



**AGENDA**  
CHARTER TOWNSHIP OF MERIDIAN  
PLANNING COMMISSION – REGULAR MEETING  
November 9, 2020 7PM

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1. CALL MEETING TO ORDER
2. PUBLIC REMARKS
3. APPROVAL OF AGENDA
4. APPROVAL OF MINUTES
  - A. September 28, 2020 Regular Meeting
5. COMMUNICATIONS
  - A. Merle Potter RE: Winslow Mobile Home Park
  - B. Jodie Emerson RE: Rezoning #20050
  - C. LeRoy Harvey RE: Green Stormwater Infrastructure Code Audit
  - D. Jessi Adler RE: Rezoning #20050
6. PUBLIC HEARINGS
  - A. Rezoning #20050 (DTN 2013 LLC), rezone three parcels totaling 31.63 acres located on the east side of Central Park Drive, west of Powell Road, and north of Grand River Avenue from RA (Single Family-Medium Density) to RD (Multiple Family – maximum eight dwelling units per acre).
  - B. Commercial Planned Unit Development #20-13034 (Meridian Mall Limited Partnership), amend commercial planned unit development approval to construct 2,500 square foot bank with three drive-up ATMs at 1982 Grand River Avenue.
7. UNFINISHED BUSINESS - None
8. OTHER BUSINESS
  - A. Mixed Use Planned Unit Development (MUPUD) ordinance review.
  - B. Grand River Avenue project.
9. REPORTS AND ANNOUNCEMENTS
  - A. Township Board update.
  - B. Liaison reports.
10. PROJECT UPDATES
  - A. New Applications - None
  - B. Site Plans Received - None
  - C. Site Plans Approved - None
11. PUBLIC REMARKS
12. ADJOURNMENT

**Zoom meeting ID: 872 0006 8286**  
**Zoom password: 5151**

**AGENDA page 2**  
CHARTER TOWNSHIP OF MERIDIAN  
PLANNING COMMISSION MEETING  
November 9, 2020 7PM

**TENTATIVE PLANNING COMMISSION AGENDA**  
**November 23, 2020**

1. PUBLIC HEARINGS
  - A. None
  
2. UNFINISHED BUSINESS
  - A. Rezoning #20050 (DTN 2013 LLC), rezone three parcels totaling 31.63 acres located on the east side of Central Park Drive, west of Powell Road, and north of Grand River Avenue from RA (Single Family-Medium Density) to RD (Multiple Family – maximum eight dwelling units per acre).
  
  - B. Commercial Planned Unit Development #20-15-13034 (Meridian Mall Limited Partnership), amend commercial planned unit development approval to construct 2,500 square foot bank with three drive-up ATMs at 1982 Grand River Avenue.
  
3. OTHER BUSINESS
  - A. Mixed Use Planned Unit Development (MUPUD) ordinance review.

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Individuals with disabilities requiring auxiliary aids or services should contact: Principal Planner Peter Menser, 5151 Marsh Road, Okemos, MI 48864 or 517.853.4576 - Ten Day Notice is Required.  
Meeting Location: Zoom web conferencing application  
Meeting ID: 872 0006 8286 Password: 5151

Providing a safe and welcoming, sustainable, prime community.



**CHARTER TOWNSHIP OF MERIDIAN  
PLANNING COMMISSION  
REGULAR MEETING MINUTES**

**DRAFT**

**September 28, 2020**

**Meeting held virtually using the Zoom web conferencing application**

**7:00 P.M.**

**PRESENT: Commissioners Premoe, Richards, McConnell, Hendrickson, Cordill, Shrewsbury, Trezise, and Blumer.**

**ABSENT: None**

**STAFF: Director of Community Planning & Development Mark Kieselbach, Principal Planner Peter Menser, Information Technology Director Stephen Gebes, Multimedia Producer Samantha Diehl.**

**1. CALL MEETING TO ORDER**

Chair Hendrickson called the regular meeting to order at 7:00 P.M.

**2. PUBLIC REMARKS - None**

**3. APPROVAL OF AGENDA**

Commissioner Richards moved to approve the agenda.

Seconded by Commissioner Shrewsbury

A correction was noted for item 4.A regarding the approval of minutes. The date was incorrect and should reflect September 14, 2020 not August 24, 2020. The motion maker accepted the correction as a friendly amendment.

VOICE VOTE: Motion approved unanimously.

**4. APPROVAL OF MINUTES**

A. August 24, 2020 Regular Meeting

Commissioner Richards moved to approve the minutes.

Seconded by Commissioner Cordill.

VOICE VOTE: Motion approved unanimously.

**5. COMMUNICATIONS**

Chair Hendrickson noted the communication submitted in the September 28, 2020 meeting packet.

**6. PUBLIC HEARINGS – None**

**7. UNFINISHED BUSINESS**

A. Special Use Permit #20061 (Elsabeth Engeda) expand an existing adult foster care home at 5340 Park Lake Road to accommodate up to 10 residents.

Motion by Commissioner McConnell to adopt the resolution approving Special Use Permit #20061.  
Seconded by Commissioner Premoe.

Planning Commissioners Discussion:

- The applicant submitted photos of the parking provided on the property for the Planning Commission to review since concerns were raised at the previous meeting.
- The plans were reviewed by the Fire Department and there were no concerns regarding emergency access to the property.
- The residents do not drive and the vehicles normally on the property are staff vehicles.
- The communication included in the packet does not list who submitted the concerns regarding the proposed expansion of the Adult Foster Care Home. Principal Planner Menser stated he contacted the couple but did not hear back so their names were only listed on the Agenda 5A Communications portion of the document.
- The Adult Foster Care Home has been in operation and has had no problems. The increase in potentially four additional residents is not expected to impact the surrounding neighbors.
- Safety measures are taken when a couple of the residents want to walk off the property. Staff escorts them across Park Lake Road. Commissioner McConnell offered additional ideas for safety using flags and other possible signage and the applicant was receptive to the feedback provided.
- Under the ordinance, the site standards listed in the staff memo on page 5 are alterable based on the character and situation being reviewed and are not a “must meet” requirement.

ROLL CALL VOTE:

YAYS: Commissioner McConnell, Premoe, Cordill, Shrewsbury, Richards, Blumer, Trezise, and Chair Hendrickson.

NAYS: 0

MOTION CARRIED: 8-0

## **8. OTHER BUSINESS**

### **A. Mixed Use Planned Unit Development (MUPUD) ordinance review.**

Commissioner Premoe proposed a motion to move to appoint a five member subcommittee, including Principal Planner Menser and Neighborhood and Economic Development Director Amber Clark and three Planning Commission members to draft a revision of the MUPUD Ordinance for review by the Planning Commission by the first meeting of December.

Seconded by Commissioner Trezise.

ROLL CALL VOTE:

YAYS: Commissioner Premoe, Trezise, McConnell, Cordill, Shrewsbury, Richards, Blumer, and Chair Hendrickson.

NAYS: 0

MOTION CARRIED: 8-0

Commissioner Premoe moved to nominate three committee members to work on the subcommittee: Chair Hendrickson, Commissioner Cordill and Commissioner Richards.

Chair Hendrickson had to regretfully decline the nomination due to his workload currently as Chief Deputy Clerk of Ingham County.

Chair Hendrickson nominated Commissioner Premoe accepted the nomination as the third committee member.

Motion by Commission Premoe

Seconded by Commissioner McConnell

VOICE VOTE: Motion approved unanimously.

Principal Planner Menser reviewed the categorized and summarized notes from the past few meetings relating to the MUPUD ordinance review.

Planning Commission Discussion:

- Hot button topics are the Concept Plan and PO Zoning.
- The need to tighten up the timing of the process.
- MUPUD and Form Base Code are very different (process and vision)
- The subcommittee should do research and come up with a list or definition for amenities.
- The cost of the amenities should be borne by the developers.
- The Climate Sustainability Plan (thru the Environmental Commission) could serve as an expression of the kinds of things (amenities) to look for because they have already been approved by the Township Board.
- Amenities enhance the public perception.
- Underground utilities are a standard, not an amenity.
- Define the term amenity (what we want it to be) and then provide examples.
- Create a list of amenities and make scalable to the size of the specific proposed project.
- An amenity today could become a standard tomorrow.
- Multiple phase projects should have stricter requirements in each phase for amenities. They should be consistent and carry through each phase of the project.
- Penalties and enforceability requirements on projects.

Commissioner Premoe requested setting meeting times for the subcommittee and asked Principal Planner Menser to schedule once in October and once in November for the group.

Chair Hendrickson suggested cancelling the October 12, 2020 Planning Commission meeting because the tentative meeting agenda didn't have anything scheduled and the subcommittee could use the time to work on their project.

Commissioner Richards moved to cancel the October 12, 2020 regular Planning Commission meeting.

Seconded by Commissioner McConnell

VOICE VOTE: Motion approved unanimously.

Commissioner McConnell had a question about Special Use Permit #20051 for 1732 Hamilton Road, Vehicle Repair Shop. He wanted to know if there were any conditions placed on the SUP regarding inoperable vehicles being parked in the parking lot. The owner may not be in compliance. Principal Planner Menser will investigate it.

**9. REPORTS AND ANNOUNCEMENTS**

A. Township Board update.

Principal Planner Menser provided a summary of the September 15, 2020 and September 22, 2020 Zoom Township Board meetings and noted the next Township Board meeting will be October 6, 2020.

B. Liaison reports.

- Chair Hendrickson provided an update from the September 23, 2020 Zoning Board of Appeals meeting.
- Commissioner Premoe provided an update from the September 17, 2020 Brownfield Redevelopment Authority meeting.

**PROJECT UPDATES**

A. New Applications- None

B. Site Plans Received

1. Site Plan Review #20-06 (Verizon Wireless), add antennae and equipment cabinet to existing wireless facility on roof of apartment building at 2900 Northwind Drive.

C. Site Plans Approved

1. Site Plan Review #20-98-31 (M&J Management) construct new 14 space parking lot at 1999 Saginaw Highway.

**11. PUBLIC REMARKS - None**

**12. ADJOURNMENT**

Commissioner Premoe moved to adjourn the meeting.

Supported by Commissioner Shrewsbury.

VOICE VOTE: Motion carried unanimously.

Chair Hendrickson adjourned the regular meeting at 8:43 p.m.

Respectfully Submitted,

Debbie Budzynski, Recording Secretary

## Peter Menser

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**From:** Meridian Township, MI <meridian-mi@enotify.visioninternet.com>  
**Sent:** Wednesday, October 14, 2020 1:54 PM  
**To:** Planning Commision (DG)  
**Subject:** Trailer park

Message submitted from the <Meridian Township, MI> website.

**Site Visitor Name:** Merle Potter  
**Site Visitor Email:** [MerleCP@att.net](mailto:MerleCP@att.net)

We live on VanAtta Rd and have to drive my the trailer park on the corner of Grand River Ave every day. It is an eyesore and poses possible danger to our community, as all rundown projects do. The township has assured others who have written about it that something will be done. We'd really like to see something done in our lifetime!! Would someone be able to share the township's plan with us?

Meridian Township Planning Committee

5151 Marsh Road

Okemos, MI 48864

4375 Arbor Drive

Okemos, MI 48864

November 4, 2020

Dear Commissioners McConnell, Premoe, Cordill, Shrewsbury, Richards, Blumer, Trezise, Chairperson Hendrickson, and Mr. Menser,

I am writing to urge you to **vote NO on the rezoning proposal #20050**. This land should be left zoned as RA (Single Family-Medium Density).

First of all, the location itself begets a traffic quagmire for 200 units. Secondly, building on the wetlands? Really? The long term plan was to have low density single family homes and green space. Third, if covid-19 has informed us of anything it is that families that have the financial resources have been leaving areas of congestion to move to less dense areas. And the point I am going to expound on is water/sewer issues.

I have the pleasure of owning a beautifully constructed 1955 ranch in the Forest Hills community for 16 years. The development of the township has been moderately paced over that time period. Since 2010, I have noticed a decrease in water pressure and flow after 8 am in the morning. This may be your canary in the coal mines moment. I had to invest in a low flow/ low pressure showerhead to rinse the hair conditioner away! I understand the township utilizes a circle system. However, I am certain the development of multi-unit 3 floor apartment building able to hold 200 units directly across from a 3 story condo development is going to have ramifications on water supply/ sewer limitations to the historically established neighborhoods.

Has there been a study on water/ sewer capacity? Has the planning commission taken into account the age of the existing infrastructure? Subdivisions are begetting other subdivisions and tying into water resources without thinking about the daily draw of demand and supply. And what happens if all the older homes tie into the sewer? Yes, I found I had a drain field in the front yard when the cast iron sewer in my home degraded this spring.

Another thought - the renters will be sending their children to Cornell Woods for school. Would you have your grade school age child walk/bike/skateboard across Grand River Road?

Thank you for reading and taking my point of view into consideration as you deliberate and hopefully vote **NO on rezoning proposal #20050** for that parcel. Thank you for your hard work and due diligence in creating and crafting a beautiful area we all want to live in. Let's make Okemos charming and walkable!

Kind regards,

Dr. Jodie Emerson

Forest Hills Homeowners Association Board Member



**To: Planning Commission**  
**From: LeRoy Harvey, Environmental Programs Coordinator**  
**Date: November 6, 2020**  
**Re: Green Stormwater Infrastructure Code Audit**

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The Environmental Commission (E.C.) invites the Planning Commission to participate in an “Environmental Review of Meridian Township’s Policies and Procedures.” We realize that many of your decisions have environmental impacts and that your expertise and experiences can help guide the Township as we not just “grow greener” – but seek ways to work smarter, save time, simplify processes, and promote sustainable, low-impact development and redevelopment.

Initially, the E.C. is focusing on a “Green Stormwater Infrastructure Code Audit.” While we welcome environmental-related ideas for policies and procedures at any time, we see this as a positive step forward and are excited to move forward on Phase 1 (low-hanging fruit) and Phase II (changes that expand options for homeowners and developers).

Please see the attached letter and recommendations compiled with assistance from Cliff Walls, Tri-County Regional Planning Commission. We look forward to your comments, questions, guidance and help moving these changes forward and proceed with a larger review of our policies and procedures.

Thank you for your consideration.

Attachment:

1. Letter and Summary of Phase 1 and Phase II Recommendations.



Clinton County  
Clinton County Road Com.  
Delhi Charter Twp  
Delta Charter Twp  
DeWitt Charter Twp  
City of DeWitt  
City of East Lansing  
Eaton County

City of Grand Ledge  
Ingham County  
Lansing Charter Twp  
Lansing School District  
City of Lansing  
City of Mason  
Meridian Charter Twp  
Michigan State University  
Waverly Community Schools

**Administrative Support:**

Tri-County Regional  
Planning Commission  
3135 Pine Tree Road.  
Suite 2C  
Lansing, MI 48911  
(517) 393-0342  
Fax (517) 393-4424

To: Meridian Township Environmental Commission  
From: Clifford Walls, GLRC Coordinator  
Date: 10-29-20  
RE: Meridian Township Green Stormwater Infrastructure Code Audit

With help from the Greater Lansing Regional Committee for Stormwater Management (GLRC) Coordinator, Meridian Township's Environmental Commission performed an audit of the Township's Code of Ordinances. The goal of this audit was to identify sections of municipal code that may discourage, complicate, or outright prevent the widespread adoption of green infrastructure in the Township. Using a Green Stormwater Infrastructure (GSI) Audit Workbook developed by the Wisconsin SeaGrant, Township regulations were reviewed to identify any barriers to green infrastructure stemming from outdated, unclear, or prohibitive code language.

With a Municipal Separate Storm Sewer System limited to Township owned properties, much of the permitting and design of stormwater management infrastructure at private developments falls outside of the Township's purview and is instead administered by the county Drain Commission. However, the Township's zoning, landscaping, and other non-stormwater specific regulations can still have great influence on the potential adoption of green infrastructure practices. These areas were the focus of this exercise.

The GSI audit identified various codified barriers that fall into two categories. The first category of barriers is best described by a lack of language defining, allowing, or encouraging green infrastructure. While the Township Master Plan and Code of Ordinances express the Township's desire for sustainability and to preserve its natural resources, nowhere is green infrastructure mentioned by name as a valuable tool to achieve it. Green infrastructure features are not defined and there are no purpose statements indicating the Township's support for their installation. In the absence of clear language and intent, the likelihood of GSI implementation is determined by the interpretation of the code by staff, builders, and developers. Solutions to barriers in this category can be addressed by broad purpose statements that communicate the Township's desire for developers to propose or include more green infrastructure in their plans.

The second category of barriers are more technical in nature and are related to either specific requirements of the ordinance or Township processes. Some present outright obstacles to GSI implementation while others are simply opportunities to optimize specific standards to either accommodate green infrastructure or discourage the advance of turf and hardscape. Some of these obstacles could also be overcome by making minor changes to code language but are considered Phase 2 recommendation because their adoption would more significantly impact current processes or require new layers of Township approval.

Recognizing that the remedies to these different obstacles will require layers of discussion and consideration by multiple commissions and the Township Board, it is recommended that these barriers

are addressed in a phased approach. The following Phase 1 recommendations address the absence of GSI language and recommend minor changes to codify the Environmental Commission's existing goals. Rather than prescribing new requirements, Phase 1 recommendations will seek to clearly encourage the implementation of GSI. In contrast, Phase 2 recommendations focus on structural or procedural changes of a technical nature that expand the options available to homeowners and developers.

It should also be noted that the Environmental and Planning Commissions, staff, and Township Board must determine which of these suggested changes are desirable and/or feasible in Meridian and do not conflict with other Township goals or ordinances. Any change should also conform with the requirements of the county drain commission and any other relevant authority. The following recommendations are simply areas that deserve a closer look. Once Township priorities and possibilities are identified, then begins the work of drafting specific language for inclusion in the Code.

A handwritten signature in black ink, appearing to read 'C. Walls', with a long horizontal flourish extending to the right.

Clifford Walls  
GLRC Coordinator

## Phase 1 Recommendations

### **Use purpose statements to specifically encourage green stormwater infrastructure and naturalized drainage in the Code of Ordinances.**

Though existing purpose statements (Section 86-5) and review criteria (Section 86-156) either mention outcomes that can be achieved through GSI or allude to natural stormwater solutions, there is no direct mention of Green Infrastructure, Low Impact Development, or other specific reference that encourages a naturalized, engineered stormwater control measure.

Section 86-5: "Encourage the preservation and use of lands, open space, and natural resources in accordance with their character and suitability for particular purposes and limit the improper use of land and natural resources."

Section 86-156: "Stormwater detention, retention, transport, and drainage facilities shall, insomuch as practical, be designed to use or enhance the natural stormwater system on-site, including the storage and filtering capacity of wetlands, water features, and/or the infiltration capability of the natural landscape. Stormwater facilities shall be designed so as not to cause flooding or the potential for pollution of water features or groundwater, on-site or off-site."

Add goal/purpose about how low impact design/GSI/naturalized drainage is a preferred feature.

*Example: "It is the purpose of these standards to promote the use of green infrastructure or vegetated stormwater management measures, where suitable, to manage stormwater runoff."*

### **Clearly state green infrastructure implementation goals in the Master Plan.**

Currently there is no direct mention of green stormwater infrastructure in the Master Plan. GSI is a tool to meet some of the Township's stated goals in the "Preserve Open Space and Natural Areas" section, such as "conserve water retention areas, linking natural areas, promote sustainable growth, water quality protection...". There is an opportunity to include a direct reference (or stated preference) for GSI.

The Master Plan does reference the TCRPC Water Policy document which does expand on GSI and watershed protection, but there is no specific commitment to it.

Consider stating GSI goals directly during the next Master Plan update.

*Workbook Example: "It is the goal of the Township to implement policies, investments, standards and actions, including the use of green infrastructure, that will protect and enhance water quality within the Township and its watersheds."*

**In the Master Plan, describe green infrastructure and water quality beyond its drainage/infrastructure utility.**

GSI has many community benefits beyond drainage and flood control. It can increase property values, sequester carbon, reduce energy and chemical usage, increase biodiversity and provide placemaking benefits. Promote the multitude of benefits of GSI techniques in private and municipal projects in Master Plan.

**Include GSI pilot/municipal projects in Master Plan objectives.**

Specific language such as “complete a permeable paving demonstration project in a municipal parking lot” helps in grant applications.

**Define “Low Impact Development” or “Green Infrastructure” in the Code of Ordinances.**

Green Infrastructure and Low Impact Development is not defined in the Code. There are stated goals/preferences for reducing impervious surfaces/protecting water/reducing runoff/maximizing green space, etc that GSI helps achieve, but it should be defined in the Code in order to promote it throughout.

An inclusive definition of green infrastructure can be: “Vegetated stormwater management measures. Swales, bioretention areas, rain gardens, amended soil areas, pocket or modular wetlands, stormwater trees, vegetated or green roofs, and similar practices *specifically designed to provide water quantity and water quality treatment of stormwater runoff, and to promote evapotranspiration and infiltration of stormwater.*”

**Add definitions of the different GSI practices to Code of Ordinances.**

Adding definitions of the different green infrastructure practices themselves (rain garden, bioretention, bioswale, etc) is especially important to providing guidance and encouragement to applicants and effective standards for its use in the community.

**Include definitions of rainwater-harvesting and stormwater control elements in Code.**

Include definitions or illustrations of green roofs, planter boxes, rain barrels and cisterns; this ensures reviewers and designers will know that these elements are allowed or encouraged. There is currently no mention of rain barrel, rain collection, etc in municipal code.

**Promote naturalized landscaping for use in stormwater treatment practices in Landscaping standards/specifically allow native plantings in lawns and front yards.**

Adding language like *“rain gardens, naturalized landscapes, and vegetated stormwater controls may be incorporated in lawn areas where planned and designed to receive stormwater runoff”* or *“The incorporation of stormwater trees, native plants, and other vegetative stormwater control measures into landscaping plans are encouraged”* makes it clear that these are allowable features. Referencing the function of its design helps reduce confusion or abuse of the ordinance, preventing a property owner from justifying a neglected lawn/landscape as a “naturalized landscape.”

Currently, no occupancy can be granted until a lot has been “seeded, covered with sod, or covered with appropriate ground cover.” Language could be added to include that native/deep rooted plants may be used. Make it known that native plants are “appropriate ground cover” and may be used (with or without review/approval).

**Promote native plants in the Lake Lansing Residential Overlay District.**

“Section 86-442 (10) Stormwater” requires that runoff from new construction directed towards Lake Lansing shall be filtered through a vegetated area, a minimum of 20 feet in width, before entering the lake. It states that the vegetated area may include a grass lawn.

Encourage the planting of native, deep rooted buffers to receive this runoff.

**Add “reducing runoff” as a goal for parking lot landscaping requirements.**

Currently, Section 86-758 indicates that parking lot interior landscaping “shall be installed and designed to control traffic, provide shade, screen views into and within vehicular use areas, and separate parking.” The inclusion of “reducing runoff,” either in a following sentence or within the existing language, will help communicate that goal. The word “shall” may be too strong, so a separate sentence encouraging it may be more appropriate.

## **Phase 2 Recommendations**

**Encourage that parking lot islands, cul de sacs, and other parking lot landscaping are designed for stormwater treatment. Create a process to waive numerical, spacing, and species requirements in landscaping areas in exchange for GSI.**

Actively encouraging the use of islands and perimeters for green infrastructure gives important direction to site planners. Landscaping in parking lots, parking lot islands, and cul de sacs can mitigate urban heat island effects, beautify what is otherwise hardscape, and be co-designed as green infrastructure for stormwater treatment. Encourage this practice.

Existing numerical, dimensional, and species requirements may conflict with the design of these vegetated stormwater controls. Waivers can allow variation where needed to accommodate green stormwater infrastructure implementation.

For Parking Lot Landscaping standards, the Code is currently prescriptive:

Section 86-758:

"A minimum of two canopy trees shall be provided for every 10 parking spaces, meeting the following standards:

1. Canopy trees shall be a minimum of two inches in caliper at time of planting.
2. Conifer trees shall be a minimum of eight feet in height at time of planting.
- d. A minimum of 50% of each landscaped area, at time of planting, shall be planted with grass, ground cover, shrubs, or other living vegetation."

Similar with cul de sac requirements:

Section 62-64

- a) A minimum of one canopy tree or one conifer tree shall be planted for every 1,000 square feet of ground area within each cul-de-sac island.
- b) Canopy trees shall be a minimum of three inches in caliper and shall be planted at least 10 feet from the back of curb.
- c) Conifer trees shall be a minimum of eight feet in height and shall be planted at least 15 feet from the back of curb.
- d) Canopy trees shall be maintained so the lowest branch is a minimum of 13 feet above the elevation of the street surface.

The Township should exempt these requirements if the design serves the interest of stormwater control.

*Example: "The planting plan may be varied to accommodate the design of vegetated stormwater control measures, so long as the total number of trees required is met. The use of deciduous trees (which may function as stormwater trees) is encouraged."*

*Example: "The integration of depressed bioretention areas used for landscaping and stormwater management is strongly encouraged. Where areas are designed specifically for stormwater management, the planting and dimensional requirements may be varied"*

*as necessary to ensure the area functions effectively for stormwater treatment, so long as the equivalent amount of landscaping, planting, or screening is provided.”*

**Allow vegetated stormwater management areas, such as bioretention areas, rain gardens, stormwater trees or other plantings, to count towards required landscape minimums.**

Requiring ornamental landscaping in addition to bioretention areas or other GSI is a significant barrier. Often, there will not be enough area on the site to accommodate both.

Allow variation in landscape requirements in exchange for GSI implementation.

*Example: “The planting plan may be varied to accommodate the design of vegetated stormwater control measures, so long as the total number of trees required is met. The use of deciduous trees (which may function as stormwater trees) is encouraged.”*

**Allow greater flexibility in parking deferments.**

Current language indicates that the purpose of parking deferrals is to eliminate unused paved areas and unnecessary levels of stormwater runoff. However, it states that areas of land where parking construction was deferred shall not be used to satisfy landscaping requirements or stormwater detention/retention requirements. While the intent is likely to prevent stormwater ponds from being sited in these areas, the Township could encourage bioretention/naturalized drainage by offering deferments in exchange for utilizing these areas for GSI.

**Encourage or require that preliminary or sketch plans include stormwater measures and landscape techniques for initial review.**

Early review of land use concepts helps identify opportunities to integrate green infrastructure into landscaping and drainage. Putting grading/drainage and landscaping plans on the same sheet can illustrate where and how landscaping and stormwater management can be integrated.

**Encourage the integration of vegetated stormwater controls into screen or buffer areas.**

Current language is prescriptive on design. Section 62-64 requires a landscape buffer 20 feet wide when a subdivision entrance is along a major road. It states the buffer shall include trees, shrubs, berms or walls. Section 86-756 requires a vegetated buffer and vertical screen for parking lots adjoining residential districts or public streets. Per Code definitions, “When a screen is called for, this shall be a dense evergreen planting area or solid fence as determined and approved by planning commission.”

The inclusion of language allowing for variation if co-designed for stormwater, and/or indicating a preference for naturalized buffers, can loosen this prescriptive requirement.

Example: *“The buffer planting plan may be varied to accommodate the design of vegetated stormwater control measures, so long as the equivalent amount of screening is provided.”*

### **Allow vegetated open channels/curb cuts in lieu of curb and gutter.**

Options for swale drainage, or partial curb-and-drain profiles with inlets for bioretention can allow for enhanced water quality and infiltration. Current parking lot requirements (Section 86-756) do offer flexibility to waive curb and gutter requirements for parking lot exteriors and islands. However, one criterion is that the parking lot has fewer than 25 parking spaces, which is limiting.

A process for a waiver exists, but it’s recommended to include language promoting “curb cuts” and inlets for bioretention and reference them as practices that could waive curb and gutter requirements.

Section 62-62: requires 6 inches straight faced curb and gutter on all streets and roads in accordance with the standards of county road commission.

### **Offer waivers of design or architectural provisions to accommodate stormwater harvesting/control measures (planters, cisterns, green roofs, etc).**

Where there are waivers for standards, “siting of green infrastructure measures” should be a specific reason for the grant of a waiver.

Currently, section 86-440 MUPUD 3 A/B/F offers design flexibility in exchange for amenities like porous pavement, the reduction of impervious surfaces, more greenspace, etc, but GSI should be encourage by name. There are many amenities listed under a wide variety of goals. An Overall purpose statement, or one withing each district regulation section, that communicates the Township’s preference for GSI, would be clearer. Offer flexibility in design, upon approval, if it is for a stormwater control. “Siting of green infrastructure measures” should be listed as a reason for a waiver.

### **Allow stormwater control measures to be sited within setback areas.**

Allowing ponds, bioretention areas and other surface stormwater controls within setback typically increases the density that can be achieved on site. Currently, half of the area of a detention or retention pond counts as “pervious surface” under the pervious surface percentage requirement.

Increasing the percentage of stormwater ponds that is considered “pervious” can reduce the total amount of turf grass planted on site.

Include “siting of green infrastructure” as a permitted yard encroachment (Section 86-564).

### **Clearly encourage permeable/porous pavement.**

Current code language requires “concrete or asphaltic” surfacing. While there are porous asphalt and concrete options, that is not obvious to the average person. Add “Permeable pavement is encouraged and may be use upon approval of the Township engineer.”

There is reference to porous pavement in Section 86-440 as a possible amenity in mixed use PUDs, however it is listed as one of many possible design features and limited to this section of the Code. The above suggestion makes the Township’s preference known to developers of all sites and homeowners looking for options to redo their driveways.

### **Reduce the Maximum Lot Coverage percentage unless a portion is permeable.**

The current impervious yard coverage limitation (Section 86-754) is 35%. It’s possible to lessen the allowable cover unless a portion is permeable or allow for expanded parking if that expanded area is permeable.

For example, East Lansing’s existing code indicates that: *“In all residential districts, the amount of paving in a front yard and in a side yard along a street on a corner lot shall not exceed an amount equal to 25 percent of the front yard area as defined in section 50-9 of this chapter or up to 35 percent where 10 percent of the paving is pervious paving material.”*

### **Consider maximum rather than minimum frontage and setback requirements.**

Per the dimensional requirements form (Section E) Current setback and frontage requirements are set as minimums. Reduced setbacks and frontages requirements make for reduced roadway/driveway length and smaller areas of turfgrass. Consider setting a ceiling rather than a floor.

### **Include a roof material and design exception for Green Roofs.**

Currently code (86-368) requires residential roofs follow prescriptive design and material specifications. There is exemption for alternative energy/solar panels, but not for green roofs.

Add Green Roofs as an eligible exemption upon approval of the Township.

### **Designate staff person to field citizen questions regarding GSI and develop procedures to address common GSI questions from residents.**

It is important that all staff know to transfer questions to a knowledgeable person or department, and having a written procedure for common requests greatly facilitates both the use of these techniques and the management of neighbor inquirers and concerns.

For example, many in the region believe rain collection is illegal. By offering guidelines and encouragement for installation, the Township can reduce these concerns. Having a point person within the township to field general questions or concerns regarding GSI (and its legality under the code) is an important step.

November 5, 2020

RE: Rezoning Proposal #20050

Dear Planning Commissioners –

I'm writing today to urge you to **vote NO on the rezoning proposal #20050**. This land should be left zoned at RA (Single Family-Medium Density).

While I realize this meeting is strictly for the rezoning, you MUST CONSIDER THE FULL PICTURE of the planned development to make the best long-term decision for this township. A decision that will have impacts for generations to come.

**Major reasons to deny the rezoning request:**

- 1) This rezoning significantly deviates from Meridian Township's Master Land Use Plan that calls for that land to be used for lower density single-family dwellings.**
  - a. TRUTH: Meridian Township needs more single-family, medium-income affordable housing, not high-density apartments and duplexes.
  - b. EDIT: In seeing the updated site plan, it now appears there will be a few single-family units as well; that is good, but still not consistent with the master plan. Even if it's rental property, it should be limited to single-family style properties, not high-density apartments or duplexes.
  - c. TRUTH: What is the point of a Master Plan, one that is only 3 years old, if you're not going to follow it?
  
- 2) This plan deviates from *Goal 1 of the Master Plan that says PRESERVE AND STRENGTHEN RESIDENTIAL NEIGHBORHOODS*, with the measure as median home value.**
  - a. TRUTH: High-density apartments do not qualify in this category. This land should be preserved for single-family houses only.
  - b. EDIT: In seeing the updated site plan, it now appears there will be a few single-family units as well; that is good, but still not consistent with the master plan. Even if it's rental property, it should be limited to single-family style properties.
  
- 3) This plan deviates from *GOAL 2: PRESERVE OPEN SPACE AND NATURAL AREAS, specifically Objective B: Conserve wetlands, floodplains, and other water retention area. Discourage development within wetlands, floodplains, floodplain fringe areas, and water retention areas. Minimize infiltration of salt, fertilizer, herbicide, and pesticide* and also *Objective A: Adopt policies and programs that maximize the preservation of open spaces, natural areas, other undeveloped areas and agricultural land uses in the Township***
  - a. TRUTH: The DTN plan would significantly impact the wetlands on the property, requiring a Wetlands Use Permit. This is not in keeping with the township's

desire to conserve wetlands, in fact, it is encouraging it. **Anytime a proposal calls for a wetland use permit should be a red flag and an automatic NO vote.**

Our land is precious and once those areas are gone and the ecosystems disrupted you cannot get them back. It is likely the permit will be for discharging of storm water into the wetland which is very environmentally unfriendly.

- b. TRUTH: The current zoning of RA (Single Family-Medium Density) meets both of these objectives, which would leave more open space, as well as conserve the wetlands and floodplains that are in that area.
- c. TRUTH: This plan will not minimize erosion and intrusion into wetlands, it will increase it. **It is no possible to build near or on a wetland without completely changing the ecosystem.**
- d. TRUTH: I have a feeling there will be a lot of fertilizer and pesticides used to maintain perfect landscaping – these chemicals will end up in our groundwater. For those of us in the area who are still on a well, we do not appreciate those types of chemicals leaching into the system.
- e. TRUTH: I know development is inevitable, but we've seen too much destruction of our woods and natural habitats - forcing the wildlife into our neighborhoods and roads. **I don't want to hear a single complaint from the residents or the township about too many deer if you continue to pave paradise.** Especially the amount of pavement needed for up to 400 cars if you're planning on up to 200 families in this development.

**4) This plan deviates from *Objective B of Goal 1: Ensure new residential developments meet high standards of visual attractiveness, health and safety, and environmental sensitivity. Minimize erosion and the intrusion of roads, pathways, houses, and driveways into wetlands and floodplains in residential developments.***

- a. TRUTH: Multiple story, high-density apartments and duplexes built in a wetland are not visually attractive, nor environmentally sensitive.
- b. TRUTH: This plan will not minimize erosion and intrusion into wetlands, it will increase it. **You cannot build near or on a wetland without completely changing the ecosystem.**
- c. TRUTH: I know development is inevitable, but we've seen too much destruction of our woods and natural habitats - forcing the wildlife into our neighborhoods and roads. I don't want to hear a single complaint from the residents or the township about more deer if you continue to pave paradise.

**5) The traffic study included with their application is ineffective and inappropriate for the types of housing they want to use, based on the construction of mostly single-family houses, and the application admits that the project will add 200 families. This is likely to be families with MULTIPLE CARS which will increase the traffic even further than the projections.**

- a. TRUTH: Let's say each family has 2 cars – pretty common in Michigan. That is an additional 400 cars, and you're projecting a minimum of 750 trips a day from this development, way above best practices.

- b. TRUTH: The Central Park/Grand River intersection is one of the busiest, dangerous and most congested due to there being no dedicated left-turn signals in either direction. You sometimes sit through 3-5 cycles at the intersection before you can turn. Adding an additional 750 trips per day will only exacerbate this problem. The recent redesign of the road down to two lanes means traffic will only back up even further.
- c. TRUTH: The Central Park corridor where this development will be is already taxed. It is poorly built on a curve, and this will add entrances and more traffic entering and exiting directly on that curve – a dangerous proposition. In addition, Powell Road was never designed to handle the volume of traffic that this development would put on it – it's partially dirt and there is a low-lying wetland section that floods periodically and closes the road. This additional volume of cars will only damage that road further.

**Additional Reasons to deny the request:**

- 6) In their application DTN says it will meet *Goal 4 - GOAL 4: MAINTAIN AND EXPAND A DIVERSE PARK SYSTEM*
  - a. TRUTH: A walkway through their private property is not a public park. This is a very weak argument and not consistent with the master plan to promote open spaces for all township residents.
- 7) In their application, DTN says they are meeting *GOAL 7: PROMOTE EFFICIENT AND SUSTAINABLE GROWTH PRACTICES* by installing electric car charging stations.
  - a. TRUTH: Again, this is a weak argument, as that is not encouraging sustainable land use or maintaining open spaces. In fact, that is only encouraging more pavement and vehicle use, instead of green space and public transportation.
- 8) Regarding *GOAL 5: MAINTAIN ESSENTIAL PUBLIC SERVICES Objective A: Ensure that any future growth is consistent with the Township's present or planned capacity for sewage treatment, public water, and other utility systems.*
  - a. Have you considered the burden on these systems? What is the burden on the drains in the area? The drains that already are too old, overworked and in need of repair? What will adding all this pavement and 200 families do to those systems? What is the impact to the overall watershed?

I hope you take these concerns and considerations to heart, and think of the best interests of the township, the land and future generations to vote NO on this rezoning.

Thank you,  
Jessi Adler, Forest Hills Homeowners Association Board Member  
1580 Hillside Drive  
Okemos, MI  
48864  
517-230-9923



**To:** Planning Commission

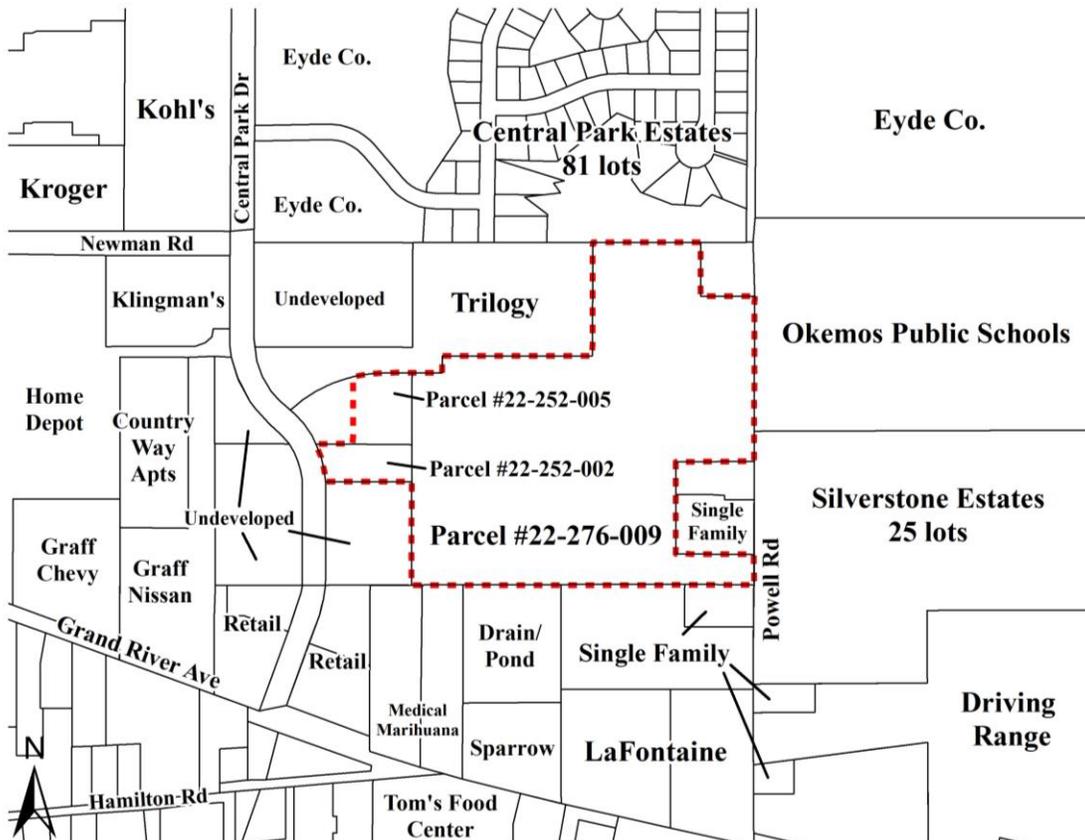
**From:** Peter Menser, Principal Planner

**Date:** November 6, 2020

**Re:** Rezoning #20050 (DTN 2013 LLC), rezone 31.63 acres located on the east side of Central Park Drive, west of Powell Road, and north of Grand River Avenue from RA (Single Family-Medium Density) to RD (Multiple Family - maximum eight dwelling units per acre).

DTN has requested the rezoning of 31.63 acres consisting of two entire parcels and a portion of a third parcel located on the east side of Central Park Drive, north of Grand River Avenue from RA (Single Family-Medium Density) to RD (Multiple Family - maximum eight dwelling units per acre) with four conditions. The parcels proposed for rezoning include Parcel #22-252-002 (1.139 acres), Parcel #22-276-009 (29.494 acres), and the eastern portion of Parcel #22-252-005 (2.248 acres).

### LOCATION MAP



**Rezoning #20050 (DTN 2013 LLC)**  
**Planning Commission (November 9, 2020)**  
**Page 2**

Parcel #22-252-002 has approximately 150 feet of frontage on Central Park Drive. Parcel #22-276-009 has 647.57 feet of frontage on Powell Road in one location and an additional 115.39 feet of frontage in an area further south. All three parcels are undeveloped.

**Conditions Offered**

The applicant has voluntarily offered the following four conditions on the requested rezoning:

- Limit the number of dwelling units to no greater than 220 units.
- No fewer than 25 single family dwelling units.
- No buildings greater than two stories.
- Enclosed garages will be provided for every dwelling unit.

Rezoning conditions run with the land and apply to the current owners and any future owners of the properties. Township Board approval is needed to amend or remove rezoning conditions. As detailed further down in the memorandum, staff estimates approximately 246 units could be built on the site. Maximum building height is limited to 2.5 stories or 35 feet in the RD zoning district.

**2020 zoning amendment**

In an effort to attract diverse housing projects to the community, in early 2020 the Township Board adopted an amendment to Section 86-376 of the Code of Ordinances (Multiple Family Residential Districts) to allow a mix of detached single family and multiple family dwellings in the RDD, RD, RC, and RCC zoning districts. The amendment created a new provision allowing single-family detached dwelling units in the RD, RC, and RCC zoning districts, in addition to those already allowed in RDD by special use permit, and established a 50 percent maximum standard for the number of single-family dwellings in a multiple-family project, among other revisions. The new provisions of the amendment will apply to a future development on the properties proposed for rezoning.

**Concept Plan**

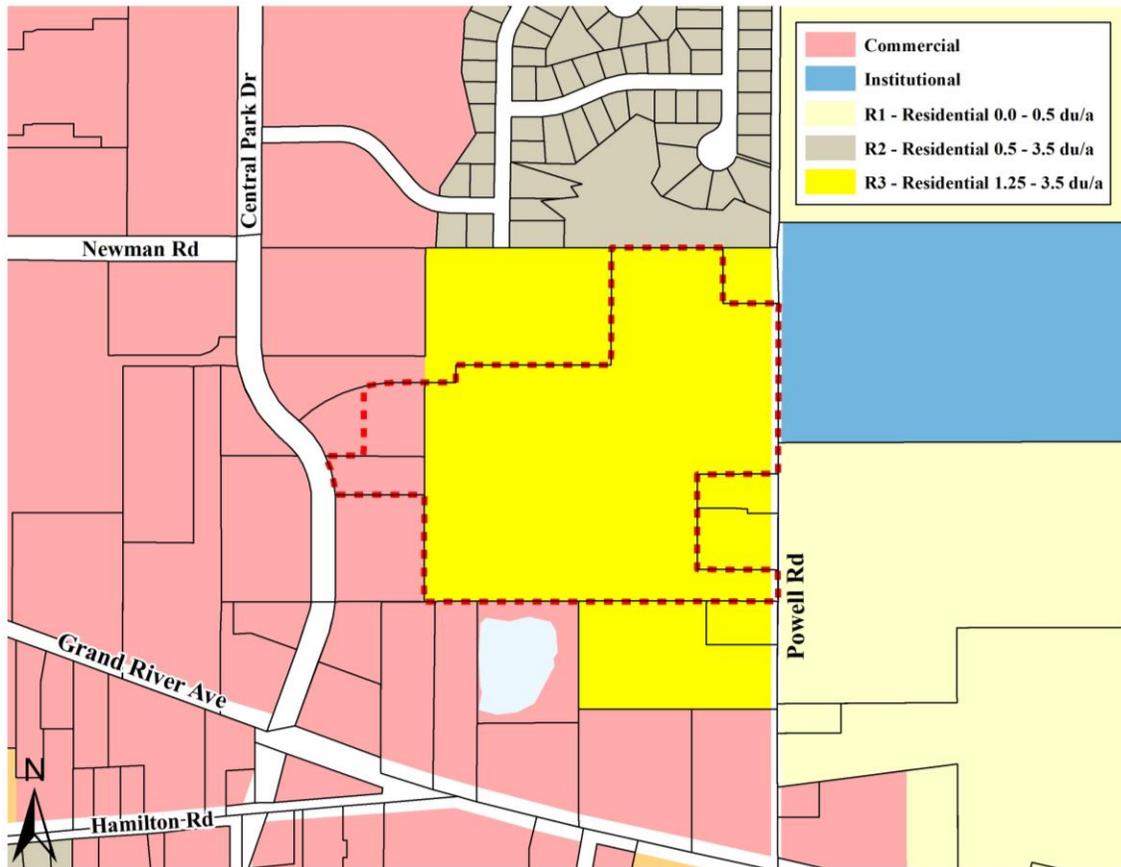
In 2018 the applicant submitted a concept plan for review by the Planning Commission and Township Board depicting a multiple family housing development on the property. A revised concept plan incorporating feedback from those meetings has been provided by the applicant, which depicts a mix of multiple family and single family dwellings totaling 206 units. The concept plan has been provided for informational purposes only and is not under consideration at this time. Review of the current request should focus only on whether the proposed RD zoning is appropriate for the site.

If the property is rezoned a separate development review process will take place. Any multiple family housing project with three or more units must receive special use permit approval from the Planning Commission. A special use permit from the Township Board is also required for constructing a group of buildings totaling more than 25,000 square feet in gross floor area. Both of the aforementioned special use permits would require separate public hearings.

### Master Plan

The Future Land Use Map from the 2017 Master Plan designates the majority of the land proposed for rezoning in the R3-Residential 1.25-3.5 dwelling units per acre (du/a) category and a small westernmost portion in the Commercial category. The proposed rezoning to RD (Multiple Family – eight du/a) is inconsistent with the Future Land Use Map designations.

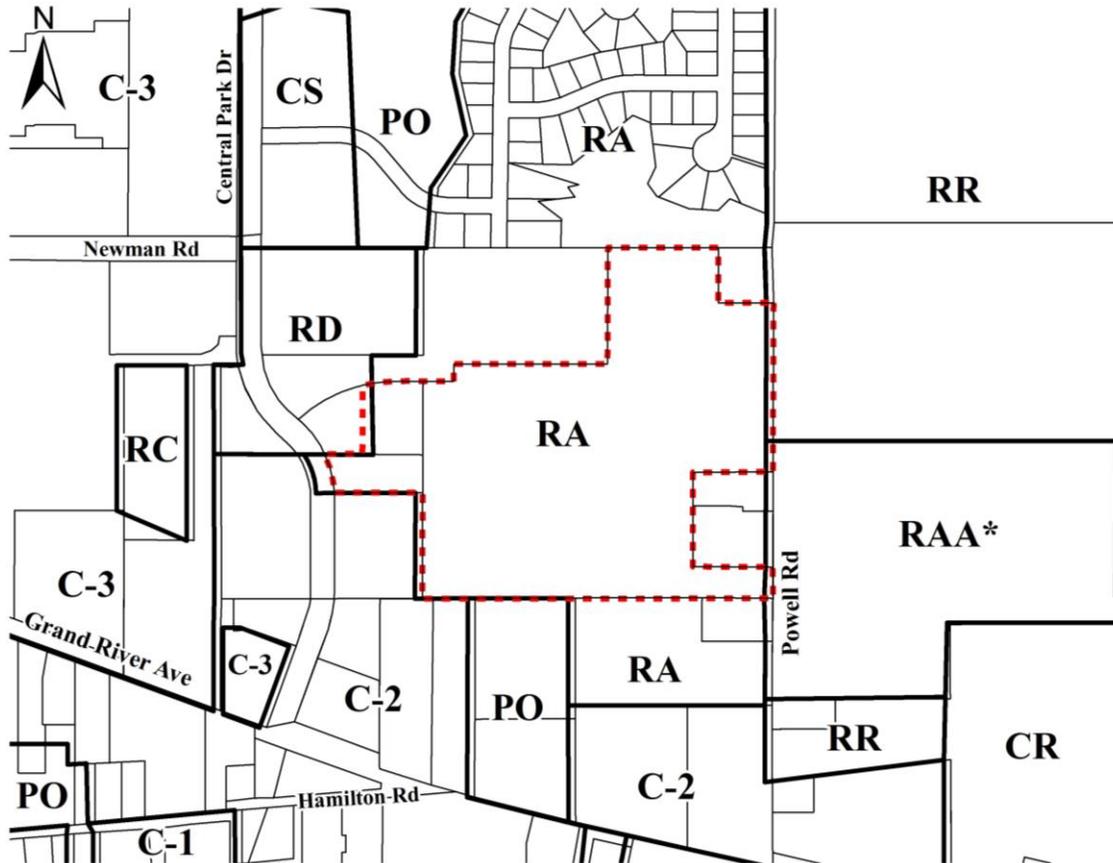
### 2017 FUTURE LAND USE MAP



### Zoning

The parcels proposed for rezoning are currently zoned RA (Single Family-Medium Density). The western third of Parcel #22-252-005 is zoned RD (Multiple Family-maximum eight d/u) and not proposed for rezoning. The current RA zoning district requires a minimum of 80 feet of lot frontage and 10,000 square feet of lot area. The requested RD zoning district requires a minimum of 100 feet of lot width and 11,000 square feet of lot area. With 150 feet of frontage on Central Park Drive and 762.96 total feet of frontage on Powell Road, and a combined 31.63 acres of lot area, the parcels comprising the rezoning meet the minimum lot area and lot frontage requirements for both the current RA and requested RD zoning districts.

ZONING MAP



**Physical Features**

A natural features study will be required for submittal if development is proposed on the site. The natural features study will include information on items such as wetlands, significant stands of trees or individual trees greater than 12 inches d.b.h., floodplains, water features, vulnerable groundwater areas, slopes greater than 20%, ravines, wildlife habitats, vegetation, and endangered wildlife.

**Greenspace Plan**

A scenic road corridor is shown along Powell Road on the Township Greenspace Plan. In the Plan a scenic road corridor is defined as a special route that is canopied, tree-lined, or affords beautiful views of the farmland and open space in the Township.

## **Floodplain**

The Flood Insurance Rate Map (FIRM) for the Township indicates floodplain is not present on or near the site proposed for rezoning.

## **Wetlands**

Wetlands on the site were delineated by Marx Wetlands LLC in 2018. Wetlands are depicted in detail on an attached map provided by the applicant. A total of eight wetlands are located on the site, three of which are regulated by Meridian Township. A fourth wetland, Wetland F on the attached map, is 0.36 acre in size and potentially subject to regulation by the Township. Section 22-156 of the Code of Ordinances requires the Township Board to determine whether a wetland greater than 0.25 acre in size but less than two acres in size is “essential to the preservation of the natural resources of the Township.” If the wetland is determined to be essential, the wetland is regulated and subject to the provisions of the Wetland Protection Ordinance. Regulated wetlands require a 20 foot setback from the delineated boundary if they are equal to or greater than one-quarter acre but less than two acres in size and a 40 foot setback if equal to or greater than two acres in size.

The applicant has indicated a wetland use permit request will be submitted for future development of the property, which will require a public hearing and approval from the Township Board. The wetland use permit is required to run concurrently with the development review process.

## **Streets & Traffic**

The properties proposed for rezoning front on both Central Park Drive and Powell Road and the submitted concept plan shows a future development project with access to both streets. Central Park Drive is a four lane road with curb and gutter. A center turn lane is added as it gets closer to the intersection with Grand River Avenue. Central Park Drive is classified as a Collector street on the Street Setbacks and Service Drives Map in the zoning ordinance. Seven foot wide pedestrian pathways are installed along both sides of Central Park Drive. The most recent (2018) traffic count information from the Michigan Department of Transportation (MDOT) for Central Park Drive just south of the subject site showed a total of 11,255 vehicles in a 24 hour period.

Powell Road is a two lane road also classified as a Collector street. Powell Road is currently a dirt road; however paving is slated from the northern extent of Silverstone Estates down to Grand River Avenue, which is expected sometime in spring of 2021. It is expected that the Township Board would require further paving to the north to facilitate a future development project on the subject property. The Pedestrian/Bicycle Master Plan shows a paved shoulder along the west side of Powell Road. The most recent (2008) traffic count information from the Ingham County Road Department (ICRD) for Powell Road showed a total of 121 vehicles in a 24 hour period.

The applicant has submitted a rezoning traffic study prepared by Fleis & Vandenbrink comparing estimated traffic generation under the existing RA zoning and proposed RD zoning. The findings of the study note the rezoning and potential resulting development including a mix of multiple family and single family dwellings will produce more trips than a single family development. A full traffic study showing detailed traffic generation, turning movements, and level of service at nearby intersections will be required should a development project be proposed.

### **Utilities**

Public water and sanitary sewer are available in the vicinity of the project area and can be extended to serve the subject site. The location and capacity of utilities for any proposed development will be reviewed in detail by the Department of Public Works and Engineering at the time of a development submittal.

### **Staff Analysis**

The applicant has requested the rezoning of approximately 31.63 acres from RA to RD with conditions. When evaluating a rezoning request the Planning Commission needs to consider all uses permitted by right and by special use permit in the current and proposed zoning districts, as well as the reasons for rezoning listed on page two of the rezoning application (attached).

#### *Allowed land uses*

Uses permitted in the RA zoning district include single family dwellings, public parks, playgrounds, playfields, and other public open space for recreational uses, golf courses, and customary agricultural operations. Uses allowed by special use permit in RA zoning include the following:

- Golf driving ranges or mini-golf courses
- Club buildings for outdoor sports
- Commercial kennels
- Institutions for human care (hospitals, nursing homes)
- Religious institutions
- Public, private, or quasi-public and social institutions
- Camps
- Cemeteries
- Airports
- Adult care centers and group adult care homes
- Private resorts and recreational camps
- Public buildings and public service installations

Two family dwellings (duplexes) are the only use allowed by right in the RD zoning district. Any mix of single, duplex, or multiple family dwellings with three or more units is allowed by special use permit.

*Development Options*

Under the current RA zoning development options include establishing a platted subdivision, a planned unit development (PUD), a planned residential development (PRD), or creating metes and bounds lots. Development options under the proposed RD zoning include constructing multiple family buildings, duplexes, and single family homes (only in conjunction with a multiple family development and limited to a maximum of 50% of the total number of multiple family units), or creating a PUD. The figures below are only estimates and do not factor in topography, soils, utilities, site layout, or other factors that may limit buildable area.

*Density Estimate – Proposed RD zoning*

While the RD zoning district allows a maximum of eight units per acre, to determine the maximum number of units on sites with wetlands or floodplain (wetlands but not floodplain are present on this site) a formula from the multiple family zoning ordinance (Section 86-376(f)(12)) is applied. The formula includes the multiplication of the land area outside of wetlands by the allowable density allowed in the zoning district by the percentage of the site covered by wetlands, expressed as a decimal, plus one. For estimation purposes the entire site acreage of 33.055 acres will be used, which includes the western portion of Parcel #22-252-005 already zoned RD. As stated above in the section on Wetlands, the regulatory status of Wetland F requires the Township Board to determine if it is essential. Assuming this happens, which historically has been the case, based on the wetland delineation there are a total of 4.81 acres of regulated wetlands out of the 31.63 acre total site. Using the formula from above, density for the site would be calculated as follows:

Maximum number of units = 28.24 acres of non-wetland land x 8 dwelling units per acre allowed in the RD zoning district x 1.1455 percent of the site covered by wetlands expressed as a decimal (plus one). The estimated maximum number of lots allowed in a future development would be 258.

*Density Estimate – Existing RA zoning (platted subdivision & PRD)*

To estimate potential density a factor is applied that considers minimum lot sizes permitted in the zoning district and an 18 percent reduction for road rights-of-way. Wetland acreage was considered as well. This calculation results in an estimate of 112 total lots in a potential future platted subdivision or PRD under RA zoning.

*Density Estimate – Existing RA zoning (PUD)*

Estimates for development as a PUD requires submittal of a yield plan showing how the property could be developed as a platted subdivision. If the 110 lot estimate from above is used 128 units could be developed with a PUD. If the applicant received the 25% density bonus the maximum total number of lots would be 160. Under a PUD 50% of the total developable land area, excluding wetlands, would have to be preserved as open space.

*Density Estimate – Existing RA zoning (metes and bounds)*

The subject site has 150 feet of frontage on Central Park Drive and 762.96 total feet of frontage on Powell Road. The current RA zoning district requires minimums of 80 feet of lot frontage and 10,000 square feet of lot area. Without regard to potential irregular lot shapes or the Township's maximum 3:1 lot depth to width ratio, it is estimated that one lot could be developed off Central Park Drive and nine lots could be developed off of Powell Road, for a total of 10 lots. The number of parcels is ultimately subject to the total number of splits allowed under the Land Division Act.

The following provisions of the RD zoning district may impact future development of the site:

- A 50 foot setback from adjacent single family residential zoning district boundaries is required for buildings in multiple family developments. The property, if rezoned, would border the RA (Single Family-Medium Density) district to the north, south, and the east.
- There is a required 85 foot front yard setback from the street right-of-way lines of both Central Park Drive and Powell Road.
- All buildings including accessory buildings cannot occupy more than 35% of the net area of land on the property.
- A minimum of 35% of the total land area exclusive of drives and parking areas must remain as open space.
- Distance between buildings: Buildings with two or more dwelling units shall be located no closer than 25 feet to any other building. Detached single-family dwellings shall be located no closer than 10 feet from any other building.

**Planning Commission Options**

The Planning Commission may recommend approval or denial of the request, or it may recommend a different zoning designation than proposed by the applicant to the Township Board. A resolution will be provided at a future meeting.

**Attachments**

1. Rezoning application and attachments.
2. Rezoning traffic study prepared by Fleis & Vandenbrink dated October 15, 2020 (revision date November 6, 2020).
3. Conceptual site plan prepared by Kebs, Inc. dated July 29, 2020.
4. Rezoning criteria.

**CHARTER TOWNSHIP OF MERIDIAN  
DEPARTMENT OF COMMUNITY PLANNING AND DEVELOPMENT  
5151 MARSH ROAD, OKEMOS, MI 48864  
PHONE: (517) 853-4560, FAX: (517) 853-4095**

**REZONING APPLICATION**

**Part I, II and III of this application must be completed. Failure to complete any portion of this form may result in the denial of your request.**

**Part I**

A. Owner/Applicant DTN 2013, LLC  
Address of applicant 2502 LAKE LANSING RD, SUITE C, LANSING, MI 48912  
Telephone: Work (517) 371-5300 Home \_\_\_\_\_  
Fax (517) 371-5356 Email \_\_\_\_\_

If there are multiple owners, list names and addresses of each and indicate ownership interest. Attach additional sheets if necessary. If the applicant is not the current owner of the subject property, the applicant must provide a copy of a purchase agreement or instrument indicating the owner is aware of and in agreement with the requested action.

B. Applicant's Representative, Architect, Engineer or Planner responsible for request:  
Name / Contact Person CHARLES HOLMAN  
Address SAME  
Telephone: Work (517) 679-3481 Home (517) 626-0705  
Fax \_\_\_\_\_ Email cholman@dtmwiqt.com

C. Site address/location 4828 CENTRAL PARK DRIVE  
Legal description (Attach additional sheets if necessary) SEE ATTACHED  
Parcel number SEE ATTACHED Site acreage 31.63 ACRES

D. Current zoning RA Requested zoning RD

E. The following support materials must be submitted with the application: SEE LETTER ATTACHED.

1. Nonrefundable fee.
2. Evidence of fee or other ownership of the subject property.
3. A rezoning traffic study prepared by a qualified traffic engineer based on the most current edition of the handbook entitled *Evaluating Traffic Impact Studies: A Recommended Practice for Michigan Communities*, published by the State Department of Transportation, is required for the following requests:
  - a. Rezoning when the proposed district would permit uses that could generate more than 100 additional directional trips during the peak hour than the principal uses permitted under the current zoning.
  - b. Rezoning having direct access to a principal or minor arterial street, unless the uses in the proposed zoning district would generate fewer peak hour trips than uses in the existing zoning district.  
(Information pertaining to the contents of the rezoning traffic study will be available in the Department of Community Planning and Development.)
4. Other information deemed necessary to evaluate the application as specified by the Director of Community Planning and Development.

**Part II**

**REASONS FOR REZONING REQUEST**

**Respond only to the items which you intend to support with proof. Explain your position on the lines below, and attach supporting information to this form.**

A. Reasons why the present zoning is unreasonable: **SEE LETTER ATTACHED**

- 1) There is an error in the boundaries of the Zoning Map, specifically: \_\_\_\_\_  
\_\_\_\_\_
- 2) The conditions of the surrounding area have changed in the following respects: \_\_\_\_\_  
\_\_\_\_\_
- 3) The current zoning is inconsistent with the Township's Master Plan, explain: \_\_\_\_\_  
\_\_\_\_\_
- 4) The Township did not follow the procedures that are required by Michigan laws, when adopting the Zoning Ordinance, specifically: \_\_\_\_\_  
\_\_\_\_\_
- 5) The Township did not have a reasonable basis to support the current zoning classification at the time it was adopted; and the zoning has exempted the following legitimate uses from the area: \_\_\_\_\_  
\_\_\_\_\_
- 6) The current zoning restrictions on the use of the property do not further the health safety or general welfare of the public, explain: \_\_\_\_\_  
\_\_\_\_\_

B. Reasons why the requested zoning is appropriate: **SEE LETTER ATTACHED**

- 1) Requested rezoning is consistent with the Township's Master Plan, explain: \_\_\_\_\_  
\_\_\_\_\_
- 2) Requested rezoning is compatible with other existing and proposed uses surrounding the site, specifically: \_\_\_\_\_  
\_\_\_\_\_
- 3) Requested rezoning would not result in significant adverse impacts on the natural environment, explain: \_\_\_\_\_  
\_\_\_\_\_
- 4) Requested rezoning would not result in significant adverse impacts on traffic circulation, water and sewer systems, education, recreation or other public services, explain: \_\_\_\_\_  
\_\_\_\_\_
- 5) Requested rezoning addresses a proven community need, specifically: \_\_\_\_\_  
\_\_\_\_\_
- 6) Requested rezoning results in logical and orderly development in the Township, explain: \_\_\_\_\_  
\_\_\_\_\_
- 7) Requested rezoning will result in better use of Township land, resources and properties and therefore more efficient expenditure of Township funds for public improvements and services, explain: \_\_\_\_\_  
\_\_\_\_\_

**Part III**

I (we) hereby grant permission for members of the Charter Township of Meridian's Boards and/or Commissions, Township staff member(s) and the Township's representatives or experts the right to enter onto the above described property (or as described in the attached information) in my (our) absence for the purpose of gathering information including but not limited to the taking and the use of photographs.

Yes     No    (Please check one)

By the signature(s) attached hereto, I (we) certify that the information provided within this application and accompanying documentation is, to the best of my (our) knowledge, true and accurate

Ronald Uppal  
Signature of Applicant

11/15/2020  
Date

RONALD UPPAL  
Type/Print Name

Fee: \$1,965.20

Received by/Date: \_\_\_\_\_



November 5, 2020

**Mark Kieselbach**

Charter Township of Meridian  
Community Planning & Development Director  
5151 Marsh Road  
Okemos, MI 48864

RE: **Rezoning Application  
Newman Equities II, L.L.C.  
Central Park Drive  
Okemos, MI 48864**

Dear Mr. Kieselbach,

The owners of the referenced parcels, Newman Equities II, L.L.C., request this Rezoning Application and attachments be submitted at the November 9, 2020 Planning Commission following a Pre-Application Meeting with Planning & Development Staff. Following the public hearing, it is our hope the Planning Commission will make a recommendation for approval of the rezoning request to the Meridian TWP Board of Trustees. We hope the information contained herein will establish the basis for favorable consideration.

**The Property**

Newman Equities II, L.L.C. is an assemblage of the following parcels –

- Parcel #33-02-02-22-252-005 +/- 2 acre Zoned RD & RA
- Parcel #33-02-02-22-252-002 +/- 1 acre Zoned RA
- Parcel #33-02-02-22-276-009 +/- 29 acre Zoned RA

Newman Equities II, L.L.C has carefully evaluated currently available residential housing stock in Meridian Township and has determined there is significant demand for single family and multiple family rental dwellings that include attached garages. The owners of Newman Equities II, LLC have built these types of housing in Delhi Township and DeWitt Township. These communities have expressed their extreme pleasure having our housing available for new and existing residents and we expect it will be embraced in a similar fashion in Meridian Township.

There is a preliminary site plan attached. The proposed development includes 206 dwelling units. The overall parcel is 31.63 acres, which is 6.5 dwelling units/acre. The site plan is based on Meridian Township Code of Ordinances, Section 86-376 Multiple-Family Residential Districts: RDD, RD, RC & RCC Districts.



### **Rezoning Request**

The RD Multiple-Family Residential Districts allows a maximum of eight dwelling units per acre. The RDD Multiple-Family Residential Districts allows a maximum of five dwelling units per acre. The current RA zoning allows approximately four dwelling units per acre. Newman Equities II, L.L.C. is requesting Parcel #33-02-02-22-252-002 (+/- 1 acre), the eastern portion of Parcel #33-02-02-22-252-005 (+/- 1 acre) and Parcel #33-02-02-22-276-009 (+/- 29 acres) be rezoned from RA to RD. The parcel proposed for rezoning is shown on the attached "Rezoning Description". The total acreage proposed to be rezoned is +/- 31.63 acres.

### **Rezoning Request – Proposed Conditions**

Newman Equities II, L.L.C offers the following conditions subject to the approval of the requested rezoning –

- 1) The RD Multiple-Family Residential Districts allows a maximum of eight dwelling units per acre. Changing the zoning of this 31.63 acre parcel to RD will allow up to 253 units. As a condition of approval of this rezoning request, Newman Equities II, L.L.C will propose a site plan with the number of dwelling units no greater than 220 units.
- 2) The RD Multiple-Family Residential District now includes Single Family dwelling units. As a condition of approval of this rezoning request, Newman Equities II, L.L.C will include no fewer than 25 Single Family dwelling units.
- 3) As a condition of approval of this rezoning request, Newman Equities II, L.L.C will include no buildings greater than two stories.
- 4) As a condition of approval of this rezoning request, Newman Equities II, L.L.C will include enclosed garages for every dwelling unit.

### **Rezoning Request Application**

The completed Rezoning Application is included in this submittal. The responses to the application are below –

#### **PART 1**

##### **A. Signature Authorization of Applicant**

- See attached Signature Authorization of Applicant

##### **E. 1. Nonrefundable Fee**

- The fee amount of \$1,965.20 was determined based on Meridian TWP's fee schedule –



\$700 plus \$40 x 31.63 acres = \$1,965.20. The payment is included with this submittal.

#### **E.2. Evidence of Ownership**

- See attached Tax Records for
  - Parcel #33-02-02-22-252-002
  - Parcel #33-02-02-22-252-005
  - Parcel #33-02-02-22-276-009

#### **E.3. Traffic Study**

- See attached Traffic Study

#### **E.4. Other Information**

- See attached conceptual Grand Reserve Site Plan dated 7/29/2020.
- See attached Newman Equities II, L.L.C. Property Map
- See attached Parcel #33-02-02-22-252-005 – Split Zoning
- See attached Newman Equities II, L.L.C. Rezoning Description
- See attached article – “The New Face Of Rental Housing: Single-Family Built-For-Rent”
- See attached article – “Linear Living: The Rise of Single-Family Rentals”

### **PART II**

#### **A. Reasons why the present zoning is unreasonable:**

- 1) **There is an error in the boundaries of the Zoning Map, specifically:**
  - This does not apply
- 2) **The conditions of the surrounding area have changed in the following respects:**
  - Due to the change in commercial and retail environment with COVID pandemic, the demand for retail and office has significantly decreased. The property adjacent to this parcel is a senior living establishment and we are providing housing that is consistent with that style of living by making a portion of the property “universal design”. The demand for single family, townhome-style and luxury rental homes with attached garages has increased throughout the nation, including Meridian Township. DTN has successfully deployed these lifestyle apartment communities throughout the Greater Lansing Area, such as Aspen Lakes in Holt and the Quarry in Dewitt. We know there is strong demand for this style of living in Meridian Township. The median Income for these residents at our similar developments have been north of \$8,000 a month. The tenants are “renters by choice” and will spend and invest money in the local community. They will support the existing retail establishments, work in the



area and their children will attend the local schools. The only difference between an owner occupied home and our residents is they prefer to live in a community with multiple amenities where the maintenance and upkeep of their homes be the responsibility of the property manager. The finishes and quality of our homes are consistent with the newer owner occupied housing stock in the township.

**3) The current zoning is inconsistent with the Township's Master Plan, explain:**

- The location of the property is adjacent to senior multifamily home and walkable to many retail locations. We have proposed lower density single family housing adjacent to existing single family housing. We are buffering the single family housing with four and six dwelling unit townhome style two story buildings that transition to two story apartment buildings along the Central Park Drive commercial corridor.

**4) The Township did not follow the procedures that are required by Michigan laws, when adopting the Zoning Ordinance, specifically:**

- This does not apply

**5) The Township did not have a reasonable basis to support the current zoning classification at the time it was adopted; and the zoning has exempted the following legitimate uses from the area:**

- This does not apply

**6) The current zoning restrictions on the use of the property do not further the health, safety or general welfare of the public, explain:**

- We are proposing to keep the property a lower density (less than 8 dwelling units per acre). We are designing a project that embraces the current natural features at the site. The property will be walkable and allow neighbors and other to enjoy the pleasant common areas. We have numerous pocket parks that will allow people to enjoy biking. This project will also support the local school districts and allow the residents to support the local retail and commercial businesses with their purchasing power. In addition, the adjacent walking and the outdoors spaces will be asset to the community. The rental by choice product will provide diversity to the area by allowing people who do not want to buy a home to enjoy the same type of lifestyle and contribute to the community. This product is particularly attractive to empty nesters and boomer households who are downsizing from owner single family homes and prefer hassle free living in an amenitized community.



**B. Reasons why the requested zoning is appropriate:**

**1) Requested zoning is consistent with the Township's Master Plan, explain:**

- This proposal is consistent with the Master Plan. It will transition from the Central Park Drive and Grand River Avenue commercial corridor zoning with big boxes and car dealerships to a much lower density residential project. Within the proposed site plan, the project transitions from two story apartment buildings along the Central Park Drive commercial corridor to townhome units and, finally, to single family homes that abut residential zoning. This will be complementary to the senior housing and subdivisions that are adjacent to the property.

**2) Requested zoning is compatible with other existing and proposed uses surrounding the site, specifically:**

- The proposed project would embrace the wetlands and allow for a lower density project rather than a potential commercial project or big box that has been proposed on the property previously or the proposed car dealership adjacent to our property. The proposed project and rezoning would allow us to provide housing that is consistent with the senior housing project and subdivisions that are adjacent to this property.
- The proposed site plan brings about an effective transition in density from commercial zoning along the Central Park Drive and Grand River Avenue corridors to the residential zoning east and north of the Newman Equities parcel.

**3) Requested zoning would not result in significant adverse impacts on the natural environment, explain:**

- The proposed site plan has been designed specifically focused to minimally affect the natural features of the parcel. Of the total acreage of 31.63 acres, close to 1/3 of the parcel will remain undisturbed. It provides a wonderful "park like" amenity within the development.

**4) Requested zoning would not result in significant adverse impacts on traffic circulation, water and sewer systems, education or other public services, explain:**

- The diverse mix of residential product included in this proposed project will allow diversity within the community. From people who need "universal design" to families that want to access the public schools, it will



allow empty nesters to young professionals to have homes to support and increase the vitality of the Meridian Township community. This diverse mix of residents will support local businesses thru their purchasing power and provide an opportunity create stronger community. The water and sewer system is designed to support this development and the additional revenue generated by the development will help maintain the infrastructure.

**5) Requested zoning addresses a proven community need, specifically:**

- The recent changes in the multifamily zoning ordinance will allow this development to include the diversity of “rental by choice” housing that is underserved in Meridian Township. Nationwide, single family, townhome and apartments with garages are in tremendous demand.
- This request promotes **Goal 1 of the Meridian Township Master Plan – Preserve and Strengthen Residential Neighborhoods.**

**6) Requested zoning results in logical and orderly development in the Township, explain:**

- The proposed site plan brings about an effective transition in density from commercial zoning along the Central Park Drive and Grand River Avenue corridors to the residential zoning east and north of the Newman Equities parcel.

**7) Requested zoning will result in better use of Township land, resources and properties and therefore more efficient expenditure of Township funds for public improvements and services, explain:**

- The proposed use will provide a tax base that will support the general fund for Meridian Township. Although the residents of our homes do not directly provide taxes, this development will provide tax revenue that is not based on owner occupied dwellings. The residents will utilize and support the local school districts. The estimated economic impact from the residents will provide approximately \$1.8 million in annual spending for local restaurants, retail and entertainment establishments. During the construction of the proposed project, it is estimated to employ over 650 men and women in the construction trades and support the local retail and food services.
- This rezoning request not only promotes Goal 1 of the Meridian Township Master Plan, it also is beneficial to and supports –



- ❖ **Goal 2 – Preserve Open Space & Natural Areas** – a large portion of the future development will be left undisturbed in its current natural state.
- ❖ **Goal 3 – Enhance the Viability of Township Businesses** – the anticipated development of the site will add over 200 families to the community. It will employ hundreds during its construction phase. The management of the anticipated development will require a staffing of approximately 10 to 20 employees.
- ❖ **Goal 4 – Maintain and Expand a Diverse Park System** – It is anticipated that walking paths surrounding natural feature areas and park areas will be included in this development.
- ❖ **Goal 7 - Promote Efficient and Sustainable Growth Practices** – This development will incorporate “Universal Design” and “Energy Star” efficiency concepts. Electric car charging stations will be available to all residents.

We hope you find our Rezoning Application submittal complete. If additional information is required or you need additional clarifications, please contact me at your earliest convenience.

Very truly yours,

A handwritten signature in blue ink, appearing to read 'C. Holman', is written over a light blue horizontal line.

**Charles H. Holman**  
**Vice President, Construction & Development**  
**DTN Management Company**

# MEMORANDUM

**TO:** Roger Drobney and Martha Mertz  
**FROM:** Raji Uppal  
**DATE:** April 26, 2019  
**SUBJECT:** Newman Equities II, L.L.C.

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I have attached a copy of the Letter of Intent between Newman Equities II, L.L.C. (the "Owner") and DTN 2013, LLC ("DTN"), dated December 22, 2016 ("LOI").

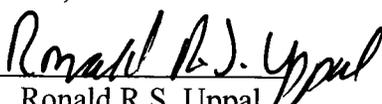
Pursuant to Section 2 of the LOI, the parties agreed to conduct a joint feasibility study for the Property, the duration of which was approximated to be less than 360 days after execution of the LOI. As a result of significant wetlands on the Property, which requires mitigation, it has taken a significantly longer time than anticipated to complete the feasibility study. While mitigation and the approval process are still continuing, the parties confirm that DTN is authorized and approved by the members of Owner to act as the Owner's agent to execute, deliver and submit applications for rezoning, applications for site plan approval, conduct negotiations and presentations, and execute any and all other documents that may be necessary to submit to Meridian Township to further pursue feasibility of the project.

In addition, the parties confirm that the feasibility term has been extended until such time as the parties determine that the project is not feasible. All other terms and conditions of the LOI are to remain in full force and effect.

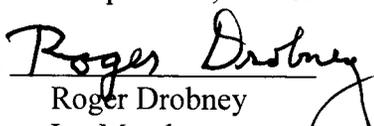
This Memorandum may be executed in several counterparts, each of which will be deemed an original, but all of which will constitute one and the same. A facsimile or scanned pdf image of a signature will be of the same effect as an original.

Agreed to and Approved by:

DTN 2013, LLC

By:   
Ronald R.S. Uppal  
Its: Manager

Newman Equities II, L.L.C.

By:   
Roger Drobney  
Its: Member

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# REZONING DESCRIPTION

For:  
DTN Management Company  
2502 Lake Lansing Road, Ste C  
Lansing, MI 48912

Survey Address:  
Vacant – Central Park Drive  
& Vacant – Powell Road  
Okemos, MI 48864

**Area to be Rezoned:**

An area of land in the Northeast 1/4 of Section 22, T4N, R1W, Meridian Township, Ingham County, Michigan, the limits of said parcel described as: Beginning at the East 1/4 corner of said Section 22; thence N89°59'34"W along the East-West 1/4 line of said Section 22 a distance of 1317.96 feet; thence N00°00'41"E 399.95 feet; thence N89°59'34"W parallel with said South line 331.20 feet to the Easterly right-of-way line of Central Park Drive; thence Northwesterly 150.26 feet along said Easterly right-of-way and a curve to the left, said curve having a radius of 395.00 feet, a delta angle of 21°47'46", and a chord of 149.36 feet bearing N14°19'42"W; thence S89°45'12"E 209.30 feet; thence N00°00'41"E 272.45 feet; thence Northeasterly 51.24 feet along a curve to the right, said curve having a radius of 550.00 feet, a delta angle of 5°20'17", and a chord of 51.22 feet bearing N87°20'17"E; thence S89°59'34"E parallel with said South section line 107.73 feet; thence N89°55'48"E parallel with the South line of Central Park Estates Subdivision, Meridian Township, Ingham County, Michigan, as recorded in Liber 57 of Plats, Pages 29-34, Ingham County Records 109.19 feet; thence N00°43'07"E 66.01 feet; thence N89°55'48"E parallel with said South plat line 580.00 feet; thence N00°43'07"E 438.33 feet to said South plat line; thence N89°55'48"E along said South plat line 416.03 feet; thence S00°04'31"W parallel with the East line of said Section 22 a distance of 208.00 feet; thence N89°55'48"E parallel with said South plat line 208.00 feet to said East section line; thence S00°04'31"W along said East section line 647.57 feet; thence S89°25'13"W 302.00 feet; thence S00°04'31"W parallel with said East section line 353.73 feet; thence N89°25'13"E 302.00 feet to said East line; thence S00°04'31"W along said East line 115.39 feet to the point of beginning; said area containing 31.63 acres more or less; including 0.57 acre more or less presently in use as public right-of-way, said area subject to all easements and restrictions if any.

**NOTES:**

1. A CERTIFIED BOUNDARY SURVEY IS REQUIRED FOR THE EXACT LOCATION OF FENCE AND PROPERTY LINES.
2. EASEMENTS, IF ANY, NOT SHOWN
3. IMPROVEMENTS NOT SHOWN

ARC = 51.24'  
RADIUS = 550.00'  
Δ = 5°20'17"  
CHORD = 51.22'  
BRG. = N87°20'17"E

1" = 300'

SOUTH LINE OF CENTRAL PARK ESTATES SUBDIVISION  
LIBER 57, PAGES 29-34

NORTHEAST CORNER  
SECTION 22, T4N, R1W

CENTRAL PARK DRIVE  
(PUBLIC - 90' WIDE R.O.W.)

POWELL ROAD  
(PUBLIC - 66' WIDE R.O.W.)

±31.63 ACRES

CENTER OF SECTION  
SECTION 22, T4N, R1W

EAST-WEST 1/4 LINE SECTION 22

P.O.B. &  
EAST 1/4 CORNER  
SECTION 22, T4N, R1W

This plan was made at the direction of the parties hereon and intended solely for their immediate use and no survey has been made and no property lines were monumented, all easements recorded or unrecorded may not be shown, unless specifically noted, and no dimensions are intended for use in establishing property lines.

— = Deed Line  
- - - = Distance Not to Scale

**KEBS, INC.** KYES ENGINEERING  
BRYAN LAND SURVEYS

2116 HASLETT ROAD, HASLETT, MI 48840  
PH. 517-339-1014 FAX. 517-339-8047

13432 PRESTON DRIVE, MARSHALL, MI 49068  
PH. 269-781-9800 FAX. 269-781-9805

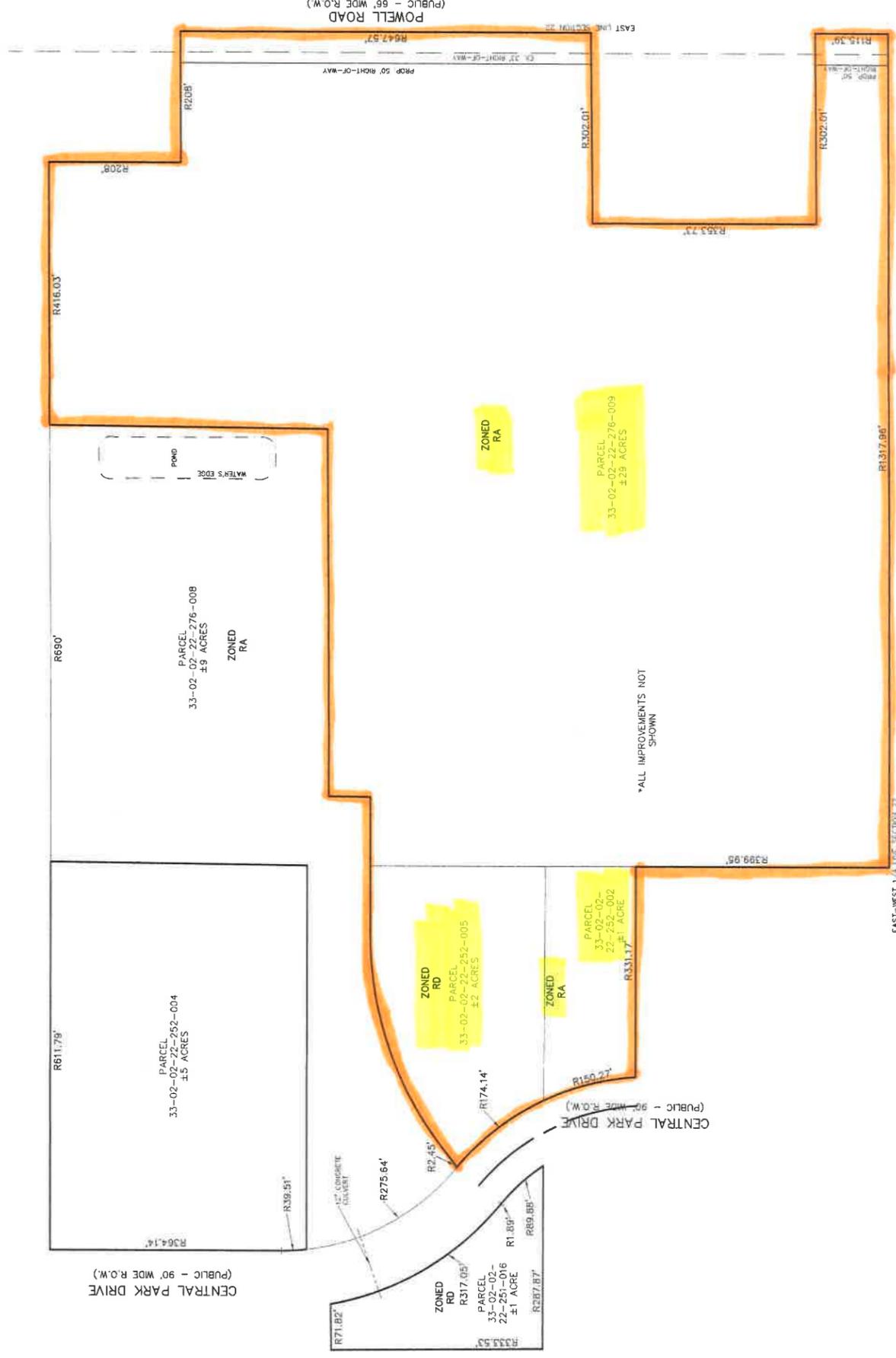
DRAWN BY <b>SSF</b>	SECTION <b>22, T4N, R1W</b>
FIELD WORK BY <b>---</b>	JOB NUMBER:
SHEET <b>1</b> OF <b>1</b>	<b>97400.PLT</b>

ERICK R. FRIESTROM

10-29-2020

**ERICK R. FRIESTROM**      **DATE**  
**PROFESSIONAL SURVEYOR**    **NO. 53497**

# NEWMAN EQUITIES II, LLC PROPERTIES CENTRAL PARK DRIVE, OKEMOS, MICHIGAN 48864



POWELL ROAD  
(Public - 66' Wide R.O.W.)

EAST 1/4 CORNER  
SECTION 22, T4N, R1W

**LEGEND**

- = DEED LINE
- = DISTANCE NOT TO SCALE
- = LIMITS OF DELINEATED WETLAND
- = WETLAND DETERMINATION POINTS

**SURVEYOR'S NOTES:**

1. This plan was made of the direction of the parties named hereon and is intended solely for their immediate use. Survey prepared from fieldwork which started in March 2017 and was updated in August 2018.
2. All distances on the survey are in feet and measured unless otherwise noted.
3. All dimensions are in feet and decimals thereof.
4. No property boundaries were determined or monumented for this survey. No building line dimensions are to be used for establishing the property lines.
5. Easements, if any, not shown hereon.
6. All improvements not shown hereon.
7. Edges of water as shown on survey map were measured on March 15, 2017.
8. Wetland acreages shown for wetlands which extend beyond the boundary of the property are acreages of the wetlands within the boundary limits, not of overall size of wetland.

**LEGAL DESCRIPTION:**  
(As provided)

Parcel 33-02-02-22-251-016:  
PART OF NE 1/4 OF SEC 22 T4N R1W DESC AS: COM AT E 1/4 COR OF SEC 22 - N00D 01'26"E 1324.69 FT ALG E SEC LN TO SE COR OF CENTRAL PARK ESTATES SUBD - S89D 52'32"W 1314.03 FT ALG S LN OF SD SUBD - S00D 39'52"W 404.26 FT - S89D 57'40"W 604.98 FT TO ELY LN OF CENTRAL PARK DR - ALG SD LN SLY 37.94 FT ON CURVE TO LEFT RAD OF 355 FT CHD BRG S09D 26'38"E 37.92 FT - S89D 31'00"W 91.60 FT TO POB - ALG SD WLY LN FOLLOWING 3 COURSES: SELY 317.05 FT ON CURVE TO LEFT RAD OF 445 FT CHD BRG S30D 27'30"E 310.36 FT; S50D 41'28"E 1.89 FT; & SELY 89.88 FT ON CURVE TO RT RAD OF 305 FT CHD BRG S42D 04'18"E 89.55 FT - N89D 46'50"W 287.87 FT - N00D 28'21"W 333.53 FT - N89D 31'00"E 71.82 FT TO POB

Parcel 33-02-02-22-252-002:  
PART OF NE 1/4 OF SEC 22 T4N R1W DESC AS: COM AT E 1/4 COR OF SEC 22 - S89D 57'40"W ALNG S LN OF NE 1/4 317.37 FT - N00D 02'20"W 399.95 FT TO POB - S89D 57'40"W 331.17 FT TO E LN OF CENTRAL PARK DR - NWLY 150.27 FT ALG SD E LN ON CURVE TO LEFT, RAD OF 395 FT, CHD BRG N14D 22'32"W 149.36 FT - S89D 47'55"E 366.15 FT - S00D 02'20"E 143.17 FT TO POB

Parcel 33-02-02-22-252-004:  
PART OF NE 1/4 OF SEC 22 T4N R1W DESC AS: COM AT E 1/4 COR OF SEC 22 - N00D 01'26"E 1324.69 FT ALG E SEC LN TO SE COR OF CENTRAL PARK ESTATES SUBD - S89D 52'32"W 1314.03 FT ALG S LN OF SD SUBD TO POB - S00D 39'52"W 404.26 FT - S89D 57'40"W 604.98 FT TO ELY LN OF CENTRAL PARK DR - ALG SD ELY LN 39.51 FT ON CURVE TO RT RAD OF 355 FT CHD BRG N03D 11'39"W 39.49 FT - ALG SD ELY LN N00D 00'45"E 364.14 FT - N89D 53'57"E 611.79 FT TO POB

Parcel 33-02-02-22-252-005:  
PART OF NE 1/4 OF SEC 22 T4N R1W DESC AS: COM AT E 1/4 COR OF SEC 22 - N00D 01'26"E 1324.69 FT ALG E SEC LN TO SE COR OF CENTRAL PARK ESTATES SUBD - S89D 52'32"W 1314.03 FT ALG S LN OF SD SUBD - S00D 39'52"W 438.26 FT - S00D 02'20"E 66 FT TO POB - S00D 02'20"E 275.5 FT - N89D 47'55"W 368.09 FT TO ELY LN OF CENTRAL PARK DR - NWLY ALG SD ELY LN 174.14 FT ON CURVE TO LEFT RAD OF 395 FT CHD BRG N37D 53'02"W 172.73 FT - N52D 46'27"E 42.56 FT - ALG CURVE TO RT RAD OF 550 FT CHD BRG N7D 22'03"E 350.74 FT - N89D 57'40"E 107.73 FT TO POB

Parcel 33-02-02-22-276-008:  
PART OF NE 1/4 OF SEC 22 T4N R1W DESC AS: COM AT E 1/4 COR OF SEC 22 - N00D 01'26"E 1324.69 FT ALG E SEC LN TO SE COR OF CENTRAL PARK ESTATES SUBD - S89D 52'32"W ALG S LN OF SD SUBD 624.03 FT TO POB - S00D 39'51"W 438.26 FT - S89D 52'32"W 580 FT - S00D 39'51"W 66.01 FT - S89D 52'32"W 109.19 FT - S89D 57'40"W 107.73 FT WLY 356.97 FT ALG CURVE TO LEFT RAD OF 550 FT CHD BRG S71D 22'03"W 350.74 FT - S52D 46'27"W 42.56 FT TO ELY LN OF CENTRAL PARK DR - NWLY 2.45 FT ALNG SD ELY LN ON CURVE TO LEFT RAD OF 395 FT CHD BRG N50D 41'28"W 2.45 FT - NWLY 275.64 FT ALG SD ELY LN ON CURVE TO RT RAD OF 355 FT CHD BRG N28D 37'33"W 268.76 FT - N89D 57'40"E 604.98 FT - N00D 35'52"E 404.26 FT - N89D 52'32"E ALG S LN OF SD SUBD & ITS EXTENSION 690 FT TO POB

Parcel 33-02-02-22-276-009:  
THAT PART OF SE 1/4 OF NE 1/4 OF SEC 22 T4N R1W DESC AS: BEG AT E 1/4 COR OF SEC 22 - N00D 01'26"E ALG E SEC LN 115.39 FT - S89D 39'17"W 302.01 FT - N00D 01'26"E 353.73 FT - N89D 39'17"E 302.01 FT TO E SEC LN - N00D 01'26"E ALG SD E LN 647.57 FT - S89D 52'32"W 208 FT - N00D 01'26"E 208 FT TO S LN OF CENTRAL PARK ESTATES SUBD - S89D 52'32"W ALG SD S LN 416.03 FT - S00D 39'51"W 438.26 FT - S89D 52'32"W 580 FT - S00D 39'51"W 66.01 FT - S89D 52'32"W 109.19 FT - S00D 02'20"E 818.62 FT TO EW 1/4 LN - N89D 57'21"E ALG EW 1/4 LN 1317.96 FT TO POB

REVISIONS	COMMENTS
02/21/17	ORIGINAL
07/16/18	UPDATE WETLANDS
08/21/18	UPDATE WETLANDS
08/22/18	REVISE LAYOUT
10/09/18	UPDATE WETLANDS

**KEBS, INC.**  
ENGINEERING AND LAND SURVEYING  
2116 HASLETT ROAD, HASLETT, MI 48840  
PH. 517-338-1014 FAX 517-338-8047  
WWW.KEBS.COM

Metrolith Office - Ph. 268-761-9800  
DRAWN BY: SSF  
FIELD WORK BY: RR

January 29, 2018

Multifamily Executive

# Linear Living: The Rise of Single-Family Rentals

The single-family rental market is booming, and developers tapping into the segment's opportunities are thriving. Here's why.

By [Lauren Shanesy](#)



*Photo courtesy BB Living*

BB Living has built six communities in the Phoenix metro area and is close to reaching the 1,000-unit benchmark.

The rental market is hot. Since 2006, the number of Americans living in rental properties has soared to nearly 37%, the largest amount since 1965. Over the same 10-year period ending in 2016, the number of households lived in by owners declined from 76.1 million to 75 million in the aftermath of the housing crisis, according to Census Bureau data.

One sector of rental housing has enjoyed a particularly dramatic rise in the past decade: Single-family for rent is the fastest-growing segment of the U.S. housing market, according to an analysis by the Urban Institute, which reports that growth in single-family rentals has outpaced the growth of both single-family for-sale and multifamily housing in recent years—and it's predicted to keep growing in the years ahead. According to the National Association of Home Builders (NAHB), 56% of the gains in rental housing stock from 2005 to 2015 were due to single-family homes.

The demand for single-family rentals has prompted a number of developers to tap into the market with a new product: cohesive single-family rental communities filled by niche renters with lifestyle needs that are unlike those of apartment renters.

### **Economic Factors Create Perfect Storm**

Industry experts say the current economic climate has created a perfect storm for the single-family rental market's success. Student debt, a tight job market, and the inability to save for a down payment have kept a number of potential home buyers out of the market.

"Credit markets are still extremely tight, and a lot of people don't have the right credit score. With stricter lending terms than ever, some consumers aren't even potential participants in the market," says Dennis Cisterna, CEO of Investability Solutions, a real estate investment firm in the single-family rental space. "[These factors] are eliminating people from homeownership. Without more alternative solutions to getting people into homeownership, whether that's a low-down payment mortgage or assistance programs, there'll be a ramp-up in rentership, which presents a great opportunity for companies to be able to grow with single-family rentals."

While many middle-class renters lack the money for a down payment, they do make enough to spend extra on a rental home. Matt Blank, principal at Scottsdale, Ariz.-based build-to-rent developer BB Living, says the average customer at one of the builder's communities is a couple in their late 30s with two children and an annual income of \$80,000 to \$110,000. With that, they have the cash flow to pay the monthly rent on a single-family home, which is around \$1,600 at one of BB Living's properties.

BB Living has built six communities in the Phoenix metro area and is close to reaching the 1,000-unit benchmark. When the business first launched in 2012, BB Living offered consumers the option to either rent or purchase the homes, a strategy that allowed the company to figure out what the market needed while it got up and running.

"We sold 35 houses that way and rented 35 houses at the same time—the market seemed to want both options at the time," Blank says. "But once we were able to prove the rental market and prove that people actually wanted to rent single-family homes, we were able to secure financing and stop the for-sale effort to focus exclusively on rentals."

BB Living's communities are located in master-planned communities that are already fully outfitted with neighborhood amenities like swim parks, golf courses, and large communal spaces. The company will soon break ground on its first stand-alone community of 217 single-family rental units with a resort-style pool, workout facility, dog park, and walking trails. The units will range from 1,500 to 2,400 square feet and include three to four bedrooms and a two-car garage.



*Photo courtesy BB Living*

### **Renters by Choice**

Economics isn't all that drives consumers to rent instead of buy; some simply aren't interested in owning a home.

"I think you also have to realize that the dream of owning a home isn't as high of a priority on people's list going forward," says Mark Wolf, CEO and founder of Irvine, Calif.-based AHV Communities, a developer that builds single-family rental communities in Texas. "Part of that is residual from the downturn, and part of that is that we're just a much more experience-driven society nowadays and are more portable. People don't live in their house for 30 years anymore, and they move much more for jobs, so this shift in the way people live their lives means that having the portability of a lease while still being able to enjoy the luxury of a home is a perfect combination."

In 2016, AHV Communities opened Vickery Grove, its first community of 82 single-family homes in San Antonio, all of which were built specifically as rentals. The homes range in size from 1,542 to 1,988 square feet, and rental costs across all of the company's communities range from about \$1,865 to \$2,350.



AHV's 84-unit Village on Legacy community in Central Texas will feature four floor plans ranging in size from 1,440 to 1,882 square feet.

The company says the communities of detached homes for rent are like a hybrid between a single-family and a multifamily development—they're fully amenitized, managed, maintained, and operated by a property manager and feature pools, fitness centers, clubhouses, dog parks, walking trails, and community events. Everything is taken care of for renters when it comes to landscaping and maintenance, so residents can enjoy the lock-and-leave lifestyle of renting.

**We borrowed our knowledge and experience from apartments and applied it to the single-family model, so this is really like a linear apartment—instead of going vertical, we're going horizontal.**

**—Mark Wolf, CEO, AHV Communities**

Downsizing baby boomers also are attracted to single-family rentals because they can live in a home similar to what they're used to without sinking retirement cash into a down payment.

"Boomers may have lost their home in the downturn or don't want to purchase a new home but also don't want to rent in a high-rise building with stairs or street noise," says Todd Wood, CEO of Scottsdale, Ariz.-based Christopher Todd Communities, which has five single-family rental communities under way in the Phoenix metro area.

The firm's gated communities feature 136 to 313 single-story, detached, one- or two-bedroom homes ranging from 688 to 1,022 square feet and renting for \$1,050 to \$1,350. The homes offer a private backyard, a dog door, and a smart-home automation system that lets residents control their locks, thermostat, doorbell camera, lighting, and security cameras with a smartphone.

Like other rental communities, the projects by Christopher Todd Communities are amenitized with pools, spas, barbecue areas, fitness centers, and event lawns for both residents' use and events put on by management.



*Rendering courtesy of Christopher Todd Communities* Scottsdale, Ariz.—based Christopher Todd Communities broke ground on five rental communities in 2017, the first of which opened in December in Surprise, Ariz.

“We’ve come up with [a housing product] that’s in between traditional homes and vertical apartments, and we call it ‘detached horizontal living,’ ” says Wood of the communities, which are leased and managed by a third-party company. “It’s easy for renters to look at the homes and say, ‘I can pay the same price as an apartment, but I don’t have to walk up three flights of stairs and I have my own backyard.’ We have a lot of interest and demand for the product from people who still want to rent, though in a different environment than a multifamily building.”

## **Multifamily Move-Up**

Lifestyle changes, like having children and therefore needing more space, combined with soaring new-home costs in some markets have left some households at a crossroads—a one- or two-bedroom apartment no longer provides the space they need for their growing family, but they may not have the financial means to purchase a home, notes Robert Dietz, NAHB’s chief economist and senior vice president for economics and housing policy.

“Single-family rentals are driven by this demographic wave that’s the new part of housing demand, which is the millennials moving from their 20s to their 30s,” Dietz says. “You have to think about the kind of household that’s going to be moving from a multifamily unit, and wants to move based on structure type, but may not have the means to complete a sale.”

Single-family rental community developers say they don’t see themselves as a threat to single-family or multifamily builders, but rather as an alternative that provides a housing product type for renters with a specific set of needs.

“We think we have a really symbiotic relationship with multifamily. We think people are going to grow out of multifamily—there’s a whole cohort of people who want to be renters, but they can’t live in a one- to two-bedroom multifamily unit because they need more space, and there are very few three-bedroom units out there,” says BB Living’s Blank. “That’s where our communities come in. The millennial generation is growing up and having kids, and as they move out of multifamily, we have product for them to move into—bigger units.”

# The New Face Of Rental Housing: Single-Family Built-For-Rent

**Brad Hunter**

Jan 16, 2020,



Avilla Buffalo Run near Denver – opened April 2019 (a built-for-rent development by NexMetro).

NEXMETRO, 2020

Sometimes a small niche is growing so rapidly and becoming so important that it cannot be ignored. Whether you choose to abbreviate it BFR, B2R, or choose from a host of other iterations, the “build-to-rent” niche comprises only 5% of homes built, but it is growing rapidly and highlighting some important emerging trends in housing demand.

Simply put, instead of opting for a standard apartment unit, some renters incline toward more of a single-family residential experience with the benefit of a professionally-managed and amenitized community. One fast-growing developer in this niche, NexMetro, markets their Avilla brand as “Rents like an Apartment. Lives like a home.”

These rental single-family communities typically offer one-, two- and, three-bedroom (and sometimes four-bedroom) attached or detached homes with upscale finishes, high ceilings, and private yards for each unit, a step above what renters can get in an apartment building. Unit appointments and finishes are often higher than in typical apartments, including stainless-steel appliances, quartz countertops, in-unit washers and dryers, and hardwood-style flooring throughout the home.

Developers say that renters of this type of product are “stickier” than typical apartment renters because they see their rental home as more of a long-term decision. Renewal rates are often higher than those for apartments.

Rent increases have consistently outpaced those in conventional apartments, and sometimes the margin is quite wide. “Across our Avilla neighborhoods, we have seen rent growth rates of 6% to more than 11%,” said Jacque Petroulakis, executive vice president of NexMetro. NexMetro developed 11 communities in the Phoenix area between 2014 and 2019, and now they are expanding into more areas.

Professional millennials equal about one-third of NexMetro’s renters, and close to 60% of the residents are single women.

NexMetro’s Avilla neighborhoods typically achieve a premium rental rate above more traditional apartment units. A quantitative analysis conducted by RCLCO found that these developments have achieved an average premium of 16% (on average rent per unit) over newest nearby traditional apartment communities. What is even more striking is that the premium grows to 24% after adjustments are made to normalize for unit size, age, and location.

Petroulakis said that NexMetro has had some prospective residents come and mention that they need a residence to live in while their long-term home is being constructed, “and sometimes that home that is being constructed is one they are planning to RENT!”

Their communities achieve a discount of 17% to single-family homes, which are typically much larger in size. After adjustments for unit size and age, NexMetro’s units achieve a premium of 16% above the single-family homes.

A Florida company that has transacted on more than \$1 billion worth of single-family rental homes has recently been buying newly-constructed homes from builders across the southeastern U.S., Texas and Nevada and renting them out. The founder of Clean Living Communities (TM), Jordan Kavana, says that 60% of their renters are young families. The average rent in their units, throughout the southeastern U.S., ranges from \$1,800 to \$2,500 per month, and the sizes are 15% to 20% larger than typical nearby apartment units. "Demand is strong," said Kavana. "We are seeing 8% to 9% growth in rents within some of our communities; never less than 4%-5%." That is significantly faster than the average rate of rent growth in rental apartments.

Kavana's company uses 24-month leases, and fully 80% of their tenants renew after the two-year term expires, which is much higher than the average renewal rate for apartments. Clean Living Communities emphasizes health and wellness, offering spaces for yoga or meditation, and provides free education for tenants regarding subjects like nutrition and sleep and will be rolling out a program in 2020 with some leaders in the preventative health and wellness space.

The business is set to grow even faster in the years ahead. The company has formed a partnership with a national homebuilding company and plans to develop and operate 3,000 units on land owned by Clean Living Communities over the next 24 to 36 months which will all be owned and managed by the platform that Kavana started in 2008.

In a separate big-builder deal, Toll Brothers has formed a \$400 million joint venture with a financial partner and an established build-to-rent developer called BB Living. Doug Yearley, CEO of Toll Brothers said on the company's quarterly earnings call, "we are initially targeting the Phoenix, Denver, [Las Vegas](#), [Jacksonville](#), Dallas, [Houston](#) and Boise markets. While Toll Brothers has committed a relatively modest \$60 million to this partnership, we believe this investment will produce strong returns over time."

American Homes 4 Rent (AMH), which leases 53,000 houses (mostly acquisitions) across 22 states, has started a major new initiative developing land and building homes for rent. David Singelyn, the company's CEO, said in a recent earnings presentation that they were set to build approximately 800

homes in 2019. He went on to project that they would triple that number in 2020, with further increases in future years. They are now developing homes for rent in 15 markets.

Lennar Homes, JMC Homes, AHV Communities, and Camillo Properties are also building thousands of homes for rent in various places nationwide.

### **The New Face of Renters**

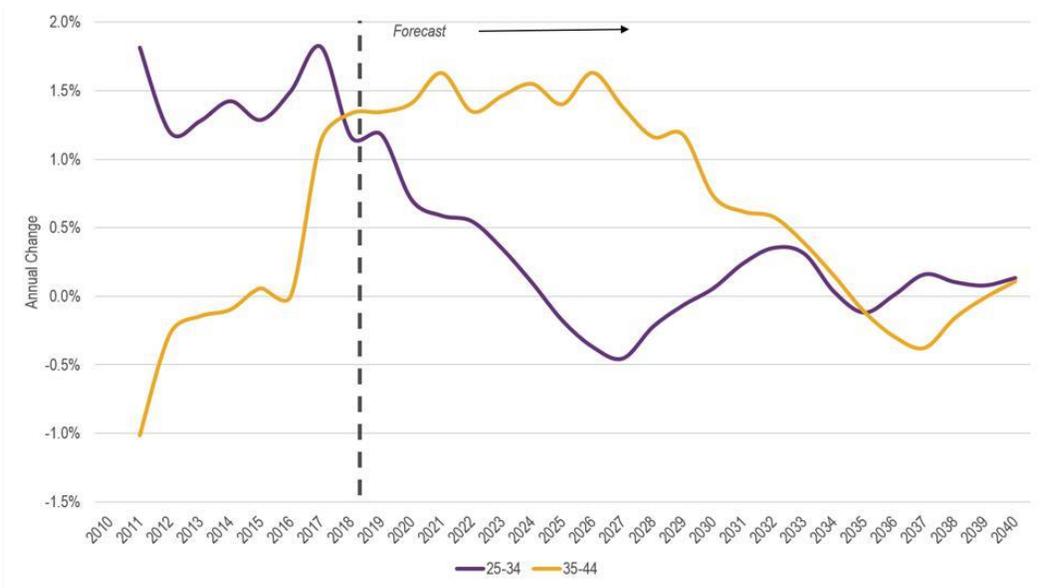
Tenants at these kinds of developments span professional millennials, move-up families/“life transition” (i.e., divorce), and empty-nesters. Most renters are younger households tired of apartments but not ready or able to buy a home. In addition, there is significant demand from Boomer households who are downsizing from owned single family but don’t want apartment living.

Millennials are finally starting to have kids, and that is driving some sudden shifts in housing demand. Rental homes and townhomes appeal to many of the older Millennials who have children because they can have a yard and more interior space.

Millennials are having children ten years “late,” but they are having them. And that is influencing the kinds of rental housing they seek. Population growth is now faster in the 35+ group than in the 25-34 group, and it is these “older” Millennials who are the ones having kids.

And the lock-and-leave convenience of renting is appealing to all generational groups, particularly the Baby Boomers whose kids have left the nest.

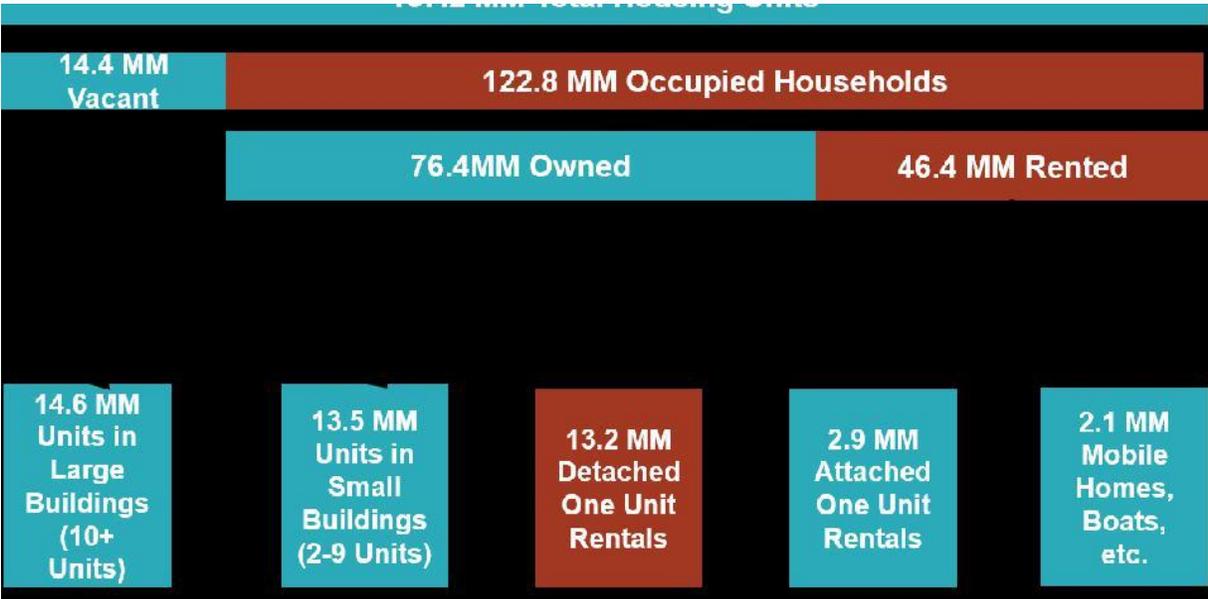
### **The “Older” Millennials Are Driving Growth**



Growth in the 35+ population is now greater than the growth in the 25-34 age group.

### Single-Family Rentals Are Big Business

The exhibit below breaks down the rental stock into the various product types. Detached rental homes are almost as numerous as units in small rental buildings.



Breakout of housing stock from Census data

RCLCO

Source: RCLCO; Census Data

The SFR market started to grow rapidly after the great recession as institutional investors bought hundreds of thousands of units around the country out of foreclosure/REO, and they bought bulk unsold inventory from builders. Today's SFR market, however, is dominated by small investors; institutional investors now own less than 2% of the rental homes.

RCLCO is anticipating strong growth in the B2R business. And remember: it is a counter-cyclical business, as more people tend to rent during recessions. That is a point that it not lost on investors and developers who are getting nervous about the business cycle.

Builders, developers, and investors have a great growth opportunity, but a cookie-cutter approach won't be the winning formula. Careful attention will have to be paid to the specific character of the market and neighborhood in which the homes will be built.

# MEMO

VIA EMAIL

**To:** Mr. Charles Holman  
DTN Management Company

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**From:** Julie M. Kroll, PE, PTOE  
Bandhan Ayon  
Fleis & VandenBrink

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**Date:** October 15, 2020, Revised November 6, 2020

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**Re:** Proposed Grand Reserve of Okemos Development  
Meridian Township, Michigan  
Rezoning Traffic Study

## INTRODUCTION

This memorandum presents the results of the Rezoning Traffic Study (RTS) for the proposed Grand Reserve of Okemos in the Meridian Township, Michigan. The project site is located generally at 4828 Central Park Drive and includes three parcels on approximately 33.63 acres adjacent to the east side of Central Park Drive. The project includes rezoning the existing Multiple Family (RD) and Medium-Density Residential (RA) parcels to Multiple Family (RD).

This RTS was performed in accordance with Meridian Township Ordinance, requirements from *Evaluating Traffic Impact Studies: A Recommended Practice for Michigan Communities*, and trip generation data published by the Institute of Transportation Engineers (ITE) in *Trip Generation, 10<sup>th</sup> Edition*.

## BACKGROUND INFORMATION

The project is located adjacent to the east side of Central Park Drive, generally between Grand River Ave. and Newman Road and adjacent to the west side of Powell Road approximately ¼ mile north of Grand River Ave. Central Park Drive and Powell Road are both under the jurisdiction of the Ingham County Road Department (ICRD) and roadway information is summarized in Table 1.

**Table 1: Roadway Conditions**

Roadway Segment	Central Park Drive (Newman Road to Grand River Ave.)	Powell Road
Number of Lanes	4 (2-lanes each direction)	2-lanes
Functional Classification	Major Collector	Local Road
Posted Speed Limit	35 mph	n/a
Traffic Volumes	11,200 vpd (MDOT 2019)	120 vpd (ICRD 2008)
Short Range TIP	Resurfacing (2020)	None
Long Range TIP	None	None

27725 Stansbury Boulevard, Suite 195  
Farmington Hills, MI 48334  
P: 248.536.0080  
F: 248.536.0079  
www.fveng.com

The majority of land uses adjacent to the project site are commercial and residential land uses. The adjacent land uses are shown below on **Figure 1**.

**FIGURE 1: ADJACENT LAND USE MAP**



### TRIP GENERATION

The project site includes a total of 33.63 acres ; 32.205 acres are currently zoned Single Family Medium-Density (RA) and 1.425 acres are zoned Multiple Family (RD). Therefore, only the RA zoned portion of the project site were considered for rezoning analysis. The Township Zoning Ordinance describes the land uses permitted under the RA and RD zoning classifications. In order to determine the maximum site trip generation potential under the existing zoning classifications, the principal uses permitted under each zoning classification must be matched to the land use categories described by the Institute of Transportation Engineers (ITE) in *Trip Generation, 10<sup>th</sup> Edition*.

**Medium-Density Residential (RA)**

- The Township permitted use under RA zoning includes attached single-family dwellings no less than 1,000 SF ground floor on a minimum of 10,000 SF lot.

**Multiple Family (RD)**

- The Township permitted uses under the RD zoning include: large parcel single owner multi-family developments with a maximum of eight dwelling units per acre, and single-family detached homes

Review of the ITE land use descriptions indicates that the Single-Family Detached Housing (LUC 210) and Multi-Family Housing (Low Rise) (LUC 220) land uses best match the RD uses defined by Ordinance. The estimated trips generated by these uses under proposed development were compared to the potential trip generation for the site under existing zoning. Within the 32.205 acres currently zoned RA, there are approximately 20 acres buildable. For analysis purposes, it was assumed that 20% of the area would be used for infrastructure, with the remaining 80% for housing at 10,000 SF per lot. Therefore, the maximum potential for the existing RA zoning was calculated at 70 units.

The number of Weekday, AM peak hour, and PM peak hour, and daily vehicle trips were calculated based on the rates and equations published by ITE in *Trip Generation, 10<sup>th</sup> Edition*. The maximum trip generation potential of the subject site was forecast for the existing zoning and was compared to the projected trips generated by the proposed zoning. The proposed development program has maximized the land use potential of the site and was used to compare the existing RA potential for this site. The trip generation forecasts are summarized in **Table 2**.

**Table 2: Site Trip Generation Comparison**

Zoning	Land Use	ITE Code	Amount	Units	Average Daily Traffic (vpd)	AM Peak Hour (vph)			PM Peak Hour (vph)		
						In	Out	Total	In	Out	Total
Existing RA	Single-Family Detached Housing	210	70	DU	749	14	41	55	45	27	72
Proposed RD	Single-Family Detached Housing	210	26	DU	301	6	17	23	18	10	28
	Multi-Family Housing (Low-Rise)	220	170	DU	1,244	18	61	79	60	35	95
	<i>Total Trips</i>					1,545	24	78	102	78	45
<b>Difference</b>					<b>796</b>	<b>10</b>	<b>37</b>	<b>47</b>	<b>33</b>	<b>18</b>	<b>51</b>

**CONCLUSIONS**

- The results of the rezoning analysis indicate that projected trip generation associated with the proposed RD zoning will be higher than the projected trip generation under the existing RA zoning.
- The trip generation for this site is anticipated to generate more than 750 trips a day, therefore a TIS may be required by Meridian Township for site plan approval.

Any questions related to this memorandum, study, analysis, and results should be addressed to F&V.



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:** Traffic Volume Data  
 Site Concept Plan

Disclaimer: The Michigan Department of Transportation (MDOT) works with individual agencies (cities/villages, counties, metropolitan planning organizations (MPOs), regional planning organizations (RPOs), and other areas of MDOT) to identify existing traffic count programs and/or traffic data.

List View | All D/Rs | Report Center

Record | 1 of 1 | Goto Record | go

Location ID	33-5205	MPO ID	
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	1628401	LRS Loc Pt.	1.532
SF Group	Urban Non State	Route Type	
AF Group	NoFactor	Route	
GF Group	Urban Non State	Active	Yes
Class Dist Grp	NTL_5	Category	Primary
Seas Class Grp			
WIM Group			
QC Group	Default		
Fnc'l Class	(5) Major Collector		
Located On	CENTRAL PARK DR	Milepost	
Loc On Alias	NORTH OF W Grand River Ave		
More Detail			

**STATION DATA**

Directions: **Z-WAY** | NB | SB | ?

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2019	11,199 <sup>3</sup>		10	51	10,751 (96%)	448 (4%)	Grown from 2018
2018	11,255 <sup>3</sup>		10	51	10,963 (97%)	292 (3%)	Grown from 2017
2017	11,255 <sup>3</sup>		10	51	10,996 (98%)	259 (2%)	Grown from 2016
2016	10,812		10	51			MDOT

**VOLUME COUNT**

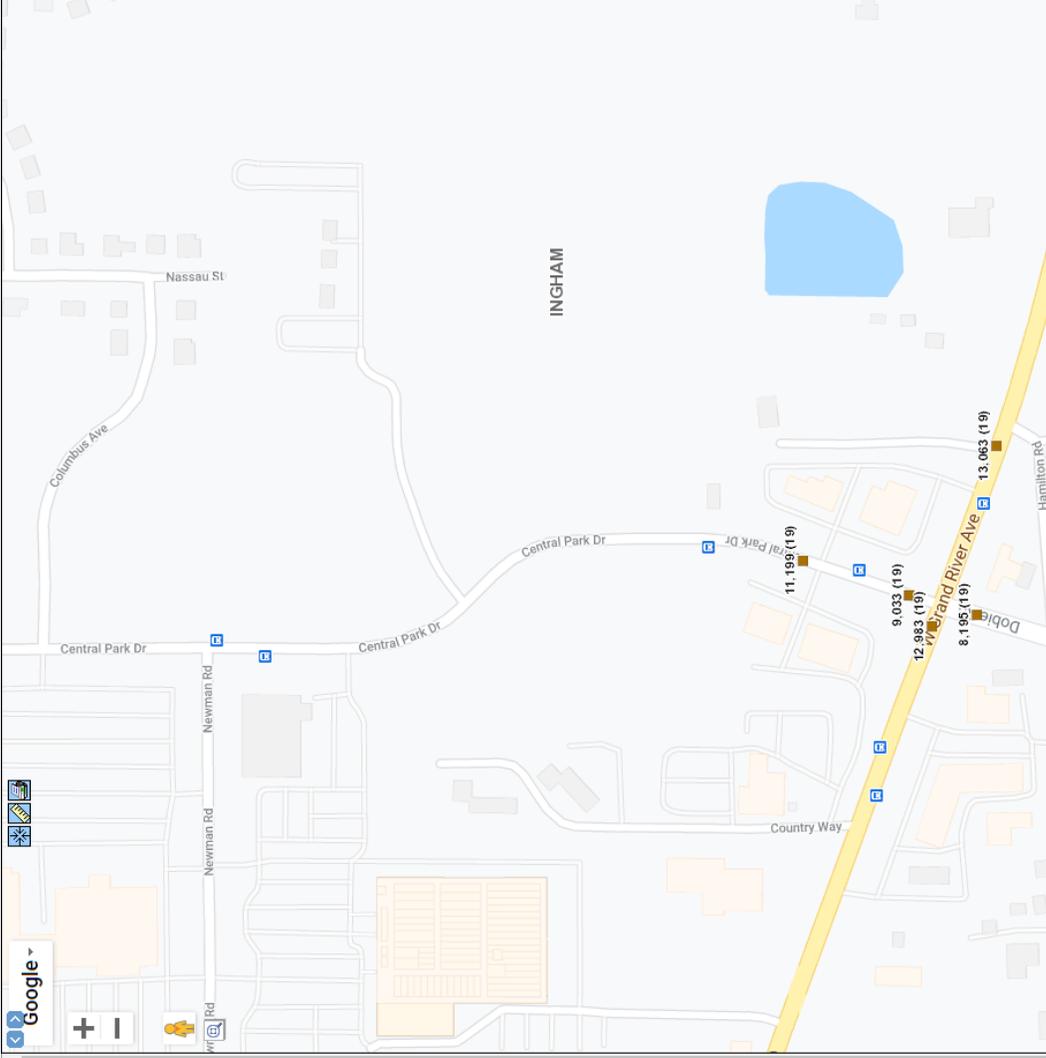
Date	Int	Total
No Data		

**VOLUME TREND**

Year	Annual Growth
2019	0%
2018	0%
2017	4%

**CLASSIFICATION**

Date	Int	Total
No Data		



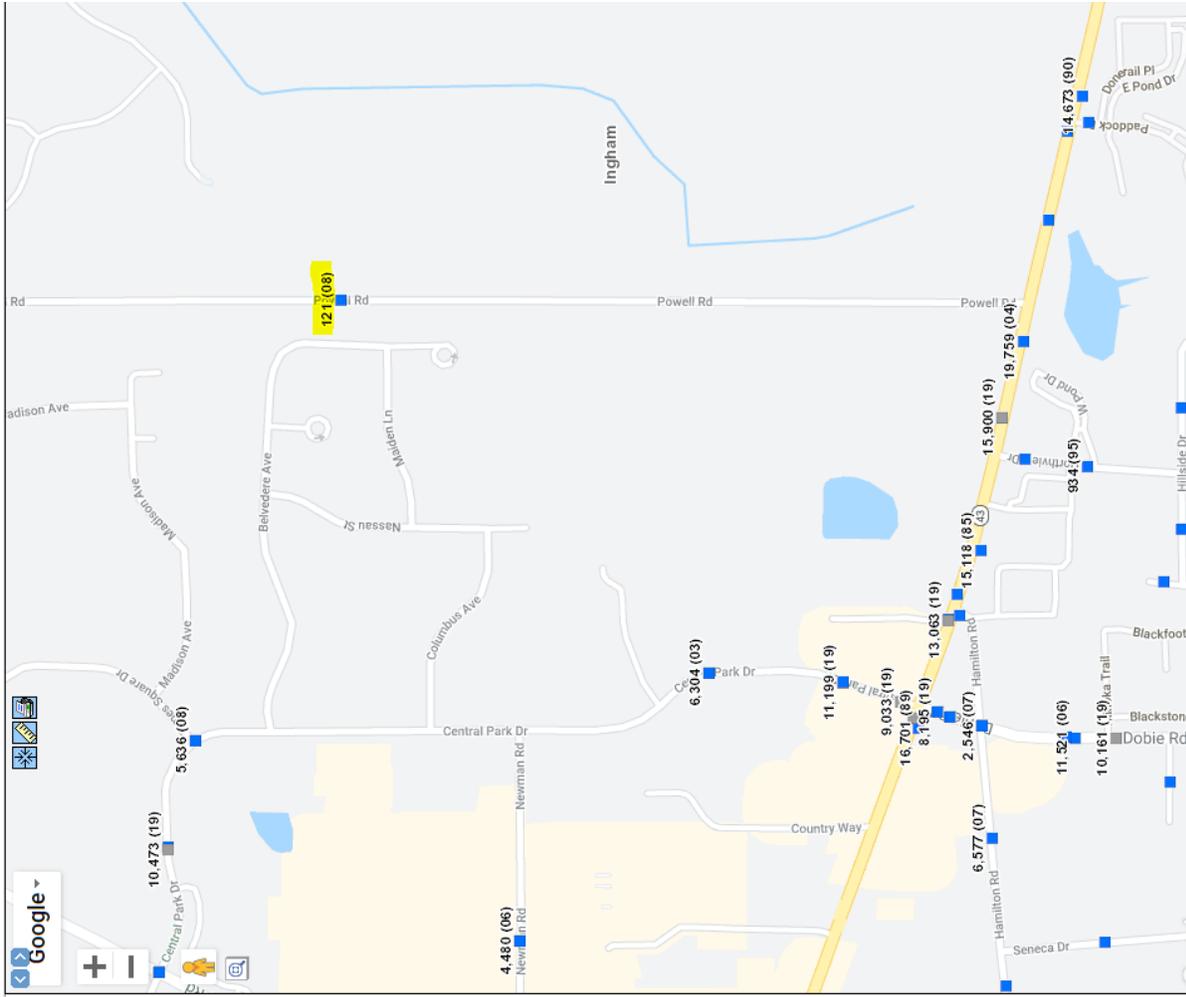
[List View](#) | [All DIRs](#) | **Record** | **1** of 1 | **Goto Record** |  | **go**

Location ID	33_5205
Type	SPOT
MPO ID	
HPMS ID	
On HPMS	
LRs ID	
LRs Loc Pt.	
SF Group	
AF Group	
GF Group	
Route	
Active	Yes
Category	
Seas Class Grp	
WIM Group	
QC Group	Default
Fncnt/Class	
Located On	Central Park
Loc On Alias	
Milepost	

AT 300 FEET N OF I-43 (MERIDIAN TWP)  
 More Detail

**STATION DATA**  
 Directions: **2-WAY** | **NB** | **SB**

Year	AADT	DHV-30	K %	D %	PA	BC	Src		
<b>Travel Demand Model</b>									
Model Year	AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV
<b>VOLUME TREND</b>									
Date	Int	Total	Annual Growth						
No Data									
<b>SPEED</b>									
Date	Int	Pace	85th	Total	Classification				
No Data									
<b>WEIGH-IN-MOTION</b>									
Date	Axles	Avg GYW	Total	Per Vehicle					
No Data									
<b>GAP</b>									
Date	Int	Total	Partial Count						
No Data									
<b>PARTIAL COUNT</b>									
Date	Int	24-Hr Total	Notes/Files						
No Data									



# Grand Reserve

MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN



CLIENT:  
 DTN Management Company  
 2502 LAKE LANSING RD STE C  
 LANSING, MI 48912-3661  
 PH: (517) 371-5300  
 FAX: (517) 371-5356

ENGINEER/SURVEYOR:  
 KEBS, INC.  
 2118 HASLETT RD.  
 HASLETT, MI 48840  
 PH: (517) 339-1014  
 FAX: (517) 339-8647

UNIT COUNT	
SINGLE	26
QUADPLEX	18 X 4 = 72
SIXPLEX	3 X 6 = 18
BIG HOUSE	9 X 10 = 90
<b>TOTAL UNITS</b>	<b>206 UNITS</b>

Model LAYOUT  
 E-94887-LAT16.dwg  
 SURVEY/04/07/2010

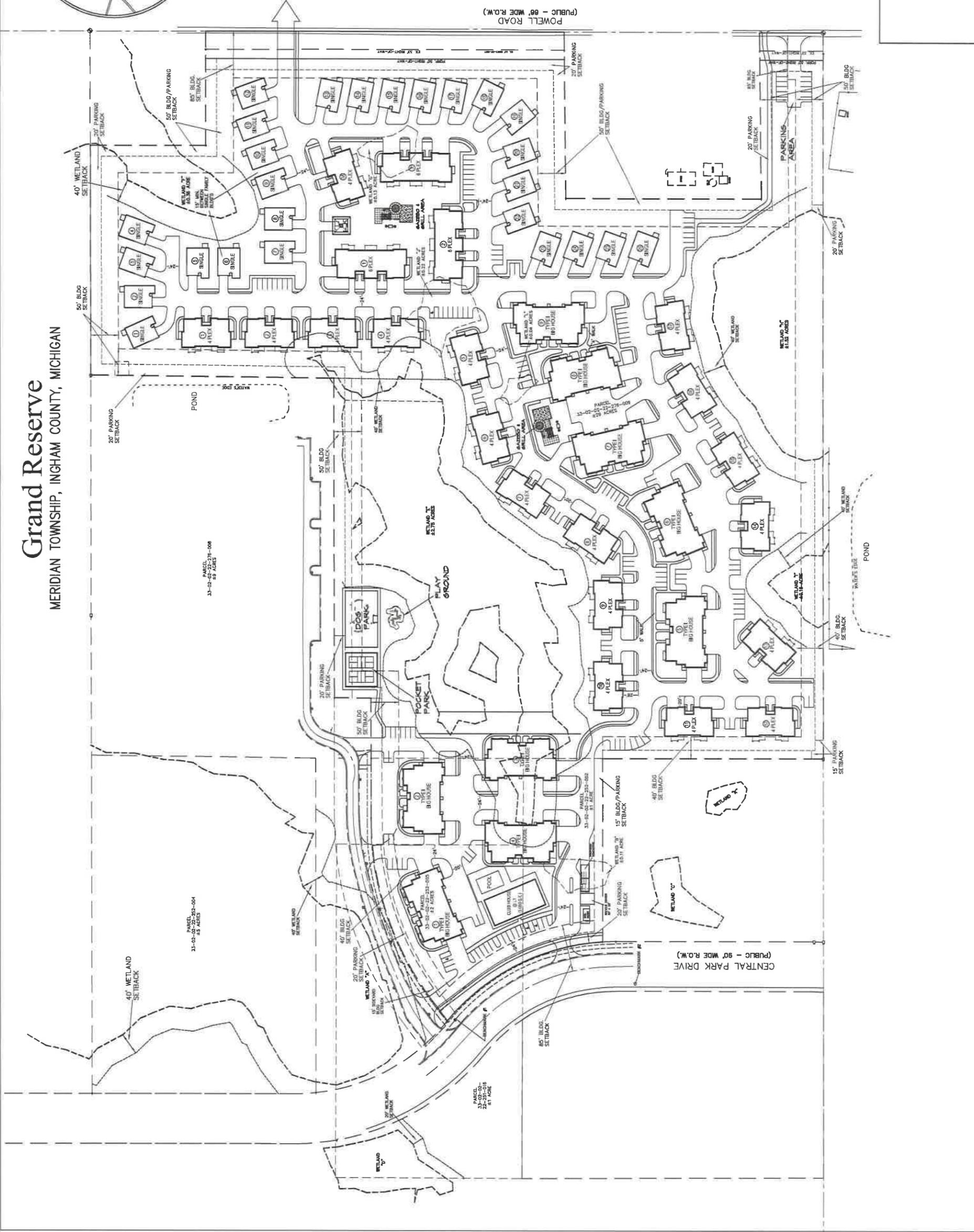
**KEBS, INC.**  
 KYES ENGINEERING  
 BRYAN LAND SURVEYS  
 2118 HASLETT ROAD, HASLETT, MI 48840  
 PH: 517-339-1014 FAX: 517-339-8647

**Grand Reserve**  
 Meridian Office  
 Ph: 269-781-8800

REVISIONS	DATE	BY	DESCRIPTION

PRELIMINARY SITE PLAN  
 PREPARED BY: [Blank]  
 DATE: 7-28-20  
 PROJECT NO.: [Blank]  
 AUTHORIZED BY: [Blank]

SCALE: 1" = 80'  
 SHEET 1 OF 1  
 JOB # 94887  
 DTN Management Company



POWELL ROAD (Public - 60' WIDE R.O.W.)

CENTRAL PARK DRIVE (Public - 90' WIDE R.O.W.)

PARCEL 33-02-03-008  
 29 ACRES

PARCEL 33-02-03-004  
 25 ACRES

PARCEL 33-02-03-016  
 21 ACRES

WETLAND T  
 2.78 ACRES

WETLAND Y

WETLAND Z

WETLAND V

WETLAND W

WETLAND X

WETLAND T  
 1.33 ACRES



**Part II**

**REASONS FOR REZONING REQUEST**

**Respond only to the items which you intend to support with proof. Explain your position on the lines below, and attach supporting information to this form.**

A. Reasons why the present zoning is unreasonable:

- 1) There is an error in the boundaries of the Zoning Map, specifically: \_\_\_\_\_  
\_\_\_\_\_
- 2) The conditions of the surrounding area have changed in the following respects: \_\_\_\_\_  
\_\_\_\_\_
- 3) The current zoning is inconsistent with the Township's Master Plan, explain: \_\_\_\_\_  
\_\_\_\_\_
- 4) The Township did not follow the procedures that are required by Michigan laws, when adopting the Zoning Ordinance, specifically: \_\_\_\_\_  
\_\_\_\_\_
- 5) The Township did not have a reasonable basis to support the current zoning classification at the time it was adopted; and the zoning has exempted the following legitimate uses from the area: \_\_\_\_\_  
\_\_\_\_\_
- 6) The current zoning restrictions on the use of the property do not further the health safety or general welfare of the public, explain: \_\_\_\_\_  
\_\_\_\_\_

B. Reasons why the requested zoning is appropriate:

- 1) Requested rezoning is consistent with the Township's Master Plan, explain: \_\_\_\_\_  
\_\_\_\_\_
- 2) Requested rezoning is compatible with other existing and proposed uses surrounding the site, specifically: \_\_\_\_\_  
\_\_\_\_\_
- 3) Requested rezoning would not result in significant adverse impacts on the natural environment, explain: \_\_\_\_\_  
\_\_\_\_\_
- 4) Requested rezoning would not result in significant adverse impacts on traffic circulation, water and sewer systems, education, recreation or other public services, explain: \_\_\_\_\_  
\_\_\_\_\_
- 5) Requested rezoning addresses a proven community need, specifically: \_\_\_\_\_  
\_\_\_\_\_
- 6) Requested rezoning results in logical and orderly development in the Township, explain: \_\_\_\_\_  
\_\_\_\_\_
- 7) Requested rezoning will result in better use of Township land, resources and properties and therefore more efficient expenditure of Township funds for public improvements and services, explain: \_\_\_\_\_  
\_\_\_\_\_



**To:** Planning Commission

**From:** Peter Menser, Principal Planner  
Keith Chapman, Assistant Planner

**Date:** November 6, 2020

**Re:** Commercial Planned Unit Development #20-13034 (Meridian Mall Limited Partnership)

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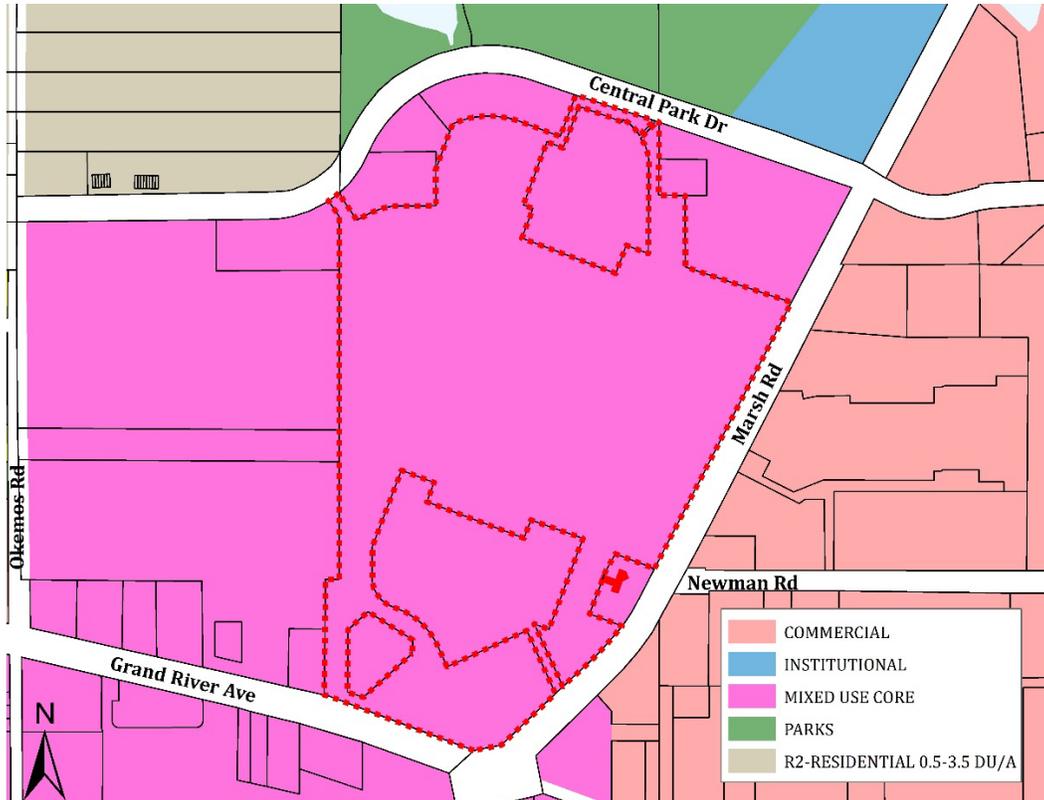
Meridian Mall Limited Partnership has submitted a request to amend the commercial planned unit development (C-PUD) for Meridian Mall. A C-PUD was established for Meridian Mall in 2013 (C-PUD #13034) for an 18,650 square foot addition to the former Gordmans tenant space and the establishment of two future building sites totaling 18,000 square feet in size adjacent to Central Park Drive. A C-PUD amendment was approved in 2019 for the removal of a 2.43 acre parcel from Meridian Mall's C-PUD and the addition of a four acre parcel for the Meridian Township Farmers Market. The 94.30 acre Meridian Mall site is zoned C-3 (Commercial) and is located at 1982 Grand River Avenue. The Mall property contains frontage on Grand River Avenue, Marsh Road, and Central Park Drive.

The applicant is proposing to construct a 2,500 square foot bank building on a proposed 1.36 acre parcel located along Grand River Avenue, east of the primary entrance off Grand River Avenue. For C-PUDs any building addition that is located outside of a building envelope as shown on the approved C-PUD is considered a major amendment.

### **Master Plan**

The Future Land Use Map from the 2017 Master Plan designates the subject sites in the Mixed Use Core category.

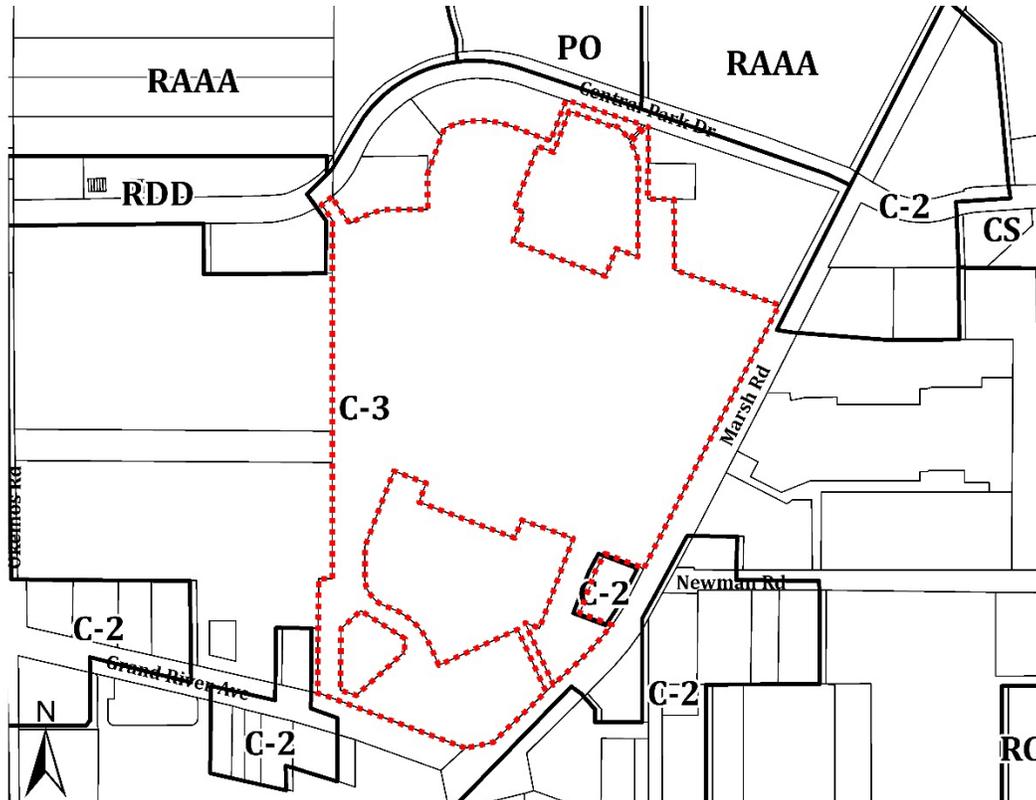
### FUTURE LAND USE MAP



### Zoning

The subject properties are zoned C-3 (Commercial). The entire Meridian Mall site meets the C-3 zoning district requirements for 100 feet of lot frontage and 10,000 square feet of lot area. With 243.07 feet of lot frontage on Grand River Avenue and 1.36 acres (59,241.6 square feet) of lot area the proposed parcel meets the minimum standards for both lot area and lot width of the C-3 zoning district.

### ZONING MAP



### Physical Features

The Township Wetland Map and the Flood Insurance Rate Map indicate neither wetlands nor floodplain are present on or near the site of the proposed building. The site has no special designation on the Township Greenspace Plan.

### Streets and Traffic

Mall entrances are located on Grand River Avenue (1), Marsh Road (3), and Central Park Drive (3). A ring road provides internal access around the Mall. A service drive connects the Mall site with an adjacent multi-tenant retail center to the west (Best Buy and Office Max). A seven foot wide pedestrian-bicycle pathway is present along Grand River Avenue. The submitted site plan shows a proposed seven foot wide bicycle/pedestrian connection to Grand River Avenue along the east property line of the future bank property.

A traffic impact study is required if the project will exceed 100 vehicle trips during peak hours. A traffic assessment was submitted by the applicant that was conducted by TADi Traffic Analysis & Design, Inc. Based on the applicant's traffic consultant the proposed addition does not increase the number of vehicle trips to the extent a traffic impact study is required.

## **Staff Analysis**

The C-PUD process mirrors that of the mixed use planned unit development (MUPUD) process, with public hearings held by both the Planning Commission and Township Board. The Planning Commission makes a recommendation on the project with the Township Board having final approval.

Following is a summary of the project's consistency with the C-PUD ordinance standards. As part of this project analysis, standards for the underlying C-3 zoning district and other requirements applicable to development in the C-3 district will be compared to what is proposed on the submitted site plan.

*Land use:* All uses permitted by right and by special use permit in the underlying C-3 zoning district are permitted in a C-PUD. The proposed land use is a bank with drive-through.

*Performance objectives:* Minimum C-PUD performance objectives include the following:

- *Provide good internal and external access to the street for pedestrians and bicycles* – a painted cross walk is proposed to connect pedestrians and bicyclists to the building from the pathway along Grand River Avenue to the bank.
- *Minimize environmental impacts by using green building and site development standards* – the submitted site plan does not indicate whether environmental impacts will be minimized.
- *Enhance access to alternative transportation modes including public transportation* – the subject site is located along CATA routes 1, 22, and 23.
- *Use of quality building materials* – generally, building materials in a C-PUD should include, but are not limited to, wood, brick, clapboards, beadboard, glass, and stone. Other materials such as vinyl, aluminum, and other metal sidings should be avoided. All buildings should be completed on all sides with acceptable materials. The design of the building should relate to and blend with the facades of adjacent buildings and complement streetscape improvements in the area. The proposed building material for the bank is a combination of a brick masonry system, stone, and metal paneling.
- *Provide for buffering between any conflicting feature of the design and an adjacent residential land use* – the site is surrounded entirely by commercial land uses.
- *Adherence to smart growth principles* – the proposed project is an example of an infill development and is located within the Urban Services Boundary.
- *Preference for parking located in the rear or side yard* – the setbacks for a parking area and the number of parking spaces required can be waived in a C-PUD. 14 parking spaces are required for the project and the applicant is proposing 25 parking spaces. Parking is located in the front, rear, and side yards.

*Railings, benches, trash receptacles, or bicycle racks:* Accessory items such as railings, benches, trash receptacles, or bicycle racks shall be of commercial quality and complement the building design and style. Information on proposed bike racks, railings, benches, trash receptacles, or other accessory items will be reviewed during the Site Plan Review process.

The following section summarizes other aspects of the project:

*Bicycle parking:* One bicycle parking space is required for every ten motor vehicle parking spaces required. There are 14 parking spaces required; therefore the project must have a minimum of one bicycle parking spaces. The bike rack will be required to be shown on the plan during Site Plan Review.

*Landscaping:* Proposed landscaping must generally comply with the provisions of the Code of Ordinances. Section 86-758 of the Code of Ordinances outlines the typical landscape requirements for off-street parking areas including landscaped islands at least ten feet in width, building perimeter landscaping at least four feet in width, a minimum of 200 square feet of interior landscaping for every ten parking spaces, and two interior canopy trees per ten parking spaces. Section 86-473 provides standards for street trees. A landscape plan was provided and building perimeter landscaping will be required to be shown during Site Plan Review.

*Outdoor lighting:* The C-PUD ordinance requires site lighting to comply with the Outdoor Lighting Ordinance (Section 38-371). A photometric plan was submitted and will be reviewed in detail during site plan review if the C-PUD is approved.

### *Parking*

The parking requirement for retail shopping centers consisting of more than 600,000 square feet of gross leasable area is 5 spaces for every 1,000 square feet of gross leasable floor area. The C-PUD established 4.52 parking spaces for every 1,000 square feet of gross leasable floor area, or a total of 4,466 parking spaces. The proposed building will add 25 parking spaces, increasing the parking spaces to 4,491.

### *Impervious Surface*

C-3 zoned sites are allowed 70 percent impervious surface coverage. The C-PUD established coverage at 82.54 percent impervious and 17.46 percent pervious. After the construction of the bank, the Mall's impervious surface coverage would be 81.05 percent, 1.49 percent under the amount granted by the C-PUD.

### **Waiver requests**

The C-PUD ordinance is intended to provide flexibility for the Planning Commission and Township Board to set appropriate standards during the review process. The C-PUD ordinance generally waives the standard requirements for lot size, setbacks, number of required parking spaces, building perimeter landscaping, and impervious surface coverage, provided the purpose and intent of the ordinance is incorporated into the overall development plan. Based on the submitted site plan the applicant is requesting the following waivers for the project:

#### *Bypass Lane*

A vehicle bypass lane is required along the outside of the drive through lanes. The submitted site plan shows three drive through lanes with no bypass lane and is therefore requesting a waiver to have no bypass lane.

### **Amenities**

One or more amenities are required for every C-PUD project. Examples of amenities are grouped into categories in the zoning ordinance, which include conservation, environment, accessibility, parks, recreation and culture, social interaction, and site and building design. If multiple amenities are shown, the ordinance suggests they should represent multiple categories. Criteria to determine whether a proposed amenity is acceptable for consideration are found in Section 86-444(e)(2) of the C-PUD ordinance.

Sheet 8 of the submitted site plan shows the proposed amenities for the project, including connection to the pedestrian-bicycle pathway along Grand River.

### **Planning Commission Options**

The Planning Commission may recommend approval, approval with conditions, or denial of the C-PUD. A resolution will be provided at a future meeting.

### **Attachments**

1. Commercial planned unit development amendment application and attachments dated October 13, 2020 and received by the Township on October 13, 2020.
2. Traffic Impact Assessment prepared by Traffic Analysis & Design, Inc. dated October 12, 2020 and received by the Township on October 13, 2020.
3. Site Plan prepared by Kebs, Inc. dated October 28, 2020 and received by the Township on November 5, 2020.
4. Building elevations prepared by vocon dated September 29, 2020 and received by the Township on October 13, 2020.
5. Photometric Plan and Lighting Cut Sheets prepared by Michigan Lighting Systems dated July 24, 2020 and Received by the Township on October 13, 2020.

CHARTER TOWNSHIP OF MERIDIAN  
DEPARTMENT OF COMMUNITY PLANNING AND DEVELOPMENT  
5151 MARSH ROAD, OKEMOS, MI 48864  
PHONE: (517) 853-4560, FAX: (517) 853-4095

COMMERCIAL PLANNED UNIT DEVELOPMENT APPLICATION

Before submitting this application for review, an applicant shall participate in the pre-application conference with the Director of Community Planning and Development to discuss the requirements for a Commercial Planned Unit Development.

**Part I**

- A. Applicant Meridian Mall Limited Partnership  
Address of Applicant c/o CBL & Associates Management, Inc, 2030 Hamilton Place Blvd, #500, Chattanooga TN 37421  
Telephone - Work 423-490-8649 E-Mail david.neuhoff@cblproperties.com Fax \_\_\_\_\_  
Interest in property (circle one):  **Owner**  Tenant  Option  Other \_\_\_\_\_  
(Please attach a list of all persons with an ownership interest in the property.)
- B. Site address / location / parcel number 1982 W. Grand River, Okemos  
Legal description (please attach if necessary) see plan  
Current zoning C-3  
Project name Meridian Mall Re-Development
- C. Developer (if different than applicant) \_\_\_\_\_  
Address \_\_\_\_\_  
Telephone: Work \_\_\_\_\_ E-Mail \_\_\_\_\_ Fax \_\_\_\_\_
- D. Architect, Engineer Planner or Surveyor responsible for design of project if different from applicant:  
Name KEBS, INC.  
Address 2116 Haslett Rd, Haslett, MI, 48840  
Telephone(s) (517) 339-1014 E-Mail jkyes@kebs.com Fax \_\_\_\_\_
- E. Acreage of all parcels in the project: Gross 94.3 Net \_\_\_\_\_
- F. Proposed Uses and Site Amenities:
1. Use(s)
    - a. Type(s) Additional Bank
    - b. Gross Floor Area See Plan
    - c. Usable floor area See Plan
    - e. Number of employees Varies
    - f. Hours of operation Varies
  3. Number of Parking Spaces Required: see plan  
Number of Parking Spaces Proposed: 4,491
  4. Proposed Amenities: Type additional 7' walk connection  
Type see plan for existing amenities  
Type \_\_\_\_\_  
Type \_\_\_\_\_
- G. The following support materials must be submitted with the application:
1. Nonrefundable fee.
  2. Legal Description of the property. (A sealed survey may be required)

3. Evidence of property ownership or a letter from the property owner authorizing the request submitted with proof of property owner from the author of the letter.
4. A site analysis indicating the principal factors which influenced design decisions. The analysis shall include but need not be limited to: soil conditions, topography, surrounding land uses, and surrounding pedestrian and vehicular circulation systems.
5. If the project is to be phased, a document generally describing the proposed phasing program.
6. A written request identifying each waiver and each amenity.
7. A map drawn to an engineer's scale of the total property showing its location in the township and its relation to adjacent property.
8. A reproducible two foot contour topographic map based on United States Geological Survey (USGS) drawn at the same scale as the site plan and showing existing relief features on the site.
9. A schematic layout of the proposed storm sewer system.
10. Site Plans: 16 copies (Fifteen (15) 24"x36" and one 8½" x11") of a Site Plan drawn to a readable scale containing the following (may be a multiple site plans for readability):
  - Total property, its location in the Township, its relationship to adjacent properties
  - Boundaries of subject property
  - Location and dimensions of all existing and proposed structures
  - Approximate location and distance of all structures within 100 feet of the subject property
  - Proposed means of vehicular and pedestrian ingress and egress to the subject property
  - Public and private roads and streets, rights-of-way and easements indicating names and widths of streets which abut or cross the site
  - Existing and proposed parking spaces and vehicular and pedestrian circulation patterns
  - Dimensions of setbacks from streets, property lines and between buildings on the site
  - Location of proposed amenities
  - Location and size of existing utilities including power lines and towers, both above and below ground
  - Amount and location and calculation of all impervious surfaces
  - Verified boundaries of all natural water features and required setback lines
11. Building elevations (all sides) drawn to scale and in color. Elevations should be accompanied by material samples or a display board of the proposed exterior materials and colors.
12. A Traffic Study (if the project will exceed 100 vehicle trips during the peak hours of the roadway(s)), prepared by a qualified traffic engineer, based on the most current edition of *Evaluating Traffic Impact Studies: A Recommended Practice for Michigan Communities*, published by the State Department of Transportation.
13. Natural Features Study for previously undeveloped properties which includes a written description of natural features proposed to be retained, removed, or modified. Natural features shall include, but are not limited to, wetlands, floodways, floodway fringe, waterbodies, significant stands of trees or individual trees greater than 12 inches dbh, identified groundwater vulnerable areas, slopes greater than 20 percent.
14. A lighting plan (see Chapter 38, Article VII).

15. Copies of comments from reviewing agencies such as, but not limited to, the following:

- Ingham County Road Commission
- Ingham County Drain Commission
- Michigan Department of Transportation (if applicable)
- Michigan Department of Environmental Quality (if applicable)

H. Any other information specified by the Director of Community Planning and Development which is deemed necessary to evaluate the application.

**Part II**

I (we) hereby grant permission for members of the Charter Township of Meridian's Boards and/or Commissions, Township staff member(s) and the Township's representatives or experts the right to enter onto the above described property (or as described in the attached information) in my (our) absence for the purpose of gathering information including but not limited to the taking and the use of photographs.

Yes     No    (Please check one)

By the signature(s) attached hereto, I (we) certify that the information provided within this application and accompanying documentation is, to the best of my (our) knowledge, true and accurate

9.25.2020

\_\_\_\_\_  
Signature of Applicant

\_\_\_\_\_  
Date

David Neuhoff

\_\_\_\_\_  
Type/Print Name

Fee: \_\_\_\_\_

Received by: \_\_\_\_\_

Date: \_\_\_\_\_

Pre-Application Meeting Held: \_\_\_\_\_  
Date

Application Complete: \_\_\_\_\_  
Date

By: \_\_\_\_\_  
Staff

# TIA TECHNICAL MEMORANDUM

**Date:** October 12, 2020

**Prepared for:** David Neuhoff  
CBL & Associates Management, Inc.

**Prepared by:** Tammi Czewski, P.E., PTOE  
Traffic Analysis & Design, Inc.

**Subject:** **Meridian Mall Bank Traffic Impact Assessment**  
**Meridian Charter Township, MI**

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## INTRODUCTION

A new bank is proposed to be constructed on an outlot for the Meridian Mall in Meridian Charter Township, Ingham County, Michigan. The outlot is located just north of Grand River Avenue on the south side of the mall property (see Exhibit 1). Per the Meridian Township requirements, a Traffic Impact Assessment (TIA) report was prepared for this development. A TIA report is typically required for proposed uses that are expected to generate 50-99 trips during the peak hour or 500-749 trips daily. The proposed bank is expected to generate 51 trips during the peak hour.

## STUDY AREA

### Study Intersections

Based on discussions with Meridian Township planners, the study intersections evaluated in this TIA include the following intersections:

- Grand River Avenue & western Meridian Mall driveway – traffic signal control
- Grand River Avenue & eastern Meridian Mall driveway – stop sign control

The existing geometrics, traffic control, posted speed limits, and distances between study intersections are shown on Exhibit 2.

### Study Area Roadways

*Grand River Avenue*, also designated as M-43, is an east/west roadway that is classified as a Principal Arterial. Grand River Avenue has a five-lane cross-section (two through lanes in each direction and a two-way center left-turn lane) and a 45-mph speed limit. There are

pedestrian sidewalks along both sides of Grand River Avenue. According to the Michigan Department of Transportation, the estimated 2019 annual average daily traffic (AADT) on Grand River was 11,020 just west of the Meridian Mall driveway. MDOT shows that this AADT is relatively the same (but declining slightly) from AADT volumes reported in 2017 and 2018.

*The Meridian Mall driveway provides access from Grand River Avenue to the Mall Drive ring road around the Meridian Mall building. The driveway splits in a Y-shape at Grand River Avenue. The west leg is signalized at Grand River Avenue for eastbound left-turns entering and southbound right-turns exiting the Meridian Mall. The east leg operates with stop sign control at Grand River Avenue for westbound right-turns entering and southbound left turns exiting the mall driveway. There are no sidewalks for pedestrians along this driveway. Opposing this driveway is the Meijer development driveway leading to the Meijer gas station and the Belle Tire outlet.*

## **DATA COLLECTION/PEAK HOUR TRAFFIC VOLUMES**

### **Traffic Counts**

TADI collected weekday turning movement traffic counts for this study at the Grand River Avenue intersection with the Meridian Mall driveways on Thursday, October 1, 2020. Traffic counts were collected for both the east and west legs from 6:00-8:00 a.m. and from 4:00-6:00 p.m. Based on the data collected (included in Appendix A), the peak hours at the study intersections occur from 8:00-9:00 a.m. (AM peak hour) and from 5:00-6:00 p.m. (PM peak hour). The existing 2020 peak hour turning movement counts were compiled for these hours and are shown on Exhibit 3.

During the count, no delay or queueing issues were reported at the signalized west leg of the Meridian Mall driveway, but eastbound traffic queues from the signalized Grand River Avenue/Marsh Road intersection periodically backed up through the Meridian Mall east leg driveway during the weekday PM peak hour. These queues occurred in the center turn lane/eastbound left-turn lane for traffic turning north onto Marsh Road and cleared during each eastbound left-turn phase at the traffic signal.

### **Traffic Adjustments**

At the time of the traffic counts, area public schools and Michigan State University were educating students in a virtual format due to the ongoing Covid-19 Pandemic. Although most retail and industrial businesses were open and operating as normal, many employees in office-type businesses were working from home. For these reasons, the existing 2020 traffic counts collected at the study intersections are lower than pre-Covid conditions.

The MDOT hourly traffic data on Grand River Avenue, just west of the Meridian Mall driveway was reviewed to determine the difference in traffic volumes between the MDOT count collected in 2017 and the recent count collected in 2020. The comparison shows that the eastbound 2017 traffic volumes on Grand River Avenue were higher than in 2020 by 30% in the AM peak hour and by 35% in the PM peak hour. The westbound 2017 traffic volumes on Grand River Avenue were higher than in 2020 by 105% in the AM peak hour and by 3% in the PM peak hour. The 2020 turning movement counts at the study

intersections were increased by these percentages to normalize the existing counts to 2017 levels. No further traffic volume increases (such as background traffic growth to 2021) were added since MDOT AADT forecasts showed no growth between 2017 and 2019 data. The factored peak hour traffic volumes at the study intersections are therefore shown as the Year 2021 Background Traffic Volumes on Exhibit 4.

## PROPOSED DEVELOPMENT

### Site Plan

The conceptual site plan for the proposed bank is shown on Exhibit 5. The bank is planned to be constructed on a vacant outlot on the Meridian Mall property. The bank building would encompass about 2,500 square feet and have two drive-through teller lanes and one ATM lane. Two access driveways are proposed to connect to the south side of Mall Drive. Twenty-five parking spaces will be provided on site for customers and employees. Buildout is expected in 2021.

### Trip Generation

Trips for the proposed bank were based on trip rates published in the ITE *Trip Generation Manual, 10<sup>th</sup> Edition*. The trip generation table for the proposed bank is shown in Table 1. The 2,500 square foot bank is expected to generate 324 weekday daily driveway trips, with 24 trips in the AM peak hour and 51 trips in the PM peak hour. An estimated 10 percent of these driveway are expected to be linked with other land uses on the Meridian Mall property, and an estimated 35 percent of the remaining trips are expected to be pass-by trips from traffic traveling along eastbound and westbound Grand River Avenue.

**Table 1. Trip Generation Table**

Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak			PM Peak		
				In	Out	Total	In	Out	Total
Drive-in Bank	912	2,500 SF	324	14	10	24	26	25	51
			FCE	(58%)	(42%)	(9.50)	(50%)	(50%)	(20.45)
<b>Total Driveway Trips</b>			<b>324</b>	<b>14</b>	<b>10</b>	<b>24</b>	<b>26</b>	<b>25</b>	<b>51</b>
<i>Minus Externally Linked Trips</i>				-1	-1	-2	-3	-3	-6
<i>Minus Pass-by Trips</i>				-4	-4	-8	-8	-8	-16
<b>Total New Trips</b>			<b>190</b>	<b>9</b>	<b>5</b>	<b>14</b>	<b>15</b>	<b>14</b>	<b>29</b>

### Trip Distribution

The trip distribution for new and pass-by trips were based on a combination of the existing peak hour turning movements traveling to/from the proposed Meridian Mall driveway at Grand River Avenue and on the MDOT AADT data obtained for Okemos Road to the west, Grand River Avenue, and Marsh Road to the east. It is expected that bank traffic will be traveling to/from these major area roadways. Due to the heavy traffic flows and periodic eastbound queues that back up through the east Meridian Mall driveway to Grand River Avenue, existing counts showed that very few cars make a left-turn onto eastbound Grand River Avenue from the Meridian Mall driveway in the PM peak hour. It is expected that new bank traffic will follow a similar pattern with most of the traffic that is traveling to the east on Grand River Avenue or turning north or south onto Marsh Road will do so via the

signalized Meridian Mall driveway to Marsh Road. The trip distributions and traffic assignments reflect that estimated traffic pattern.

Trip Distribution – New Trips

- 40% to/from the west on Grand River Avenue
- 15% to/from the east on Grand River Avenue
- 15% to/from the west on Mall Drive (toward Okemos Road)
- 30% to/from the east on Mall Drive (toward Marsh Road)

Trip Distribution – Internally Linked Trips

- 55% to/from the west on Mall Drive
- 45% to/from the east on Mall Drive

Trip Distribution – Pass-by Trips

- 41% AM & 55% PM eastbound on Grand River Avenue
- 59% AM & 45% PM westbound on Grand River Avenue

**Traffic Assignment**

The proposed bank trips were assigned to the study intersections and site driveways based on the above trip distributions. The traffic assignments are shown on the following Exhibits:

- Exhibit 6: Meridian Mall Bank New Trips
- Exhibit 7: Meridian Mall Bank Externally Linked Trips
- Exhibit 8: Meridian Mall Bank Pass-by Trips
- Exhibit 9: Meridian Mall Bank Driveway Trips

**Build Traffic Volumes**

The Meridian Mall Bank driveway trips (shown on Exhibit 9) were added to the 2021 Background traffic volumes to generate the 2021 Build traffic volumes evaluated in this study. The 2021 Build Traffic Volumes are shown on Exhibit 10.

**SIGHT DISTANCE**

The sight distance requirements for the Meridian Mall driveways to Grand River Avenue were reviewed for traffic making a left-turn or right-turn from these driveways. Grand River Avenue is straight and flat and the Y-shaped driveway configuration results in angles that provide greater visibility of oncoming traffic on Grand River Avenue from the driveway stop bars.

According to the American Association of State Highway and Transportation Officials (AASHTO), the sight distance requirements for a single-unit design vehicle turning onto a five-lane road with a design speed of 50 mph (assumed as five mph over the posted speed limit) is a minimum of 800 feet for a vehicle making a left turn (looking right) and a minimum of 625 feet for a vehicle making a right turn (looking left). The west Meridian Mall driveway (for exiting right turns) is located 625 feet west of Marsh Road and the east Meridian Mall driveway (for exiting left turns) is located 1,625 east of Okemos Road. Based on field observations, vehicles from the Meridian Mall driveway can see oncoming Grand

River Avenue traffic from both of these intersections. Therefore, the minimum sight distance requirements are met.

### PEAK HOUR TRAFFIC OPERATIONS & QUEUES

The study intersections were analyzed using the Synchro 11 traffic analysis model (outputs based on the *Highway Capacity Manual, 6th Edition*), SimTraffic 11, and the peak hour turning movement volumes estimated for each intersection. Intersection operation is defined by “level of service.” Level of Service (LOS) is a quantitative measure that refers to the overall quality of flow at an intersection ranging from very good, represented by LOS ‘A’, to very poor, represented by LOS ‘F’ (see Table 2). For the purposes of this study, LOS D or better was used to define acceptable peak hour operating conditions.

**Table 2. LOS Descriptions**

LOS	Signalized Intersections Control Delay/Vehicle (sec/veh)	Unsignalized Intersections Avg. Control Delay (sec/veh)	Relative Delay
A	≤10	≤10	Short Delays
	Free-flow traffic operations at average travel speeds. Vehicles completely unimpeded in ability to maneuver. Minimal delay at signalized intersections		
B	> 10 - 20	> 10 - 15	
	Reasonably unimpeded traffic operations at average travel speeds. Vehicle maneuverability slightly restricted. Low traffic delays.		
C	> 20 - 35	> 15 - 25	Moderate Delays
	Stable traffic operations. Lane changes becoming more restricted. Travel speeds reduced to half of average free flow travel speeds. Longer		
D	> 35 - 55	> 25 - 35	
	Small increases in traffic flow can cause increased delays. Delays likely attributable to increased traffic, reduced signal progression, and adverse		
E	> 55 - 80	> 35 - 50	Long Delays
	Significant delays. Travel speeds reduced to one-third of average free flow travel speed.		
F	> 80	> 50	
	Extremely low speeds. Intersection congestion. Long delays. Extensive traffic queues at intersections.		

Source: Highway Capacity Manual, Transportation Research Board, Washington, D.C., 2010

The capacity analysis tables showing the peak hour intersection and approach delays (in seconds per vehicle) and LOS are shown in Table 3 for the AM peak hour and in Table 4 for the PM peak hour. The LOS tables compare the expected traffic operations between the 2021 Background (No Build) and 2021 Build (with buildout of the proposed bank) traffic volumes. The Synchro and SimTraffic analysis reports for the 2021 Background traffic analysis are in Appendix B. The Synchro and SimTraffic analysis reports for the 2021 Build traffic analysis are in Appendix C.

**Table 3. AM Peak Hour Traffic Operations**

Intersection	Approach	AM Peak Hour			
		2021 Bckgd		2021 Build	
		Delay	LOS	Delay	LOS
Grand River Avenue & W. Mall Driveway* <i>Traffic Signal Control</i>	EB	0.5	A	0.9	A
	WB	1.4	A	1.4	A
	SB	2.2	A	2.2	A
	Overall	1.1	A	1.3	A
Grand River Avenue & E. Mall Driveway <i>Stop Sign Control</i>	EB	0.0	A	0.0	A
	WB	0.3	A	0.3	A
	NB	26.5	D	26.4	D
	SB	57.3	F	59.9	F
	Overall	1.5	A	1.6	A

\*SimTraffic used for delay evaluation due to non-NEMA phasing/unable to process HCM 6 results.

**Table 4. PM Peak Hour Traffic Operations**

Intersection	Approach	PM Peak Hour			
		2021 Bckgd		2021 Build	
		Delay	LOS	Delay	LOS
Grand River Avenue & W. Mall Driveway <i>Traffic Signal Control</i>	EB	1.9	A	2.1	A
	WB	2.4	A	3.0	A
	SB	2.0	A	1.4	A
	Overall	2.0	A	2.3	A
Grand River Avenue & E. Mall Driveway <i>Stop Sign Control</i>	EB	0.0	A	0.0	A
	WB	0.2	A	0.2	A
	NB	38.9	E	38.3	E
	SB	65.0	F	67.7	F
	Overall	1.4	A	1.5	A

\*SimTraffic used for delay evaluation due to non-NEMA phasing/unable to process HCM 6 results.

All traffic movements at the signalized west Meridian Mall driveway to Grand River Avenue operates at acceptable LOS A for all traffic movements with the 2021 Background and 2021 Build traffic volumes. The northbound and southbound approaches at the stop-controlled east Meridian Mall driveway to Grand River Avenue operate at LOS E and F conditions with both the 2021 Background and 2021 Build traffic volumes. During the peak hours, fewer gaps in Grand River Avenue traffic exist so that vehicles from the east Meridian Mall driveway and the opposing Meijer development/Belle Tire driveway have to wait up to about one minute in order to make a left turn onto Grand River Avenue. Due to the heavy peak hour volumes on Grand River Avenue, this level of left-turn delay is typical for most of the stop-controlled driveways on Grand River Avenue in the vicinity of the Meridian Mall. Queues at the driveway approaches are expected to be low at all driveway approaches (1-2 vehicle queues in the peak hours). The bank traffic is expected to generate very little additional delay at the study intersections compared to the 2021 Background (No Build) traffic condition.

## **CONCLUSIONS**

The proposed bank is expected to generate a relatively low amount of additional traffic during the peak hours. Because of its location on the south side of the Meridian Mall, the majority of the bank trips are expected to travel through the Meridian Mall driveways to Grand River Avenue. This additional traffic is expected to impact the study area by adding only minor peak hour delay increases (up to 2.7 seconds per vehicle) to the turning movements from the Meridian Mall driveways to Grand River Avenue. Delay increases to eastbound and westbound Grand River Avenue are expected to be negligible throughout the entire day.

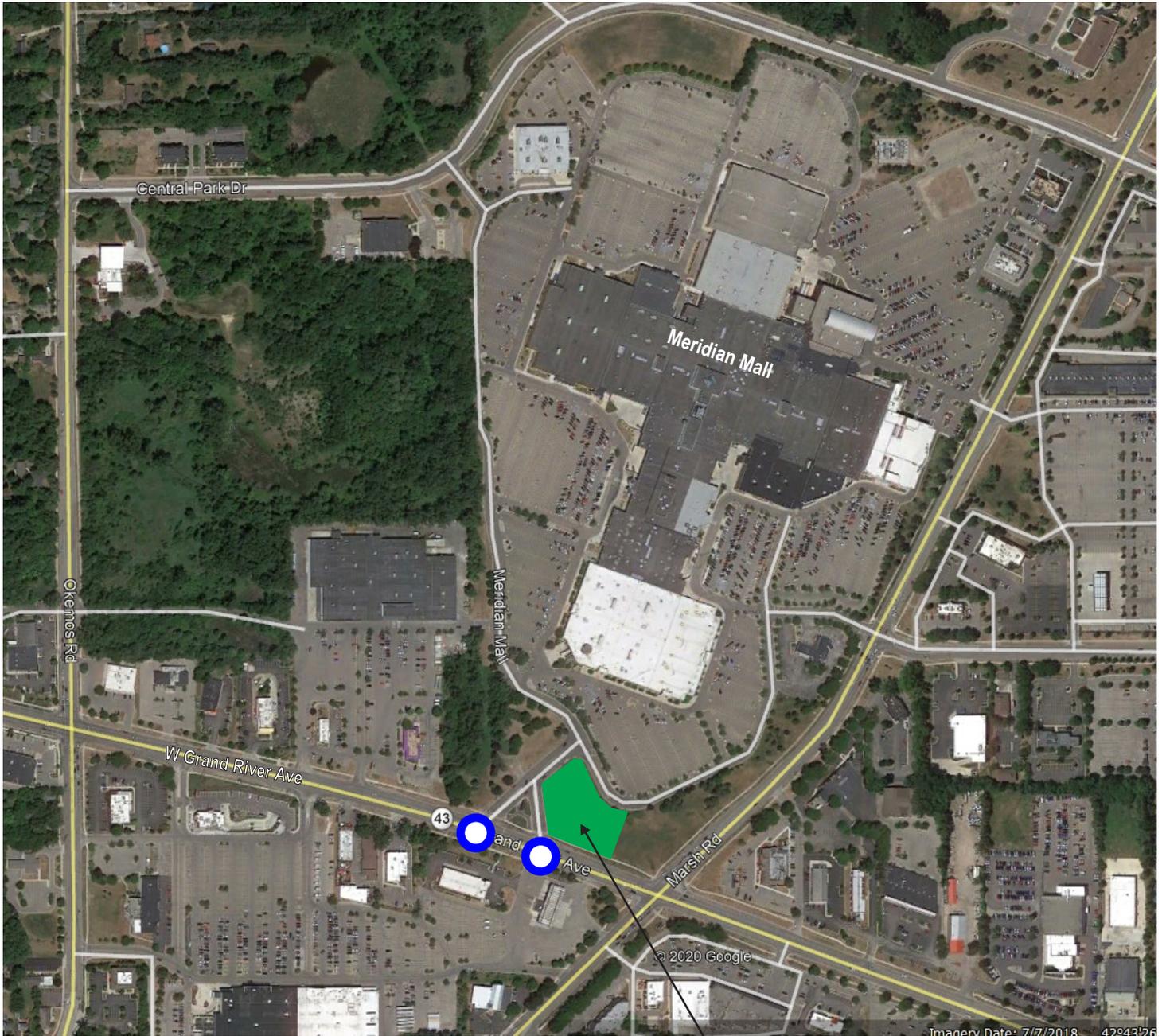
Therefore, it is concluded that the additional traffic from the proposed bank is not expected to significantly impact traffic operations at the study intersections. No changes to the existing geometrics or traffic control at these intersections are recommended to accommodate the additional traffic from the proposed bank.

## **APPENDICES**

Appendix A – Traffic Counts

Appendix B – Synchro/SimTraffic Analysis: 2021 Background Traffic

Appendix C – Synchro/SimTraffic Analysis: 2021 Build Traffic



Imagery Date: 7/7/2018 42°43'26"  
Source: GoogleEarth, accessed 10-9-2020

Proposed Bank Location

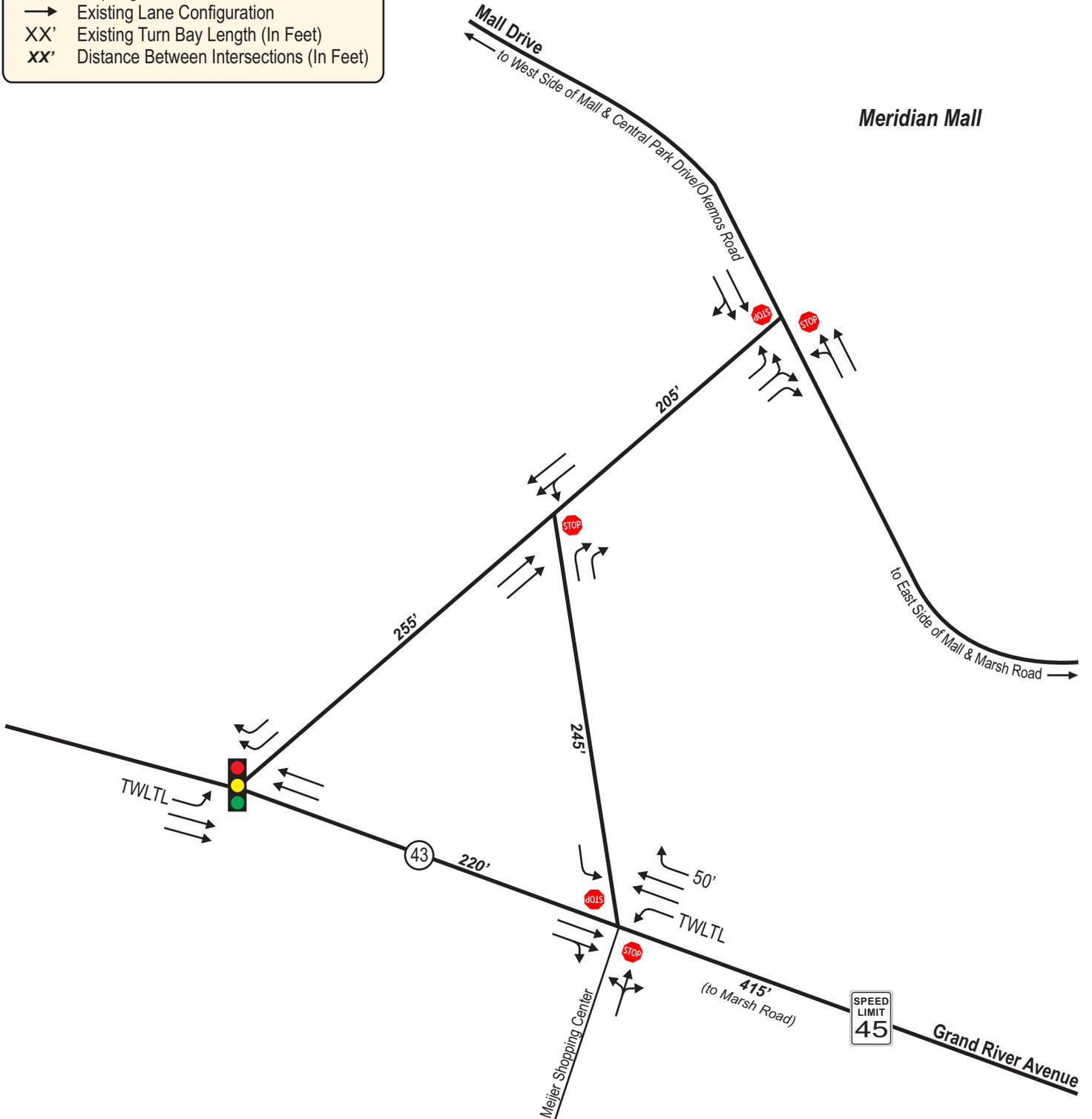
**LEGEND**

-  Study Area Intersection
-  Site Location



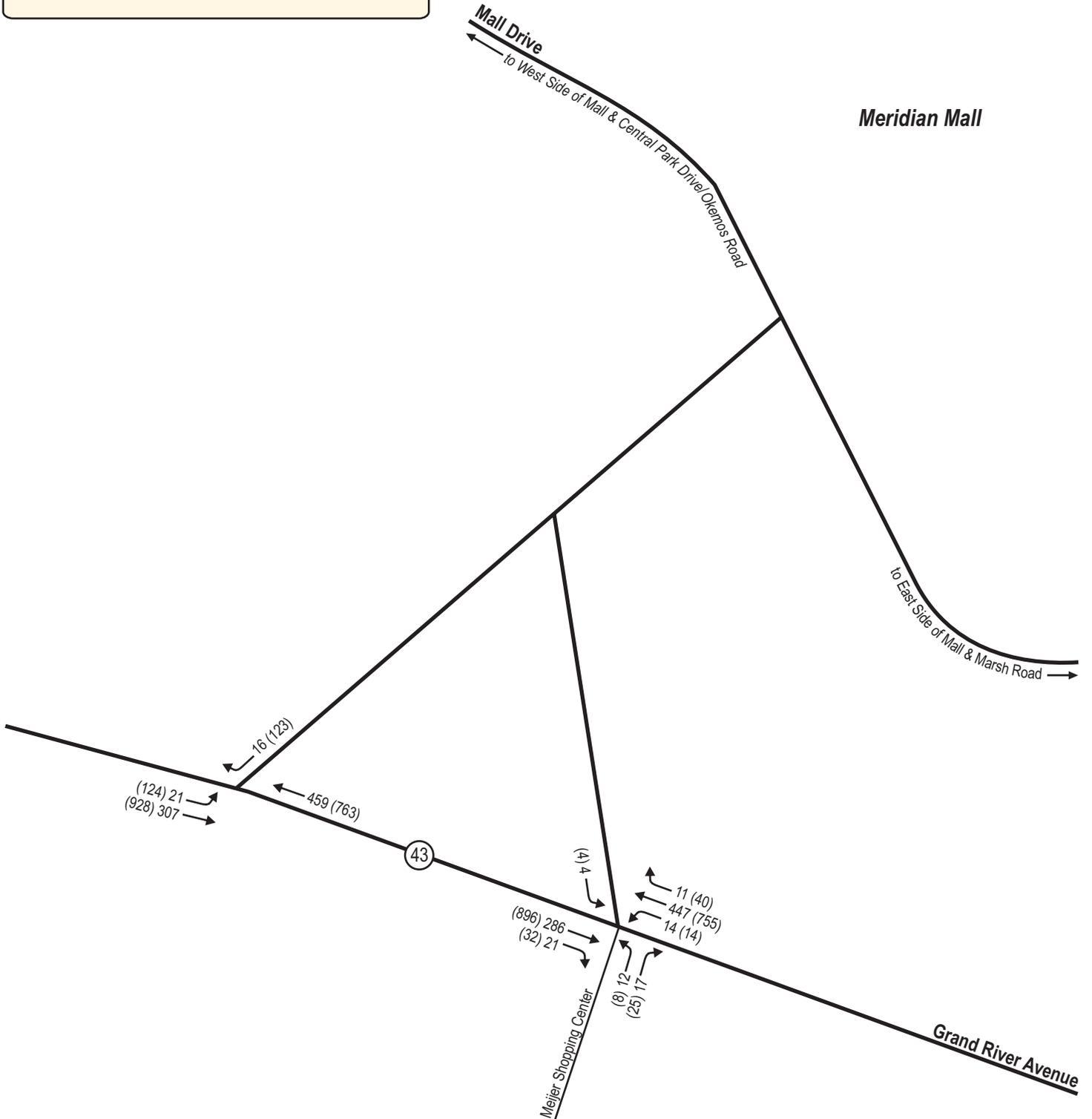
**LEGEND**

-  Traffic Signal
-  Stop Sign
-  Existing Lane Configuration
- XX'** Existing Turn Bay Length (In Feet)
- XX'** Distance Between Intersections (In Feet)



**LEGEND**

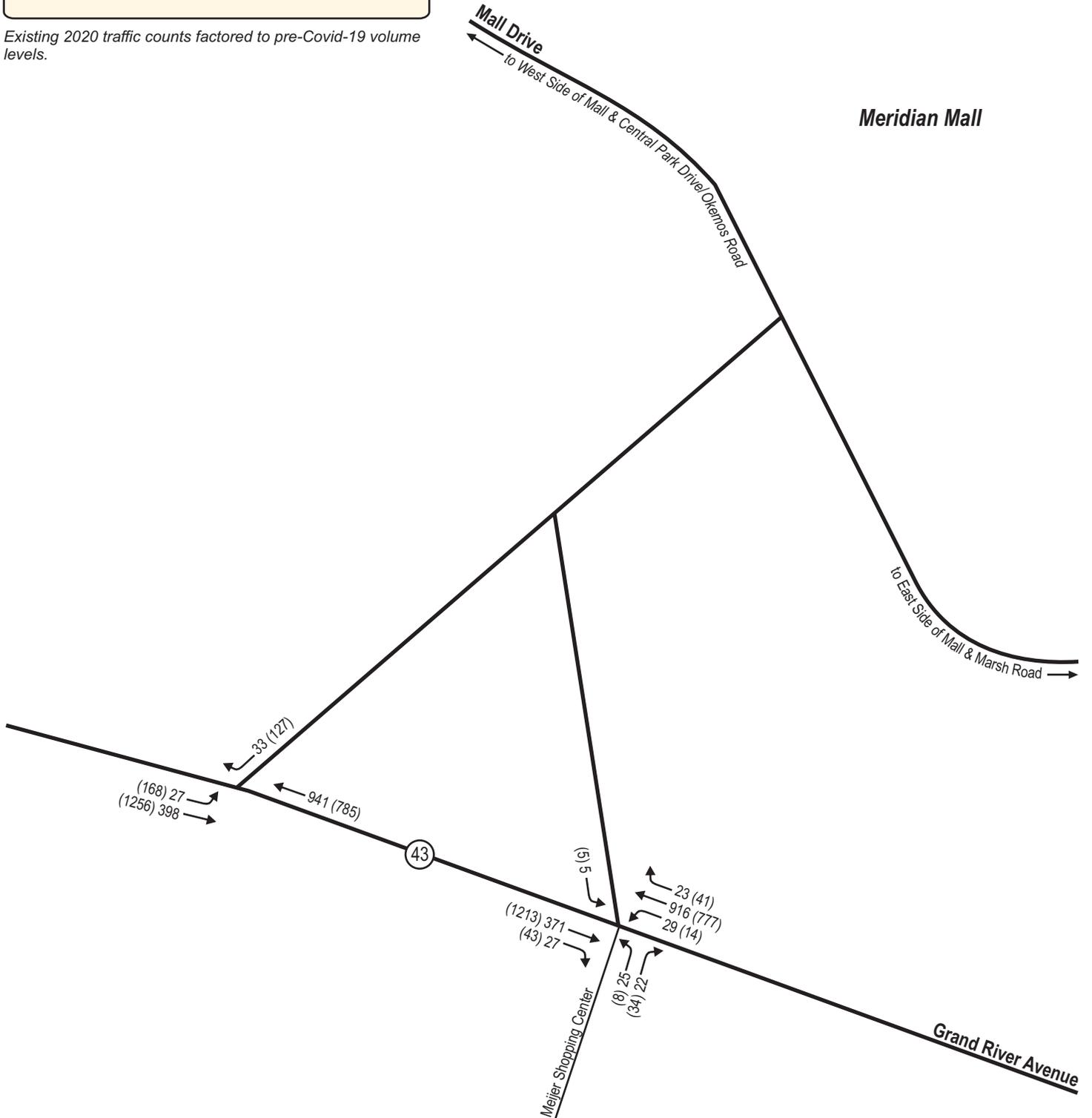
- XX AM Peak Hour Volumes (8:00-9:00 AM)
- (XX) PM Peak Hour Volumes (5:00-6:00 PM)

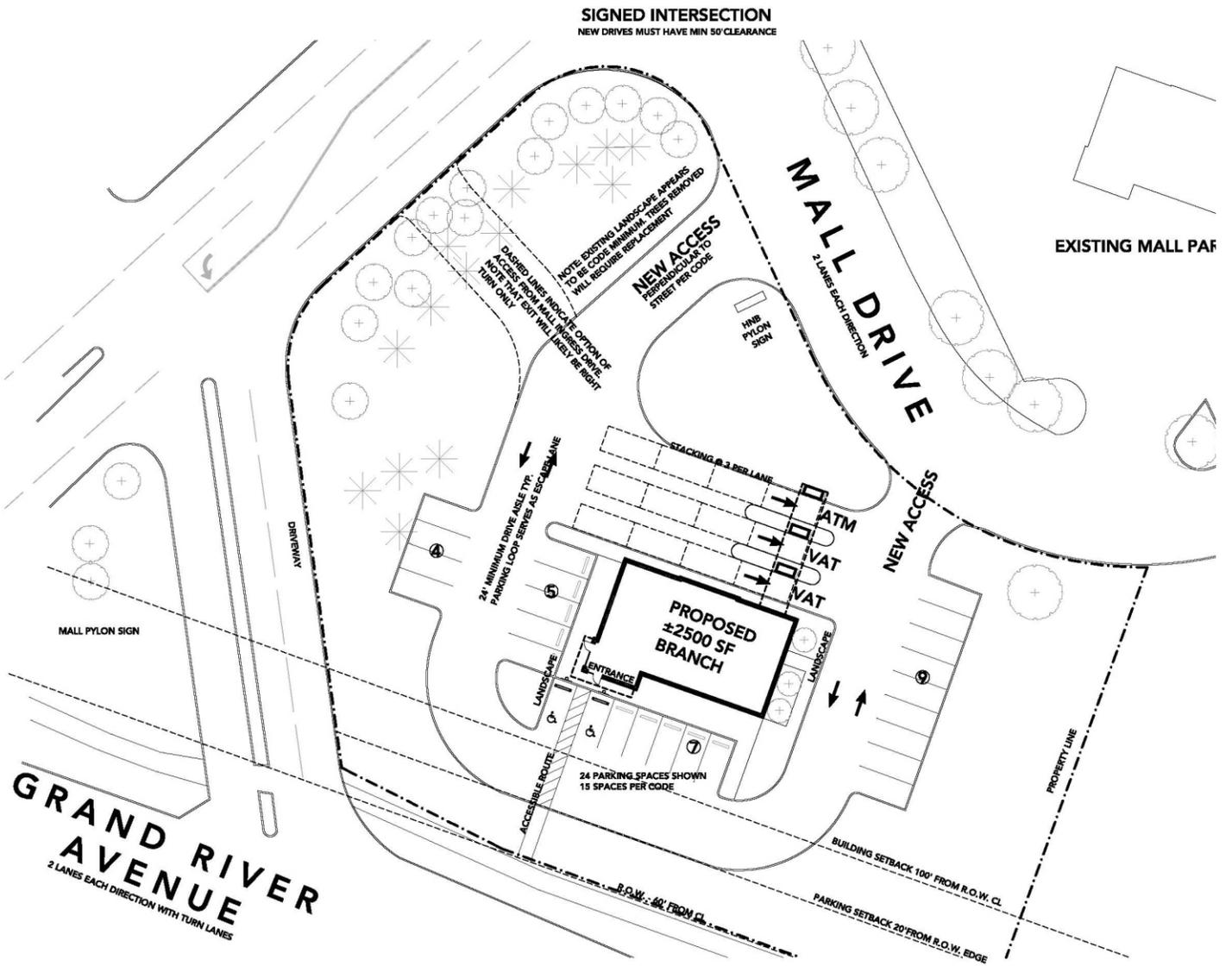


**LEGEND**

- XX AM Peak Hour Volumes (8:00-9:00 AM)
- (XX) PM Peak Hour Volumes (5:00-6:00 PM)

Existing 2020 traffic counts factored to pre-Covid-19 volume levels.





HUNTINGTON NATIONAL BANK | MERIDIAN MALL, MI

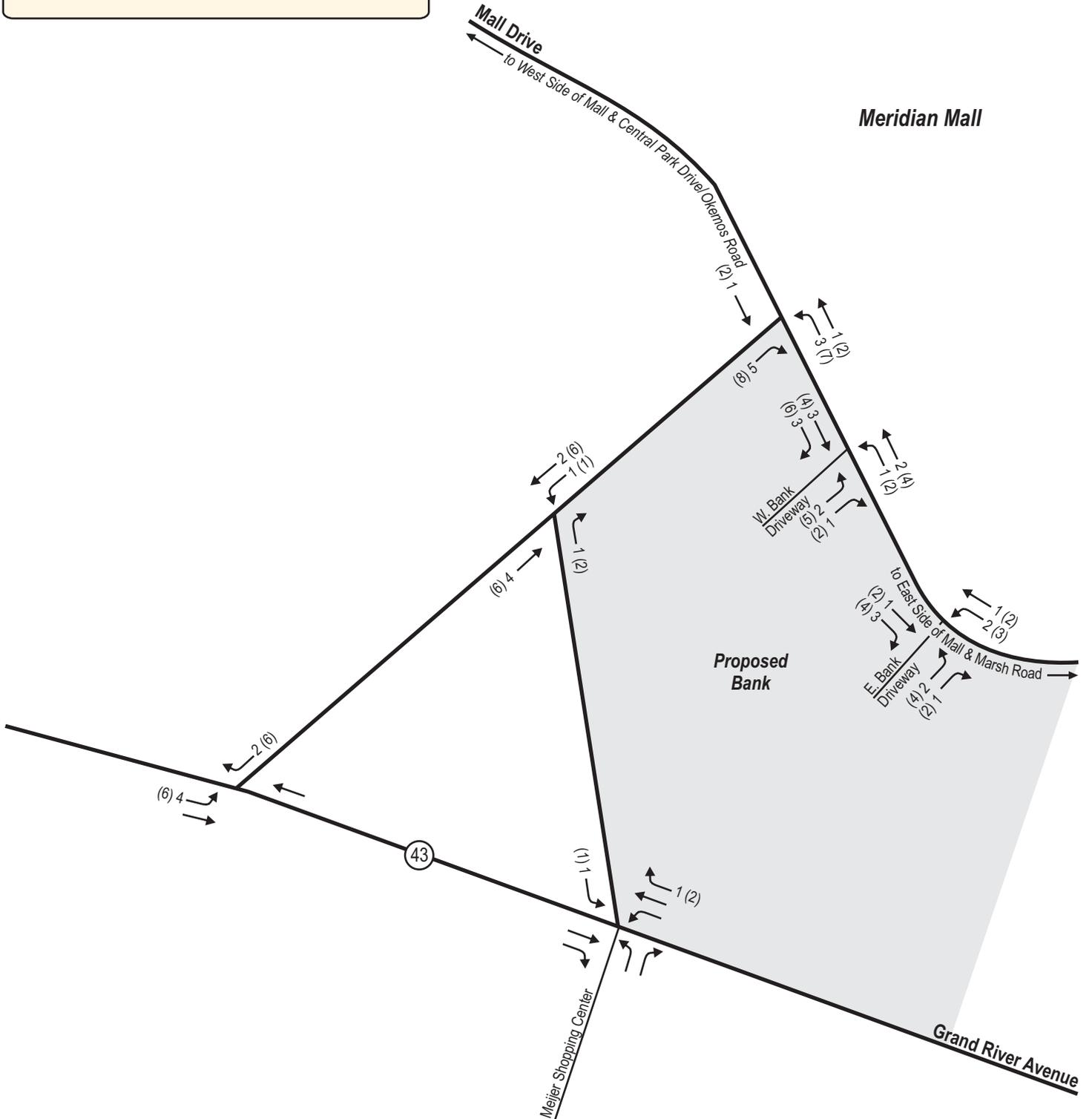
**SCHEMATIC SITE PLAN**  
NTS



NOT TO SCALE

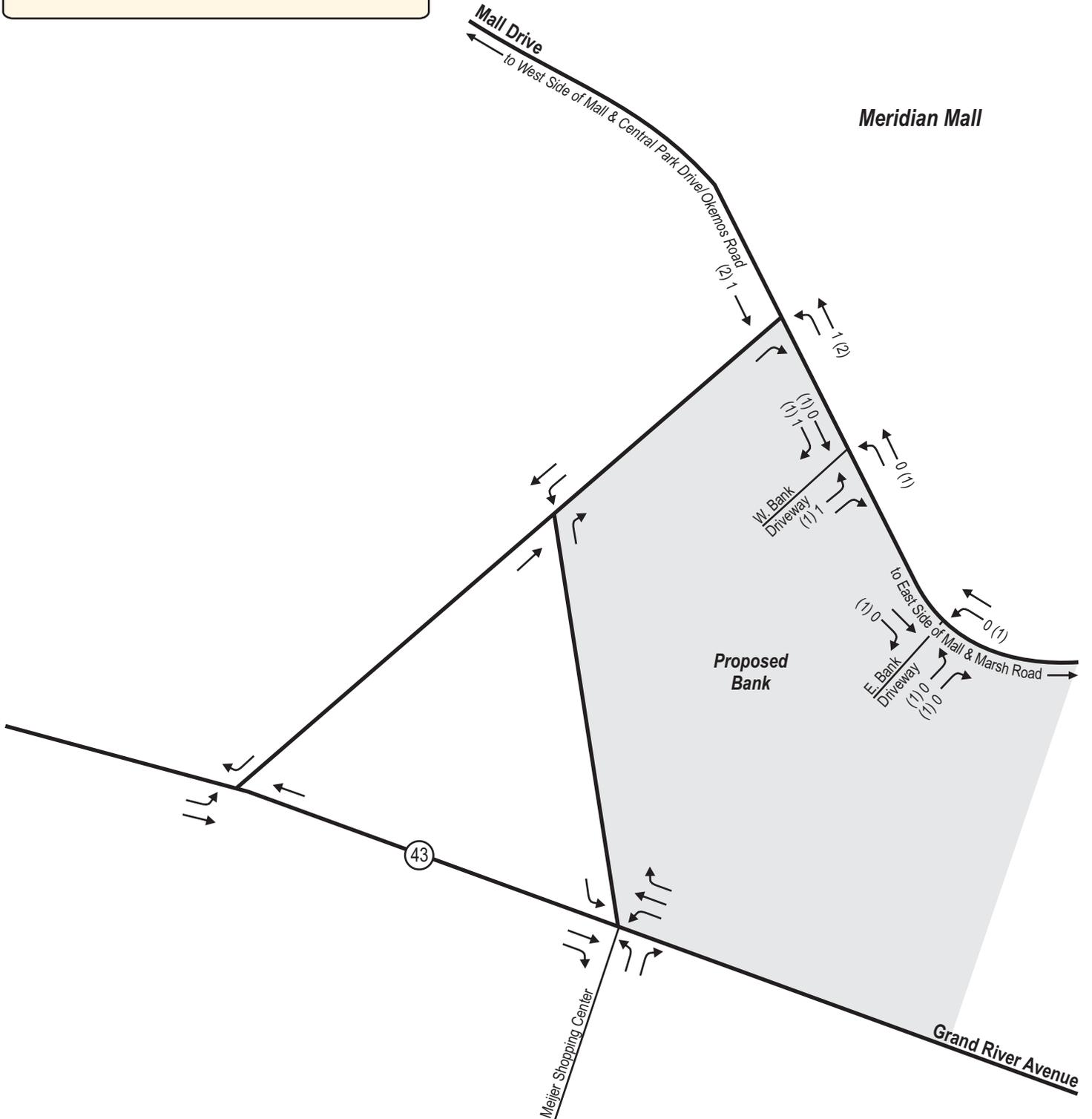
**LEGEND**

- XX AM Peak Hour Volumes (8:00-9:00 AM)
- (XX) PM Peak Hour Volumes (5:00-6:00 PM)



**LEGEND**

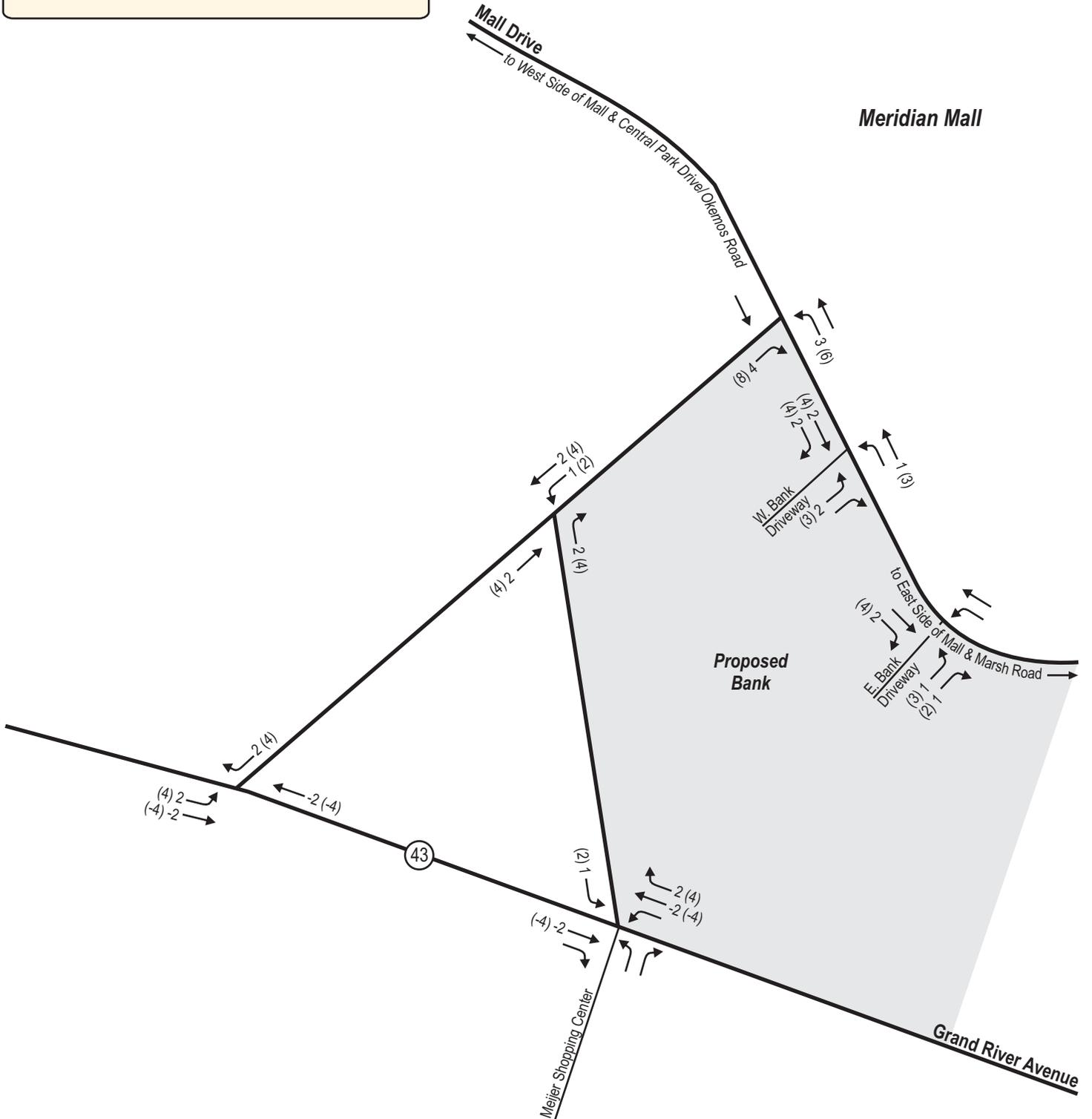
- XX AM Peak Hour Volumes (8:00-9:00 AM)
- (XX) PM Peak Hour Volumes (5:00-6:00 PM)



NOT TO SCALE

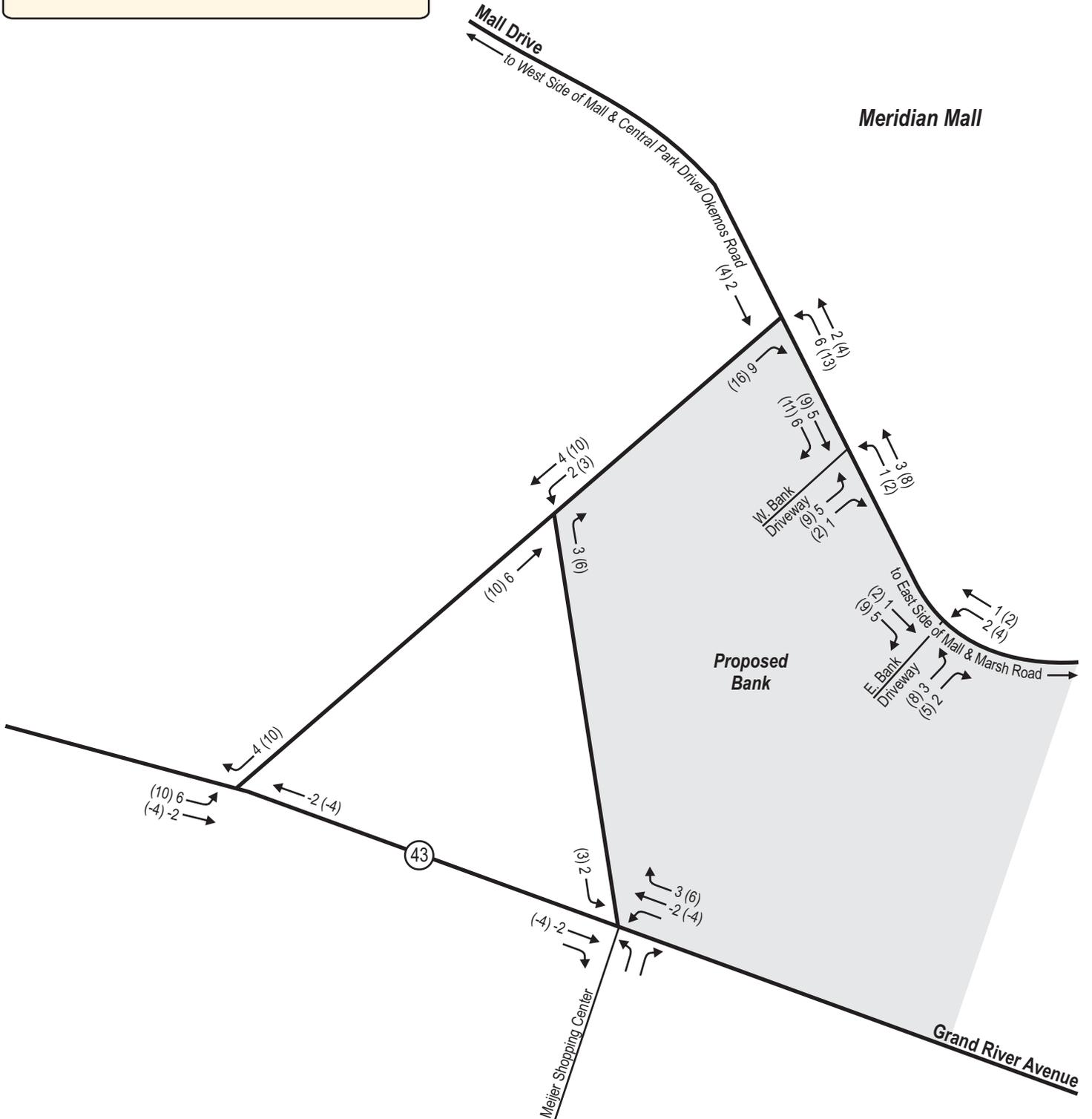
**LEGEND**

- XX AM Peak Hour Volumes (8:00-9:00 AM)
- (XX) PM Peak Hour Volumes (5:00-6:00 PM)



**LEGEND**

- XX AM Peak Hour Volumes (8:00-9:00 AM)
- (XX) PM Peak Hour Volumes (5:00-6:00 PM)



**LEGEND**

- XX AM Peak Hour Volumes (8:00-9:00 AM)
- (XX) PM Peak Hour Volumes (5:00-6:00 PM)



NOT TO SCALE

# **APPENDIX A**

## **TRAFFIC COUNTS**

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# Intersection Traffic Volume Report

<b>Count Basics</b>		<b>Version 2013.J4.1</b>		<b>Page 1 of 13</b>	
Start Date:	Thursday, October 1, 2020	Weekday	Schools in Session		
Total Number of Hours Counted:	4	Non-Holiday	No Special Events		

## Base Information, Observed (4) Hour and Estimated (24) Hour Volume Summaries

Intersection of: **Meridian Mall Drive and Grand River Avenue**

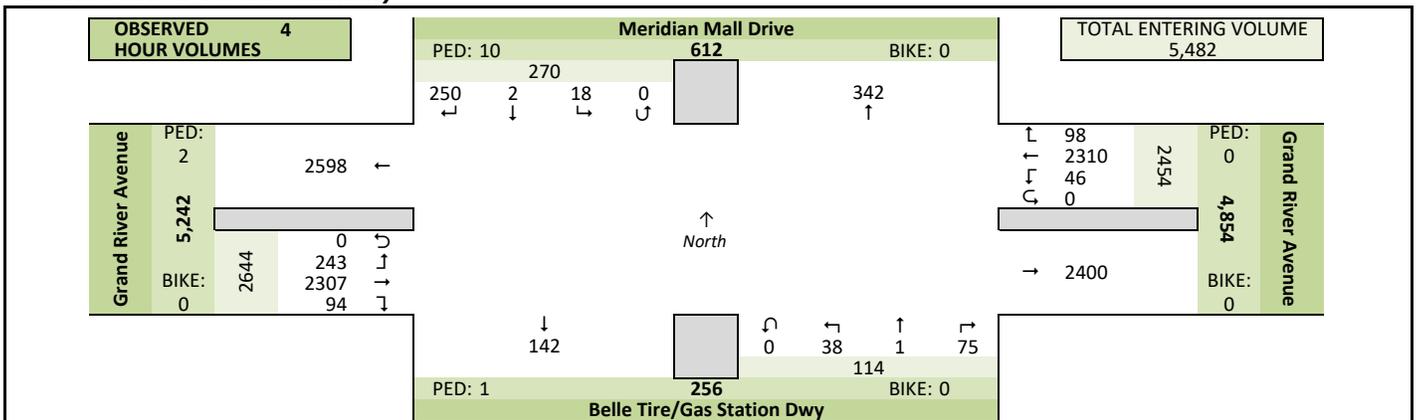
### Site Information

Municipality	Meridian Township		
Traffic Control	Traffic Signal		
Roadway Names	North Direction	↑	
North Leg	Meridian Mall Drive		
East Leg	Grand River Avenue		
South Leg	Belle Tire/Gas Station Dwy		
West Leg	Grand River Avenue		
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
	Pre-school children	None	
	Elementary school age children	None	
	Visually impaired (white cane/helper dog)	None	
	Elderly/disabled (except wheelchairs)	None	
	Wheelchairs/electric scooters	None	
Other (describe)	None	None	

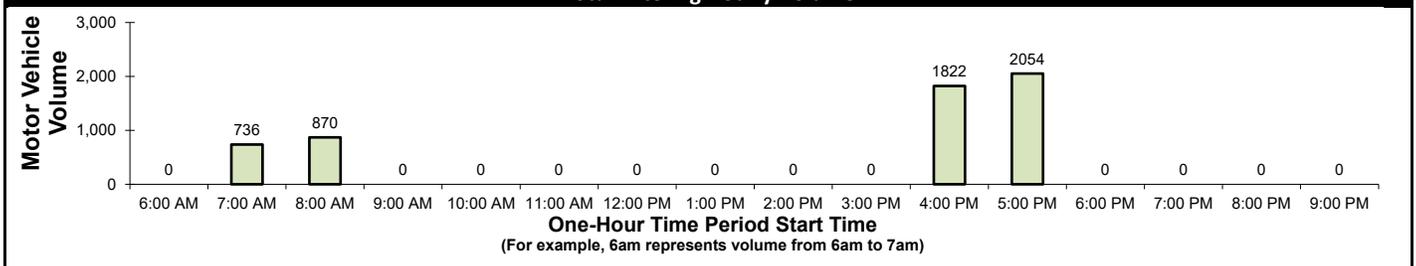
### Count Information

Hrs Counted:	7:00 AM-9:00 AM and 4:00 PM-6:00 PM		
1st Day of Count	Thursday, October 1, 2020		Weather
AM Peak Period	Thursday, October 1, 2020		Clear, occasional rain
Midday Peak Period			
PM Peak Period	Thursday, October 1, 2020		Clear, occasional rain
Calculated Peak Hours			
	AM	8:00-9:00am	MD
			PM
			5:00-6:00pm
Peak Hours Selected for Analysis			
	AM	8:00-9:00am	MD
			PM
			5:00-6:00pm
Daily/Seasonal Adjustment Group			
Count Expansion Group			
Daily/Seasonal Adjustment Factor	1	Count Expansion Factor	1.000
Company Name	TADI, Inc.		Manual Adj.
			1.000
Observers	AM Peak Period	TSC	
	Midday Peak Period		
	PM Peak Period	TSC	
Comments	Okemos Public Schools and MSU operating virtually rather than in person.		

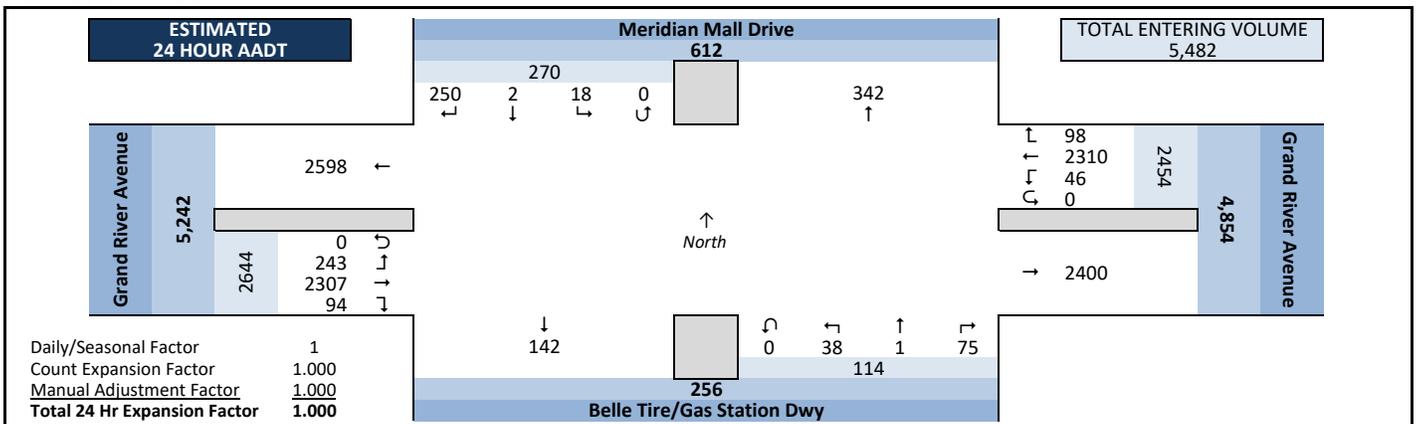
### Observed 4 Hour Volume Summary



Total Entering Hourly Volume



### Estimated 24 Hour AADT



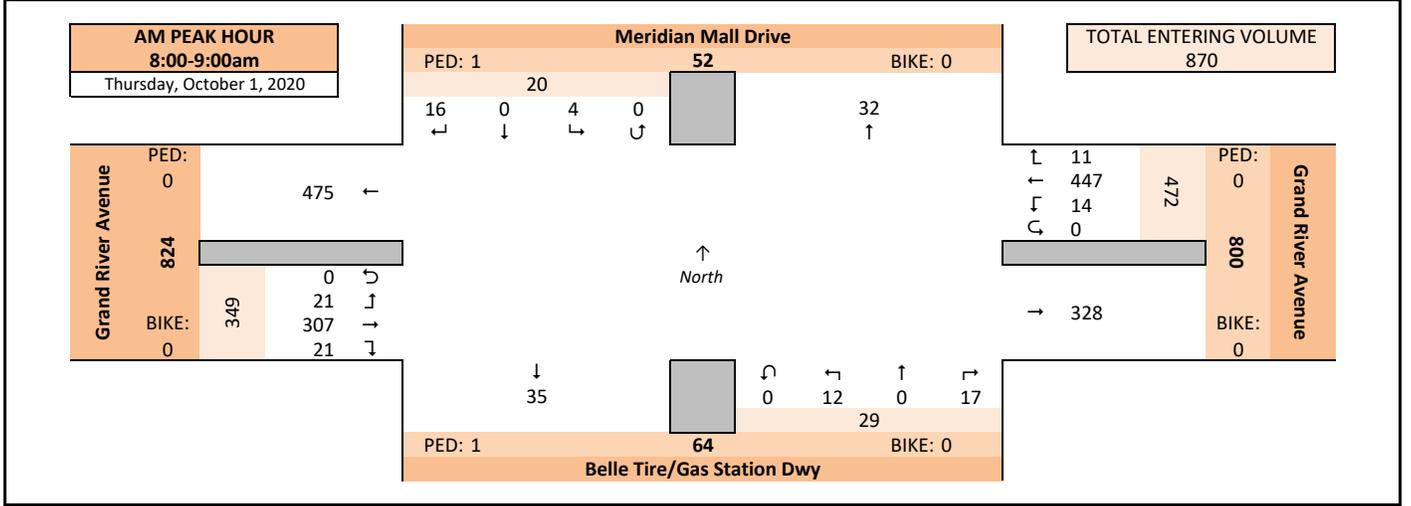
# Intersection Traffic Volume Report

## Peak Hour Volume Graphical Summary

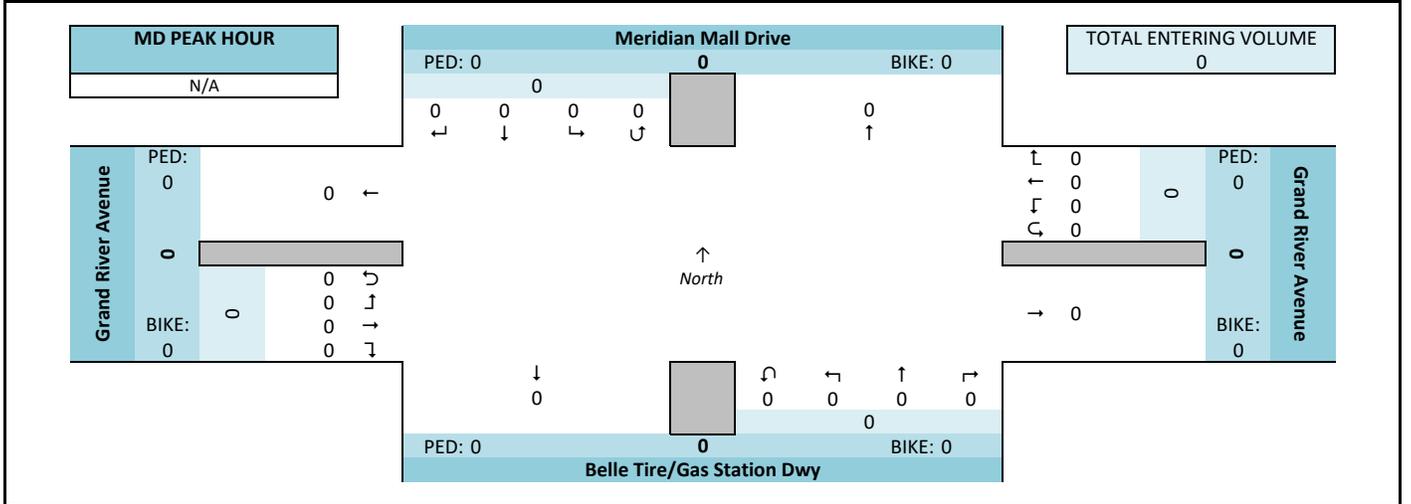
### Meridian Mall Drive and Grand River Avenue



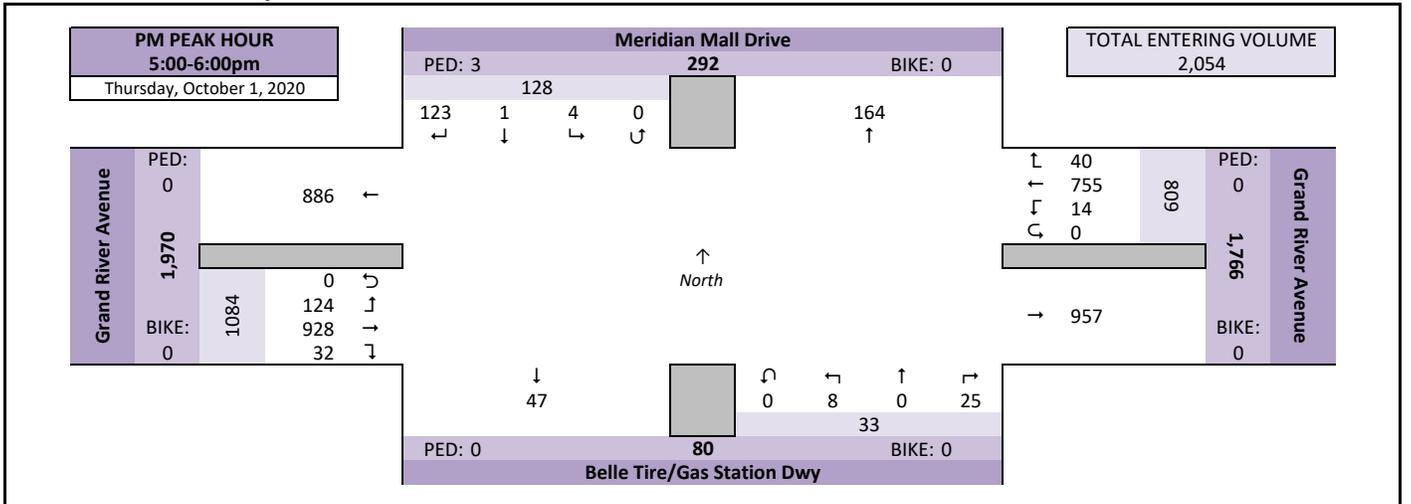
### AM Peak Hour Summary



### Midday (MD) Peak Hour Summary



### PM Peak Hour Summary





# Intersection Traffic Volume Report

## 15-Minute Motor Vehicle Data

### Meridian Mall Drive and Grand River Avenue



#### 15-Minute Motor Vehicle Data

15-Minute Time Period	From North					From East					From South					From West					15-Min Totals	Hourly Sum	PHF		
	Meridian Mall Drive					Grand River Avenue					Belle Tire/Gas Station Dwy					Grand River Avenue									
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total					
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:00 AM	2	1	0	0	3	2	68	1	0	71	1	1	2	0	4	3	36	3	0	42	120		736	0.77	
7:15 AM	7	0	0	0	7	4	83	1	0	88	3	0	2	0	5	4	54	2	0	60	160		821	0.86	
7:30 AM	4	0	1	0	5	4	123	4	0	131	1	0	3	0	4	6	70	1	0	77	217		864	0.90	
7:45 AM	3	0	1	0	4	2	127	0	0	129	5	0	3	0	8	6	83	9	0	98	239		846	0.88	
8:00 AM	3	0	1	0	4	4	111	3	0	118	3	0	2	0	5	5	69	4	0	78	205		870	0.83	
8:15 AM	2	0	1	0	3	2	111	2	0	115	4	0	3	0	7	4	71	3	0	78	203				
8:30 AM	8	0	1	0	9	1	108	4	0	113	5	0	2	0	7	4	61	5	0	70	199				
8:45 AM	3	0	1	0	4	4	117	5	0	126	5	0	5	0	10	8	106	9	0	123	263				
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:15 PM	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			
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:00 PM	34	0	0	0	34	7	174	3	0	184	6	0	3	0	9	4	210	16	0	230	457		1822	0.95	
4:15 PM	19	0	3	0	22	8	176	1	0	185	4	0	2	0	6	6	219	20	0	245	458		1856	0.95	
4:30 PM	21	0	3	0	24	10	198	6	0	214	7	0	2	0	9	7	203	23	0	233	480		1938	0.90	
4:45 PM	21	0	2	0	23	10	159	2	0	171	6	0	1	0	7	5	197	24	0	226	427		1973	0.91	
5:00 PM	30	1	1	0	32	7	170	8	0	185	4	0	1	0	5	7	231	31	0	269	491		2054	0.95	
5:15 PM	24	0	0	0	24	11	200	0	0	211	8	0	5	0	13	9	249	34	0	292	540				
5:30 PM	31	0	2	0	33	7	189	2	0	198	5	0	0	0	5	11	238	30	0	279	515				
5:45 PM	38	0	1	0	39	15	196	4	0	215	8	0	2	0	10	5	210	29	0	244	508				
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
<b>Totals</b>	<b>250</b>	<b>2</b>	<b>18</b>	<b>0</b>	<b>270</b>	<b>98</b>	<b>2310</b>	<b>46</b>	<b>0</b>	<b>2454</b>	<b>75</b>	<b>1</b>	<b>38</b>	<b>0</b>	<b>114</b>	<b>94</b>	<b>2307</b>	<b>243</b>	<b>0</b>	<b>2644</b>	<b>5482</b>				

#### Peak Hour All Vehicle Volume Summary

Hourly Time Period	From North					From East					From South					From West					Total Hourly Volume	PHF
	Meridian Mall Drive					Grand River Avenue					Belle Tire/Gas Station Dwy					Grand River Avenue						
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM 8:00 AM	16	0	4	0	20	11	447	14	0	472	17	0	12	0	29	21	307	21	0	349	870	0.83
MD 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM 5:00 PM	123	1	4	0	128	40	755	14	0	809	25	0	8	0	33	32	928	124	0	1084	2054	0.95

# Intersection Traffic Volume Report

## 15-Minute Heavy Vehicle Data

### Meridian Mall Drive and Grand River Avenue



#### 15-Minute Heavy Vehicle Data

15-Minute Time Period	From North					From East					From South					From West					15-Min Totals	Hourly Sum	
	Meridian Mall Drive					Grand River Avenue					Belle Tire/Gas Station Dwy					Grand River Avenue							
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total			
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	1	1	0	0	2	2	3	0	0	5	1	1	0	0	2	1	3	0	0	4	13	38	
7:15 AM	2	0	0	0	2	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	6	40	
7:30 AM	2	0	0	0	2	2	3	0	0	5	0	0	0	0	0	0	5	0	0	5	12	51	
7:45 AM	3	0	0	0	3	2	1	0	0	3	1	0	0	0	1	0	0	0	0	0	7	53	
8:00 AM	2	0	1	0	3	2	4	1	0	7	1	0	0	0	1	0	3	1	0	4	15	57	
8:15 AM	1	0	0	0	1	2	7	1	0	10	2	0	0	0	2	0	4	0	0	4	17		
8:30 AM	3	0	1	0	4	1	4	1	0	6	0	0	1	0	1	1	2	0	0	3	14		
8:45 AM	1	0	0	0	1	2	4	0	0	6	0	0	1	0	1	0	3	0	0	3	11		
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:15 PM	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	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	3	0	0	0	3	1	4	0	0	5	0	0	0	0	0	0	2	0	0	2	10	45	
4:15 PM	2	0	0	0	2	3	2	0	0	5	0	0	0	0	0	0	3	0	0	3	10	42	
4:30 PM	2	0	0	0	2	3	5	0	0	8	0	0	0	0	0	0	4	0	0	4	14	41	
4:45 PM	2	0	0	0	2	2	1	0	0	3	0	0	0	0	0	0	6	0	0	6	11	33	
5:00 PM	3	0	0	0	3	2	1	0	0	3	0	0	0	0	0	0	1	0	0	1	7	33	
5:15 PM	2	0	0	0	2	3	1	0	0	4	1	0	0	0	1	0	2	0	0	2	9		
5:30 PM	2	0	0	0	2	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	6		
5:45 PM	3	0	0	0	3	3	3	0	0	6	0	0	0	0	0	0	2	0	0	2	11		
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Totals</b>	<b>34</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>37</b>	<b>32</b>	<b>47</b>	<b>3</b>	<b>0</b>	<b>82</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>2</b>	<b>42</b>	<b>1</b>	<b>0</b>	<b>45</b>	<b>173</b>		

#### Peak Hour Heavy Vehicle Volume Summary

Hourly Time Period	From North					From East					From South					From West					Total Hourly Volume
	Meridian Mall Drive					Grand River Avenue					Belle Tire/Gas Station Dwy					Grand River Avenue					
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM 8:00 AM	7	0	2	0	9	7	19	3	0	29	3	0	2	0	5	1	12	1	0	14	57
MD 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 5:00 PM	10	0	0	0	10	9	8	0	0	17	1	0	0	0	1	0	5	0	0	5	33

# **APPENDIX B**

## **SYNCHRO/SIMTRAFFIC ANALYSIS**

### **2021 Background Traffic**

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Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑	↑		↑↑		↑		
Traffic Vol, veh/h	0	371	27	29	916	23	25	0	22	5	0	0
Future Vol, veh/h	0	371	27	29	916	23	25	0	22	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	350	-	50	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	94	94	94	72	72	72	60	60	60
Heavy Vehicles, %	4	4	4	6	6	6	17	17	17	45	45	45
Mvmt Flow	0	523	38	31	974	24	35	0	31	8	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	561	0	0	1091	1602	281	1298	-	-
Stage 1	-	-	-	-	-	-	542	542	-	1036	-	-
Stage 2	-	-	-	-	-	-	549	1060	-	262	-	-
Critical Hdwy	-	-	-	4.22	-	-	7.84	6.84	7.24	8.4	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.84	5.84	-	7.4	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.84	5.84	-	7.4	-	-
Follow-up Hdwy	-	-	-	2.26	-	-	3.67	4.17	3.47	3.95	-	-
Pot Cap-1 Maneuver	0	-	-	979	-	-	151	90	673	83	0	0
Stage 1	0	-	-	-	-	-	456	483	-	181	0	0
Stage 2	0	-	-	-	-	-	451	269	-	612	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	979	-	-	147	87	673	77	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	147	87	-	77	-	-
Stage 1	-	-	-	-	-	-	456	483	-	181	-	-
Stage 2	-	-	-	-	-	-	437	260	-	584	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.3			26.5			57.3		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	232	-	-	979	-	-	77
HCM Lane V/C Ratio	0.281	-	-	0.032	-	-	0.108
HCM Control Delay (s)	26.5	-	-	8.8	-	-	57.3
HCM Lane LOS	D	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.1	-	-	0.1	-	-	0.3

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200: Grand River Avenue & W. Mall Driveway Performance by approach

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Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.3	0.0	0.0	0.1
Total Del/Veh (s)	0.5	1.4	2.2	1.1

Intersection: 200: Grand River Avenue & W. Mall Driveway

Movement	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	R
Maximum Queue (ft)	27	112	53	59	43
Average Queue (ft)	9	43	20	10	2
95th Queue (ft)	29	99	50	39	15
Link Distance (ft)		106	106	123	123
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		2			
Storage Bay Dist (ft)	500				
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑	↑		↑↓		↑		
Traffic Vol, veh/h	0	1213	43	14	777	41	8	0	34	5	1	0
Future Vol, veh/h	0	1213	43	14	777	41	8	0	34	5	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	350	-	50	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	94	94	94	63	63	63	82	82	82
Heavy Vehicles, %	1	1	1	2	2	2	3	3	3	8	8	8
Mvmt Flow	0	1304	46	15	827	44	13	0	54	6	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1350	0	0	1771	2228	675	1509	2207	-
Stage 1	-	-	-	-	-	-	1327	1327	-	857	857	-
Stage 2	-	-	-	-	-	-	444	901	-	652	1350	-
Critical Hdwy	-	-	-	4.14	-	-	7.56	6.56	6.96	7.66	6.66	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.66	5.66	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.66	5.66	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.53	4.03	3.33	3.58	4.08	-
Pot Cap-1 Maneuver	0	-	-	506	-	-	52	42	394	78	41	0
Stage 1	0	-	-	-	-	-	162	221	-	306	358	0
Stage 2	0	-	-	-	-	-	560	353	-	409	206	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	506	-	-	50	41	394	66	40	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	50	41	-	66	40	-
Stage 1	-	-	-	-	-	-	162	221	-	306	347	-
Stage 2	-	-	-	-	-	-	541	342	-	353	206	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.2			38.9			65		
HCM LOS							E			F		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	171	-	-	506	-	-	66
HCM Lane V/C Ratio	0.39	-	-	0.029	-	-	0.092
HCM Control Delay (s)	38.9	-	-	12.3	-	-	65
HCM Lane LOS	E	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-	-	0.3

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200: Grand River Avenue & W. Mall Driveway Performance by approach

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Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.5	0.0	0.0	0.3
Total Del/Veh (s)	1.9	2.4	2.0	2.0

Intersection: 200: Grand River Avenue & W. Mall Driveway

Movement	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	R
Maximum Queue (ft)	116	96	96	48	5
Average Queue (ft)	53	50	25	9	1
95th Queue (ft)	95	94	65	29	3
Link Distance (ft)		106	106	123	123
Upstream Blk Time (%)		0	0		
Queuing Penalty (veh)		0	0		
Storage Bay Dist (ft)	500				
Storage Blk Time (%)					
Queuing Penalty (veh)					

# **APPENDIX C**

## **SYNCHRO/SIMTRAFFIC ANALYSIS**

### **2021 Build Traffic**

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Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑	↑		↑↓		↑		
Traffic Vol, veh/h	0	369	27	29	914	26	25	0	22	7	0	0
Future Vol, veh/h	0	369	27	29	914	26	25	0	22	7	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	350	-	50	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	94	94	94	72	72	72	60	60	60
Heavy Vehicles, %	4	4	4	6	6	6	17	17	17	45	45	45
Mvmt Flow	0	520	38	31	972	28	35	0	31	12	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	558	0	0	1087	1601	279	1294	-	-
Stage 1	-	-	-	-	-	-	539	539	-	1034	-	-
Stage 2	-	-	-	-	-	-	548	1062	-	260	-	-
Critical Hdwy	-	-	-	4.22	-	-	7.84	6.84	7.24	8.4	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.84	5.84	-	7.4	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.84	5.84	-	7.4	-	-
Follow-up Hdwy	-	-	-	2.26	-	-	3.67	4.17	3.47	3.95	-	-
Pot Cap-1 Maneuver	0	-	-	982	-	-	152	91	675	83	0	0
Stage 1	0	-	-	-	-	-	458	484	-	182	0	0
Stage 2	0	-	-	-	-	-	452	268	-	614	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	982	-	-	148	88	675	77	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	148	88	-	77	-	-
Stage 1	-	-	-	-	-	-	458	484	-	182	-	-
Stage 2	-	-	-	-	-	-	438	259	-	586	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.3			26.4			59.9		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	233	-	-	982	-	-	77
HCM Lane V/C Ratio	0.28	-	-	0.031	-	-	0.152
HCM Control Delay (s)	26.4	-	-	8.8	-	-	59.9
HCM Lane LOS	D	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.1	-	-	0.1	-	-	0.5

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200: Grand River Avenue & W. Mall Driveway Performance by approach

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Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.0	0.0	0.1
Total Del/Veh (s)	0.9	1.4	2.2	1.3

Intersection: 200: Grand River Avenue & W. Mall Driveway

Movement	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	R
Maximum Queue (ft)	53	114	74	48	22
Average Queue (ft)	16	49	22	9	1
95th Queue (ft)	39	95	55	31	8
Link Distance (ft)		106	106	123	123
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		1			
Storage Bay Dist (ft)	500				
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑	↑		↑↑		↑		
Traffic Vol, veh/h	0	1209	43	14	773	47	8	0	34	8	1	0
Future Vol, veh/h	0	1209	43	14	773	47	8	0	34	8	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	350	-	50	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	94	94	94	63	63	63	82	82	82
Heavy Vehicles, %	1	1	1	2	2	2	3	3	3	8	8	8
Mvmt Flow	0	1300	46	15	822	50	13	0	54	10	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1346	0	0	1765	2225	673	1502	2198	-
Stage 1	-	-	-	-	-	-	1323	1323	-	852	852	-
Stage 2	-	-	-	-	-	-	442	902	-	650	1346	-
Critical Hdwy	-	-	-	4.14	-	-	7.56	6.56	6.96	7.66	6.66	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.66	5.66	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.66	5.66	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.53	4.03	3.33	3.58	4.08	-
Pot Cap-1 Maneuver	0	-	-	508	-	-	53	42	395	79	41	0
Stage 1	0	-	-	-	-	-	163	222	-	308	360	0
Stage 2	0	-	-	-	-	-	562	352	-	410	207	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	508	-	-	51	41	395	67	40	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	51	41	-	67	40	-
Stage 1	-	-	-	-	-	-	163	222	-	308	349	-
Stage 2	-	-	-	-	-	-	543	341	-	354	207	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.2			38.3			67.7		
HCM LOS							E			F		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	173	-	-	508	-	-	67
HCM Lane V/C Ratio	0.385	-	-	0.029	-	-	0.146
HCM Control Delay (s)	38.3	-	-	12.3	-	-	67.7
HCM Lane LOS	E	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-	-	0.5

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200: Grand River Avenue & W. Mall Driveway Performance by approach

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Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.6	0.0	0.0	0.4
Total Del/Veh (s)	2.1	3.0	1.4	2.3

Intersection: 200: Grand River Avenue & W. Mall Driveway

Movement	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	R
Maximum Queue (ft)	156	117	111	48	19
Average Queue (ft)	60	63	39	10	2
95th Queue (ft)	118	107	91	31	8
Link Distance (ft)		106	106	123	123
Upstream Blk Time (%)		1	0		
Queuing Penalty (veh)		4	1		
Storage Bay Dist (ft)	500				
Storage Blk Time (%)					
Queuing Penalty (veh)					

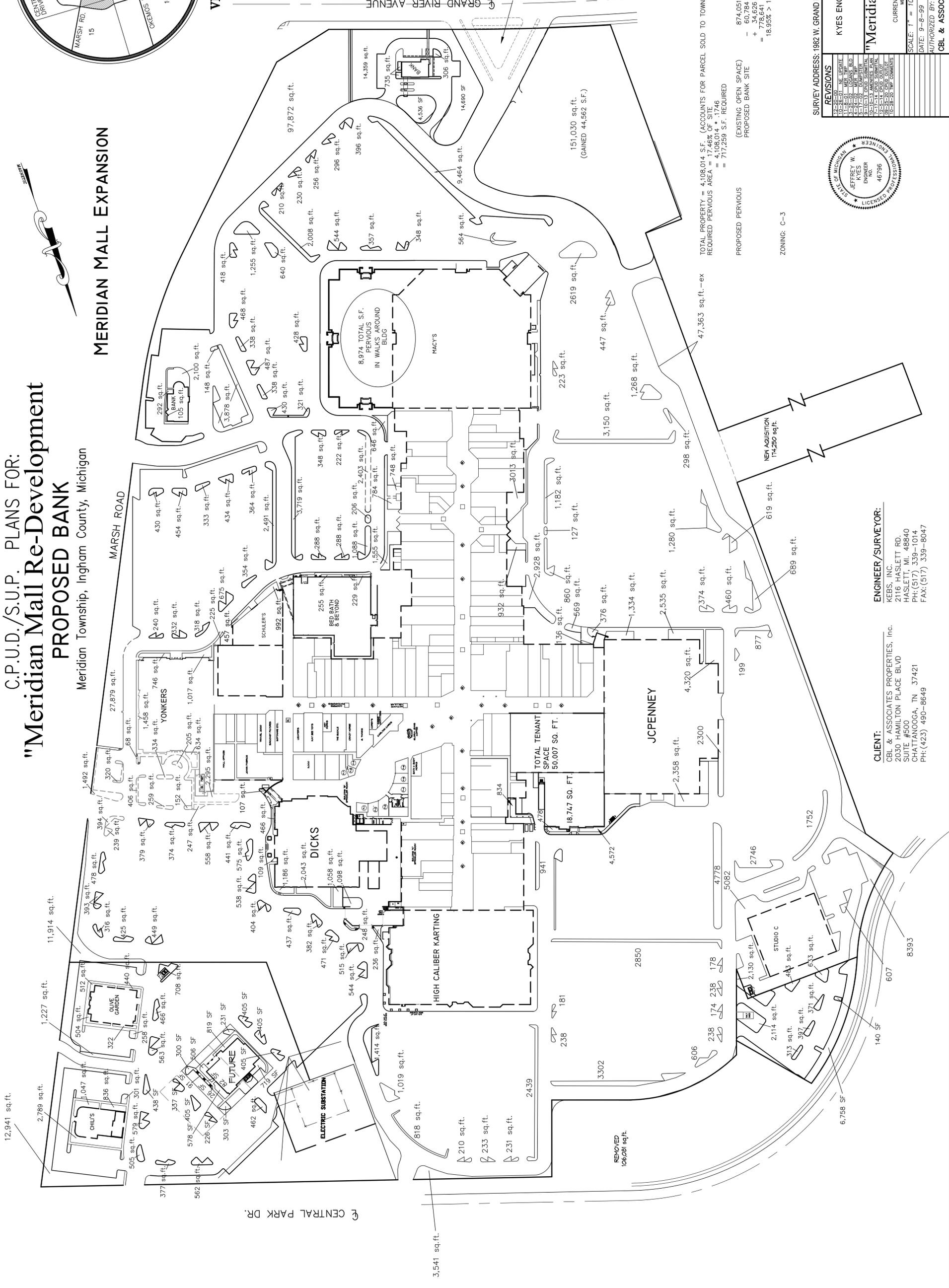
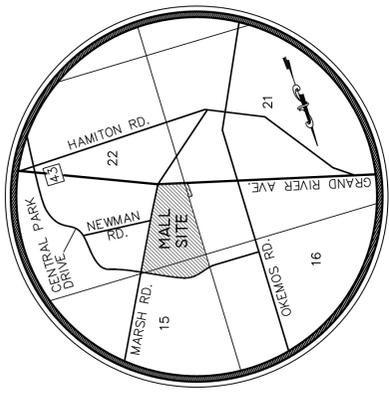




# C.P.U.D./S.U.P. PLANS FOR: "Meridian Mall Re-Development PROPOSED BANK

Meridian Township, Ingham County, Michigan

## MERIDIAN MALL EXPANSION



TOTAL PROPERTY = 4,108,014 S.F. (ACCOUNTS FOR PARCEL SOLD TO TOWNSHIP, PARCEL ACQUIRED FROM TOWNSHIP)  
 REQUIRED PERVIOUS AREA = 4,108,014 + 1,746  
 = 717,259 S.F. REQUIRED

PROPOSED PERVIOUS (EXISTING OPEN SPACE)  
 PROPOSED BANK SITE

874,051 S.F. (BANK LOT)  
 - 60,784 S.F. (PROPOSED OPEN SPACE)  
 = 778,641 S.F. TOTAL PROPOSED PERVIOUS = 18.95%  
 18.95% > 17.46%. MEETS CURRENT APPROVED CPUD

ZONING: C-3



**ENGINEER/SURVEYOR:**  
 KEBS, INC.  
 2116 HASLETT RD.  
 HASLETT, MI. 48840  
 PH: (517) 339-1014  
 FAX: (517) 339-8047

**CLIENT:**  
 CBL & ASSOCIATES PROPERTIES, Inc.  
 2030 HAMILTON PLACE BLVD  
 SUITE #500  
 CHATTANOOGA, TN 37421  
 PH: (423) 490-8649

REVISIONS	
12-20-03	REV. 1
12-20-03	REV. 2
12-20-03	REV. 3
12-20-03	REV. 4
12-20-03	REV. 5
12-20-03	REV. 6
12-20-03	REV. 7
12-20-03	REV. 8
12-20-03	REV. 9
12-20-03	REV. 10
12-20-03	REV. 11
12-20-03	REV. 12
12-20-03	REV. 13
12-20-03	REV. 14
12-20-03	REV. 15
12-20-03	REV. 16
12-20-03	REV. 17
12-20-03	REV. 18
12-20-03	REV. 19
12-20-03	REV. 20
12-20-03	REV. 21
12-20-03	REV. 22
12-20-03	REV. 23
12-20-03	REV. 24
12-20-03	REV. 25
12-20-03	REV. 26
12-20-03	REV. 27
12-20-03	REV. 28
12-20-03	REV. 29
12-20-03	REV. 30
12-20-03	REV. 31
12-20-03	REV. 32
12-20-03	REV. 33
12-20-03	REV. 34
12-20-03	REV. 35
12-20-03	REV. 36
12-20-03	REV. 37
12-20-03	REV. 38
12-20-03	REV. 39
12-20-03	REV. 40
12-20-03	REV. 41
12-20-03	REV. 42
12-20-03	REV. 43
12-20-03	REV. 44
12-20-03	REV. 45
12-20-03	REV. 46
12-20-03	REV. 47
12-20-03	REV. 48
12-20-03	REV. 49
12-20-03	REV. 50
12-20-03	REV. 51
12-20-03	REV. 52
12-20-03	REV. 53
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12-20-03	REV. 60
12-20-03	REV. 61
12-20-03	REV. 62
12-20-03	REV. 63
12-20-03	REV. 64
12-20-03	REV. 65
12-20-03	REV. 66
12-20-03	REV. 67
12-20-03	REV. 68
12-20-03	REV. 69
12-20-03	REV. 70
12-20-03	REV. 71
12-20-03	REV. 72
12-20-03	REV. 73
12-20-03	REV. 74
12-20-03	REV. 75
12-20-03	REV. 76
12-20-03	REV. 77
12-20-03	REV. 78
12-20-03	REV. 79
12-20-03	REV. 80
12-20-03	REV. 81
12-20-03	REV. 82
12-20-03	REV. 83
12-20-03	REV. 84
12-20-03	REV. 85
12-20-03	REV. 86
12-20-03	REV. 87
12-20-03	REV. 88
12-20-03	REV. 89
12-20-03	REV. 90
12-20-03	REV. 91
12-20-03	REV. 92
12-20-03	REV. 93
12-20-03	REV. 94
12-20-03	REV. 95
12-20-03	REV. 96
12-20-03	REV. 97
12-20-03	REV. 98
12-20-03	REV. 99
12-20-03	REV. 100

SURVEY ADDRESS: 1982 W. GRAND RIVER, OKEMOS, MI. 48864  
 E-87112-000-0000-PERVIOUS PLAN  
 PARKING/PERVIOUS PLAN  
 98E-60209

**KEBS INC.**  
 KYES ENGINEERING - BRYAN LAND SURVEYS  
 2116 Haslett Road  
 Haslett, MI 48840  
 PH: (517) 339-1014

**"Meridian Mall Re-Development BANK"**  
 CURRENT/PROPOSED PERVIOUS/IMPERVIOUS PLAN  
 MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

SCALE: 1" = 100'  
 DATE: 9-8-99  
 AUTHORIZED BY: S.E.B.  
 DRAWN BY: J.W.K.  
 SHEET 3 OF 8  
 DRAWING NO. CBL & ASSOCIATES PROPERTIES, Inc. 96110

- EX. SEWER INVENTORIES**
- CATCH BASIN #100
  - RM- 844.01
  - 10" RCP E- 840.78
  - CATCH BASIN #101
  - RM- 843.82
  - 12" RCP NE- 840.02
  - 12" RCP NW- 840.23
  - 12" PVC W- 840.23
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**72 HRS**  
 (9 WORKING DAYS)  
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 CALL 800-487-7777  
 (TOLL-FREE)

**BM#1 - CHISELED SQUARE ON NORTHWEST CORNER OF CONCRETE PAD FOR MERIDIAN MALL SIGN ELEVATION - 846.47 N.A.V.D. 1988**

**BM#2 - BIG ARM OF FIRE HYDRANT ON NORTH SIDE OF GRAND RIVER AVENUE NEAR SOUTHWEST CORNER OF PROPERTY ELEVATION - 847.28 N.A.V.D. 1988**

**LEGEND**

- EXT. CONTOURS
- EXT. WATER MAIN
- EXT. SANITARY SEWER
- EXT. STORM SEWER
- EXT. ELEVATIONS
- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- MANHOLE (NEW)
- MANHOLE (EX)
- UTILITY EASEMENT
- CENTER LINE OF ROAD
- ROAD RIGHT OF WAY
- PROPERTY LINE
- FIRE HYDRANT
- WATER VALVE
- THRUST BLOCK
- PROPOSED TOP OF CURB ELEV.

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- = CONIFEROUS TREE
- = BUSH
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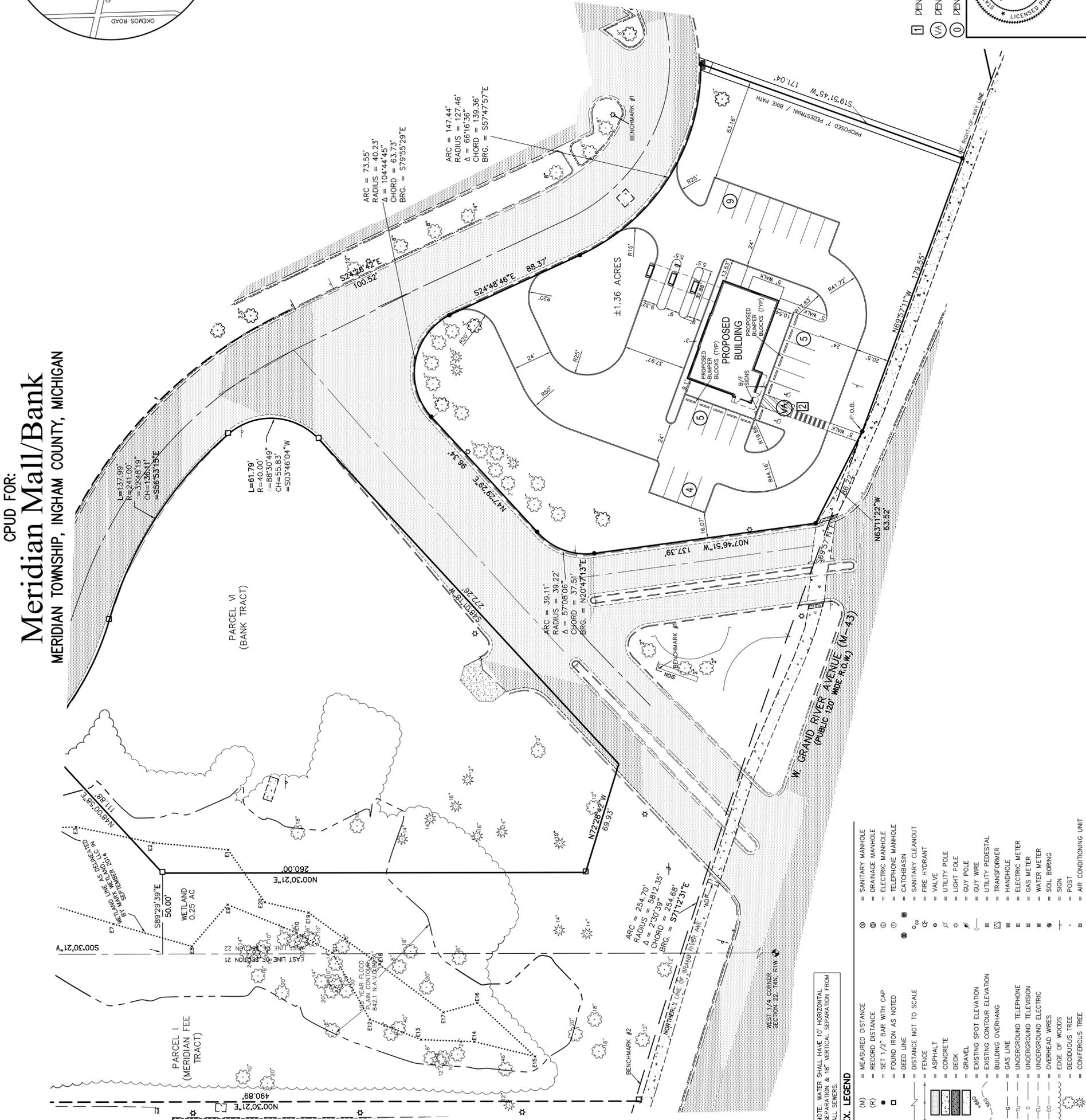
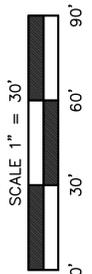
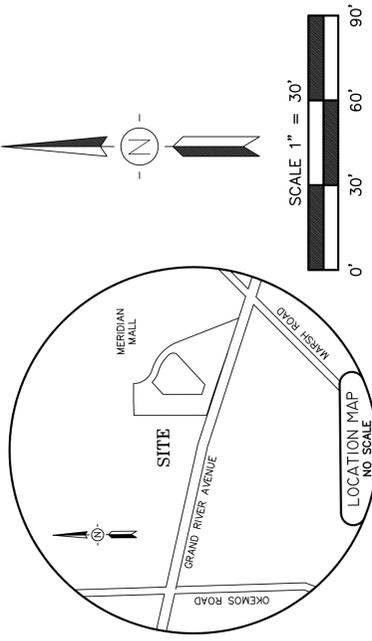
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**CPUD FOR:**  
**Meridian Mall/Bank**  
 MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN



- 1 DENOTES NUMBER OF P/F SPACES
- VA DENOTES VAN ACCESS P/F SPACES
- 0 DENOTES PROPOSED NUMBER OF 9' x 20' PARKING SPACES

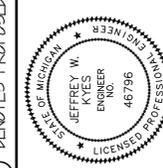
**KEBS, INC.** KYES ENGINEERING  
 2116 HASLETT ROAD, HASLETT, MI 48840  
 PH. 517-339-1014 FAX. 517-339-8047

Meridian Office  
 Ph. 269-781-8900

**Meridian Mall/Bank**

DESIGNER: JMW  
 PROJECT MGR: JMW  
 SCALE: 1" = 30'  
 DATE: 1-24-19  
 SHEET: 4 OF 8

AUTHORIZED BY: JMW  
 MERIDIAN MALL BANKS/OKEMOS 96110  
 KEBS & ASSOC. PROFESSIONALS, INC.



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PROPOSED GRADES  
 PROPOSED FIRST FLOOR ELEV.  
 PROPOSED TOP OF CURB ELEV.  
 PROPOSED TOP OF GROUND ELEV.  
 PROPOSED TOP OF WALK ELEV.  
 PROPOSED TOP OF DRIVEWAY ELEV.  
 DENOTES S.E.S.C. KEYING SYSTEM

LEGEND

- EXT. CONTOURS
- EXT. WATER MAIN
- EXT. SANITARY SEWER
- EXT. STORM SEWER
- EXT. ELEVATIONS
- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- MANHOLE (NEW)
- MANHOLE (EX)
- UTILITY EASEMENT
- CENTER LINE OF ROAD
- ROAD RIGHT OF WAY
- PROPERTY LINE
- FIRE HYDRANT
- WATER VALVE
- THRUST BLOCK
- PROPOSED TOP OF CURB ELEV.

EX. LEGEND

- (M) = MEASURED DISTANCE
- (R) = RECORD DISTANCE
- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = FENCE
- = ASPHALT
- = CONCRETE
- = DECK
- = GRAVEL
- = EXISTING CONTOUR ELEVATION
- = BUILDING OVERHANG
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- = EDGE OF WOODS
- = DECIDUOUS TREE
- = CONIFEROUS TREE
- = BUSH

NOTE: WATER SHALL HAVE 10" HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.

EX. LEGEND

- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCH BASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SOIL BORING
- = SIGN
- = POST
- = AIR CONDITIONING UNIT

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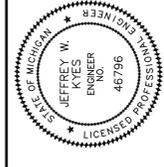
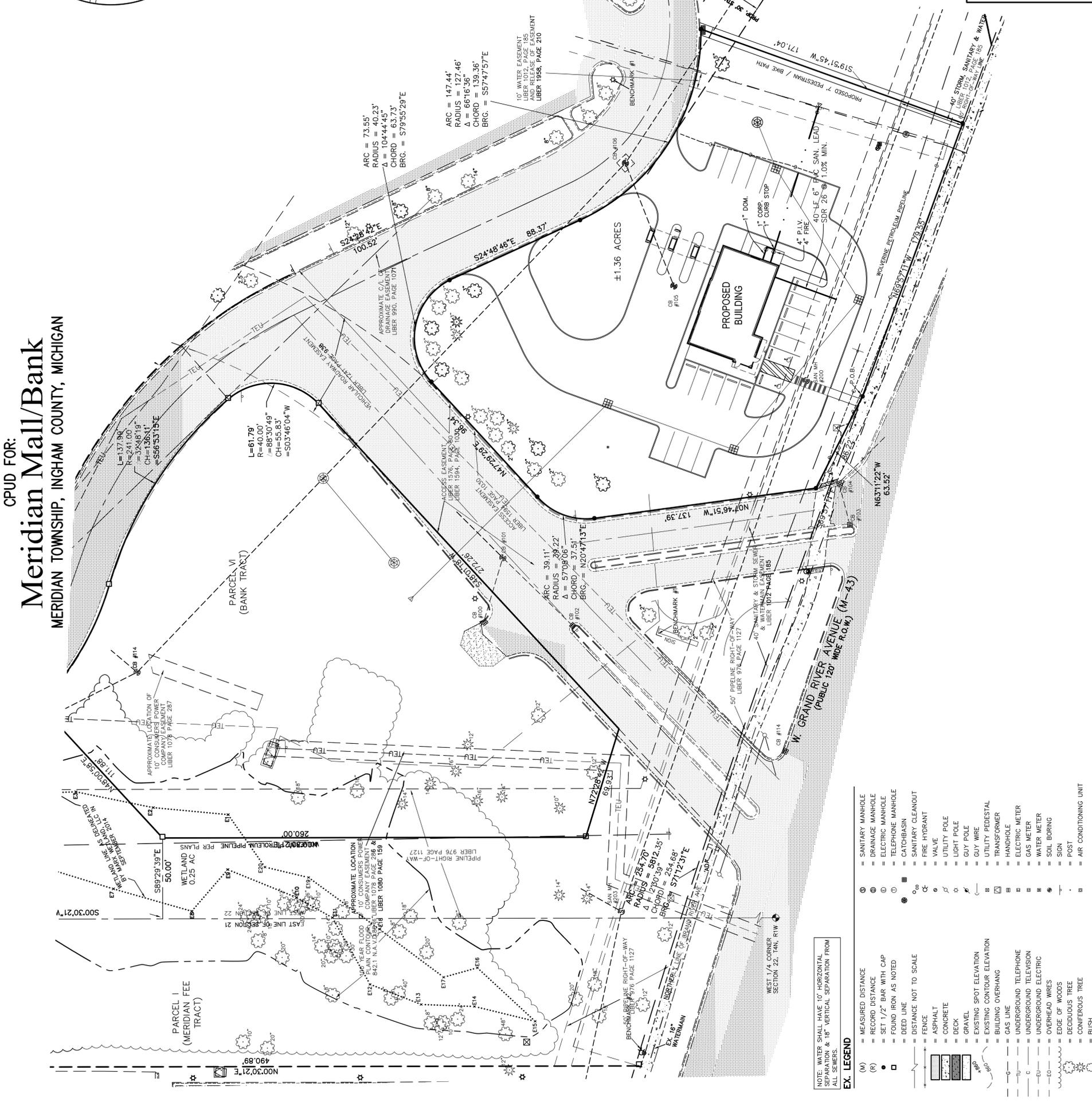
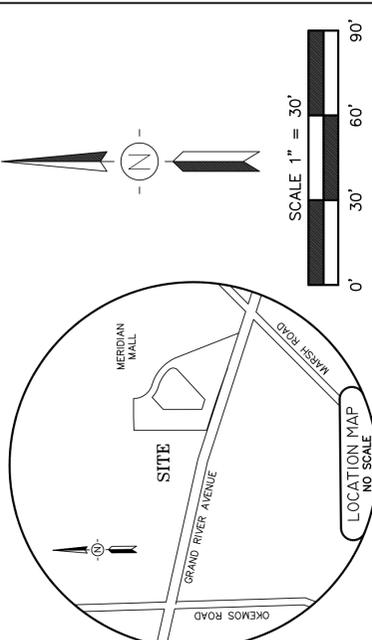
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CPUD FOR:  
**Meridian Mall/Bank**  
 MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

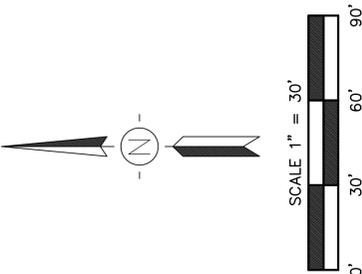


REVISIONS	DESIGNER	APPROVED BY:
09-25-20 CPUD	JEFFREY W. KYES	JWK
10-21-20 TREES	KYES	JWK
10-28-20 TWP	ENGINEER NO. 46796	JWK
	PRELIMINARY UTILITY PLAN	
	SCALE: 1" = 30'	DATE: 1-24-19
		PROJECT MGR. JWK
		SHEET 5 OF 8
		AUTHORIZED BY: MERIDIAN MALL ASSOCIATES, INC.
		JOB # 96110

**KEBS, INC.** KYES ENGINEERING  
 2116 HASLETT ROAD, HASLETT, MI 48840  
 PH. 517-339-1014 FAX. 517-339-8047  
 Meridian Office  
 Ph. 269-781-9900

**Meridian Mall/Bank**

CPUD FOR:  
**Meridian Mall/Bank**  
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN



- EX. SEWER INVENTORIES**
- CATCH BASIN #100
  - RM- 844.01
  - 10" RCP E- 840.78
  - CATCH BASIN #101
  - RM- 843.82
  - 12" RCP NE- 840.02
  - 12" RCP NW- 840.23
  - CATCH BASIN #102
  - RM- 843.82
  - 12" RCP NE- 840.98
  - CATCH BASIN #103
  - RM- 846.60
  - 15" RCP E- 843.55
  - CATCH BASIN #104
  - RM- 846.55
  - 15" RCP SE- 843.21
  - 15" RCP W FULL OF DEBRIS
  - CATCH BASIN #105
  - RM- 843.29
  - 12" RCP NE- 841.83
  - CATCH BASIN #106
  - RM- 847.33
  - 12" RCP SE- 840.48
  - 12" RCP SW- 842.25
  - 24" RCP W- 840.42
  - CATCH BASIN #107
  - RM- 845.20
  - 12" RCP E- 851.31
  - CATCH BASIN #114
  - RM- 844.56
  - 12" RCP NW- 841.08
  - 12" RCP NNE- 842.10
  - NO OTHER PIPES VISIBLE DUE TO SEDIMENT
  - STORM MANHOLE #119
  - RM- 850.35
  - 12" RCP NW- 841.62
  - STORM MANHOLE #120
  - RM- 851.42
  - 48" RCP SE- 836.62
  - 48" RCP SE- 836.62
  - STORM MANHOLE #121
  - RM- 854.30
  - 15" RCP NE- 840.49
  - 15" RCP SW- 840.92
  - 8" VCP SW- 840.92
  - 15" RCP W- 839.56
  - STORM MANHOLE #203
  - RM- 844.52
  - 16" DIP NW- 832.60
  - 16" DIP SE- 833.12
  - 8" VCP NE- 833.12
  - STORM MANHOLE #204
  - RM- 843.68
  - 18" DIP SE- 829.58
  - 18" DIP SE- 829.78

WETLAND 0.25 AC

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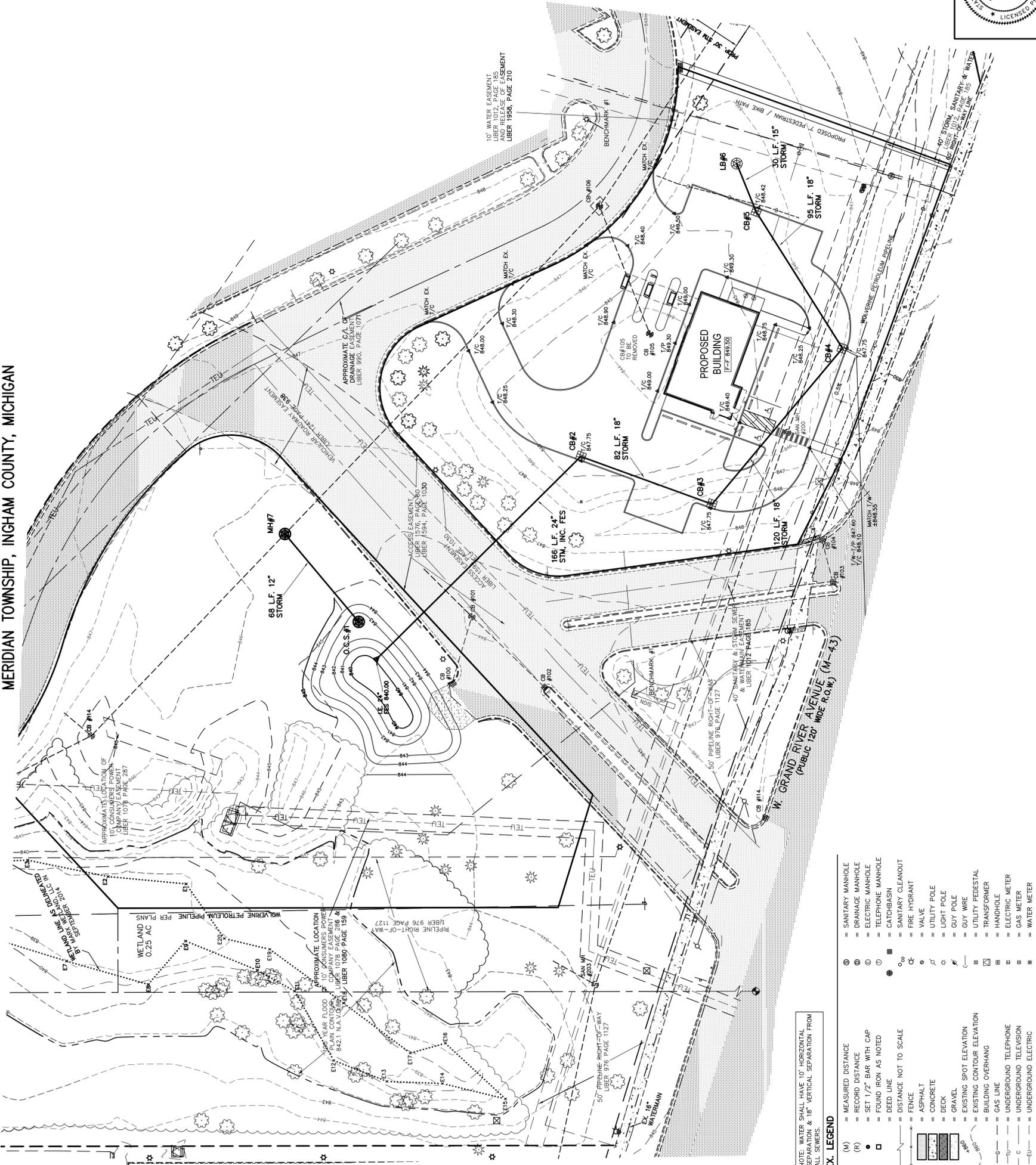
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10" WATER EASEMENT LIBER 1012 PAGE 185 AND RELEASE OF EASEMENT LIBER 1958 PAGE 210

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APPROXIMATE LOCATION OF 10' CONSUMERS POWER COMPANY EASEMENT LIBER 1576 PAGE 300 LIBER 1080 PAGE 159 LIBER 1072 PAGE 185

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APPROXIMATE LOCATION OF 10' CONSUMERS POWER COMPANY EASEMENT LIBER 1576 PAGE 300 LIBER 1080 PAGE 159 LIBER 1072 PAGE 185

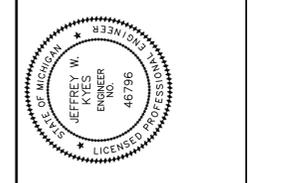
**KEBS, INC.** KYES ENGINEERING  
2116 HASLETT ROAD, HASLETT, MI 48840  
PH. 517-339-1014 FAX. 517-339-8047

Meridian Office  
Ph. 269-781-9900

**Meridian Mall/Bank**  
STORM & GRADING PLAN

DESIGNER: JEFFREY W. KYES  
PROJECT MGR. JWK  
SCALE: 1" = 30'  
DATE: 1-24-19  
APPROVED BY: JWK  
SHEET 6 OF 8

AUTHORIZED BY: MERIDIAN MALL BANKING SERVICES, INC.  
JOB # 96110



EX. LEGEND

- (M) = MEASURED DISTANCE
- (R) = RECORD DISTANCE
- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = FENCE
- = ASPHALT
- = CONCRETE
- = DECK
- = GRAVEL
- = EXISTING SPOT ELEVATION
- = BUILDING CONTOUR ELEVATION
- = BUILDING OVERHANG
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- = EDGE OF WOODS
- = DECIDUOUS TREE
- = CONIFEROUS TREE
- = BUSH
- = AIR CONDITIONING UNIT

NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.

PROPOSED GRADES  
PROPOSED FIRST FLOOR ELEV.  
PROPOSED TOP OF CURB ELEV.  
PROPOSED TOP OF GROUND ELEV.  
PROPOSED TOP OF WALK ELEV.  
PROPOSED TOP OF DRIVE ELEV.  
DENOTES S.E.S.C. KEYING SYSTEM

LEGEND

- = EXT. CONTOURS
- = EXT. WATER MAIN
- = EXT. SANITARY SEWER
- = EXT. STORM SEWER
- = EXT. ELEVATIONS
- = PROPOSED WATER MAIN
- = PROPOSED SANITARY SEWER
- = PROPOSED STORM SEWER
- = MANHOLE (NEW)
- = MANHOLE (EX)
- = UTILITY EASEMENT
- = CENTER LINE OF ROAD
- = ROAD RIGHT OF WAY
- = PROPERTY LINE
- = FIRE HYDRANT
- = WATER VALVE
- = THRUST BLOCK
- = PROPOSED TOP OF CURB ELEV.

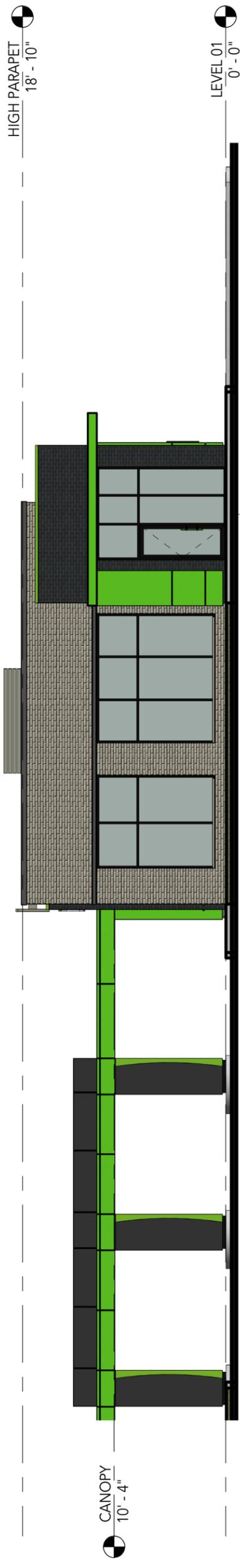
BM#1 - CHISELED SQUARE ON NORTHWEST CORNER OF CONCRETE PAD FOR MERIDIAN MALL SIGN ELEVATION - 846.47 N.A.V.D. 1988

BM#2 - BIG ARM OF FIRE HYDRANT ON NORTH SIDE OF GRAND RIVER AVENUE NEAR SOUTHWEST CORNER OF PROPERTY ELEVATION - 847.28 N.A.V.D. 1988

71 MRS  
(9 WORKING DAYS)  
BEFORE YOU DIG  
CALL 800-455-6116  
800-455-6116  
(TOLL-FREE)

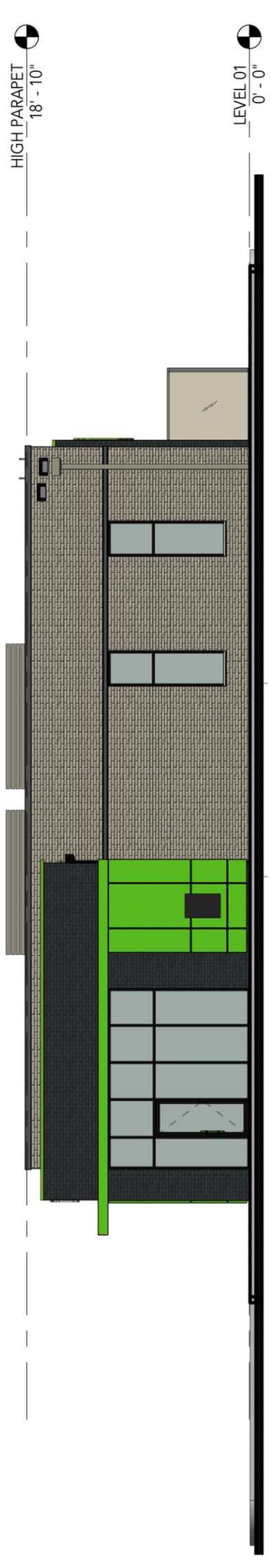






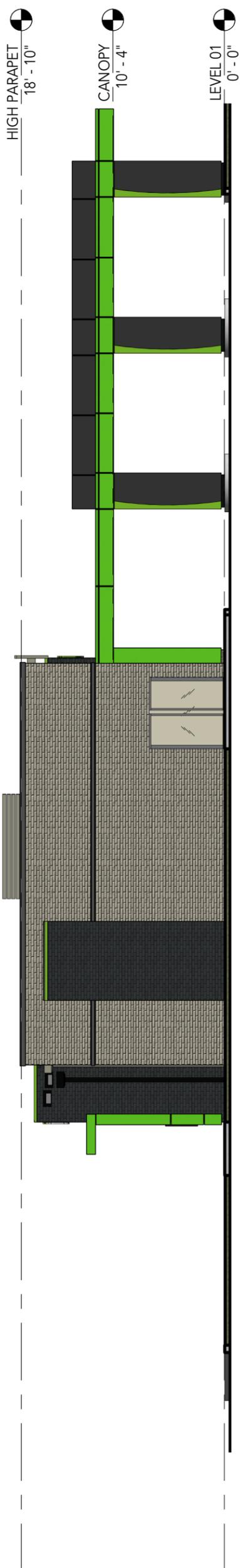
2 WEST PRESENTATION ELEVATION

SCALE: 3/32" = 1'-0"



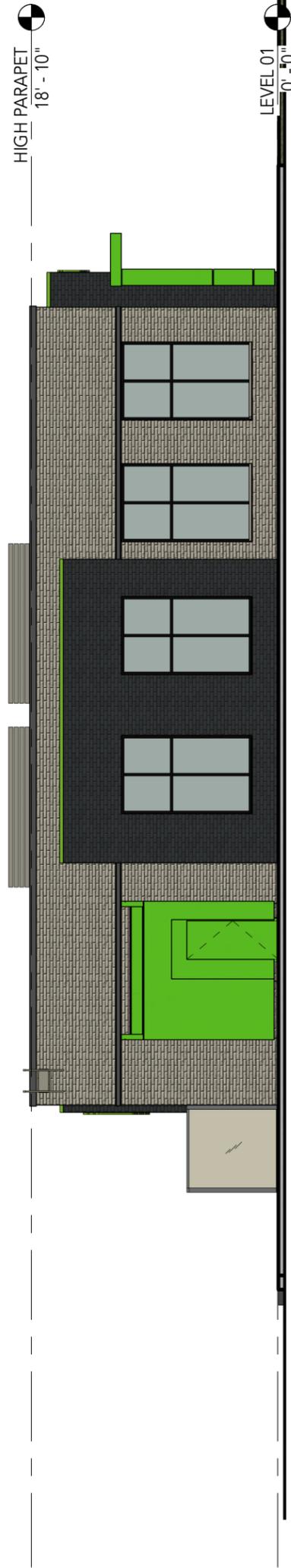
1 SOUTH PRESENTATION ELEVATION

SCALE: 3/32" = 1'-0"



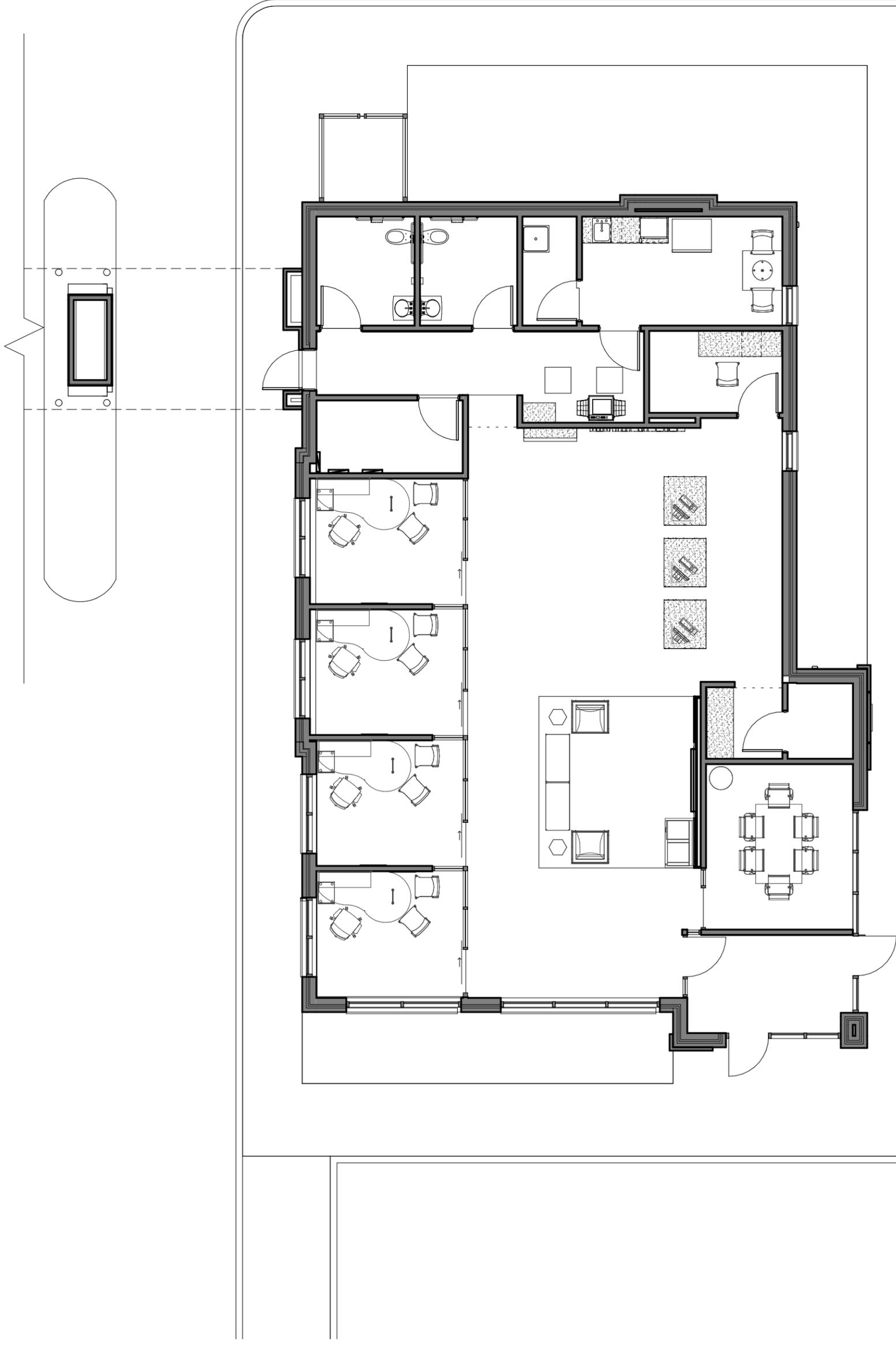
2 EAST PRESENTATION ELEVATION

SCALE: 3/32" = 1'-0"



1 NORTH PRESENTATION ELEVATION

SCALE: 3/32" = 1'-0"



**PROPOSED EXTERIOR FINISH MATERIALS**



**1** ENDICOTT BRICK  
 COLOR: MANGANESE IRONSPOT  
 GROUT: DARK GRAY  
 STYLE: RUNNING BOND



**2** PALMETTO BRICK  
 COLOR: WHITESTONE  
 GROUT: LIGHT BEIGE  
 STYLE: RUNNING BOND



**3** ROCKCAST SILL AND ACCENT  
 COLOR: SMOKEHOUSE



**4** ROCKCAST SILL  
 COLOR: CHARLOTTE TAN



**5** MAPES FLAT FASCIA CANOPY  
 COLOR: CUSTOM  
 OUTRAGEOUS GREEN  
 DIMENSIONS: 10" FACE



**6** LAMINATORS INC  
 METAL PANEL SYSTEM  
 COLOR: CUSTOM  
 GREYMOOR RGB



**3**

**6**

**7**

**9**

**7**

**1**

**6**

**5**

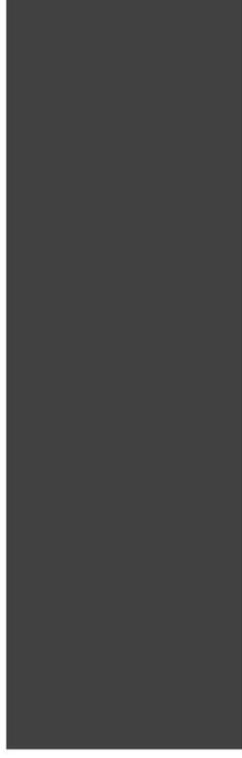
**8**

**4**

**9**



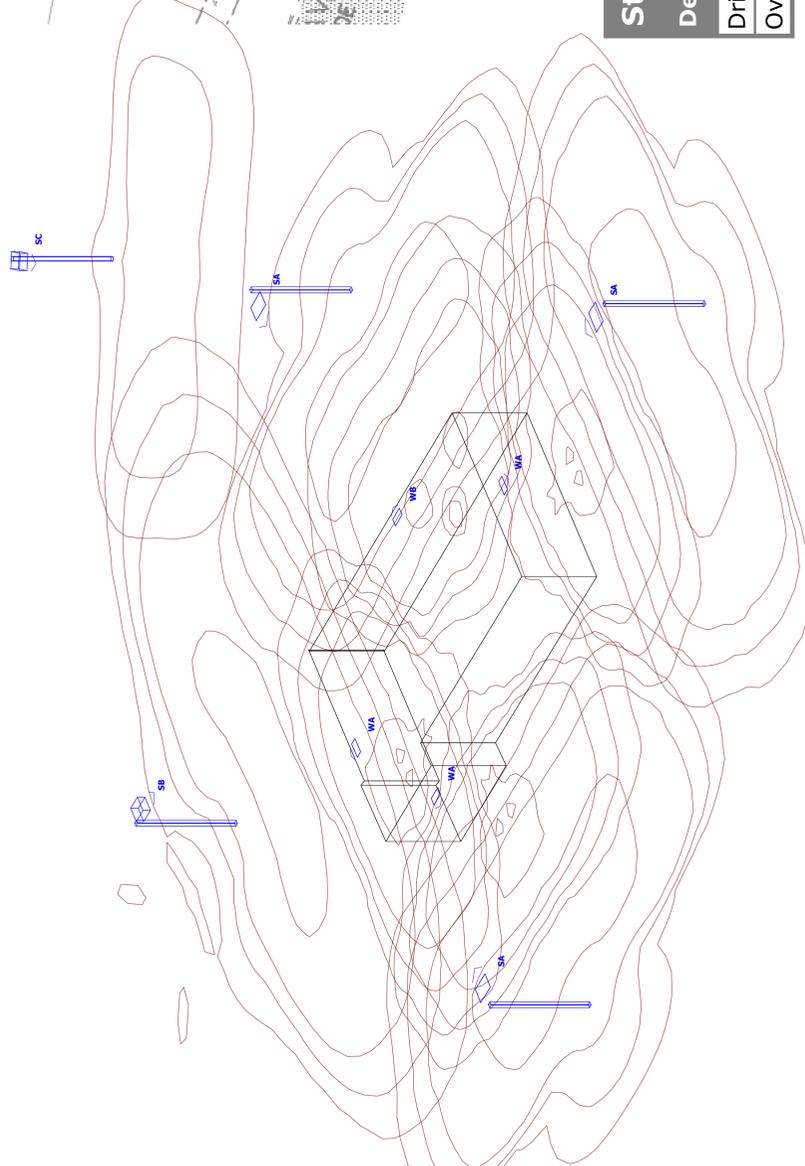
**7** LAMINATORS INC  
 METAL PANEL SYSTEM  
 COLOR: CUSTOM  
 OUTRAGEOUS GREEN



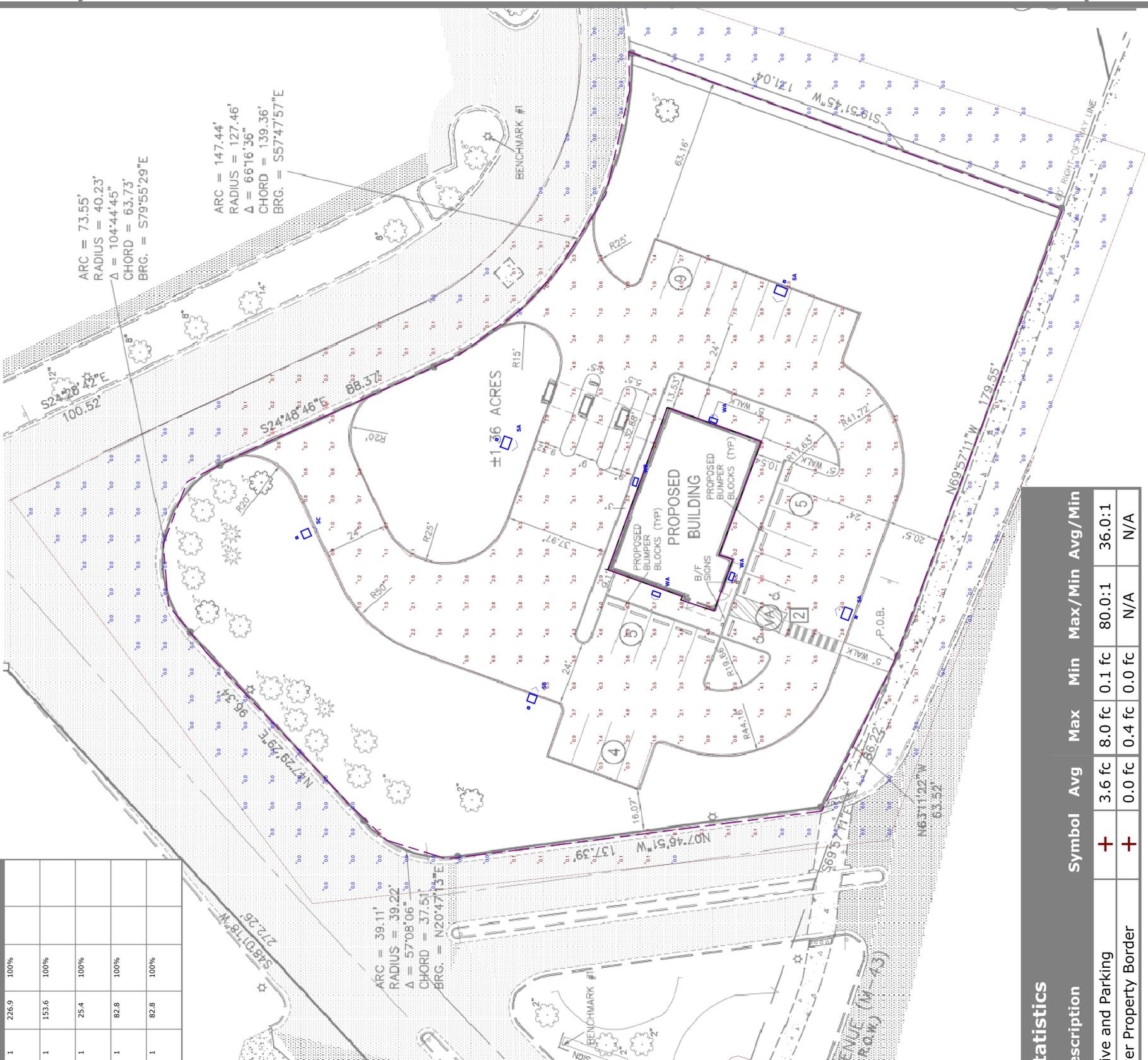
**9** KAWNEER  
 STOREFRONT SYSTEM  
 COLOR: CHARCOAL

Schedule Symbol	Label	Image	QTY	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumen per Lamp	LLF	Wattage	Efficiency	Distribute Ion	Notes
	SA		3	HUBBELL OUTDOOR	RAR-2-80L-240-4K7-4-BC	RATIO AREA lens gaskets and Back Light Shields	X-70-CRI	1	RAR-2-80L-240-4K7-4-BC.lvs	17647	1	226.9	100%		
	SB		1	HUBBELL OUTDOOR	RAR2-320L-165-4K7-3		B-70-CRI	1	RAR2-320L-165-4K7-3.lvs	21832	1	153.6	100%		
	SC		1	HUBBELL OUTDOOR	RAR1-80L-25-4K7-4W		B-70-CRI	1	RAR1-80L-25-4K7-4W.lvs	3412	1	25.4	100%		
	WA		3	HUBBELL OUTDOOR	LNK3-24L4K-105-3	Medium LNK3 Litepak	C-70-CRI	1	LNK3-24L4K-105-3.lvs	7353	1	82.8	100%		
	WB		1	HUBBELL OUTDOOR	LNK3-24L4K-105-4	Medium LNK3 Litepak	C-70-CRI	1	LNK3-24L4K-105-4.lvs	7400	1	82.8	100%		

Luminaire Locations		Location		Aim						
No.	Label	X	Y	Z	MH Orientation	Tilt	X	Y	Z	
1	SA	-152.29	-377.96	20.00	20.00	290.87	0.00	-153.46	-377.52	0.00
2	SA	-277.95	-404.64	20.00	20.00	20.61	0.00	-277.51	-403.47	0.00
4	SA	-211.44	-270.74	20.00	20.00	199.44	0.00	-211.86	-271.92	0.00
1	SB	-311.88	-282.61	20.00	20.00	109.88	0.00	-310.70	-283.03	0.00
1	SC	-248.20	-196.25	20.00	20.00	156.16	0.00	-247.69	-197.39	0.00
1	WA	-268.55	-330.40	12.00	12.00	289.41	0.00	-268.79	-330.32	0.00
2	WA	-262.47	-357.61	12.00	12.00	200.97	0.00	-262.56	-357.84	0.00
3	WA	-204.94	-351.15	12.00	12.00	110.20	0.00	-204.70	-351.24	0.00
1	WB	-227.54	-323.14	12.00	12.00	18.57	0.00	-227.46	-322.90	0.00



South East View



Plan View

Scale - 1" = 20ft

DATE: \_\_\_\_\_ LOCATION: \_\_\_\_\_  
 TYPE: \_\_\_\_\_ PROJECT: \_\_\_\_\_  
 CATALOG #: \_\_\_\_\_

# LNC3

MEDIUM LED LITEPAK

## FEATURES

- Litepak LNC3 is a mid-sized wallpack in the popular Litepak series
- The LNC3 features luminaires with TIR optics and four different lumen packages, multiple distributions and CCT for maximum light level and mounting height flexibility
- Capable of replacing up to 250w HID solutions at over 70% energy savings
- Energy efficient LEDs provide 70%+ energy savings with little to no maintenance when compared to traditional light sources
- Typical mounting heights of 8-20"



## CONTROL TECHNOLOGY



## SPECIFICATIONS

### CONSTRUCTION

- Die-cast aluminum housing protects components and provides an architectural appearance
- Casting thermally conducts LED heat to optimize performance and long life
- Powder paint finish provides durability in outdoor environments
- Four 1/2" conduit entries (top, bottom, and sides) provided for surface conduit
- Zero uplight distributions using individual acrylic LED optics provide IES type II, III and IV distributions
- CS - Frosted acrylic diffuser option for reduced glare
- CSU - Frosted acrylic diffuser for inverted "up" mounting applications (lens required)

### OPTICS

- Ambient operating temperature -40°C to 40°C
- 3000K, 4000K and 5000K CCT nominal with 70 CRI
- Available in 4 or 24 LED configuration
- L70 at 60,000 hrs (Projected per IESNA TM-21-11), see table on page 3 for all values

### INSTALLATION

- Quick-mount adapter with gasket seal provides easy installation to wall or to recessed junction box (4" square junction box)

### INSTALLATION (CONTINUED)

- Fixture attaches by two Allen-head hidden fasteners for tamper resistance
- Designed for direct j-box mount or conduit feed on all four sides in single SKU

### ELECTRICAL

- 120-277, 347 and 480 voltage, 50/60Hz, 0-10V dimming drivers
- Electronic driver
- 10kA surge protection

### CONTROLS

- Button photocontrol for dusk to dawn energy savings
- 7-pin photo-receptacle available for twist lock photocell and controls by others
- Occupancy sensor options available for complete on/off and dimming control
- SiteSync pre-commissioned wireless controls (with or without sensor)
- In addition, LITEPAK can be specified with SiteSync™ wireless control system for reduction in energy and maintenance cost while optimizing light quality 24/7
- See ordering information or visit [www.hubbellighting.com/sitesync](http://www.hubbellighting.com/sitesync) for more details



## RELATED PRODUCTS

- ∅ [LNC](#)      ∅ [INC2](#)      ∅ [LNC4](#)

### CERTIFICATIONS

- DLC® DesignLights Consortium Qualified, with some Premium Qualified configurations. Please refer to the DLC website for specific product qualifications at [www.designlights.org](http://www.designlights.org)
- Listed to UL1598 and CSAC22.2#250.0-24 for wet locations
- Listed to UL1598 and CSAC22.2#250.0-24 for wet locations
- IP65 Assembly
- IDA Approved (3000K configurations)

### WARRANTY

- 5 year limited warranty
- See [HLI Standard Warranty](#) for additional information

KEY DATA	
Lumen Range	2,991–7,603
Wattage Range	28–83
Efficacy Range (LPW)	84–115
Fixture Projected Life (Hours)	L70>60K
Weights lbs. (kg)	18.0 (8.2)

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

# LNC3

MEDIUM LED LITEPAK

## ORDERING GUIDE

Example: LNC3-24L-3K-035-2-U-DBT-PCU

CATALOG #

### ORDERING INFORMATION

Series	# LEDs	CCT/CRI	Drive Current	IES Distribution	Voltage
LNC3 Medium Litepak Wallpack	24L 24LEDs	<b>3K</b> 3000K nominal, 70 CRI <b>4K</b> 4000K nominal, 70 CRI <b>5K</b> 5000K nominal, 70 CRI	<b>035</b> 350mA <b>050</b> 500mA <b>075</b> 750mA <b>105</b> 1050mA	<b>2</b> Type II <sup>1</sup> <b>3</b> Type III <sup>1</sup> <b>4</b> Type IV <sup>1</sup>	<b>U</b> 120-277V <b>1</b> 120V <sup>1</sup> <b>2</b> 208V <sup>1</sup> <b>3</b> 240V <sup>1</sup> <b>4</b> 277V <sup>1</sup> <b>5</b> 480V <sup>1</sup> <b>F</b> 347V <sup>1</sup>

Finish	Control Options	Options	Notes:
<b>BLT</b> Black Matte Textured <b>BLS</b> Black Gloss Smooth <b>DBT</b> Dark Bronze Matte Textured <b>DBS</b> Dark Brone Gloss Smooth <b>GTT</b> Graphite Matte Textured <b>LGS</b> Light Grey Gloss Smooth <b>PSS</b> Platinum Silver Smooth <b>WHT</b> White Matte Textured <b>WHS</b> White Gloss Smooth <b>VGT</b> Verde Green Textured <b>Color Option</b> <b>CC</b> Custom Color	<b>PCU</b> Universal Button Photocontrol <b>7PR</b> 7pin PCR <sup>6</sup> <b>SCP</b> Programmable occupancy sensor <sup>3,4</sup> <b>SWP</b> SiteSync Pre-Commission <sup>7,10</sup> <b>SWPM</b> SiteSync Pre-commission w/ OCC Sensor <sup>4,7,8,10</sup>	<b>F</b> Fusing (must specify voltage per footnote) <b>CS</b> Frosted acrylic diffuser <b>CSU</b> Inverted/Up mounting frosted acrylic diffuser (required for up/inverted fixture installations, factory install only see page 3) <sup>2</sup> <b>E</b> Integral battery backup rated for 0°C <sup>1,5</sup> <b>EH</b> Integral battery backup with heater rated for -30°C <sup>1,5</sup> <b>2DR</b> Dual Driver <sup>9</sup>	<ol style="list-style-type: none"> <li>Must specify voltage (120 or 277 only for E &amp; EH)</li> <li>Factory install only. Not available with SCP or SWPM sensor/control options</li> <li>Must order minimum of one remote control to program dimming settings, 0-10V fully adjustable dimming with automatic daylight calibration and different time delay settings, 120-277V only</li> <li>PCU option not applicable, included in sensor (8F = up to 8ft, 20F = up to 20ft)</li> <li>350mA, 500mA &amp; 750mA versions only. Not available with F, SWP or SWPM options</li> <li>Accepts standard 3, 5, and 7-Pin ANSI controls (by others). Not available with PCU, SWP or SWPM control options</li> <li>Must specify group and zone information at time or order. See <a href="http://www.HubbellLighting.com/products/sitesync">www.HubbellLighting.com/products/sitesync</a> for future details</li> <li>Specify time delay, dimming level and mounting height</li> <li>750mA and 1050mA versions only, not available with 347/480V</li> <li>1050mA only, not available with 347V or 480V</li> </ol>

## ACCESSORIES AND SERVICES (ORDERED SEPARATELY)

Catalog Number	Description
<input type="checkbox"/> LNC3-CS	Frosted acrylic comfort shield/lens, reduces glare and improves uniformity with only 20% lumen reduction
<input type="checkbox"/> SCP-Remote	Remote Control for SCP/_F option. Order at least one per project to program and control the occupancy sensor
<input type="checkbox"/> SWUSB	SiteSync interface software loaded on USB flash drive for use with owner supplied PC (Windows based only). Includes SiteSync license, software and USB radio bridge node*
<input type="checkbox"/> SWTAB	Windows tablet and SiteSync interface software. Includes tablet with preloaded software, SiteSync license and USB radio bridge node*
<input type="checkbox"/> SWBRG	SiteSync USB radio bridge node only. Order if a replacement is required or if an extra bridge node is requested
<input type="checkbox"/> SW7PR	SiteSync 7 Pin on fixture module On/Off/Dim, Daylight Sensor 120-480VAC*

Notes:  
 \* When ordering SiteSync at least one of these two interface options must be ordered per project  
 + Available as a SiteSync retrofit solution for fixtures with an existing 7pin receptacle

### Hubbell Control Solutions — Accessories (Sold Separately)

- NX Distributed Intelligence™**
- NXOFM-1R1D-UNV On-fixture Module (7-pin), On / Off / Dim, Daylight Sensor with HubbNET Radio and Bluetooth® Radio, 120–480VAC
- wiSCAPE® Lighting Control**
- WIR-RME-L On-fixture Module (7-pin or 5-pin), On / Off / Dim, Daylight Sensor with wiSCAPE Radio, 110–480VAC

For additional information related to these accessories please visit [www.hubbellcontrolsolutions.com](http://www.hubbellcontrolsolutions.com). Options provided for use with integrated sensor, please view specification sheet ordering information table for details.

# LNC3

MEDIUM LED LITEPAK

## CONTROLS

### SiteSync — Precommissioned Ordering Information:

When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit [the SiteSync family page on our website](#) or contact Hubbell Lighting tech support at 800-345-4928.



SiteSync fixtures with Motion control (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: LNC3-24L-4K-075-3-U-BL-SWP

SiteSync only

LNC3-24L-4K-075-3-U-BL-SWPM-20F

SiteSync with Motion Control

### SiteSync 7-Pin Module:

- SiteSync features in a new form
- Available as an accessory for new construction or retrofit applications (with existing 7-Pin receptacle)
- Does not interface with occupancy sensors



SW7PR

## PERFORMANCE DATA

# Of LEDs	Nominal Wattage	System Watts	Dist. Type	5K (5000K NOMINAL 70 CRI)					4K (4000K NOMINAL 70 CRI)					3K (3000K NOMINAL 80 CRI)				
				Lumens	LPW*	B	U	G	Lumens	LPW*	B	U	G	Lumens	LPW*	B	U	G
4	N/A	N/A	E	671	-	-	-	-	657	-	-	-	-	591	-	-	-	-
24	350mA	28	2	3,212	115	1	0	1	3,145	113	1	0	1	2,991	107	1	0	1
			3	3,160	113	1	0	1	3,094	111	1	0	1	2,944	106	1	0	1
			4	3,182	114	1	0	1	3,116	112	1	0	1	2,964	106	1	0	1
	500mA	41	2	4,143	101	1	0	2	4,057	99	1	0	2	3,858	94	1	0	2
			3	4,076	99	1	0	1	3,991	97	1	0	1	3,797	93	1	0	1
			4	4,104	100	1	0	1	4,019	98	1	0	1	3,823	93	1	0	1
	750mA	60	2	5,918	99	1	0	2	5,795	97	1	0	2	5,512	92	1	0	2
			3	5,823	97	1	0	2	5,702	95	1	0	2	5,424	90	1	0	2
			4	5,863	98	1	0	2	5,741	96	1	0	2	5,461	91	1	0	2
	1050mA	83	2	7,630	92	2	0	2	7,472	90	2	0	2	7,107	86	2	0	2
			3	7,508	90	1	0	2	7,352	89	1	0	2	6,993	84	1	0	2
			4	7,559	91	1	0	2	7,402	89	1	0	2	7,041	85	1	0	2

## ELECTRICAL DATA

# OF LEDs	Drive Current (mA)	Input Voltage (V)	Oper. Current (Amps)	System Power (W)
24	350mA	120	0.23	28
		277	0.10	28
		347	0.08	28
		480	0.06	28
	500mA	120	0.34	41
		277	0.15	41
		347	0.12	41
		480	0.09	41
	750mA	120	0.50	60
		277	0.22	60
		347	0.17	60
		480	0.13	60
	1050mA	120	0.69	83
		277	0.30	83
		347	0.24	83
		480	0.17	83

## PROJECTED LUMEN MAINTENANCE

Ambient Temperature	OPERATING HOURS					
	0	25,000	50,000	TM-21-11* L96 60,000	100,000	L70 (Hours)
25°C / 77°F	1.00	0.97	0.94	0.93	0.89	>296,000
40°C / 104°F	1.00	0.95	0.91	0.89	0.83	>191,000

\* Projected per IESNA TM-21-11\* (Nichia 219B, 700mA, 85°C Ts, 10,000hrs). Data references the extrapolated performance projections for the LNC-12LU-5K base model in a 40°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

# LNC3

MEDIUM LED LITEPAK

## LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

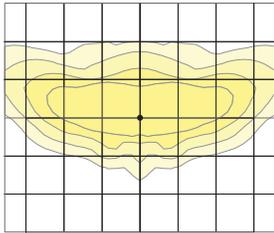
Ambient Temperature		Lumen Multiplier
0° C	32° F	1.02
10° C	50° F	1.01
20° C	68° F	1.00
25° C	77° F	1.00
30° C	86° F	1.00
40° C	104° F	0.99

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

## PHOTOMETRY

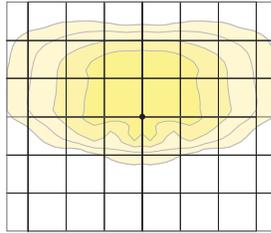
The following diagrams represent the general distribution options offered for this product. For detailed information on specific product configurations, see [website photometric test reports](#).

LNC3 – Type II



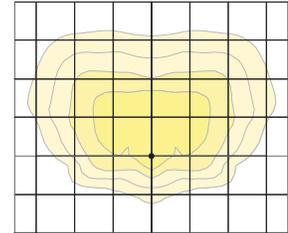
Mounting Height: 15'

LNC3 – Type III



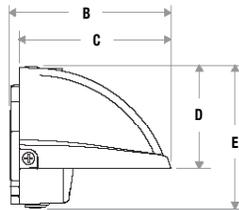
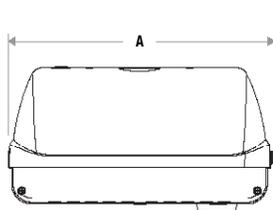
Mounting Height: 15'

LNC3 – Type IV



Mounting Height: 15'

## DIMENSIONS



A	B	C	D	E	Weight
13" (330 mm)	10.5" (267 mm)	9.9" (251 mm)	5.8" (147 mm)	8.3" (211 mm)	25.0 lbs 11.3 kg

## ADDITIONAL INFORMATION

### CSU – INVERTED MOUNTING OPTION



\*Requires Factory Installed Lens Option

Inverted mounting capabilities for uplighting applications. Specially designed frosted acrylic diffuser option softens output, improves uniformity and protects LED lenses.

### SCP - PROGRAMMABLE OCCUPANCY SENSOR



\*Photocontrol and Wireless Controls by Others

Standard NEMA 7-Pin receptacle for twist lock photocell or wireless controls (by others).

### SCP – PROGRAMMABLE OCCUPANCY SENSOR



Sensor offers greater control and energy savings with SCP programmable sensor with adjustable delay and dimming levels (Factory default is 10%)

Visit: <http://www.hubbellighting.com/solutions/controls/> for control application information

## SHIPPING INFORMATION

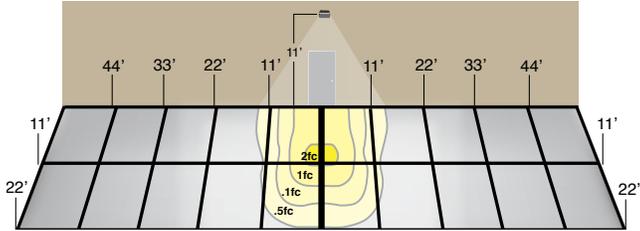
Catalog Number	G.W(kg)/ CTN	Carton Dimensions			Carton Qty. per Master Pack
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)	
LNC3-24LU	18.0 (8.2)	15.8 (40)	11.0 (28)	13.0 (33)	1

# LNC3

MEDIUM LED LITEPAK

## ADDITIONAL INFORMATION (CONTINUED)

### LNC2 - BATTERY BACK UP



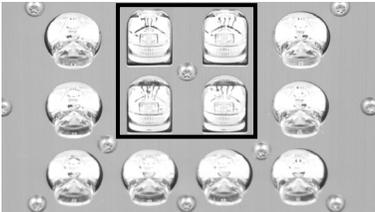
**11' Mounting Height**

Provides Life Safety Code average illuminance of 1.0 fc. Assumes open space with no obstructions and mounting height of 11'.

Diagrams for illustration purposes only, please consult factory for application layout.

Battery backup units consume 6 watts when charging a dead battery and 2 watts during maintenance charging. EH (units with a heater) consume up to an additional 8 watts when charging if the battery temp is lower than 10°C

### E & EH EMERGENCY BATTERY BACKUP



24 High Power LEDs generate up to 7,500 lumens in Normal Mode, and use 4 LEDs for up to 700 lumens in emergency.

## USE OF TRADEMARKS AND TRADE NAMES

All product and company names, logos and product identifies are trademarks™ or registered trademarks® of Hubbell Lighting, Inc. or their respective owners. Use of them does not necessarily imply any affiliation with or endorsement by such respective owners.

DATE: \_\_\_\_\_ LOCATION: \_\_\_\_\_  
 TYPE: \_\_\_\_\_ PROJECT: \_\_\_\_\_  
 CATALOG #: \_\_\_\_\_

# RATIO Series

AREA/SITE LIGHTER

## FEATURES

- Low profile LED area/site luminaire with a variety of IES distributions for lighting applications such as retail, commercial and campus parking lots
- Featuring Micro Strike Optics which maximizes target zone illumination with minimal losses at the house-side, reducing light trespass issues
- Visual comfort standard
- Compact and lightweight design with low EPA
- 3G rated for high vibration applications including bridges and overpasses
- Control options including photo control, occupancy sensing, NX Distributed Intelligence™ and 7-Pin with networked controls
- Best in class surge protection available



## CONTROL TECHNOLOGY



## SPECIFICATIONS

### CONSTRUCTION

- Rectilinear form mimics the traditional shoebox form factor keeping a similar but updated style and appearance, ideal for retrofit applications
- Die-cast housing with hidden vertical heat fins that are optimal for heat dissipation while keeping a clean smooth outer surface
- Corrosion resistant, die-cast aluminum housing with powder coat paint finish

### OPTICS

- Entire optical aperture illuminates to create a larger luminous surface area resulting in a low glare appearance without sacrificing optical performance
- 80, 160, 320 or 480 midpower LEDs
- 3000K, 4000K or 5000K (70 CRI) CCT
- Zero uplight at 0 degrees of tilt
- Field rotatable optics

### INSTALLATION

- Standard square arm mount, compatible with B3 drill pattern
- Optional universal mounting block for ease of installation during retrofit applications. Available as an option or accessory for square and round poles.
- Knuckle arm fitter option available for 2-3/8" OD tenon. Max tilt of 60 degrees with 4 degree adjustable increments. (Restrictions apply for 7-pin options)

### ELECTRICAL

- Universal 120-277 VAC or 347-480 VAC input voltage, 50/60 Hz
- Ambient operating temperature -40°C to 40°C
- Drivers have greater than 90% power factor and less than 20% THD
- LED drivers have output power over-voltage, over-current protection and short circuit protection with auto recovery
- Field replaceable surge protection device provides 20kA protection meeting ANSI/IEEE C62.41.2 Category C High and Surge Location Category C3; Automatically takes fixture off-line for protection when device is compromised

### CONTROLS

- Photo control, occupancy sensor and wireless available for complete on/off and dimming control
- 7-pin ANSI C136.41-2013 photocontrol receptacle option available for twist lock photocontrols or wireless control modules (control accessories sold separately)
- 0-10V dimming leads available for use with control devices (provided by others, must specify lead length)
- SiteSync™ wireless control system is available via 7-pin See ordering information and details at: [www.hubbellighting.com/sitesync](http://www.hubbellighting.com/sitesync)
- NX Distributed Intelligence™ available with in fixture wireless control module, features dimming and occupancy sensor



## RELATED PRODUCTS

- ∅ [Airo](#) ∅ [Cimarron LED](#) ∅ [Ratio Family](#)

### CONTROLS (CONT'D)

- wiSCAPE® available with in fixture wireless control module, features dimming and occupancy sensor via 7-pin

### CERTIFICATIONS

- DLC® (DesignLights Consortium Qualified), with some Premium Qualified configurations. Please refer to the DLC website for specific product qualifications at [www.designlights.org](http://www.designlights.org)
- Listed to UL1598 and CSA C22.2#250.0-24 for wet locations and 40°C ambient temperatures
- 3G rated for ANSI C136.31 high vibration applications
- Fixture is IP66 rated
- Meets IDA recommendations using 3K CCT configuration at 0 degrees of tilt

### WARRANTY

- 5 year limited warranty
- See [HLI Standard Warranty](#) for additional information

KEY DATA	
Lumen Range	3,000–48,000
Wattage Range	25–340
Efficacy Range (LPW)	118–155
Fixture Projected Life (Hours)	L70>60K
Weights lbs. (kg)	13.5–24 (6.1–10.9)

# RATIO SERIES

AREA/SITE LIGHTER

## ORDERING GUIDE

Example: RAR1-80L-25-3K7-2-UNV-ASQ-BL-NXWE-BC

CATALOG #

### ORDERING INFORMATION

Series	# LEDs - Wattage	CCT/CRI	Distribution	Optics Rotation	Voltage
RAR1 Ratio Area Size 1	80L-25 25W - 3,000 Lumens	3K7 3000K, 70 CRI	2 IES TYPE II	Blank for no rotation	UNV Universal 120-277V
	80L-39 39W - 5,200 Lumens	4K7 4000K, 70 CRI	3 IES TYPE III	L Optic rotation left	120 120V
	80L-50 50W - 6,000 Lumens	5K7 5000K, 70 CRI	4W IES TYPE IV	R Optic rotation right	208 208V
	160L-70 70W - 9,000 Lumens		5QW IES TYPE V		240 240V
	160L-100 100W - 12,000 Lumens				277 277V
	160L-115 115W - 15,000 Lumens				347 347V
	160L-135 135W - 18,000 Lumens				480 480V
RAR2 Ratio Area Size 2	320L-110 110W - 15,000 Lumens				
	320L-140 140W - 18,000 Lumens				
	320L-165 165W - 21,000 Lumens				
	480L-185 185W - 24,000 Lumens				
	480L-210 210W - 27,000 Lumens				
	480L-240 240W - 30,000 Lumens				
	480L-255 255W - 36,000 Lumens				
	480L-295 295W - 42,000 Lumens				
	480L-340 340W - 48,000 Lumens				

Mounting	Color	Control Options Network	Options
ASQ Arm mount for square pole/flat surface	BLT Black Matte Textured	NXWE NX Wireless Enabled (module + radio)	BC Backlight control
ASQU Universal arm mount for square pole/flat surface	BLS Black Gloss Smooth	NXSPW_F NX Wireless, PIR Occ. Sensor, Daylight Harvesting <sup>2</sup>	CD Continuous dimming
<b>Mounting Round Poles</b>			
A_ Arm mount for round pole <sup>1</sup>	DBT Dark Bronze Matte Textured	NXSP_F NX, PIR Occ. Sensor, Daylight Harvesting <sup>2</sup>	F Fusing (must specify voltage)
A_U Universal arm mount for round pole <sup>1</sup>	DBS Dark Bronze Gloss Smooth	<b>Control Options Other</b>	
<b>Mounting Other</b>			
WB Wall bracket	GTT Graphite Matte Textured	SCP-40F Programmable occupancy sensor <sup>3</sup>	TB Terminal block
MAF Mast arm fitter for 2-3/8" OD horizontal arm	LGS Light Grey Gloss Smooth	7PR 7-Pin twist lock receptacle	2PF 2 power feed with 2 drivers <sup>3</sup>
K Knuckle	PSS Platinum Silver Smooth	7PR-SC 7-Pin receptacle with shunting cap	
	WHT White Matte Textured	7PR-MD40F Low voltage sensor for 7PR	
	WHS White Gloss Smooth	7PR-TL 7-Pin PCR with photocontrol	
	VGT Verde Green Textured		
	<b>Color Option</b>		
	CC Custom Color		

- Notes:
- 1 Replace "\_" with "3" for 3.5"-4.13" OD pole, "4" for 4.18"-5.25" OD pole, "5" for 5.5"-6.5" OD pole
  - 2 Replace "\_" with "14" for up to 14' mounting height, "30F" for 15-30' mounting height
  - 3 Not available with 25, 50, 255, 295 & 340W configurations
  - 4 At least one SCPREMOTE required to program SCP motion sensor

### STOCK ORDERING INFORMATION

Catalog Number	Lumens	Wattage	LED Count	CCT/CRI	Voltage	Distribution	Mounting	Finish
RAR1-100-4K-3	12,000	100W	160L	4000K/70CRI	120-277V	Type 3	Square Arm	Bronze
RAR1-100-4K-4W	12,000	100W	160L	4000K/70CRI	120-277V	Type 4W	Square Arm	Bronze
RAR1-135-4K-3	18,000	135W	160L	4000K/70CRI	120-277V	Type 3	Square Arm	Bronze
RAR1-135-4K-4W	18,000	135W	160L	4000K/70CRI	120-277V	Type 4W	Square Arm	Bronze
RAR2-165-4K-3	21,000	165W	320L	4000K/70CRI	120-277V	Type 3	Square Arm	Bronze
RAR2-165-4K-4W	21,000	165W	320L	4000K/70CRI	120-277V	Type 4W	Square Arm	Bronze

# RATIO SERIES

AREA/SITE LIGHTER

## OPTIONS AND ACCESSORIES - STOCK (ORDERED SEPARATELY)

Catalog Number	Description
<input type="checkbox"/> RARRPA3DB	Round pole adapter 3.5" to 4.13" for ASQ arm, 3.5" to 4.13" OD pole, dark bronze finish
<input type="checkbox"/> RARA3UDB	Universal mount for square pole or round pole 3.5" to 4.13", dark bronze finish
<input type="checkbox"/> RARBC80L	Ratio blacklight control 80L
<input type="checkbox"/> RARBC160L	Ratio blacklight control 160L
<input type="checkbox"/> RARBC320L	Ratio blacklight control 320L
<input type="checkbox"/> RARBC480L	Ratio blacklight control 480L

## ACCESSORIES AND REPLACEMENT PARTS - MADE TO ORDER

Catalog Number	Description
<input type="checkbox"/> RAR-ASQU-XX	Universal arm mount for square pole/flat surface <sup>2</sup>
<input type="checkbox"/> RAR-A_U-XX	Universal arm mount for round poles <sup>1,2</sup>
<input type="checkbox"/> RAR-RPA_-XX	Round pole adapter <sup>1,2</sup>
<input type="checkbox"/> SETAVP-XX	4" square pole top tenon adapter, 2 3/8" OD slipfitter <sup>2</sup>
<input type="checkbox"/> RETAVP-XX	4" round pole top tenon adapter; 2 3/8" OD slipfitter for max. Four fixtures (90o); order 4" round pole adapters separately <sup>2</sup>
<input type="checkbox"/> BIRD-SPIKE-3	Ratio size 1 bird deterrent/spikes
<input type="checkbox"/> BIRD-SPIKE-4	Ratio size 2 bird deterrent/spikes
<input type="checkbox"/> RARWB-XX	Wall bracket - use with Mast Arm Fitter or Knuckle <sup>2</sup>

1 Replace "-" with "3" for 3.5"-4.13" OD pole, "4" for 4.18"-5.25" OD pole, "5" for 5.5"-6.5" OD pole

2 Replace "XX" with desired color/paint finish

## CONTROLS

### Control Options

#### Standalone

<b>SW7PR</b>	SiteSync™ on fixture module via 7PR
<b>SWUSB</b>	SiteSync™ Software on USB
<b>SWTAB</b>	SiteSync™ Windows Tablet
<b>SWBRG</b>	SiteSync™ Wireless Bridge Node
<b>SWFC</b>	SiteSync™ Field Commission Serve
<b>SCPREMOTE</b>	Order at least one per project location to program and control

#### Networked – Wireless

<b>WIR-RME-L</b>	wiSCAPE External Fixture Module <sup>1,2</sup>
------------------	------------------------------------------------

#### NX Networked – Wireless

<b>NXOFM-1R1D-UNV</b>	NX Wireless, Daylight Harvesting, BLE, 7 pin twisted lock
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Notes:

- 1 Works with external networked photosensor
- 2 wiSCAPE Gateway required for system programming

# RATIO SERIES

AREA/SITE LIGHTER

## PERFORMANCE DATA

Description	Nominal Wattage	System Watts	Dist. Type	5K (5000K NOMINAL 70 CRI)					4K (4000K NOMINAL 70 CRI)					3K (3000K NOMINAL 80 CRI)				
				Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
RAR1	25	25.4	2	3438	135	1	0	1	3445	136	1	0	1	3240	128	1	0	1
			3	3460	136	1	0	1	3467	136	1	0	1	3260	128	1	0	1
			4W	3406	134	1	0	1	3412	134	1	0	1	3209	126	1	0	1
			5QW	3483	137	2	0	1	3490	137	2	0	1	3282	129	2	0	1
	39	39	2	5263	139	1	0	2	5273	139	1	0	2	4960	131	1	0	2
			3	5297	139	1	0	2	5308	140	1	0	2	4991	131	1	0	2
			4W	5200	137	1	0	2	5210	137	1	0	2	4900	129	1	0	2
			5QW	5333	140	3	0	1	5344	141	3	0	1	5025	132	3	0	1
	50	49.8	2	6310	127	1	0	2	6323	127	1	0	2	5946	120	1	0	2
			3	6349	128	1	0	2	6362	128	1	0	2	5983	120	1	0	2
			4W	6233	125	1	0	2	6245	126	1	0	2	5873	118	1	0	2
			5QW	6392	129	3	0	1	6405	129	3	0	1	6023	121	3	0	1
	70	68.4	2	9486	139	1	0	2	9505	139	1	0	2	8938	131	1	0	2
			3	9544	140	1	0	2	9563	140	1	0	2	8993	131	1	0	2
			4W	9395	137	1	0	2	9414	138	1	0	2	8853	129	1	0	2
			5QW	9608	140	4	0	2	9628	141	4	0	2	9054	132	4	0	2
	100	90.0	2	11976	133	2	0	2	12000	133	2	0	2	11285	125	2	0	2
			3	12050	134	2	0	2	12074	134	2	0	2	11354	126	2	0	2
			4W	11861	132	2	0	2	11885	132	2	0	2	11177	124	2	0	2
			5QW	12131	135	4	0	2	12155	135	4	0	2	11431	127	4	0	2
	115	109.7	2	15572	142	2	0	2	15494	141	2	0	2	14871	136	2	0	2
			3	15833	144	2	0	2	15754	144	2	0	2	15121	138	2	0	2
			4W	15281	139	2	0	3	15205	139	2	0	3	14623	133	2	0	3
			5QW	15732	143	4	0	2	15653	143	4	0	2	15024	137	4	0	2
	135	133.3	2	17971	135	3	0	3	17881	134	3	0	3	17163	129	3	0	3
			3	18272	137	2	0	2	18181	136	2	0	2	17450	131	2	0	2
			4W	17635	132	2	0	3	17547	132	2	0	3	16876	127	2	0	3
			5QW	18156	136	4	0	2	18065	136	4	0	2	17339	130	4	0	2

RAR2 Performance Data on next page

\* Lumen values are from photometric test performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.

# RATIO SERIES

AREA/SITE LIGHTER

## PERFORMANCE DATA

Description	Nominal Wattage	System Watts	Dist. Type	5K (5000K NOMINAL 70 CRI)					4K (4000K NOMINAL 70 CRI)					3K (3000K NOMINAL 80 CRI)				
				Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
RAR2	110	100.3	2	15326	153	2	0	3	15357	153	2	0	3	14442	144	2	0	3
			3	15421	154	2	0	3	15452	154	2	0	3	14531	145	2	0	3
			4W	15180	151	2	0	2	15210	152	2	0	2	14304	143	2	0	2
			5QW	15525	155	4	0	2	15556	155	4	0	2	14629	146	4	0	2
	140	133.2	2	19395	146	2	0	3	19434	146	2	0	3	18276	137	2	0	3
			3	19515	147	2	0	3	19554	147	2	0	3	18389	138	2	0	3
			4W	19210	144	2	0	3	19248	145	2	0	3	18101	136	2	0	3
			5QW	19647	148	5	0	3	19686	148	5	0	3	18513	139	5	0	3
	165	153.6	2	21651	141	3	0	3	21695	141	3	0	3	20402	133	3	0	3
			3	21785	142	3	0	3	21828	142	3	0	3	20527	134	3	0	3
			4W	21444	140	3	0	3	21487	140	3	0	3	20206	132	3	0	3
			5QW	21932	143	5	0	3	21976	143	5	0	3	20666	135	5	0	3
	185	174.5	2	26046	149	3	0	3	26098	150	3	0	3	24543	141	3	0	3
			3	26207	150	3	0	3	26259	150	3	0	3	24694	142	3	0	3
			4W	25797	148	3	0	4	25849	148	3	0	4	24308	139	3	0	4
			5QW	26384	151	5	0	3	26437	152	5	0	3	24861	143	5	0	3
	210	198.2	2	28848	145	3	0	4	28906	146	3	0	4	27184	137	3	0	4
			3	29027	146	3	0	4	29085	147	3	0	4	27351	138	3	0	4
			4W	28572	144	3	0	4	28630	144	3	0	4	26924	136	3	0	4
			5QW	29222	147	5	0	4	29281	148	5	0	4	27536	139	5	0	4
	240	226.9	2	32087	141	3	0	4	32151	142	3	0	4	30235	133	3	0	4
			3	32285	142	3	0	4	32350	143	3	0	4	30422	134	3	0	4
			4W	31780	140	3	0	4	31844	140	3	0	4	29946	132	3	0	4
			5QW	32503	143	5	0	4	32568	144	5	0	4	30627	135	5	0	4
	255	257.0	2	37040	144	3	0	4	36854	143	3	0	4	35373	138	3	0	4
			3	37660	147	3	0	4	37472	146	3	0	4	35966	140	3	0	4
			4W	36347	141	3	0	5	36166	140	3	0	5	34782	135	3	0	5
			5QW	37420	146	5	0	4	37233	145	5	0	4	35736	139	5	0	4
	295	294.0	2	41733	142	3	0	4	41524	141	3	0	4	39855	136	3	0	4
			3	42432	144	3	0	4	42220	144	3	0	4	40523	138	3	0	4
			4W	40953	139	3	0	5	40748	139	3	0	5	39190	133	3	0	5
			5QW	42162	143	5	0	4	41951	143	5	0	4	40264	137	5	0	4
	340	347.1	2	48392	139	4	0	5	48150	139	4	0	5	46215	133	4	0	5
			3	49203	142	3	0	4	48957	141	3	0	4	46989	135	3	0	4
			4W	47488	137	4	0	5	47261	136	4	0	5	45443	131	4	0	5
			5QW	48889	141	5	0	5	48645	140	5	0	5	46689	135	5	0	5

\* Lumen values are from photometric test performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.

# RATIO SERIES

AREA/SITE LIGHTER

## ELECTRICAL DATA

# OF LEDS	Nominal Wattage	Input Voltage	Oper. Current (Amps)	System Power (Watts)
RAR1	25	120	0.21	25.4
		208	0.12	
		240	0.11	
		277	0.09	
	39	120	0.32	38.0
		208	0.18	
		240	0.16	
		277	0.14	
		347	0.11	
		480	0.08	
	50	120	0.42	49.8
		208	0.24	
		240	0.21	
		277	0.18	
	70	120	0.57	68.4
		208	0.33	
		240	0.29	
		277	0.25	
	100	120	0.75	90.0
		208	0.43	
		240	0.38	
		277	0.32	
	115	120	0.91	109.7
		208	0.53	
		240	0.46	
		277	0.40	
		347	0.32	
		480	0.23	
135	120	1.11	133.3	
	208	0.64		
	240	0.56		
	277	0.48		
	347	0.38		
		480	0.28	

# OF LEDS	Nominal Wattage	Input Voltage	Oper. Current (Amps)	System Power (Watts)
RAR2	110	120	0.84	100.3
		208	0.48	
		240	0.42	
		277	0.36	
	140	120	1.11	133.2
		208	0.64	
		240	0.56	
		277	0.48	
	165	120	1.28	153.6
		208	0.74	
		240	0.64	
		277	0.55	
	185	120	1.45	174.5
		208	0.84	
		240	0.73	
		277	0.63	
	210	120	1.65	198.3
		208	0.95	
		240	0.83	
		277	0.72	
	240	120	1.89	226.9
		208	1.09	
		240	0.95	
		277	0.82	
	255	120	2.14	257.0
		208	1.24	
		240	1.07	
		277	0.93	
		347	0.74	
		480	0.54	
	295	120	2.45	294.0
		208	1.41	
		240	1.23	
		277	1.06	
		347	0.85	
		480	0.61	
340	120	2.89	347.1	
	208	1.67		
	240	1.45		
	277	1.25		
	347	1.00		
	480	0.72		

## LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

Ambient Temperature		Lumen Multiplier
0° C	32° F	1.03
10° C	50° F	1.01
20° C	68° F	1.00
25° C	77° F	1.00
30° C	86° F	0.99
40° C	104° F	0.98
50° C	122° F	0.97

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

## PROJECTED LUMEN MAINTENANCE

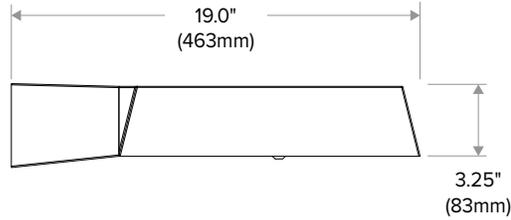
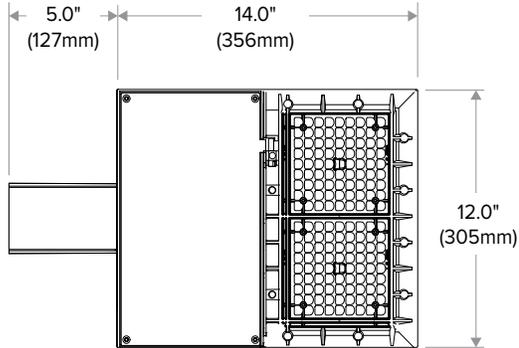
Ambient Temperature	OPERATING HOURS					
	0	25,000	TM-21-11 L90 36,000	50,000	100,000	L70 (Hours)
25°C / 77°F	1.00	0.97	0.95	0.93	0.86	238,000
40°C / 104°F	0.99	0.96	0.95	0.93	0.85	225,000

# RATIO SERIES

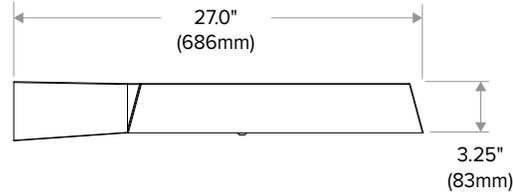
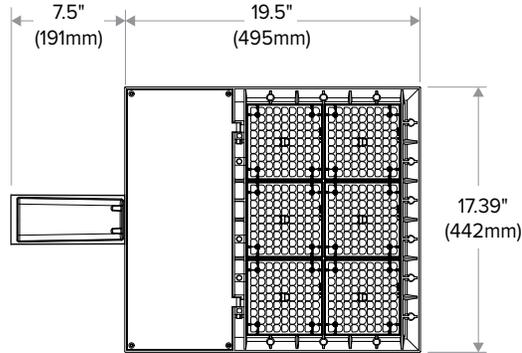
AREA/SITE LIGHTER

## DIMENSIONS

RAR1

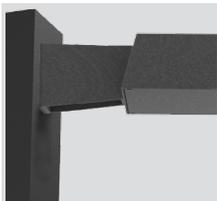


RAR2



## ADDITIONAL INFORMATION

### MOUNTING



**Arm Mount** – Fixture ships with integral arm for ease of installation. Compatible with Hubbell Outdoor B3 drill pattern.



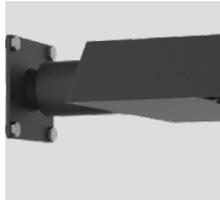
**Knuckle** – Knuckle mount 15° aiming angle increments for precise aiming and control, fits 2-3/8" tenons or pipes.



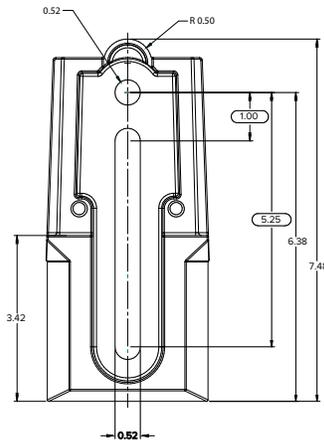
**Universal Mounting** – Universal mounting block for ease of installation. Compatible with drill patterns from 2.5" to 4.5"



**MAF** – Fits 2-3/8" OD arms Roadway applications.



**Wall Mount** – Wall mount bracket designed for building mount applications.



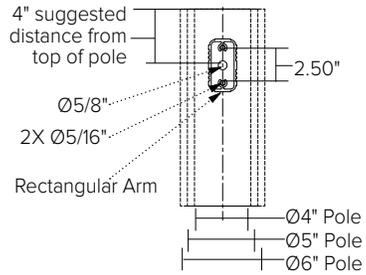
# RATIO SERIES

AREA/SITE LIGHTER

## ADDITIONAL INFORMATION (CONT'D)

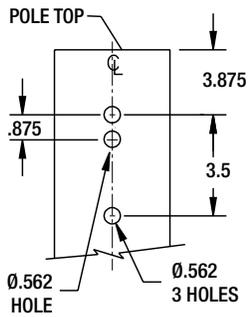
### ARM MOUNT (ASQ)

Compatible with Pole drill pattern B3



### UNIVERSAL MOUNTING (ASQU)

Compatible with pole drill pattern S2



## SITESYNC 7-PIN MODULE



SW7PR



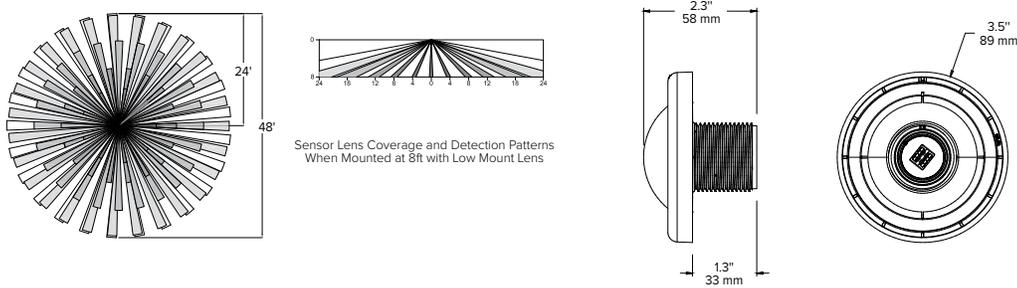
- SiteSync features in a new form
- Available as an accessory for new construction or retrofit applications (with existing 7-Pin receptacle)

# RATIO SERIES

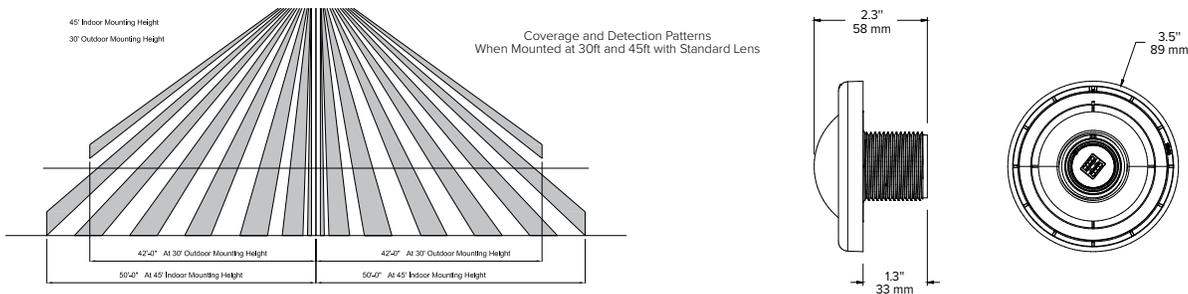
AREA/SITE LIGHTER

## ADDITIONAL INFORMATION (CONT'D)

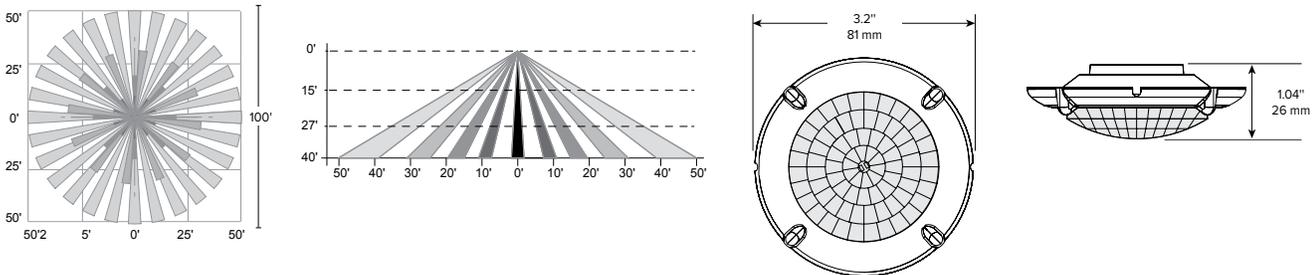
### NXSP-14F



### NXSP-30F



### SCP-40F



### RAR1 EPA

RAR-1	
EPA at 0°	EPA at 30°
.45ft. <sup>2</sup> .13m <sup>2</sup>	.56ft. <sup>2</sup> .17m <sup>2</sup>

### RAR2 EPA

RAR-2	
EPA at 0°	EPA at 30°
.55ft. <sup>2</sup> .17m <sup>2</sup>	1.48ft. <sup>2</sup> .45m <sup>2</sup>

### SHIPPING

Catalog Number	G.W(kg)/CTN	Carton Dimensions		
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)
RAR1	15 (6.8)	20.75 (52.7)	15.125 (38.4)	6.9375 (17.6)
RAR2	19 (8.6)	25 (63.5)	15.125 (38.4)	6.9375 (17.6)

## USE OF TRADEMARKS AND TRADE NAMES

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# CHARTER TOWNSHIP OF MERIDIAN

Ronald J. Styka  
Brett Dreyfus  
Phil Deschaine  
Frank L. Walsh

Supervisor  
Clerk  
Treasurer  
Manager



Courtney Wisinski  
Patricia Herring Jackson  
Dan Opsommer  
Kathy Ann Sundland

Trustee  
Trustee  
Trustee  
Trustee

August 25, 2020

Miranda Spare, PE  
Cost and Scheduling Engineer  
Michigan Department of Transportation  
Lansing TSC  
2700 Port Lansing Road  
Lansing, MI 48906

**Re: Grand River Avenue Improvements – Milling and Resurfacing Project**

Dear Ms. Spare,

The Meridian Township Corridor Improvement Authority (CIA) and the Meridian Township Transportation Commission (MTC) are dedicated to establishing the Grand River Avenue Corridor in Meridian Township as a prime business and recreation destination in the Tri-County region. In furtherance of that mission, the CIA and MTC are also supportive of transportation infrastructure improvements on Grand River that safely promote alternate modes of transportation and create the potential to spur economic growth within the Township through improved roadway conditions.

Adopted in 2017, the CIA's goals and objectives focus on the promotion and improvement of Grand River Avenue and include increasing safety and accessibility for vehicles, pedestrians and bicyclists. In furtherance of its objectives, in 2019 the CIA conducted a survey of Township businesses and residents to determine, in part, what improvements or changes the community would like to see on Grand River Avenue to make it a safer, more community friendly roadway. In relation to roadway improvements that are between the curbs (not including sidewalks and streetscapes improvements within the rights-of-way), the survey results mirrored many of the CIA's objectives and resoundingly showed that the community would like to see the following improvements and changes: (1) enhanced pedestrian crosswalks (2) bicycle lanes (3) additional street lighting and (4) a reduction of the speed limit.

The CIA and MTC understand that the Michigan Department of Transportation (MDOT) is planning a milling and resurfacing project for Grand River Avenue from Oak Pointe Court west to Park Lake Road in the next 1-3 years. Accordingly, on behalf of the Township businesses and residents located in that area, the CIA and MTC requests that MDOT incorporate within its project plans the items listed above. Specifically, the CIA and MTC requests that MDOT consider;

- The addition of signalized pedestrian crosswalks (signals to include audible count-down and tactile feedback) within the 1800 block of West Grand River Avenue (near Washington Heights Avenue), the 2000 block of West Grand River (near McDonalds), the 2200 block of West Grand River (near the Campus Hill Apartments).
- The addition of dedicated bicycle lanes on Grand River from Park Lake Road east to Oak Pointe Court.

- The addition of more street lighting from Park Lake Road east to Dobie Road (current street lighting is helpful but insufficient to safely light the roadway and adjacent sidewalks).
- A reduced speed limit of 35 MPH, especially in portions of Grand River near the proposed pedestrian crosswalks.
- A traffic signal at Montrose Avenue.

The CIA and MTC appreciate the opportunity to share with you the results of our community survey and to present you with this desired roadway improvements list. We hope that our requests can be safely incorporated into MDOT's upcoming project.

We would be happy to meet with you to discuss these items in greater detail at your convenience. Additionally, we can provide you with more detailed information relating to each item.

Please contact us at (517) 853-4506 if you have any questions, concerns or if you would like to schedule a meeting. Thank you.

Sincerely,



Jeffrey Ross, Chair  
Corridor Improvement Authority



Steven Vagnozzi, Chair  
Meridian Transportation commission

cc:

CIA Members

MTC Members

Derek Perry, Deputy Township Manager/Director of Department of Public Works

Mark Kieselbach, Director of Community Planning & Development



STATE OF MICHIGAN  
DEPARTMENT OF TRANSPORTATION  
LANSING

GRETCHEN WHITMER  
GOVERNOR

PAUL C. AJEGBA  
DIRECTOR

October 21, 2020

Jeffrey Ross, Chair  
Corridor Improvement Authority

Steve Vagnozzi, Chair  
Meridian Transportation Commission

**Re: M-43 (Grand River Avenue) Improvements – Milling and Resurfacing Project**

Dear Mr. Ross and Mr. Vagnozzi,

On behalf of the Michigan Department of Transportation (MDOT) Lansing Transportation Service Center (TSC), I want to thank the Charter Township of Meridian Corridor Improvement Authority (CIA) and the Transportation Commission (MTC) for the letter dated August 25, 2020 and for forwarding the CIA's and MTC's requests regarding the M-43 (Grand River Avenue) corridor.

The TSC has reviewed the CIA's and MTC's requested improvements for the M-43 (Grand River Avenue) corridor in relation to our upcoming project, and MDOT has the following comments regarding the requests:

- The addition of signalized pedestrian crosswalks at three locations along the project limits:
  - The request of new pedestrian crosswalks within the project limits is being reviewed by MDOT. However, due to MDOT's funding and project timeline constraints, local participation may be requested to accommodate any midblock crossings as part of the current project. MDOT will contact the Township to discuss findings of midblock crossing feasibility.
- The addition of bicycle lanes on Grand River from Park Lake Road east to Oak Pointe Court:
  - The addition of bicycle lanes will not be considered with this project. Due to the nature of the road work, primarily resurfacing as opposed to reconstruction and widening, the current roadway width does not provide adequate width or separation for bicycle lanes adjacent to vehicle traffic. A further study investigating the feasibility of bicycle lanes can be completed by the Township in consultation with MDOT.
- The addition of more street lighting from Park Lake Road east to Dobie Road:
  - The Department does not fund the installation or maintenance street (low level) lighting along our trunkline routes. Freeway lighting is the only type of lighting that MDOT owns, operates, and maintains. MDOT can consider the installation of locally-funded lighting with this project as a non-participating item utilizing the selected contractor. MDOT and the Township can have further discussions of this possible coordination.

- A reduced speed limit of 35mph:
  - The establishment of speed limits on the state highway system is the joint responsibility of the State Police (MSP) and MDOT. When a review is made to determine a reasonable speed limit, several factors are considered. These include the number and types of traffic crashes occurring, the number and speeds of vehicles through the area, and the roadway's physical conditions, including the alignment, surface, and the number of intersections and driveways.
  - The primary factor used in establishing a realistic speed limit is the nationally recognized method using the 85th percentile speed of the existing traffic. This is the speed at or below which 85 percent of the motorists travel. In general, motorists will travel at a speed they believe to be reasonable and proper and experience shows that 85 percent of the traffic stream will adhere to properly established speed limits. It is possible that speed limits may be raised depending on the results of the speed study.
  - There is a popular misconception that lowered speed limits will result in improved safety. Arbitrarily installing a lower speed limit produces two distinct groups of drivers - those attempting to observe the limit and those driving at a speed they feel is reasonable and prudent. The difference in driving speeds may result in actually increasing crashes due to tailgating, improper passing, and reckless driving.
  - MDOT is willing to request a review of the speeds on M-43 in conjunction with the MSP, but we will require a resolution from the Township Board in order to proceed with the study. The resolution must state that the Township is in agreement with any and all changes to the speed limit as determined by MSP and MDOT and will support any changes identified. Please note that the speed limit review would be conducted for all state trunklines in the Township, and would not be limited to the area of concern.
  
- Traffic Signal at Montrose Avenue:
  - The TSC will work with the Department's Signals Unit to perform a signal study for this intersection. It may not be feasible to incorporate signal work into this project's schedule. However, if a signal is warranted, a future date for a signal project can be established and discussed with the Township at that time.

At MDOT, we value local effort to provide integrated transportation systems for all users and appreciate the opportunity to work with you. Should you have any questions regarding the information provided in this letter, please feel free to reach out to me using my phone number or email address included below.

Best Regards,

*Miranda Spare*

Miranda Spare  
Cost and Scheduling Engineer  
Lansing Transportation Service Center  
Michigan Department of Transportation  
Email: SpareM@michigan.gov  
Work: 517-243-4051

Cc:

CIA Members

MTC Members

Derek Perry, Deputy Township Manager/Director of Department of Public Works

Mark Kieselbach, Director of Community Planning & Development

MDOT: G. Losch, K. Martin, M. Davis Jr.