



**AGENDA**  
**CITY OF KENTWOOD PLANNING COMMISSION**  
**TUESDAY, JULY 9, 2024**  
**KENTWOOD COMMISSION CHAMBERS**  
**4900 BRETON AVENUE, SE**  
**7:00 P.M.**

- A. Call to Order
- B. Pledge of Allegiance (Sarah Weir)
- C. Roll Call
- D. Declaration of Conflict of Interest
- E. Approval of the Minutes of June 25, 2024 and Findings of Fact for: **Case#14-24** – 3119 – 52<sup>nd</sup> Street – Rezoning of 15.96 acres of land from R1-A Estate Residential and R1-C Single family Residential to R1-D Single Family Residential located at 3119 52<sup>nd</sup> Street SE; **Case#16- 24** – Bethel Hispanic 7<sup>th</sup> Day Adventist Church – Special Land Use and Site Plan Review for a Place of Worship located at 4430 Potter Ave SE; **Case#17-24** – Zoning Ordinance Text Amendments – Residential Architectural Requirements and Short Term Rental Fines
- F. Approval of the Agenda for July 9, 2024
- G. Acknowledge visitors and those wishing to speak to non- agenda items.
- H. Old Business

**Case#3-24** – Breton Ravines RPUD – Rezoning and Preliminary PUD Approval for a Residential Planned Unit Development Located at 2720 52<sup>nd</sup> Street, 2854 52<sup>nd</sup> Street and 5491 Wing Avenue SE (**Applicant has requested tabling to the August 13, 2024**)

- I. Public Hearing

**Case#15-24** – Third Coast 4301 60<sup>th</sup> Street – Site Plan Review and Major Change to a PUD located at 4175 -60<sup>th</sup> Street SE; (**Tabled from the July 9, 2024**)

- J. Work Session

**Case#18-24** – Steelcase 60<sup>th</sup> Street Entrance – Site Plan Review and Major Change to a PUD located at 4301 60<sup>TH</sup> Street

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K. New Business

Set public hearing date of , for:

L. Other Business

1. Commissioners' Comments
2. Staff's Comments

M. Adjournment

\*Public Hearing Format:

1. Staff Presentation – Introduction of project, Staff Report and Recommendation  
Introduction of project representative
2. Project Presentation – By project representative
3. Open Public Hearing (please state name, address and speak at podium. Comments are limited to five minutes per speaker; exceptions may be granted by the chair for representative speakers and applicants.)
4. Close Public Hearing
5. Commission Discussion – Requests for clarification to project representative, public or staff
6. Commission decision – Options
  - a. postpone decision – table to date certain
  - b. reject proposal
  - c. accept proposal
  - d. accept proposal with conditions.

PROPOSED MINUTES OF THE REGULAR MEETING  
OF THE KENTWOOD PLANNING COMMISSION  
JUNE 25, 2024, 7:00 P.M.  
COMMISSION CHAMBERS

- A. Chair Jones called the meeting to order at 7:00 p.m.
- B. The Pledge of Allegiance was led by Commissioner VanderMeer.
- C. Roll Call:  
Members Present: Dan Holtrop, Sandra Jones, Ed Kape, Alex Porter, Ray Poyner, Darius Quinn, Doug VanderMeer, Sarah Weir  
Members Absent: None  
Others Present: Community Development Director Terry Schweitzer, Economic Development Planner Lisa Golder, Senior Planner Joe Pung, Planning Assistant Monique Collier, the applicants and about 15 citizens.
- D. Declaration of Conflict of Interest  
  
There was no conflict of interest statement expressed.
- E. Approval of the Minutes and Findings of Fact  
  
**Motion by Commissioner Holtrop, supported by Commissioner Kape, to approve the Minutes of June 11, 2024 and the Findings of Fact for: Case#13-24 – Weiss Technik – Rezone 9.8 acres of land from R1-C Single family Residential to IPUD Industrial Planned unit Development and Preliminary Site Plan Approval located at 4375 and 4401 36<sup>th</sup> Street SE**  
  
- Motion Carried (8-0) –
- F. Approval of the Agenda  
  
**Motion by Commissioner Holtrop, supported by Commissioner Poyner, to approve the agenda for the June 25, 2024, meeting.**  
  
- Motion Carried (8-0) –
- G. Acknowledge visitors wishing to speak to non-agenda items.  
  
There was no public comment.

**Case#3-24** – Breton Ravines RPUD – Rezoning and Preliminary PUD Approval for a Residential Planned Unit Development Located at 2720 52<sup>nd</sup> Street, 2854 52<sup>nd</sup> Street and 5491 Wing Avenue SE (**Applicant has requested tabling to the August 13, 2024**)

I. Public Hearing

**Case#14-24** – 3119 – 52<sup>nd</sup> Street – Rezoning of 15.96 acres of land from R1-A Estate Residential and R1-C Single family Residential to R1-D Single Family Residential located at 3119 52<sup>nd</sup> Street SE

Pung stated the request is to rezone 15.96 acres of land from R1-A Estate Residential and R1-C Single family Residential to R1-D Single Family Residential. Located on the north side of 52<sup>nd</sup> Street west of the Jefferson Farms subdivision and north of 52<sup>nd</sup> Street.

Pung stated a portion of the site is encumbered by wetlands and floodplain primarily on the northern portion of the site. It is anticipated that access would be coming off 52<sup>nd</sup> Street and along with the extension of Nature View Drive from the adjacent Jefferson Farms subdivision.

Pung stated the proposed R1-D zoning allows for smaller lots as small as 5,500 square feet with a 50-foot width. Pung stated under plats and site condominiums, there is an averaging requirement. Although they can go down to 5,500 square feet and a 50-foot width, the overall development has to have an average of 6,500 square feet and average a width of 60 feet.

Pung stated the Master Plan recommendation is for low density residential development which is less than 4 units per acre. He stated under an R1-D zoning, there is the potential to get medium density residential which is 4-8 units per acre. But, when you look at the averaging requirements, and the environmental constraints along with the Master Plan recommendation for low density residential, that is going to restrict this development to less than 4 units per acre.

Pung stated at the work session there were some possible concerns with the ability to meet some of the new architectural requirements; primarily how the garage orients itself with the house. He stated based on the discussion, the applicant indicated that he would be able to meet the architectural standards specifically with the garages for this development.

Puns stated he is recommending to the City Commission approval of the request to rezone 15.96 acres from R1-A Estate Residential and R1-C Single family Residential to R1-D Single Family Residential as described in his memo.

Chris VanderHoff, Bosco Construction was present

Jones opened the public hearing.

Bob Green, 3181 Nature View Dr. was present. He stated he doesn't want Nature View Drive to be extended. There is enough traffic in the neighborhood and there are a lot of kids playing; therefore he is concerned about safety.

Jason Sytsma and daughter Taylor Sytsma, 3065 52<sup>nd</sup> Street were present. He stated this development will be in their backyard. He stated there is enough traffic on 52<sup>nd</sup> Street and a lot of accidents at Wing Avenue and 52<sup>nd</sup> Street and that is a safety concern. He stated the developer has already put power lines down. He stated they have also cut down a lot of trees. He stated he will get all the water runoff because it flows to the east. They are also concerned about their privacy.

**Motion by Kape, supported by Weir to close the public hearing.**

- Motion Carried (8-0) -

Porter thanked the residents for coming out and speaking. He questioned the traffic light at 52<sup>nd</sup> Street and Wing Avenue, the Nature View Drive connection and the flooding/drainage. He explained to the residents that there is another step and explained that this is just the rezoning.

Quinn also thanked the residents for voicing their concerns. He stated he shared his thoughts and concerns about a traffic light at 52<sup>nd</sup> Street and Wing Avenue we need to revisit this. He also wants to make sure the flooding concerns are taken into consideration when it gets to that point.

Holtrop questioned if they can build 4 units per acre, or 60 homes and is it possible. Pung stated they have the issues with the wetlands and floodplains and have to come in with the averaging requirements for the lot widths. If they can meet all the City's requirements with regards to the roads, the setbacks etc. we have to see what they come in with. Pung stated it will be based on the gross density. Pung stated the averaging will play some restrictions. Discussion ensued. Holtrop stated his concern is that the surrounding neighbors who have lived there looked at it as a 5 acre minimum so with that there would have been always be some level of privacy, not crowded, traffic etc. He stated it was zoned R1-A and it didn't go up for public sale to give anybody the opportunity to buy it. He stated he is not in favor of the rezoning at this time.

Poyner asked whether the architectural standards apply. Pung stated the architectural standards will apply to any new home constructed other than outside of a PUD. Poyner stated he is in favor of the rezoning. Poyner questioned how many homes would be in this development.

VanderHoff addressed some concerns. He stated regarding the drainage that would be done with engineering and that is way down the road. He stated he has been working with

Consumers Energy. They have a primary line that runs through the site that has to be rerouted and reworked. He stated all the utilities in the future development will be underground. He stated as far as Nature View and the connection to the west, that has always been the wish of the engineers and the city to have connectivity. He doesn't have a lot of say. He stated he believes 52<sup>nd</sup> Street is adequate with the number of homes they are putting in. He stated 60 homes is not going to happen, it is a challenging site. He thinks it will be more in the 40 home range, but they have detention ponds to build and that will probably be to the south end. He stated it is a really low impact for the neighbors. To the north are the powerlines and the landfill, to the west the public works area. About ½ the frontage on the east side adjacent to Jefferson East is the exposure to most of the neighbors. He stated his engineer said they will have to do detention ponds probably to the south part which will buffer the residents pretty well. He stated they certainly wouldn't put any more water on any adjacent property owners land that isn't there already. He stated the development would probably reduce that. He stated as far as the tree clearing, the site has not been manicured for quite some time. He stated they had some time this winter so they started to mow and manicure the property.

VanderMeer thanked the neighbors and let them know that the commissioners are passionate about protecting everybody. He questioned if power lines are going in now. VanderHoff stated no power lines are going in at all now. VanderMeer encouraged VanderHoff to spend some time with the neighbors. VanderHoff stated the neighbors have a lot of time yet before this development will go in. he stated it takes 2-3 years trying to move dirt and depending on how things go it could be even longer to build.

Weir thanked the residents that came out.

Kape stated he isn't in favor of the rezoning at this time he is struggling.

Schweitzer discussed the history of R1-A zoning and the Master Plan in the past.

**Motion by Poyner, supported by Porter, to recommend to the City Commission approval of the request to rezone 15.96 acres from R1-A Estate Residential & R1-C Single Family Residential to R1-D Single Family Residential. Approval is conditioned upon basis points 1-7 as described in Pung's memo dated June 18, 2025.**

- Motion Carried (6-2) –
- Holtrop and Kape opposed

**Case#15-24 – Third Coast 4301 60<sup>th</sup> Street – Site Plan Review and Major Change to a PUD located at 4175 -60<sup>th</sup> Street SE; (Staff has requested tabling to July 9, 2024)**

Jones opened the public hearing.

There was no public comment.

Golder stated that this is part of the Steelcase plan. There was a 350,000 building that was approved with a 45,000 square foot office. The applicant has come in with a 600,000 square foot building which is bigger than the original. One of the concerns was that there should be a driveway that serves the development in the future. She stated right now the parcel to the north is Steelcase's property. Steelcase may or may not develop it, but they wanted to make sure that there will be a secondary way to get to building G to the north. The applicant has proposed to cut off access to that and to have the driveway serving this northern piece that is more like a firelane. This is an issue with the Fire Department, and possibly a clear vision issue. She stated the road as proposed is not appropriate to serve as an access driveway for the user to the north.

Golder stated Steelcase has a stake in this because they have to approve this site plan as part of the sale. She stated we are also looking for some traffic information that we did not get and that is why she tabled the request. Golder stated we will take this up with Steelcase and Third Coast to figure out the driveway issue. She stated she asked Steelcase, because they have the existing driveway that is on the other side of the ditch, whether this driveway could serve the parcel to the north.

Golder stated part of why Steelcase is requesting a major change for their property because they are also proposing a new curb cut onto 60<sup>th</sup> Street. We have a traffic analysis to review for this project.

**Motion by Holtrop, supported by Quinn to table the public hearing until July 9, 2024.**

- Motion Carried (8-0) -

**Case#16- 24** – Bethel Hispanic 7<sup>th</sup> Day Adventist Church – Special Land Use and Site Plan Review for a Place of Worship located at 4430 Potter Ave SE

Pung stated the request is for an 8,700 square foot building for a place of worship off of Potter Avenue. He stated the site currently encompasses 3 parcels and would have to be combined into a single parcel as part of the development.

Pung stated the only issue that was brought up at the work session is that we wanted to make sure that there is compliance with the building elevations, height and landscaping and that would all be handled through the staff level review, but we wanted to make the applicant aware of what the requirements were.

He stated he is recommending conditional approval of the special land use and site plan review as described in his memos dated June 18, 2024.

Robb Lamer, with Exxel Engineering was present.

Jones opened the public hearing.

There was no public comment.

**Motion by Kape, supported by Weir to close the public hearing.**

- Motion Carried (8-0) –

VanderMeer questioned the pedestrian connection. Pung stated they have to have some type of pedestrian connection to the public walkway along Potter.

**Motion by Holtrop, supported by Kape, to grant conditional approval of the Special Land Use Place of Worship as described in Case 16-24 Bethel Hispanic 7<sup>th</sup> Day Adventist Church. Approval is conditioned on condition 1 and basis points 1 – 5 as described in Pung’s memo dated June 18, 2024.**

- Motion Carried (8-0) –

**Motion by Holtrop, supported by Porter, to grant conditional approval of the site plan dated May 28, 2024, as described in Case 16-24 Bethel Hispanic 7<sup>th</sup> Day Adventist Church. Approval is conditioned on conditions 1-10 and basis points 1 – 5 as described in Pung’s memo dated June 18, 2024.**

- Motion Carried (8-0) –

**Case#17-24 – Zoning Ordinance Text Amendments – Residential Architectural Requirements and Short Term Rental Fines**

Golder stated regarding the architectural requirements, she has asked Mike Corby with Integrated Architecture to give some input because he has done similar review for Grand Rapids. He stated generally just adding these architectural elements doesn’t make good designs, but we are trying to do all that we can to make things better.

Corby added some comments to some of the architectural requirements below:

- i. At least three (3) windows with a minimum of six (6) square feet each are required on side walls (those adjoining the front façade) that face a street.

*Corby.: Feels too prescriptive, not sure about requiring 3 windows in addition to the 6 sq. ft. of window area.*

- a. Side wall transparency for single-story dwellings where it is determined that the standard cannot be met due to the interior design of the dwelling.

*Corby.: asked whether examples be used? For example, windows may not be required for mechanical room.*

Golder stated she can add examples this isn't a bad idea or have it a guide for the applicants or developers of what we want to see

- a. Exterior cladding may consist of brick, stone, vinyl or aluminum siding, glass, fiber cement siding, wood lap, stucco, or decorative split-faced block.

*Corby.: Suggest or require trim (casings around windows/doors, skirt boards, rake trim). Trim contributes more to the overall look than the type of material.*

Commissioners stated maybe we need to spell this out within the architectural standards.

- b. EIFS shall only be used for building accents.

*Corby. suggest not using at grade level EIFS.*

Commissioners stated it makes sense because it deteriorates.

- i. Porch columns of 8 inches or more with a substantial base and capital.

*Corby. does not like this requirement because for a certain style of home, a narrow porch column is appropriate*

Commissioners are ok with the language as is.

- a. Where garages are rear loaded, off an alley or common drive through a rear yard, the minimum distance from the face of the garage to the edge of pavement is fifteen (15) feet.

*Corby. Suggested 18' or more to fit a vehicle in driveway off an alley.*

Golder stated the requirement may need to be increased in order to park the car allow for a car to be parked off an alley.

- a. For multi-family developments parking areas visible from the public street shall be sited to be perpendicular to the street to reduce visual impacts on the streetscape.

*Corby.: understands the intent but not practical to accomplish.*

Golder stated we may have to go back and change the ordinance as needed, based on how effective it is in providing a better product.

**Motion by VanderMeer, supported by Holtrop, to recommend to the City Commission amendment of the Zoning Ordinance to amend Section 1.02 and 3.22 to**

**require architectural standards and guidelines to residential dwellings within the City.**

- Motion Carried (8-0) –

Schweitzer stated City Commissioner wanted to move forward in terms of penalties for violations of the provisions pertaining to short term rentals. He stated the fees would be reflective of the time it takes to enforce upon this if someone decides to go against the regulations. He stated it is also a matter of giving some assurance of maintaining the integrity of our existing neighborhoods. Schweitzer discussed nuisance problems we have been having with Airbnb operations in Kentwood.

Schweitzer stated it was also pointed out that a few other existing provisions should be reviewed. One is subsection deals with electronic messages centers. The reason why it was a higher fine is due to regulations that we have in terms of the brightness of the signs and the movement. We may need a heavier fine to make it clear that it is a priority of the community and that it is important to the safety of motorists and pedestrians to minimize the amount of distractions.

Schweitzer stated another section deals with our provisions site design requirements for self-storage facilities that will have an area set aside for RV parking. That shouldn't be as high as it was before. By removing that portion we are basically saying in those circumstances we will rely upon the ordinances and our standard of 65 dollars for the first violation 130.00 for the second violation and 250.00 for the third and subsequent violations. He stated he thinks we can deal with this one without zoning enforcement more effectively and not having to rely upon a higher fine to bring that in to compliance with the ordinance.

Jones questioned if someone has already had their first and second violation will they then go to the \$5,000 or does the clock start over. Schweitzer stated if there is a substantial gap in time between the 1<sup>st</sup> and 2<sup>nd</sup> violation that is taken into account. He stated these are the allowable fines that can be imposed by ordinance, but the District Court Judge has the discretion based on the circumstances of imposing a lesser fine.

Porter stated there was mention about substantial time to reset the clock, he feels that is really vague and questioned if there should be something to define substantial time. Schweitzer stated he will get with the City Attorney on that issue.

Porter questioned if we would penalize the both owner of the Airbnb and the renter. Schweitzer stated the approach we have taken is penalizing the owner because they are the one in violation.

**Motion by Holtrop, supported by VanderMeer, to recommend to the City Commission amendment of the Zoning Ordinance to amend the violation and penalties provisions to increase the fine schedule for short-term rental violations and reduce the fine schedule for violation of special land use outdoor storage of**

**Recreational Vehicles in the industrial zone districts. As described in Schweitzer's memo dated June 14, 2024.**

- Motion Carried (8-0) -

J. Work Session

Three were no work sessions.

K. New Business

**Motion by Porter, supported by Quinn, to set public hearing date of July 23, 2024, for: Case#18-24 – Steelcase 60<sup>th</sup> Street Entrance – Site Plan Review and Major Change to a PUD located at 4301 60<sup>TH</sup> Street**

- Motion Carried (8-0) –

L. Other Business

1. Commissioners' Comments

Porter questioned what the commercial development was going up at 44<sup>th</sup> and Shaffer. Golder stated it is zoned residential, but the zoning allows for some commercial and that was what was approved. She stated we would have to review a site plan. If it is consistent with what we have approved, then they can come in for final approval.

Holtrop stated we have discussed over the years some vacant property in a section of 44<sup>th</sup> Street between Roger B Chaffee and Division. He noticed there is a basement going in. Schweizer stated that was one of the privately held properties. They lost some frontage but there is still enough depth to it for them to put a house there.

Holtrop questioned the status of Hope Haven he noticed the City Commission has tabled the request. Pung stated yes, Hope Hazen is working on a traffic analysis to see if a decel lane would be warranted and site distance.

Holtrop stated someday he won't be on the commission and encouraged the commissioners to be vigilant when they drive around town.

Kape reminded everyone of the 4<sup>th</sup> of July festivities.

2. Staff's Comments

Schweitzer stated as of July 2<sup>nd</sup> we should have an appointment for someone to serve on the Planning Commission.

M. Adjournment

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**Motion by Commissioner Weir, supported by Commissioner Kape, to adjourn the meeting.**

- Motion Carried (8-0) –

Meeting adjourned at 8:35pm

Respectfully submitted,

Ed Kape, Secretary



**CITY OF KENTWOOD  
PLANNING COMMISSION  
PROPOSED  
FINDINGS OF FACT  
JULY 9, 2024**

Pung 06/18/2024

PROJECT: 3119 – 52<sup>nd</sup> Street Rezoning

APPLICATION: 14-24

LOCATION: 3119 – 52<sup>nd</sup> Street

HEARING DATE: June 25, 2024

REVIEW TYPE: Rezoning of 15.96 acres from R1-A Estate Residential & R1-C Single Family Residential to R1-D Single Family Residential

MOTION: **Motion by Poyner, supported by Porter, to recommend to the City Commission approval of the request to rezone 15.96 acres from R1-A Estate Residential & R1-C Single Family Residential to R1-D Single Family Residential. Approval is conditioned upon basis points 1-7 as described in Pung's memo dated June 18, 2025.**

- Motion Carried (6-2) –
- Holtrop and Kape opposed

- BASIS:
1. The Master Plan recommends low density residential development for this site. Residential development under the R1-D zoning district would be low density.
  2. The City's infrastructure and services are sufficient to accommodate development of the property under the R1-D Single Family Residential district.
  3. The rezoning is not anticipated to have a substantial and permanent adverse impact on neighboring property.
  4. The rezoning would not tend to create any type of blight within the area and would allow for reasonable use of the property.
  5. Development under the R1-D district would be compatible with the surrounding uses

6. Applicant's presentation at the Planning Commission work session and public hearing.
7. Discussion at the Planning Commission work session and public hearing.



**CITY OF KENTWOOD  
PLANNING COMMISSION  
PROPOSED  
FINDINGS OF FACT  
JULY 9, 2024**

Pung 06/18/2024

PROJECT: Bethel Hispanic 7<sup>th</sup> Day Adventist Church

APPLICATION: 16-24

LOCATION: 4424 & 4448 Potter Avenue & 4435 Eastern Avenue

HEARING DATE: June 25, 2024

REVIEW TYPE: Special Land Use Place of Worship

MOTION: **Motion by Holtrop, supported by Kape, to grant conditional approval of the Special Land Use Place of Worship as described in Case 16-24 Bethel Hispanic 7<sup>th</sup> Day Adventist Church. Approval is conditioned on condition 1 and basis points 1 – 5 as described in Pung's memo dated June 18, 2024.**

- Motion Carried (8-0) –

CONDITION: 1. Installation of a pedestrian connection from the building entrance to the public sidewalk along Potter Avenue.

BASIS:

1. The proposed use is consistent with both the Master Plan and the zoning district in which it is located.
2. To provide pedestrian access to the building entrance from the public sidewalk.
3. The use otherwise meets the special land use standards of Sections 15.02 and 15.04 of the Kentwood Zoning Ordinance.
4. Applicant's representation at the work session and public hearing.
5. Discussion at the work session and public hearing.



**CITY OF KENTWOOD  
PLANNING COMMISSION  
PROPOSED  
FINDINGS OF FACT  
JULY 9, 2024**

Pung 06/18/2024

PROJECT: Bethel Hispanic 7<sup>th</sup> Day Adventist Church

APPLICATION: 16-24

LOCATION: 4424 & 4448 Potter Avenue & 4435 Eastern Avenue

HEARING DATE: June 25, 2024

REVIEW TYPE: Site Plan Review for a Special Land Use Place of Worship

MOTION: **Motion by Holtrop, supported by Porter, to grant conditional approval of the site plan dated May 28, 2024, as described in Case 16-24 Bethel Hispanic 7<sup>th</sup> Day Adventist Church. Approval is conditioned on conditions 1-10 and basis points 1 – 5 as described in Pung's memo dated June 18, 2024.**

- Motion Carried (8-0) -

- CONDITION:
1. Planning Commission approval of the special land use Place of Worship.
  2. Planning staff review and approval of an exterior photometric plan.
  3. Planning staff review and approval of a landscape plan..
  4. Planning staff approval of exterior building elevations.
  5. Install pedestrian connection from the building entrance to the public sidewalk along Potter Avenue.
  6. The location of any external refuse containers to be reviewed and approved by planning staff.
  7. Compliance with all applicable standards and requirements of the Kentwood Engineering Department.

8. Compliance with all applicable standards and requirements of the Kentwood Fire Department.
9. Applicant's representation at the work session and public hearing.
10. Discussion at the work session and public hearing.

BASIS:

1. To ensure building elevations, landscaping, and exterior lighting comply with zoning ordinance requirements.
2. To provide pedestrian access to the building entrance from the public sidewalk.
3. The use otherwise meets the requirements of the Kentwood Zoning Ordinance.
4. Applicant's representation at the work session and public hearing.
5. Discussion at the work session and public hearing.



CITY OF KENTWOOD  
PLANNING COMMISSION  
PROPOSED  
FINDINGS OF FACT  
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Golder 6-17-2024

PROJECT: Zoning Ordinance Amendments-Residential Architectural Standards

APPLICATION: 17-24

HEARING DATE: June 25, 2024

REVIEW TYPE: Zoning Ordinance Text Amendments

MOTION: Motion by VanderMeer, supported by Holtrop, to recommend to the City Commission amendment of the Zoning Ordinance to amend Section 1.02 and 3.22 to require architectural standards and guidelines to residential dwellings within the City.

- Motion Carried (8-0) -

RECOMMENDED ORDINANCE AMENDMENT LANGUAGE:

AN ORDINANCE TO AMEND SECTION 1.02 PURPOSE AND SECTION 3.22  
REGULATIONS APPLICABLE TO ALL RESIDENTIAL DWELLINGS

Section 1. Amendment to Section 1.02 Purpose

Section 1.02 is hereby amended to read as follows:

SECTION 1.02 PURPOSE

The fundamental purpose of this ordinance is to promote and safeguard the public health, safety, prosperity and general welfare of the people of this City. The provisions of this Ordinance are intended, among other things, to encourage the use of lands, waters, and other natural resources in the City in accordance with their character and in a reasonable manner; to limit the improper use of lands and resources; to eliminate nonconforming uses; to reduce hazards to life and property; to provide for orderly development within the City; to avoid overcrowding of land with structures or buildings; to provide adequate light, air and health conditions within dwellings and buildings hereafter erected or altered; to protect the prosperity and economic interests of

the city, taxpayers, and property owners; to ensure that the built environment in the city is durable and sustainable; to encourage redevelopment efforts within the city; to manage the impact on the public roads and streets resulting from development; to protect and conserve natural recreational areas, residential and other areas naturally suited to particular uses; to facilitate the establishment of an adequate and economic system of transportation; sewage disposal, safe water supply, education, recreation and other public requirements; to conserve the expenditure of funds for public improvements and services to conform with the most advantageous uses of land, resources and properties.

This Ordinance is enacted under the authority of the City and Village Zoning Act and Section 6.14 (c) of the Charter of the City of Kentwood.

Section 2 Amendment to Section 3.22 Regulations Applicable to all Residential Dwellings.

Section 3.22 is hereby amended to read as follows:

**SECTION 3.22 REGULATIONS APPLICABLE TO ALL RESIDENTIAL DWELLINGS**

The following provisions shall not apply to dwellings located in manufactured home communities or Form Based Code districts. Provisions specific to a particular housing type shall apply in addition to the general provisions applicable to all housing types contained in Part B.

A. The purpose and intent of these provisions is:

1. To create neighborhoods that are safe, livable, attainable, and sustainable, and create a sense of community for Kentwood's varied households. Each home will contribute to a neighborhood's context. Building placement, design, and parking location are all components that affect how walkable and safe a neighborhood is for children, the elderly, and the general community. Front porches, windows, and entries provide "eyes on the street" that contributes to the safety and security of a neighborhood.
2. Many of the following provisions have been used within residential Planned Unit Developments but were not formally codified as general provisions. The intent of codifying these rules is to increase transparency in the development process, provide greater predictability for the development community, and increase consistency in decision-making.
3. It is recognized that not every home and building site is the same. To that end, these provisions seek to provide flexibility for builders, homeowners, and City staff by instructing where administrative departures may be granted in lieu of the need for a zoning variance process.
4. It is recognized that the Building Code regulates appropriate construction materials to be used in residential construction. That Code, however, does not consider how all the

various components contribute to building a neighborhood and a community. It is expected that materials will be compatible in character and scale with the structure on which it is being installed, have no visible fasteners, and be uniform in type and appearance. Building materials shall be durable and installed in simple configurations with solid craftsmanship, according to the manufacturer's specifications such that no warping or buckling, cracking, molding, fading, or oil canning is expected.

B. All housing types. These general provisions are applicable to all housing types.

1. Transparency.

- a. Residential dwellings shall have windows on the front walls and side walls of the structure that face a street. The size and placement of windows on the facade shall be generally consistent.

- i. For all residential dwellings at least twelve percent (12%) of the area of the front façade shall consist of clear glass windows and may include the primary entrance door, which permits a view from the dwelling to the street. Garage door windows may count towards the percentage.

If the front façade of the residential dwelling has between 10%-12% clear glass windows, an additional design element must be provided from the list provided in Section 2.22 B. The design element shall be specific to the façade of the house and provided in addition to that required in Section 3.22 B 3.

If the front facade of a residential dwelling has less than 10% clear glass windows, an additional two design elements must be provided, specific to the façade of the house, and selected from the list outlined in Section 3.22 B. The 2 design elements shall be specific to the façade of the house and provided in addition to the 4 design elements required in Section 3.22 B 3.

- ii. At least three (3) windows with a minimum of six (6) square feet each are required on side walls (those adjoining the front façade) that face a street.
    - iii. Lightwell facades shall have twelve percent (12%) minimum clear glass between the finish floor line of the lightwell and the finish floor line of the first floor.
    - iv. Administrative Departures. The following shall be eligible for an administrative departure request:

- a. Side wall transparency for single-story dwellings where it is determined that the standard cannot be met due to the interior design of the dwelling.
- b. Placement is limited by the presence of a garage. If the garage is facing the street, a departure cannot be provided to the facade.
- c. Building code requirements make adherence to this requirement infeasible.

## 2. Exterior Materials.

- a. Exterior cladding may consist of brick, stone, vinyl or aluminum siding, glass, fiber cement siding, wood lap, stucco, or decorative split-faced block. Installation shall include trim.
- b. EIFS shall only be used for building accents and shall not be permitted at grade level.
- c. Where more than one (1) façade material is proposed, the heavier material in appearance shall be incorporated below the lighter material (e.g. masonry below siding).
- d. Administrative Departure. Other materials of equivalent or better quality, including high quality synthetic material, may be approved, if determined appropriate for the building, site, and area with an approved sample and examples of successful, high quality local installations.

3. **Design Elements.** The intent of this Section is to encourage the use of various design elements on residential lots and structures to create visual interest and support walkable neighborhoods. The menu of design elements is intended to provide a variety of choices for potential design compositions. A number of the design elements represent a standard of quality and durability that can decrease future maintenance responsibilities for the homeowner or limit deterioration of the exterior of the home(s). It is also the intent of this Section to maintain the affordability, livability, and safety of housing in the City. A minimum of four (4) elements or sub-elements from the menu are required. Implementation of these design elements should demonstrate thoughtful design; considering scale, symmetry, balance and compatibility. A minimum of one (1) design element must be different among adjacent detached dwelling units, or for each multi-family building. Landscaping and front porches shall be exempted from this requirement.

- a. Landscaping.

- i. Three (3) trees measuring 2.5" caliper or greater on the lot. A minimum of five hundred (500) cubic feet of soil volume shall be provided per tree. Retained trees on the property can be credited towards this option.
  - ii. Planted landscape area/s of a minimum of one hundred fifty (150) square feet in the front yard.
  - iii. A sod grass lawn provided in the front, back, and side lawn.
- b. Front Porch.

Front porch, as defined in Chapter 2, not including steps, that is at least five (5) feet in depth to provide for usable seating and circulation and is at least one-third (1/3) the width of the front façade of the residential structure (not including the garage) but in no case is it less than nine (9) feet wide.
- c. Structural Modifications.
  - i. Dormers, the placement of which is balanced with the dwelling's façade.
  - ii. Room bump-out (e.g. sunroom, bay window, etc.) on the façade of the building with minimum depth of two (2) feet.
  - iii. Dwelling is designed and constructed to meet the Type B Unit accessibility requirement of the ANSI A117.1 standard.
- d. Windows and Window Detailing.
  - i. Increased percentage of clear glass windows on the front facade of fifteen percent (15%) or higher on front façade.
  - ii. Exterior trim not less than three (3) inches in width.
  - iii. Shutters that are one-half the width of the window on each side and of a high-quality material that will not fade or peel.
  - iv. Other enhancements, such as awnings.
- e. Roof Detailing.
  - i. Eaves with a minimum of twelve-inch (12") overhang on all eaves.
  - ii. Exterior soffit detailing such as brackets, moldings, or changes in materials.
  - iii. Gable end (rakes) with a minimum eight-inch (8") overhang on all gable ends.
  - iv. Eavestroughs with downspouts.
- f. Materials.
  - i. Brick, stone, or other decorative materials used on the façade of the building and wrap the sides of the structure with the same materials for a depth of at least two (2) feet.
  - ii. Hardie Plank/fiber cement siding.

- iii. Metal siding, roofing, or paneling of 24 gauge or better with no visible fasteners. Any change in profile is non-corrugated and has a minimum rib depth of 1-inch.
    - iv. A change in exterior building materials used as an accent on the façade of the building.
  - g. Columns
    - i. Porch columns of 8 inches or more with a substantial base and capital.
    - ii. Administrative Departures: The Zoning Administrator may accept alternative options that meet the intent of this provision to increase the visual diversity of residential structures within a neighborhood.
- C. **Detached single-family.** A detached single-family dwelling and any additions or alterations thereto, shall meet the requirements of this Section in addition to all other regulations of this Chapter.
  - 1. Garages. The following provisions shall apply to provide safe, unobstructed pedestrian through-movement on sidewalks, encourage the visibility of street activities from dwellings, ensure sufficient space for the parking of vehicles to avoid front-yard parking and street congestion, and reduce the visual dominance of garages and parking in neighborhoods.
    - a. For the purposes of this Section, the garage setback shall be considered independently from that of the residential dwelling.
    - b. Garages that are accessed from a public street through the front yard shall be placed a minimum of thirty-five (35) feet from the front lot line. Garages that are accessed from a private street through the front yard shall be placed at a minimum of 25' from the edge of the right-of-way easement. Administrative departures for private roads may be approved by the Zoning Administrator.
    - c. Where garages are rear loaded, off an alley or common drive through a rear yard, the minimum distance from the face of the garage to the edge of pavement is twenty (20) feet.
    - d. The placement and size of attached garages shall be determined by the following:
      - i. Attached garages cannot exceed 50% of the total width of the front façade of a dwelling unit. Attached garages that are set back at least 15 feet behind the front of the dwelling unit are permitted and shall not be counted against front façade calculations.
      - ii. Garages that comprise 50% or less of the front façade of the dwelling may align with the front façade.

- iii. Attached garages comprising 35% to 50% of the total width of the front facade may project up to 8 feet forward of the front of the dwelling unit, or up to 10 feet forward of the front of the dwelling unit if a front porch is provided in compliance with Section 3.22.B.3.b. Front yard setbacks still apply.
    - iv. Attached garages that are 33% or less of a dwelling unit's front facade may be placed fully forward of the dwelling unit.
  - e. Where a third, single garage stall is desired, it shall be located at least two (2) feet behind the main façade of a two-stall garage. A third, single garage stall set back more than 5' shall not count toward the width of garage for the for the purposes of determining compliance with Section 3.22 C.1.d.
  - f. Administrative Departure. An administrative departure may be granted where seventy-five percent (75%) of existing dwelling units within three hundred (300) feet on the same block have a dwelling to garage façade ratio that does not meet the above requirements.
2. The roof of any dwelling unit shall have a minimum pitch of three (3) inches height to one foot of run.
  3. Dwelling units shall be permanently anchored to wood, masonry, concrete, or other approved foundation. Access to the basement or crawl space shall be from inside the dwelling unit.
  4. Dwelling units shall meet all the requirements and specifications of the currently adopted Building Code, Housing Code, Electric Code, Plumbing Code, Energy Code, and the One and Two Family Code.
  5. If the dwelling unit was transported to the building site, all wheels, axles, and towing devices shall be removed from the dwelling unit once placed on the lot.
- D. Attached single-family, duplexes, and multi-family.** Attached single-family dwellings, duplexes, and multi-family dwellings (3 or more units) and any additions or alterations thereto, shall meet the requirements of this Section in addition to all other regulations of this Chapter.
1. Parking Areas, Garages, and Carports.
    - a. Garages for duplexes are not allowed to be placed in the center of the front façade. Drive areas shall be separated to allow for a common green. A circular drive may be permitted for access management purposes.
    - b. For multi-family developments unenclosed parking areas and freestanding parking structures (detached garages or carports) shall not occupy more than thirty percent (30%) of any public street frontage.

- c. For multi-family developments parking areas visible from the public street shall be sited to be perpendicular to the street to reduce visual impacts on the streetscape.
- d. Administrative Departure. An administrative departure may be granted to allow up to fifty percent (50%) of unenclosed parking areas or to adjust parking area orientation along a street frontage when a dense year-round landscape screen is provided.



**CITY OF KENTWOOD  
PLANNING COMMISSION  
PROPOSED  
FINDINGS OF FACT  
JULY 9, 2024**

PROJECT: Zoning Ordinance Amendments-Violations and Penalties

APPLICATION: 17-24

HEARING DATE: June 25, 2024

REVIEW TYPE: Zoning Ordinance Text Amendments

MOTION: **Motion by Holtrop, supported by VanderMeer, to recommend to the City Commission amendment of the Zoning Ordinance to amend the violation and penalties provisions to increase the fine schedule for short-term rental violations and reduce the fine schedule for violation of special land use outdoor storage of Recreational Vehicles in the industrial zone districts. As described in Schweitzer's memo dated June 14, 2024.**

- Motion Carried (8-0) -

RECOMMENDED ORDINANCE AMENDMENT LANGUAGE:

**AN ORDINANCE TO AMEND APPENDIX A, CHAPTER 22, SECTION 22.07 ENTITLED "VIOLATIONS AND PENALTIES" OF THE CODE OF ORDINANCES FOR THE CITY OF KENTWOOD**

Section 1. Amendment to Appendix A, Chapter 22, Section 22.07. Appendix A, Chapter 22, Section 22.07 of the Code of Ordinances of Kentwood is hereby amended to read as follows:

Sec. 22.07. – Violations and penalties.

- A. Unless a section of this ordinance specifically provides otherwise, any person, firm, corporation, trust, partnership or other legal entity which violates any provision of the zoning ordinance or violates any provision or condition imposed by the planning commission, city commission, or zoning board of appeals in pursuance of any ordinance provision or assigned condition, shall be responsible for a municipal civil infraction and shall be subject to fines, costs and orders as provided by law.
- B. Each day a violation occurs or continues shall constitute a separate offense, and shall make the violator liable for the imposition of a fine and other penalties for each day of violation.

- C. The owner and co-owner of any building, structure or premises which is in violation of this ordinance shall be responsible for a municipal civil infraction and shall be subject to the fines, costs and orders as provided by law.
- D. Any building or structure which is erected, altered or converted, or any use of any premises or land which is begun or changed subsequent to the effective date of this ordinance that is in violation of any of this ordinance is declared to be a public nuisance per se, and may be abated by order of a court of competent jurisdiction.
- E. Any person who violates any provision of Section 16.05.D. is responsible for a civil infraction and shall be fined not less than \$2,500.00 for each violation. Any person who, after having been determined to be responsible for a violation of this article or the act, commits and is found responsible for a subsequent violation within a two-year period, shall be fined double the amount assessed for the immediate preceding violation.
- F. The rights and remedies provided are cumulative and are in addition to any other remedies provided by law.
- G. Nothing herein shall be interpreted to limit the authority of the city to revoke an approval previously granted for a violation of this ordinance, which right is expressly reserved.
- H. Any person who violates Section 3.32(a) is responsible for a municipal civil infraction and shall be fined \$500.00 for a first violation, \$2,500.00 for a second violation, and \$5,000.00 for a third or subsequent violation, as well as such other costs, damages, expenses, and sanctions as provided by Section 1-7.

Section 2. Conflict.

- A. Nothing in this Ordinance is to be construed to conflict with existing City ordinances except as otherwise stated herein.
- B. Nothing in this Ordinance is to be construed to conflict with any other law of the State of Michigan.

Section 3. Repealer. All ordinances or parts of ordinances in conflict with this Ordinance are repealed.

Section 4. Savings Clause. The provisions of this Ordinance are severable. If any part of this Ordinance is declared void or inoperable for any reason, such declaration does not void any or render inoperable other part or portion of this Ordinance.

Section 5. Effective Date. This Ordinance is effective ten (10) days following its publication in the manner required by law.

Basis:

1. In November and December of 2022, the City Commission approved amendments to the Rental Dwelling Inspection Program of the Code of Ordinances and the Zoning Ordinance to regulate short term residential rentals. The purpose of these amendments was to protect the general health, safety and welfare of the community, retain existing long term housing stock, and preserve the unique character of the diverse residential neighborhood within the city.

2. Over the past one and a half years city staff and the City Attorney's office have pursued prosecution of several homeowners whose "short term renters" were found to have created disturbances in the surrounding neighborhoods. While the city has been able to sufficiently document violations and assess fines, it has come after a great deal of time and effort. Despite these efforts to date, several of the illegal short-term rentals continue to rent and are willing to pay the fines.

3. During the June 4 City Commission Committee of the Whole meeting, the City Commission initiated the process to formally amend the short-term rental violations and penalties provisions of the Rental Dwelling Inspection Program of the Code of Ordinances. The City Commission would also like to consider a similar amendment of the short-term rental violations and penalties provisions of the Zoning Ordinance

4. A review of Section 22.07, subsection E, revealed that a \$2500.00 fee would be assessed for violations of the city's special land use provisions for outdoor storage of recreational vehicles in industrial areas. The amount of the fine for these provisions is more appropriately the standard fines of \$65 for a first offense, \$130 for a second offense and \$250 for a third and subsequent offense.

## PLANNING STAFF RECOMMENDATION

Golder 7/5/24

PROJECT: Third Coast Development

APPLICATION: 15-24

REQUEST: Major Change to an Approved PUD Site Plan

LOCATION: 4301 60<sup>th</sup> Street SE

HEARING DATE: July 9, 2024

RECOMMENDATION: Recommend to the City Commission Conditional Approval of the site plan dated May 22, 2024 for Third Coast Development Major Change to an Approved PUD Plan as described in Case No. 15-24. Approval is conditioned on the following:

### CONDITIONS:

1. Compliance with the PUD Statement dated May 23, 2024, with the following amendment, to be approved by staff:
  - Fire lanes must be provided on all sides of the building
2. Review and approval by staff and the City Attorney of the Third Coast PUD Statement and Development Agreement for compliance with legal and related requirements.
3. Compliance with the City Engineer's memo dated June 13, 2024, and the approval of the site plan by the Kentwood Fire Marshal.
4. A gated access shall be required east of the passenger car parking lot to prevent vehicles from accessing the fire lane and will discourage trucks from exiting the site through the East Paris curb cut.
5. Additional traffic information shall be provided for the intersection of East Paris and 60<sup>th</sup> Street.
6. Applicant shall provide deferred parking information on the site plan.
7. Approval by the City Engineer of the driveway design for East Paris Avenue, including the recommended right turn lane.

8. Approval by the City Engineer of any proposed improvements to the existing driveway (Data Drive).
9. The applicant shall maintain the private road connection between the property and the Steelcase property to the East.
10. Planning and City Commission approval of any building material waivers.
11. Planning Commission approval of the Final PUD site plan.
12. Final approval of the landscaping plan.

#### BASIS

1. A review of the PUD Development Agreement is required by the Zoning Ordinance and its review in light of the proposed site plan will ensure that the development is undertaken in a way consistent with Planning and City Commission approvals and representations made by the applicant.
2. The East side of the proposed building has a 30' paved driveway that is intended to serve as both a fire lane and an access driveway to Building G to the north. The Fire Marshal will review to determine whether this provides acceptable access for the Fire Department and if additional signage is needed to prohibit parking within the fire lane.
3. A gated access located east of the East Paris parking lot will prohibit truck traffic from exiting the site on East Paris Avenue.
4. A traffic analysis for the adjacent Steelcase project (Case 18-24) indicates that the queues for southbound right turn movements at the 60<sup>th</sup>/East Paris intersection currently exceed provided storage lengths. It is unclear whether the traffic analysis incorporates the Third Coast Development traffic into its calculation for the queues at the 60<sup>th</sup>/East Paris intersection. The applicant must confirm that the movement and overall approach still operate at an acceptable level of service.
5. The Steelcase traffic analysis recommends a west bound right turn lane at 60<sup>th</sup> and Data Drive.
6. Maintaining the driveway connection between Data Drive and the proposed Steelcase driveway will allow more options for access to 60<sup>th</sup> Street for both the Third Coast property and the Steelcase property, as well as the future Building G.
7. The zoning ordinance requires 361 parking spaces for the square footage and the uses proposed for the Third Coast building, and 231 spaces are provided. The Project Narrative indicated that additional parking would

be provided as necessary. The deferred parking spaces should be shown on the site plan.

8. The 2014 PUD major change for the Steelcase PUD allowed buildings N, M, L, K, D and A to adhere to a lesser standard, which is the façade standards that apply to all industrial buildings within the city. This standard requires that the front and sides of buildings facing streets to be treated with a finished material, which could include various percentages of brick, glass, decorative masonry, metal composite materials, siding and finishes.
9. Discussion and representations during the work session and public hearings.

## **PROJECT NARRATIVE**

TC 4301 60<sup>th</sup> Street – New Facility  
City of Kentwood, Kent County, Michigan  
*May 23<sup>rd</sup>, 2024*

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### **Background:**

The site is approximately 56 Acres located in the Southwest corner of: 60<sup>th</sup> Street and East Paris. There is an open I-PUD for this property.

### **Proposed Use & Site Improvements:**

The proposed development includes a new facility onsite. Project anticipates approximately 130± employees for this location when this facility is in full production, working a normal shift model of three (3) shifts, five (5) days a week.

The proposed site improvements include an approximately 599,500± square foot facility with an additional 3,500± square foot two-story office area and will also include adjacent parking, loading area, traffic circulation, and fire lanes. The staff parking area is proposed to be located off to the West and south portions, while the loading docks are proposed to be located on the southerly portion of the site.

### **Parking:**

Based on the City's parking requirements, one (1) parking space per 300 square foot of office space. Manufacturing is (1) parking space per 2000 Gross Square Foot. Warehouse is (1) parking space per 1500 Gross Square Foot

Should additional spaces be needed, parking could be added south of the parking lot in the future.

### **Truck Traffic:**

Truck Traffic is anticipated to function only on the south side with access off the current 60<sup>th</sup> street truck route.

### **Driveways:**

A new driveway is proposed to be located off East Paris for light duty cars and employee parking. Truck traffic is designed to flow only on the south side.

### **Pedestrian Connectivity:**

Concrete sidewalks and crosswalks are proposed between the parking areas and the building.

### **Fire Lane:**

Based on our review with the City's Fire Department, fire lanes will be provided along the north, west, and east sides of the site. The fire lane along the West, North and East side of the site will be a 30-foot- wide fire lane.

### **Proposed Sanitary Service:**

A sanitary service lateral is proposed to be extended to the new facility on the South Portion at the middle of the building.

### **Proposed Watermain & Water Services:**

An 12-inch public watermain will be extended along the length of the South side of the site. An 8-

inch public watermain is proposed to be extended from this new watermain along the East, North and West side of the site. The watermain will be designed in accordance with the City's standards and requirements and will be submitted to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) for permitting.

Although a fire service and domestic water service will be needed for the proposed facility, the proposed connection location(s) and size(s) are not known at this time and will be added to the design drawings in the future. These service connections will be coordinated with the City and installed in accordance with their standards and requirements.

**Grading & Storm Water Management:**

The building finished floor elevation is proposed to be located at 755-feet. The drives adjacent to the building have been designed to drain away from the building and collected within a storm sewer system. The parking lot will also be graded to drain to the proposed catch basins and collected in a storm sewer system.

**Landscaping & Buffers:**

The proposed landscaping has been designed in accordance with the City's zoning ordinance and the

**Lighting:**

The proposed onsite lighting will be designed in accordance with the City's zoning ordinance. Lighting will be directed downward and away from adjacent properties. A lighting plan is included in this submission packet.

For additional information, please refer to the project drawings.



To: Kentwood Planning Department  
From: Brad Boomstra, P.E.  
City Engineer  
Date: June 13, 2024  
Re: **Third Coast Development**  
4175 60<sup>th</sup> Street SE  
41-18-36-300-020

We have completed our planning level review of the proposed site plans dated 5-22-2024 for the above referenced project. Kentwood offers the following comments as the review process proceeds:

**Street / Sidewalk / Parking Lot:**

1. The pavement within the commercial drive approach between the sidewalk and the gutter pan must be concrete at least 6 inches thick.
2. For any curb cut which terminates less than five (5) feet from a construction joint, the contractor shall remove and replace the existing curb to the next joint.
3. The sidewalk must be carried across the commercial drive. Where it crosses, it must be at least 6" thick.
4. Include the City of Kentwood General Notes on the plan(s). These notes are required for the work being performed in the East Paris Avenue right-of-way. Highway permit conditions, specifications and required general plan notes are posted on the City's website, and can be accessed at <http://www.ci.kentwood.mi.us> (hover over "CITY SERVICES" and "DEPARTMENTS" then click "ENGINEERING", then click the "RIGHT-OF-WAY" link near the top of the page).

**Grading:**

1. Please identify at least one (1) benchmark on the plan.
2. Indicate and label the 1% chance (100-year) flood elevation on the site plan or add a note that none exists on this site.
3. Indicate and label the wetland delineation line or add a note that none exist on this site.

**Storm Sewer / Drainage:**

1. Provide a tributary area map and calculations to verify the capacity of the proposed and existing storm pipes to carry a 10-year storm (or a 100-year event if no overland floodway is provided). Use the Kentwood Storm Sewer Design Standards available on the City's website; they contain a Kentwood-specific IDF curve and time of

### Third Coast Development

4175 60<sup>th</sup> Street

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concentration ( $T_c$ ) nomograph. Use a minimum initial  $T_c$  of 10 minutes. Maintain a minimum cleansing velocity of 2.5 ft/sec in the pipes. Calculations must be sealed by a registered engineer.

#### Detention Basin:

1. On-site stormwater detention will be required for this parcel. Section 78-123 of the City of Kentwood Ordinance requires that the new detention facility be sized for the entire parcel in a *fully developed condition*. We will need to see these calculations. If existing basins are to be used for stormwater detention, provide calculations verifying their capacity to handle the runoff.
2. The amount of detention volume required may be based on an estimate of the percentage of impervious surface area based on the Kent County Subdivision Drainage Rules (short method #1), on the basis of 0.1 acre-ft per acre for the entire parcel (short method #2) or, alternately, a tabulation of actual reservoir routing (long method). Routing calculations usually result in the lowest required volume. The detention sizing must be based on a 25-year storm. We will need to see detention sizing and release calculations.
3. Kentwood allows a maximum detention release rate of 0.33 cfs/acre, based on the total parcel size.
4. The emergency outlet pipe must be capable of carrying a 10-year, fully developed non-detained storm flow. Please provide calculations to show that the pipe can carry this flow.
5. An emergency spillway may also be used instead of an outlet pipe. Section V(E) of the City of Kentwood Standard Specifications for Design and Construction of Storm Detention Storage requires that the detention basin spillway "shall be constructed of hot-rolled plant mix asphalt or concrete and must extend from the top of the berm to the intersection with the outfall channel. All interfaces with native soil shall be toed in." Show details on the plans.
6. If you are using an existing detention basin that will serve this project, we are requesting an inspection of the pond and an inspection report to verify the basin(s) will operate as designed.

#### Soil Erosion and Sediment Control:

1. Indicate and label the 1% chance (100-year) flood elevation on the SESC plan or add a note that none exists on this site.
2. Indicate and label the wetland delineation line or add a note that none exist on this site.
3. Include a written description of the soil types of the exposed land area contemplated for an earth change.
4. Place a note on the soil erosion control plan to indicate that existing and new catch basins shall be protected with an inlet filter drop (silt sack). Straw bales or fabric placed under the grate are NOT acceptable, and sediment traps alone are not sufficient to provide adequate sediment filtration. Such a note might read, "EXISTING AND NEW

### Third Coast Development

4175 60<sup>th</sup> Street

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CATCH BASINS SHALL BE PROTECTED WITH AN INLET FABRIC DROP (SILT SACK).” Include a simple detail of the proposed silt sack on the Soil Erosion and Sediment Control plan. We can provide you with an acceptable CAD detail upon request.

5. Place the following notes on the soil erosion control plan:

- ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL COMPLY WITH ARTICLE 2 OF CITY OF KENTWOOD ORDINANCE 78 AND PART 91 OF PUBLIC ACT 451.
- ALL SOIL EROSION AND SEDIMENT CONTROLS SHALL BE INSPECTED AND MAINTAINED ON A DAILY BASIS AND IMMEDIATELY FOLLOWING EVERY SIGNIFICANT RAINFALL EVENT.
- ALL EXCESS SPOILS ARE TO BE REMOVED FROM THE SITE. OTHERWISE, STOCKPILES MUST BE PROVIDED WITH TEMPORARY AND PERMANENT STABILIZATION MEASURES.
- EXCESS DIRT IS NOT TO BE PLACED ON ANY AREAS ON OR ADJACENT TO THE SITE WHERE THE PLAN DOES NOT SHOW THE AREA BEING DISTURBED. (This area of disturbance, or grading limits, must be clearly shown on the site plan.)
- SILT FENCING IS REQUIRED ALONG ALL DOWNSTREAM EDGES OF THE GRADING LIMITS AND MUST REMAIN IN PLACE UNTIL VEGETATION IS UNIFORMLY RE-ESTABLISHED. THE SILT FENCE MUST BE TOED IN A MINIMUM OF 6 INCHES ALONG ITS BASE. (Remember that silt fences are intended to intercept *sheet flow* only and must always be installed *parallel* with the ground contours. Silt fences must not cross ravines, overland floodways, ditches, swales, etc. where concentrated flows occur.)
- ALL DISTURBED BANKS EQUAL TO OR GREATER THAN 4:1 AND THE DETENTION BASIN BANKS AND BOTTOM MUST BE COVERED WITH TOPSOIL, SEED AND NORTH AMERICAN GREEN S-150 (OR APPROVED EQUAL) EROSION CONTROL BLANKET. THIS BLANKET, ALONG WITH THE NECESSARY STAPLES OR WOOD PEGS, SHALL BE PLACED PER MANUFACTURER'S RECOMMENDATIONS. SEAMS SHALL BE PLACED PARALLEL TO THE DIRECTION OF SURFACE RUNOFF. (Indicate such areas with shading or hatching on the plan.)
- ALL SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS AND SHALL BE MAINTAINED UNTIL VEGETATION IS UNIFORMLY RE-ESTABLISHED AND THE SITE IS PERMANENTLY STABILIZED.
- NO SEDIMENT SHALL BE TRACKED ONTO THE ADJACENT PUBLIC STREET AND IF IT DOES OCCUR, IT SHALL BE CLEANED DAILY.
- THE STORMWATER DETENTION BASIN IS TO BE THE FIRST ITEM OF EARTH MOVING AND SHALL BE CONSTRUCTED IN CONJUNCTION WITH THE INSTALLATION OF SOIL EROSION CONTROL MEASURES.

#### Utilities (Sanitary & Water):

1. The City of Grand Rapids owns, operates and maintains the sanitary sewer collection and water distribution systems in this portion of Kentwood. Any alterations, extensions or new connections to either of these systems will require approval from Grand Rapids. Construction plans (drafting standards) and specifications for the proposed watermain and sanitary sewer must conform to Grand Rapids requirements.

### Third Coast Development

4175 60<sup>th</sup> Street

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#### Required Permits, Bonds, Fees [and Escrow]:

1. Because this parcel is adjacent to a public street, over one (1) acre is being disturbed, or is within 500 feet of a lake or stream, a Permit for an Earth Change (fee \$800) and a \$5,000 soil erosion control performance bond or an irrevocable letter of credit using the City of Kentwood format will be required through Kentwood Engineering. The Owner/Developer must sign the Permit for an Earth Change. Both the Owner/Developer and the Contractor must be named on the bond. Please contact us if you need a permit and/or a bond template form, or one can be accessed on the City's website at <http://www.ci.kentwood.mi.us> (hover over "CITY SERVICES" and "DEPARTMENTS" then click "ENGINEERING", then click the "SOIL EROSION AND STORM WATER" link near the top of the page). There is a 365-day limit to complete the work under this permit.
2. An NPDES Notice of Coverage will also be needed as the proposed area of disturbance exceeds 5 acres. At the time the Earth Change permit is issued by the Kentwood, your Notice of Coverage will immediately become effective as a "permit-by-rule" as soon as the NOC has been properly filed and the appropriate fee is paid.
3. Your contractor will need a Drive Permit from Kentwood Engineering for the proposed commercial drive into the East Paris Avenue right-of-way. A \$10,000 annual ROW bond or an irrevocable letter of credit using the City of Kentwood format and a certificate of insurance (with the City of Kentwood named as additional insured) will also be required. We will need to see a plan of the proposed commercial driveway at a plan scale no greater than 1" = 50'. Contact us if you need a permit and/or bond form, or they can be accessed on the City's website. Highway specifications, general conditions and required plan notes are also posted on the City's website.
4. A \$30,000 Site Grading and Stormwater Management Bond or an irrevocable letter of credit using the City of Kentwood format and an administrative fee of \$750 will be required through Kentwood Engineering. This bond is posted to assure that the plan, once approved, is constructed in the field according to that plan. Both the Owner/Developer and the Contractor must be named on the bond. Let us know if you need our bond template, or it can be accessed on the City's website.
5. Please note that all required bonds and permit applications and fees must be submitted to, and accepted by, Kentwood Engineering *before any permits can be issued!* There will be no "partial" or "conditional" permits issued.

#### Miscellaneous / Reminders:

1. Please be advised that at the completion of construction, a civil engineer or surveyor will need to provide an as-built plan to the City of Kentwood with a certification by a registered engineer stating that the site grading and the stormwater system were constructed in accordance with the approved plans. A copy of the certification form is available upon request or on the City's website.
2. Remember that, for a Building Permit to be issued, other City departments (fire, assessor, treasurer, water, planning) may have comments regarding this plan. Contact

**Third Coast Development**

4175 60<sup>th</sup> Street

Page 5 of 5

Kentwood Inspections (Renee Hargrave, 554-0781) regarding building permit application procedures, fees, plan requirements and approval status.

3. Once final approval by all departments has been granted, make sure the contractor has the latest approved set of plans before beginning construction!

Should you have any questions regarding this department's review, please feel free to contact our office.

cc: Kentwood Engineering Permit Staff

# 60TH STREET

4175 60TH ST. SE  
KENTWOOD, MI 49512

## ZONING

I-PUD ( INDUSTRIAL PLANNED UNIT DEVELOPMENT )

SETBACKS:  
FRONT YARD 35 FEET MIN.  
FRONT YARD W/ PARKING 75 FEET MIN.  
SIDE YARD 10 FEET  
SIDE YARD WITH PARKING 50 FEET MIN.  
REAR YARD 25 FEET MIN.  
BUILDING HEIGHT \*\*\*

\*\*\* BUILDING HEIGHT. THE HEIGHT OF BUILDINGS WITHIN THE PUD SHALL BE DETERMINED BY THE USE. I-1 USES SHALL BE LIMITED TO I-1 HEIGHT REQUIREMENTS, I-2 USES SHALL BE LIMITED TO I-2 HEIGHT REQUIREMENTS.

PARKING:  
OFFICE: 1 PER 300 GFA  
MANUFACTURING: 1 PER 2,000 GFA  
WAREHOUSE: 1 PER 1,500 GFA + OFFICE + CORPORATE VEHICLES

REQUIRED: 600,000 GFA/1,500 = 403 SPACES  
PROVIDED: 229 SPACES INCLUDING 7 BARRIER FREE SPACES  
TRUCK DOCKS: 40 DOCKS @ 12' X 50'  
OVERHEAD DOOR DOCKS: 4 DOCKS @ 16' X 50'  
ADDITIONAL TRAILER PARKING: 132 SPACES @ 12' X 50'

TOTAL PROVIDED PARKING: 405 SPACES

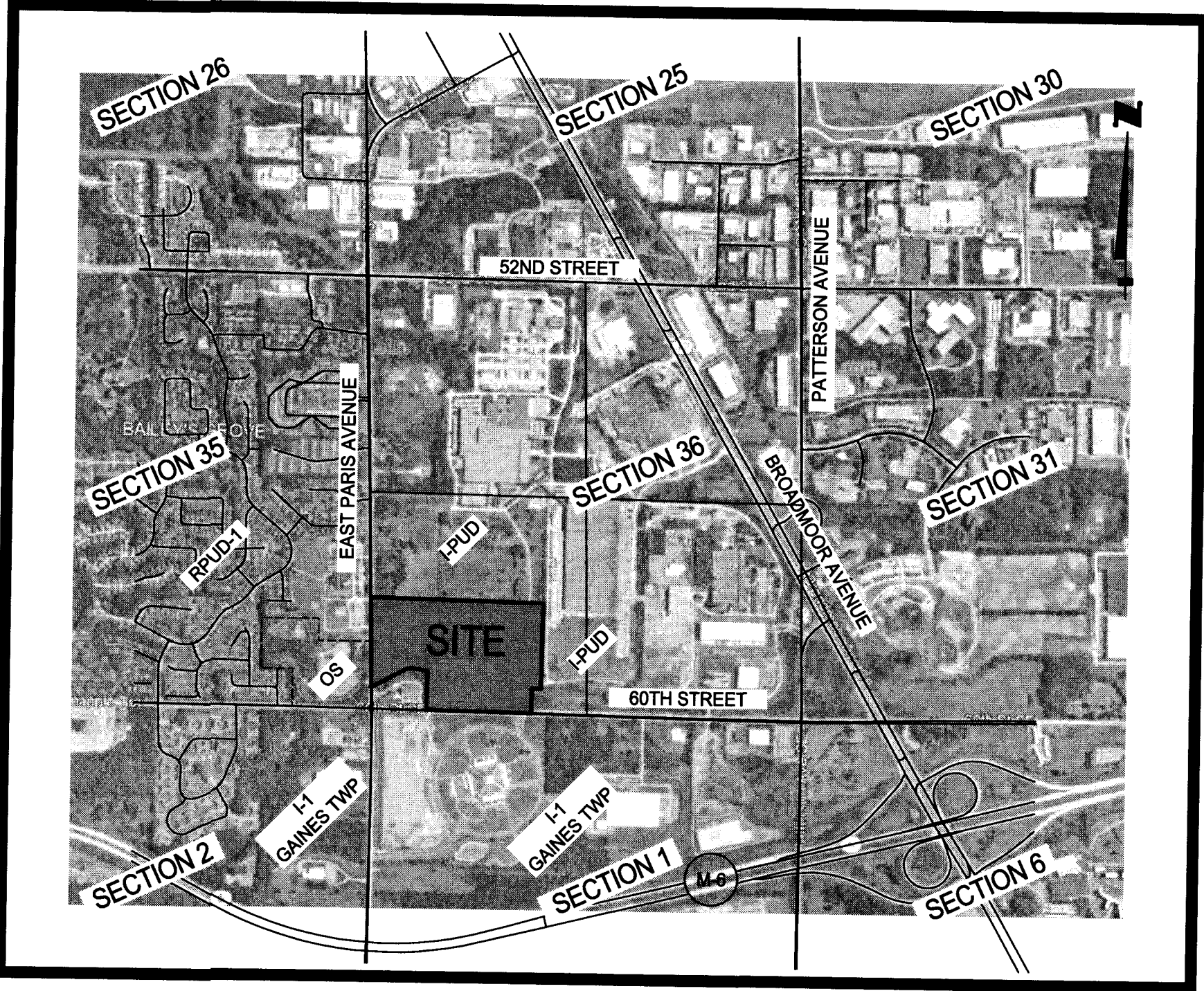
OPEN SPACE:  
TOTAL PROPERTY AREA: 55.92 ACRES  
PROPERTY AREA NOT INCLUDING ROW: 53.66 ACRES

PROPOSED BUILDING: 13.77 ACRES (600,000 SF)  
PAVEMENT: 10.36 ACRES (451,131 SF)  
TOTAL IMPERVIOUS AREA: 24.13 ACRES

TOTAL OPEN SPACE: 29.53 ACRES (45%)

WETLAND/DRAINS: 19.82 ACRES (863,239 SF)

OPEN SPACE EXCLUDING WETLANDS: 9.71 ACRES (32%)



LOCATION MAP NOT TO SCALE

## DESCRIPTION

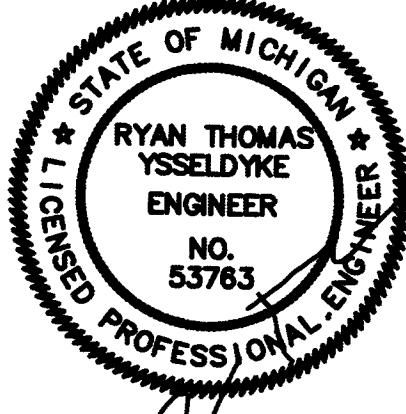
THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF KENTWOOD, COUNTY OF KENT, STATE OF MICHIGAN, AND IS DESCRIBED AS FOLLOWS:

PARCEL D:  
PART OF THE SOUTHWEST 1/4 OF SECTION 36, TOWN 6 NORTH, RANGE 11 WEST, CITY OF KENTWOOD, KENT COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE SOUTH 1/4 CORNER OF SAID SECTION 36; THENCE SOUTH 90 DEGREES 00 MINUTES 00 SECONDS WEST 695.42 FEET ALONG THE SOUTH LINE OF SAID SOUTHWEST 1/4 TO THE PLACE OF BEGINNING OF THIS DESCRIPTION; THENCE SOUTH 90 DEGREES 00 MINUTES 00 SECONDS WEST 1277.51 FEET ALONG SAID SOUTH LINE OF SAID SECTION 36 TO A POINT WHICH IS SOUTH 90 DEGREES 00 MINUTES 00 SECONDS EAST 660.00 FEET FROM THE SOUTHWEST CORNER OF SAID SECTION; THENCE NORTH 00 DEGREES 00 MINUTES 00 SECONDS EAST 469.00 FEET; THENCE NORTH 81 DEGREES 12 MINUTES 15 SECONDS WEST 194.43 FEET; THENCE SOUTH 77 DEGREES 33 MINUTES 30 SECONDS WEST 61.43 FEET; THENCE SOUTH 61 DEGREES 35 MINUTES 00 SECONDS WEST 474.19 FEET TO THE WEST LINE OF SAID SOUTHWEST 1/4; THENCE NORTH 02 DEGREES 01 MINUTE 30 SECONDS WEST 1065.97 FEET ALONG SAID WEST LINE TO THE NORTH LINE OF THE SOUTH 1/2 OF SAID SOUTHWEST 1/4; THENCE SOUTH 89 DEGREES 55 MINUTES 36 SECONDS EAST 2096.37 FEET ALONG SAID NORTH LINE; THENCE SOUTH 00 DEGREES 00 MINUTES 00 SECONDS WEST 1042.46 FEET; THENCE SOUTH 90 DEGREES 00 MINUTES 00 SECONDS WEST 112.00 FEET; THENCE SOUTH 00 DEGREES 00 MINUTES 00 SECONDS WEST 280.00 FEET TO THE PLACE OF BEGINNING.

(FOR INFORMATIONAL PURPOSES ONLY)  
TAX PARCEL ID: 41-18-36-300-020  
PROPERTY ADDRESS: 4175 60TH STREET SE, KENTWOOD, MI 49512



Know what's below.  
Call before you dig.



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SHEET C-102	SITE LAYOUT PLAN
SHEET C-200	OVERALL GRADING & SESC PLAN
SHEET C-201	DETAILED GRADING PLAN
SHEET C-202	DETAILED GRADING PLAN
SHEET C-203	STORM SEWER PLAN
SHEET C-501	GENERAL DETAILS
SHEET C-502	GENERAL DETAILS CONT.
SHEET C-503	KCRC DRIVEWAY DETAIL
SHEET L-100	LANDSCAPE PLANTING PLAN

## LEGEND

	SECTION CORNER		UNDERGROUND GAS
	SITE BENCHMARK		UNDERGROUND ELECTRIC
	SOIL BORING		UNDERGROUND TELEPHONE
	FOUND STEEL BAR		CHAIN LINK FENCE
	FOUND IRON PIPE		MINOR CONTOUR
	SET STEEL BAR		INDEX CONTOUR
	MANHOLE		ASPHALT
	CATCHBASIN		CONCRETE
	HYDRANT		GRAVEL
	WATER VALVE		WETLANDS
	UTILITY POLE		LIGHT DUTY PAVEMENT
	LIGHT POLE		HEAVY DUTY PAVEMENT
	CLEANOUT		
	DECIDUOUS TREE		

HOLLAND  
ENGINEERING

220 Hoover Boulevard  
Holland, MI 49423-3766  
www.hollandeng.com  
T 616-392-5938 F 616-392-2118

THIRD COAST  
DEVELOPMENT

ATTN: MR. BRAD ROSELY  
545 MICHIGAN ST NE, SUITE 201  
GRAND RAPIDS, MI 49503

60th STREET  
4175 60TH ST SE  
KENTWOOD, MI 49512

PT. OF THE SW 1/4 SEC. 36, T6N, R11W  
CITY OF KENTWOOD, KENT COUNTY, MICHIGAN

Issued for:		Project Manager	
Date	Description	Vertical Datum	Horz. Datum
02/23/2023	PRELIMINARY SITE PLAN TO OWNER	RYAN T. YSSELDYKE, PE	
10/11/2023	REVISED LAYOUT		
10/23/2023	REVISED LAYOUT		
03/08/2024	ADDED NORTH LAYOUT		
03/27/2024	SITE PLAN		
05/22/2024	REV LAYOUT		
05/22/2024	PUD SITE PLAN APPROVAL		
Plans are preliminary & incomplete until ISSUED FOR CONSTRUCTION			
Drawn by		HEI Project Number	
PETER BULTEN, P.E.		22-11-027	
Checked by		Sheet Title	
Survey		COVER SHEET	
Civil		Sheet No.	
Struc.		G-100	
L. A.			

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF KENTWOOD, COUNTY OF KENT, STATE OF MICHIGAN, AND IS DESCRIBED AS FOLLOWS:

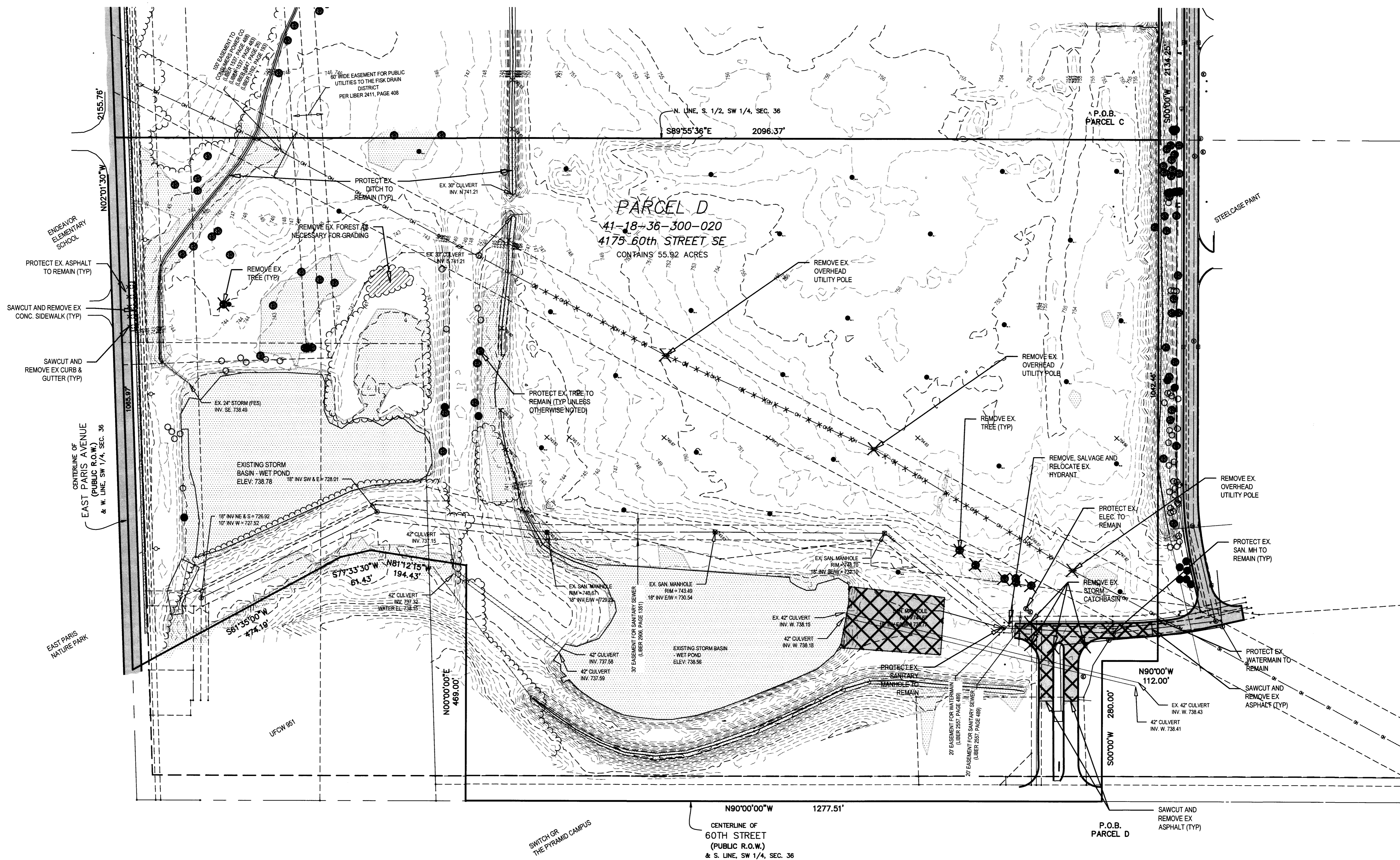
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(FOR INFORMATIONAL PURPOSES ONLY)  
TAX PARCEL ID: 41-18-36-300-020  
PROPERTY ADDRESS: 4175 60TH STREET SE, KENTWOOD, MI 49512

## CIVIL DEMOLITION NOTES

1. THE BOUNDARY AND TOPOGRAPHIC WERE COMPLETED BY ANOTHER FIRM AND PROVIDED TO HEI BY THE CLIENT. HEI IS NOT RESPONSIBLE FOR THE ACCURACY OF THE SURVEY INFORMATION OR ANY DESIGN DISCREPANCIES RESULTING FROM THE PROVIDED SURVEY INFORMATION.
2. SEE BOUNDARY AND TOPOGRAPHIC SURVEY SHEET FOR PROPERTY, EASEMENT, BENCHMARK, ETC. INFORMATION.
3. LOCATION OF UNDERGROUND UTILITIES HAVE BEEN SHOWN BASED ON SURFACE EVIDENCE AND RECORD INFORMATION AVAILABLE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
4. DURING CONSTRUCTION, CONTRACTOR SHALL PROTECT ALL EXISTING AND NEW CONSTRUCTION FROM DAMAGE, SHOULD, BUT AT LEAST OCCUR. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING OR NEW CONSTRUCTION. THE PAVED ROADWAY SHALL BE SWEPT CLEAN AS REQUIRED, BUT AT LEAST ONCE A WEEK.
5. CONTRACTOR SHALL PROVIDE BARRIERS, AS NECESSARY, TO PREVENT PEDESTRIAN AND VEHICULAR TRAFFIC FROM ENTERING THE CONSTRUCTION SITE.
6. CALL MISS DIG AT LEAST THREE (3) WORKING DAYS PRIOR TO STARTING ANY EXCAVATION.
7. REMOVAL ITEMS ARE SHOWN BASED ON BEST AVAILABLE INFORMATION AND ARE SHOWN SCHEMATICALLY. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO VERIFYING THE EXTENT OF WORK REQUIRED.
8. REMOVE ALL STRUCTURES, CONCRETE CURB, CONCRETE PAVING, ASPHALT PAVING, TREES, UTILITIES, AND OTHER EXISTING SITE FEATURES WITHIN THE LIMITS OF DEMOLITION. ALL DEMOLITION MATERIALS SHALL BE REMOVED FROM THE SITE UNLESS OTHERWISE NOTED AND DISPOSED OF IN A MANNER ACCEPTABLE TO THE CITY OF KENTWOOD.
9. ALL UTILITY LINES SHOWN "X" OUT SHALL BE PHYSICALLY REMOVED ALONG WITH STRUCTURES AND APPURTENANCES. CONTRACTOR SHALL CONFIRM UTILITY LINES REMOVED WILL NOT IMPACT UTILITIES TO REMAIN.
10. ALL REMOVALS OF PAVEMENT, CONCRETE, CURB AND GUTTER, ETC. SHALL BE PERFORMED TO THE NEXT JOINT BEYOND THE LIMITS OF REMOVAL. ALL REMOVALS SHALL BE PERFORMED BY SAWCUTTING.
11. PROTECT ALL TREES AND SHRUBS NOT SCHEDULED FOR REMOVAL. DO NOT OPERATE EQUIPMENT, STORE, STOCKPILE, OR PARK WITHIN DRIP LINE. HOLD NECESSARY DISTURBANCE TO A MINIMUM.
12. ALL TREE STUMPS SHALL BE REMOVED TO BELOW GRADE BY EITHER GRINDING OR COMPLETE REMOVAL IN ALL CASES NO WOODCHIPS AND/OR STUMPS SHALL BE LEFT IN PLACE.
13. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL UTILITIES REMOVALS WITH PROPERTY OWNER AND UTILITY PROVIDER.
14. ALL WORK IN ROAD RIGHTS OF WAY SHALL BE COMPLETED IN ACCORDANCE WITH MDOT, KENT COUNTY ROAD COMMISSION, AND THE CITY OF KENTWOOD.
15. SEE OTHER SHEETS IN PLAN SET FOR MORE INFORMATION.

X X X X X UTILITY REMOVAL



The Surveyor's / Engineer's liability for any and all claims, including but not limited to those arising out of the Surveyor's / Engineer's professional services, negligence, gross misconduct, warranties or misrepresentations shall be deemed limited to an amount no greater than the service fee.

THIRD COAST  
DEVELOPMENT  
ATTN: MR. BRAD ROSELY  
6645 MICHIGAN ST NE SUITE 201  
GRAND RAPIDS, MI 49503

60th STREET  
1175 60TH ST SE  
KENTWOOD, MI 49512

Issued for:	
Date	Description
6/23/2023	PRELIMINARY SITE PLAN TO OWNER
10/11/2023	REVISED LAYOUT
10/23/2023	REVISED LAYOUT
11/06/2023	ADDED NORTH LAYOUT
02/21/2024	SITE PLAN
05/17/2024	REV. LAYOUT
05/22/2024	PUD / SITE PLAN APPROVAL
All work complete & acceptable. All issued for construction.	

Project Manager  
RYAN T. YSSELDYKE, PE

Drawn by  
PETER BULTEN P E

Checked by Survey	Date
----------------------	------

Survey	.	.
Civil	.	.

Struc.	.	.
L.A.		

L. A.	.	.
HEI Project Number		
22-11-007		

22-11-027

Sheet Title

**EXISTING**

## CONDITIONS & DEMO PLAN

Sheet No.

( V-101 )

\_\_\_\_\_



The Surveyor's / Engineer's liability for any and all claims, including but not limited to those arising out of the Surveyor's / Engineer's professional services, negligence, gross misconduct, warranties or misrepresentations shall be deemed limited to an amount no greater than the service fee.

# THIRD COAST DEVELOPMENT

ATTN: MR. BRAD ROSELY  
545 MICHIGAN ST NE SUITE 201  
GRAND RAPIDS, MI 49503

60th STREET  
4175 60TH ST SE  
KENTWOOD, MI 49512

PT. OF THE SW 1/4 SEC. 36, T6N, R11W  
CITY OF KENTWOOD, KENT COUNTY, MICHIGAN

Date	Description	No
06/23/2023	PRELIMINARY SITE PLAN TO OWNER	A
10/11/2023	REVISED LAYOUT	B
10/23/2023	REVISED LAYOUT	C
11/06/2023	ADDED NORTH LAYOUT	D
02/21/2024	SITE PLAN	E
05/17/2024	REV. LAYOUT	F
05/17/2024	PUD / SITE PLAN APPROVAL	G

Plans are preliminary & incomplete until ISSUED FOR CONSTRUCTION

Project Manager  
RYAN T. YSSELDYKE, PE

Drawn by  
PETER BULTEN, P.E.

Checked by	Date
Survey	

Civil	.	.
Struc.	.	.

L. A.	.	.
HEI Project Number		

22-11-027

Sheet Title

## OVERALL

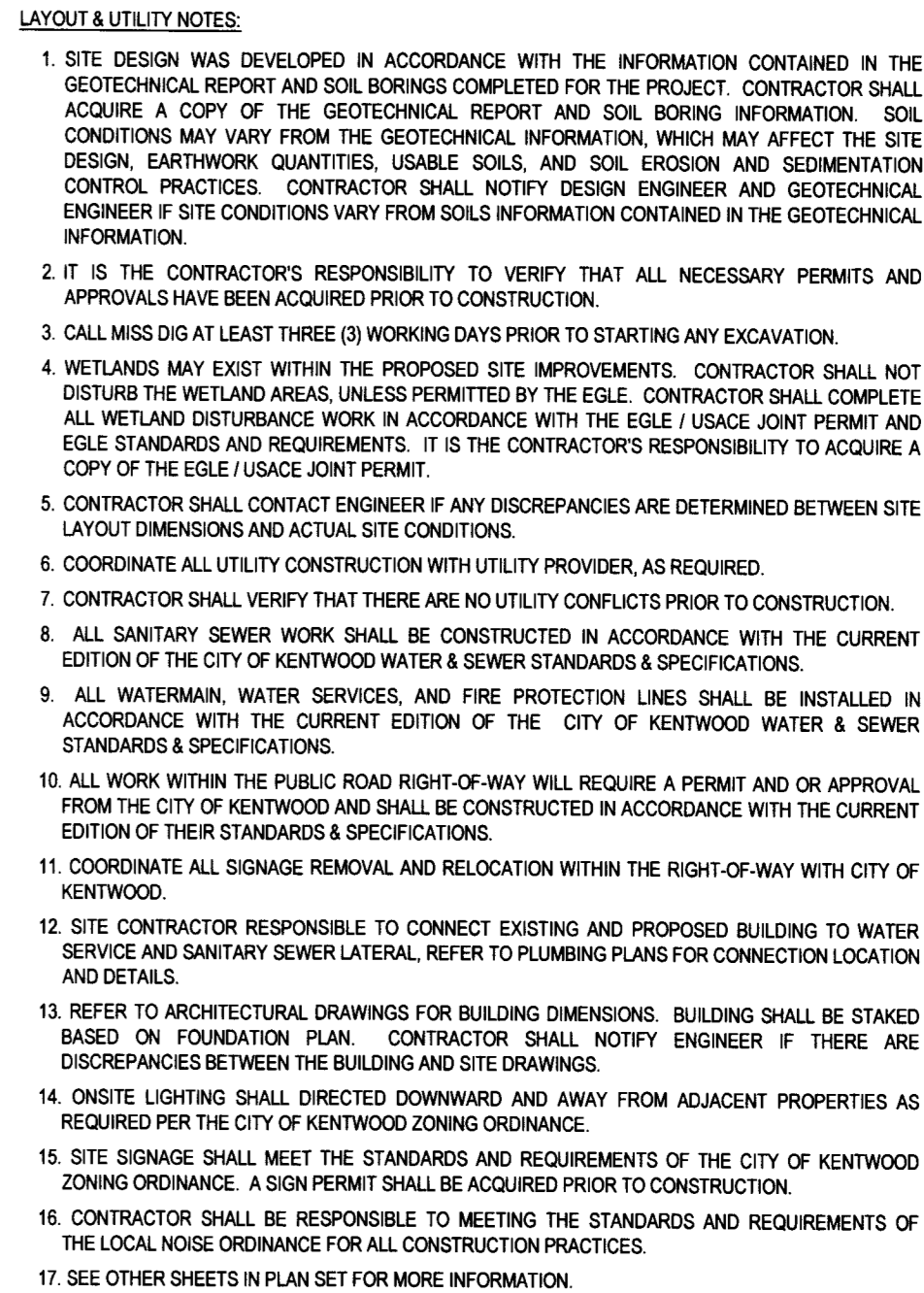
## LAYOUT

## PLAN

## PLAN

Sheet No. **C 100**

C-100



**FLOOD NOTE:**  
BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY,  
THIS PROPERTY LIES IN  
ZONE C (AREAS OF MINIMAL FLOODING)  
AND IS NOT IN A SPECIAL FLOOD HAZARD AREA  
PER THE FLOOD INSURANCE RATE MAP  
CITY OF KENTWOOD, KENT COUNTY, MICHIGAN  
MAP NUMBER: 2601070010B  
EFFECTIVE DATE: NOVEMBER 18, 1981

MEADAVOR  
ELEMENTARY  
SCHOOL

PROPOSED 5' WIDE  
CONC SIDEWALK  
SEE DET A2 SHT C-501

PROPOSED 63 LF OF HEAD  
CURB & GUTTER  
SEE DET A2 & A3 SHT C-502

PROPOSED 72 LF OF  
30" GUTTER PAN  
SEE DET A4 SHT C-502

PROPOSED 63 LF OF HEAD  
CURB & GUTTER  
SEE DET A2 & A3 SHT C-502

PROPOSED 5' WIDE  
CONC SIDEWALK  
SEE DET A2 SHT C-501

CENTERLINE OF  
EAST PARIS AVENUE  
(PUBLIC ROW)  
& W. LINE, SW 1/4, SEC. 36

18" INV NE & S = 726.92  
10" INV W = 727.52

EXISTING STORM  
BASIN - WET POND  
ELEV. 738.78

18" INV SW & E = 728.01

PROPOSED RE-LOCATED POWER LINE

PROP. VARIABLE HEIGHT  
RETAINING WALL  
SEE DETAIL C1 SHEET C-501

PROPOSED 7" INTEGRATED WALK & CURB  
DUB DOWN FLUSH WITH PAVEMENT AT  
BARRIER FREE SPACES  
SEE DET A2 & A3 SHT C-501

PLACE 160 LF OF GUARDRAIL  
SEE DET C1 SHT C-502

PROP. VALLEY GUTTER  
SEE DETAIL A6 SHEET  
C-501

PROP. VARIABLE HEIGHT  
RETAINING WALL  
SEE DETAIL C1 SHEET C-501

PROP. VARIABLE HEIGHT  
RETAINING WALL  
SEE DETAIL C1 SHEET C-501

PROP. VALLEY GUTTER  
SEE DETAIL A6 SHEET  
C-501

PROP. VALLEY GUTTER  
SEE DETAIL A6 SHEET  
C-501

PROPOSED 5' WIDE CONC  
SIDEWALK  
SEE DET A2 SHT C-501

PROPOSED  
SAN MH

PROPOSED  
SAN MH

PROPOSED  
HYDRANT

PLACE 200 LF OF HAND RAILING  
SEE DET A1 SHT C-502

PROP. 8"  
WATERMAIN

N. LINE, S. 1/2, SW 1/4, SEC. 36

PROPOSED  
HYDRANT

PROPOSED 5' WIDE RAMP  
SIDEWALK  
SEE DET A2 SHT C-501

PROPOSED 7" INTEGRATED  
WALK & CURB  
SEE DET A2 & A3 SHT C-501

PROPOSED STAIRS UP TO  
BUILDING FFE  
SEE DET C2 SHT C-502

PROPOSED  
8" THICK CONCRETE  
TRUCK DOCK (TYP)  
SEE DETAIL A1  
SHEET C-501

PROP. VARIABLE HEIGHT  
RETAINING WALL  
SEE DETAIL C1 SHEET C-501

PROP. VALLEY GUTTER  
SEE DETAIL A6 SHEET  
C-501

EX. SAN. MANHOLE  
RM = 743.49  
18" INV E/W = 730.54

EX. SAN. MANHOLE  
RM = 740.87  
18" INV E/W = 728.22

PROPOSED  
HYDRANT

PROPOSED LIGHT DUTY PAVEMENT  
SEE DET A7 SHT C-501

PROPOSED HEAVY DUTY PAVEMENT  
SEE DET A5 SHT C-501



0' 25' 50' 100'  
SCALE 1" = 50'

MATCH LINE (SEE CONTINUATION  
LOCATED ON SHEET C-102)

Issued for:

Date	Description	No.
02/23/2023	PRELIMINARY SITE PLAN TO OWNER	A
10/11/2023	REVISED LAYOUT	B
10/23/2023	REVISED LAYOUT	C
11/06/2023	ADDED NORTH LAYOUT	D
02/17/2024	SITE PLAN	E
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05/22/2024	PUD / SITE PLAN APPROVAL	G

Plans are preliminary & incomplete until ISSUED FOR CONSTRUCTION

Project Manager  
RYAN T. YSSELDYKE, P.E.

Vertical Datum  
Horz. Datum

Drawn by  
PETER BULTEN, P.E.

Checked by  
Survey

Civil

Struc.

L. A.

HEI Project Number  
22-11-027

Sheet Title  
SITE  
LAYOUT  
PLAN

Sheet No.  
C-101

THIRD COAST  
DEVELOPMENT

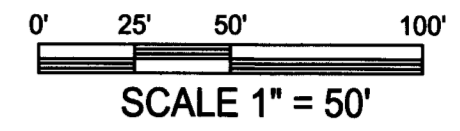
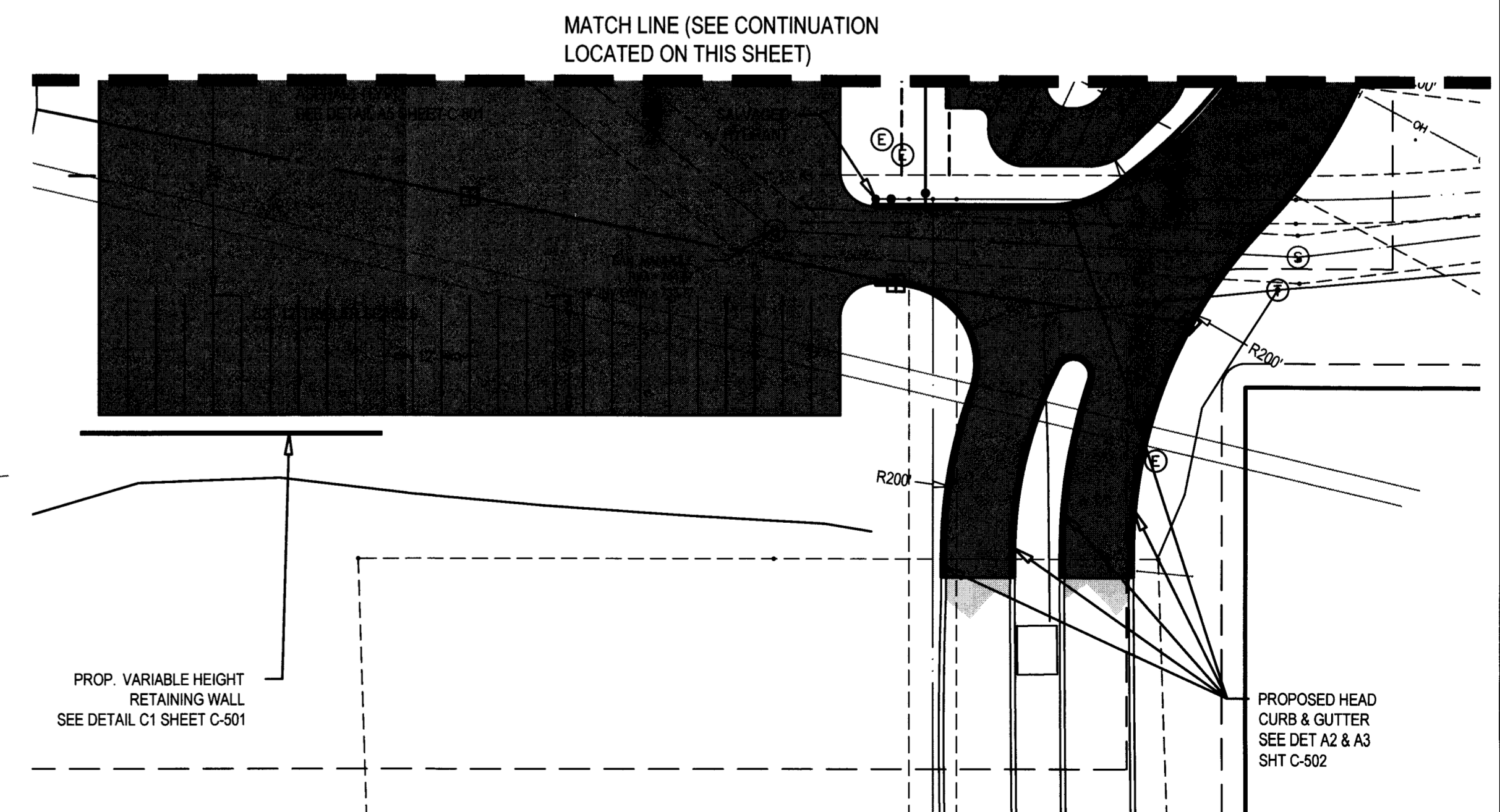
ATTN: MR. BRAD ROSELY  
545 MICHIGAN ST. NE SUITE 201  
GRAND RAPIDS, MI 49503


60th STREET  
4175 60TH ST SE  
KENTWOOD, MI 49512  
PT. OF THE SW 1/4 SEC. 36, T6N, R11W  
CITY OF KENTWOOD, KENT COUNTY, MICHIGAN


The Surveyor's  
responsibility for any  
errors or omissions  
and all claims, including  
but not limited to those  
arising out of the  
negligence, gross  
misconduct, warranties or  
professional services,  
shall be limited to the  
amount no greater than  
the service fee.

HOLLAND  
ENGINEERING

220 Hoover Boulevard  
Holland, Michigan 49423-3786  
T 616-382-5936 F 616-382-2116



 PROPOSED LIGHT DUTY PAVEMENT  
SEE DET A7 SHT C-501

 PROPOSED HEAVY DUTY PAVEMENT  
SEE DET A5 SHT C-501

Holland, Michigan 49423-3766  
www.hollandengineering.com  
T 616-392-5938 F 616-392-2116

ATTN: MR. BRAD ROSE  
545 MICHIGAN ST NE SUITE 201  
GRAND RAPIDS, MI 49503

PT. OF THE SW 1/4 SEC. 36, T6N, R11W  
CITY OF KENTWOOD, KENT COUNTY, MICHIGAN

Project Manager	
Designed by <b>PETER BULTEN, P.E.</b>	
Checked by civil	Date
Truc.	
A.	
Project Number <b>22-11-027</b> sheet Title <div style="text-align: center;"> <b>SITE LAYOUT PLAN</b>  <b>C-102</b> </div>	

PROPOSED  
CONSTRUCTION SCHEDULE

ACTIVITY	2024							2025				
	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	MAY	JUNE	JULY	AUG.	SEPT.
INSTALL CONTROLS	<div></div>	<div></div>										
CLEARING		<div></div>										
GRADE			<div></div>	<div></div>								
BUILDING				<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
UTILITIES								<div></div>	<div></div>			
PAVING									<div></div>	<div></div>		
RESTORE										<div></div>	<div></div>	<div></div>

\*NOTE: CONSTRUCTION SCHEDULE MAY VARY BASED ON CONTRACTOR'S SCHEDULE. CONTRACTOR SHALL UPDATE THE CITY OF KENTWOOD IF CONSTRUCTION SCHEDULE VARIES FROM ABOVE.

GRADING & STORM SEWER NOTES:

- IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT ALL NECESSARY PERMITS AND APPROVALS HAVE BEEN ACQUIRED PRIOR TO CONSTRUCTION.
- SITE DESIGN WAS DEVELOPED IN ACCORDANCE WITH THE INFORMATION CONTAINED IN THE GEOTECHNICAL REPORT AND SOIL BORINGS COMPLETED FOR THE PROJECT. CONTRACTOR SHALL ACQUIRE A COPY OF THE GEOTECHNICAL REPORT AND SOIL BORING INFORMATION. SOIL CONDITIONS MAY VARY FROM THE GEOTECHNICAL INFORMATION, WHICH MAY AFFECT THE SITE DESIGN, EARTHWORK QUANTITIES, USABLE SOILS, AND SOIL EROSION AND SEDIMENTATION CONTROL PRACTICES. CONTRACTOR SHALL NOTIFY DESIGN ENGINEER AND GEOTECHNICAL ENGINEER IF SITE CONDITIONS VARY FROM SOILS INFORMATION CONTAINED IN THE GEOTECHNICAL INFORMATION.
- CALL MISS DIG AT LEAST THREE (3) WORKING DAYS PRIOR TO STARTING ANY EXCAVATION.
- WETLANDS MAY EXIST WITHIN THE PROPOSED SITE IMPROVEMENTS. CONTRACTOR SHALL NOT DISTURB THE WETLAND AREAS, UNLESS PERMITTED BY THE EGLE. CONTRACTOR SHALL COMPLETE ALL WETLAND DISTURBANCE WORK IN ACCORDANCE WITH THE EGLE / USACE JOINT PERMIT AND EGLE STANDARDS AND REQUIREMENTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACQUIRE A COPY OF THE EGLE / USACE JOINT PERMIT.
- CONTRACTOR SHALL VERIFY THAT THERE ARE NO UTILITY CONFLICTS PRIOR TO CONSTRUCTION.
- ALL WORK WITHIN THE RIGHT-OF-WAY WILL REQUIRE A PERMIT AND OR APPROVAL FROM KENT COUNTY ROAD COMMISSION AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT EDITION OF THEIR STANDARDS & SPECIFICATIONS.
- STORM WATER MANAGEMENT SYSTEM AND GRADING SHALL BE IN ACCORDANCE WITH THE KENT COUNTY DRAIN COMMISSION AND THE CITY OF KENTWOOD STORM WATER ORDINANCE.
- SITE CONTRACTOR RESPONSIBLE TO CONNECT STORM / ROOF WATER TO STORM DRAIN AS SHOWN. REFER TO PLUMBING PLANS FOR CONNECTION TO THE BUILDING AND DETAILS.
- SITE SHALL BE GRADED WITH SMOOTH CONTOURS IN ALL AREAS OF DISTURBANCE AND GRADED TO SLOPE AWAY FROM THE EXISTING AND PROPOSED BUILDINGS AND SIDEWALKS.
- ALL STORM SEWER PIPING SHALL BE ADS N-12, HANCOCK H-Q OR APPROVED EQUIVALENT POLYETHYLENE (PE) PLASTIC PIPE AND FITTINGS, UNLESS OTHERWISE NOTED. WHERE SPECIFIED IN THE PLANS, CONCRETE CLASS IV PIPE WITH RUBBER GASKETS IS REQUIRED.
- SEE OTHER SHEETS IN PLAN SET FOR MORE INFORMATION.

SESC NOTES:

- CONTRACTOR SHALL OBTAIN ALL STATE AND LOCAL PERMITS AS NECESSARY FOR CONSTRUCTION.
- SITE DESIGN WAS DEVELOPED IN ACCORDANCE WITH THE INFORMATION CONTAINED IN THE GEOTECHNICAL REPORT AND SOIL BORINGS COMPLETED FOR THE PROJECT. CONTRACTOR SHALL ACQUIRE A COPY OF THE GEOTECHNICAL REPORT AND SOIL BORING INFORMATION. SOIL CONDITIONS MAY VARY FROM THE GEOTECHNICAL INFORMATION, WHICH MAY AFFECT THE SITE DESIGN, EARTHWORK QUANTITIES, USABLE SOILS, AND SOIL EROSION AND SEDIMENTATION CONTROL PRACTICES. CONTRACTOR SHALL NOTIFY DESIGN ENGINEER AND GEOTECHNICAL ENGINEER IF SITE CONDITIONS VARY FROM SOILS INFORMATION CONTAINED IN THE GEOTECHNICAL INFORMATION.
- CONTRACTOR IS RESPONSIBLE TO ACQUIRE THE KENT COUNTY ROAD COMMISSION SOIL EROSION AND SEDIMENTATION CONTROL PERMIT AND THE NPDES NOTICE OF COVERAGE AND COMPLY WITH ALL PERMIT REQUIREMENTS AND WITH ALL STANDARDS AND REQUIREMENTS OF THE AGENCIES HAVING JURISDICTION.
- BEST MANAGEMENT PRACTICES SHALL BE UTILIZED DURING AND AFTER CONSTRUCTION FOR TEMPORARY AND PERMANENT SOIL EROSION AND SEDIMENTATION CONTROL MEASURES.
- CONTRACTOR SHALL PROVIDE A CERTIFIED STORM WATER OPERATOR FROM CONSTRUCTION COMMENCEMENT THROUGH FINAL SITE STABILIZATION.
- THE TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED WEEKLY AND AFTER EACH SIGNIFICANT RAIN EVENT IN ACCORDANCE WITH THE EGLE REQUIREMENTS.
- CALL MISS DIG AT LEAST THREE (3) WORKING DAYS PRIOR TO STARTING ANY EXCAVATION.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF KENTWOOD AND KENT COUNTY ROAD COMMISSION STANDARDS AND SPECIFICATIONS.
- SOIL EROSION CONTROL MEASURES SHALL BE PLACED PRIOR TO EARTH MOVING OR GROUND DISTURBANCE AND REMAIN IN PLACE UNTIL FINAL RESTORATION HAS BEEN ESTABLISHED.
- THE STORM WATER MANAGEMENT BASIN SHALL BE CONSTRUCTED FIRST. CONTRACTOR IS RESPONSIBLE TO REMOVE SEDIMENT FROM BOTTOM OF DETENTION BASIN UNTIL THE SITE IS FULLY STABILIZED.
- ALL FOREIGN MATERIAL OR DEBRIS FROM JOB SITE WHICH IS DEPOSITED ON PAVED ROADWAY SHALL BE REMOVED IMMEDIATELY.
- THE PAVED ROADWAY SHALL BE SWEEP CLEAN AS NEEDED, BUT AT LEAST ONCE A WEEK.
- SOIL EROSION CONTROL MEASURES ARE THE RESPONSIBILITY OF THE CONTRACTOR DURING CONSTRUCTION AND THE OWNER UPON COMPLETION.
- CONTRACTOR SHALL PHASE THE PLACEMENT OF THE SOIL EROSION CONTROL MEASURES AS NECESSARY FOR THE SITE IMPROVEMENTS WITHIN THE LIMITATIONS OF THE ACQUIRED SOIL EROSION CONTROL PERMIT.
- STOCKPILE AREAS SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT SEED IN ACCORDANCE WITH THE KENT COUNTY ROAD COMMISSION SOIL EROSION AND SEDIMENTATION CONTROL REQUIREMENTS. ALL EXCESS SPOILS SHALL BE REMOVED FROM SITE.
- ALL EXCESS SPOILS SHALL BE HAULED OFFSITE AND LEGALLY PLACED IN AN UPLAND AREA NOT ENCLOSED BY WETLANDS OR FLOODPLAIN.
- THERE SHALL BE NO EARTH MOVEMENT OR DISTURBANCE OUTSIDE THE LIMITS OF DISTURBANCE WITHOUT PRIOR AUTHORIZATION FROM THE KENT COUNTY ROAD COMMISSION.
- THE MINIMUM AMOUNT OF SOIL EROSION AND SEDIMENTATION CONTROL MEASURES ARE SHOWN THE DRAWINGS. CONTRACTOR SHALL PROVIDE ADDITIONAL CONTROL MEASURES, MAINTENANCE, AND/OR STABILIZATION MEASURES AS NECESSARY FOR CONSTRUCTION ACTIVITIES.
- SEE OTHER SHEETS IN PLAN SET FOR MORE INFORMATION.

**HOLLAND**  
ENGINEERING

The Surveyor's/Engineer's seal is for any and all claims, including but not limited to those arising out of the professional services, negligence, gross misconduct, warranties or misstatements, shall be deemed limited to an amount no greater than the service fee.

**THIRD COAST  
DEVELOPMENT**

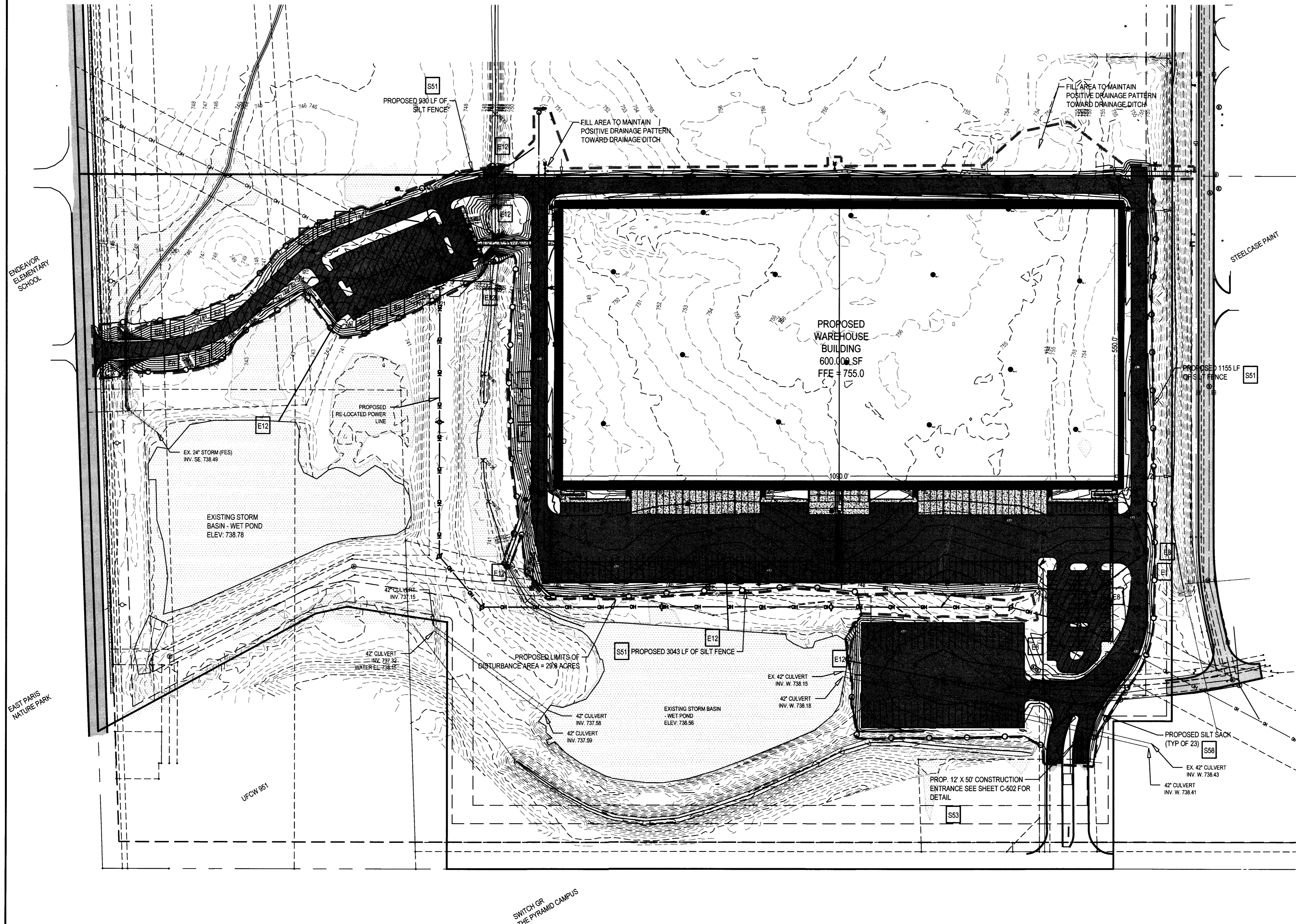
ATTN: MR. BRAD ROSELY  
545 MICHIGAN ST NE SUITE 201  
GRAND RAPIDS, MI 49503

**60th STREET**  
4175 60TH ST SE  
KENTWOOD, MI 49512

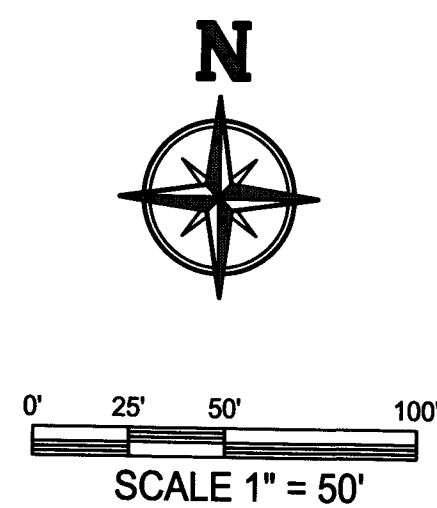
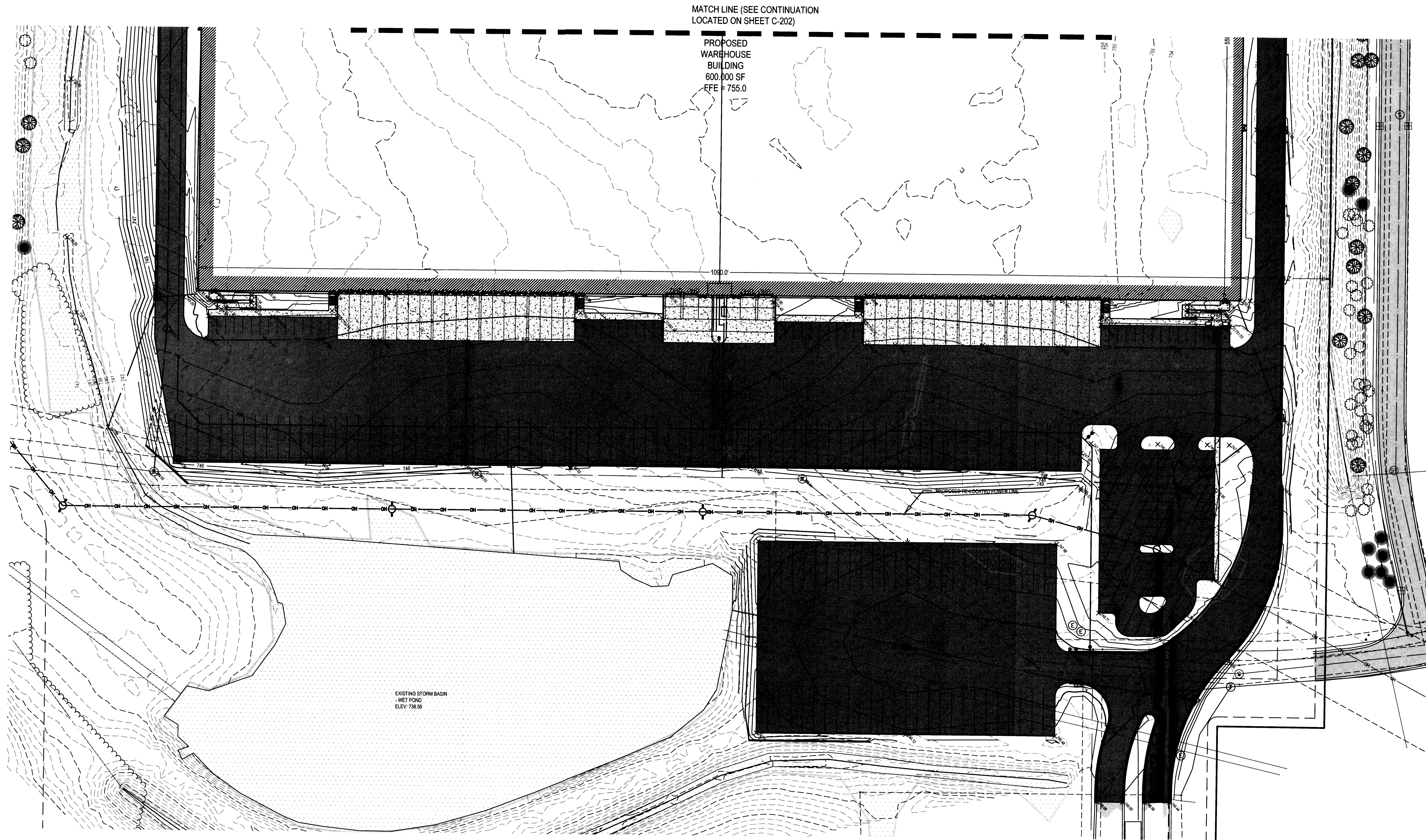
Issued for:		No.	Description
Project Manager RYAN T. YSSELDYKE, PE	Date	A	PRELIMINARY SITE PLAN TO OWNER
	01/11/2023	B	REVISED LAYOUT
	10/23/2023	C	REVISED LAYOUT
	11/06/2023	D	ADDED NORTH LAYOUT
	02/21/2024	E	SITE PLAN
	05/17/2024	F	REV LAYOUT
	06/22/2024	G	PUD / SITE PLAN APPROVAL

Plans are preliminary & incomplete until ISSUED FOR CONSTRUCTION

Drawn by PETER BULTEN, P.E.	Checked by Survey	Date
Civil		
Struc.		
L. A.		
HEI Project Number 22-11-027	Sheet Title <b>OVERALL GRADING AND SESC PLAN</b>	
Sheet No. C-200		



0' 50' 100' 200'  
SCALE 1" = 100'



60th STREET  
4175 60TH ST SE  
KENTWOOD, MI 49512  
PT. OF THE SW 1/4 SEC. 36, T6N, R11W  
CITY OF KENTWOOD, KENT COUNTY, MICHIGAN

THIRD COAST  
DEVELOPMENT  
ATTN: MR. BRAD ROSELY  
545 MICHIGAN ST NE, SUITE 201  
GRAND RAPIDS, MI 49503

HOLLAND  
ENGINEERING

220 Hoover Boulevard  
Holland, Michigan 49423-3766  
www.holland-engineering.com  
T 616-392-5938 F 616-392-2116

Issued for:	
Date	Description
6/23/2023	PRELIMINARY SITE PLAN TO OWNER
10/11/2023	REVISED LAYOUT
10/23/2023	REVISED LAYOUT
11/06/2023	ADDED NORTH LAYOUT
02/21/2024	SITE PLAN
05/17/2024	REV. LAYOUT
05/22/2024	PUD / SITE PLAN APPROVAL

Plans are preliminary & incomplete until ISSUED FOR CONSTRUCTION

Project Manager	
Vertical Datum	Horz. Datum
RYAN T. YSSELDYKE, PE	

Drawn by	
Checked by	Date
PETER BULTEN, P.E.	

Survey	
Civil	Struc.
L. A.	

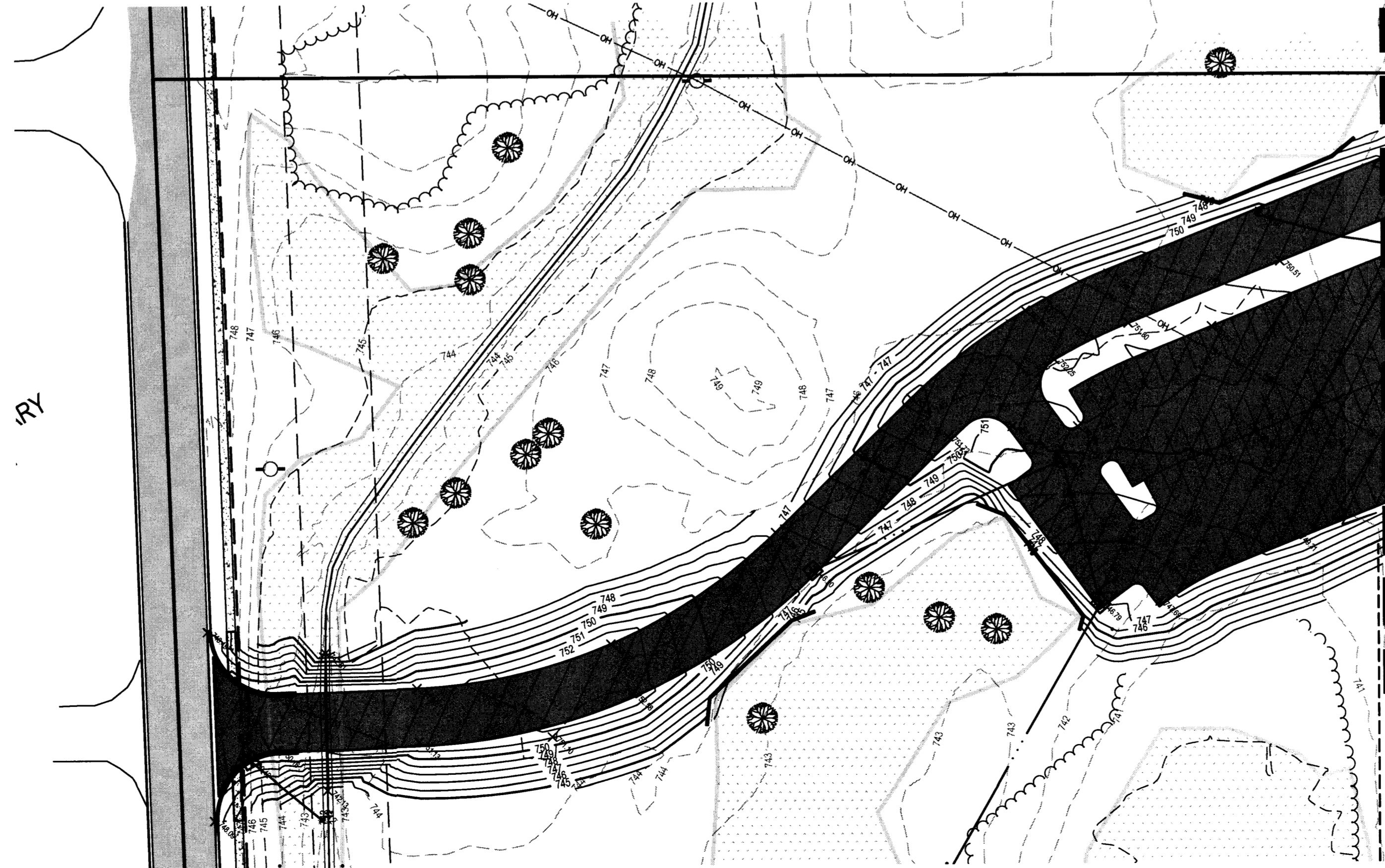
HEI Project Number	
Sheet Title	
22-11-027	GRADING PLAN

Sheet No.	
C-201	

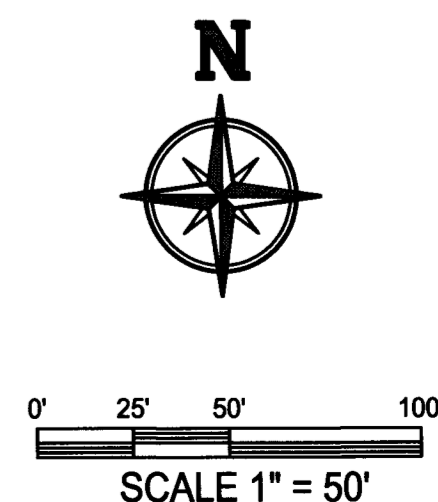
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LOCATED ON THIS SHEET)



MATCH LINE (SEE CONTINUATION  
LOCATED ON SHEET C-201)



MATCH LINE (SEE CONTINUATION  
LOCATED ON THIS SHEET)



Issued for:		No.	
Date	Description	A	B
02/23/2023	PRELIMINARY SITE PLAN TO OWNER		
03/23/2023	REVISED LAYOUT		
03/23/2023	REVISED LAYOUT		
11/06/2023	ADDED NORTH LAYOUT		
02/21/2024	SITE PLAN		
05/17/2024	REV. LAYOUT		
05/22/2024	PLD / SITE PLAN APPROVAL		
Plans are preliminary & incomplete until ISSUED FOR CONSTRUCTION		G	
Project Manager RYAN T. YSSELDYKE, PE			
Vertical Datum		Horz. Datum	
Drawn by PETER BULTEN, P.E.			
Checked by		Date	
Survey			
Civil			
Struc.			
L. A.			
HEI Project Number 22-11-027			
Sheet Title GRADING PLAN			
Sheet No. C-202			

**HOLLAND**  
ENGINEERING

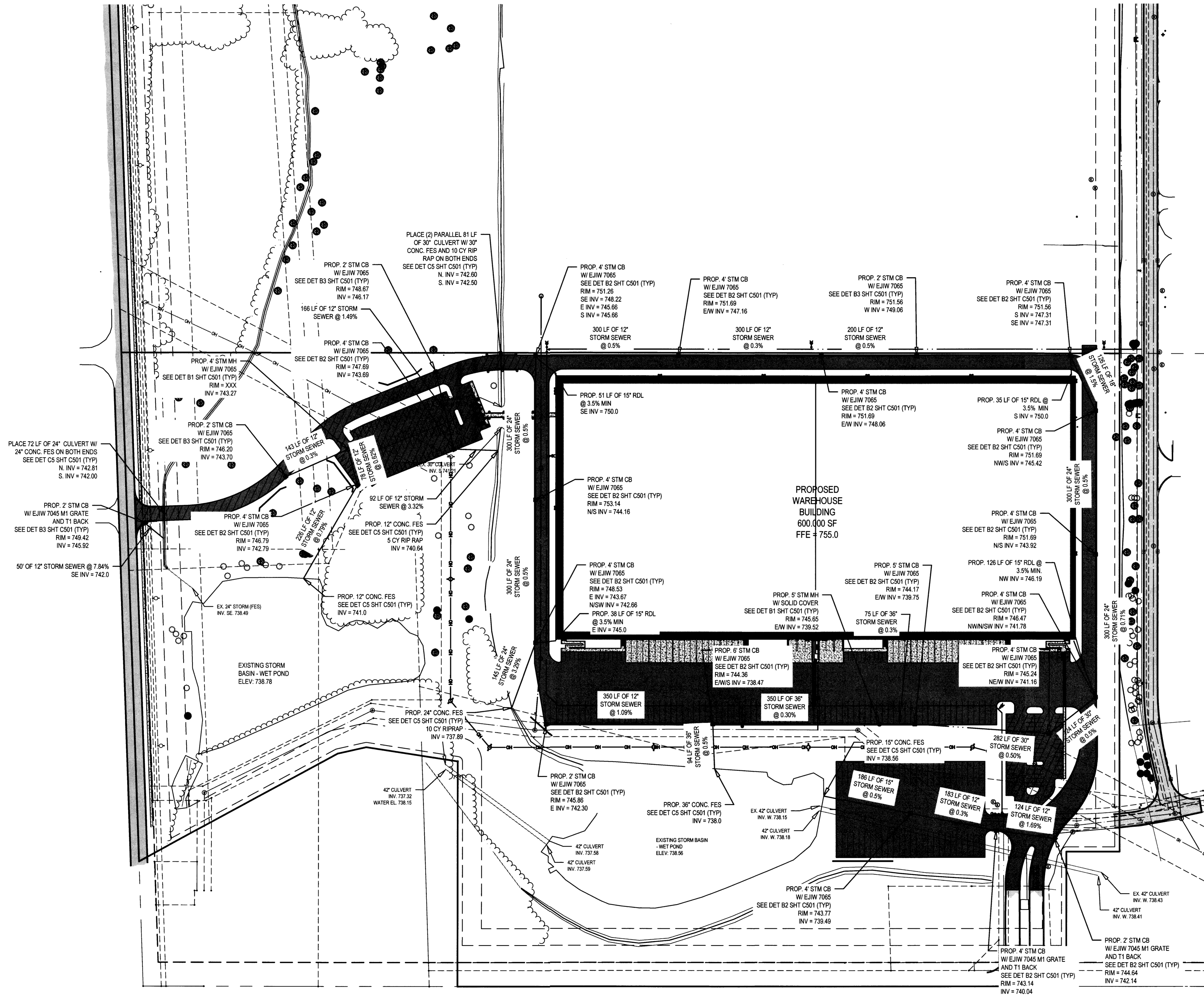
220 Hoover Boulevard  
Holland, Michigan 49423-3796  
T 616-392-5938 F 616-392-2116

**THIRD COAST  
DEVELOPMENT**

ATTN: MR. BRAD ROSELY  
545 MICHIGAN ST NE SUITE 201  
GRAND RAPIDS, MI 49503

**60th STREET**  
4175 60TH ST SE  
KENTWOOD, MI 49512

PT. OF THE SW 1/4 SEC. 36, T6N, R11W  
CITY OF KENTWOOD, KENT COUNTY, MICHIGAN



0' 50' 100' 200'  
SCALE 1" = 100'

**HOLLAND**  
ENGINEERING

The Surveyor's/Engineer's responsibility is for the accuracy of the information provided, but not limited to those arising out of the professional services, negligence, gross misconduct, warranties or omissions, shall be deemed limited to an amount no greater than the service fee.

**THIRD COAST  
DEVELOPMENT**  
ATTN: MR. BRAD ROSELY  
545 MICHIGAN ST NE SUITE 201  
GRAND RAPIDS, MI 49503

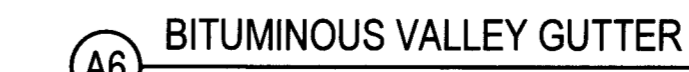
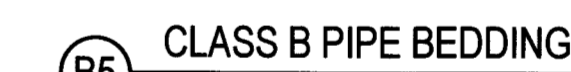
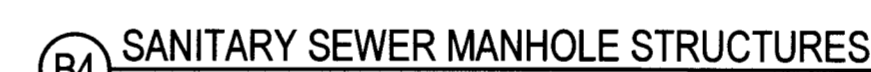
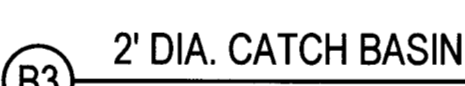
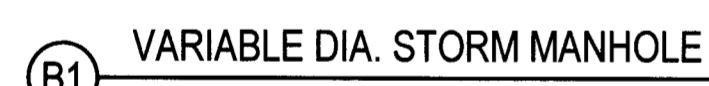
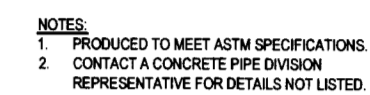
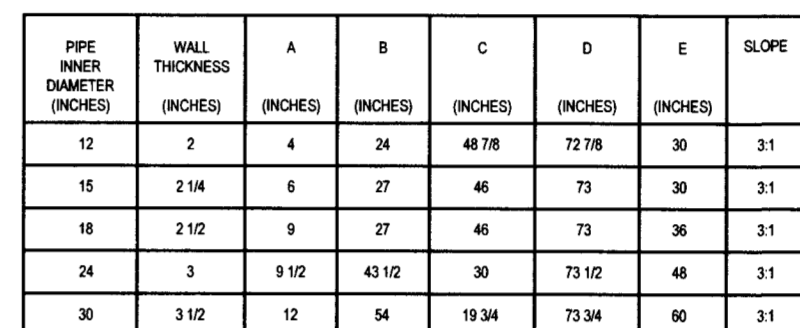
**60th STREET**  
4175 60TH ST SE  
KENTWOOD, MI 49512  
PT. OF THE SW 1/4 SEC. 36, T6N, R11W  
CITY OF KENTWOOD, KENT COUNTY, MICHIGAN

Issued for:

No.	Description	Date
A	PRELIMINARY SITE PLAN TO OWNER	02/23/2023
B	REVISED LAYOUT	01/12/2023
C	REVISED LAYOUT	10/23/2023
D	ADDED NORTH LAYOUT	11/06/2023
E	SITE PLAN	02/22/2024
F	REV LAYOUT	05/17/2024
G	REV LAYOUT	05/22/2024

Plans are preliminary and incomplete until issued for construction.

Project Manager <b>RYAN T. YSELDYKE, PE</b>	
Vertical Datum	Horz. Datum
Drawn by <b>PETER BULTEN, P.E.</b>	
Checked by	Date
Civil	
Struc.	
L. A.	
HEI Project Number <b>22-11-027</b>	
Sheet Title <b>STORM SEWER PLAN</b>	
Sheet No. <b>C-203</b>	



## THIRD COAST DEVELOPMENT

negligence, gross misconduct, warranties or misrepresentations shall be deemed limited to an amount no greater than the service fee.

60th STREET  
1175 60TH ST SE  
KENTWOOD, MI 49512  
PPT. OF THE SW 1/4 SEC. 36, T6N, R11W  
CITY OF KENTWOOD, KENT COUNTY, MICHIGAN

No.	Date	Description
A	6/23/2023	PRELIMINARY SITE PLAN TO OWNER
B	10/11/2023	REVISED LAYOUT
B	10/23/2023	REVISED LAYOUT
C	11/06/2023	ADDED NORTH LAYOUT
D	02/21/2024	SITE PLAN
E	06/17/2024	REV LAYOUT
F	05/22/2024	PUYD SITE PLAN APPROVAL
G		Plans are preliminary & incomplete until ISSUED FOR CONSTRUCTION

Project Manager  
RYAN T. YSSELDYKE, PE

Drawn by  
PETER BULTEN, P.E.

Checked by Survey	Date

Civil	.	.
Struc.	.	.

L. A.	.	.
HEI Project Number		

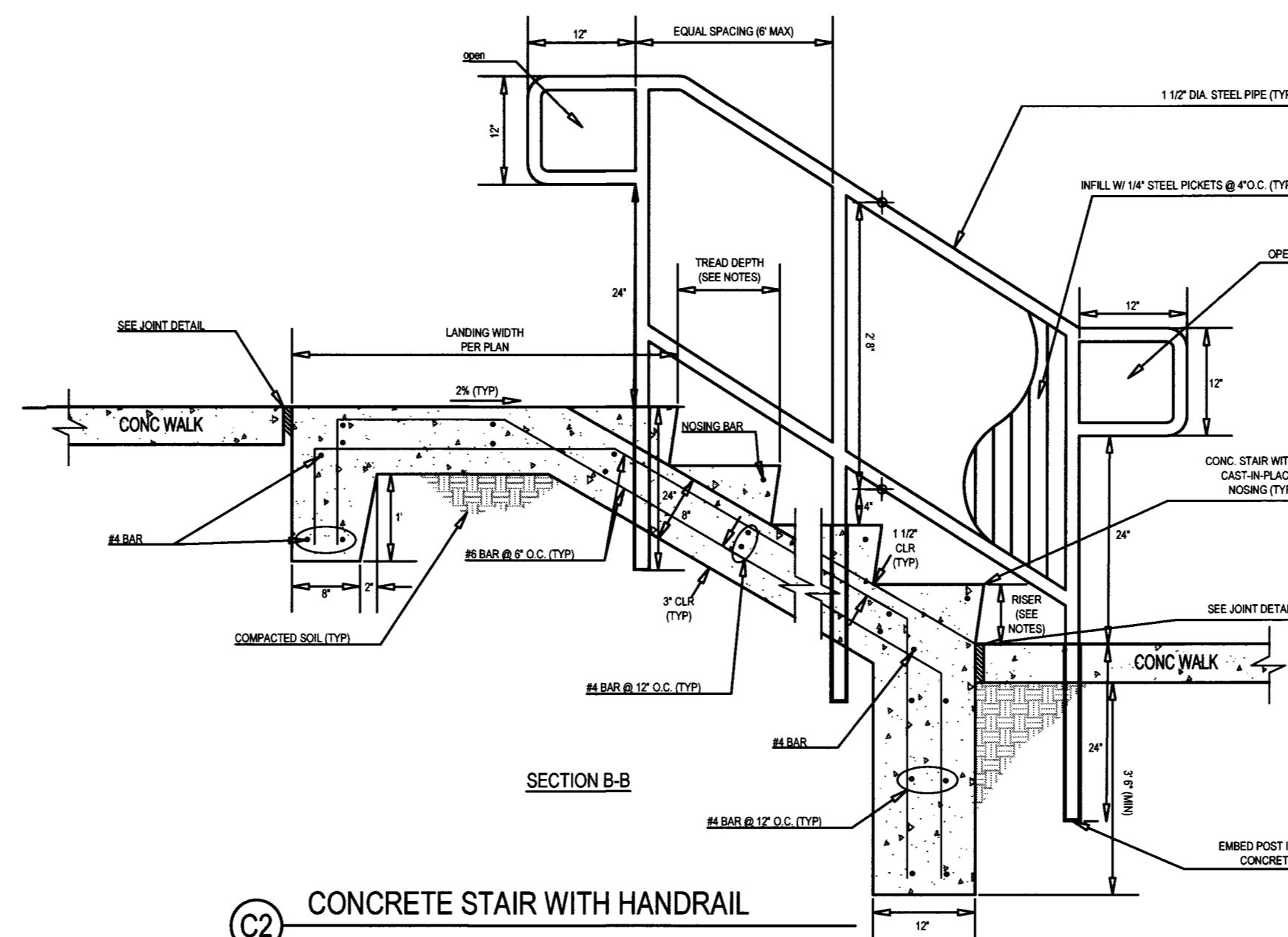
22-11-027

Sheet Title

## GENERAL DETAILS

Sheet No. \_\_\_\_\_

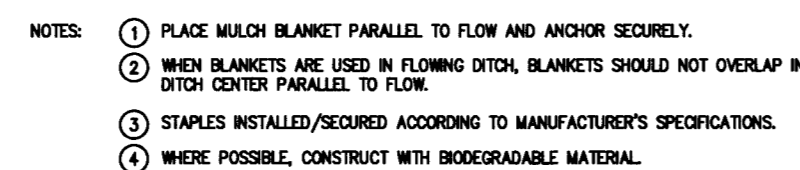
Sheet No. **C-501**



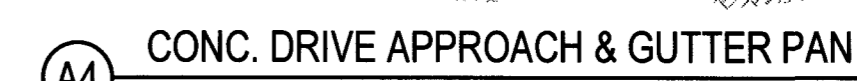
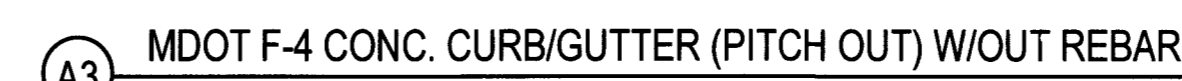
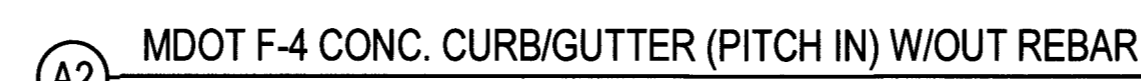
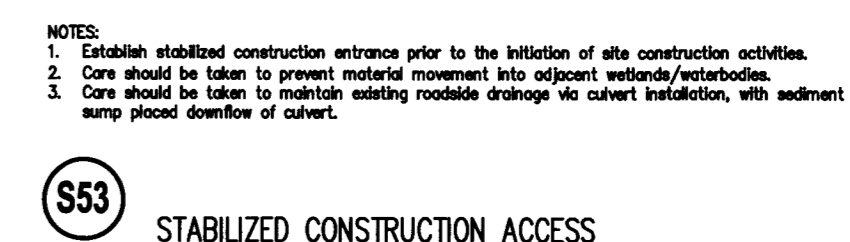
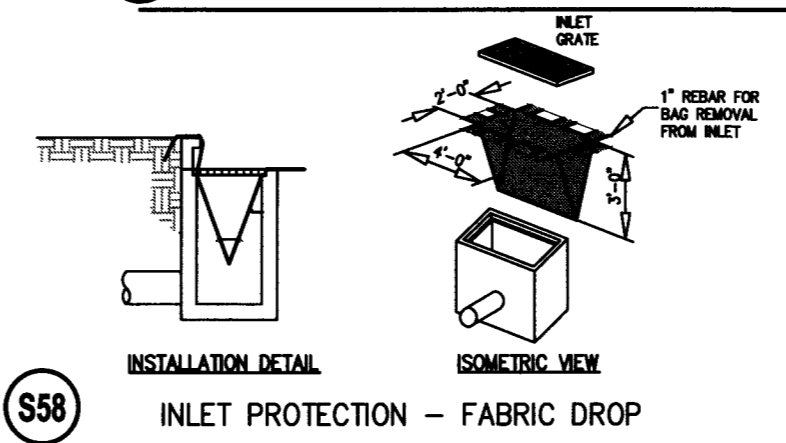
**C1 STEEL POST GUARD RAIL**

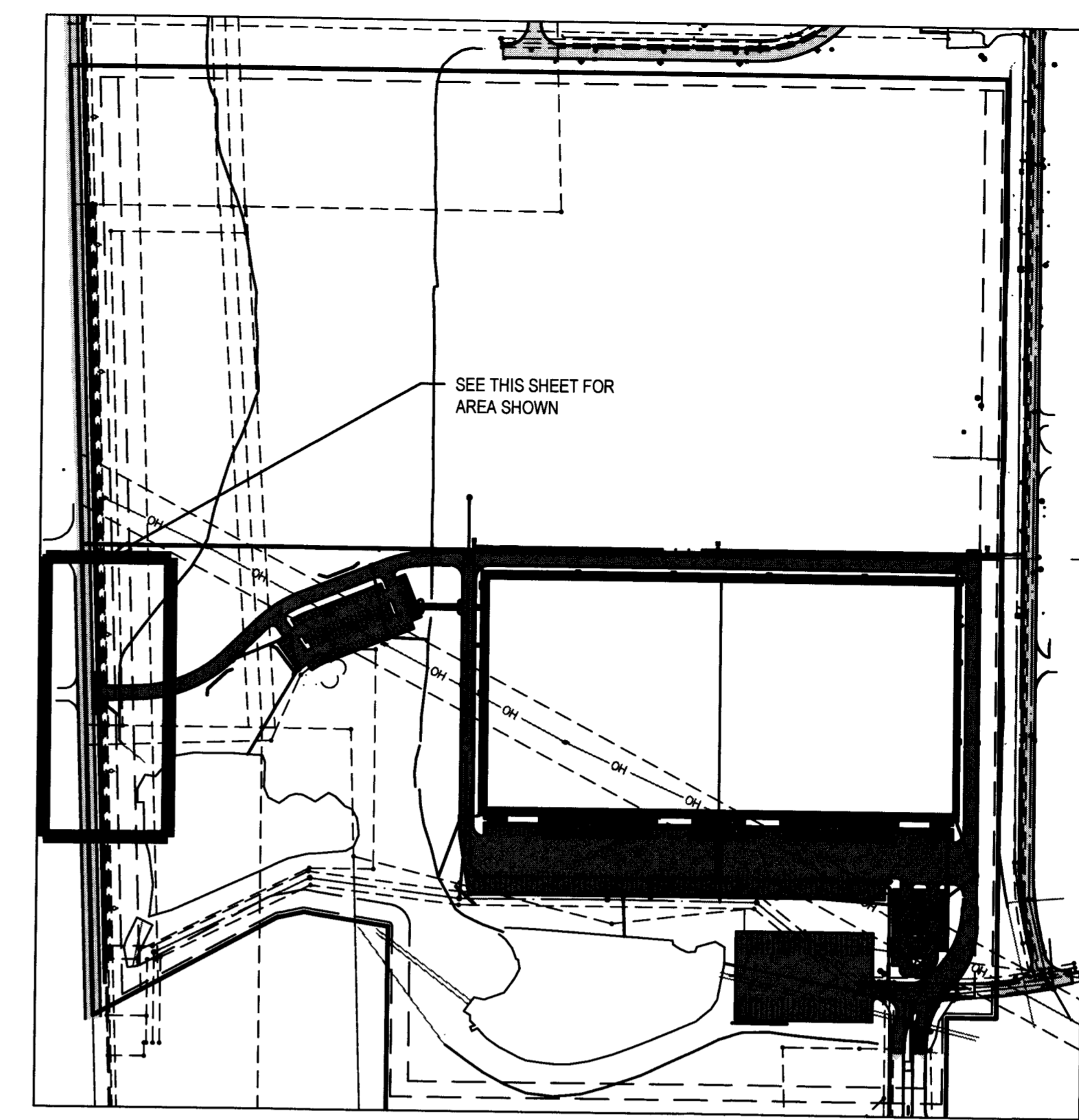
**C2 CONCRETE STAIR WITH HANDRAIL**

E1	SELECTIVE GRADING AND SHAPING		To reduce steep slopes and erosive velocities.
E8	PERMANENT SEEDING		Stabilization method utilized on slopes where earth change has been completed (final grading attained).
E9	MULCH BLANKETS		On exposed slopes, newly seeded areas, new ditch bottoms, or areas subject to erosion.
E12	RIPRAP		Use along shorelines, waterways, or where concentrated flow occurs. Slows velocity, reduces sediment load, and reduces erosion.
S51	SILT FENCE		Use adjacent to critical areas, to prevent sediment laden sheet flow from entering these areas.
S53	STABILIZED CONSTRUCTION ACCESS		Used at every point where construction traffic enters or leaves a construction site.
S58	INLET PROTECTION FABRIC DROP		Use at stormwater inlets, especially at construction sites.

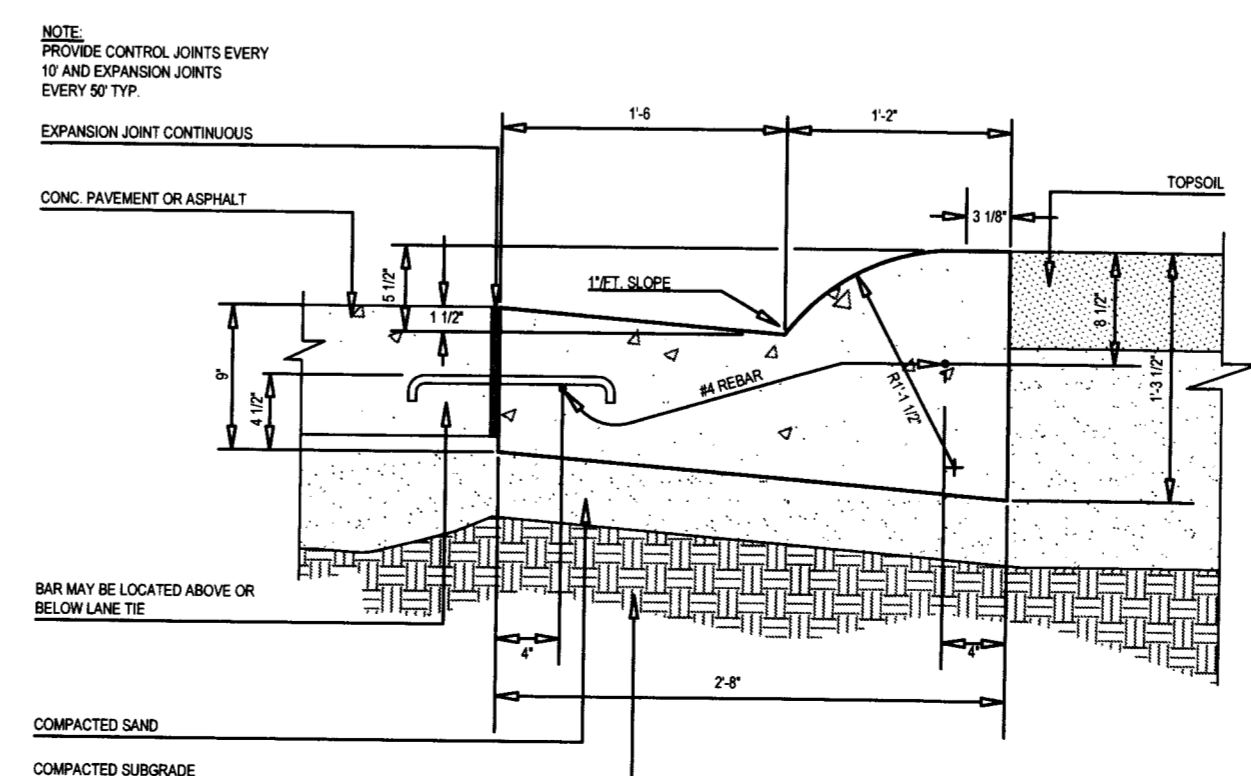
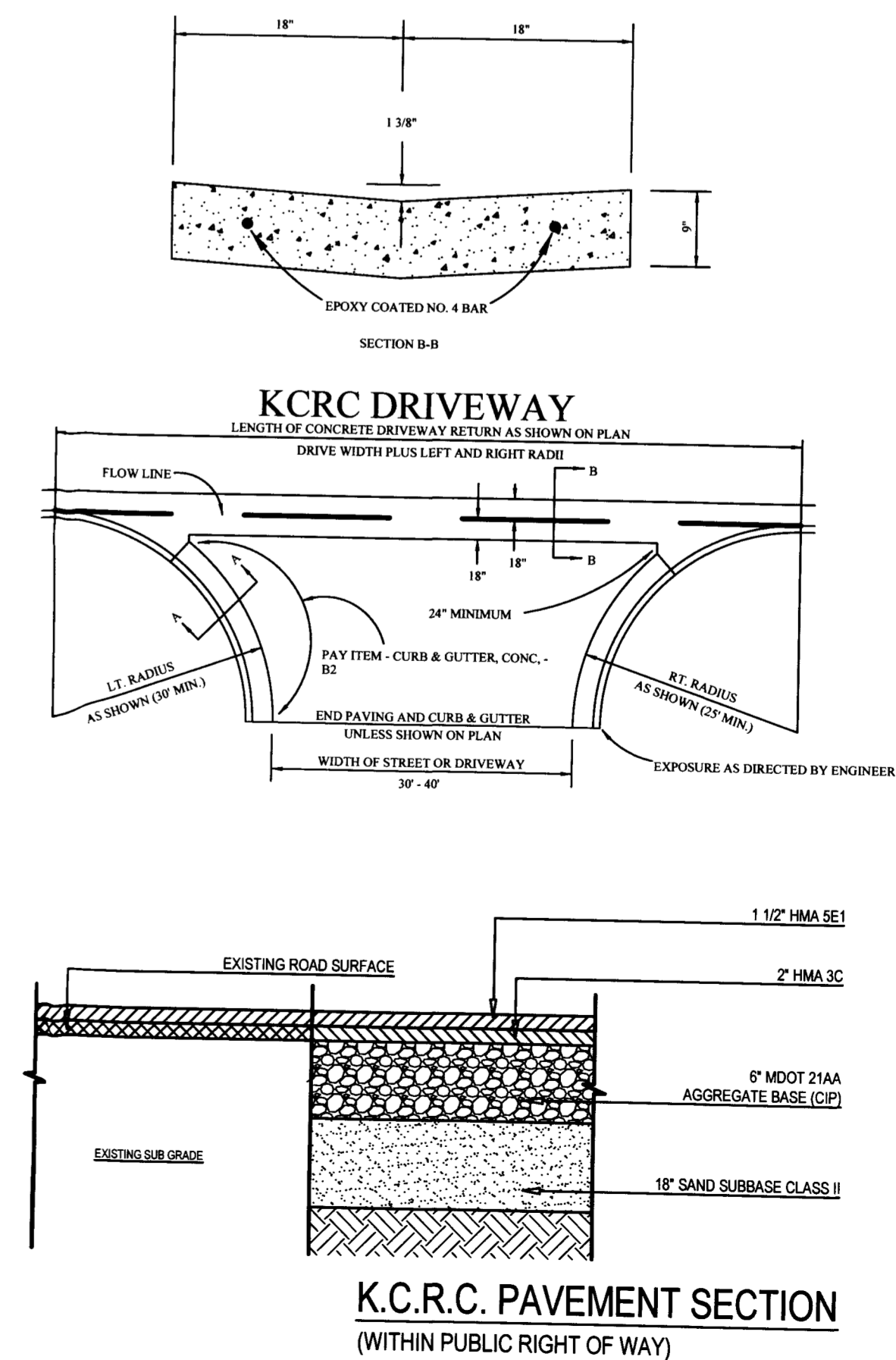


**E9** MULCH BLANKETS

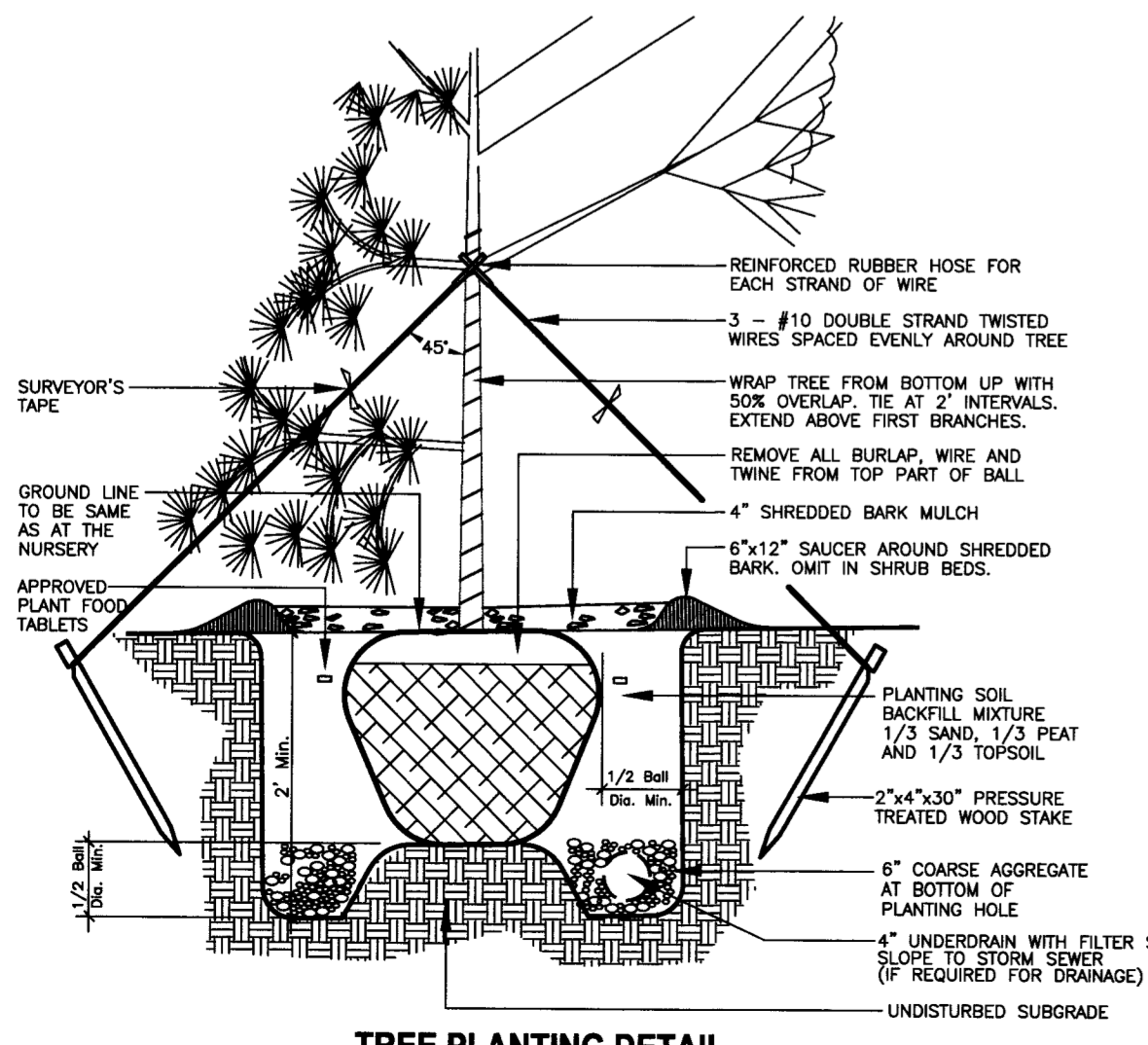
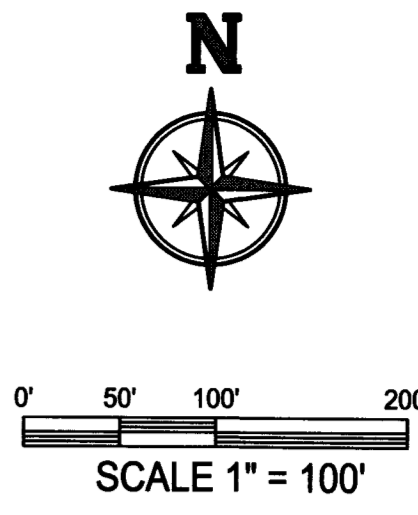
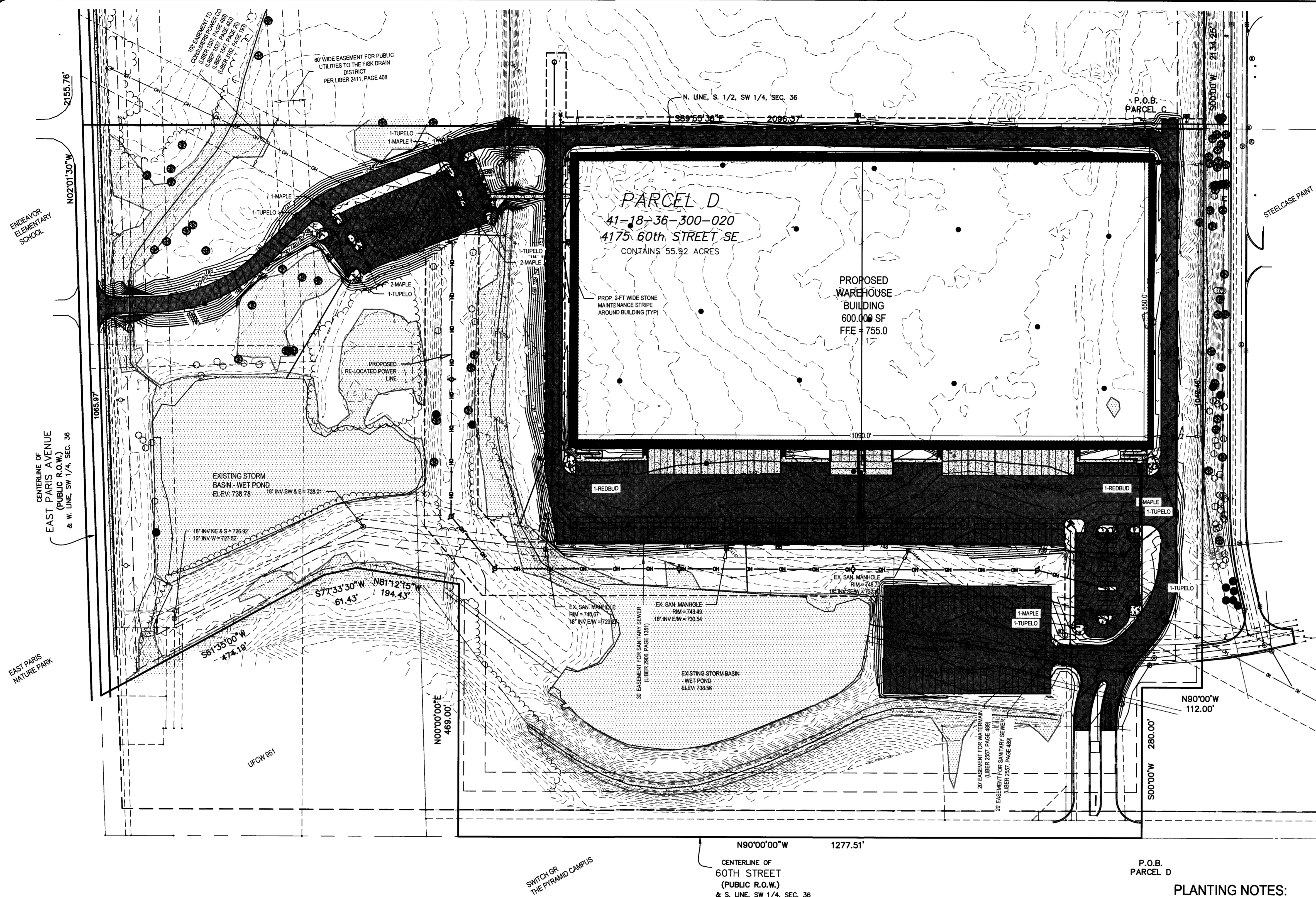




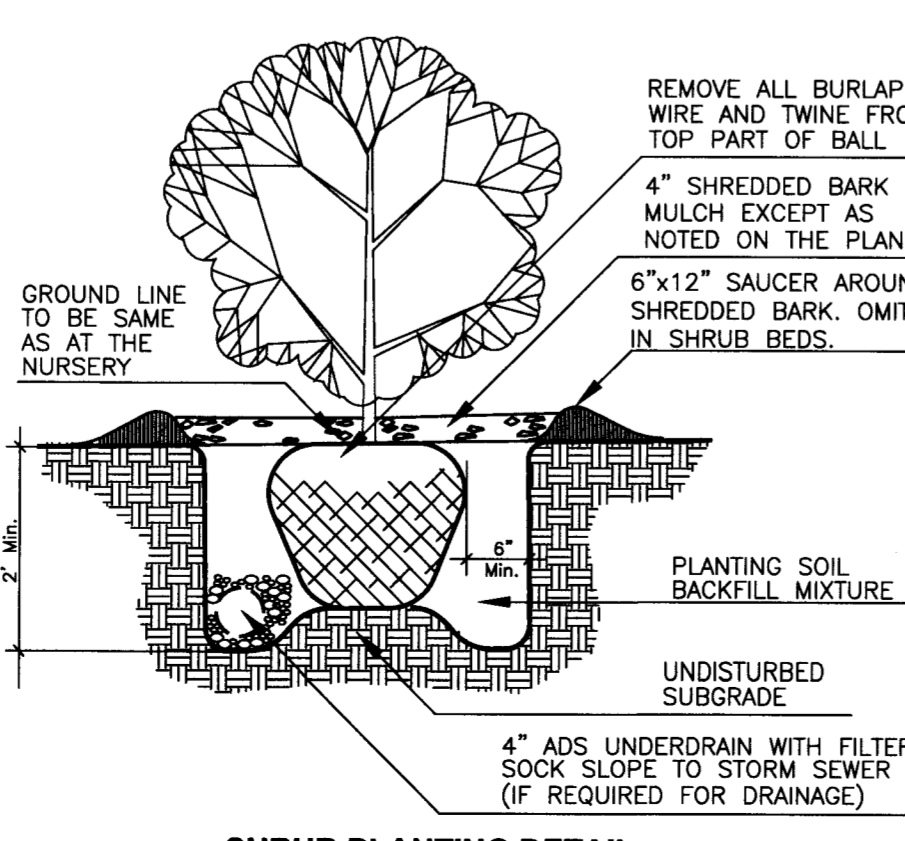
KEYNOTE: 1"=300'



<h1 style="margin: 0;">HOLLAND</h1> <h2 style="margin: 0;">ENGINEERING</h2>		<p style="margin: 0;">220 Hoover Boulevard Holland, Michigan 49423-3706 www.hollandengineering.com T 616-392-5938 F 616-392-2116</p>	
<h3 style="margin: 0;">THIRD COAST DEVELOPMENT</h3> <p style="margin: 0;">ATTN: MR. BRAD ROSELY 545 MICHIGAN ST NE SUITE 201 GRAND RAPIDS, MI 49503</p>		<p style="margin: 0; font-size: small;">The Surveyor's / Engineer's liability for any and all claims arising out of this Surveying but not limited to those arising out of the Surveyor's / Engineer's professional services, misrepresentations or misconduct, warranties or misrepresentations shall be deemed limited to an amount not greater than the services fees.</p>	
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p style="margin: 0;"><b>60th STREET</b></p> <p style="margin: 0;"><b>4175 60TH ST SE</b></p> <p style="margin: 0;"><b>KENTWOOD, MI 49512</b></p> </div> <div style="width: 45%; text-align: right;"> <p style="margin: 0;">PT. OF THE SW 1/4 SEC. 36, T6N, R11W</p> <p style="margin: 0;">CITY OF KENTWOOD, KENT COUNTY, MICHIGAN</p> </div> </div>			
<p style="margin: 0;"><b>Issued for:</b></p>			
Date	Description	No.	
03/23/2023	PRELIMINARY SITE PLAN TO OWNER	A	
01/11/2023	REVISED LAYOUT	B	
10/23/2023	REVISED LAYOUT	C	
1/09/2023	ADDED NORTH LAYOUT	D	
02/21/2024	REV LAYOUT	E	
06/17/2024	REV LAYOUT	F	
06/22/2024	PUD SITE PLAN APPROVAL	G	
Plans are preliminary & incomplete until ISSUED FOR CONSTRUCTION			
<p style="margin: 0;">Project Manager <b>RYAN T. YSELSDYKE, PE</b></p>			
<p style="margin: 0;">Vertical Datum</p>		<p style="margin: 0;">Horz. Datum</p>	
<p style="margin: 0;">Drawn by <b>PETER BULTEN, P.E.</b></p>			
<p style="margin: 0;">Checked by <b>Survey</b></p>		<p style="margin: 0;">Date</p>	
Civil	.		
Struc.	.		
L.A.	.		
<p style="margin: 0;">IEI Project Number <b>22-11-027</b></p>			
<p style="margin: 0;">Sheet Title <b>KCRC DRIVEWAY DETAIL</b></p>			
<p style="margin: 0;">Sheet No. <b>C-503</b></p>			



TREE PLANTING DETAIL



SHRUB PLANTING DETAIL

PLANT LIST

QTY.	KEY	SIZE	COMMON NAME	BOTANICAL NAME	MATURE SIZE/COMMENTS
N 9	MAPLE	2-1/2"BB	CELEBRATION MAPLE	ACER X FREEMANII 'CEJZAM'	45Hx25S; SEEDLESS; COMPACT; RED & GOLD FALL COLOR
N 2	REDBUD	2-1/2"BB	REDBUD	CERCIS CANADENSIS	30Hx25S; HEART-SHAPED LEAVES; GOLDEN-YELLOW FALL COLOR
N 7	TUPELO	2-1/2"BB	TUPELO / BLACK GUM	NYSSA SYLVATICA	50Hx35S; PYRAMIDAL; ORANGE, RED & GOLD FALL COLOR

LAWN- SPARTAN GRADE A MIX

SPARTAN GRADE A MIXTURE by Earth Carpet  
10% Cannon Kentucky Bluegrass  
10% Gold Rush Kentucky Bluegrass  
20% Rondo Kentucky Bluegrass  
15% SR5100 Chewings Fescue  
25% SR5210 Creeping Red Fescue  
10% SR4500 Perennial Ryegrass  
10% Manhattan 4 Perennial Ryegrass  
SEEDING RATE: 5 LBS. PER 1,000 SQUARE FEET.  
HYDROSEED ALL AREAS WITH A SLURRY OF SEED, PULVERIZED MULCH, FERTILIZER AND WATER.  
PLACE IN ALL DISTURBED AREAS NOT LABELED AS DETENTION BASIN SEED MIX.

PLANTING NOTES:

- LANDSCAPE REQUIREMENTS:
  - GREENBELT ALONG FRONTAGE: 10' WIDE WITH 1 CANOPY TREE + 7 SHRUBS PER 40'. 3' PLANTING BERM REQUIRED ALONG MAJOR ARTERIAL STREET. PC MAY APPROVE SUBSTITUTION OF EVERGREEN TREES FOR UP TO 50%.
    - REQUIRED ON 60th: 1,277 / 40 = 31.9 = 32 TREES + 224 SHRUBS
    - 1.1.1.1. PROVIDED ON 60th: EXISTING VEGETATION TO REMAIN (210' BETWEEN ROW AND PROPOSED TRAILER PARKING).
    - 1.1.2. REQUIRED ON EAST PARIS: 1066 / 40 = 26.6 = 27 TREES + 189 SHRUBS
    - 1.1.2.1. PROVIDED ON EAST PARIS: EXISTING VEGETATION TO REMAIN (407' BETWEEN ROW AND PROPOSED PARKING)
  - BUFFER ZONES: NOT REQUIRED ADJACENT TO INDUSTRIAL
  - PARKING (OVER 101-200 SPACES): 1 CANOPY TREE + 100 SF LANDSCAPED AREAS PER 12 SPACES. 1/3 SHALL BE WITHIN INTERIOR OF PARKING AREA (WITHIN 18' SURROUNDING PARKING). DISPERSED THROUGHOUT PARKING LOT. 3' WALL OR 2' EVERGREEN HEDGE REQUIRED IN FRONT YARD.
    - REQUIRED WEST PARKING LOT: 116 SPACES / 12 = 9.6 = 10 TREES IN 1,000 SF LANDSCAPED AREA
    - 1.1.1. PROPOSED WEST PARKING LOT: 10 TREES IN 2,400 SF LANDSCAPED AREA
    - REQUIRED SOUTH PARKING LOT: 64 SPACES / 12 = 5.33 = 6 TREES IN 600 SF LANDSCAPED AREAS
    - 3.2.1. PROPOSED SOUTH PARKING LOT: 6 TREES IN 1,450 SF LANDSCAPE AREA
    - 3.2.2. STORM BASIN: NATURAL APPEARANCE WITH 1 CANOPY OR EVERGREEN TREE + 9 SHRUBS PER 50' PERIMETER OF POND, PLANTED IN RANDOM PATTERN
  - NOT LIMITED TO TOP OF BANK
  - PROPOSED: NONE - EXISTING STORM BASINS
  - DUMPSTER: ENCLOSURE REQUIRED, LOCATED IN THE REAR YARD OR NON-REQUIRED SIDE YARD. SEE SEC. F. ON PAGE 19-5.
    - NO EXTERIOR DUMPSTER PROPOSED
  - ALL TREES AND SHRUBS SHALL BE PLANTED A MINIMUM OF 4' AWAY FROM PAVEMENT. PLANTS SHALL BE PLANTED OUTSIDE FRONT UTILITY EASEMENT AND AS CLOSE TO EDGE OF DRAINAGE EASEMENTS AS POSSIBLE.
  - ALL LAWN AND PLANTING AREAS SHALL BE IRRIGATED WITH UNDERGROUND IRRIGATION IN SUCH WAY TO MAINTAIN VEGETATION IN A HEALTHY AND GROWING MANNER.
  - ALL LANDSCAPE AREAS SHALL BE MAINTAINED BY OWNER. TREES AND OTHER VEGETATION THAT DIE SHALL BE PROMPTLY REPLACED WITH IN KIND VEGETATION.
  - CONTRACTOR SHALL PROVIDE SPECIFIED TREES, SHRUBS, GROUND COVERS AND OTHER PLANT MATERIAL THAT COMPLY WITH ALL RECOMMENDATIONS AND REQUIREMENTS OF ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK." PLANT MATERIAL SHALL BE HEALTHY, VIGOROUS STOCK GROWN WITH GOOD HORTICULTURAL PRACTICE AND INSTALLED IN ACCORDANCE WITH METHODS ESTABLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
  - SEED SHALL BE PLACED OVER 6" TOPSOIL IN ALL PROPOSED LAWN AREAS AND ALL AREAS DISTURBED BY CONSTRUCTION EXCEPT AS NOTED ON THE PLANS. SOD SHALL BE PLACED IN ALL AREAS AS SHOWN ON THE PLANS OVER 4" TOPSOIL.
  - PLANTING SOIL CONSISTING OF 1/3 TOPSOIL, 1/3 PEAT MOSS AND 1/3 SAND SHALL BE PLACED IN ALL GROUND COVER AND FLOWER BEDS. DEPTH SHALL BE NOT LESS THAN 8".
  - FOLLOWING CONSTRUCTION, RESTORE ALL DISTURBED AREAS WITH EARTH CARPET SPARTAN GRADE "A" SEED MIX, UNLESS OTHERWISE NOTED.
  - PLANT MATERIAL SUBSTITUTIONS SHALL BE APPROVED BY OWNER & LANDSCAPE ARCHITECT.

**HOLLAND**  
ENGINEERING

220 Hoover Boulevard  
Holland, Michigan 49423-3766  
Tel: 616-392-5938 F: 616-392-2116

THIRD COAST  
DEVELOPMENT

ATTN: MR. BRAD ROSELY  
545 MICHIGAN ST NE SUITE 201  
GRAND RAPIDS, MI 49503

60th STREET  
475 60TH ST SE  
KENTWOOD, MI 49512

PT. OF THE SW 1/4 SEC. 36, T6N, R11W  
CITY OF KENTWOOD, KENT COUNTY, MICHIGAN

No.	Description	Date	
		Issued For	By
1	PRELIMINARY SITE PLAN TO OWNER	9/23/2023	A
2	REVISED LAYOUT	10/23/2023	B
3	REVISED LAYOUT	10/23/2023	C
4	ADDED DRAINAGE LAYOUT	11/08/2023	D
5	SITE PLAN	02/21/2024	E
6	REV. LAYOUT	03/17/2024	F
7	PLD. / SITE PLAN APPROVAL	03/22/2024	G

Project Manager  
RYAN T. YSSELDYKE, PE

Drawn by  
BRUCE ZEINSTR, LLA

Checked by  
Survey

Civil

Struc.

L. A.

HEI Project Number  
22-11-027

Sheet Title  
LANDSCAPE  
PLANTING  
PLAN

Sheet No.  
L-100

STAFF REPORT: July 1, 2024  
PREPARED FOR: Kentwood Planning Commission  
PREPARED BY: Lisa Golder  
CASE NO.: 18-24 4301 – 60<sup>th</sup> Street (Steelcase PUD) Major Change

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#### GENERAL INFORMATION

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APPLICANT: Eric Calcaterra Elizabeth Girgen  
Steelcase Inc. Project Manager, Facilities  
901 44<sup>th</sup> Street SE Steelcase Inc.  
Grand Rapids MI 4950

STATUS OF APPLICANT: Steelcase facilities representatives

REQUESTED ACTION: Applicant is requesting a major change an approved site plan for the Steelcase PUD

EXISTING ZONING OF SUBJECT PARCEL: IPUD – Industrial Planned Unit Development

GENERAL LOCATION: 4301 60<sup>th</sup> Street SE

PARCEL SIZE: 62.5 Acres

EXISTING LAND USE ON THE PARCEL: Vacant

ADJACENT AREA LAND USE  
LAND USE N: Vacant; future facility (200,000 sq ft)  
S: 60<sup>th</sup> Street; Gaines Township  
E: Vacant, future phases of the Steelcase PUD  
W: Future Third Coast Development site (Case 15-24)

ZONING ON ADJOINING PARCELS: N, W& E: IPUD Industrial Planned Unit Development  
S: I-1 Industrial (Gaines Township)

#### Compatibility With Master Plan

The Master Plan recommends industrial use for the site.

## Staff Report

Case No. 18-24 4301 – 60<sup>th</sup> Street PUD Major Change

Page 2

### Relevant Zoning Ordinance Sections

General standards for Planned Unit Developments are found in Section 12.01 and 12.02 of the Zoning Ordinance. Permitted uses, development requirements, and other development guidelines for Industrial PUDs are found in Section 12.08 of the Kentwood Zoning Ordinance. Standards for PUD approval can be found in Section 12.10 and 12.12 of the Zoning Ordinance. Site plan standards are found in Chapter 14 of the Zoning Ordinance.

### Zoning History

The property was zoned for agriculture and low density residential prior to 1980. In 1980, 358.9 acres of land was rezoned from Agricultural and R1-B Low Density Residential to I-1 Light Industrial. At the same time, Steelcase sought an extension of the Grand Rapids Sewer Service District to serve this section. In 1982 the Light Industrial zoning was amended to an Industrial Planned Unit Development (IPUD) of 408 acres, and a development plan was adopted at that time. In 1987 four parcels totaling 99 acres were added to the IPUD to create the 507-acre development. At that time, it was envisioned that Steelcase would someday build and occupy approximately 6 million square feet of manufacturing, shipping, distribution and other operations within the campus.

In 2014 a Major Change to the approved Steelcase site plan was approved through the Planning and City Commissions. A new development agreement was approved and signed by all the property owners—Steelcase, Franklin Partners, Roskam Baking, as well as the city.

In 2017 another amendment to the Steelcase PUD was approved to allow the construction of a credit union and to allow for the increase of square footage of several of the buildings in the southeast corner of the PUD. The PUD Agreement/Plan that incorporates these changes is attached.

In 2023 the city approved a major change to the approved PUD plan that would allow the sale of 27 acres of land along 52<sup>nd</sup> Street to Transport Properties Inc. for use as truck parking, storage and maintenance.

Case 15-24 Third Coast Development involves the proposed development of 600,000 square feet of industrial property to the west. This area was formerly proposed to allow 350,000 square feet of manufacturing area and 45,000 square feet of office. The increase in square footage and a proposed driveway to East Paris constitute a major change to the Steelcase PUD.

### Project Overview

Steelcase is the current owner of 4301 60<sup>th</sup> Street, located to the east of the proposed Third Coast Development Inc project (Case 15-24). Steelcase still owns and would potentially develop the property (Building G) to the north of the Third Coast property. The Kentwood West Plant (Building K4) is north of Building G and requires a secure entry/exit due to customs requirements. Up until now, Building K4 has been accessed through the gated entry off 52<sup>nd</sup> Street. Steelcase would like to have the ability to move all truck traffic to a new, secure 60<sup>th</sup> Street access. The request is to allow the new access that is 1,200 feet east of the existing boulevard entrance off 60<sup>th</sup> Street and 1,000 feet from the existing eastern driveway that serves ETO Magnetic and Roskam.

Any amendment to the PUD Plan is reviewed to determine whether it is a major or a minor change. A minor change can proceed directly to final PUD approval, while a major change requires re-approval of the preliminary plan by both the Planning and City Commissions. The proposed additional curb cut is considered a major change to the approved site plan.

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## TECHNICAL INFORMATION

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### Streets and Traffic:

The approved Steelcase PUD Plan currently has two driveways to 60<sup>th</sup> Street. Since the original development was intended for Steelcase facilities only, access within the PUD was through an internal loop road. Now that multiple businesses occupy the Steelcase PUD, more consideration has been given to allow new curb cuts to support the traffic and security requirements of the users. At the same time, shared internal driveways are still encouraged and required in order to reduce the number of curb cuts on the public streets.

The applicant has contracted with Fishbeck Inc to analyze the traffic on 60<sup>th</sup> Street and at nearby intersections, as per the PUD Development Agreement. The conclusions of the analysis are attached. Since 60<sup>th</sup> Street is a county road, the traffic study has been forwarded to the Kent County Road Commission for review.

The study indicates that in future conditions (2025), southbound traffic for the existing Steelcase driveway (Data Drive) will degrade from a LoS B to LoS E in the AM peak and from LoS B to LoS F in the PM peak hour. The only recommendation for mitigation study is for a west bound right turn lane at the existing Steelcase driveway and offsetting the shifts at the manufacturing buildings. In addition, the study only considered the development of a 350,000 square foot facility for the Third Coast property, rather than the 600,000 square foot facility that is being proposed. The traffic study does not appear to take into account the impact of Third Coast Development's East Paris access. This may impact the function of the southbound right turn at East Paris and 60<sup>th</sup> Street; the traffic study indicates that the queue for the southbound right turn at 60<sup>th</sup> Street will exceed the provided storage length by one vehicle in the AM peak hour, and five vehicles in the PM peak hour.

If the proposed Steelcase 60<sup>th</sup> Street driveway is approved, the traffic analysis recommends a deceleration lane only. The new proposed Steelcase driveway is anticipated to have a LoS of A-B in both the AM and PM peaks.

### Internal Circulation:

The Steelcase PUD was developed with the concept of an internal roadway system for truck and employee circulation. Steelcase currently has an existing north-south driveway (North-South Drive) that extends between proposed buildings K and G and the Physical Distribution Center. Since the boulevard driveway (Data Drive) is projected to have a LoS E and F after the construction of these buildings, it would be reasonable to have some of the traffic from these locations diverted to the Steelcase proposed 60<sup>th</sup> Street access. In addition, the North-South Drive could serve as the north-south access to Building G, as depicted in the overall Master Plan for the Steelcase site. If customs requirements dictate a more secure location, the Steelcase

## Staff Report

Case No. 18-24 4301 – 60<sup>th</sup> Street PUD Major Change

Page 4

guard shack can be relocated to an area near Building G, or, near the substation on the Steelcase property.

### Site Characteristics:

The 62.5 acre site is undeveloped. Detention Pond 4 exists on the site. The proposed driveway to 60<sup>th</sup> Street would have to cross between Ponds 3 and 4. Information on wetlands within this area should be provided.

### Staff Review

1. Steelcase is the current owner of 4301 60<sup>th</sup> Street, located to the east of the proposed Third Coast Development Inc project (Case 15-24). Steelcase still owns and would potentially develop the property (Building G) to the north of the Third Coast property. The Kentwood West Plant (Building K4) is north of Building G and requires a secure entry/exit due to customs requirements. Up until now, Building K4 has been accessed through the gated entry off 52<sup>nd</sup> Street. Steelcase would like to have the ability to move all truck traffic to a new, secure 60<sup>th</sup> Street access. The request is to allow the new access that is 1,200 feet east of the existing boulevard entrance off 60<sup>th</sup> Street and 1,000 feet from the existing eastern driveway that serves ETO Magnetic and Roskam.
2. The applicant needs to show through the traffic analysis the intended circulation for the Kentwood West Plant (Building K4).
3. Third Coast and Steelcase should consider shared access to both the boulevard driveway and the new proposed driveway in order to disperse traffic. In no event will truck traffic be allowed to circulate to East Paris Avenue.
4. Steelcase should indicate why their North-South driveway is not adequate for access to Building G, especially if Building G becomes a Steelcase building.
5. The proposed new driveway for Steelcase is located between Ponds 3 and 4. The applicant should indicate whether wetlands exist in this area.

### Attributes:

- Curb cut may be needed for customs security for Building K4
- Traffic analysis indicates deteriorating level of service for existing boulevard entrance; another driveway would disperse traffic
- Curb cut is located 1200 feet from the existing Steelcase driveway (Data Drive)

### Issues:

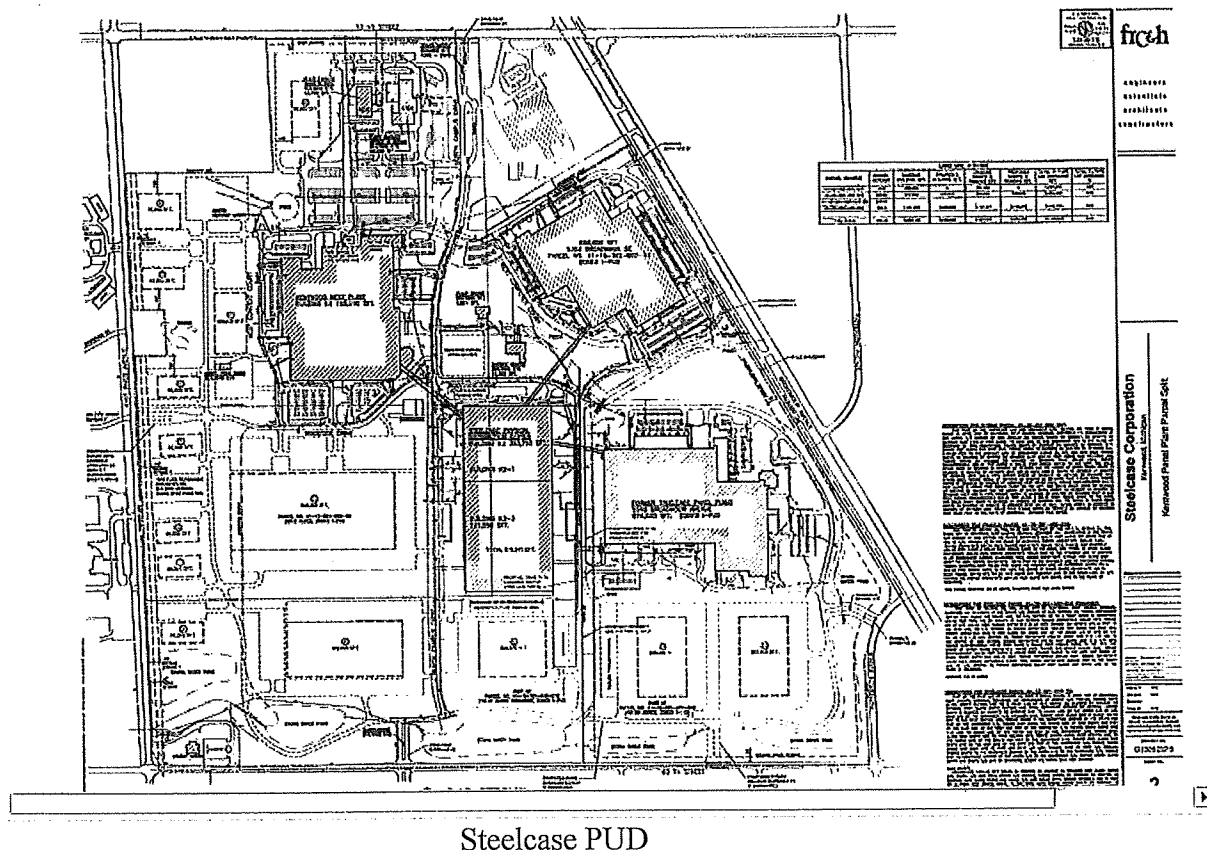
- Wetlands information for proposed curb cut
- Cooperation needed between Steelcase and Third Coast Development to disperse traffic
- Maintenance provisions for shared driveways
- Guard shack maybe required to be relocated in order to satisfy customs requirements
- Accessibility to 60<sup>th</sup> Street between the two detention ponds

# Staff Report

Case No. 18-24 4301 – 60<sup>th</sup> Street PUD Major Change

Page 5

- Traffic study did not take into account the proposed 600,000 square foot building proposed for third Coast Development
- Traffic study does not show impact of proposed Third Coast driveway at intersection of East Paris and 60<sup>th</sup> Street



June 21, 2024

Lisa Golder  
City of Kentwood  
4900 Breton Rd SE  
Kentwood, MI 49508

RE: PUD Statement

Dear Ms. Golder:

Steelcase is requesting approval for an additional curb cut along 60th Street. In support of the sale of 4175 60th Street SE, we are working to separate our property from this new parcel by creating a new entry point to our campus. As you are aware, CTPAT requires the need to have a secure and controlled property to maintain this certification. As part of the property sale, we have outlined a plan to create a new entrance to meet our requirements and address internal circulation within our remaining properties. During the early evaluation process, we believe that a secure entrance off 60th Street would support an entrance for our truck traffic patterns more efficiently. Therefore, we are requesting the City of Kentwood to approve a new curb cut along 60th street.

Our initial vision of a new entrance along 60th Street would be utilized to support truck traffic with a new secure access point and the 52nd Street entrance would transition to an employee only entrance. This will alleviate safety concerns with the existing traffic pattern at 52nd Street. Per the draft site plan, you will see that the proposed new curb cut would tie into the previous forecasted PUD interior ring road design to the north and west.

Please reach out if you have any questions. We appreciate the City of Kentwood's ongoing support.

Sincerely,



Elizabeth Girgen, PE  
Project Manager, Facilities  
Steelcase

# Steelcase Traffic Impact Study

Steelcase, Inc.

Project No. 231538  
November 27, 2023

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## Executive Summary

Fishbeck has conducted a traffic impact study (TIS) related to a proposed development on the Steelcase property located between 52nd Street, 60th Street, E Paris Avenue, and M-37 (Broadmoor Avenue) in the City of Kentwood (City), Kent County, Michigan. The development will be built on a vacant parcel within the Steelcase property and will consist of two manufacturing buildings with estimated sizes of 650,000 square feet (sft) and 350,000 sft. The development will be completed in one phase, assumed to be open and fully operational in 2025.

Currently, all Steelcase traffic that enters or exits onto 60th Street utilizes a single driveway that is aligned with Data Drive. With the addition of this new development, all Steelcase traffic that enters or exit onto 60th Street will utilize a new driveway that will be approximately 1,200 feet east of the existing driveway/Data Drive. All traffic generated by the new development will utilize the existing Steelcase Driveway.

This study was conducted according to the methodologies and guidance published by Institute of Transportation Engineers (ITE), American Association of State Highway and Transportation Officials (AASHTO), Michigan Department of Transportation (MDOT), Kent County Road Commission (KCRC), and the City.

Vehicular Turning Movement Counts (TMCs) were collected at the study intersections on Thursday, September 21, 2023, during the weekday a.m. (7 to 9 a.m.) and p.m. (4 to 6 p.m.) peak periods for the roadway network. There is ongoing construction at the Switch facility in the southeast quadrant of 60th Street and E Paris Avenue, however KCRC indicated there was no traffic study performed for that expansion. There are no other known projects in the site vicinity that would add additional traffic volumes or alter traffic patterns within the study network. It is assumed that any additional traffic within the study network would be accounted for with the growth factor that was applied to the existing volumes.

Site-generated traffic was forecast using the information and methodologies specified in the ITE *Trip Generation Manual*. Existing traffic volumes, site layout, and engineering judgement were used to develop a trip distribution model for the a.m. and p.m. peak hours for the new traffic that would be generated by the proposed development. Additionally, directions of origin, surrounding residential densities, and commuting patterns were considered.

Capacity analyses were conducted for existing, background, and total future conditions based on the *Highway Capacity Manual* (HCM) 6th Edition methodologies using Synchro traffic analysis software. Synchro network models were also simulated using SimTraffic to evaluate network operations including intersection queueing.

Based on the findings of the HCM operational analyses, crash data, and site traffic generation, Table 1 – Proposed Improvements has the recommended existing, background, and future improvements to the study intersections to mitigate traffic impacts.

Table 1 – Proposed Improvements

Intersection	2025 Existing	2025 Background	2025 Future
60th Street and Existing Steelcase Driveway		-	• Construct a WB right turn lane.

The opinions, findings, and conclusions expressed in this TIS are those of Fishbeck and not necessarily those of the Owner/Applicant, MDOT, KCRC, or the City.

Prepared By:

  
Alyssa Wambold, PE, PTOE – Fishbeck

  
Kyle Reidsma, PE, PTOE – Fishbeck  
Project Manager

### 1.3 Intersection Characteristics

Based on the type and size of the proposed development and the likely area of influence for the site trips, traffic operations were analyzed for the following intersections:

1. 60th Street and E Paris Avenue (signalized).
2. 60th Street and Existing Steelcase Driveway/Data Drive (minor-street stop-controlled).
3. 60th Street and Alliance Beverage Driveway (minor-street stop-controlled).
4. 60th Street and Roskam Baking Driveway/Arlo Plastics Driveway (minor-street stop-controlled).
5. 60th Street and Patterson Avenue (signalized).
6. 60th Street and Proposed Steelcase Driveway (proposed unsignalized driveway 1,200 feet east of Existing Steelcase Driveway/Data Drive).

The existing intersection lane configurations, traffic controls, and posted speed limits are displayed in Figure 2 – 2023 Existing Lane Configurations.

### 1.4 Roadway Characteristics

The characteristics of the study area roadways and signalized intersections are described in Table 2 – Roadway Characteristics and Table 3 – Signal Characteristics. The data points referenced were from the Grand Valley Metropolitan Council (GVMC) Traffic Count Database System (TCDS) and the MDOT Transportation Data Management System (TDMS) online maps.

Table 2 – Roadway Characteristics

Roadway	Jurisdiction	Speed Limit (mph)	No. of Lanes	Roadway Classification	Direction	AADT (vpd)
60th Street	KCRC	55 <sup>1</sup>	5	Minor Arterial	EB	3,991 (2023)
					WB	3,778 (2023)
E Paris Avenue	City	50	2-3	Minor Arterial	NB	4,366 (2023)
					SB	5,352 (2023)
Patterson Avenue	KCRC	55 <sup>1</sup>	2-3	Minor Arterial	NB	3,975 (2022)
					SB	3,392 (2022)

<sup>1</sup>No posted speed limit. 55 MPH Prima Facie.

AADT Average Annual Daily Traffic

mph miles per hour

vpd vehicles per day

Table 3 – Signal Characteristics

Intersection	Jurisdiction	Left Turn Phasing			
		NB	SB	EB	WB
60th Street and E Paris Avenue	KCRC	Permitted	Permitted	Permitted and Protected	Permitted
60th Street and Patterson Avenue	KCRC	Permitted	Permitted	Permitted	Permitted

EB eastbound  
NB northbound  
SB southbound  
WB westbound

### 1.5 Existing Traffic Volumes

Vehicular turning movement counts (TMCs) were collected at the following study intersection during the weekday a.m. (7 to 9 a.m.) and p.m. (4 to 6 p.m.) peak periods of the road network on Thursday September 21, 2023:

- 60th Street and E Paris Avenue.
- 60th Street and Existing Steelcase Driveway/Data Drive.
- 60th Street and Roskam Baking Driveway/Arlo Plastics Driveway.
- 60th Street and Patterson Avenue.

Traffic volume information can be found in Appendix 1 – Traffic Volume Data, which includes heavy vehicle data. The existing traffic volumes used in this study are provided in Figure 3 – 2023 Existing Traffic Volumes.

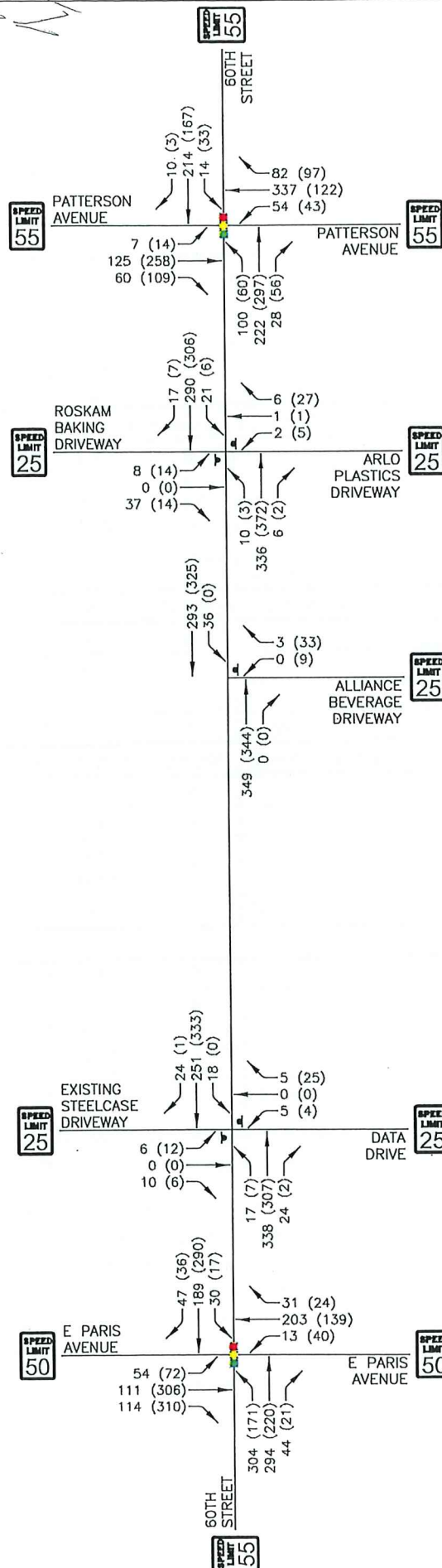


# 2023 EXISTING TRAFFIC VOLUMES

NO SCALE

## LEGEND

- LANE ASSIGNMENT
- 🚦 SIGNALIZED INTERSECTION
- ⏹ STOP CONTROL
- XX a.m. PEAK HOUR
- (XX) p.m. PEAK HOUR



Hard copy is  
intended to be  
8.5"x11" when  
plotted. Scale(s)  
indicated and  
graphic quality may  
not be accurate for  
any other size.

**STEELCASE**  
Kentwood, Michigan 49512  
Traffic Impact Study

PROJECT NO.

231538

FIGURE NO.

3

The resulting LOS and delay for the existing conditions are provided in Table 5 – LOS Analysis for 2023 Existing Conditions.

Table 5 – LOS Analysis for 2023 Existing Conditions

Approach	LOS/Delay(s)	
	a.m. Peak Hour	p.m. Peak Hour
60th Street and E Paris Avenue (Signalized)		
EB 60th Street	B 16.3	B 15.0
WB 60th Street	C 22.6	C 23.7
NB E Paris Avenue	C 21.3	C 20.3
SB E Paris Avenue	C 20.1	C 21.7
Overall	B 19.1	C 20.3
60th Street and Existing Steelcase Driveway/ Data Drive (Minor-Street Stop-Controlled)		
EB 60th Street	A 0.4	A 0.2
WB 60th Street	A 0.5	A 0.0
NB Data Drive	B 12.8	B 10.3
SB Existing Steelcase Driveway	B 11.9	B 14.2
Overall	A 1.1	A 1.1
60th Street and Alliance Beverage Driveway (Minor-Street Stop-Controlled)		
EB 60th Street	A 0.0	A 0.0
WB 60th Street	A 0.9	A 0.0
NB Alliance Beverage Driveway	A 9.5	B 10.3
Overall	A 0.5	A 0.5
60th Street and Roskam Baking Driveway/Arlo Plastics Driveway (Minor-Street Stop-Controlled)		
EB 60th Street	A 0.2	A 0.1
WB 60th Street	A 0.5	A 0.2
NB Arlo Plastics Driveway	B 14.0	B 11.4
SB Roskam Baking Driveway	B 11.0	B 13.9
Overall	A 1.5	A 1.2
60th Street and Patterson Avenue (Signalized)		
EB 60th Street	B 16.5	B 16.8
WB 60th Street	B 15.3	B 15.5
NB Patterson Avenue	C 20.0	B 16.9
SB Patterson Avenue	B 17.1	C 20.1
Overall	B 17.7	B 17.5

Further analysis of the LOS results for existing conditions revealed that all movements, approaches, and intersections are expected to operate at an acceptable LOS C or better during both the a.m. and p.m. peak hours.

SimTraffic simulations were also reviewed to observe network operations and vehicle queues. For existing conditions, study network operations are acceptable, with no significant vehicle queues or spill-back from available storage lanes. The 95th percentile queue length for the SB right turn lane at the intersection of 60th Street and E Paris Avenue exceeded the provided storage length by 8 feet (less than one vehicle) in the a.m. peak hour and 103 feet (four vehicles) in the p.m. peak hour. This right turn movement operates at a LOS B in the a.m. peak hour and at a LOS C in the p.m. peak hour. Due to acceptable LOS results, no mitigation is recommended. See Appendix 2 – Existing LOS Output Reports for the existing conditions LOS reports and queueing analysis reports.

Of the 15 crashes that occurred along 60th Street outside the influence area of the signalized intersections, four crashes involved a deer, four crashes involved a vehicle attempting to change lanes without assured clear distance, three crashes involved a vehicle turning into or out of a private driveway without assured clear distance, two crashes involved a truck striking another vehicle while attempting to turn into or out of a private driveway, one crash involved a vehicle failing to stop for a stopped vehicle in the roadway due to snowy road conditions, and one crash involved a vehicle failing to slow down and move over for a bicyclist in the roadway and striking the bicyclist with their sideview mirror. No crash patterns were identified on this segment of 60th Street.

Further review of the Level-A crashes revealed that the first Level-A crash involved an EB vehicle turning left onto NB E Paris Avenue without assured clear distance and striking a WB on 60th Street. As mentioned previously, EB left turn permitted/protected phasing was installed in September 2023 to address this EB left turn crash pattern. The second Level-A crash involved a vehicle that exited a private driveway at a high rate of speed without assured clear distance, struck an EB vehicle on 60th Street, and then struck a fire hydrant. The UD-10 crash reports for the Level-A crashes are provided in Appendix 3 – Crash Data.

Based on the results of the existing conditions analysis, no additional operational or safety improvements are recommended to mitigate any unacceptable traffic conditions absent of the proposed development. Appendix 3 summarizes this information.

### **3.0 2025 Background Conditions Analysis**

US Census data for the City was reviewed to determine related to the growth rate for the existing traffic volumes to the project build-out year in 2025. The population of the City grew on average 1.1% per year between 2010 and 2020. Additionally, GVMC was contacted to determine a growth rate based on their travel demand model. The GVMC model indicated the 60th Street corridor will see a 2.06% per year growth rate between 2023 and 2026. Based on this review, a background growth rate of 2.06% was utilized. The Switch facility in the southeast quadrant of 60th Street and E Paris Avenue is currently undergoing additional development however KCRC indicated that no traffic study was performed for that development. No other background developments were identified for inclusion in this study. It is assumed that all background traffic within the study area network is accounted for with the growth rate provided by GVMC's travel demand model. The total background traffic volumes are presented in Figure 4 – 2025 Background Traffic Volumes.

### 3.1 2025 Background Conditions Traffic Analysis

The resulting LOS and delay for the background conditions are provided in Table 8 – LOS Analysis for 2025 Background Conditions.

Table 8 – LOS Analysis for 2025 Background Conditions

Approach	LOS/Delay(s)			
	a.m. Peak Hour		p.m. Peak Hour	
60th Street and E Paris Avenue (Signalized)				
EB 60th Street	B	16.9	B	15.1
WB 60th Street	C	22.8	C	23.9
NB E Paris Avenue	C	21.6	C	20.7
SB E Paris Avenue	C	20.3	C	22.2
Overall	B	19.5	C	20.6
60th Street and Existing Steelcase Driveway/Data Drive (Minor-Street Stop-Controlled)				
EB 60th Street	A	0.4	A	0.2
WB 60th Street	A	0.5	A	0.0
NB Data Drive	B	13.1	B	10.3
SB Existing Steelcase Driveway	B	12.1	B	14.6
Overall	A	1.0	A	1.1
60th Street and Alliance Beverage Driveway (Minor-Street Stop-Controlled)				
EB 60th Street	A	0.0	A	0.0
WB 60th Street	A	0.9	A	0.0
NB Alliance Beverage Driveway	A	9.6	B	10.3
Overall	A	0.5	A	0.5
60th Street and Roskam Baking Driveway/Arlo Plastics Driveway (Minor-Street Stop-Controlled)				
EB 60th Street	A	0.2	A	0.1
WB 60th Street	A	0.5	A	0.2
NB Arlo Plastics Driveway	B	14.4	B	11.5
SB Roskam Baking Driveway	B	11.0	B	14.3
Overall	A	1.5	A	1.3
60th Street and Patterson Avenue (Signalized)				
EB 60th Street	B	16.7	B	16.9
WB 60th Street	B	15.4	B	15.6
NB Patterson Avenue	C	20.4	B	17.1
SB Patterson Avenue	B	17.3	C	20.5
Overall	B	17.9	B	17.8

Further analysis of the LOS results for background conditions revealed that all movements, approaches, and intersections are expected to continue to operate at an acceptable LOS C or better during both the a.m. and p.m. peak hours.

SimTraffic simulations were also reviewed to observe network operations and vehicle queues. For background conditions, study network operations would continue to be acceptable, with no significant vehicle queues or spill-back from available storage lanes. The 95th percentile queue length for the SB right turn lane at the intersection of 60th Street and E Paris Avenue would continue to exceed the provided storage length. These 95th percentile queues would exceed the provided storage length by 15 feet (one vehicle) in the a.m. peak hour and 108 feet (four vehicles) in the p.m. peak hour. This right turn movement would continue to operate at a LOS B in the a.m. peak hour and at a LOS C in the p.m. peak hour. Due to acceptable LOS results, no mitigation is recommended. See Appendix 4 – Background LOS Output Reports for the background conditions LOS reports and queueing analysis reports.

Table 10 – Trip Distribution

Direction	Via	New Trips			
		a.m. Peak Hour		p.m. Peak Hour	
		To	From	To	From
North	E Paris Avenue	28%	13%	15%	32%
	Patterson Avenue	23%	9%	9%	17%
South	E Paris Avenue	9%	12%	15%	9%
	Patterson Avenue	8%	24%	15%	13%
East	60th Street	16%	11%	18%	10%
West	60th Street	16%	31%	28%	19%

Currently, all Steelcase traffic that enters or exits onto 60th Street utilizes a single driveway that is aligned with Data Drive. With the addition of this new development, all Steelcase traffic that enters or exit onto 60th Street will utilize a new driveway that is approximately 1,200 feet east of the existing driveway/Data Drive. All traffic generated by the new development will utilize the existing Steelcase Driveway. The relocation of the Steelcase traffic is indicated in Figure 6 – Steelcase Relocation Volumes.

The trip distribution for the site is indicated in Figure 7 – Trip Generation Volumes, which includes the reassignment of existing Steelcase traffic and the addition of the new development traffic. These trips were added to the background volumes (Figure 4) to result in the future conditions volumes in Figure 8 – 2025 Future Traffic Volumes.

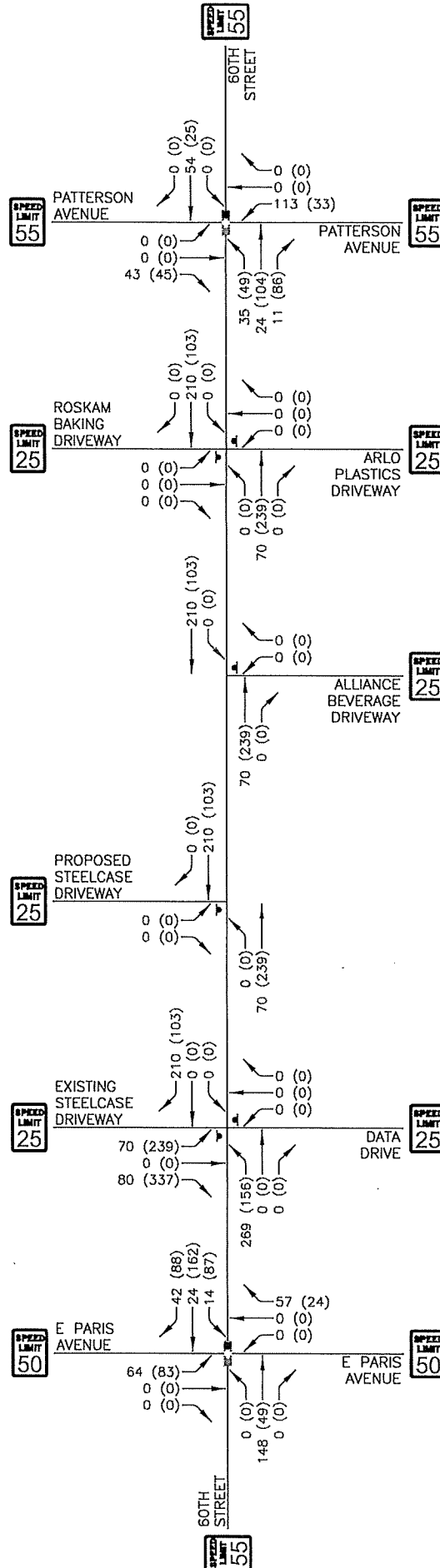


# TRIP GENERATION VOLUMES

NO SCALE

## LEGEND

- LANE ASSIGNMENT
- ◫ SIGNALIZED INTERSECTION
- ◫ STOP CONTROL
- XX a.m. PEAK HOUR
- (XX) p.m. PEAK HOUR



Hard copy is  
intended to be  
8.5"x11" when  
plotted. Scale(s)  
indicated and  
graphic quality may  
not be accurate for  
any other size.

**STEELCASE**  
Kentwood, Michigan 49512

Traffic Impact Study

PROJECT NO.  
231538

FIGURE NO.

7

## 5.0 2025 Future Conditions Analysis

### 5.1 Turn Lane Warrants

An evaluation was performed in accordance with MDOT requirements to determine if right turn deceleration lanes are required at the site driveways. Turn lane warrants are based on the volume of traffic turning and the total approach volume. There is an existing TWLTL along 60th Street; therefore, left turn lane warrants were not completed. The results of the analysis indicated that a right turn lane is warranted at the Existing Steelcase Driveway (to be used by new development traffic). No right turn treatment is warranted at the Proposed Steelcase Driveway. A right turn lane at the Existing Steelcase Driveway was added to the future analysis models. All turn lane warrant charts are provided in Appendix 6 – Turn Lane Warrants. The results of the analysis are presented in Table 11 – Turn Lane Warrants.

Table 11 – Turn Lane Warrants

Intersection	Movement	Result
60th Street and Existing Steelcase Driveway/Data Drive	WB Right Turn	Turn Lane Warranted
60th Street and Proposed Steelcase Driveway	WB Right Turn	Not Warranted

### 5.2 2025 Future Conditions Traffic Analysis

The resulting LOS and delay for the future conditions are presented in Table 12 – LOS Analysis for 2025 Future Conditions.

Table 12 – LOS Analysis for 2025 Future Conditions

Table 12 LOS Analysis for 2020 Future Conditions

Approach	LOS/Delay(s)			
	a.m. Peak Hour		p.m. Peak Hour	
60th Street and E Paris Avenue (Signalized)				
EB 60th Street	B	17.7	B	16.3
WB 60th Street	C	23.9	C	29.4
NB E Paris Avenue	C	24.0	C	21.1
SB E Paris Avenue	C	25.5	C	23.7
Overall	C	21.5	C	23.6
60th Street and Existing Steelcase Driveway/ Data Drive (Minor-Street Stop-Controlled)				
EB 60th Street	A	4.2	A	3.0
WB 60th Street	A	0.3	A	0.0
NB Data Drive	D	31.4	B	14.6
SB Existing Steelcase Driveway	E	49.2	F	158.3
Overall	A	7.8	F	55.9
60th Street and Alliance Beverage Driveway (Minor-Street Stop-Controlled)				
EB 60th Street	A	0.0	A	0.0
WB 60th Street	A	0.6	A	0.0
NB Alliance Beverage Driveway	A	9.8	B	12.1
Overall	A	0.4	A	0.4
60th Street and Roskam Baking Driveway/Arlo Plastics Driveway (Minor-Street Stop-Controlled)				
EB 60th Street	A	0.2	A	0.0
WB 60th Street	A	0.3	A	0.1
NB Arlo Plastics Driveway	C	17.9	B	14.7
SB Roskam Baking Driveway	B	13.2	C	19.9
Overall	A	1.3	A	1.1

## 6.0 Findings and Recommendations

The analyses conducted for this TIS indicate the proposed development will not result in any significant operational impact to the adjacent road network. The proposed site access configuration is appropriate and will acceptably facilitate site ingress and egress. These conclusions are supported by the following key findings:

1. Existing storage lengths on public roadways are adequate for all movements in existing and future conditions, except for the SB right turn at the intersection of 60th Street and E Paris Avenue.
  - a. The queues for the SB right turn movement exceed the provided storage length during existing, background, and future conditions. However, the movement and overall approach operate at acceptable levels, therefore, no mitigation is recommended.
2. Lane configurations and physical capacity are appropriate within the study area, assuming the proposed turn lane improvement documented below.
3. Existing nor planned transit or non-motorized facilities in the site vicinity would not be impacted by the project.
4. While egress queues on the proposed site are long in the p.m. peak hour, they do not impact traffic on the public roadway. Traffic volumes, delays, and queues could be reduced if shifts were offset at the two proposed manufacturing buildings. This would result in improved operations at the site driveway.

Based on the findings of the HCM operational analyses, crash data, and site traffic generation, Table 13 – Proposed Improvements includes the recommended existing, background, and future improvements to the study intersections to mitigate traffic impacts.

Table 13 – Proposed Improvements

Intersection	2025 Existing	2025 Background	2025 Future
60th Street and Existing Steelcase Driveway		-	• Construct a WB right turn lane.

Intersection	Time period	Year	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBRR	WBRR	NBRR	SBRR
#1 - 60th Street and E Paris Avenue	a.m. Peak Hour 09/21/23 7:15 - 8:15 a.m.		PHF		0.91			0.88			0.83			0.78					
			% Heavy		3%			6%			5%			1%					
		2023	Existing	304	294	44	27	170	42	13	203	31	54	111	114	7	13	13	39
		2023	Existing Adj.	304	291	41	30	165	47	13	203	31	54	111	114				
		2025	Background	317	307	46	30	197	49	14	211	32	56	116	119				
			Bckgrd. Dev. A																
			Bckgrd. Dev. B																
			Bckgrd. Dev. C																
			Total Background	317	307	46	30	197	49	14	211	32	56	116	119				
			Relocate Steelcase Traffic																
			Site Generated		148		14	24	42				57	64					
			Total Site Gen		0	148	0	14	24	42	0	0	57	64	0	0			
			Total Future	317	455	46	44	221	91	14	211	69	110	116	119				

Count Date: 9/21/2023  
Count Year: 2023  
Existing Adj. Year: 2023  
Existing Adjustment Rate: 1.00  
Growth Rate: 2.06%  
Buildout Year: 2025  
Scenario: a.m. Peak Hour

Bckgrd. Dev. A:  
Bckgrd. Dev. B:  
Bckgrd. Dev. C:

Volume Balance

Intersection	Time period	Year	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBRR	WBRR	NBRR	SBRR
#2 - 60th Street and Existing Steelcase Driveway/Data Drive	a.m. Peak Hour 09/21/23 7:00 - 8:00 a.m.		PHF		0.89			0.84			0.63			0.60					
			% Heavy		4%			3%			10%			19%					
		2023	Existing	16	331	23	18	251	24	5	0	5	6	0	10				
		2023	Existing Adj.	17	338	24	18	253	24	5	0	5	6	0	10				
		2025	Background	18	352	25	19	261	25	5	0	5	6	0	10				
			Bckgrd. Dev. A																
			Bckgrd. Dev. B																
			Bckgrd. Dev. C																
			Total Background	18	352	25	19	261	25	5	0	5	6	0	10				
			Relocate Steelcase Traffic	-18	18			10	-25				-6		-10				
			Site Generated		269				210				70		80				
			Total Site Gen		251	18	0	0	10	185	0	0	0	64	0	70			
			Total Future	269	370	25	19	276	210	5	0	5	70	0	80				

Intersection	Time period	Year	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBRR	WBRR	NBRR	SBRR
#3 - 60th Street and Alliance Beverage Driveway	a.m. Peak Hour 09/21/23		PHF		0.86			0.88			0.92								
			% Heavy		7%			6%			2%								
		2023	Existing		349	0	36	293		0		3							
		2023	Existing Adj.		349	0	36	293		0		3							
		2025	Background		363	0	37	305		0		3							
			Bckgrd. Dev. A																
			Bckgrd. Dev. B																
			Bckgrd. Dev. C																
			Total Background		363	0	37	305		0		3							
			Relocate Steelcase Traffic																
			Site Generated		70			210											
			Total Site Gen		70	0	0	210		0		0							
			Total Future		433	0	37	515		0		3							

Intersection	Time period	Year	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBRR	WBRR	NBRR	SBRR
#4 - 60th Street and Roskam Baking Driveway/Arlo Plastics Driveway	a.m. Peak Hour 09/21/23 7:00 - 8:00 a.m.		PHF		0.82			0.91			0.60			0.60					
			% Heavy		10%			9%			56%			16%					
		2023	Existing	10	336	6	21	290	17	2	1	6	8	0	37				
		2023	Existing Adj.	10	336	6	21	290	17	2	1	6	8	0	37				
		2025	Background	10	350	6	22	301	18	2	1	6	8	0	39				
			Bckgrd. Dev. A																
			Bckgrd. Dev. B																
			Bckgrd. Dev. C																
			Total Background	10	350	6	22	301	18	2	1	6	8	0	39				
			Relocate Steelcase Traffic																
			Site Generated		70			210											
			Total Site Gen		0	70	0	0	210	0	0	0	0	0	0				
			Total Future	10	420	6	22	511	18	2	1	6	8	0	39				

Intersection	Time period	Year	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBRR	WBRR	NBRR	SBRR
#5 - 60th Street and Patterson Avenue	a.m. Peak Hour 09/21/23 7:15 - 8:15 a.m.		PHF		0.84			0.85			0.78			0.68					
			% Heavy		11%			10%			3%			10%					
		2023	Existing	99	220	28	14	213	10	54	317	82	7	125	60	12	4	57	29
		2023	Existing Adj.	99	220	28	14	213	10	54	317	82	7	125	60				
		2025	Background	104	231	29	15	223	10	56	351	85	7	130	62				
			Bckgrd. Dev. A																
			Bckgrd. Dev. B																
			Bckgrd. Dev. C																
			Total Background	104	231	29	15	223	10	56	351	85	7	130	62				
			Relocate Steelcase Traffic																
			Site Generated		35	24	11		54		113				43				
			Total Site Gen		35	24	11	0	54	0	113	0	0	0	43				
			Total Future	139	255	40	15	277	10	169	351	85	7	130	105				

Intersection	Time period	Year	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBRR	WBRR	NBRR	SBRR
#6 - 60th Street and Proposed Steelcase Driveway	a.m. Peak Hour 09/21/23		PHF		0.89			0.84						0.60					
			% Heavy		4%			3%						19%					
		2023	Existing		332			293											
		2023	Existing Adj.		319			291											
		2025	Background																
			Bckgrd. Dev. A																
			Bckgrd. Dev. B																
			Bckgrd. Dev. C																
			Total Background		319			291											
			Relocate Steelcase Traffic	18	-6			-25	25				6		10				
			Site Generated		70			210											
			Total Site Gen		18	64		185	35				6		10				
			Total Future		18	427		490	35				6		10				

60th/East Paris - RTOR x4 - TMC

Thu Sep 21, 2023

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1106493, Location: 42.854482, -85.565558



Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	60th Eastbound						60th Westbound					
Time	L	T	R	U	RR	App	L	T	R	U	RR	App
2023-09-21 7:00AM	44	53	7	0	1	105	9	51	4	0	6	70
7:15AM	48	68	20	0	3	139	10	48	3	0	3	64
7:30AM	83	89	2	0	0	174	6	47	11	0	4	68
7:45AM	99	66	9	0	2	176	2	39	12	0	2	55
Hourly Total	274	276	38	0	6	594	27	185	30	0	15	257
8:00AM	74	71	6	0	2	153	9	36	3	0	4	52
8:15AM	60	59	9	0	5	133	6	24	10	0	5	45
8:30AM	67	51	6	0	3	127	4	22	8	0	5	39
8:45AM	72	51	5	0	1	129	10	34	4	0	3	51
Hourly Total	273	232	26	0	11	542	29	116	25	0	17	187
4:00PM	21	36	3	0	1	61	6	64	4	0	1	75
4:15PM	37	41	2	0	3	83	8	63	8	0	1	80
4:30PM	36	40	4	0	1	81	5	55	1	0	3	64
4:45PM	34	52	2	0	1	89	9	68	3	0	5	85
Hourly Total	128	169	11	0	6	314	28	250	16	0	10	304
5:00PM	37	49	2	0	2	90	5	70	4	0	4	83
5:15PM	55	50	3	0	3	111	3	86	5	0	2	96
5:30PM	45	58	6	0	2	111	0	66	9	0	4	79
5:45PM	33	52	12	0	1	98	6	41	5	0	2	54
Hourly Total	170	209	23	0	8	410	14	263	23	0	12	312
Total	845	886	98	0	31	1860	98	814	94	0	54	1060
% Approach	45.4%	47.6%	5.3%	0%	1.7%	-	9.2%	76.8%	8.9%	0%	5.1%	-
% Total	15.2%	15.9%	1.8%	0%	0.6%	33.4%	1.8%	14.6%	1.7%	0%	1.0%	19.1%
Lights	829	867	95	0	29	1820	73	793	93	0	52	1011
% Lights	98.1%	97.9%	96.9%	0%	93.5%	97.8%	74.5%	97.4%	98.9%	0%	96.3%	95.4%
Articulated Trucks	2	7	0	0	1	10	11	7	0	0	0	18
% Articulated Trucks	0.2%	0.8%	0%	0%	3.2%	0.5%	11.2%	0.9%	0%	0%	0%	1.7%
Buses and Single-Unit Trucks	14	12	3	0	1	30	14	14	1	0	2	31
% Buses and Single-Unit Trucks	1.7%	1.4%	3.1%	0%	3.2%	1.6%	14.3%	1.7%	1.1%	0%	3.7%	2.9%

\*L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

60th/East Paris - RTOR x4 - TMC

Thu Sep 21, 2023

Full Length (7 AM-9 AM, 4 PM-6 PM)

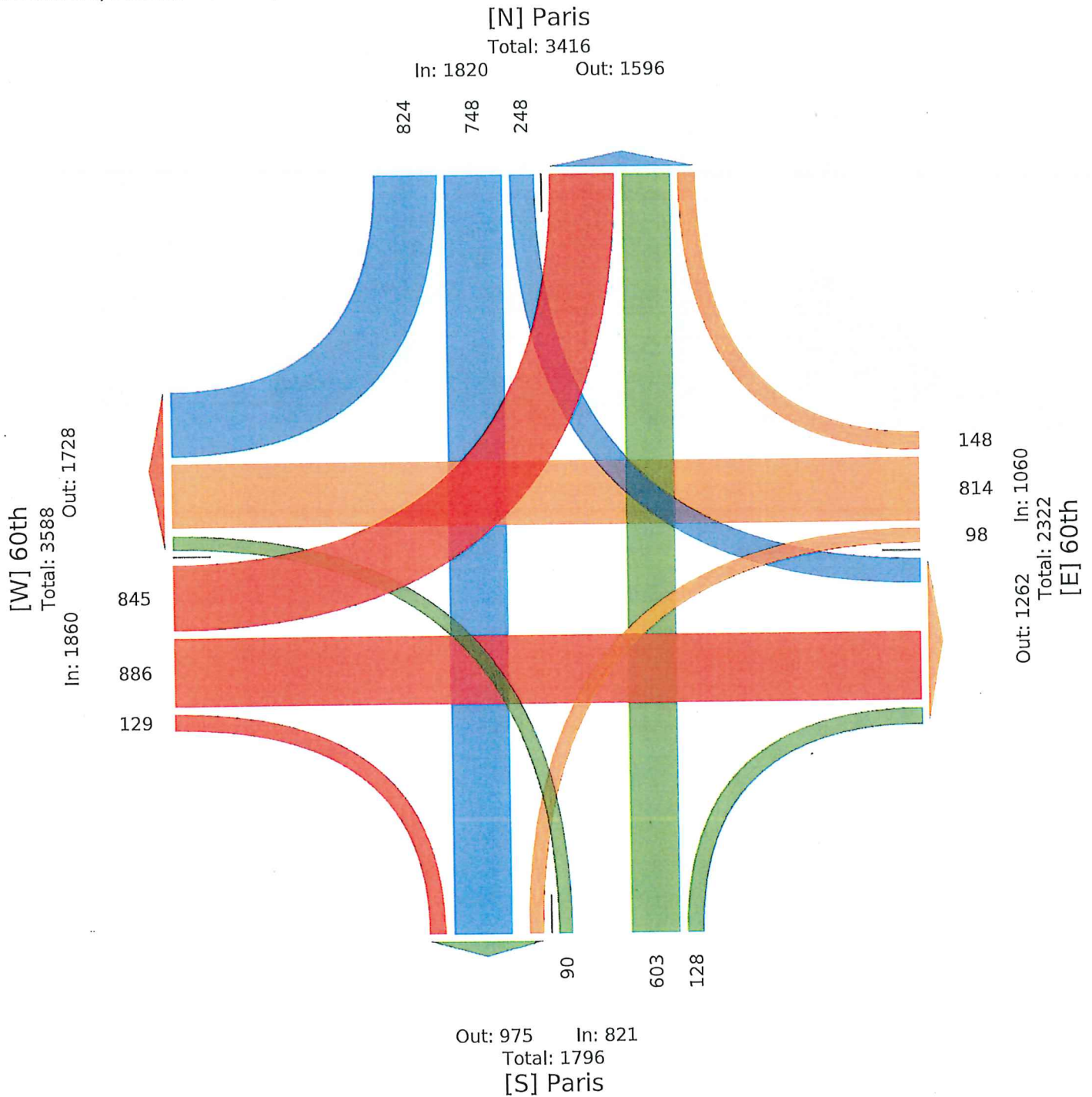
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1106493, Location: 42.854482, -85.565558



Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



60th/East Paris - RTOR x4 - TMC

Thu Sep 21, 2023

AM Peak (7:15 AM - 8:15 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1106493, Location: 42.854482, -85.565558



Provided by: Gewalt Hamilton Associates Inc.

625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Paris Northbound							Paris Southbound							
Time	L	T	R	U	RR	App		L	T	R	U	RR	App	Int	
2023-09-21 7:15AM	4	37	8	0	2	51		20	33	20	0	16	89		343
7:30AM	3	56	2	0	4	65		12	30	18	0	8	68		375
7:45AM	5	60	5	0	4	74		10	33	20	0	5	68		373
8:00AM	1	50	3	0	3	57		12	15	17	0	10	54		316
Total	13	203	18	0	13	247		54	111	75	0	39	279		1407
% Approach	5.3%	82.2%	7.3%	0%	5.3%	-		19.4%	39.8%	26.9%	0%	14.0%	-		-
% Total	0.9%	14.4%	1.3%	0%	0.9%	17.6%		3.8%	7.9%	5.3%	0%	2.8%	19.8%		-
PHF	0.650	0.846	0.563	-	0.813	0.834		0.675	0.841	0.938	-	0.609	0.784		0.938
Lights	11	201	13	0	11	236		53	111	75	0	37	276		1362
% Lights	84.6%	99.0%	72.2%	0%	84.6%	95.5%		98.1%	100%	100%	0%	94.9%	98.9%		96.8%
Articulated Trucks	0	0	1	0	0	1		0	0	0	0	0	0		13
% Articulated Trucks	0%	0%	5.6%	0%	0%	0.4%		0%	0%	0%	0%	0%	0%		0.9%
Buses and Single-Unit Trucks	2	2	4	0	2	10		1	0	0	0	2	3		32
% Buses and Single-Unit Trucks	15.4%	1.0%	22.2%	0%	15.4%	4.0%		1.9%	0%	0%	0%	5.1%	1.1%		2.3%

\*L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

60th/East Paris - RTOR x4 - TMC

Thu Sep 21, 2023

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1106493, Location: 42.854482, -85.565558



Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

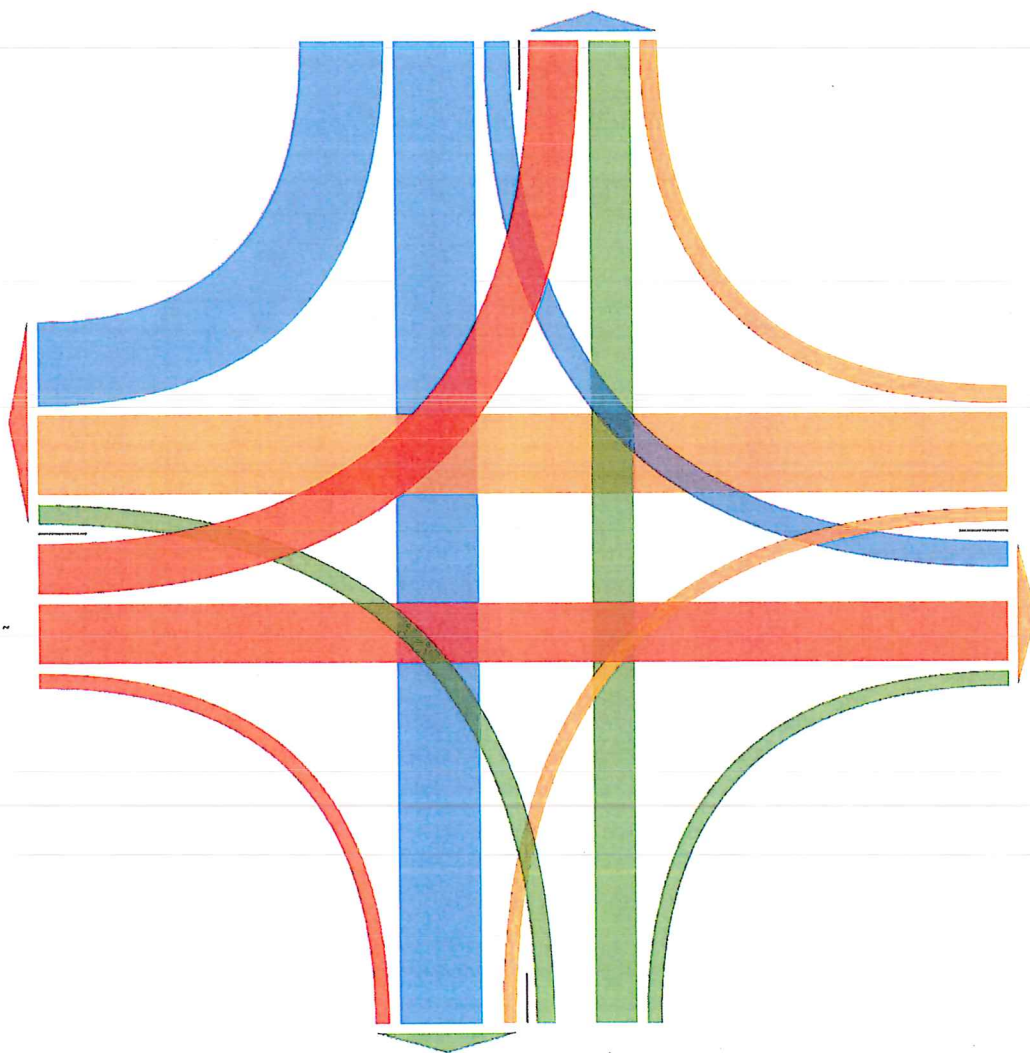
Leg Direction	60th Eastbound						60th Westbound					
Time	L	T	R	U	RR	App	L	T	R	U	RR	App
2023-09-21 4:45PM	34	52	2	0	1	89	9	68	3	0	5	85
5:00PM	37	49	2	0	2	90	5	70	4	0	4	83
5:15PM	55	50	3	0	3	111	3	86	5	0	2	96
5:30PM	45	58	6	0	2	111	0	66	9	0	4	79
<b>Total</b>	<b>171</b>	<b>209</b>	<b>13</b>	<b>0</b>	<b>8</b>	<b>401</b>	<b>17</b>	<b>290</b>	<b>21</b>	<b>0</b>	<b>15</b>	<b>343</b>
<b>% Approach</b>	<b>42.6%</b>	<b>52.1%</b>	<b>3.2%</b>	<b>0%</b>	<b>2.0%</b>	<b>-</b>	<b>5.0%</b>	<b>84.5%</b>	<b>6.1%</b>	<b>0%</b>	<b>4.4%</b>	<b>-</b>
<b>% Total</b>	<b>10.5%</b>	<b>12.8%</b>	<b>0.8%</b>	<b>0%</b>	<b>0.5%</b>	<b>24.6%</b>	<b>1.0%</b>	<b>17.8%</b>	<b>1.3%</b>	<b>0%</b>	<b>0.9%</b>	<b>21.0%</b>
<b>PHF</b>	<b>0.777</b>	<b>0.901</b>	<b>0.542</b>	<b>-</b>	<b>0.667</b>	<b>0.903</b>	<b>0.472</b>	<b>0.843</b>	<b>0.583</b>	<b>-</b>	<b>0.750</b>	<b>0.893</b>
<b>Lights</b>	<b>169</b>	<b>207</b>	<b>13</b>	<b>0</b>	<b>7</b>	<b>396</b>	<b>14</b>	<b>284</b>	<b>21</b>	<b>0</b>	<b>15</b>	<b>334</b>
<b>% Lights</b>	<b>98.8%</b>	<b>99.0%</b>	<b>100%</b>	<b>0%</b>	<b>87.5%</b>	<b>98.8%</b>	<b>82.4%</b>	<b>97.9%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>97.4%</b>
<b>Articulated Trucks</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>% Articulated Trucks</b>	<b>0.6%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0.2%</b>	<b>5.9%</b>	<b>0.7%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0.9%</b>
<b>Buses and Single-Unit Trucks</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>
<b>% Buses and Single-Unit Trucks</b>	<b>0.6%</b>	<b>1.0%</b>	<b>0%</b>	<b>0%</b>	<b>12.5%</b>	<b>1.0%</b>	<b>11.8%</b>	<b>1.4%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>1.7%</b>

\* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

60th/East Paris - RTOR x4 - TMC  
Thu Sep 21, 2023  
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour  
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
All Movements  
ID: 1106493, Location: 42.854482, -85.565558



Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



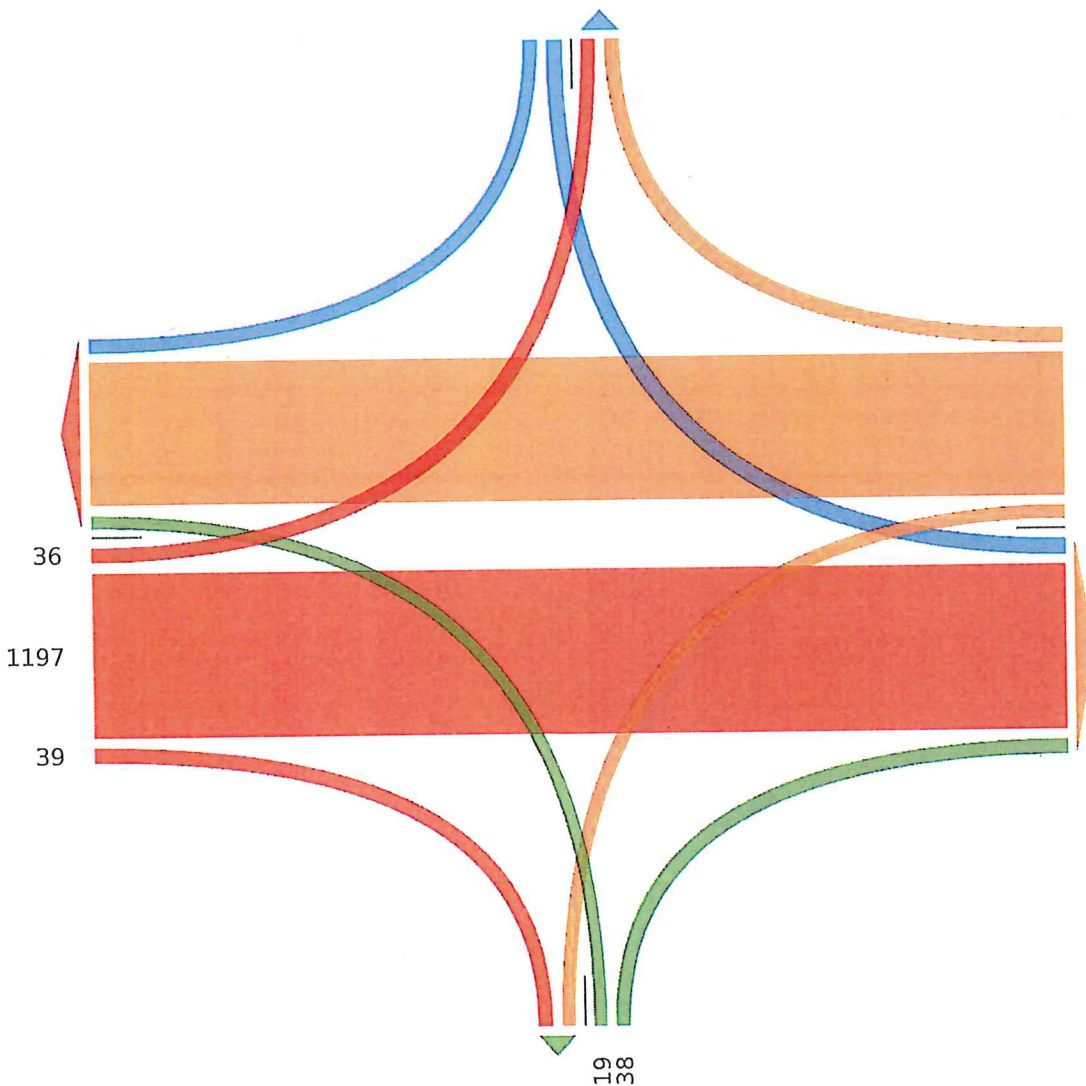
60th/Steelcase/Data Drive - TMC  
 Thu Sep 21, 2023  
 Full Length (7 AM-9 AM, 4 PM-6 PM)  
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
 All Movements  
 ID: 1106494, Location: 42.854529, -85.55874

[N] Steelcase

Total: 156  
 In: 82 Out: 74

33  
49

[W] 60th  
 Total: 2349  
 In: 1272 Out: 1077



Out: 64 In: 57  
 Total: 121  
 [S] Data

38  
1025  
25  
In: 1088  
Out: 1284  
Total: 2372  
[E] 60th

60th/Steelcase/Data Drive - TMC

Thu Sep 21, 2023

AM Peak (7 AM - 8 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1106494, Location: 42.854529, -85.55874



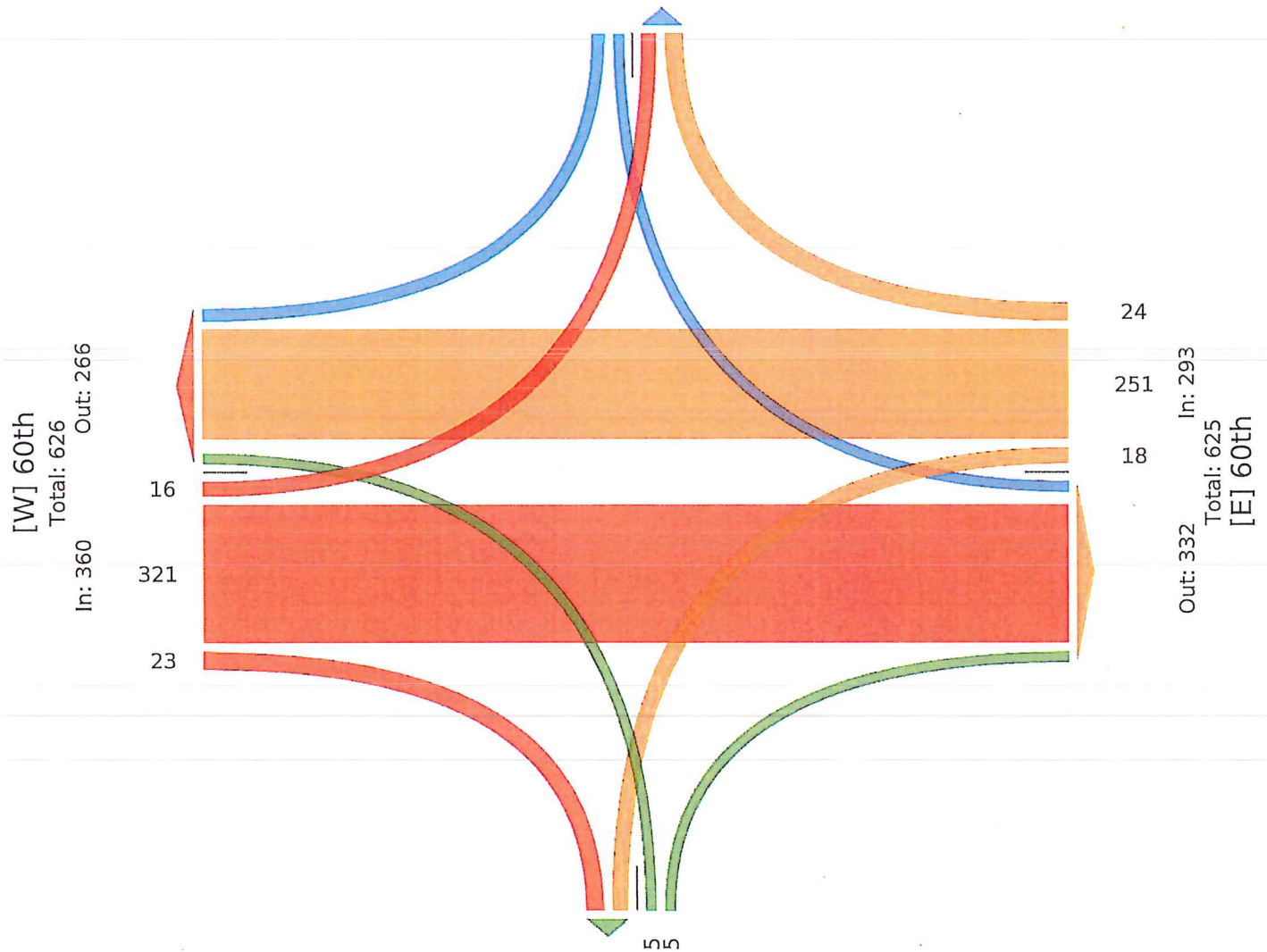
Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

[N] Steelcase

Total: 56

In: 16 Out: 40

106



Out: 41 In: 10

Total: 51

[S] Data

60th/Steelcase/Data Drive - TMC

Thu Sep 21, 2023

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1106494, Location: 42.854529, -85.55874



Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

[N] Steelcase

Total: 26

In: 18 Out: 8

6 12

[W] 60th  
Total: 656  
In: 316 Out: 340

7  
307  
2

1  
330

Out: 344 In: 331  
Total: 675  
[E] 60th

Out: 2 In: 29  
Total: 31  
[S] Data

4 25

60th/Roskam Baking Driveway - TMC

Thu Sep 21, 2023

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1106495, Location: 42.854482, -85.55013



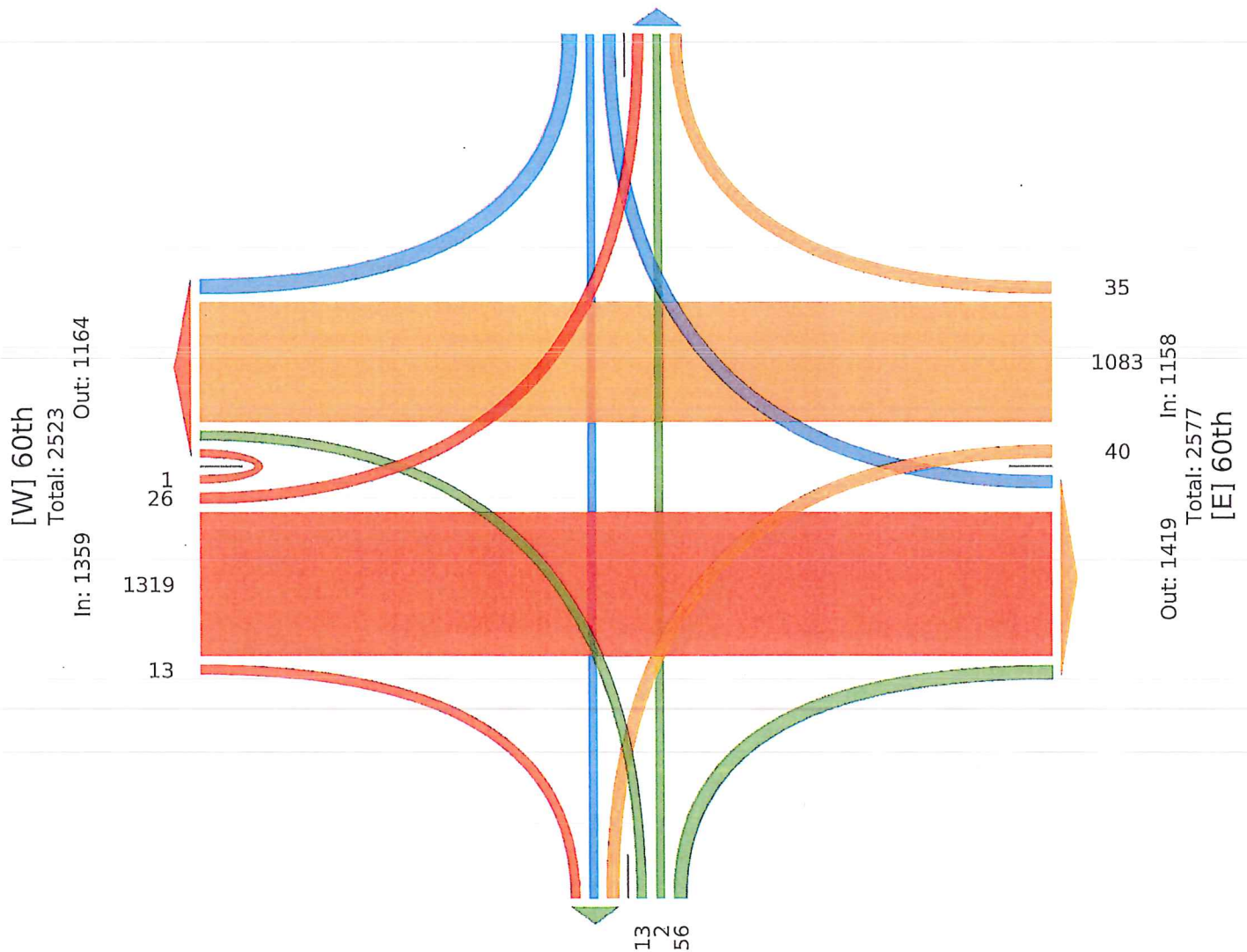
Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

[N] Roskam Baking

Total: 175

In: 112 Out: 63

67  
44



Out: 54 In: 71

Total: 125

[S] Alro Plastics

60th/Roskam Baking Driveway - TMC

Thu Sep 21, 2023

AM Peak (7 AM - 8 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1106495, Location: 42.854482, -85.55013



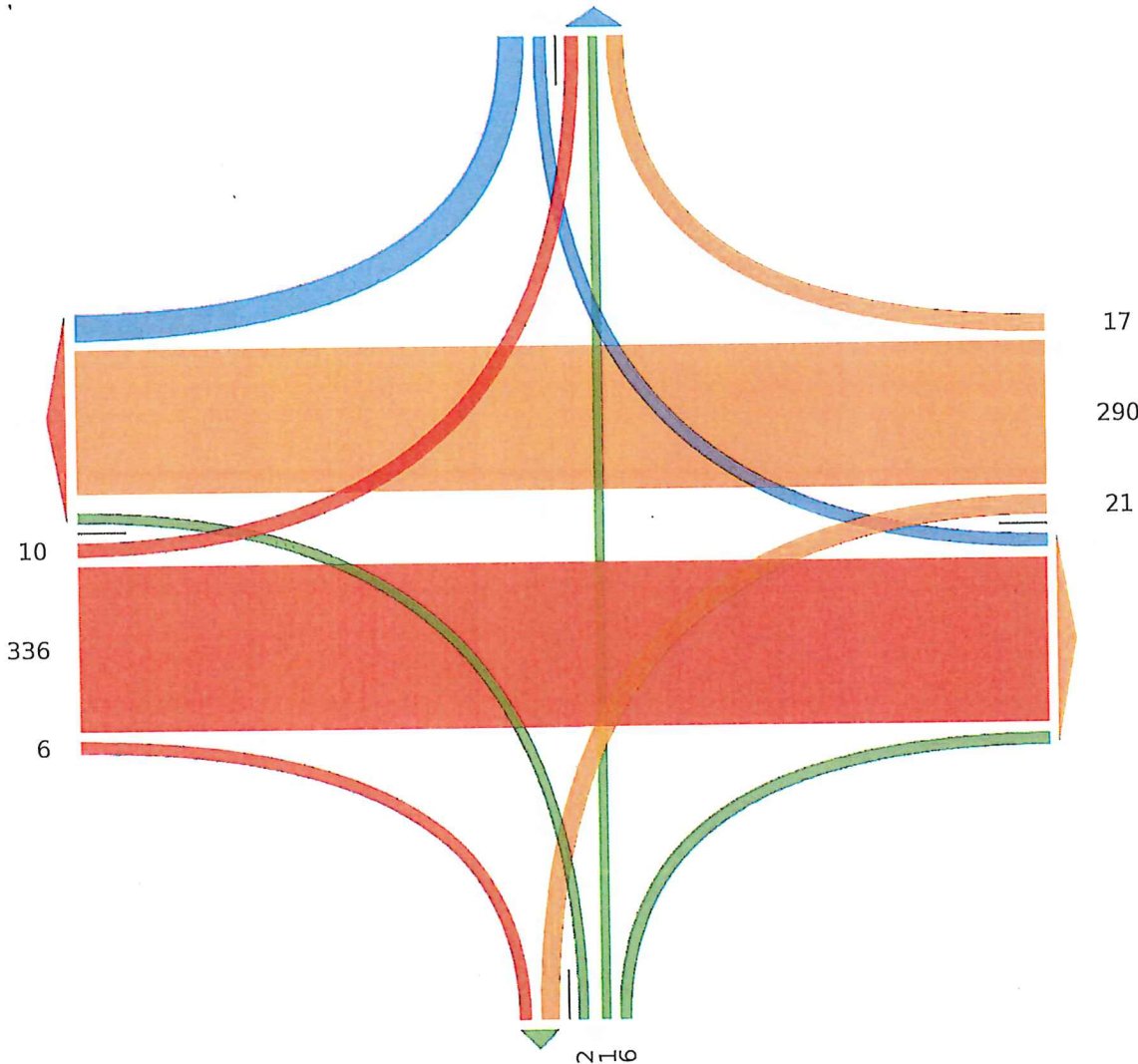
Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

[N] Roskam Baking

Total: 73  
In: 45 Out: 28

37 8

[W] 60th  
Total: 681  
In: 352 Out: 329



17

290

21

In: 328  
Total: 678  
Out: 350  
[E] 60th

Out: 27 In: 9  
Total: 36  
[S] Alro Plastics

60th/Roskam Baking Driveway - TMC

Thu Sep 21, 2023

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

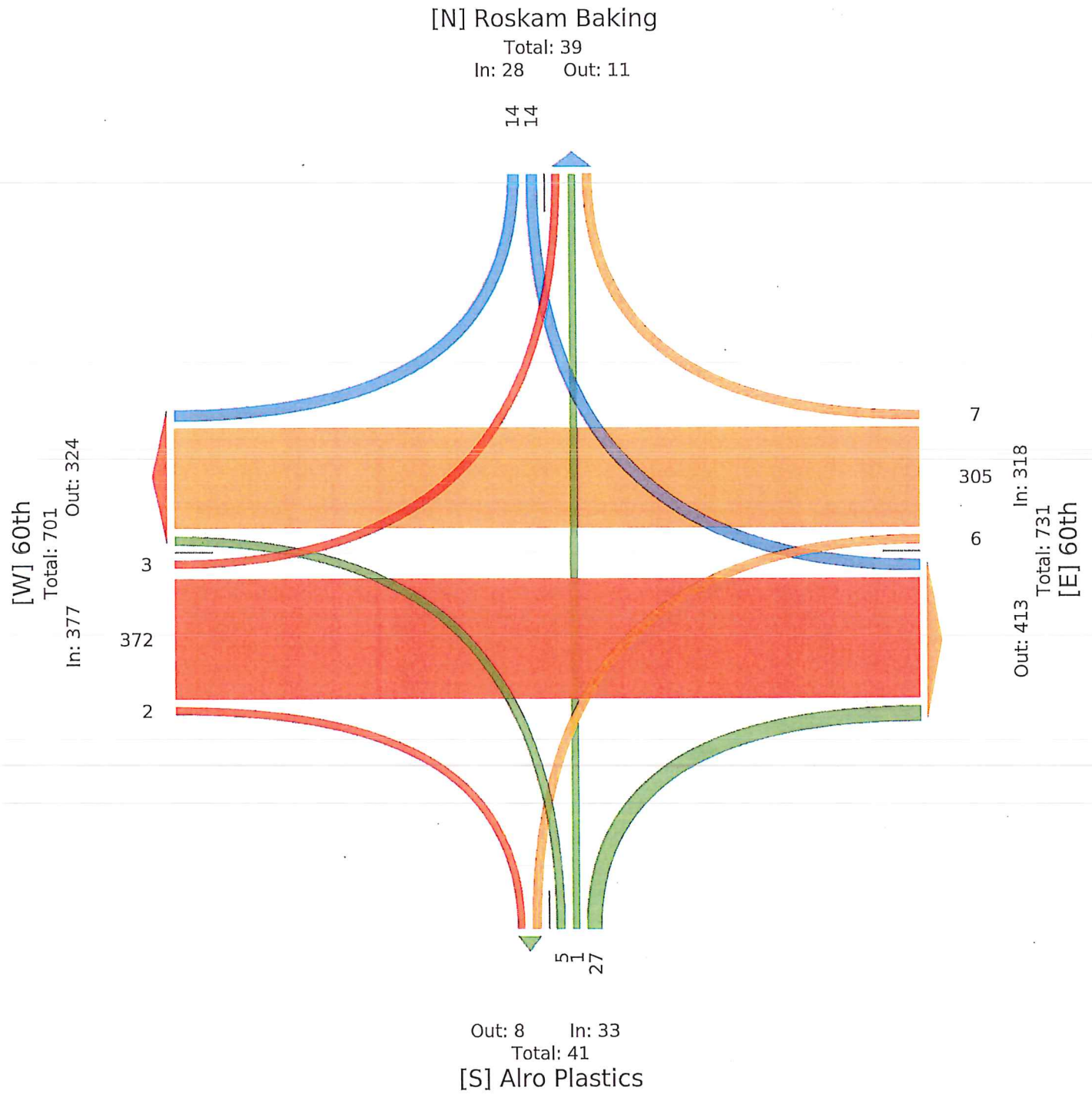
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1106495, Location: 42.854482, -85.55013



Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



# 4 - 60th/Patterson - RTOR x4 - ReUpload - TMC

Thu Sep 21, 2023

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1118438, Location: 42.854414, -85.545848



Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Patterson Northbound						Patterson Southbound						
Time	L	T	R	U	RR	App	L	T	R	U	RR	App	Int
2023-09-21 7:00AM	6	57	5	0	11	79	1	33	9	0	9	52	247
7:15AM	14	79	7	0	12	112	1	50	11	0	9	71	338
7:30AM	18	111	5	0	17	151	3	28	5	0	7	43	354
7:45AM	16	90	8	0	17	131	2	14	6	0	4	26	310
Hourly Total	54	337	25	0	57	473	7	125	31	0	29	192	1249
8:00AM	9	66	5	0	15	95	3	14	7	0	11	35	244
8:15AM	9	29	3	0	10	51	1	20	9	0	4	34	201
8:30AM	12	53	7	0	10	82	2	10	13	0	1	26	207
8:45AM	9	45	2	0	12	68	2	14	12	0	8	36	218
Hourly Total	39	193	17	0	47	296	8	58	41	0	24	131	870
4:00PM	10	26	9	0	10	55	4	56	9	0	3	72	266
4:15PM	8	37	15	0	11	71	2	54	18	0	12	86	291
4:30PM	6	36	17	0	14	73	3	55	8	0	8	74	287
4:45PM	9	29	21	0	7	66	6	64	18	0	8	96	294
Hourly Total	33	128	62	0	42	265	15	229	53	0	31	328	1138
5:00PM	13	25	15	0	13	66	2	63	12	0	8	85	323
5:15PM	12	26	4	0	10	52	3	70	28	0	16	117	319
5:30PM	9	42	14	0	13	78	3	61	10	0	9	83	293
5:45PM	6	38	11	0	18	73	0	64	9	0	4	77	263
Hourly Total	40	131	44	0	54	269	8	258	59	0	37	362	1198
Total	166	789	148	0	200	1303	38	670	184	0	121	1013	4455
% Approach	12.7%	60.6%	11.4%	0%	15.3%	-	3.8%	66.1%	18.2%	0%	11.9%	-	-
% Total	3.7%	17.7%	3.3%	0%	4.5%	29.2%	0.9%	15.0%	4.1%	0%	2.7%	22.7%	-
Lights	157	756	127	0	195	1235	35	643	167	0	113	958	4162
% Lights	94.6%	95.8%	85.8%	0%	97.5%	94.8%	92.1%	96.0%	90.8%	0%	93.4%	94.6%	93.4%
Articulated Trucks	6	12	15	0	1	34	1	7	6	0	2	16	140
% Articulated Trucks	3.6%	1.5%	10.1%	0%	0.5%	2.6%	2.6%	1.0%	3.3%	0%	1.7%	1.6%	3.1%
Buses and Single-Unit Trucks	3	21	6	0	4	34	2	20	11	0	6	39	153
% Buses and Single-Unit Trucks	1.8%	2.7%	4.1%	0%	2.0%	2.6%	5.3%	3.0%	6.0%	0%	5.0%	3.8%	3.4%

\*L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

# 4 - 60th/Patterson - RTOR x4 - ReUpload - TMC

Thu Sep 21, 2023

AM Peak (7 AM - 8 AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1118438, Location: 42.854414, -85.545848

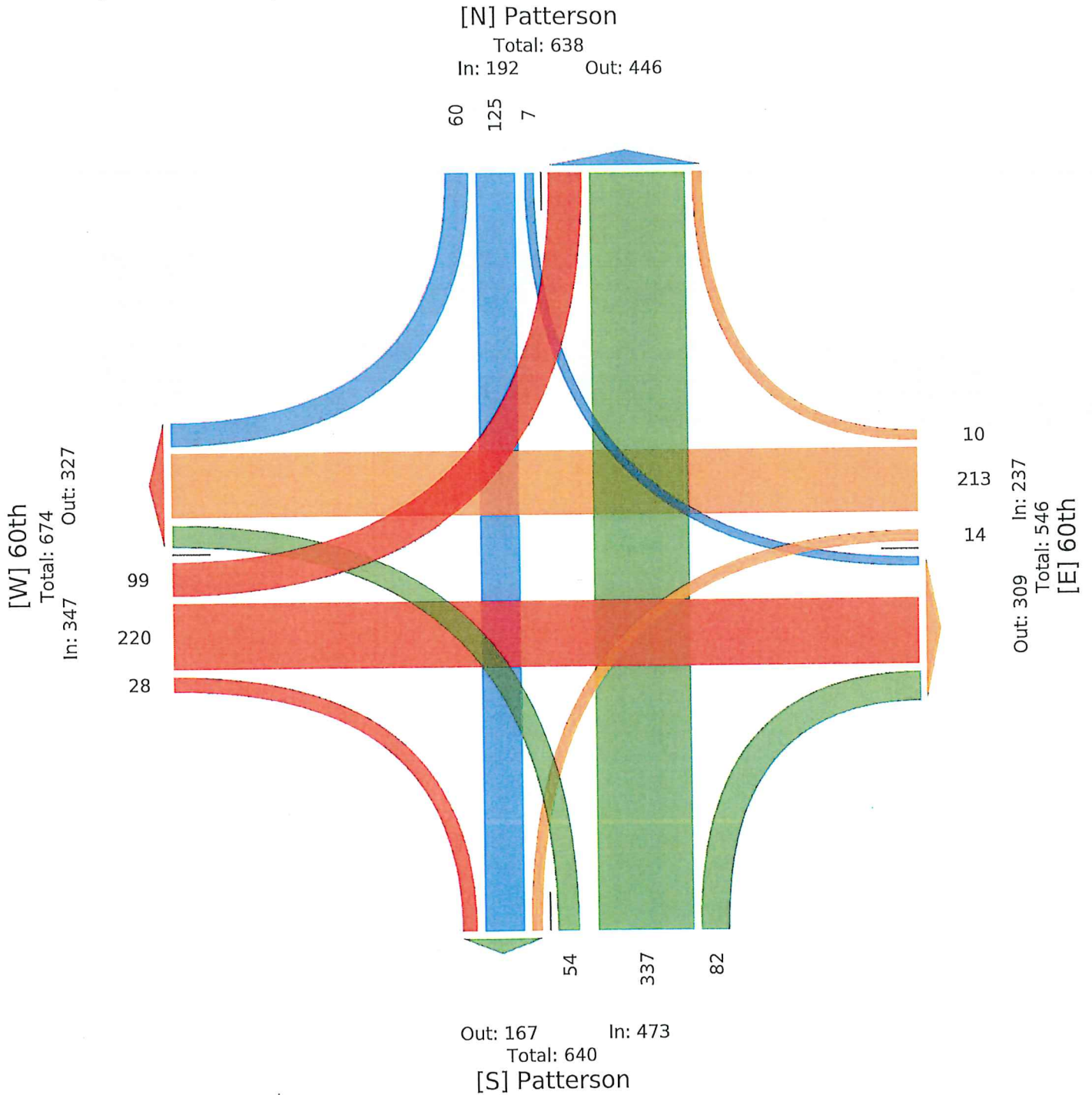


Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	60th Eastbound						60th Westbound					
Time	L	T	R	U	RR	App	L	T	R	U	RR	App
2023-09-21 7:00AM	15	42	4	0	3	64	3	49	0	0	0	52
7:15AM	25	61	5	0	6	97	5	52	0	0	1	58
7:30AM	34	66	2	0	1	103	4	49	2	0	2	57
7:45AM	25	51	5	0	2	83	2	63	4	0	1	70
Total	99	220	16	0	12	347	14	213	6	0	4	237
% Approach	28.5%	63.4%	4.6%	0%	3.5%	-	5.9%	89.9%	2.5%	0%	1.7%	-
% Total	7.9%	17.6%	1.3%	0%	1.0%	27.8%	1.1%	17.1%	0.5%	0%	0.3%	19.0%
PHF	0.728	0.833	0.800	-	0.500	0.842	0.700	0.845	0.375	-	0.500	0.846
Lights	88	194	16	0	11	309	14	191	4	0	4	213
% Lights	88.9%	88.2%	100%	0%	91.7%	89.0%	100%	89.7%	66.7%	0%	100%	89.9%
Articulated Trucks	2	13	0	0	0	15	0	6	0	0	0	6
% Articulated Trucks	2.0%	5.9%	0%	0%	0%	4.3%	0%	2.8%	0%	0%	0%	2.5%
Buses and Single-Unit Trucks	9	13	0	0	1	23	0	16	2	0	0	18
% Buses and Single-Unit Trucks	9.1%	5.9%	0%	0%	8.3%	6.6%	0%	7.5%	33.3%	0%	0%	7.6%

\*L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

4 - 60th/Patterson - RTOR x4 - ReUpload - TMC  
 Thu Sep 21, 2023  
 AM Peak (7 AM - 8 AM) - Overall Peak Hour  
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)  
 All Movements  
 ID: 1118438, Location: 42.854414, -85.545848



4 - 60th/Patterson - RTOR x4 - ReUpload - TMC

Thu Sep 21, 2023

PM Peak (4:45 PM - 5:45 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1118438, Location: 42.854414, -85.545848



Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Patterson Northbound						Patterson Southbound						
Time	L	T	R	U	RR	App	L	T	R	U	RR	App	Int
2023-09-21 4:45PM	9	29	21	0	7	66	6	64	18	0	8	96	294
5:00PM	13	25	15	0	13	66	2	63	12	0	8	85	323
5:15PM	12	26	4	0	10	52	3	70	28	0	16	117	319
5:30PM	9	42	14	0	13	78	3	61	10	0	9	83	293
Total	43	122	54	0	43	262	14	258	68	0	41	381	1229
% Approach	16.4%	46.6%	20.6%	0%	16.4%	-	3.7%	67.7%	17.8%	0%	10.8%	-	-
% Total	3.5%	9.9%	4.4%	0%	3.5%	21.3%	1.1%	21.0%	5.5%	0%	3.3%	31.0%	-
PHF	0.827	0.726	0.643	-	0.827	0.840	0.583	0.921	0.607	-	0.641	0.814	0.951
Lights	39	121	46	0	43	249	12	252	65	0	40	369	1174
% Lights	90.7%	99.2%	85.2%	0%	100%	95.0%	85.7%	97.7%	95.6%	0%	97.6%	96.9%	95.5%
Articulated Trucks	2	0	5	0	0	7	0	2	1	0	0	3	28
% Articulated Trucks	4.7%	0%	9.3%	0%	0%	2.7%	0%	0.8%	1.5%	0%	0%	0.8%	2.3%
Buses and Single-Unit Trucks	2	1	3	0	0	6	2	4	2	0	1	9	27
% Buses and Single-Unit Trucks	4.7%	0.8%	5.6%	0%	0%	2.3%	14.3%	1.6%	2.9%	0%	2.4%	2.4%	2.2%

\*L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

# Appendix 2

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## Existing LOS Output Reports

HCM 6th TWSC  
2: Data Drive/Existing Steelcase Driveway & 60th Street

2023 Existing Conditions  
a.m. Peak Hour

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↕		↵	↕			↕	↵		↕	↵
Traffic Vol, veh/h	17	338	24	18	251	24	5	0	5	6	0	10
Future Vol, veh/h	17	338	24	18	251	24	5	0	5	6	0	10
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	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	84	84	84	63	63	63	60	60	60
Heavy Vehicles, %	4	4	4	3	3	3	10	10	10	19	19	19
Mvmt Flow	19	380	27	21	299	29	8	0	8	10	0	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	328	0	0	407	0	0	624	802	204	584	801	164
Stage 1	-	-	-	-	-	-	432	432	-	356	356	-
Stage 2	-	-	-	-	-	-	192	370	-	228	445	-
Critical Hdwy	4.18	-	-	4.16	-	-	7.7	6.7	7.1	7.88	6.88	7.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.7	5.7	-	6.88	5.88	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.7	5.7	-	6.88	5.88	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	3.6	4.1	3.4	3.69	4.19	3.49
Pot Cap-1 Maneuver	1214	-	-	1141	-	-	354	301	778	361	286	801
Stage 1	-	-	-	-	-	-	551	561	-	590	587	-
Stage 2	-	-	-	-	-	-	769	599	-	708	532	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1214	-	-	1141	-	-	338	291	778	348	276	801
Mov Cap-2 Maneuver	-	-	-	-	-	-	338	291	-	348	276	-
Stage 1	-	-	-	-	-	-	542	552	-	581	576	-
Stage 2	-	-	-	-	-	-	739	588	-	690	523	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.5	12.8	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	338	778	1214	-	-	1141	-	-	348	801
HCM Lane V/C Ratio	0.023	0.01	0.016	-	-	0.019	-	-	0.029	0.021
HCM Control Delay (s)	15.9	9.7	8	-	-	8.2	-	-	15.7	9.6
HCM Lane LOS	C	A	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.1	0	0	-	-	0.1	-	-	0.1	0.1

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	10	336	6	21	290	17	2	1	6	8	0	37
Future Vol, veh/h	10	336	6	21	290	17	2	1	6	8	0	37
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	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	0	-	75	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	91	91	91	60	60	60	60	60	60
Heavy Vehicles, %	10	10	10	9	9	9	56	56	56	16	16	16
Mvmt Flow	12	410	7	23	319	19	3	2	10	13	0	62

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	338	0	0	417	0	0	644	822	209	605	816	169
Stage 1	-	-	-	-	-	-	438	438	-	375	375	-
Stage 2	-	-	-	-	-	-	206	384	-	230	441	-
Critical Hdwy	4.3	-	-	4.28	-	-	8.62	7.62	8.02	7.82	6.82	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-	7.62	6.62	-	6.82	5.82	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.62	6.62	-	6.82	5.82	-
Follow-up Hdwy	2.3	-	-	2.29	-	-	4.06	4.56	3.86	3.66	4.16	3.46
Pot Cap-1 Maneuver	1162	-	-	1090	-	-	267	223	654	354	285	803
Stage 1	-	-	-	-	-	-	445	460	-	581	582	-
Stage 2	-	-	-	-	-	-	643	492	-	713	541	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1162	-	-	1090	-	-	241	216	654	338	276	803
Mov Cap-2 Maneuver	-	-	-	-	-	-	241	216	-	338	276	-
Stage 1	-	-	-	-	-	-	441	455	-	575	570	-
Stage 2	-	-	-	-	-	-	581	482	-	692	536	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.5	14	11
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	241	507	1162	-	-	1090	-	-	338	803
HCM Lane V/C Ratio	0.014	0.023	0.01	-	-	0.021	-	-	0.039	0.077
HCM Control Delay (s)	20.1	12.3	8.1	-	-	8.4	-	-	16.1	9.9
HCM Lane LOS	C	B	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0	0.1	0	-	-	0.1	-	-	0.1	0.2

# Queuing and Blocking Report

2023 Existing Conditions

a.m. Peak Hour

## Intersection: 1: E Paris Avenue & 60th Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	254	264	132	86	77	108	43	186	101	108	68
Average Queue (ft)	121	53	35	20	36	48	8	85	35	46	31
95th Queue (ft)	215	169	104	62	70	91	31	151	77	89	58
Link Distance (ft)	1500		1500	1709		1709	367		617		
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	250	250			175			250		50	
Storage Blk Time (%)	3	0	0						10	1	
Queuing Penalty (veh)	4	0	0						17	2	

## Intersection: 2: Data Drive/Existing Steelcase Driveway & 60th Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	LT	R	LT	R
Maximum Queue (ft)	21	25	42	40	46	62
Average Queue (ft)	2	4	4	8	6	12
95th Queue (ft)	13	18	24	31	30	45
Link Distance (ft)			234	234	281	281
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	250	250				
Storage Blk Time (%)						
Queuing Penalty (veh)						






















## Intersection: 3: Alliance Beverage Driveway & 60th Street

Movement	WB	NB
Directions Served	L	R
Maximum Queue (ft)	33	35
Average Queue (ft)	6	3
95th Queue (ft)	25	18
Link Distance (ft)		
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	250	75
Storage Blk Time (%)		
Queuing Penalty (veh)		

# HCM 6th Signalized Intersection Summary

## 1: E Paris Avenue & 60th Street

2023 Existing Conditions  
p.m. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	220	21	17	290	36	40	139	24	72	306	310
Future Volume (veh/h)	171	220	21	17	290	36	40	139	24	72	306	310
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	190	244	14	19	326	23	55	190	21	89	378	279
Peak Hour Factor	0.90	0.90	0.90	0.89	0.89	0.89	0.73	0.73	0.73	0.81	0.81	0.81
Percent Heavy Veh, %	1	1	1	3	3	3	2	2	2	2	2	2
Cap, veh/h	458	1567	89	415	977	69	264	631	70	442	713	604
Arrive On Green	0.08	0.46	0.46	0.29	0.29	0.29	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1795	3444	197	1113	3341	235	777	1655	183	1171	1870	1585
Grp Volume(v), veh/h	190	126	132	19	171	178	55	0	211	89	378	279
Grp Sat Flow(s),veh/h/ln	1795	1791	1850	1113	1763	1813	777	0	1837	1171	1870	1585
Q Serve(g_s), s	5.7	3.3	3.3	1.0	6.1	6.2	4.7	0.0	6.4	4.6	12.5	10.6
Cycle Q Clear(g_c), s	5.7	3.3	3.3	1.0	6.1	6.2	17.3	0.0	6.4	11.0	12.5	10.6
Prop In Lane	1.00		0.11	1.00		0.13	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	458	815	842	415	516	530	264	0	701	442	713	604
V/C Ratio(X)	0.41	0.15	0.16	0.05	0.33	0.34	0.21	0.00	0.30	0.20	0.53	0.46
Avail Cap(c_a), veh/h	458	815	842	415	516	530	264	0	701	442	713	604
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.7	12.8	12.8	20.4	22.2	22.2	25.9	0.0	17.3	21.2	19.2	18.6
Incr Delay (d2), s/veh	0.6	0.4	0.4	0.2	1.7	1.7	1.8	0.0	1.1	1.0	2.8	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.2	1.2	0.3	2.5	2.6	0.9	0.0	2.6	1.3	5.3	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	13.2	13.2	20.6	23.9	23.9	27.7	0.0	18.4	22.2	22.0	21.1
LnGrp LOS	B	B	B	C	C	C	C	A	B	C	C	C
Approach Vol, veh/h	448			368			266			746		
Approach Delay, s/veh	15.0			23.7			20.3			21.7		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	2			4		5	6	8				
Phs Duration (G+Y+Rc), s	43.0			37.0		13.0	30.0	37.0				
Change Period (Y+Rc), s	* 6.6			6.5		* 6.6	* 6.6	6.5				
Max Green Setting (Gmax), s	* 36			30.5		* 6.4	* 23	30.5				
Max Q Clear Time (g_c+l1), s	5.3			14.5		7.7	8.2	19.3				
Green Ext Time (p_c), s	1.2			3.0		0.0	1.5	1.0				
Intersection Summary												
HCM 6th Ctrl Delay				20.3								
HCM 6th LOS				C								

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.























HCM 6th TWSC  
3: Alliance Beverage Driveway & 60th Street

2023 Existing Conditions  
p.m. Peak Hour

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	344	0	0	325	9	33
Future Vol, veh/h	344	0	0	325	9	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	92	92
Heavy Vehicles, %	3	3	5	5	2	2
Mvmt Flow	425	0	0	401	10	36
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	425	0	626	213
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	201	-
Critical Hdwy	-	-	4.2	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.25	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1110	-	416	792
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	813	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1110	-	416	792
Mov Cap-2 Maneuver	-	-	-	-	505	-
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	813	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		10.3		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	505	792	-	-	1110	-
HCM Lane V/C Ratio	0.019	0.045	-	-	-	-
HCM Control Delay (s)	12.3	9.8	-	-	0	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-

HCM 6th Signalized Intersection Summary  
5: Patterson Avenue & 60th Street

2023 Existing Conditions  
p.m. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	297	56	33	167	3	43	122	97	14	258	109
Future Volume (veh/h)	60	297	56	33	167	3	43	122	97	14	258	109
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	1826	1826	1826	1826	1856	1856	1856
Adj Flow Rate, veh/h	80	396	66	40	201	4	51	145	64	17	319	84
Peak Hour Factor	0.75	0.75	0.75	0.83	0.83	0.83	0.84	0.84	0.84	0.81	0.81	0.81
Percent Heavy Veh, %	5	5	5	5	5	5	5	5	5	3	3	3
Cap, veh/h	530	1248	206	389	1457	29	329	765	648	519	593	156
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	1149	2979	493	908	3479	69	959	1826	1547	1163	1416	373
Grp Volume(v), veh/h	80	229	233	40	100	105	51	145	64	17	0	403
Grp Sat Flow(s),veh/h/ln	1149	1735	1737	908	1735	1813	959	1826	1547	1163	0	1788
Q Serve(g_s), s	3.7	7.1	7.2	2.5	2.8	2.9	3.4	4.0	2.0	0.7	0.0	13.5
Cycle Q Clear(g_c), s	6.6	7.1	7.2	9.7	2.8	2.9	16.9	4.0	2.0	4.8	0.0	13.5
Prop In Lane	1.00		0.28	1.00		0.04	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	530	726	727	389	726	759	329	765	648	519	0	749
V/C Ratio(X)	0.15	0.32	0.32	0.10	0.14	0.14	0.15	0.19	0.10	0.03	0.00	0.54
Avail Cap(c_a), veh/h	530	726	727	389	726	759	329	765	648	519	0	749
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	15.6	15.6	18.8	14.3	14.3	23.8	14.7	14.1	16.2	0.0	17.4
Incr Delay (d2), s/veh	0.6	1.1	1.2	0.5	0.4	0.4	1.0	0.6	0.3	0.1	0.0	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.6	2.6	0.5	1.0	1.1	0.8	1.5	0.6	0.2	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.0	16.7	16.8	19.4	14.7	14.7	24.8	15.2	14.4	16.3	0.0	20.2
LnGrp LOS	B	B	B	B	B	B	C	B	B	B	A	C
Approach Vol, veh/h	542			245			260			420		
Approach Delay, s/veh	16.8			15.5			16.9			20.1		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	40.0			40.0			40.0			40.0		
Change Period (Y+Rc), s	6.5			6.5			6.5			6.5		
Max Green Setting (Gmax), s	33.5			33.5			33.5			33.5		
Max Q Clear Time (g_c+I1), s	18.9			9.2			15.5			11.7		
Green Ext Time (p_c), s	0.9			2.6			2.0			1.1		
Intersection Summary												
HCM 6th Ctrl Delay				17.5								
HCM 6th LOS				B								

## Intersection: 4: Arlo Plastics Driveway/Roskam Baking Driveway &amp; 60th Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	L	TR	L	TR
Maximum Queue (ft)	4	26	34	44	65	53
Average Queue (ft)	0	1	3	18	14	12
95th Queue (ft)	3	12	18	44	48	40
Link Distance (ft)			378		257	257
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	250	250		75		
Storage Blk Time (%)						
Queuing Penalty (veh)						

## Intersection: 5: Patterson Avenue &amp; 60th Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	77	114	135	76	99	46	87	114	56	42	254
Average Queue (ft)	31	52	60	20	42	10	28	48	25	8	123
95th Queue (ft)	68	95	109	51	82	31	65	95	53	30	220
Link Distance (ft)		1040	1040		734	734		406			487
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	250			250			190		115	200	
Storage Blk Time (%)								0			2
Queuing Penalty (veh)								0			0

## Zone Summary


Zone wide Queuing Penalty: 158
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Crash Data January 1, 2018 - December 31, 2022

ID #	Date	Crash Type	Road Conditions	Light	Injury	Alcohol or Drugs	Animal	Ped or Bike	Cause
Intersection of 60th Street and E Paris Avenue									
20184049	1/5/2018	Angle	Dry	Daylight	O	No	No	No	EB vehicle disregarded red light and struck SB vehicle.
2018215937	9/17/2018	Angle	Dry	Daylight	B	No	No	No	EB vehicle attempted to turn left without assured clear distance on yellow light.
2018214955	9/25/2018	Head-On Left Turn	Wet	Dark Lighted	C	No	No	No	EB vehicle attempted to turn left without assured clear distance.
201912311	1/22/2019	Rear End	Snow	Daylight	O	No	No	No	Failed to stop for stopped vehicle.
2019129185	5/30/2019	Angle	Dry	Dusk	B	No	No	No	EB vehicle attempted to turn left without assured clear distance.
2019165116	7/24/2019	Angle	Dry	Daylight	A	No	No	No	NB vehicle attempted to turn left on red light and struck motorcyclist.
2019250094	11/4/2019	Rear End	Dry	Daylight	C	Yes	No	No	Failed to stop for stopped traffic. Alcohol was a factor.
2020106599	6/30/2020	Angle	Dry	Daylight	C	No	No	No	EB vehicle attempted to turn left without assured clear distance.
2021156282	8/14/2021	Angle	Dry	Daylight	C	No	No	No	EB vehicle attempted to turn left without assured clear distance.
2022232710	10/27/2022	Sideswipe Opp. Direction	Dry	Dark Lighted	C	No	No	No	NB vehicle attempted to turn left without assured clear distance.
Intersection of 60th Street and Patterson Avenue									
201932625	1/24/2019	Rear End	Ice	Dark Lighted	O	No	No	No	Failed to stop for stopped vehicle at flashing red light. Signal was operating in flash mode.
2019109285	5/16/2019	Other	Dry	Daylight	O	No	No	No	EB vehicle attempted to back into TWLTL and struck a vehicle already in the TWLTL.
2019141562	6/25/2019	Angle	Wet	Daylight	O	No	No	No	EB vehicle disregarded red light and struck NB vehicle.
2019250102	11/4/2019	Sideswipe Same Direction	Dry	Daylight	O	No	No	No	NB vehicle attempted to turn left and struck SB vehicle that was turning right.
202015654	1/24/2020	Sideswipe Same Direction	Wet	Daylight	O	No	No	No	Two WB vehicles collided in TWLTL.
2020135283	8/12/2020	Angle	Dry	Dark Lighted	C	No	No	No	WB vehicle disregarded red flashing light and struck SB vehicle. Signal was operating in flash mode.
2020228813	10/30/2020	Angle	Dry	Dark Unlighted	O	No	No	No	SB vehicle and WB vehicle collided within singalized intersection during power outage.
2020228809	11/14/2020	Single Motor Vehicle	Dry	Daylight	O	Yes	No	No	Lost control of vehicle and struck curb. Drugs were a factor.

Crash Data January 1, 2018 - December 31, 2022

ID #	Date	Crash Type	Road Conditions	Light	Injury	Alcohol or Drugs	Animal	Ped or Bike	Cause
2022195759	9/24/2022	Animal	Wet	Dark Unlighted	O	No	Yes	No	Deer collision.
2022225468	10/25/2022	Sideswipe Same Direction	Dry	Dawn	O	No	No	No	Attempted to change lanes without assured clear distance.

UNIT DRIVER	Unit Number	02	Unit Known	Yes	State	MI	Driver License Number	#####	Date of Birth (Age)	##### (56)	License Type	<input checked="" type="radio"/> Operator <input type="radio"/> Chauffeur <input type="radio"/> Moped	Endorsements	<input checked="" type="radio"/> Cycle <input type="radio"/> Farm <input type="radio"/> Recreation	Sex	F	Total Occupants	01	Hazardous Action	None								
	Unit Type	MV	Driver Information ##### ##### MIDDLEVILLE, MI 49333 (###) ###-####								Driver Is Owner	Yes	Injury	A	Position	Front - Left	Restraint	Helmet Worn										
	Driver Condition at Time of Crash 1st Appeared Normal								2nd				Driver Distracted By Not Distracted		Ejected	Yes	Trapped	Airbag Deployed Not Deployed										
	Hospital OTHER										Ambulance LIFE EMS INC																	
	Alcohol Suspected	No	Contributing Factor	No	Alcohol Test Type <input type="radio"/> Breath <input type="radio"/> Blood <input type="radio"/> Urine <input type="radio"/> Field <input type="radio"/> PBT <input type="radio"/> Refused <input checked="" type="radio"/> Not Offered				Alcohol Test Results		<input type="radio"/> Pending	Test Results:	Interlock Device No															
	Drug Suspected	No	Contributing Factor	No	Drug Test Type <input type="radio"/> Blood <input type="radio"/> Urine <input type="radio"/> Field <input type="radio"/> Refused <input checked="" type="radio"/> Not Offered				Drug Test Results		<input type="radio"/> Pending	Test Results:	Citation Issued <input type="radio"/> Hazardous <input type="radio"/> Other															
	Vehicle Registration	LQ423	State	MI	Vehicle Description	Year	2010	Make	HONDA	Model	VT1300	Color	RED															
	VIN	JH2SC6702AK001964			Vehicle Type	Motorcycle			Special Vehicles	Not Applicable			Private Trailer Type	Vehicle Defect														
	Automation System(s) in Vehicle				No				Automation System Level in Vehicle				No Automation				Automation System Level Engaged at Time of Crash				No Automation							
	Insurance Company				#####				Insurance Policy #				#####				Towed By				MERLS				Towed To			
	Location of Greatest Damage	01	First Impact	01	Extent of Damage (Power Unit and/or Trailers)				Disabling Damage				Vehicle Direction	W		Vehicle Use	Private		Action Prior				Going Straight Ahead					
	Sequence of Events (● Indicates MOST harmful event)																											
First ● 17 - Motor Veh in Transport																												
Second																												
Third																												
Fourth																												
PASSENGERS	Passenger Information								Date of Birth (Age)			Sex			Position			Restraint										
									Injury			Ejected			Trapped			Airbag Deployed										
									Hospital												Ambulance							
PASSENGERS	Passenger Information								Date of Birth (Age)			Sex			Position			Restraint										
									Injury			Ejected			Trapped			Airbag Deployed										
									Hospital												Ambulance							
TRUCK/BUS	Carrier Information								USDOT				MC		MPSC													
									Driver's CDL Type				Endorsements <input type="radio"/> H <input type="radio"/> P <input type="radio"/> T <input type="radio"/> N <input type="radio"/> S <input type="radio"/> X		CDL Exempt <input type="radio"/> Farm <input type="radio"/> Other													
TRUCK/BUS	GVWR/GCWR <input type="radio"/> 10,000 lbs. or Less <input type="radio"/> 10,001 - 26,000 lbs. <input type="radio"/> Greater than 26,000 lbs.								Vehicle Configuration				Cargo Body Type		Medical Card		Hazardous Material <input type="radio"/> Placard <input type="radio"/> Cargo Spill		ID #	Class #								
OWNERS	Owner Information								Owner Information																			
WITNESS	Witness Information ##### ##### #####, ## #####-#### (###) ###-####								Witness Information ##### ##### #####, ## #####-#### (###) ###-####																			
Investigated at Scene		Yes		Reported Date (Time)		07/24/2019 (12:42)		1st Investigator Name (Badge)				SARAH SCHUDEL (2907)				2nd Investigator Name (Badge)								Photos		No		
Narrative										Diagram																		
Unit 2 was West bound on 60th with a green light. Unit 1 was turning North bound onto East Paris from 60th. Unit 1 stated that he was turning left onto East Paris from 60th since he didn't see any vehicles approaching. Witnesses advised Unit 1 turned in front of Unit 2, causing the collision. Unit 2 was transported by EMS for neck and arm injuries.																												

Unit Number	Unit Known	State	Driver License Number	Date of Birth (Age)	License Type <input type="checkbox"/> Operator <input type="checkbox"/> Chauffeur <input type="checkbox"/> Moped	Endorsements <input type="checkbox"/> Cycle <input type="checkbox"/> Farm <input type="checkbox"/> Recreation	Sex	Total Occupants	Hazardous Action
Unit Type	Driver Information				Driver Is Owner	Injury	Position		Restraint
Driver Condition at Time of Crash 1st 2nd				Driver Distracted By			Ejected	Trapped	Airbag Deployed
Hospital					Ambulance				
Alcohol Suspected	Contributing Factor	Alcohol Test Type <input type="checkbox"/> Breath <input type="checkbox"/> Blood <input type="checkbox"/> Urine <input type="checkbox"/> Field <input type="checkbox"/> PBT <input type="checkbox"/> Refused <input type="checkbox"/> Not Offered			Alcohol Test Results <input type="checkbox"/> Pending Test Results:		Interlock Device		
Drug Suspected	Contributing Factor	Drug Test Type <input type="checkbox"/> Blood <input type="checkbox"/> Urine <input type="checkbox"/> Field <input type="checkbox"/> Refused <input type="checkbox"/> Not Offered			Drug Test Results <input type="checkbox"/> Pending Test Results:		Citation Issued <input type="checkbox"/> Hazardous <input type="checkbox"/> Other		
Vehicle Registration	State	Vehicle Description	Year	Make	Model			Color	
VIN	Vehicle Type		Special Vehicles		Private Trailer Type		Vehicle Defect		
Automation System(s) in Vehicle		Automation System Level in Vehicle			Automation System Level Engaged at Time of Crash				
Insurance Company			Insurance Policy #		Towed By			Towed To	
Location of Greatest Damage	First Impact	Extent of Damage (Power Unit and/or Trailers)		Vehicle Direction	Vehicle Use			Action Prior	
Sequence of Events		First			Second			Third	
		Fourth							
(● Indicates MOST harmful event)									

PASSENGERS	Passenger Information				Date of Birth (Age)	Sex	Position	Restraint
					Injury	Ejected	Trapped	Airbag Deployed
	Hospital				Ambulance			
PASSENGERS	Passenger Information				Date of Birth (Age)	Sex	Position	Restraint
					Injury	Ejected	Trapped	Airbag Deployed
	Hospital				Ambulance			

TRUCK/BUS	Carrier Information				USDOT		MC	MPSC
					Driver's CDL Type	Endorsements <input type="checkbox"/> H <input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> X	CDL Exempt <input type="checkbox"/> Farm <input type="checkbox"/> Other	
	GVWR/GCWR <input type="checkbox"/> 10,000 lbs. or Less <input type="checkbox"/> 10,001 - 26,000 lbs. <input type="checkbox"/> Greater than 26,000 lbs.		Vehicle Configuration		Cargo Body Type	Medical Card	Hazardous Material <input type="checkbox"/> Placard <input type="checkbox"/> Cargo Spill	ID # Class #

OWNERS	Owner Information				Owner Information			

WITNESS	Witness Information				Witness Information			
	#####				#####			
	#####				#####			

Investigated at Scene	Reported Date (Time)	1st Investigator Name (Badge)	2nd Investigator Name (Badge)	Photos
Narrative				
Diagram				

Unit Number 02	Unit Known Yes	State MI	Driver License Number #####	Date of Birth (Age) ##### (51)	License Type <input type="radio"/> Operator <input checked="" type="radio"/> Chauffeur <input type="radio"/> Moped	Endorsements <input type="radio"/> Cycle <input type="radio"/> Farm <input type="radio"/> Recreation	Sex M	Race W	Total Occupants 01	Hazardous Action None
Unit Type MV	Driver Information ##### ##### WHITE CLOUD, MI 49349 (###) ###-####				Driver is Owner No	Injury C	Position Front - Left		Restraint Shoulder and Lap Belt	
Driver Condition at Time of Crash 1st Appeared Normal				2nd		Driver Distracted By Not Distracted		Ejected	Trapped	Airbag Deployed Not Equipped
Hospital NONE					Ambulance NONE					
Alcohol Suspected No	Contributing Factor No	Alcohol Test Type <input type="radio"/> Breath <input type="radio"/> Blood <input type="radio"/> Urine <input type="radio"/> Field <input type="radio"/> PBT <input type="radio"/> Refused <input checked="" type="radio"/> Not Offered			Alcohol Test Results <input type="radio"/> Pending		Test Results:		Interlock Device No	
Drug Suspected No	Contributing Factor No	Drug Test Type <input type="radio"/> Blood <input type="radio"/> Urine <input type="radio"/> Field <input type="radio"/> Refused <input type="radio"/> Not Offered			Drug Test Results <input type="radio"/> Pending		Test Results:		Citation Issued <input type="radio"/> Hazardous <input type="radio"/> Other	
Vehicle Registration BB57081	State MI	Vehicle Description 1995	Year	Make KENWORTH	Model SEMI	Color RED				
VIN 1NKDLB0X2SJ638196		Vehicle Type Truck / Bus	Special Vehicles Construction Equipment		Private Trailer Type Utility	Vehicle Defect				
Automation System(s) in Vehicle No		Automation System Level in Vehicle No Automation			Automation System Level Engaged at Time of Crash No Automation					
Insurance Company #####			Insurance Policy # #####			Towed By BUDS			Towed To	
Location of Greatest Damage 01	First Impact 01	Extent of Damage (Power Unit and/or Trailers) Functional Damage		Vehicle Direction E	Vehicle Use Commercial (Business)			Action Prior Going Straight Ahead		
Sequence of Events (● indicates MOST harmful event)		First ● 17 - Motor Veh in Transport		Second 04 - Ran Off Roadway-Right	Third 06 - Overturn		Fourth			

PASSENGERS	Passenger Information				Date of Birth (Age)	Sex	Race	Position	Restraint
					Injury	Ejected	Trapped	Airbag Deployed	
	Hospital				Ambulance				
PASSENGERS	Passenger Information				Date of Birth (Age)	Sex	Race	Position	Restraint
					Injury	Ejected	Trapped	Airbag Deployed	
	Hospital				Ambulance				

TRUCK/BUS	Carrier Information VINTAGE TRUCKING 12902 MASON DR GRANT, MI 49327				USDOT 000003117005	MC	MPSC	
					Driver's CDL Type Group A	Endorsements <input type="radio"/> H <input type="radio"/> P <input type="radio"/> T <input type="radio"/> N <input type="radio"/> S <input type="radio"/> X	CDL Exempt <input type="radio"/> Farm <input type="radio"/> Other	
	GVWR/GCWR <input type="radio"/> 10,000 lbs. or Less <input type="radio"/> 10,001 - 26,000 lbs. <input checked="" type="radio"/> Greater than 26,000 lbs.				Vehicle Configuration Tractor / Semi-Trailer	Cargo Body Type 4	Medical Card Yes	Hazardous Material <input type="radio"/> Placard <input type="radio"/> Cargo Spill
					ID #	Class #		

OWNERS	Owner Information				Owner Information			

WITNESS	Witness Information ##### ##### #####				Witness Information			






















Investigated at Scene Yes	Reported Date (Time) 06/23/2021 (12:48)	1st Investigator Name (Badge) AARON DIPADOVA (2720)	2nd Investigator Name (Badge)	Photos Yes
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Narrative UNIT 2 WAS EAST ON 60TH WEST OF PATTERSON AVE. UNIT 1 WAS SOUTH EXITING DRIVE FROM 4631 60TH. PER UNIT 2 AND WITNESS BEHIND UNIT 2 OBSERVED UNIT 1 EXIT PVT DRIVE AT HIGH RATE OF SPEED CROSSING 60TH AND BEING STRUCK BY UNIT 2. BOTH VEHICLES WENT EAST AND RAN OFF ROADWAY RIGHT/SOUTH. STRIKING FIRE HYDRANT. TRAILER OVERTURNED WITH ASHPHALT. DEQ#26787. UNIT 1 WAS TRANSPORTED TO METRO BY LIFE. UNIT 2 COMPLAINT NO MEDICAL ATTENTION REQUESTED.	Diagram 
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# HCM 6th Signalized Intersection Summary

## 1: E Paris Avenue & 60th Street

2025 Background Conditions  
a.m. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	317	307	46	30	197	49	14	211	32	56	116	119
Future Volume (veh/h)	317	307	46	30	197	49	14	211	32	56	116	119
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1811	1811	1811	1826	1826	1826	1885	1885	1885
Adj Flow Rate, veh/h	348	337	43	34	224	41	17	254	23	72	149	103
Peak Hour Factor	0.91	0.91	0.91	0.88	0.88	0.88	0.83	0.83	0.83	0.78	0.78	0.78
Percent Heavy Veh, %	3	3	3	6	6	6	5	5	5	1	1	1
Cap, veh/h	533	1511	191	374	852	153	421	588	53	356	672	569
Arrive On Green	0.11	0.48	0.48	0.29	0.29	0.29	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1767	3148	398	971	2913	524	1101	1650	149	1111	1885	1598
Grp Volume(v), veh/h	348	187	193	34	131	134	17	0	277	72	149	103
Grp Sat Flow(s),veh/h/ln	1767	1763	1784	971	1721	1717	1101	0	1799	1111	1885	1598
Q Serve(g_s), s	8.4	5.0	5.0	2.1	4.7	4.8	0.9	0.0	9.4	4.2	4.4	3.5
Cycle Q Clear(g_c), s	8.4	5.0	5.0	2.1	4.7	4.8	5.3	0.0	9.4	13.6	4.4	3.5
Prop In Lane	1.00		0.22	1.00		0.31	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	533	846	856	374	503	502	421	0	641	356	672	569
V/C Ratio(X)	0.65	0.22	0.22	0.09	0.26	0.27	0.04	0.00	0.43	0.20	0.22	0.18
Avail Cap(c_a), veh/h	533	846	856	374	503	502	421	0	641	356	672	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.7	12.1	12.1	20.7	21.7	21.7	19.9	0.0	19.6	24.8	18.0	17.7
Incr Delay (d2), s/veh	2.9	0.6	0.6	0.5	1.3	1.3	0.2	0.0	2.1	1.3	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	1.7	1.8	0.5	1.8	1.9	0.2	0.0	3.8	1.1	1.8	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.6	12.7	12.7	21.2	22.9	23.0	20.0	0.0	21.7	26.0	18.8	18.4
LnGrp LOS	C	B	B	C	C	C	C	A	C	C	B	B
Approach Vol, veh/h	728			299			294			324		
Approach Delay, s/veh	16.9			22.8			21.6			20.3		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	2			4		5	6		8			
Phs Duration (G+Y+Rc), s	45.0			35.0		15.0	30.0		35.0			
Change Period (Y+Rc), s	* 6.6			6.5		* 6.6	* 6.6		6.5			
Max Green Setting (Gmax), s	* 38			28.5		* 8.4	* 23		28.5			
Max Q Clear Time (g_c+I1), s	7.0			15.6		10.4	6.8		11.4			
Green Ext Time (p_c), s	1.9			1.0		0.0	1.2		1.3			
Intersection Summary												
HCM 6th Ctrl Delay	19.5											
HCM 6th LOS	B											
Notes												
User approved pedestrian interval to be less than phase max green.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												























HCM 6th TWSC  
3: Alliance Beverage Driveway & 60th Street

2025 Background Conditions  
a.m. Peak Hour

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	363	0	37	305	0	3
Future Vol, veh/h	363	0	37	305	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	88	88	92	92
Heavy Vehicles, %	7	7	6	6	2	2
Mvmt Flow	422	0	42	347	0	3
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	422	0	680	211
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	258	-
Critical Hdwy	-	-	4.22	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.26	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1106	-	385	794
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	761	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1106	-	370	794
Mov Cap-2 Maneuver	-	-	-	-	476	-
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	732	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.9		9.6	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	794	-	-	1106	-
HCM Lane V/C Ratio	-	0.004	-	-	0.038	-
HCM Control Delay (s)	0	9.6	-	-	8.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	-	0	-	-	0.1	-

HCM 6th Signalized Intersection Summary  
5: Patterson Avenue & 60th Street

2025 Background Conditions  
a.m. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	231	29	15	223	10	56	351	85	7	130	62
Future Volume (veh/h)	104	231	29	15	223	10	56	351	85	7	130	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1737	1737	1737	1752	1752	1752	1856	1856	1856	1752	1752	1752
Adj Flow Rate, veh/h	124	275	21	18	262	7	72	450	36	10	191	48
Peak Hour Factor	0.84	0.84	0.84	0.85	0.85	0.85	0.78	0.78	0.78	0.68	0.68	0.68
Percent Heavy Veh, %	11	11	11	10	10	10	3	3	3	10	10	10
Cap, veh/h	470	1302	99	457	1387	37	456	777	658	288	566	142
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	1031	3109	236	1015	3312	88	1132	1856	1572	852	1351	340
Grp Volume(v), veh/h	124	145	151	18	131	138	72	450	36	10	0	239
Grp Sat Flow(s),veh/h/ln	1031	1650	1695	1015	1664	1736	1132	1856	1572	852	0	1691
Q Serve(g_s), s	6.9	4.5	4.5	0.9	4.0	4.0	3.7	14.9	1.1	0.7	0.0	7.7
Cycle Q Clear(g_c), s	10.9	4.5	4.5	5.5	4.0	4.0	11.3	14.9	1.1	15.6	0.0	7.7
Prop In Lane	1.00		0.14	1.00		0.05	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	470	691	710	457	697	727	456	777	658	288	0	708
V/C Ratio(X)	0.26	0.21	0.21	0.04	0.19	0.19	0.16	0.58	0.05	0.03	0.00	0.34
Avail Cap(c_a), veh/h	470	691	710	457	697	727	456	777	658	288	0	708
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.1	14.8	14.8	16.6	14.7	14.7	19.6	17.8	13.8	23.8	0.0	15.7
Incr Delay (d2), s/veh	1.4	0.7	0.7	0.2	0.6	0.6	0.7	3.1	0.2	0.2	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.5	1.6	0.2	1.4	1.4	0.9	6.0	0.4	0.1	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.5	15.5	15.5	16.7	15.3	15.3	20.3	21.0	14.0	24.1	0.0	17.0
LnGrp LOS	B	B	B	B	B	B	C	C	B	C	A	B
Approach Vol, veh/h	420			287			558			249		
Approach Delay, s/veh	16.7			15.4			20.4			17.3		
Approach LOS	B			B			C			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	40.0			40.0			40.0			40.0		
Change Period (Y+Rc), s	6.5			6.5			6.5			6.5		
Max Green Setting (Gmax), s	33.5			33.5			33.5			33.5		
Max Q Clear Time (g_c+l1), s	16.9			12.9			17.6			7.5		
Green Ext Time (p_c), s	2.5			1.9			1.0			1.3		
Intersection Summary												
HCM 6th Ctrl Delay	17.9											
HCM 6th LOS	B											

# Queuing and Blocking Report

2025 Background Conditions  
a.m. Peak Hour

## Intersection: 4: Arlo Plastics Driveway/Roskam Baking Driveway & 60th Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	L	TR	L	TR
Maximum Queue (ft)	24	35	38	57	40	70
Average Queue (ft)	2	6	2	10	6	29
95th Queue (ft)	13	25	19	40	26	62
Link Distance (ft)			378		257	257
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	250	250		75		
Storage Blk Time (%)				0		
Queuing Penalty (veh)				0		

## Intersection: 5: Patterson Avenue & 60th Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	157	125	147	56	126	71	86	211	58	41	176
Average Queue (ft)	70	57	68	10	50	20	29	113	22	5	65
95th Queue (ft)	128	105	119	35	98	55	63	189	47	24	131
Link Distance (ft)		1040	1040		734	734		406			487
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	250			250			190		115	200	
Storage Blk Time (%)								7			0
Queuing Penalty (veh)								10			0

## Zone Summary

Zone wide Queuing Penalty: 34

HCM 6th TWSC  
2: Data Drive/Existing Steelcase Driveway & 60th Street

2025 Background Conditions  
p.m. Peak Hour

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↖	↗		↖	↗
Traffic Vol, veh/h	7	320	2	0	347	1	4	0	26	12	0	6
Future Vol, veh/h	7	320	2	0	347	1	4	0	26	12	0	6
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	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	82	82	82	60	60	60	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	0	0	0	17	17	17
Mvmt Flow	8	386	2	0	423	1	7	0	43	16	0	8

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	424	0	0	388	0	0	615	827	194	633	828	212
Stage 1	-	-	-	-	-	-	403	403	-	424	424	-
Stage 2	-	-	-	-	-	-	212	424	-	209	404	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.5	6.5	6.9	7.84	6.84	7.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.84	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.84	5.84	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.5	4	3.3	3.67	4.17	3.47
Pot Cap-1 Maneuver	1132	-	-	1167	-	-	379	309	821	335	278	749
Stage 1	-	-	-	-	-	-	601	603	-	540	549	-
Stage 2	-	-	-	-	-	-	776	590	-	732	561	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1132	-	-	1167	-	-	373	307	821	316	276	749
Mov Cap-2 Maneuver	-	-	-	-	-	-	373	307	-	316	276	-
Stage 1	-	-	-	-	-	-	597	599	-	536	549	-
Stage 2	-	-	-	-	-	-	768	590	-	688	557	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	10.3	14.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	373	821	1132	-	-	1167	-	-	316	749
HCM Lane V/C Ratio	0.018	0.053	0.007	-	-	-	-	-	0.051	0.011
HCM Control Delay (s)	14.8	9.6	8.2	-	-	0	-	-	17	9.9
HCM Lane LOS	B	A	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.1	0.2	0	-	-	0	-	-	0.2	0

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↱	↱↱		↱	↱↱		↱	↱		↱	↱	
Traffic Vol, veh/h	3	387	2	6	319	7	5	1	28	15	0	15
Future Vol, veh/h	3	387	2	6	319	7	5	1	28	15	0	15
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	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	0	-	75	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	77	77	77	60	60	60	88	88	88
Heavy Vehicles, %	3	3	3	7	7	7	3	3	3	18	18	18
Mvmt Flow	4	490	3	8	414	9	8	2	47	17	0	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	423	0	0	493	0	0	723	939	247	689	936	212
Stage 1	-	-	-	-	-	-	500	500	-	435	435	-
Stage 2	-	-	-	-	-	-	223	439	-	254	501	-
Critical Hdwy	4.16	-	-	4.24	-	-	7.56	6.56	6.96	7.86	6.86	7.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.86	5.86	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.86	5.86	-
Follow-up Hdwy	2.23	-	-	2.27	-	-	3.53	4.03	3.33	3.68	4.18	3.48
Pot Cap-1 Maneuver	1126	-	-	1032	-	-	312	261	750	303	237	746
Stage 1	-	-	-	-	-	-	519	539	-	529	540	-
Stage 2	-	-	-	-	-	-	756	574	-	685	503	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1126	-	-	1032	-	-	302	258	750	280	234	746
Mov Cap-2 Maneuver	-	-	-	-	-	-	302	258	-	280	234	-
Stage 1	-	-	-	-	-	-	517	537	-	527	536	-
Stage 2	-	-	-	-	-	-	733	569	-	638	501	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	11.5	14.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	302	704	1126	-	-	1032	-	-	280	746
HCM Lane V/C Ratio	0.028	0.069	0.003	-	-	0.008	-	-	0.061	0.023
HCM Control Delay (s)	17.3	10.5	8.2	-	-	8.5	-	-	18.7	9.9
HCM Lane LOS	C	B	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.1	0.2	0	-	-	0	-	-	0.2	0.1

## Queuing and Blocking Report

2025 Background Conditions  
p.m. Peak Hour

## Intersection: 1: E Paris Avenue &amp; 60th Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	155	84	77	50	143	138	95	160	135	339	150
Average Queue (ft)	62	29	16	11	66	65	32	62	47	129	86
95th Queue (ft)	119	62	48	34	117	117	72	124	108	264	158
Link Distance (ft)		1500	1500		1709	1709		367		617	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	250			250			175		250		50
Storage Blk Time (%)							0			32	13
Queuing Penalty (veh)							0			128	51

## Intersection: 2: Data Drive/Existing Steelcase Driveway &amp; 60th Street

Movement	EB	NB	NB	SB	SB
Directions Served	L	LT	R	LT	R
Maximum Queue (ft)	20	30	36	59	43
Average Queue (ft)	2	2	18	12	7
95th Queue (ft)	12	13	43	43	29
Link Distance (ft)		234	234	281	281
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250				
Storage Blk Time (%)					
Queuing Penalty (veh)					

## Intersection: 3: Alliance Beverage Driveway &amp; 60th Street

Movement	NB	NB
Directions Served	L	R
Maximum Queue (ft)	31	42
Average Queue (ft)	10	23
95th Queue (ft)	33	47
Link Distance (ft)	518	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

# Appendix 5

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## Trip Generation Calculations

# Land Use: 140

## Manufacturing

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### Description

A manufacturing facility is an area where the primary activity is the conversion of raw materials or parts into finished products. Size and type of activity may vary substantially from one facility to another. In addition to the actual production of goods, a manufacturing facility typically has an office and may provide space for warehouse, research, and associated functions. General light industrial (Land Use 110) and industrial park (Land Use 130) are related uses.

### Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Minnesota, Missouri, New Jersey, New York, Oregon, Pennsylvania, South Dakota, Texas, Vermont, Washington, and West Virginia.

### Source Numbers

177, 179, 184, 241, 357, 384, 418, 443, 583, 598, 611, 728, 747, 875, 879, 940, 969, 1067, 1068, 1082

# Manufacturing (140)

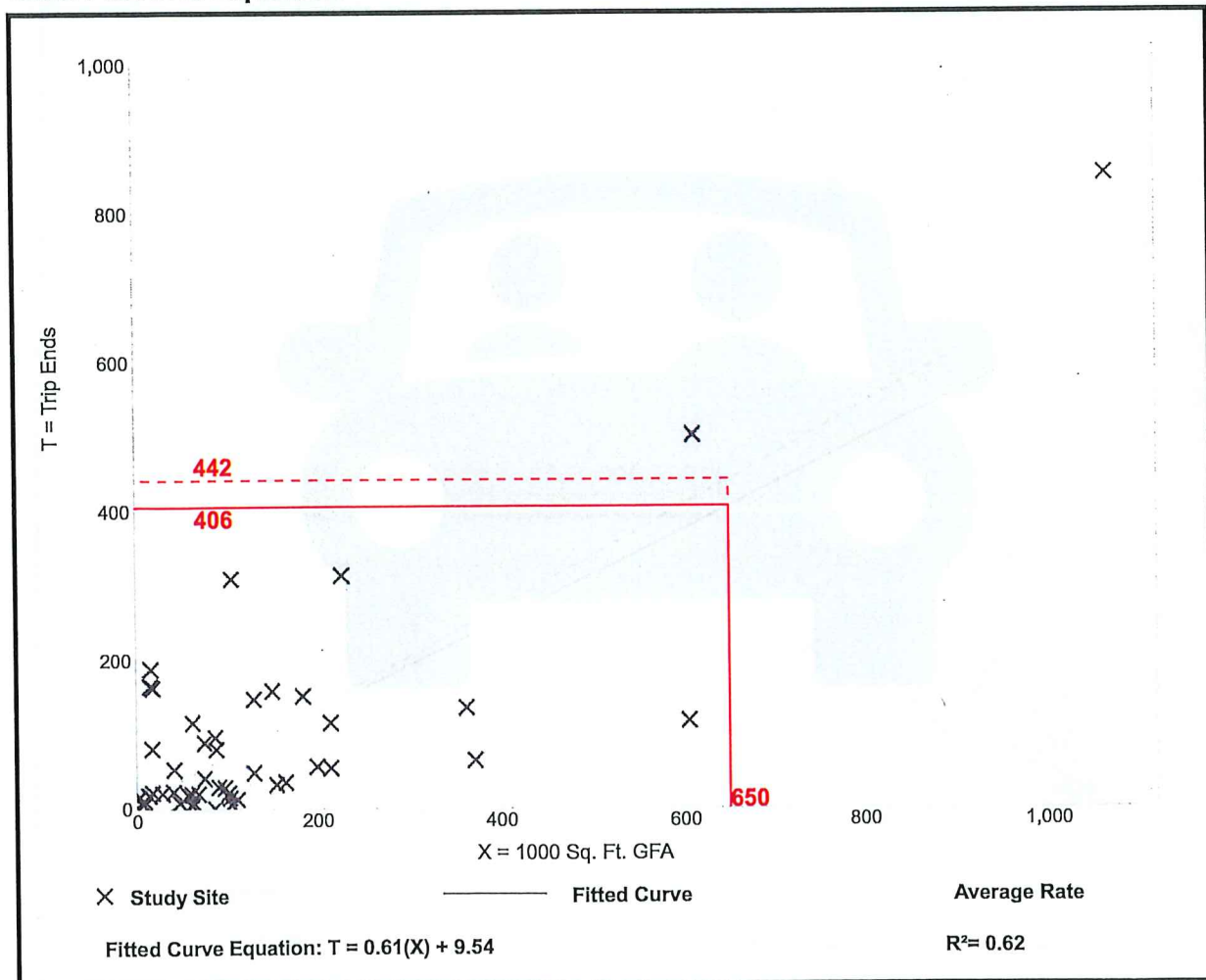
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban  
Number of Studies: 48  
Avg. 1000 Sq. Ft. GFA: 138  
Directional Distribution: 76% entering, 24% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.68	0.01 - 11.93	1.03

## Data Plot and Equation



# Manufacturing (140)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 53

Avg. 1000 Sq. Ft. GFA: 208

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate

4.75

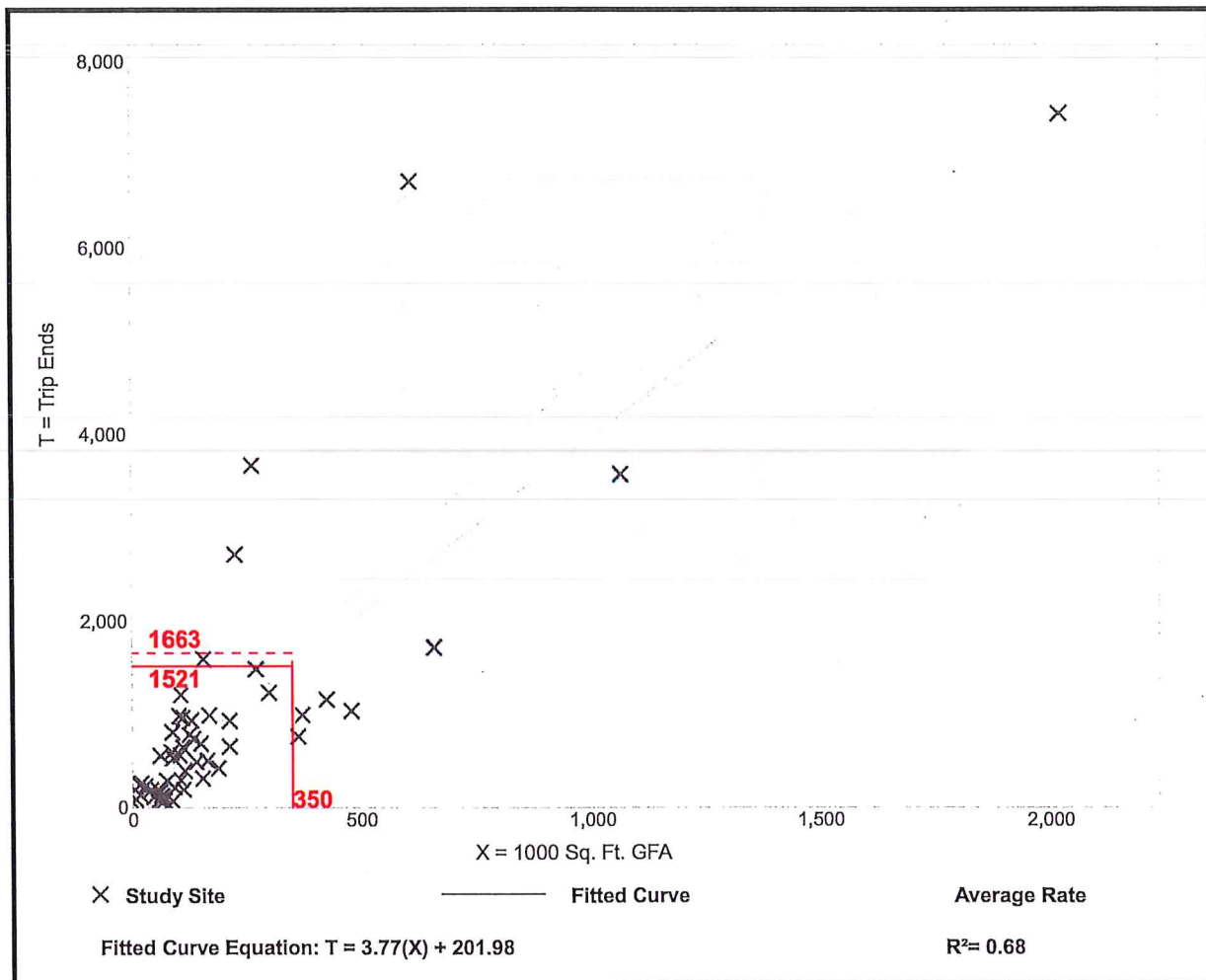
Range of Rates

0.83 - 49.50

Standard Deviation

3.20

## Data Plot and Equation



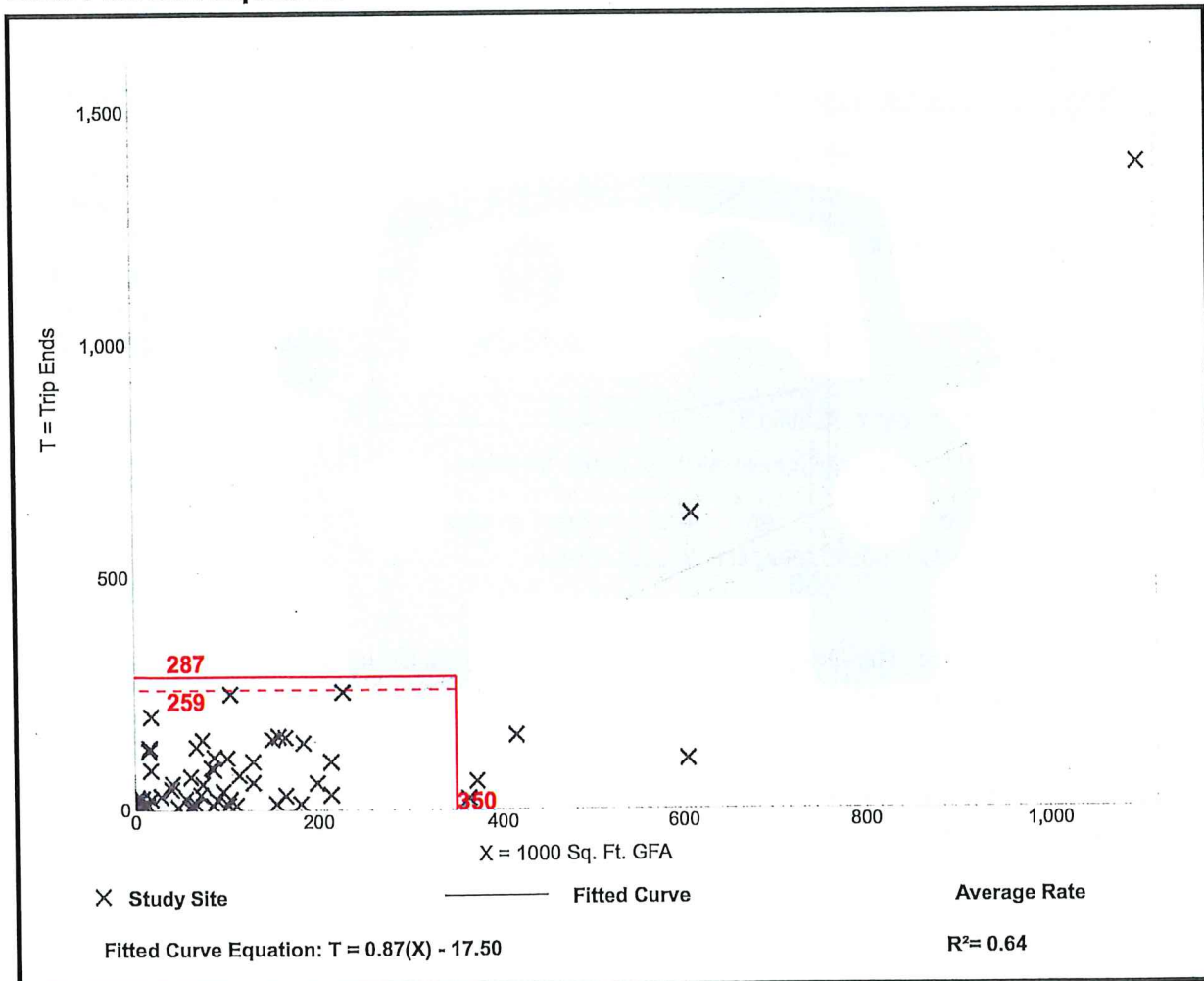
# Manufacturing (140)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
 On a: Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 4 and 6 p.m.  
 Setting/Location: General Urban/Suburban  
 Number of Studies: 55  
 Avg. 1000 Sq. Ft. GFA: 142  
 Directional Distribution: 31% entering, 69% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

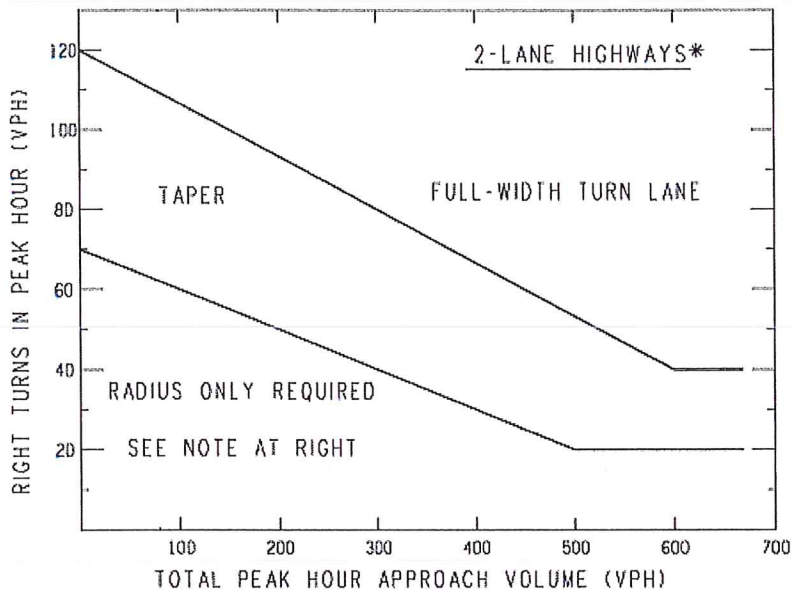
Average Rate	Range of Rates	Standard Deviation
0.74	0.07 - 11.37	0.93

## Data Plot and Equation



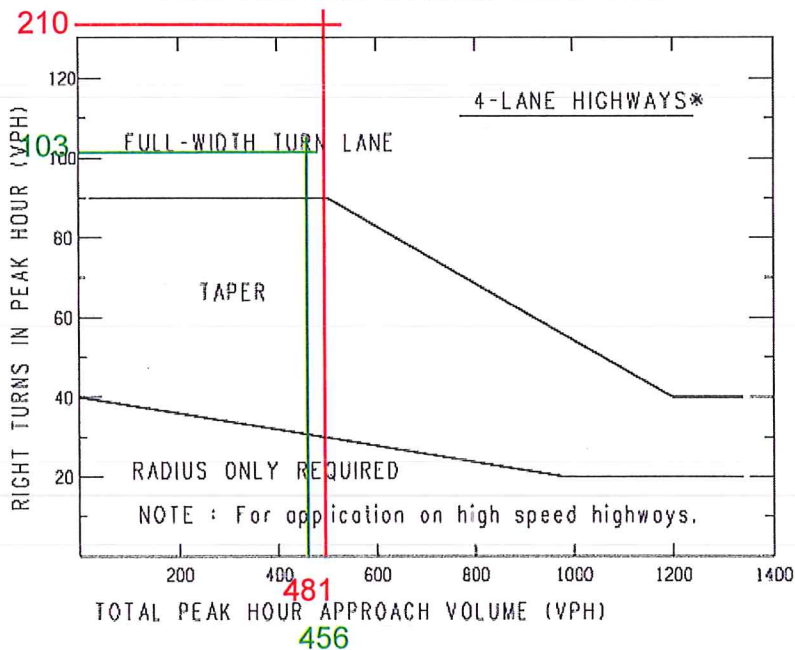
60th Street and Existing Steelcase Driveway  
(Used by Manufacturing Traffic)

a.m. Peak Hour  
p.m. Peak Hour



NOTE: For posted speeds at or under 45 mph, peak hour right turns greater than 40 vph, and total peak hour approach less than 300 vph, adjust right turn volumes.

Adjust peak hour  
Right turns = Peak hour  
Right turns - 20



\*If a center left-turn lane exists (ie 3 or 5 lane roadway), subtract the number of left turns in approach volume from the total approach volume to get an adjusted total approach volume.

Sample Problem: The Design Speed is 55 mph. The Peak Hour Approach Volume is 300 vph. The Number of Right Turns in the Peak Hous is 100 vph. Determine if a right turn lane is recommended.

Solution: Figure indicates that the intersection of 300 vph and 100 vph is located above the upper trend line; thus, a right-turn lane may be recommended.

# Appendix 7

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## Future LOS Output Reports









HCM 6th TWSC  
2: Data Drive/Existing Steelcase Driveway & 60th Street

2025 Future Conditions  
a.m. Peak Hour

Intersection												
Int Delay, s/veh	7.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↕		↵	↕	↵		↕	↵		↕	↵
Traffic Vol, veh/h	269	370	25	19	271	210	5	0	5	70	0	80
Future Vol, veh/h	269	370	25	19	271	210	5	0	5	70	0	80
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	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	250	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	84	84	84	63	63	63	92	92	92
Heavy Vehicles, %	4	4	4	3	3	3	10	10	10	2	2	2
Mvmt Flow	302	416	28	23	323	250	8	0	8	76	0	87
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	573	0	0	444	0	0	1242	1653	222	1181	1417	162
Stage 1	-	-	-	-	-	-	1034	1034	-	369	369	-
Stage 2	-	-	-	-	-	-	208	619	-	812	1048	-
Critical Hdwy	4.18	-	-	4.16	-	-	7.7	6.7	7.1	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.7	5.7	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.7	5.7	-	6.54	5.54	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	3.6	4.1	3.4	3.52	4.02	3.32
Pot Cap-1 Maneuver	982	-	-	1105	-	-	123	90	758	145	136	854
Stage 1	-	-	-	-	-	-	234	291	-	623	619	-
Stage 2	-	-	-	-	-	-	752	459	-	339	303	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	982	-	-	1105	-	-	83	61	758	108	92	854
Mov Cap-2 Maneuver	-	-	-	-	-	-	83	61	-	108	92	-
Stage 1	-	-	-	-	-	-	162	201	-	431	606	-
Stage 2	-	-	-	-	-	-	661	449	-	232	210	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.2			0.3			31.4			49.2		
HCM LOS							D			E		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	83	758	982	-	-	1105	-	-	108	854		
HCM Lane V/C Ratio	0.096	0.01	0.308	-	-	0.02	-	-	0.705	0.102		
HCM Control Delay (s)	52.9	9.8	10.3	-	-	8.3	-	-	94.3	9.7		
HCM Lane LOS	F	A	B	-	-	A	-	-	F	A		
HCM 95th %tile Q(veh)	0.3	0	1.3	-	-	0.1	-	-	3.7	0.3		

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	420	6	22	511	18	2	1	6	8	0	39
Future Vol, veh/h	10	420	6	22	511	18	2	1	6	8	0	39
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	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	0	-	75	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	91	91	91	60	60	60	60	60	60
Heavy Vehicles, %	10	10	10	9	9	9	56	56	56	16	16	16
Mvmt Flow	12	512	7	24	562	20	3	2	10	13	0	65





Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	582	0	0	519	0	0	869	1170	260	901	1163	291
Stage 1	-	-	-	-	-	-	540	540	-	620	620	-
Stage 2	-	-	-	-	-	-	329	630	-	281	543	-
Critical Hdwy	4.3	-	-	4.28	-	-	8.62	7.62	8.02	7.82	6.82	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-	7.62	6.62	-	6.82	5.82	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.62	6.62	-	6.82	5.82	-
Follow-up Hdwy	2.3	-	-	2.29	-	-	4.06	4.56	3.86	3.66	4.16	3.46
Pot Cap-1 Maneuver	935	-	-	996	-	-	174	127	599	212	174	665
Stage 1	-	-	-	-	-	-	378	404	-	410	445	-
Stage 2	-	-	-	-	-	-	529	360	-	664	484	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	935	-	-	996	-	-	153	122	599	201	168	665
Mov Cap-2 Maneuver	-	-	-	-	-	-	153	122	-	201	168	-
Stage 1	-	-	-	-	-	-	373	399	-	405	434	-
Stage 2	-	-	-	-	-	-	466	351	-	642	478	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			17.9			13.2		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	153	384	935	-	-	996	-	-	201	665
HCM Lane V/C Ratio	0.022	0.03	0.013	-	-	0.024	-	-	0.066	0.098
HCM Control Delay (s)	29.1	14.7	8.9	-	-	8.7	-	-	24.2	11
HCM Lane LOS	D	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	0.1	0	-	-	0.1	-	-	0.2	0.3

HCM 6th TWSC  
6: 60th Street & Proposed Steelcase Driveway

2025 Future Conditions  
a.m. Peak Hour

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	427	490	25	6	10
Future Vol, veh/h	18	427	490	25	6	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	84	84	60	60
Heavy Vehicles, %	4	4	3	3	19	19
Mvmt Flow	20	480	583	30	10	17

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	613	0	-	0	878 307
Stage 1	-	-	-	-	598 -
Stage 2	-	-	-	-	280 -
Critical Hdwy	4.18	-	-	-	7.18 7.28
Critical Hdwy Stg 1	-	-	-	-	6.18 -
Critical Hdwy Stg 2	-	-	-	-	6.18 -
Follow-up Hdwy	2.24	-	-	-	3.69 3.49
Pot Cap-1 Maneuver	949	-	-	-	257 641
Stage 1	-	-	-	-	467 -
Stage 2	-	-	-	-	694 -
Platoon blocked, %	-	-	-	-	
Mov Cap-1 Maneuver	949	-	-	-	252 641
Mov Cap-2 Maneuver	-	-	-	-	358 -
Stage 1	-	-	-	-	457 -
Stage 2	-	-	-	-	694 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	12.7
HCM LOS	B		

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	949	-	-	-	494
HCM Lane V/C Ratio	0.021	-	-	-	0.054
HCM Control Delay (s)	8.9	-	-	-	12.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

## Intersection: 4: Arlo Plastics Driveway/Roskam Baking Driveway &amp; 60th Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	L	TR	L	TR
Maximum Queue (ft)	31	52	42	64	35	73
Average Queue (ft)	2	7	2	12	3	29
95th Queue (ft)	14	30	18	45	20	63
Link Distance (ft)			378		257	257
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	250	250		75		
Storage Blk Time (%)			0	0		
Queuing Penalty (veh)			0	0		

## Intersection: 5: Patterson Avenue &amp; 60th Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B19	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	T	L	TR
Maximum Queue (ft)	166	117	137	36	115	123	263	288	122	40	37	212
Average Queue (ft)	80	55	74	7	48	38	103	125	27	1	7	81
95th Queue (ft)	144	102	120	25	95	86	222	237	105	29	26	156
Link Distance (ft)		1040	1040		734	734		406		379		487
Upstream Blk Time (%)								0	0			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)	250			250			190		115		200	
Storage Blk Time (%)							6	7				1
Queuing Penalty (veh)							30	20				0

## Intersection: 6: 60th Street &amp; Proposed Steelcase Driveway










Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	30	10	66
Average Queue (ft)	6	0	17
95th Queue (ft)	24	5	52
Link Distance (ft)		263	731
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	250		
Storage Blk Time (%)			
Queuing Penalty (veh)			

## Zone Summary

Zone wide Queuing Penalty: 101

HCM 6th TWSC  
2: Data Drive/Existing Steelcase Driveway & 60th Street

2025 Future Conditions  
p.m. Peak Hour

Intersection												
Int Delay, s/veh	55.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	156	327	2	0	353	103	4	0	26	239	0	337
Future Vol, veh/h	156	327	2	0	353	103	4	0	26	239	0	337
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	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	250	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	82	82	82	60	60	60	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	0	0	0	2	2	2
Mvmt Flow	188	394	2	0	430	126	7	0	43	260	0	366

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	556	0	0	396	0	0	986	1327	198	1003	1202	215
Stage 1	-	-	-	-	-	-	771	771	-	430	430	-
Stage 2	-	-	-	-	-	-	215	556	-	573	772	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.5	6.5	6.9	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.5	4	3.3	3.52	4.02	3.32
Pot Cap-1 Maneuver	1011	-	-	1159	-	-	205	157	816	~196	183	790
Stage 1	-	-	-	-	-	-	363	413	-	574	582	-
Stage 2	-	-	-	-	-	-	773	516	-	472	407	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1011	-	-	1159	-	-	94	128	816	~159	149	790
Mov Cap-2 Maneuver	-	-	-	-	-	-	94	128	-	~159	149	-
Stage 1	-	-	-	-	-	-	295	336	-	467	582	-
Stage 2	-	-	-	-	-	-	415	516	-	364	331	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	3			0			14.6			158.3		
HCM LOS							B			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	94	816	1011	-	-	1159	-	-	159	790
HCM Lane V/C Ratio	0.071	0.053	0.186	-	-	-	-	-	1.634	0.464
HCM Control Delay (s)	46.2	9.7	9.4	-	-	0	-	-	\$ 362.6	13.4
HCM Lane LOS	E	A	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	0.2	0.2	0.7	-	-	0	-	-	18	2.5

Notes												
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    *: All major volume in platoon												

**Intersection**

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Vol, veh/h	3	626	2	6	422	7	5	1	28	15	0	15
Future Vol, veh/h	3	626	2	6	422	7	5	1	28	15	0	15
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	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	0	-	75	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	77	77	77	60	60	60	88	88	88
Heavy Vehicles, %	3	3	3	7	7	7	3	3	3	18	18	18
Mvmt Flow	4	792	3	8	548	9	8	2	47	17	0	17





Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	557	0	0	795	0	0	1092	1375	398	974	1372	279
Stage 1	-	-	-	-	-	-	802	802	-	569	569	-
Stage 2	-	-	-	-	-	-	290	573	-	405	803	-
Critical Hdwy	4.16	-	-	4.24	-	-	7.56	6.56	6.96	7.86	6.86	7.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.86	5.86	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.86	5.86	-
Follow-up Hdwy	2.23	-	-	2.27	-	-	3.53	4.03	3.33	3.68	4.18	3.48
Pot Cap-1 Maneuver	1003	-	-	791	-	-	168	143	599	184	126	672
Stage 1	-	-	-	-	-	-	342	392	-	436	466	-
Stage 2	-	-	-	-	-	-	691	499	-	552	358	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1003	-	-	791	-	-	162	141	599	166	124	672
Mov Cap-2 Maneuver	-	-	-	-	-	-	162	141	-	166	124	-
Stage 1	-	-	-	-	-	-	341	390	-	434	461	-
Stage 2	-	-	-	-	-	-	667	494	-	505	357	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			14.7			19.9		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	162	539	1003	-	-	791	-	-	166	672
HCM Lane V/C Ratio	0.051	0.09	0.004	-	-	0.01	-	-	0.103	0.025
HCM Control Delay (s)	28.4	12.3	8.6	-	-	9.6	-	-	29.2	10.5
HCM Lane LOS	D	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.2	0.3	0	-	-	0	-	-	0.3	0.1

HCM 6th TWSC  
6: 60th Street & Proposed Steelcase Driveway

2025 Future Conditions  
p.m. Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	585	450	1	12	6
Future Vol, veh/h	7	585	450	1	12	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	82	82	75	75
Heavy Vehicles, %	2	2	2	2	17	17
Mvmt Flow	8	705	549	1	16	8
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	550	0	-	0	919	275
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	369	-
Critical Hdwy	4.14	-	-	-	7.14	7.24
Critical Hdwy Stg 1	-	-	-	-	6.14	-
Critical Hdwy Stg 2	-	-	-	-	6.14	-
Follow-up Hdwy	2.22	-	-	-	3.67	3.47
Pot Cap-1 Maneuver	1016	-	-	-	244	679
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1016	-	-	-	242	679
Mov Cap-2 Maneuver	-	-	-	-	361	-
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	627	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		13.9		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1016	-	-	-	428	
HCM Lane V/C Ratio	0.008	-	-	-	0.056	
HCM Control Delay (s)	8.6	-	-	-	13.9	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	

## Intersection: 4: Arlo Plastics Driveway/Roskam Baking Driveway &amp; 60th Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	L	TR	L	TR
Maximum Queue (ft)	14	19	28	59	51	59
Average Queue (ft)	1	1	5	19	14	16
95th Queue (ft)	8	11	22	47	45	50
Link Distance (ft)			378		257	257
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	250	250		75		
Storage Blk Time (%)				0		
Queuing Penalty (veh)				0		

## Intersection: 5: Patterson Avenue &amp; 60th Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	112	146	170	72	95	62	110	122	73	30	334
Average Queue (ft)	54	72	96	21	40	17	51	50	29	8	146
95th Queue (ft)	98	122	150	54	79	44	93	95	59	27	267
Link Distance (ft)		1040	1040		734	734		406			487
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	250			250			190		115	200	
Storage Blk Time (%)								0			4
Queuing Penalty (veh)								1			1

## Intersection: 6: 60th Street &amp; Proposed Steelcase Driveway

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	25	56
Average Queue (ft)	2	15
95th Queue (ft)	13	44
Link Distance (ft)		731
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	250	
Storage Blk Time (%)		
Queuing Penalty (veh)		

## Zone Summary

Zone wide Queuing Penalty: 242

