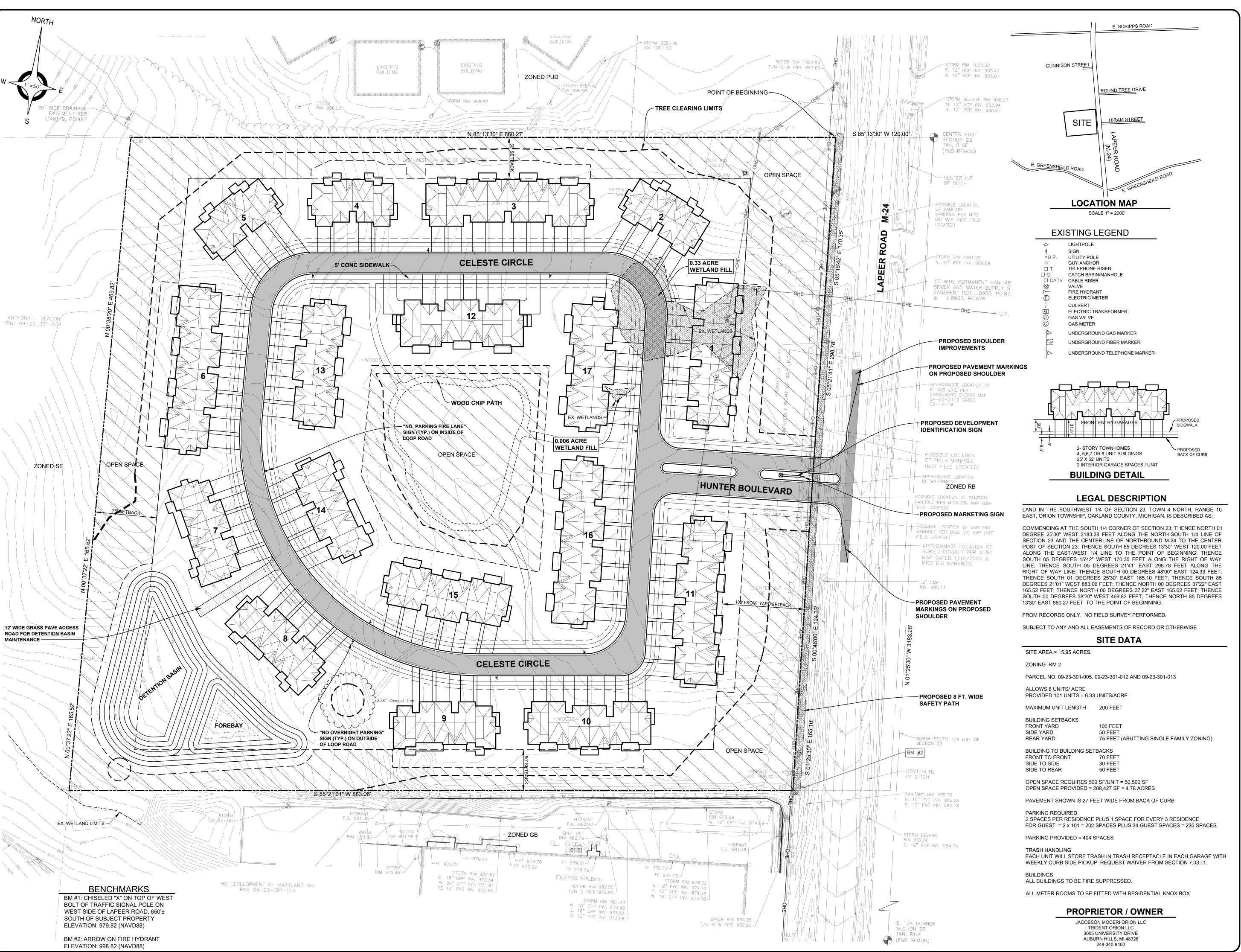
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N. 12" RCP INV. 993.07

Plan View Scale - 1'' = 50ft



Designer NW/KB **Date** 6/16/2022 Scale Not to Scale **Drawing No.** #22-76899-V1





ANDERSON, ECKSTEIN AND WESTRICK, INC.

Phone 586 726 1234

Fax 586 726 8780

CIVIL ENGINEERS SURVEYORS ARCHITECTS

51301 Schoenherr Road Shelby Township Michigan 48315

www.aewinc.com

ENGINEERING STRONG COMMUNITIES



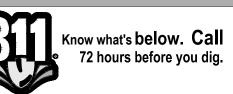
PROJECT NAME:

SUBMITTALS/REVISIONS

PLAN

JACOBSON MOCERI ORION LLC TRIDENT ORION LLC PRELIMINARY CONSTRUCTION RECORD

3-27-2021 1" = 50' HORIZ.



ITILITY INFORMATION, AS SHOWN, INDICATES APPROXIMATE LOCATIONS AND TYPES OF EXISTING FACILITIES ONLY. AS DISCLOSED BY RECORDS PROVIDED TO THIS FIRM FROM THE VARIOUS UTILITY COMPANIES. NO GUARANTEE IS GIVEN OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF.

PRIOR TO CONSTRUCTION, ALL LOCATIONS AND DEPTHS OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES (IN CONFLICT WITH THE CONSTRUCTION OF THESE PROPOSED MPROVEMENTS) SHALL BE VERIFIED IN THE FIELD. DURING THE CONSTRUCTION, THE CONTRACTOR SHALL PROTECT AND SUPPORT ALL UTILITIES THAT ARE ENCOUNTERED. (ALL COSTS FOR UTILITY LOCATION VERIFICATION, SUPPORT AND PROTECTION SHALL BE NCLUDED IN THE PROPOSED PAY ITEM CONFLICTING WITH

DURING CONSTRUCTION, THE CONTRACTOR SHALL USE XTREME CAUTION WHEN OPERATING NEAR ANY AND ALL OVERHEAD AND / OR BURIED UTILITIES.

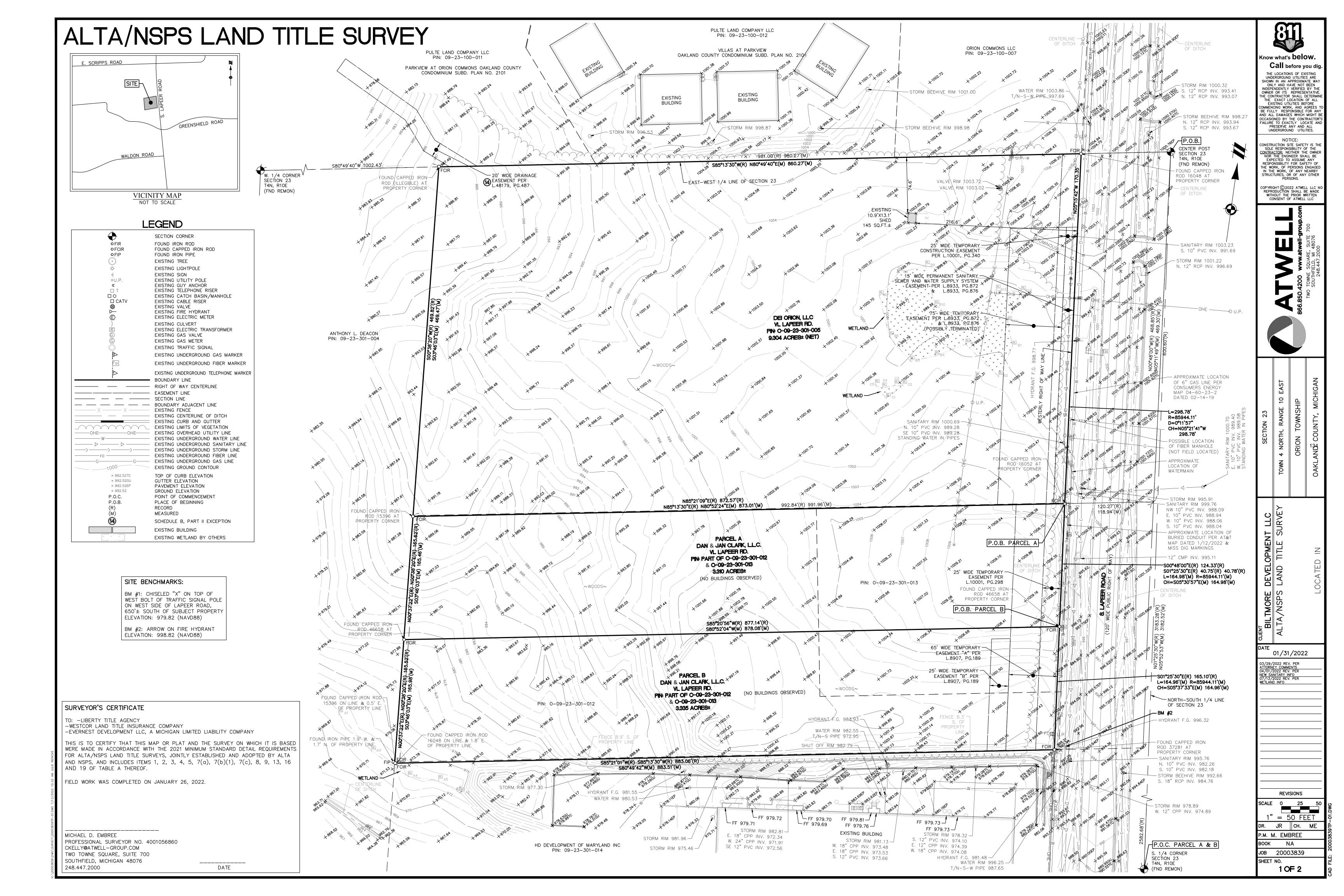
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PROJECT NO.

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M:\0361\0361-0069\DWG\CIVIL\01_SITE PLAN.DWG 02A_NAT FEAT--7/12/2022 2:45:39 PM SHEET NO.

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Planning & Zoning Department

Phone: (248) 391-0304, ext. 5000

TO: The Charter Township of Orion Planning Commission

FROM: Tammy Girling, Planning & Zoning Director

DATE: July 15, 2022

www.oriontownship.org

RE: PC-22-27, Willow Creek Apartments Wetland & Site Plan

As requested, I am providing suggested motions for the abovementioned project. Please feel free to modify the language. The verbiage below could substantially change based upon the Planning Commissions' findings of facts for the project. Any additional findings of facts should be added to the motion below.

Wetland Permit (Ordinance No. 107)

Motion 1: I move that the Planning Commission **approves/denies** the wetland permit for PC-22-27, Willow Creek Apartments Wetland, located at 3120 S. Lapeer Rd. (parcel 09-26-151-019) for plans date stamped received June 29, 2022. This **approval/denial** is based on the following findings of facts:

- a. The action or use **is not/is** likely to or **will not/will** pollute, impair, or destroy a Wetland (insert findings of facts).
- b. There **are no/are** feasible or prudent alternatives to the proposed action (insert findings of facts)
- c. The **approval is/is not** consistent with public interest, in light of the stated purposes of the ordinances (insert findings of facts).

If approved the approval is based on the following conditions:

Motion maker to insert any conditions.

Covered Trash Enclosure Waiver (Ord. No. 78, Section 7.03, I)

Motion 2: I move that the Planning Commission **grants/does not grant** a waiver from the requirement for a covered trash receptacle because the applicant **did/did not** demonstrate that based on the nature of the operation being proposed the amount of trash generated can be adequately disposed of without use of an outside trash receptacle.(**motion make to insert findings of facts**).

Site Plan (Ord. No. 78, Section 30.01)

Motion 3: I move that the Planning Commission grants site plan **approval** for PC-22-27, Willow Creek Apartments Site Plan, located at 3120 S. Lapeer Rd. (parcel 09-26-151-019) for plans date stamped received June 29, 2022 based on the following findings of facts (**motion make to insert findings of facts**).

This **approval** is based on the following conditions:

The successful completion of the rezone of the property to RM-1

- (Motion maker to list any unresolved issues related to the Township Planner's review letter).
- (Motion maker to list any unresolved issues related to the Township Engineer's review letter).
- (Motion maker to list any unresolved issues related to the Fire Marshall's review letter)
- (Motion maker to list any additional conditions).

Or

I move that the Planning Commission **denies** site plan approval for PC-22-27, Willow Creek Apartments Site Plan, located at 3120 S. Lapeer Rd. (parcel 09-26-151-019) for plans date stamped received June 29, 2022. This **denial** is based on the following reasons (insert findings of facts).

Or

I move that the Planning Commission **postpones** site plan approval for PC-22-27, Willow Creek Apartments Site Plan, located at 3120 S. Lapeer Rd. (parcel 09-26-151-019) for plans date stamped received June 29, 2022 for the following reasons (motion maker to indicate outstanding items to be addressed from the Planner's, Fire Marshall's, or Engineer's review letter(s)).



ARCHITECTS, ENGINEERS, PLANNERS,

July 14, 2022

Scott Reynolds, Planning Commission Chairperson CHARTER TOWNSHIP OF ORION 2323 Joslyn Road Lake Orion, MI 48360 RECEIVED

JUL 1 4 2022

Orion Township Planning & Zoning

RE: Willow Creek Apartments Site Plan & Wetland – PC-2022-27

Wetland Review

Received: June 29, 2022 by Orion Township

Dear Mr. Reynolds:

We have completed the first review for the Willow Creek Wetland submittal. Wetlands on this site are shown on plans prepared by UMLOR Group. The EGLE/USACE Joint Permit Application was utilized for the township wetland permit application and was included in the submittal. The wetland inspection and permit application were completed by ASTI Environmental. The application was reviewed with respect to the Township's Wetlands Protection Ordinance, No. 107.

EXISTING SITE CONDITIONS:

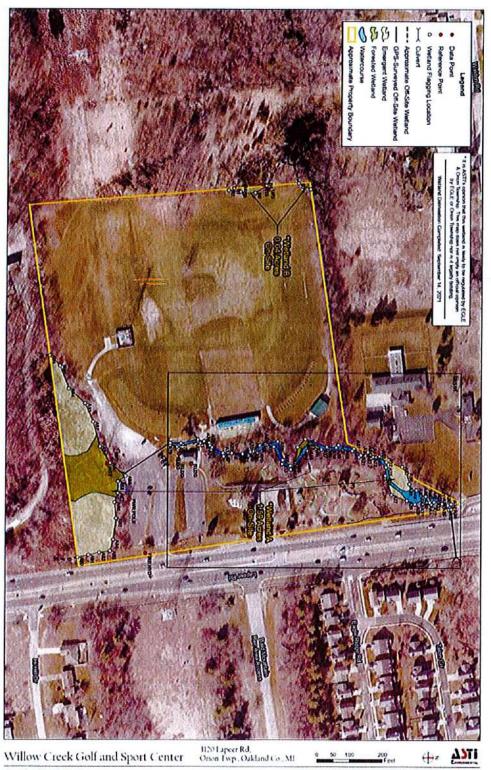
The proposed site is located on the western side of Lapeer Rd (M-24) and south of Waldon Rd. in the NW quadrant of Section 26 of the Charter Township of Orion. From our site visit on July 6, 2022, we were able to confirm that the wetland limits provided in the plans appear to reflect the existing conditions observed during the field visit.

Wetland A – see below: Wetland A is recognized as the wetland in the southeast corner of the property as well as two small portions that are connected to the southern portion of Wetland A via the watercourse known as Willow Creek (represented as 1.59 acres on site per wetland permit application). Both the National Wetlands Inventory (NWI) and Michigan Department of Environment, Great Lakes, and Energy (EGLE) mapping systems show the southern portion of Wetland A, neither map shows the two smaller areas of Wetland A that are along the path of Willow Creek. Willow Creek is represented as a 2.58-acre Riverine, described as: Riverine, Unknown Perennial, Unconsolidated Bottom, Permanently Flooded. There is an existing culvert crossing located along the riverine for the sports center driveway. The NWI map identifies the southern portion of Wetland A as a Freshwater Forested/Shrub Wetland and describes it as: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded (PSS1C). The EGLE map identifies Wetland A as an Emergent Wetland and Scrub-Shrub with Hydric Soils. The Natural Resources Conservation Service (NRCS) Soil Survey map appears to identify the southern portion of Wetland A soils to be Houghton and Adrian Mucks (27), and the northern portions of Wetland A to be Oshtemo-Boyer loamy sands (13B and 13C). In our opinion all portions of Wetland A are regulated wetland as it is contiguous with Willow Creek and ultimately Lower Trout Lake. These wetlands are also regulated by the Township per Ordinance.

Wetland B – see below. Wetland B is located in the northwest corner of the parcel (represented as 0.04 acres on site per wetland permit application). This wetland appears to be included in both the NWI and EGLE mapping systems.

Willow Creek Apartments Wetland – PC-2022-27 Wetland Review July 14, 2022 Page 2 of 7

The NWI map identifies Wetland B as a 1.03-acre Freshwater Emergent Wetland and describes it as: Palustrine, Emergent, Persistent, Seasonally Flooded (PEM1C). The EGLE map identifies Wetland B as an Emergent Wetland with hydric soils. NRCS Soil Survey Map appears to show the entirety of Wetland B as Water (W). The day we observed the wetlands in the field Wetland B was not entirely covered in water. The bordering soil types according to the NRCS map are Oshtemo-Boyer loamy sands (13B) and Gilford Sandy Loam Till Plain (48). It is our opinion that Wetland B is most likely composed of some combination of soil type 13B and 48 per NRCS mapping. In our opinion, Wetland B is a regulated wetland as it is contiguous to a larger network of existing wetlands and ultimately Lower Trout Lake. These wetlands are also regulated by the Township per Ordinance.



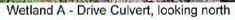
Client Genekless Computers Created by RMH September 15 2021. ASH Project 15000 Imagery Oskland Course 2017

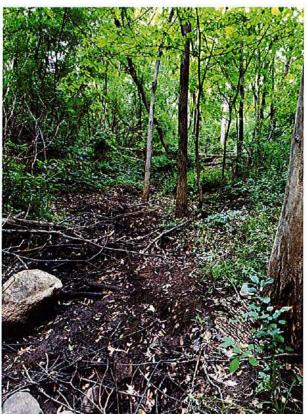
Figure 1 GPS Surveyed Wetland Boundaries



Willow Creek Apartments Wetland – PC-2022-27 Wetland Review July 14, 2022 Page 5 of 7







Wetland A - Willow Creek north end, looking north



Wetland B, looking southeast from off-site

Willow Creek Apartments Wetland – PC-2022-27 Wetland Review July 14, 2022 Page 6 of 7

IMPACT OF THE PROPOSED PROJECT ON THE WETLANDS:

Impact Area 1 - Wetland A:

The applicant is proposing to alter the path of the on site watercourse, Willow Creek. The applicant is proposing to replace approximately 20' of existing 24" CMP culvert with 91' of 24" RCP culvert to facilitate a wider entry drive into the development. Rip-rap is to be installed around new culvert ends. The applicant also proposes to cross Willow Creek with 8" water main and 8" Sanitary Sewer in the boundaries of the proposed roadway, within the boundaries of Impact Area 1. Impact Area 1 is proposed as 551 sft of impact to Willow Creek.

Impact Area 2 - Wetland A:

The applicant is proposing to outlet Detention Basin B into the 25' wetland buffer zone of Willow Creek. There is no impact on the wetland in this area, only on the 25' wetland buffer zone. Impacts to the buffer should be quantified on the plans.

Impact Area 3 - Wetland B:

The applicant is proposing to outlet Detention Basin A into the 25' wetland buffer zone of Wetland B. The proposed rip-rap stone around the end section is proposed to impact 12 sft of Wetland B.

Proposed Mitigation:

No mitigation has been proposed for the project by the applicant.

Per the Ordinance, the wetland application shall not be approved unless the following exist:

- 1. The action or use is not likely to or will not pollute, impair, or destroy a wetland. In our opinion, the proposed minor impacts to the wetlands will not have long term negative effect and therefore can be approved.
- 2. There are no feasible or prudent alternatives to the proposed action. In our opinion, the proposed land use is consistent with the zoning of the property and the proposed minor impacts are consistent with typical developments to provide the required road access, utility networks, and storm water management.
- 3. The approval is consistent with public interest, in light of the stated purposes of this Ordinance. Based on the above findings, it is our opinion the requirements of the Wetlands Protection Ordinance are being met. The applicant is providing the required storm water management facilities and impacting the least amount of wetland area possible given the location of the improvements.

CONCLUSION:

In our opinion, the wetlands submittal for the Willow Creek Apartments project is in substantial compliance with the Township's Wetlands Protection Ordinance.

Please note the soil erosion and sediment control measures will be reviewed during the engineering review phase to ensure that the wetlands are protected from adjacent construction practices. Further measures such as multiple rows of silt fence, outlet filters, and vegetative buffers may be required as part of that review.

Please feel free to contact us with any questions at (248) 751-3108 or joseph.lehman@ohm-advisors.com

Willow Creek Apartments Wetland - PC-2022-27 Wetland Review July 14, 2022 Page 7 of 7

Sincerely,

OHM Advisors

Joe Lehman, P.E.

Engineer

cc:

Chris Barnett, Township Supervisor

David Goodloe, Building Official

Jeff Stout, Director of Public Services Tammy Girling, Director of Planning and Zoning Lynn Harrison, Planning and Zoning Coordinator

Joseph Salome, Grandview Companies

Jason Fleis, Umlor Group

Mark A. Landis, P.E. Project Manager

P:\0101_0125\SITE_OrionTwp\2021\0121211094 Willow Creek Multifamily\MUNI\Permits\Wetland\2022.07.14_Willow Creek - Wetland_Review.docx

Grandview Building Company

251 Diversion Street Rochester, Michigan 48307

June 14, 2022

Mr. Robert Primeau
EGLE-WRD
Warren District Office
27700 Donald Court
Warren, Michigan 48092

RE: Wetland Permit Authorization

Willow Creek 3120 Lapeer Road

Orion Township, Oakland County, Michigan

Dear Mr. Primeau:

Please be advised, ASTI Environmental has been retained to provide permitting services related to the above referenced property. Accordingly, they authorized to act on our behalf as agent for submittal of applicable EGLE permit applications.

Should you have any questions regarding this project, or should additional information be required, please contact Ms. Dana R. Knox at 734.474.0190 or dknox@asti-env.com.

Sincerely,

Adam Ossiprove

adam Osipur

Grandview Building Company

251 Diversion Street

Suite 100

Rochester, MI 48307

248.330.3000

aossipove@grandviewcompanies.com

Digital EGLE/USACE Joint Permit Application (JPA) for Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams, **Environmental Areas, High Risk Erosion Areas and Critical Dune** Areas

version 1.30

(Submission #: HPJ-N2E0-SHM1D, version 1)

Details

Submission ID

HPJ-N2E0-SHM1D

Submission Reason New

Status

Draft

Form Input

Instructions

To download a copy or print these instructions. Please click this link (recommended).

Contact Information

Applicant Information (Usually the property owner)

First Name Last Name

Adam Ossipve

Organization Name

Grandview Building Company

Phone Type Number Extension

Mobile 248

2483303000

Email

aossipove@grandviewcompanies.com

Address

251 Diversion Street

Suite 100

Rochester, MI 48307

Is the Property Owner different from the Applicant?

No

Has the applicant hired an agent or cooperating agency (agency or firm assisting applicant) to complete the application process?

Yes

Upload Attachment for Authorization from Agent

1. Willow Creek Authorization Letter[58431] asti.pdf - 06/23/2022 03:54 PM

Comment

NONE PROVIDED

Agent Contact

First Name Last Name

Dana Knox

Organization Name

ASTI Environmental

Phone Type Number Extension

Mobile 7344740190

Email

dknox@asti-env.com

Address

10048 Citation Drive, Suite 100

Suite 100

Brighton, MI 48116

Are there additional property owners or other contacts you would like to add to the application?

No

Project Location

DEQ Site Reference Number (Pre-Populated)

-7847475358973411152

Project Location

42.7329946,-83.24564509999999

Project Location Address

3120 Lapeer Road

Orion Township, MI 48359

County

Oakland

Is there a Property Tax ID Number(s) for the project area?

Please enter the Tax ID Number(s) for the project location

09-26-151-09

Is there Subdivision/Plat and Lot Number(s)?

No

Is this project within Indian Lands?

No

Local Unit of Government (LUG)

Orion Township

Directions to Project Site

75 to M-24N/Lapeer Road; go to 2.83 miles to site on the left (west side of road); site is known as Willow Creek Golf and Sports Center

Background Information

Has the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and/or United States Army Corps of Engineers (USACE) conducted a pre-application meeting/inspection for this project?

No

Has the EGLE completed a Wetland Identification Program (WIP) assessment for this site?

No

Environmental Area Number (if known):

NONE PROVIDED

Has the United States Army Corps of Engineers (USACE) completed either an approved or preliminary jurisdictional determination for this site?

Were any regulated activities previously completed on this site under an EGLE and/or **USACE** permit?

No

Have any activities commenced on this project?

Is this an after-the-fact application?

Are you aware of any unresolved violations of environmental law or litigation involving the property?

No

Is there a conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property?

No

Are there any other federal, interstate, state, or local agency authorizations associated with this project?

Yes

List all other federal, interstate, state, or local agency authorizations.

Agency	Type of Approval	Number	Date Applied	Approved/Denied/Undetermined
Orion Township	Site Plan	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED
Oakland County Water Resource Commissioner	SESC	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED
MDOT	Road entrance	NONE PROVIDED	NONE PROVIDED	NONE PROVIDED

Comments

NONE PROVIDED

Permit Application Category and Public Notice Information

Indicate the type of permit being applied for.

General Permit for wetlands, lakes, streams, or Great Lakes

If you are applying for a general permit, which project type(s) is being proposed?

GP G. Culverts and Bridges - Small

GP Z. Storm Water Management Facilities: Inland Lakes and Streams

Project Description

Project Use: (select all that apply - Private, Commercial, Public/Government/Tribal, Receiving Federal/State Transportation Funds, Non-profit, or Other) Private

Project Type (select all that apply):

Development-Condominium/Subdivision-Residential

Project Summary (Purpose and Use): Provide a summary of all proposed activities including the intended use and reason for the proposed project.

The project includes construction of 18 apartment buildings off of Lapeer Road (M-24) at the current location of the Willow Creek Golf and Sports Center. Construction of these multifamily residential buildings will require an interior curb and gutter road system with a 5-foot wide sidewalk and two detention basins with forebays and infiltration for treatment of stormwater. Sanitary and water main will be installed as part of the road within road fill.

Project Construction Sequence, Methods, and Equipment: Describe how the proposed project timing, methods, and equipment will minimize disturbance from the project construction, including but not limited to soil erosion and sedimentation control measures.

Construction stakeout; installation of geotextile silt fence and any other soil control structures as indicated on drawings and/or soil erosion control permit; clear and grub area; removal of existing culvert and installation of replacement culvert; placement of fill material, and/or culverts as indicated on drawings; construction of road stream crossing with utilities; construction of stormwater detention basins and associated forebays; re-vegetation/soil stabilization; removal of soil erosion control structures.

Project Alternatives: Describe all options considered as alternatives to the proposed project, and describe how impacts to state and federal regulated waters will be avoided and minimized. This may include other locations, materials, etc.

Regulated resources for this project are limited to wetland located within the southeast corner of the property and minimal wetland fringe along a watercourse known as Willow Creek. Willow Creek crosses the property frontage and is part of a wetland/stream complex identified as Wetland A. In addition, a wetland was identified in the northwest corner of the property and identified as Wetland B.

Wetland will not be impacted by the project. Only Willow Creek is proposed for impact. This watercourse meets the definition of a stream and originates from the wetland area in the southeast corner of the property, flows through a culvert under a driveway that provides access to overhead power lines along the southern property boundary line, and eventually leaves the site through a culvert that carries flow beneath Lapeer Road.

Because the stream crosses the property frontage, a crossing cannot be avoided. However, the watercourse already includes a 24-inch diameter crossing for the sports center driveway. This existing culvert will be replaced in-kind at a slightly revised angle/location and a slightly increased length. The revised location is required in order to orient the new site access road perpendicular to the crossing. Culvert removal and replacement is required to accommodate the required wider road footprint.

Sanitary and water main will be installed as part of the road. Therefore, additional impacts beyond the road construction and from the utilities specifically will not be realized. Because the utilities will be installed as part of the road construction (not a stand alone activity), the utility section of the application is not used.

Stormwater detention basins are proposed within 500 feet of the stream. All detention basin structures will be located upslope of wetland and/or the stream. Discharge of pre-treated stormwater will be to the Orion Township required wetland buffer areas. The stormwater outfall structures section of the application are not used due to the structures and discharge being located entirely within upland within a Township required 25-foot wetland/stream buffer. Basin A (west) will be 0.27 acres in size including forebays and Basin B (east) will be 0.36 acres in size including forebays.

This project meets GP G, Bridges and Culverts - Small and GP Z, Stormwater Management Facilities: Inland Lakes and Streams.

Project Compensation: Describe how the proposed impacts to state and federal regulated waters will be compensated, OR explain why compensatory mitigation should not be required for the proposed impacts. Include amount, location, and method of compensation (i.e., bank, on-site, preservation, etc.)

This project meets general permit categories GP G and GP Z, and therefore, mitigation is not required.

Upload any additional information as needed to provide information applicable to your project regarding project purpose sequence, methods, alternatives, or compensation.

NONE PROVIDED Comment NONE PROVIDED

Resource and Activity Type

SELECT THE ACTIVITIES from the list below that are proposed in your project (check ALL that apply). If you don't see your project type listed, select "Other Project Type". These activities listed require additional information to be gathered later in the application.

Culverts - Stream Only

Stream, River or Drain Construction Relocation and Enclosure Activities

The Proposed Project will involve the following resources (check ALL that apply).

Stream or River

Pond (open water less than 5 acres in size)

Pond Information

What is the surface area of the pond? (acres)

0.36

Identify all resources impacted by the proposed pond.

Pond located within 500 feet of a lake or stream

Major Project Fee Calculation Questions

Is filling of 10,000 cubic yards or more proposed (cumulatively) within wetlands, streams, lakes, or Great Lakes? No

Is dredging of 10,000 cubic yards (cumulatively) or more proposed within streams, lakes, or Great Lakes? (wetlands not included)

Is new dredging or adjacent upland excavation in suspected contamination areas proposed by this application? No

Is a subdivision, condominium, or new golf course proposed?

Stream Project Information (1 of 1)

Please provide a name for the stream, river, channel:

Willow Creek

Stream Water elevation reference* (show elevation on plans with description): NAVD 88

Ordinary High Water Mark (OHWM) elevation (feet): 987

Date of observation (M/D/Y) 9/17/2021

What length (feet) does the project activity(ies) extend waterward of the OHWM? NONE PROVIDED

What length (feet) does the project activity(ies) extend landward of the OHWM? NONE PROVIDED

Is the drainage area upstream of the proposed project area greater than 2 sq. miles? Unsure

What is the the width (feet) of the stream where the water begins to overflow its banks. This is called the Bankfull width.

Will a turbidity curtain be used during the proposed project?

Inland Lakes, Great Lakes and Stream Impacts (1 of 1)

The following impact description applies to: (select only one at a time, duplicate this entire section if there are impacts to multiple waterbody types):

Stream

Linear feet of stream affected by your project

Category	Affected linear feet (ft)		
Permanent	45		
Temporary	0		
	Sum: 45		

Select from the following list all Fill Activities (select all that apply to this waterbody impacted):

Road - New

Complete this table for projects involving Fill below the Ordinary High Water Mark. Enter each activity/ location that corresponds with each activity selected in the previous question and enter the dimensions. Activities may be entered in one line of the table if they occupy the same impact footprint and cannot be broken out separately (Example: Activity - Driveway and Riprap slope). Multiple activities in different locations should be listed on different lines of the table.

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	Volume (cubic feet)	Volume (cubic yards	Corrected Value for complex impact Area (square feet)
Road Crossing	45	12	8	540	4320	160	551

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	Volume (cubic feet)	Volume (cubic yards	Corrected Value for complex impact Area (square feet)
				Sum: 540	Sum: 4320	Sum: 160	Sum: 551

Type of Fill Sand

Source of Fill

Off-site

Is riprap proposed?

Yes

Indicate size range of riprap:

8" to 15"

Type of riprap

Angular rock

Will material be installed under the riprap?

Yes

Type of material installed under riprap:

Filter fabric

Activities Involving Dredging or Excavation: Select from the following list for Excavation/Dredge Activities (select all that apply to this waterbody impacted):

No Dredging/Excavation Proposed

If your project includes STRUCTURES then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:

Culvert

Projects involving Structures constructed below the Ordinary High Water Mark:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Road Crossing Culvert	58	3	0	174	0	0	NONE PROVIDED
				Sum: 174	Sum: 0	Sum: 0	Sum: NaN

If your project includes Other Activities not listed in this section, then select from the proposed activities in the following list. If your activity has not been listed in this Section, then select "Other" and enter a description of your activity. Only enter an impacted area in one of the impact tables (do not duplicate impact entries). If you selected a Fill, Excavation/Dredging, or Structure activity above in this section, but do not have an activity listed as Other, then select None of the Above for this question. None of the above

Does the proposed project include mitigation? none

Stream, River or Drain Construction Relocation and Enclosure **Activities**

STREAM INFORMATION

Is this a county drain? No

Does the proposed project include an:

Enclosure

Are stream enclosures of 100 feet or more (cumulatively) in length proposed? No

Does enclosure include additional construction at the ends of the structure? No

Dimensions of existing stream/drain channel

Length (feet)	Width (top of bank to top of bank) (feet)	Depth (feet)	Channel bottom width (feet)
91	17	6	5

Existing channel average water depth in a normal year (feet) 0.5

For activities on legally established county drains, provide original design and proposed dimensions and elevations.

NONE PROVIDED Comment NONE PROVIDED

Bridges and Culverts (1 of 1)

Unique Identifier:

Road Crossing

STREAM INFORMATION

Width of the stream

Upstream (feet)	Downstream (feet)		
5	5		

Cross-sectional area of primary channel (square feet):

NONE PROVIDED

The width of the stream where the water begins to overflow its banks. Bankfull width (feet):

Is there an existing structure?

Yes

Is the existing Structure perched?

No

Help for the following Table

Structure Width: Enter the total width of culvert or bridge in feet.

Culvert Length or Bridge span: Enter the total length perpendicular or across the stream in feet.

Culvert Height Prior to any burying: Enter the total width of culvert in feet at this location as it measures on land. Do not subtract any depth the culvert may be buried. For bridges enter "0".

Depth culvert buried: Enter total feet the culvert bottom will be buried. Does not apply to bridges so enter "0".

Bottom of bridge beam (upstream) elevation (feet): For culverts enter "0".

Bottom of bridge beam (downstream) elevation (feet): For culverts enter "0".

Stream Invert Elevation (feet) Upstream: This is the elevation at the bottom of the culvert as it lies in place after installation on the upstream end of the culvert, not including any fill on the culvert bottom.

Stream Invert Elevation (feet) Downstream: This is the elevation at the bottom of the culvert as it lies in place after installation on the downstream end of the culvert, not including any fill on the culvert bottom.

Bride rise from bottom of beam to streambed or culvert crown height (feet): This is the elevation at the top of the culvert as it lies in place after installation, for bridges this is from the bottom of the beam. Do not including any fill on top of the culvert or the bridge structure.

Total structure waterway area above streambed (square feet): This is the total square foot area that would allow passage of water through the structure opening.

Total structure waterway area below the 100-year elevation (square feet) (if known): This is

the total square foot area that would allow passage of water that is below the 100-year flood elevation.

Elevation of road grade at structure (feet): Enter the elevation at the road above the structure.

Elevation of low point in road (feet): Enter the elevation of the lowest point in the road nearest the structure.

Distance from low point of road to mid-point of structure (feet): How far (in feet) from the structure does any fill used for the structure extend before it reaches the existing grade?

Length of approach fill from edge of bridge/culvert to existing grade (feet):

Existing and Proposed Bridge and/or Culvert Information

Question	Existing	Proposed
Bridge width or Culvert length (parallel to stream) (feet)	18	91
Bridge span or Culvert width/diameter (perpendicular to stream) (feet)	2.39	3.54
Height of culvert prior to burying (if bridge enter 0)	2.39	3.54
Depth culvert buried (feet) (if bridge enter 0)	0.75	2.75
Bottom of bridge beam (feet) upstream (if culvert enter 0)	0	0
Bottom of bridge beam (feet) downstream (if culvert enter 0)	0	0
Stream invert elevation at bridge (feet) upstream	987.41	988.60
Stream invert elevation at bridge (feet) downstream	987.45	986.97
Bridge rise from bottom of beam to streambed or culvert crown height (feet)		989.79
Total structure waterway opening above streambed (square feet)	3.14	3.14
Total structure waterway area below the 100-year elevation (square feet) (if applicable)	0	0
Elevation of road grade at structure (feet)	990.55	994.03
Elevation of low point in road (feet)	0	992.76
Distance from low point in road (feet)	0	70
Length of approach fill from edge of bridge/culvert to existing grade (feet)	0	2

Culvert Type

Existing	Proposed		
Circular	Circular		

Culvert Material

Existing	Proposed		
Corrugated Metal	Corrugated Metal		

Structure Entrance Design Type:

Existing	Proposed		
Other: None	Other: End Section		

Certification Upload

NONE PROVIDED Comment

NONE PROVIDED

Upload of Proposed Site Plans

Required on all Site Plan uploads. Please identify that all of the following items are included on your plans that you upload with this application.

Site Plan Features	Existing and Proposed Plan Set
Scale, Compass North, and Property Lines	Yes
Fill and Excavation areas with associated amounts in cubic yards	Yes
Any rivers, lakes, or ponds and associated Ordinary High Water Mark (OHWM)	Yes
Exterior dimensions of Structures, Fill and Excavation areas associated with the proposed project	Yes
Dimensions to other Structures and Lot Lines associated with the project	Yes
Topographic Contour Lines from licensed surveyor or engineer when applicable	Yes

Upload Site Plans and Cross Section Drawings for your Proposed Project

2022-06-28 Willow Creek EGLE.pdf - 06/28/2022 04:39 PM

Comment

NONE PROVIDED

Additional Required and Supplementary Documents

ASTI Wet Del Report-Willow Creek Golf & Sports Center.pdf - 06/28/2022 04:41 PM Comment

NONE PROVIDED

Fees

	General Permit Fee:	
+\$50.00		

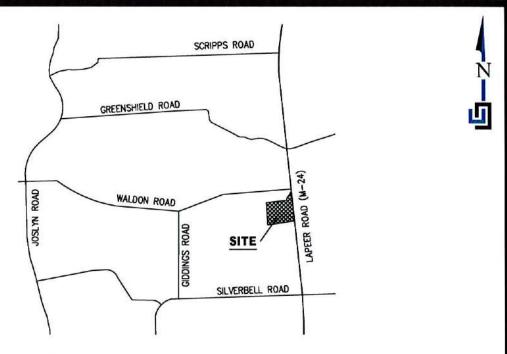
Total Fee Amount:

\$50.00

Is the applicant or landowner a State of Michigan Agency? No

Attachments

Date Attachment Name		Context	User	
6/28/2022 4:41 PM	ASTI Wet Del Report-Willow Creek Golf & Sports Center.pdf	Attachment	Dana Knox	
6/28/2022 4:39 PM	2022-06-28 Willow Creek EGLE.pdf	Attachment	Dana Knox	
6/23/2022 3:54 PM	Willow Creek Authorization Letter[58431] asti.pdf	Attachment	Dana Knox	



LEGAL DESCRIPTION AS SURVEYED

PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26, TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER:55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 2'40'30" WEST, 878.57 FEET; THENCE NORTH 84'44'00" EAST, 825.43 FEET; THENCE NORTH 11'03'00" EAST, 107.63 FEET; THENCE NORTH 39'01'00" EAST, 106.90 FEET; THENCE NORTH 29'31'00" EAST, 159.50 FEET; THENCE SOUTH 38'42'00" EAST, 16.49 FEET; THENCE SOUTH 5'27'00" EAST, 1,138.77 FEET; THENCE SOUTH 82'50'40" WEST, 1,075.09 FEET TO THE POINT OF BEGINNING.

LEGAL DESCRIPTION ZONED RM-1

PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26, TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER:55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 2'40'30" WEST, 878.57 FEET; NORTH 84'44'00" EAST, 763.28 FEET; THENCE SOUTH 5'27'00" EAST, 521.17 FEET; THENCE NORTH 82'49'48" EAST, 268.93 FEET; THENCE SOUTH 5'27'00" EAST, 330.00 FEET; THENCE SOUTH 82'50'40" WEST, 1,075.09 FEET TO THE POINT OF BEGINNING.

LEGAL DESCRIPTION ZONED GB

PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26, TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER: 55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 8250'40" EAST 1,075.09 FEET; THENCE NORTH 52'4'00" WEST 330.00 FEET TO THE POINT OF BEGINNING: THENCE SOUTH 82'49'48" WEST, 288.93 FEET; THENCE NORTH 52'7'00" WEST, 521.17 FEET; THENCE NORTH 84'44'00" EAST, 62.15 FEET; THENCE NORTH 11'03'00" EAST, 106.90 FEET; THENCE NORTH 29'51'00" EAST, 159.50 FEET; THENCE SOUTH 38'42'00" EAST, 16.49 FEET; THENCE SOUTH 5'27'00" EAST, 808.77 FEET TO THE POINT OF BEGINNING.

LEGAL DESCRIPTION PROPOSED PARCEL A

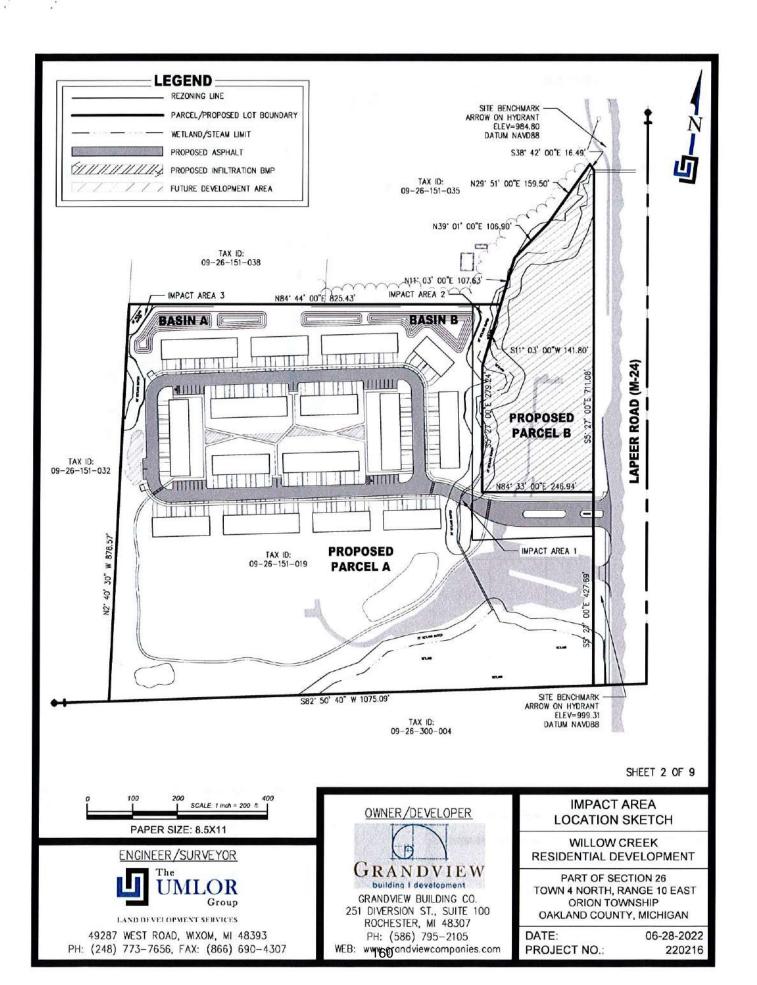
PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26, TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER:55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 2'40'30" WEST, 878.57 FEET; THENCE NORTH 84'44'00" EAST, 825.43 FEET; THENCE SOUTH 5'27'0" EAST 141.80 FEET; THENCE SOUTH 5'27'0" EAST 279.24 FEET; NORTH 84'33'0" EAST 246.94 FEET; SOUTH 5'27'0" EAST 427.69 FEET; SOUTH 82'50'40" WEST 1075.10 FEET TO THE POINT OF BEGINNING.

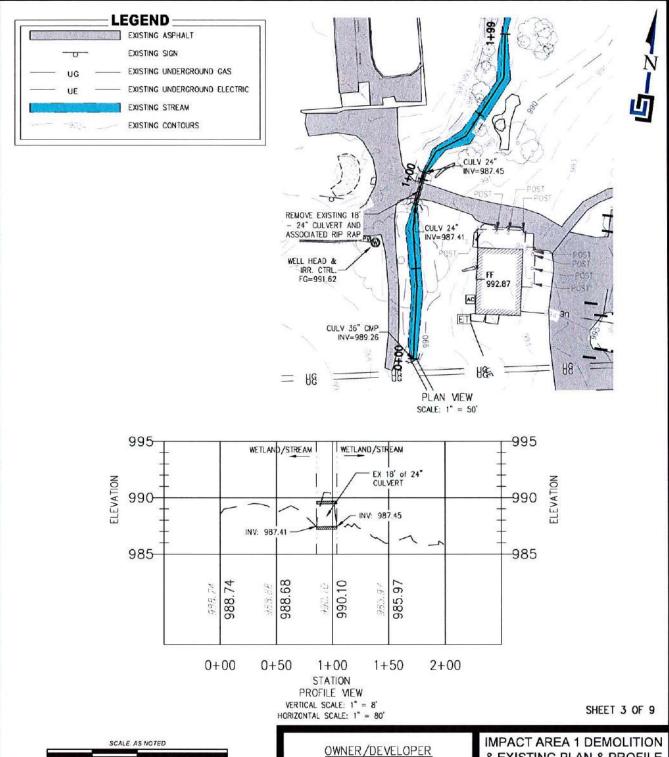
LEGAL DESCRIPTION PROPOSED PARCEL B

PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26, TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER: 55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 82'50'40" EAST 1,075.09 FEET; THENCE NORTH 05'24'00" WEST 42'7.89 FEET TO THE POINT OF BEGINNING: THENCE NORTH 84'33'00" EAST 164.94 FEET; THENCE SOUTH 05'27'00" EAST 279.24 FEET; THENCE SOUTH 11'03'00" WEST 141.81 FEET; THENCE NORTH 11'03'00" EAST 107.63 FEET; THENCE NORTH 39'01'00" EAST 10.89 FEET; THENCE NORTH 29'51'00" EAST 159.50 FEET; THENCE SOUTH 38'42'00" EAST 16.49 FEET; THENCE SOUTH 05'27'00" EAST 11.08 FEET TO THE POINT OF BEGINNING.

SHEET 1 OF 9







PAPER SIZE: 8.5X11

ENGINEER/SURVEYOR



LAND DEVELOPMENT SERVICES

49287 WEST ROAD, WIXOM, MI 48393 PH: (248) 773-7656, FAX: (866) 690-4307





building I development

GRANDVIEW BUILDING CO. 251 DIVERSION ST., SUITE 100 ROCHESTER, MI 48307 PH: (586) 795-2105

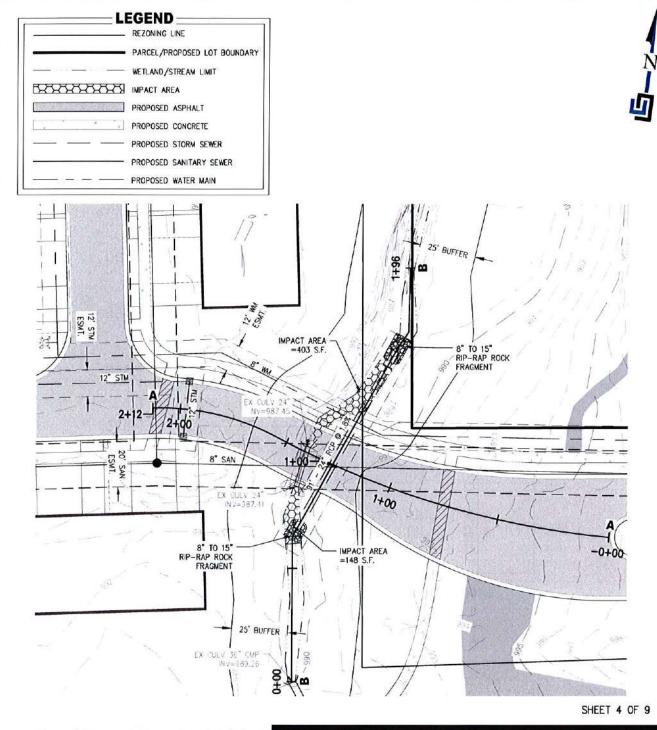
WEB: www.grandviewcompanies.com

& EXISTING PLAN & PROFILE

WILLOW CREEK RESIDENTIAL DEVELOPMENT

PART OF SECTION 26 TOWN 4 NORTH, RANGE 10 EAST ORION TOWNSHIP OAKLAND COUNTY, MICHIGAN

DATE: PROJECT NO .:





ENGINEER/SURVEYOR



LAND DEVELOPMENT SERVICES

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OWNER/DEVELOPER



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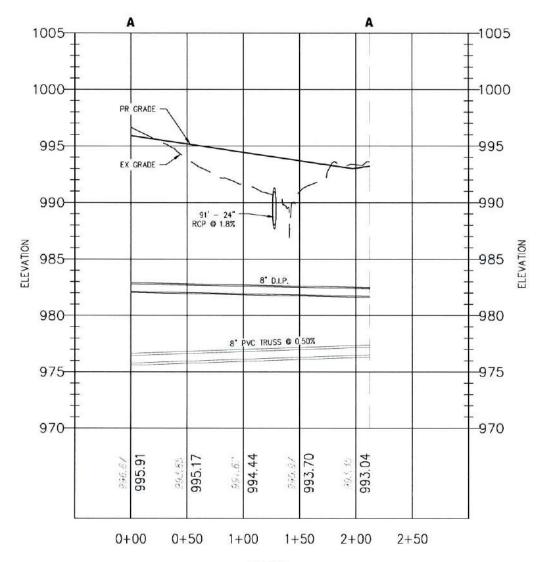
WEB: www.grandviewcompanies.com

IMPACT AREA 1 PLAN VIEW

WILLOW CREEK RESIDENTIAL DEVELOPMENT

PART OF SECTION 26 TOWN 4 NORTH, RANGE 10 EAST ORION TOWNSHIP OAKLAND COUNTY, MICHIGAN

DATE: PROJECT NO.:



STATION

ROAD PROFILE VIEW (A-A)VERTICAL SCALE: I" = 8' HORIZONTAL SCALE: 1" = 80'

SHEET 5 OF 9

SCALE AS NOTED

PAPER SIZE: 8.5X11

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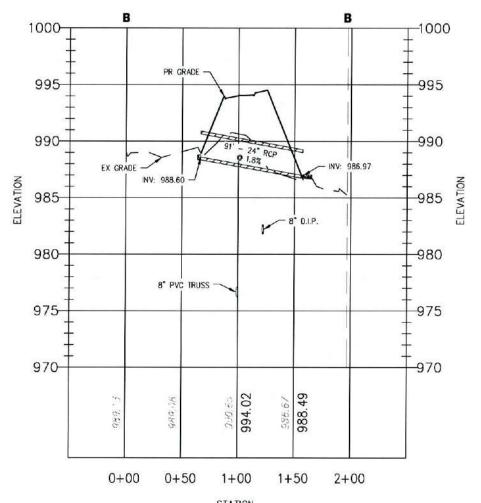
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IMPACT AREA 1 ROAD PROFILE

WILLOW CREEK RESIDENTIAL DEVELOPMENT

PART OF SECTION 26 TOWN 4 NORTH, RANGE 10 EAST ORION TOWNSHIP OAKLAND COUNTY, MICHIGAN

DATE: PROJECT NO .:



STATION DRAIN PROFILE VIEW (B-B)VERTICAL SCALE: 1" = 8' HORIZONTAL SCALE: 1" = 80'

SHEET 6 OF 9

SCALE: AS NOTED

PAPER SIZE: 8.5X11

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WEB: www.grandviewcompanies.com

IMPACT AREA 1 DRAIN PROFILE

WILLOW CREEK RESIDENTIAL DEVELOPMENT

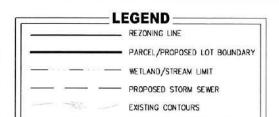
PART OF SECTION 26 TOWN 4 NORTH, RANGE 10 EAST ORION TOWNSHIP OAKLAND COUNTY, MICHIGAN

DATE:

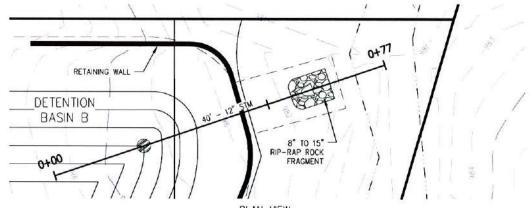
06-28-2022

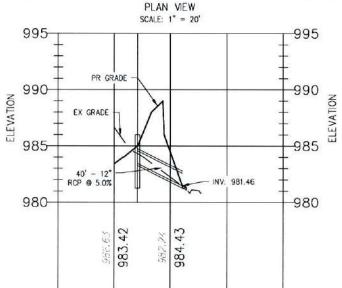
PROJECT NO .:

220216









STATION PROFILE VIEW VERTICAL SCALE: 1" = 8' HORIZONTAL SCALE: 1" = 80'

0 + 50

0+00

SHEET 7 OF 9

SCALE: AS NOTED

PAPER SIZE: 8.5X11

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1+00



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IMPACT AREA 2 PLAN & PROFILE

WILLOW CREEK RESIDENTIAL DEVELOPMENT

PART OF SECTION 26 TOWN 4 NORTH, RANGE 10 EAST ORION TOWNSHIP OAKLAND COUNTY, MICHIGAN

DATE PROJECT NO .:

<u>6</u>-2

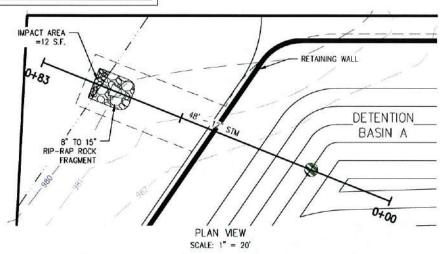
PARCEL/PROPOSED LOT BOUNDARY

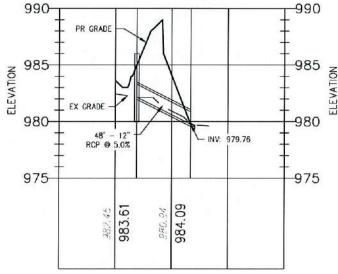
WETLAND/STREAM LIMIT

MPACT AREA

PROPOSED STORM SEWER

EXISTING CONTOURS





0+00 0+50 1+00
STATION
PROFILE VIEW
VERTICAL SCALE: 1" = 8'

VERTICAL SCALE: 1" = 8' HORIZONTAL SCALE: 1" = 80'

SHEET 8 OF 9

SCALE: AS NOTED

PAPER SIZE: 8.5X11

ENGINEER/SURVEYOR



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IMPACT AREA 3 PLAN & PROFILE

WILLOW CREEK RESIDENTIAL DEVELOPMENT

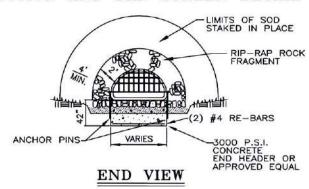
PART OF SECTION 26 TOWN 4 NORTH, RANGE 10 EAST ORION TOWNSHIP OAKLAND COUNTY, MICHIGAN

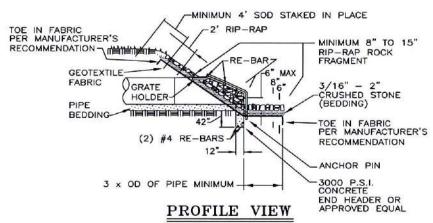
DATE:

06-28-2022 220216

PROJECT NO .:

RIP-RAP, END SECTION AND BAR SCREEN DETAIL (E-7)





NOTE:

- -BAR SCREEN DETAILS PER MDOT ROAD & BRIDGE STANDARD PLANS, STEEL GRATES FOR END SECTIONS. BARS ARE TO BE CUT OFF AT EDGE OF END SECTION.
- -FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THIS SHEET OR IN THE WRC SOIL EROSION MANUAL.

RIP RAP, END SECTION AND BAR SCREEN DETAIL
PER: OAKLAND COUNTY WATER RESOURCES COMMISSIONER
SOIL EROSION AND SEDIMENTATION CONTROL DETAILS
SHEET: 1 OF 1

SHEET 9 OF 9





RIP RAP, END SECTION AND BAR SCREEN DETAIL

WILLOW CREEK RESIDENTIAL DEVELOPMENT

PART OF SECTION 26 TOWN 4 NORTH, RANGE 10 EAST ORION TOWNSHIP OAKLAND COUNTY, MICHIGAN

DATE: PROJECT NO.:



Assessment • Remediation • Compliance Restoration • Incentives

10448Citation Drive, Suite 100 Brighton, MI 48116

Mailing Address: P.O. Box 2160 Brighton, MI 48116-2160

800 395-ASTI Fax: 810.225.3800

www.asti-env.com

Sent Via Email Only

September 17, 2021

Mr. Adam Ossipove Grandview Companies Suite 100 251 Diversion Street Rochester, MI 48307

RE:

Wetland Delineation and Jurisdictional Assessment with GPS Survey Willow Creek Golf and Sport Center 3120 Lapeer Road, Orion Township, Oakland County, Michigan

3120 Lapeer Road, Onon Township, Oakland County, Michigan

ASTI File No. 12066

Dear Mr. Ossipove:

A site inspection was completed on September 14, 2021 by ASTI Environmental (ASTI) to delineate wetland boundaries within the Willow Creek Golf and Sport Center located at 3120 Lapeer Road, Orion Township, Oakland County, Michigan (Property). One watercourse, and two wetlands likely regulated by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and Orion Township were found on the Property (Figure 1 – *GPS-Surveyed Wetland Boundaries and Inset*). Wetland boundaries, as depicted on Figure 1, were located using a professional grade, sub-meter, hand-held global positioning system unit (GPS).

SUPPORTING DATA

The United States Geological Survey (USGS) Rochester, Michigan 7.5' Quadrangle Map, the USDA Web Soil Survey (WSS), the National Wetland Inventory Map (NWI), the EGLE Wetlands Map Viewer web site, and digital aerial photographs were all used to support the wetland delineation and subsequent regulatory status determination. The USGS map did not depict wetland on the Property. The NWI and EGLE maps depicted wetland in the northwest and south east portions of the Property. All reviewed data indicated an unnamed watercourse in the eastern portion of the Property.

The WSS indicates the Property is comprised of the soil map units of Marlette sandy loam (1-6% slopes), Oshtemo-Boyer loamy sands (0-6% slopes), Oshtemo-Boyer loamy sands (6-12% slopes), Spinks loamy sand (12-25% slopes), Houghton and Adrian mucks, Metea loamy sand (0-6% slopes), and Gilford sandy loam (till plain, 0-2% slopes). According to the WSS, Houghton and Adrian mucks and Gilford sandy loam (till plain, 0-2% slopes) are hydric soils.

FINDINGS

ASTI inspected the Property for the presence of lakes, ponds, wetlands, and watercourses. This work is based on MCL 324 Part 301, Inland Lakes and Streams and Part 303, Wetlands Protection. The delineation protocol used by ASTI for this delineation is based on the US Army Corps of Engineers' Wetland Delineation Manual, 1987, the Regional Supplement to the Corps of Engineer Wetland Delineation Manual: Northcentral/Northeast Region, and related



guidance/documents, as appropriate. Wetland vegetation, hydrology, and soils were used to locate the wetland boundaries.

One watercourse and two wetlands were found on the Property.

Unnamed Watercourse

An unnamed watercourse was observed in the eastern portion of the Property (Figure 1). This unnamed watercourse exhibited defined channel bed and banks and was flowing on the day of the site inspection and, thus, meets the definition of a stream under Part 301.

Wetland A

Wetland A is an emergent and forested wetland 1.59 acres in size on the Property (Figure 1 and Inset). Vegetation within the emergent portion of Wetland A was dominated by Phragmites (*Phragmites australis*), cattail (*Typha latifolia*), and jewelweed (*Impatiens capensis*); vegetation in the forested portion of Wetland A was dominated by American elm (*Ulmus americana*), cottonwood (*Populus deltoides*), box elder (*Acer negundo*), glossy buckthorn (*Frangula alnus*), and green ash (*Fraxinus pennsylvanica*). Soils within Wetland A were comprised of sandy loams and mucky sand and are considered hydric because the criteria for a sandy mucky mineral matrix, a sandy redox matrix, and a depleted matrix were met. Indicators of wetland hydrology observed within Wetland A included surface water, high water table, sediment deposits, sparsely vegetated concave surfaces, and soil saturation.

Vegetation within the upland adjacent to Wetland A was dominated by shagbark hickory (*Carya ovata*), prickly ash (*Zanthoxylem americana*), linden (*Tilia americana*), glossy buckthorn, teasel (*Dipsacus fullonum*), Kentucky bluegrass (*Poa pratensis*), and woodbine (*Parthenocissus inserta*). Soils in the adjacent upland were sandy and did not exhibit hydric soils characteristics. No indicators of wetland hydrology were observed.

It is ASTI's opinion that Wetland A is regulated by EGLE under Part 303 and by Orion Township under Ordinance 107, Wetlands Protection, because it is directly connected to the on-site unnamed watercourse, which meets the definition of a stream under Part 301.

Wetland B

Wetland B is an emergent and forested wetland 0.04 acres in size on the Property (Figure 1). Vegetation within the emergent portion of Wetland B was dominated by Phragmites, reed canary grass (*Phalaris arundinacea*), and lake bank sedge (*Carex lacustris*); vegetation in the forested portion of Wetland B was dominated by silver maple (*Acer saccharinum*), green ash, and glossy buckthorn. Soils within Wetland B were comprised of mucky peat and sandy loams and the criteria for a histic epipedon was observed. Indicators of wetland hydrology observed within Wetland B included surface water, high water table, and soil saturation.

Dominant vegetation within the upland adjacent to Wetland B included Kentucky blue grass, showy goldenrod (*Solidago speciosa*), and crown vetch (*Securigera varia*). Soils in

Wetland Delineation and Jurisdictional Determination with GPS Survey Willow Creek Golf and Sport Center Orion Twp., Oakland Co., MI ASTI File No. 12066 Page 2 of 3



the adjacent upland were sandy and did not exhibit hydric soils characteristics. No indicators of wetland hydrology were observed.

It is ASTI's opinion that Wetland B is regulated by EGLE and Orion Township because it is greater than five total acres in size off-site.

Wetland Flagging

Wetland boundaries were marked in the field with day-glo pink and black striped flagging, located with GPS, and numbered as follows:

Wetland A = A-1 through A-96 (includes the unnamed watercourse)

Wetland B = B-1 through B-8

SUMMARY

Based upon the data, criteria, and evidence noted above, it is ASTI's professional opinion the Property includes one watercourse (Unnamed watercourse) and two wetlands (Wetlands A and B) regulated by EGLE under Part 301, Inland Lakes and Streams and Part 303, Wetlands Protection, respectively, and by Orion Township under the Township's Ordinance 107, Wetlands Protection. However, EGLE has the final authority on the extent of regulated wetlands, lakes, and streams in the State of Michigan and Orion Township has the final authority on the extent of wetlands lakes and streams within the Township boundaries. Please also note that Orion Township requires a 25-feet setback on from all Township-regulated wetlands and streams on all plans submitted to the Township.

Attached are Figure 1, which shows the GPS located wetland boundaries on the Property and completed US Army Corps of Engineers (ACOE) Wetland Data Forms.

Thank you for the opportunity to assist you with this project. Please let us know if we can be of any further assistance in moving your project forward.

Respectfully submitted,

ASTI ENVIRONMENTAL

Kyle Hottinger Wetland Ecologist

Professional Wetland Scientist #2927

Dianne C. Martin Vice President

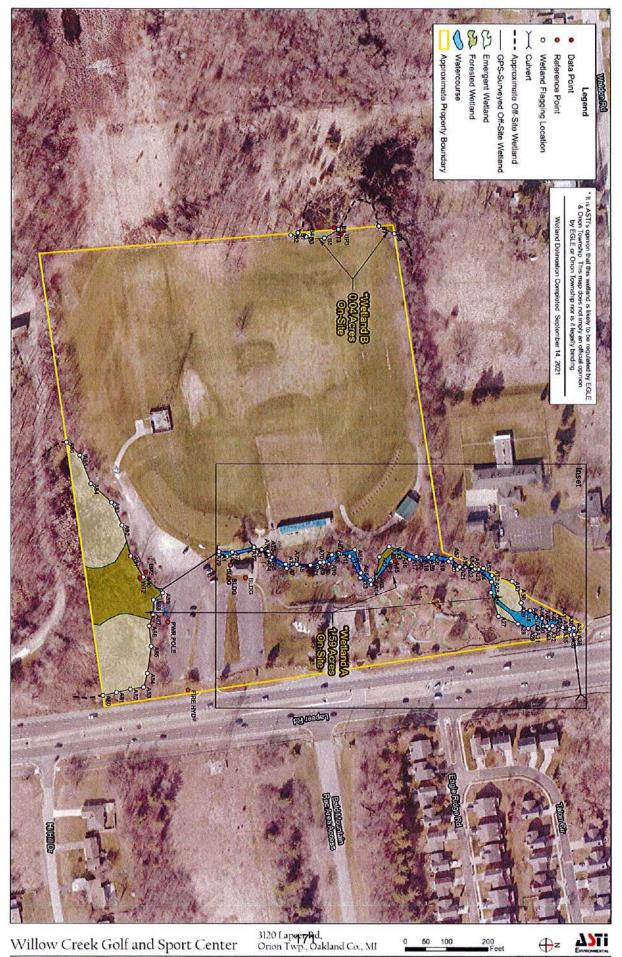
Professional Wetland Scientist #1313

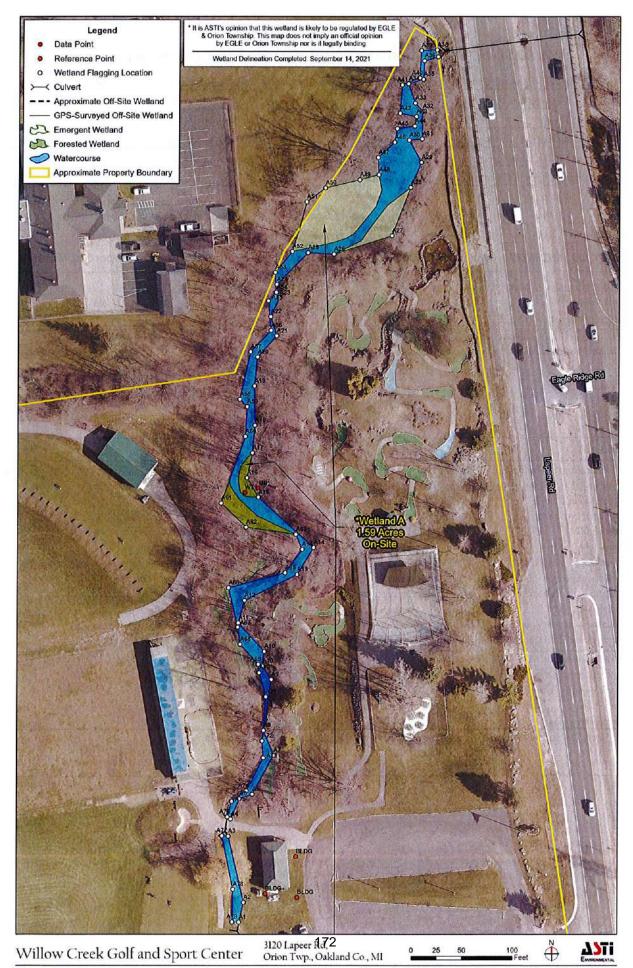
Attachments:

Figure 1 - GPS-Surveyed Wetland Boundaries

Completed ACOE Wetland Data Forms

Wetland Delineation and Jurisdictional Determination with GPS Survey Willow Creek Golf and Sport Center Orion Twp., Oakland Co., MI ASTI File No. 12066 Page 3 of 3





WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Willow Creek Golf and Sport Ce	nter	City/County: Orion Twp-Oakland Co.	Sampling Date: 9-14-21
Applicant/Owner: Grandview Properties		State: MI	Sampling Point: UP1
Investigator(s): ASTI-KAH		Section, Township, Range: Sec 26	T4N R10E
Landform (hillside, terrace, etc.): slope	Local re	elief (concave, convex, none): slope	Slope %: 10-12
Subregion (LRR or MLRA): LRR L	Lat: 42.734028	Long: -83.245695	Datum: NAD83
Soil Map Unit Name: Oshtemo-Boyer loamy s		NWI classification	
Are climatic / hydrologic conditions on the site t	Security Control of the Control of t		explain in Remarks.)
Are Vegetation, Soil, or Hydrole			
Are Vegetation, Soil, or Hydrole	ogynaturally problemat	tic? (If needed, explain any answers i	n Remarks.)
SUMMARY OF FINDINGS – Attach s	site map showing samp	oling point locations, transects, in	nportant features, etc.
Hydrophylic Vegetation Present?	Yes No X	Is the Sampled Area	
Hydric Soil Present?	Yes No X	within a Wetland? Yes	No_X_
Wetland Hydrology Present?	Yes No X	If yes, optional Wetland Site ID:	
Upland adjacent to Wetland A in northern port	ion of site		
HYDROLOGY			
Wetland Hydrology Indicators:		Secondary Indicators	(minimum of two required)
Primary Indicators (minimum of one is require	d; check all that apply)	Surface Soil Crack	ESOL SOLVEROR
Surface Water (A1)	Water-Stained Leaves (B	9) Drainage Patterns	(B10)
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3)	Marl Deposits (B15)	Dry-Season Wate	r Table (C2)
Water Marks (B1)	Hydrogen Sulfide Odor (C	C1) Crayfish Burrows	(C8)
Sediment Deposits (B2)	Oxidized Rhizospheres of		on Aerial Imagery (C9)
Drift Deposits (B3)	Presence of Reduced Iron	n (C4) Stunted or Stresse	ed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in	Tilled Soils (C6) Geomorphic Posit	ion (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard ((D3)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remark	ss)Microtopographic	Relief (D4)
Sparsely Vegetated Concave Surface (B8	3)	FAC-Neutral Test	(D5)
Field Observations:			
Surface Water Present? Yes	No x Depth (inches):		
Water Table Present? Yes	No x Depth (inches):		
Saturation Present? Yes	No x Depth (inches):	Wetland Hydrology Present?	Yes No _X_
(includes capillary fringe)			
Describe Recorded Data (stream gauge, moni	itoring well, aerial photos, prev	vious inspections), if available:	
Remarks:			
_			
=			
	173		

VEGETATION - Use scientific names of plants.

Absolute Dominant Indicator Species Status St	
2.	
2. Prunus serolina 10 No FACU That Are OBL, FACW, or FAC: 2 3. Tilia americana 20 Yes FACU Total Number of Dominant Species Across All Strata: 6 5. ————————————————————————————————————	
A	(A)
4.	- Source
5. 6. Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% 7. 70 =Total Cover Prevalence Index worksheet: Total % Cover of: Multiply by. Sapling/Shrub Stratum (Plot size: 15') 0BL species 0 x1 = 0 0 x1 = 0 1. Ribes americanum 20 Yes FACW FACW species 25 x2 = 50 x2 = 50 2. Zanthoxylum americanum 20 Yes FACU FAC species 15 x3 = 45 x3 = 45 3. Frangula alnus 10 Yes FAC UPL species 0 x5 = 0 Column Totals: 165 (A) 595 x4 = 500 6. Prevalence Index = B/A = 3.61 Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation Indicators: 2 - Dominance Test is >50% 1 - Rapid Test for Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation Indicators of Hydrophytic Vegetation Indicators Indicators of Hydrophytic Vegetation Indicators of Hydrophytic Vegetation Indicators of Hydrophytic Vegetation Indicators Indicators	(B)
6.	_, _
Prevalence Index worksheet: Total % Cover of: Multiply by:	(A/B)
Total % Cover of: Multiply by:	_(,,,,
Sapling/Shrub Stratum (Plot size:	
1. Ribes americanum 20 Yes FACW FACW species 25 x 2 = 50 2. Zanthoxylum americanum 20 Yes FACU FAC species 15 x 3 = 45 3. Frangula alnus 10 Yes FAC FACU species 125 x 4 = 500 4. UPL species 0 x 5 = 0 Column Totals: 165 (A) 595 Prevalence Index = B/A = 3.61 7. Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0¹ 2 - Carex woodii 5 No FACU 3 - Prevalence Index is ≤3.0¹ 2 - Carex grayi 5 No FACW 4 - Morphological Adaptations¹ (Provide sudata in Remarks or on a separate sheet 3 - Parthenocissus inserta 30 Yes FACU Problematic Hydrophytic Vegetation¹ (Exp 5 No FAC Problematic Hydrophytic Vegetation¹ (Exp	
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7	(B)
Stratum (Plot size: 5') 2 - Dominance Test is >50% Carex woodii	
Herb Stratum (Plot size: 5') 2 - Dominance Test is >50% 1. Carex woodii 5 No FACU 3 - Prevalence Index is ≤3.0¹ 2. Carex grayi 5 No FACW 4 - Morphological Adaptations¹ (Provide sudata in Remarks or on a separate sheet 3. Parthenocissus inserta 30 Yes FACU Problematic Hydrophytic Vegetation¹ (Exp. Problematic Hydrophytic Vegetation² (Exp. Problematic Hydrophytic Veget	
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4. Toxicodendron radicans 5 No FAC Problematic Hydrophytic Vegetation¹ (Exp. 1. Indicators of hydric soil and wetland hydrology)	pporting
5¹Indicators of hydric soil and wetland hydrology)
5¹Indicators of hydric soil and wetland hydrology	ain)
be present, unless disturbed or problematic.	must
Definition of Vancturian Charles	
9. Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of	hoight
	neight.
10 Sapling/shrub – Woody plants less than 3 in.	DBH
11 and greater than or equal to 3.28 ft (1 m) tall.	
12. Herb – All herbaceous (non-woody) plants, reg	ardless
=Total Cover of size, and woody plants less than 3.28 ft tall.	
Woody Vine Stratum (Plot size: 15') Woody vines – All woody vines greater than 3	28 ft in
1. 0 height.	
2	
3. Hydrophytic Vegetation	
4 Present? Yes No_X	
=Total Cover	
Remarks: (Include photo numbers here or on a separate sheet.)	
	1

•	-		
	7	п	

Sampling	Point	UP1

Depth	cription: (Describe Matrix	to the de		ument ti x Featur		tor or co	ifirm the absen	ce of indic	ators.)		
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture		Rem	arks	
0-4	10YR 3/3	100					Sandy				
4-18	10YR 7/3	95		-	-		Sandy	_			
	10YR 3/3	5									
				_							
		_		<u></u>	_	 					
¹Type: C=C	oncentration, D=Depl	letion, RM	=Reduced Matrix, N	MS=Mas	ked Sand	Grains.	² Locatio	n: PL=Por	e Lining, M=N	Matrix.	
Hydric Soil Histosol Histic El Black Hi Hydroge Stratified Depleted Thick Da Sandy M Sandy G Stripped Dark Su	Indicators: (A1) pipedon (A2) stic (A3) an Sulfide (A4) d Layers (A5) d Below Dark Surface ark Surface (A12) Mucky Mineral (S1) Sleyed Matrix (S4) Redox (S5) I Matrix (S6) rface (S7)	e (A11)	Polyvalue Belo MLRA 149B Thin Dark Surf High Chroma S Loamy Mucky Loamy Gleyed Depleted Matri Redox Dark Si Depleted Dark Redox Depres Marl (F10) (LR	ow Surface (S9) Sands (S Mineral Matrix (x (F3) urface (F Surface sions (F8 R K, L)	ce (S8) (L (LRR R, 511) (LRF (F1) (LRF F2) 6) (F7)	.RR R, MLRA 14 8 K, L) 8 K, L)	Indicate	ors for Pro in Muck (A1 ist Prairie F in Mucky Pe rvalue Belo in Dark Surfi -Manganes dmont Floo ic Spodic (in Parent Ma y Shallow E ier (Explain	blematic Hyd 0) (LRR K, L Redox (A16) (eat or Peat (S w Surface (S ace (S9) (LR se Masses (F dplain Soils (TA6) (MLRA aterial (F21) Dark Surface in Remarks)	dric Soils ³ ., MLRA 14 LRR K, L, 63) (LRR K 8) (LRR K, R K, L) 12) (LRR K F19) (MLR 144A, 145	49B) R) , L, R) , L) (, L, R) A 149B)
The state of the s	f hydrophytic vegetat Layer (if observed):	ion and w	etland hydrology mi	ust be pr	esent, ur	less distu	rbed or problema	atic.			
Type:	non-	е									
Depth (in	nches):						Hydric Soil Pr	esent?	Yes	No	Х
	m is revised from Noi 2015 Errata. (http://w								d Indicators	of Hydric S	oils,

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Willow Creek G	olf and Sport Center		City/County: Orion T	Twp-Oakland Co.	Sampling Date: 9-14-21
Applicant/Owner: Grandv	iew Properties			State: MI	Sampling Point: UP2
Investigator(s): ASTI-KAH			Section, To	wnship, Range: Sec 26	There is a series of the serie
Landform (hillside, terrace, etc	.): slope	Local r	elief (concave, conve	ex, none): slope	Slope %: 2-4
Subregion (LRR or MLRA): L	RR L	Lat: 42.732367		-83.245629	Datum: NAD83
Soil Map Unit Name: Houghto	on and Adrian mucks			NWI classification:	none
Are climatic / hydrologic condit	or the total terms of the total	I for this time of year?	Yes x		explain in Remarks.)
Are Vegetation, Soil _	1974 (1971 1974) 1974 (1974 1974 1974 1974 1974 1974 1974 1974		CC 250	mal Circumstances" pres	
Are Vegetation, Soil _				d, explain any answers in	
SUMMARY OF FINDING	W IN 100000			1250	
Hydrophytic Vegetation Prese	ent? Yes	No X	Is the Sampled A	rea	
Hydric Soil Present?):	No X	within a Wetland		No X
Wetland Hydrology Present?	Yes	No X	If yes, optional We	District Control of the Control of t	
HYDROLOGY					
Wetland Hydrology Indicato	rs:			Secondary Indicators (r	ninimum of two required)
Primary Indicators (minimum o	of one is required; che	ck all that apply)		Surface Soil Cracks	s (B6)
Surface Water (A1)		Vater-Stained Leaves (B	9)	Drainage Patterns	
High Water Table (A2)		quatic Fauna (B13)		Moss Trim Lines (B	
Saturation (A3)	· · · · · · · · · · · · · · · · · · ·	farl Deposits (B15)		Dry-Season Water	
Water Marks (B1)		lydrogen Sulfide Odor (C		Crayfish Burrows (0	
— Sediment Deposits (B2)		oxidized Rhizospheres or			n Aerial Imagery (C9)
— Drift Deposits (B3)		resence of Reduced Iron	(8)	Stunted or Stressed	
Algal Mat or Crust (B4) Iron Deposits (B5)	(Recent Iron Reduction in	Tilled Solls (Cb)	Geomorphic Position Shallow Aquitard (E	23 (5)
Inundation Visible on Aeri		hin Muck Surface (C7) other (Explain in Remarks	c)	Microtopographic R	51
Sparsely Vegetated Conc		mei (Explain in Remark	5)	FAC-Neutral Test (M 323
Field Observations:	ave carrace (Bo)				50,
	Yes No	v Denth (inches):			
	Yes No	x Depth (inches): _ x Depth (inches): _			
		x Depth (inches):	Wetland	d Hydrology Present?	Yes No X
(includes capillary fringe)				, 3,	
Describe Recorded Data (stre	am gauge, monitoring	well, aerial photos, prev	ious inspections), if a	available:	
Remarks:					
		1	76		

Tree Stratum (Plot size:30')	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test	worksheet:			
12.	10 M			Number of Domin That Are OBL, FA	No.		2	_(A)
34.				Total Number of D Species Across A		2	4	(B)
56.				Percent of Domini That Are OBL, FA		5	0.0%	_(A/B)
7.:				Prevalence Index	x worksheet:			
		=Total Cover		Total % Cov	er of:	Mul	tiply by:	
Sapling/Shrub Stratum (Plot size: 15'	_)			OBL species	0	x 1 = _	0	_
1. Frangula alnus	60	Yes	FAC	FACW species	0 >	x 2 = _	0	
2. Elaeagnus umbellata	30	Yes	UPL	FAC species	90	x 3 =	270	
3. Cornus racemosa	10	No	FAC	FACU species	40	x 4 =	160	
4.				UPL species	55	x 5 =	275	
5.				Column Totals:	185	(A)	705	— (B)
6.				Prevalence	Index = B/A		3.81	
7.				Hydrophytic Veg	etation Indica	ators:		
	100	=Total Cover		1 - Rapid Tes	t for Hydrophy	tic Veg	etation	
Herb Stratum (Plot size: 5')				2 - Dominanc	e Test is >50%	6		
Toxicodendron radicans	20	Yes	FAC		e Index is ≤3.0)1		
		Yes No	FAC UPL	3 - Prevalenc	e Index is ≤3.0		ovide sup	pportin
2. Securigera varia	- I		UPL	3 - Prevalenc		ns¹ (Pro		
Securigera varia Parthenocissus inserta		No		3 - Prevalenc 4 - Morpholog data in Rer	e Index is ≤3.0 gical Adaptatio marks or on a	ns¹ (Pro separa	te sheet)	
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare	10 40	No Yes	UPL FACU	3 - Prevalenc 4 - Morpholog data in Rei Problematic H	e Index is ≤3.0 gical Adaptatio marks or on a Hydrophytic Ve ric soil and we	ns ¹ (Pro separate getatio	te sheet) in¹ (Expla ydrology	ain)
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare 6.	10 40 10 5	No Yes No	UPL FACU UPL	3 - Prevalence 4 - Morpholog data in Rer Problematic F Indicators of hydi be present, unless	e Index is ≤3.0 gical Adaptatio marks or on a Hydrophytic Ve ric soil and we s disturbed or p	ns ¹ (Proseparates) getation tland hyproblen	te sheet) in¹ (Expla ydrology	ain)
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare 6.	10 40 10 5	No Yes No	UPL FACU UPL	3 - Prevalenc 4 - Morpholog data in Rei Problematic H	e Index is ≤3.0 gical Adaptatio marks or on a Hydrophytic Ve ric soil and we s disturbed or p	ns ¹ (Proseparates) getation tland hyproblen	te sheet) in¹ (Expla ydrology	ain)
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare 6.	10 40 10 5	No Yes No	UPL FACU UPL	3 - Prevalence 4 - Morpholog data in Rer Problematic H Indicators of hydibe present, unless Definitions of Ve	e Index is ≤3.0 gical Adaptation marks or on a selection with the soul and we selection Straints 3 in. (7.6 cents 1.0 cents 2.0 cents 3 in. (7.6 cents 2.0 cents 3.0 cents 2.0	ns¹ (Proseparation separation sep	te sheet) in¹ (Expla ydrology natic. more in	ain) must
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare 6	10 40 10 5	No Yes No	UPL FACU UPL	3 - Prevalence 4 - Morpholog data in Rer Problematic H Indicators of hydrogenessent, unless Definitions of Vertical Tree – Woody pladiameter at breas	e Index is ≤3.0 gical Adaptation marks or on a structure version soil and we state of the structure of the	ns¹ (Proseparate separate sepa	te sheet) in¹ (Expla ydrology natic. more in dless of h	ain) must height.
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare 6	10 40 10 5	No Yes No	UPL FACU UPL	3 - Prevalence 4 - Morpholog data in Rer Problematic H Indicators of hydrogeness of the present, unless Definitions of Vertical diameter at breas Sapling/shrub —	e Index is ≤3.0 gical Adaptation marks or on a structure of the soil and we soil and we soil and straints 3 in. (7.6 of theight (DBH)	ns¹ (Proseparate separate sepa	te sheet) n¹ (Expla ydrology natic. nore in dless of h an 3 in. E	ain) must height.
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare 6. 7. 8. 9.	10 40 10 5	No Yes No	UPL FACU UPL	3 - Prevalence 4 - Morpholog data in Rer Problematic H Indicators of hydrogenessent, unless Definitions of Vertical Tree – Woody pladiameter at breas	e Index is ≤3.0 gical Adaptation marks or on a structure of the soil and we soil and we soil and straints 3 in. (7.6 of theight (DBH)	ns¹ (Proseparate separate sepa	te sheet) n¹ (Expla ydrology natic. nore in dless of h an 3 in. E	ain) must height.
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare 6. 7. 8. 9.	10 40 10 5	No Yes No No	UPL FACU UPL	3 - Prevalence 4 - Morpholog data in Rei Problematic H Indicators of hydibe present, unless Definitions of Ve Tree – Woody pladiameter at breas Sapling/shrub – and greater than of Herb – All herbace	e Index is ≤3.0 gical Adaptation marks or on a selection of the solid and we selected or logeration Straints 3 in. (7.6 cent to the selection of the selection	ns¹ (Proseparate separate sepa	te sheet) In (Explaid In (Exp	ain) must height. DBH
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare 6	10 40 10 5	No Yes No	UPL FACU UPL	3 - Prevalence 4 - Morpholog data in Rer Problematic H Indicators of hydrogenessent, unless Definitions of Vertical Tree – Woody pladiameter at breas Sapling/shrub – and greater than of	e Index is ≤3.0 gical Adaptation marks or on a selection of the solid and we selected or logeration Straints 3 in. (7.6 cent to the selection of the selection	ns¹ (Proseparate separate sepa	te sheet) In (Explaid In (Exp	ain) must height. DBH
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare 6	10 40 10 5	No Yes No No	UPL FACU UPL	3 - Prevalence 4 - Morpholog data in Rei Problematic H Indicators of hydibe present, unless Definitions of Ve Tree – Woody pladiameter at breas Sapling/shrub – and greater than of size, and wood Woody vines – A	e Index is ≤3.0 gical Adaptation marks or on a subdividual distribution of the solid and we subdividual distribution of the solid and the sol	ns¹ (Proseparate separate sepa	te sheet) In (Explaid In (Exp	must height. DBH ardless
Securigera varia Parthenocissus inserta Centaurea stoebe Clinopodium vulgare . .	10 40 10 5	No Yes No No Total Cover	UPL FACU UPL	3 - Prevalence 4 - Morpholog data in Rei Problematic H Indicators of hydibe present, unless Definitions of Ve Tree – Woody pladiameter at breas Sapling/shrub – and greater than of the size, and wood	e Index is ≤3.0 gical Adaptation marks or on a subdividual distribution of the solid and we subdividual distribution of the solid and the sol	ns¹ (Proseparate separate sepa	te sheet) In (Explaid In (Exp	ain) must height. DBH ardless
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare 6	10 40 10 5	No Yes No No Total Cover	UPL FACU UPL	3 - Prevalence 4 - Morpholog data in Rei Problematic H Indicators of hydibe present, unless Definitions of Ve Tree – Woody pladiameter at breas Sapling/shrub – and greater than of the herb – All herbac of size, and wood Woody vines – Aheight.	e Index is ≤3.0 gical Adaptation marks or on a subdividual distribution of the solid and we subdividual distribution of the solid and the sol	ns¹ (Proseparate separate sepa	te sheet) In (Explaid In (Exp	ain) must height. DBH ardless
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare 6	10 40 10 5	No Yes No No Total Cover	UPL FACU UPL	3 - Prevalence 4 - Morpholog data in Rei Problematic H Indicators of hydibe present, unless Definitions of Ve Tree - Woody pladiameter at breas Sapling/shrub - and greater than of size, and wood Woody vines - Aheight. Hydrophytic Vegetation	e Index is ≤3.0 gical Adaptation marks or on a selection and we selected and we selected and se	ns¹ (Proseparate separate sepa	te sheet) in (Explaid ydrology natic. more in dless of han 3 in. E in) tall. ants, regal 8 ft tall.	ain) must height. DBH ardless
2. Securigera varia 3. Parthenocissus inserta 4. Centaurea stoebe 5. Clinopodium vulgare 6. 7. 8. 9. 10. 11. 12. Woody Vine Stratum (Plot size: 15' 1. 2. 2.	10 40 10 5	No Yes No No Total Cover	UPL FACU UPL	3 - Prevalence 4 - Morpholog data in Rei Problematic H Indicators of hydibe present, unless Definitions of Ve Tree - Woody pladiameter at breas Sapling/shrub - and greater than of size, and wood Woody vines - Aheight. Hydrophytic Vegetation	e Index is ≤3.0 gical Adaptation marks or on a subdividual distribution of the solid and we subdividual distribution of the solid and the sol	ns¹ (Proseparate separate sepa	te sheet) in (Explaid ydrology natic. more in dless of han 3 in. E in) tall. ants, regal 8 ft tall.	ain) must height. DBH ardless

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Sampling Point UP2

Depth	Matrix			x Feature	es		onfirm the absence				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture		Rem	narks	
0-6	10YR 4/2	100		-	(<u></u>		Sandy	1			
6-18	10YR 5/4	90		—		e s es	Sandy	0.			
						—					
	10YR 4/2			-		—					
			<u>.</u>								
100	V				gg	is					
								(i			
	N. Carlotte	-									
							- 4				x
-					_						
							-	-			
		-					200				
	ncentration, D=Depl	etion, RM=	Reduced Matrix, M	IS=Mask	ed Sand	Grains.			ELining, M=N		
Hydric Soil I			-2004		~0.00000000000000000000000000000000000	Name and the second			elematic Hyd		
Histosol (-	Polyvalue Belov		e (S8) (L	.RR R,			0) (LRR K, L		
Black His	pedon (A2)		MLRA 149B)			MI DA 4			edox (A16) (I		10 M
	Sulfide (A4)	-	Thin Dark Surfa High Chroma S				A		at or Peat (S w Surface (S	1000	138 S
	Layers (A5)	-	Loamy Mucky M	E					ice (S9) (LRI	AL SILVER	·, _)
	Below Dark Surface	(A11)	Loamy Gleyed			, -,			e Masses (F		K, L, R)
	k Surface (A12)	-	Depleted Matrix		(5)		-		lplain Soils (f		
Sandy M	ucky Mineral (S1)	_	Redox Dark Su	rface (F6)				TA6) (MLRA		
Sandy GI	eyed Matrix (S4)	-	Depleted Dark	Surface (F7)		Red Par	ent Ma	terial (F21)		
Sandy Re		n=	Redox Depress		1				ark Surface ((F22)	
	Matrix (S6)	10 m	Marl (F10) (LRF	R K, L)			Other (E	xplain i	n Remarks)		
Dark Surf	ace (S7)										
³ Indicators of	hydrophytic vegetati	on and we	tland hydrology mu	st be pre	sent, un	less dist	urbed or problematic.				
THE TOTAL STREET	ayer (if observed):		, ,,				•				
Туре:	none	9									
Depth (in	ches):						Hydric Soil Prese	nt?	Yes	No	X
Remarks:							100000000000000000000000000000000000000				
							2.0 to include the NR	CS Field	d Indicators o	of Hydric S	Soils,
Version 7.0, 2	015 Errata. (http://w	ww.nrcs.us	sda.gov/Internet/FS	E_DOCI	JMENTS	S/nrcs142	2p2_051293.docx)				
					170						

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Willow Creek Golf and Sport Center	City/County: Orion Twp-Oakland Co. Sampling Date: 9-14-21
Applicant/Owner: Grandview Properties	State: MI Sampling Point: UP3
Investigator(s): ASTI-KAH	Section, Township, Range: Sec 26 T4N R10E
No. of the Control of	cal relief (concave, convex, none): slope Slope %: 2-3
Subregion (LRR or MLRA): LRR L Lat: 42.733697	Long: -83.248644 Datum: NAD83
Soil Map Unit Name: Water - no soil designation	NWI classification: PEM1C
Are climatic / hydrologic conditions on the site typical for this time of year	
Are Vegetation, Soil, or Hydrology significantly dis	
Are Vegetation Soil , or Hydrology naturally proble	The statement of the state of t
	ampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No X	Is the Sampled Area
Hydric Soil Present? Yes No X	within a Wetland? Yes No _X
Wetland Hydrology Present? Yes No X	If yes, optional Wetland Site ID:
Upland adjacent to Wetland B	
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Water-Stained Leave:	
High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)
Water Marks (B1) Hydrogen Sulfide Odd	
	es on Living Roots (C3) Saturation Visible on Aerial Imagery (C9)
Drift Deposits (B3) Presence of Reduced	
Algal Mat or Crust (B4)Recent Iron Reduction	
Iron Deposits (B5) Thin Muck Surface (C	- : : : : : : : : : : : : : : : : : : :
Inundation Visible on Aerial Imagery (87) Other (Explain in Rem	
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No x Depth (inche	?s):
Water Table Present? Yes No x Depth (inche	
Saturation Present? Yes No _x Depth (inche	es): Wetland Hydrology Present? Yes No _X
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos,	previous inspections), if available:
Remarks:	
Normana.	

VEGETATION - Use scientific names of plants.

	Absolute	Dominant	Indicator			
Tree Stratum (Plot size: 30')	% Cover	Species?	Status	Dominance Test worksheet:		
. Acer negundo	10	Yes_	FAC	Number of Dominant Species		
				That Are OBL, FACW, or FAC:	2	(A)
L				Total Number of Dominant		
				Species Across All Strata:	6	(B)
j				Percent of Dominant Species		
				* I I I I I I I I I I I I I I I I I I I	33.3%	(A/B
				Prevalence Index worksheet:		
	10	=Total Cover		Total % Cover of: Mu	ultiply by:	
apling/Shrub Stratum (Plot size:15')				OBL species 0 x 1 =	0	
Frangula alnus	25	Yes	FAC	FACW species 20 x 2 =	40	
Elaeagnus umbellata	10	Yes	UPL	FAC species 35 x 3 =	105	
3. 4.				FACU species 20 x 4 =	80	
			55	UPL species 70 x 5 =	350	
				Column Totals: 145 (A)	575	— (E
6.		9	·	Prevalence Index = B/A =		
		(S)		Hydrophytic Vegetation Indicators:		_
	35	=Total Cover		1 - Rapid Test for Hydrophytic Ve		
erb Stratum (Plot size: 5')				2 - Dominance Test is >50%	3	
Solidago speciosa	40	Yes	UPL	3 - Prevalence Index is ≤3.0¹		
Symphyotrichum novae-angliae	10	No	FACW	4 - Morphological Adaptations (P	rovide sup	porti
Securigera varia	20	Yes	UPL	data in Remarks or on a separa		P
Phragmites australis	10	No	FACW	Problematic Hydrophytic Vegetation	on¹ (Expla	in)
Poa pratensis	20	Yes	FACU			
	20			¹ Indicators of hydric soil and wetland he present, unless disturbed or proble		must
				Definitions of Vegetation Strata:	mauc.	
(i)		8 		Definitions of Vegetation Strata.		
		-		Tree – Woody plants 3 in. (7.6 cm) or		اطحنما
·			-	diameter at breast height (DBH), regard	raless of n	eign
		$\overline{}$		Sapling/shrub - Woody plants less th		ВН
1		(and greater than or equal to 3.28 ft (1	m) tall.	
				Herb – All herbaceous (non-woody) pl		rdles
	100	=Total Cover		of size, and woody plants less than 3.2	28 ft tall.	
/oody Vine Stratum (Plot size:15')				Woody vines - All woody vines greate	er than 3.2	28 ft i
	0	3		height.		
				Hydrophytic		
				Vegetation		
		,		Vegetation		
				The state of the s	X	

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	<i>_</i>	

UP3

Depth	Matrix	o ucp		x Featur		01 00	nfirm the absence of	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-18	10YR 4/3	95					Sandy	
							Caridy	
	10YR 7/6							
		At		93		Se		
					-			
			7		A			
	-							
(1)				570	49			
		—					R03=	
*	-) (()		0.0	
•								
Control of States of Control of the Control	oncentration, D=Deple	etion, RM	=Reduced Matrix, I	MS=Mas	ked Sand	Grains.	Visit CARS ATOM STORES	L=Pore Lining, M=Matrix.
Hydric Soil			1922 1831 - John D. 1922 1835	0-126-726		Padaroleo en		or Problematic Hydric Soils ³ :
Histosol	No. of the contract of the con	9	Polyvalue Beld		ce (S8) (I	RR R,		ck (A10) (LRR K, L, MLRA 149B)
- I iliano de la compania de	pipedon (A2)		MLRA 149E	<u> </u>	// DD D	MIDA		rairie Redox (A16) (LRR K, L, R)
Black Hi	en Sulfide (A4)		Thin Dark Surf					cky Peat or Peat (S3) (LRR K, L, R)
	d Layers (A5)	52	High Chroma				H	e Below Surface (S8) (LRR K, L)
	d Below Dark Surface	/Δ11\	Loamy Mucky Loamy Gleyed			(K, L)		k Surface (S9) (LRR K, L) ganese Masses (F12) (LRR K, L, R)
	ark Surface (A12)	(////	Depleted Matr		(2)		11 	it Floodplain Soils (F19) (MLRA 149B
	fucky Mineral (S1)	•	Redox Dark S	TO SEE SEE	6)			podic (TA6) (MLRA 144A, 145, 149B)
	Gleyed Matrix (S4)	-	Depleted Dark					ent Material (F21)
	Redox (S5)	•	Redox Depres					allow Dark Surface (F22)
	Matrix (S6)		Marl (F10) (LR		54 5 7			xplain in Remarks)
	rface (S7)	-						20 * 10 10 19 19 19 19 10 10 10 10 10 10 10 10 10 10 10 10 10
3Indicators o	f hydrophytic vegetation	on and we	etland hydrology m	ust be pr	esent, ur	less distu	irbed or problematic.	
Restrictive	Layer (if observed):							
Type:	none	2				- 1		
Depth (i	nches):						Hydric Soil Presen	nt? Yes No X
Remarks:							.,,	
								CS Field Indicators of Hydric Soils,
Version 7.0,	2015 Errata. (http://ww	ww.nrcs.u	sda.gov/Internet/F	SE_DOC	UMENT	S/nrcs142	2p2_051293.docx)	

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Willow Creek Golf and Sport Center	City/County: Orion Twp-Oakland Co. Sampling Date: 9-14-21
Applicant/Owner: Grandview Properties	State: MI Sampling Point: WT1
Investigator(s): ASTI-KAH	Section, Township, Range: Sec 26 T4N R10E
Landform (hillside, terrace, etc.): depression Loca	al relief (concave, convex, none): concave Slope %: 1-2
Subregion (LRR or MLRA): LRR L Lat: 42.734016	Long: -83.245742 Datum: NAD83
Soil Map Unit Name: Oshtemo-Boyer loamy sands (0-6% slopes)	NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year?	
Are Vegetation, Soil, or Hydrology significantly distu	
Are Vegetation, Soil, or Hydrologynaturally problem	natic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing sar	mpling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes X No	Is the Sampled Area
Hydric Soil Present? Yes X No	within a Wetland? Yes X No
Wetland Hydrology Present? Yes X No	If yes, optional Wetland Site ID: Wetland A
Wetland A - forested wetland portion in NE portion of site	
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Water-Stained Leaves	
X High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)
X Saturation (A3)Marl Deposits (B15)	Dry-Season Water Table (C2)
Water Marks (B1) Hydrogen Sulfide Odor	
x Sediment Deposits (B2) Oxidized Rhizospheres	
Drift Deposits (B3) Presence of Reduced I	-
Algal Mat or Crust (B4) Recent Iron Reduction This Music Surface (C7)	
Iron Deposits (B5) Thin Muck Surface (C7 Inundation Visible on Aerial Imagery (B7) Other (Explain in Rema	i
x Sparsely Vegetated Concave Surface (B8)	X FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No x Depth (inches))
Water Table Present? Yes x No Depth (inches)	
Saturation Present? Yes x No Depth (inches)	
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pr	evious inspections), if available:
Remarks:	
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VEGETATION – Use scientific names of plants.

TEGETATION - 636 Scientific flames of pie	20104-19-001			Sampling Point
Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. Acer negundo	20	Yes	FAC	Number of Dominant Species
2. Ulmus americana	40	Yes	FACW	That Are OBL, FACW, or FAC: 7 (A)
3.				Total Number of Dominant
4.				Species Across All Strata: 8 (B)
5				Percent of Dominant Species
6.				That Are OBL, FACW, or FAC: 87.5% (A/B)
7.				Prevalence Index worksheet:
	60	=Total Cover		Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15')				OBL species 0 x 1 = 0
Acer negundo	10	Yes	FAC	FACW species 75 x 2 = 150
2. Fraxinus pennsylvanica	5	Yes	FACW	FAC species 40 x 3 = 120
3. Frangula alnus	10	Yes	FAC	FACU species 10 x 4 = 40
4				UPL species 0 x 5 = 0
5.		1) (1)		Column Totals: 125 (A) 310 (B)
6.		10 1	·	Prevalence Index = B/A = 2.48
7.				Hydrophytic Vegetation Indicators:
	25	=Total Cover		1 - Rapid Test for Hydrophytic Vegetation
Herb Stratum (Plot size: 5')				X 2 - Dominance Test is >50%
Symphyotrichum lanceolatum	10	Yes	FACW	X 3 - Prevalence Index is ≤3.0¹
2. Impatiens capensis	5	No	FACW	4 - Morphological Adaptations¹ (Provide supporting
Parthenocissus inserta	10	Yes	FACU	data in Remarks or on a separate sheet)
A Caray gravii	10	Yes	FACW	Problematic Hudsonbutic Venetation (Fundain)
5. Bidens frondosa				Problematic Hydrophytic Vegetation ¹ (Explain)
6.	5	No	_FACW_	¹ Indicators of hydric soil and wetland hydrology must
-		-		be present, unless disturbed or problematic.
7.		-		Definitions of Vegetation Strata:
8.		-		Tree - Woody plants 3 in. (7.6 cm) or more in
9.	A.			diameter at breast height (DBH), regardless of height.
10				Sapling/shrub - Woody plants less than 3 in. DBH
11				and greater than or equal to 3.28 ft (1 m) tall.
12				Herb - All herbaceous (non-woody) plants, regardless
	40	=Total Cover		of size, and woody plants less than 3.28 ft tall.
Woody Vine Stratum (Plot size: 15')				Woody vines – All woody vines greater than 3.28 ft in
1	0			height.
2		o:		
3.				Hydrophytic Vegetation
4			7	Present? Yes X No
		=Total Cover		
Remarks: (Include photo numbers here or on a separ	rate sheet.)			

Profile Desc Depth	Matrix	to the de		ument tr x Featur		itor or co	nfirm the absence o	or indicators.)
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-18	10YR 4/1	85	5YR 3/3	15	С	PL/M	Loamy/Clayey	Prominent redox concentr
				_	_			
					-			
	-	_			_	_ :		
		\$ I 				3		
			a.	_				
				_				
			1=Reduced Matrix, N				21	L=Pore Lining, M=Matrix.

Stripped Matrix (S6)	Marl (F10) (LRR K, L)	Other (Explain in Remarks)					
Dark Surface (S7)							
³ Indicators of hydrophytic vegetation	n and wetland hydrology must be present, unle	ess disturbed or problematic.					
Restrictive Layer (if observed):							
Type: none							
Depth (inches):		Hydric Soil Present?	Yes X	No			
Remarks:		•					
This data form is revised from North	ncentral and Northeast Regional Supplement	Version 2.0 to include the NRCS Field	d Indicators c	of Hydric Soils,			
Version 7.0, 2015 Errata. (http://ww	w.nrcs.usda.gov/Internet/FSE_DOCUMENTS	/nrcs142p2_051293.docx)					

Thin Dark Surface (S9) (LRR R, MLRA 149B)

High Chroma Sands (S11) (LRR K, L)

Loamy Mucky Mineral (F1) (LRR K, L)

Loamy Gleyed Matrix (F2)

Redox Dark Surface (F6)

Redox Depressions (F8)

Depleted Dark Surface (F7)

X Depleted Matrix (F3)

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Black Histic (A3)

Hydrogen Sulfide (A4)

Stratified Layers (A5)

Thick Dark Surface (A12)

Sandy Mucky Mineral (S1)

Sandy Gleyed Matrix (S4)

Sandy Redox (S5)

Depleted Below Dark Surface (A11)

5 cm Mucky Peat or Peat (S3) (LRR K, L, R)

Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)

Mesic Spodic (TA6) (MLRA 144A, 145, 149B)

Polyvalue Below Surface (S8) (LRR K, L)

Thin Dark Surface (S9) (LRR K, L)

Red Parent Material (F21)

Very Shallow Dark Surface (F22)

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Applicant/Owner: Grandview Properties State: MI Sampling Point: WT2 Investigator(s): ASTI-KAH Section, Township, Range: Sec 26 T4N R10E Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope %: 1-2 Subregion (LRR or MLRA): LRR L Lat: 42.73233 Long: -83.245576 Datum: NAD83 Soil Map Unit Name: Houghton and Adrian mucks NWI classification: PSS1C Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.) Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes X No If yes, optional Wetland? Yes X No If yes, optional Wetland Site ID: Wetland A - forested wetland portion in SC portion of site							
Landform (hillside, terrace, etc.): depression							
Landform (hillside, terrace, etc.): depression							
Subregion (LRR or MLRA): LRR L Lat: 42.73233 Long: -83.245576 Datum: NAD83 Soil Map Unit Name: Houghton and Adrian mucks NWI classification: PSS1C Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.) Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes X No Is the Sampled Area within a Wetland? Yes X No Wetland Hydrology Present? Yes X No If yes, optional Wetland Site ID: Wetland A Remarks: (Explain alternative procedures here or in a separate report.)							
Soil Map Unit Name: Houghton and Adrian mucks Are climatic / hydrologic conditions on the site typical for this time of year? Are Vegetation Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes X No Is the Sampled Area within a Wetland? Yes X No Wetland Hydrology Present? Yes X No If yes, optional Wetland Site ID: Wetland A Remarks: (Explain alternative procedures here or in a separate report.)							
Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes _x _ No Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes _x _ No Is the Sampled Area Hydric Soil Present? Yes _x _ No within a Wetland? Yes _x _ No Wetland Hydrology Present? Yes _x _ No If yes, optional Wetland Site ID: Wetland A Remarks: (Explain alternative procedures here or in a separate report.)							
Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes _x _ No Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc Hydrophytic Vegetation Present? Yes _X _ No							
Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present?							
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc Hydrophytic Vegetation Present? Hydric Soil Present? Yes X No Is the Sampled Area within a Wetland? Wetland Hydrology Present? Yes X No If yes, optional Wetland Site ID: Wetland A Remarks: (Explain alternative procedures here or in a separate report.)							
Hydrophytic Vegetation Present? Yes X No Is the Sampled Area Hydric Soil Present? Yes X No within a Wetland? Yes X No If yes, optional Wetland Site ID: Wetland A Remarks: (Explain alternative procedures here or in a separate report.)							
Hydric Soil Present? Yes X No within a Wetland? Yes X No lf yes, optional Wetland Site ID: Wetland A Remarks: (Explain alternative procedures here or in a separate report.)							
Hydric Soil Present? Yes X No within a Wetland? Yes X No lf yes, optional Wetland Site ID: Wetland A Remarks: (Explain alternative procedures here or in a separate report.)							
Remarks: (Explain alternative procedures here or in a separate report.)							
HYDROLOGY							
Wetland Hydrology Indicators: Secondary Indicators (minimum of two required)							
Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6)							
x Surface Water (A1) Water-Stained Leaves (B9) Drainage Patterns (B10)							
X High Water Table (A2) Aquatic Fauna (B13) Moss Trim Lines (B16)							
x Saturation (A3) Marl Deposits (B15) Dry-Season Water Table (C2)							
Water Marks (B1) Hydrogen Sulfide Odor (C1) Crayfish Burrows (C8)							
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Saturation Visible on Aerial Imagery (C9) Presence of Reduced Iron (C4) Stunted or Stressed Plants (D1)							
Drift Deposits (B3) Presence of Reduced Iron (C4) Stunted or Stressed Plants (D1) Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6) x Geomorphic Position (D2)							
Iron Deposits (B5) Thin Muck Surface (C7) Shallow Aguitard (D3)							
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) x Microtopographic Relief (D4)							
x Sparsely Vegetated Concave Surface (B8) X FAC-Neutral Test (D5)							
Field Observations:							
Surface Water Present? Yes x No Depth (inches): 0.25							
Water Table Present? Yes x No Depth (inches): 1							
Saturation Present? Yes x No Depth (inches): 1 Wetland Hydrology Present? Yes X No							
(includes capillary fringe)							
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:							
Remarks:							
iii							
185							

VEGETATION - Use scientific names of plants.

and Table and the Control of the Con
nce Test worksheet:
of Dominant Species
OBL, FACW, or FAC: 8 (A)
mber of Dominant
Across All Strata: 8 (B)
of Dominant Species OBL, FACW, or FAC: 100.0% (A/E
nce Index worksheet:
al % Cover of: Multiply by:
cies x 1 = 20
pecies 90 x 2 = 180
cies50 x 3 =150
pecies0 x 4 =0
cies0 x 5 =0
Totals: 160 (A) 350 (E
revalence Index = B/A = 2.19
ytic Vegetation Indicators:
apid Test for Hydrophytic Vegetation
ominance Test is >50%
revalence Index is ≤3.01
Iorphological Adaptations ¹ (Provide supporti
ata in Remarks or on a separate sheet)
lematic Hydrophytic Vegetation ¹ (Explain)
lematic Hydrophytic vegetation (Explain)
rs of hydric soil and wetland hydrology must
nt, unless disturbed or problematic.
ns of Vegetation Strata:
loody plants 3 in. (7.6 cm) or more in
at breast height (DBH), regardless of height
shrub – Woody plants less than 3 in. DBH
ter than or equal to 3.28 ft (1 m) tall.
ll herbaceous (non-woody) plants, regardles
nd woody plants less than 3.28 ft tall.
rines – All woody vines greater than 3.28 ft i
ytic
on Yes Y Ne
Yes X No
10.00

-	-		

Sampling Point

WT2

Profile Desc	ription: (Describe to	the dep	th needed to docu	ment th	ne indica	tor or co	onfirm the absence	of indicators.)
Depth	Matrix		Redox	Featur	es			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-18	10YR 3/1	95	10YR 6/1	5	C	_M_	Mucky Sand	Distinct redox concentrations
-	· · · · · · · · · · · · · · · · · · ·	-		-	-	- 1		
	***************************************		**		-			
I								
	-	-					- 3	
								-
	x				-			
Value and the second second	×			28 - 54	49		e de la companya de l	V2
¹Type: C=Co	ncentration, D=Deple	tion, RM	Reduced Matrix, M	S=Mas	ked Sand	d Grains.	² Location:	PL=Pore Lining, M=Matrix.
Hydric Soil I			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					for Problematic Hydric Soils ³ :
Histosol (Polyvalue Belov	v Surfa	ce (S8) (LRR R,		fuck (A10) (LRR K, L, MLRA 149B)
Histic Ep	ipedon (A2)	-	MLRA 149B)		(Sin 187 9			Prairie Redox (A16) (LRR K, L, R)
Black His	etic (A3)		Thin Dark Surfa	ce (S9)	(LRR R	, MLRA 1	49B) 5 cm M	flucky Peat or Peat (S3) (LRR K, L, R)
Hydroger	Sulfide (A4)		? High Chroma S.	ands (S	11) (LR	R K, L)	Polyva	lue Below Surface (S8) (LRR K, L)
Stratified	Layers (A5)		Loamy Mucky N	Aineral ((F1) (LRI	R K, L)	Thin D	ark Surface (S9) (LRR K, L)
Depleted	Below Dark Surface	(A11)	Loamy Gleyed	Matrix (F2)		Iron-Ma	anganese Masses (F12) (LRR K, L, R)
Thick Da	rk Surface (A12)	_	Depleted Matrix	(F3)			Piedmo	ont Floodplain Soils (F19) (MLRA 149B)
	ucky Mineral (S1)		Redox Dark Sui	- 1 S	- Allenan -		200.000.0000000000000000000000000000000	Spodic (TA6) (MLRA 144A, 145, 149B)
The second secon	eyed Matrix (S4)	_	Depleted Dark S		300		the state of the s	arent Material (F21)
X Sandy Re		2	Redox Depress		8)			hallow Dark Surface (F22)
	Matrix (S6)	-	Marl (F10) (LRF	R K, L)			Other ((Explain in Remarks)
Dark Sur	face (S7)							
³ Indicators of	hydrophytic vegetation	on and we	tland hydrology mu	st be or	esent u	nless dist	urbed or problematic	
	ayer (if observed):	and we	nana nyarology ma	ot be pi	coont, a	nood didt	arbed of problematic	
Type:	none							
Depth (in	ches):	ž	•				Hydric Soil Pres	ent? Yes X No
D: 12							Try drie dell'i Tes	- 103 <u>/</u> 110
Remarks:	n is ravised from Nort	heantral	and Northeast Degic	anal Su	nnlemen	t Vareinn	2 0 to include the NE	RCS Field Indicators of Hydric Soils,
	2015 Errata. (http://ww		and the second of the second o					Con leid indicators of Frydric Cons,
W=00=05844AW76*.0							•	
								1

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Willow Creek Golf and Sport Center	City/County: Orion Twp-Oakland Co. Sampling Date: 9-14-21						
Applicant/Owner: Grandview Properties	State: MI Sampling Point: WT3						
Investigator(s): ASTI-KAH	Section, Township, Range: Sec 26 T4N R10E						
Landform (hillside, terrace, etc.): depression Local re	elief (concave, convex, none): concave Slope %: 1-2						
Subregion (LRR or MLRA): LRR L Lat: 42.733651	Long: -83.248701 Datum: NAD83						
Soil Map Unit Name: Water no soil designation	NWI classification: PEM1C						
Are climatic / hydrologic conditions on the site typical for this time of year?							
Are Vegetation, Soil, or Hydrology significantly disturbed	8X 1,						
Are Vegetation, Soil, or Hydrologynaturally problemati							
SUMMARY OF FINDINGS – Attach site map showing samp	ling point locations, transects, important features, etc.						
Hydrophytic Vegetation Present? Yes X No	Is the Sampled Area						
Hydric Soil Present? Yes x No	within a Wetland? Yes X No						
Wetland Hydrology Present? Yes X No	If yes, optional Wetland Site ID: Wetland B						
Remarks: (Explain alternative procedures here or in a separate report.) Wetland B - emergent portion on-site.							
HYDROLOGY							
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)						
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)						
x Surface Water (A1) Water-Stained Leaves (B9	Drainage Patterns (B10)						
X High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)						
x Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)						
Water Marks (B1) Hydrogen Sulfide Odor (C	1) Crayfish Burrows (C8)						
Sediment Deposits (B2) Oxidized Rhizospheres on	Living Roots (C3) Saturation Visible on Aerial Imagery (C9)						
Drift Deposits (B3) Presence of Reduced Iron	(C4) Stunted or Stressed Plants (D1)						
Algal Mat or Crust (B4) Recent Iron Reduction in T	Tilled Soils (C6) x Geomorphic Position (D2)						
Iron Deposits (B5) Thin Muck Surface (C7)	Shallow Aquitard (D3)						
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks	x Microtopographic Relief (D4)						
Sparsely Vegetated Concave Surface (B8)	X FAC-Neutral Test (D5)						
Field Observations:							
Surface Water Present? Yes x No Depth (inches):	0.25						
Water Table Present? Yes x No Depth (inches):	1						
Saturation Present? Yes x No Depth (inches):	1 Wetland Hydrology Present? Yes X No						
(includes capillary fringe)							
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previ	ous inspections), if available:						
Remarks:							
18	38						

VEGETATION - Use scientific names of plants.

Table Chartery (District) 200 V	Absolute	Dominant	Indicator		
Tree Stratum (Plot size:30')	% Cover	Species?	Status	Dominance Test worksheet:	
Fraxinus pennsylvanica	10	Yes	_FACW_	Number of Dominant Species	
2. Acer negundo	10	Yes	FAC	That Are OBL, FACW, or FAC: 7	(A)
3. Ulmus americana	10	Yes	_FACW_	Total Number of Dominant	
4.				Species Across All Strata: 7	(B)
5				Percent of Dominant Species	
6.	W		V	That Are OBL, FACW, or FAC: 100.0%	(A/B)
7.				Prevalence Index worksheet:	,
	30	=Total Cover		Total % Cover of: Multiply b	v .
Sapling/Shrub Stratum (Plot size: 15')				OBL species 0 x1 = 0	
Cornus racemosa	25	Yes	FAC	FACW species 125 x 2 = 25	50
Ulmus americana	5	No		Printed and the state of the st	
			FACW	FAC species 45 x 3 = 13	
3. Frangula alnus	10	Yes	FAC	FACU species0 x 4 =0	-
4				UPL species0 x 5 =0	
5	-			Column Totals: 170 (A) 38	5(B)
6	-			Prevalence Index = B/A = 2.26	<u> </u>
7				Hydrophytic Vegetation Indicators:	
	40	=Total Cover		1 - Rapid Test for Hydrophytic Vegetation	1
Herb Stratum (Plot size:5')				X 2 - Dominance Test is >50%	
Phragmites australis	60	Yes	FACW	X 3 - Prevalence Index is ≤3.01	
2. Phalaris arundinacea	30	Yes	FACW	4 - Morphological Adaptations ¹ (Provide s	supporting
3. Impatiens capensis	10	No	FACW	data in Remarks or on a separate she	et)
4.	2			Problematic Hydrophytic Vegetation ¹ (Ex	plain)
5.	\(\frac{1}{2}\)				
6	2)———			¹ Indicators of hydric soil and wetland hydrolog be present, unless disturbed or problematic.	gy must
-				Definitions of Vegetation Strata:	
0		-		Deminions of Vegetation Strata.	
-	0.0	N = 3		Tree – Woody plants 3 in. (7.6 cm) or more in	
10				diameter at breast height (DBH), regardless of	or neight.
10	-		2)	Sapling/shrub - Woody plants less than 3 in	
11,		-		and greater than or equal to 3.28 ft (1 m) tall.	
12				Herb - All herbaceous (non-woody) plants, re	
	100	=Total Cover		of size, and woody plants less than 3.28 ft tal	l.
Woody Vine Stratum (Plot size:15')				Woody vines - All woody vines greater than	3.28 ft in
	0			height.	
1					
2.				The Martin Andrews Andrews Andrews	
•				Hydrophytic Vegetation	
2.				Hydrophytic Vegetation Present? Yes X No	

Sampling Point

WT3

Profile Desc	ription: (Describe	to the de	pth needed to doc	ument ti	ne indica	ator or co	onfirm the absence of	f indicators.)
Depth	Matrix		Redo	x Featur				
(inches)	Color (moist)	_%_	Color (moist)	_%_	Type ¹	Loc ²	Texture	Remarks
0-22	5YR 3/2	90	5YR 5/8	10	<u> </u>	<u>M</u>	Mucky Peat	24" + mucky peat
	<u> </u>		<u> </u>		Gr			
22-24	10YR 4/1	95	5YR 3/2	5	<u>c</u>	_M_	Sandy	Distinct redox concentrations
7a	%			16.	-		-	
			· · · · · · · · · · · · · · · · · · ·		_			
				-		 .		76
		N. H.			_			
		×	91 - H					
					_			
¹ Type: C=Co	ncentration, D=Depl	etion, RM	=Reduced Matrix, M	/S=Masi	ked Sand	Grains.	² Location: Pl	_=Pore Lining, M=Matrix.
Hydric Soil I								r Problematic Hydric Soils ³ :
Histosol (N. T. C.		Polyvalue Belo		ce (S8) (L	RR R,		ck (A10) (LRR K, L, MLRA 149B)
X Histic Ep			MLRA 149B)			12.231.2012 6		airie Redox (A16) (LRR K, L, R)
— Black His			Thin Dark Surfa		10 A 22 32 10 C 22			cky Peat or Peat (S3) (LRR K, L, R)
	Sulfide (A4)		High Chroma S					Below Surface (S8) (LRR K, L)
	Layers (A5)		Loamy Mucky I	AND THE PROPERTY OF	W 1960-1960-1960-1960-1960-1960-1960-1960-	R K, L)		k Surface (S9) (LRR K, L)
	Below Dark Surface	(A11)	Loamy Gleyed		-2)			ganese Masses (F12) (LRR K, L, R)
	rk Surface (A12)		Depleted Matrix				-	t Floodplain Soils (F19) (MLRA 149B)
	ucky Mineral (S1)		Redox Dark Su	110000000000000000000000000000000000000				odic (TA6) (MLRA 144A, 145, 149B)
	eyed Matrix (S4)		Depleted Dark					ent Material (F21)
	edox (S5)		Redox Depress		3)		Very Sha	llow Dark Surface (F22)
	Matrix (S6)	9	Marl (F10) (LRI	R K, L)			Other (Ex	plain in Remarks)
Dark Surf	ace (S7)							
		on and w	etland hydrology mu	st be pre	esent, un	less distu	irbed or problematic.	
	ayer (if observed):							
Type: _	none	e						
Depth (in	ches):						Hydric Soil Presen	t? Yes x No
Remarks:								05.111.5.7.701.11.0.5
	n is revised from Nor 015 Errata. (http://w							S Field Indicators of Hydric Soils,
Version 7.0, 2	oro Errata. (mtp.//w	ww.mcs.t	isua.gov/interneura	E_DOC	OMENT	3/11/05 142	.p2_031293.d0cx)	
								I
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giffels## webster

July 15, 2022

Orion Township Planning Commission 2525 Joslyn Road Lake Orion, MI, 48360

RECEIVED

JUL 15 2022

Orion Township Planning & Zoning

Site Plan Review no. 1 Willow Creek

Case Number: PC-2022-27

3120 S. Lapeer Road

Address: Parcel ID:

09-26-151-019

Area:

18.50 AC (Parcel A)

Applicant:

Joseph P. Salome

Plan Date:

06/28/2022

Zoning:

RM-1 (Conditional)

Lapeer Overlay District

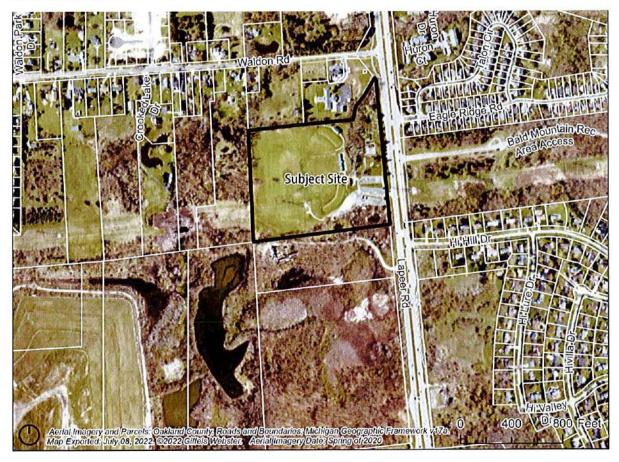
Reviewer:

Matt Wojciechowski

Rod Arroyo

Dear Planning Commission Members:

We have reviewed the above application and site plan, landscape plan, and tree survey and a summary of our findings is below. Items in bold require specific action by the Planning Commission. Items in italics can be addressed administratively.



Date: July 15, 2022

Project: Willow Creek - SPR no. 1

Page: 2

Project Summary

The applicant is proposing to construct 104 apartment units on the west side of Lapeer Road, south of Waldon Road. The units are situated within 18 buildings ranging from four to eight units per building, with each unit providing two bedrooms. Access to the internal private road is proposed via a divided boulevard-style drive off of Lapeer Road. Units are then accessed via a 27' wide private drive. Sidewalks will be provided on the exterior portion of the private drive, in addition to a concrete path within the open space on the southern portion of the site.

The site is conditionally rezoned from Rec-2 to RM-1, contingent on the sale of the property to the applicant. The closing date for the sale is anticipated in the fall of 2022. **The Planning Commission should make the completion of the rezone to RM-1 a condition of any approval.**

SUMMARY OF REVIEW

Revisions & Additional Information

- 1. A photometric plan is required
- 2. Applicant shall confirm underground utilities
- The proposed patios do not meet the minimum square footage requirement of 150 square feet
- 4. Applicant shall provide calculation and show area of rec. open space on the site plan
- 5. Applicant should provide details on the type of structure (patio, balcony, etc) and the dimension of the proposed projections on the site plan
- 6. Tree removal permit required for trees greater than 4" d.b.h not in building envelope or site development area

Planning Commission Waivers and Discussion

- The Planning Commission should review the proposed screening on the north, south and west and determine if the mix of proposed and existing landscaping is sufficient to screen the property; 40 of 90 of the required trees are proposed, as the Applicant is proposing to not plant trees in areas with existing vegetation.
- The Planning Commission should confirm that the recreation area meets the intent of the
 ordinance, as much of the area is located on the south end of the property and is not located
 conveniently in relation to the majority of dwelling units, however, a paved walkway is proposed
 to connect to the occupied portion of the site.
- 3. The Planning Commission should make the completion of the rezone to RM-1 a condition of any approval.

Date: July 15, 2022

Project: Willow Creek - SPR no. 1

Page: 3

Zoning Ordinance Compliance Tables

4. **RM-1 District Standards**. Multiple Family dwellings are permitted uses within the RM-2 district. The following standards apply:

	RM-1 (Article XXXIV)						
Section		Requirement	Proposed	Comment			
7.01 Uses		Multiple Family dwellings	104 apartment units	Permitted			
	В.	Minimum parcel size of 5 acres	18.50 acres	Compliant			
		1. Minimum of two parking spaces per unit	Two per unit	Compliant			
	C.	2. One visitor space for every three units (104/3 = 35 required)	36 provided	Compliant			
		1. Landscaping per 27.05 (see pg. 3)	See p	gs. 5-6			
	D.	2. 10' perimeter greenbelt 3. Screened from view of adjacent single-family zoning or use (Applies west property line)	~ 20' wide existing and new screening (40 of 90 provided)	PC to confirm compliance			
		1. Lighting plan per 27.11					
	F.	Exterior site lighting shielded down Site lighting not to exceed 0.3 at residential property lines	Not provided TBD	Applicant shall provide plan			
	G.	1. Access to major thoroughfare	Lapeer Road				
		7. Twenty-two-foot (22') min drive width	27'	Compliant			
7.03 Required Conditions	Н.	Utilities required underground	. 1515	onfirm on utility lan			
	I.	Covered trash receptacles required	Two provided	Waiver requested			
	K.	Performance guarantee per 30.09	Applicant	to confirm			
		1. A paved outdoor patio area of not less than one hundred fifty (150) square feet may be provided for each dwelling unit	80 sq-ft patios are proposed	The proposed patios do not meet the minimum square footage requirement			
	L.	2.a. Hard-surfaced sidewalks shall be provided throughout the development so as to provide a complete pedestrian circulation system	5' internal sidewalks	Compliant			
		3.a. Recreation open space shall be provided and shall be equal to an area of not less than five hundred (500) square feet per dwelling unit	Pathway, stretching, and yoga areas shown	Applicant shall show area of rec. open space			

Date: July 15, 2022 Project: Willow Creek – SPR no. 1

Page: 4

		3.b. The required recreation open space shall be located conveniently in relation to the majority of dwelling units intended to be served by such facility, and shall not include a wetland area	All open space is located on the south end of the site	PC should discuss how this applies
7.03 Required Conditions		3.c. Uses permitted within the required recreation open space shall include playground and park space, play equipment, tennis courts, shuffleboard courts, basketball courts, and/or similar facilities, or any structure for which a building permit must be issued.	Pathway, stretching, and yoga areas shown	Permitted
		3.e. Safety path along Lapeer Road	8' wide path	Compliant
	A.	Min lot size of five acres	18.50 acre	Compliant
	В.	Maximum building height of 35 and max. building length of 200'	169' foot max length	Compliant
	C.	Maximum 6 dwelling units per acre	5.91 units per acre	Compliant
7.04 Area and	D.	Min floor area of 700 square feet	Min of 1,100 square feet	Complaint
Bulk Requirements	ELIVE	Max site coverage 25%	12.3 %	Compliant
Requirements		1.a. 100' front perimeter setback	100' provided	Compliant
		1.b. 50' side /rear yard exterior setback	50'	Compliant
	_	2. 75' setback when abutting residential	75′	Compliant
	E.	3.b. End to end interior building setback of 30' required	30' min	Compliant
		3.c. End to rear min 50' setback	50'	Compliant

5. **General Provisions**. The standards in the table below are a summary of the applicable Zoning Ordinance standards in Article XXVII; please refer to the individual sections referenced herein for the full Zoning Ordinance text

	General Provisions (Article 27)	Market Assessment		
Condition	Requirement	Proposed	Comment	
	The following projections shall be permitted when lo specified:	ed yards as		
27.03 Yard and Bulk Regulations	1. All yards. Awnings, canopies & steps		Applicant should	
	2. Front yards. Open, paved terraces not exceeding 3' above grade	None shown on	provide details on the type of structure and	
Negarations	3.a. Rear Yards. Balconies and porches allowed 3' into setback	site plan	the dimension of the proposed projection into	

Date: July 15, 2022 Project: Willow Creek – SPR no. 1

Page: 5

	4. Side Yards. Bay windows and architectural features up to 18"		the setback on the site plan	
27.04 Parking	Residential Parking. Off-street parking spaces in single-family residential districts shall consist of a parking strip, driveway, garage, or combination thereof and shall be located on the premises they are intended to serve	Driveway and garage parking proposed	Compliant	
	A.3.a.i. All portions of the landscaped area shall be planted with grass, ground cover, shrubbery, or other suitable plant material, except that paved patios, terraces, sidewalks, and similar site features maybe incorporated, with Planning Commission approval.	Grass, shrubbery and trees proposed	Compliant	
	A.3.a.ii. A mixture of evergreen and deciduous trees shall be planted at the rate of one (1) tree for each 3,000 square feet of landscaped open-space area (336,322 / 3,000 = 112 trees required)	112 provided	Compliant	
27.05	A.3.a.vi. All landscaped areas shall have an underground irrigation system or shall be provided supply.	Irrigation is noted on LS-2	Compliant	
Landscaping	A.5. Where non-residential uses abut residential uses or where multi-family uses abut single family uses, the Planning Commission may require a greenbelt buffer A minimum of one (1) deciduous tree or evergreen tree shall be planted for each thirty (30) lineal feet (309/30 = 11 required)	~ 20' wide existing and new screening (40 of 90 provided)	PC to confirm compliance	
	Off-street parking areas containing greater than twenty (20) spaces shall be provided with at least twenty (20) square feet of interior landscaping per parking space, and one tree must be provided for each 200 sf of landscaping.	Three trees are provided	Complaint	
27.06 Access	F. Safety Pathway required	8' wide	Appears complaint; engineering to confirm	
27.12 Tree & Woodland	A person shall not remove, transplant, or destroy, or cause to be removed, transplanted, or destroyed, on any undeveloped land in the Township, any protected tree (i.e., a tree having a d.b.h. of four(4) inches or greater) without first obtaining a Tree Removal Permit			

Date: July 15, 2022

Project: Willow Creek - SPR no. 1

Page: 6

Staff will be available to discuss this review at the next Planning Commission meeting

Respectfully, Giffels Webster

Rodney L. Arroyo, AICP

Partner

Matt Wojciechowski, AICP

Mat Vojin

Senior Planner





July 14, 2022

JUL 1 4 2022

RECEIVED

Scott Reynolds, Planning Commission Chairperson CHARTER TOWNSHIP OF ORION 2323 Joslyn Road Lake Orion, MI 48360

Orion Township Planning & Zoning

RE:

Willow Creek Apartments Site Plan and Wetland, PC-2022-27

Site Plan Review #1

Received:

June 29, 2022 by Orion Township

Dear Mr. Reynolds:

We have completed our review of Willow Creek Apartments plan set. The plans were prepared by The Umlor Group and were reviewed with respect to the Township's Zoning Ordinance, No. 78, Stormwater Management and Soil Erosion & Sedimentation Control Ordinance, No. 139, and the Township's Engineering Standards.

EXISTING SITE CONDITIONS:

The site is located on the west side of M-24, north of Silverbell Road, and south of Waldon Road within Section 26 of the Charter Township of Orion. The site has been rezoned to Multi-Family Residential (RM-1) and General Business (GB). The parcel is bound by parcels to the north and south of the property zoned Office and Professional (OP), and parcels to the east of the property zoned Recreation 2 (REC-2), and parcels to the west of the property zoned Single Family Residential (R-2).

The site is currently occupied by a miniature golf course, batting cages, and golf driving range. The miniature golf course and batting cages are located in the east portion of the property along M-24. There is an existing gravel and asphalt parking lot that services all on site facilities. An existing fence line along the north, east, and west property boundaries encloses the driving range area and is managed lawn area. A stream known as Willow Creek separates the miniature golf course and the driving range. The stream area is mostly forested and appears to include two wetland areas per the Wetland Permit Application. The stream runs south to north on the site passing through two culverts before ultimately leaving the site and crosses underneath Lapeer Rd through a culvert. The southern portion of the site has existing transmission towers with overhead electrical lines and underground gas pipelines crossing the property east to west. Multiple recorded easements are associated with these utilities and appear to be shown on the site plan. There are multiple existing wetlands within the property boundaries that are located in the southeast corner, northwest corner, and along Willow Creek.

The applicant is proposing to split the site into two parcels on either side of Willow Creek. The east side is called out as retail/commercial for future development, and the west side is proposed as a multi-family residential community that consists of 15 buildings and 104 total units. The development includes a private road that loops around the site with a single boulevard entrance on M-24.

Willow Creek Apartments Site Plan and Wetland, PC-2022-27 Site Plan Review #1 July 14, 2022 Page 2 of 5



WATER MAIN AND SANITARY SEWER:

There is an existing 16-inch water main that runs along M-24. No existing water service lead is shown on the site plan. There is an existing well head shown on the site plan that appears to service the existing building and facilities. It is unclear whether the existing well head is intended to be kept in service or capped per the Oakland County and Michigan Department of Public Health requirements. Please make clear on the demolition plan intentions for the existing well head. It appears that the proposed water main crosses Willow Creek. A minimum 4-foot clearance is required between the top-of-pipe for the water main and bottom-of-pipe for the culvert per the Charter Township of Orion Standard Water Main Details.

The applicant is proposing to extend 8-inch water main into the site from the 16-inch water main located on the west side of M-24. The water main is looped internally to the site, but only a single connection to the existing main is proposed. This means that a single break in the water main between the loop and the connection point would render the entire site out of service which is unacceptable per Township Standards. A 12-foot water main easement is included along with the proposed water main, in compliance with Township requirements. Four (4) hydrants and three (3) gate valves appear to be proposed on-site. The distance of the proposed dead-end hydrant run north of Building 8 is acceptable for an 8-inch dead-end hydrant lead but will not be acceptable for a 6-inch dead-end hydrant lead. An 8-inch lead needs to be provided to this hydrant. Proposed gate valve spacing appears to exceed the Township maximum spacing of 800 feet between gate valves. Additionally, the gate valves need to be oriented such that a break anywhere in the main will not leave more than 30 units or two (2) hydrants out of service. A tapping sleeve, valve and well shall be proposed for the water main connections on M-24.

A meter room and knox box are required when single water service leads are proposed for each building. The applicant shall specify the location of meter rooms on the plan set, and coordinate meter room details with the Orion Township DPW.

If fire suppression is proposed, the location of FDC's and fire suppression leads should be shown on the plans. We defer to the Fire Marshal for additional review comments.

There is an existing 15-inch sanitary sewer along M-24. There is no existing sanitary sewer lead show on the plans. It appears that the site may be serviced by an existing septic system which is not shown on the plans. The applicant shall verify the current method of sanitary service on site and indicate on the existing conditions plan.

The applicant is proposing to extend 8-inch sanitary into the site from an existing stub located at an existing manhole northeast of the existing parking lot. A 20-foot-wide sanitary easement is proposed along with the sewer and appears acceptable. The distance between the existing sanitary manhole along M-24 and the next manhole in the system exceeds the maximum distance allowed of 350 feet per Orion Township Engineering Standards for 8-inch pipe. The applicant shall also provide sanitary cleanouts on the plans for each building lead.

A 12-foot wide franchise utility easement has been provided and appears to be acceptable as it does not overlap any proposed or existing water main or sanitary sewer easements.

STORMWATER MANAGEMENT:

The parcel does not fall in a drainage district. Runoff on the existing site appears to be conveyed via sheet flow off site into the wetlands surrounding the parcel and on site into Willow Creek. There are 2 existing culverts on site allowing Willow Creek to flow under an existing pathway and parking lot. The existing drainage pattern on site is predominantly runoff leaving the site via overland sheet flow. It appears the applicant is proposing to preserve the existing grade in the south half of the site. The proposed drainage pattern of the northern, developed half of the site shows that the majority of runoff will be collected by the stormwater management system and sent to one of

Willow Creek Apartments Site Plan and Wetland, PC-2022-27 Site Plan Review #1 July 14, 2022 Page 3 of 5



the two detention basins which outlet on opposite sides of the site. This generally conforms to the existing drainage pattern.

The applicant proposes to move and extend the existing northern culvert to accommodate Willow Creek to flow under the proposed site access road. The creek does not appear to be substantially affected by this culvert modification. The southern culvert appears to be left in its existing location according to the plans. Storm water management is proposed via two (2) detention basins with sediment forebays and five (5) infiltration trenches. Detention Basin A is proposed to outlet into Wetland B and Detention Basin B is proposed to outlet into Wetland A. The outlet locations are consistent with the existing drainage pattern of the site. Preliminary detention calculations are shown on the plans. Weighted C value for each detention basin was included but needs to incorporate the surface area of the detention basins, forebays, at the 100-year elevation as open water (C-value of 1.0 for open water). There are no orifice or outlet restrictor calculations on the plans, these will be required at engineering review.

No detail information is provided for the proposed infiltration trenches shown on the plans. Cross-section details will be required at engineering review.

A Land Use Summary Table will be required at engineering per OCWRC Stormwater Standards. Similar information as the weighted C-value table, please refer to The OCWRC Stormwater Standards, Section II, Part 1 to reference the required Land Use Summary Table.

PAVING/GRADING:

The existing entrance to the property from M-24 serves two-way traffic and does not have a deceleration lane. The applicant proposes to remove the existing site entrance and install a new entrance to the north. The proposed site entrance is shown as a boulevard to separate incoming and outgoing traffic.

Proposed pavement slopes are not shown on the plans. No spot grades or proposed contours are shown. Pavement slopes are to remain between 1% and 6% for drive areas, and between 1% and 4% for parking areas. Pavement cross-section details are included in the plan set for the internal road, the internal sidewalk, the public pathway, and the dumpster pad. The proposed plans state that the interior site roadway will be private. The dumpster enclosure detail is proposed with a 4-inch concrete slab. The engineering standards require an 8-inch concrete slab in loading zones and dumpster enclosure pads. No ADA ramp detail was included in the plans, ADA detectable warning surface is required at the safety path crossing at the site entrance. The applicant shall provide MDOT approved ADA detectable warning surface details on future submittals.

It appears there are two proposed sidewalk crossings in the entrance to the site. It is suggested that the crossing to the east of Willow Creek be removed, and the sidewalk re-routed along the south side of the roadway. The culvert under the road may need to be extended to accommodate the sidewalk. This would decrease the number of cross walks necessary on the site and will increase ease of access for residents to the proposed walking path.

It appears that the proposed 8' wide safety path along M-24 is roughly 5 feet from the edge of the road. The applicant shall move the safety path to be 1' off of M-24 right-of-way where feasible per standards.

Existing grade is shown via 1-foot contours; no spot grades are shown on the plans. Proposed grade is not shown on the site plans; finished floor elevations and drainage arrows are the only indication of proposed grade for the site.

There appears to be no details for the proposed retaining walls on the plans. There are also no grades shown for the retaining walls. Both detail specifications and top/bottom of wall grades will be required in future submittals.

Willow Creek Apartments Site Plan and Wetland, PC-2022-27 Site Plan Review #1 July 14, 2022 Page 4 of 5



TRAFFIC & CIRCULATION:

The applicant shall overlay the turning template for the Orion Township Fire Apparatus on the site plan to ensure that the fire truck will be able to navigate easily through the site. We defer further comment to the Fire Marshal.

With the increased traffic to the site it may be necessary to include a dedicated deceleration lane. Approval from MDOT will be required for the approach and work within M-24 right-of-way.

Per our estimate, the trip generation for this development is well below the Township Ordinance threshold to warrant a traffic impact study.

LANDSCAPING:

A landscape plan is included in the plan set. There appear to be multiple encroachments of proposed trees into storm sewer, sanitary sewer and water main easements throughout the site. The applicant shall ensure that tree locations will not impact utilities.

NATURAL FEATURES:

Wetlands:

There are two wetlands noted on site. They both appear to be EGLE and Township regulated wetlands and permits from EGLE and the Township are required for site development. The applicant has submitted a wetland application to both EGLE and the Township. Opinions regarding the on-site wetlands are discussed in the Willow Creek Apartments Wetland Review.

Woodlands:

A tree survey, with table indicating tree characteristics and removal intentions is included in the plan set. Landmark trees have been identified and replacement quantity for both landmark and non-landmark trees is calculated on the plan set. We defer to the planner for further review.

CONCLUSION:

In our opinion, the site plan as submitted is in substantial compliance with the Township's ordinances and engineering standards. We ask that any approval include the following:

- Additional grading should be provided on the plan set including spot road grades and top/bottom of wall.
- 2. A looped connection to the existing main is required for the proposed water main.
- 3. If fire suppression will be provided, revise the plans to show the locations of FDC's and fire suppression lines for each building.
- 4. For each building the applicant shall provide an exterior meter room with knox box for water service, shown on the plan set.
- 5. The dumpster enclosure detail proposes a 4-inch concrete slab, the engineering standards require an 8-inch concrete slab in loading zones and dumpster enclosure pads. The applicant shall revise the cross-section detail provided on the plan set.
- 6. It is suggested that the mid-block crossing to the east of Willow Creek be removed, and the sidewalk re-routed along the south side of the roadway.
- 7. Provide a proposed cross section detail for the retaining walls including railing where applicable.
- 8. The engineering plan, designed in accordance with Zoning Ordinance No. 78, Stormwater Management and Soil Erosion & Sedimentation Control Ordinance No. 139, and the Township's Engineering Standards shall be submitted to the Township for review and approval prior to construction. A detailed cost estimate for the improvements shall be submitted with the plans signed and sealed by the design engineer.

Willow Creek Apartments Site Plan and Wetland, PC-2022-27 Site Plan Review #1 July 14, 2022 Page 5 of 5



The applicant should note the Township may require performance bonds, fees, and/or escrows for a preconstruction meeting and necessary inspections. Please feel free to contact us with any questions at (248) 751-3100 or mark.landis@ohm-advisors.com.

Sincerely,

OHM Advisors

Joe Lehman, P.E. Project Engineer Mark Landis, P.E. Project Manager

cc:

Chris Barnett, Township Supervisor
David Goodloe, Building Official
Jeff Stout, Director of Public Services
Tammy Girling, Director of Planning and Zoning
Lynn Harrison, Planning and Zoning Coordinator
Jeff Williams, Township Fire Marshal
Bill Basigkow, Water and Sewer Superintendent
Joseph Salome, Grandview Companies
Jason Fleis, Umlor Group
File

P:\0101_0125\SITE_OrionTwp\2021\0121211091 Willow Creek Multifamily\MUNI\Site\1st Review\2022.07.14_Willow Creek Apartments_SP.ISC.docx

Fire Department

Phone: (248) 391-0304, ext. 2000 Fax: (248) 309-6993

RECEIVED

To: Planning Commission/Planning & Zoning Director

From: Jeff Williams, Fire Marshal

www.oriontownship.org

Re: PC-2022-27, Willow Creek Apartments Site Plan and Wetland

Date: 7/7/2022

JUL 07 2022

Orion Township Planning & Zoning

The Orion Township Fire Department has completed its review of Application PC-2022-27 for the limited purpose of compliance with Charter Township of Orion Ordinance's, Michigan Building Code, and all applicable Fire Codes.

Based upon the application and documentation provided, the Fire Department has the following recommendation:

Approved

Approved with Comments (See below)

X Not approved

Comments:

- Multiple-family residential developments having more than 100 dwelling units shall be equipped throughout with two separate and approved fire apparatus access roads. Exception: Projects having up to 200 dwelling units shall have not fewer than one approved fire apparatus access road where all buildings, including nonresidential occupancies, are equipped throughout with an approved automatic sprinkler system. The revised plans shall note that all buildings located on site will be fire suppressed meeting the requirements of 2015 IFC.
- Fire Department Connections shall be located on the street side of the building or facing approved fire apparatus access roads, fully visible and recognizable for the street, fire apparatus access road or nearest point of the fire department vehicle access or otherwise approved by the fire code official. The revised plans shall show locations of all Fire Department Connections.
- The turning radius for the emergency apparatus road shall be in accordance with the Orion Township Fire Department turning performance analysis template. Overlays of the template shall be shown on the plans.

If there are any questions, the Fire Department may be reached at 248-391-0304 ext. 2004. Sincerely,

Jeff Williams, Fire Marshal

Jeffrey Williams

Orion Township Fire Department



Charter Township of Orion

2323 Joslyn Rd., Lake Orion MI 48360 www.oriontownship.org

Public Services Department

Phone: (248) 391-0304, ext. 8500

To:

Tammy Girling

Planning & Zoning Director

RECEIVED

JUL 1 4 2022

From:

Jeffery T. Stout

Director, Department of Public Services

Orion Township Planning & Zoning

Date:

July 14, 2022

Re:

PC-2022-27, Willow Creek Apartments Site Plan & Wetland

Dear Tammy,

The Department of Public Services has reviewed the above-mentioned project. We have ample capacity to meet the needs of this expansion.

If you have any questions, please contact me.

Respectfully Submitted,

Jeffery T. Stout

Director

Department of Public Services



July 7, 2022

Lynn Harrison Orion Township Planning & Zoning 2323 Joslyn Road Lake Orion, MI 48360 RECEIVED

JUL 07 2022

Orion Township Planning & Zoning

Reference:

Willow Creek Apartments - CAMS #202200564 Part of the NW 1/4 of Section 26, Orion Township

Dear Ms. Harrison,

This office has received one set of plans for the Willow Creek Apartments Project to be developed in the Northwest ¼ of Section 26, Orion Township.

Our <u>stormwater system</u> review indicates that the proposed project has no direct involvement with any legally established County Drain under the jurisdiction of this office. Therefore, a storm drainage permit will not be required from this office.

<u>The water system</u> is operated and maintained by Orion Township and plans must be submitted to Orion Township for review.

<u>The sanitary sewer</u> is within the Clinton-Oakland Sewage Disposal System. Any proposed sewers of 8" or larger may require a permit through this office.

Please note that all applicable permits and approvals from federal, state or local authorities, public utilities and private property owners must be obtained.

Any related earth disruption must conform to applicable requirements of Part 91, Soil Erosion and Sedimentation Control of the Natural Resource and Environmental Protection Act, Act 451 of the Public Acts of 1994. An application should be made to Orion Township for the required soil erosion permit.

If there are any questions regarding this matter, please contact Dan Butkus at 248-897-2744.

Sincerely.

Brian Bennett, P.E. Civil Engineer III



Tammy Girling

From:

Tammy Girling

Sent:

Thursday, June 30, 2022 3:59 PM

To:

'Adam Grandview'

Subject:

RE: issues with application

Hi Adam,

I received the following comment from MDOT (when we sent them the plan like we normally do).

"They will need to provide a site development plan that includes the proposed access to "Parcel B" and anything else they may be considering for the south side of the property. Parcel B if sold off will not necessarily be considered a unique property entitled to its own roadway access point.

To avoid having to further mitigate for future development traffic of Parcel B, they should consider preparing a TIA or TIS for the worst case scenario and address it one time."



Site Walk, 3120 S. Lapeer Road

A site walk was completed July 13th at approximately 4:30pm for Willow Creek Multi-Family Development proposed at 3120 S. Lapeer Road.

The proposed multi-family development is located on a parcel currently used for outdoor recreation on the west side of M-24 (Lapeer Road.) The proposed development appears to replace the existing golf driving range, commonly known as Willow Creek Driving Range. The Willow Creek Putt Putt and Batting Cages along M-24/Lapeer Road appear to remain with the proposed development.

It was unclear during the site walk where parcels boundaries exist, therefore was difficult to establish what trees would be removed with the proposed development. The western portion of the parcel is mostly clear of trees and landscaping due to the existing use.

The southern portion of the parcel is occupied by overhead power utilities that appear to remain unchanged.

A commercial dog boarding facility and clinic exist to the north of the proposed development. A small commercial development exists to the south within a heavily wooded parcel. The entrance to Bald Mountain State Recreation Area is directly across from the development on the east side of Lapeer Road.

Scott Reynolds, Planning Commissioner Charter Township of Orion sreynolds@oriontownship.org RECEIVED

JUL 15 2022

Orion Township Planning & Zoning



Checklist for Site Plan Approval Application

Applications must be submitted by noon on Wednesday, three (3) weeks prior to a scheduled meeting. Meetings are held on the first and third Wednesday of each month, unless otherwise specified.

Pursuant to Zoning Ordinance 78, Section 30.01(C)(8) the applicant or a designated representative must be at all scheduled review meetings. Refer to Section 30.01(F) for the criteria the Planning Commission will use to evaluate a site plan.

The following must accompany your completed application; incomplete submittals will not be accepted.

- Complete application including original ink signatures of property owner and the applicant.
- The Site Plan Review fees calculated using Ordinance No. 41.
- Proof of ownership. Acceptable forms of documentation include: Warranty Deed, Quit Claim Deed, Land Contract, or Option to Purchase with a Copy of the Warranty Deed.
- Traffic Study if applicable.
- Wetlands Permit application if applicable.
- Four (4) sets of signed and sealed 24" x 36" detailed site plans containing all elements within Zoning Ordinance No. 78, Section30.01(E). One (1) of the four (4) sets needs to be hand delivered or mailed to Giffels Webster, Attn: Matt Wojciechowski, 28 W. Adams St., Suite 1200, Detroit, MI 48226. Please note, if your project involves MDOT, one (1) additional copy is needed.
- Four (4) sets of all supporting documents, reports, studies etc.
- PDF format copy of all information submitted (may be emailed or provided on a USB/flash drive).
- Proof of submittal to outside agencies

The Township reserves the right to request additional copies of printed materials as necessary.

If you have any questions, please call the Planning & Zoning Director at (248) 391-0304 ext. 5000.



Case # _ Meeting Date: _

Charter Township of Orion Planning Commission Site Plan Approval Application

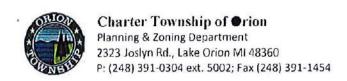
30.01, A. Intent: The site plan review procedures and standards are intended to provide an opportunity for consultation and cooperation between the applicant and the Planning Commission so as to achieve maximum utilization of land with minimum adverse effects on adjoining property. Furthermore, it is the intent of these procedures and standards to allow for review of site plans by the Planning Commission, to provide a consistent and uniform method of review, and to ensure full compliance with the standards contained within Zoning Ordinance 78, and other applicable local ordinances and State and Federal laws.

Project	: Name: _	Wil	low Cr	eek Apartments						
Name	of Develop	ment if applicable:				11				
	Name:	Joseph P. Salome								
cant	Address:	251 Diversion Stre	eet	City:_	Rocheste	r	_State:_	MI	Zip:_	48307
Applicant	Phone:	586-795-2105		586-854-6501	Fax:	N/A		_		
	Email:	jsalome@grandview	compa	nies.com						
	Name:	Sharon Weger Living	g Trust	(Sharon Weger,	Trustee)					
*Property Owner(s)	Address:_	825 Markwood R	oad	City:_	Oxford		_State:_	MI	_Zip:_	48370
rty Q	Phone:		Cell:_		Fax:			_		
Prope	Email:									
*	* If the na individual	ame on the deed does not r I is the same as the compar	natch th iy name	e name of the proper must be provided.	ty owner on th	nis application,	docume	ntation	showi	ng the
	Name:	Adam Ossipove								
Plan Preparer Firm/Person	Address:_	251 Diversion		City:	Rochester		_State:_	MI	_Zip:_	48307
an Pr irm/P	Phone:		Cell:_	248-330-3000	Fax:					
<u> </u>	Email:	aossipove@grandvie	wcomp	panies.com						
++	Name:	Jason M. Fleis, PE								
Project Contact Person	Address:_	49287 West Road		City:	Wixom		_State:_	MI	_Zip:_	48393
oject Cor Person	Phone: 2	248-773-7656	Cell:_	248-981-4281	Fax:	866-690-43	07	_		
Pro	Email:	jfleis@umlorgroup.co	m							

	Sidwell Number(s): 09-26-151-019	
ption		120 S Lapeer Road
Property Description	Side of Street: West Nearest Intersection:	South of Waldon Road, West side of Lapeer Road
serty	Acreage: 18.50 Current Use of Property:	Golf Driving Range
Prop	Is the complete legal description printed on the site plan	
	Subject Property Zoning: Conditional RM-1Adjacent	t Zoning: N. OP S. OP E. REC-2 W. R-2
Project Information	List any known variances needed (subject to change bas	sed on Township consultant's review)
Project In		nt, including the number and size of the buildings or units being s. The units will be approximately 1,100 square athrooms
-	Pursuant to Zoning Ordinance 78, Section 30.01 C. a co	ppy of this application and two copies of the site plan must be
S	submitted to the each of the following agencies. <u>Pleass</u> of <u>delivery</u> .	e provide the Township with a copy of each transmittal as proof
ıcie	AT&T	Consumers Power Company
ger	54 Mill St.	530 W. Willow St.
Submittal to Outside Agencies	Pontiac, MI 48342 DTE Energy Co.	Lansing, MI 48906 Oakland County Health Department
tsic	ATTENTION: NW Planning & Design	Building 34 East
5	1970 Orchard Lake Rd.	1200 N. Telegraph Rd.
5	Sylvan Lake, MI 48320	Pontiac, Mi 48341
E E	Michigan Department of Transportation (if applicable)	Road Commission of Oakland County (if applicable) ssintkowski@rcoc.org
Ē	800 Vanguard Dr. Pontiac, Mi 48341	(electronic submittal only)
Su	Oakland County Water Resources To Be Submitted by the Township	
Towns) above j comple Signatu (must be Print N	thip of Orion Zoning Ordinance; No. 78, Section 30.01 and facts are provided. I hereby certify that the information party of Applicant: original ink signature	te Plan Approval, pursuant to the provisions of the Charter applicable ordinance requirements. In support of this request the provided is accurate and the application that has been provided is Date: Date: Date:
corresp	condence and to represent me at all meetings. I also granty, without prior notification, as is deemed necessary.	nt permission to the Planning Commission members to visit the
<u>Signatı</u> be pro	<u>are of Owner</u> (if the deed of ownership does not show an vided showing the individual signing this application has	nindividual, ie is a corporation, partnership, etc., documentation mus signing rights for the entity):
(must be	original ink signature)	Date:
Print N	ame:	
	12/1/21	Page 2 of 3

· · · · ·

É	Sidwell Number(s):	
Property Description	Location or Address of Property:	
escr		
ty D		
oper	Acreage:Current Use of Property:_	
£	Is the complete legal description printed on the site plan	n? Yes No (if no please attach to the application)
	Subject Property Zoning:Adjacent	t Zoning: N. S. E. W.
ormation		sed on Township consultant's review)
Project Information	Give a detailed description of the proposed development	nt, including the number and size of the buildings or units being
86	submitted to the each of the following agencies. Please of delivery.	opy of this application and two copies of the site plan must be se provide the Township with a copy of each transmittal as proof
Submittal to Outside Agencies	AT&T 54 Mill St.	Consumers Power Company 530 W. Willow St.
Age	Pontiac, MI 48342	Lansing, MI 48906
ide	DTE Energy Co.	Oakland County Health Department
outs	ATTENTION: NW Planning & Design 1970 Orchard Lake Rd.	Building 34 East 1200 N. Telegraph Rd.
20	Sylvan Lake, MI 48320	Pontiac, MI 48341
th th	Michigan Department of Transportation (if applicable)	Road Commission of Oakland County (if applicable)
mit	800 Vanguard Dr.	sintkowski@rcoc.org
Sub	Pontiac, MI 48341 Oakland County Water Resources	(electronic submittal only)
	wrcpermitting@oakgov.com	
	(electronic submittal only)	1
Townsi above comple	hip of Orion Zoning Ordinance; No. 78, Section 30.01 and facts are provided. I hereby certify that the information pate.	te Plan Approval, pursuant to the provisions of the Charter I applicable ordinance requirements. In support of this request the provided is accurate and the application that has been provided is
	ure of Applicant:	
Print N	ame: TUSEPIT SALO	ME PALS
corresp	roperty owner, hereby give permission to the applicant li condence and to represent me at all meetings. I also gran ty, without prior notification, as is deemed necessary.	listed above to act as my agent in submitting applications, nt permission to the Planning Commission members to visit the
Signati be pro	ure of Owner (if the deed of ownership does not show an vided showing the individual signing this application has	n individual, ie is a corporation, partnership, etc., documentation must signing rights for the entity):
(must be	original ink signocure) Shalls of live as	Date: 4/1/22
Print N	ame: Sharon Weger	
Version	12/7/20	Page 2 of 3



Do not want plans posted on Web Site

	Parcel#(s)	0 2 451 0 9		
se select an option belo	w:			
X Permission to Post of	n Web Site			
	The state of the s			
	The state of the s	of my consultants, we a	gree to allow the plans for	the
By signing below as a	applicant and on behalf		gree to allow the plans for ning Commission and/or To	
By signing below as a above named projec	applicant and on behalf	eing sought by the Plan		
By signing below as a above named projec	applicant and on behalf t, in which approval is b	eing sought by the Plan e.		
By signing below as a above named projec	applicant and on behalf t, in which approval is b	eing sought by the Plan e. 	ning Commission and/or To	



MEMO

VIA EMAIL: jfleis@umlorgroup.com

To: Grandview Building Co.

Julie M. Kroll, PE, PTOE

From: Jacob Koning

Fleis & VandenBrink

Date: June 24, 2022

Willow Creek Residential Development

Re: Orion Township, Oakland County

Traffic Impact Assessment Proposal

1 INTRODUCTION

This memorandum presents the results of the Traffic Impact Assessment (TIA) for the proposed development located at 3120 Lapeer Road (M-24) adjacent to the west side of Lapeer Road, south of Waldon Road in Orion Township, Michigan as shown in **Figure 1**. The property is currently occupied by the Willow Creek Golf Center which will be razed for the construction of the proposed one and two story attached residential units. Access is proposed via one (1) driveway on Lapeer Road (M-24) which is under the jurisdiction of the Michigan Department of Transportation (MDOT). The projected trip generation associated with this development is below the MDOT thresholds for further analysis and therefore, has not required the completion of a traffic study for site access permitting.

Waldon Road

Name and the state of the state

FIGURE 1: SITE LOCATION MAP

2 DATA COLLECTION

Existing weekday traffic volume data was obtained from the MDOT Transportation Data Management System (TDMS) for use in this analysis. Additional roadway information for the study section of Lapeer Road (M-24) is attached and summarized in **Table 1**.

Table 1: Roadway Information

Roadway Segment	Lapeer Road (M-24)
Number of Lanes	4 lane divided boulevard
Functional Classification	Other Principal Arterial
Speed Limit	55 mph
Traffic Volumes (MDOT 2019)	40,568 AADT

Due to the impact of COVID-19, current traffic volume data is not necessarily representative of typical pre-COVID traffic volumes. Therefore, historic 2019 traffic volume data was used in this study and a **0.5%** annual growth rate was applied to calculate the existing baseline 2022 and the background 2027 traffic volumes shown on **Figure 2**.

3 SITE TRIP GENERATION

The number of weekday peak hour (AM and PM) vehicle trips were calculated based upon the ITE trip generation calculations pursuant to MDOT requirements and the requirements outlined in the Orion Township Ordinance Section 27.14.D. The proposed development includes a single-family attached housing development. The trip generation using both methodologies is summarized in **Table 2**.

Table 2: Site Trip Generation

MDOT Standards (ITE Methodology)										
Land Use	ITE	Siza		Average Daily	AM Peak Hour (vph)			PM Peak Hour (vph)		
Land 030	Code	5	Unit	Traffic (vpd)	ln	Out	Total	ln	Out	Total
Single-Family Attached Housing	215	104	DU	742	15	33	48	33	25	58
Orion Twp Standards (Ordinance Section 27.14.D)										
Land Use	ITE	ITE Size U		Unit Average Daily	AM Peak Hour (vph)			PM I	/ Peak Hour (vph)	
Land OSE	Code	e Size	Offic	Traffic (vpd)	ln	Out	Total	In	Out	Total
Single-Family Attached Housing	215	104	DU	916	20	44	64	51	38	89

4 SITE TRIP DISTRIBUTION

The vehicular trips that would be generated by the proposed development were assigned to the study road based on the proposed site access, the existing peak hour traffic patterns on the adjacent roadway network, and the methodologies published by ITE. The adjacent street traffic volumes were used to develop the trip distribution. It was assumed that the trips in the AM are home-to-work based trips, and in the PM are work-to-home based trips. The ITE trip distribution methodology also assumes that new trips will return to their direction of origin. The site trip distributions used in the analysis are summarized in **Table 3**.

Table 3: Site Trip Distribution

To/From	Via	AM	PM	
North	Lapeer Road (M-24)	73%	68%	
South	Lapeer Road (M-24)	27%	32%	
	Total	100%	100%	

The vehicular traffic volumes shown in **Table 2** were distributed to the roadway network according to the distribution shown in **Table 3**. The site generated trips are shown on **Figure 2** for the proposed development.



The site generated trips were added to the projected 2027 traffic volumes to calculate the future 2027 peak hour traffic volumes shown on **Figure 2**.

5 ACCESS MANAGEMENT

The location of the proposed site driveway, the adjacent streets, and adjacent site driveways; the MDOT desirable corner clearances and access management criteria are summarized in **Table 4**.

Table 4: Desirable Corner Clearance Summary

Adjacent Driveways & Intersections			Distance	Criteria (55 mph)	Meets	
Site Driveway	То	North Crossover	225 feet	150 feet	YES	

The analysis shows that the site driveway meets the desirable corner clearance to the nearest crossover. Additionally, the driveway operates as a right-in/right-out only thus further reducing the impact of traffic on the adjacent street.

A. 6 MCTS

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DATE OF THE CONTROL NAME

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DATE OF THE CONTROL NAME

A. 6 MCTS

DATE OF THE CONTROL NAME

DATE

Exhibit 1: Driveway Spacing

6 AUXILIARY TURN LANE EVALUATION

The MDOT volume warranting criteria was evaluated to determine the need for an auxiliary right-turn lane at the proposed site driveway location on Lapeer Road (M-24), with the addition of the site-generated development traffic. The trip generation using MDOT criteria and the ITE methodology was used in the calculations to determine the recommendation for the driveway design pursuant to MDOT criteria. Lapeer Road (M-24) is a median-divided road; therefore, the left-turn warrant was not evaluated. The results of the turn lane analysis are summarized in **Table 5** and the attached MDOT criteria is attached. The results of the analysis indicate that a right-turn taper should be considered as part of the proposed intersection design.

Table 5: Auxiliary Lane Analysis

Intersection	Right-turn	Treatment	Recommendation	
mersesion	AM	PM	Recommendation	
Site Drive and Lapeer Road (M-24)	Radius Only	Taper	Taper	

7 CONCLUSIONS

1. The proposed development includes the construction of a single-family attached residential development with access provided via one (1) Right-in/Right-Out only driveway on Lapeer Road (M-24).



- 2. The projected trip generation associated with this development is below the MDOT thresholds for further analysis and therefore, MDOT has not required the completion of a traffic study for site access permitting.
- 3. The proposed site driveway meets the MDOT recommended spacing from a crossover intersection.
- 4. A right-turn taper should be considered with the proposed intersection design.

Any questions related to this memorandum, study, analysis, and results should be addressed to Fleis & VandenBrink.



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Michigan.

Attached: Figure 2

Site Concept Plan Traffic Volumes SEMCOG Road Profile MDOT Right-Turn Treatment



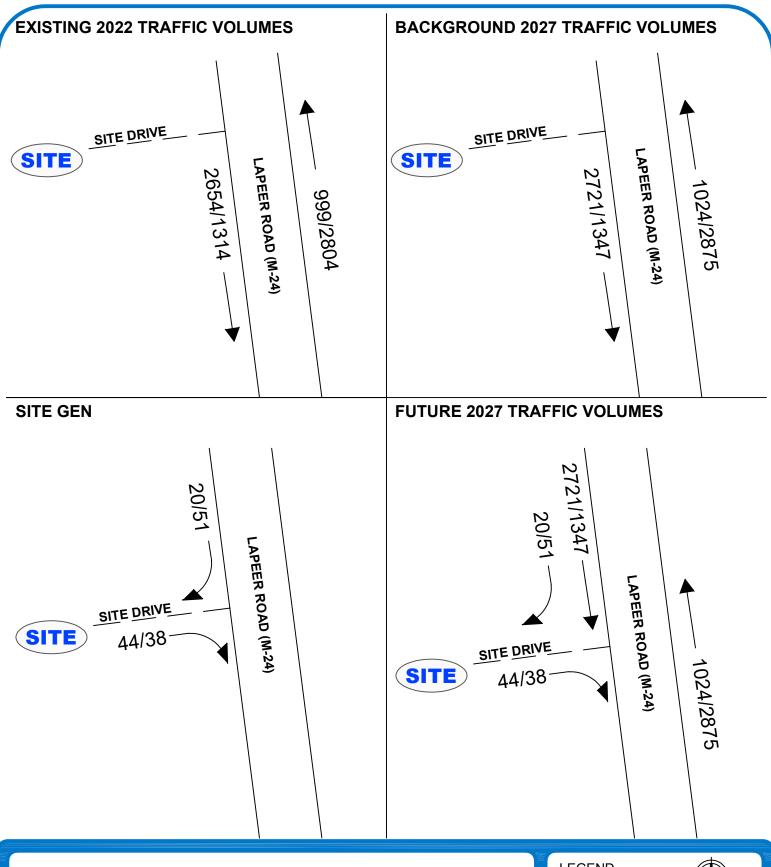
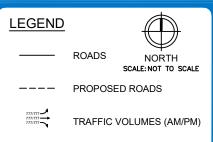


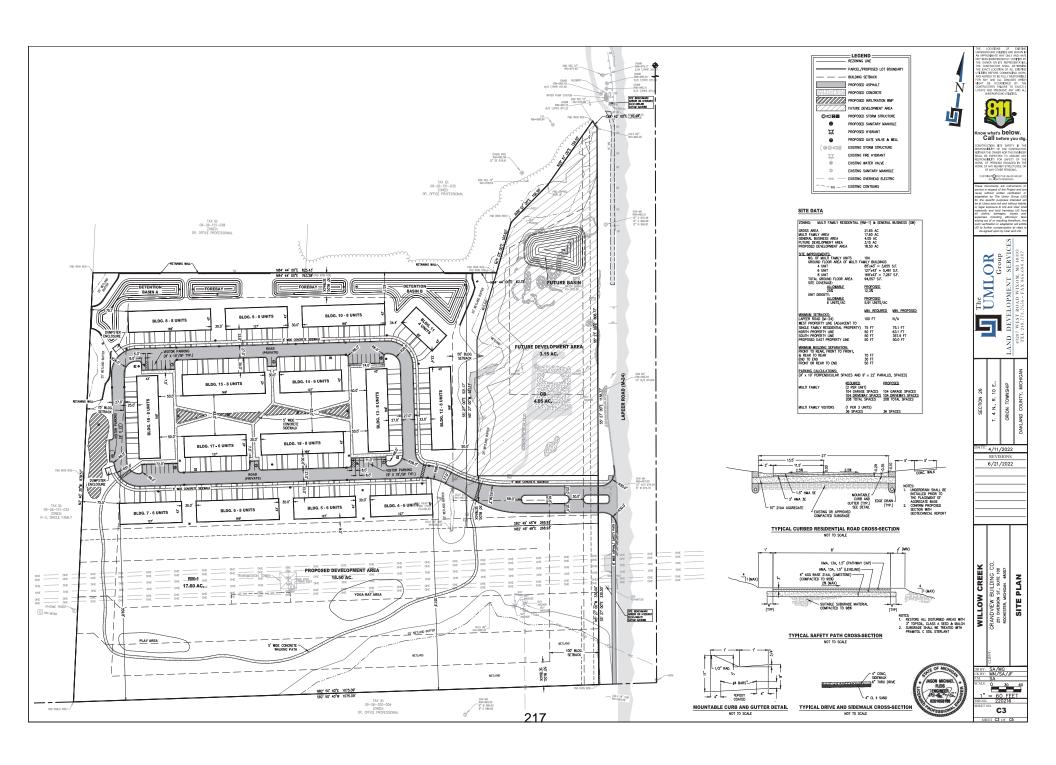


FIGURE 2 TRAFFIC VOLUMES

216

PROPOSED RESIDENTIAL DEVELOPMENT ORION TOWNSHIP, MICHIGAN









Volume Count Report

LOCATION INFO	
Location ID	63-0050
Туре	SPOT
Fnct'l Class	3
Located On	M-24
Loc On Alias	M 24
Direction	2-WAY
County	Oakland
Community	-
MPO ID	50885
HPMS ID	
Agency	MDOT

COUNT DATA INFO			
Count Status	Accepted		
Start Date	Wed 8/7/2019		
End Date	Thu 8/8/2019		
Start Time	10:00:00 AM		
End Time	10:00:00 AM		
Direction	2-WAY		
Notes			
Station	XC38699 6100		
Study			
Speed Limit			
Description			
Sensor Type	Axle/Tube		
Source	CombineVolumeCountsIncremental		
Latitude,Longitude			

INTERVAL:15-MIN					
	15-min Interval Hourly				
Time	1st	2nd	3rd	4th	Count
0:00-1:00	109	83	72	55	319
1:00-2:00	57	28	38	50	173
2:00-3:00	43	35	35	32	145
3:00-4:00	30	40	58	68	196
4:00-5:00	71	119	143	225	558
5:00-6:00	249	399	547	562	1,757
6:00-7:00	636	691	843	875	3,045
7:00-8:00	778	855	882	902	3,417
8:00-9:00	829	856	790	848	3,323
9:00-10:00 📵	823	758	673	387	2,641
10:00-11:00	662	660	724	721	2,767
11:00-12:00	724	768	818	814	3,124
12:00-13:00	757	840	832	812	3,241
13:00-14:00	784	804	748	809	3,145
14:00-15:00	788	800	898	835	3,321
15:00-16:00	943	885	1,039	937	3,804
16:00-17:00	980	952	996	989	3,917
17:00-18:00	1,024	997	1,060	975	4,056
18:00-19:00	933	966	813	758	3,470
19:00-20:00	702	669	639	591	2,601
20:00-21:00	600	559	540	419	2,118
21:00-22:00	468	376	379	322	1,545
22:00-23:00	322	235	233	225	1,015
23:00-24:00	167	172	139	130	608
Total					54,306
AADT					40,355
AM Peak	07:30-08:30 3,469				
PM Peak	16:45-17:45 4.070				





Volume Count Report

LOCATION INFO		
Location ID	63-0050_NB	
Туре	SPOT	
Fnct'l Class	3	
Located On	M-24	
Loc On Alias	M 24	
Direction	NB	
County	Oakland	
Community	-	
MPO ID	50883	
HPMS ID		
Agency	MDOT	

COUNT DATA INFO	
Count Status	Accepted
Start Date	Wed 8/7/2019
End Date	Thu 8/8/2019
Start Time	10:00:00 AM
End Time	10:00:00 AM
Direction	
Notes	
Station	XC38699 6100
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:15-MIN					
	15-min Interval				Hourly
Time	1st	2nd	3rd	4th	Count
0:00-1:00	66	51	48	37	202
1:00-2:00	28	18	26	34	106
2:00-3:00	31	17	20	23	91
3:00-4:00	10	20	19	10	59
4:00-5:00	20	17	20	35	92
5:00-6:00	21	53	86	61	221
6:00-7:00	108	124	133	186	551
7:00-8:00	147	193	238	224	802
8:00-9:00	229	230	211	314	984
9:00-10:00 📵	290	300	276	182	1,048
10:00-11:00	275	279	311	339	1,204
11:00-12:00	355	373	403	389	1,520
12:00-13:00	382	382	417	387	1,568
13:00-14:00	360	427	362	431	1,580
14:00-15:00	419	424	530	521	1,894
15:00-16:00	581	545	699	655	2,480
16:00-17:00	662	647	687	689	2,685
17:00-18:00	692	700	710	660	2,762
18:00-19:00	640	667	512	468	2,287
19:00-20:00	450	432	400	364	1,646
20:00-21:00	355	330	309	242	1,236
21:00-22:00	264	208	232	186	890
22:00-23:00	181	131	137	122	571
23:00-24:00	98	91	83	70	342
Total	26,821			26,821	
AM Peak	11:45-12:45				
	1,570 16:45-17:45				
PM Peak	2,791				





Volume Count Report

LOCATION INFO			
Location ID	63-0050_SB		
Туре	SPOT		
Fnct'l Class	3		
Located On	M-24		
Loc On Alias	M 24		
Direction	SB		
County	Oakland		
Community	-		
MPO ID	50884		
HPMS ID			
Agency	MDOT		

COUNT DATA INFO	
Count Status	Accepted
Start Date	Wed 8/7/2019
End Date	Thu 8/8/2019
Start Time	10:00:00 AM
End Time	10:00:00 AM
Direction	
Notes	
Station	010117-0005891
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	
Latitude,Longitude	

INTERVAL:15-MIN					
	15-min Interval				Hourly
Time	1st	2nd	3rd	4th	Count
0:00-1:00	43	32	24	18	117
1:00-2:00	29	10	12	16	67
2:00-3:00	12	18	15	9	54
3:00-4:00	20	20	39	58	137
4:00-5:00	51	102	123	190	466
5:00-6:00	228	346	461	501	1,536
6:00-7:00	528	567	710	689	2,494
7:00-8:00	631	662	644	678	2,615
8:00-9:00	600	626	579	534	2,339
9:00-10:00	533	458	397	205	1,593
10:00-11:00	387	381	413	382	1,563
11:00-12:00	369	395	415	425	1,604
12:00-13:00	375	458	415	425	1,673
13:00-14:00	424	377	386	378	1,565
14:00-15:00	369	376	368	314	1,427
15:00-16:00	362	362 340 340 282 1,32			1,324
16:00-17:00	318	305	309	300	1,232
17:00-18:00	332	297	350	315	1,294
18:00-19:00	293	299	301	290	1,183
19:00-20:00	252	237	239	227	955
20:00-21:00	245	229	231	177	882
21:00-22:00	204	168	147	136	655
22:00-23:00	141	104	96	103	444
23:00-24:00	69	81	56	60	266
Total	27,485				
AM Peak	06:30-07:30 2 692			3:30-07:30 2,692	
DM Deals				12	2:15-13:15
PM Peak	1,722				

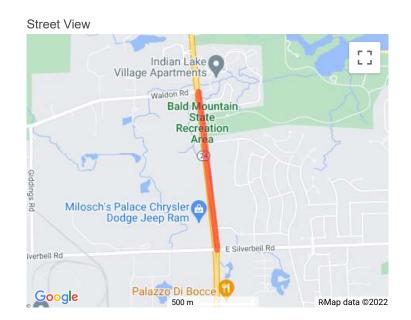
Crash and Road Data

Road Segment Report

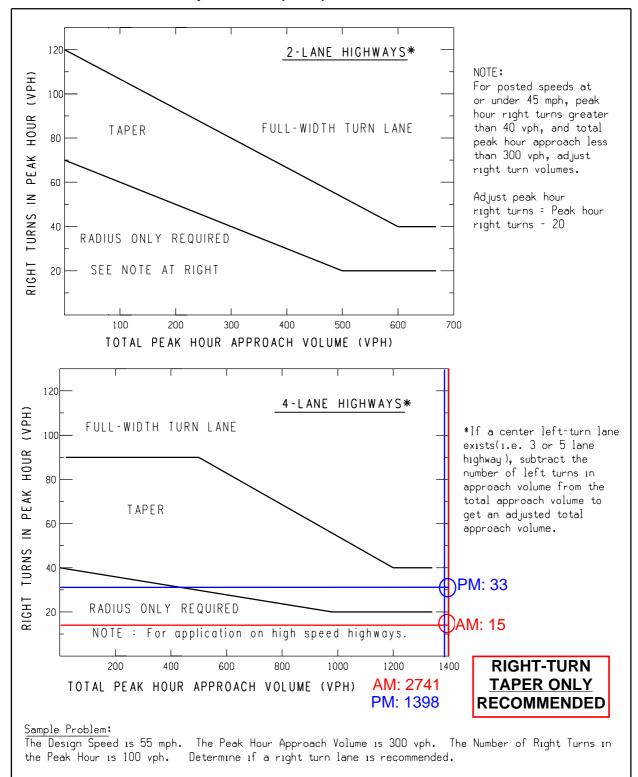
Lapeer Rd, (PR Number 616604)

From:	Silver Bell Rd E 3.050 BMP
То:	Waldon Rd 3.933 EMP
FALINK ID:	322
Community:	Orion Township
County:	Oakland
Functional Class:	3 - Other Principal Arterial
Direction:	1 Way
Length:	0.883 miles
Number of Lanes:	2
Posted Speed:	55 (source: TCO)
Route Classification:	Not a route
Annual Crash Average 2016-2020:	17
Traffic Volume (2016)*:	21,700 (Observed AADT)
Pavement Type (2019):	Asphalt
Pavement Rating (2019):	Good
Short Range (TIP) Projects:	No TIP projects for this segment.
Long Range (RTP) Projects:	No long-range projects for this segment.

^{*} AADT values are derived from Traffic Counts



Lapeer Road (M-24) & Site Drive



Solution:

Figure indicates that the intersection of 300 vph and 100 vph is located above the upper trend line; thus, a right-turn lane may be recommended.

Michigan Department of Transportation TRAFES AND SAFETY NOTE	FOR RIGHT-TI	OLUME GUIDELINES JRN LANES AND TA	
DRAWN BY: MTS	08/05/2004	COAA	SHEET
CHECKED BY: JAT	PLAN DATE:	604A	2 OF 2
FILE: K:/DGN/+s notes/No	ste6044 tsp. dap	REV 08/05/20	Π4

ENGINEER/SURVEYOR



LAND DEVELOPMENT SERVICES

THE UMLOR GROUP 49287 WEST ROAD WIXOM, MI 48393 FAX: (866) 690-4307 WEB: www.umlorgroup.com

WES LEE O. UMLOR, P.E., P.S. PHONE: (248) 773-7656 EMAIL: wumlor@umlorgroup.com

JASON M. FLEIS, P.E. PHONE: (248) 773-7656 EMAIL: jfleis@umlorgroup.com

DEVELOPER/APPLICANT



GRANDVIEW CONSTRUCTION 251 DIVERSION STREET, SUITE 200 ROCHESTER, MICHIGAN 48307 PHONE: (586) 795-2105 WEB: www.grandviewcompanies.com

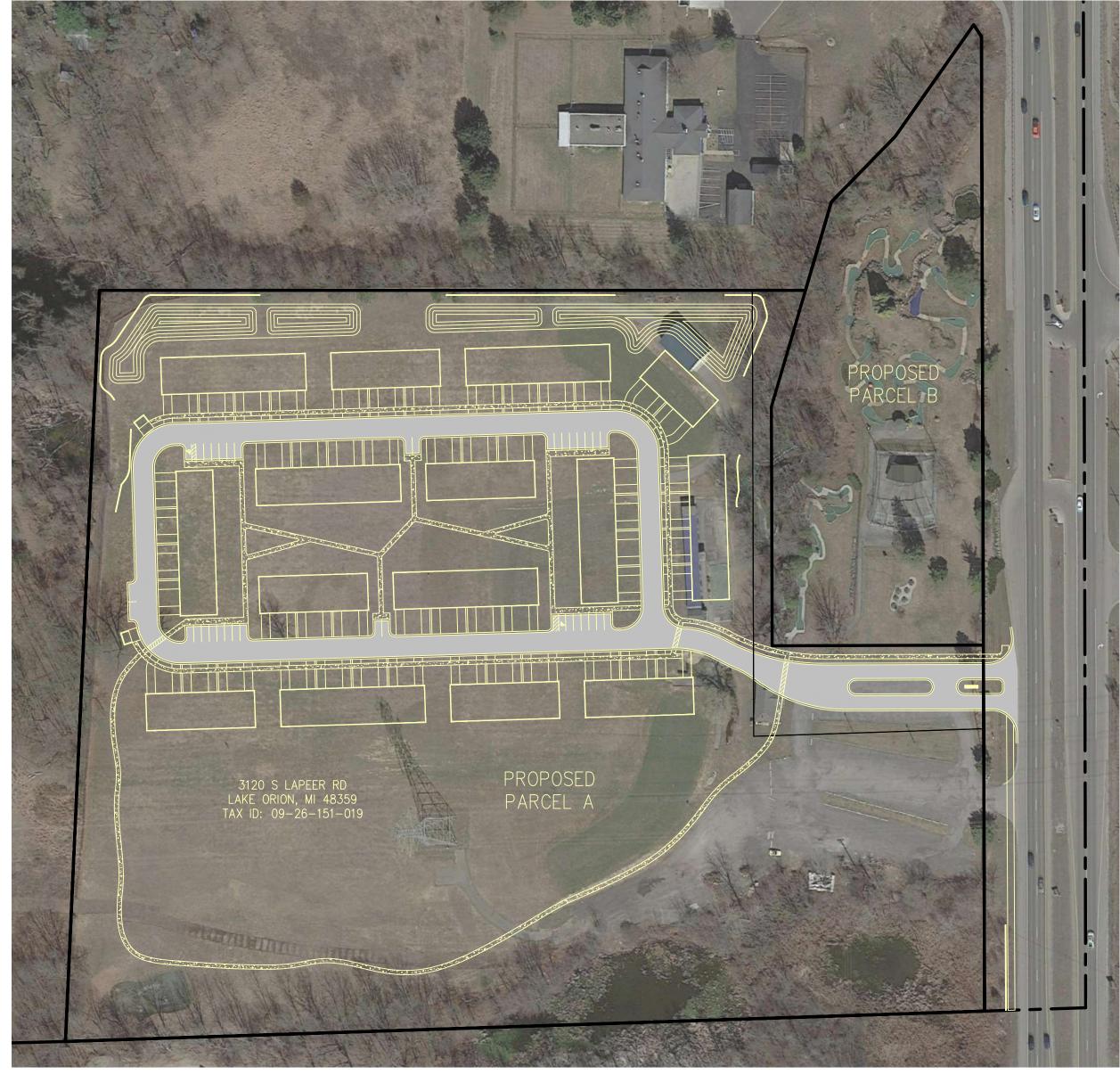




Orion Zoning

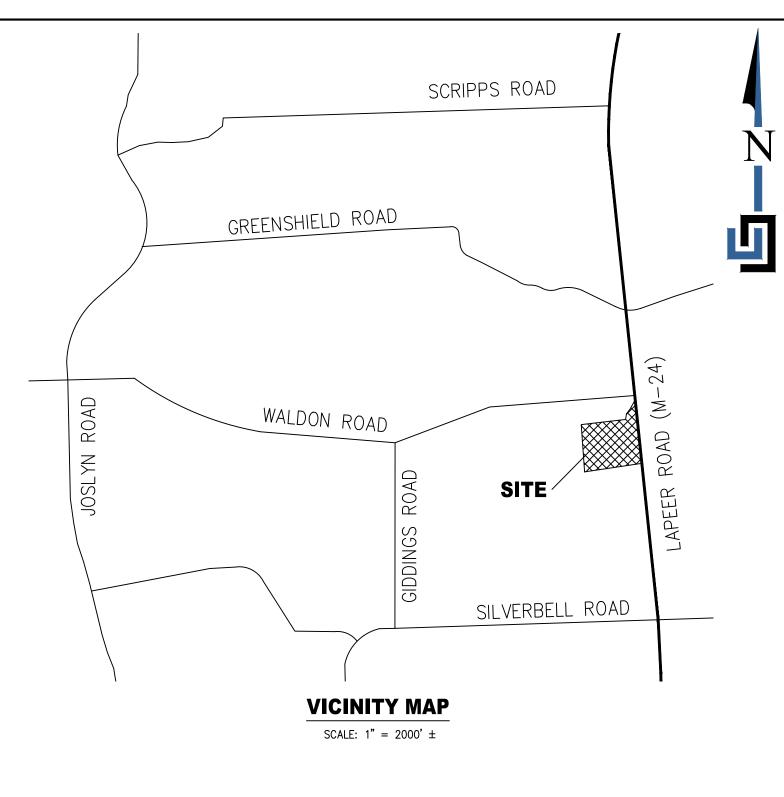
SITE PLAN DRAWINGS WILLOW CREEK APARTMENTS PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT

SECTION 26, TOWN 4 NORTH, RANGE 10 EAST ORION TOWNSHIP, OAKLAND COUNTY, MICHIGAN



SITE MAP

SCALE: 1" = 100'



SHEET INDEX

- C1 COVER
- C2 EXISTING CONDITIONS PLAN
- C3 DEMOLITION PLAN C4 TREE SURVEY-1
- C5 TREE SURVEY-2
- C6 SITE PLAN C7 UTILITY PLAN
- C8 GRADING AND SESC PLAN
- C9 STORMWATER MANAGEMENT PLAN

REFERENCE

- LS 1 OVERALL LANDSCAPE PLAN VIEW
- LS 2 GENERAL LANDSCAPE PLANTINGS LS 3 BUILDING FOUNDATION
- LS 4 SEED MIX LAWN SOD AREA PLAN
- LS 5 PLANT MATERIAL LIST
- A-1 FLOOR PLANS A-2 ELEVATIONS

Orion Township Planning & Zoning

PROJECT OVERVIEW

THE DEVELOPMENT IS PROPOSED TO BE A MULTIPLE FAMILY CONDOMINIUM RESIDENTIAL APARTMENT COMMUNITY. THE PROPOSED DEVELOPMENT AREA IS APPROXIMATELY 18.5 ACRES LOCATED NEAR THE SOUTHWEST CORNER OF WALDON ROAD AND LAPEER ROAD (M-24), WHERE THE WILLOW CREEK GOLF AND SPORTS CENTER IS CURRENTLY LOCATED. THE PROPOSED DEVELOPMENT AREA IS SURROUNDED BY SINGLE FAMILY TO THE WEST, AN ANIMAL HOSPITAL TO THE NORTH, AND PROFESSIONAL EVENT PLANNING TO THE SOUTH. THE SITE FEATURES GAS PIPELINE AND OVERHEAD ELECTRIC TRANSMISSION EASEMENTS ALLOWING FOR OPTIMAL OPEN SPACE AREA FOR THE 104 TOTAL PROPOSED UNITS.

LEGAL DESCRIPTION AS SURVEYED

PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26, TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER: 55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 2'40'30" WEST, 878.57 FEET; THENCE NORTH 84'44'00" EAST, 825.43 FEET; THENCE NORTH 11'03'00" EAST, 107.63 FEET; THENCE NORTH 39°01'00" EAST, 106.90 FEET; THENCE NORTH 29°51'00" EAST, 159.50 FEET; THENCE SOUTH 38'42'00" EAST, 16.49 FEET; THENCE SOUTH 5'27'00" EAST, 1,138.77 FEET; THENCE SOUTH 82'50'40" WEST, 1,075.09 FEET TO THE POINT OF BEGINNING.

LEGAL DESCRIPTION ZONED RM-1

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LEGAL DESCRIPTION ZONED GB

山

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LEGAL DESCRIPTION PROPOSED PARCEL A

PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26, TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER: 55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 2*40'30" WEST, 878.57 FEET; THENCE NORTH 84*44'00" EAST, 825.43 FEET; THENCE SOUTH 11*03'00" WEST 141.80 FEET; THENCE SOUTH 5*27'0" EAST 279.24 FEET; NORTH 84*33'0" EAST 246.94 FEET; SOUTH 5*27'0" EAST 427.69 FEET; SOUTH 82*50'40" WEST 1075.10 FEET TO THE POINT OF

LEGAL DESCRIPTION PROPOSED PARCEL B

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BENCHMARKS:

(NAVD 88 DATUM)

BENCHMARK #124

BENCHMARK SET ON HYDRANT ARROW WEST OF LAPEER ROAD (M-24), NEAR SOUTHEAST CORNER OF SUBJECT PARCEL ELEV.=999.31

BENCHMARK #126

BENCHMARK SET ON HYDRANT ARROW WEST OF LAPEER ROAD (M-24), NEAR NORTHEAST CORNER OF SUBJECT PARCEL ELEV.=984.80



JNDERGROUND UTILITIES ARE SHOWN AN APPROXIMATE WAY ONLY AND HA NOT BEEN INDEPENDENTLY VERIFIED THE OWNER OR ITS REPRESENTATIV THE CONTRACTOR SHALL DETERMI THE EXACT LOCATION OF ALL EXISTIN UTILITIES BEFORE COMMENCING WOR AND AGREES TO BE FULLY RESPONSIB CONTRACTOR'S FAILURE TO EXACT OCATE AND PRESERVE ANY AND

UNDERGROUND UTILITIES.

now what's **below**.

Call before you dig ONSTRUCTION SITE SAFETY IS ESPONSIBILITY OF THE CONTRACT

NEITHER THE OWNER NOR THE ENGINEER

SHALL BE EXPECTED TO ASSUME A

WORK, OF PERSONS ENGAGED IN TH

WORK, OF ANY NEARBY STRUCTURES,

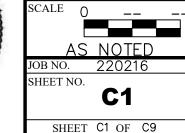
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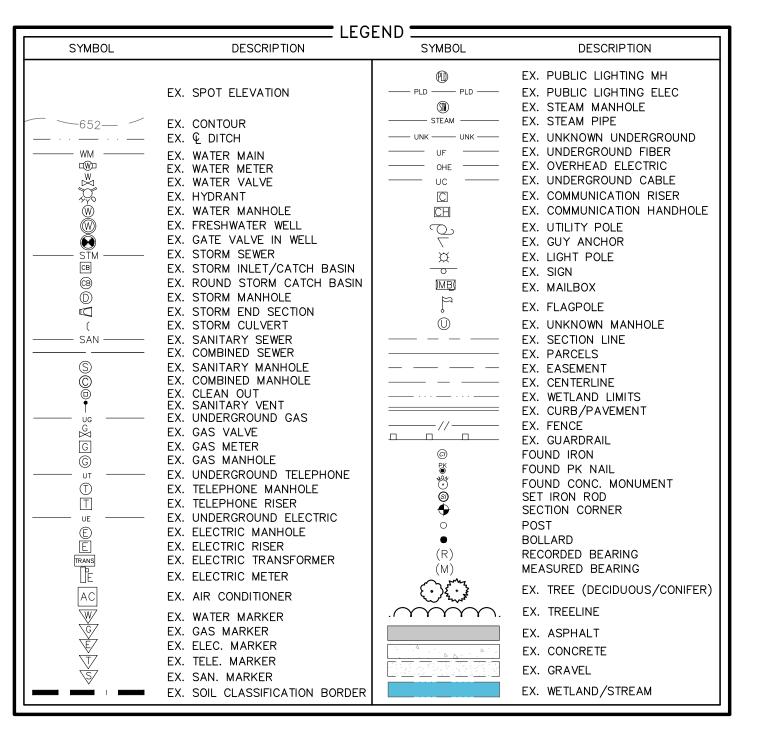
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be agreed upon by User and UG.

DATE: 6/28/2022

KBY: MN/SA/JF AS NOTED NO. 220216





NOTE:

BOUNDARY AND LEGAL DESCRIPTION BY NOWAK & FRAUS ENGINEERS ALTA REPORT DATED 07/20/2021.

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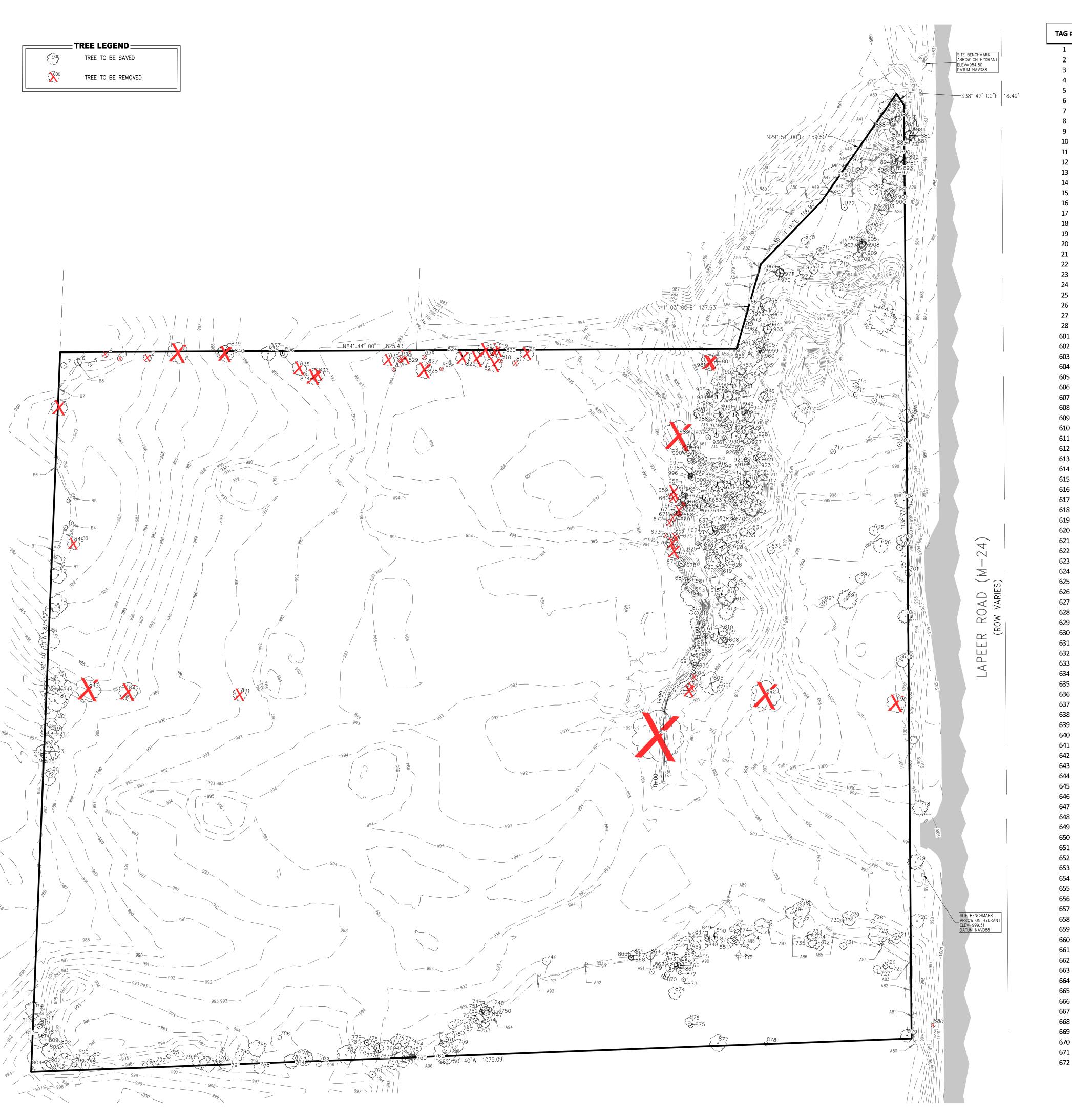
SOIL MAP UNIT LEGEND

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10B	Marlette sandy loam, 1 to 6 percent slopes	1.5	7.1%
13B	Oshtemo-Boyer loamy sands, 0 to 6 percent slopes	16.8	77.3%
13C	Oshtemo-Boyer loamy sands, 6 to 12 percent slopes	0.8	3.5%
15E	Spinks loamy sand, 12 to 35 percent slopes	0.1	0.4%
27	Houghton and Adrian mucks	2.0	9.1%
31B	Metea loamy sand, 0 to 6 percent slopes	0.2	0.8%
48	Gilford sandy loam, till plain, 0 to 2 percent slopes	0.2	1.1%
W	Water	0.1	0.6%
Totals for Area of Interest		21.7	100.0%

GAS PIPELINE







TAG #	SCIENTIFIC NAME	COMMON NAME	DBH	Multi Note	CONDITION	SAVE/REMOVE	Landmark	
1	Prunus serotina	BLACK CHERRY	20'		GOOD	REMOVE	N	
2 3	Ulmus spp. Acer negundo	ELM BOX ELDER	8" 5"	TRI	GOOD GOOD	REMOVE REMOVE	N N	N
4	Acer negundo	BOX ELDER	4", 10"	TWIN	GOOD	REMOVE	N	
5	Acer negundo	BOX ELDER	4"	TWIN	GOOD	SAVE	N	
6 7	Acer negundo Fraxinus spp.	BOX ELDER ASH	7" 6"		GOOD GOOD	SAVE SAVE	N N	ıñ
8	Carya glabra	PIGNUT HICKORY	16''		GOOD	REMOVE	N	
9	Salix spp.	WILLOW	4"		GOOD	SAVE	N	_
10 11	Salix spp. Juglans nigra	WILLOW BLACK WALNUT	4" 14"		GOOD GOOD	SAVE SAVE	N N	
12	Juglans nigra	BLACK WALNUT	16"		POOR	SAVE	N	
13	Quercus alba	WHITE OAK	18"		GOOD	SAVE	N	
14 15	Prunus serotina Prunus serotina	BLACK CHERRY BLACK CHERRY	15" 20"		GOOD GOOD	SAVE SAVE	N N	
15 16	Quercus alba	WHITE OAK	20' 22''		GOOD	SAVE	N	
17	Prunus serotina	BLACK CHERRY	15'		GOOD	SAVE	N	
18	Quercus rubra	RED OAK	22"		GOOD	SAVE	N	ŀ
19 20	Quercus rubra Quercus rubra	RED OAK RED OAK	22" 20"		GOOD GOOD	SAVE SAVE	N N	
21	Ulmus spp.	ELM	9"		GOOD	SAVE	N	
22	Ulmus spp.	ELM	9"		GOOD	SAVE	N	
23 24	Quercus rubra Prunus serotina	RED OAK BLACK CHERRY	20'' 19''		GOOD GOOD	SAVE SAVE	N N	
25	Quercus rubra	RED OAK	11"		GOOD	SAVE	N	
26	Ulmus spp.	ELM	9"		GOOD	SAVE	N	
27 28	Prunus serotina Acer negundo	BLACK CHERRY BOX ELDER	14" 3", 4", 13"	TRI	GOOD GOOD	SAVE REMOVE	N N	
601	Salix spp.	WILLOW	50"	/13	FAIR	REMOVE	N	
602	Ulmus spp.	ELM	13"		GOOD	REMOVE	N	
603	Ulmus spp.	ELM	9"		GOOD	REMOVE	N	
604 605	Ulmus spp. Quercus alba	ELM WHITE OAK	7" 22"		FAIR GOOD	REMOVE SAVE	N N	
606	Carya ovata	SHAGBARK HICKORY	12"		GOOD	SAVE	N	
607	Thuja spp.	CEDAR	9"	TRI	GOOD	SAVE	N	
608 609	Thuja spp.	CEDAR ELM	6" 11"		GOOD GOOD	SAVE SAVE	N N	
610	Ulmus spp. Ulmus spp.	ELM	10''		GOOD	SAVE	N	
611	Carya glabra	PIGNUT HICKORY	18"		GOOD	SAVE	N	
612	Ulmus spp.	ELM	7"		GOOD	SAVE	N	
613 614	Thuja spp. Thuja spp.	CEDAR CEDAR	8", 16" 12"	TWIN	GOOD GOOD	SAVE SAVE	Y Y	
615	Prunus spp.	CHERRY	4"	TWIN	GOOD	SAVE	, N	
616	Carya glabra	PIGNUT HICKORY	20'		GOOD	SAVE	N	
617	Prunus spp.	CHERRY	4"	TWIN	FAIR	SAVE	N	
618 619	Thuja spp. Carya ovata	CEDAR SHAGBARK HICKORY	9" 5"		GOOD GOOD	SAVE SAVE	N N	
620	Carya ovata	SHAGBARK HICKORY	7"		GOOD	SAVE	N	
621	Ulmus spp.	ELM	14"		GOOD	SAVE	N	
622	Carya glabra	PIGNUT HICKORY	5"		GOOD	SAVE	N	
623 624	Carya glabra Carya glabra	PIGNUT HICKORY PIGNUT HICKORY	12" 7"		GOOD GOOD	SAVE SAVE	N N	
625	Ulmus spp.	ELM	2", 4"	TWIN	GOOD	SAVE	N	
626	Carya ovata	SHAGBARK HICKORY	5"		GOOD	SAVE	N	
627 628	Carya ovata Carya ovata	SHAGBARK HICKORY SHAGBARK HICKORY	14" 10"		GOOD GOOD	SAVE	N	
628 629	Carya avata Carya glabra	PIGNUT HICKORY	10", 14"	TWIN	GOOD	SAVE SAVE	N N	
630	Prunus serotina	BLACK CHERRY	16"		GOOD	SAVE	N	
631	Carya ovata	SHAGBARK HICKORY	10''		GOOD	SAVE	N	
632 633	Prunus subhirtella Thuja spp.	WEEPING CHERRY CEDAR	7" 9"		GOOD GOOD	SAVE SAVE	N N	
634	Ulmus spp.	ELM	6"		GOOD	SAVE	N	
635	Carya glabra	PIGNUT HICKORY	4 "		GOOD	SAVE	N	
636 637	Carya glabra Carya glabra	PIGNUT HICKORY PIGNUT HICKORY	5" 10"		GOOD GOOD	SAVE SAVE	N N	
638	Carya glabra Carya glabra	PIGNUT HICKORY	13"		GOOD	SAVE	N	
639	Carya glabra	PIGNUT HICKORY	5"		GOOD	SAVE	N	
640	Carya glabra	PIGNUT HICKORY	5"		GOOD	SAVE	N	
641 642	Prunus serotina Ulmus spp.	BLACK CHERRY ELM	15" 15"		GOOD GOOD	SAVE SAVE	N N	
643	Carya glabra	PIGNUT HICKORY	20"		GOOD	SAVE	N	
644	Ulmus spp.	ELM	4"		GOOD	SAVE	N	
645 646	Carya glabra Carya glabra	PIGNUT HICKORY PIGNUT HICKORY	13" 11"		GOOD GOOD	SAVE SAVE	N N	
647	Carya glabra Carya glabra	PIGNUT HICKORY	5", 12"	TWIN	GOOD	SAVE	N	ŀ
648	Carya glabra	PIGNUT HICKORY	4"		GOOD	SAVE	N	
649	Carya glabra	PIGNUT HICKORY	9"		GOOD	SAVE	N	
650 651	Carya ovata Carya glabra	SHAGBARK HICKORY PIGNUT HICKORY	7" 9"		GOOD GOOD	SAVE SAVE	N N	
652	Carya glabra	PIGNUT HICKORY	6"		GOOD	SAVE	N	
653	Carya glabra	PIGNUT HICKORY	11"		GOOD	SAVE	N	
654 655	Carya glabra Carya ovata	PIGNUT HICKORY SHAGBARK HICKORY	4" 14"		GOOD GOOD	SAVE SAVE	N N	
656	Quercus rubra	RED OAK	16"		GOOD	SAVE	N	
657	Tilia americana	AMERICAN BASSWOOD	7"		GOOD	SAVE	N	DENOUMADIVO.
658 659	Tilia americana	AMERICAN BASSWOOD	4" 15"		GOOD	SAVE	N	BENCHMARKS:
659 660	Acer negundo Acer negundo	BOX ELDER BOX ELDER	15" 4", 10"	TWIN	FAIR GOOD	REMOVE REMOVE	N N	(NAVD 88 DATUM)
661	Tilia americana	AMERICAN BASSWOOD	10"		GOOD	SAVE	N	BENCHMARK #124
662	Tilia americana	AMERICAN BASSWOOD	8"		GOOD	SAVE	N	BENCHMARK SET ON HYDRANT ARROW WEST OF LAPEER ROAD (M-24), NEAR
663 664	Tilia americana Ulmus spp.	AMERICAN BASSWOOD ELM	10'' 5''		GOOD GOOD	SAVE REMOVE	N N	SOUTHEAST CORNER OF SUBJECT PARCEL ELEV.=999.31
665	Uimus spp. Tilia americana	AMERICAN BASSWOOD	ב 4"		GOOD	REMOVE	N	BENCHMARK #126
666	Ulmus spp.	ELM	4"		GOOD	REMOVE	N	BENCHMARK SET ON HYDRANT ARROW
667	Carya glabra	PIGNUT HICKORY	11") a	GOOD	SAVE	N	WEST OF LAPEER ROAD (M-24), NEAR NORTHEAST CORNER OF SUBJECT PARCEL
668 669	Tilia americana Ulmus spp.	AMERICAN BASSWOOD ELM	5", 10" 6"	TWIN	GOOD GOOD	REMOVE REMOVE	N N	ELEV.=984.80
670	Prunus serotina	BLACK CHERRY	4"		GOOD	REMOVE	N	ELEV.=984.80 FLOR MICHAELE OF
671	Acer negundo	BOX ELDER	7" -"		GOOD	REMOVE	N	S. WES LEE O. Z
672	Malus spp.	APPLE	7"		GOOD	REMOVE	N	PROFESSIONAL *



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.



Know what's **below.** Call before you dig.

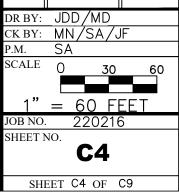
CONSTRUCTION SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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DATE: 6/28/2022

BENCHMARK SET ON HYDRANT ARROW
WEST OF LAPEER ROAD (M-24), NEAR
SOUTHEAST CORNER OF SUBJECT PARCEL
ELEV.=999.31



TAG#	SCIENTIFIC NAME	COMMON NAME	DBH	Multi Note	CONDITION	SAVE/REMOVE	Landmark	TAG#	SCIENTIFIC NAME	COMMON NAME	DBH	Multi Note	CONDITION	SAVE/REMOVE	Landmark	TAG#	SCIENTIFIC NAME	COMMON NAME	DBH	Multi Note	CONDITION	SAVE/REMOVE	Landmark	TA
673	Prunus serotina	BLACK CHERRY	5"		GOOD	REMOVE	N	773	Quercus rubra	RED OAK	5"		GOOD	SAVE	N	873	Fraxinus spp.	ASH	4"		POOR	SAVE	N	9
674 675	Carya ovata Carya ovata	SHAGBARK HICKORY SHAGBARK HICKORY	8" 6"		GOOD	REMOVE REMOVE	N N	774 775	Ulmus spp. Ulmus spp.	ELM ELM	8" 6"		GOOD	SAVE SAVE	N	874 875	Salix spp. Ulmus spp.	WILLOW	12" 5"		GOOD GOOD	SAVE SAVE	N	9
676	Carya ovata	SHAGBARK HICKORY	11"		GOOD	REMOVE	N	776	Quercus rubra	RED OAK	5"		GOOD	SAVE	N	876	Ulmus spp.	ELM	8"		GOOD	SAVE	N	9
677	Carya ovata		5", 10", 12", 14	ř.	GOOD	REMOVE	N	777	Quercus rubra	RED OAK	10"		GOOD	SAVE	N	877	Prunus serotina	BLACK CHERRY	16''		GOOD	SAVE	N	9
678 679	Carya glabra	PIGNUT HICKORY BOX ELDER	6" 8", 10"		GOOD	SAVE SAVE	N N	778 779	Quercus rubra Quercus rubra	RED OAK RED OAK	16" 9"		GOOD	SAVE SAVE	N N	878 879	Fraxinus spp. Salix spp.	ASH WILLOW	4" 12"		GOOD	SAVE	N	9
680	Acer negundo Ulmus spp.	ELM	4"		GOOD	SAVE	N	780	Ulmus spp.	ELM	4"		GOOD	SAVE	N	880	Ulmus spp.	ELM	4"	TWIN	GOOD	REMOVE	N	9
681	Carya ovata	SHAGBARK HICKORY	17"		GOOD	SAVE	N	781	Prunus serotina	BLACK CHERRY	7"		GOOD	SAVE	N	881	Ulmus spp.	ELM	8"		GOOD	SAVE	N	9
682	Carya glabra	PIGNUT HICKORY	7"		POOR	SAVE	N	782	Quercus rubra	RED OAK	18"		GOOD	SAVE	N	882	Ulmus spp.	ELM	10"		GOOD	SAVE	N	9
683 684	Carya glabra Prunus serotina	PIGNUT HICKORY BLACK CHERRY	27" 9"		GOOD	SAVE SAVE	N N	783 784	Quercus rubra Quercus rubra	RED OAK RED OAK	6" 15"		GOOD	SAVE	N N	883 884	Ulmus spp. Ulmus spp.	ELM ELM	8" 9"		GOOD GOOD	SAVE SAVE	N N	9
685	Ulmus spp.	ELM	6"		GOOD	SAVE	N	785	Ulmus spp.	ELM	9", 15"	TWIN	GOOD	SAVE	N	885	Quercus rubra	RED OAK	28"		GOOD	SAVE	Y	9
686	Acer negundo	BOX ELDER	7"		GOOD	SAVE	N	786	Acer spp.	MAPLE	4"	TWIN	GOOD	SAVE	N	886	Ulmus spp.	ELM	6"		GOOD	SAVE	N	9
687	Carya glabra	PIGNUT HICKORY	5"		GOOD	SAVE	N	787	Carya glabra	PIGNUT HICKORY	14"		GOOD	SAVE	N	887	Ulmus spp.	ELM	16", 20"	TWIN	GOOD	SAVE	N	9
688 689	Ulmus spp. Ulmus spp.	ELM ELM	12" 10"		GOOD	SAVE SAVE	N N	788 789	Quercus rubra Ulmus spp.	RED OAK ELM	11" 16"		GOOD POOR	SAVE SAVE	N	888 889	Acer negundo Ulmus spp.	BOX ELDER ELM	3" - 7" 4"	MULTI (5)	GOOD FAIR	SAVE SAVE	N	9
690	Carya glabra	PIGNUT HICKORY	5"		GOOD	SAVE	N	790	Acer negundo	BOX ELDER	9"	TWIN	GOOD	SAVE	N	890	Prunus serotina	BLACK CHERRY	10''		GOOD	SAVE	N	9
691	Carya glabra	PIGNUT HICKORY	5"		GOOD	SAVE	N	791	Populus deltoides	COTTONWOOD	14"		GOOD	SAVE	N	891	Ulmus spp.	ELM	9"		GOOD	SAVE	N	9
692 693	Quercus alba Fraxinus spp.	WHITE OAK ASH	28" 5"	- 1	GOOD FAIR	REMOVE SAVE	Y N	792 793	Fraxinus spp. Populus deltoides	ASH COTTONWOOD	4" 15"		FAIR GOOD	SAVE SAVE	N N	892 893	Ulmus spp. Ulmus spp.	ELM ELM	11"	TWIN	GOOD	SAVE	N	9
694	Picea pungens	COLORADO SPRUCE	20"		GOOD	SAVE	N	794	Populus deltoides	COTTONWOOD	15"		GOOD	SAVE	N	894	Ulmus spp.	ELM	4"	TVVIIV	GOOD	SAVE	N	9
695	Acer negundo	BOX ELDER	9"		GOOD	SAVE	N	7 95	Juglans nigra	BLACK WALNUT	4"		GOOD	SAVE	N	895		AMERICAN BASSWOOD	7"		GOOD	SAVE	N	9
696	Acernegundo	BOX ELDER	7", 14"		GOOD	SAVE	N	796	Fraxinus spp.	ASH	5"		FAIR	SAVE	N	896		AMERICAN BASSWOOD	7"	TWIN	GOOD	SAVE	N	9
697 698	Morus spp. Pinus nigra	MULBERRY AUSTRIAN PINE	4", 9" 18"		GOOD	SAVE REMOVE	N N	797 798	Acer negundo Acer negundo	BOX ELDER BOX ELDER	6" 8"		GOOD	SAVE SAVE	N N	897 898	Tilia americana Fraxinus spp.	AMERICAN BASSWOOD ASH	8 "	TWIN	GOOD POOR	SAVE SAVE	N N	9
699	Pyrus calleryana	BRADFORD PEAR	12"		GOOD	SAVE	N	799	Acer negundo	BOX ELDER	5"		GOOD	SAVE	N	899	Prunus serotina	BLACK CHERRY	12"		GOOD	SAVE	N	9
700	Pinus nigra	AUSTRIAN PINE	14"	Acceptance	GOOD	SAVE	N	800	Acer negundo	BOX ELDER	4"		GOOD	SAVE	N	900		AMERICAN BASSWOOD	10"		GOOD	SAVE	N	10
701	Malus spp.	CRAB APPLE	7"	TWIN	GOOD	SAVE	N	801	Acer negundo	BOX ELDER	5" 4"		GOOD	SAVE	N	901		AMERICAN BASSWOOD	11", 13"	TWIN	GOOD	SAVE	N	
702 703	Pinus sylvestris Malus spp.	SCOTCH PINE CRAB APPLE	10"	QUAD	GOOD	SAVE SAVE	N N	802 803	Ulmus spp. Populus spp.	ELM POPLAR	16"		GOOD	SAVE SAVE	N N	902 903	Ulmus spp. Tilia americana	ELM AMERICAN BASSWOOD	10"	QUAD	GOOD GOOD	SAVE SAVE	N N	
704	Pinus sylvestris	SCOTCH PINE	18"		GOOD	SAVE	N	804	Ulmus spp.	ELM	10"		GOOD	SAVE	N	904		AMERICAN BASSWOOD	10"	20/10	GOOD	SAVE	N	
705	Malus spp.	CRAB APPLE	5"	MULTI (5)		SAVE	N	805	Populus spp.	POPLAR	14"		GOOD	SAVE	N	905	Tilia americana	AMERICAN BASSWOOD	8"		GOOD	SAVE	N	
706 707	Pinus sylvestris	SCOTCH PINE	14" 28"		GOOD	SAVE SAVE	N	806 807	Fraxinus spp.	ASH BLACK CHERRY	4" 8"		GOOD	SAVE	N	906	Ulmus spp.	ELM	6" 9"		GOOD	SAVE	N	
707 708	Pinus sylvestris Acer negundo	SCOTCH PINE BOX ELDER	28" 15"		GOOD	SAVE	N N	807 808	Prunus serotina Carya ovata	SHAGBARK HICKORY	4"		GOOD	SAVE SAVE	N	907		AMERICAN BASSWOOD AMERICAN BASSWOOD		TRI	GOOD GOOD	SAVE SAVE	N N	
709	Pinus sylvestris	SCOTCH PINE	10"	TRI	FAIR	SAVE	N	809	Ulmus spp.	ELM	10"		POOR	SAVE	N	909		AMERICAN BASSWOOD		MULTI (5)		SAVE	N	
710	Salix spp.	WILLOW	16"	TWIN	GOOD	SAVE	N	810	Fraxinus spp.	ASH	5"		GOOD	SAVE	N	910	Carya glabra	PIGNUT HICKORY	14''	TWIN	GOOD	SAVE	N	
711 712	Acer negundo	BOX ELDER BOX ELDER	8"		GOOD	SAVE SAVE	N N	811 812	Fraxinus spp.	ASH BLACK CHERRY	7" 10"		GOOD FAIR	SAVE SAVE	N	911	Carya glabra	PIGNUT HICKORY	7"		GOOD	SAVE	N	
713	Acer negundo Salix spp.	WILLOW	20"		POOR	SAVE	N	813	Prunus serotina Quercus alba	WHITE OAK	22"		GOOD	SAVE	N	912 913	Carya glabra Carya glabra	PIGNUT HICKORY PIGNUT HICKORY	10"		GOOD	SAVE SAVE	N N	
714	Acer spp.	MAPLE	6"		GOOD	SAVE	N	814	Prunus serotina	BLACK CHERRY	16"		GOOD	SAVE	N	914	Carya glabra	PIGNUT HICKORY	10", 14"		GOOD	SAVE	N	
715	Acer spp.	MAPLE	4"		GOOD	SAVE	N	815	Carya glabra	PIGNUT HICKORY	4 "		GOOD	SAVE	N	915	Carya glabra	PIGNUT HICKORY	9"		GOOD	SAVE	N	
716 717	Acer spp. Prunus spp.	MAPLE CHERRY	5" 5"		GOOD	SAVE	N	816 817	Ulmus spp. Prunus serotina	ELM BLACK CHERRY	4" 6"		GOOD	SAVE REMOVE	N	916		AMERICAN BASSWOOD	10" 12"		POOR	SAVE SAVE	N	
717	Pinus sylvestris	SCOTCH PINE	16"		GOOD	SAVE	N	818	Tilia americana	AMERICAN BASSWOOD	4"	TWIN	GOOD	REMOVE	N	917 918	Ulmus spp. Ulmus spp.	ELM ELM	4"		GOOD GOOD	SAVE	N N	
719	Pinus sylvestris	SCOTCH PINE	16"		GOOD	SAVE	N	819	Tilia americana	AMERICAN BASSWOOD	7", 14"	TWIN	GOOD	REMOVE	N	919	Ulmus spp.	ELM	5"		GOOD	SAVE	N	
720	Acer negundo	BOX ELDER	14"	TRI	GOOD	SAVE	N	820	Tilia americana	AMERICAN BASSWOOD	9"		GOOD	REMOVE	N	920	Ulmus spp.	ELM	5"		GOOD	SAVE	N	
721 722	Acer negundo Acer negundo	BOX ELDER BOX ELDER	3", 4", 5", 10"	QUAD	GOOD	SAVE	N N	821 822	Tilia americana Tilia americana	AMERICAN BASSWOOD AMERICAN BASSWOOD	15" 16"		GOOD	REMOVE REMOVE	N	921	Indiana and a second	AMERICAN BASSWOOD AMERICAN BASSWOOD	8"		GOOD	SAVE SAVE	N N	
723	Populus deltoides	COTTONWOOD	18"		GOOD	SAVE	N	823	Tilia americana	AMERICAN BASSWOOD	7", 15"	TWIN	GOOD	REMOVE	N	922 923		AMERICAN BASSWOOD	5"		GOOD GOOD	SAVE	N	
724	Salix spp.	WILLOW	5"		GOOD	SAVE	N	824	Carya ovata	SHAGBARK HICKORY	14"		GOOD	REMOVE	N	924	Carya glabra	PIGNUT HICKORY	4"		GOOD	SAVE	N	
725	Salix spp.	WILLOW	11"		GOOD	SAVE	N	825	Fraxinus spp.	ASH	4"		GOOD	REMOVE	N	925		AMERICAN BASSWOOD	5"		GOOD	SAVE	N	
726 727	Salix spp. Salix spp.	WILLOW	5" 8"		GOOD	SAVE SAVE	N N	826 827	Acer negundo Prunus serotina	BOX ELDER BLACK CHERRY	5" 4"		GOOD	REMOVE REMOVE	N N	926 927	Ulmus spp. Tilia americana	ELM AMERICAN BASSWOOD	4", 8"	TWIN	GOOD GOOD	SAVE SAVE	N N	
728	Malus spp.	APPLE	4"		GOOD	SAVE	N	828	Quercus alba	WHITE OAK	16"		GOOD	REMOVE	N	928		AMERICAN BASSWOOD	14"	TWIN	GOOD	SAVE	N	
729	Acer negundo	BOX ELDER	14"	TRI	FAIR	SAVE	N	829	Pinus nigra	AUSTRIAN PINE	14"		GOOD	REMOVE	N	929	Ulmus spp.	ELM	5"		GOOD	SAVE	N	
730	Fraxinus spp.	ASH	4" 7"		GOOD	SAVE	N	830	Acernegundo	BOX ELDER	7" 4"		GOOD	REMOVE	N	930	Prunus serotina	BLACK CHERRY	18"		GOOD	SAVE	N	
731 732	Salix spp. Salix spp.	WILLOW	8"	TWIN	GOOD	SAVE SAVE	N N	831 832	Acer negundo Pinus nigra	BOX ELDER AUSTRIAN PINE	12"		GOOD	REMOVE REMOVE	N	931 932	Carya glabra Carya glabra	PIGNUT HICKORY PIGNUT HICKORY	9"		GOOD GOOD	SAVE SAVE	N N	
733	Salix spp.	WILLOW	9"	0 0 0 0 0 0 0	GOOD	SAVE	N	833	Pinus nigra	AUSTRIAN PINE	12"		GOOD	REMOVE	N	933	Carya glabra	PIGNUT HICKORY	8"		GOOD	SAVE	N	
734	Populus deltoides	COTTONWOOD	16"		GOOD	SAVE	N	834	Quercus rubra	RED OAK	16"		GOOD	REMOVE	N	934	Carya glabra	PIGNUT HICKORY	7"		GOOD	SAVE	N	
735 736	Salix spp. Acer negundo	WILLOW BOX ELDER	13" 16"		GOOD	SAVE SAVE	N N	835 836	Prunus serotina Pinus nigra	BLACK CHERRY AUSTRIAN PINE	14" 7"		GOOD	REMOVE SAVE	N N	935		AMERICAN BASSWOOD	4"		GOOD	SAVE	N	
737	Salix spp.	WILLOW	10"		GOOD	SAVE	N	837	Acer negundo	BOX ELDER	4 "		GOOD	SAVE	N	936 937	Ulmus spp. Acer negundo	ELM BOX ELDER	5"	TWIN	GOOD GOOD	SAVE SAVE	N N	
738	Acer negundo	BOX ELDER	4"		GOOD	SAVE	N	838	Quercus rubra	RED OAK	5", 14"	TWIN	GOOD	SAVE	N	938	Carya ovata	SHAGBARK HICKORY	15"		GOOD	SAVE	N	
739	Acer negundo	BOX ELDER	7", 11"	TWIN	GOOD	SAVE	N	839	Quercus rubra	RED OAK	13"	TWIN	GOOD	REMOVE	N	939	Carya ovata	SHAGBARK HICKORY	13"		GOOD	SAVE	N	
740 741	Ulmus spp. Salix spp.	ELM WILLOW	15" 16"		GOOD POOR	SAVE SAVE	N N	840 841	Pinus nigra Carya ovata	AUSTRIAN PINE SHAGBARK HICKORY	16" 13"		GOOD	REMOVE REMOVE	N	940 941	Ulmus spp.	ELM PIGNUT HICKORY	4" 11"		GOOD	SAVE SAVE	N N	
741	Fraxinus spp.	ASH	5"		GOOD	SAVE	N	842	Prunus serotina	BLACK CHERRY	18"		GOOD	REMOVE	N	941	Carya glabra Carya ovata	SHAGBARK HICKORY	12"		GOOD	SAVE	N	
743	Fraxinus spp.	ASH	4"		GOOD	SAVE	N	843	Quercus rubra	RED OAK	24"	TWIN	GOOD	REMOVE	Υ	943	Carya glabra	PIGNUT HICKORY	14''		GOOD	SAVE	N	
744 745	Ulmus spp.	ELM ELM	6" 5"		GOOD	SAVE SAVE	N N	844 845	Prunus serotina	BLACK CHERRY MAPLE	22", 28" 3", 5", 12"	TWIN TRI	GOOD	SAVE REMOVE	Y	944	Tilia americana	AMERICAN BASSWOOD	10"	TWIN	GOOD	SAVE	N	
745	Ulmus spp. Populus deltoides	COTTONWOOD	5", 6", 8"	TRI	GOOD	SAVE	N	845 846	Acer spp. Populus deltoides	COTTONWOOD	3", 5", 12" 18"	IKI	GOOD	SAVE	N	945 946	Populus deltoides Salix spp.	COTTONWOOD	10'' 7''		GOOD GOOD	SAVE SAVE	N N	
747	Ulmus spp.	ELM	13"		GOOD	SAVE	N	847	Ulmus spp.	ELM	5"		GOOD	SAVE	N	947	Ulmus spp.	ELM	7"		GOOD	SAVE	N	
748	Ulmus spp.	ELM	14"		GOOD	SAVE	N	848	Ulmus spp.	ELM	5"		GOOD	SAVE	N	948	Carya glabra	PIGNUT HICKORY	10"		GOOD	SAVE	N	
749 750	Acer spp. Fraxinus spp.	MAPLE ASH	4" 9"		GOOD	SAVE SAVE	N N	849 850	Ulmus spp. Ulmus spp.	ELM ELM	6" 4"		GOOD	SAVE SAVE	N N	949	Carya ovata	SHAGBARK HICKORY	9"		GOOD	SAVE	N	
751	Ulmus spp.	ELM	5"		GOOD	SAVE	N	851	Salix spp.	WILLOW	12"		GOOD	SAVE	N	950 951	Acer negundo Prunus serotina	BOX ELDER BLACK CHERRY	17"		GOOD	SAVE SAVE	N N	
752	Acer spp.	MAPLE	7", 16", 18"	TRI	GOOD	SAVE	N	852	Salix spp.	WILLOW	8"		GOOD	SAVE	N	952	Prunus serotina	BLACK CHERRY	12", 14"	TWIN	GOOD	SAVE	N	
753	Ulmus spp.	ELM	4"		GOOD	SAVE	N	853	Populus deltoides	COTTONWOOD	26"		GOOD	SAVE	N	953	Prunus serotina	BLACK CHERRY	10"		FAIR	SAVE	N	
754 755	Ulmus spp. Ulmus spp.	ELM ELM	8" 10"		GOOD GOOD	SAVE SAVE	N N	854 855	Ulmus spp. Ulmus spp.	ELM ELM	5" 5"		FAIR GOOD	SAVE SAVE	N N	954 955	Ulmus spp.	ELM	11"		GOOD	SAVE SAVE	N	
756	Ulmus spp.	ELM	7"		GOOD	SAVE	N	856	Ulmus spp.	ELM	4"		GOOD	SAVE	N	955 956	Ulmus spp. Quercus rubra	ELM RED OAK	22", 24", 26"	TRI	GOOD GOOD	SAVE	N Y	
757	Ulmus spp.	ELM	4"		GOOD	SAVE	N	857	Ulmus spp.	ELM	6"		GOOD	SAVE	N	957	Ulmus spp.	ELM	5"	100(GT\$)	GOOD	SAVE	N	
758	Ulmus spp.	ELM	9"		GOOD	SAVE	N	858	Ulmus spp.	ELM	7"		GOOD	SAVE	N	958	Carya glabra	PIGNUT HICKORY	10"		GOOD	SAVE	N	
759 760	Ulmus spp. Ulmus spp.	ELM ELM	12" 8"		GOOD	SAVE SAVE	N	859 860	Ulmus spp. Ulmus spp.	ELM ELM	7" 4"		GOOD FAIR	SAVE SAVE	N	959 960		AMERICAN BASSWOOD AMERICAN BASSWOOD	14", 18"		GOOD GOOD	SAVE SAVE	N	
761	Ulmus spp.	ELM	7"		GOOD	SAVE	N	861	Ulmus spp.	ELM	8"		GOOD	SAVE	N	961	Ulmus spp.	ELM	5"		FAIR	SAVE	N	
762	Salix spp.	WILLOW	22"		POOR	SAVE	N	862	Ulmus spp.	ELM	9"		GOOD	SAVE	N	962	Ulmus spp.	ELM	5"		GOOD	SAVE	N	
763	Ulmus spp.	ELM	8"		GOOD	SAVE	N	863	Ulmus spp.	ELM	5"		GOOD	SAVE	N	963	Tilia americana	AMERICAN BASSWOOD	4"		GOOD	SAVE	N	
764 765	Ulmus spp. Quercus alba	ELM WHITE OAK	16" 5"		FAIR GOOD	SAVE SAVE	N N	864 865	Morus spp. Acer spp.	MULBERRY MAPLE	8" 10"		FAIR GOOD	SAVE SAVE	N N	964	Ulmus spp.	ELM	8"		GOOD	SAVE	N	
766	Quercus rubra	RED OAK	12"		GOOD	SAVE	N	866	Ulmus spp.	ELM	4"		GOOD	SAVE	N	965 966	Ulmus spp. Tilia americana	ELM AMERICAN BASSWOOD	6"	TWIN	GOOD GOOD	SAVE SAVE	N N	
767	Ulmus spp.	ELM	5"		GOOD	SAVE	N	867	Ulmus spp.	ELM	5"		GOOD	SAVE	N	967		AMERICAN BASSWOOD	4", 14"	TWIN	GOOD	SAVE	N	
768	Ulmus spp.	ELM	10"		GOOD	SAVE	N	868	Ulmus spp.	ELM PIRCH	5"		GOOD	SAVE	N	968	Morus spp.	MULBERRY	10", 14"	TWIN	GOOD	SAVE	N	
769 770	Quercus alba Prunus serotina	WHITE OAK BLACK CHERRY	6" 16"	TWIN	GOOD	SAVE SAVE	N N	869 870	Betula alleghaniesis Betula alleghaniesis	YELLOW BIRCH YELLOW BIRCH	5" 4"	TWIN	FAIR GOOD	SAVE SAVE	N N	969	Acer negundo	BOX ELDER	9"	TWIN	GOOD	SAVE	N	
771	Quercus rubra	RED OAK	7"	. vally	GOOD	SAVE	N	871	Betula alleghaniesis	YELLOW BIRCH	5"	. WIIN	GOOD	SAVE	N	970 971	Ulmus spp. Thuja spp.	ELM CEDAR	9"		GOOD GOOD	SAVE	N N	
20000	- Commence of the Commence of	RED OAK	8"		GOOD	SAVE	N	872	Ulmus spp.	ELM	4"		POOR	SAVE	NI	972		AMERICAN BASSWOOD		01140	GOOD	SAVE	N	

ark	TAG#	SCIENTIFIC NAME	COMMON NAME	DBH	Multi Note	CONDITION	SAVE/REMOVE	Landmark
	973	Acer negundo	BOX ELDER	12"		GOOD	SAVE	N
	974	Quercus alba	WHITE OAK	8"		GOOD	SAVE	N
	975	Carya ovata	SHAGBARK HICKORY	18"		GOOD	SAVE	N
	976	Quercus alba	WHITE OAK	28"		GOOD	SAVE	Υ
	977	Tilia americana	AMERICAN BASSWOOD	6"		GOOD	SAVE	N
	978	Acer negundo	BOX ELDER	7"	TRI	GOOD	SAVE	N
	979	Acer negundo	BOX ELDER	7"		GOOD	SAVE	N
	980	Ulmus spp.	ELM	14"		GOOD	REMOVE	N
	981	Acer negundo	BOX ELDER	16"		GOOD	REMOVE	N
	982	Tilia americana	AMERICAN BASSWOOD	7"		GOOD	SAVE	N
	983	Carya ovata	SHAGBARK HICKORY	10"		GOOD	SAVE	N
	984	Acer negundo	BOX ELDER	5"		GOOD	SAVE	N
	985	Acer negundo	BOX ELDER	3", 6"	TWIN	GOOD	SAVE	N
	986	Quercus rubra	RED OAK	10"	TWIN	GOOD	SAVE	N
	987	Quercus rubra	RED OAK	9"		GOOD	SAVE	N
	988	Quercus rubra	RED OAK	5"		GOOD	SAVE	N
	989	Quercus rubra	RED OAK	30"		GOOD	REMOVE	Y
	990	Quercus rubra	RED OAK	11"		GOOD	SAVE	N
	991	Ulmus spp.	ELM	7"		GOOD	SAVE	N
	992	Ulmus spp.	ELM	7"		GOOD	SAVE	N
	993	Tilia americana	AMERICAN BASSWOOD	6"	TWIN	GOOD	SAVE	N
	994	Carya glabra	PIGNUT HICKORY	14"		GOOD	SAVE	N
	995	Tilia americana	AMERICAN BASSWOOD	6"		GOOD	SAVE	N
	996	Tilia americana	AMERICAN BASSWOOD	7"		GOOD	SAVE	N
	997	Tilia americana	AMERICAN BASSWOOD	4"		GOOD	SAVE	N
	998	Tilia americana	AMERICAN BASSWOOD	4"		GOOD	SAVE	N
	999	Carya glabra	PIGNUT HICKORY	14"		GOOD	SAVE	N
	1000	Carya glabra	PIGNUT HICKORY	4"		GOOD	SAVE	N

TREE CALCULATIONS		
		TOTAL DBH
TOTAL TREES SURVEYED	428	4244"
TOTAL PROTECTED TREES TO BE REMOVED	53	592"
TOTAL PROTECTED TREES TO BE SAVED	365	3405"
TOTAL LANDMARK TREES TO BE REMOVED	3	82"
TOTAL <i>LANDMARK</i> TREES TO BE SAVED	7	165"

	LANDMARK REPLACEMENT REQUIREMENTS	REPLACEMENT CALCULATION	COUNT (AT 2" DBH EACH)
R/	NE (1) LANDMARK TREE SHALL BE REPLACED AT A ATE OF ONE (1) INCH OF REPLACEMENT TREE FOR EACH DBH INCH OF LANDMARK TREE REMOVED	82" OF REPLACEMENT TREES REQUIRED	41 TREES

REPLACEMENT CALCULATION PROTECTED TREE REPLACEMENT REPLACEMENT SHALL BE ON A ONE-TO-ONE BASIS, 53 REPLACEMENT TREES REPLACEMENT TREES HAVING AT LEAST A 2 INCH DBH. REQUIRED ALL EVERGREEN TREES MUST BE AT LEAST 6 FEET TALL.



MATTHEW DORNAN ISA CERTIFIED ARBORIST MI-4463A

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE OWNER OR ITS REPRESENTATIVE.
THE CONTRACTOR SHALL DETERMINE
THE EXACT LOCATION OF ALL EXISTING
UTILITIES BEFORE COMMENCING WORK,
AND AGREES TO BE FULLY RESPONSIBLE
FOR ANY AND ALL DAMAGES WHICH
MIGHT BE OCCASIONED BY THE
CONTRACTOR'S FAILURE TO EXACTLY
LOCATE AND PRESERVE ANY AND ALL
UNDERGROUND UTILITIES.



Know what's **below.** Call before you dig.

CONSTRUCTION SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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DATE: 6/28/2022 REVISIONS

NO SCALE **C5**

SHEET C5 OF C9



LEGAL DESCRIPTION AS SURVEYED

PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26, TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER: 55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 2'40'30" WEST, 878.57 FEET; THENCE NORTH 84°44'00" EAST, 825.43 FEET; THENCE NORTH 11°03'00" EAST, 107.63 FEET: THENCE NORTH 39°01'00" EAST, 106.90 FEET: THENCE NORTH 29°51'00" EAST, 159.50 FEET; THENCE SOUTH 38°42'00" EAST, 16.49 FEET; THENCE SOUTH 5'27'00" EAST, 1,138.77 FEET; THENCE SOUTH 82'50'40" WEST, 1,075.09 FEET TO THE POINT OF BEGINNING.

LEGAL DESCRIPTION ZONED RM-1

PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26, TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER: 55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 2'40'30" WEST, 878.57 FEET; NORTH 84°44'00" EAST, 763.28 FEET; THENCE SOUTH 5°27'00" EAST, 521.17 FEET; THENCE NORTH 82'49'48" EAST, 268.93 FEET; THENCE SOUTH 5'27'00" EAST, 330.00 FEET; THENCE SOUTH 82°50'40" WEST, 1,075.09 FEET TO THE POINT OF

LEGAL DESCRIPTION ZONED GB

PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26, TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER: 55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 82°50'40" EAST 1,075.09 FEET; THENCE NORTH 05'24'00" WEST 330.00 FEET TO THE POINT OF BEGINNING: THENCE SOUTH 82°49'48" WEST, 268.93 FEET; THENCE NORTH 5'27'00" WEST, 521.17 FEET; THENCE NORTH 84'44'00" EAST, 62.15 FEET; THENCE NORTH 11°03'00" EAST, 107.63 FEET; THENCE NORTH 39°01'00" EAST, 106.90 FEET; THENCE NORTH 29°51'00" EAST, 159.50 FEET; THENCE SOUTH 38°42'00" EAST, 16.49 FEET; THENCE SOUTH 5'27'00" EAST, 808.77 FEET TO THE POINT OF BEGINNING.

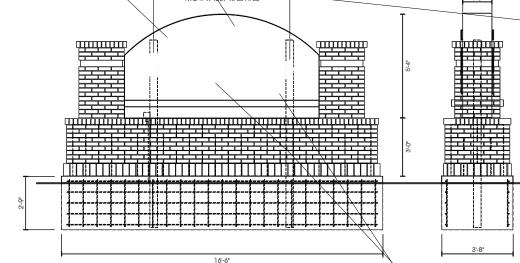
LEGAL DESCRIPTION PROPOSED PARCEL A

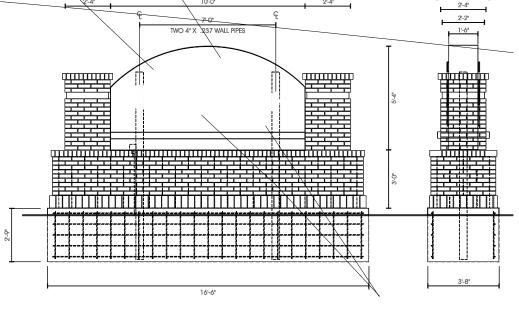
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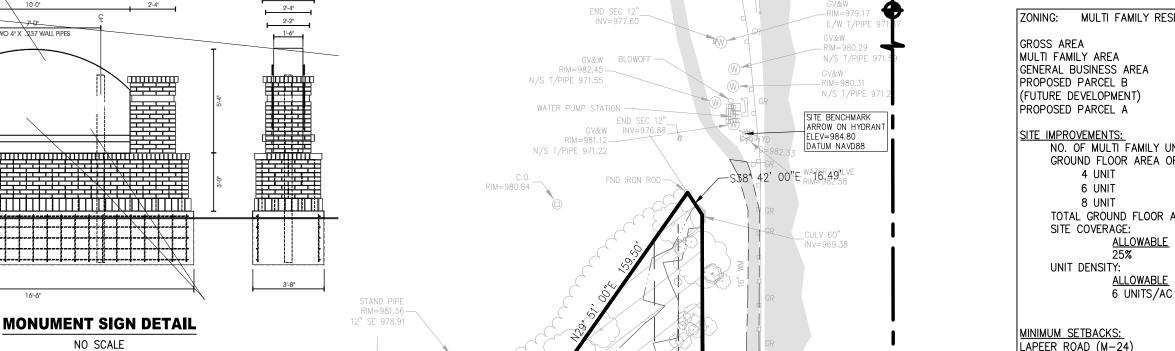
LEGAL DESCRIPTION PROPOSED PARCEL B

PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26. TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER: 55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 82'50'40" EAST 1,075.09 FEET; THENCE NORTH 05°24'00" WEST 427.69 FEET TO THE POINT OF BEGINNING: THENCE NORTH 84°33'00" EAST 246.94 FEET; THENCE SOUTH 05°27'00" EAST 279.24 FEET; THENCE SOUTH 11°03'00" WEST 141.81 FEET; THENCE NORTH 11°03'00" EAST 107.63 FEET; THENCE NORTH 39°01'00" EAST 106.90 FEET; THENCE NORTH 29°51'00" EAST 159.50 FEET; THENCE SOUTH 38°42'00" EAST 16.49 FEET; THENCE SOUTH 05°27'00" EAST 711.08 FEET TO THE POINT OF BEGINNING.

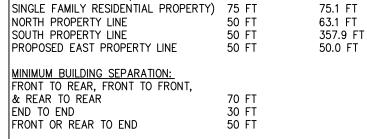
2'-2" 1'-6"





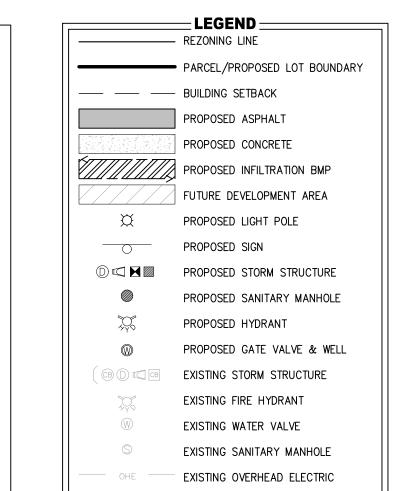


SITE DATA: ZONING: MULTI FAMILY RESIDENTIAL (RM-1) & GENERAL BUSINESS (GB) 4.05 AC 3.15 AC 18.50 AC SITE IMPROVEMENTS: NO. OF MULTI FAMILY UNITS GROUND FLOOR AREA OF MULTI FAMILY BUILDINGS 85'x43' = 3,655 S.F.127'x43' = 5,461 S.F.169'x43' = 7,267 S.F.TOTAL GROUND FLOOR AREA 94,557 S.F. 6 UNITS/AC 5.91 UNITS/AC MIN. REQUIRED MIN. PROPOSED LAPEER ROAD (M-24) 100 FT N/A WEST PROPERTY LINE (ADJACENT TO 75.1 FT SINGLE FAMILY RESIDENTIAL PROPERTY) 75 FT NORTH PROPERTY LINE 63.1 FT SOUTH PROPERTY LINE 357.9 FT PROPOSED EAST PROPERTY LINE 50 FT 50.0 FT



36 SPACES

PARKING CALCULATIONS: (9' x 19' PERPENDICULAR	SPACES AND 9' x 22' PA	RALLEL SPACES)
MULTI FAMILY	<u>REQUIRED</u> (2 PER UNIT) 104 GARAGE SPACES	PROPOSED 104 GARAGE SPACES
		104 DRIVEWAY SPACES
MULTI FAMILY VISITORS	(1 PER 3 UNITS)	

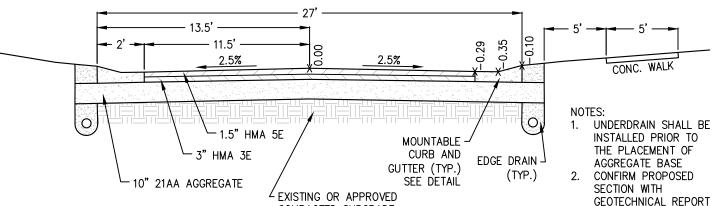


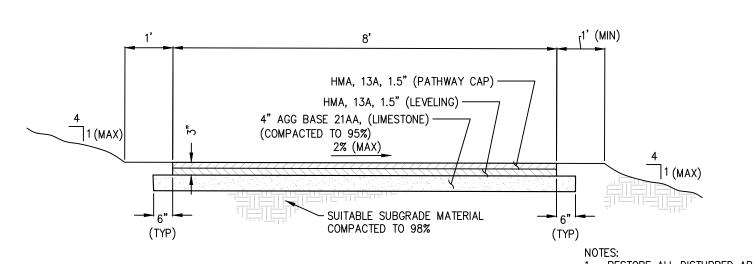
_ _ _ 900 _ _ EXISTING CONTOURS

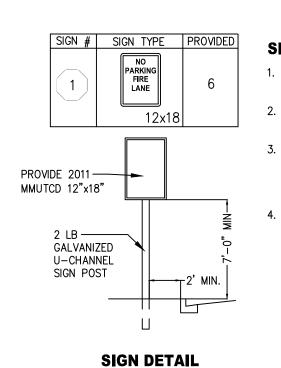
1. ALL CONSTRUCTION MUST CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS ADOPTED BY ORION TOWNSHIP, OAKLAND COUNTY WATER RESOURCES COMMISSION, ROAD COMMISSION FOR OAKLAND COUNTY, AND MICHIGAN DEPARTMENT OF TRANSPORTATION.

2. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.

3. LIGHTING SHALL NOT TRESPASS ON ADJACENT PROPERTIES.







SIGN NOTES:

PRAMITOL C SOIL STERLANT

ALL SIGNS SHALL COMPLY WITH CURRENT MMUTCD STANDARDS. ALL TRAFFIC CONTROL SIGNS WILL COMPLY

WITH FHWA STANDARD ALPHABET SERIES.

ALL TRAFFIC CONTROL SIGNS WILL USE HIGH INTENSITY PRISMATIC (HIP) SHEETING TO MEET FHWA RETRO-REFLECTIVITY REQUIREMENTS.

ORION TOWNSHIP HAS NO RESPONSIBILITY TO IMPROVE OR MAINTAIN THE PRIVATE STREETS WITHIN THE PROPERTY DESCRIBED IN THIS PLAN.

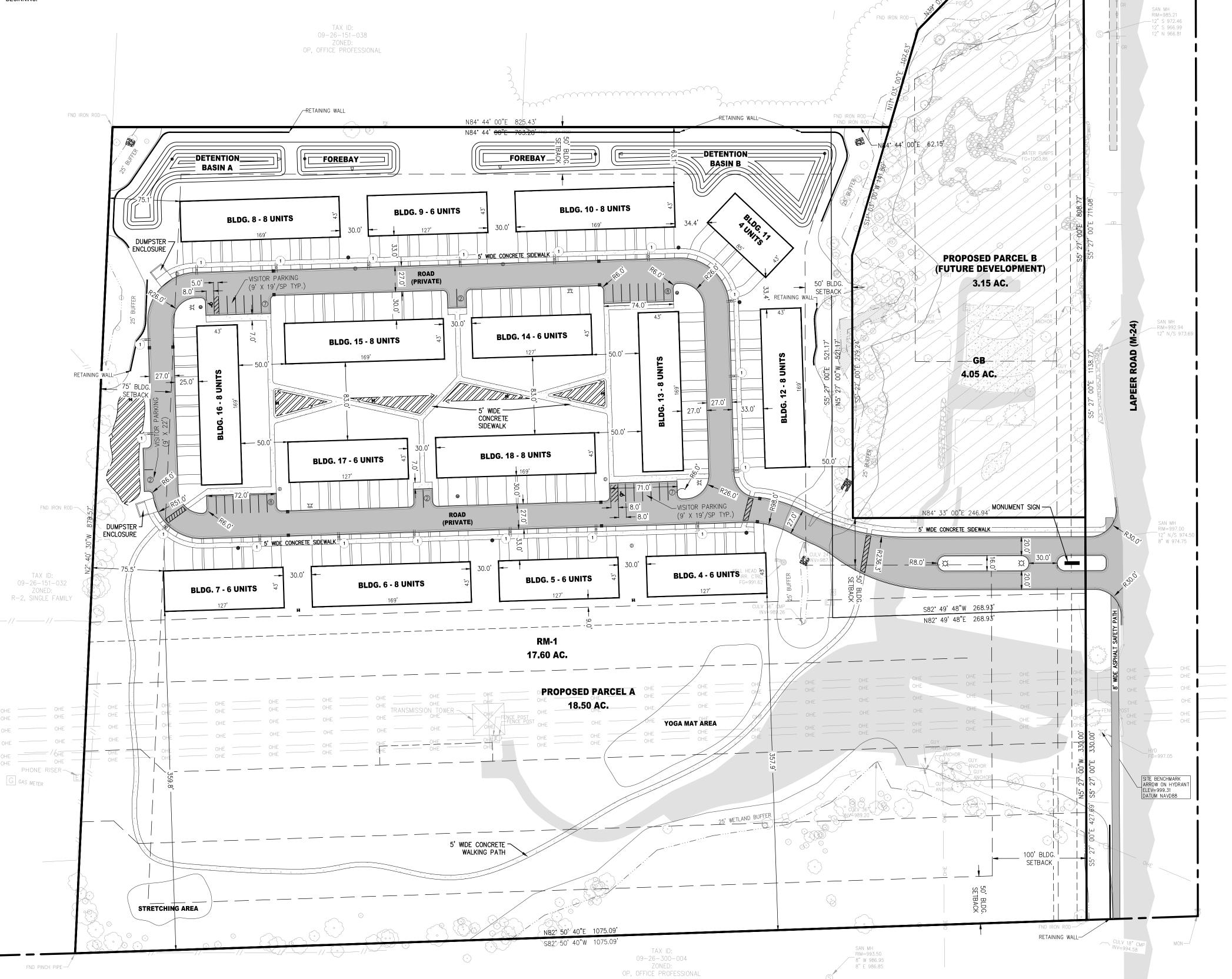
BENCHMARKS:

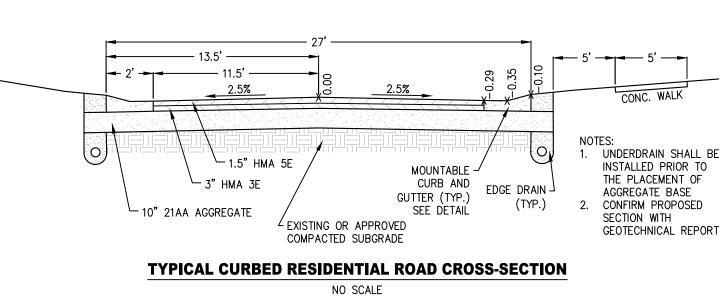
(NAVD 88 DATUM) BENCHMARK #124

BENCHMARK SET ON HYDRANT ARROW WEST OF LAPEER ROAD (M-24), NEAR SOUTHEAST CORNER OF SUBJECT PARCEL ELEV.=999.31

BENCHMARK #126

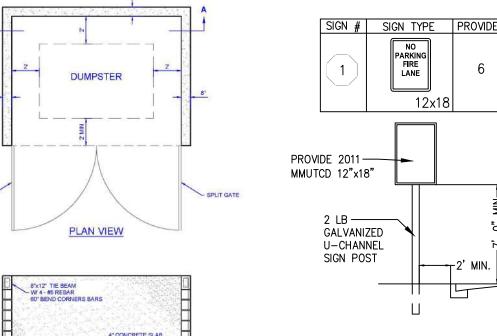
BENCHMARK SET ON HYDRANT ARROW WEST OF LAPEER ROAD (M-24), NEAR NORTHEAST CORNER OF SUBJECT PARCEL ELEV.=984.80



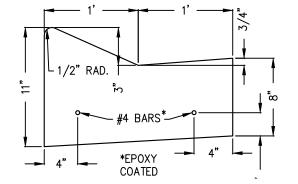


1. RESTORE ALL DISTURBED AREAS WITH 3" TOPSOIL, CLASS A SEED & MULCH 2. SUBGRADE SHALL BE TREATED WITH

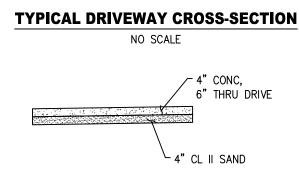
TYPICAL SAFETY PATH CROSS-SECTION NO SCALE



DUMPSTER ENCLOSURE DETAIL NO SCALE



MOUNTABLE CURB AND GUTTER DETAIL



TYPICAL SIDEWALK CROSS-SECTION

6" THRU WALK

DATE: 6/28/2022

REVISIONS

HE LOCATIONS OF EXISTIN INDERGROUND UTILITIES ARE SHOWN II AN APPROXIMATE WAY ONLY AND HAV

OT BEEN INDEPENDENTLY VERIFIED B

THE OWNER OR ITS REPRESENTATIVE

THE CONTRACTOR SHALL DETERMIN

THE EXACT LOCATION OF ALL EXISTING

UTILITIES BEFORE COMMENCING WOR

AND AGREES TO BE FULLY RESPONSIBLE

FOR ANY AND ALL DAMAGES WHICH

CONTRACTOR'S FAILURE TO EXACTL

OCATE AND PRESERVE ANY AND

UNDERGROUND UTILITIES.

now what's **below**.

ONSTRUCTION SITE SAFETY IS

RESPONSIBILITY OF THE CONTRACTO

NEITHER THE OWNER NOR THE ENGINEER

SHALL BE EXPECTED TO ASSUME AN

RESPONSIBILITY FOR SAFETY OF T

WORK, OF ANY NEARBY STRUCTURES, C

OF ANY OTHER PERSONS.

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service in respect of the Project and an

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adaptation by The Umlor Group (UG

be at Users sole risk and without liability

or legal exposure to UG and User shall

all claims, damages, losses and expenses including attorneys' fee

arising out of or resulting therefrom. Any

such verification or adaptation will entitl

G to further compensation at rates t be agreed upon by User and UG.

ndemnify and hold harmless UG from

for the specific purposes intended w

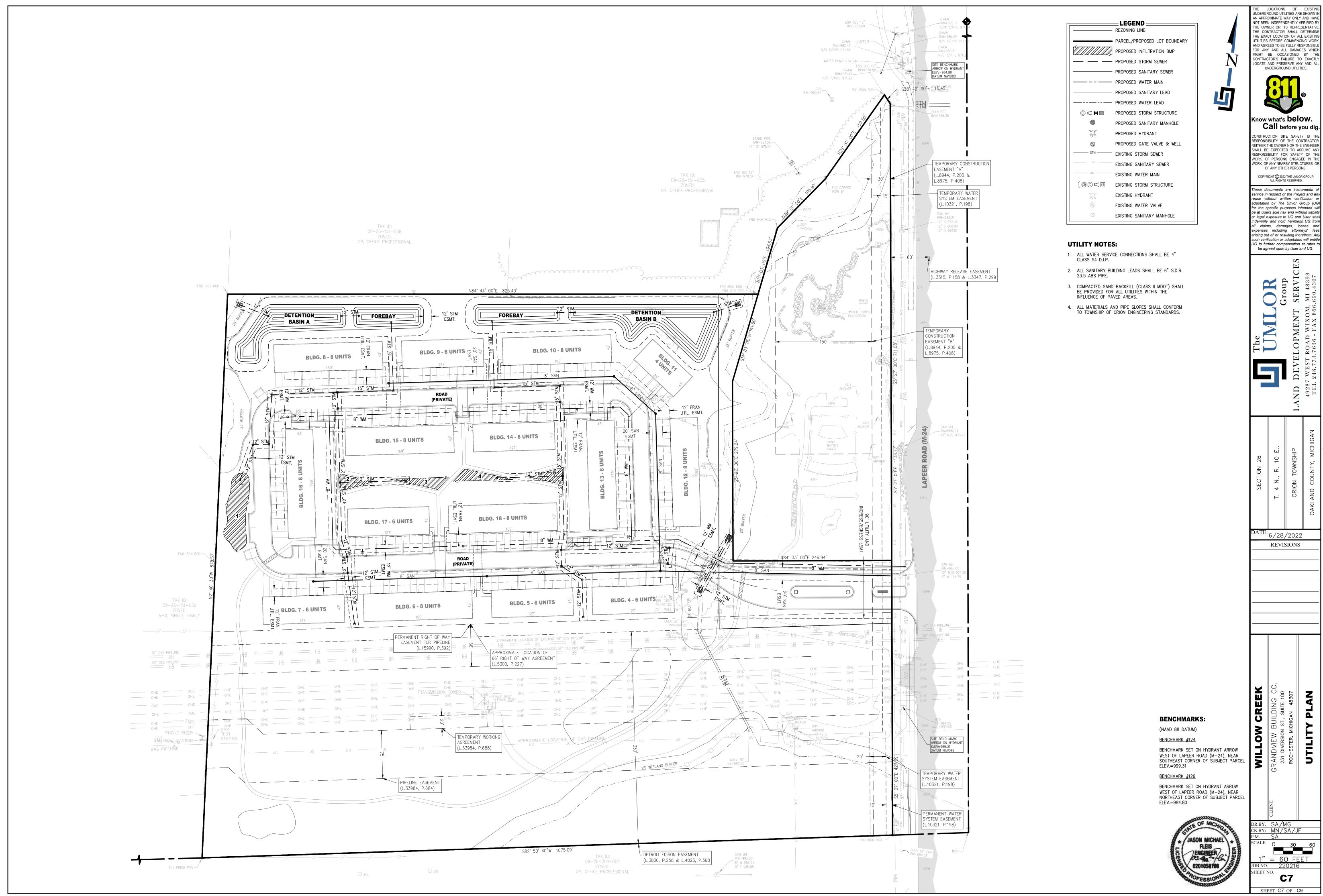
WORK, OF PERSONS ENGAGED IN TH

Call before you dig.

MIGHT BE OCCASIONED BY

KBY: MN/SA/JF = 60 FFFTC6

SHEET C6 OF C9



LEGAL DESCRIPTION AS SURVEYED

PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26, TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER: 55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 2'40'30" WEST, 878.57 FEET; THENCE NORTH 84*44'00" EAST, 825.43 FEET; THENCE NORTH 11*03'00" EAST, 107.63 FEET; THENCE NORTH 39°01'00" EAST, 106.90 FEET; THENCE NORTH 29°51'00" EAST, 159.50 FEET; THENCE SOUTH 38°42'00" EAST, 16.49 FEET; THENCE SOUTH 5°27'00" EAST, 1,138.77 FEET; THENCE SOUTH 82°50'40" WEST, 1,075.09 FEET TO THE POINT OF BEGINNING.

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LEGAL DESCRIPTION ZONED GB

R-2, SINGLE FAMYLY

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LEGAL DESCRIPTION PARCEL A

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LEGAL DESCRIPTION PARCEL B

09-26-151-038

OP, OFFICE PROFESSIONAL

RETAINING WALL 31B -

BLDG. 15 - 8 UNITS

BLDG. 6 - 8 UNITS

FG: 993.00

+++ FOREBAY

BLDG. 8 - 8 UNITS

BASIN A

BLDG. 7 - 6 UNITS

PART OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 26, TOWN 4 NORTH, RANGE 10 EAST, DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHEAST CORNER OF LOT 5 OF VERNIER'S FARMS, AS RECORDED IN LIBER: 55 PAGE 49 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 82°50'40" EAST 1,075.09 FEET; THENCE NORTH 05'24'00" WEST 427.69 FEET TO THE POINT OF BEGINNING: THENCE NORTH 84°33'00" EAST 246.94 FEET; THENCE SOUTH 05°27'00" EAST 279.24 FEET; THENCE SOUTH 11°03'00" WEST 141.81 FEET; THENCE NORTH 11°03'00" EAST 107.63 FEET; THENCE NORTH 39°01'00" EAST 106.90 FEET; THENCE NORTH 29°51'00" EAST 159.50 FEET; THENCE SOUTH 38°42'00" EAST 16.49 FEET; THENCE SOUTH 05°27'00" EAST 711.08 FEET TO THE

N84° 44' 00"F 825 43

BLDG. 9 - 6 UNITS

FG: 992.00

FOREBAY_

BLDG. 14 - 6 UNITS

FG: 993.50

BLDG, 5 - 6 UNITS

17.60 AC.

BLDG. 10 - 8 UNITS

FG: 992.50

SESC NOTES:

N/S T/PIPE

ARROW ON HYDRANT

12" S 966.99 12" N 966.81

SITE BENCHMARK

DATUM NAVD88

&\\$\\\3\\\42'\\00"E\\\16\\49"\\

- 1. IF DEWATERING IS NECESSARY DURING CONSTRUCTION AND ENGINEERED DEWATERING PLAN MUST BE SUBMITTED TO DEWATERING PLAN, IF NECESSARY SHALL CONSIDER MUNICIPAL REQUIREMENTS AND IMPACTS TO ADJACENT PROPERTIES. RELATED WORK SHALL NOT COMMENCE UNTIL NECESSARY, THE DEWATERING PLAN SHALL CONSIDER PREVIOUS REVIEW COMMENTS AND IMPACTS TO ADJACENT PROPERTIES. RELATED WORK SHALL NOT COMMENCE UNTIL
- 2. IT IS THE DEVELOPER'S RESPONSIBILITY TO GRADE AND
- 3. CATCH BASIN INLET FILTERS SHALL BE INSTALLED ON
- RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE DONE AS NEEDED OR DIRECTED BY THE ENGINEER AND\OR COUNTY STAFF.
- WHERE NECESSARY OR DIRECTED BY THE ENGINEER
- 6. CONTRACTOR SHALL OBTAIN SOIL EROSION PERMIT PRIOR TO ANY
- WORK UNDERTAKEN ON THIS SITE SHALL BE IN ACCORDANCE WITH LOCAL JURISDICTION.
- 8. CONTRACTOR SHALL MAINTAIN ALL SOIL EROSION CONTROL MEASURES. THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT. SURROUNDING PAVED AREAS SHALL BE POWER BROOMED AS NECESSARY TO REMOVE
- CHANGES IN GRADES OR CROSS SLOPES, LOW SPOTS, OR HAZARDOUS CONDITIONS. GRADING AT THE BOUNDARIES SHALL BE DONE SO AS NOT TO OBSTRUCT THE RUNOFF OF STORM
- 12. ALL SOIL EROSION CONTROL PRACTICES TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE AND MAINTAINED FOR ONE YEAR AFTER COMPLETION OF THE APPROVED PLAN OR UNTIL SUCH MEASURES ARE PERMANENTLY STABILIZED AS DETERMINED BY THE TOWNSHIP
- WITHIN TEN (10) DAYS AFTER FINAL GRADING. MULCH TO BE USED AS NECESSARY FOR PROTECTION UNTIL SEEDING IS
- GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION (I.E., STEEP SLOPES) WILL RECEIVE APPROPRIATE VEGETATIVE COVER AS
- DEEMED NECESSARY TO PREVENT EROSION OR CONTROL SEDIMENT BEYOND THOSE MEASURES SHOWN ON THE APPROVED PLANS SHALL BE INSTALLED OR EMPLOYED AT THE DIRECTION OF THE ENGINEER.
- RETAINING WALL TO BE RESTORED WITH WETLAND, WETLAND EDGE AND/OR UPLAND MIX AS NECESSARY.

- REASONABLE DISTANCE FROM SITE.

- MUD TRACKING FROM THE SITE.
- WATER FROM ADJACENT PROPERTIES.
- THE LANDSCAPING PLAN. ALL OTHER DISTURBED AREAS SHALL BE TOPSOILED, HYDROSEEDED, FERTILIZED AND MULCHED.
- 11. THE CONTRACTOR IS REQUIRED TO HAVE A COPY OF THE CERTIFIED PLAN AT THE CONSTRUCTION SITE.
- 13. PERMANENT VEGETATION TO BE SEEDED ON ALL EXPOSED AREAS ESTABLISHED.
- 14. IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH
- 15. DURING CONSTRUCTION, ANY ADDITIONAL CONTROL MEASURES AS
- 16. TEMPORARY DISTURBANCES DUE TO INSTALLATION OF PROPOSED

LEGEND =

— PROPOSED STORM SEWER

REZONING LINE

PROPOSED ASPHALT

PROPOSED CONCRETE

PROPOSED DRAINAGE ARROW

PROPOSED STORM STRUCTURE

PROPOSED SANITARY MANHOLE

PROPOSED GATE VALVE & WELL

PROPOSED HYDRANT

EXISTING STORM SEWER

PR. SESC LEGEND —

TEMPORARY ACCESS STONE DRIVE

SOIL CLASSIFICATION BORDER

INLET PROTECTION FILTER

EXISTING STORM STRUCTURE

- — 900 — — EXISTING CONTOURS

NOT BEEN INDEPENDENTLY VERIFIED B THE OWNER OR ITS REPRESENTATIVE THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING PARCEL/PROPOSED LOT BOUNDARY UTILITIES BEFORE COMMENCING WOR AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY PROPOSED INFILTRATION BMP



now what's **below.**

HE LOCATIONS OF EXISTIN INDERGROUND UTILITIES ARE SHOWN II AN APPROXIMATE WAY ONLY AND HAV

ONSTRUCTION SITE SAFETY IS 1 RESPONSIBILITY OF THE CONTRACTO NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME AN RESPONSIBILITY FOR SAFETY OF T WORK, OF PERSONS ENGAGED IN TH WORK, OF ANY NEARBY STRUCTURES, C OF ANY OTHER PERSONS.

Call before you dig

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be agreed upon by User and UG.

DISTURBED AREA:

— X — SILT FENCE

DISTURBED AREA = ± 9.5 ACRES

LAPEER ROAD (M-24).

PUBLIC UTILITIES.

GRADING NOTES: 1. APPROACH GRADING SHALL MATCH ELEVATIONS AT

- 2. ALL CULVERT END SECTIONS MUST BE PROVIDED WITH GROUT RIPRAP.
- 3. IT IS THE DEVELOPER'S RESPONSIBILITY TO GRADE AND STABILIZE DISTURBANCES DUE TO THE INSTALLATION OF
- 4. ALL WORK WITHIN THE RIGHT-OF-WAY OF LAPEER ROAD (M-24) SHALL MEET OR EXCEED ROAD COMMISSION FOR OAKLAND COUNTY AND MICHIGAN DEPARTMENT OF

SOIL MAP UNIT LEGEND:

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10B	Marlette sandy loam, 1 to 6 percent slopes	1.5	7.1%
13B	Oshtemo-Boyer loamy sands, 0 to 6 percent slopes	16.8	77.3%
13C	Oshtemo-Boyer loamy sands, 6 to 12 percent slopes	0.8	3.5%
15E	Spinks loamy sand, 12 to 35 percent slopes	0.1	0.4%
27	Houghton and Adrian mucks	2.0	9.1%
31B	Metea loamy sand, 0 to 6 percent slopes	0.2	0.8%
48	Gilford sandy loam, till plain, 0 to 2 percent slopes	0.2	1.1%
W	Water	0.1	0.6%
Totals for Area of Interest	,	21.7	100.0%

SESC MEASURES LEGEND:

6	SEEDING WITH MULCH AND/OR MATTING	FACILITATES ESTABLISHMENT OF VEGETATIVE COVER EFFECTIVE FOR DRAINAGEWAYS WITH LOW VELOCITY EASILY PLACED IN SMALL QUANTITIES BY INEXPERIENCED PERSONNEL SHOULD INCLUDE PREPARED TOPSOIL BED
7	HYDRO-SEEDING	EFFECTIVE ON LARGE AREAS MULCH TACKING AGENT USED TO PROVIDE IMMEDIATE PROTECTION UNTIL GRASS IS ROOTED SHOULD INCLUDE PREPARED TOPSOIL BED
16	CURB AND GUTTER	KEEPS HIGH VELOCITY RUNOFF ON PAVED AREAS FROM LEAVING THE PAVED SURFACE COLLECTS AND CONDUCTS RUNOFF TO ENCLOSED DRAINAGE SYSTEM OR PREPARED DRAINAGEWAY
36	CATCH BASIN, DRAIN INLET	COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF MAY USE FILTER CLOTH OVER INLET
54	FILTER FENCING	USES GEOTEXTILE FABRIC AND POSTS OR POLES EASY TO CONSTRUCT AND LOCATE AS NECESSARY

DATE: 6/28/2022

SHEET C8 OF C9

09-26-300-004

RETAINING WALL

BASIN B

BLDG. 4 - 6 UNITS

FG: 993.90 🔊

PROPOSED PARCEL B

(FUTURE DEVELOPMENT)

ARROW ON HYDRAN ELEV=999.31 DATUM NAVD88

THE TOWNSHIP ENGINEER FOR REVIEW AND APPROVAL. THE PLAN APPROVALS HAVE BEEN GRANTED. IF DEWATERING IS

PLAN APPROVALS HAVE BEEN GRANTED.

STABILIZE DISTURBANCES DUE TO THE INSTALLATION OF PUBLIC UTILITIES.

EXISTING ROADWAYS ALONG CONSTRUCTION ROUTE FOR A 4. STREET SWEEPING AND DUST CONTROL ARE THE

- 5. DIVERSION BERMS OR TERRACING SHALL BE IMPLEMENTED
- AND\OR COUNTY STAFF.
- 7. ALL GRADING, EROSION, AND SEDIMENT CONTROL AND RELATED
- 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MATCHING EXISTING FACILITIES TO AVOID ANY ABRUPT OR APPARENT
- 10. SOD AND HYDROSEEDING SHALL BE DONE IN ACCORDANCE WITH
- STATED IN THE CONSTRUCTION SEQUENCE.

TRANSPORTATION SPECIFICATIONS.

STORMWATER MANAGEMENT CALCULATIONS **DETENTION BASIN A**

Weighted C Factor					
Surface Type	Area (sf)	C*	Area x C (sf)]	*Township of Orio
Pavement (Asphalt & Concrete)	4 6132.76	0.95	438 26.12	1	Engineering
Roofs	39990.00	0.90	35991.00]	Standards VII.B.i
Lawns (HSG A)	101226.93	0.15	15184.04	1	
	Σ	(Area*C) =	95001.158	sf	
		Σ(Area) =	187349.69	sf	
Weir	whited $C = \Sigma(Area^*C)$	$I \Sigma (Area) =$	0.51		

Weighted C = $\Sigma(Area^*C) / \Sigma(Area) = 0.51$

Township of Orion Engineering Standards

Contributing Area (A) = 4.30 acres Runoff Coefficient "C" = 0.51 (VII.B.iv.c)

VIII.B.1: Channel Protection Volume Control (CPVC) (Vcp-r) Vep-r = 4,719°C*A = 10291.79 cf

VIII.B.3: Extended Detention Volume (Ved) Ved= 6,897*C*A = 15041.85 cf

VIII.B.5: Water Quality Control (Qwq)

VIII.B.6: Water Quality Control (Vf) Vf = 0.15*Vwq = 545*C*A = 1188.60 cf

VIII.B.7: Detention and Flood Control Allowable Variable Release Rate

Qvrr = 1.1055 - 0.206*In(A) = 0.80 cfs/acre* *Site is not located in a drainage district per Orion Allowable 100-Year Peak Flow Discharge Rate Township Drainage District Q100p = $Qvrr^*A = 3.46 cfs$ Map (Appendix D)

Tc = 20 min

VIII.B.8: 100-year Detention Volume 100-Year Runoff Volume

V100r = 18985*C*A = 41404.89 cf 100-Year Peak Inflow Rate $C^{1100*A} = 11.82$ cfs 1100 = 83.3 / (Tc + 9.17) \(^10.81 = \quad 5.42 \) in/hr

Stroage Curve Factor R = [0.206-0.15ln(Q100p/Q100in)] = 0.39

Infiltration Storage Volume = Provided CVPC = Vcp-p

Infiltration Trench Area (sf)

Storage Volume (cf) Average Design Infiltration Vol. Infiltration Rate | During Storm Reduction (cf) Surface Sand
 Surface
 Sand
 (in/hr)*
 (cf)
 Reduction (cf)

 3414.04
 1707.02
 1024.21
 0.50
 853.51
 3584.74

 758.61
 379.30
 227.58
 0.50
 189.65
 796.54

 866.78
 433.39
 260.03
 0.50
 216.70
 910.12
 5291.40

100-Year Detention Basin Size V100d = (V100r*R) - Vcp-p = 10865.13 cf Vcp-p = Provided CVPC = 5291.40 cf

*Infiltration rates and areas subject to change based on geotechnical investigation test results.

Preliminary Basin Sizing

Forebay		Required=	1188.60	cf
Elevation (ft)	Area (sft)	Depth (ft)	Vol (cft)	Cumulative Vol (cft)
984.00	480.98	0.00	0.00	0.00
985.00	1238.22	1.00	859.60	859.60
986.00	2120.06	1.00	1679.14	2538 74
987.00	3105.86	1.00	2612.96	5151 70

V100d > Ved ? NO

Therefore, use Ved = 15041.85 cf

Detention		Required =	15041.85	cf		
Elevation (ft)	Area (sf)	Depth (ft)	Vol (cf)	Cumulative Vol (cf)	Vol. Incl. Forebay	
983.00	135.3 1	0.00	0.00	0.00	0.00	
984.00	998.24	1.00	566.78	566.78	566.78	
985.00	2353.84	1.00	1676.04	2242 81	3102.41	
986.00	3994.72	1.00	3174.28	5417.09	7955.83	
987.00	5739.85	1.00	4867.29	10284.38	15436.07	$> V_{EI}$

DETENTION BASIN B

Surface Type	Area (sf)	C.	Area x C (sf)		"Township of Orion
Pavement (Asphalt & Concrete)	67654.56	0.95	64271.83	1	Engineering
Roofs	54567.00	0.90	49110.30	1	Standards VII.B.iv.d
Lawns (HSG A)	149662.82	0 15	22449.42	1	
		Σ(Area*C) =	135831.56	sf	
		Σ(Area) =	271884.39	sf	

Weighted C = $\Sigma(Area^*C) / \Sigma(Area) = 0.50$

Township of Orion Engineering Standards

Contributing Area (A) = 6.24 acres Runoff Coefficient "C" = 0.50 (VII.B.iv.c)

VIII.B.1: Channel Protection Volume Control (CPVC) (Vcp-r) $V_{cp-r} = 4.719^{+}C^{+}A = 14715.09 \text{ cf}$

VIII.B.3: Extended Detention Volume (Ved) Ved= 6,897*C*A = 21506.66 cf

VIII.B.5: Water Quality Control (Qwq) N/A

VIII.B.6: Water Quality Control (Vf) Vf = 0.15*Vwq = 545*C*A = 1699.45 cf

VIII.B.7: Detention and Flood Control

Allowable Variable Release Rate Qvr = 1,1055 - 0,206*In(A) = 0.73 cfs/acre* Allowable 100-Year Peak Flow Discharge Rate $Qvrr^*A = 4.55$ cfs

VIII.B.8: 100-year Detention Volume

100-Year Runoff Volume V100r = 18985*C*A = 59200.23 cf 100-Year Peak Inflow Rate

Q100in = $C^*1100^*A = 16.90$ cfs 1100 = 83.3 / (Tc + 9.17)^0.81 = 5.42 in/hr

Tc = Tc = 20 min Stroage Curve Factor

R = [0.206-0.15ln(Q100p/Q100in)] = 0.40

Infiltration Storage	Volume = F	Provided C	VPC = Vc			
Infilmation Transla	A === (0.A	Storage Ve	olume (cf)	Average Design	Infiltration Vol.	Total Volume
Infiltration Trench	Area (sf)	Surface	Sand	Infiltration Rate (in/hr)*	(cf)	Reduction (cf)
4	866.78	433.39	260.03	0.50	216.70	910.12
5	758.66	379.33	227.60	0.50	189.67	796 59

*Site is not located in a drainage district per

Drainage District Map (Appendix D)

Orion Township

100-Year Detention Basin Size $V100d = (V100r^2R) - Vcp-p = 22150.98 cf$

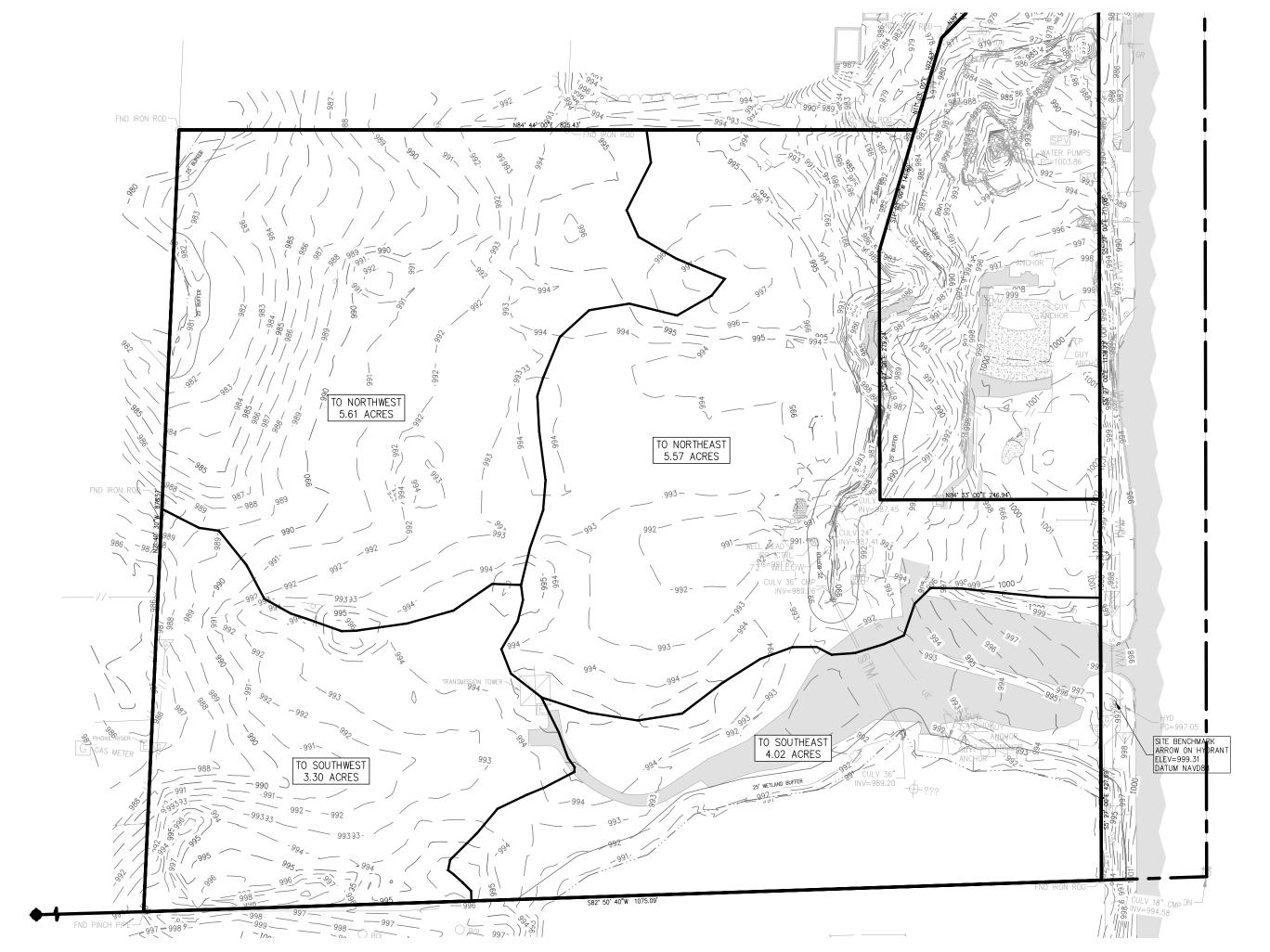
Therefore, use V100d = 22150.98 cf

*Infiltration rates and areas subject Provided CVPC = 1706.71 cf to change based on geotechnical investigation test results. V100d > Ved ? YES

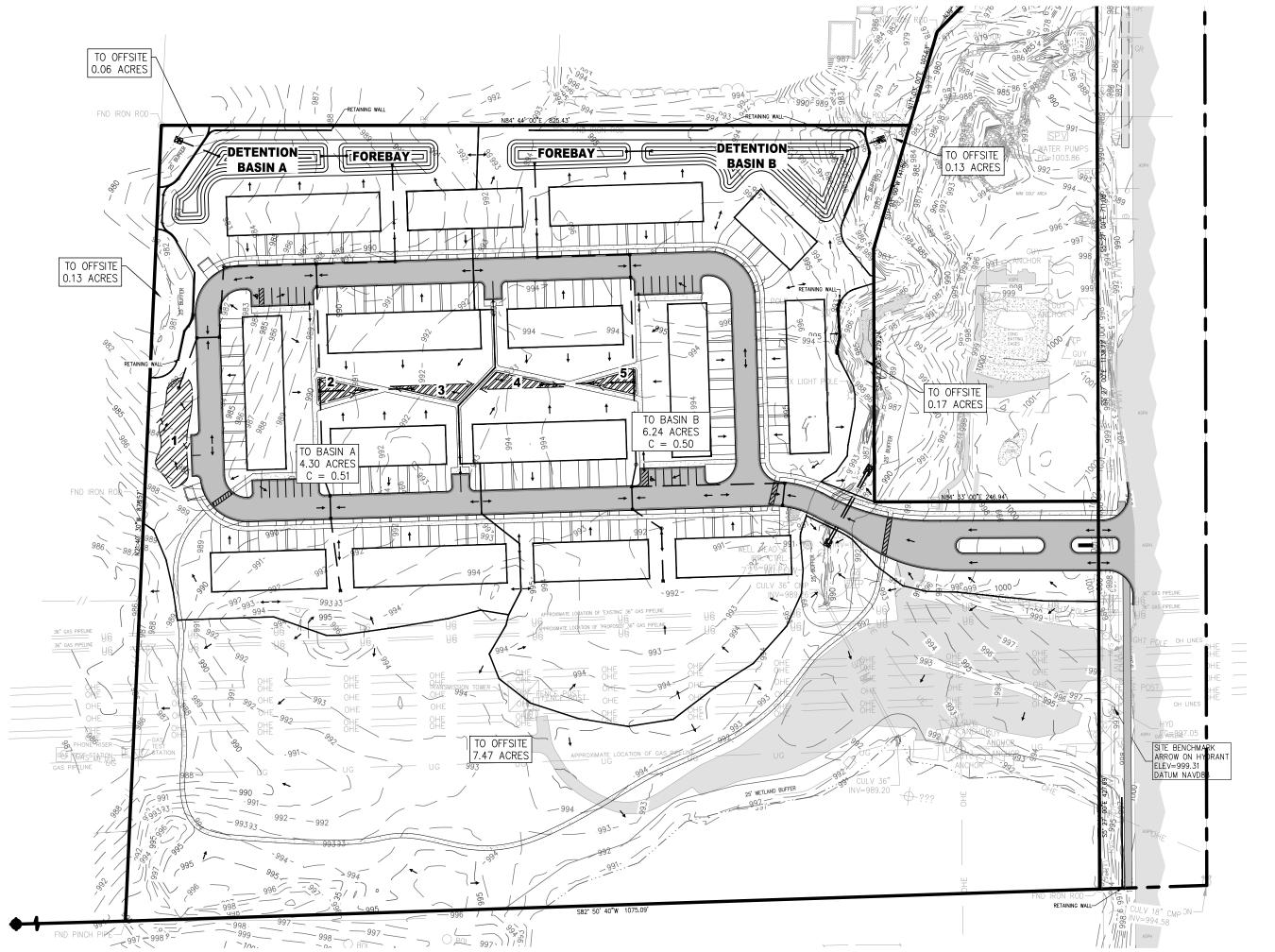
Preliminary Basin Sizing

Forebay		Required=	1699.45	cf
Elevation (ft)	Area (sft)	Depth (ft)	Vol (cft)	Cumulative Vol (cft)
984.00	857.38	0.00	0.00	0.00
985.00	1900.03	1.00	1378.70	1378.70
986.00	3046.65	1.00	2473.34	3852.05

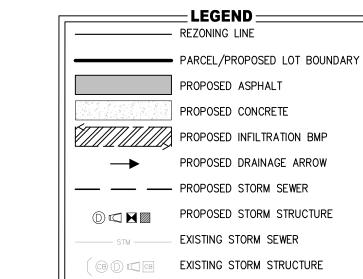
Detention		Required =	21506.66	cf	
Elevation (ft)	Area (sf)	Depth (ft)	Vol (cf)	Cumulative Vol (cf)	Vol. Incl. Forebay
982.00	1353.38	0.00	0.00	0.00	0.00
983.00	2522.71	1.00	1938.04	1938.04	1938 04
984.00	4272.78	1.00	3397.74	5335 78	5335.78
985.00	6464.35	1.00	5368.56	10704.35	12083.05
986.00	8765.61	1.00	7614.98	18319.33	22171.38

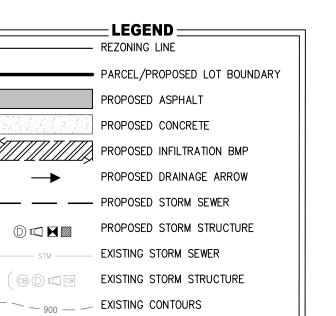


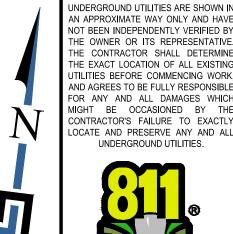




PROPOSED SITE DRAINAGE PLAN SCALE: 1" = 100'







(now what's **below.** Call before you dig.

THE LOCATIONS OF EXISTIN

ONSTRUCTION SITE SAFETY IS 1 RESPONSIBILITY OF THE CONTRACTOR NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME AN' RESPONSIBILITY FOR SAFETY OF T WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, C

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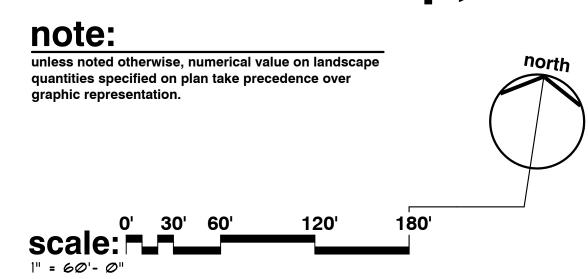
DATE: 6/28/2022 REVISIONS

1" = 100 FFFT

SHEET C9 OF C9



Orion Township, Michigan



landscape requirements:

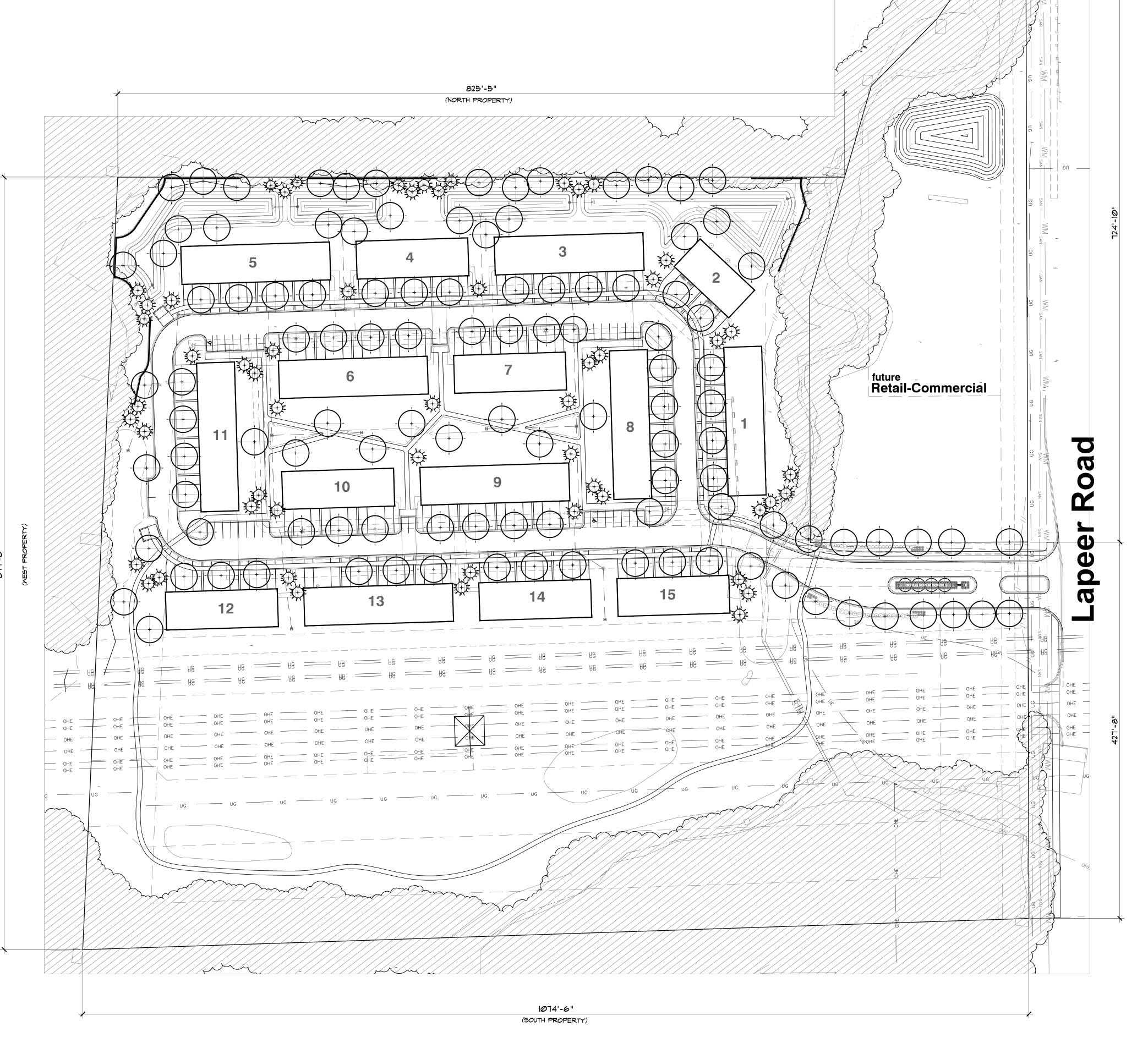
parking	REQUIRED	PROVIDED
TOTAL NO. OF PARKING SPACES PROVIDED	32	
TWENTY (20) SQ.FT / PER I-SPACE (32 SPACES \times 20 SQ.FT = 640 SQ.FT)		
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 200 SQ.FT	3	3
(640 SQ.FT / 200 SQ.FT = 3.2 TREES)		
site landscape	REQUIRED	PROVIDED
SITE LANDSCAPE TOTAL AREA OF OPEN SPACE	REQUIRED 336,322	PROVIDED
•		PROVIDED

screening (north)	REQUIRED	PROVIDED
TOTAL LN.FT. OF CONFLICTING PROPERTY LINE	825.4 <u>+</u>	
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 30 LN.FT	25	25
(825 LN.FT. / 30 LN.FT. = 24.5 TREES)		
screening (south)	REQUIRED	PROVIDED
TOTAL LN.FT. OF CONFLICTING PROPERTY LINE	1075 <u>+</u>	
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 30 LN.FT	36	('A')
(1075 LN.FT. / 30 LN.FT. = 35.83 TREES)		EXISTING WOOD AND VEGETATION
screening (west)	REQUIRED	PROVIDED
TOTAL LN.FT. OF CONFLICTING PROPERTY LINE	878' <u>+</u>	
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 30 LN.FT	29	15 + ('B')
(878 LN.FT. / 30 LN.FT. = 29.23 TREES)		EXISTING MOOD AND VEGETATION

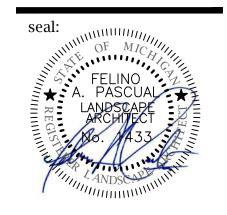
- 'A' EXISTING TREES AND VEGETATION SAVED TO BE USED TOWARD SCREENING REQUIREMENT.
- 'B' EXISTING TREES SAVED TO BE USED TO SUPPLEMENT TOWARD SCREENING TREE REQUIREMENT.

sheet index

- LS-1 OVERALL PLAN VIEW
- LS-2 GENERAL LANDSCAPE PLAN
- LS-3 BUILDING FOUNDATION PLAN
- LS-4 PLANT DETAILS & LANDSCAPE NOTES
- LS-5 SOD, IRRIGATION, & SEED PLAN







client:
GRANDVIEW
BUILDING CO.

251 Diversion St. Suit 100 Rochester, Michigan

project:
WILLOW
CREEK

A PLANNED
MIXED-USE RETAIL &
RESIDENTIAL
COMMUNITY

project location:
Orion Township ,
Michigan
Lapeer Road

sheet title:

OVERALL PLAN VIEW

job no./issue/revision date:

LS22.075.06 SPA 6-30-2022

drawn by: **JP, DK**

checked by:

date: **6-10-2022**

notice:

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BEFORE YOU [
CALL MISS DI
1-800-482-7
For free location of public utility lin

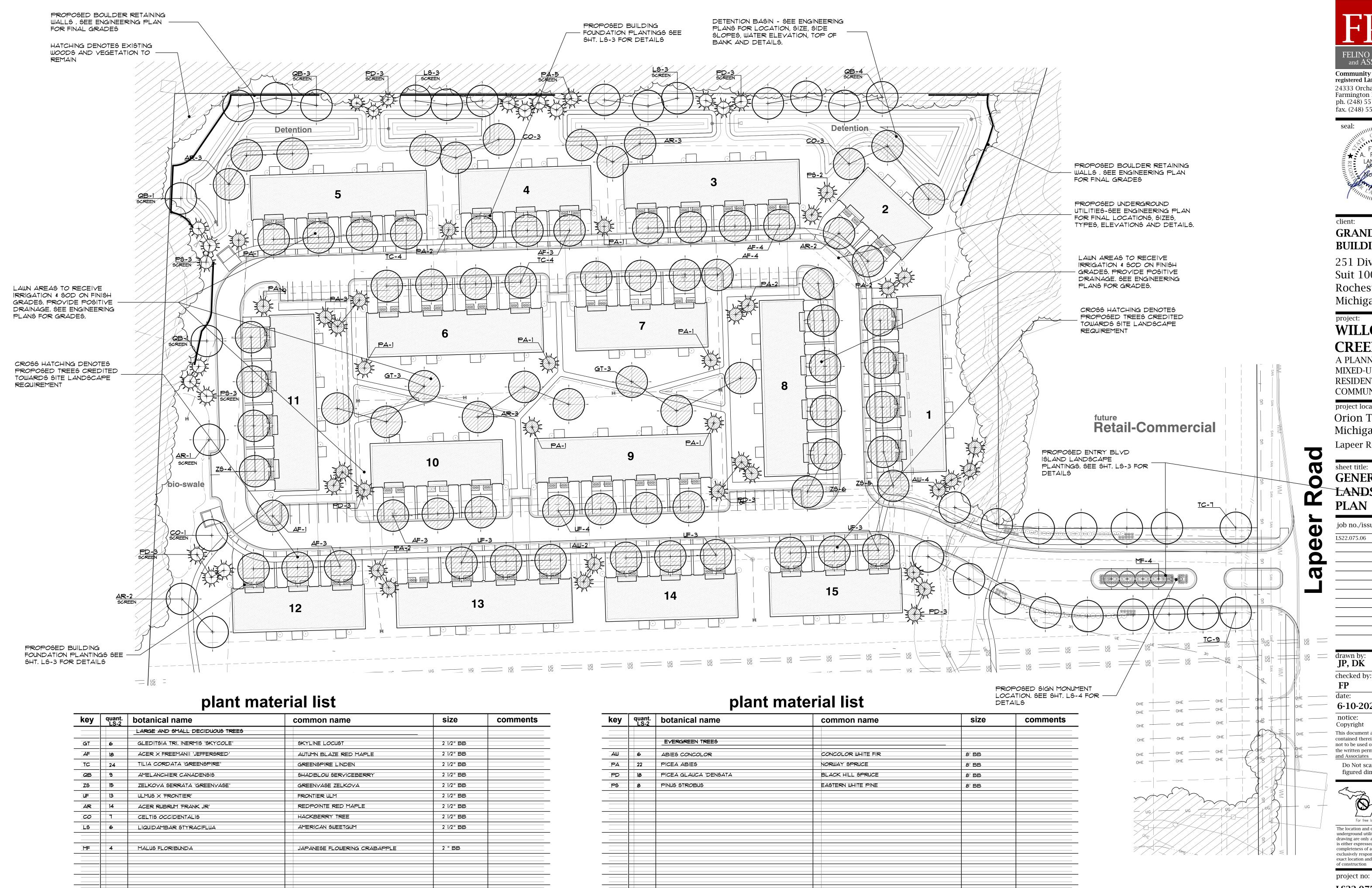
The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start

project no: LS22.075.06

sheet no:

LS-1

of 5



FELINO A. PASCUAL and ASSOCIATES

Community Land Planner and registered Landscape Architect 24333 Orchard Lake Rd, Suite G Farmington Hills, MI 48336 ph. (248) 557-5588 fax. (248) 557-5416



GRANDVIEW BUILDING CO.

251 Diversion St. **Suit 100** Rochester, Michigan

WILLOW CREEK

A PLANNED MIXED-USE RETAIL & RESIDENTIAL COMMUNITY

project location: Orion Township, Michigan

Lapeer Road

sheet title: **GENERAL** LANDSCAPE **PLAN**

job no./issue/revision date: LS22.075.06 SPA 6-30-2022

drawn by: JP, DK

6-10-2022

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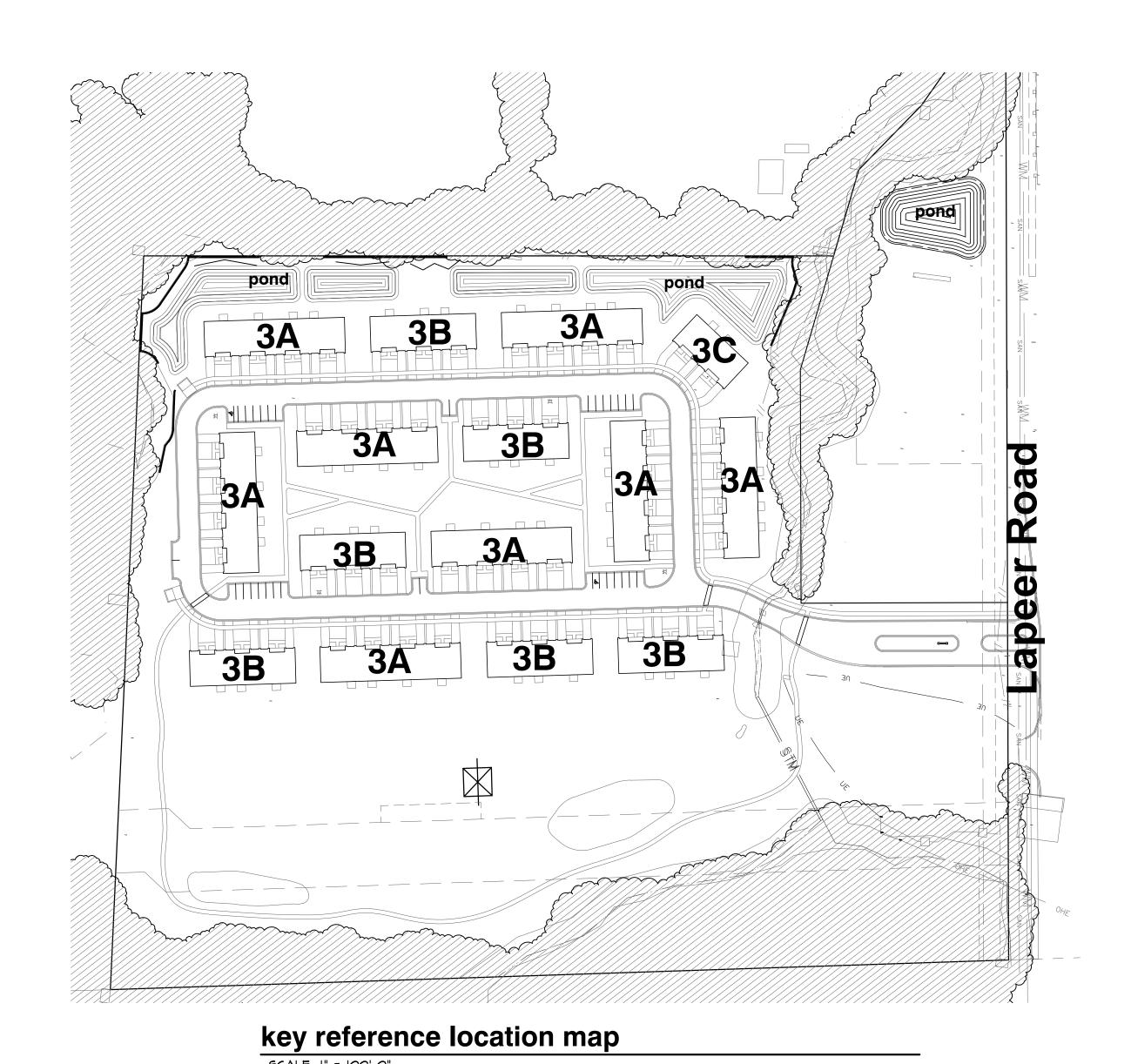
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The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start

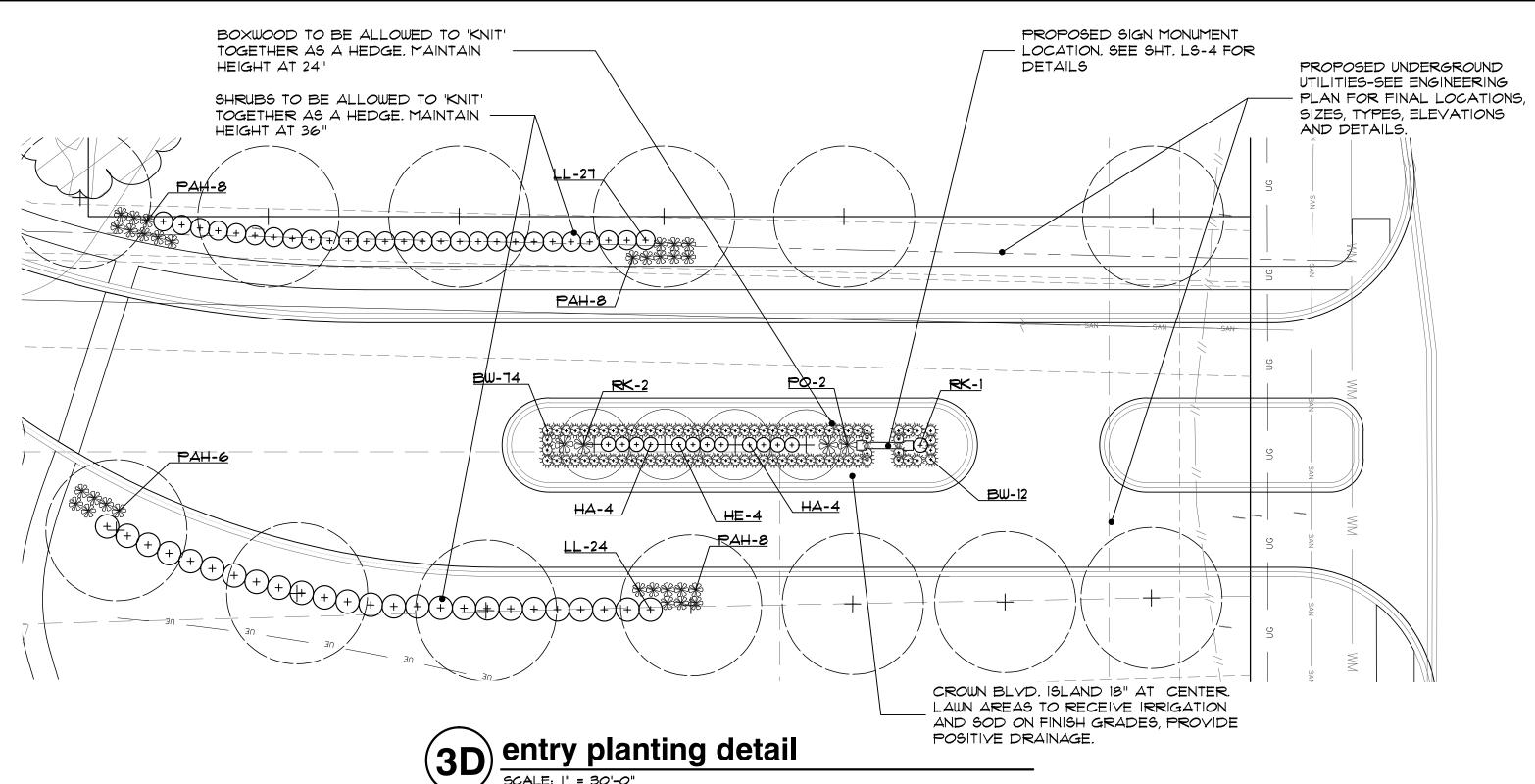
project no: LS22.075.06

sheet no:



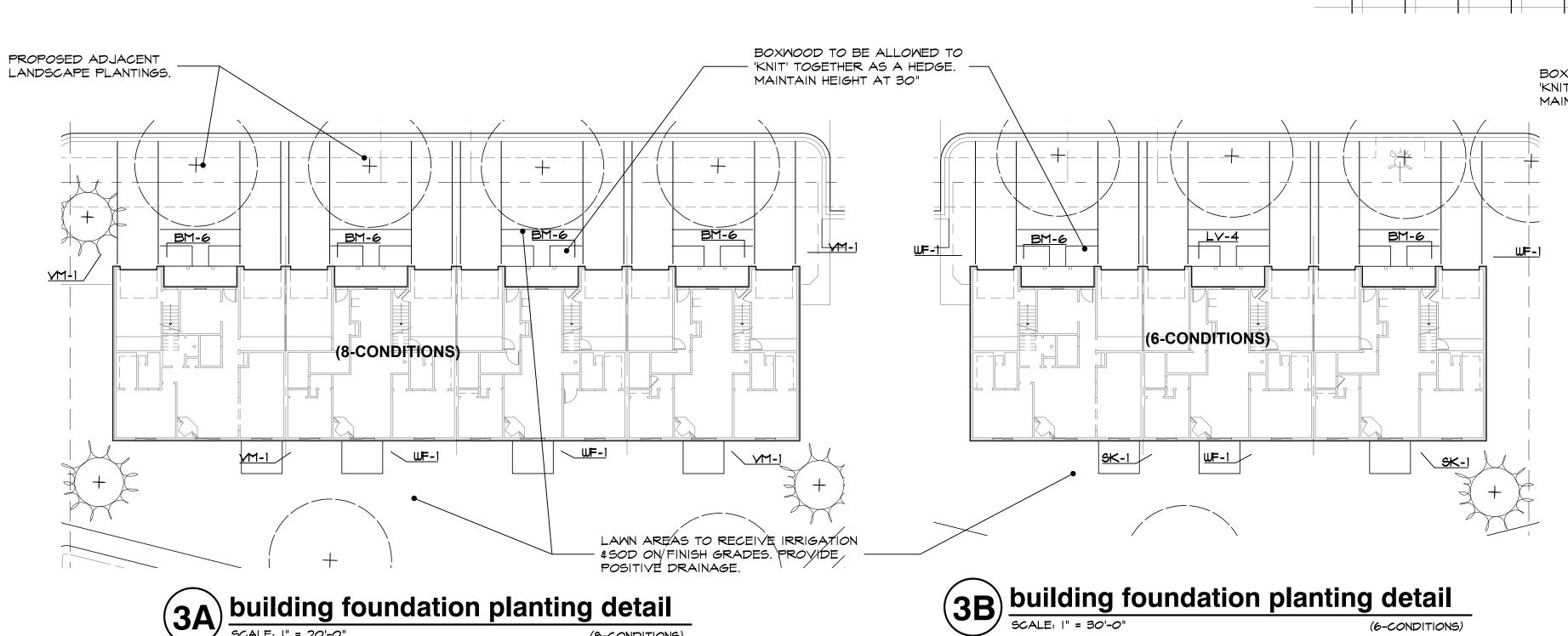
building foundation planting detail

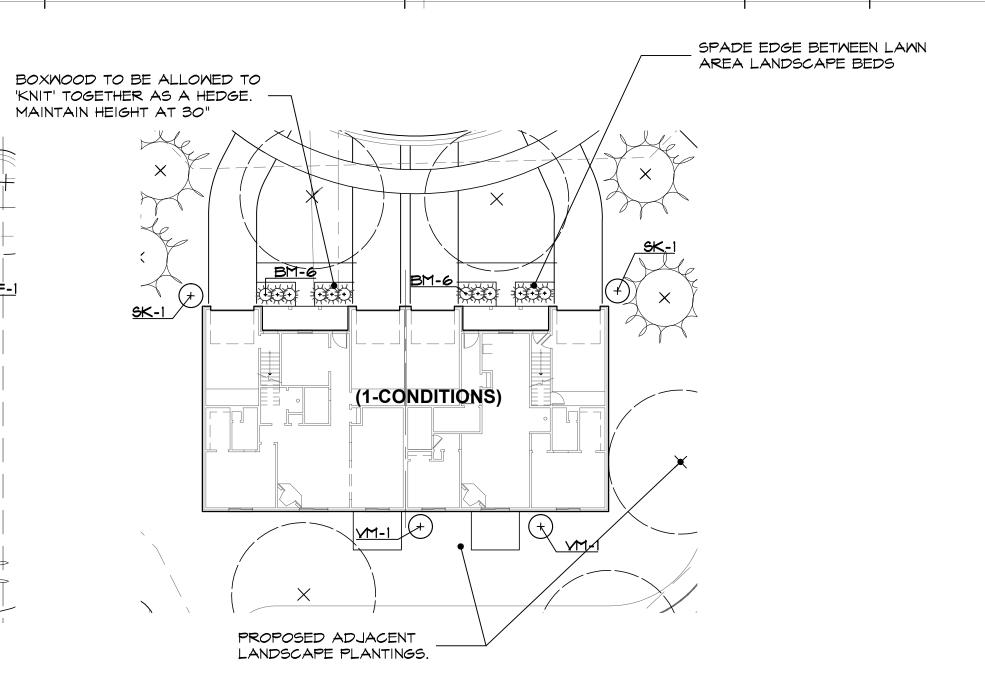
| SCALE: |" = 20'-0" (8-CONDITIONS)



plant material list

key	quant. 3A	quant. 3B	quant. 3C	quant.	botanical name	common name	size	comments
					SHRUBS			
<u>s</u> K	-	12	2	-	SYRINGA PATULA 'MISS KIM'	MISS KIM DWARF LILAC	3' B.B.	48" O.C. SPACING
PO	-	18	-	2	PHYSOCARPUS OPULIFOLIUS 'SEWARD'	SUMMER WINE NINEBARK	36"HIGH CONT.	42" O.C. SPACING
TLL	-	-	-	51	LIGUSTRUM VULGARE 'LODENSE'	LODENSE PRIVET	3' BB	42" O.C. SPACING
M	32	-	2	-	VIBURNUM X.B. 'MOHAWK'	MOHAWK VIBURNUM		48" O.C. SPACING
BM	32	72	12	-	BUXSUS 'GREEN MOUNTAIN'	GREEN MOUNTAIN BOXWOOD	24" B.B	30" O.C. SPACING
RK	-	-	-	3	ROSA X. 'OSA EASY DOUBLE RED''	OSA EASY DOUBLE RED ROSE	30" HIGH CONT.	36" O.C. SPACING
НД	-	-	-	8	HYDRANGEA ANNEBELLE	ANNABELLE HYDRANGEA	30" HIGH CONT.	36" O.C. SPACING
HE	-	-	-	4	HYDRANGEA M. 'GLOWING EMBERS'	GLOWING EMBERS HYDRANGEA	30" HIGH CONT.	36" O.C. SPACING
LY	-	24	-	-	LIGUSTRUM X. 'VICARYI'	GOLDEN VICARY PRIVET	3' 1/2' B.B	48" O.C. SPACING
BW	-	-	-	86	BUXSUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	18" B.B	24" O.C. SPACING
PAH	-	-	-	30	PENNISETUM ALOPECUROIDES 'HAMELIN'	DWARF FOUNTAIN GRASS	#3 CONT.	36" O.C. SPACING





POSITIVE DRAINAGE.

3c building foundation planting detail

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GRANDVIEW BUILDING CO.

251 Diversion St. **Suit 100** Rochester, Michigan

project: **WILLOW CREEK**

A PLANNED MIXED-USE RETAIL & RESIDENTIAL COMMUNITY

project location: Orion Township, Michigan Lapeer Road

sheet title:

BUILDING FOUNDATION

job no./issue/revision date: LS22.075.06 SPA 6-30-2022

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project no: LS22.075.06

sheet no:

general landscape notes:

1. LANDSCAPE CONTRACTOR SHALL VISIT THE SITE, INSPECT EXISITING CONDITIONS, REVIEW PROPOSED PLANTINGS AND RELATED WORK. CONTACT THE OWNER AND/OR LANDSCAPE ARCHITECT WITH ANY CONCERNS OR DISCREPANCY BETWEEN THE PLAN, PLANT MATERIAL LIST, AND/OR SITE

2. PRIOR TO BEGINNING OF CONSTRUCTION ON ANY WORK, CONTRACTORS SHALL VERIFY LOCATIONS OF ALL ON SITE UTILITIES. GAS, ELECTRIC, TELEPHONE, CABLE TO BE LOCATED BY CONTACTING MI66 DIG 1-800-482-7171. ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COORDINATE ALL RELATED WORK ACTIVITIES WITH OTHER TRADES AND REPORT ANY UNACCEPTABLE JOB CONDITIONS TO OWNER PRIOR TO COMMENCING

3. NUMERICAL VALUE ON THE LANDSCAPE QUANTITIES SPECIFIED ON THE PLAN TAKE PRECEDENCE OVER GRAPHIC REPRESENTATION. VERIFY ANY CONCERN-DISCREPANCY WITH LANDSCAPE ARCHITECT.

4. ALL CONSTRUCTION AND PLANT MATERIAL LOCATION TO BE ADJUSTED ON SITE IF NECESSARY 5. ANY SUBSTITUTIONS OR DEVIATIONS FROM THE LANDSCAPE PLAN MUST BE

APPROVED BY ORION TOWNSHIP AND LANDSCAPE ARCHITECT 6. ALL LARGE TREES AND EVERGREENS TO BE STAKED, GUYED AND WRAPPED AS DETAIL SHOWN ON PLAN.

7. PLANT BEDS TO BE DRESSED WITH MIN. 4" OF FINELY DOUBLE SHREDDED

HARDBARK MULCH. 8. DIG SHRUB PITS I' LARGER THAN SHRUB ROOT BALLS AND TREE PITS 2' LARGER THAN ROOT BALL. BACK FILL WITH ONE PART TOP SOIL AND ONE PART SOIL FROM EXCAYATED PLANTING HOLE.

9. NATURAL COLOR, FINELY SHREDDED HARDWOOD BARK MULCH REQUIRED FOR ALL PLANTINGS.

10. REMOVE ALL TWINE, WIRE AND BURLAP FROM TREE AND SHRUB EARTH BALLS, AND FROM TREE TRUNKS. 4" THICK BARK MULCH FOR TREES IN 4' DIA. CIRCLE WITH 3" PULLED AWAY FROM TRUNK . 4" THICK BARK MULCH FOR SHRUBS AND 2" THICK BARK MULCH FOR PERENNIALS.

THE CURRENT AMERICAN ASSOCIATION OF NURSERYMEN LANDSCAPE STANDARDS.

11. PLANT MATERIAL QUALITY & INSTALLATION SHALL BE IN ACCORDANCE WITH

12. PROVIDE PEAT SOD FOR ALL NEW AND DISTURBED LAWN AREAS UNLESS NOTED OTHERWISE.

13. ALL PLANTING AREAS TO BE PREPARED WITH APPROPRIATE SOIL MIXTURES AND FERTILIZER BEFORE PLANT INSTALLATION.

14. PLANT TREES AND SHRUBS GENERALLY NO CLOSER THEN THE FOLLOWING DISTANCES FROM SIDEWALKS, CURBS AND PARKING STALLS: a). SHADE TREES_ b). ORNAMENTAL AND EVERGREEN TREES (CRAB, PINE, SPRUCE, ETC.) c). SHRUBS THAT ARE LESS THAN I FOOT TALL

AND WIDE AT MATURITY

15. NO TREES OR EVERGREENS TO BE INSTALLED OVER ANY PROPOSED OR EXISTING UTILITY LINES AS SHOWN ON THE OVERALL LANDSCAPE PLAN. SEE ENGINEERING PLANS FOR LOCATION AND DETAILS.

16. ALL LAWN AREAS AND LANDSCAPE BEDS TO BE FULLY IRRIGATED WITH A AUTOMATIC UNDERGROUND SYSTEMS, IRRIGATION SYSTEM TO HAVE SEPARATE ZONES FOR LAWN AREAS, PARKING ISLANDS, AND SHRUB BEDS WITH DIFFERENT CONTROL MOISTURE LEVEL ADJUSTMENT PER ZONE AS REQUIRED

IT. UNLESS NOTED OTHERWISE, LANDSCAPE BEDS ADJACENT TO LAWN TO RECEIVE EDGING. EDGING SHALL BE 4" X 1/8" METAL (FINISH BLACK OR GREEN) OR APPROVED EQUAL AND TO BE INSTALLED WITH HORIZONTAL METAL STAKES AT 32" O.C. OR PER MANUFACTURER'S SPECIFICATION.

IS. ALL NEW PARKING ISLANDS AND LANDSCAPE BEDS ADJACENT AND NEXT TO BUILDING SHALL BE EXCAVATED OF ALL BUILDING MATERIALS AND POOR SOILS A MIN. OF 16"-18" DEPTH. BACK FILL WITH GOOD, MEDIUM TEXTURED PLANTING SOILS. ADD A MIN. 4" OF TOPSOIL OVERFILL TO FINISH GRADE. PROVIDE POSITIVE DRAINAGE.

19. WATERING OF ALL PLANTS AND TREES TO BE PROVIDED IMMEDIATELY AND MULCHING WITHIN 24 HOURS AFTER INSTALLATION.

20. ALL TREE PITS TO BE TESTED FOR PROPER DRAINAGE PRIOR TO TREE PLANTING. PROVIDE APPROPRIATE DRAINAGE SYSTEM AS REQUIRED IF THE TREE PIT DOES NOT DRAIN SUFFICIENTLY.

21. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL LANDSCAPE PLANT MATERIALS AND IRRIGATION INSTALLATION FOR A PERIOD OF TWO YEAR BEGINNING AFTER THE COMPLETION OF LANDSCAPE INSTALLTION DATE APPROVED BY THE CITY OR LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL REPLACE DURING AND AT THE END OF THE GUARANTEE PERIOD, ANY DEAD OR UNACCEPTABLE PLANTS, AS DETERMINED BY THE CITY OR LANDSCAPE ARCHITECT, WITHOUT COST TO THE OWNER.

planting landscape notes:

- 1) PLANT MATERIALS TO BE INSTALLED ACCORDING TO THE ORION TOWNSHIP AND CURRENT AMERICAN ASSOCIATION OF NURSERYMEN'S STANDARDS.
- 2) PLANT MATERIALS TO BE GUARANTEED FOR 2 YEARS. REPLACE FALLING MATERIAL WITHIN I YEAR, OR THE NEXT APPROPRIATE PLANTING PERIOD.
- 3) PLANT MATERIALS TO BE OF PREMIUM QUALITY, NO. 1 GRADE NORTHERN NURSURY GROWN, IN HEALTHY CONDITION, FREE OF PESTS AND DISEASES.
- 4) MULCH IS TO BE NATURAL COLORED, FINELY SHREDDED HARDWOOD BARK OF 4" THICK BARK MULCH FOR TREES IN 4' DIA. CIRCLE W/3" PULLED AWAY FROM TRUNK, 3" THICK BARK MULCH FOR SHRUBS AND 2" THICK BARK MULCH FOR PERRENIALS.

5) CALL MISS DIG AT 1-800-482-7171 PRIOR TO ANY CONSTRUCTION. DECIDUOUS & EVERGREEN TREE:

1) TREE SHALL BE INSTALLED SAME RELATIONSHIP TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 6" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.

2) DO NOT PRUNE TERMINAL LEADER, PRUNE ONLY DEAD OR BROKEN BRANCHES.

3) REMOVE ALL TAGS, STRING, PLASTICS AND OTHER MATERIALS THAT ARE UNSIGHTLY AND COULD CAUSE GIRDLING.

4) REMOVE TREE STAKES, GUY WIRES AND TREE WRAP AFTER ONE WINTER SEASON.

1) SHRUB SHALL BE INSTALLED SAME RELATIONSHIP TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 4" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.

2) DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES.

3) REMOVE ALL TAGS, STRING, PLASTICS AND OTHER MATERIALS THAT ARE UNSIGHTLY AND COULD CAUSE GIRDLING.

entry monument notes:

1. ALL INFORMATION CONTAINED HEREIN IS SUBJECT TO APPROVAL. AND PERMITS TO BE OBTAINED PRIOR TO CONSTRUCTION FROM ALL NECESSARY AGENCIES.

2. CONTRACTOR SHALL VISIT THE SITE, INSPECT EXISTING CONDITIONS, REVIEW PROPOSED PLANS AND RELATED WORK CONTACT THE OWNER WITH ANY CONCERNS OR DISCREPANCY BETWEEN THE PLANS AND/OR SITE CONDITIONS.

3. PRIOR TO BEGINNING OF CONSTRUCTION ON ANY WORK CONTRACTORS SHALL VERIFY LOCATIONS OF ALL ON SITE UTILITIES. GAS, ELECTRIC, TELEPHONE, CABLE . ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COORDINATE ALL RELATED WORK ACTIVITIES WITH OTHER TRADES AND REPORT ANY UNACCEPTABLE JOB CONDITIONS TO OWNER PRIOR TO COMMENCING. CONTACT MISS DIG AT 811 OR 800 -482-7171 BEFORE YOU DIG

4. GRADES BY OTHERS. FINAL GRADES TO PROVIDE POSITIVE DRAINAGE

5. FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED SOIL WITH AN ASSUMED SAFE BEARING CAPACITY OF 2000 P.S.I. IF SOIL OF THIS CAPACITY IS NOT FOUND AT THE ELEVATIONS INDICATED, FOOTINGS SHALL BE ENLARGED OR LOWERED AT THE DIRECTION OF THE ARCHITECT. VERIFY FOUNDATION SOIL BEARING PRESSURE IN FIELD BY SOILS ENGINEER.

6. LOCATE AND STAKE ALL EXISTING AND PROPOSED UTILITIES PRIOR TO CONSTRUCTION. COORDINATE ANY ADJUSTMENTS WITH LANDSCAPE ARCHITECT.

7. ALL ENTRY WALL LIGHTING SHALL BE CONTROLLED WITH A 'PHOTO-EYE' SWITCH. ALL LIGHTING SHALL BE SHIELDED FROM PUBLIC ROW'S AND ADJACENT PROPERTIES.



sign panel uplighting

(2-CONDITIONS)

1.EVERGREEN TREE SHALL BEAR SAME RELATION TO FINISH GRADE

CLAY SOIL AREAS.

BELOW 12' HEIGHT.

ROOT FLARE.

RECOMPACT BASE OF TO 4"

BRANCHES.

MANUFACTURER: ACUITY BRANDS LIGHTINGS ONE LITHONIA WAY CONYERS, GA 30012 PEACHTREE, GA 30269 PH. 770-922-9000

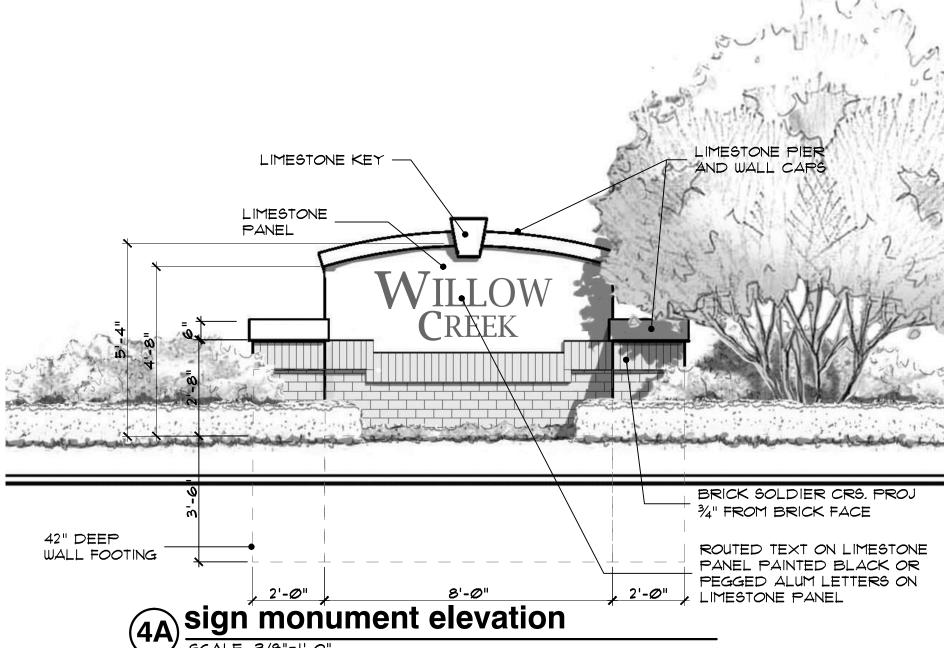
BRAND: HYDREL MODEL: 4750SF or EQUAL (LED 4000K) FINISH : BRONZE

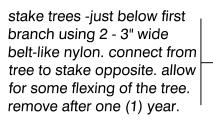
3 STAKES PER TREE MAX

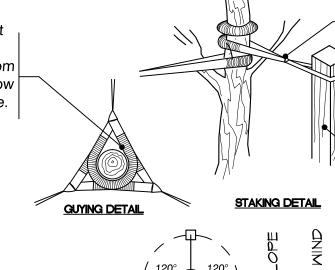
LACE STRAPS TOGETHER

WITH SINGLE STAY

8. SIGN TEXT AND LOGO TO BE PAINTED AND ROUTED LOGO/LETTER ON LIMESTONE PANEL. PRIOR TO SIGN INSTALLATION, PERMITS TO BE OBTAINED PER ORION TWP. REQUIREMENTS AND APPROVALS.







branch using 2 - 3" wide belt-like nylon, connect from tree to stake opposite. allow for some flexing of the tree. remove after one (1) year.

stake trees - just below first

use 3 hardwood stakes per tree. 2" x 2" x 8' stakes. drive stakes into undisturbed soil 6"-8" outside of rootball to a depth of 18" below tree pit. remove after one (1) year. do not use wire or rope thru a

Orient staking/guying to prevailing winds, except on slopes greater than 3:1 orient to slope.

Use same staking/guying orientation for all plants within each grouping or

tree staking detail

STAKING/GUYING LOCATION

1. SHRUB SHALL BEAR SAME RELATION TO FINISH MULCH 2" DEPTH WITH SHREDDED HARDWOOD BARK. NATURAL IN COLOR. LEAVE 3" CIRCLE OF BARE SOIL AT BASE OF TREE TRUNK TO EXPOSE ROOT FLARE. MOUND EARTH TO FORM SAUCER REMOVE COLLAR OF ALL FIBER POTS. POTS SHALL BE CUT TO PROVIDE FOR ROOT GROWTH. REMOVE ALL NONORGANIC CONTAINERS COMPLETELY.

AMEND SOILS PER SITE REQUIREMENTS OF THE PLANT

project no: LS22.075.06

sheet no:

and ASSOCIATES

Community Land Planner and registered Landscape Architect 24333 Orchard Lake Rd, Suite G

Farmington Hills, MI 48336

ph. (248) 557-5588

fax. (248) 557-5416

client:

Suit 100

Rochester,

Michigan

WILLOW

CREEK

A PLANNED

RESIDENTIAL

COMMUNITY

project location:

Michigan

sheet title:

NOTES

JP, DK

checked by:

6-10-2022

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3 WORKING DAYS

BEFORE YOU DIG

~ 1-800-482-7171

CALL MISS DIG

For free location of public utility line

The location and elevations of existing

nderground utilities as shown on this

is either expressed or implied as to the

drawing are only approximate, no guarant

completeness of accuracy, contractor shall be

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Lapeer Road

MIXED-USE RETAIL &

Orion Township

PLANT DETAILS

AND LANDSCAPE

job no./issue/revision date:

LS22.075.06 SPA 6-30-2022

project:

GRANDVIEW

BUILDING CO.

251 Diversion St.

. TREES SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY STAKE TREES AT FIRST BRANCH HIGHER THAN FINISH GRADE UP TO USING 2"-3" WIDE BELT-LIKE 6" ABOVE GRADE, IF DIRECTED BY NYLON OR PLASTIC STRAPS. LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS. ALLOW FOR SOME MINIMAL FLEXING OF THE TREE. REMOVE 2. DO NOT PRUNE TERMINAL AFTER ONE YEAR. LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES. 2" X 2" HARDWOOD STAKES, MIN. 3. REMOVE ALL TAGS, STRING, 36" ABOVE GROUND FOR PLASTICS ETC. UPRIGHT, 18" IF ANGLED. DRIVE 4. GUY TREES ABOVE 3" CAL.. STAKE STAKES A MIN. 18" INTO DECIDUOUS TREES BELOW 3" CAL. UNDISTURBED GROUND OUTSIDE ROOTBALL. REMOVE AFTER ONE PLANT TREE SO ROOT FLARE MULCH 3" DEPTH WITH IS AT OR ABOVE SHREDDED HARDWOOD BARK. SURROUNDING GRADE REMOVE ROOT BALL DIRT NATURAL IN COLOR. LEAVE 3" TO EXPOSE FLARE IF CIRCLE OF BARE SOIL AT BASE OF NECESSARY AND CUT ANY TREE TRUNK TO EXPOSE ROOT GIRDLING ROOTS. FLARE. MOUND EARTH TO FORM PLANTING MIXTURE: SAUCER AMEND SOILS PER SITE CONDITIONS AND REQUIREMENTS OF THE REMOVE ALL NON-BIODEGRADABLE PLANT MATERIAL. MATERIALS COMPLETELY FROM THE ROOTBALL. CUT AND REMOVE WIRE BASKET AND BURLAP FROM TOP HALF SCARIFY PLANTING PIT OF THE ROOTBALL. SIDES, RECOMPACT 3 x width of rootball BASE OF TO 4" DEPTH tree planting detail

SAUCER REMOVE ALL NON-BIODEGRADABLE MATERIALS COMPLETELY FROM THE ROOTBALL. CUT AND REMOVE 3 x width of rootball WIRE BASKET AND BURLAP FROM TOP HALF OF THE ROOTBALL. evergreen planting detail

STAKE TREES AT FIRST BRANCH

USING 2"-3" WIDE BELT- LIKE

NYLON OR PLASTIC STRAPS.

FLEXING OF THE TREE. REMOVE

ALLOW FOR SOME MINIMAL

2" X 2" HARDWOOD STAKES,

UPRIGHT, 18" IF ANGLED.

DRIVE STAKES A MIN. 18"

REMOVE AFTER ONE YEAR.

REMOVE ROOT BALL DIRT TO

CUT ANY GIRDLING ROOTS.

MOUND EARTH TO FORM

OUTSIDE ROOTBALL.

MIN. 36" ABOVE GROUND FOR

INTO UNDISTURBED GROUND

PLANT TREE SO ROOT FLARE IS AT

OR ABOVE SURROUNDING GRADE.

EXPOSE FLARE IF NECESSARY AND

AFTER ONE YEAR.

AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 6" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY 2. DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN 3. REMOVE ALL TAGS, STRING, 4. GUY EVERGREEN TREES ABOVE 12' HEIGHT. STAKE EVERGEEN TREE MULCH 3" DEPTH WITH SHREDDED HARDWOOD BARK. NATURAL IN COLOR. LEAVE 3" CIRCLE OF BARE SOIL AT BASE OF TREE TRUNK TO EXPOSE PLANTING MIXTURE: AMEND SOILS PER SITE **CONDITIONS AND REQUIREMENTS** OF THE PLANT MATERIAL. SCARIFY PLANTING PIT SIDES.

PRUNE AS SPECIFIED STAKE 3 LARGEST STEMS, IF TREE HAS MORE THAN 3 LEADERS SET TREE STAKES VERTICAL & AT SAME HEIGHT. MOUND TO FORM SAUCER PLANT MIXTURE AS SPECIFIED SCARIFY T 4" DEPTH AND RECOMPACT

STAKES TO EXTEND 12" BELOW TREE PIT IN UNDISTURBED GROUND

multi-stem tree planting detail

SET STAYS ABOVE FIRST BRANCHES, APPROX. HALFWAY UP TREE(SEE DETAIL) MULCH" DEPTH WITH SHREDDED HARD WOOD BARK NATURAL IN COLOR. LEAVE 3" CIRCLE OF BARE SOIL AT BASE OF TREE TRUNK TO **EXPOSE ROOT FLARE** REMOVE EXCESS SOIL TO EXPOSE ROOT FLARE IF NECESSARY. REMOVE ALL NON-BIODEGRADABLE MATERIALS COMPLETELY FROM THE ROOTBALL. CUT DOWN WIRE BASKET AND

TOP ⅓ OF THE ROOTBALL

FOLD DOWN BURLAP FROM

SCARIFY PLANTING PITSIDES. RECOMPACT BASE OF TO 4" DEPTH. shrub planting detail

GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 4" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS. 2. PRUNE ONLY DEAD OR BROKEN BRANCHES. 3. REMOVE ALL TAGS, STRING, PLASTICS AND OTHER MATERIALS PLANTING MIXTURE: CONDITIONS AND

> SHRUBS PLANTED IN BEDS SHALL HAVE ENTIRE BED MASS EXCAVATED AND BACKFILLED WITH APPROVED PLANT MIX. PLANTS SHALL NOT BE

INSTALLED IN INDIVIDUAL HOLES. REMOVE ALL NON-BIODEGRADABLE MATERIALS COMPLETELY FROM THE ROOTBALL. CUT AND REMOVE WIRE BASKET AND BURLAP FROM TOP HALF OF THE ROOTBALL.

exclusively responsible for determining the exact location and elevation prior to the start of construction

bioswale seed mix:

Best suited for drainage swales or depressions, the native plants used in this mix help filter pollutants from lawns and pavement runoff. This seed mix can also be applied to areas that temporarily retain water after a rain event or dry-bottomed detention basins. The swale seed mix includes at least 10 of 12 native permanent grass and sedge species and 12 of 17 native forb species to provide diversity for establishment. Apply at 32.30 PLS pounds per acre.

Andropogon gerardii Big Bluestem 4.1 Arex conosa Bristly Sedge 2.2 Arex cristatella Crested Voal Sedge 2.2 Arex sex pristatella Bottlebrush Sedge 2.2 Arex sex pp. Prairie Sedge species 3.8 Brown Fox Sedge 4.4 Autiliphioidea Brown Fox Sedge 5.8 Autiliphioidea Grass 5.1 Autiliphioidea Grass 6.1	Botanical Name	Common Name	PLS Oz/Acre
Bristly Sedge	Permanent Grasses/Sedges		
Crested Oval Sedge 2.1 Parex unide Bottlebrush Sedge 2.1 Parex spp. Prairie Sedge species 8.8.1 Parex vulpinoidea Brown Fox Sedge 4.4 Prairie Sedge species 8.8.1 Prairie Wild Rye 8.8.1 Powl Manna Crass 1.1 Powl Manna Crass 1.1 Powl Manna Crass 1.1 Paricum virgatum 5.2 Paricum virgatum 6.2 Prairie Cord Grass 1.1 Prairie Cord Grass 1.	Andropogon gerardii	Big Bluestem	4.00
Sarex Jurida Bottlebrush Sedge 2: Arex spp. Prairie Sedge species 8. Arex spp. Prairie Sedge species 9. Alphopulation of the species of	Carex comosa	Bristly Sedge	2.50
Prairie Sedge species Brown Fox Sedge Aliyours virginious Virginia Wild Rye Brown Fox Sedge Virginia Wild Rye Brown Milliams Dark Green Rush Corporation For Sedge Sedicing Sedic	Carex cristatella	Crested Oval Sedge	2.00
Active suriginious and suriginious artistate and suriginious artistate artistate and suriginious artistate and suriginious artistate art	Carex lurida	Bottlebrush Sedge	2.50
Virginia Wild Rye 81 Nyeeria striate Fowl Manna Grass 1.1 Particum virginicus Switch Grass Dark Green Rush Corpus strovirens Vool Grass Total Annual Rye Common Oat Annual Rye Total Annual Rye Orespis tripteris Tall Coreopsis T	Carex spp.	Prairie Sedge species	8.00
Fowl Manna Grass 1.1 Saircum virgatum Switch Grass 2.2 Soirpus atrovirens Dark Green Rush 2.1 Soirpus atrovirens Wool Grass 1.1 Soirpus atrovirens Wool Grass 1.1 Foartina pectinata Prairie Cord Grass 3.3 Total 40 Prairie Cord Grass 3.3 Total 40 Pemporary Cover Soirpus atrive Common Oat 360 Soirpus atrive Olium multiflorum Annual Rye 100 Total 480 Soreopsis Incarnata Swamp Milkweed 2.1 Soreopsis tripteris Tall Coreopsis 1.1 Soreopsis tripteris 1.1 Sorted Joe Pye Weed 0.1 Soir Soir Soir Soir Soir Soir Soir Soir	Carex vulpinoidea	Brown Fox Sedge	4.00
Switch Grass 2.1 Scirpus atrovirens Dark Green Rush 2.1 Spartina pectinata Prairie Cord Grass 1.1 Spartina pectinata Prairie Cord Grass 1.1 Semporary Cover Stephen Scirpus Sc	Elymus virginicus	Virginia Wild Rye	8.00
Corpus atrovirens Coliques cyperinus Corpus cyperinus Corpus cyperinus Corpus cyperinus Corpus cyperinus Corpus cyperinus Corpus cyperinus Common Oat Comm	Glyceria striata	Fowl Manna Grass	1.00
Scirpus cyperinus Spartina pectinata Prairie Cord Grass Total Au Au Au Au Au Au Au Au Au A	Panicum virgatum	Switch Grass	2.00
Prairie Cord Grass 3.1 Total 40.0 Imporary Cover Invena sativa Common Oat 360.0 Invena Sativa Common Mountain Mint 360.0 Invena Sativa Common Mountain Mint 360.0 Invena Sativa Common Oat 360.0 Invena Sativa Common Oat 360.0 Invena Sativa Common Oat 360.0 Invena Sativa Common Mountain Mint 360.0 Invena Sativa Common Oat 360.0 Invention	Scirpus atrovirens	Dark Green Rush	2.00
Total 40.1	Scirpus cyperinus	Wool Grass	1.00
Annual Rye 100.0 Annual Rye 100.0 Total 460.0 Total 460.0 Orbs Misma spp. Water Plantain Mix 1.1 Asciepias incarnata Swamp Milkweed 2.1 Totropisis tripteris 1.1 Totropisis 1.1 Tall Coreopsis 1.1 Tall	Spartina pectinata	Prairie Cord Grass	3.00
Annual Rye 100.0 Total 460.0 Water Plantain Mix 1.1 Seclepias incarnata Swamp Milkweed 2.1 Tall Coreopsis tripteris 1.1 Tall Coreopsis tripteris 1.1 Spotted Joe Pye Weed 0.1 Sitris virginica Blue Flag 4.1 Interest in the spicata 1.1 Spotted Joe Pye Weed 0.1 Spotted Joe Pye Pye Weed 0.1 Spotted Joe Pye Pye Weed 0.1 Spotted Joe Pye Pye Pye Pye Pye Pye Pye Pye Pye Py		Т	otal 40.00
Total 460.1 Total	Temporary Cover		
Total 460.0 orbs Misma spp. Water Plantain Mix 1 Asclepias incarnata Swamp Milkweed 2 Tall Coreopsis tripteris Tall Coreopsis 1 Tall Cor	Avena sativa	Common Oat	360.00
Misma spp. Misma spp. Misma spp. Misclepias incarnata Swamp Milkweed 2d Decepsis tripteris Tall Coreopsis Tall Coreopsis Tall Tall Toreopsis Tall Coreopsis Tall Tall Tall Tall Tall Tall Tall Tall	Lolium multiflorum	Annual Rye	100.00
Misma spp. Asclepias incarnata Swamp Milkweed 2.6 Soreopsis tripteris Tall Coreopsis Tall Coreopsis 1.6 Sutrochium maculatum Spotted Joe Pye Weed 0.7 Spotted Joe Pye Veed		Т	otal 460.00
Sclepias incarnata Swamp Milkweed 2.0 Coreopsis tripteris Tall Coreopsis Tall Coreofsity Tall Coreopsis Tall Coreopsis Tall Coreofsity Tall Coreofsity Tall Coreofsity Tall Coreopsis Tall Coreofsity Tall Coreo	Forbs		
Tall Coreopsis tripteris Tall Coreopsis Tall Coreofinates Tall	Alisma spp.	Water Plantain Mix	1.00
Spotted Joe Pye Weed District Virginica Blue Flag Marsh Blazing Star Cardinal Flower District Spicata Marsh Blazing Star Cardinal Flower District Spicata Great Blue Lobelia Common Water Horehound Common Water Horehound District Triloba Brown-Eyed Susan District Intiloba Senna hebecarpa Wild Senna District Intiloba Senna hebecarpa Wild Senna District Dock District Intiloba Senna hebecarpa District Intiloba Senna hebecarpa District Intiloba Senna hebecarpa Blue Vervain District Autron District Intiloba Senna hastata Blue Vervain District Autron District Intiloba Senna hastata Blue Vervain District Intiloba Spotted Joe Pye Weed Autron District Virginica District Intiloba District Intiloba	Asclepias incarnata	Swamp Milkweed	2.00
Blue Flag Marsh Blazing Star Cardinal Flower Obelia cardinalis Cardinal Flower Obelia siphilitica Great Blue Lobelia Common Water Horehound Ocommon Mountain Mint Common Mountain Mint Brown-Eyed Susan Ocommon Arrowhead Ocommon Arr	Coreopsis tripteris	Tall Coreopsis	1.0
iatris spicataMarsh Blazing Star1.1obelia cardinalisCardinal Flower0.3obelia siphiliticaGreat Blue Lobelia0.9ycopus americanusCommon Water Horehound0.3Sudbeckia trilobaBrown-Eyed Susan0.9Sagittaria latifoliaCommon Arrowhead0.3Senna hebecarpaWild Senna1.9Silphium terebinthinaceumPrairie Dock1.1Symphyotrichum novae-angliaeNew England Aster1.9Silzia aureaGolden Alexanders0.3	Eutrochium maculatum	Spotted Joe Pye Weed	0.29
Cardinal Flower Obelia siphilitica Great Blue Lobelia Octommon Water Horehound Octommon Mountain Mint Octommon Mountain Mint Octommon Mountain Mint Octommon Arrowhead Octommon Arrowhe	Iris virginica	9	4.00
Great Blue Lobelia 0.9 ycopus americanus Common Water Horehound 0.5 yconanthemum virginianum Common Mountain Mint 0.9 Brown-Eyed Susan 0.9 Gagittaria latifolia Common Arrowhead 0.9 Genna hebecarpa Wild Senna 1.9 Gilphium terebinthinaceum Prairie Dock 1.9 Gymphyotrichum novae-angliae New England Aster 1.9 Gerbena hastata Blue Vervain 1.9 Golden Alexanders 0.9	Liatris spicata	Marsh Blazing Star	1.00
Common Water Horehound Common Water Horehound Common Mountain Mint Common Mountain Mint Common Mountain Mint Common Mountain Mint Common Arrowhead Cagittaria latifolia Common Arrowhead Common Mountain Mint Common Arrowhead Common A	Lobelia cardinalis	Cardinal Flower	0.2
Common Mountain Mint 0.8 Budbeckia triloba Brown-Eyed Susan 0.8 Bagittaria latifolia Common Arrowhead 0.8 Benna hebecarpa Wild Senna 1.8 Bilphium terebinthinaceum Prairie Dock 1.8 Bymphyotrichum novae-angliae New England Aster 1.8 Blue Vervain 1.8 Bizizia aurea Golden Alexanders 0.8	Lobelia siphilitica	Great Blue Lobelia	0.50
Brown-Eyed Susan 0.8 Gagittaria latifolia Common Arrowhead 0.8 Genna hebecarpa Wild Senna 1.8 Glymphyourichum novae-angliae New England Aster 1.8 Gerbena hastata Blue Vervain 1.8 Gizia aurea Golden Alexanders 0.8	Lycopus americanus	Common Water Horehound	0.2
Common Arrowhead 0.3 Senna hebecarpa Wild Senna 1.3 Silphium terebinthinaceum Prairie Dock 1.3 Symphyotrichum novae-angliae New England Aster 1.3 Serbena hastata Blue Vervain 1.3 Silzia aurea Golden Alexanders 0.3	Pycnanthemum virginianum	Common Mountain Mint	0.50
Senna hebecarpa Wild Senna 1.0 Silphium terebinthinaceum Prairie Dock 1.0 Symphyotrichum novae-angliae New England Aster 1.0 Serbena hastata Blue Vervain 1.0 Silzia aurea Golden Alexanders 0.0	Rudbeckia triloba	Brown-Eyed Susan	0.50
Silphium terebinthinaceum Prairie Dock Symphyotrichum novae-angliae New England Aster 1.1 Verbena hastata Blue Vervain 1.2 Silzia aurea Golden Alexanders 0.3	Sagittaria latifolia	Common Arrowhead	0.29
Symphyotrichum novae-angliae New England Aster 1.1 Verbena hastata Blue Vervain 1.1 Vizia aurea Golden Alexanders 0.1	Senna hebecarpa	Wild Senna	1.00
Terbena hastata Blue Vervain 1.1 Tizia aurea Golden Alexanders 0.7	Silphium terebinthinaceum	Prairie Dock	1.00
Tizia aurea Golden Alexanders 0.1	Symphyotrichum novae-angliae	New England Aster	1.00
66-01-01-01-01-01-01-01-01-01-01-01-01-01-	Verbena hastata	Blue Vervain	1.50
Total 16.1	Zizia aurea	Golden Alexanders	0.75
		Т	otal 16.79

Detention Pond Seed Mix

A wetland seed mix for saturated soils in a detention pond or for seeding a saturated basin, this mix will tolerate highly fluctuating water levels and poor water quality associated with urban stormwater wetlands and ponds. For detention basins that experience long, dry periods, use the Economy Prairie seed mix in the upper third to half of the basin area in combination with this mix. This seed mix includes at least 10 of 12 native permanent grass and sedge species and 12 of 16 native forb species. Apply at 32.81 PLS pounds per acre.

Botanical Name	Common Name	PLS Oz/Acre
Permanent Grasses/Sedges		
Bolboschoenus fluviatilis	River Bulrush	0.25
Carex cristatella	Crested Oval Sedge	2.00
Carex lurida	Bottlebrush Sedge	3.00
Carex vulpinoidea	Brown Fox Sedge	6.00
Elymus virginicus	Virginia Wild Rye	13.50
Glyceria striata	Fowl Manna Grass	1.25
Juneus effusus	Common Rush	2.00
Leersia oryzoides	Rice Cut Grass	1.00
Panicum virgatum	Switch Grass	2.00
Schoenoplectus tabernaemontani	Softstem Bulrush	3.00
Scirpus atrovirens	Dark Green Rush	2.00
Scirpus cyperinus	Wool Grass	1.00
	Total	37.00
Temporary Cover		
Avena satīva	Common Oat	360.00
Lolium multiflorum	Annual Rye	100.00
	Total	460.00
Forbs		
Alisma spp.	Water Plantain Mix	4.25
Asclepias incamata	Swamp Milkweed	1.50
Bidens spp.	Bidens Mix	2.00
4.9.4		0.00
Helenium autumnale	Sneezeweed	2.00
Helenium autumnale Iris virginica	Sneezeweed Blue Flag	
	Service Amongs	4.00
Iris virginica	Blue Flag	4.00 0.25
Iris virginica Lycopus americanus	Blue Flag Common Water Horehound	4.00 0.29 1.00
lris virginica Lycopus americanus Mimulus ringens	Blue Flag Common Water Horehound Monkey Flower	4.00 0.29 1.00 0.50
lris virginica Lycopus americanus Mimulus ringens Oligoneuron riddellii	Blue Flag Common Water Horehound Monkey Flower Riddell's Goldenrod	4.00 0.29 1.00 0.50 0.50
Iris virginica Lycopus americanus Mimulus ringens Oligoneuron riddellii Penthorum sedoides	Blue Flag Common Water Horehound Monkey Flower Riddell's Goldenrod Ditch Stonecrop	4.00 0.29 1.00 0.50 0.50 4.00
Iris virginica Lycopus americanus Mimulus ringens Oligoneuron riddellii Penthorum sedoides Polygonum spp.	Blue Flag Common Water Horehound Monkey Flower Riddell's Goldenrod Ditch Stonecrop Pinkweed Mix	4.00 0.29 1.00 0.50 0.50 4.00
Iris virginica Lycopus americanus Mimulus ringens Oligoneuron riddellii Penthorum sedoides Polygonum spp. Rudbeckia subtomentosa	Blue Flag Common Water Horehound Monkey Flower Riddell's Goldenrod Ditch Stonecrop Pinkweed Mix Sweet Black-Eyed Susan	4.00 0.25 1.00 0.50 4.00 1.00
Iris virginica Lycopus americanus Mimulus ringens Oligoneuron riddellii Penthorum sedoides Polygonum spp. Rudbeckia subtomentosa Rudbeckia triloba	Blue Flag Common Water Horehound Monkey Flower Riddell's Goldenrod Ditch Stonecrop Pinkweed Mix Sweet Black-Eyed Susan Brown-Eyed Susan	4.00 0.28 1.00 0.50 0.50 4.00 1.00
Iris virginica Lycopus americanus Mimulus ringens Oligoneuron riddellii Penthorum sedoides Polygonum spp. Rudbeckia subtomentosa Rudbeckia triloba Sagittaria latifolia	Blue Flag Common Water Horehound Monkey Flower Riddell's Goldenrod Ditch Stonecrop Pinkweed Mix Sweet Black-Eyed Susan Brown-Eyed Susan Common Arrowhead	2.00 4.00 0.25 1.00 0.50 0.50 4.00 1.50 1.50

SEEDED LAWN AREAS SHALL CONSIST OF THE FOLLOWING TYPES AND

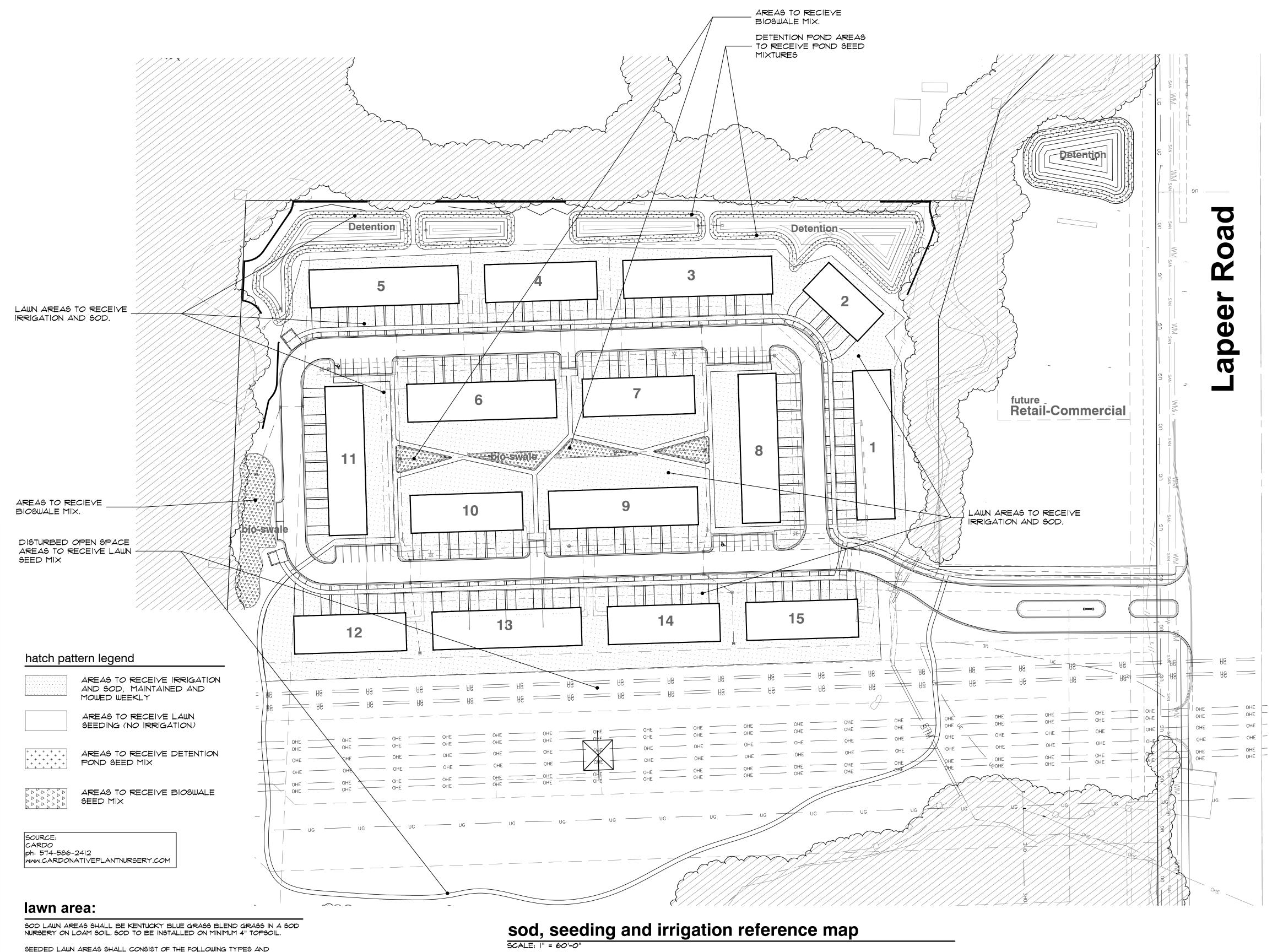
SEED MIX SHALL BE APPLIED AT A RATE OF 200 POUNDS PER ACRE AND WEED CONTENT SHALL NOT EXCEED 1%, SEED, PROVIDE A MINIMUM 4" TOP

5% PERENNIAL RYE GRASS

60% KENTUCKY BLUE GRASS

10% RED FESCUE 25% CHEWING FESCUE

SOIL ON ALL SEEDED LAWN AREA





GRANDVIEW BUILDING CO.

251 Diversion St. **Suit 100** Rochester, Michigan

project: **WILLOW CREEK**

A PLANNED MIXED-USE RETAIL & RESIDENTIAL COMMUNITY

project location: Orion Township, Michigan Lapeer Road

sheet title:

SOD, IRRIGATION, **SEEDING PLAN**

job no./issue/revision date:

LS22.075.06 SPA 6-30-2022

JP, DK

checked by:

notice:

6-10-2022

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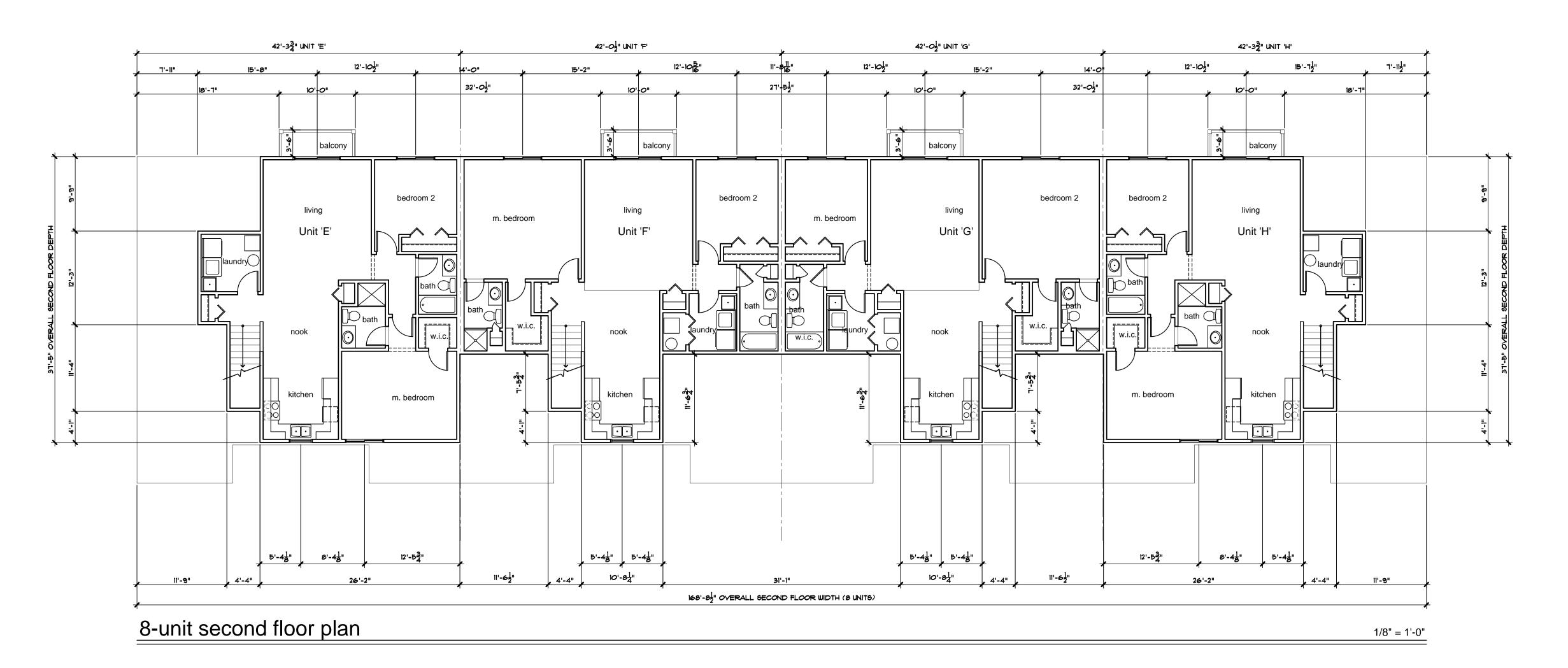
Do Not scale drawings. Use figured dimensions only

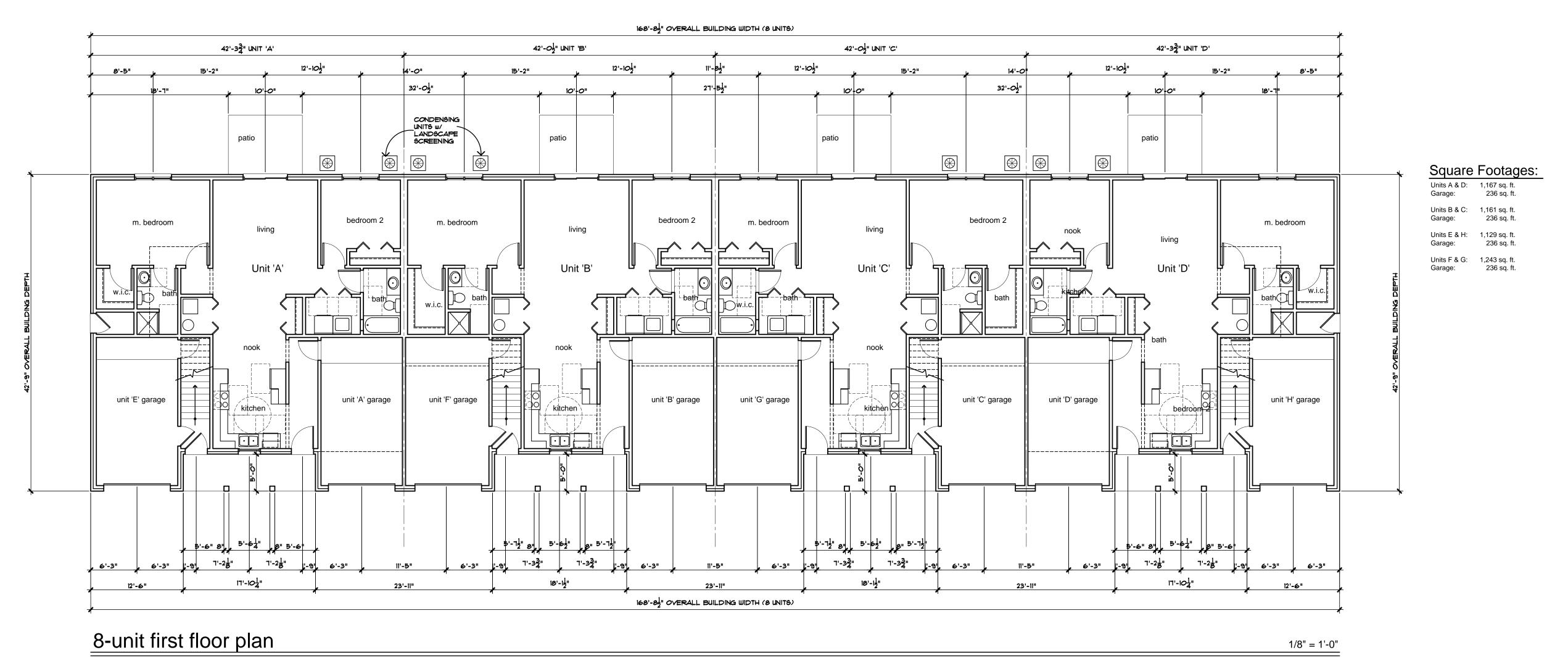


underground utilities as shown on this is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no: LS22.075.06

sheet no:





Frank Salamone

architects engineers planners

48701 hayes road shelby, mi 48315 586.532.0091

fsalamone@fsarchitect.com

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Date Issued:

P.A. 06/23/22

Project:

Proposed Apartment Complex for:

Willow Creek
3120 S. Lapeer Rd.
Orion Twp., MI

Client:

Grandview Construction 251 Diversion St. Suite 200 Rochester, MI 48307

Sheet Title:

FLOOR PLANS

Project Number: M22-154

Drawn By:

J.N.

Checked By: F.S.



Issue:

prelimi

constru record

Sheet Number:



Frank Salamone 0

architects engineers planners

48701 hayes road shelby, mi 48315 586.532.0091

fsalamone@fsarchitect.com

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Date Issued:

S.P.A. 06/23/22

Project:

Proposed Apartment Complex for:

Willow Creek
3120 S. Lapeer Rd.
Orion Twp., MI

Client:

Grandview
Construction

251 Diversion St.

251 Diversion St. Suite 200 Rochester, MI 48307

Sheet Title:

FLOOR PLANS

Project Number: M22-154

Drawn By:

J.N.

Checked By: F.S.



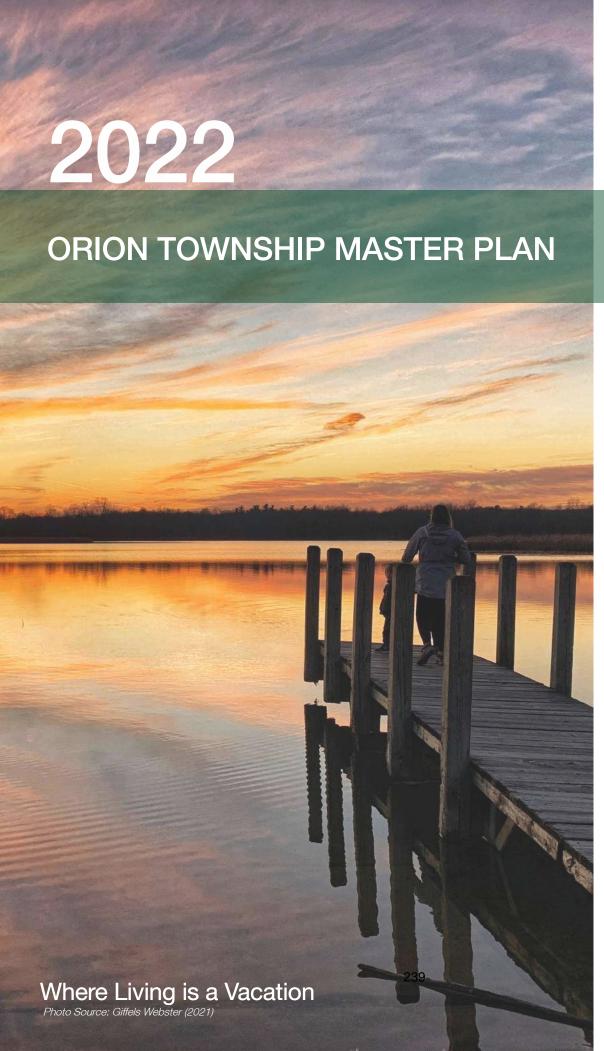
Issue:

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constru

record

Sheet Number:





Prepared by

ORION TOWNSHIP
PLANNING COMMISSION
2323 Joslyn Road
Lake Orion, MI, 48360

DRAFT

July 07, 2022 Updated



Intentionally Blank



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Scott Reynolds, Chair

Don Gross, Vice Chair

Joe St. Henry, Secretary

Kim Urbanowski, BOT rep.

Don Walker, PC rep. to ZBA

Derek Brackon

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Resolution of Adoption

Resolution of adoption

What is in this Master Plan?



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Executive Summary

This document replaces the 2015 Orion Township Master Plan and was prepared in accordance with the Michigan Planning Enabling Act. The 2022 Master Plan was created on the foundation of an updated community vision statement:

Orion Township, where Living is a Vacation, seeks to guide growth in a rational manner, striving to avoid patterns of "leapfrog" development. Innovative and flexible approaches for growth management and development regulations will be used, with the desired outcome of preventing overcrowding, protecting critical open space and natural resources, preserving a balance of housing options, preserving community character, minimizing traffic congestion, fostering creativity in design, and establishing vibrant places for community interaction, commerce, and recreation.

Goals

The goals from the previous Master Plan were revised and combined into five broad categories:

- 1. High-Quality and Diverse Housing (Residential Areas)
- 2. Natural and Historic Resources (Environmental Resources and Historic Preservation)
- 3. Economic Development (Economic Development, Commercial, Office and Industrial areas)
- 4. Community Facilities (Community, Recreation and Complete Streets)
- 5. Community Character and Aesthetics

The plan addresses each goal above and includes an expanded description of each category along with accompanying objectives and action items for implementation.

Public Engagement

There were several opportunities for public engagement including an online survey, two open houses and a public hearing, as well as monthly workshop discussions with the planning commission.

Housing

The plan introduces new housing concepts that address the missing middle housing gap, which refers to duplex, triplex, quadplex, cottage court and other house-scale style developments, some of which are not explicitly permitted by the current zoning ordinance. These development concepts are used to accommodate and promote attainable housing for all members of the community and support the 15-minute neighborhoods.

15-Minute Neighborhoods

The 15-Minute Neighborhood concept is a key planning element, which is based primarily on how far a person can bike in 15-minutes from each node. Three key core areas in the Township include the Gingellville Village Center, Decker (near Silver Bell and Squirrel), and Friendship Woods (near Friendship Park). The fourth core area is the Village of Lake Orion.

Economic Development Plan

A market assessment was conducted in order to identify specific areas of need and opportunity. The Economic Development Plan summarizes this study and offers 10 strategies that establish the framework for the economic development strategy. The plan also address three specific sites within the Township by providing preferred redevelopment scenarios based on the concepts of the land use plan.

Implementation

the Township.

The plan outlines specific action items to achieve the goals and objectives of the plan. These action items will be prioritized by the Planning Commission as it looks to implement the **247**plan. This section also includes a Zoning Plan, which shows how the Master Plan categories align with Zoning Districts in



Introduction

Purpose of Master Plan

This 2022 Master Plan update represents an opportunity to affirm, reevaluate, and update the course of land development within Orion Township as identified and described in the 2015 Master Plan. This Plan contains the community's updated vision, goals, objectives, and strategies as developed during the collaborative process of updating the Plan that began in the fall of 2020. As with the 2015 Master Plan, the Plan is intended to guide future decision-making processes related to land development, as well as address the community's quality of life that results from both short-term and long-term planning decisions. Lastly, this Plan seeks to be an informative document for those that may not be aware of the many communitybased initiatives that Township leadership, staff, and others have been continually working towards to advance Orion Township since the 2015 Master Plan and prior.

A sound Master Plan promotes a land use pattern that reflects a community's goals. It addresses planned future land uses and desired development, and other community features and amenities in a coordinated and organized manner. It portrays a clear statement of Orion Township goals and objectives, establishes a vision of the future, and includes a structure to achieve this vision through zoning and other means. If followed carefully, the Master Plan will have a lasting impact on the built and natural environment. Decisions made when the Plan is developed will likely be implemented over short-term, medium-term, and longterm timelines as specified in the Implementation Plan, which functions as an action-oriented conclusion of this Plan. This Implementation Plan should be referenced and considered by Township stakeholders on a regular basis as part of day-to-day functions and long-term community planning considerations and initiatives.

While the Master Plan is desired to be a living document, it is long-range in its view and is intended to guide development in the Township over a period of 10 to 20 years based on the information we have today, with reviews and any necessary updates occurring every five years in order to maintain required consistency with the Michigan Planning Enabling Act of 2008. The information and concepts presented in this Master Plan are to be used as a guide for local decisions on public and private uses of land and the provision of public facilities and services. This Plan also contains recommendations that directly relate to Township ordinances, specifically the Zoning Ordinance, and may also be of value for regional initiatives and improvements, such as roads and regional parks, that may not be directly controlled by the Township but may be influenced by the information contained within the Plan.

2015





CHARTER TOWNSHIP OF ORION MASTER PLAN

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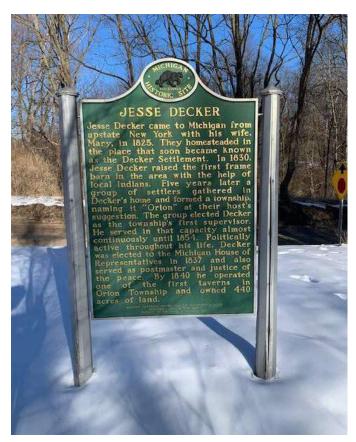
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History

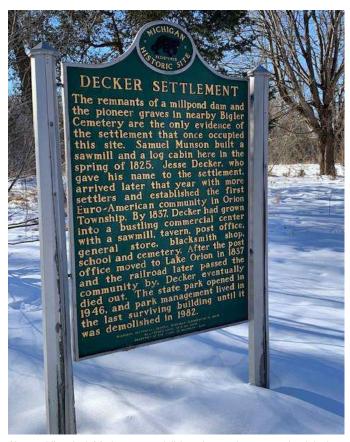
Township Settlement

Orion Township was historically settled for agriculture and forestry. In 1819, Judah Church and John Wetmore purchased land in the midwest portion of the Township to harvest timber. This area was once known as "The Big Pinery" due to its abundance of large trees. However, the majority of early Township settlement occurred in the southeast portion of the Township. Jesse Decker was one of the first pioneers to locate in this area which became commonly referred to as "Decker Settlement" by locals. This was a collection of farms that were created from cleared woodlands that once covered this area, which may have contributed to this location being the first sawmill constructed in the Township. A historical marker located on the south side of East Greenshield Road, just west of Kern Road, acknowledges the location of Decker's Settlement and Jesse Decker's importance to Orion Township's early formation.



Above: Historical Marker recognizing Jesse Decker

Source: Giffels Webster (2021)



Above: Historical Marker memorializing the settlement and original founders of the Township

Source: Giffels Webster (2021)

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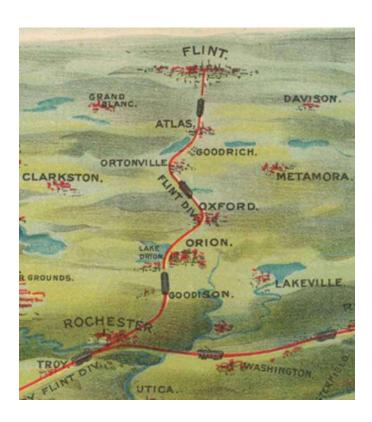
Impact of Transit

In 1872, the Detroit and Bay City Railroad, later known as the Michigan Central Railroad, was constructed through the northeast portion of the Township connecting Detroit to Oxford, with the connection to Bay City completed in 1873. Through Orion Township the railroad was constructed on an old Native American trail that followed Paint Creek. Due to the limited means of transportation during this time, the opening of this railroad facilitated the flow of Township agricultural products to larger markets and provided access to needed goods for Township residents. In addition to its economic benefit, the unified ownership of the railroad corridor helped to preserve this old Native American trail route for reuse.



Above: A portion of the Detroit United Railway Map showing the portion of the route that traveled from Detroit through Orion Township, eventually ending up in Flint.

Source: Detroit United Railway



Above: Detroit United Railway Map showing the portion of the route that traveled from Troy to Flint.

Right: "Flint Division Excerpt" of a Detroit United Railway Brochure

Source: Detroit United Railway

FLINT AND INTERVENING ATTRACTIONS.

Cars from Detroit to Flint follow the direct Pontiac line to Royal Oak and there diverge. From Royal Oak, you pass through such villages as Clawson, Big Beaver, and Troy to Rochester, a fascinating study in past and present, with its old flouring mills, its great knitting mills, its big beet sugar factory, its old homes and new, and the grand country about it. Beyond this, on the main line, comes Goodison, Rudd's Mills, Orion on Orion Lake, the famous place of assemblages and summer resorters, with its hotels, cottages, yachts and lighter craft, a summer place deserving all the praise given it; through enterprising Oxford, Ortonville, Goodrich and Atlas to the terminal. Flint is one of the biggest little cities in the world. It is not only handsome, but has endless interest in its varied industries and enterprises. Time, either way, 3 hours hours; fare each way, \$1.00. Cars every hour; connections with Pere Marquette and Grand Trunk Rallroads.

Justice to the attractions of this division require mention of

Pere Marquette and Grand Trunk Raifroads.

Justice to the attractions of this division require mention of the branch to Romeo, leaving the main line at Lake Orion Junction. It penetrates a thickly settled and very old country for this part of the world, its excellence attested in fine school houses and churches, highly cultivated farms and "homey" homes. Stony Creek and Washington give attractions to the way, and when Romeo is reached, you find a place that stands apart in its day and generation, because of its nicely distributed wealth, culture, good taste and that admirable form of aristocracy that rests on merit. Time, 2 hours. Fare, 50 cents, one way. Cars every hour. The Grand Trunk Railway connects at Romeo.

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Interurban Transit

During the early 20th Century, Orion Township was also accessible using the Detroit United Railway (D.U.R.), which was a consolidated transit company that was in operation from 1900 to the 1920's operating across the City of Detroit and providing access to suburban communities. Orion Township was part of the D.U.R.'s Flint Division line, which connected Orion with Goodison and Rochester to the south, and several communities to the north, ending at Flint. From D.U.R. brochure "Trolley Rides in City and Country":









Left: A brochure advertising trolley rides on the Detroit United Railway.

Above: All three photos above show the Detroit United Railway Depot Station that was located in Orion.

Source: Detroit United Railway

Paint Creek Trail

In the 1970's, the last rail line operator, Penn Central Railroad, abandoned the line and filed for bankruptcy. With railroad use ending, Oakland County and Orion Township began planning for the use of a trail through the corridor, which consisted of 8.9 miles of former railroad right-of-way connecting Rochester and Lake Orion. In 1981, the Paint Creek Trailways Commission was formed with the purpose of purchasing this land from the railroad for what today is known as the Paint Creek Trail, the first rail-to-trail conversion in the state. Please refer to the Paint Creek Trailways Commission for more information on this historic regional rail trail.

Polly Ann Trail

Another rail to trail project connecting Orion Township to the greater Southeast Michigan trail system is the Polly Ann trail, which connects to the Orion Township Pathway system on Joslyn just south of Waldon. From there, the trail runs north and follows the route of the original P.O. & N. rail line, which was established in 1879 as part of a route that ran from Pontiac to Port Austin. Like many other passenger rail lines in the area, the lightly traveled route was poorly managed and maintained and saw declining ridership throughout the 1900's. The line was eventually closed in 1984 and was purchased by the DNR with federal funds in 1994 from the Grand Trunk Rail Company.

Today the trail is owned by the Michigan Department of Natural Resources and is managed separately by groups in Lapeer County and by the Polly Ann Trail Management Council, Inc. (PATMC) in Oakland County.



Above: the Paint Creek Trail in Orion Township is a popular destination for those looking to get outdoors all year round.

Source: Giffels Webster (2019)



Above: A Map of the Paint Creek Trail, which connects Rochester to Lake Orion and traverses through Orion Township.

Source: Paint Creek Trail



Above: A sign located along the Paint Creek Trail in Orion Township denotes mile maker 38 of the former Michigan Central Railroad. The lines has since been converted to a non-motorized path.

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Source: Giffels Webster (2019)



Lake Orion

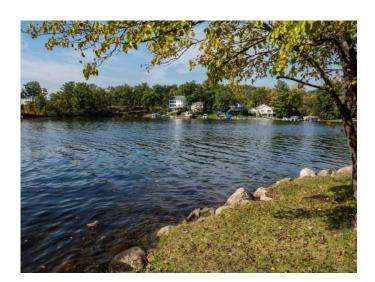
Lake Orion, known as Lake Canandaigua prior to 1834, is primarily man-made through the use of numerous dams. Prior to 1936, the lake was smaller than its current area and outletted to Paint Creek. In order to provide adequate water flow for water-powered mills, a dam was constructed. Over the years, a number of different dams were constructed as previous ones failed and often destroyed mills relying on the water flow.

As the route of the railroad ran along Lake Orion, a new, safer dam was constructed to ensure that the railroad grade would be stable. This new dam was higher and longer than the older mill dams, which enlarged the area of Lake Orion. With this new safer dam, water-driven mills became more practical and were a great benefit to the Township's lumber and agriculture industries.

Above: "Lake Orion, Mich. from R.R. tracks 1890-1901" Source: Library of Congress

Wildwood Farm (Canterbury Village)

From the Orion Historical Society: "In 1916, William E. Scripps heir to the Detroit News, founded Wildwood Farm as a land reclamation project to make over farmed land productive once again. He eventually acquired 3,830 acres and relocated earlier pioneer barns to a site on Joslyn Road, adding other farm buildings, manager housing, and a school for the farm's children. He developed one of the foremost stock breeding enterprises in America, and he developed a strain of disease-resistant Aberdeen Angus (Black Angus) beef. Scripps also raised purebred sheep, cows, swine, and chickens and had a modern dairy operation. Today, the original farm buildings are now incorporated into the unique shopping complex known as Canterbury Village. Visitors there can see the intact manager cottages, an original Hadrill family farmhouse, and the remains of several barns, including the large dairy barn, now converted to shops. Much of the farm's land and lakes are now parks and continue to provide for local wildlife as part of Orion Township's Civic Center Park, Oakland County's Orion Oaks Park, and Bald Mountain State Recreation Area."



Above: Lake Orion as seen from Heights Road

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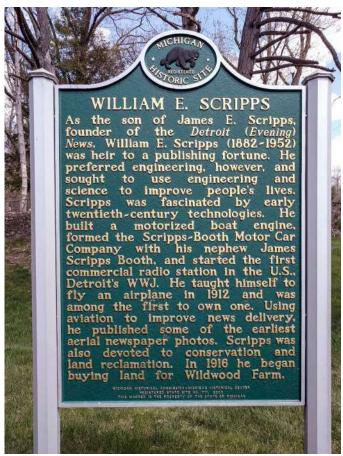
Source: Giffels Webster (2021)

Scripps Estate (Guest House)

From the Orion Historical Society: "Ten years after establishing the farm, Scripps and his wife Nina Downey Scripps began building a country retreat on part of the estate. Scripps engaged his talented brother-in-law, Clarence E. Day, to design the Norman revival style mansion with all the modern amenities available at the time. The result is one of the most artistically important American country estate homes of the era. After William Scripps died in 1952, the estate was subdivided, and Guest House, Inc., became the owner of the house and a little over 100 acres of grounds in 1956. At the time, the newly formed non-profit needed the right facility to begin its progressive treatment facility for alcoholic priests. The former Scripps house was ideal as a quiet place for clients to begin their recovery. In 1993, the priests moved to a facility in Minnesota, and the Orion Township site became a facility for religious women recovering from addictions. This year (2007), a modern treatment center has been built on the grounds for the clients. The house will continue to be used for treatment but will be more accessible to the public for programs and tours."

Historical Resources

For additional detailed information on the history of Orion Township, please refer to the Oakland County Historical Resources and the Orion Historical Society. This includes the publication "Orion Since 1818" by Paul M. Scott, which was commissioned by the Orion Township Library Board in 1976 in honor of the American Revolution Bicentennial and is one of the most comprehensive documents on the history of Orion Township. Additionally, the historic Howarth School House, a Michigan State Register of Historic Sites, and Porritt Barn have been relocated to Orion Parks' Friendship Park for preservation and enjoyment by the public. Please refer to the Orion Township Parks and Recreation Plan for more information on Friendship Park.



Above: A historical marker denotes the site of the William E. Scripps estate.

Source: Joel Seewald (2020)

Right: Amelia Earhart performs a test flight of the Scripps glider over Wildwood Farm in Lake Orion, Mi in 1929.

Source: Henry Ford Museum digital collection (2022)



Orion in History

In the winter of 1929, Amelia Earhart visited William E. Scripp's estate for dinner where he asked her to test a new glider. She successfully flight-tested a glider for Scripps, owner of Gliders, Inc. and the Detroit News, on July 5, 1930, at Grosse Ile Airport, and she set three speed records (Lake Orion Review).

Amelia Earhart also flight-tested a wingless autogiro prototype version of the helicopter in 1931 and, as a sales agent, sold the first model to William E. Scripps of Orion for use by the Detroit News. (Source: Orion Historical Society.)



Location and Regional Setting

Established in 1835, the Charter Township of Orion, commonly referred to as Orion Township, is part of Metropolitan Detroit and is situated in northeast Oakland County. Orion Township is approximately 35 square miles excluding the home rule Village of Lake Orion located in the northeast corner of the Township. Orion Township and the Village of Lake Orion have a close relationship due to this proximity, and Township and village areas are often referred under the same name of "Lake Orion" or "Orion."

The Village of Lake Orion has a local governance structure that is separate from Orion Township, however, Village residents are also part of the Township, they participate in Township functions, and they vote in Township elections. The Village has a separate Village Master Plan and zoning functions that are not shared due to this separate governance structure, which is rooted in State of Michigan enabling legislation.

The City of Pontiac, with its downtown located about 5 miles to the south of Orion Township, is the seat of Oakland County and is the closest urbanized area to Orion Township. Pontiac is separated from Orion Township by the City of Auburn Hills, which is formerly part of Pontiac Township and borders the entire south boundary of Orion Township. The City of Lake Angelus is also between Pontiac and Orion Township though it does not share a border with Orion Township.

Notably, Orion Township is an equidistant drive from Downtown Detroit, 35 miles to the south, and the City of Flint, 35 miles to the north, and has direct access to both cities via Interstate 75 which crosses near the south boundary of Orion Township. Interstate 75 is highway of regional and national significance, which has a direct local impact on the residents and economy of Orion Township.

Orion Township is bordered by Oakland Township to the east, Oxford Township to the north, and Independence Township to the west. Independence Township includes The City of the Village of Clarkston which is connected to Orion Township by Clarkston Road and Waldon Road, which are significant local east-west corridors through the area. Oxford Township and the Village of Oxford share a close relationship with Orion due to the Village of Oxford's close proximity and direct access provided by M-24/Lapeer Road, which is a limited access highway of regional and statewide importance. Waterford Township, located directly to the southwest, and Rochester Hills, located directly to the southeast of Orion Township, both offer a variety of retail, recreation, and employment opportunities.

Lastly, land devoted to parks and recreation accounts for over 25 percent of the land area within the Township. This area includes Orion Township parks, Orion Oaks County Park, and the Bald Mountain State Recreation Area, which includes three large state-owned areas within and to the east of Orion Township.

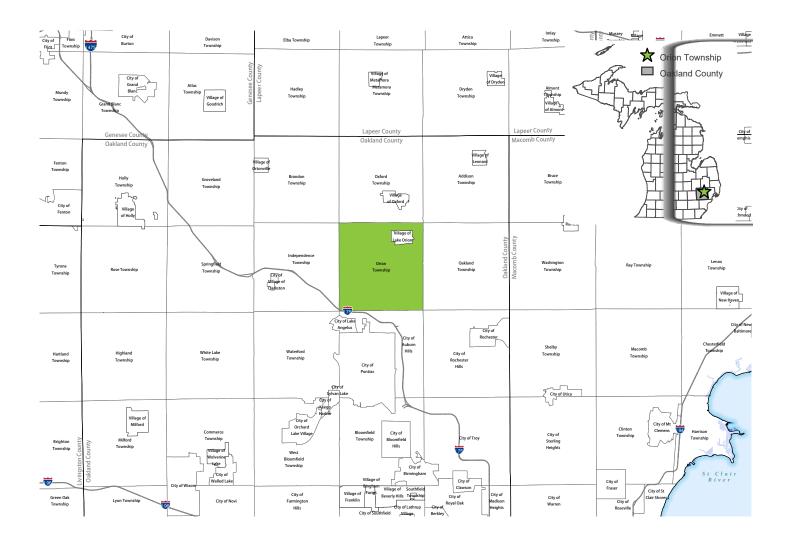


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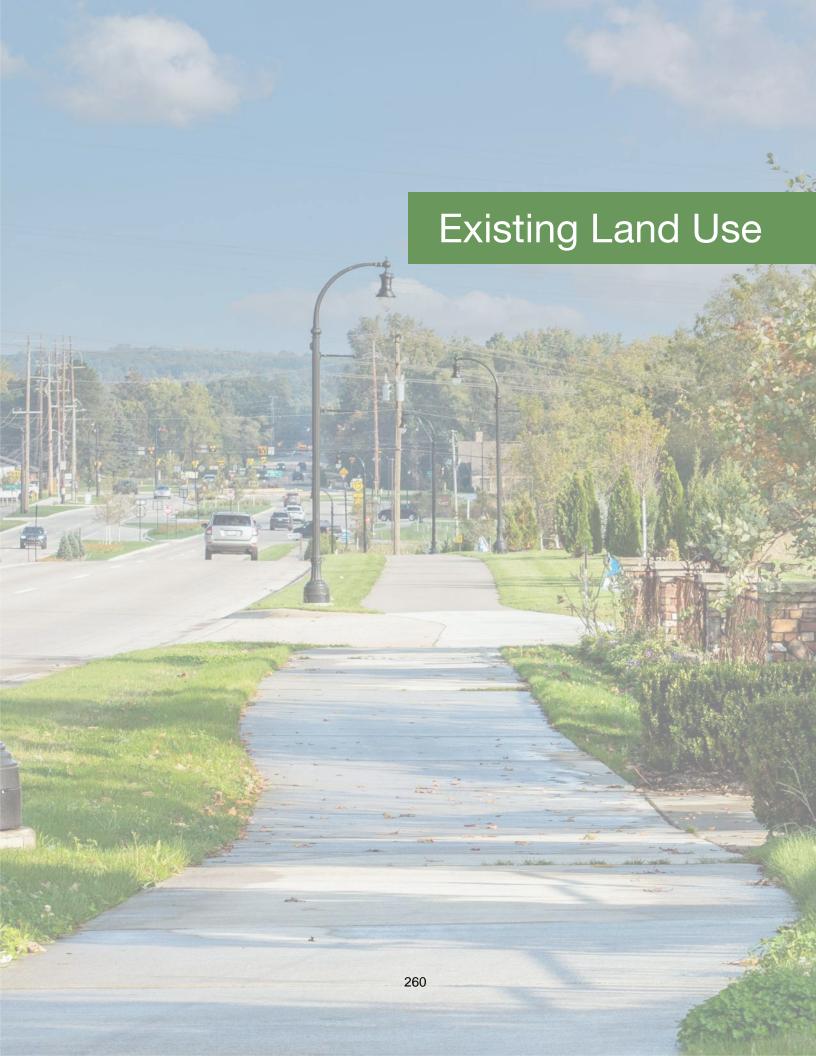
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MAP 1: ORION TOWNSHIP REGIONAL SETTING



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Existing Land Use

2020 Land Use



Residential

Approximately 37% of the land area in Orion Township is dedicated to residential land uses, which is slightly lower than Oakland County overall ratio of just under 43%. Most of the residential development is single family units, with nearly 85% of the single family lots consisting of less than one acre.



Agriculture

As of 2020, the Township had one 15-acre parcel of agricultural land, located in the northwest quadrant.



Commercial and Office

Commercial and office development account for 2.7 % of the total Township area (1.9% of all parcels). The commercial and office land uses are concentrated along the Lapeer, Baldwin and Brown Road corridors.



Industrial

Industrial development is primarily concentrated in the southeast portion of the Township around the Brown-Giddings-W. Silverbell-Lapeer Road area and occupies 6 % of the land area withing the Township.



Open Space

Recreation and Conservation area account for nearly a quarter of the land area (24.3%) in the Township. This classification includes public or private-owned parks, golf courses, or areas of which the primary purpose is preservation and conservation of undeveloped natural areas.



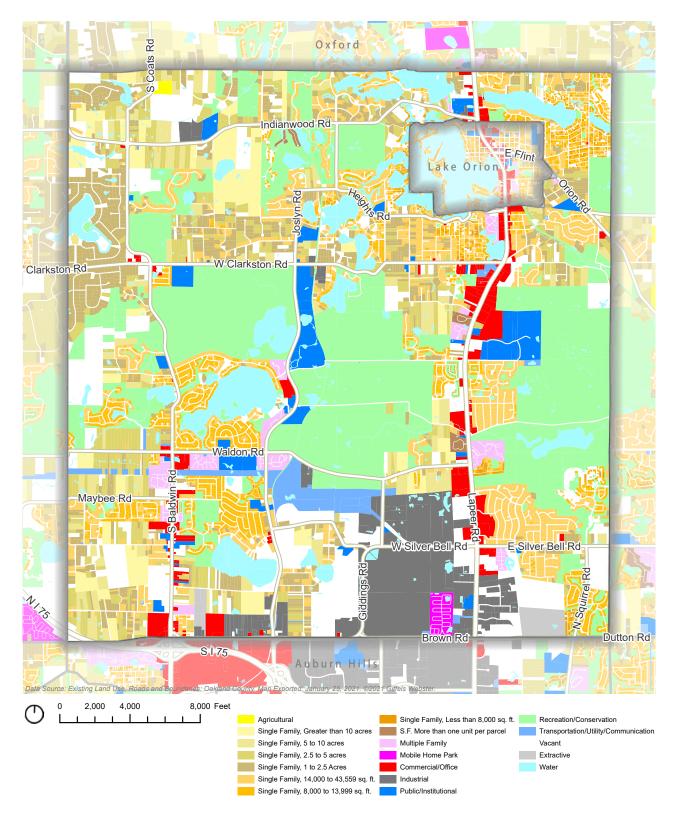
Water

Orion Township has 42 lakes over five acres in size that occupy 7.6 % of the total area in the Township.

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MAP 2: EXISTING LAND USE





Existing Land Use

ORION TOWNSHIP

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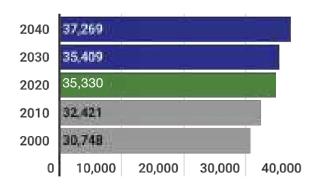




Population

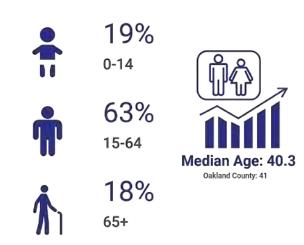
Understanding the demographics of a community is vital to sound policy making and planning. Demographics inform the trends in population, aging, migration, local economies, and much more. Master Plans rely on demographic analysis to better prepare for the issues and demands facing a community in the present and the future. The demographic makeup of a community contains valuable information that affects the types of resources, programming, and physical infrastructure required to meet the needs of residents and businesses. Proper planning for the future must consider the composition of the population and consider its likely future composition. Understanding where the Township has been and where it is likely to go is essential to projecting future needs.

POPULATION GROWTH

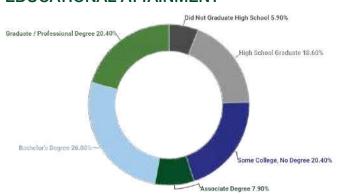


The Southeast Michigan Council of Governments (SEMCOG) is forecasting slow population growth in the Township between now and 2040. With a strong economic development program, excellent freeway access, natural features, and desirable small-town and rural character, the Planning Commission anticipates that growth will surpass these projections. For example, a modest one percent annual compound growth rate in population over 20 years would yield a 2040 population of about 45,400. Also, The Chesapeake Group notes marketable opportunities for up to 1,500 housing units over the next ten years. This would increase the population by approximately 3,800 people.

POPULATION AGE



EDUCATIONAL ATTAINMENT



HOUSEHOLDS



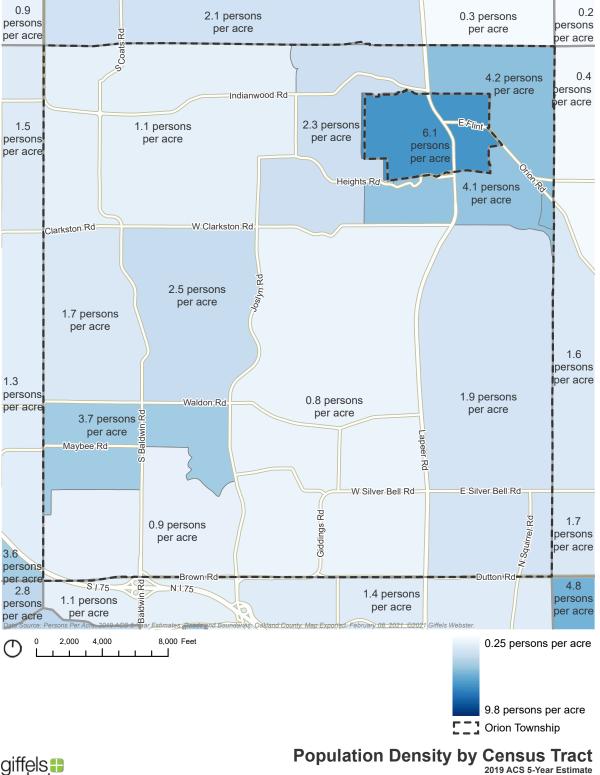
Page data source: 2019 ACS data via SEMCOG Community Explorer



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MAP 3 POPULATION DENSITY BY CENSUS TRACT





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ORION TOWNSHIP

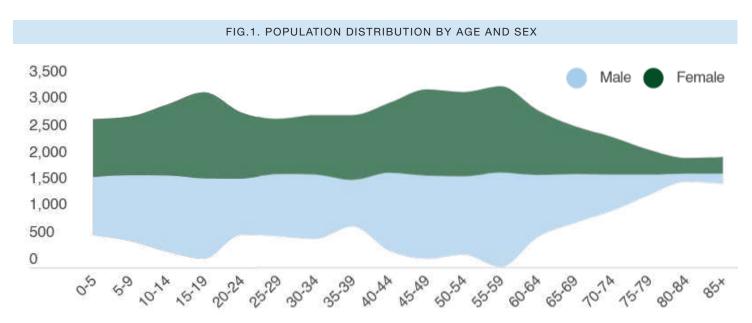
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Population Cohort Analysis

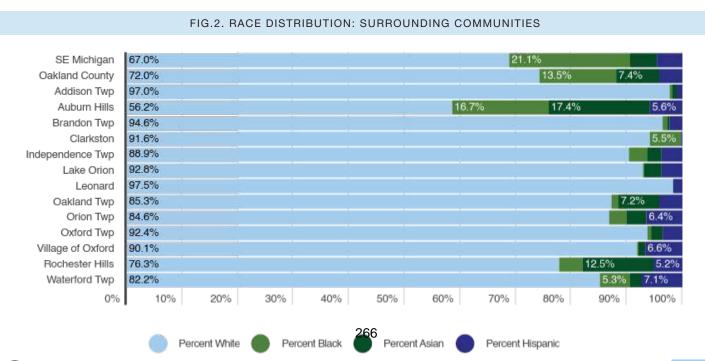
It is essential to understand the population's composition by age and sex to have a proper insight into demographic conditions and socio-economic trends. Orion has an almost equal distribution of male and female population on average. However, the ratio varies with age (see chart below). As they age, the ratio of females to males is increasing.

Race

The racial composition in Orion Township is predominantly white at 84.6%, Orion's racial distribution is consistent with most of the surrounding communities except for the more diverse city of Auburn Hills. Orion Township also has a higher white population percentage than the county and SEMCOG, whose total population are 72% and 67% white, respectively.



Source: 2019 ACS data via SEMCOG Community Explorer



Surrounding Communities

The demographic composition of Orion Township incorporates data about race, age, housing, population trends, income, education, and employment. This section compares the Township's demographic characteristics to neighboring communities that share a border with Orion.

Persons per Acre

Orion Township maintains a similar density compared to surrounding areas, with density increasing south of the Township and decreasing to the north. The graph at the bottom of the page provides a comparison to some surrounding communities.

TABLE 1. SURROUNDING COMMUNITIES: POPULATION GROWTH (2000-2020)					
	Population 2020	Population 2010	Population 2000	Percent Population change (2000-2020)	
Oakland County	1,274,395	1,202,362	1,194,156	7%	
Oakland Twp.	20,067	16,779	13,071	54%	
Oxford Twp.	18,927	17,090	12,485	52%	
Auburn Hills	24,360	21,412	19,837	23%	
Orion Twp.	35,330	32,421	30,748	15%	
Independence Twp.	36,686	34,681	32,581	13%	
Lake Orion	2,876	2,973	2,715	6%	
Waterford Twp.	70,565	71,707	71,981	-2%	



Source: Decennial Census data via SEMCOG Community Profiles and 2020 Census Map

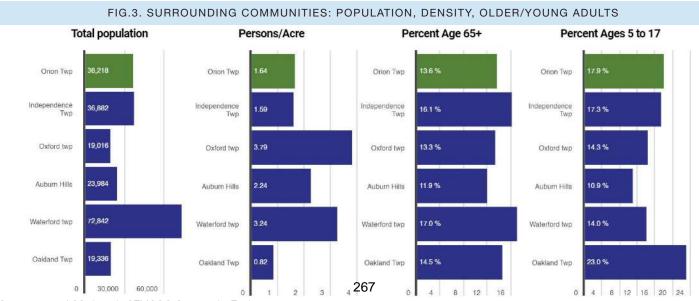
Population Growth

Many communities surrounding Orion Township and in Oakland County have been experiencing an increase in population since 2000. Oakland Township (54%), Oxford Township (52%) and the City of Auburn Hills (23%) have experienced the highest population growth between 2000 and 2020, followed by Orion Township.

Older and young adult population

Compared to surrounding communities, Orion Township has comparable percentages of the aging population over 65 years and of the population of people between ages 5 to 16. This distribution essentially focuses on dependent people who are unlikely to be primary breadwinners and indicates the share of people who are dependent on others' income.

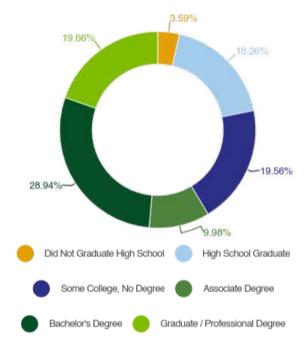
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Source: 2020 ACS data via SEMCOG Community Explorer

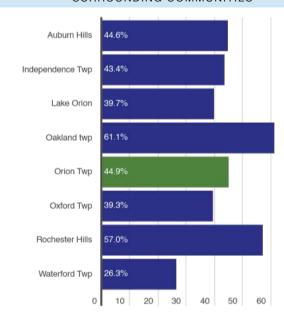
Educational Attainment

The highest levels of educational attainment result in a higher skill set and ultimately contribute to the local job growth. In general, about 80% of residents older than 25 years have some kind of associate of a higher degree past high school. Orion Township has a comparable percentage of bachelor degrees or higher graduates among the surrounding communities.



Source: 2019 ACS data via SEMCOG Community Explorer

FIG.4. PERCENT BACHELORS DEGREE OR HIGHER: SURROUNDING COMMUNITIES

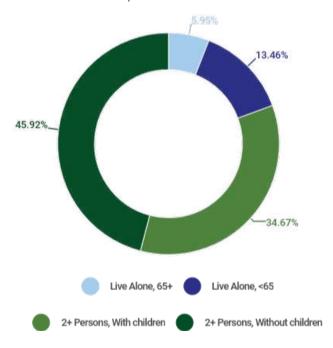


Source: 2019 ACS data via SEMCOG Community Explorer

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Households

In 2019, there are a total of 11,673 households in Orion Township. Nearly half of the households are couples with no children (46%), and approximately 35% of the households are families with children. The remaining percentage is split between adults and elders who live alone. The average household size is slightly higher than the surrounding area, with 2.73 members per household.



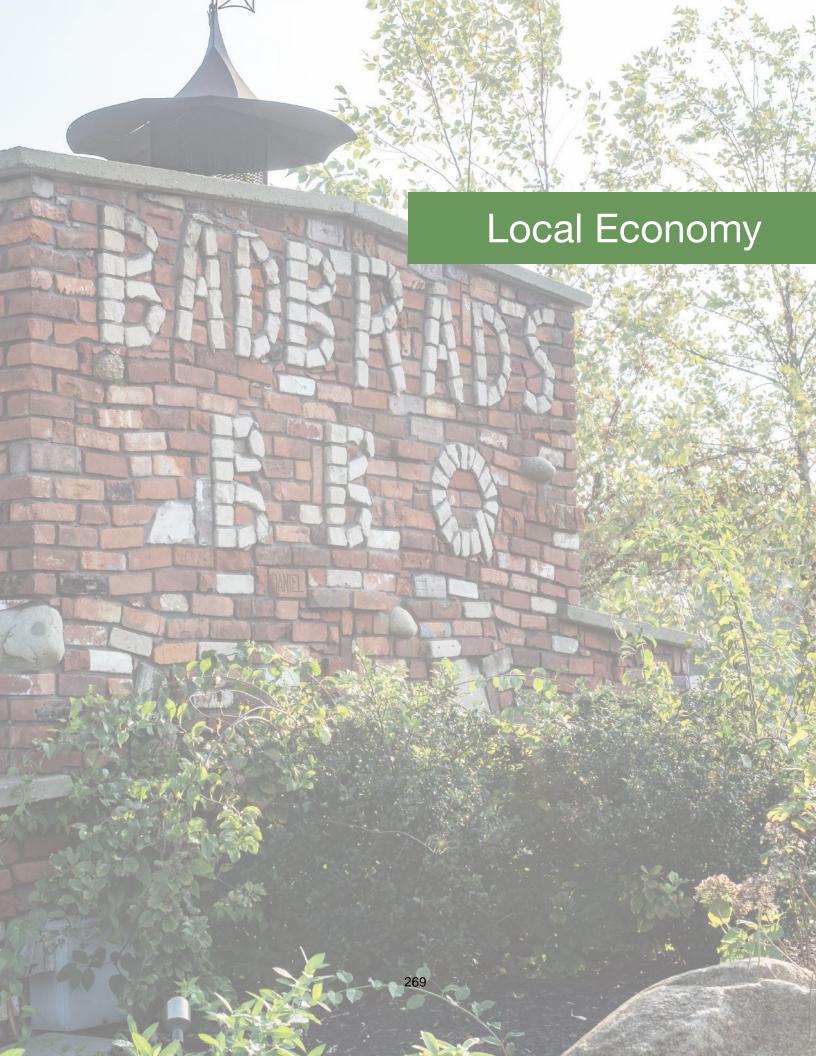
Source: 2019 ACS data via SEMCOG Community Explorer

TABLE 2. HOUSEHOLD TYPES					
	Percent with Seniors	Percent with children	Average Household Size		
SE Michigan	28.9 %	28.8 %	2.54		
Oakland County	28.8 %	28.5 %	2.46		
Auburn Hills	21.7 %	23.2 %	2.31		
Independence Twp.	26.2 %	33.8 %	2.70		
Lake Orion	28.9 %	27.8 %	2.22		
Oakland Twp.	28.6 %	41.5 %	2.99		
Orion Twp.	22.4 %	34.7 %	2.73		
Waterford Twp.	27.5 %	25.4%	2.35		

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Source: 2019 ACS data via SEMCOG Community Explorer

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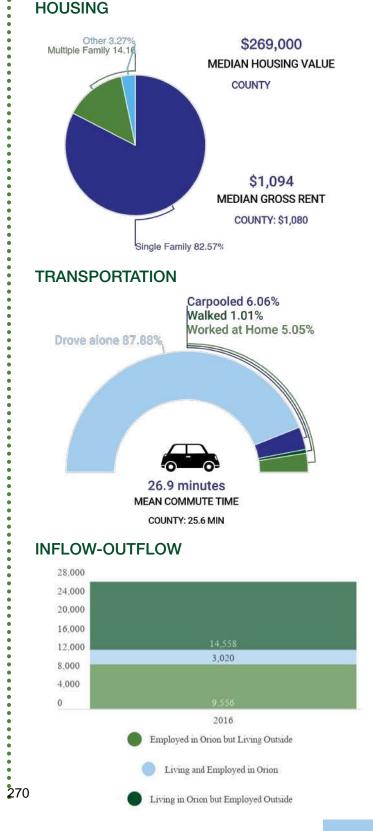


Local Economy

Identifying trends in employment can help a community project future need for land for certain use categories and assess potential opportunities for economic development. This section provides a brief overview of the Township's existing economic base. This plan also includes a market study that looks extensively at commercial demand and employment and businesses.

WORKFORCE

INCOME



Source: 2019 ACS data via SEMCOG Community Explorer

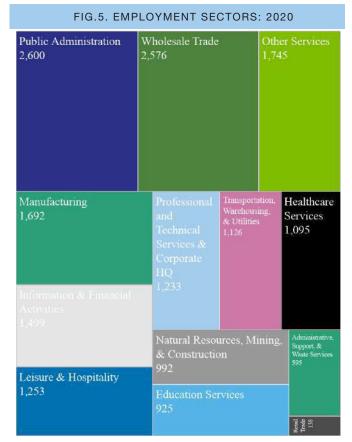


Workforce

In 2020, Orion Township produced an estimated 17,469 jobs. The chart (below) shows the distribution of employment sectors for the Township. There is no dominant sector that contributes majorly to the local economy, however, the public

administration, wholesale trade and other services trades comprise about a third of all jobs. The percent contribution of each of these industries to the total employment within the Township is relatively identical since 2015 and is projected to remain the same with minimal variation in 2045. The total number of jobs is projected to increase by 398 jobs from 2020 to 2045, which represents a 2.3% rate of jobs growth. Refer to the table below for more details.

A robust economic development program could substantially increase the job forecast from SEMCOG shown in Table 3 below. The Chesapeake Group is forecasting marketable opportunities for 270,000 sf of retail and service space, 100,000 sf of office space and 200,000 sf of industrial space over 10 years. In addition, on January 25, 2022, General Motors announced a \$4 billion investment to convert the GM Orion facility to produce electric trucks. This investment is expected to create more than 2,350 new jobs at Orion and retain approximately 1,000 current jobs when the plant is fully operational.



Source: 2019 ACS data via SEMCOG Community Explorer

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TABLE 3. EMPLOYMENT SECTORS (PAST, PRESENT AND FUTURE)									
	2015	2020	2025	2030	2035	2040	2045	Change	2015-2045
Total Employment Numbers	17,033	17,469	17,269	17,179	17,373	17,456	17,431	398	2.30%
Public Administration	2458	2600	2613	2586	2575	2552	2493	35	1.40%
Wholesale Trade	2885	2576	2415	2224	2102	1995	1880	-1005	-34.80%
Other Services	1690	1745	1768	1778	1,817	1,859	1884	194	11.50%
Manufacturing	1611	1692	1691	1712	1752	1759	1779	168	10.40%
Information & Financial Activities	1,368	1,499	1,539	1,558	1,592	1,664	1,659	291	21.30%
Leisure & Hospitality	1,219	1,253	1,223	1,200	1,194	1,184	1,168	-51	-4.20%
Professional and Technical Services & Corporate HQ	1175	1233	1159	1253	1,349	1,332	1,346	171	14.60%
Transportation, Warehousing, & Utilities	975	1126	1072	1057	1068	1079	1091	116	11.90%
Healthcare Services	1,014	1,095	1,147	1,184	1,274	1,365	1,450	436	43.00%
Natural Resources, Mining, & Construction	1,020	992	993	992	1004	1009	1023	3	0.30%
Education Services	904	925	923	913	913	912	905	1	0.10%
Administrative, Support, & Waste Services	576	595	589	587	598	611	618	42	7.30%
Retail Trade	138	138	¹³⁷ 271	135	135	135	135	-3	-2.20%

Source: SEMCOG 2045 Regional Development Forecast

(lacktriangledown)

Employment

The total number of jobs in the Township makes up 1.7% of the total jobs in the county. The Township's unemployment rate is lower than the county's and is lower than the rate in surrounding communities. The labor force participation rate of 70% is higher than the surrounding areas and the national average of 62.8%. A higher labor force participation rate and a lower unemployment rate indicate a successful local job market. These rates are impacted by demographic and economic trends. For example, adults aged 25-64, people who are typically in the workforce make up to 63% of the total Township population which explains the 70% labor participation rate.

TABLE 4. EMPLOYMENT WORKFORCE: SURROUNDING COMMUNITIES					
	Total Jobs	Percent Unemployed	Labor Force Participation Rate		
SE Michigan	2,774,223	6.2%	63%		
Oakland County	960,562	3.6%	66%		
Orion Twp.	17,033	2.5%	70%		
Auburn Hills	66,539	6.0%	69%		
Independence Twp.	17,024	4.6%	68%		
Lake Orion	1,945	2.9%	71%		
Oakland Twp.	5,151	4.7%	66%		
Rochester Hills	41,559	2.9%	63%		
Waterford Twp.	33,441	4.5%	67%		

Source: 2019 ACS data via SEMCOG Community Explorer

Income

Median household income and per capita income (average income per person) are typical metrics to determine the standard of living in a community. Orion Township has a median household income of \$98,741, which is significantly higher then the county median of \$79,698. The Township has a per capita income of \$44,958.

TABLE 5. INCOME DATA: SURROUNDING COMMUNITIES				
	Median Household Income	Average Income Per Person		
SE Michigan	\$61,926	\$34,632		
Oakland County	\$79,698	\$44,629		
Orion Twp.	\$98,741	\$44,958		
Auburn Hills	\$64,186	\$33,071		
Independence Twp.	\$94,018	\$44,534		
Lake Orion	\$90,999	\$49,172		
Oakland Twp.	\$146,228	\$63,546		
Rochester Hills	\$93,953	\$47,881		
Waterford Twp.	\$62,321	\$34,524		

Source: 2019 ACS data via SEMCOG Community Explorer

FIG.6. MEDIAN HOUSEHOLD AND AVERAGE INCOME PER PERSON (2019)



Source: 2019 ACS data via SEMCOG Community Explorer



Transportation

In Orion Township, the majority mode of travel to work is by car alone (approximately 87%) which is similar to national trends. This is followed by carpooling at 6%, followed by 5% who work from home; 1% walk to work.

FIG. 7. MODE OF TRAVEL: ORION TOWNSHIP 87% 6% 5% 1% Drove alone Carpooled Worked at Home Walked

Source: 2019 ACS data via SEMCOG Community Explorer

9,556 Employed in the Township, living outside ORION 3,020 14,558 Living in the Township, employed outside

TABLE 6. DA POPULAT		
Jobs	12,576	Daytime
Non-Working Residents	16,770	Population
Age 15 and under	8,051	-
Not in labor force	7,657	29,346
Unemployed	1,062	

Source: 2019 ACS data via SEMCOG Community Explorer

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Car Ownership

In Orion Township, there is a total of 13,158 households. A majority of households (79.1%) have at least one car, which is above the county average.

FIG.9.HOUSEHOLDS WITH NO CAR



20.1 %

SEMCOG: 33.9%

Oakland County: 30.4%

Travel Times

In 2019, the mean travel time to work for Orion residents was about 26.4 minutes, which is comparable to the county mean (25.6) and United States (26.1).

Commute Patterns

Orion Township experiences a decrease in its population during the daytime, as the number of workers that leave the Township for work is more than the number that come to the Township for work. Overall, the Township's daytime population is about 21% smaller than its permanent population. Auburn Hills and Troy are the most common places of employment for Orion residents outside the Township.

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final draf



Community Facilities

Community facilities include both physical facilities located within the Township as well as services provided by the Township and other governmental or quasi-public entities operating in the area. Community facilities include essential facilities or services like a fire station or public utility, or may be non-essential facilities or services such as a public park or library. Both essential and non-essential community facilities play a vital role in the growth potential of the Township and resident retention. A welcoming Township Hall, the availability of public safety services, attractive recreational and cultural facilities, and strong public school and library systems are some examples of community facilities that can help draw new people to the Township and enhance the quality of life of existing residents. As part of the 2015 Master Plan, there was a specific focus on addressing areas of need related to the Township Civic Center, the Orion Center, and fire and police services. Updates on these three community facilities are provided within this section. Additionally, the safety path plan is based on creating connections between the many community facilities located within the Township, and references to community facilities related to planning and transportation are provided throughout this Master Plan update.

New Township Hall and Sheriff Substation

Construction of a new Orion Township Hall began in late 2019 and opened for business in fall of 2021. The new Township Hall site is located on the southeast corner of the intersection of Joslyn Road and Scripps Road, on Township-owned land, and is just to the north of the former Township Hall on the east side of Joslyn Road south of Greenshield Road.

The new Township Hall addresses the space needs of Oakland County Sheriff deputies also operated out of the former Township Hall, providing a separate 8,000 square-foot building dedicated exclusively to policing needs. The main Township Hall building is about 32,000 square feet housing modern office, meeting, and public spaces for Township staff, leaders, residents, and patrons. The new Township Hall was designed by Auger Klein Aller Architects and was funded through municipal bonds. No taxes were raised to fund construction. Future improvements on the new Township Hall site include future sports fields and a trail network that includes a connection to the Polly Ann Trail which runs near the east boundary of the site.



Above: The new Orion Township Hall opened in January of 2022.

Source: Giffels Webster (2022)

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Police and Fire

Police and fire services are funded under the Township's dedicated millage rate of 3 mills. Police services are contracted through the Oakland County Sheriff's Department and staffing and equipment have been adjusted to keep pace with land use. The Township recently opened a new fire station on Giddings Road and renovated a second existing fire station. The Township's fire department is ALS certified (Advanced Life Support).





Above: Fire Station 1 and Fire Station 3, Orion Township Source: Giffels Webster (2021)

STATION & APPARATUS LOCATIONS



Station 1
93 S. Anderson Lake Orion, MI 48362
Apparatus: Alpha 1, Air 1, Engine 1



Station 3 and Fire Administration 3365 Gregory Rd. Lake Orion, MI 48359



Station 2 3801 Giddings Rd. Lake Orion, MI 48359 Apparatus: Alpha 2, Engine 2, Ladder 1



Station 4
465 S. Baldwin Rd. Lake Orion, MI 48360

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(

Orion Township Public Library

(From orionlibrary.org)

The Lake Orion Library, established by the Lake Orion Women's Club in 1926, was first located on the second floor of 37 East Flint Street in the Village of Lake Orion.

- In 1929, Orion Township residents ratified a proposition to levy taxes in support of the Lake Orion Library, renaming it the Orion Township Free Public Library.
- In 1940, it was moved to the Hemingway House on Lapeer Street in the Village of Lake Orion and grew until the floorboards sagged.
- In 1964, the first formal library was built at 845 South Lapeer Road. Opening in 1965, this building met the community's needs for the next 23 years.
- In 1986, the Orion community passed a bond to create the new Orion Township Public Library to serve the next generation of Orion residents.

The 29,000 square foot building opened at its current location on Joslyn Road in February of 1989. Designed to serve a population of 30,000 and house a collection of 100,000 volumes with a capacity for a 200,000 items per year circulation, the new Orion Township Public Library is spacious and inviting, offering quiet study areas, comfortable seating, meeting rooms for community gatherings, and the latest titles, as well as state-of-the-art computers and other new technologies.

1940-65

1926-40



1965-89



1989-now



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Mutual Aid Agreements/Assessing

As part of Orion Township's arrangement with the Oakland County Fire Chief Association, a mutual aid agreement was signed with surrounding communities to provide necessary services for fire protection. The mutual aid agreement, known as Mutual Aid Box Alarm Society (MABUS 320) provides for specific responses based on needs and alarm priorities. This mutual aid pact allows for Orion Township to receive and render aid in emergency situations when resources have been placed at their maximum. In the event of serious structure fires or other emergencies, Orion Township will be provided with the necessary aid from all adjacent communities and receive resources from County, State and Federal sources. Orion Township relies upon the Oakland County Equalization Department for assessing and assistance regarding property taxes.



Orion Township offers a number of services and resources for its seniors. Services include free transportation via the North Oakland Transportation Authority (NOTA), senior sports & fitness programs, trips, and senior clubs. Many senior programs are run out of the Orion Center, located at 1335 Joslyn Road. The Orion Center, built in 2011, is home to the Community Programs Department which encompasses general recreation programming and senior services. The building incorporates a variety of recreation facilities, including a senior fitness room, yoga room, and arts and crafts room. The Orion Center also features a wellness center and a branch of the Orion Township Public Library.

Orion Neighborhood Television

Orion Neighborhood Television is a community media outlet. Its mission is to empower community members and groups to create, communicate and connect through television and video production. It is based out of the Orion Center on Joslyn Road and is intended to provide transparency in government through media while also providing internship opportunities.



Above: Orion Neighborhood Television (ONTV) is a community tool used for a variety of communications, including the annual local food drive.

Source: Orion Neighborhood Television (2022)

Existing Utilities

Public Water and Sewer Services

Currently, the Township is served by the Detroit Water System. The Detroit Water System has been extended along M-24 to a point north of Indianwood Road and along Brown Road to serve the General Motors plant and the industrial sector in the southeast and south-central part of the Township. The Detroit Water System also extends along Brown Road to Baldwin Road, then north on Baldwin Road just north of Clarkston Road.

Existing and planned water service areas are depicted on Map 4 on the next page. A large main was recently installed along Baldwin Road that loops to Indianwood Road. The intent of the loop is to provide alternatives in case of a service disruption, thereby providing for the health, safety and welfare of Township residents and businesses. The Township has extended Detroit Water westerly in a loop that follows along Giddings, Silverbell, Joslyn, and Brown Roads. This loop relieves the community well system that did serve the Keatington and Judah Lake subdivisions. An additional loop is planned for Miller, Conklin and Indian Lake Roads.

The accompanying Sanitary Sewers map (Map 5) depicts the areas served in the Township and distinguishes between the Paint Creek Interceptor and the Oakland-Orion system. The existing sanitary sewer area in Orion Township covers some residential subdivisions, including the Keatington and Judah Lake subdivisions, the Heather Lake area, and subdivisions surrounding the Village of Lake Orion, the industrial sector in the southeast part of the Township and sparsely developed residential areas along M-24 and Waldon Road.

The Water & Sewer Division services over 5,000 water customers and over 7,000 sewer customers. The water and sewer system contains over 150 miles of water mains and over 140 miles of sewer mains; 23 sewer lift stations; 6 pressure reducing vaults; over 1,700 fire hydrants; and a 2.5 million gallon water storage facility. Orion Township recently added two new water loops and is continually seeking solutions to better service the residents.

Drainage

Orion Township lies within the Clinton River Watershed; therefore all surface water eventually works its way to the Clinton River. However, the community is divided into several sub-watersheds. The major sub-watersheds include the Paint Creek and the Main-Clinton, while the Stony Creek covers a small portion of the northeastern corner of the Township. Several smaller sub-watersheds are also located within the Township and include the following: Sashabaw Creek, Trout Creek, Lake Angelus, Galloway Creek and Galloway Ditch.

There are several Oakland County Drain Water Resources Commission drains (enclosed and open ditch) that serve Orion Township, including: Brown Drain, Dry Run Drain, Reid & Branch Drain, Paint Creek Drain, Axford Drain, Osgood Drain, and the Ballard Drain (see Map 6). There are several other small streams that serve as, tributaries to the Township's major drains.

Drainage for the most of Orion Township is private or non-governmental, and the individual property owners in the Township are typically responsible for their own storm water drainage. The Township's Stormwater Management Ordinance, No. 92, is one of the primary tools in controlling impacts of new developments, as well as providing for other benefits. It is expected that, as Orion Township continues to develop, active maintenance of the Township's creeks and County drains will be increasingly important to the prevention of future flooding and drainage concerns. While already in place, Orion Township must continuously monitor and update its ordinances and policies to ensure that they meet Federal Clean Water Act requirements.

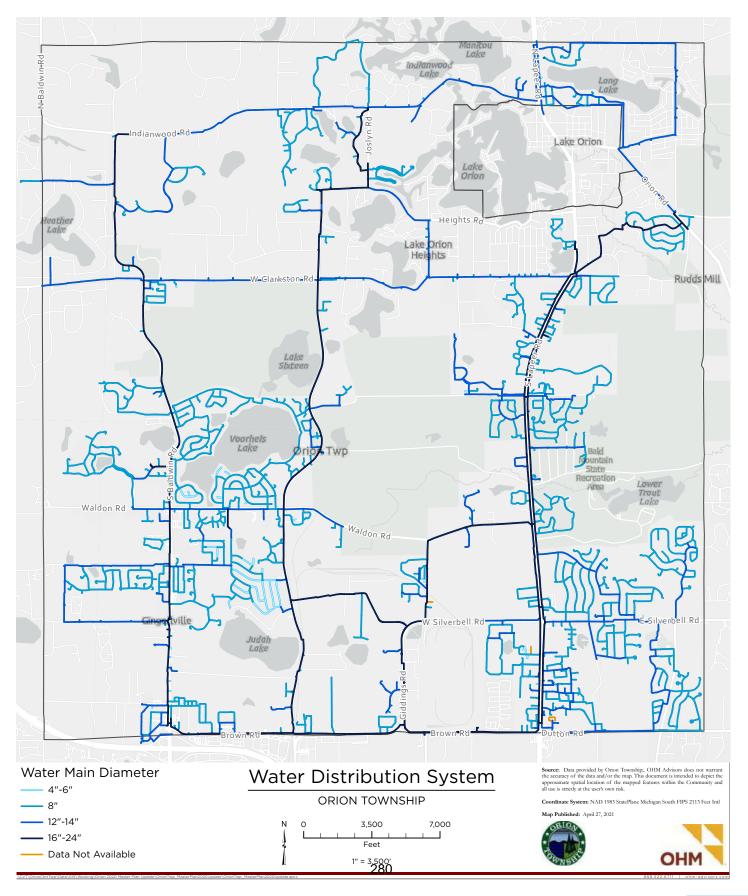


Above: The Orion Township water tower holds around 2.5 million gallons of water and is one of the largest in Michigan.

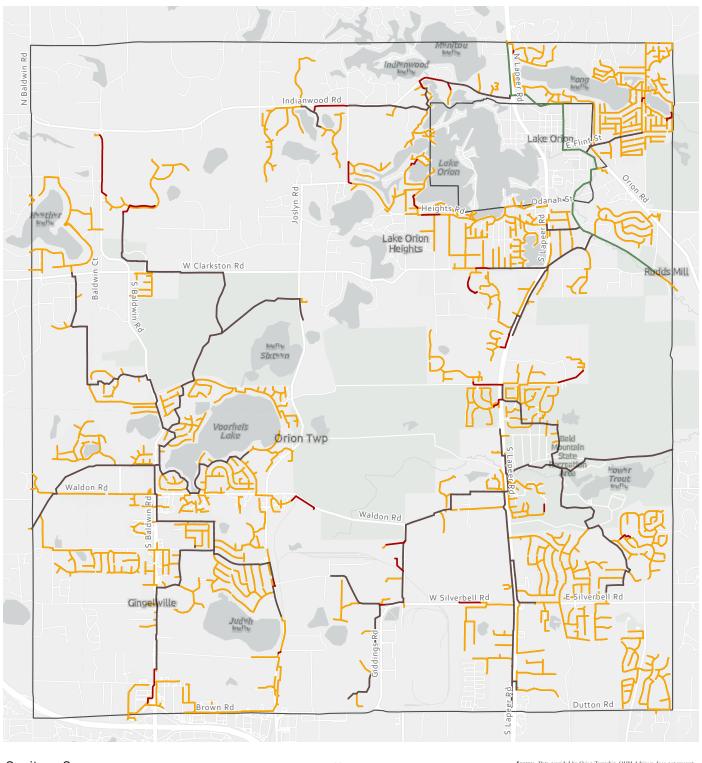
Source: Michigan Municipal League (2022)



MAP 4: WATER DISTRIBUTION SYSTEM

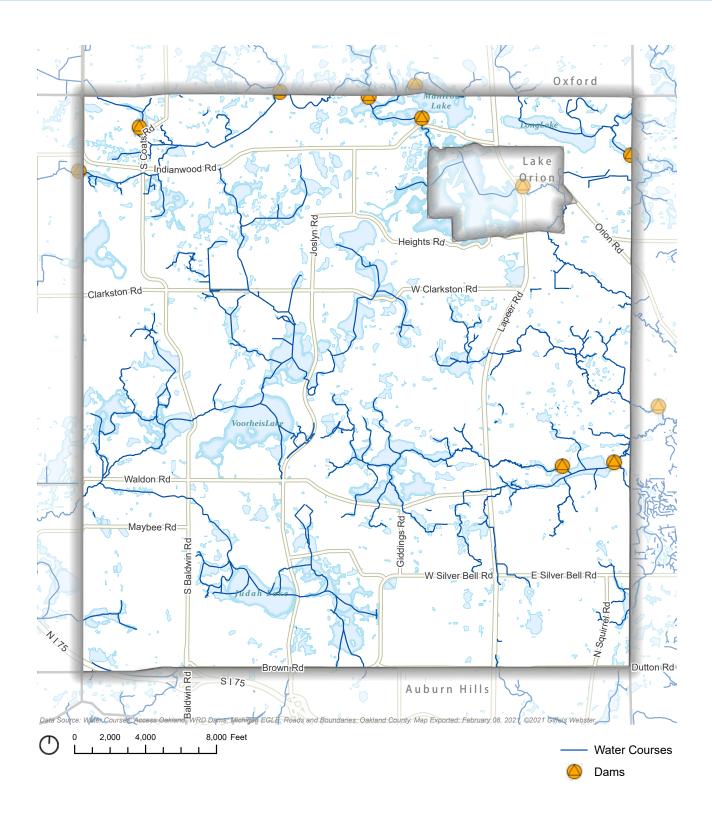


MAP 5: SANITARY COLLECTION SYSTEM



Sanitary Sewer Collector Interceptor Trunk Force Main Sanitary Collection System ORION TOWNSHIP Source: Data provided by Orion Township, OHM Advisors does not warrant the accuracy of the data and/or the map This document is intended to depirt the approximate spatial location of the mapped fatures within the Community and all use is strictly at the user's own risk. Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Infl. Map Published: April 27, 2021 The strict of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the map. This document is intended to depirt the accuracy of the data and/or the data and/or the data and/or the data and/or the map. This document is intended to depirt the accuracy of the data and/or the data and/or the data and or d

MAP 6: DRAINS





DrainsORION TOWNSHIP

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2019 Parks and Recreation Master Plan

The 2019 to 2023 Orion Township Parks and Recreation 5-Year Master Plan includes a complete parkland and facility inventory for the Township. This inventory includes 19 Township recreation sites, which include parks, nature areas, schools, and other properties. The inventory also includes Orion Oaks County Park, Bald Mountain State Recreation Area, and three public boating access sites. Important facilities in the Township include inclusive play structures at Friendship Park, Miracle Field, Fire Bowl at Camp Agawam, and the KaBoom! playground. For more information, go to https://www.orionparks.com/

Camp Agawam

Camp Agawam is the Township's largest property and was recently recognized as a state campsite for bikers. This 140 acres property is nestled along the east side of Tommy's Lake with an access point to the water for swimming and catch-and-release fishing. It was purchased in 2014 and until then it was operated by the Boy Scouts of America, so most of its features are centered on camping and group recreation such as cabins, fire pits, pavilions, lodges, and an outdoor auditorium. The buildings and sites are scattered across the property and connected mainly by natural trails that are not accessible to cars. It is the Township's most rustic recreational property with great potential to serve the community and the region. The site's facilities are also available to rent for large and small events. Most of the site is left in its natural state which makes the terrain difficult



Camp Agawam (Source: Giffels Webster 2020)



Fire Bowl at Camp Agawam (Source: Orion Township)

to cross. However, there are two major developments that are fully accessible for all levels of mobility: the KaBoom! playground and the walking trail that leads to the fishing dock.

Orion Center

The Orion Center was built in 2011 on Joslyn Road in the heart of Orion Township. On this 11-acre property, the Parks and Recreation Department is housed and much of the recreation and 50 and better programming takes place. It serves as a convenient meeting point to initiate off-site excursions. From this property, there is access to the Polly Ann Trail. Both indoor and outdoor facilities are available for rent. Inside, many rooms feature flat screen TVs, tables and chairs, good lighting, and serve a particular function for classes and programming. The back patio has picnic tables that are covered by umbrellas as well as a gazebo. The building was built with accessibility in mind. Getting into the building can be done with ease, and once inside there is an elevator and handicap accessible restrooms. The Senior Services Division provides a network, events, classes, and resources geared to help both residents and non-residents aged 50 and over. Membership for 50+ adults is free at the Orion Center and hosts a range of social and educational clubs and programming for its members.



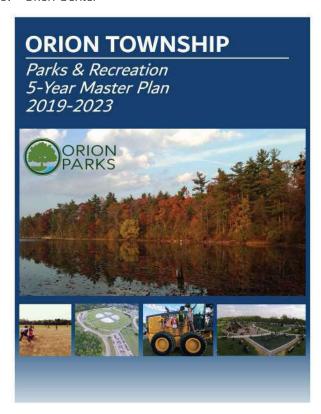
Orion Center (Source: Giffels Webster 2020)

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Specific facilities addressed within the parkland and facility inventory include the following which are referenced within this Master Plan Update due to their importance related to planning (from 2019 Parks and Recreation Master Plan):

- Jesse Decker Park
- 2. Civic Center Park and Wildwood Amphitheater
- 3. Friendship Park
- 4. Camp Agawam
- 5. Orion Center



Jesse Decker Park

Jesse Decker Park is a corner park located at the intersection of Squirrel and Silverbell Roads, directly across from a residential subdivision. Built in 2009, it is a little larger than a "neighborhood park," but its short distance to a neighborhood means it likely serves a smaller population than Friendship and Civic Center Parks, even with similar facilities. In a smaller space, the park still manages to provide ample active and passive spaces. Its hilly terrain gives it a unique feature: a sledding hill. Using the park's natural features to keep the park in use during the winter is a bonus for the neighbors and the Parks and Recreation Department.

Civic Center Park & Wildwood Amphitheater

As the name implies, this park is situated in the Township's Civic Center. Adjacent to the (1974) old Township Hall and just down the road from the Orion Center, its central location and versatile facilities make it a highly-frequented park. Its size and the variety of activities it provides makes it a popular site for social gatherings in the pavilion and sporting events on its varying types of athletic fields. The Wildwood amphitheater was built since the last Parks and Recreation Plan was completed in 2014. Located within Civic Center Park, it is home to several outdoor cultural events. In the summer, the amphitheater hosts weekly free concerts, in addition to music and film festivals and other public events. It is also available to rent for private events.

Friendship Park

Friendship Park is the Township's second largest park, behind the recently acquired Camp Agawam. Located in the northwest portion of the Township along Clarkston and Baldwin Roads, and covering about 135 acres, this is a well-used, all-purpose park. The park provides ample space for organized sports leagues, other active recreation on the play structures, and passive spaces where visitors can relax under a shaded pavilion or fish at the beautifully landscaped catch and release pond. The meeting room is one of two facilities in the park system where visitors can enjoy indoor space for events, making this a valuable year-round space. The park features a playscape designed exclusively for individuals with special needs. The swings are accessible for children in wheelchairs, and the smooth surfacing serves wide-ranging mobility needs. In addition, Friendship Park features Miracle Field, a fully accessible baseball field.



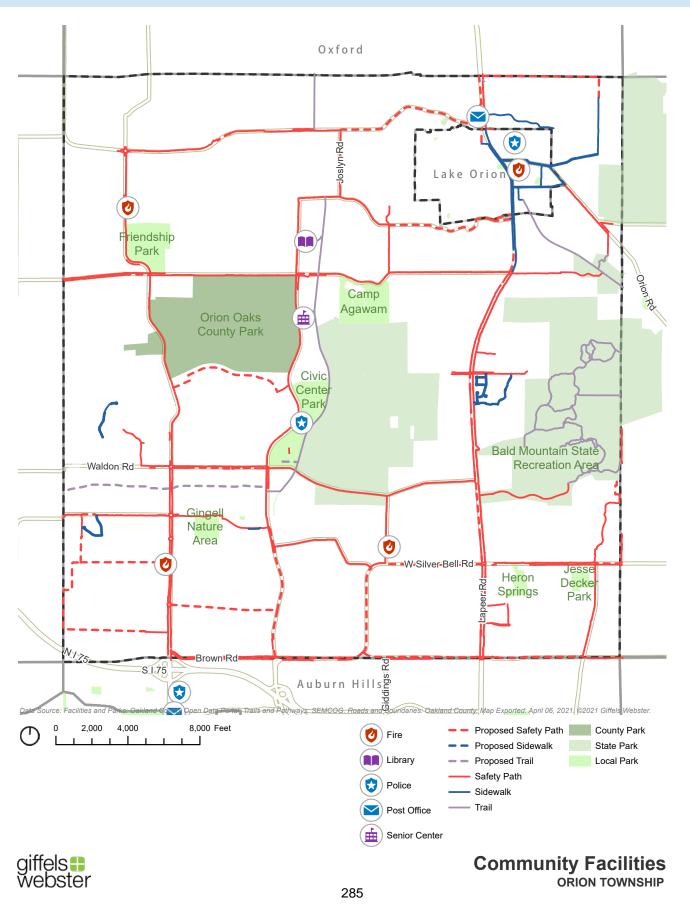
284

Miracle Field at Friendship Park (Source: Orion Township)



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MAP 7: COMMUNITY FACILITIES





National Functional Classification

The Transportation Plan presented on the following page lists the hierarchy of transportation routes based upon the National Functional Classification (NFC) System. NFC is a planning tool which has been used by federal, state and local transportation agencies since the late 1960s. Functional classifications are used to group streets and highways into classes, or systems, according to the character of traffic service they are intended to provide. The NFC designation also determines whether a road is eligible for federal funds, either as part of the National Highway System (usually limited to principal arterials) or through the Surface Transportation Program. Federal-aid roads are, collectively: all principal arterials, all minor arterials, all urban collectors and all rural major collectors. (Source: MDOT)

- **Principal Arterials.** These roadways are at the top of the classification hierarchy. The primary function of such roadways is to carry relatively long distance, through-travel movements. Examples include interstates and other freeways as well as state routes between larger cities.
- Minor Arterials. Minor Arterials tend to accommodate slightly shorter trips than principal arterials. There is some emphasis on land access and they may carry local bus routes and provide intra-community continuity, but do not penetrate neighborhoods.
- Major Collectors. Major collectors provide access and mobility within residential, commercial, or industrial use and connect local roads to arterials. Major collectors generally carry more traffic than minor collectors.
- Minor Collectors. Minor collectors also provide access amongst varying land uses, but generally have less traffic than Major Collectors.
- Local Roads. Local Roads provide access to individual properties and typically have moderate to low speeds. The majority of Township roads are classified as local roads.

Natural Beauty Roads

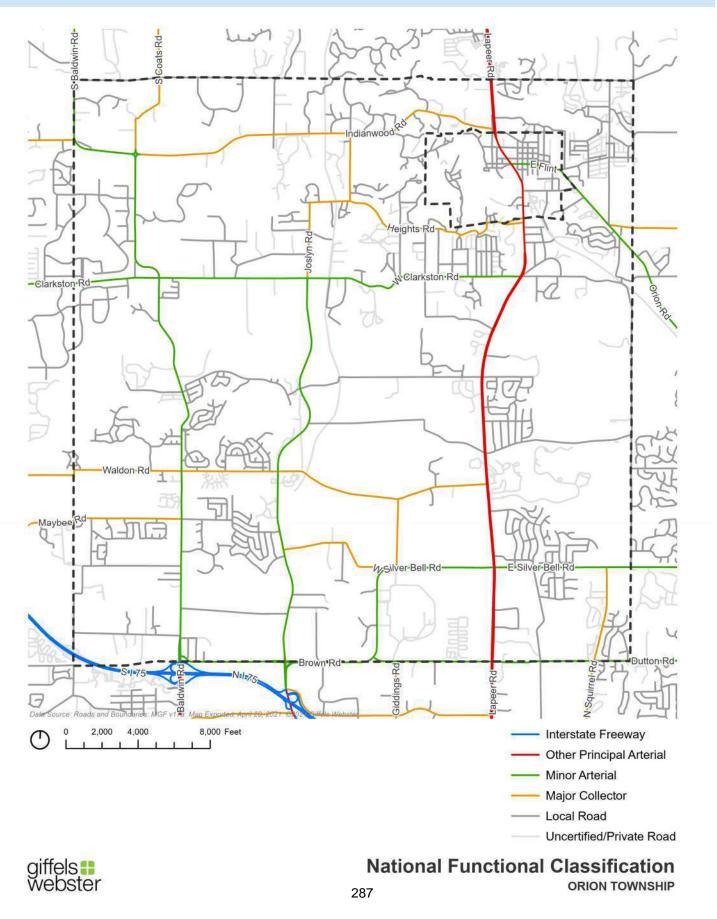
Certain roads in Orion Township are classified as Natural Beauty Roads, in accordance with Michigan Act 150 of 1970. The goal of the Natural Beauty Roads Act is to identify and preserve designated roads in a natural, essentially undisturbed condition. Roads considered eligible for this designation are county local roads that have unusual or outstanding natural beauty by virtue of native vegetation or other natural features. Widening, mowing, spraying and other maintenance or improvement activities may be restricted or prohibited on designated Natural Beauty Roads. Natural Beauty Roads in Orion Township include:

- Kern Road from Orion Road south to Clarkston Road
- Clarkston Road from 1,000 feet west of the south leg of Kern Road to the north leg of Kern Road
- Nakomis Road north of Cayuga, almost to the Township line
- Greenshield Road



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MAP 8: NATIONAL FUNCTIONAL CLASSIFICATION







Natural Features

Many residents have settled in Orion Township because they have been attracted by its natural features, such as lakes, wetlands, woodlands, rolling topography, and open spaces. These features are significant not only because of their strong appeal to residents, but also because they constitute a functioning ecosystem that has been largely unspoiled by human activity. While there are many opportunities for enjoyment and utilization of the natural resource base, particular features of the natural environment are incapable of supporting development or are of sufficient significance to be preserved. It is helpful to examine the various natural resource factors in detail to determine the opportunities and constraints for development, as well as to weigh the value of preservation. Sound land use depends on a keen awareness of the Township's natural features. Accordingly, key natural features are highlighted in the text and maps which are included within this document.

Land

Wetlands and Floodplains

Wetlands are a significant component in the water resources system. The term "wetlands" encompasses a variety of ecosystem types, which are classified by the depth of the water and the typical vegetation that grows in each. Examples in the Township include inland marshes, wet meadows, mudflats, ponds, bogs, bottom-land hardwood forests, and wooded swamps. The Township contains approximately 500 acres of emergent wetlands (marshes), over 2,000 acres of forested wetlands, and almost 1,5000 acres of scrub-shrub wetlands, for a total of 17% of the Township's land area (not including lakes). Most of these wetlands are adjacent to lakes or streams.

Wetlands play an important role in controlling flooding and treating polluted stormwater runoff to improve water quality. During storm events, wetlands hold runoff and release it slowly to adjacent streams and lakes, which helps to reduce "flashy flows" and reduce stream bank erosion. During wet periods, the wetlands absorb water, thereby reducing shoreline flooding around lakes. During dry periods, the wetlands release water to the lakes to help maintain lake levels. Wetlands also help to maintain water quality by filtering sediment and pollutants before they reach the lakes and streams. Wetlands contribute significantly to the rural character of the community by providing critical wildlife habitat.

Wetlands attract and retain many species of animals, birds, and other wildlife by providing a source of water, nesting, and feeding habitat. In turn, residents often identify the vegetation and animal life characteristically found in wetland areas as bringing a rural feeling to the community. Certain wetlands are unique, "high-value" ecological areas that should be identified and preserved. Excess stormwater flows should not be directed toward such wetlands that have special ecological significance. In addition, any wetland that is used for stormwater detention should only receive treated stormwater, and not in volumes greater than it receives under predevelopment conditions. See Map 10 for wetlands and flood hazard areas and see Appendix A for Priority Conservation Areas.

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In accordance with the State law, wetlands are regulated by the Michigan Department of Environment, Great Lakes and Energy (EGLE) if they are any of the following:

- Connected to one of the Great Lakes or Lake St. Clair.
- Located within 1,000 feet of one of the Great Lakes or Lake St. Clair.
- Connected to an inland lake, pond, river, or stream.
- Located within 500 feet of an inland lake, pond, river or stream.
- Not connected to one of the Great Lakes or Lake St. Clair, or an inland lake, pond, stream, or river, but are more than 5 acres in size.
- Not connected to one of the Great Lakes or Lake St.
 Clair, or an inland lake, pond, stream, or river, and less than 5 acres in size, but EGLE has determined that these wetlands are essential to the preservation of the state's natural resources and has notified the property owner.
- In addition, Orion Township Ordinance No. 107 provides for the local regulation of certain wetlands greater than two acres in size.

Woodlands

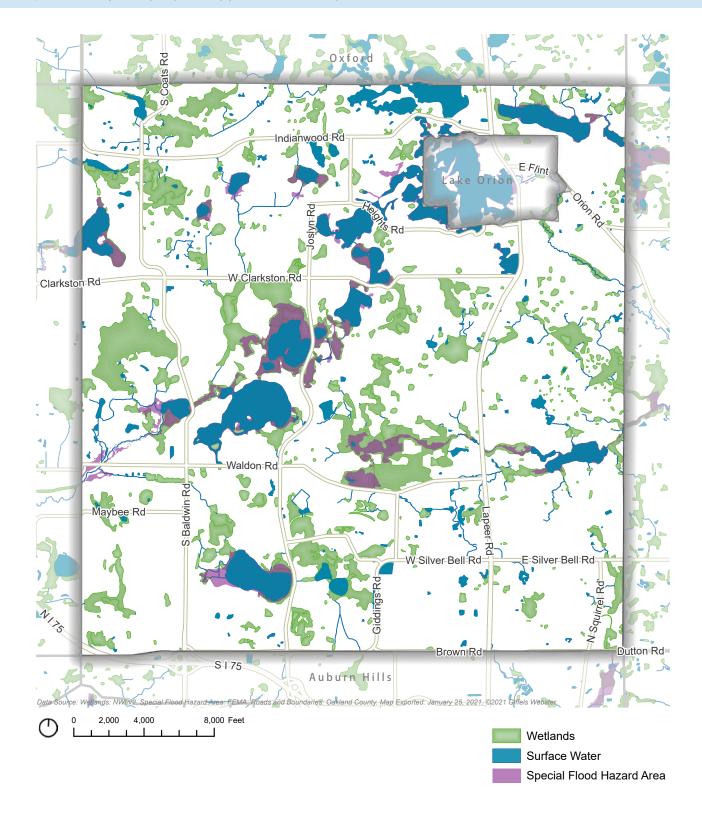
Tree stands and woodlands are another important component in Orion Township's natural resource inventory. Significant tree stands predominantly consist of hardwoods, evergreens, or lowland brush. Many of the significant tree stands are found in conjunction with other natural resource features, such as wetlands or steep slopes. For example, approximately 50% (2,000 acres) of the Township's wetlands are wooded. The Bald Mountain Recreation Area and Orion Oaks County Park contain hundreds of acres of heavily wooded land. Three of the Township's four designated Natural Beauty Roads, Clarkston Road, Kern Road and Greenshield Road, are located on the east side of the Township and intersect a densely forested area.



Above: Clarkston Road is a designated natural beauty road within the Township in part due to its outstanding vegetative features. Source: Giffels Webster (2021)



MAP 9: WETLANDS AND SPECIAL FLOOD HAZARD AREAS





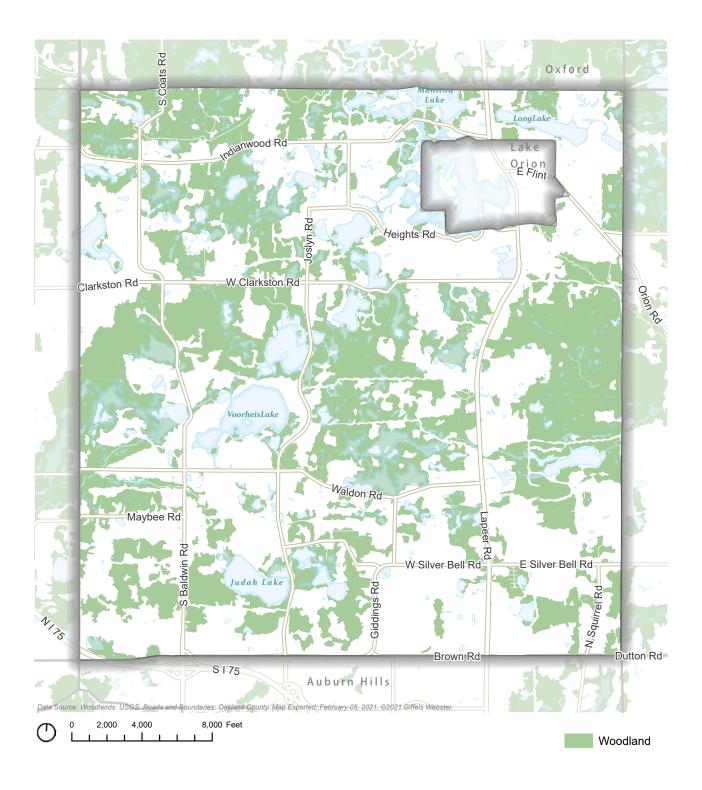
Wetlands and Special Flood Hazard Areas

ORION TOWNSHIP

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MAP 10: WOODLANDS





Woodlands
ORION TOWNSHIP





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Water

Over the years, the prime residential developments in Orion Township have been built around the Township's many lakes. Most residents appreciate the recreational or scenic value of the lakes. However, the lakes represent only one component of the community's extensive, inter-connected water system that also includes streams, wetlands and groundwater. The water system provides significant benefits for current and future residents of the Township, such as a source of drinking water, stormwater attenuation, water filtration and storage, and aesthetic and recreational benefits.

Watersheds

Orion Township is wholly located within the Clinton River Watershed. The Township's entire land area ultimately drains to the Clinton River, which subsequently drains into Lake St. Clair. Within the Township, the Clinton River Watershed is broken down into stream-based watersheds, which include the Upper Clinton Watershed, the Stony/Paint Watershed, and the Clinton-Main Watershed. The watershed divisions were identified to facilitate the work the Township has been doing to comply with the Clean Water Act's Phase Il requirements for regulating stormwater. Since 2002, the Township has participated in watershed planning activities to obtain a stormwater permit from the state through the National Pollutant Discharge Elimination System (NPDES). Because Orion Township is located in three stream watersheds, they participate in three watershed groups to draft and implement watershed management plans for each. While each plan is unique, an analysis of the various watersheds revealed similar conclusions. In general, the streams and lakes within Orion Township have fairly good water quality and support aquatic organisms typically found within urbanizing areas. There are several areas of concern:

- Square Lake (in the Upper Clinton Watershed), has problems with excessive algae and other plant growth. This may be due to fertilizers washing from lawns into the lake, waterfowl feces, or failing septic systems.
- Many streams and lakes are impacted by sediments flowing in from gravel roads, construction sites, or "flashy flows" that deposit sediments due to stream bank erosion.

Streams are becoming more "flashy," or experiencing increased stream flows following storms. This is due to increases in impervious surfaces which keeps storm water from naturally infiltrating the ground and increases in storm intensity. Therefore, more water is reaching the streams (increased volume, runoff), faster.

Lakes

There are 42 natural lakes over five acres in size, covering about 8% (1,700 acres) of the total area of the Township. Many of the lakes are large enough for boating, fishing, swimming, and other water-oriented activities. Most of the major lakes are surrounded by residentially-developed land. Certain lakes have public access, including Lake Orion and Lower Trout Lake, which is located in the Bald Mountain Recreation Area. Lake Sixteen, located within the Orion Oaks County Park, has restricted access from Joslyn Road and from within the park itself. Orion Township's lake also serve an important function as a natural stormwater detention system.

Lake Boards

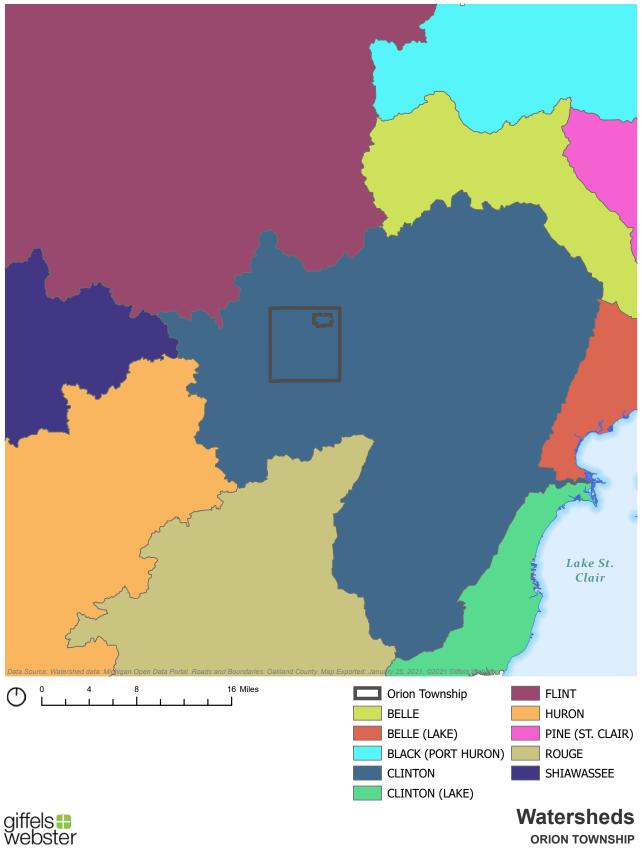
Lake Boards can be created around any inland lake, and can cross municipal boundaries. Their most crucial power is the ability to create special assessment districts, which can raise money from lakefront property owners for lake protection and improvements. By creating an authority, with its own funding source, dedicated to protecting the lake, residents can take preservation or protection into their own hands.

Natural Shoreline Dynamics

Runoff is one of the primary concerns regarding the shoreline dynamics and water quality of inland lakes. Runoff can carry fertilizer and other undesirable substances into the water, some of which can cause an overgrowth of aquatic plants and alter the natural ecosystems in these lakes. It is crucial to protect natural ecosystems by managing development on the shoreline and in the watersheds of inland lakes. Communities can create best practices to protect inland lakes from erosion and runoff damage by encouraging the

293 use of permeable pavement and growing native plants along the shoreline and in the watershed.

MAP 11: WATERSHEDS



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Invasive Species

Phragmites australis, is an invasive wetland grass that can grow up to fifteen (15) feet in height and spread between thirty (30) and fifty (50) feet per year. The invasive species has spread rapidly throughout Michigan's coastal and interior wetlands, threatening ecological health and reducing property values. Due to their aggressive growth rate and height, phragmites crowd out native wetland plants, reduce access to recreational areas, and block lakefront views. In addition, dry phragmites material is highly flammable and can create fire hazards.

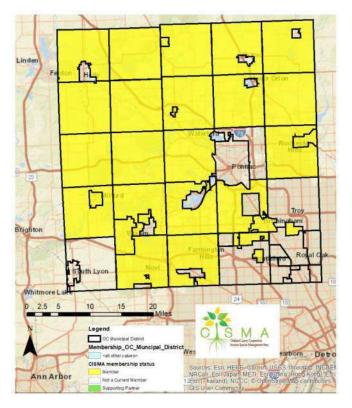
While difficult to remove, invasive phragmites can be controlled through combined management techniques including the use of herbicides, mowing and prescribed fires. However, an MDEQ permit is required to treat phragmites using herbicides for most inland lakes and wetlands. Clear steps must be taken to properly rid an area of phragmites; improper removal techniques can actually increase the invasive species' rate of growth.

Orion Township and various other Michigan communities have enacted phragmites ordinances that address the control and removal of the invasive plant. Many of the example phragmites ordinances focus on removing the invasive plant along the shores of Lake Michigan. However, there are limited examples of ordinances that address the removal of phragmites from inland lakes and wetlands. Orion Township currently has a phragmites control program and holds a permit for application of approved chemicals. Herbicide treatment for phragmites usually occurs before the first frost of the year, in September or October.

Oakland County Cooperative Invasive Species Management Area (CISMA)

The Oakland County Cooperative Invasive Species Management Area (CISMA) was established in December 2014 by 19 partners. Today the partnership has grown to over 40 members including local governments, county governments, non-profit organizations, and universities.

The cooperative is focused on managing the spread of eight priority invasive species including: invasive Phragmites (common reed), Black and Pale Swallowworts, Knotweeds, European frog-bit, Flowering rush and Red swamp crayfish. Members also have extensive experience managing other common invasive plants such as Buckthorns, Autumn olive, Garlic mustard, Asian bittersweet, and Purple loosestrife. (Text source: oaklandinvasivespecies.org)



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Above: Current Oakland County CISMA members Source: oaklandinvasivespecies.org (2022)

Above: Phragmities grow along the edge of Elkhorn Lake.

Source: Google (2019)

Michigan Natural Feature Inventory

The Michigan Natural Features Inventory (MNFI) maintains a continuously updated information base, of Michigan's endangered, threatened, or special concern plant and animal species, natural communities, and other natural features. MNFI has responsibility for inventorying and tracking the State's rarest species and exceptional examples of the whole array of natural communities. MNFI also provides information to resource managers for many types of permit application regarding these elements of diversity.

In July of 2002, the Oakland County Planning and Economic Development Services Department worked with MNFI to identify potential conservation/natural areas within the County. The conclusions of the study were the identification of high, medium and low-ranking areas within each municipality. These rankings are based upon a set of criteria that include size, core area, street corridor, landscape connectivity, restorability and element occurrence.

Based upon the updated study in 2017, Orion Township has five (5) areas identified as priority one (highest ranking), numerous smaller areas ranked as priority two (medium ranking) and the open water/wetland areas identified as priority three (lowest ranking). See the Priority Conservation Areas map in Appendix A.



Above: Wild turkey seen along Judah Road Source: Giffels Webster (2021)

Portions of this area maybe lost to development, but the preservation of the remaining areas and their associated links to other natural resource sites may be preserved through various land use controls and preservation plan alternatives. To implement the green infrastructure plan, and better integrate ecological systems into development, the following techniques should be considered:

- 1. Encourage the use of the cluster development on parcels where sensitive ecosystems exist. This technique places roads, lots, and other development on land that is most capable of supporting it, and places the sensitive natural features in commonly-owned open space. The proposed Corridor Open Space Preservation District, which would allow for some lot size flexibility in exchange for preserving open space along corridors, will also assist in this effort.
- Create a detailed program to implement the green infrastructure plan, including goals & policies, priorities, action items, schedule, and funding mechanisms.
- Continue to work towards reduction of impervious surfaces and increases in stormwater infiltration through local, county and state regulations, as well as working with developers during the site plan review process.
- 4. Enhance the natural feature setback/buffer regulations by allowing a flexible width buffer (larger for more sensitive features, smaller for less sensitive features) rather than a standard distance to help manage development near stream corridors and provide floodplain protection.
- 5. Adopt native vegetation guidelines that preserve native plants and encourage the use of native plants in landscaping. These plants are particularly helpful in riparian buffers to treat stormwater runoff and provide wildlife corridor links within the Township's green infrastructure system. The State of Michigan defines riparian rights as "those rights which are associated with the ownership of the bank or shore of an inland lake or stream". These guidelines could be enhanced by an ordinance that prohibits the use of exotic invasive plant species in landscaping, and supplemented by additional invasive species ordinances, such as a phragmites ordinance. These plants tend to take over natural areas and out-compete native species.

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Environmental Resources Recommendations

The Paint Creek watershed and other tributaries in the Township are recognized as sensitive environmental features. These water courses and their accompanying watershed areas are indispensable and fragile resources that provide public benefits including maintenance of surface and groundwater quality, fish and wildlife habitat, stormwater run-off control, and aesthetic resources. It is inappropriate to consider these fragile resource areas for high or suburban density development. Smaller lots within these areas can degrade natural resources. Clear-cutting, dredging, filling, and other activities associated with higher density development can be harmful to natural systems. It is therefore recommended that areas within close proximity of streams, lakes, and watercourses and without public water and sanitary sewers be reserved for low density development.

Natural features play a vital role in the health of Township residents and the natural systems of the Township. Overall density and lot size should be closely related to natural features. In general, the Township may consider larger lots for environmentally sensitive areas and smaller or moderate size lots in areas more suitable for denser development. It is recognized that large lots are not always a guarantee of environmental preservation.

- 1. Large lots consume more land and may diminish local control of wetlands, woodlands, or other environmental features. In general, however, large lot developments have the potential to create fewer environmental impacts.
- 2. Small lots or cluster residential developments may be sensitively planned to preserve natural features and may be more appropriate than some large lot developments.
- 3. The enforcement of the Township Wetlands Protection Ordinance, Stormwater Management Ordinance and Woodlands Regulations, provided they are constantly evaluated for accuracy, can help maintain the natural resources within areas planned for higher density development.
- 4. Orion Township should continue to enforce its phragmites ordinance (No. 151) that addresses the control and removal of invasive phragmites from areas adjacent to inland lakes, wetlands and drainage areas

Mitigating Risks

The Township has an Environmental Resource Committee that is established to communicate with, advise, and make recommendations to the designated Orion Township employee responsible for website information and /or the Board regarding community concerns on solid waste removal, curbside recycling, hazardous waste disposal, and review other Ordinances with content regarding environmental issues

Sustainability & Resiliency

It is becoming critical to include concepts of resiliency and sustainability into land use plans. Though they are related, resiliency and sustainability are not the same.



Sustainability is the well-established concept that focuses on decreasing or eliminating the detrimental future impacts of our current activity.



Resiliency recognizes that our built environment will be subject to stresses and is the practice of designing that environment in a way that can endure those stresses. Some threats are ongoing, persistent stresses, while others are sudden shocks or single events that disrupt the day-to-day functioning of the community.

As we plan for the future, many of the challenges we will face are related either directly or indirectly to our place in larger systems, both natural and man-made. We often have little direct local control over these systems, but adapting to change and discovering our role in contributing to the health of these systems is nonetheless essential to planning for a community that can survive and thrive even in the face of the most severe challenges. Resilient communities are not only preparing for weather and climate-related shocks, but are also preparing for economic and health shocks as well. In 2020, we saw the impacts of a global pandemic on local community health, education, recreation, commerce, technology and social connectivity. These impacts touched everyone's lives in big and small ways and may have lasting impacts in our communities.

Effects of Climate Change

A changing climate has far-reaching implications for Michigan's agricultural and tourism economies, waterfront development, and communities with older stormwater management infrastructure. Locally, within the last decade, Oakland County has experienced multiple heavy rain events that have led to property damage and decreased mobility and must anticipate that more flooding will occur in the future, damaging property, impairing access to parts of the Township, and creating financial distress for local residents and businesses.

As the frequency and intensity of severe weather events continues to increase, communities will experience economic disruption. For instance, while the frost-free season has nominally increased, farmers in many of Michigan's agricultural communities have not benefited in recent years due to abnormally late frosts (such as those in mid-May, 2020) or heavy rain events, which have damaged early crops or delayed planting of late crops. Rising temperatures and more very hot days may affect the timing of summer festivals and tourism.

Communities must be prepared to anticipate the local effects of regional climate trends. According to the United States Environmental Protection Agency, climate change is already impacting many sectors of our communities. At a minimum, increases in air temperature and precipitation, combined with other factors, have caused impacts in the Great Lakes region including:

- Increased risk of heat-stress to equipment, infrastructure, and people, especially those who work outdoors or are otherwise vulnerable.
- Increased flooding and coastal erosion.
- Reduction in water quality due to increased occurrences of toxic algae blooms.
- Changes to the usability of water infrastructure like docks and piers.
- Economic impact to industries like forestry, fishing, crop production, tourism, manufacturing, energy production, and recreation.
- Expanded commercial navigation season as ice coverage continues to decline on the Great Lakes.

This Master Plan recognizes the importance of additional planning efforts needed to ensure the Township is resilient and sustainable. Future planning should include a public outreach process in two basic parts: education and input. Education includes making community members aware of potential threats and the process of planning for them, with an emphasis on outreach to the most vulnerable members of the community. The input process should offer the opportunity for residents and other stakeholders such as municipal staff and business owners to engage in detailed, focused conversations regarding resiliency planning issues. It is important for the community to engage in vigorous outreach through multiple channels to get people involved.









Extreme heat

Average temperatures in the Great Lakes region rose 2.3 degrees Fahrenheit from 1951 through 2017. Extreme heat is dangerous for vulnerable populations and can also tax electrical infrastructure, leading to power outages, which in turn can increase the risk for the people most prone to succumbing to heat. Designating specific locations with backup power sources (such as municipal halls, libraries, and schools) as cooling stations can provide vulnerable residents with an essential escape from the heat. There may be a need to provide transportation to cooling stations for those with limited mobility options.

Severe winter storms

As temperatures rise, winter precipitation levels are anticipated to rise as well, and mixed precipitation events with more heavy ice may become more common. Severe winter storms can result in power outages, impeded mobility, damage to structures and trees, and lost economic productivity. Municipal costs for snow removal should be included in budget planning. While storms are the primary focus of future concern, communities also benefit from planning for extreme cold—locations designated as cooling stations in the summer can become warming stations in the winter.

Heavy rain and flooding

Heavy rain events are already more common in Michigan than they were in the mid-to-late 20th Century, having increased by 35 percent from 1951 to 2017, as total annual precipitation increased by 14 percent. They are anticipated to become even more common in the future.

Public health emergencies

The 2020 COVID-19 pandemic brought with it unprecedented economic disruption, forced short-term changes in social habits, destroyed numerous small businesses, and led to a very large increase in unemployment in a very short time period. Planning for public health emergencies needs to consider the many dimensions of the social fabric that are heavily impacted, including the availability of medical services, government's ability to continue functioning under quarantines or stay-at-home orders, and the locations and numbers of vulnerable populations. Local police, fire, and ambulance services may be particularly taxed in a future public health emergency.

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Damage to natural systems

Human activity is rarely in balance with the natural systems it occurs within. While resource extraction and pollution offer two very obvious examples of human activity, nearly all modern human development activity has some impact on natural systems, including loss of habitat, interruption of habitat, and increased emissions due to greater travel distances as development moves outward into wild places. A combination of rising temperatures and agricultural runoff that changes the nutrient balance in major water bodies has led to much higher frequency of toxic cyanobacteria and algae blooms, particularly in Lake Erie. These blooms can impair drinking water quality and limit recreational opportunities, including fishing and watersports.



Unanticipated events

No community can plan for every possible future event or scenario. This is why developing resiliency, improving sustainability, understanding vulnerabilities, and identifying emergency resources is so important.



Drought

We most frequently think of drought as a prolonged period without precipitation. While this kind of drought is certainly possible in the future in Michigan, the more likely effects of the changes the state is experiencing will be changes in seasonal distribution of storms with precipitation. Winter rainfall will become more common, snowpack overall may decrease, and stream levels will peak earlier in the year, affecting water availability and the timing of groundwater recharge. Drought is exacerbated by higher temperatures, which lead to increased evaporation rates; even with higher average rainfall, land may become drier, and as rain becomes less frequent in the hottest summer months, mid-summer drought could become a regular challenge. Dry conditions bring with them the possibility of wildfires, which are not uncommon in rural Michigan but could grow in scale and intensity in coming years. It is important to understand the community's water sources and how extended periods of drought might affect water availability.

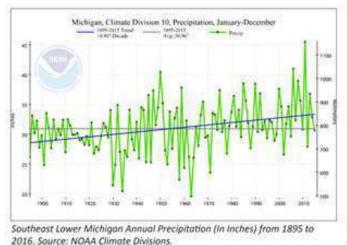


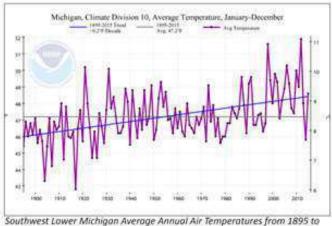
Food systems

As the climate changes and weather patterns shift accordingly, planting and harvesting conditions become less predictable, and the potential for crop losses increases. In 2019, unusually heavy rains across much of Michigan made planting during the typical time difficult for many farmers. While the number of frost-free days has increased by an average of 16 days across the Great Lakes region from 1951 to 2017, the timing of those extra days has not uniformly added to the growing season. In recent years, unexpected late freezes after earlier-than-usual warm weather lead to the loss of large portions of fruit crops such as apples and cherries.

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Regional climate trends indicate that southeast lower Michigan is poised to see stronger and more frequent storms, in addition to higher temperatures. The figure below shows how these two measures have been trending steadily over the last 100 years. With increasing precipitation, more frequent extreme heat days and an overall rise in average temperature, communities should be planning for what this mean locally and how their most venerable populations are situated to survive.





2016. Source: NOAA Climate Divisions.

Southeast lower Michigan Annual Precipitation (left) and Average Annual Air Temperature (right) from 1895-2016

Addressing Resiliency: Identifying Vulnerable Populations

Resilient communities anticipate likely shocks, understand trends in stressors, and prepare for potential worst-case scenarios. Understanding where a community is physically most vulnerable to specific events and understanding which members of the community are likely to be most vulnerable in each case is key to effective planning. Vulnerability assessments have been used across Michigan to identify vulnerabilities within a community and to develop tools communities can use to foster resiliency in their policy decisions. A vulnerability assessment looks at exposure to risk and sensitivity to risk.

Exposure demonstrates the land, property, and neighborhoods that are most likely to be impacted by flooding, heat, or other severe weather. Low lying land, land near bodies of water, areas with large swaths of pavement, neighborhoods with few trees, and sections with older homes all suffer from high levels of exposure.

Evaluating exposure to risk asks: where is the environmental risk the greatest?

Sensitivity demonstrates the members of the population that are most likely to be impacted by severe weather. The most sensitive populations are the elderly, young children, people with medical conditions, those living in poverty (especially the homeless) and people who work outdoors. People who live alone, regardless of their economic status, are also at higher risk

Evaluating sensitivity to risk asks: who in my community is most likely to experience the adverse effects from that risk?

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Next to placing land into various zoning districts, site plan review is the most powerful planning and natural resource protection tool. Easily enforced, site plan review is a way for communities to ensure what is approved on a site plan is what will be built. When large projects are proposed or when small projects are proposed in or adjacent to sensitive natural resources, some communities require applicants to submit an environmental assessment, which details the impact of the proposed development on natural resources. Communities that have plans and zoning regulations based on a solid environmental inventory are able to set the threshold for future environmental assessments at a defensible level. Without such a basis, an environmental assessment may be considered arbitrary, as there is little context for the requirement. An environmental assessment can be a valuable source of information, and in some cases an important tool for ensuring that new development is designed in such a way that unavoidable environmental impacts are properly mitigated. Environmental assessment can also be viewed as an affirmative tool for helping a local government meet its responsibility for preventing pollution, impairment or destruction of the environment.

The Township's existing water features play an important role in managing storm water. Several creeks and streams, which connect the Townships natural water system, meander through the Township, connecting lakes and wetlands with each other, and then conveying storm water run-off. As described in the referenced watershed management plans, the most prominent streams in the Township are Paint Creek, Clear Creek, Trout Creek and Sashabaw Creek. These creeks have flowing water throughout most of the year and are valued because of their ecological, aesthetic and recreational benefits. Implementing, updating and enforcing a stormwater management ordinance is essential to ensuring the necessary infrastructure is in place to protect the natural assets and health of the community.

Stormwater Management



Above: Flooding can lead to dangerous and sometimes impassible road conditions, as seen here along Clarkston Road. It is important to understand what vulnerable populations may be affected by extreme weather events for emergency service and disaster mitigation planning.

Source: Giffels Webster (2021)



Impervious Surfaces

Because development replaces pervious ground with impervious pavement and buildings, water runs off the surface rather than permeating naturally through the ground. As stormwater drains across pavement, it picks up pollutants such as automobile fluids, fertilizers, and sediment and conveys them into a storm drain. If a storm drain is directly connected to a creek, the creek receives polluted water which, in turn, can degrade water quality and wildlife habitat. This, in turn, degrades streams and water quality unless managed in an ecologically-sound manner. Ordinance standards that limit impervious surface coverage, or regulate materials used to construct impervious surfaces, can address this at a site plan individual site level.

Portions of southeast Michigan receive their drinking water from surface water sources. Because stormwater heats up the longer it sits on hot, impervious surfaces, it can also impact aquatic organisms that depend on cool or cold-water habitats. Lastly, water volume is greater for surface stormwater; therefore, it reaches the stream much faster. The increased volume and speed erode stream banks and impairs the stream's ability to support aquatic vegetation and wildlife.

An impervious surface analysis was conducted as part of the Upper Clinton and Stony/Paint Watershed Management Plans. This analysis classifies the quality of streams based on the percentage of impervious cover (IC) in their watersheds. The framework classifies streams as sensitive (0-11% IC), impacted (11-25% IC), and non-supporting (>25% IC).

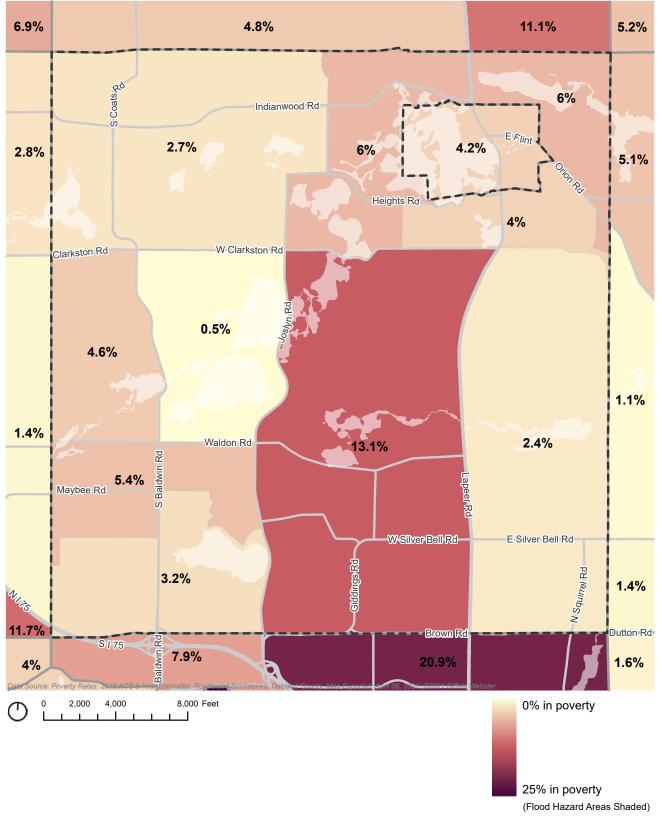
The Stony/Paint results showed that, as of 2000, all of the streams in this watershed passing through Orion Township were classified as "sensitive," with impervious cover at less than 11% (average 7.3% IC). However, the model estimates that this watershed will develop to the "impacted" classification (average 11.2% IC), unless low impact development techniques are used. It is estimated that these techniques could reduce impervious cover in this watershed by almost 4%, and maintain "sensitive" streams.

The Upper Clinton results show streams that are impacted to a greater level by development. The average IC score for 2000 land cover is 16.6% in the Township, placing the streams in this watershed in the "impacted" category. Future development will push these streams almost to the "non-supporting" classification with an average IC estimate of 23%. The model also estimates that low impact development techniques (such as pervious pavements, green roofs, natural feature protection, etc, could bring IC down by 5%, which would better maintain current conditions.

Disaster Mitigation Mapping

Map 14, Senior Population and Flood Areas (pg. 67), shows where seniors live in relation to flood hazard areas. As hazardous flood events increase, seniors may be more vulnerable to property damage and potential health issues because some may lack access to resources to retrofit structures or react to flash flood events.

MAP 12: PERCENTAGE IN POVERTY AND FLOOD AREAS



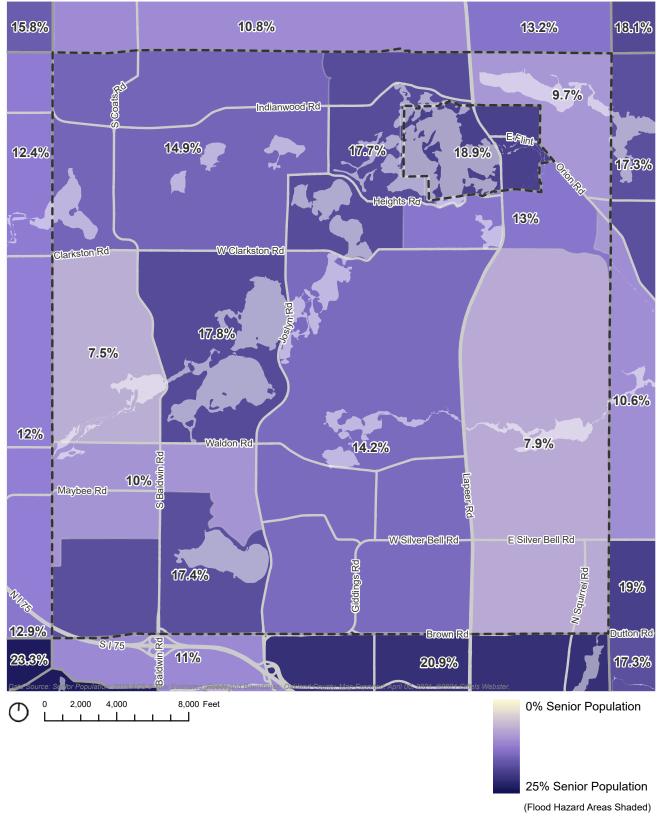


Percentage in Poverty and Flood Areas 2019 ACS 5-Year Estimate

ORION TOWNSHIP

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MAP 13: SENIOR POPULATION AND FLOOD AREAS





Senior Population and Flood Areas 2019 ACS 5-Year Estimate

ORION TOWNSHIP

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Leadership Advance Summary

On Tuesday, February 9, 2021, the Giffels Webster planning team met with sixteen Orion Township staff members and stakeholders from various departments to gather their input on the Township's strengths, weaknesses, opportunities and threats (SWOT). Participants were asked what they saw as the Township's top three strengths and weaknesses. The results of that exercise are provided in the following pages. Information is compiled using Infogram.

Orion Township Leadership Advance Summary

On Tuesday, February 9, 2021, the Giffels Webster planning team met with sixteen Orion Township staff members and stakeholders from various departments to gather their input on the township's strengths, weaknesses, opportunities and threats (SWOT). The results of that exercise are summarized on the following pages. Participants were asked what they saw as the township's top three **strengths** and **weaknesses**. The answers were then grouped into similar categories; the top 5 categories are show below:

Strengths

PARKS RECREATION AND OPEN SPACE (28)

Parks

Recreation

Safety paths

Close to recreational opportunities

Parks/trees nature



Above: Staff wrote strengths on green sticky notes, which were collected and organized into like categories

GOVERNMENT (6)

Fiscally responsible

On TV

Chamber

Great Staff

Police and Fire

Reliable Infrastructure

SCHOOLS (9)

Good School system

Education

COMMUNITY (8)

Volunteer opportunities

Collaboration with government

Sense of community

Nice community & people

LOCATION (6)

Freeway access

Close to I-75

Near city amenities





Weaknesses

TRANSPORTATION & MOBILITY (12)

Congestion

Road condition

Gravel/dirts roads

No Pedestrian connectivity

No Mass transit



No adult sports beer leagues

No Volleyball

No lake access

No rec center (youth)

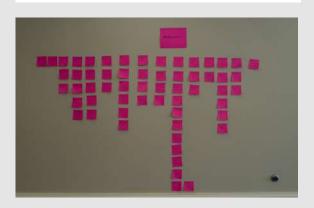
No basketball courts

HOUSING (6)

Lack of multiple-family

Affordability

Needs hosue for lake access





LACK OF SHOPPING OPPORTUNITIES (8)

Not enough future business

Unknown to big developers

Too small

Lacks shopping

Lacks destination

Grocery shopping options

LAND USE (6)

Urban/City mix

No downtown

Ugly Industrial

Land Fill

No Buisness center

Historic Suburban dev. Style



Opportunities and Threats

After the strengths and weaknesses were discussed, staff were asked to discuss, in small groups of 4-5, what they perceived as the best opportunities and biggest threats to a better future for the township. Each group shared their answers, which are listed below:

Opportunities

- Enhancing trails / open space
- Long term recreation millage
- Keeping state lands in control
- Environmentally responsible
- Master Plan Process
- Craft updated zoning to implement Master Plan
- Schools offering trades training
- Safe crossing for pathway system
- Youth/talent retention
- Provide affordable Housing
- Gingellville Overlay
- Pocket parks/walkability
- Mixed use development
- More restaurants
- Updating the Master Plan
- Educating citizens about development process
- Education for boards and commission
- Work with Village of Lake Orion
- Involved businesses in planning process
- Existing business spaces are available (vacancy)

Threats

- Lawsuits (land use)
- Village/Twp. governments with different views
- Separate Police Depts.
- Invasive species
- Overtaxing
- Overbuilding/development
- Overcrowded lakes
- Declining population
- Negative perception of rental housing
- Maintain relationship with chamber
- Impact of online business to brick and mortar
- Change in social trends (rural being less attractive)
- Lack of employees to fill available jobs
- Aging population demand for community services

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- Lack of population growth
- Consent judgments
- Fences
- Road conditions
- Drainage residential areas
- Sewage and sanitary capacity



Emerging Trends

Finally, staff were asked to write what emerging trends they thought should be explored as part of the master plan update process. They were asked to write down their favorite "trend" on a large sticky note, which were then all posted on the wall. Each staff member was then given six "votes" (dots) and were asked to vote for their favorite idea. All results were tallied and are shown in the table below:

Trends	Votes (Dots)
Green Infrastructure	4
Outbuilding Size	1
Using technology for safety	6
Safety Paths	4
Regional Connectivity	5
Live - work - play	2
Variety of housing	5
Sustainability (green space, cluster housing)	4
Establish Destination	18
Wakability + transit system	8
10 Minute neighborhood	8
How to attract talent?	5
Outdoor seating	2
Outdoor socialization	9
Diversified Housing Types / styles	11
Work from home	-





The highest vote topic relates to establishing a destination or place that is clearly identifiable in the township. The 10 minute neighborhood comment is similar in that it speaks to creating walkable residential neighborhoods with a core area that provides local goods and services, all of which are accessible within a 10 minute walk. Walkability, outdoor socialization, safety paths, and live-workplay are also related topics that support the destination and 10 minute neighborhood concepts. For more information, please visit the Township's website:

https://www.oriontownship.org/departments

Made with infogram



Open House Summary

Open House

The Township hosted a hybrid open house which included an in-person event at the Township Hall on June 16th, which is followed by a four-day virtual open house. Both platforms included the same information and allowed participants to engage with information about the community and provide input on several prompts. Input is gathered on major topics as listed below

- Demographics and local economy
- Sustainability and natural features
- Land use (existing, future, and developments)
- Complete streets (roads and sidewalks)
- Housing (single-family, multi-family, and rural character)
- 15-minute neighborhoods: village and hamlets

Encourage Industries

Education

Healthcare

Township Now | Demographics, Economy & Sustainability

The feedback included a strong support for requiring developers to preserve more trees and to pay into a tree fund to install trees elsewhere within the Township (along roads or within parks).

The majority of the respondents considered wetland and woodland preservation very important. The feedback was split between 'neutral' and 'very important when asked about low-impact storm water management practices. Residents recommended that the Township should pursue healthcare and educational industries and increasing employment opportunities.

Discourage land uses

- Heavy industrial
- Woodland removal
- Large lot residential uses
- Conversion of residential to non-residential uses

Land Use | Existing, Future & Developments

The majority of respondents do not have positive opinion about recent developments in the Township due to increased traffic. When asked to recommend areas for potential redevelopment, the property adjacent to Baldwin Commons was recommended.

The property adjacent to Baldwin Commons off Morgan Road would make be well suited for multi family as a transition area from commercial to residential and has great walk ability to the area conveniences

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Housing | Single-Family, Multiple-Family & Rural Character

The open house focused on gathering input on housing styles and development patterns. A summary of responses are provided in the images below. The input was gathered using a visual preference exercise. The respondents were asked to place a dot on their favorite image. Respondents recognize the need of alternate housing styles such as ADUs and cottage court housing to cater to the aging population. Only a guarter of the respondents did not consider missing middle housing types appropriate in the more densely populated areas of the Township. The majority of respondents (57%) did not support single-family developments on smaller lots.

FIG.10. PUBLIC INPUT SUMMARY: HOUSING

Housing | PREFERRED DEVELOPMENT STYLE IN RURAL AREAS Preferred Road Character. Front Yard Setbacks 60% 23% 44%





7%

56%

10%

Almost fifty percent of the respondents supported permitting ADUs on larger single-family lots. Only a quarter of the respondents supported permitting ADUs on all lots. The feedback is split between attached and detached.



When asked about preferred style of housing among four options presented, the feedback included a strong interest (44%) in side-entry garage style units followed by recessed garage with detached look (27%). Front projecting garages are the least preferred choice (7%).







Widen Roads

- Joslyn Road to alleviate Baldwin traffic
- Waldon M-24 to Independence Twp.
- Heights Road
- Squirrel Road
- Possibly Clarkston Road (east-west)
- Full rebuild for Brown and Silverbell
- North right turn on Clarkston at Baldwin

Complete Streets | Roads

Most respondents considered the current conditions of Township roads to be either neutral or poor. The attendees were asked multiple questions about potential locations for road widening or building more roads. There were only a couple of responses for new roads, Maybee Road, Silver Bell by the GM plant and another access to I-75 at Clintonville Road.

When asked about how important is proximity school and parks to their decision regarding the desired location of their home, a larger majority of respondents considered proximity to both places equally very important.

Mobility Enhancements

more crosswalks

bike/walking path

Safer, easier crossing at M-24 and other major roads.

Little more directional signage, some solar style lighting, commercial sponsors (without gaudy promotion) to generate revenues for the paths.

sidewalks

Continuation of safety paths throughout township, safer crosswalks

Bike lanes or improved shoulders along all major roadways where the road right a ways are too small for paths.

Joslyn Sidewalk from Indian Woods to Heights Still feels unsafe after repaving

Complete Streets | Sidewalks

One of the mobility questions focused more on pedestrian safety and non-motorized improvements. The responses indicate a strong interest for improving walkability and bikeability within the Township.

The attendees were asked for recommendations for potential locations for future pedestrian, bike path and pedestrian connections. An excerpt of responses is provided below.

Future pedestrian, bike path, pedestrian connection

Something through or along the Scripps road area.

Maybe constructed / elevated trails in the nature areas and wetlands.

Maybe road west of Baldwin

A way to get all the way down M-24 to Auburn Hills passed I-75. There is no completely finished safety path.

silverbell and squirrel

Elevated or constructed bike paths in the nature and wetland areas.

Joslyn Road from Brown to Silverbell; Broiwn Rd from M-24 to Joslyn

Indianwood road east of Joslyn. Joslyn road south of Hammerslea

Waldon Rd (once paved) between Bladwin - Clintonville Rd

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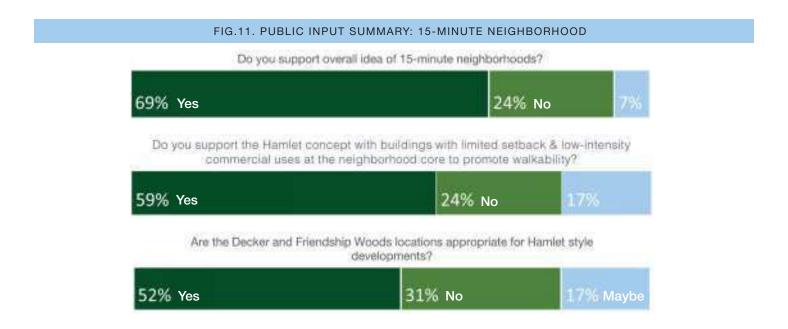


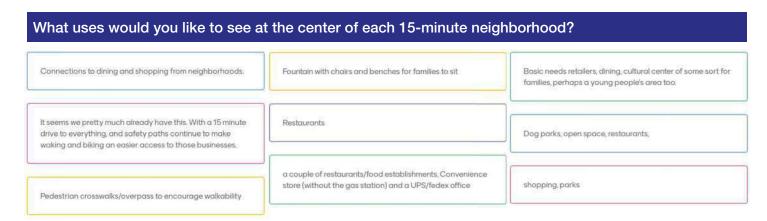
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15-Minute Neighborhoods

The 15-Minute Neighborhood concept is based primarily on how far a person can walk or bike in both five- and 15-minute increments for each mode of travel based on the average speed of travel. The definition can vary, but for the purpose of this open house exercise, it is a place where you can access some of your daily needs (food, local services, local goods) within a 15-minute bike ride from your home.

The open house presented four potential 15-minute neighborhoods in the Township. Each 15-minute neighborhood typically has a village or hamlet at its core. The attendees were asked questions about supporting the concept and preferred uses in these areas.





Refer to page 138 for more details about 15-minute neighborhoods.

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Spending Priorities

The participants were given three dots and ten topics, each dot represents one million dollars. They were asked, if they are given three million to spend, what three items would they pick to invest? Responses including majority support for preserving existing natural features and adding more trees and pedestrian amenities along major roads.

Natural Resource Protection
Shade Trees & Pedestrian Amenities along Major Roads
Bike Paths
New/Improved Parks
Sidewalks
Police and Fire Facilities
Extend Water and Sewer to Undeveloped Areas
Expand Transit
Widen Roads
Community Art Projects

20%

17%

13%

13%

10%

7%

4%

Community Art Projects
3%

FIG.12. PUBLIC INPUT SUMMARY: SPENDING PRIORITIES

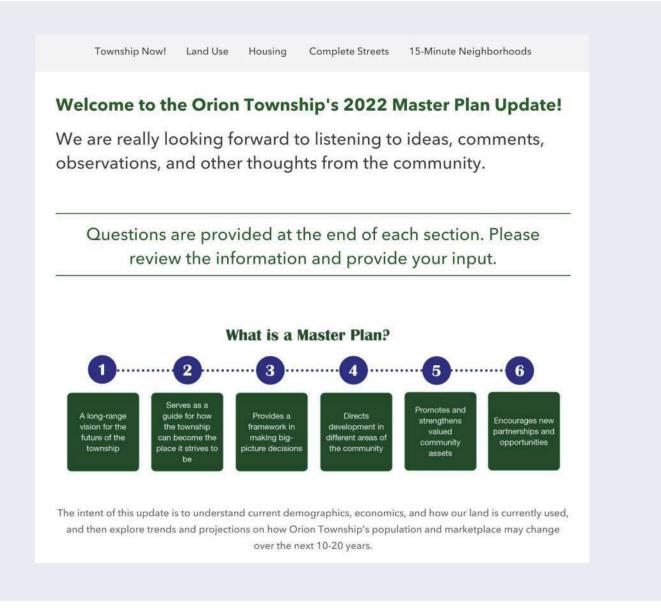
Township staff, Planning Commission and planning consultants interacting with the residents at the open house



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In addition to the in-person open house, the Township also launched the Master Plan Virtual Open House to provide an extended platform for public input. The virtual platform allowed participants to engage with information about the community and provide input on several prompts. The Virtual Open House was promoted via the Township's website and social media posts. This was open for a week following the open house. This chapter includes a summary of public input from the virtual open house and the virtual open house.



Vision

Orion Township, where Living is a Vacation, seeks to guide growth in a rational manner, striving to avoid patterns of "leapfrog" development. Innovative and flexible approaches for growth management and development regulations will be used, with the desired outcome of preventing overcrowding, protecting critical open space and natural resources, preserving a balance of housing options, preserving community character, minimizing traffic congestion, fostering creativity in design, and establishing vibrant places for community interaction, commerce, and recreation.

Goals

High-Quality and Diverse Housing (Residential Areas)

Orion Township will provide and support high-quality housing for residents of all ages through new residential developments and ongoing maintenance and upkeep of existing neighborhoods. A variety of new, high-quality housing types at various densities will be accommodated to welcome younger residents and families as well as allow older residents to age in the community. The quality of life for residents will be enhanced by protecting the natural features and rural suburban atmosphere of the Township while encouraging the development of neighborhood parks and open spaces.

Natural and Historic Resources (Environmental Resources and Historic Preservation)

Orion Township will preserve and maintain natural resources and open spaces through growth management techniques that encourage development in specific areas of the community while preserving and protecting natural features of the community. Future development will incorporate innovative storm water management, low-impact design features, and site and landscape design that protect natural resources, preserve high-quality open spaces, minimize stormwater runoff, and reflect the natural character of the Township. The Township will maintain and preserve structures of significant historical and architectural value which are key elements in the unique identity and community character of the Township.

Economic Development (Economic Development, Commercial, Office and Industrial areas)

Orion Township will support a strong local workforce by maintaining and promoting the proper distribution of commercial, office, industrial and research development in a manner that results in desired economically sustainable developments, land use relationships, high-quality design, and an increase in the community's tax base. The Township will promote and encourage the concept of 15-minute neighborhoods in desired areas that foster walkable, mixed-use places supported by both non-motorized and motorized transportation infrastructure choices.

Community Facilities (Community, Recreation, and Complete Streets)

Orion Township will support and foster motorized and non-motorized transportation facilities, community recreation facilities, and other supportive community facilities and services desired by residents and businesses in a financially responsible manner that reflects the Township's role and position in the region. These systems will minimize the impact on the Township's natural features and open space while supporting a high quality of life for residents of all ages, as well as targeted land use recommendations. The Township will, when desirable, partner with neighboring communities, other public agencies, and the private sector to maintain, link, and expand infrastructure in an effective, efficient, and economical manner.

Community Character and Aesthetics

Orion Township's tagline, Where Living is a Vacation, encompasses a wide variety of community qualities and features that make the Township unique and cherished by those that live here. In addition to the goals and objectives noted above, the Township will continue to support retaining community character elements and aesthetic qualities that are consistent with the vision of the Township and promotion of health, safety, and general welfare.

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Objectives

High-Quality and Diverse Housing

- 1. Support healthy communities by improving connectivity and access to green space in new and existing neighborhoods.
- 2. Ensure adequate housing styles and densities are available to provide options for first time home buyers or those looking to downsize and "age in community."
- 3. Develop programs to maintain and enhance existing neighborhood character, especially within older neighborhoods
- 4. Encourage land use in accordance with the existing character and Township Future Land Use Plan.
- 5. Promote adaptability through the use of innovative planning and zoning techniques that will result in a full range of housing types.

Natural and Historic Resources

- 1. Protect and enhance the Township's woodlands, wetlands, water features, habitats, and open space by enforcing the regulations that preserve natural features and the functions that they provide to the community.
- 2. Improve storm water management using best management practices; establish appropriate standards for the community in coordination with the Oakland County Water Resources Commissioner.
- 3. Adopt and enforce policies that minimize pollution and preserve the lakes and watershed areas of the Township.
- 4. Promote and communicate sustainability concepts and incentivize residents and businesses to implement relevant strategies.
- 5. Encourage energy-efficient and environmentally sustainable development through raising awareness and creating standards that support best practices.
- 6. Provide resources and guidelines for the development and application of solar, wind, and other alternative energies.
- 7. Preserve the inherent architectural character of individual historical architecture resources throughout the Township.
- 8. Promote sustainable practices that craft solutions to today's challenges that are cognizant of and sensitive to impacts on future generations.
- 9. Require street tree planting as part of all residential and non-residential development and promote and encourage preservation and, where appropriate, creation of woodland areas in order to foster environmental benefits, enhance property values, and act in support of the Township's recognition in the Tree City USA program.

Economic Development

- Achieve a balanced variety of neighborhood-, community-, and regionally-oriented facilities that will meet the shopping and service needs of the community and nearby metropolitan area populations without unnecessary duplication.
- 2. Promote the physical clustering of commercial establishments by encouraging mixed use, shared parking facilities, non-motorized access, consolidated driveways, pleasant pedestrian spaces, and contextual extensions of utilities.
- 3. Regulate the physical clustering of industrial businesses in planned industrial parks, such as those within the southern half of the Township along the Brown Road and Lapeer Road corridors, rather than in stand-alone development, thereby providing for minimal extensions and impacts on utilities and nearby residential uses.
- 4. Support residents of all ages in the local workforce by serving as an information clearinghouse on local and regional training, education, and business needs.
- 5. Expand the Township's economy and tax base by supporting existing local businesses, encouraging entrepreneurship, and attracting new businesses
- 6. Implement incentive programs available through Oakland County and the State of Michigan regarding emerging employment sectors.
- 7. Continue participation in the Michigan Economic Development Corporation's Redevelopment Ready Communities Program.
- 8. Continue and refine the practice of identifying and improving key corridors and districts for growth and economic development, including those near the GM Orion assembly plant.
- 9. Promote the redevelopment of obsolete sites so that they can once again make meaningful contributions to the Township.

Community Facilities

- 1. Facilitate multi-modal connections that provide access to residential areas, economic destinations and parks & recreation facilities throughout the Township in a safe, efficient and effective manner.
- 2. Ensure civic spaces, utilities and other infrastructure are well-maintained while providing sustainable strategies for growth in a practical manner.
- 3. Provide community support to ensure Orion Township police, fire and first responders can continue to operate efficiently in a manner that best serves all residents within the community.
- 4. Pursue new facilities that enhance the quality of life for Township residents and businesses, including a new Township Hall, improved parks, and non-motorized facilities that connect these assets with residential and non-residential areas.
- 5. Actively promote and, where appropriate, require the installation of non-motorized facilities in accordance with the Township's Safety Path Plan and establishment of the core 15-minute neighborhoods.
- 6. Deliver outstanding parks and recreation facilities and programs.
- 7. Encourage Township staff to promote ways in which all Township-owned facilities can conserve energy and serve as a model for energy efficiency in the Township.

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Community Character and Aesthetics

- 1. Enforce Township regulations that reduce glare and preserve the dark sky.
- 2. Promote the preservation of natural vegetation along rural corridors of the Township through creative zoning regulations and coordination with the Road Commission for Oakland County.
- 3. Seek out preservation of important viewsheds that permit Township residents to view lakes, streams and other natural resources
- 4. Require high quality and durable finishing materials and furnishings, consistent with recommendations and policies in this Master Plan, and recognize that certain districts and corridors require unique and harmonious elements.
- 5. Support the advancement of the four identified 15-minute neighborhoods and develop regulations that support hamlet and village style development.
- 6. Encourage the incorporation of design elements into new development that reflect the historic character of the Township.
- 7. Continue to update and enforce sign regulations to ensure that signage in the Township is an aesthetic asset that effects communication and quality appearance over blight, clutter and over-saturation of messaging.



Housing Plan

The Housing Plan refines the residential land use designations identified in the Land Use Plan. The housing plan intends to outline a strategy for a Township to ensure the housing needs for current and future residents are met, to provide opportunities for residents to age in place and to regulate density for future residential developments. Housing styles and development patterns in the Township was the focus of the Master Plan open house that was conducted in June 2021. The results indicate support for the need of alternate housing styles to cater to a variety of age segments and family sizes in the population. Refer to page 74 for a summary of public input on these topics.

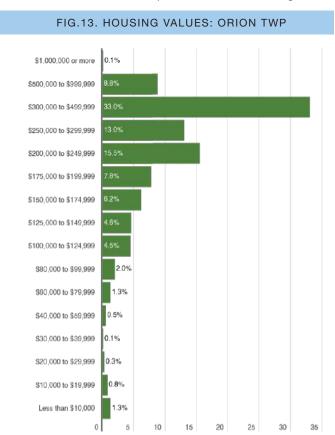
Current Housing

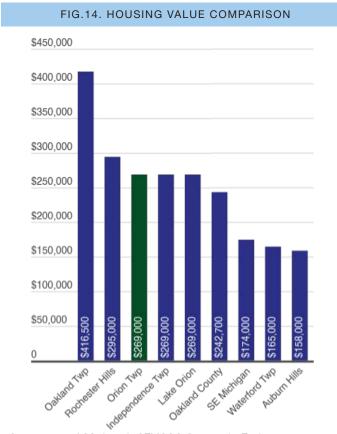
Housing represents the strength of the local economy and overall community appeal. Older housing reflects the physical, historic and social context of a community. The age of housing influences local housing policies for rehabilitation and redevelopment. Older houses require additional maintenance and upkeep, and may also require upgrades to ensure energy efficiency, barrier free access and increased livability for aging adults. In 2019, of the Township's 13,880 housing units, 78% were owner-occupied, 19% were occupied by renters and 5% remained vacant. This is consistent with the county rates.

Housing Value

Housing values in the Township have remained stagnant since 2010, with a slight (0.1%) median housing value decrease over that time. Overall the Township has fared better than Oakland County since 2010, where overall values fell 3.4% from \$251,248 to \$242,700. Orion Township has a median housing value of \$269,000.

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Source: 2019 ACS data via SEMCOG Community Explorer

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Housing Types

Single-family housing is the predominant housing type in the Township, making up 78% of all units. Multiple unit buildings (20%) and mobile homes/other (2%) comprise the remaining 22%. See the image below for more details.

FIG.15. HOUSING TYPES: ORION TOWNSHIP



78% Single Family

2010: 9,640 2019: 10, 849



20% Multi-unit

2010: 2,395 2019: 2,716



2% Mobile Home / Other

2010: 268 2019: 315

Source: 2019 ACS data via SEMCOG Community Explorer









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325 Existing housing in Orion Township Source: Giffels Webster, 2021



Housing Forecast

The following is an excerpt from the market assessment survey conducted in 2020 by the Chesapeake Group. Refer to the appendix for more details.

Housing Development Patterns

Both Orion Township and Oakland County experienced substantial growth in housing permits between 2011 to 2020, following the end of the preceding Great Recession. The Township contributed approximately 6% of the county's 25,000 housing permits, consisting of primarily single-family units. The Township saw slower non-single-family residential growth and only permitted these types of units in 5 of the 10-year period. The Township and county experienced a slowdown in permit activity in 2020 due to the Covid pandemic and other factors.

Property Trends Synopsis

Many factors are driving the significant price escalation for residential property in 2021, including but not limited to:

- 1. Historically low mortgage rates.
- 2. Supply limitations partially resulting from the pandemic.
- 3. Limited labor supply.
- Rapidly rising costs of materials. The cost of construction is being driven by the rising cost of materials and limited labor supply.

Summary of the Market Survey

- 52% of the households may or are likely to move within the next five years from their Orion area residences.
- The primary potential reasons for the move include changes in lifestyle, number of household members, and physical or medical conditions.
- 50% of those that may move in the next five years say they will stay in Michigan.
- In addition to those that may move, about 3 in 10 households have an individual that will likely create a new household in the next three years.
- Age is not a factor in considering the availability of housing options in the Orion area, with most defining options as "very good" or "excellent."
- For those that may move, almost one-half envision or desire a unit smaller than their current home. Income is not a contributing factor for those who are likely to move and desire a smaller, same-sized, or larger home in the future. The majority of all sized units have annual household incomes above \$100,000, reflecting the potential affordability of moving to a new home.
- 72% of residents define Orion's shopping options to which they can easily walk as being "poor" or "fair". Due to online options, the character of commercial development and its blending with walkability are of increasing importance. Households with primary income earners 25 years of age or younger have the most members who feel the availability of places where they can live, recreate, easily walk, and work at or near one location to be "fair" or "poor." The 15-minute neighborhood concepts included in this plan will help to support more non-motorized connections to core mixed-use areas.

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Housing Demand Forecast

The following is an estimate of housing activity for Orion Township. Adjustments have been made to the survey data for demand forecast purposes based on known biases associated with online sampling. The opportunities are not linked to any specific development proposal or site but are a measure of potential within Orion and its core. The defined units and space may be beyond the holding capacity of available land but are for guidance with planning. Also, the ability to accommodate the demand may be limited by community desires and character.

Based on historical patterns in the County, Orion Township, and an additional database derived from The Chesapeake Group's surveys of residents in other communities of the County, the potential for new housing units in Orion Township is defined.

The forecast estimates a total of roughly 1,375 to 1,525 new units by 2030. Of these units, about 260 to 290 could be non-single-household structures like duplexes, townhomes, and other attached structures. This total does not include any potential for developing an "active adult" community, unique niche opportunities, or the range of assisted living opportunities. This estimate is not linked to the holding capacity of available land, current zoning, or any existing development regulations.







Above: New housing developments should provide a variety of housing styles and options ranging from single to multi family

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Source (top and bottom): Giffels Webster (2021)

Source (middle): Orion Township

Missing Middle Housing

"Missing Middle Housing" is a term coined by Daniel Parolek of Opticos Design, Inc. in 2010. Parolek defines this type of housing as follows:

"Well-designed, simple Missing Middle housing types achieve medium-density yields and provide high-quality, marketable options between the scales of single-family homes and mid-rise flats for walkable urban living. They are designed to meet the specific needs of shifting demographics and the new market demand and are a key component to a diverse neighborhood. They are classified as "missing" because very few of these housing types have been built since the early 1940s due to regulatory constraints, the shift to auto-dependent patterns of development, and the incentivization of single-family home ownership."

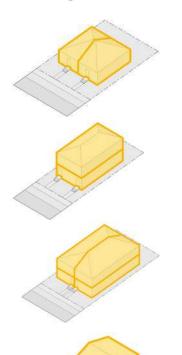
Missing Middle Housing is a range of multi-unit or clustered housing types compatible in scale with single-family homes that help meet the growing demand for walkable urban living. Characteristics of these housing types include:

- Walkable (homes are set in walkable context)
- Medium density but lower perceived density
- Smaller, well-designed units
- Smaller footprint and blended densities

Detached Single-Family Houses Detached Single-Family Houses Duplex: Side-By-Side + Stacked S

FIG.16. MISSING MIDDLE HOUSING CONCEPT

Missing Middle Housing Types



Duplex Side-by-side

A small (1 to 2-story), detached structure that consists of two dwelling units arranged side-by-side, each with an entry from the street. This type may include a rear yard.

Duplex Stacked

A small (2 to 2.5-story), detached structure that consists of two dwelling units arranged one above the other, each with an entry from the street

Quadplex Stacked

A detached (2 to 2.5-story) structure with four dwelling units, two on the ground floor and two above, with shared or individual entries from the street. This type may include a rear yard

Attached Townhouse

A small-to medium-sized attached structure that consists of 2 to 16 multi-story dwelling units placed side-by-side. Entries are on the narrow side of the unit and typically face a street or courtyard.

Cottage Court

A group of small (1 to 1.5-story*), detached structures arranged around a shared court visible from the street. The shared court is an important community-enhancing element and unit entrances should be from the shared court. It replaces the function of a rear yard.

Courtyard Multifamily

A medium-to-large sized (1 to 3.5-story*) detached structure consisting of multiple side-by-side and/or stacked dwelling units oriented around a courtyard or series of courtyards. The courtyard replaces the function of a rear yard and is more open to the street in low intensity neighborhoods and less open to the street in more urban setting.

Multiplex Medium

A detached (2 to 2.5-story) structure that consists of 5 to 12 dwelling units arranged side-by-side and/or stacked, typically with a shared entry from the street.

Triplex Stacked



A small-to-medium (3 to 3.5-story) sized detached structure that consists of 3 dwelling units typically stacked on top of each other on consecutive floors, with one entry for the ground floor unit and a shared entry for the units above.

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FINAL DRAFT (07-07-2022)

Data & Image source: Opticos Design, Inc.

Recommendations

Missing Middle Housing

The Township also recognizes the need for allowing for diverse housing within the Township. The Township recently amended the Zoning Ordinance to allow for a diverse type of housing styles within the Gingellville Village Center area. For existing multiple family zoning districts, the current ordinance standards permit senior housing, garden style apartments and attached townhomes.

The market analysis results indicate an increasing demand for smaller units for current residents in order to downsize. In addition, proximity and walkability to retails uses and other services is a primary factor in choosing a location for a future home. According to the survey, for those that may move, almost one-half envision or desire a unit smaller than their current home. Income is not a contributing factor for those who are likely to move and desire a smaller, same-sized, or larger home in the future. Walkability is also an important factor in identifying potential locations for such housing developments. The table below provides a summary of recommended housing styles in applicable future land use categories. Minimum density for developments using 'missing middle housing styles' should be guided by the building form, open space standards and other design features consistent with the underlying zoning. Such flexibility in housing styles would allow for residents to age in place.

TABLE 7.MISSING MIDDLE HOUSING- USE RECOMMENDATIONS								
	SF Low	SF Medium	SF High	MF Low	MF Medium	Village Center	Mixed Use	PUD
Duplex Side-by-side				Υ	Υ	Υ		Y*
Duplex Stacked				Υ	Υ	Υ		Y*
Quadplex Stacked				Υ	Υ	Υ	Υ	Y*
Attached Townhouse				Υ	Υ	Υ	Υ	Y*
Cottage Court			Υ	Υ	Υ	Υ	Υ	Y*
Courtyard Multi-family				Υ	Υ	Υ	Υ	Y*
Multiplex Medium				Υ	Υ	Υ	Υ	Y*
Triplex Stacked				Υ	Υ	Υ	Υ	Y*

^{*} Only if found to be appropriate as part of the PUD approval process.

Amendments to the Zoning Ordinance will be necessary for allow all of these types as indicated in the above table.

In addition to the missing middle types above, the multi-family, Village Center, Mixed Use, and, where appropriate, PUD planned areas may also provide for traditional multi-family units in a variety of styles. In mixed-use settings, these may be located over non-residential uses or they may be in stand-alone buildings.

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Rural Development Patterns

The Orion Township has longstanding interest in preserving and maintaining natural features and open spaces. The zoning tools that are available to maintain rural character within low-density residential areas include ones that discourage traditional subdivisions where lots are located adjacent to road rights-of-way and to encourage cluster and open space developments with a modest reduction in lot sizes and larger green buffers between the lots and the roads rights-of-way (See image below).

Typically, a minimum width of this type of natural green corridor is 100 feet deep from the right-of-way line on both sides of the road. The Township should consider incentivizing rural corridor preservation by permitting flexibility in lot area and width in exchange for corresponding open space along roadways. In addition to modifying lot development standards, the Township may also consider encouraging landscaping elements such as rural fencing. This recommendation received favorable response at the Master Plan open house. The following corridors are designated as priorities for corridor preservation as described above:

- 1. Indianwood Road
- 2. Baldwin Road, north of Indianwood Road
- 3. Coates Road, north of Indianwood Road
- 4. Designated Natural Beauty Roads
- 5. Scripps Road and Greenshield Road through Bald Mountain Recreation Area
- 6. Waldon Road and
- 7. Clarkston Road

See page 129 in the Complete Streets chapter for more information.







PUD Planned Unit Development

Planned Unit Development (PUD) is a flexible development tool, authorized by the Michigan Zoning Enabling Act, that promotes innovative solutions that preserves natural features, provides community benefits and builds up the existing community fabric.



Source: Giffels Webster

Qualifying Criteria

Examples of projects that might qualify for a PUD include the following:

- Projects that create a community catalyst, by providing amenities, missing housing types and promoting multimodal transportation.
- Developments that preserve green space, promote green infrastructure, and promote further preservation and enhancement of existing and future (proposed) natural features.
- Projects that require flexibility in parcel size and shapes
 to develop and improve a site that, under traditional
 zoning, would be difficult to achieve. Flexibility in zoning
 should not have a negative impact on existing uses,
 but rather strengthen the connection of the project to
 the network of development and overall fabric in the
 community.

Purpose and Intent

In addition to the qualifying criteria, PUD projects should be consistent with the following:

- The PUD process should not be used to introduce a radical shift away from the vision of the Master Plan; rather, it should be a Master Plan implementation tool.
- PUD projects can be used to assist in providing for transitional zoning from high-intensity areas to lower intensity areas. In some cases, the transition may take place within the PUD itself.
- Where appropriate from a density perspective, PUD projects can assist in the introduction of missing middle housing types, so Orion Township's community attributes are available to a wide range of people with varying income levels.
- PUD projects should use the opportunity for development flexibility to promote sustainability, community resiliency, and healthier living conditions.
- Where appropriate, PUD should provide for the preservation of natural and rural road corridors by concentrating development interior to the site and preserving and/or enhancing natural vegetation and amenities along rural and natural corridors in Orion Township.

(A)

95

Attainable Housing

When communities have a wide spectrum of housing options to support residents, they can accomplish many goals. The availability of "attainable" housing helps accommodate everyone from young adults who are just beginning to live on their own, to families looking to grow, to older residents looking to downsize while staying in the community. It also provides for workforce housing. While there is no universal definition of "attainable housing," the term was recently defined by the Urban Land Institute as "non-subsidized, for-sale housing that is affordable to households with incomes between 80 and 120 percent of the area median income (AMI)."

Overview

In many communities, young adults and the elderly have limited housing options due to a combination of their lower income levels along with the pricing and availability of housing. This kind of financial challenge can impact people of all ages.

The general rule of thumb based on guidance from the U.S. Department of Housing and Urban Development is to spend a maximum of 30% of a household's income on housing costs, yet many people find themselves spending more on housing, leaving less of their income available for other household expenses. Finding attainable housing can be challenge and it can stress family finances.

The figure below demonstrates that nearly half of all renter households and about a quarter of owner households are cost burdened. Cost burdened is defined as households spending more that 30 percent of income on housing. In 2001, only slightly more that 40 percent of renters were cost burdened.



Source: Joint Center for Housing Studies at Harvard University, The State of the Nation's Housing 2018

Housing Costs and Supply

Housing costs are on the rise. According to the National Association of Home Builders, the median price of a new-construction home was \$375,000 in March 2020 (nationwide), up from \$325,100 in October 2018. The median price for existing homes was \$280,600, up from \$257,500 in 2018. The cost of new construction is driving the overall cost of housing higher.

The supply of multifamily for-sale housing is decreasing. Multifamily for-sale housing has historically represented about 20 to 25 percent of total multifamily permits. This type of housing is often more attainable because of its lower cost. In the past 8 years, multifamily for-sale housing has represented 6 to 7 percent of total permits, reflecting a significant post-Great Recession decline.

New construction has delivered larger homes with more bedrooms even though household size was dropping. "Although one- or two-person households make up more than 60 percent of total households, nearly 50 percent of the homes delivered are four bedrooms or more. Less than 10 percent of the homes offer fewer bedroom options like one and two bedrooms," as noted by ULI.

The same ULI report notes that small housing, under 1,400 square feet, has historically represented about 16 percent of new construction, but in the last cycle, it has averaged closer to 7 percent. When combined with the next size category, 1,400 to 1,800 square feet, the overall distribution of "small homes" has declined from just under 40 percent to 22 percent. Homes over 2,400 square feet have increased from 32 percent to 50 percent of new construction since 1999, according to the ULI.

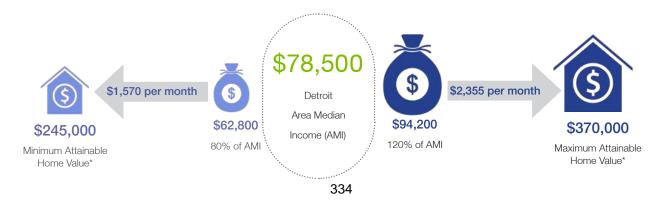
Urban Land Institute (ULI) is a leading provider of research and analysis on issues that affect housing. https://bit.ly/AttainableHousing-ULI

What does this mean for Orion Township?

As noted above, attainable housing has been defined as non-subsidized, for-sale housing that is affordable to households with incomes between 80 and 120 percent of the area median income (AMI)." The Detroit metropolitan area median family income for 2020, which is used by the U.S. Department of Housing and Urban Development for housing reports and applies to Oakland County, was \$78,500.00. Median family income is typically higher that median household income. A family consists of two or more people compared to a household, which may only consist of one person. The numbers below and in Figure 18 are based on providing attainable housing in the Detroit regional market:

- MINIMUM VALUE. 80% of the median family income = \$62,800.00. With 30% of income spent on housing, \$1,570 per month is available. A home valued about \$245,000 is attainable at this income level.
- MAXIMUM VALUE. 120% of the median income = \$94,200.00. With 30% of income spent on housing, \$2,355 per month is available. A home valued about \$370,000 is attainable at this income level.

FIG. 18. ESTIMATED ATTAINABLE HOME VALUE FOR ORION TOWNSHIP



lack

What determines a median housing sale value?

The median sales price for a home in the metro Detroit real estate market in June 2021 was \$282,938. With 10 percent down, a family income of about \$77,600 is necessary for a home of this median price.

The estimated median price for a single-family home of new construction in southeast Michigan was \$391,000 (Detroit News, April 29, 2019) and the median price of single family new construction in Michigan is over \$330,000 (MSHDA), which is substantially higher than the median home value. These prices have continued to increase with the rising cost of lumber and other materials. Michigan home prices are also higher than the national average of about \$325,100 (2018). To buy a new construction home valued at \$391,000, a family household income of about \$99,700 is required, which is outside the range of attainable housing (\$62,800 to \$94,200). See Figure 18 in the previous page.

In addition to housing costs, transportation costs can also be a substantial economic burden. For the southeast Michigan region (SEMCOG), 29 percent of income is spent on housing and 23 percent is spent on transportation (52 percent total). In Oakland County, where housing costs are higher, on average, than the region, 58 percent of income is spent on housing and transportation (34 percent housing and 23 percent transportation).

The Master Plan addresses attainable housing by targeting a wide variety of housing options that go beyond single-family detached housing. Examples include multi-family dwellings, manufactured housing, and missing middle housing types, which are house-scale building with multiple units (duplexes, quadplexes and cottage court bungalows). This variety of housing types will expand the number of homes available across many price points.

References

- https://bit.ly/AttainableHousing-ULI
- https://www.huduser.gov/portal/datasets/il/ il2020/2020MedCalc.odn



Density Plan

The Residential Density Plan map on next page indicates the planned maximum number of dwelling units per acre throughout the Township. The density numbers shown on the map correspond to the density maximums and ranges provided for.

Density numbers

Density numbers provided on this plan are not intended to depict actual densities of established residential areas. These are gross densities that apply to the site, excluding regulated wetland areas. If an applicant receives approval from the applicable regulatory agency(ies) for off-site mitigation of regulated wetlands, the Township may consider including the on-site wetland areas in the density calculations. The Township will review unique site characteristics and the surrounding area to establish appropriate density through zoning. Density numbers provided can be organized into the following groups:

Established residential areas

Density ranges indicated for established residential areas primarily reflects previously established density patterns. Significant changes to density in established residential areas are not planned or anticipated.

Established public and semi-public areas

These areas, consisting primarily of public parks, schools, municipal property and similar uses, are not planned for residential development as indicated by the Institutional designation. Density is provided on the Residential Density Plan in the event that the public / semi-public use is no longer viable and the Township determines that residential use is appropriate.

Emerging growth areas

This covers mostly rural and underdeveloped areas of the Township. As municipal services are carefully planned for expansion within the Township, the Residential Density Plan sets forth a policy guide for future zoning designations. Future water and sewer capability in low density areas of the Township will likely result in development at the higher end of the ranges provided on the map.

Build-out analysis

Based on the residential density map, a forecast of build-out population has been conducted. Vacant property and underutilized property was totaled for each subarea and the mid-point of the planned density range was applied. Public park areas were excluded. For mixed use areas, a separate forecast was prepared. Areas that appear to have state-regulated wetlands were not included in the total land area. Once a total number of units was determined, a factor of 2.51 persons per unit (SEMCOG) was applied. This total was then added to the existing population for an approximate build-out population.

• 2020 population: 35,300

New dwelling units possible: 4,660

Persons per unit estimate: 2.51

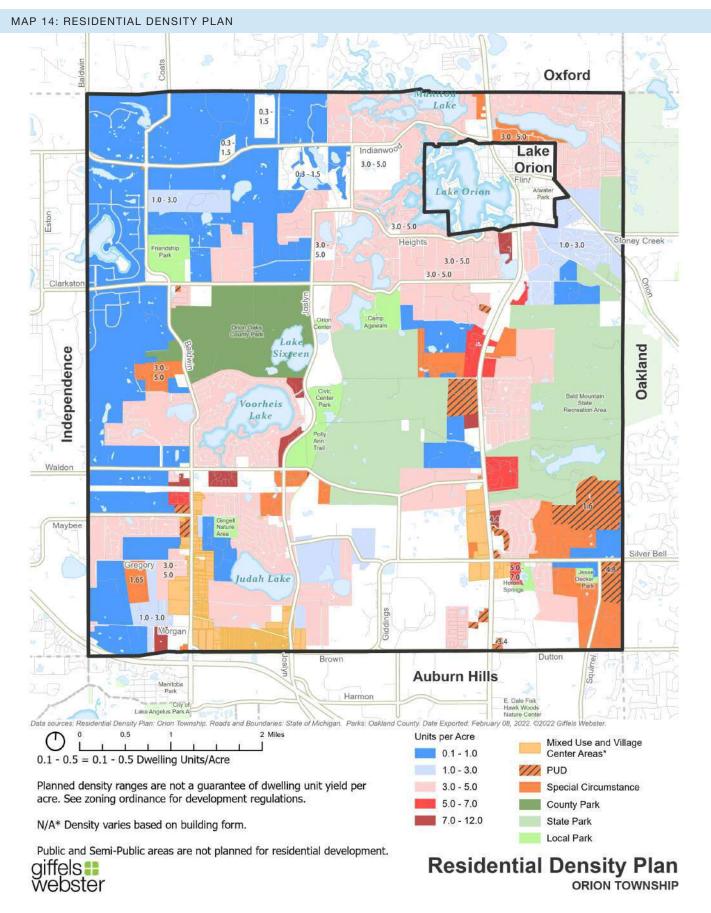
New residents possible: 11,697

Conceptual build-out population: 46,996

336



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Economic Development Plan



Economic Development Plan

Introduction

Orion Township has used many available economic development tools in the past. One of the most significant is the formulation of a Corridor Improvement Authority included special zoning districts and overlays. Future success will depend upon taking advantage of opportunities and focusing on mitigating areas that could impact the Township's long-term economic viability. For example, the increasing median age trend, which is shared by much of the region, is conducive to a robust economic development outcome. Actions to expand workforce housing and non-residential job growth in targeted areas could attract or retain young people in the Township.

No community will capture all the composite of marketable activity and space. There will be competition. Furthermore, economic conditions continue to change. Purchasing online was growing rapidly prior to Covid-19, resulting in the exportation of dollars; the online purchasing rate sped up since the pandemic. Large proportions of office and workspace were being built in homes, and more people were working from remote locations before Covid-19; as with purchasing, the speed of change has accelerated.

If Orion Township is going to take advantage of the opportunities in the market, it must keep its economic toolbox ready and prepared, with an eye towards effectively and efficiently utilizing limited human and fiscal resources. Also, some potential changes in policies and ordinances activity may be necessary. The following are targeted to enhance economic and fiscal viability and should be explored as part of Master Plan implementation.

FIG.19. MARKETABLE OPPORTUNITIES OVER THE NEXT 10 YEARS

The identified marketable opportunities over the next 10 years include the following



HOUSING

1,500 additional housing units



RETAIL & SERVICE

270,000 sq. ft.



OFFICE

100,000 sq.ft.



INDUSTRIAL

200,000 sq. ft.

*Developed by The Chesapeake Group, Inc., 2021.

Overall Economic Strategy

Orion Township seeks to maintain an economically sustainable community which can support the well-being of its residents and business in terms of services, opportunities, and quality of life. It strives to assure that new investment in the community is in conformance with the Master Plan. It seeks to capitalize on the existing community assets including location, existing business, residential desirability, recreational opportunities, schools and top public safety ratings.

Economic development activity should be focused on the following:

- 1. Foster entrepreneurship
- 2. Increase housing options
- 3. Maximize the relationship with General Motors and the future of electric vehicle production
- Seek growth of industries that utilize the labor force's skills
- 5. Create places for business incubators
- 6. Explore the development of a sports training and climate-controlled activity center
- 7. Adapt commercial corridors for the future
- Recruit of outside and local developer investment interests
- 9. Promote development within the CIA district and designated corridors
- Promote redevelopment sites and continue to develop new locations

Strategy 1. Foster entrepreneurship

The Township should work with higher educational institutions to attract those interested in small business development, including but not limited to those focused on small business activity and electric vehicle growth.

From a regulatory perspective, the Township can support work from home options in areas by potential mixing uses within close proximity of residential areas. This creates access to potential retail, service, shared office space and other amenities close to home and accessible by bicycle and walking, in addition to the motor vehicle. The implementation of the 15-minute neighborhood concept will support this effort.

Entrepreneurship growth also fosters housing investment as well as the attraction of younger households.

Strategy 2. Increase housing options

Housing is an important element of economic development. Orion Township seeks to increase the number of housing options available to current and new residents, with a focus on ensuring that new housing development is consistent with the community character and housing recommendations in this Master Plan. Labor force reassessment is playing out in all facets of the labor market with people making very different decisions about work than they did pre-Covid. Resignations are high; there are 4.9 million more people in the U.S. who aren't working or looking for work, and there is a surge in retirements. There is a boost in entrepreneurship.

Orion Township is anticipating a relatively flat trend in population over the next 20 years based on current projections. With a growing population 65 years of age or older and a need for younger residents, housing opportunities need to expand and reflect overall market opportunities that are consistent with Township's goals and objectives.

There is ample opportunity to capture new households through growth in the housing stock. Adding rooftops significantly impacts the community's economic viability by expanding the internal commercial market and holding existing seniors in the community by accommodating them in appropriate housing, potentially freeing existing occupied units for younger households, creating new work environments, expanding tax revenues without changes in rates, and others.

Housing expansion, including both the mix of housing types and number of units, will have a significant economic impact on Orion Township. It makes good planning sense to build upon past planning successes such as the Gingellville Village Center planning area, one of the Township's 15-minute neighborhoods.

This village-scale area would benefit from multiple family and missing middle, house-scale attached units that would be attractive to both young people and active empty nesters looking for low-maintenance housing in a walkable setting.

Employment of tools that can assist first-time home buyers, homeownership stimulation, and zoning and other regulations that foster walkability and community continuity are keys.

Strategy 3. Maximize the relationship with General Motors and the future of Electric Vehicle Production

The GM Orion Assembly Plant opened in 1983 and made the transition to manufacturing electric vehicles in 2020. Orion Township is the home to the Chevy Bolt EV production vehicles and Cruise AV test vehicles. This 4.3 million square foot facility employs over 1,100 people and is on the cutting edge of electric vehicle production and testing.

Potential future action facilitated by the Township could include developing a joint effort with GM to expand linked activity. For example, the Township could partner to recruit software developers, battery research entities, EV parts producers, etc.



Source: Giffels Webster 2020

Strategy 4. Seek growth of industries that utilize the labor force's skills

The following industries have been identified as those that could take advantage of the skills that are already present in the area labor force. These would be attractive industries to pursue to fill vacant or emerging development sites.

- 1. Drone developer or assemblers
- 2. Robotics and other advanced manufacturing businesses, including electric vehicle suppliers
- 3. Electric bike producers or assemblers
- 4. Electric scooter manufacturers
- 5. Information tech providers to the above producers
- 6. 3D printing operations
- 7. Computer software application and 3D printing
- 8. Defense and construction industries and related suppliers
- 9. Cannabis growth and production

Strategy 5. Create Places for Business Incubators

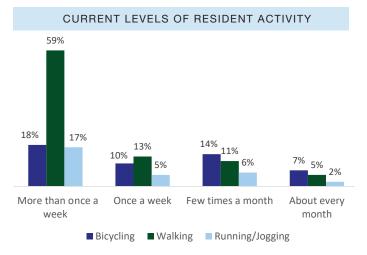
Orion Township can generate excitement and activity in core walkable areas and other strategic locations by allowing business incubator spaces. These are generally comprised of attractive, constructed pop-up units, not tents, typically sized at about 10'x10'. The purpose of these spaces is not to compete with local businesses, but rather to serve as a place to test a new retail-oriented business or venture or serve as a place for an existing business to test a new location. If they are provided with heating, these unique business incubators could operate year-round. Others may operate only seasonally. In the core 15-minute neighborhood areas, a collection of pop-up incubators could locate under single management control on an in-fill lot, providing a place to visit by foot or bicycle.



Source: Giffels Webster 2020

Strategy 6. Explore the development of a sports training and climate-controlled activity center

Orion Township is home to Bald Mountain State Recreation Park with strong outdoor activity such as hiking, mountain biking, fishing, swimming, paddle boating, and picnicking. Also, 90-acre lake in Orion Oaks County Park and the various trails and parks are significant outdoor resources. Current levels of activity are reflected below.



Numerous well-known professional athletes, Olympians, professional athletes, sports commentators and personalities came from the Township and nearby area over many years. This provides an opportunity to partner and establish a sports training facility that takes advantage of an active population and local resources to train that population. It also allows for the community to establish partnerships with community sports leagues and advanced sports clubs (soccer, baseball, lacrosse, etc.).

Strategy 7. Adapt commercial corridors for the future

Retail corridors will be sustainable if they adapt to changes in demand and consumer preferences. The following are suggested actions to promote retail sustainability:

- · Seek redevelopment of targeted properties
- Expand mixing of uses and walkability
- Expand the activity defined in the market analysis
- Expand housing options integrated into corridors, villages and hamlets

Strategy 8. Recruitment of outside and local developer Investment Interests

As important as local private and public sector investment is to Orion Township, so too is investment generated from private outside sources. If one examines the history of "crowdfunding," which reached beyond "friends and family" funding, to newer versions of the concept, such as "Start Engine," outside private funding can generate more considerable financial resources to make things possible that seemed beyond reach.

While not abandoning the regional efforts at business recruitment, Orion Township should prioritize and pursue outside developer and investor interests on a project by project basis. That effort should include the following.

- Advise potential investors of the best opportunities for growth and inform them about the importance of maintaining community character that is unique to the Township.
- Identification of entities to be solicited based on their portfolios.
- Direct solicitation of those entities. It cannot be assumed that the "right" entities are looking for opportunities, know of such in Orion Township even if ad placement is done, and that they will "find" this location.
- Follow-up with those expressing interests.
- Create local partnerships as appropriate to buy property, create lease arrangements, or any number of other diverse fiscal, buyout, or ownership relationships.

Strategy 9. Promote development within the CIA district and designated corridors

Promote the development platforms of the Corridor Improvement Authority (CIA) and other zoned commercial corridors and locations which include an established Industrial Development District in accordance with PA 198 for tax abatement in limited zones. Further the Township supports applicable Brownfield Tax Increment Financing (TIF) opportunities for environmentally challenged sites.

FINAL DRAFT (07-07-2022)

Strategy 10. Promote redevelopment of priority sites

Three sites within the Township have been strategically identified as prime areas to focus redevelopment resources in order to achieve future economic vitality and sustainability. The following pages provide an overview and recommendations for these locations.

Redevelopment Site 1:

JUDAH-BALDWIN (GINGELLVILLE/BIZ TRANSITION AREA)





Source: Giffels Webster 2020

Background

Location. The approximate 88-acre area is located in the southwest quadrant of the Township, on the east side of Baldwin Road, and along both north and south sides of Judah Road. The northeast portion of the site is in close proximity to the Judah Lake wetlands.

History and Existing Development Constraints. The Baldwin Road corridor had recently been reconstructed and expanded from a two-lane, rural thoroughfare to a four-lane boulevard roadway with center landscaped islands, safety paths, and improved lighting on both sides. A signature characteristic of the improvement project are roundabouts at major intersections, including Judah Road, the focal point of the southern boundary of planned Gingellville Village Center District.

Unlike the other two redevelopment sites, the Judah-Baldwin area contains a large number of individual parcels with many property owners, which may prolong the acquisition process in order to implement the long-range vision for the area. Some may choose to remain as single family homes.

Future Land Use Map. The 2015 Future Land Use Map for the designated area consists of the Gingellville Village Center District north of Judah Road. South of Judah Road, the plan establishes Office Research and Industrial, Commercial, and Residential Mixed Use, which aligns with the Brown Road Innovation Zone (BIZ). A portion of single-family residential land uses are identified along Judah Road, extending east of the redevelopment area.

The 2022 Future Land Use map proposes extending the Village Center classification to include this redevelopment area. This will accomplish a number of key objectives:

- adding more rooftops in the vicinity of the Village Center planning area
- provide a variety of housing types not found elsewhere in the Township
- provide workforce housing opportunities
- locating housing in reasonable proximity to the Baldwin / I-75 interchange

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Public Input. The general consensus of the data collected from the community survey and the February 2021 Leadership Advance meeting is that the Village Center concept is planning opportunity that residents desire and want to develop so that the community can strategically improve upon a sense of place and identity. The Village Center is the largest, walkable mixed-use district planned in the Township, and along with the Village of Lake Orion and the two hamlet areas, comprises the four core areas of the planned 15-minute neighborhoods (see pages 138-145). With the framework that the Gingellville Village Center Overlay provides, and the implementation of goals and objectives outlined in the Master Plan, this potential redevelopment area can serve as a southern Village Center gateway and transition from the BIZ uses to the south to the Village Center area.

Concepts for the Redevelopment

Land Use. With mixed use as the focus for the village center development, low intensity commercial, entertainment, and office uses are permitted to mix with a variety of residential use types. The mixed-use conceptual plan shown below illustrates a layout that is in line with the imagined redevelopment based on the future land use designations.

Flex buildings along Baldwin Road are retail, mixed use, or townhouse, up to three stories, all depending on market conditions. Gateway areas at the roundabout provide gathering space for plazas, outdoor dining venues, and public art.

East of the flex buildings, a new, north-south public road will separate townhomes from ranch-style, detached cottage court bungalow units north of Judah Road and cottage court duplexes south of Judah. These units would be onestory ranches with a ½ story bonus bedroom/bathroom upstairs, and possibly with two-story units mixed in.

The cottage court bungalows north of Judah Road are planned to potentially accommodate quadplex units at the ends of each block. These units are envisioned as being designed to appear as larger single family homes (see photo example), but include two units on each of two levels.

Also planned, are 100' wide greenways along each side

of Judah Road will beautify and buffer the residential neighborhoods on Judah Road as well as provide an attractive transition to the residential areas beyond the district. Rain gardens and a walking trail will wrap around the development on the north, east, and south sides, connecting to the safety path along the east side of Baldwin Road.

Building Form. Urban design will play a key role in the



Source: Quadplex example (Photo by Michael Kansas Sebastian - Flickr)



Source: Cottage Court Bungalow example - Ingelnook in Carmel, Indiana

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redevelopment of this area. Design features should deviate away from suburban style and auto-centric layouts and exemplify a more human scale, sustainable, and resourceful presence within the limitations of the buildable area (rights-of-way, wetlands, woodlands, etc). Reduced setbacks, incorporation of open space, and placemaking elements planned in this area will foster a sense of community. The look and feel of the built environment can, with appropriate buffers, achieve harmony with and transition to less dense land uses to the east.

Transportation. The site should take advantage of the investments that included safety paths as part of the Baldwin Road improvement and expansion project. The conceptual layout explained above is intended to be served by non-motorized transportation facilities that connect to adjacent sidewalks, roadways, natural areas, and sites as identified in the Township's Thoroughfare Plan.

Sustainability. With its close proximity to Judah Lake and its surrounding natural features, the redevelopment site has an opportunity to engage in sustainable building practices with sensitivity to the natural environment as well as alternatives to transportation, as mentioned above. The future land use framework has been established for a mix of uses to maximize economic productivity, evolve as a sense of place, while honoring the natural surroundings that will enhance the quality of life for residents and non-residents alike.

Development of the District. The connectivity of the Gingellville Village Center Overlay and BIZ District are a clear indication that the Township has strategically set aside an area where it is believed the goals and objectives identified in the Master Plan can be successfully implemented through sound public policy and careful, forward thinking planning. The adopted Master Plan should provide the guidance required to develop the area in a manner. There will need to be a new zoning district or modified Village Center District to make this plan possible, accounting for more missing middle housing types and cottage court style development patterns.

Judah Lake Wetland
Complex

SINGLE-FAMILY
TWO-FAMILY

MULTIPLE FAMILY

FLEX SPACE

BALDWIN ROAD

FIG.20. JUDAH-BALDWIN(GINGELLVILLE/BIZ TRANSITION AREA CONCEPT)

FINAL DRAFT (07-07-2022)

Redevelopment Site 2:

FIG. 21. EAGLE VALLEY LANDFILL LOCATION







Source: Giffels Webster 2020



Background

Location. The 277.5-acre site is located in the southeast quadrant of the Township and abuts the north side of Silverbell Road and the east side of Giddings Road.

History and Existing Development Constraints. The Eagle Valley Recycling and Disposal Facility is an operable, Type II landfill that has been an important presence serving the immediate and surrounding Southeast Michigan community since 1985. The facility produces renewable energy from harnessing methane gases produced from the state-of-the-art collection of solid waste. According to reports from Waste Management, the company that owns the facility, the amount of renewable energy the site produces, which produces power for nearby homes and businesses, is one of the factors that contributed to the company's decision to maintain its operation for the foreseeable future.

Future Land Use Map. The Future Land Use Map designates this redevelopment site as recreation. Properties east of the site are currently within the Lapeer Road Overlay District and are planned for a mixed use of Industrial, Commercial, and Residential.

Natural features along the northern boundary of the site provide buffering from existing and planned medium residential lots to the north. Beyond the Giddings and Silverbell Roads, along the west and south sides respectively, future land use designations of research and light industrial remain comparable to the existing limited industrial and industrial park districts. The General Motors Orion Assembly Plant lies south of the landfill and continues to utilize the renewable energy resources generated by the landfill operations as well as solar power.

Public Input. The data gathered from the Leadership Advance regarding the landfill site is that it is, or is perceived to be, a weakness within the community. Key components of its purpose were identified in the "Emerging Trends" commentary; those being green infrastructure and sustainability. The takeaway is that the owner and operator of the landfill, as an existing facility, publishes a wide variety of information explaining its role as a leader in environmental

347 stewardship, protection, and practice.

Concepts for the Redevelopment

Land Use. The current and future use of the Eagle Valley Recycling and Disposal facility represents a unique opportunity to remain a purposeful community asset for many years to come, while also planning for transition to a new use once the facility ceases to operate as a landfill. By recognizing and understanding the level of environmental protection and regulation that currently takes place at the facility, the community will be better positioned to analyze, prepare for, and implement the next lifespan of the former landfill and future recreation site.

The vision for this site is expanded to include both recreational and renewable energy land uses. In addition to the methane gas potential that is currently being realized on this site, this site is adaptable to harness clean solar power as a commercial solar farm. These would particularly be an attractive use if portions of the overall site prove difficult to mitigate for recreational uses.



Solar Farm on Closed Landfill in Dover, Mass. Photo by Lucas Faria, USDOE via wikimedia



Redevelopment Site 3:

FIG.22. BROWN ROAD INNOVATION (BIZ) SITE



Background

Location. The site is located in the southwest quadrant of the Township, along the north side of Brown Road, between Baldwin and Joslyn Roads. It is a central site within the Brown Road Innovation Zone District.

History and Existing Development Constraints. This redevelopment site is in a prime location along Brown Road, a corridor shared by Orion Township and Auburn Hills to the south and has experienced rapid and expansive commercial growth in the recent past. There is not much in the way of known constraints to develop the site other than to market it for the types of mixed uses intended under the future land use map. The site is currently used by an excavating company and there is significant outdoor storage of vehicles and equipment on the site.

Future Land Use Map. The Future Land Use Map for the designated area consists of a mix of uses as industrial, commercial, and residential, which parallels the present-day Brown Road Innovation Zone (BIZ). Here, these types of developments and land uses are encouraged within the existing BIZ zoning district.

Public Input. Future land use designation allowing for a mix of uses parallels that of the current Brown Road Innovation District. The area, coupled with the extension of the Village Center classification, north along Baldwin Road, is intended to address the desire for a more diversified approach to development with sensitivity toward sustainability and place-based design standards.



View of Brown Road development site, looking east. Source: Giffels Webster 2020



Concepts for the Redevelopment

Land Use. In keeping with the characteristics of the current BIZ District and the goals of the Master Plan, a conceptual approach to redeveloping the site would be to divide the land according to future needs and provide a single-point, common access to each parcel via Brown Road to the south. A secondary access connection to the west and/or east could also be explored. The future use should be compatible and consistent with the shared Brown Road commercial corridor with Auburn Hills.

The concept plan envisions redevelopment as a research office complex with individual pad sites for users. The frontage on Brown Road could develop with a restaurant or retail pad. This redevelopment concept would complement the planned hotel and restaurant uses to the east and Menards to the west.

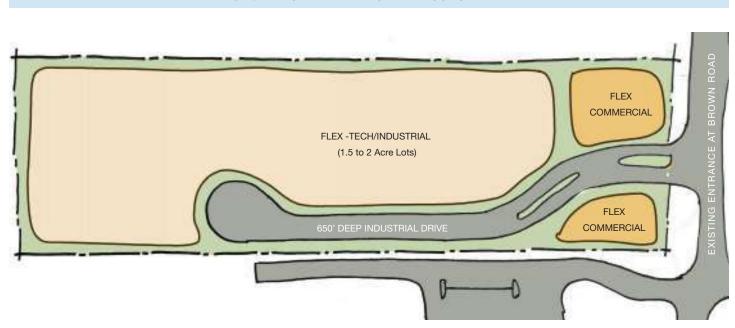


FIG.23. BIZ SITE REDEVELOPMENT CONCEPT PLAN

Leisure Recreation

In Michigan, many state parks are a principal tourist attraction and host millions of visitors each year. State parks, such as Bald Mountain Recreation Area in Orion Township, are also home to spectacular landscapes, historic structures and sites, sensitive habitats, and rare plants and wildlife. This, in turn, attracts visitors from around the region who are interested in leisure recreation activities within the park. Because some visitor activities have the potential to harm these resources, balancing recreation use with resource protection requires specific care. The MDNR guides development, use, and protection of its park lands according to a general management plans (GMP), which are prepared specifically for each park. This resource is worth exploring at the community level, where popular local parks contain sensitive habitats and other resources. This approach provides thoughtful management to sustain the uses and benefits of resources while balancing recreation use and resource protection.

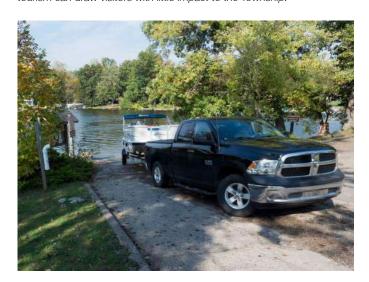
For Orion Township, it is important that there be a balance between residents and visitors enjoying the natural features in the community. It is recognized some Township amenities have a regional draw that goes beyond the boundaries of Orion Township. It is also recognized that visitors to these nature features can help support local businesses. If natural features and amenities become too popular to those outside the community, it could negatively impact enjoyment be residents. By studying visitation patterns and usage rates, the Township can adjust its marketing efforts accordingly.

Pure Michigan Trail Town Designation

Orion Township was one of three Michigan communities named as 2020 Pure Michigan Trail Towns by the Michigan Department of Natural Resources (DNR). Towns with Pure Michigan designation are identified as vibrant places where trail-based tourism meets the needs of both trail users and town residents. A Pure Michigan Trail Town is a destination along a Pure Michigan Trail where users can venture off the trail to enjoy the scenery and the nearby community's character, heritage and charm. For more information, visit https://www.michigan.gov/dnr/places/ state-trails/pure-mi-trails



Above: The Paint Creek trail is a popular destination for regional residents seeking leisure recreation. The trail provides a connection to the north and central portion of Oakland County and is one example of how leisure tourism can draw visitors with little impact to the Township.



Above: MDNR boat launch on Lake Orion in Orion Township.





Source: Giffels Webster 2020



Safety Path Plan

Complete Streets Policy

Complete Streets is a term used to describe a transportation network that includes facilities for vehicles, pedestrians, cyclists, and other legal users of all ages and abilities. In 2010, Michigan passed Complete Streets legislation to encourage and justify the development of Complete Streets in communities. At that time, Michigan's Planning Enabling Act was also amended to require comprehensive plans to address Complete Streets. Communities that adopt Complete Streets policies recognize that

- Complete Streets provide transportation choices, allowing people to move about their communities safely and easily.
- Complete Streets policies acknowledge the problems with current transportation facilities.
- Implementing Complete Streets strategies will make communities better places to live and work.

An important element of the Comprehensive Plan process is the planning for the overall system of streets and roads in a community that provide for the movement of people and goods from places both inside and outside the community.

The National Complete Streets Coalition (NCSC) compiled a list of ten principles that makes an ideal Complete Streets policy.

	VISION		
Vision and intent	Includes an equitable vision for how and why the community wants to complete its streets. Specifies need to create complete, connected, network and specifies at least four modes, two of which must be biking or walking.		
	DESIGN		
Diverse users	Benefits all users equitably, particularly vulnerable users and the most under-invested and under-served communities.		
Design	Directs the use of the latest and best design criteria and guidelines and sets a time frame for their implementation.		
Land use and context sensitivity	Considers the surrounding community's current and expected land use and transportation needs.		
	IMPLEMENTATION		
Performance measures	Establishes performance standards that are specific, equitable, and available to the public.		
Commitment in all projects and phases	Applies to new, retro-fit/reconstruction, maintenance, and ongoing projects.		
Clear, accountable expectations	Makes any exceptions specific and sets a clear procedure that requires high-level approval and public notice prior to exceptions being granted.		
Jurisdiction	Requires inter agency coordination between government departments and partner agencies on Complete Streets.		
Project selection	Provides specific criteria to encourage funding prioritization for Complete Streets implementation.		
criteria	Trovides specific effects to effecting phontization for complete effects importantation.		

FIG. 24. Elements of Complete Street Design GREEN SPACE BIKE LANES ROAD DIET TRANSIT STOPS

Green spaces encourage community interaction and provide opportunities to rest

SIDEWALKS

Sidewalks for pedestrians to link neighborhoods, schools, civic uses, and other destinations together

STREETSCAPE

Protective streetscape including trees and street lights to provide shade, create buffer and contribute to a sense of safety and security

Protected bike lanes increase the level of comfort and encourage more users

CROSS WALKS

Crosswalks, pedestrian pavement markings, and crosswalk signals make it safer for pedestrians to help slow motorized traffic This involves reducing either the width or number of travel lanes to make space for shoulder or bike path

TRAFFIC SIGNALS

Traffic signals with pedestrian signal heads and audible crossing signals for visually impaired pedestrians to safely cross major roadways

TRAFFIC CALMING

Curb extensions or bump-outs and other traffic calming devices slow vehicular traffic, and alert drivers to the presence of pedestrians Our dependence on the automobile increases air and water pollution resulting from motor vehicles and the impervious surfaces of roads

WAYFINDING

Wayfinding signs help people on foot or bicycles to identify the route to important destinations and civic spaces

Image Source: Street Mix; Exhibit prepared by: Giffels Webster

FIG. 25. BENEFITS OF COMPLETE STREETS

Safety



- 1. Reduce pedestrian accidents by increasing the safety factor.
- 2. Perceptions of the safety of non-motorized travel strongly influence decisions about alternative modes of travel for many.
- 3. Reducing either the width or number of travel lanes to make space for shoulder or bike paths will improve safety (road diet).
- 4. Refer to 'Level of Stress' on the following pages.

Health



- 1. Walking or biking to school will result in reduced child obesity rates.
- 2. Sedentary lifestyles have been shown to be associated with a host of long-term health problems.
- 3. Sidewalks, bike paths and access to transit increases level of physical activity.

Access



- 1. Walking or biking to school will result in reduced child obesity rates.
- 2. Sedentary lifestyles have been shown to be associated with a host of long-term health problems.

Environment



- Our dependence on the automobile increases air and water pollution resulting from motor vehicles and the impervious surfaces of roads.
- 2. Studies have shown that 5 to 10 percent of urban automobile trips can reasonably be shifted to non-motorized transport.

Economy



- 1. Designing residential and local business districts are redesigned with traffic calming measures and provide safe pedestrian access increases consumer activity.
- 2. Implementing Complete Streets will be a good placemaking strategy for economic development and community revitalization.

 @ Giffels Webster



On an average, a pedestrian was killed in the US every 88 minutes in traffic crashes in 2017



Between 1989 and 2018, child obesity rates rose dramatically, while the percentage of walking or biking to school dropped



54% of older American living in inhospitable neighborhoods say they would walk and ride more often if things improved



Carbon-dioxide emissions can be reduced by 20 pounds per day or more than

4,800 pounds in a year per each commuter by using transit instead of driving



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40 percent of merchants reported increase in sales, and 60 percent more area residents shopping locally due to reduced travel time and convenience

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The usage rate of any non-motorized facility by diverse groups of users depends on the level of comfort the path provides. Level of comfort typically depends on various stress factors such as vehicular traffic speed, volume and the time of the day. Safely designed pedestrian/bicycle lanes lead to more users and less accidents. The recommended non-motorized routes in this are rated based on the following criteria:

Level of Traffic Stress

The Mineta Transportation Institute developed a rating system to rate the "stress levels" users experience. The 'Level of Traffic Stress' (LTS) ratings range from 1 (lowest stress) to 4 (highest stress and discomfort) and are based on factors such as the speed and volume of vehicle traffic, the number of travel lanes, the size and complexity of intersections, and the types of bicycle facilities provided.

Type of Ridership

A study completed by Roger Geller for the Portland Office of Transportation identified Four type(s) of users which correlates with the LTS ratings. The type of riders are categorized by their level of comfort riding on different types of facilities.

All Ages and Abilities

National Association of City Transportation Officials (NACTO) developed an 'All Ages & Abilities' criteria for selecting and implementing bike facilities. All Ages and Abilities facilities are defined by three primary factors: safety, comfortability and equitability. This guide helps communities design facilities with appropriate traffic calming measures based on contextual factors such as vehicular speeds and volumes, user type and level of comfort to reduce accidents and increase ridership. Another good resource for determining the right type of facility for a particular route is the 'Bikeway Selection Guide' created by US Department of Transportation Federal Highway Administration.

FIG. 26. ALL AGES AND ABILITIES TYPE OF USERS BARRIERS TO CONSIDER Children Smaller and less visible from driver's seat Seniors Lower visual acuity and slower riding speeds Concerns about personal safety and traffic Women stress. Prefer buffers or barriers from vehicular traffic lanes People Bike to transit or make one-way trips. Rely on Riding comfortable and easily understandable bike structure Bike Share People of Fear of exposure to theft, assault or being a Color target for enforcement Low-Rely extensively on bicycles to ride to work. Income Access to continuous and safe facilities Riders People with Use adaptive bicycles that require wider envelope and operate at lower speeds Disabilities People Cannot be accommodated by facilities designed Moving Goods or to minimal standards Cargo Constitute a smaller percentage of total users, most often male. In the U.S., 76% of bike trips Confident Cyclists are made by men and 87% of competitive

cyclists are male.



FIG. 27. LEVEL OF TRAFFIC STRESS AND TYPE OF RIDERSHIP

LTS-1



- 1. Shared use paths are used by pedestrians as well as bicycle users
- 2. 8 feet min. width with 5-10 feet planted buffer
- 3. Ideal traffic speeds less than 25 miles per hour
- 4. Wider Right-of-way widths
- Pavement surfaces should be based on anticipated usage volumes
- 6. Comfortable for all ages and abilities



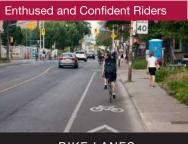
LTS-2



- 1. Bike lanes separated by buffers defined by pavement markings and parallel parking
- 2. 8 feet min. two-ways or 5 feet min. one-way with 5 feet painted buffer
- 3. Ideal traffic speeds from 20-25 miles per hour
- 4. Limited Right-of-way widths
- 5. Add vertical delineation such as candlestick bollards for increased level of perceived protection
- 6. Comfortable for most adults



LTS-3



BIKE LANES

- 1. Dedicated bike lanes that are adjacent to traffic lanes
- 2. 8 feet min. two-ways or 5 feet min. one-way with 5 feet
- 3. Ideal traffic speeds more than 25 miles per hour
- 4. Dedicated bike lanes that are adjacent to traffic lanes
- 5. Limited Right-of-way widths
- 6. Reduce curbside and intersection conflicts through access management
- 7. Comfortable for confident bicyclists, who prefer not to share with the vehicles



LTS-4



- 1. Identifying a specific route as a 'Bike Route' is the simple alternative when immediate infrastructure improvements to roadway network are not feasible
- 2. Wayfinding signage such as 'share the road' or directional signage can be installed to guide the users to destinations or other connections
- 3. Traffic calming measures are required to manage speeds
- 4. Uncomfortable for most users



Safety Paths/Trails

Orion Township's safety path program is a constantly expanding network of over 50 miles of asphalt paths that provide safe, designated areas separated from roadways for pedestrians, cyclists, and other users in areas where sidewalks were not historically present along county or state roadways throughout the Township. The safety path program was first established as a plan in 1978 and has since grown with the direction of the Safety Path Advisory Committee, now the Parks and Path Advisory Committee, to be a model program for other developing Townships wishing to provide this essential community facility for residents and visitors through local initiative. Funding for safety paths is provided primarily by a millage originally approved in 1988, with the quarter mill tax re-approved by voters in 1998, 2008, and again in 2018 to last until December 2027. These funds go into the Safety Path Fund and a General Capital Improvement Fund.

Safety Paths as Transportation Facility

A primary function of the safety path program is to provide a direct community facility for residents that otherwise may not have safe pedestrian access along main roads at the boundary of residential areas. Providing these main road safety paths is crucial to connecting the many residential areas within the Township to other community facilities or commercial areas such as Gingellville. While the automobile is still the primary means of travel in metro Detroit, safety paths provide an alternative for people that may wish to travel this way, either by necessity or choice, such as children, senior citizens, or people simply without access to an automobile.

Safety Paths as Recreation Facility

Safety paths also play a key role in Orion Township's position as a central recreation area in Oakland County due to the presence of numerous Township, village, county, and state park facilities within the Township. While safety paths function as an essential nonmotorized community facility at the boundary of residential areas, safety paths are also specifically intended to provide links with park facilities, two regional trails, the Paint Creek Trail and Polly Ann Trail, and other community facilities such as schools through a

comprehensive safety path network that provides benefits beyond the Township boundary.

An example of this is the recent fall 2020 completion of a safety path linking the Polly Ann Trail, which runs near Joslyn Road, with the Paint Creek Trail, which cuts across the northeast area of the Township for five miles. This linkage was accomplished through the Township's installation of a safety path along Clarkston Road, east of Lapeer Road, ending at Kern Road and a new landmark bridge over Paint Creek connecting the new safety path to the Paint Creek Trail. Through this connection, the Township safety path network is now directly linked with these two regional trails, and through the Pain Creek Trail, the safety path network is linked with the statewide Iron Belle Trail system, which is planned to ultimately connect Belle Isle in Detroit with Ironwood in the Upper Peninsula.

Oakland County Trails Master Plan

The 2008 Oakland County Trails Master Plan, Oakland County Pathway Concept provides additional policy support for Township safety paths and regional trails through Orion Township. The County Trail Concept states: "The county pathways system is comprised of a vision to link pathways and greenways throughout Oakland County and Southeastern Michigan. The county concept envisions a hierarchy of pathways consisting of primary and secondary pathways." The Pathway Concept map indicates paths and trails within the Township that have an impact at the countywide trail level. In addition to supporting the Paint Creek Trail and Polly Ann Trail, the County Pathway Concept calls out trails for the areas listed below.

West of Joslyn Road/Polly Ann Trail

- Clarkston Road to Independence Township
- West extension of Polly Ann Trail, following a stream between Waldon Road and Maybee Road, to Independence Township

East of Joslyn Road/Polly Ann Trail

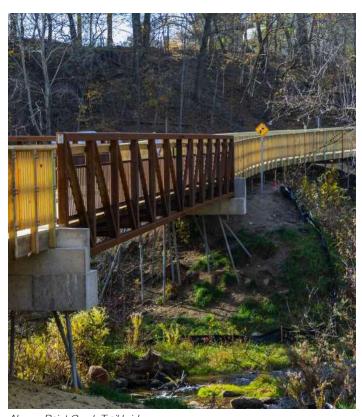
- Waldon Road, through Bald Mountain State Rec Area, to Oakland Township/Kern Road
- Clarkston Road to M-24/Lapeer Road

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Implementing Safety Paths through Zoning

Through the Zoning Ordinance and Safety Path Ordinance, the Township has historically required property developers to install safety paths as part of development or permitted contribution to the safety path fund for use on projects in other Township locations. These ordinances have been crucial to the continued expansion of the safety path network and for providing the substantial funds and easements necessary for expansion of the network. While all safety path missing links and gaps cannot be closed by developers alone, these ordinances are a valuable part to improving the safety path system and should remain in place going forward. Additional opportunities for ordinance amendments may be needed to require safety paths that are not adjacent to roadways as has been traditionally required. This could include paths through the middle of property to complete key connections, such as a path through mid-blocks that would provide more direct routes for pedestrians to schools or other community facilities, or other direct connections through non-residential areas that again may be more impactful for pedestrians than paths only along roadways. Please refer to the Implementation Plan for more information on this.



Above: Paint Creek Trail bridge Source: Orion Township

FIG. 28. 2008 OAKLAND COUNTY TRAILS MASTER PLAN

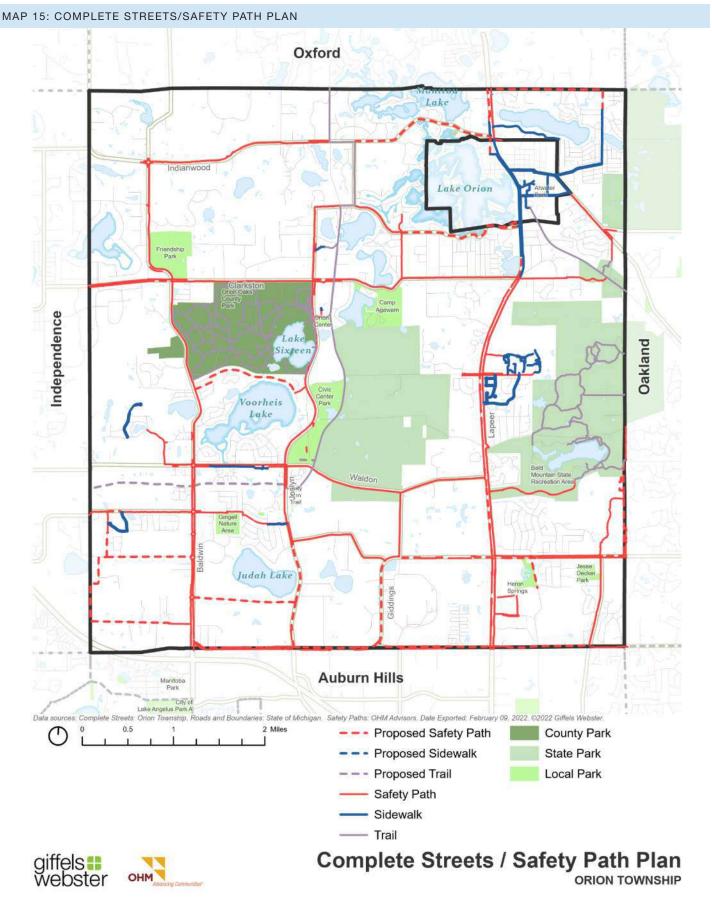


2008 Oakland County Trails Master Plan



It should be noted that as the County Trails Plan and these concepts are from 2008, some of these connections, specifically the Waldon Road connection, may no longer be considered a preferred trail route due to Township safety path improvements which have occurred since 2008, such as the Clarkston Road safety path connecting the Polly Ann Trail and Paint Creek Trail.

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An important and obvious element of the Complete Streets includes the development of a plan for the overall system of streets and roads in a community to improve mobility. This system provides for the movement of people and goods from places both inside and outside the community and make regional connections. The Township is located approximately 30 miles north of Downtown Detroit and located in the northern portion of Oakland County. Interstate 75 (I-75) and Lapeer Road provide regional access to the Township, while Joslyn, Baldwin, Waldon, Squirrel and Silverbell provide more local access from adjacent communities.

The Master Plan includes an overview of the Township's transportation network as it relates to land use. The transportation system provides for the movement of people and goods from places both inside and outside the community. Road rights-of-way also provide places for various public utilities such as water lines, gas lines, sanitary and storm sewers, cable television lines, electrical power, and telephone lines. Because of this combined function, the system of roads in a community can impact economic conditions, environmental quality, energy consumption, land development, and overall quality of life in a community.

Functional Classification

Over the years during which the majority of roads and freeways were constructed in the United States, the concept of "functional classification" was developed by the Federal Highway Administration (see page 48 for the existing national functional classification). This involved two main elements: mobility and access. Mobility relates to how vehicular traffic is able to flow through or around an area. Access relates to how travelers of the streets access adjacent land uses (primarily through intersections and driveways). At higher levels of mobility, travel speeds and volumes are higher; as a result, access to these roads becomes more limited. Conversely, lower classification roads often feature slower speeds and provide more access points to adjacent land uses.

While this system of classification worked in the past, it is clear that the functionality of roads only takes one type of user into consideration: motorized travelers. Assessing the function of roads in conjunction with non-motorized users is not as clear. Motorists learn to drive understanding the trade-offs of roadways: freeways run faster than surface streets, but they can't be used to get directly to their destination. However, with non-motorized uses, the function of roads isn't as black and white. For example, if a pedestrian or cyclist wants to go somewhere, generally speaking, their travel time may not be impacted by the type of road on which they travel. The decision of what route to use depends largely on what the destination is, the directness of the route, how safe it is to get there, and the availability of transportation facilities like pathways/ sidewalks, crosswalks, and bike paths. The idea of mobility for non-motorized users goes beyond simply the efficiency of roadway travel and includes a wider range of barriers to mobility that partly correspond with functional road classifications, but also correspond to land uses, overall community safety, and the condition of transportation facilities.

Jurisdiction

The maintenance and improvement of all roads serving the Township are primarily controlled by the Road Commission for Oakland County (RCOC). Some roads are under the jurisdiction of the Michigan Department of Transportation (MDOT). However, the developments that generate the traffic on these roads are approved by the Township. The Township should continue the on-going collaboration with the county and state for funding sources, planning and implementation to serve future needs of the residents. When appropriate, information will be shared regarding developments that are expected to significantly increase traffic

Long-Range Street Classification

For the purpose of long-range planning, including designation of future right-of-way widths, roads are classified as follows:

Interstate Highway / Regional State Trunkline. Divided highways under that jurisdiction of MDOT or FHWA that principally serve to move large volumes of vehicular traffic over long distances, providing connections within and beyond Orion Township. Right-of-way varies but is typically 180 feet or more.

Major Thoroughfare. An arterial road of great continuity which is intended to serve as a large volume traffic-way for both the immediate municipality area and region beyond, and which is designated on the Thoroughfare Plan / Future Right-of-Way map as a major thoroughfare. Major thoroughfares shall also have an existing or proposed right-of-way of one hundred twenty (120) feet or more.

Collector Road. A road used primarily to carry traffic from a minor road to a major thoroughfare, and which is designated on the Thoroughfare Plan / Master Right-of-Way map as a collector. Collector Roads shall have an existing or proposed right-of-way of 86 feet or more, but less than 120 feet.

Local Road. A road of limited continuity primarily providing access to abutting properties which is designated with an existing or proposed right-of-way of less than 86 feet.

Thoroughfare Plan / Master Right-of-Way Plan

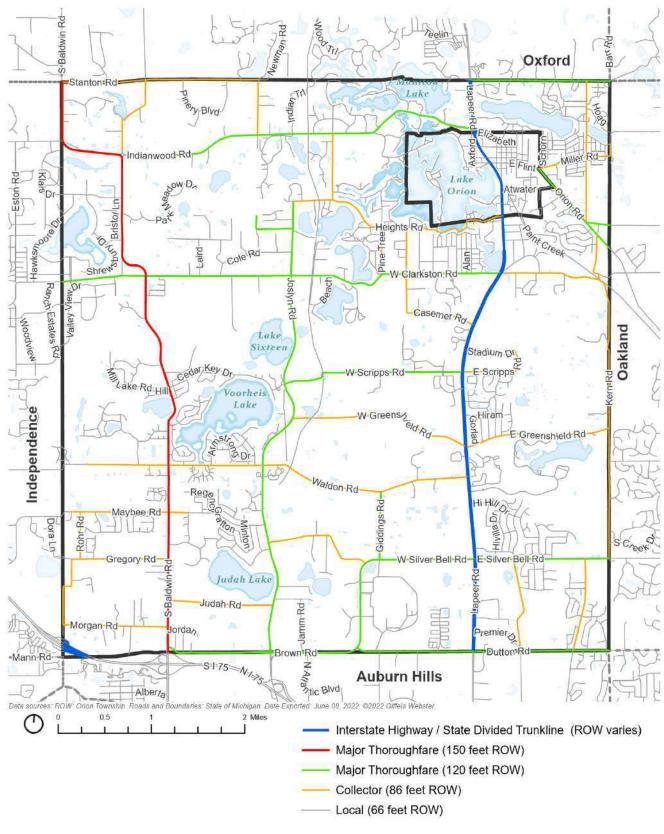
The Thoroughfare Plan / Master Right-of-Way Plan consists of a map that indicates the existing or planned right-of-way widths for roads in Orion Township. Right-of-way widths are established based on research that indicates the required road specifications to provide various levels of service, functionality, and public use in furtherance of protecting the health, safety, and welfare of the public. The foundation for this plan is the Master Right-of-Way Plan published by the Road Commission for Oakland County. While the Road Commission publishes this Master Right-of-Way Plan, Orion Township believes that further study may be required on some roadways to justify the additional width proposed for some of the right-of-way designations. This may lead to future amendments of this map after these studies are complete. The right-of-way plan is an important planning document because setbacks and other development standards should be established in relationship to the existing or future right-of-way width. The Master Right-of-Way Plan also sets forth distinct classifications based on right-of-way width.

Planned Road Improvements

According to SEMCOG's 2045 Regional Transportation Plan (RTP) and 2020-2023 Transportation Improvement Program (TIP), a number of roadway improvements are planned or are being studied for Orion Township as follows:

TABLE 8. TIP ROADWAY IMPROVEMENTS BY ROAD COMMISSION OF OAKLAND COUNTY: 2020-2023				
Project	Limits	Proposed Work		
Orion Road	Stoney Creek Road	Roundabout		
Silverbell	Brown, Giddings, Silverbell from Jamm Rd to M-24 (Lapeer Rd.)	Resurface		
Waldon Road	Clintonville to Baldwin	Pave gravel		

MAP 16: THOROUGHFARE/MASTER RIGHT OF WAY PLAN





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Corridor Planning

There are several key corridors within the Township that have unique characteristics that should be considered as new development or redevelopment of adjacent land occurs. These considerations are unique to each corridor, as the function, volume of traffic, ownership and land uses adjacent to these roads varies and plays an important role in the regulation and development of these areas.

Brown Road

Brown Road is a unique east-west corridor within the community in that it has several characteristics that are not shared with other corridors in the Township. Serving as the Township's southern border, with Auburn Hills bordering Orion Township to the south, only the developments located on the northern half of this right-of-way are regulated by Orion Township standards. The properties within this area are currently zoned Brown Road Innovation Zone (BIZ) and are subject to unique design standards that distinguish the corridor along the northern side. These flexible standards encourage building frontages along the roadway (instead of parking), screening when parking is permitted in the front yard, as well as standards to encourage multiple buildings on a single lot. See Appendix C for design recommendations for the areas in the mixed use area known commonly known as the BIZ district.

As the area has developed under the BIZ standards, which was amended after the 2015 Master Plan, there have been significant developments that file in key portions of the corridor. The Township has identified one of the few remaining vacant parcels for redevelopment (Economic Development Plan, pg. 102), meaning future endeavors may require redevelopment of older structures or land use patterns. This process will need to promote collaboration between adjacent property owners in the form of shared access and possibly lot combinations. Other key elements to accomplish in this area include the completion of the safety path along the north side of Brown Road and the further consolidation of curb cuts to eliminate vehicular-pedestrian conflicts.

Lapeer Road

Lapeer Road is a major north-south trunkline thoroughfare located on the eastern half of the Township, beginning at the south end at Interstate 75 (I-75) providing access to the Village of Lake Orion, Oxford and other communities further north in the thumb area. The route terminates at M-25 in Unionville, just east of Bay City near Saginaw Bay. This MDOT owned and operated road is one of the most heavily traveled routes in the Township. Its proximity to I-75 means this corridor serves as the gateway to many regional visitors, as many traveling through this corridor may not stop within Orion Township. In addition, many local residents and businesses that rely on this corridor depend on traffic flow and design standards to accommodate their developments and provide a blueprint for the future of corridor. This plan seeks to identify key areas and standards enforced along the corridor that are in need of refinement in order to provide a better experience for all users.

One key landscape feature that would enhance the transformation of this area would be the introduction of street trees within the right-of-way Lapeer Road. There are two challenges to this: one is safety standards used by the Michigan Department of Transportation for separation of roadside objects from moving traffic and 2) overhead power lines along both the east and west sides of the thoroughfare. As this area evolves, the Township should explore the potential to introduce entryway design standards and screening elements that feature smaller tree species or preferred hedges that are less of a roadside hazard and will not grow into power lines. There are other landscape and streetscape amenities that can enhance the corridor including tall ornamental grasses and vertical art installations. Also, larger deciduous trees should be planted within the private frontage, close to sidewalks and pathways, to provide shade and protection from the elements provided they are not in the impact area from overhead power lines. The concept sketch below is an example of how screening can incorporate low hedgerows to screen parking areas, decorative fencing and brick posts to define driveway entries and parking lot corners, deciduous trees and ground cover.

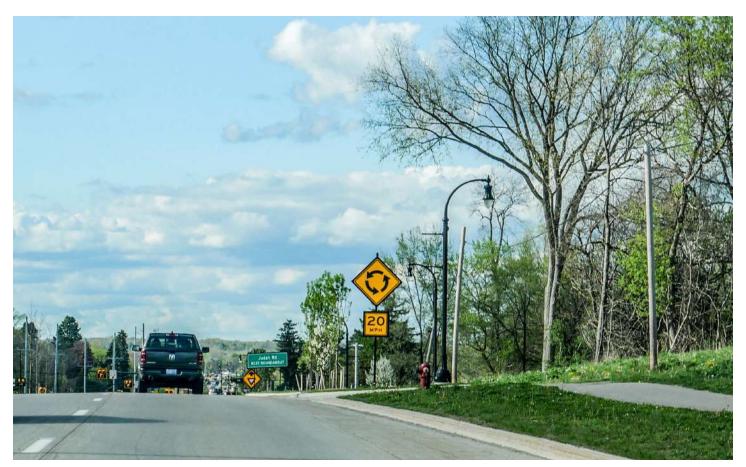


FIG.29. LAPEER ROAD SCREENING CONCEPT

Baldwin

Baldwin Road has seen perhaps the most physical change among all of the Township's corridors since the last Master Plan updated. Between 2017 and 2020 the roadway was widened from two to four lanes and five roundabouts were added at key intersections. These changes, along with the continued development of the safety pathway along the corridor, have piqued development interest for both residential and non-residential development.

The southern portion of this corridor from Judah to Maybee is located in the Gingellville Village Center, which regulated by the Gingellville Village Center Overlay District. This district is envisioned as a mixed-use village area that will incorporate and preserve the existing historic elements while providing design guidelines that require a complementary architectural style. New developments are encouraged to provide a transition from commercial or multiple family to lower density residential uses including single family detached through appropriate screening while maintaining pedestrian linkages. Missing middle housing types are envisioned in this area. As village-style development occurs along the south end of this corridor, the Township may begin to see increased pressure for similar developments further north along the corridor. Steps should be taken to ensure that and the recommendations in this Master Plan are implemented and that high intensity developments do not encroach on existing areas planned for lower density land uses. Additional screening, facade and design standards may be appropriate for other areas of this corridor (outside of Gingellville) to promote a harmonious streetscape design. Baldwin Road, north of Indianwood, has a much different character. See Appendix C for an overview of the corridor treatment for this area.



Source: Giffels Webster 2020



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Distinct Natural Corridors

There are several corridors in the Township where trees, natural vegetation and viewsheds create unique experiences for those passing through by vehicle, bicycle or by walking. Preservation of the natural features near the road right-of-way by use of open space development techniques is envisioned. In exchange for preservation of road frontage with natural features, lot size reductions can be allowed so that there is not loss of dwelling unit yield. Exemplary projects could qualify for density bonuses.

The following corridors are designated as priority for natural corridor preservation:

- 1. Indianwood Road;
- 2. Baldwin Road, north of Indianwood Road;
- 3. Coates Road, north of Indianwood Road;
- 4. Designated Natural Beauty Roads;
- 5. Scripps Road and Greenshield Road through Bald Mountain Recreation Area;
- 6. Waldon Road; and
- 7. Clarkston Road

Natural Beauty Roads

Certain roads in Orion Township are classified as Natural Beauty Roads, in accordance with Michigan Act 150 of 1970. The goal of the Natural Beauty Roads Act is to identify and preserve designated roads in a natural, essentially undisturbed condition. Roads considered eligible for this designation are federal local roads that have unusual or outstanding natural beauty by virtue of native vegetation or other natural features. Widening, mowing, spraying and other maintenance or improvement activities may be restricted or prohibited on designated Natural Beauty Roads.

Natural Beauty Roads in Orion Township include:

- Kern Road from Orion Road south to Clarkston Road:
- Clarkston Road from 1,000 feet west of the south leg of Kern Road to the north leg of Kern Road;
- Nakomis Road north of Cayuga, almost to the Township line; and
- Greenshield Road.

The Department of Natural Resources and the County Road Association have developed a list of guidelines and criteria for designating natural beauty roads. The criteria for designation, available on the Michigan DNR website (http://michigan.gov/dnr/), include:

- 1. Character of Road: Must have outstanding natural features along its borders, including native trees, shrubs, wildflowers, grasses, or natural vistas.
- 2. Length: Normally a minimum of one-half mile.
- 3. **Roadside Development:** Should have little to no development along them.
- 4. Road Bed: May be dirt, gravel or hard surface.
- Function of the Road: Should function as a local access road.
- 6. Speed: Intended to be low speed roads (25-35 mph).

Source: Guidelines for Designation of Natural Beauty Roads (http://www.michigan.gov/dnr/)



Future Land Use Designations

Residential Districts

The residential category includes a number of districts based primarily on density as expressed in dwelling units per acre. The primary land use in the residential categories is detached single-family dwelling units, while other types of land uses such as schools, places of worship, parks, and attached single-family dwelling units, such as attached condominiums are appropriate in certain locations. In multiple family districts, other building types include townhouses, stacked flats, triplex and quadplex units, cottage court bungalows, and carriage houses are permitted.

It is intended that development in the residential land use categories be tied to overall density in terms of units per gross acre, rather than minimum lot sizes. This will permit greater flexibility in the development and redevelopment of land and presents an opportunity to create parks, open space, and other types of neighborhood features without reducing the overall potential yield on any particular piece of property. Final density yield will depend upon the unique environmental features of a site. For example, a single family detached residential project with regulated wetlands or steep slopes will like not have the same final unit count as a site in the same planning area that does not have these environmental constraints.

Providing vehicular and non-motorized connectivity between adjacent developments is a priority. Stub streets should be provided in all residential developments that abut vacant land or compatible land with redevelopment potential.

Single Family Low Density Residential is planned for areas with existing and low and medium density development and are primarily located in the north and west portions of the Township. These areas are planned to develop at a density of 0.55 dwelling units per gross acre, with a range of 0.3 to 0.7 dwelling units per gross acre. As an example, a 10-acre parcel without environmental limitations could yield about 5 lots with 1.5 acres per lot under conventional development. With open space development techniques, lot sizes may be reduced but the same effective unit yield would be realized unless the zoning district provided for a density bonus.

Some of the areas in this planning category that are rural and semi-rural in nature lack municipal sewer and water, are accessed from unpaved roads, or have similar challenges in terms of site development. Areas that are more capable of supporting development will remain rural residential and support new homes and, in some cases, small farming operations. The correlating zoning classification is the SE, Suburban Estates zoning district.

Single Family Medium Density Residential is planned for areas with existing moderate density development and areas most capable of supporting development due to adequate utility services (municipal sewer and water) and paved roads. Because some of these areas border lakes, cluster developments are encouraged to preserve open space areas and lake access. The density in these areas is planned at 1.2 dwelling units per gross acre, with a range of 0.7-1.5 units per acre. However, the actual density may vary depending on the area needed for the street right-of-way and the impact of environmental constraints. The correlating zoning classification is the SR, Suburban Ranch zoning district with a minimum lot size of 30,000 square feet.

Single Family High Density Residential is the highest density single family category with a density range of 3 to 5 dwelling units per acre. While the actual density will depend on the area needed for the street right-of-way, lot sizes in such areas range from 8,400 to 14,000 square feet each. A majority of the areas planned for Single Family High Density residential are clustered around the Township's lakes, near Gingellville Village Center and the Village of Lake Orion, and located adjacent to the Township's major corridors. Much like the medium density areas, the clustering of residential homes around lakes allows more people to take advantage of the amenity while also providing sufficient recreation space. These areas are typically flatter and can thus accommodate a greater number of units. The presence of adequate roads and utilities are also of importance. The correlating zoning classifications include the R-1/R-2/R-3, Single Family Residential zoning districts at a minimum lot size of 14,000 square feet, 10,800 square feet and 8,400 square feet respectively This classification also includes the Orion Lakes Manufactured Home Community zoned MHP, Mobile Home Park. However, the classification does not provide for the expansion of mobile home parks in other portions of the Township.

Multiple Family Low Density Residential is planned for selected areas along Lapeer Road (M-24) as a buffer from the more rural residential neighborhoods to the east and west of the corridor. The planned density for these areas is between 5 to 7 dwelling units per acre, depending on the number of rooms per unit (defined in the Zoning Ordinance). Proximity to a major thoroughfare, utilities, commercial amenities and the limited presence of significant natural resources makes these areas viable for multi-family uses. The correlating zoning classification is the RM-1, Multiple Family Residential zoning district at a density of 21 rooms per acre.

Multiple Family Medium Density Residential is planned for areas primarily within the southwestern portion of the Township with some limited areas also identified along Lapeer Road and south of the Village of Lake Orion. Some of these areas have pre-existing development, with limited available land for expansion. Other areas are targeted closer to the Village Center district where higher residential densities are supported. These areas planned at a density of between 7 to 12 dwelling units per acre at a density of up to 36 rooms per acre (defined in the Zoning Ordinance). The proximity to a major thoroughfare, utilities, commercial amenities and the limited presence of significant nature resources has made these areas suitable for higher-density residential development. The correlating zoning classification is the RM-2, Multiple Family Residential zoning district, which will require updates to reflect more rooms per acre and to provided regulations for missing middle residential dwelling types. Currently the district is structured to permit traditional garden apartment units.

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Office Districts

The Orion Township Future Land Use Plan identifies areas for office developments of two (2) types: General Office and Office Research. Office uses are limited to those which function during daytime business hours, have limited truck traffic and have no outside activities. Because of their limited impact, General Office uses can be placed as a transition between single family residential areas and more intensive nonresidential areas.

Office Research uses are primarily located within the south Lapeer Road corridor, within the northern portions of the Brown Road Innovation Zone and scattered throughout the industrial parks along Silverbell and Giddings Roads. These kinds of uses seek locations on major thoroughfares where there is good access for employees, viable truck routes, and close proximity to an interstate.

These areas are intended to provide employment opportunities in many varied research fields, but all with the characteristic of having little or no impact on nearby residential areas. Intended uses include research, computer applications, pilot manufacturing, administrative, automotive technologies, etc. The classification is also intended to encourage the development of planned office and business parks; to promote excellence in the design and construction of buildings, outdoor spaces, transportation facilities and streetscapes; to direct the development of workplaces consistent with the availability of public facilities and services, and; to continue to complement the vitality and quality of life in nearby residential neighborhoods. Development in these areas should take place on larger parcels of land with generous setbacks intended to create an open space setting. Correlating zoning districts include the Brown Road Innovation Zone (BIZ), Office and Professional (OP) and Industrial Park (IP).

General Office uses in the Township are implemented through use of the Office and Professional District (OP) of the Zoning Ordinance and located predominantly within the Lapeer Road corridor. General Office areas are intended to provide for development on small sites and to be limited to uses that will be relatively compatible with residential uses. Direct access to a major thoroughfare or collector street is key to the viability of these uses, which include administrative offices of all types. Professional offices for administrative services, including medical, are anticipated to be the predominant office use, while service type uses are also permitted under certain situations. Additionally, it is recognized that these area need to be flexible to accommodate other low-impact commercial uses. Examples are personal service establishments (e.g., hair salons), small low-impact specialty retail shops, restaurants (sit-down and carryout restaurants, but no drive-through operations), day care uses, pharmacies, recording studios, and studios for painters, photographers, decorators, and similar vocations. The standards applicable to these areas reflect the intent to be able to place the uses on small parcels of land, with comparable small setback requirements (see the Zoning Ordinance).

Commercial and mixed-use areas

The Future Land Use Map includes four commercial or mixed-use categories to accommodate a range of residential, office, commercial and industrial uses as standalone uses, or within mixed use buildings or areas. The majority of areas planned for these areas currently have a mix of these uses, which are permitted to improve, develop or redevelop as permitted by the Zoning Ordinance or the use guidelines in this plan

Neighborhood Commercial uses are located primarily along Baldwin and Lapeer Road (M-24) corridors with the greatest concentration planned for the M-24 corridor. These areas are intended to be located in close proximity to the residential neighborhoods in order to meet the day-to-day shopping needs of nearby residents. Neighborhood commercial activities may be located either individually or in small centers that serve one or more neighborhood trade areas. Planned uses include food stores, hardware and drug stores as well as personal service establishments, all of which can be found within the Restricted Business (RB) zoning district.

General Commercial is planned along the Baldwin and Lapeer Road corridors and is intended for commercial uses that supply a larger and more diversified number of goods than those in the Neighborhood Commercial classification. The intended character of these areas is comparable to those permitted within the General Business (GB) zoning districts which includes a wide range of regional commercial uses such as large-format retail, supermarkets and drugstores, discount stores, department stores along with facilities such as automobile dealers, other vehicle related services, and commercial recreation.

Village Center is planned for the Gingellville sub area exclusively. This portion of Baldwin Road between Maybee and Judah Roads is one of the oldest commercial/residential centers in the Township and has a rich history. The intended mix of uses includes those in the Neighborhood Commercial, General Office, Multiple Family Residential and Single-Family Residential land use categories. Also, missing middle development, which envisions many

house-scale building types such as triplexes, quadplexes, small townhouse cluster, and cottage court bungalows is anticipated to be part of the residential mix in this area. Density will vary in this district and is controlled by formbased zoning. The classification intends for the integration of commercial and residential uses in an attractive and welldesigned environment. The classification is also intended to encourage the development of a pedestrian friendly atmosphere, an attractively landscaped boulevard and sidewalks, rear and side parking lots, unified architectural theme and streetscape, and aims to continue the vitality and quality of life in nearby residential neighborhoods through the creation of public spaces and amenities. These developments should be designed with placemaking and pedestrian amenities as an integral component of site development. The correlating zoning district is the Gingellville Village Center Overlay District. See the Gingellville Sub-Area in this Chapter for additional land use considerations regarding the Village Center.

Industrial/Commercial/Residential Mixed-Use

Development is planned to provide a mix of industrial, commercial and residential uses in the area near Brown Road between Baldwin and Joslyn and along Lapeer Road between Brown and Waldon. The intent is a mix of industrial, residential, commercial, medical and office uses and ancillary commercial uses within a well-planned business setting. Large-format retail may be considered along the Brown Rd. frontage. Density will vary in this district and is controlled by height, bulk, and setback regulations in the applicable zoning district. The Township will also promote economic development initiatives for the area. Economic incentives may include Brownfield Redevelopment, Local Development Finance Authority (LDFA), Industrial Facilities Tax Exemption (IFT), Tax Increment Financing (TIF), infrastructure investments and State grant programs. Redevelopment projects will be reviewed by way of a Planned Unit Development for those projects which deviate from the listing of permitted/special uses. Specific zoning regulations are incorporated within the Light Industrial (LI), Brown Road Innovation Zone (BIZ) and Lapeer Road Overlay zoning districts.

(1)

Industrial

Research/Light Industrial areas are intended to provide locations for research, laboratory and light industrial development including scientific research and development. training, and production of prototype products, plans or designs. Accessory commercial and office uses are also encouraged. Such uses are intended to be enclosed within a building and any external effects are not to be experienced beyond the property boundaries. This classification is further intended to encourage the development of a campustype setting; to promote excellence in the design and construction of buildings, outdoor spaces, transportation facilities and streetscapes; to direct the development of workplaces consistent with the availability of public facilities and services, and to work within the confines of the existing natural features. Correlating zoning classifications include Limited Industrial (LI) and Industrial Park (IP).

Heavy Industrial is planned for the General Motors plant exclusively which is located at the southeast corner of Giddings and Silverbell Roads. The classification is intended to accommodate manufacturing and non-manufacturing uses that, in contrast to research and light industrial uses, may negatively impact the environment and adjacent land uses. Presently no additional land is proposed to be included within this land use classification. The correlating zoning classifications is the IC, Industrial Complex zoning district.

Other

Institutional is located where existing schools, places of worship, public buildings and cemeteries are currently in operation within the Township. Because such uses are permitted in a variety of zoning districts, the correlating zoning classifications are too numerous to mention. Institutional uses are permitted within nearly any zoning district within the Township.

Recreation is the second largest land use within the Township. The State and County own and operate three very large tracts of land, while several smaller pieces are owned and operated by the DNR and/or the Township. This category also includes private recreation, the majority of which is associated with a golf course and/ or a private conservation easement. These uses are scattered throughout the Township, with the greatest concentration within the northern portions of the community. The correlating zoning classifications are the REC-1, and REC-2, Recreation zoning districts. All public non-motorized trails within the Township are also designated recreation.

Special Purpose is a very limited land use category and is presently only planned for the area known as Olde World Canterbury Village. While the correlating zoning classifications (SP-1/SP-2, Special Purpose) permit a mixture of uses, the only site taking advantage of this classification consists of gift shops, a restaurant, cider mill and church.

Utility Owned land is located exclusively within the DTE utility corridor that extends from the western parcel perimeter to Giddings Road just south of Waldon Road. However, there is no correlating zoning classification because the above noted area is actually zoned for REC-2 use.

Special Circumstance land use designations indicate areas that have legal agreements that regulate the density and layout of the subdivision. These areas are typically single family or attached residential in nature. The density map (Map 15) provides the regulated density of the residential developments included in this designation. This category also includes areas that have conditional rezoning agreements in place.

Planned Unit Developments are sites that have been approved through the Township's Planned Unit Development process and have established development agreements. The density map (Map 15) provides the regulated density of residential developments included in this designation.

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MAP 17: FUTURE LAND USE

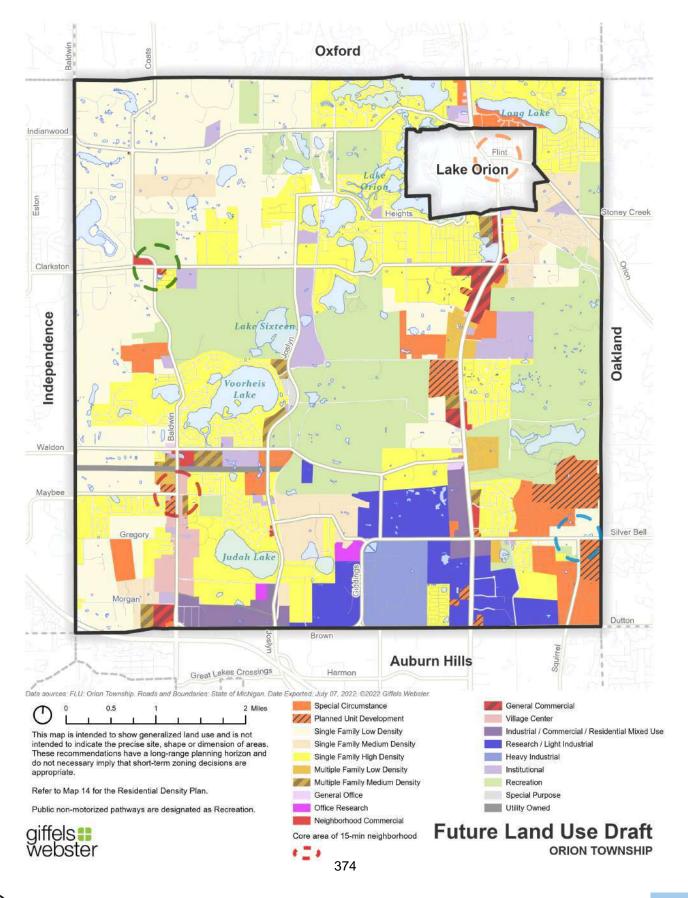




TABLE 9. PLANNED DENSITY					
FLU	Zoning	Density*			
SF Low Density	SE	0.3 – 0.7 units / acre			
SF Medium Density	SR	0.7 – 1.5 units / acre			
SF High Density	R-1/R-2/R-3	3 – 5 units / acre			
MF Low Density	RM-1	5 – 7 units/acre			
MF Medium Density	RM-2	7 – 12 units/acre			
General Office	OP				
Office Research	BIZ / OP				
Neighborhood Commercial	RB				
Village Center	Gingellville Village Center Overlay				
General Commercial	GB				
Res/Comm/Ind Mixed Use	BIZ / Lapeer Overlay				
Research Industry	Ц				
Heavy Industry	IC				

^{*} Per gross acre excluding regulated wetlands. Note: Planned density is not a guarantee of development yield. This future land use map is intended to show generalized land use and is not intended to indicate the precise site, shape or dimension of areas. These recommendations have a long-range planning horizon and do not necessary imply that short-term zoning decisions are appropriate.

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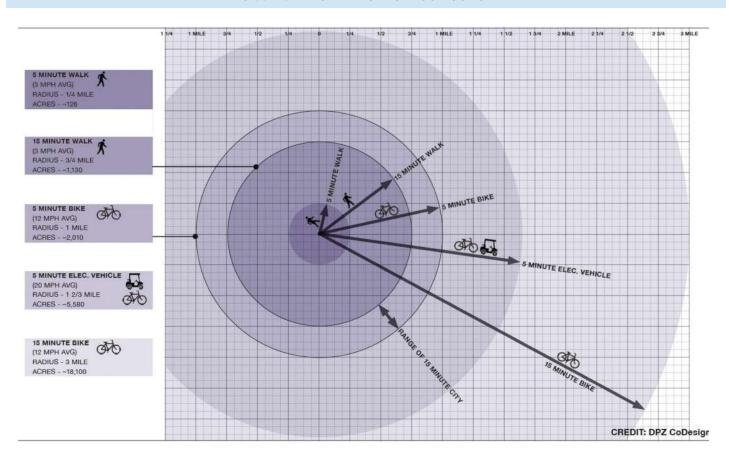
15-minute neighborhoods

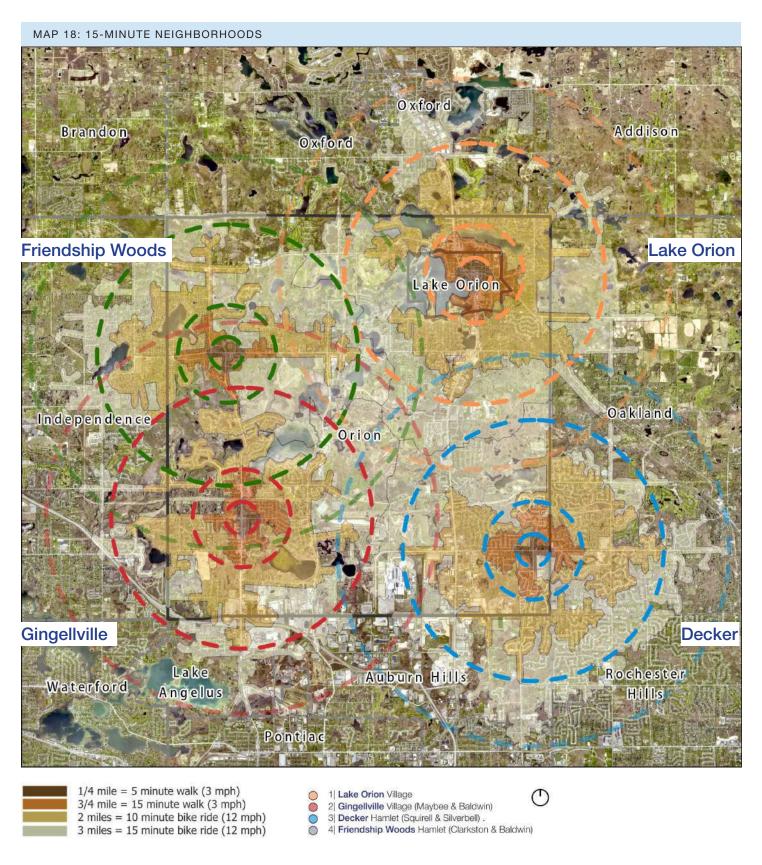
Introduction

As part of the Township's analysis of land use and transportation, a new concept has been introduced as part of this Master Plan update known as the 15-Minute Neighborhood. This is an accepted planning concept that is becoming more mainstream; it focuses planning efforts on areas that are larger than individual neighborhoods. The difference between the 15-Minute Neighborhood concept and typical planning focus areas or corridors that may have special considerations, is that 15-Minute Neighborhoods are defined solely by travel time and distance to a core mixed-use center by either walking or biking.

The 15-Minute Neighborhood concept is based primarily on how far a person can walk or bike from a core mixed-use center. It could be measured in 5, 10 or 15-minute increments for each mode of travel based on the average speed of travel. Five minutes (1/4 mile) is generally a reasonable amount of time a person may choose to travel by walking for a short trip in a mixed-used setting, and 15 minutes is representative of a 3 mile easy bike ride. These travel areas are indicated as concentric circles radiating from a defined center, with darker shaded areas closer to the center and lighter shaded areas as you move away from the center towards the 15-minute travel boundaries.

FIG.30. 15-MINUTE NEIGHBORHOOD CONCEPT





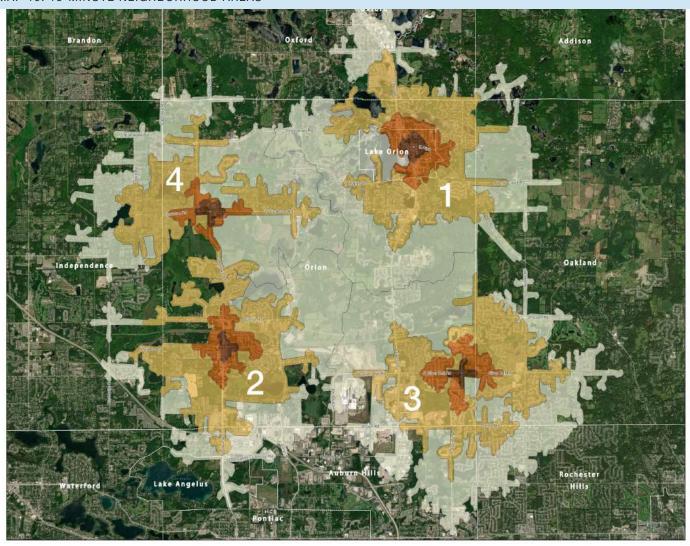
In reality, 15-minute travel time is dependent on the existing sidewalk/pathways network. When you take existing paths into consideration, the 15-minute neighborhoods appear more of an organic nature as shown above. The concentric rings show how these areas could growth if more robust non-motorized paths are provided. As part of this Master Plan update, four service core areas have been identified as center of 15-Minute Neighb**377**oods.

Village and Hamlets

As the 15-Minute Neighborhood is a larger area than individual neighborhoods or subdivisions, the center of these areas can be prime locations to provide facilities that serve multiple neighborhoods and these centers should also accessible by vehicular travel, though this does not define the concept. The primary purpose of the concept is to provide a central area, either a "village" center or "hamlet", that provides some or all of your daily needs and amenities (food, services, goods, parks, etc) by walking or biking for 15 minutes or less from your home.

- Village. A mixed-use area with a small-town downtown character: Lake Orion (Flint & Broadway) & Gingellville (Maybe & Baldwin). The Village of Lake Orion is governed by its own Master Plan and Zoning Map. As such, the Orion Township Master Plan update will not address areas within the boundaries of the village. It will address non-motorized connections to the village, and it will consider the Gingellville/Village Center 15-Minute Neighborhood area.
- **Hamlet.** A small settlement with some mix of uses, but containing a form that is more rural in character: Decker (Squirrel & Silverbell) & Friendship Woods (Clarkston & Baldwin)

MAP 19: 15-MINUTE NEIGHBORHOOD AREAS



1/4 mile = 5 minute walk (3 mph)
3/4 mile = 15 minute walk (3 mph)
2 miles = 10 minute bike ride (12 mph)
3 miles = 15 minute bike ride (12 mph)

1 | Lake Orion Village
2 | Gingellville Village (Maybee & Baldwin)
3 | Decker Hamlet (Squirell & Silverbell) .
4 | Friendship Woods Hamlet (Clarkston & Baldwin)

0 0.5 1 2 Miles



Applying 15-minute neighborhood strategies in Orion Township

A key consideration when applying the 15-Minute Neighborhood concept is choosing one or more centers or core areas within the Township. An informal way to think about the concept is that of a central area where you could complete some or all of your Saturday morning errands without having to drive to from your home. This could range from a small mixed use area that provides access to a few amenities like a café, small market or ice cream shop and a park, to a more robust village setting with many shops and restaurants. While some of these uses may not be as critical to resident needs as a grocery store, they are still important community facilities that can help identifiable places within the Township. In order for a 15-minute neighborhood to be sustainable and foster walkability, several key ingredients are needed. This includes:

 Land Uses. The core of 15-minute neighborhoods includes mixed use areas where at least some basic everyday local commercial and service needs can be fulfilled. This may range from a small market to get milk, bread and basic goods in a hamlet setting to much more extensive commercial and local service offerings in a village setting.



- 2. **Placemaking.** The walkable core area with placemaking elements. This needs to be a desirable destination with places to gather, things to do, and places to shop.
- 3. **Zoning Implementation.** A zoning district with contextual form and use regulations. A hamlet district differs from a village or traditional downtown because in recognizes a relaxed, small-town feel where buildings have modest setbacks in all yards, some retail uses may take place in buildings that were formerly homes, and retail uses are limited to meeting convenience needs, not comparison shopping, and



4. **Complete Streets.** A complete streets network that directs walking, biking, and vehicle trips to the core areas. This includes sidewalks, bike paths, bike lanes, and roads connecting people living in working within a 15-minute bike ride to the core area.

The 15-minute neighborhood concept will be implemented by establishing a new zoning district or overlay district for hamlet areas and refining the Gingellville Village Center Overlay District to reflect the current Master Plan vision. It will also require amendments to the Complete Streets / non-motorized plans. This concept creates the framework for recommendations and implementation strategies in this Master Plan.

Gingellville Village

Independence Orion Waterford Lake Angelius Auburn-Hillis

- 1/4 mile = 5 minute walk (3 mph)
 - 3/4 mile = 15 minute walk (3 mph)
- 2 miles = 10 minute bike ride (12 mph)
 - 3 miles = 15 minute bike ride (12 mph)

Background

The Township has existing policies in place through the 2015 Master Plan, Zoning Ordinance, and Zoning Map which guide and dictate development within the Gingellville Area.

The 15-Minute Neighborhood Concept for this area continues the Township's focus on this area as an emerging village center. Rather than taking the corridor approach as existing policies have done, the Gingellville Village is centered from the intersection of S Baldwin Rd and Maybee Rd. The walk sheds spread fairly evenly in all direction from this area, and the bike sheds stretch to the west and south beyond the Township's boundaries.

Anticipated Uses

Permitted uses within the area outlined are listed in the Gingellville Village Center Overlay District – Section 33.01 Principal Uses Permitted. Following are the list of uses currently permitted/restricted in this overlay district.

- Low intensity retail, office or professional uses
- "Big Box" or intensive commercial uses shall be restricted
- Mixed use developments including residential and commercial uses are encouraged as part of a PUD.
- Deep parcels shall be reserved for residential uses, but may have frontage retail or flex space that could be townhouse, retail or other similar uses. Single-family residences are favored as the predominant land use at the edges of the district. In mixed use projects, it is expected that detached and attached units would be interspersed with local business uses along the frontage of the property. Missing middle housing types are also encouraged in this area.

Decker Hamlet

FIG.32. DECKER HAMLET: SQUIRREL & SILVERBELL Orion Oakland Auburn Hills Rochester Hills

- 1/4 mile = 5 minute walk (3 mph)
- 3/4 mile = 15 minute walk (3 mph)
 - 2 miles = 10 minute bike ride (12 mph)
- 3 miles = 15 minute bike ride (12 mph)





Location

The Decker Hamlet is centered from the intersection E Silverbell Rd and N Squirrel Rd in the southwest corner of the Township.

Walksheds and Bikesheds

The walksheds remain primarily within Orion Township, stretching east into the developed southwest corner of Oakland Township.

The bikesheds stretch further into Oakland Township and continue into Auburn Hills and Rochester Hills to the south. While the immediate area around this intersection is developed with single-family housing or undeveloped, there are three community facilities present near the center: Jesse Decker Park, The Goddard School of Lake Orion (private), and Eagle Creek Academy (private – Oakland Twp).

Anticipated Uses

This Hamlet envisions a small settlement with some mix of uses not currently present in the area, but containing a form that remains compatible with the existing residential and rural character of the area.

Uses and development could include small-scale commercial uses in one or two-story buildings, potentially through the re-purposing of single-family buildings or new buildings that are compatible with single-family uses.

Images to the left. Existing small-scale commercial buildings compatible with existing residential style

Friendship Woods Hamlet

FIG. 33. FRIENDSHIP WOODS HAMLET: CLARKSTON & BALDWIN Brond on Omford Onford Onion

- 1/4 mile = 5 minute walk (3 mph)
- 3/4 mile = 15 minute walk (3 mph)
- 2 miles = 10 minute bike ride (12 mph)
- 3 miles = 15 minute bike ride (12 mph)



Restaurant at Baldwin Commons

Location

The Friendship Woods Hamlet is centered from the intersection of S Baldwin Rd and W Clarkston Rd in the northwest corner of the Township.

Walksheds and Bikesheds

The walkshed is entirely within Orion Township. The bikesheds stretch further west into Independence Township with small portions continuing to the north into Oxford and Brandon Townships.

Anticipated Uses

Friendship Park is a major attraction to this location offering many amenities and continuing to evolve with the addition of historic structures relocated from other areas in the Township and other community amenities. Across S Baldwin Rd to the southwest of Friendship Park is an existing commercial area that has existing uses and buildings that are desirable to include within a hamlet, though these uses are primarily service-oriented.

The Baldwin Commons shopping center at the southeast corner of Baldwin and Clarkston has a variety of convenience and restaurant uses and services including Great Harvest Bread, indoor and outdoor dining at Ignite Tavern, a cleaners, ice cream / frozen custard store, dry cleaners, nail salon, and more. It also has an existing pedestrian linkage to the Orion Oaks Assisted Living and Memory Care facility.

Additional uses should be pursued within this area to strengthen the existing hamlet-quality of this area. This could include infill development within this immediate area, or additional small-scale development along Clarkston Rd in both directions and S Baldwin Rd to the south.

Hamlet Placemaking Ideas

Creating people-oriented design elements is key to offering an authentic sense of place with the core of each neighborhood. These elements can be simple, like high quality chairs and benches, or they can be elaborate, with outdoor fireplaces, pop-up shops, and more.

Encouraging mixed use and, where appropriate, missing middle or more dense housing developments in the core helps to sustain a Hamlet style development.



Brick Pathways and Liner Gardens



Makeshift Outdoor Cafes



Activated Front Yard



Pop-up Retail



Permanent Outdoor Cafes

145 FINAL DRAFT (07-07-2022)

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Public Space Activation

"I end then in praise of small spaces. The multiplier effect is tremendous. It is not just the number of people using them, but the larger number who pass by and enjoy them vicariously, or even the larger number who feel better about the city center for knowledge of them. For a city, such places are priceless, whatever the cost."

- William H. Whyte

Community Gardens and Pocket Parks

As the Township seeks to promote public spaces in walkable areas, there should be a consideration for developing community gardens and pocket parks to promote placemaking and enhance community ties. Community gardens and pocket parks are typically small spaces, but they provide many benefits for communities, including beautification, creation of a sense of public culture and wellbeing, and pulses of interest along a non-motorized pathway. While community gardens and pocket parks can function in a variety of locations throughout the Township, this plan suggest the Orion Township seek out and identify locations within public parks, corridors and non-motorized paths that can be serve as a collective gathering place.

While early community gardens throughout the U.S. functioned to provide food for communities during WWII (see Fenway Victory Garden below), the concept has more recently been used to promote creative placemaking and encourage intergenerational ties throughout the community.



Above: Located within Frederick Law Olmsted's famed Emerald Necklace, the Fenway Victory Gardens hold more than 500 gardens for City of rich history and culture. (Fenwayvictorygardens.com)

146 FINAL DRAFT (07-07-2022)

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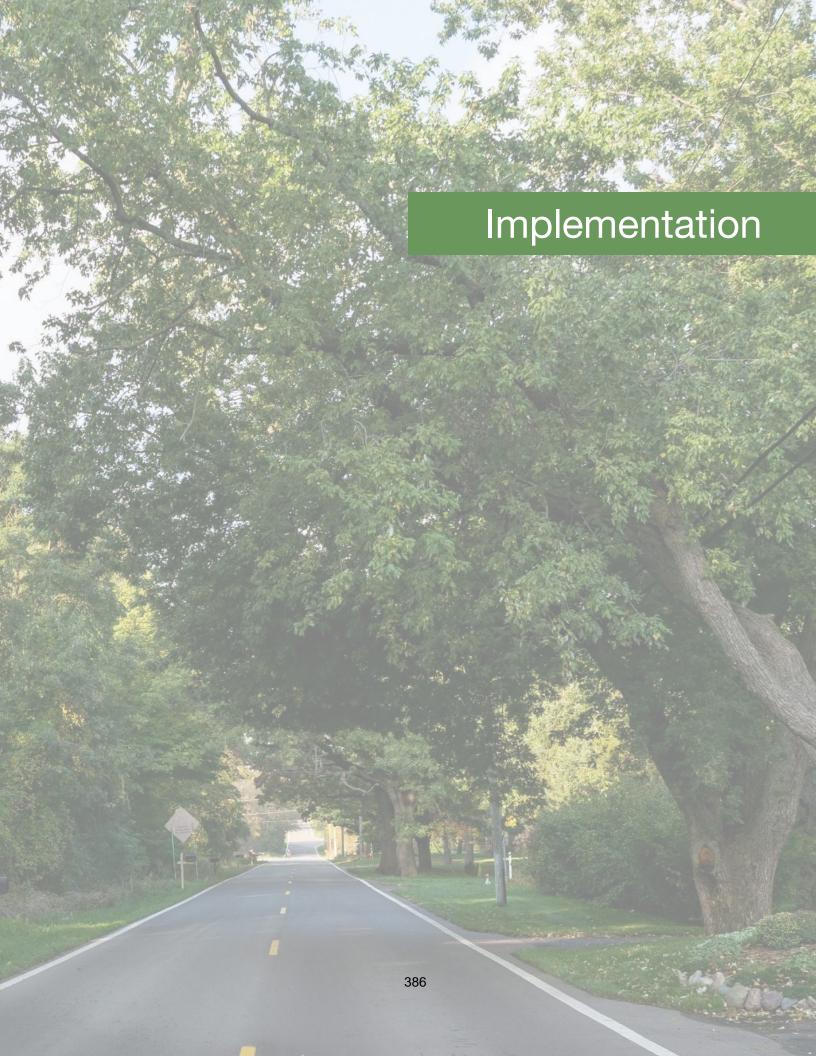
Photo Source (Andrew Watson, Victory Garden Path)

Following adoption of the Master Plan, there are many potential paths towards the creation of new community gardens and pocket parks. These amenities could become a part of new developments. A mail pocket park incorporated along a public pathway along a street would serve to benefit all users along that pathway. Township staff within the Parks and Recreation and Planning should collaborate to identify areas within Township parks or on Township owned land that would serve as appropriate locations. Places within the 15-minute neighborhood core areas: Friendship Woods Hamlet, Decker Hamlet and Gingellville Village Center could serve as logical starting points for this endeavor.



Pocket Park example (photo: Andrew Alexander Price)

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Zoning Plan

The Zoning Ordinance is one of the primary tools for implementing the Master Plan. Many of the land use recommendations, goals and objectives found in this plan can be aided by amendments to the Township's Zoning Ordinance. Amendments can range from minor changes to text all the way to the creation of new districts.

Aside from the modification of existing districts (e.g., updating multiple family districts to including missing middle housing), some objectives of the Master Plan will be addressed with text amendments. The table below is the Zoning Plan. It shows how Master Plan categories align with zoning categories in the Township

TABLE 10. ZONING PLAN				
General Category	Future Land Use Category	Zoning District		
	Circula Familia I ann Daraita	SF – Suburban Farms		
	Single Family Low Density	SE – Suburban Estates		
Residential	Single Family Medium Density	SR – Suburban Ranch		
ricoldential	Single Family High Density	R-1/R-2/R-3 - Single Family Residential		
	Multiple Family – Low Density	RM-1 - Multiple Family		
	Multiple Family – Medium Density	RM-2 - Multiple Family		
	General Office	OP - Office and Professional		
Office		BIZ – Brown Road innovation Zone		
	Office Research	OP - Office and Professional		
	Neighborhood Commercial	RB – Restricted Business		
Commercial	Village Center	Gingellville Village Center Overlay District		
	General Commercial	GB – General Business		
	Industrial/Commercial Mixed Use	BIZ - Brown Road innovation Zone		
		Lapeer Road Overlay		
Industrial	Research Industry	LI – Limited Industrial Park		
	Treeseason made y	IP – Industrial Park		
	Heavy Industry	IC – Industrial Complex		
	Institutional	Not a specific district		
	Private Recreation	- REC-1/REC2 - Recreation		
	Recreation	TIES I/TIESZ TIGGGATIOTT		
Other	Special Purpose	SP-1/SP-2 – Special Purpose		
	Utility Owned	Railroad Freight Yard and other districts		
	Special Circumstance	Typically the result of Consent Judgments or other Court Order		
	Planned Unit Development 387	Planned Unit Development		

Action Strategies

The thoughtful preparation and adoption of any plan would be of diminished value without a program of implementation strategies. The implementation strategies of this chapter will assist the Township in putting the key recommendations of the Master Plan to work. The implementation program is based on the goals and objectives discussed earlier. A specific Zoning Plan outlines steps that can be taken toward implementation through amendments to the Zoning Ordinance.

The best plans are those that are implemented in a consistent, incremental, and logical manner. The implementation matrix that follows is designed to show how the goals of the Master Plan are fulfilled by action strategies. All boards, commissions, and authorities are encouraged to read through all of the strategies to understand how they all work together to create a better community to live, work, and play.

Implementation Matrices

In order to illustrate the connection between goals, objectives and action strategies, each of the implementation matrices that follow align with the goals, which are noted at the top of each matrix. Within each matrix, the action items are broken into subcategories intended to assist with identification and prioritization. Not all goals contain action items within each subcategory and some goals are repeated as they can advance more than one goal. The matrix subcategories include:

TABLE 10. IMPLEMENTATION ACTION ITEMS				
Action Strategy	Description			
Zoning	These are items requiring zoning amendments and will generally be led by staff and the Planning Commission.			
Advocacy	These will be items involving education of the community, including residents, business owners, property owners, developers and design professionals. They will be led by a combination of staff, boards and commissions. This may also involve Township staff and officials working with county and state officials to coordinate plans and funding, as appropriate.			
Capital Improvement	These involve large capital investments, such as equipment, projects or studies, that require inclusion into the Township's Capital improvement plans in order to determine the most efficient time and method of completion and may involve multiple municipal departments.			
Other	Other items may involve research, study and further evaluation by staff and/or other boards and commissions.			

After adoption, the Planning Commission will assign time frames or priorities to the action items. These time frames are intended as guides and may be adjusted as resources allow or as other issues arise. Generally, short time frames are intended as three years or less; medium-to-long time frames are more than three years.

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The tables that follow assign actions to the goals and objectives, leaving room to establish priority levels for short-term, midterm, and long-term items as the next step following adoption of this plan. This chapter should be reviewed periodically and at least annually to assess progress and adequately budget for specific strategies. Each action should have a "lead," a board, commission, group, or individual who is responsible for project initiation and coordination.

TABLE 12. IMPLEMENTATION MATRIX CATEGORIES			
Matrix Categories	Definitions		
Action Strategy	The actions necessary to carry out goals and objectives		
Lead Body	Identifies the primary party responsible for accomplishing the action strategy		
Time frame	Identifies and prioritizes the time frame for the action strategy to be implemented. S = Short term (1-3 years) L = Long term (3+ years)		
Supporting Partners	Identifies other parties involved in the accomplishment of the action strategy		
Abbreviations	Admin - Planning Department PC - Planning Commission TB - Township Board NA - Not Applicable		

High-Quality and Diverse Housing (Residential Areas)

Orion Township will provide and support high-quality housing for residents of all ages through new residential developments and ongoing maintenance and upkeep of existing neighborhoods. A variety of new, high-quality missing middle housing types at various densities will be accommodated to welcome younger residents and families as well as allow older residents to age in the community. The quality of life for residents will be enhanced by protecting the natural features and rural suburban atmosphere of the Township while encouraging the development of neighborhood parks and open spaces.

Objectives

- Support healthy communities by improving connectivity and access to green space in new and existing neighborhoods.
- Ensure adequate housing styles and densities are available to provide options for first time homebuyers or those looking to downsize and "age in community."
- Develop programs to maintain and enhance existing neighborhood character, especially within older neighborhoods
- Encourage land use in accordance with the existing character and Township Future Land Use Plan.
- Promote adaptability through the use of innovative planning and zoning techniques that will result in a full range of housing types.

Goal 1 | HIGH-QUALITY AND DIVERSE HOUSING

	Action Strategy	Lead Body	Time Frame	Supporting Partners			
Zon	Zoning Action Items						
1a	Develop zoning standards for "missing middle" housing, including but not limited to duplex, triplex, quadplex and cottage court bungalow dwellings in multiple family districts. This will require updating existing zoning districts (see the Zoning Plan)	Admin / PC	S	ТВ			
1b	Enable residents to age in place by creating zoning standards that encourage the development of active adult housing in a variety of styles, including detached and attached single-family homes and mixed-use development. Complement these developments with entertainment and community recreation opportunities	Admin / PC	S	ТВ			
1c	Assess and amend the ordinance as needed to ensure open space required within developments offers adequate public amenities	Admin / PC	S	ТВ			
1d	Review and, if necessary, update standards for buffering of non-residential uses from residential uses.	Admin / PC	S	ТВ			
1e	Apply standards for street and subdivision design that require connections between neighborhoods that improve residential access, promote public safety access and minimize traffic congestion. Require new developments to provide connections to adjacent pedestrian and non-motorized facilities as practical. Coordinate with RCOC to ensure developments implement traffic safety measures and congestion strategies.	Admin / PC	S	TB / RCOC			
Adv	Advocacy Action Items						
1f	Promote residential retrofits for accessibility in order to help seniors remain in their homes	Admin	S	PC			
1g	Pursue strategies to make Orion Township an age-in-place friendly community	ALL	S	Oakland County			
Ca	Capital Improvement Action Items						
1h	Continue public investment in new and existing pathways, sidewalks, parks, roads, and street trees to improve the quality of life in existing neighborhoods and along thoroughfares.	ТВ	S	Admin / PC			
Otl	Other Action Items						
	Facilitate rehabilitation or removal of blighted residential structures.	ТВ	S	Admin / PC			

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Natural and Historic Resources

(Environmental Resources and Historic Preservation)

Orion Township will preserve and maintain natural resources and open spaces through growth management techniques that encourage development in specific areas of the community while preserving and protecting natural features of the community. Future development will incorporate innovative storm water management, low-impact design features, and site and landscape design that protect natural resources, preserve high-quality open spaces, minimize stormwater runoff, and reflect the natural character of the Township. The Township will maintain and preserve structures of significant historical and architectural value which are key elements in the unique identity and community character of the Township.

Objectives

- Protect and enhance the Township's woodlands, wetlands, water features, habitats, and open space by enforcing the regulations that preserve natural features and the functions that they provide to the community.
- Improve storm water management using best management practices; establish appropriate standards for the community in coordination with the Oakland County Water Resources Commissioner.
- Adopt and enforce policies that minimize pollution and preserve the lakes and watershed areas of the Township.
- Promote and communicate sustainability concepts and incentivize residents and businesses to implement relevant strategies.
- Encourage energy-efficient and environmentally sustainable development through raising awareness and creating standards that support best practices.
- Provide resources and guidelines for the development and application of solar, wind, and other alternative energies.
- Preserve the inherent architectural character of individual historical architecture resources throughout the Township.
- Promote sustainable practices that craft solutions to today's challenges that are cognizant of and sensitive to impacts on future generations.
- Require street tree planting as part of all residential and non-residential development and promote and encourage preservation
 and, where appropriate, creation of woodland areas in order to foster environmental benefits, enhance property values, and
 act in support of the Township's recognition in the Tree City USA program.

Goal 2 NATURAL AND HISTORIC RESOURCES

	Action Strategy	Lead Body	Time Frame	Supporting Partners
Zon	ing Action Items			
2a	Adopt a Corridor Open Space Preservation Overlay District or similar zoning mechanism that the Township can use to protect important corridor vegetation and rural character, as well as environmentally sensitive areas, but without requirement for 50% open space that is currently in the Open Space Preservation regulations.	Admin / PC	S	ТВ
2b	Assess the Zoning Ordinance and amend as needed to promote green development that are consistent with Leadership in Energy and Environmental Design (LEED) Standards or the equivalent	Admin / PC	L	ТВ
2c	Amend the Zoning Ordinance to allow alternative energy systems	Admin / PC	L	ТВ
2d	Explore the addition of a historic overlay zone to recognize and preserve the recognized historic assets within the Township	Admin / PC	L	ТВ
2e	Review and amend the Zoning Ordinance as needed to update lighting standards to lower energy demand and light pollution.	Admin / PC	S	ТВ
2f	Update the Zoning Ordinance standards to ensure they align with the county's best practice standards for stormwater management and low impact design	Admin / PC	S	TB
2g	Require electric vehicle charging station conduits in both public and private parking lots so that charging stations can be added as demand increase without the need to tear up surface lots	Admin / PC	S	ТВ
2h	Amend landscaping provisions to encourage more natural stormwater management practices, increase tree canopy, and reduce overall impervious surface on developed sites.	Admin / PC	S	ТВ
Adv	ocacy Action Items			
2i	Educate the development community about the benefits of LEED certifications for both residential and non-residential buildings	Admin	S	PC
2j	Continue to promote and publicize the Township's participation in the Tree City USA program by exploring additional opportunities for recognition, such as the Growth Award for communities that demonstrate increased levels of tree care and community engagement.	Admin / TB	S	PC
Ca	pital Improvement Action Items			
2k	Identify and budget for grant and funding opportunities to acquire and enhance parcels adjacent to the environmentally sensitive areas	Admin / TB	L	PC
Otl	ner Action Items			
21	Explore the creation of a "Friends of Orion Parks" volunteer group to assist with identification and removal of invasive species and identification and protection strategies for wildlife habitats.	Admin / TB	S	PC
2m	Partner with Orion Schools and local environmental professionals to understand important environmental issues in the Township and region and make recommendations for educating parks and recreation users.	ТВ	L	Admin / PC

Economic Development

(Economic Development, Commercial, Office and Industrial areas)

Orion Township will support a strong local workforce by maintaining and promoting the proper distribution of commercial, office, industrial and research development in a manner that results in desired economically sustainable developments, land use relationships, high-quality design, and an increase in the community's tax base. The Township will promote and encourage the concept of 15-minute neighborhoods in desired areas that foster walkable, mixed-use places supported by both non-motorized and motorized transportation infrastructure choices.

Objectives

- Achieve a balanced variety of neighborhood-, community-, and regionally-oriented facilities that will meet the shopping and service needs of the community and nearby metropolitan area populations without unnecessary duplication.
- Promote the physical clustering of commercial establishments by encouraging mixed use, shared parking facilities, non-motorized access, consolidated driveways, pleasant pedestrian spaces, and contextual extensions of utilities.
- Regulate the physical clustering of industrial businesses in planned industrial parks, such as those within the southern
 half of the Township along the Brown Road and Lapeer Road corridors, rather than in stand-alone development, thereby
 providing for minimal extensions and impacts on utilities and nearby residential uses.
- Support residents of all ages in the local workforce by serving as an information clearinghouse on local and regional training, education, and business needs.
- Expand the Township's economy and tax base by supporting existing local businesses, encouraging entrepreneurship, and attracting new businesses
- Implement incentive programs available through Oakland County and the State of Michigan regarding emerging employment sectors.
- Continue participation in the Michigan Economic Development Corporation's Redevelopment Ready Communities Program.
- Continue and refine the practice of identifying and improving key corridors and districts for growth and economic development.
- Promote the redevelopment of obsolete sites so that they can once again make meaningful contributions to Orion Township.

Goal 3 | ECONOMIC DEVELOPMENT

	Action Strategy	Lead Body	Time Frame	Supporting Partners
Zon	ing Action Items			
За	Amend the Zoning Ordinance to add mixed use designations that align with the goals of the Hamlet, Village Center and mixed-use designations	PC / Admin	S	TB
3b	Update industrial zoning to accommodate a modern mix of tech, research, and light industrial uses	PC / Admin	S	ТВ
3c	Review and amend the Zoning Ordinance as needed to ensure the development review process is as efficient and effective as possible	PC / Admin	S	ТВ
3d	Develop flexibility in parking standards and other site standards for redevelopment sites to enable new uses on physically constricted sites. Lower barriers to positive redevelopment.	PC / Admin	S	TB
Зе	Use frontage landscaping standards to improve the appearance of commercial and industrial areas.	PC / Admin	S	ТВ
3f	Consider permitting additional height and or density in the RM-2 district. Review and consider appropriate buffering of taller structures	PC / Admin	S	TB
3g	Implement corridor-specific landscape and streetscape design concepts.	PC / Admin	S	TB
Adv	ocacy Action Items			
3h	Explore public/private partnership opportunities for corridor improvements	ТВ	L	Admin / PC
Зі	Develop a guidebook showing placemaking ideas for private development sites	Admin	L	PC / TB
3j	Develop annual survey to better understand the needs of the business community and ways in which the Township can provide support	TB / Admin	L	PC / Chamber of Commerce
3k	Work with MDOT and RCOC to encourage provisions that allow context-appropriate landscaping within state-controlled rights-of-way, like those along Lapeer Road	TB / Admin	S	PC/MDOT/ RCOC
31	Strive to target development to corridors with recent public investments including, but not limited to, Brown Road and Baldwin Road.	PC / Admin	S	PC / TB
3m	Work with property owners and the development community to explore implementation of identified redevelopment site concept plans.	PC / Admin	S	PC / TB
3n	Work towards development of a plan to promote Orion Township's leisure recreation amenities by highlighting natural beauty with important Township, County and State Parks and Recreation Areas, non-motorized pathways, and access to shopping and entertainment. Monitor the success of these efforts to ensure that the priority is on local residents having access and reasonable use of these facilities, striking an important balance so that natural amenities are not overburdened by too many visitors.	Admin / TB	S	PC
Ca	pital Improvement Action Items			
30	Annually review and update the CIP to target capital spending to priority areas.	TB / Admin	S	ТВ
Otl	ner Action Items			
3р	Establish a beautification award program, with categories for individual residential and commercial/mixed use properties, as well as collective neighborhood efforts. 395	TB / Admin	L	PC





Community Facilities (Community, Recreation, and Complete Streets)

Orion Township will support and foster motorized and non-motorized transportation facilities, community recreation facilities, and other supportive community facilities and services desired by residents and businesses in a financially responsible manner that reflects the Township's role and position in the region. These systems will minimize the impact on the Township's natural features and open space while supporting a high quality of life for residents of all ages, as well as targeted land use recommendations. The Township will, when desirable, partner with neighboring communities, other public agencies, and the private sector to maintain, link, and expand infrastructure in an effective, efficient, and economical manner.

Objectives

- Facilitate multi-modal connections that provide access to residential areas, economic destinations and parks & recreation facilities throughout the Township in a safe, efficient and effective manner.
- Ensure civic spaces, utilities and other infrastructure are well-maintained while providing sustainable strategies for growth in a practical manner.
- Provide community support to ensure Orion Township police, fire and first responders can continue to operate efficiently in a manner that best serves all residents within the community.
- Pursue new facilities that enhance the quality of life for Township residents and businesses, including a new Township Hall, improved parks, and non-motorized facilities that connect these assets with residential and non-residential areas.
- Actively promote and, where appropriate, require the installation of non-motorized facilities in accordance with the Township's Safety Path Plan and establishment of the core 15-minute neighborhoods.
- Deliver outstanding parks and recreation facilities and programs.
- Encourage Township staff to promote ways in which all Township-owned facilities can conserve energy and serve as a model for energy efficiency in the Township.

Goal 4 | COMMUNITY FACILITIES

	Action Strategy	Lead Body	Time Frame	Supporting Partners			
Zon	ing Action Items						
4a	Review and amend the Zoning Ordinance as needed to accommodate autonomous vehicles, ride-sharing and other forms of transportation.	PC / Admin	L	ТВ			
SAc	lvocacy Action Items						
4b	Adopt a Complete Streets policy that establishes non-motorized transportation as a policy priority, reflecting that the Township will consider opportunities for improvements to non-motorized connections and facilities whenever new construction projects take place.	ТВ	S	PC / Admin			
4c	Explore the creation of an ad hoc committee tasked with evaluation of sharing facilities and services between adjacent communities, schools, the county and private businesses with a goal of providing effective and efficient community amenities and services.	TB / Admin	L	PC			
Ca	pital Improvement Action Items						
4d	Consider the priority installation of non-motorized facilities in accordance with the Township's Safety Path Plan and establishment of the core 15-minute neighborhoods	TB / Admin	S	PC			
Otl	Other Action Items						
4e	Minimize required street pavement width, where possible, based on need to support travel lanes, street parking and emergency maintenance service vehicle access.	PC / Admin	L	ТВ			
4f	Continue to update the Township's recreation Master Plan every five years to ensure the adopted plan is recognized by the DNR and the Township remains eligible for grant and assistance	TB / Admin	L	PC			

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Community Character and Aesthetics

Orion Township's tagline, Where Living is a Vacation, encompasses a wide variety of community qualities and features that make the Township unique and cherished by those that live here. In addition to the goals and objectives noted above, the Township will continue to support retaining community character elements and aesthetic qualities that are consistent with the vision of the Township and promotion of health, safety, and general welfare.

Objectives

- Enforce Township regulations that reduce glare and preserve the dark sky.
- Promote the preservation of natural vegetation along rural corridors of the Township through creative zoning regulations and coordination with the Road Commission for Oakland County.
- Seek out preservation of important viewsheds that permit Township residents to view lakes, streams and other natural resources
- Require high quality and durable finishing materials and furnishings, consistent with recommendations and policies in this Master Plan, and recognize that certain districts and corridors require unique and harmonious elements.
- Support the advancement of the four identified 15-minute neighborhoods and develop regulations that support hamlet and village style development.
- Encourage the incorporation of design elements into new development that reflect the historic character of the Township.
- Continue to update and enforce sign regulations to ensure that signage in the Township is an aesthetic asset that effects communication and quality appearance over blight, clutter and over-saturation of messaging.

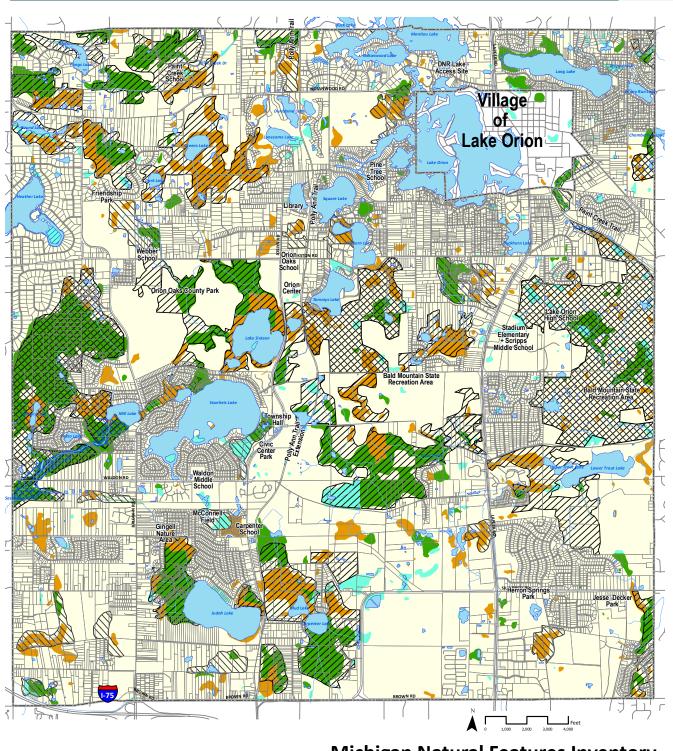
Goal 5 | COMMUNITY CHARACTER & AESTHETICS

	Action Strategy	Lead Body	Time Frame	Supporting Partners
Zon	ing Action Items			
5a	Review and amend the Zoning Ordinance as needed to require high quality building materials and design standards for all new development.	PC / Admin	S	Orion Historical Society / TB
5b	Review and amend the Zoning Ordinance as needed to encourage preservation and reuse of historic structures.	PC / Admin	S	ТВ
5c	Review and update the lighting ordinance to meet the Michigan Dark Skies regulations; consider lighting zones to accommodate all uses	PC / Admin	S	ТВ
Adv	ocacy Action Items			
5d	Establish architectural design, signage, and landscaping of key entryway features at the Township's borders.	ТВ	L	Admin / PC
5e	When property is developed or redeveloped, explore opportunities to link the front and back of the building by pedestrian passages that are open to the public	PC/TB	S	Admin
Ca	pital Improvement Action Items			
5f	Update the Township's CIP plan annually	PC / TB	S	Admin
Otl	ner Action Items			

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Appendix A

Michigan Natural Features Inventory Priority Conservation Areas



Priority One Forested Wetlands Scrub-Shrub Wetlands Priority Two Priority Three **Emergent Wetlands** Floodplain

Michigan Natural Features Inventory Priority Conservation Areas

Charter Township of Orion Oakland County

Source: Oakland County Potential Conservation/Natural Areas Report, Michigan Natural Features Inventory, MDNR + MSU, 2004

Map by: Carlisle / Wortman Associates, Inc.



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Appendix B

Oakland County Programs

County Programs and Services

Oakland County Department of Economic Development Programs and Services

Program	Service / Mission
Brownfield Redevelopment Authority (OCBRA)	Provide assistance in the County's Brownfield initiative to clean-up and redevelop contaminated properties.
Environmental Stewardship	Provide information, plans and options to promote conservation of the natural environment while supporting sustainable economic growth, development, and redevelopment.
Historic Preservation Assistance	Support local efforts to maintain and enhance architectural and heritage resources through sustainable practices to enrich the quality of life for all.
Land Use & Zoning Services	Prepare and provide land use, zoning, and Master Plan reviews for communities to enhance coordination of land use decision-making.
Main Street Oakland County (MSOC)	Help local governments develop their downtowns as vibrant, successful districts that serve as the heart of their community.
Oakland County Household Hazardous Waste Program (NoHaz)	Help Oakland County residence to have an option for the proper disposal of household hazardous waste
Planning, Zoning and Development Training	Encourage communities to capitalize on their strengths and refine their economic development processes to implement their community vision.
Trail, Water & Land Alliance (TWLA)	Become an informed, coordinated, collaborative body that supports initiatives related to the County's Green Infrastructure Network

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Appendix C

Updated 2015 Master Plan-Sub Area Plans

SUB AREA PLANS

As a part of the 2015 Master Plan update, several areas within the Township received more detailed analyses and considerations for future land use. The areas of special focus, described below, provide specific land use recommendations and site design considerations for each. This Appendix includes key concepts carried forward and adapted,, as necessary to reflect the vision of the 2022 Plan. These sub areas include:

- Gingellville
- Village of Lake Orion Area
- Brown Road

GINGELLVILLE SUB AREA

The Village of Gingellville has had a long history in Orion Township. Originally founded as an agricultural community, the Village has evolved into a collection of shops and residential areas. The land use plan promotes the continued refinement of the Village into a unique enclave. The plan promotes the integration of commercial and residential uses within a well-designed, pedestrian-friendly development.

Due to the size of the Township's population, the historical growth patterns and the close proximity to several regional shopping centers, it is imperative that the development concepts for this sub-area are compatible with the existing development patterns. The congestion problems within the area, the abundance of available land, and the desired intent to preserve the historical hamlet of Gingellville should also be key elements of any new development concepts. Therefore, the Township policies for this sub-area should focus on clustered, mixed use village style rather than strip commercial development land use patterns.

Strip Development vs. Village Center Development





The disjointed character of strip-style development (left) often requires the use of an automobile to get from building to building. In contrast, village center-style development (right) encourages pedestrian connectivity between uses.

Source: http://homesmsp.typepad.com/

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Table A-1. – Characteristics of Typical Strip Development vs. Village Center Development

TYPICAL STRIP DEVELOPMENT	VILLAGE CENTER DEVELOPMENT
Disruption of traffic flow from multiple curb cuts.	Shared access to minimize the number of curb cuts.
Not pedestrian friendly due to multitude of cars in front of the buildings.	Parking encouraged in the side or rear to make the street side for pedestrians.
Lack of coordination of commercial uses and building styles.	Compatibility of uses and architecture through specific guidelines.
Requires the continued use of the automobile to shop in multiple stores.	Buildings located close to the street to slow vehicles and encourage pedestrian use.
Often has blighting effect on contiguous residential land. Lack of uniformity in signs, lighting,	Pedestrian connectivity between buildings and uses.
landscaping and other amenities.	Uniform sign, lighting and landscape requirements result in a uniform and well maintained product.

The intent of the Gingellville sub area is to create a "village-like" atmosphere with areas of various uses that are interconnected, pedestrian-friendly, and blend community-oriented business development with residential uses. Commercial uses shall be of neighborhood scale and shall not include intensive commercial uses which are incompatible with surrounding residential uses. A new zoning overlay district – the Gingellville Village Center Overlay District – has been established to accomplish the intent of this land use category.

As a mixed land use concept, low intensity commercial and office uses are allowed to mix with residential land uses within the Gingellville sub area. The following land use design principles shall apply to the Village Center land use classification, the Gingellville sub area and the correlated Gingellville Village Center Overlay District:

- Mixed-Use Village Center developments shall be reviewed as part of a Planned Unit Development (PUD).
- Commercial uses shall be limited to low intensity retail, office or professional uses similar to the Restricted Business zoning district (RB).
- "Big Box" commercial uses shall be prohibited. Maximum floor area for commercial
 use shall be limited and shall be consistent with the Village character.
- Deep parcels shall be reserved for residential uses, but may have frontage retail or flex space that could be townhouse, retail or other similar uses. Single-family residences are favored as the predominant land use at the edges of the district. In mixed use projects, in is expected that detached and attached units would be interspersed with local

business uses along the frontage of the property. Missing middle housing types are also encouraged in this area.

- Land uses should transition from commercial, or multiple-family, to lower density
 residential uses including single family detached units to the east and west of Baldwin
 Road, with appropriate buffers and screening on the perimeter.
- Village Center developments shall promote pedestrian connection and linkage.
- Secondary access shall be required either by parallel access roads or perpendicular access roads from Baldwin Road.
- Rear yard and side yard parking shall be encouraged.
- Pedestrian amenities such as street furniture, benches, lighting, pavers and extensive landscaping shall be required.
- All projects shall demonstrate quality architecture and landscaping consistent with the Village Center.

The conclusion from this analysis is that the Township needs to maintain the existing Gingellville Village Center Overlay District in order to ensure that strip development land use patterns are halted and that new "Village"-style development concepts can take hold. As noted above, this development concept is a traditional village concept that successfully integrates commercial and residential uses. Special emphasis will be placed upon high-quality architecture and landscaping within a pedestrian-friendly environment.

Village Center Development

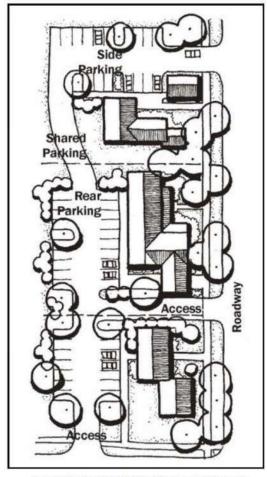




Pedestrian-friendly mixed-use projects are encouraged within the Gingellville Village Center. Village Center developments should promote linkages between various land uses, including neighborhood-oriented retail (left), multi-family residential (right), and single-family residential.

Source: activerain.trulia.com

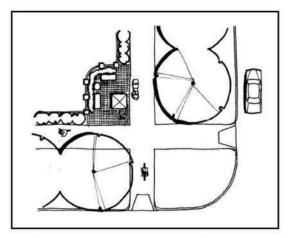
FINAL DRAFT (07-07-2022)



Rear/Side Yard Parking along with Primary and Secondary Access from Baldwin Road and Side Roadway



Pedestrian Amenities such as Benches Wabash Valley Manufacturing, Inc. (Model #ES420P)



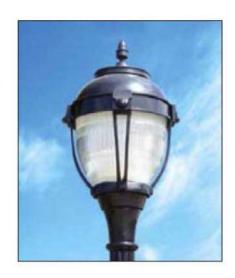
Pedestrian Plaza as a Public Space Amenity



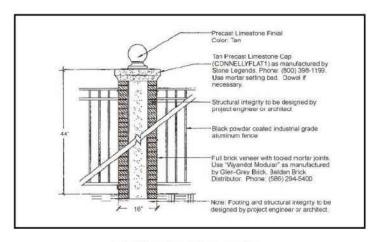
Commercial Developments
(Complementary colors, common lettering, similar location, uniform materials, size, proportion and background panel)

Gingellville Planning Concepts

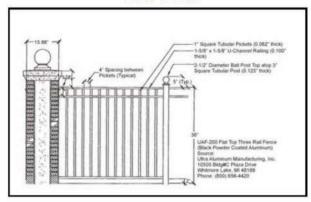
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Pedestrian Lighting Detail Antique Street Lamps Mfg. Inc. (Model # DS7K)



Parking Lot Screening Pillar Detail



Parking Lot Screening Fence Detail

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Gingellville Planning Concepts

VILLAGE OF LAKE ORION AREA

The Master Plan recognizes the importance of the Village of Lake Orion to the Township. The Village is a commercial and residential center with an attractive downtown and waterfront. The Township and Village share a unique identity within the overall region.

Much of the commercial activity prevalent within this sub-area of the Township is in a linear pattern on Lapeer Road as opposed to larger commercial areas or shopping centers. While understanding that this portion of the Township promotes a mix of office and commercial facilities in close proximity to several neighborhoods, the depth of the commercial land use prohibits regional shopping centers. These smaller-scale commercial centers are also not intended to compete with the larger regional shopping centers in Auburn Hills, Pontiac and Novi.

BROWN ROAD SUB AREA

The Brown Road sub area is geographically consistent with the Brown Road Innovation Zone (BIZ) zoning district. The sub area and BIZ district encourage mixed industrial and commercial uses, and supporting ancillary uses, within large-scale planned developments. The sub area promotes economic development as well as redevelopment, and encourage the elimination of blighted properties. The Master Plan promotes "flex" zoning concepts which will help facilitate redevelopment and minimize impediments to future growth. The Brown Road Area is also intended to encourage collaboration between adjacent property owners in the form of shared access and lot combinations. Parcel consolidation and interior loop roads are encouraged and are represented in the proposed Brown Road Redevelopment Plan illustrated on the following page.

Development within the Brown Road sub area should incorporate low impact design (LID) and participate in Leadership in Energy and Environmental Design (LEED) practices. New developments shall plan for safe and complementary vehicular and pedestrian circulation patterns and improve environmental quality. Special consideration should be given to projects that provide an attractive transition between residential and non-residential properties, and projects which feature a mixture of uses in a well-designed land use arrangement.

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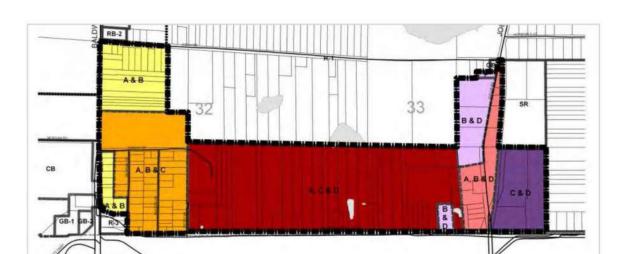


Figure A-1. Brown Road Innovation Zone (BIZ) and Brown Road Redevelopment Plan



Access Management / Shared Parking

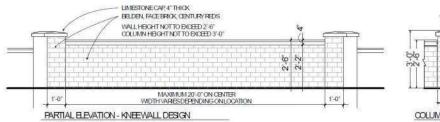


Interior Road Entrance Area Example



Brown Road / BIZ District Planning Concepts

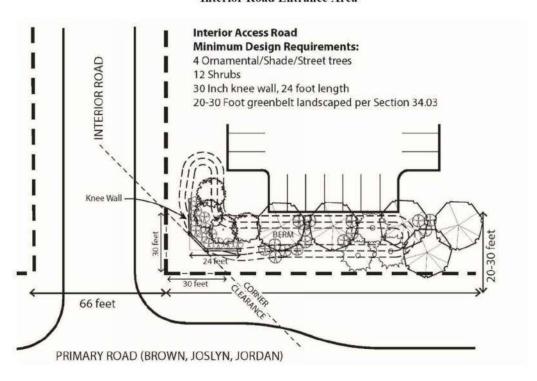
Representative Interior Access Road With Knee Wall and Landscaping





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Interior Road Entrance Area

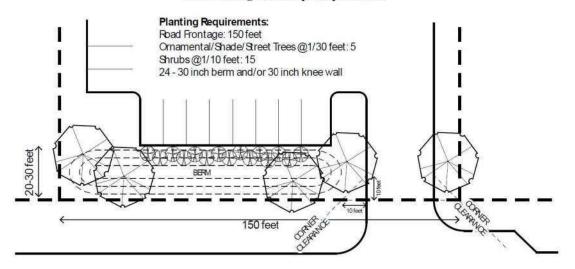


Brown Road / BIZ District Planning Concepts

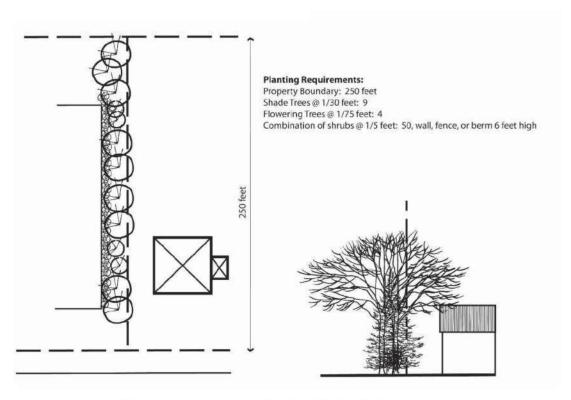
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Street Frontage Landscape Requirements



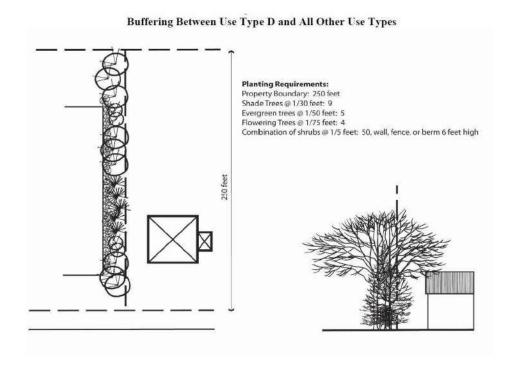
Buffering between Residential and Non-residential Uses

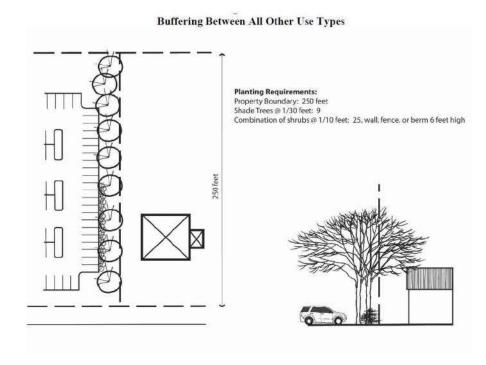


Brown Road / BIZ District
Planning Concepts

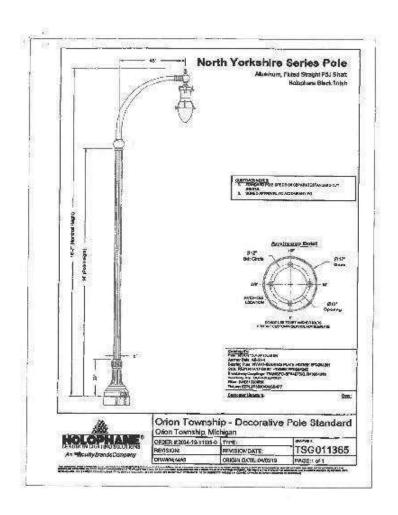
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Brown Road / BIZ District
Planning Concepts



Brown Road / BIZ District Planning Concepts

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Appendix D

Market Assessment Survey Summary

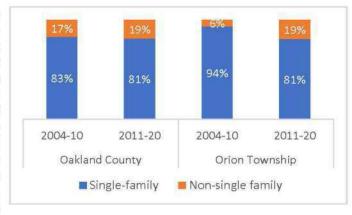
Orion Township Market Assessment Summary

The following is a market assessment for Orion Charter Township. The focus is on market conditions and is based on data mining, analytics, and analytical methods. The indicated demand is based on historical data, new data developed on area property sales and rentals, data mined from a survey of area residents, analytics from surveys of several thousand households in Neighboring areas of Michigan conducted in the past two years by The Chesapeake Group for other public and private sector clients, and demand forecasting for residential and non-residential activity.

Housing Development Patterns

Orion Township is situated within Oakland County, which provides context for market opportunities within the Township.

- a. Oakland County. Oakland County has seen substantial growth in households since 2011, or the close of the Great Recession. More than 25,000 new housing units were permitted in Oakland County between 2011 and 2020. of these units, about 20,500 were single-family homes, and roughly 4,700 were multi-household units. The latter represents 19 percent of all units permitted from 2011 to 2020. The average number of all units permitted between 2011 and 2021 was above the number permitted from 2004 through 2010. However, the number of units permitted in Oakland County peaked in 2004 and 2005 before the "housing bubble" collapse that followed. There was a statistically significant drop-off in new units permitted in 2020. Several unique factors resulted in the drop-off, not the least of which was the Covid Pandemic. Both single and non-single-family housing unit permits fell.
- b. Orion Township. Orion Township reported substantial growth in housing units permitted between 2011 and 2020. The Township permitted a total of 1,527 new homes during those years. The increase represents about 6 percent of the Oakland County total. As was the case in Oakland County, there was a statistically significant drop-off in new units permitted in 2020. Furthermore, non-single-household units



permits were not issued in five of the ten years in the Township.

		Oakland	County		Orion Township			
	Housing Permits	All Units	Single- family	Non- single	All Units	Single- family	Non- single	
	Total	25,155	20,459	4,696	1,527	1,234	293	
2011-20	Percent of total	100%	81%	19%	100%	81%	19%	
	Per year	2,516	2,046	470	153	123	29	
	Total	17,170	14,255	2,915	440	412	28	
2004-10	Percent of total	100%	83%	17%	100%	97%	3%	
	Per year	2,453	2,036	416	63	59	4	

Institutional Influence

The institution that has the most significant impact on the area is General Motors. The Orion GM assembly plant began production almost 30 years ago in the early 1980s. The plant was at a time idled and has changed the type of vehicle produced several times since its inception.

The future of the plant appears to be brighter than the recent past. Several hundred million dollars was and is being reinvested to secure its future. The plant's production is being based on electronic vehicles. While electronic vehicles represent a small chare of all manufactured fleet at this time, it is expected to become a substantial if not dominant share of production by 2025 and beyond.

Resident Survey Analytics

Fundamental to the market assessment is a survey of area residents conducted online. More than 600 "unique" households, defined by IP addresses, responded to the survey. The following are characteristics of the households that responded to the survey.

1. Sample Characteristics

- About 38 percent of the responding households live in zip code 48360, while another 36% live in 48362. An additional 18 percent live in zip code 48359, with the remaining distributed in eight other zip code areas.
- The average number of people per responding household is 2.84.
- Just over one in ten households have only one member.
- The average age of the primary income earner is 54. However, 57 percent of the households have a primary income earner below 54 years old.
- About two in ten responding households have a primary income earner at least sixty-five years of age.
- About 58% of the respondents have a primary earner in the household between 45 to 64 years of age. Age of the Primary Income Earner in the Household is between 45-54 years for about 31% of the respondents.
- The average household owns or leases 2.4 vehicles.
- One-third of the households own two or more vehicles at least five years old, typically associated with lesser monthly loan payments.

2. Employment Conditions

- More than eight in ten households have one or more members employed full-time. Nineteen
 percent have no one employed full-time, closely paralleling the households where the primary
 income earner is at least 65 years of age.
- Eleven percent of the households have a member either under-employed or not now employed full-time but would like to be employed full-time.
- About four in ten households' employment conditions have been impacted by the Covid pandemic.
- The majority of the individuals (71%) impacted by Covid working part-time are between the ages of 35 and 64.
- The majority of the individuals (79%) impacted by Covid wanting full-time work are more concentrated between 45 and 64.
- About 10% of those wanting full-time work impacted by Covid have a high school education or less. The preponderance of those affected has a college degree.

- Those impacted are most often associated with the foodservice, automotive, educational, and medical sectors or industries.
- Despite Covid, the annual average (mean) total annual household income is \$126,000. The mean
 average is often fifty or more percent greater than the median employed in government statistics
 but is much more meaningful in demand forecasts. The mean better reflects purchasing power
 for all goods and services.

3. Spending Analytics

Households generally spend income and assets on three essential commodities.

1. Food

Grocery spending is a surrogate for convenience shopping in general.

- The average amount spent weekly on groceries and related merchandise is \$146 per household.
- Three-fourths of the households have not changed their food shopping patterns since the Covid pandemic. Many others will go back to their former practices once the threat of Covid diminishes.
- Kroger and Meijer are dominant in the market, with a combined market share of 84 percent.
 Food is also purchased from food service and preparation establishments generally for consumption outside of the home.
- Before Covid, the majority ate lunch (59%) or dinner (67%) outside the home, purchasing the
 meal at foodservice operations at least once each week. The frequency of lunch trips may
 indicate of opportunities for food service establishments to operate during the day and in the
 evenings.
- Roughly one-half preferred to eat lunch at "local, non-chain full-service" operations. An even larger proportion of households chose such establishments for dinner.
- Sixty-two percent defined their frequented foodservice establishment for lunch as being in Orion Township.
- Sixty-nine percent defined their frequented foodservice establishment for dinner as being in Orion Township.
- Most dinner trips (86%) were made to food establishments fifteen minutes or less from home,
 with almost one-half of these within a five to ten-minute drive.

2. Shopping

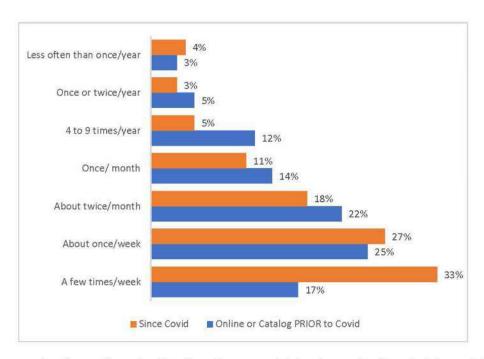
Apparel shopping is a surrogate for non-convenience shopping in general.

 The primary entities most often frequented or from which apparel purchases are made include Kohls and Amazon/other online sources.

Before the Covid pandemic, substantial online purchases were made by Orion area residents. Online purchases increased during the pandemic.

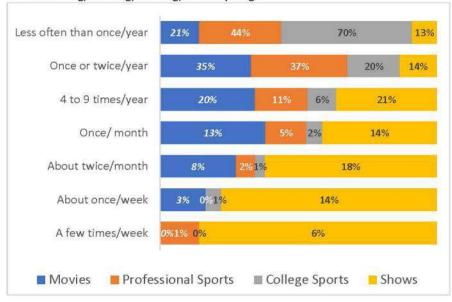
- More than one-third (42%) shopped online at least once per week before Covid. About 68
 percent shopped online at least twice per month. Therefore, both convenience and nonconvenience shopping dollars are exported from the area with regularity prior to Covid.
- Since Covid, those shopping at least once per week increased to 60 percent. Those shopping
 online at least twice per month rose to 78 percent.
- Based on the changes with convenience shopping associated with groceries, post-Covid online sales are expected to be roughly 50 percent weekly and 73 percent at least twice per month.





Because of online options, the blending of commercial development with entertainment is of increasing importance.

- About one in four households had a member partake of or participate in some form of entertainment at least twice each month before Covid.
- About one-fourth of the households had a member that went to see movies at a theater before Covid.
- The frequency of most forms of outdoor recreation activity is substantially above nonparticipatory entertainment. At least 17 percent of the households have members that participate in an outdoor recreational activity during season or year-round, including all forms of walking, running, boating, and bicycling.



3. Transportation

Across all age groups, the majority defines the availability of places that they can live, recreate, easily walk, and work at or near one location to be good. However, households with primary income earners 25 years of age or younger have the most members who feel the availability of places where they can live, recreate, easily walk, and work at or near one location to be "fair" or "poor."

Characterization	Under 25	25 to 34	35 to 44	45 to 54	55 to 64	65 to	75 or over
1 Poor	20%	3%	10%	12%	10%	5%	9%
2 Fair	20%	20%	23%	21%	17%	32%	23%
3 Good	60%	33%	29%	31%	41%	35%	27%
4 Very Good	0%	33%	19%	23%	19%	24%	32%
5 Excellent	0%	10%	19%	13%	13%	5%	9%
Total	100%	100 %	100%	100%	100%	100%	100%

Also, due to online options, the character of commercial development and its blending with walkability are of increasing importance. The majority of residents (72%) define Orion's shopping options to which they can easily walk as being "poor" or "fair."

Characteristic	Poor	Fair	Good	Very Good	Excellent
Housing options	3%	12%	34%	38%	14%
Availability of professional and personal services	2%	11%	36%	38%	13%
Shopping options to which I can easily walk	42%	30%	16%	7%	4%
Orion's shopping experience	9%	29%	39%	16%	7%
Orion's restaurant options	4%	15%	38%	31%	13%
Walking experiences that are safe, comfortable, and interesting	3%	10%	26%	35%	26%
The availability of places that I can live, recreate, easily walk, and work at or near one location	10%	23%	32%	22%	13%

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Property Trends Synopsis

Before 2021, residential sales indicated a range of prices per square foot. Factors included location, age of units, and many other factors.

- The average per square foot residential unit sales ranged from a low of \$160 to a high of \$246 in the general Orion area.
- The average condominium sales ranged from \$143 to a high of \$186 per square foot.
- Condominium fees ranged from \$200 to \$225 per month.
- The average sales price for condominiums ranged from a low of \$195,000 to a high of \$337,000.
- A sampling of retail space sold during the same time frame indicates that the average sale price
 per square foot was \$109. Property or units sold ranged from a low of 600 square feet to a high
 of more than 48,000 square feet.
- A recorded sampling of office space sold during the same time frame indicates that the average sale price per square foot was \$206. The average publicized rent per square foot was 429.
- There are very limited industrial space sales. For those sold, the average sale price was about \$93
 per square foot.

It is noted that there has been a significant price escalation for the residential property during 2021. Many factors are driving the increases, including but not limited to extremely low mortgage rates, supply limitations partially resulting from the pandemic, limited labor supply, and rapidly rising costs of materials. The cost of construction for non-residential is being driven by the rising cost of materials and limited labor supply.

Housing Market Analytics/Segmentation

The survey of residents indicates the following.

- Ninety-nine percent live in their home full-time.
- Ninety-four percent live there about ten months of the year.
- Ninety-four percent own their homes, and six percent rent.
- Ninety-one percent describe their housing unit as being a single-family home.
- About one-third have lived in their current home for 20 years or more.
- Almost one-fourth have only lived in their current home for less than five years.
- More than one-half (52%) of the households may or are likely to move within the next five years from their Orion area residences.
- The primary potential reasons for the move include changes in lifestyle, changes in the number of household members, and changes in physical or medical conditions.

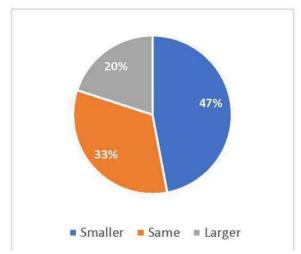


FIN	ve Years*
Reasons	Percent
lifestyle changes	34%
decrease in the number of people living in the residence	15%
changes in a household member's physical conditions/medical change	11%
changes in my or other household member's employment likely to result in leaving the area	7%
changes in fiscal conditions	5%
increase in the number of people living in the residence	3%
housing market conditions	2%
rental conditions	1%
graduate from a higher education institution with a degree	1%
Others	21%

- About one-half of those that may move in the next five years say they will stay in Michigan.
- In addition to those that may move, about three in ten households have an individual that will likely create a new household in the next three years.
- Age is not a factor in considering the availability of housing options in the Orion area, with most defining options as "very good" or "excellent."

Not all existing households have monthly payments. There are many reasons households do not have monthly payments, including those living in homes where mortgages are paid off.

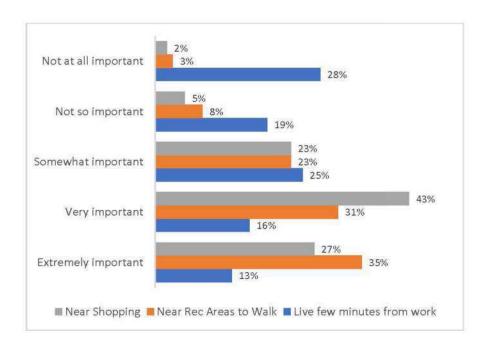
- The average monthly payment, including those without payments, is \$1,185.
- About 20 percent of the households have no monthly payments reflecting tenure, living with other relatives, and different situations.
- The average monthly payment is \$1,490 when those without payments are excluded.
- About one-half of all households have monthly payments between \$1,000 and \$2,000.
- There is a strong correlation between household income and monthly payments. In general, higher monthly payments are associated with higher-income households.
- Also, and in general, the more bedrooms in the home, the larger the unit in square feet.



For those that may move, almost one-half envision or desire a unit smaller than their current home.

• Whether the desire for a smaller, samesized or larger home in the future for those likely to move, income is not a contributing factor. The majority for all sized units have annual household incomes above \$100,000, reflecting the potential affordability of moving to a new home.

- For the majority seeking a larger home, the unit would likely be greater than 1,500 square feet, with many being 2,000 square feet or more.
- For those likely to move to a smaller unit, the preponderance would seek a home likely in the range of 1,500 to under 2,000 square feet.
- Seventy percent of those who may move define living near shopping as "very" or "extremely" important.
- About two-thirds define living near recreational areas to walk as being "very" or "extremely" important.



Demand Forecast

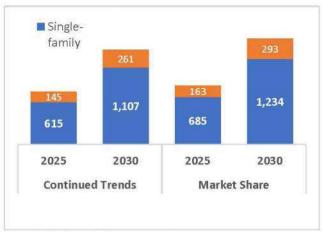
The following are estimates of marketable activity for Orion Township. Adjustments have been made to the survey data for demand forecast purposes based on known biases associated with online sampling. The opportunities are not linked to any specific development proposal or site but are a measure of potential within Orion and its core. The defined units and space may be beyond the holding capacity of available land but are for guidance with planning. Also, the ability to accommodate the demand may be limited by community desires and character.

a. Housing

Based on historical patterns in the County, Orion Township, and an additional database derived from The Chesapeake Group's surveys of residents in other communities of the County, the potential for new housing units in Orion Township is defined.

Two scenarios are presented. One is defined as "Continued Trends," while the other is defined as "Market Share." Market share is an important economic concept implying "holding one's own" or maintaining economic parity. To reiterate, neither estimate is linked to the holding capacity of available land, current zoning, or any existing development regulations.

- In the <u>Continued Trends alternative</u>, Orion Township will support a total of roughly 1,375 new units by 2030. Of the 1,375 units by 2030, 260 units could be non-single-household structures like duplexes, townhomes, and other attached structures. This total does not include any potential for developing an "active adult" community, unique niche opportunities, or the range of assisted living opportunities.
- 2. In the Market Share alternative, Orion Township will support a total of roughly 1,525 new units by 2030. Of the 1,525 units by 2030, about 290 units could be non-singlehousehold structures. As is the case for the other alternative, the Market Share alternative total does not include any potential for "active adult" developing an community, niche unique opportunities, or the range of assisted living opportunities.



The majority of the units would likely be in the 1,250 to 1,750 square foot range.

b. Retail Goods & Related Services Space

New rooftops result in increased spending and demand for retail goods and related supportable space. It is noted that no jurisdiction can be expected to capture all demand created by any market. Spending will occur in many places, including operations near home and work. Online purchases, vacation spending, and other activity diminish local sales. On the other hand, people working within the area, employed nearby, and those coming to the area for a range of purposes will spend money in Orion. Some dollars are exported, while others are imported. Currently, the survey indicates an opportunity to diminish the exportation of dollars from Orion and other portions of the County residents, particularly in food, food services, and linked entertainment activity.

Based on the anticipated growth in rooftops and derived only from current and future residents of the County, Orion is expected to capture an additional 272,000 square feet of retail goods and related services space by 2030. Excluding transportation and vehicle service space, the figure is about 227,000 square feet.

Other than transportation and vehicle services space, most of the commercial opportunities are appropriate for land/parcels/structures associated with the future core of Orion's commercial areas or neighborhoods. Retail and entertainment are today and will continue to be in the future linked to "entertainment" so that one creates an experience, not merely a shopping trip or a trip to go to a restaurant. Much of the space will be in food services, with smaller regional chains and independent operations likely to garner the largest market share.

Category	2021 Space (sf)	2030 Space (sf)	Net Increase 2021-30 Space (sf)
Food	167,700	182,668	14,967
Eat/Drink	241,390	262,933	21,543
General Merchandise	729,628	794,743	65,116
Furniture	60,663	66,076	5,414
Transportation	388,072	422,704	34,632
Drugstore	87,703	95,529	7,826
Apparel	154,260	168,025	13,767
Hardware	384,918	419,266	34,352
Vehicle Service	239,558	260,938	21,379
Miscellaneous	596,951	650,224	53,274
TOTAL	3,050,843	3,323,106	272,270

^{*}Developed by The Chesapeake Group, Inc. 2021.

c. Multi-tenant Office Space

The office market continues to change with the increased emphasis on flexible work arrangements, safe co-working space, and in-home live/work activity. Added rooftops increase demand for professional services and related space derived from the new households. Rooftop growth and the desire of people to work near home also provide the opportunity for office space growth.

New demand generates between 165,000 and 183,000 square feet of multi-tenant office space by 2030 in the Orion Township. Of this space, between 100,000 and 110,000 square feet can be captured and located outside of the home in existing or new spaces.

Some office space could be targeted toward software development linked to electronic and autonomous vehicle production and electronic vehicle charging systems.

d. Multi-tenant Industrial Space

Based on the market share concept and Oakland County's Economic Development Plan, between 195,000 and 215,000 square feet of new industrial space opportunity exists in Orion Township by 2030. "Flex space" is indicated to be marketable.

Areas of focus for the new activity would include those that follow.

- Start-up entrepreneurial activity in general.
- Electronic vehicle software, battery research or manufacturing, battery storage research and development for both vehicles and solar.
- Digitized software development.
- Drone/aerial autonomous vehicle enhancement and product development.

e. Composite Opportunities

In total and without consideration of potential opportunities, such as a large-scale active adult community or the attraction of a major manufacturing or warehouse distribution entity, Orion Township has the opportunity to capture about 1,500 new housing units, 270,000 square feet of new retail and personal services space, and 110,000 square feet of office space.

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Orion Township Appendix

Oakland County Housing

Housing Permits	All Units	Single-family	Non-single
2011 thru 2020 total	25,155	20,459	4696
Percent of total	100%	81%	19%
per year	2,516	2,046	470
2004 thru 2010 total	17170	14255	2915
Percent of total	100%	83%	17%
Per year	2453	2036	416

^{*}Developed by The Chesapeake Group, Inc., 2021.

Year	2020**	2019	2018	2017	2016	2015	2014	2013	2012	2011
Total Units	1,782	2,842	2,642	3,707	3,196	2,645	2,458	2,705	1,901	1,277
Units in Single-Family Structures	1,378	1,976	2,482	2,744	2,143	2,180	2,114	2,296	1,880	1,266
Units in All Multi-Family Structures	404	866	160	963	1,053	465	344	409	21	11
Units in 2-unit Multi-Family Structures	8	0	16	4	60	58	16	14	6	0
Units in 3- and 4-unit Multi-Family Structures	89	83	71	105	49	44	49	60	15	11
Units in 5+ Unit Multi-Family Structures	307	783	73	854	944	363	279	335	0	0

^{*}Developed by The Chesapeake Group, Inc., 2021.

Year	2010	2009	2008	2007	2006	2005	2004
Total Units	1,230	456	801	1,218	2,462	4,638	6,365
Units in Single-Family Structures	959	443	667	1,135	1,984	4,050	5,017
Units in All Multi-Family Structures	271	13	134	83	478	588	1,348
Units in 2-unit Multi-Family Structures	4	0	2	12	58	26	40
Units in 3- and 4-unit Multi-Family Structures	26	13	15	22	46	39	129
Units in 5+ Unit Multi-Family Structures	241	0	117	49	374	523	1,179

^{*}Developed by The Chesapeake Group, Inc., 2021.

Orion Township Housing

Housing Permits	All Units	Single-family	Non-single
2011 thru 2020	1527	1234	293
Percent of total	100%	81%	19%
per year	153	123	29
2004 thru 2010	440	412	28
Percent of total	100%	97%	3%
per year	63	59	4

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Total Units	103	129	198	250	160	172	220	176	75	44
Units in Single-Family Structures	103	129	198	226	153	124	119	63	75	44
Units in All Multi-Family Structures	0	0	0	24	7	48	101	113	0	0
Units in 2-unit Multi-Family Structures	0	0	0	0	0	18	0	4	0	0
Units in 3- and 4-unit Multi-Family Structures	0	0	0	0	0	6	4	12	0	0
Units in 5+ Unit Multi-Family Structures	0	0	0	24	7	24	97	97	0	0

^{*}Developed by The Chesapeake Group, Inc., 2021.

	2010	2009	2008	2007	2006	2005	2004
Total Units	22	5	14	41	76	106	176
Units in Single-Family Structures	22	5	14	39	66	92	174
Units in All Multi-Family Structures	0	0	0	2	10	14	2
Units in 2-unit Multi-Family Structures	0	0	0	2	0	14	2
Units in 3- and 4-unit Multi-Family Structures	0	0	0	0	4	0	0
Units in 5+ Unit Multi-Family Structures	0	0	0	0	6	0	0

^{*}Developed by The Chesapeake Group, Inc., 2021.

Single-family Residential Per Square Foot Sale Price in Orion Area 2019-2020

Zip Code	Sq. Ft. Sale Price
48359	\$171
48360	\$180
48362	\$160
48362 lakefront	\$246

^{*}Developed by The Chesapeake Group, Inc., 2021.

Condominiums

Zip Code	Sq Footage	Price	Sq Ft Cost	Homeowners/condo fee
48359	1336	305000	\$186	\$225
48360	1234	\$195,540	\$143	\$222
48362	1880	\$337,000	\$178	\$200

^{*}Developed by The Chesapeake Group, Inc., 2021.



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^{*}Developed by The Chesapeake Group, Inc., 2021.

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Retail space Real Estate Transaction Examples

Sale price of about \$109/square foot

Туре	Sq. Ft	Age
Office/Retail	1,294	2006
Office/Retail	1,360	1993
Retail	14,820	2009
Retail	47,063	1993
Retail	48,362	1993
Retail	1,700	1988
Retail	6,750	1988
Retail	7,200	1987
Retail	1,025	1977
Retail	600	1975
Retail	1,300	1940
Retail	39,503	1925

^{*}Developed by The Chesapeake Group, Inc., 2021.

Type	Sq. Ft	Age
Office	3,841	2020
Office	3,076	2016
Office	1,200	2015
Office	1,464	2015
Office	3,008	2005
Office	3,116	2005
Office	3,194	2005
Office	3,140	2005
Office	3,347	2005
Office	1,940	2005
Office	1,700	1999
Office	6,705	1997
Office	2,235	1997
Office	2,235	1997
Office	2,235	1997
Office	1,600	1997
Office	1,200	1988
Office/Retail	1,294	2006
Office/Retail	1,360	1993

^{*}Developed by The Chesapeake Group, Inc., 2021.

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Industrial limited examples. Sale price average of about \$93/square foot

Zip Codes from Survey

Zip Code	Percent
48360	38.1%
48362	35.7%
48359	18.3%
48348	4.0%
48371	2.1%
48326	0.4%
48370	0.4%
48363	0.2%
48369	0.2%
47362	0.2%
48320	0.2%
Total	100.0%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Number of People Living in The Home

Number of People	Percent
1	11%
2	31%
3	21%
4 or more	37%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Age of the Primary Income Earner

Age Cluster	Percent
Under 25	1%
25 to 34	7%
35 to 44	18%
45 to 54	31%
55 to 64	27%
65 to 74	14%
75 or over	5%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.



Number of People in the Household Employed Full-time

Full-time Employment	Percent
0	19%
1	38%
2	37%
3	5%
4 or more	1%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Number in Household Employed Full-time

	None	0ne	Two	Three	4 or More
Under 25	0%	2%	1%	0%	0%
25 to 34	1%	6%	10%	0%	0%
35 to 44	2%	18%	26%	4%	0%
45 to 54	6%	34%	38%	44%	40%
55 to 64	21%	30%	21%	52%	40%
65 to 74	54%	7%	3%	0%	0%
75 or over	16%	3%	2%	0%	20%
Total	100%	100%	100%	100%	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Anyone in the Household Not currently employed or Underemployed

Answer	Percent
Yes	11%
No	78%
Not certain	3%
Someone would like to work part-time	8%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Whether Employment in Household Impacted by Covid

Impacted	Percent of HH
Yes	40%
No	60%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.



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Age Category of those Wanting to Work Part-time Impacted by Covid

Age Cluster	Percent
Under 25	0%
25 to 34	3%
35 to 44	21%
45 to 54	39%
55 to 64	21%
65 to 74	11%
75 or over	5%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Age Category of those Wanting to Work Full-time Impacted by Covid

Age Cluster	Percent
Under 25	0%
25 to 34	3%
35 to 44	7%
45 to 54	38%
55 to 64	41%
65 to 74	9%
75 or over	2%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Industry or Area Previous to Covid

Industry/Area	Percent
Foodservice	13%
Automotive	12%
Education	8%
Medical	6%
Accounting	4%
Retail	4%
Marketing/Sales	4%
IT	4%
Hospitality	3%
Others	43%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.



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Vehicles per household

Number	Percent of HH
0	34%
1	33%
2	22%
3	7%
4 or more	4%
4 or more	4%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Number of Personal Vehicles Owned or Leased per Household and Percent at least Five Years old

Number	All Vehicles Percent of HH	Percent of HH with Vehicle at least 5 yrs
0	1%	34%
1	12%	33%
2	46%	22%
3	29%	7%
4 or more	12%	4%
Total	100%	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Walk or Bicycle for Employment Purposes

	Once/wk or more	Few X/mon	Once/mon	Few/yr	Less often	Rarely/never
Bicycle	3%	2%	1%	3%	1%	90%
Walk	7%	2%	1%	1%	1%	88%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Average Household Incomes

Income Range	Percent
Less than \$5,000	0.2%
\$7,500 to \$9,999	0.2%
\$10,000 to \$14,999	0.2%
\$20,000 to \$29,999	1.7%
\$30,000 to \$49,999	5.0%
\$50,000 to \$74,999	12.5%
\$75,000 to \$99,999	13.8%
\$100,000 to \$149,999	30.0%
\$150,000 to \$199,999	17.2%
\$200,000 to \$249,999	9.5%
\$250,000 or more	9.7%

General Amount Spent on Food/Grocery-realated Merchandise in a Week

Amount	Percent
Less than \$35	0%
\$35 to \$44.99	2%
\$45 to \$59.99	4%
\$60 to \$74.99	7%
\$75 to \$99.99	11%
\$100 to \$124.99	22%
\$125 to \$149.99	19%
\$150 to \$199.99	16%
\$200 to \$249.99	11%
\$250 to \$299.99	4%
\$300 or more	5%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Change in Pattern Since Covid and Belief that Change is Permanent

Change in Grocery Shopping & Permanence	
No change from before.	75%
Now have most groceries delivered and will likely be permanent.	5%
Now have most groceries delivered but not likely to continue after the threat of the virus has diminished.	3%
Now use pick-up service versus shopping myself and will likely continue after virus threat has diminished.	8%
Now use pick-up service but will go back to shopping once the threat of the virus has diminished.	5%
Not certain or applicable.	5%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Store frequented/Market Share

Operation	Percent
Kroger	60%
Meijer	24%
Aldi	3%
Whole Foods	3%
Costco	3%
Trader Joe's	2%
Hollywood Market	1%
Sam's Club	1%
Walmart	1%
Others	3%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.



FINAL DRAFT (07-07-2022)

^{*}Developed by The Chesapeake Group, Inc., 2021.

Frequency of Eating Outside the Home at a Foodservice Establishment pre-Covid

Frequency	Lunch	Dinner
A few times/week	27%	26%
About once/week	32%	41%
About twice/month	14%	16%
Once/ month	12%	9%
4 to 9 times/year	8%	4%
Once or twice/year	5%	2%
Less often than once/year	2%	1%
Total	100%	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Type of Foodservice establishment Frequented for Lunch and Dinner Pre-Covid

Type of Establishment	Lunch	Dinner
A national or regional chain full-service, sit-down restaurant	5%	11%
A local non-chain independent full-service, sit-down restaurant	51%	72%
A local non-chain independent limited-service restaurant	7%	7%
Fast casual operation (like Chipotle or Noodles)	14%	2%
Fast food operation (like McDonalds or Taco Bell)	13%	2%
All you can eat buffet	0%	0%
Sub shop	5%	0%
Other	5%	5%
Total	100%	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Orion Location of Lunch and Dinner Establishment Pre-Covid

In Orion	Lunch	Dinner
Yes	62%	69%
No	33%	26%
Not Sure	5%	5%
Total	100%	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.



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Drive Time to Dinner Establishment Frequented

Drive Time	Percent
Less than 5 minutes	15%
5 to 10 minutes	41%
11 to 15 minutes	30%
16 to 25 minutes	10%
More than 25 minutes	2%
Not certain or applicable	3%
Total	100%

Name of the Operation and Market Share for Apparel

Operation	Percent
Kohl's	35%
Amazon/Online	10%
Costco	5%
Target	5%
Old Navy	4%
Nordstrom	3%
Macy's	3%
Loft	2%
Eddie Bauer	2%
Marshalls	2%
Meijer	2%
Salvation Army	1%
J Crew	1%
Stitch Fix	1%
Talbots	1%
Walmart	1%
Ann Taylor	1%
Banana Republic	1%
J Jill	1%
JCP	1%
Lululemon	1%
Athleta	1%
Bass Pro Shop	1%
Buckle	1%
Chicos	1%
Evereve	1%
Gap	1%
Lane Bryant	1%
Sam's Club	1%
Torrid	1%
Twice Blessed	1%
Others	15%
Total	100%

Exportation of Dollars Via the Internet Pre and Since Covid

	Online or Catalog PRIOR to Covid	Since Covid
A few times/week	17%	33%
About once/week	25%	27%
About twice/month	22%	18%
Once/ month	14%	11%
4 to 9 times/year	12%	5%
Once or twice/year	5%	3%
Less often than once/year	3%	4%
Total	100%	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Description of Current Home

Description of the Home	Percent
single-family home	90.8%
duplex	0.2%
townhouse	0.7%
loft	0.2%
condominium	5.4%
farm	0.6%
Student housing on the campus of a higher education institution	0.2%
Other	2.0%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Tenure in Current Home

Tenure	Percent
2 years or less	11%
3 to 4 years	12%
5 to 9 years	19%
10 to 19 years	24%
20 or more years	34%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

^{*}Developed by The Chesapeake Group, Inc., 2021.

Potential to Move in the Next Five Years

Likely to Move	Percent
Yes	29%
No	48%
Maybe	23%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Primary Reasons for Move

Reasons	Percent
life-style changes	34%
decrease in the number of people living in the residence	15%
changes in a household member's physical conditions/medical change	11%
changes in mine or other household member's employment likely to result in leaving the area	7%
changes in fiscal conditions	
increase in the number of people living in the residence	3%
housing market conditions	2%
rental conditions	
graduate from a higher education institution with a degree	1%
Others	21%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Likelihood of Staying in Michigan

Stay	Percent
Yes	24%
No	47%
Uncertain	25%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Potential for Generation of a New Household from Existing Families in the next three Years

New household created in 3 years	Percent	
Yes, one person	20%	
Yes, more than one person	10%	
No	66%	
Not sure or maybe	4%	
Total	100%	

^{*}Developed by The Chesapeake Group, Inc., 2021.



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Housing Options in Orion

	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	75 or over
1 Poor	0%	2%	2%	4%	3%	8%
2 Fair	10%	15%	13%	13%	8%	4%
3 Good	43%	31%	30%	34%	38%	29%
4 Very Good	37%	34%	34%	40%	45%	46%
5 Excellent	10%	17%	21%	10%	6%	13%
	100%	100%	100%	100%	100%	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Current Monthly Payments

Monthly Range	Percent of HH
None	20%
Less than \$750/month	5%
\$750 to \$999/month	12%
\$1,000 to \$1,249/month	16%
\$1,250 to \$1,499/month	14%
\$1,500 to \$1,749/month	11%
\$1,750 to \$1,999/month	7%
\$2,000 to \$2,249/month	5%
\$2,250 to \$2,499/mon	3%
\$2,500 to \$2,999/month	4%
\$3,000 or more/month	2%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Housing Monthly Payment and Average Household Income

	\$20,000 to \$29,999	\$30,000 to \$49,999	\$50,000 to \$74,999	\$75,000 to \$99,999	\$100,000 to \$149,999	\$150,000 to \$199,999	\$200,000 to \$249,999	\$250,000 or more
None	0%	15%	17%	23%	12%	5%	0%	28%
Less than \$750/month	0%	23%	3%	7%	5%	0%	0%	0%
\$750 to \$999/month	40%	23%	37%	17%	18%	8%	0%	0%
\$1,000 to \$1,249/month	60%	23%	20%	27%	19%	18%	8%	6%
\$1,250 to \$1,499/month	0%	15%	10%	13%	19%	16%	24%	11%
\$1,500 to \$1,749/month	0%	0%	10%	3%	14%	18%	12%	11%
\$1,750 to \$1,999/month	0%	0%	0%	3%	8%	8%	8%	6%
\$2,000 to \$2,249/month	0%	0%	3%	7%	1%	11%	16%	6%
\$2,250 to \$2,499/mon	0%	0%	0%	0%	1%	13%	8%	6%
\$2,500 to \$2,999/month	0%	0%	0%	0%	1%	3%	16%	17%
\$3,000 or more/month	0%	0%	0%	0%	0%	0%	8%	11%
Total	100%	100%	100%	100%	100%	100%	100%	100%

Number of Bedrooms and Square Footage

Square Footage	1-Bedroom	2-bedroom	3-Bedroom	4 or more
Under 750 square feet	40%	10%	0%	0%
750 to 999 square feet	60%	35%	4%	1%
1,000 to 1,499 square feet	0%	30%	22%	5%
1,500 to 1,999 square feet	0%	20%	40%	15%
2,000 to 2,499 square feet	0%	0%	20%	29%
2,500 to 2,999 square feet	0%	5%	10%	27%
3,000 to 3,499 square feet	0%	0%	4%	21%
3,500 square feet or more	0%	0%	1%	2%
Total	100%	100%	100%	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Number of Bedrooms and Monthly Payment

Monthly Payment	1-Bedroom	2-Bedrooms	3=Bedrooms	4 or more
None	20%	10%	22%	16%
Less than \$750/month	20%	15%	5%	3%
\$750 to \$999/month	40%	30%	20%	0%
\$1,000 to \$1,249/month	0%	30%	17%	17%
\$1,250 to \$1,499/month	20%	0%	20%	15%
\$1,500 to \$1,749/month	0%	10%	7%	13%
\$1,750 to \$1,999/month	0%	5%	7%	8%
\$2,000 to \$2,249/month	0%	0%	1%	11%
\$2,250 to \$2,499/mon	0%	0%	1%	9%
\$2,500 to \$2,999/month	0%	0%	2%	6%
\$3,000 or more/month	0%	0%	0%	3%
Total	100%	100%	100%	100%

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Monthly Payment by Square Footage of Home

	Under 750 Square feet	750 to 999 Square feet	1,000 to 1,499 square feet	1,500 to 1,999 square feet	2,000 to 2,499 square feet	2,500 to 2,999 square feet	3,000 to 3,499 square feet	3,500 square feet or +
None	25%	7%	16%	16%	20%	7%	21%	28%
Less than \$750/month	75%	7%	12%	3%	2%	7%	0%	0%
\$750 to \$999/month	25%	57%	29%	19%	9%	7%	0%	0%
\$1,000 to \$1,249/month	0%	21%	28%	23%	18%	15%	3%	12%
\$1,250 to \$1,499/month	0%	7%	9%	23%	20%	15%	21%	0%
\$1,500 to \$1,749/month	0%	0%	6%	11%	13%	12%	14%	4%
\$1,750 to \$1,999/month	0%	0%	1%	3%	4%	12%	10%	4%
\$2,000 to \$2,249/month	0%	0%	0%	2%	5%	10%	17%	4%

^{*}Developed by The Chesapeake Group, Inc., 2021.

\$2,250 to \$2,499/mon	0%	0%	0%	0%	5%	7%	3%	24%
\$2,500 to \$2,999/month	0%	0%	0%	0%	2%	5%	7%	16%
\$3,000 or more/month	0%	0%	0%	0%	2%	2%	3%	8%
Total	100%	100%	100%	100%	100%	100%	100%	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

For Those That Are Likely or May Move, desired Size of the Next Home Compared to Current Home

Future Scale	Percent
Smaller	47%
Same	33%
Larger	20%
Total	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Income Level of Those Likely to Move By Desired Relative Size of the Next Home

Income Cluster	Smaller	Same	Larger
Less than \$5,000	0%	0%	0%
\$7,500 to \$9,999	0%	0%	0%
\$10,000 to \$14,999	0%	0%	0%
\$20,000 to \$29,999	3%	3%	0%
\$30,000 to \$49,999	8%	3%	5%
\$50,000 to \$74,999	12%	7%	23%
\$75,000 to \$99,999	7%	19%	16%
\$100,000 to \$149,999	31%	32%	32%
\$150,000 to \$199,999	17%	16%	14%
\$200,000 to \$249,999	14%	11%	7%
\$250,000 or more	9%	10%	5%
total	100%	100%	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Current Square Footage and Desired Scale if the Next Home

Current Home Size	Smaller	Same	Larger
Under 750 square feet	0%	0%	6%
750 to 999 square feet	0%	7%	15%
1,000 to 1,499 square feet	6%	15%	29%
1,500 to 1,999 square feet	17%	24%	31%
2,000 to 2,499 square feet	29%	18%	8%
2,500 to 2,999 square feet	18%	16%	10%
3,000 to 3,499 square feet	17%	10%	0%
3,500 square feet or more	14%	10%	2%
Total	100%	100%	100%

Importance of Select Characteristics for the Next Home

	Live few minutes from work	Near Rec Areas to Walk	Near Shopping
Extremely important	13%	35.38%	27%
Very important	16%	30.73%	43%
Somewhat important	25%	23.28%	23%
Not so important	19%	7.82%	5%
Not at all important	28%	2.79%	2%
Total	100%	100%	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Evaluation of the Availability of Places that One Can Live, Recreate, Easily Walk, and Work at Or Near One Location

Characterization	Under 25	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	75 or over
1 Poor	20%	3%	10%	12%	10%	5%	9%
2 Fair	20%	20%	23%	21%	17%	32%	23%
3 Good	60%	33%	29%	31%	41%	35%	27%
4 Very Good	0%	33%	19%	23%	19%	24%	32%
5 Excellent	0%	10%	19%	13%	13%	5%	9%
Total	100%	100%	100%	100%	100%	100%	100%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Evaluation of Orion's Characteristics Prior to Covid

Characteristic	Poor	Fair	Good	Very Good	Excellent
Housing options	3%	12%	34%	38%	14%
Availability of professional and personal services	2%	11%	36%	38%	13%
Shopping options to which I can easily walk	42%	30%	16%	7%	4%
Orion's shopping experience	9%	29%	39%	16%	7%
Orion's restaurant options	4%	15%	38%	31%	13%
Walking experiences that are safe, comfortable, and interesting	3%	10%	26%	35%	26%
The availability of places that I can live, recreate, easily walk, and work at or near one location	10%	23%	32%	22%	13%

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Entertainment & Leisure Activity

Pre-Covid Frequency	Movies	Profess Sports	College Sports	Shows
A few times/week	0%	1%	0%	6%
About once/week	3%	0%	1%	14%
About twice/month	8%	2%	1%	18%
Once/ month	13%	5%	2%	14%
4 to 9 times/year	20%	11%	6%	21%
Once or twice/year	35%	37%	20%	14%
Less often than once/year	21%	44%	70%	13%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Frequency of Outdoor Recreational Activity in which One or More Household Member Participates

	More than once/wk	Once/wk	Few X/mon	About every mon	4-9 X/yr	Few X/yr	Once/yr	Less often or never
Fishing	7%	5%	6%	2%	6%	14%	9%	51%
Boating	19%	5%	4%	4%	8%	15%	9%	36%
Kayaking	8%	6%	7%	3%	8%	11%	6%	50%
Hunting	2%	1%	2%	1%	7%	6%	5%	77%
Birding/Nature Walks	18%	10%	12%	7%	10%	14%	4%	25%
Hiking	16%	11%	9%	7%	9%	13%	5%	30%
Bicycling	18%	10%	14%	7%	9%	12%	5%	27%
Walking	59%	13%	11%	5%	3%	4%	1%	3%
Running/Jogging	17%	5%	6%	2%	2%	4%	2%	62%

^{*}Developed by The Chesapeake Group, Inc., 2021.

Types of activity or business desired in order of frequency noted

Another grocery store than Kroger (Ninos style**, Whole Foods, Trader Joes)
Fresh food or Farmers Market
Hospital & Related
Better/Healthy Restaurants
24 hour urgent care
Tech industry
Bakery
Butcher
Manufacturing



Household growth (conservative Estimate)

New Units/year	Total Units	Single-family	Non-single	
Continued Trend	S			
2025	765	615	145	
2030	1377	1107	261	
Market Share	=	38	8	
2025	848	685	163	
2030	1527	1234	293	

^{*}Developed by The Chesapeake Group, Inc., 2021.

Retail Goods and Related Services

Category	2021 Space	2030 Space	2021-30 Space
Food	167,700	182,668	14,967
Eat/Drink	241,390	262,933	21,543
General Merchandise	729,628	794,743	65,116
Furniture	60,663	66,076	5,414
Transportation	388,072	422,704	34,632
Drugstore	87,703	95,529	7,826
Apparel	154,260	168,025	13,767
Hardware	384,918	419,266	34,352
Vehicle Service	239,558	260,938	21,379
Miscellaneous	596,951	650,224	53,274
TOTAL	3,050,843	3,323,106	272,270

^{*}Developed by The Chesapeake Group, Inc., 2021.

Category	2021 Sales	2030 Sales	2021-30 Sales	2021 Space	2030 Space	2021-30 Space
Food	\$105,424,000	\$114,833,000	\$9,408,000	167,700	182,668	14,967
Eat/Drink	101,384,000	110,432,000	9,048,000	241,390	262,933	21,543
General Merchandise	122,931,000	133,902,000	10,971,000	729,628	794,743	65,116
Furniture	26,356,000	28,708,000	2,352,000	60,663	66,076	5,414
Transportation	118,410,000	128,977,000	10,567,000	388,072	422,704	34,632
Drugstore	89,457,000	97,440,000	7,983,000	87,703	95,529	7,826
Apparel	55,598,000	60,560,000	4,962,000	154,260	168,025	13,767
Hardware	94,459,000	102,888,000	8,430,000	384,918	419,266	34,352
Vehicle Service	98,402,000	107,184,000	8,782,000	239,558	260,938	21,379
Miscellaneous	149,479,000	162,819,000	13,340,000	596,951	650,224	53,274
TOTAL	\$961,900,000	\$1,047,743,000	\$85,843,000	3,050,843	3,323,106	272,270

^{*}Developed by The Chesapeake Group, Inc., 2021.



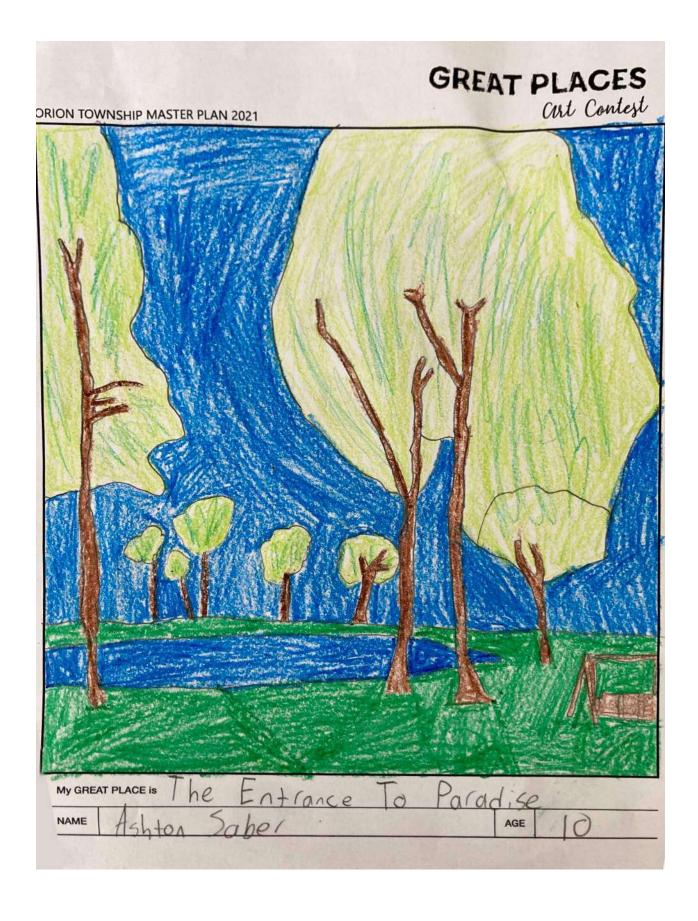
Sub-category	2021 Sales	2030 Sales	2021-30 Sales	2021 Space	2030 Space	2021-30 Space
Food	\$105,424,000	\$114,833,000	\$9,408,000	167,700	182,668	14,967
Supermarkets	88,029,040	95,885,555	7,855,680	133,377	145,281	11,903
Independents	8,433,920	9,186,640	752,640	21,085	22,967	1,882
Bakeries	2,319,328	2,526,326	206,976	7,731	8,421	690
Dairies	1,370,512	1,492,829	122,304	3,807	4,147	340
Others	5,271,200	5,741,650	470,400	1,700	1,852	152
Eat/Drink	101,384,000	110,432,000	9,048,000	241,390	262,933	21,543
General Merchandise	122,931,000	133,902,000	10,971,000	729,628	794,743	65,116
Dept. Stores	43,517,574	47,401,308	3,883,734	181,323	197,505	16,182
Variety Stores	8,851,032	9,640,944	789,912	52,065	56,711	4,647
Jewelry	8,482,239	9,239,238	756,999	11,947	13,013	1,066
Sporting Goods/Toys	13,399,479	14,595,318	1,195,839	53,598	58,381	4,783
Discount Dept.	46,099,125	50,213,250	4,114,125	419,083	456,484	37,401
Antiques, etc.	614,655	669,510	54,855	2,672	2,911	239
Others	1,966,896	2,142,432	175,536	8,940	9,738	798
Furniture	26,356,000	28,708,000	2,352,000	60,663	66,076	5,414
Furniture	3,979,756	4,334,908	355,152	12,838	13,984	1,146
Home Furnishings	5,482,048	5,971,264	489,216	20,304	22,116	1,812
Store/Office Equip.	4,164,248	4,535,864	371,616	8,676	9,450	774
Music Instr./Suppl.	1,133,308	1,234,444	101,136	5,667	6,172	506
Radios,TV, etc.	11,596,640	12,631,520	1,034,880	13,178	14,354	1,176
Transportation	118,410,000	128,977,000	10,567,000	388,072	422,704	34,632
New/Used Vehicles	41,443,500	45,141,950	3,698,450	103,609	112,855	9,246
Tires, Batt., Prts.	52,218,810	56,878,857	4,660,047	217,578	236,995	19,417
Marine Sales/Rentals	6,275,730	6,835,781	560,051	16,961	18,475	1,514
Auto/Truck Rentals	18,471,960	20,120,412	1,648,452	49,924	54,379	4,455
Drugstore	89,457,000	97,440,000	7,983,000	87,703	95,529	7,826
Apparel	55,598,000	60,560,000	4,962,000	154,260	168,025	13,767
Men's and Boy's	7,283,338	7,933,360	650,022	18,208	19,833	1,625
Women's and Girl's	18,458,536	20,105,920	1,647,384	49,888	54,340	4,452
Infants	1,167,558	1,271,760	104,202	3,892	4,239	347
Family	15,456,244	16,835,680	1,379,436	61,825	67,343	5,518
Shoes	11,619,982	12,657,040	1,037,058	13,205	14,383	1,178
Jeans/Leather	222,392	242,240	19,848	741	807	66
Tailors/Uniforms	1,000,764	1,090,080	89,316	5,004	5,450	447
Others	389,186	423,920	34,734	1,497	1,630	134
Hardware	94,459,000	102,888,000	8,430,000	384,918	419,266	34,352
Hardware	45,718,156	49,797,792	4,080,120	166,248	181,083	14,837
Lawn/Seed/Fertil.	1,794,721	1,954,872	160,170	5,279	5,750	471
Others	46,946,123	51,135,336	4,189,710	213,391	232,433	19,044
Vehicle Service	98,402,000	107,184,000	8,782,000	239,558	260,938	21,379
Gasoline	33,456,680	36,442,560	2,985,880	23,074	25,133	2,059
Garage, Repairs	64,945,320	70,741,440	5,796,120	216,484	235,805	19,320
Miscellaneous	149,479,000	162,819,000	13,340,000	596,951	650,224	53,274
Advert. Signs, etc.	2,391,664	2,605,104	213,440	8,697	9,473	776
Barber/Beauty shop	9,118,219	9,931,959	813,740	45,591	49,660	4,069
Book Stores	6,876,034	7,489,674	613,640	38,200	41,609	3,409
Bowling	3,438,017	3,744,837	306,820	34,380	37,448	3,068
Cig./Tobacco Dealer	1,046,353	1,139,733	93,380	2,093	2,279	187
Dent./Physician Lab	5,979,160	6,512,760	533,600	18,397	20,039	1,642
Florist/Nurseries	11,210,925	12,211,425	1,000,500	26,379	28,733	2,354
Laundry, Dry Clean	5,082,286	5,535,846	453,560	16,941	18,453	1,512
Optical Goods/Opt.	3,587,496	3,907,656	320,160	10,250	11,165	915
Photo Sup./Photog.	10,314,051	11,234,511	920,460	29,469	32,099	2,630

Sub-category	2021 Sales	2030 Sales	2021-30 Sales	2021 Space	2030 Space	2021-30 Space
Printing	12,107,799	13,188,339	1,080,540	44,028	47,958	3,929
Paper/Paper Prod.	6,427,597	7,001,217	573,620	32,138	35,006	2,868
Gifts/Cards/Novel.	21,375,497	23,283,117	1,907,620	71,252	77,610	6,359
Newsstands	1,195,832	1,302,552	106,720	2,392	2,605	213
Video Rent/Sales	19,432,270	21,166,470	1,734,200	97,161	105,832	8,671
Others	29,895,800	32,563,800	2,668,000	119,583	130,255	10,672
TOTAL	\$961,900,000	\$1,047,743,000	\$85,843,000	3,050,843	3,323,106	272,270

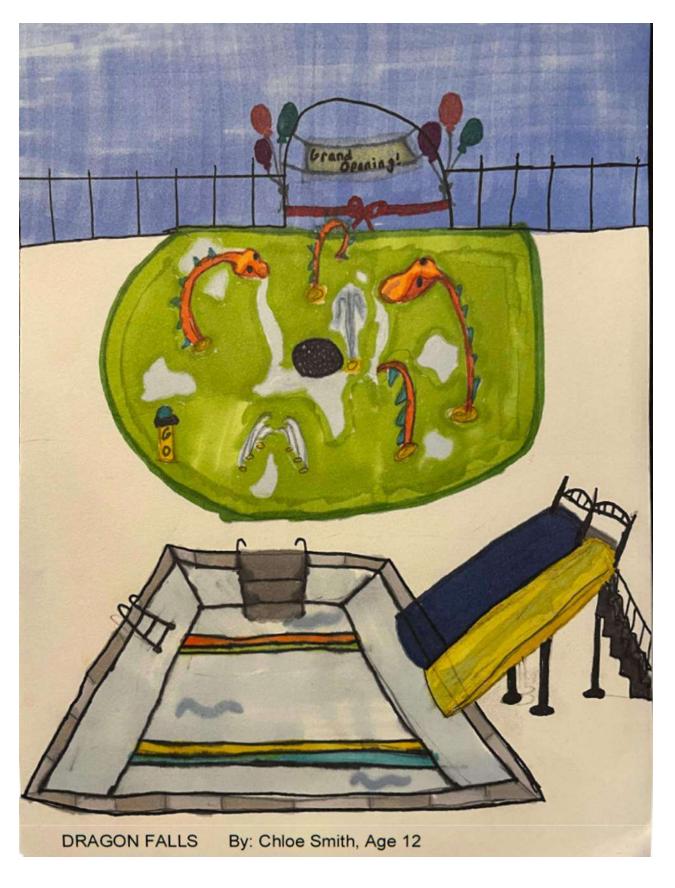
^{*}Developed by The Chesapeake Group, Inc., 2021.



Appendix E Student Art Submittals



GREAT PLACES Cert Contest **ORION TOWNSHIP MASTER PLAN 2021** My GREAT PLACE is 10-11 NAME AGE







memorandum

DATE: July 7, 2022

TO: Orion Township Planning Commission and Board of Trustees

FROM: Rod Arroyo and Matt Wojciechowski; Giffels Webster

SUBJECT: Changes to 2022 Master Plan Draft

The following memo summarizes the changes made to the last draft that was distributed for review. We have received several comments from the Planning Commission, Township Board, Oakland County Planning Department and Road Commission for Oakland County (RCOC). These changes were primarily related to corrections and clarifications; no policy changes were added or removed except for the Future Land Use map amendment to one parcel that was discussed with the Planning Commission on July 6, 2022.

Summary of Changes:

- Pg. 29 Table 1 updated with 2020 Census numbers and Fig. 1 updated with 2020 Census American Community Survey data.
- Pg. 48 Corrected to say that 'county' local roads are eligible instead of 'federal'
- Pg. 78 Corrected typo virtual open house was listed twice; one was corrected to state
 that "This chapter includes a summary of public input from the both open houses and the
 virtual open house."
- Pg. 123 Added "When appropriate, information will be shared regarding developments that are expected to significantly increase traffic" under Jurisdiction
- Pg. 124 Updated limits of Silverbell project (table)
- Pg. 125 Corrected local road to show 66' ROW (not 60") and corrected S. Newman Road future ROW to 120'
- Pg. 135 Residential density map reference correction Map 14 (not 15)
- Pg. 135 A sentence was added to the recreation designation description noting that "All public non-motorized trails within the Township are also designated recreation."
 (Comment from Oakland County Planning)
- Pg. 136 Updated Future Land Use map to change Utility-designated site to Single Family Medium Density (this parcel is zoned Railroad Freight Yard) and added two notes: one referencing density map and another noting that non-motorized trails have a Recreation designation.

- Pg. 143 Map correction; the map on this page was a duplicate of figure 31 (Gingellville Village: Maybee & Baldwin). It was replaced with the correct map showing the Decker Hamlet: Squirrel and Silverbell.
- Pg. 144 Map correction; the map on this page was a duplicate of figure 31 (Gingellville Village: Maybee & Baldwin). It was replaced with the correct map showing the Friendship Woods Hamlet: Clarkston & Baldwin.
- Pg. 146 Replaced photo of Fenway Victory Gardens after a comment about the previous picture's quality (Board Comment)
- Pgs. 153-161 Action Plan. Updated action tables per PC discussion
- Page 151, Added table abbreviation notes
 - S = Short term (1-3 years)
 - L = Long Term (3+ years)
- Page 153 1.e added "Coordinate with RCOC to ensure developments implement traffic safety measures and congestion strategies."
- Page 157 3.k. added "and RCOC" (supporting partner)
- Pgs. 210 -213 (appendix) Added student art contest submittals

RECEIVED



JUN 2 9 2022

Orion Township Planning & Zoning

OAKLAND COUNTY EXECUTIVE DAVID COULTER

ECONOMIC DEVELOPMENT

Scott E. Kree | Senior Planner Office: (248) 858-0389 | krees@oakgov.com

June 27, 2022

Commissioner Gwen Markham, Chairperson Oakland County Coordinating Zoning Committee 1200 North Telegraph Road Pontiac, MI 48341

SUBJECT:

County Code No. MP 22-06, Oakland County Department of Economic Development, Division of Planning & Local Business Development's staff review of the <u>Orion Township Draft Master Plan</u>

Update.

Dear Chairperson Markham and Committee Members:

On May 10, 2022, the Oakland County Department of Economic Development (OCED), Division of Planning & Local Business Development (PLBD) received a mailed letter from Orion Township, dated May 5, 2022, that initiated the review and comment period for the proposed **Orion Township Draft Master Plan Update**, (County Code Master Plan No. 22-06). Under the Michigan Planning Enabling Act, which took effect September 1, 2008, Oakland County, adjacent municipalities, and other jurisdictional authorities have 63 days to submit comments on Master Plan updates.

This review of the draft Master Plan will go before the Oakland County Coordinating Zoning Committee (CZC) on July 6, 2022. This date falls within the community's specified comment period. It is assumed that the adjacent Oakland County Communities were notified about the proposed draft Master Plan and review period by Orion Township. The draft Master Plan can be found at:

https://www.oriontownship.org/departments/planning zoning/master plan update.php

Staff Recommendation

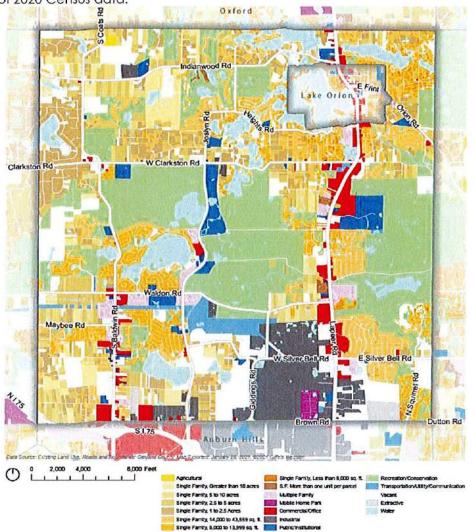
Based on the review of the surrounding communities' master plans, the Orion Township Draft Master Plan proposed update is <u>not inconsistent</u> with the plan of any city, village, or township that received notice of the draft plan. Oakland County has not prepared a countywide development plan, so there is no countywide plan with which to compare the draft amendment. Following is a detailed analysis and summation of the draft Master Plan update.

Select Summary Analysis of Content

The focus of this report is to present a clear understanding of the draft master plan document and describe changes in border land use through an analysis of the plan. Recommendations that may help make the document stronger are offered as a result of the analysis. The information included herein represents a summarized analysis of the proposed Orion Township draft Master Plan. Select sections are highlighted in this review with a focus on changes to borderline conditions and future land uses. Planning Staff at Oakland County last reviewed changes to the community's Master Plan in 2015, which was later adopted by Orion Township that same year. Communities adjacent to Orion Township include the City of Auburn Hills, Village of Lake Orion, Independence Township, Oxford Township and Oakland Township. The adjacent communities' master plans were used in the border compatibility analysis portion of this report.

Demographics

The proposed master plan has updated all demographic information using data from the 2019 U.S. Census Bureau American Community Survey (ACS), and the Southeast Michigan Council of Governments (SEMCOG). Orion Township has experienced 5% population growth since 2000. Staff recommendations below will address utilization of 2020 Census data.



Existing Land Use

Existing land uses were updated to reflect changes through 2020. Classifications have been modified to reflect additional density or intensity of land use details; however, they do not reflect actual use changes. Existing land use patterns along the community's borders remain essentially unchanged, with the new classification categories simply reflecting more detail regarding existing density patterns.

Community Facilities

This section is focused on the township's infrastructure and services. The section has been widened to include motorized transportation and other forms of mobility. Sidewalk and bicycle safety paths are promoted in the plan, both as part of existing and proposed trails, as well as components of complete streets. infrastructure portion focuses on the utility systems recent expansion and growing/stabilized capacity.

Environment

This section includes a focus on the protection and preservation of natural features remaining

within the township. Information developed by Michigan Natural Features Inventory (MNFI) is included along with best practices related to preventing the spread of invasive species as encouraged by the Oakland County Cooperative Invasive Species Management Area (CISMA). The Sustainability & Resiliency sub-section focusses on the planning implications of severe weather, long-term climate change, impervious surfaces and flood areas, stormwater management, and disaster mitigation planning for vulnerable populations.

Public Input

The township held three (3) public input opportunities during development of the draft Master Plan. In February of 2021 the township hosted a "Leadership Advance" session which included a strengths, weaknesses, opportunities, and threats (SWOT) analysis with township staff and select stakeholders. An in-person Master Plan Open House was held in June of 2021 which was followed immediately by a 4-day virtual open house. A Draft Master Plan Open House was hosted on May 18, 2022. The results of the sessions are outlined in the Plan and provide background and basis for many of the Master Plan goals and objectives.

Housing

Over three quarters of the township's dwelling unit inventory is made up of single, detached units, with almost 70% of the housing stock valued at over \$200,000 in 2019. The section touches on "missing middle housing", attainability and affordability. The Master Plan seeks to address attainable housing by targeting a wide variety of housing options that go beyond single-family detached housing. Examples include multi-family dwellings, manufactured housing, and missing middle housing types, which are house-scale building with multiple units (duplexes, quadplexes and cottage court bungalows). By supporting a variety of housing types the Plan seeks to expand the number of homes available across many price points.

Future Land Use

The proposed Future Land Use (FLU) plan, when compared to the FLU plan of 2015, includes several changes to the descriptions of FLU classifications. The FLU plan has been simplified by combining "Private Recreation" and "Recreation", and consolidating four single family designations into three, with minor changes to the underlying planned densities.

The Plan also includes two new classifications:

- "Special Circumstances" are land use designations that have legal agreements in place that regulate
 the density and layout of the subdivision. These areas are typically single family or attached residential in
 nature. There is a density map providing the regulated density of the residential developments included
 in this designation. This category also includes areas that have conditional rezoning agreements in place
- 2. "Planned Unit Development" designates sites that have been approved through the Township's Planned Unit Development process and have established development agreements. The density map provides the regulated density of residential developments included in this designation.

Several of the highlighted border changes below involve new classifications that do not reflect an actual change in land use. Rather, they reflect their status as "Special Conditions" or "Planned Unit Developments".

Finally, the Plan includes "Core Area of 15 Minute Neighborhood" designations. These are 15-Minute Neighborhoods defined solely by travel time and distance to a core mixed-use center by either walking or biking. The 15-Minute Neighborhood concept is based primarily on how far a person can walk or bike from a core mixed-use center. It could be measured in 5, 10 or 15-minute increments for each mode of travel based on the average speed of travel. Five minutes (1/4 mile) is generally a reasonable amount of time a person may choose to travel by walking for a short trip in a mixed-used setting, and 15 minutes is representative of a 3-mile easy bike ride. These travel areas are indicated as concentric circles radiating from a defined center. All four of these planning areas extend beyond the township's borders, reflecting the interconnectedness of communities and the need for pedestrian and other non-motorized planning within and among communities.

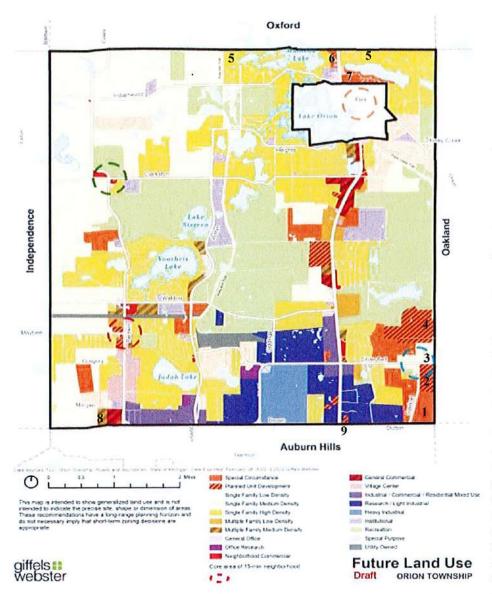
Our review of the FLU map along the borders of the township have been identified changes in nine (9) separate locations. An analysis of the change to FLU classification of select properties is provided as follows:

- 1. East Border with Oakland Twp.: East of Squirrel Road and south of Silver Bell the designation changed from Single-Family Medium Density (1-3/ac) to Special Circumstances (No density noted). This does not reflect a future land use. It reflects an existing single-family development that meets the new definition of the Special Circumstances designation. It is similar to area residential developments and constitutes a **compatible border**.
- 2. East Border with Oakland Twp.: Southeast corner of Silver Bell and Squirrel. Designation changed from Single-Family Low Density (.1-.5 / ac) to Planned Unit Development (4.8 / ac). This change reflects a Planned Unit Development approved by the township (County Code RZ 20-01). The residential character of this PUD blends well with nearby land uses and constitutes a **compatible border**.
- 3. East Border with Oakland Twp.: Decker 15 Minute Neighborhood. The designation does not denote any proposed land use changes on the plan map. Instead, the Plan notes:
 - "This Hamlet envisions a small settlement with some mix of uses not currently present in the area, but containing a form that remains compatible with the existing residential and rural character of the area. Uses

and development could include small-scale commercial uses in one or two-story buildings, potentially through the re-purposing of single-family buildings or new buildings that are compatible with single-family uses."

This designation constitutes a compatible border.

4.. East Border with Oakland Twp.: Along Kern Rd. – Designation changed from Private Recreation (a golf course) to Planned Unit Development to reflect an approved PUD which resulted in a single-family type housing development identified as the *Estates at Bald Mountain* that began construction in 2016. It is generally consistent with residential development patterns in the area and constitutes a **compatible border**.



- 5. North border with Oxford Twp.: Designation changes from Single Family Medium High Density (3-5 / ac) and Single-Family Medium Density (1-3 / ac) to Single Family High Density (3-5 / ac). This change reflects existing development patterns in the area, is generally consistent the residential development densities, and constitutes a compatible border.
- 6. North border with Oxford Twp.: West side of M-24 - Designation changes from Institutional and General Office to Special Plan is Circumstances. The reflecting approved an development pattern that is based on legal agreements related to a conditional zoning. This rezoning case was reviewed by the CZC in 2018 (County Code RZ 18-05). This is a compatible border.
- 7. Border with Lake Orion, north of village: Designation change from single family medium density to Special Circumstance. This area consists of a single-family development and a commercial/retail development known as The Shores of Long Lake. commercial uses are along the M-24 corridor while

residential uses create an extension of the village's street system which connects to the commercial development. All uses are existing and well established since the late 1990's when the development was created. This remains to be a **compatible border**.

8. South border with Auburn Hills: East side of Meadowbrook Ln. – Designation change from Single-Family Medium Density (1-3 / ac) to Multiple Family Medium Density (5-7 / ac). The southern property line abuts I-75, with Auburn Hills south of the I-75 freeway and right of way. Existing multiple family residential development is situated south of I-75 in Auburn Hills. This is a **Compatible Border**.

9. South border with Auburn Hills: Northeast Corner of Dutton and Lapeer Rd. – Designation change from Research / Light Industrial to Planned Unit Development. This reflects an already approved and partially built commercial development through a PUD. Commercial / industrial land uses are predominant along Lapeer Rd. This is a compatible border.

Recommendations

As stated throughout this review, recommendations have been made to strengthen the plan as a usable tool for the community. The following are staff recommendations for the Draft Master Plan:

- 1. Update the demographic data to include the 2020 Census information.
- 2. Consider referencing Map 14 Residential Density Plan on the Future Land Use Map for the new Special Circumstances and Planned Unit Development designations so users have an easy reference to determine approved densities for these designated properties.
- 3. Add the Recreational Future Land Use (FLU) designation to the recreational trails in the township. This recommendation is based on County Code 18-04 (Orion Township PC-2018-20) which was a rezoning of the Polly Ann Trail and Paint Creek Trail systems to have a zoning of Recreation-2 (REC-2) an outdoor recreation classification. The Proposed FLU map continues to show the trails without a use classification.

Oakland County Technical Assistance

A summary of programs offered by the Oakland County Economic Development Department that are relevant to Orion Township have been included on the final page of this review.

Oakland County Technical Resources

E. Kul

Oakland County compiles existing and future land use statistics for the county as a whole and for each community using generalized land use definitions. These documents are included as reference and to provide a snapshot of the Township's existing land use and development patterns.

Conclusion Summary

The Orion Township Draft Master Plan is very comprehensive and expands on strategies to include a strong emphasis on housing, healthy growth, hazard mitigation and the environment. The plan is well written, has obtainable goals, and should prove to be a useful tool to guide forecasted growth and natural preservation within the township.

Our review includes three non-binding recommendations that we hope will strengthen the plan. Oakland County does not have a Planning Commission or County Master Plan, so a full comparison and contrast of the information to County-wide Plans is not possible. Our staff review of the proposed Master Plan and a cursory review of adjacent communities' Master Plans have found the Orion Township Draft Master Plan to be <u>not inconsistent</u> with those plans.

Orion Township has received a copy of this review. Additional copies have been emailed to adjacent municipalities and other reviewing jurisdictions for their review and/or comment. On July 6, 2022, this review will go before the CZC which will consider a motion on the recommendation of the submitted draft Master Plan. If there are any questions or comments about this review and analysis, please do not hesitate to contact me at (248)858-0389 or email me at krees@oakgov.com.

Respectfully,

Scott E. Kree Senior Planner

CC:

Gary McGillivray, Oakland County Commissioner, CZC Vice-Chair
Phil Weipert, Oakland County Commissioner, CZC Member
Tammy Girling, Orion Township Planning & Zoning Director
Rod Arroyo, Planning Consultant at Giffels Webster
Matt Wojciechowski, Planning Consultant at Giffels Webster
Shawn Keenan, Auburn Hills City Planner
Brian Oppmann, Independence Township Planning & Zoning Director
Susan Galeczka, Clerk at Village of Lake Orion
Donald Mende, Oakland Township Planning Coordinator
Cheryl Lotan, Oxford Township Planning Coordinator
Brad Knight, Road Commission for Oakland County Director of Planning Environmental Concerns
Lori Swanson, Oakland TSC-MDOT Manager
Jim Tedder, ITC Area Manager
Jennifer Whitteaker, DTE Regional Manager
Brandon Hofmeister, Consumers Energy Senior VP of Government Affairs

Oakland County Planning Resources

The Oakland County Department of Economic Development (OCED), Division of Planning & Local Business Development (PLBD) offers a variety of programs to support Oakland County communities with innovative programming and assistance to create attractive destinations in which to live, work and raise a family. The chart below details those programs offered by the PLBD (a division of the OCED). Current participation in these programs and opportunities for future involvement are noted on the right of the chart. Additional information on all OCED programs can be found at www.oakgov.com/advantageoakland.

Program	Mission	Orion Township's Opportunities and Current Participation
Environmental Stewardship	Provide information, plans and options to promote conservation of the natural environment while supporting sustainable economic growth, development, and redevelopment.	Orion Township supports development that is cognizant of natural resource protection and management. County staff members are able to act in a supporting capacity with grant application identification, open space protection, and sustainable development practices as requested.
Historic Preservation Assistance	Support local efforts to maintain and enhance architectural and heritage resources through sustainable practices to enrich the quality of life for all.	County staff is able to assist with potential design concepts for adaptive reuse of any historic structures within the community.
Land Use & Zoning Services	Prepare and provide land use, zoning, and Master Plan reviews for communities to enhance coordination of land use decision-making.	Orion Township continues to send Master Plan Updates and Amendments to the County for review fulfilling the legislative requirements. Other coordination services are available upon request.
Trail, Water & Land Alliance (TWLA)	Become an informed, coordinated, collaborative body that supports initiatives related to the County's Green Infrastructure Network	The County fully supports the expansion of non-motorized facilities and protection of the natural environment. Oakland County can aid the community in non-motorized planning efforts through education and the identification of potential funding sources.
Brownfield Redevelopment Authority (OCBRA)	Provide assistance in the County's Brownfield initiative to clean-up and redevelop contaminated properties	The OCBRA can assist and coordinate with the State of Michigan Department of Environment, Great Lakes and Energy (EGLE, formally MDEQ) along with the Michigan Economic Development Corporation (MEDC), as needed, in an effort to prepare designated brownfields for redevelopment with the County's BRA.
Oakland County Household Hazardous Waste Program (NoHaz)	Help Oakland County residence to have an option for the proper disposal of household hazardous waste	Brandon Township is a participating community in the NoHaz program. Township Residents currently have access to this program which allows them to participate and properly dispose of household hazardous waste.



BOARD OF COMMISSIONERS

1200 N. Telegraph Road Pontiac, MI 48341-0475

Phone: Fax:

(248) 858-0100 (248) 858-1572

July 6, 2022

Tammy Girling, Planning & Zoning Director Charter Township of Orion 2323 Joslyn Road Lake Orion, MI 48360

Dear Ms. Girling:

On Wednesday, July 6, 2022, the Oakland County Coordinating Zoning Committee (CZC) held a meeting and considered the following Master Plan Update:

Orion Township Master Plan Update (County Code Master Plan No. 22-06)

The CZC, by a 2-0 vote (with one member absent), endorses the Oakland County Economic Development Department, Planning & Local Business Development's staff review of the Orion Township Draft Master Plan Update. The staff review finds the proposed Master Plan changes to be <u>not inconsistent</u> with the Master Plans of any of the adjacent communities that received notification of the proposed update. A copy of the staff review is enclosed.

A copy of the proposed draft Master Plan for Orion Township was reviewed as currently posted at the following web link: https://www.oriontownship.org/departments/planning zoning/master plan update.php. Adjacent communities and other reviewing jurisdictions are asked to contact Orion Township regarding the final adoption process for the proposed Master Plan, if of interest.

If further documentation is necessary regarding the CZC meeting, the official minutes of the July 6, 2022, meeting will be available following the next CZC meeting. If you have any questions regarding the review, please do not hesitate to contact me at (248)858-0389 or email me at krees@oakgov.com.

Sincerely,

Scott E. Kree Senior Planner

CC: Rod Arroyo, Planning Consultant at Giffels Webster

Matt Wojciechowski, Planning Consultant at Giffels Webster

Shawn Keenan, Auburn Hills City Planner

Brian Oppmann, Independence Township Planning & Zoning Director

Susan Galeczka, Clerk at Village of Lake Orion

Donald Mende, Oakland Township Planning Coordinator

Cheryl Lotan, Oxford Township Planning Coordinator

Brad Knight, Road Commission for Oakland County Director of Planning Environmental Concerns

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Jennifer Whitteaker, DTE Regional Manager 462

Brandon Hofmeister, Consumers Energy Senior VP of Government Affairs

Gwen Markham, Oakland County Commissioner, Chairperson Gary McGillivray, Oakland County Commissioner, CZC Vice-Chair Phil Weipert, Oakland County Commissioner, CZC Member Michael Gingell, Oakland County Commissioner, District 1 Michael Spisz, Oakland County Commissioner, District 3 Karen Joliat, Oakland County Commissioner, District 4

Received at BOT meeting
7/18/20

ORION TOWNSHIP CITIZEN ALERT #1

DID YOU KNOW the ORION TOWNSHIP 2022 5-Year MASTER PLAN COULD BE APPROVED AT THE JULY 20th ORION TOWNSHIP MEETING at 7pm, but it was changed by a Coordinated Zoning Committee meeting hours before the last meeting held in Orion Township on July 6th?

Two Oakland County Board members VOTED TO PRE-APPROVE THE ORION MASTER PLAN, with *their changes* made at an UNRECORDED Ad Hoc Coordinated Zoning Committee meeting held on July 6th at 11am, then submitted changes to Orion Township HOURS BEFORE the JULY 6th ORION TOWNSHIP MEETING at 7pm TO REVIEW THE MASTER PLAN with citizens! That means NO ORION TOWNSHIP CITIZENS HAVE ACTUALLY SEEN OAKLAND COUNTY CHANGES, SO WE MUST REJECT THE ADMISSION OF THIS 2022 ORION TOWNSHIP 5-YEAR MASTER PLAN COMPLETELY! The link below is to access documents on the Oakland County Board of Commissioner's website to find Oakland County meeting data. There was a quick statement about having received some input from Oakland County at the Orion Township meeting July 6th. You can find details about the changes on the Oakland County Website through the Ad Hoc Coordinated Zoning Meeting since the Packet for the meeting held on July 6th at 11am included a summary to pre-approve and change the Orion Township Master at oakgov.com.

Meeting Resources | Committees & Authorities (oakgov.com)

COMMENTS ARE BEING ACCEPTED AT ORION TOWNSHIP by directing to: Tammy Girling, Planning & Zoning Director, Charter Township of Orion, 2323 Joslyn, Lake Orion, MI. 48360;

Tammy Girling: Telephone: (248) 391-0304 ext 5000; (cell) 248-978-21321 or Email: tgirling@oriontownship.org and copy everyone else you think needs to know.

WE MUST REJECT THIS PLAN IN ITS ENTIRETY FOR THE FOLOWING ADDITIONAL REASONS

- 1) Insufficient citizens participated in the development and planning of this plan. Since 2020, hired subcontractor, Giffels-Webster, the Orion Township Planning Commission and only 3 citizens participated in the process; by comparison, Waterford involved 70 citizens in their process.
- 2) New higher density housing zoning is created, seemingly with no real regard to wetlands or woodlands; we need to create land conservancies to protect our resources from takeover. We currently have 11.5 acres at 625 Clarkston at risk since the out-of-town LLC who bought the property, has another project known as "value" apartments in Ypsilanti. The project has been changed from 50 2-story townhomes to two (30) duplex housing units, even though roads can't be expanded without destroying the wildlife habitat so we can provide "Fair, Diverse Housing Options" formally called low-income housing.
- The Plan calls for Lapeer Road to be expanded into an Interstate and roads like Clarkston are designated as Major Throughfares in 5 years. Is the new \$5 million in borrowed money for roads intended to import the workforce, build low-income housing to accommodate the new residents being invited to our region at our expense, at the same time as Public Safety, Homeland Security and Hospitals and in person medical access for citizens is being cut?
- 4) The Open House for the Master Plan was presented to citizens on May 18, 2022, rules require 63 days of comment is required, but since the County changed it on July 6th, the clock should be restarted.
- 5) Too many sections of the plans appear to have been designed by the World Economic Forum, complete with regional transportation and diverse attainable housing needs being noted as missing gaps.
- 6) Urbanization of the region appears to be the intent even granting a special Industrial Zoning to General Motors.
- NEW PUD Planned Unit Developments this new Zoning type appears to be designed so developers can get around zoning rules.
- 8) Natural Resources are not being preserved in favor of becoming the first US HUB for Advanced Engineering as redefined by the World Economic Forum. Oakland Gaynty approved giving \$3 million of our taxpayer dollars to the rich elitists who meet in Davos, Switzerland once a year.

ORION TOWNSHIP CITIZEN ALERT #2

DID YOU KNOW:

- Oakland County has been DEFUNDING SHERIFF (Down \$1.5 million as of 8-11-21) while creating a NEW INDIGENT LEGAL SERVICES DEPARTMENT (up \$1.8 million last year, with expansion to a full Department this year. Most attorneys are contracted at a rate of \$175 per hour.
- Oakland County DEFUNDED the Sheriff Budget for PARKS by 20%, after creating a NEW "Environmental Dept" who hired AECOM who decided UN theory that "no poverty" is best option for Oakland County to help climate change (is that why the sanctuary city policies?) This PARKS COMMISSION refused to change all contracts and rules documents for Oakland County Parks to PUBLIC PROPERTY instead of COMMISSION PROPERTY when another citizen presented a well written formal request to change ALL PARKS REFERENCES TO PUBLIC PROPERTY.
- Property Tax Increases have been included at the OCBOC April 29, 2021 meeting and more recent millage
 increases on May 12, 2022 have ONE FOR THE COUNTY, and ONE FOR PARKS that will take effect December of
 2022, and Headlee limits to the rate of inflation at record highs.
- Oakland County Citizens still paid about \$44 million last year for the DIA Temporary tax assessment we agreed to
 pay to prevent creditors of Detroit bankruptcy from selling off the art. The last annual report shows that almost
 all of OUR TAX money is paying legal and accounting.
- Oakland Spent so wastefully last year, when the 2021 audit was completed, there was a substantial deficit, but since we used to be managed in a fiscally responsible way before this administration, there was money transferred to balance. (OCBOC Finance 12-6-21 disclosed)
- Oakland County has two concerning tabs under the "Workforce Development Department" one for Refugees
 and Immigrants (who are being trained with our tax dollars instead of citizens) and the Clean Slate Act which is
 used to expunge criminal records, and this MICHIGAN LAW AS ENACTED ABOUT OCTOBER OF 2020, DOES NOT
 HAVE LANGUAGE PROHIBITING EXPUNGEMENT OF CRIMIAL RECORDS FOR NON-CITIZENS.
- Oakland County has executed a no rental income lease of our International Airport with the US Border Patrol that places taxpayers responsible for 100% of operational costs, less some minor user fees, with no local control. In February 2022, Airports were moved to be under the direction of Coulter Deputy Sean Carlson, who also manages Economic Development Division and now in charge of Airports and at the same 9:30AM meeting on February 24, 2022, the "Attainable Housing Trust" was created records moved to facilities?
- Oakland County Deputy Sean Carlson was the individual who presented the World Economic Forum Resolution
 and presentation when I attended the Economic Development Meeting in April. Oakland County was the only
 county offered this opportunity to become the "First US HUB" of Automation Alley, as redefined by the World
 Economic Forum, which can only eliminate jobs and prosperity in America, so why are we inviting this globalist
 takeover, or importing from elsewhere at the same time as jobs will continue to be robotized?
- Do you realize the Orion Township PRIMARY August 2nd BALLOT PROPOSAL for NORTH OAKLAND TRANSPORTATION AUTHORITY also will fund the Village of Orion Downtown Development Authority and "Orion Improvement Corridor" urbanization agenda and massive takeover of our region, with zoning and funding bonanzas for developers to support this industrial revolution, at taxpayers' expense?
- Oakland County has been digitizing our records, including real estate, identity, voting and other records, placed
 it in a "Super Index" to start a fee subscription service, and is making us completely hackable. Why is Oakland
 County enabling a contractor to create QR Codes for citizens for an Opinion Survey? QR CODES SHOULD NEVER
 BE USED ON HUMANS since designed for inventory control with data capture and tracking functions.
- Oakland County just created an Oakland County Land Bank, and it seems to be established to receive title and 50% tax capture for Brownfield of all real estate they foreclose on in any Oakland County community who does not have a "Right of First Refusal" on file which was needed to ensure local retains control, otherwise new online auction of foreclosed properties is expected to be completed by August 12, 2022.

From a concerned citizen, Kathryn Kenngdy: Kmae690@gmail.com

Courtney Keisman

Subject:

FW: Comments for 7/2/2022 Master Plan Meeting

RECEIVED

From: Stan Stevens <sastevens19@gmail.com>

Sent: Thursday, July 14, 2022 3:02 PM

To: Tammy Girling < tgirling@oriontownship.org > Subject: Comments for 7/2/2022 Master Plan Meeting

JUL 1 4 2022

Orion Township Planning & Zoning

We want to voice our objection to the proposal before the Planning Commission. This proposal will add high density attainable (low cost) housing, mass transit and other items which are detrimental to the life style and quality of life we now enjoy in Orion Township.

This proposal should be placed on the ballot to be voted upon by the residents. People move to Lake Orion to get away from what you are proposing. We moved here in 1977 for that exact reason.

The Orion slogan is "Where living is a vacation", please help me understand why you want to change it?

Sincerely, Stanley and Carolyn Stevens 3037 Canada Ct, Lake Orion, MI 48360

Courtney Keisman

Subject:

FW:

From: Andrea Pupkiewicz <andreapupkiewicz@gmail.com>

Sent: Wednesday, July 6, 2022 11:19 AM

To: Tammy Girling <tgirling@oriontownship.org>

Subject:

RECEIVED

JUL 06 2022

Orion Township Planning & Zoning

To whom ever it may concern,

I am writing you today on July 6, 2022 to openly reject the 5 year Master plan that is being put into action in Lake Orion Michigan. All my life my family and I have lived here and loved that it was like living a vacation and yes there might be a big lake you'd consider to be the reason why it's like living a vacation when in reality it's the beauty of the wetlands and being able to have that relaxation to escape to nature. If you decide to build on those lands is this place really what you like to call a vacation. I'm sure many of us people of lake orion wouldn't be calling it where living is a vacation, you might as well change it to where living use to be a vacation. This town deserves to be left alone and left in its glory not destroyed for greed and what you consider a investment towards a Brighter future.

Yours sincerely,

One pissed off resident of lake orion

Courtney Keisman

Subject: FW: 5 year plan

From: Aubrey Zufelt <a tierney5@gmail.com > Sent: Wednesday, July 6, 2022 12:49 PM

To: Tammy Girling < tgirling@oriontownship.org>

Subject: 5 year plan

RECEIVED

JUL 06 2022

Orion Township Planning & Zoning

Reject the 5 year plan and protect the natural beauty of Orion. Recent acceleration of development in the township has already begun to destroy the unique charm of the place we call home.

Subject: FW: Master Plan RECEIVED

JUL 0 5 2022

From: jan kruszewski < jkru55@yahoo.com >

Sent: Tuesday, July 5, 2022 8:38 AM

To: Tammy Girling <tgirling@oriontownship.org>

Subject: Master Plan

Orion Township Planning & Zoning

I disagree with your 5yr Master Plan. I moved here from W.Bloomfield in 2004 specifically because it wasn't W.Bloomfield. M24 traffic is horrible now, road noise is constant, and it goes against "Where living is a vacation"

We don't need to be a Royal Oak, Birmingham or Ferndale or even Rochester. We don't need a ton of shops and restaurants. They're all accessible from our area.

What we do need is continued green spaces, low congestion and Low Taxes.

Development adds to over utilization of existing infrastructure and with increase in population comes increase in societal problems.

Keep "Where Living is a Vacation" just that.

Thank You

Subject: FW: Master 5 year plan

RECEIVED

From: Tina Hein < tinahein 97@yahoo.com > Sent: Sunday, July 3, 2022 12:40 PM

To: Tammy Girling <tgirling@oriontownship.org>

Subject: Master 5 year plan

JUL 0 5 2022

Orion Township Planning & Zoning

Dear To whom it may concern,

I am a citizen in Lake Orion township.

I have read about the plan to use our natural resources, woodlands, and wetlands for more urbanization.

I reject this plan and prefer to preserve the lands

We have enough places for people to live here in Lake Orion.

It is already too congested.

We need to focus on plans to preserve our lands and the animals to.

If you need to follow up with me, you can call me: 810 310-0141

Sincerely,

Tina Hein

Sent from Yahoo Mail on Android

Subject: FW: Master Plan

JUL 0 5 2022

----Original Message----

From: Karen K <kkoneda24@gmail.com> Sent: Sunday, July 3, 2022 11:36 AM

To: Tammy Girling <tgirling@oriontownship.org>

Subject: Master Plan

To whom it may concern,

Orion Township Planning & Zoning

The Orion Township Master Plan in regards to housing seems to be more a reflection of external influence versus a reflection of those within the community. The Master Plan's disproportionate support for urban cluster homes IE townhomes and apartments, is not in correlation with the lifestyle people seek when living in Orion Township. While urban sprawl is inevitable, we chose to live in this community because of green space and water limiting an over abundance of growth. Building congestion is evident in other communities. This plan seems to be more accommodating to transient living versus those who build a life here spanning over years. A more appropriate cultural fit for this community is middle class homes with integrated green space. If prospective home buyers prefer cluster transient living conditions, they can live in Troy.

Sincerely, Karen Koneda

Sent from my iPhone

Subject: FW: Master plan RECEIVED

JUL 0 5 2022

From: joyce <joycejog4@protonmail.com>
Sent: Saturday, July 2, 2022 5:59 PM

To: Tammy Girling < tgirling@oriontownship.org>

Subject: Master plan

Orion Township Planning & Zoning

I guess I need to ask who's master plan? We've lived in lake orion 30 years. We moved here for the nature, lakes and small town feel. It is kinda like living up north without the drive. Reading about this 5 year urban master plan without getting public opinion is wrong. If I wanted to live in a crowded urban city I would have moved to one. Please re-think this agenda.

Sent from Proton Mail for iOS

Subject:

FW: 5 Year Master Plan Change***Reject

From: dl.greer <<u>dl.greer@att.net</u>>
Sent: Friday, July 1, 2022 1:46 PM

To: Tammy Girling < tgirling@oriontownship.org > **Subject:** 5 Year Master Plan Change***Reject

RECEIVED

JUL 0 1 2022

Orion Township Planning & Zoning

Sent from my Verizon, Samsung Galaxy smartphone

I am totally apposed to the "attainable" housing and design fitting URBAN areas.

. I have lived here 42 years, since 1980. I also lived here from 1963 to 1967. I graduated Lake Orion High.

I am very against the WEF and every single thing they stand for. I hope someone has investigated all they stand for. They are Global Predators. Don't let your pocketbook get ahead of your future. Lake Orion is a wonderful place to live right now.

I am disgusted with Oakland County for sending them 3 million. And now they can buy up wetlands??? Oh! After the "first right of refusal"

So much for protecting Wetlands.

If you let this happen, this will not be the county I grew up in. The WEF doesn't want you to own anything. But they think we will be happy.

Please do your research before you buy into this plan.

Linda Greer
42 year resident
Sent from my Verizon, Samsung Galaxy smartphone

Subject:

FW: Master Plan

RECEIVED

JUL 0 1 2022

From: bob steinheiser < bobsteinheiser@comcast.net >

Sent: Friday, July 1, 2022 8:31 AM

To: Tammy Girling < tgirling@oriontownship.org>

Subject: Master Plan

Orion Township Planning & Zoning

I agree with you that the whole Master Plan should be rejected. Who ever thought that changing are community to coincide with the communist elites of the World Economic Forum is a good idea. I would like to know the individuals responsible

for this dumb idea because I would like to vote them out of office.

Subject:

FW: Orion Twp. 5-Year Master Plan - July 6 Agenda

From: amratza@yahoo.com <amratza@yahoo.com>

Sent: Thursday, June 30, 2022 10:14 PM

To: Tammy Girling < tgirling@oriontownship.org>

Subject: Orion Twp. 5-Year Master Plan - July 6 Agenda

RECEIVED

JUL 0 1 2022

Orion Township Planning & Zoning

Greetings,

Please accept this letter as a plea to reject the Orion Township 5-Year Master Plan on the July 6th Agenda. A plan that serves the interests of the globalists of the World Economic Forum (WEF) is something we simply cannot stand for and expect to flourish in the long-term. The WEF is the proverbial wolf in sheep's clothing. Their boilerplate language for their goals of forging public-private partnerships sounds innocent enough, but behind their word salad is nothing short of fascism. As Kathryn Kennedy accurately pointed out in the letters to the editor of the Lake Orion Review, if WEF has their way, our 5-Year Master Plan will include us all owning nothing and being "happy".

I find it abhorrent that the Oakland County Board of Commissioners approved sending \$3 million to the WEF, even if it comes in the form of a donation to the U.S. Centre for Advanced Manufacturing. These funds are likely to be laundered towards one of their many shady initiatives under the guise of public-private partnership. We are flirting with disaster in any plan that bends to this criminal organization.

Over the generations, this community has been built into a treasure and something we can all be proud of. This treasure must continue to be nurtured, and any false step taken can be devastating to the biological and economical ecosystem that we've been able to cultivate. A Master Plan aligned to a WEF-supported agenda will devastate this community by design. This organization has a goal of one world government, sacrificing American sovereignty in the process. If we don't stand up at a local level, the snowball will be too large to stop at the national level. We must rise up here and now. Please reject this 5-Year Master Plan; there must be a better way forward, because I couldn't think of a worse way forward for our community and our families.

Thank you for your consideration,

Adrian Ratza

Subject:

FW: Master Plan

RECEIVED

----Original Message----

From: Kevin Breslin <nozkcb@yahoo.com> Sent: Thursday, June 30, 2022 2:42 PM

To: Tammy Girling <tgirling@oriontownship.org>

Subject: Master Plan

JUN 3 0 2022

Orion Township Planning & Zoning

My family and I moved to the area over 20 years ago essentially due to what the marketing slogan for Orion states, "Where living is a vacation".

Over the last several years we have seen a substantial increase in densely populate, Multi family developments which has had an unmistakable negative impact on traffic and the general quality of life in the Orion area.

At a very basic level, the infrastructure, especially the roads are simply not capable of sustaining these huge spikes in dense population.

By all appearances it appears that our local government representatives are caving, or worse are willing advocates of implementing an agenda driven by the leftist Federal government to densify populations in rural and suburban areas in a blatant attempt to change voting demographics for political purposes.

This is insidious, wrong and undeniably an unmistakable form of dereliction of duty in favor of furthering a political agenda.

As a 20+ year resident and taxpayer of Orion, I can't state strongly enough how opposed I am to this densification population of low-cost housing in our neighborhood to further a political agenda.

Sincerely,

Kevin Breslin

Subject:

FW: 5year master plan changes

RECEIVED

JUN 3 0 2022

From: Timothy Munsell < munselltimothy@yahoo.com>

Sent: Thursday, June 30, 2022 2:52 PM

To: Tammy Girling < tgirling@oriontownship.org>

Subject: Re: 5year master plan changes

Orion Township Planning & Zoning

Hi Tammy, these are the components I disagree with. Regional transit, diversified attainable housing, higher density zoning status. More traffic. Keep our natural resources, woodland, wetlands for the wildlife that live here. I moved from Chesterfield Township to Orion Township 9 years ago for the same reasons that Chesterfield did there, which this township is trying to do.

Thank you for your time

Sent from Yahoo Mail for iPhone

On Thursday, June 30, 2022, 2:39 PM, Tammy Girling < tgirling@oriontownship.org > wrote:

Hello,

Thank you for your comments. Just as a side note, by law we have to discuss the master plan every 5 years. The document itself is about an 1.5" thick with a great deal on information. Is there a particular component that you are opposed to?

Tammy Girling
Director
Planning & Zoning
2323 Joslyn Road, Lake Orion, MI 48360
O: 248.391.0304, ext. 5000 C: 248.978.2132

W: www.oriontownship.org

----Original Message-----

From: Timothy Mindel < munselltimothy@yahoo.com>

Sent: Thursday, June 30, 2022 2:32 PM

To: Tammy Girling <tgirling@oriontownship.org>

Subject: 5year master plan changes

I just read about it in the Lake Orion Review. None supporter of changing master plan. Keep Orion Township a place where living is a vacation. Make my interest in this matter a solid no. Sent from my iPhone

Debra Walton

Received after 6/1/22 PC Moeting

From:

Kathy <kmae690@gmail.com> Wednesday, June 1, 2022 4:30 PM

Sent:

Debra Walton

To: Subject:

Why does Planning Commission want to change Orion Township's Motto "Where living

IS a vacation" to "Where Living WAS a vacation?

Deb:

RECEIVED

Could you please distribute this letter to the Planning Commission members please. Thanks!

JUN 02 2022

Kathryn Kennedy

Orion Township Planning & Zoning

Dear Commissioner:

PLEASE UNDERSTAND, WE THE PEOPLE OBJECT TO THE URBANIZATION of our region; This MASTER PLAN Is detrimental to ALL CITIZENS and WILDLIFE currently living in Lake Orion. The fact that the entire Plan was done by a Subcontracted firm that appears to have listened to global and external influences is shocking. This plan does not represent the needs or wants of the community. I have only recently started attending Orion Township meetings, but another citizen advised me that only 16 employees participated in planning that started in 2020, but was not shared with the public until 2022. How many citizens were involved in the development of the Orion Township Master Plan? Waterford enlisted guidance from 70 citizens BEFORE having the Master Plan presented to the citizens. I saw the 5-Year Master Plan for the first time on May 18, 2022 at the Orion Township OPEN HOUSE TO REVIEW THE MASTER PLAN!

WE NEED NO NEW CONSTRUCTION, FREEZE ALL ZONING CHANGES and ABSOLUTLY NO PUD DEVELOPMENTS that appear to prioritize developers above citizens!

We do not want the Urbanization and destruction of natural resources this Agenda includes. This Agenda includes (3) more NEW BUSINESS ITEMS including a Hyatt proposal – likely one of 3 Hotels planned to be built across from Costco that will create blight since we are entering into a recession, whether you realize or not, and everything I have researched so far is not good.

school expansion likely needed if these muti-unit projects are approved. Pine Tree Elementary was recently converted for Special Education, but with all the Multi-Unit "Attainable Housing" Options listed as a Weakness in the Master Plan (Pages 70-71), these urbanization projects would force the need for more schools and all public services, increasing taxes further

UNFINISHED BUSINESS

CLARKSTON ROAD- INSIGHT LLC ZONING CHANGE PROPOSAL — only residents within 300 feet of property were notified, even though surrounding community has estate sized lots and is a wildlife refuge and breeding area in the region. It appears to me converting this natural, rolling, wildlife filled 11.5 acres would have NO BENEFIT FOR CITIZENS and would forever eliminate the nature currently expected by the longtime residents and taxpayers. It appears this is part of the concept to promote low-income "Attainable Housing" into our communities, but that would change our motto from Where Living is a Vacation, to Where Living WAS a Vacation!

The proposed zoning change involves Insight LLC as the purchaser and that itself is concerning for several reasons. According to the State of Michigan LARA website, this LLC had only been in good standing for three years since 2008. This LLC was not In good standing since 2011, changed ownership with Resident Agents in Muskegon first, now

Jenison, then on 5-19-2020 filed 2016 through 2020 Annual Reports late to "Restore" the Corporation Certificate the next day? Why in the world would we want to rely on that proven mismanagement to protect our sensitive environment surrounding our Lakes community?

RIDGEWOOD APARTMENTS PROJECT 625 Clarkston—This "Attainable" Housing project eliminates natural land (between Clarkston and Casemer Roads) and is not what is best for our community. In Ypsilanti, the developer's project is considered a "Value" apartment. These parcels are surrounded by longtime resident taxpayers with large lots who were not even notified unless they were within 300'. Most lots in the region have a single lot dimension exceeding 300'; this is not a reasonable proposal and WOULD PERMANENTLY DAMAGE OUR COMMUNITY in the name of Greed. In effect, all citizens North of Clarkston in the Subdivision most impacted by the elimination of the natural environment DID NOT RECEIVE DIRECT NOTICE. This development is in between multiple lakes — all surrounded by wetlands, water foul habitat, Deer, Sandhill Cranes, Red Winged Blackbirds, Orioles, Turkeys and much more wildlife.

There is No infrastructure, Roads, or Sewer currently on the property and residents do not want our environment and community altered. This specific proposal would create a need for Infrastructure and road where none is possible. Especially in between Pine Tree and Joslyn, that curved section of road between the lakes certainly does not need more traffic, and there is no place where a road is viable. In fact, since last year when they added a lane to LAPEER ROAD that pushed more concrete towards Buckhorn Lake, for this FIRST TIME since 1998, the Lake overflowed onto Lapeer Road, Clarkston Road, the commercial property at NW corner and WATER WAS PUMPED OUT OF THE LAKE INTO THE STORM SEWERS!!

This is not an acceptable project and is not suitable for the community. I believe a LAND CONSERVANCY not run by politicians is the best way the region maintains the environment the residents appreciate and support. Our tax money has been wasted and wetlands should not be developed since those always become flood zones.

OAKLAND COUNTY RECENT RESOLUTTIONS

Perhaps you are unaware, but on (5-12-22) the Oakland County Board of Commissioners VOTED FOR (12-9) a Resolution to pay \$3 million of our tax dollars to "accept the invitation" of the **World Economic Forum** to join the Third pillar of the "Automotion Alley" global initiative they claim to have promoted in 1999. In fact "Automation Alley" was a marketing strategy created in Oakland County Michigan in 1987 to ADD JOBS in Oakland County coming out of a recession. WEF has redefined "Automation Alley" with the OPPOSITE INTENT designed to ELIMINATE JOBS with the stated Digital Transformation of Manufacturing, eliminating zoning, and making us all hackable. You may have seen the global elitists who had their once a year meeting in Davos, Switzerland recently – these are the rich people who take their private jets around the world to try to sell us on the non-recyclable, battery powered, "green energy" they invested too heavily in and cybercurrency designed to replace US currency so they don't have to repay US deficit.

WE THE PEOPLE CHOOSE FREEDOM – WE OBJECT TO ALL DIGITIZING OF OUR IDENTITY, VOTING, REAL ESTATE, MEDICAL RECORDS and other RECORDED DOCUMENTS. You see, they know the top 1% (like them) pays 40% of all US taxes and except for America, the socialist agenda dominates the globe, for them it is all about POWER and CONTROL.

Oakland County has been chosen as a guinea pig for the WEF social experiment to see if adding disadvantaged into perceived richer neighborhoods creates Fair Housing. Is this enabling Real Estate Investment Trusts to control residential housing since recorded documents are being pushed into a "Digital Transformation" AS WE SPEAK? Whoever controls the digital data will control everything and that appears to be the globalist/socialist plan.

AECOM was hired by Oakland County to find environmental solutions, but after \$675,000 budget added to "Parks", and about 1 year later, the first presentation merely copied the illogical UN theory of "green energy" which includes Item 1 as "No Poverty". This Oakland County Board already created an "Attainable Housing Trust" and all sorts of new programs, in spite of having mismanaged the COUNTY INTO A DEFICIT BUDGET in 2021 They still continue funding Oakland Together free education and workforce training for residents and prospective residents, not just citizens! Conservation, not importation of disadvantaged residents from elsewhere, is the only logical solution.

THE ORION TOWNSHIP MASTER PLAN NEEDS TO BE DONE WITH THE INPUT OF THE CITIZENS WHO PAY FOR IT ALL; THIS GLOBALIST AGENDA MASTER PLAN IN UNACCEPTABLE. Thank you very much for your consideration. PLEASE REJECT Urbanization of our community.

Longtime Resident,

Kathryn Kennedy 248-981-9185

Sent from Mail for Windows

Donn Comments
MASTER Plan 3
Connents:
(19.39)
Dg. 181 - Is the
Non Single Family wants
Signify as 1 dwelling on 1 Apartment Building ?
on I Apartment Building ?
Pg 182-183-
ARE Covid STATISTICS
Necessary This is
A 5 year Master Plan. Will good Be Released as
a PAST Stastictis ENBRIDGE IN 2022 - 2027?
Page 147
1º Dicture 15 a
TERRIBLE TRIBUTE
LAR Den
OMENTO

Tammy Girling

From:

Gary Roberts <groberts.us@gmail.com>

Sent:

Wednesday, April 20, 2022 12:10 PM

To:

Tammy Girling Samantha Timko

Cc: Subject:

RE: Master Plan Draft

Hi Tammy, I know you sent this April 1 but sorry I didn't realize I was late typing up my notes. If there is any chance to pick up some of these comments if not done already that would be good.

Master plan:

- 1. There are a number of typos but probably already picked up.
- 2. History of trails has nice feature on map of Paint Creek but Poly Ann is hard to pick out if there. Pg 16
- 3. Existing Land use % numbers don't add up. Suggests way too much industrial which isn't labeled. Pg 23
- 4. Demographics don't agree with the MEDC numbers on our website. Pg.27 (I don't know which is better but they should agree)
- 5. Parks map is weak and hard to read. Pg 45
- 6. The watershed lines map need some township lines or some frame of reference Pg. 57
- 7. The words "Discourage Heavy industry" appear. I realize that we aren't promoting that but, in light of the recent GM announcement maybe those words could just disappear. Pg. 74
- 8. The Preferred Housing numbers as presented are confusing to me. Seems like they should add to 100%. Pg. 75
- 9. The "Vision" which I'll take to mean the vision of this Mater Plan, should include the phrase " promoting high quality new real estate investment in the community". Pg. 81
- We need a specific target to replace or redevelop underutilized properties to align with the vision and prominence of the community. Pg 84

(really thing of Estes, Huston, Georgia area)

- 11. ECON dev Strategy #3 should include a statement about leveraging the great GM investment in terms of retail, commercial, hotel and service support opportunities for downstream investment. Pg. 105
- 12. Retail Incubators in Strategy #5 creating these small temporary structures is odd to me. We don't really have a place for that and regardless of what is stated, they would compete with our real retailers.
- 13. Econ Dev strategy #8 also a little strange to me in that using "crowd funding" for community promotion is not really a master plan matter in my mind.

Maybe a Chamber of Commerce thing?

- 14. The Landfill needs analysis of surrounding land (owned by them) for development and goals for reducing the visual impact in terms of covering it with trees and plan material. We won't hide it but large eroded areas and trash blowing around behind a chain link fence are just basic things. South facing solar arrays are good idea. Pg 110.
- 15. Future Land use: I really was hoping for serious consideration of my suggestion made to the planner for extending the BIZ zoning to the south side of Judah. We are seeing that the BIZ is attractive to new developers in terms of higher density development and this area of the community is the best place for that investment long term, in my opinion. Pg. 136 +
- 16. Future land use maps on new neighborhoods seem right but the maps are just hard to read. Pg 141 +
- 17. Our IDDs are referenced in the doc but a map enlarging where they currently exist should be in the appendix or someplace.

Gary D. Roberts AIA

Strategic Communication Solutions

Orion Township Economic Development Consultant

9864 E. Grand River #110 -299

Brighton, Mi. 48116

734.604.4628

Subject:

FW: Master Plan comment

From: Tammy Girling <tgirling@oriontownship.org>

Sent: Friday, July 15, 2022 9:54 AM

To: Courtney Keisman < ckeisman@oriontownship.org>

Subject: Master Plan comment

Planning Commission:

I recently received a comment that page 113 seems to be in a strange location (not really related to the adjacent pages) that perhaps it should be moved to the amenity section.



Tammy Girling

Director
Planning & Zoning
2323 Joslyn Road, Lake Orion, MI 48360
O: 248.391.0304, ext. 5000 C: 248.978.2132

W: www.oriontownship.org



June 3, 2022

Tammy Girling Orion Township Planning Commission 2323 Joslyn Road Lake Orion, MI 48360

Reference:

2022 Notice of Intent to Plan Charter Township of Orion RECEIVED

JUN 2 4 2022

Orion Township Planning & Zoning

Dear Ms. Girling:

Thank you for the opportunity to comment on Orion Township's Master Plan proposed amendments.

There are multiple County Drains maintained and operated within Orion Township. The restoration and protection of the various Drainage Districts are an important objective of this office. Please be aware that my office is prepared to assist the Township in this endeavor under the relevant sections of the Michigan Drain Code.

Additionally, the County Drains located in Orion Township are within the Federal Phase-II Storm Water Program's "Urbanized Area," and therefore are subject to applicable Municipal Separate Storm Sewer System (MS4) permit requirements. Specifically, Post-Construction requirements include site plan review, water quality performance standards, channel protection performance standards, long-term operations and maintenance and an enforcement/tracking procedure.

Also worth mentioning is the goal of the Oakland County Water Resource Commissioner to be a leader in stormwater quality in the State of Michigan. WRC's new stormwater standards went into effect on May 31, 2021. Our new stormwater design standards can be found here:

https://www.oakgov.com/water/stormwater/Pages/Stormwater-Engineering-Design-Standards.aspx.

My office is prepared to assist the township with the design and construction of future sewer extensions and drainage facility improvements. We will continue to cooperate with timely reviews of plans and the issuance of permits relating to utility construction. I look forward to continuing our success in working with Orion Township.

Sincerely

C:

Jim Nash, Oakland County Water Resources Commissioner

Ryan Dividock, AICP, PCP - Oakland County Planning & Economic Development Services

Joe St. Henry, Secretary - Orion Township







QUALITY LIFE THROUGH GOOD ROADS: ROAD COMMISSION FOR OAKLAND COUNTY "WE CARE."

Board of Road Commissioners

Ronald J. Fowkes Commissioner

Andrea LaLonde Commissioner

Nancy Quarles Commissioner

Dennis G. Kolar, P.E. Managing Director

Gary Piotrowicz, P.E., P.T.O.E. Deputy Managing Director County Highway Engineer

Planning and Environmental Concerns Department

> 31001 Lahser Road Beverly Hills, MI 48025

> > 248-645-2000

FAX 248-645-1349

www.rcocweb.org

June 1, 2022

Tammy Girling, Planning and Zoning Director Orion Township 2323 Joslyn Rd Lake Orion, MI 48360

Orion Township Planning & Zoning

JUN 02 2022

Re: Orion Township Draft Master Plan Review

Dear Tammy,

The Road Commission for Oakland County has reviewed Orion Township's Draft Master Plan. Below are comments on the plan and suggested edits.

- Page 48 In the "Natural Beauty Roads" section, it is stated that "roads considered eligible for this designation are federal local roads..." but it is recommended that it say county local roads. Federal designation does not play a role in the eligibility of roads for natural beauty designation and county local roads is consistent with Part 357 of Act 451 (NREPA).
- Page 123 Under "Jurisdiction", we recommend including a statement
 mentioning that when appropriate, information will be shared regarding
 developments that are expected to significantly increase traffic. It is
 important to coordinate with RCOC early in the development process so
 that future safety or congestion concerns can be proactively addressed.
- Page 124 Under "Planned Road Improvements", Table 8 is missing some information for the Silverbell project. The full limits of the project are Brown, Giddings, Silverbell from Jamm Rd to M-24 (Lapeer Rd).
- Page 125 Thoroughfare Plan / Master Right of Way Plan Map
 - Attached is the RCOC's updated MROWP Map.
 - The legend shows "60 feet ROW" for local roads but the state legal minimum is 66 feet.
 - S Newman Rd (above Cole Rd and W Clarkston Rd) is shown in yellow but has a 120-foot ROW.
- Page 153 Under High-Quality and Diverse Housing "Zoning Action Items", item 1e, we recommend adding something to the effect of "coordinate with RCOC to ensure developments implement traffic safety measures and congestion mitigation strategies."
- Page 157 Under Economic Development "Advocacy Action Items", item 3k should include "...work with MDOT and RCOC..." to ensure that the RCOC is also included in activities associated with Oakland County roads.

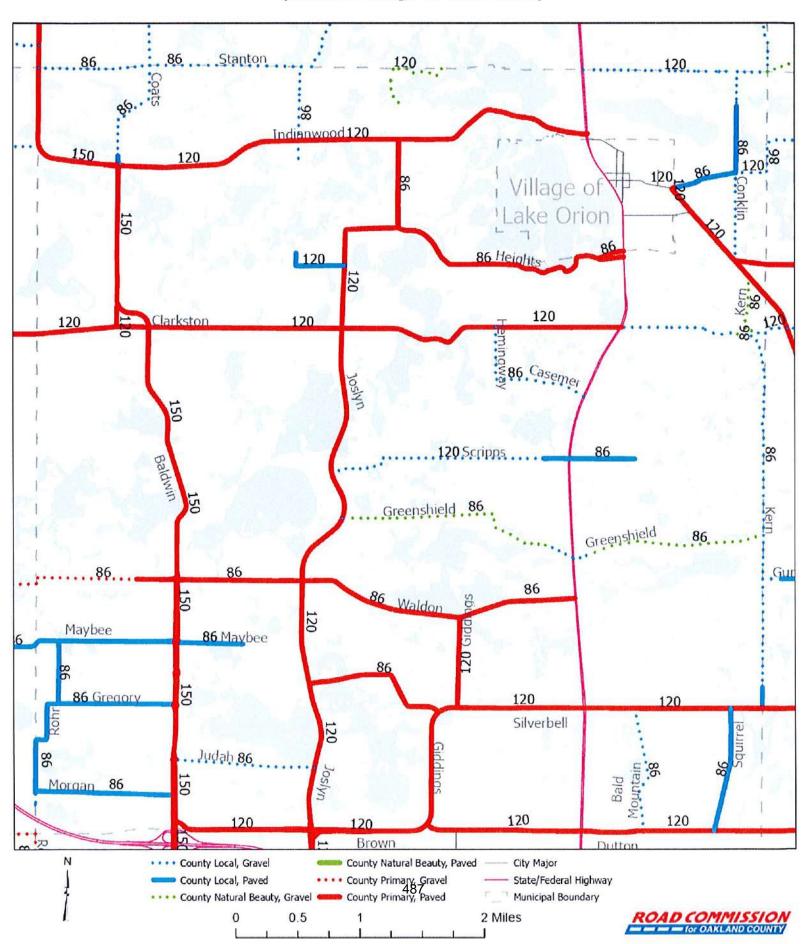
We appreciate the opportunity to review and comment. Please let us know if you have questions. Best wishes as you move forward with adopting and implementing your plan.

Sincerely,

Brad Knight

Director of Planning & Environmental Concerns

Master Right of Way Plan Orion Township (includes Village of Lake Orion)



RESOLUTION OF ADOPTION

Master Plan Prepared By Orion Township Planning Commission

WHEREAS, the Orion Township Planning Commission may prepare and adopt a Master Plan for the physical development of the Township, as empowered by the Michigan Planning Enabling Act of 2008, and

WHEREAS, Orion Township has contracted with a professional planning consultant to assist the Planning Commission with the technical assessments necessary to make the Master Plan for the Township that includes a Future Land Use Plan, Complete Streets Plan, Housing and Density Plan, Economic Development Plan and more, and

WHEREAS, Orion Township provided multiple opportunities for public input as part of the process including, but not limited to, two in-person open house workshops, one online open house, online resident survey, and multiple Planning Commission study sessions open to the public.

WHEREAS, the Planning Commission has held a public hearing on its proposed Master Plan on July 20, 2022,

NOW THEREFORE BE IT RESOLVED that the Orion Township Planning Commission hereby adopts this Master Plan for the Township, along with the text, maps, charts, graphs, and other descriptive materials contained in the Plan.

Motion by:	Supported by:	
AYES:		
NAYS:		
THIS	_th DAY OF, 2022.	
Scott Reynolds, Chairperson	Joe St. Henry, Secretary	

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Connecting People and Food

Connecting People and Food

June 29th, 2022

Agrihoods and Agritourism

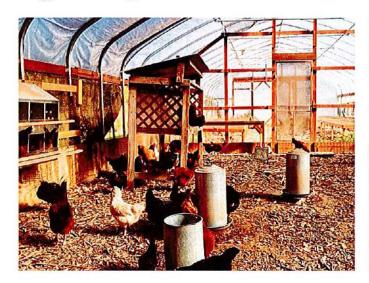


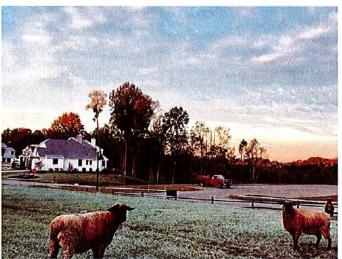
The farm to fork movement has been alive and well for a while now, helping people connect with their food while they cook and eat. Some communities are taking this idea to another level by creating spaces where food production is the focal point. These development-support agricultural areas, more commonly known as "agrihoods", differ from simply having a community garden in the neighborhood by more fully integrating farms, gardens, and food production processes into the recreational and social lives of community members. This close integration results in a rural feel, even in urban areas. Agrihoods are developed intentionally with this strong connection to agriculture at the fore when planning the community. Interest in being more closely connected to our food sources, nature in general, and each other, especially among millennials, has led to an increase and growth in the number of agrihood developments throughout the United States.

Components of an agrihood

Agrihoods come in various sizes and with different amenities and levels of engagement for residents. The main component is the presence of a central working farm, which could include livestock, row crops, orchards, and/or vineyards. Agrihoods can be as small as a handful of homes surrounding a large community garden (sometimes called "microhoods"), but most range from 100 to 1,000 residential units near a large working farm. More recently larger agrihoods of several thousand homes are being built near farms that have several hundred acres of production space.

In addition to a working farm, some agrihoods also have open space and protected areas, as well as smaller community gardens or greenhouses. Others may have other amenities to support recreational and social activities such as an event space, an on-site community kitchen, and horse stables. Those committed to sustainability and supporting the local ecosystem may also have solar panels, beekeeping, and building requirements such as LEED certification and Energy Star ratings.



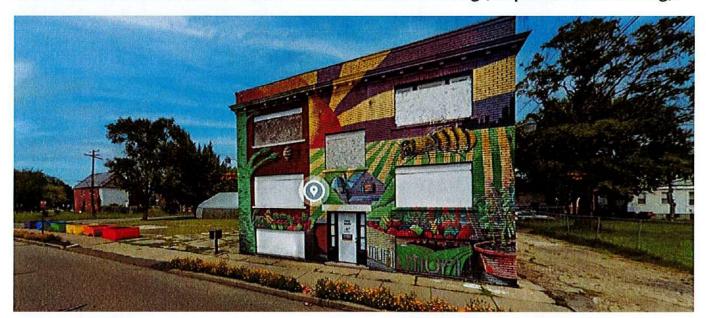


Sheep and chickens in Aberline Springs, located in Morrow, OH. Image Source (https://agrihoodliving.com/featured-communities/aberlin-springs/).

Agritourism

Michigan Urban Farming Initiative (MUFI) - Detroit, MI

MUFI is conprofit based in Detroit's North End that seeks to use urban agriculture to "promote education, sustainability, and community in an effort to empower urban communities, solve many social challenges facing Detroit, and potentially develop a broader model for redevelopment." The organization works to adaptively reuse the built environment, such as turning an old apartment complex at 7432 Brush St. into a community center complete with offices, food processing space, and a healthy food café. More information about MUFI can be found at www.miufi.org (https://www.miufi.org).



MUFI's location at 7432 Brush St., Detroit, MI. Image Source: www.google.com

Aberlin Springs - Morrow, OH

Aberlin Springs is home to a sustainable farm that uses organic practices, a community supported agriculture (CSA) program, a weekly farmers market, and a community chalet that hosts classes and special events to encourage farm to table eating and connectivity between residents and with nature. Three types of homes have starting prices between \$450K and \$900K. More information about Aberlin Springs can be found at Farm to Table Living – Aberlin Springs.

Agricultural tourism, or agritourism for short, is a set of activities that are secondary to the operation of a farm that bring members of the public to the site for educational, recreational, or retail purposes. These additional activities encourage and support agricultural economic development by diversifying the offerings that farms can provide to the community. When appropriate, communities should define agritourism uses in their

zoning code and permit them as secondary uses to an agricultural use, as well as provide standards to mitigate unnecessary impacts. An example of a local and recent agritourism expansion is Blake's Cider Mill in Armada hosting events and activities such as ice skating, yoga, cider-based alcohol drink tasting, fitness classes, crafting, and cooking contests at its orchard. Giffels Webster assisted in preparation of zoning amendments to enable the expansion of the Blake's operation.



Blake's offers recreation and entertainment for people of all ages, in addition to being a farm. Image Source: https://blakefarms.com

Benefits of agrihoods

Agrihoods are beneficial for many stakeholders in multiple ways, further fueling their popularity. The culture fostered by agrihoods is often of interest to those looking to embrace ustainable living, be surrounded by like-minded people, have access to green spaces, eat farm-fresh foods, unplug from technology, and live a lifestyle designed for the outdoors. Educational opportunities and activities are often provided for residents. Improved physical and mental health outcomes derived from eating healthy and nutritious foods, being physically active, feeling socially connected to others, and spending time outside are also benefits of living in an agrihood.

For developers, agrihoods offer a more cost-effective amenity than the traditional golf-course-centered suburb as well as higher demand. The development also often qualifies for tax benefits due to preserving green space and keeping agricultural land productive, or infill and brownfield redevelopment credits, depending on the location.

Since many agrihoods are centered around a working farm, many hire a farm manager. The stability and rate of pay is often better than that of other farmers, particularly new farmers without their own land. Nearby farmers also benefit from the addition of an agrihood to the area, as agrihoods often serve as education centers for agricultural topics and draw people interested in local agriculture to farmers markets and produce stands.

Zoning implications for agrihoods

Agrihoods can be a catalyst for neighborhood revitalization and a useful strategy for infill or brownfield redevelopment. Many agrihoods start when a farming family decides to develop some of its property for housing and maintain some of it for agricultural purposes. For communities that have agricultural areas, clear language regarding lot split requirements and processes is helpful. Additionally, clear regulations regarding the number and type of animals allowed is an important consideration, especially for places where agrihoods may be a good option for infill or brownfield development. Consideration for concerns that come with higher density such as access to roads, sewer and water connections, and increased congestion must be given, particularly where large agrihoods may be proposed.

* * * * * NOTICE OF PUBLIC HEARING * * * * *

The Charter Township of Orion Planning Commission will hold a public hearing on Wednesday, August 3, 2022 at 7:05 p.m., at the Orion Township Municipal Complex Board Room, 2323 Joslyn Rd, Lake Orion, MI 48360 on the following matter:

PC-22-28, GM Orion BET 2, Special Land Use Request to expand an automotive manufacturing facility located at 4555 Giddings Road (parcels 09-34-200-006 and 09-34-400-011).

If you are not able to attend, send correspondence to Orion Township Hall, 2323 Joslyn Rd. addressed to the Planning Commission to express your concerns and comments. A copy of the proposed Special Land Use is on file in the Planning & Zoning Department office and the Township Clerk's office and may be examined during normal business hours, 8:30 a.m. to 4:30 p.m., Monday through Friday until the date of the public hearing.

Orion Township will provide necessary and reasonable auxiliary aids, and services for individuals with disabilities at the public hearing upon advance notice by writing or calling Penny S. Shults, Township Clerk, 2323 Joslyn Road, Lake Orion, Michigan 48360; 248-391-0304, ext. 4001. Please contact the Clerk's office at least 72 hours in advance of the public hearing.

Scott Reynolds Planning Commission

Penny S. Shults Township Clerk



* * * * * NOTICE OF PUBLIC HEARING * * * * *

The Charter Township of Orion Planning Commission will hold a Joint Public Hearing with the Board of Trustees on Wednesday, August 3, 2022 (immediately following PC-22-28 Public Hearing at 7:05 p.m.) at the Orion Township Municipal Complex Board Room, 2323 Joslyn Road, Lake Orion, Michigan 48360, on the following matter:

PC-22-29, Baldwin Village Planned Unit Development (PUD) Concept and Eligibility Plan, located at 4410 & 4408 S. Baldwin Rd. (parcel 09-32-301-001), an unaddressed parcel 09-32-301-014 located at the NW corner of Morgan and S. Baldwin Roads, an unaddressed parcel 09-32-151-020 located north of 4408 S. Baldwin, and 4292 S. Baldwin (parcel 09-32-151-021). The applicant, RED Equities, LLC, is proposing to rezone the properties from Single Family Residential-1 (R-1), Suburban Farms (SF) and Brown Road Innovation Zone (BIZ) to Planned Unit Development (PUD) to construct a mixed-use development containing both residential and commercial components on approximately 67 acres.

If you are not able to attend, you may send correspondence to the Orion Township Hall, 2323 Joslyn Rd. addressed to the Planning Commission to express your concerns and comments. A copy of the proposed Planned Unit Development is on file in the Planning & Zoning Department office and the Township Clerk's office and may be examined during normal business hours, 8:30 a.m. to 4:30 p.m., Monday through Friday until the date of the public hearing.

Orion Township will provide necessary and reasonable auxiliary aids, and services for individuals with disabilities at the public hearing upon advance notice by writing or calling Penny S. Shults, Township Clerk, 2323 Joslyn Road, Lake Orion, Michigan 48360; (248) 391-0304, ext. 4001. Please contact the Clerk's office at least 72 hours in advance of the public hearing.

Scott Reynolds Planning Commission

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