



500 West Big Beaver  
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## **PLANNING COMMISSION MEETING AGENDA REGULAR MEETING**

Marianna Perakis, Chair, Lakshmi Malalahalli, Vice Chair  
Toby Buechner, Carlton Faison, Tyler Fox, Michael W. Hutson, Tom Krent,  
Dave Lambert and John J. Tagle

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**April 9, 2024**

**7:00 P.M.**

**Council Chambers**

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1. ROLL CALL
2. APPROVAL OF AGENDA
3. APPROVAL OF MINUTES – March 12, 2024
4. PUBLIC COMMENT – For Items Not on the Agenda

### **PRELIMINARY SITE PLAN**

5. PRELIMINARY SITE PLAN APPROVAL (JPLN2024-0004) –. Proposed Outdoor Bounce House, North of Fourteen Mile and west of John R (PIN 88-20-35-400-017), Section 35, Zoned GB (General Business) Zoning District.

### **CITY OF TROY MASTER PLAN**

6. PUBLIC HEARING - CITY OF TROY DRAFT MASTER PLAN

### **PLANNED UNIT DEVELOPMENT**

7. PUBLIC HEARING - PLANNED UNIT DEVELOPMENT (File Number PUD 020 JPLN2023-0021) – CONCEPT DEVELOPMENT PLAN (CDP) AND PRELIMINARY DEVELOPMENT PLAN (PDP) APPROVAL – The Village of Hastings PUD, East side of Livernois, north of Square Lake, PIN 88-20-03-301-088, -023, -024, -025 and 88-20-03-351-004, Section 3, Presently zoned NN (Neighborhood Node “Q”) and R-1B (One Family Residential) Zoning Districts
8. PUBLIC COMMENT- For Items on the Agenda
9. PLANNING COMMISSION COMMENT
10. ADJOURN

**NOTICE:** People with disabilities needing accommodations for effective participation in this meeting should contact the City Clerk by e-mail at [clerk@troymi.gov](mailto:clerk@troymi.gov) or by calling (248) 524-3317 at least two working days in advance of the meeting. An attempt will be made to make reasonable accommodations

Televised Live, Government Channel WTRY (10 WideOpenWest and 17 Comcast) Replayed Wednesdays 3:00 pm, 6:00 pm and 11:00 pm



Chair Perakis called the Regular meeting of the Troy City Planning Commission to order at 7:01 p.m. on March 12, 2024, in the Council Chamber of the Troy City Hall. Chair Perakis and Vice Chair Malalahalli presented opening remarks relative to the role of the Planning Commission and procedure of tonight's meeting.

1. ROLL CALL

Present:

Toby Buechner  
Carlton M. Faison  
Tyler Fox  
Michael W. Hutson  
Tom Krent  
David Lambert  
Lakshmi Malalahalli  
Marianna Perakis  
John J. Tagle

Also Present:

Ben Carlisle, Carlisle Wortman & Associates  
R. Brent Savidant, Community Development Director  
Julie Quinlan Dufrane, Assistant City Attorney  
Kathy L. Czarnecki, Recording Secretary

2. APPROVAL OF AGENDA

Mr. Savidant explained why Agenda item #6, Public Hearing for Street Vacation Request (SV JPLN2024-0002) is being pulled from tonight's agenda.

**Resolution # PC-2024-03-010**

Moved by: Lambert  
Support by: Fox

**RESOLVED**, To approve the written Agenda with the removal of Agenda item #6.

Yes: All present (9)

**MOTION CARRIED**

3. APPROVAL OF MINUTES – February 13, 2024

**Resolution # PC-2024-03-011**

Moved by: Malalahalli  
Support by: Fox

**RESOLVED**, To approve the minutes of February 13, 2024 Regular meeting as submitted.

Yes: All present (9)

**MOTION CARRIED**

4. PUBLIC COMMENT – For Items Not on the Agenda

There was no one present who wished to speak.

**PRELIMINARY SITE PLAN**

5. PRELIMINARY SITE PLAN APPROVAL (JPLN2024-0001) – Proposed Livernois/Elmwood Business Park, Northeast corner of Livernois and Elmwood (PIN 88-20-34-153-041, -042 and -043), Section 34, Zoned IB (Integrated Industrial and Business) Zoning District

Mr. Carlisle provided background information on the proposed Preliminary Site Plan application for Livernois/Elmwood Business Park. He addressed a wide range of permitted uses within the IB zoning district, building arrangement, parking based on light industrial zoning use, site access and circulation, required landscaping of parking lot islands, elevations and building materials and the applicant's intent to erect a *City of Troy Welcomes You* monument sign.

In summary, Mr. Carlisle said the type of flex space proposed is a desirable use. He asked the Planning Commission to discuss with the applicant proposed uses of the suites in light of parking supply, to consider if any additional architectural details are needed and to consider if the Site Plan Review Design Standards (Section 8.06) are met.

Mr. Carlisle stated any approval of the site plan application would be subject to the following conditions:

- Increase the sidewalk along Livernois to 8 feet and add a sidewalk along Elmwood.
- Provide six (6) additional trees within the parking lot.
- Provide mechanical equipment screenings.
- Incorporate sustainable design features.
- Reduce lighting levels along the eastern and northern property lines to less than one (1) foot candle.

Some of the comments during discussion among the administration related to:

- Parking requirements in light industrial zoning district.
- City procedure to verify sufficient parking in multi-tenant buildings/uses prior to issuing certificate of occupancy.
- Parking lot/island trees, as relates to Zoning Ordinance requirement, location of trees, clumping of trees.

Present were Roger Sherr and Mitchel Sherr of Sherr Development and Project Architect Richard Konik of Siegal/Tuomaala Associates Architects & Planners Inc.

Roger Sherr shared a brief background of their real estate company located in Farmington Hills and his experience in the family nursery business. He said the proposed moderately-sized industrial development offers flexible space for smaller industrial tenants. Mr. Sherr said the leased suites would provide tenants with their own space with no common area at a lower cost and result in lower tenant turnover. He addressed how the parking would be shared among the tenants, explaining the rationale of the cross-hatched parking spaces.

Mitchel Sherr said their demographic focus is industrial/manufacturing tenants and confirmed there would be no retail tenants. He said studies of similar facilities validate the proposed parking design is truly perfect for the proposed use. Mr. Sherr said they would expand the sidewalk along Livernois, and they would be happy to extend the sidewalk along Elmwood in the future because at this time the sidewalk would not lead anywhere. Mr. Sherr addressed the tree count in the parking lot and the enhanced landscaping within the development and its perimeter. It was their opinion that the required number of parking lot trees was met. Mr. Sherr said the heavy clay on site would not be conducive to a bioswale or rain garden.

Mr. Konik addressed architectural design features, building materials and color scheme. He cited sustainability features, such as highly insulated walls and roof that exceeds energy code requirements, lighter color roof to reflect heat, and low-flow bathroom features. He said the dumpster screening would match building materials and color scheme. Mr. Konik said they would meet the requirements of screening the transformers on site and shielding the lights. Mr. Konik displayed samples of the building materials.

There was discussion, some comments related to:

- Industrial use only; no studio, no retail.
- Potential entrepreneur users; retail and/or wholesale.
- Parking, as relates to zoning verification for certificate of occupancy, cross-hatched parking spaces, spacing and length.
- Suites would have no air conditioning; no rooftop mechanical equipment.
- Architectural features; consideration to provide more articulation, detail.
- Natural light encouraged inside building; windows along the ceiling.
- Required trees in parking lot; number, location, spacing, clumping.
- Enhanced landscaping throughout the development.
- Signage; 1) coordination of monument *Welcome to City of Troy* sign with City administration; 2) additional signage to identify tenants.
- Consideration of bioswale and/or rain garden.
- Orientation of buildings discussed in pre-application meeting(s).
- Snow removal treatment.
- Potential noise and/or light pollution during evening hours; hours of operation.

Chair Perakis opened the floor for public comment.

- Dale Murrish, 1813 Dorchester, Apt 103; addressed sustainability, height of multi-family residential homes, increase in density, forestation and preserving green space.

Chair Perakis closed the floor for public comment.

**Resolution # PC-2024-03-**

Moved by: Fox

Seconded by: Krent

**RESOLVED**, That Preliminary Site Plan Approval, pursuant to Article 8 of the Zoning Ordinance, as requested for the proposed Livernois/Elmwood Business Park, located on the northeast corner of Livernois and Elmwood (PIN 88-20-34-153-041, -042 and -043), Section 34, Zoned IB (Integrated Industrial & Business) Zoning District, be granted, subject to the applicant providing the following:

1. Increase the sidewalk along Livernois to eight (8) feet and add a sidewalk along Elmwood.
2. Provide six (6) additional trees within the parking lot to the satisfaction of the Planning Department.
3. Provide details for mechanical equipment screenings.
4. Incorporate sustainable design features.
5. Reduce lighting levels along the eastern and northern property lines to less than one (1) foot-candle.
6. Coordinate the City monument sign design with City staff, to the Planning Department discretion.

**Discussion on the motion on the floor.**

The following revisions to the conditions were discussed, agreed to and supported by the motion makers.

- Increase the sidewalk along Livernois to eight (8) feet wide and add a five (5) feet wide sidewalk along Elmwood.
- Provide details for mechanical and electrical equipment screenings.
- Provide six (6) additional trees within the parking lot to comply with the Zoning Ordinance.
- Connect the sidewalks across the Livernois access aisle and provide a striped pedestrian crosswalk for safety.

**Vote on the motion as revised and to read as follows:**

**Resolution # PC-2024-03-012**

Moved by: Fox

Seconded by: Krent

**RESOLVED**, That Preliminary Site Plan Approval, pursuant to Article 8 of the Zoning Ordinance, as requested for the proposed Livernois/Elmwood Business Park, located on

the northeast corner of Livernois and Elmwood (PIN 88-20-34-153-041, -042 and -043), Section 34, Zoned IB (Integrated Industrial & Business) Zoning District, be granted, subject to the applicant providing the following:

1. Increase the sidewalk along Livernois to eight (8) feet wide and add a five (5) feet wide sidewalk along Elmwood.
2. Provide six (6) additional trees within the parking lot to comply with the Zoning Ordinance.
3. Provide details for mechanical and electrical equipment screenings.
4. Incorporate sustainable design features.
5. Reduce lighting levels along the eastern and northern property lines to less than one (1) foot-candle.
6. Coordinate the City monument sign design with City staff, to the Planning Department discretion.
7. Connect the sidewalks across the Livernois access aisle and provide a striped pedestrian crosswalk for safety.

Yes: All present (9)

## **MOTION CARRIED**

### **OTHER ITEMS**

6. PUBLIC HEARING - STREET VACATION REQUEST (SV JPLN2024-0002) – Request to vacate an unconstructed alley, approximately 20-feet wide by 285-feet long, North of Elmwood and east of Livernois, Abutting PIN 88-20-34-153-042 and -043 to the west and PIN 88-20-34-153-041 to the east, Platted as part of Davis Park Replat of a portion of Northford Park Subdivision, in Section 34

*(Item removed, refer to Resolution # PC-2024-03-010)*

7. CITY OF TROY DRAFT MASTER PLAN – Discussion on Proposed Neighborhood Node Classifications

Mr. Carlisle initiated a group discussion on the proposed Draft Master Plan that City Council sent back to the Planning Commission for further study, specifically to review two Neighborhood Nodes; Node F (Wattles and Crooks) and Node L (Square Lake and Livernois).

Input points and updated language from the Master Plan Steering Committee comprised of Planning Commissioners Perakis, Krent, Lambert and Faison, and redlined in the Planning Consultant report dated March 7, 2024, were discussed.

**Node F: Crooks and Wattles**

*(formerly Node I before elimination of some Neighborhood Nodes)*

There was discussion among the Board members and administration.

Chair Perakis opened the floor for public comment.

- Barb Yagley, 860 Huntsford; addressed single family on southwest and northwest corners; encouraged stability of single home ownership vs transient apartment living.
- Daryl Dickhudt, 4143 Glencastle; addressed definition of low density multi family, transition of residential density.
- Fabrice Smieliauskas, 4607 Lehigh; addressed need for affordable housing, density as relates to tax dollars, encouraged multi-family residential on southwest corner of Node.
- Jeff Silagy, 1110 Whispering Way; addressed preservation of green space and wildlife, affordable housing.
- Jim Musial, 4160 Glencastle; addressed any development that would decrease density and be a good fit for neighborhood, encouraged the suggestion of a park.
- Sheila Lenz-Shomo, 6464 Fredmoor; addressed concerns with traffic, encouraged walkability, sidewalks, safe pedestrian areas.
- John Shallcross, 1059 Fountain; addressed northwest corner of Node, parking, traffic.

Chair Perakis closed the floor for public comment.

Consensus:

- Accept redline changes as printed in Intent Statement, with designating term “multiple family residential” as “low-scale multiple family residential”.
- Future Land Use designation for both Northwest corner and Southwest corner as either R-1B or RT or park.

**Node L: Livernois Road and Square Lake Road**

*(formerly Node Q before elimination of some Neighborhood Nodes)*

There was discussion among the Board members and administration.

Chair Perakis opened the floor to public comment.

- Deborah Louzecky, 6327 Donaldson; addressed definition of low-scale multiple family residential, consideration of duplex and triplex residential uses, asked to not allow adult-type businesses, stronger architectural design to recognize history of corner, property values of condominiums, more aesthetic architectural control.
- Sheila Lenz-Shomo, 6464 Fredmoor; addressed charm/historical nature of neighborhood, traffic concerns, preservation, improvement or creation of greenspace, setback requirements.
- Shelley Stenger, 437 Hurst; addressed traffic as relates to schools, building setbacks and heights, questioned if City park would stay in the neighborhood node.

- Ann Coleman, 6091 Livernois; addressed density limitations, future widening of Livernois, affordable housing, preserving green space.

Chair Perakis closed the floor for public comment.

Consensus:

- Accept redline changes as printed in Intent Statement, with keeping historic feel, architectural features; eliminate non-automotive oriented nature.
- Further discussion on consideration in removing two or three parcels within Node when revisiting zoning district(s).
- More softening, tweaking, tightening up Zoning Ordinance to encourage buffer and address setbacks and building façade to capture historic feel.
- Consideration to incorporate public art, benches, water features.

Mr. Carlisle said the revised language would come back to the Planning Commission for further discussion and a Public Hearing scheduled for the April 9 meeting.

8. MICHIGAN CITIZEN PLANNER CAPSTONE PRESENTATION – Presentation by Planning Commission Member David Lambert

Mr. Lambert presented a PowerPoint presentation on the Michigan Land Division Act.

Highlights captured were:

- What is the Michigan Land Division Act?
- Why is the Land Division Act relevant now?
- Current State Law.
- The Land Division Act (formerly known as the Subdivision Control Act) regulates the separation of land into two or more small parcels, as well sets standards for creating subdivision lots.
- City of Troy Chapter 41, Subdivision Control Act.
- Site Condominium development approach.
- Senate Bill 480.
  - Passed by Senate, currently in the House for consideration.
  - If passed, Bill would be effective March 1, 2025.
- Arguments in Favor of the Bill.
- Negatives about the Bill.
- Information resources.
- Question and Answer.

Mr. Lambert received applause for an excellent presentation.

9. PUBLIC COMMENT – For Items on the Agenda

There was no one present who wished to speak.

10. PLANNING COMMISSION COMMENT

Mr. Krent announced an upcoming Michigan Planners Gathering online seminar on March 27 relating to building a transit-friendly community.

Chair Perakis thanked everyone -- the City Council, Planning Department, Planning Consultant, Master Plan Sub-Committee and the public – for their role in the Master Plan process.

11. ADJOURN

The Regular meeting of the Planning Commission adjourned at 10:35 p.m.

Respectfully submitted,

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Marianna Perakis, Chair

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Kathy L. Czarnecki, Recording Secretary

[https://d.docs.live.net/2f7ed4fe5f664ea8/Documents/Kathy/COT Planning Commission Minutes/2024/2024 03 12 Draft.docx](https://d.docs.live.net/2f7ed4fe5f664ea8/Documents/Kathy/COT%20Planning%20Commission%20Minutes/2024/2024%2003%2012%20Draft.docx)



**ITEM #5**

DATE: April 5, 2024

TO: Planning Commission

FROM: R. Brent Savidant, Community Development Director

SUBJECT: PRELIMINARY SITE PLAN APPROVAL (JPLN2024-0004) –. Proposed Outdoor Bounce House, North of Fourteen Mile and west of John R (PIN 88-20-35-400-017), Section 35, Zoned GB (General Business) Zoning District.

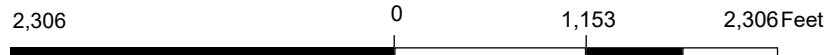
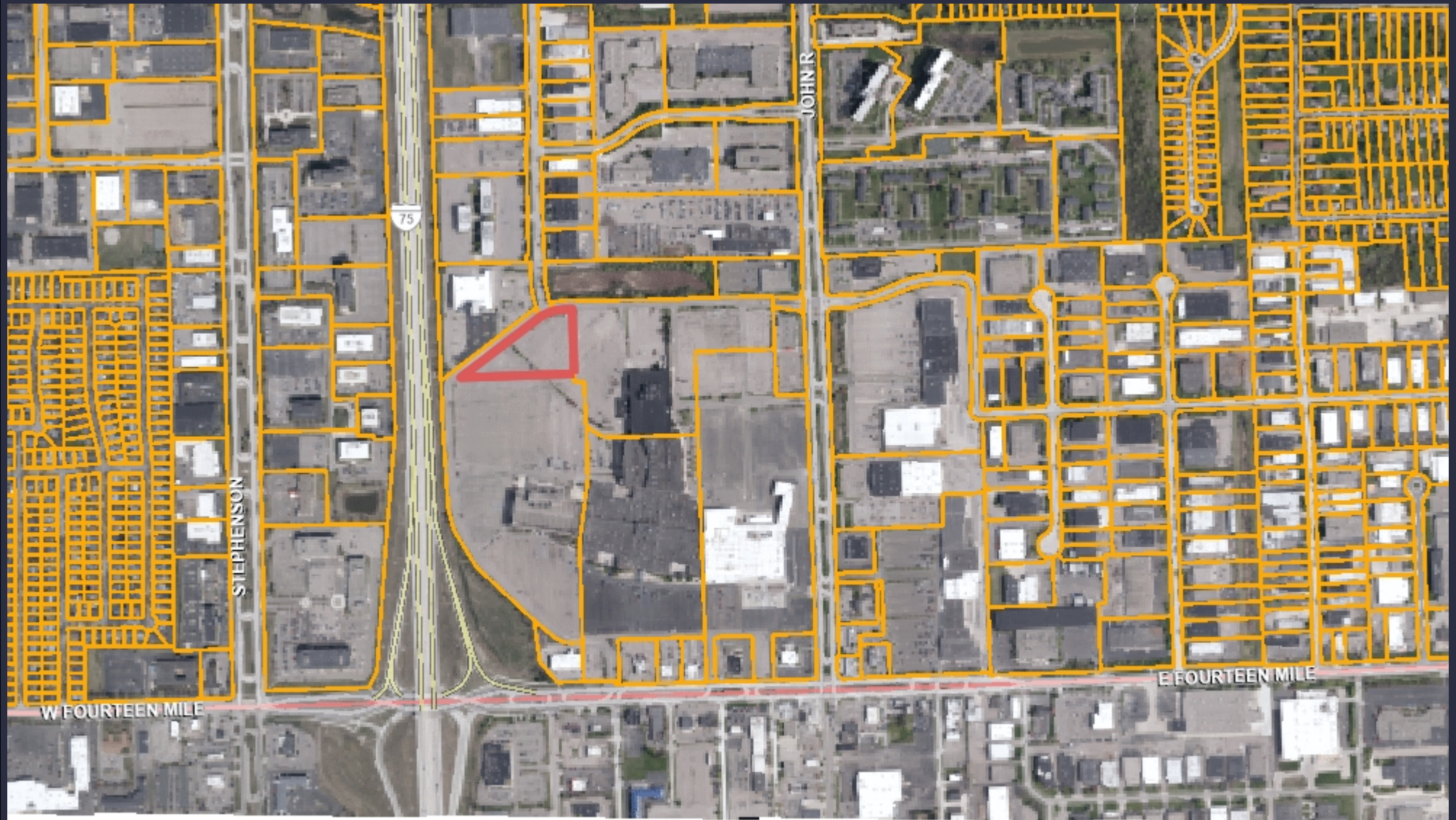
The petitioner Lala Bounce LLC submitted the above referenced Preliminary Site Plan application for a temporary outdoor bounce house in the underutilized parking lot northwest of Oakland Mall. The property is currently zoned GB (General Business) Zoning District. 'Outdoor commercial recreation' uses are permitted by right in this district. The Planning Commission is responsible for granting Preliminary Site Plan approval for this item.

The attached report prepared by Carlisle/Wortman Associates, Inc. (CWA), the City's Planning Consultant, summarizes the project. CWA prepared the report with input from various City departments including Planning, Engineering, Public Works and Fire. City Management supports the findings of fact contained in the report and the recommendations included therein.

Attachments:

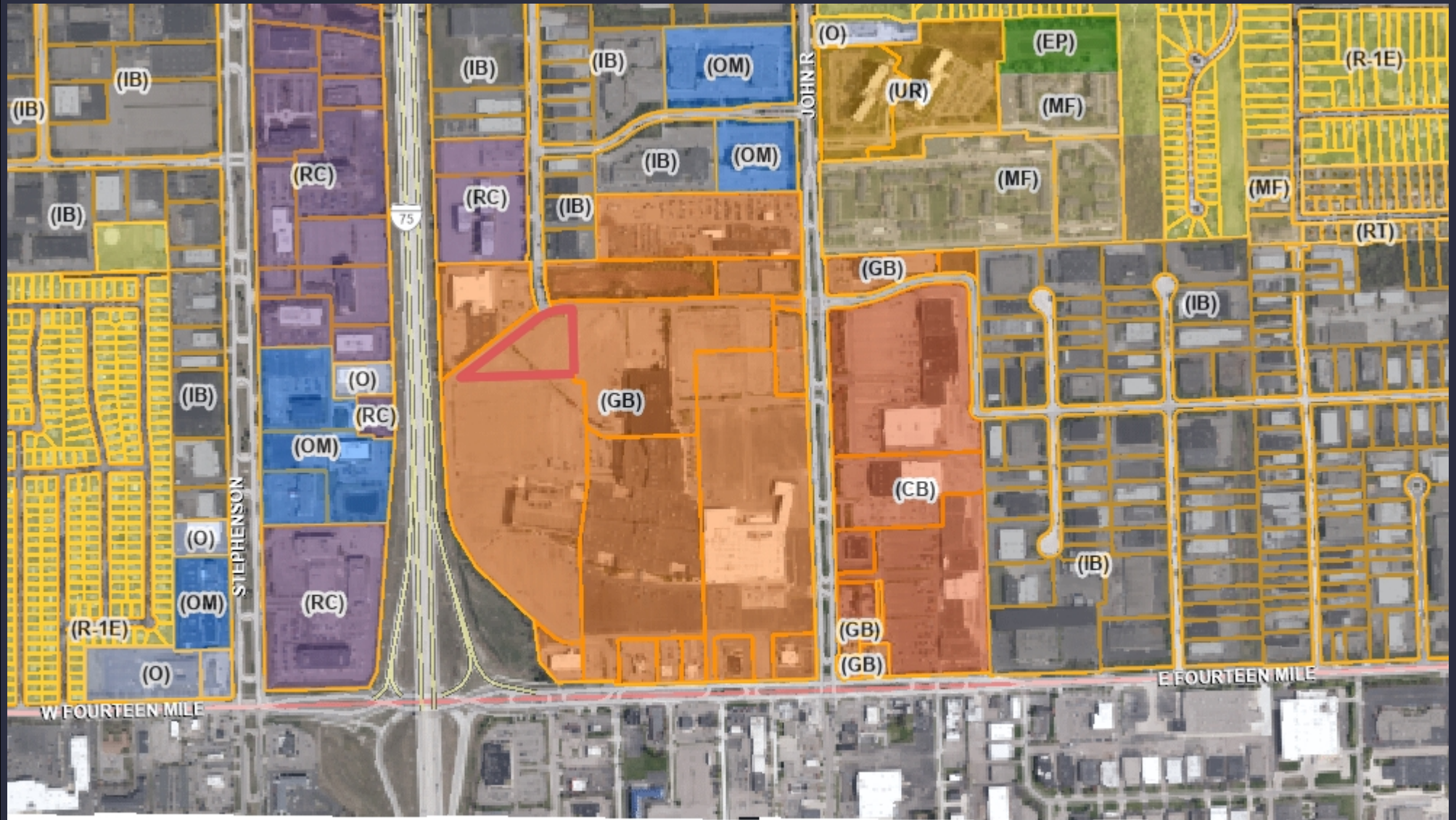
1. Maps
2. Report prepared by Carlisle/Wortman Associates, Inc.
3. Preliminary site plan

G:\SITE PLANS\SP\_JPLN2024-0004\_MK OAKLAND MALL OUTDOOR BOUNCE HOUSE\PC Memo 2024 04 09.docx



Note: The information provided by this application has been compiled from recorded deeds, plats, tax maps, surveys, and other public records and data. It is not a legally recorded map survey. Users of this data are hereby notified that the source information represented should be consulted for verification.





2,306 0 1,153 2,306 Feet



Note: The information provided by this application has been compiled from recorded deeds, plats, tax maps, surveys, and other public records and data. It is not a legally recorded map survey. Users of this data are hereby notified that the source information represented should be consulted for verification.

**PROPOSED RESOLUTION**

PRELIMINARY SITE PLAN APPROVAL (JPLN2024-0004) –. Proposed Outdoor Bounce House, North of Fourteen Mile and west of John R (PIN 88-20-35-400-017), Section 35, Zoned GB (General Business) Zoning District.

**Resolution # PC-2024-04-**

Moved by:

Seconded by:

**RESOLVED**, That Preliminary Site Plan Approval, pursuant to Article 8 of the Zoning Ordinance, as requested for the proposed temporary outdoor bounce house, located north of Fourteen Mile and west of John R (PIN 88-20-35-400-017), Section 35, Zoned GB (General Business) Zoning District, be granted, subject to the following:

\_\_\_\_\_ ) or

(denied, for the following reasons: \_\_\_\_\_) or

(postponed, for the following reasons: \_\_\_\_\_)

Yes:

No:

**MOTION CARRIED/FAILED**



**Carlisle | Wortman**  
ASSOCIATES, INC.

117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

Date: March 19, 2024

## Site Plan Review For City of Troy, Michigan

<b>Applicant:</b>	FunBox
<b>Project Name:</b>	FunBox
<b>Plan Date:</b>	February 17, 2024
<b>Location:</b>	412 W 14 Mile Road (Oakland Mall)
<b>Zoning:</b>	GB – General Business
<b>Action Requested:</b>	Site Plan Approval

### PROJECT AND SITE DESCRIPTION

The applicant has applied for site plan approval of a temporary inflatable park in the Oakland Mall parking lot. Inflatable parks are considered an outdoor commercial recreation use, which is a permitted use in the GB- General Business zoning district. The site of the inflatable park measures roughly 69,120 square feet and features several tents and recreation areas. The inflatable park is proposed in the northwest corner of the Oakland Mall parking lot.

The applicant is proposing the inflatable park as a temporary operation through the spring and summer months; though, no specific timeline has been provided. This review covers all items applicable to a temporary operation.

Site Location:



Proposed Uses of Subject Site:

+/- 69,120 temporary inflatable park.

Current Zoning:

GB- General Business District.

Surrounding Property Details:

Direction	Zoning	Use
North	GB- General Business	Sportsman's Warehouse
South	GB- General Business	Oakland Mall
East	GB- General Business	ABC Warehouse
West	ROW: Right of Way	I-75



## LAYOUT OF SITE

The yellow line on the plan set indicates the perimeter fence location of the inflatable park. The site of the inflatable park measures roughly 69,120 square feet and is proposed in the northwest corner of the mall parking lot. While no specific measurements have been provided, the perimeter of the inflatable park appears roughly 200-300 feet away from the closest portion of Oakland Mall.

The inflatable park features several tents and recreation areas. The “welcome tent” is proposed at the south end of the site, along with two (2) “spider tents” and one (1) “toddler park.” The far west side of the site features one (1) obstacle course and one (1) shoe tent. There is a 12,248-foot “main park” positioned in the center of the site. In the northern portion of the site, an unnamed 2,500 square foot building is situated behind and connected to the main park. Nearby, in the northwest corner of the site, is the generator used to power the inflatables. A 6-foot tall chain link fence is proposed around the generator.

Washing stations are located in the southwest corner of the site. In this corner, the applicant proposes four (4) temporary portable restrooms and one (1) hand washing station. One (1) restroom is ADA compliant. Trash containers are located in this area, as well as elsewhere across the site. Fire extinguishers are provided throughout the site every 75-feet. Parking lot surface across the southern portion of the site shall be covered in turf, and a 6-foot tall chain link fence shall be erected around the entire site. Planning Commission should discuss if a 6-foot tall chain link fence is sufficient or if additional screening should be required.

It appears that food and drinks will not be sold within the park. The applicant should confirm. In addition, does the applicant plan for any ancillary uses outside of the park such as food trucks.

***Items to be Addressed:*** 1). *Planning Commission to discuss if the 6-foot tall chain link fence is sufficient or if additional screening should be required;* 2). *Confirm if food and drink will be sold within the park;* and 3). *Does the applicant plan for any ancillary uses outside of the park such as food trucks.*

## OPERATIONAL DETAILS

Hours of operation:

- Friday: 3 PM- 7:30 PM
- Saturday: 10:30 AM- 7:30 PM
- Sunday: 10:30 AM- 7:30 PM

Maximum occupancy load permitted:

- Main inflatable: 300 persons
- In the park: 400 persons

The applicant states that the park operates within 1.5-hour time slots.



The applicant has not indicated any security details (onsite security, lighting, cameras, etc). Security plan should be reviewed by Troy Police Department.

**Items to be Addressed:** *Provide security details and confirm security plan with Troy Police Department.*

## ACCESS AND CIRCULATION

The applicant has provided three (3) 12-foot emergency access points within the perimeter fencing, in addition to the “welcome tent” point of access. In a separate letter to the applicant, the Fire and Engineering Departments have requested additional information regarding vehicle impact protection and traffic circulation.

**Items to be Addressed:** *Submit additional information as requested by Fire and Engineering Departments.*

## PARKING

In terms of parking, the applicant explains that the inflatable park will temporarily remove 200 spaces from the Oakland Mall parking lot. Based on use they find that the maximum parking for their use will be 200 spaces for guests + 14 spaces for employees, resulting in 214 total required parking spaces. The applicant indicates that site parking is more than sufficient as Oakland Mall has 5,777 available parking spaces.

The table below illustrates required parking for outdoor recreational uses per the City’s Zoning Ordinance. Given the inflatable park’s location in the center of the Oakland Mall parking lot, we find parking for the site to be compliant.

	Required	Provided	Compliance
Outdoor recreational uses: 1 space per 1,000 square feet of enclosed recreational space	(69,120 SF/1,000) = 69.12 spaces		
	PLUS		
1 space for each employee on the largest typical shift	14 employee spaces	5,777 spaces	Compliant
	= 83.12 spaces total		

**Items to be Addressed:** *None.*

## PHOTOMETRICS

No photometric plans have been provided. It is possible that existing light sources at Oakland Mall will provide sufficient light to the inflatable park. Although we recognize that external

lighting might rarely be needed during the park's hours of operation, such lighting is necessary to protect staff and equipment outside of business hours. We request the applicant provide information confirming that exterior lighting at Oakland Mall is sufficient for safety of patrons, staff and park equipment. If alternative light sources are used, provide cut sheets and proposed light locations.

**Items to be Addressed:** *Provide information regarding exterior site lighting.*

## SUMMARY

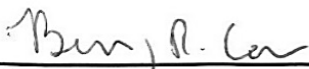
The Planning Commission is asked to consider the application, and specifically discuss the following points with the applicant:

1. Time length of application (how many months)?
2. Since the use is temporary, would the Planning Commission like to limit approval to this year only and require the applicant to get reapproved in 2025?
3. Is the 6-foot tall chain link fence sufficient or should additional screening be required?
4. Confirm if food and drink will be sold within the park?
5. Does the applicant plan for any ancillary uses outside of the park such as food trucks?
6. Provide security details and confirm security plan with Troy Police Department.
7. Lighting details of the site.

If the Planning Commission approves the use, we recommend the following conditions:

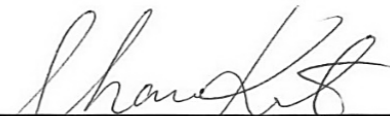
1. *Any conditions based on the items discussed as noted above.*
2. *Applicant shall provide additional information as requested by Fire and Engineering Departments.*
3. *The security plan to be approved by the Troy Police Department.*

Respectfully,



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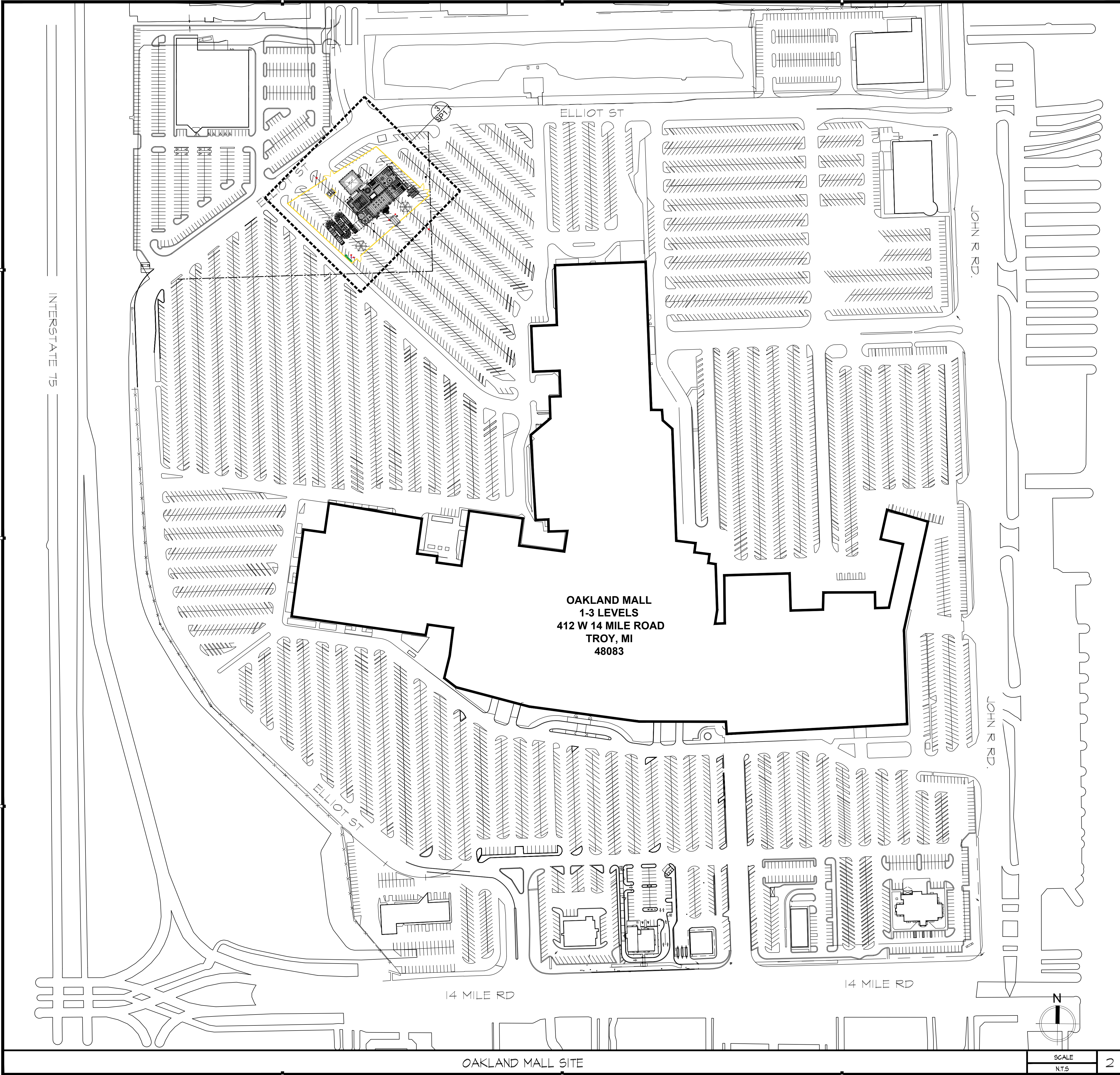
**CARLISLE/WORTMAN ASSOC., INC.**  
**Benjamin R. Carlisle, AICP, LEED AP**  
**President**



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**CARLISLE/WORTMAN ASSOC., INC.**  
**Shana Kot**  
**Community Planner**





PARKING TABULATION

PARKING SPACES TEMP. REPLACED	200
EMPLOYEE PARKING SPACES	14
REGULAR PARKING SPACES	5,991
TOTAL PARKING SPACES REQUIRED	214
TOTAL PARKING SPACES AVAILABLE	5,777

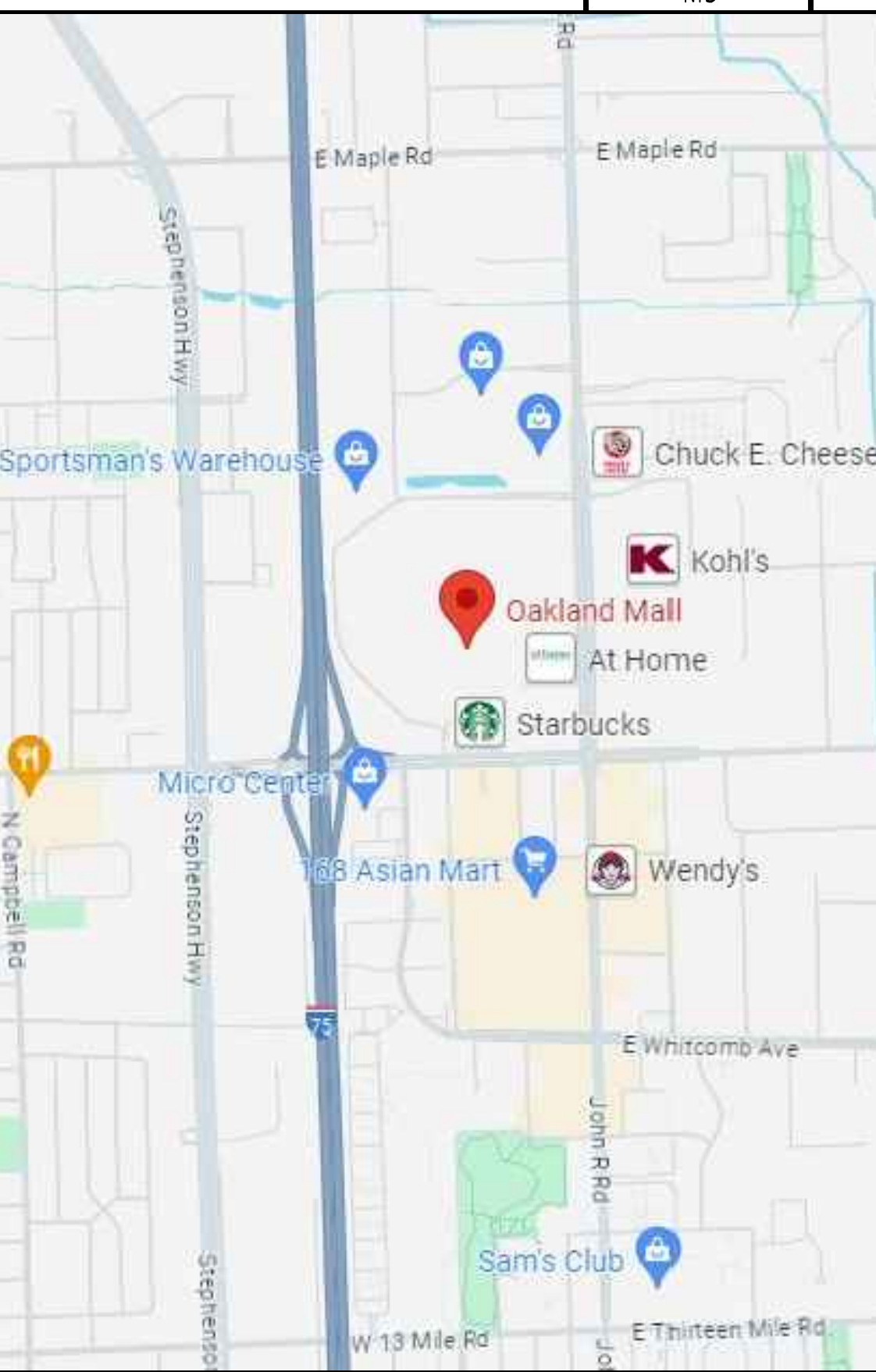
HOURS OF OPERATION

FRIDAY: 3 P.M- 7:30 P.M
SATURDAY: 10:30 A.M- 7:30 P.M
SUNDAY: 10:30 A.M- 7:30 P.M
*** 1.5- HOUR TIME SLOTS
*** 300 OCCUPANCY LOAD PERMITTED ON MAIN INFLATABLE
*** 400 OCCUPANCY LOAD MAX PERMITTED IN THE PARK

EMPLOYEES PER SHIFT

FRIDAY:	
MANAGER + MAINTENANCE + STAFF OF 12 TO 16	
SATURDAY & SUNDAY:	
MANAGER + MAINTENANCE + STAFF OF 12 TO 16	

PROJECT DATA



VICINITY



APPLICANT:

PROFESSIONAL SEAL:

DESIGNER:  
FUNBOX

4500 PARK GRANADA SUITE 202  
CALABASAS, CALIFORNIA  
91302

SHEET TITLE:  
SITE PLAN

ISSUES & REVISIONS:		BY	APP'D
NO.	DATE	DESC.	
△			
△			
△			
△			
△			
△			
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DRAWINGS, SPECIFICATIONS AND OTHER VISUAL AIDS, AS INSTRUMENTS OF SERVICE ARE THE PROPERTY OF THE DESIGNER WHETHER THE PROJECT FOR WHICH THEY ARE MADE BE EXECUTED OR NOT, AND THEY ARE NOT TO BE USED FOR ANY OTHER SITE THAN THE ONE FOR WHICH THEY ARE PREPARED, EXCEPT BY AGREEMENT IN WRITING.

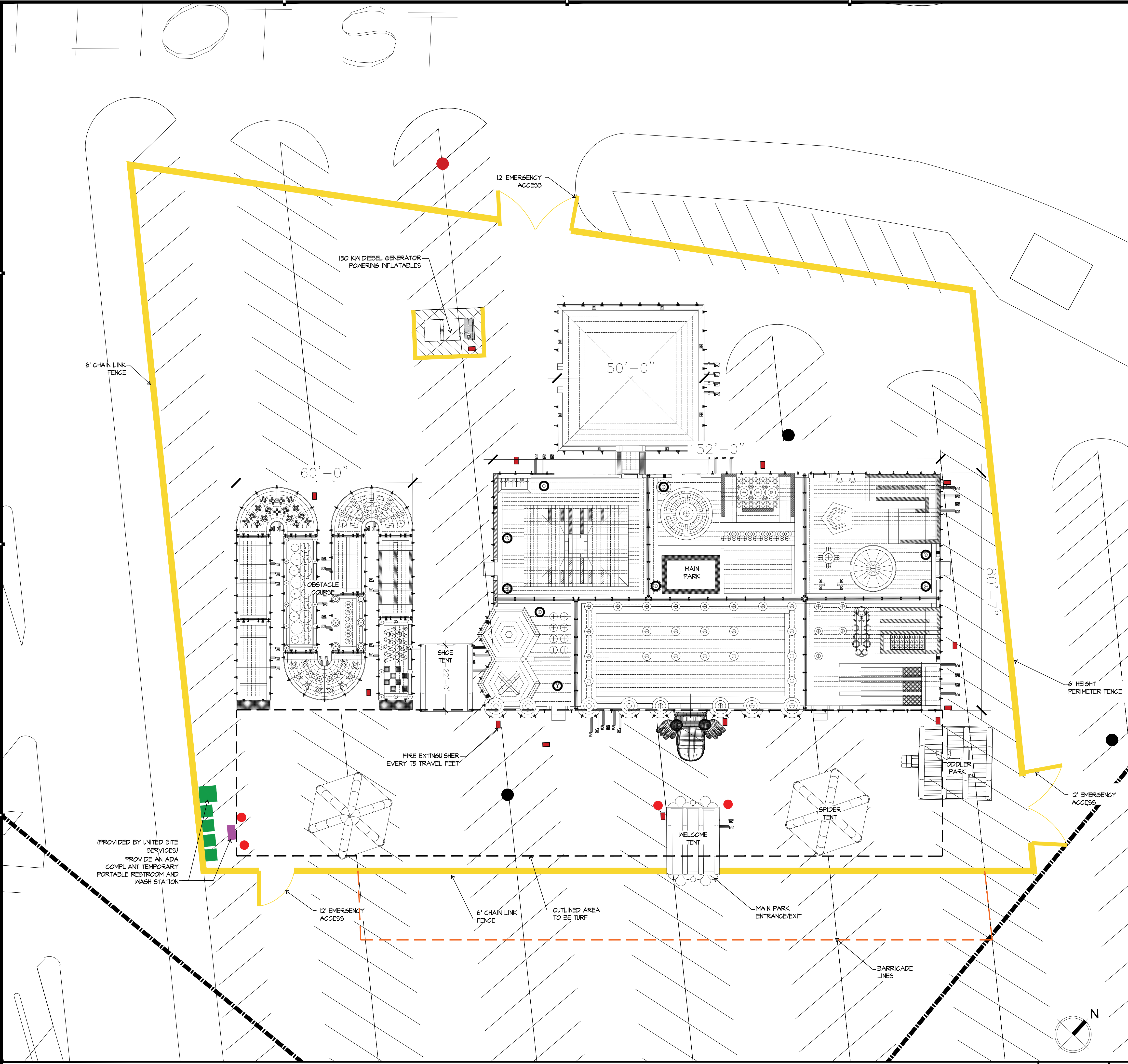
FUNBOX 2020

OWNER/CLIENT:

PROJECT: FUNBOX  
OAKLAND MALL  
LOCATION: 412 W 14 MILE RD  
TROY, MI  
48083

JOB #: - DATE: 02/17/24 SCALE: NOTED SHEET #: SP-1





OAKLAND MALL ENLARGED SITE

SCALE  
1/16" = 1'-0"

PARKING TABULATION

PARKING SPACES TEMP. REPLACED	200
EMPLOYEE PARKING SPACES	14
REGULAR PARKING SPACES	5,991
TOTAL PARKING SPACES REQUIRED	214
TOTAL PARKING SPACES AVAILABLE	5,777

HOURS OF OPERATION

FRIDAY: 3 P.M- 7:30 P.M
SATURDAY: 10:30 A.M- 7:30 P.M
SUNDAY: 10:30 A.M- 7:30 P.M

- \*\*\* 1.5- HOUR TIME SLOTS
- \*\*\* 300 OCCUPANCY LOAD PERMITTED ON MAIN INFLATABLE
- \*\*\* 400 OCCUPANCY LOAD MAX PERMITTED IN THE PARK

PROJECT DATA

SCALE	2
NTS	

- TRASH CAN CONTAINERS
- TEMPORARY PORTABLE BATHROOMS (4)  
PROVIDE AN ADA COMPLIANT PORTABLE RESTROOM (1)
- HAND WASHING STATION (1)  
PROVIDE AN ADA COMPLIANT WASHING STATION (1)
- 6' TALL PERIMETER FENCING
- AREA TO HAVE TURF
- FIRE EXTINGUISHER EVERY 75 TRAVEL FEET
- BARRICADE FOR LINES

LEGEND

SCALE  
NTS



APPLICANT:

PROFESSIONAL SEAL:

DESIGNER:  
FUNBOX

4500 PARK GRANADA SUITE 202  
CALABASAS, CALIFORNIA  
91302

SHEET TITLE:  
ENLARGED  
SITE PLAN

ISSUES & REVISIONS:			
NO.	DATE	DESC.	BY APP'D
△			
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△			

DRAWINGS, SPECIFICATIONS AND OTHER VISUAL AIDS, AS INSTRUMENTS OF SERVICE, ARE THE PROPERTY OF THE DESIGNER WHETHER THE PROJECT FOR WHICH THEY ARE MADE BE EXECUTED OR NOT, AND THEY ARE NOT TO BE USED FOR ANY OTHER SITE, THAN THE ONE FOR WHICH THEY ARE PREPARED, EXCEPT BY AGREEMENT IN WRITING.

FUNBOX 2020

OWNER/CLIENT:

PROJECT: FUNBOX  
OAKLAND MALL  
LOCATION: 412 W 14 MILE RD  
TROY, MI  
48083

JOB #: - DATE: 02/17/24 SCALE: NOTED SHEET #: SP-1.1



CLIENT: FUNBOX  
400 S. Baldwin, Suite S6  
Arcadia, CA 91007

Test Report No: RJ8554F-1 Date: June 08, 2022

SAMPLE ID: The Client submitted and identified the following test material as: FUNBOX PVC Tarpaulin for Inflatables, nominal thickness 0.0210". (Control Samples). See Photo in Appendix of this report.

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: Samples were received on May 26, 2022.

TESTING PERIOD: June 07, 2022.

AUTHORIZATION: Testing authorized by Josue Lovos for proposal 22RT051902 signed May 19, 2022.

TEST REQUESTED: The sample material was tested in accordance with the procedures outlined in NFPA 701 Fire Test method 2 (Large Scale) 2019 Edition "Standard Methods of Fire Tests for Flame-Resistant Textiles and Films". (Control Samples).

TEST CONDITIONING: The test samples were conditioned at 20 °C ± 5 °C (68 °F ± 9 °F) for 24 hours

TEST RESULTS: This tested material has met the performance requirements per NFPA 701 -2019, Test Method 2. (Large Scale)

\*See page 2 for Performance Criteria.

Prepared By:

*Victor A. Peinado*

Victor.A.Peinado  
Senior Test Technician

Signed for and on behalf of  
QAI Laboratories, Inc.

*Jason Friedrich*

Jason Friedrich P.E.  
Engineering Manager

THIS REPORT IS THE CONFIDENTIAL PROPERTY OF THE CLIENT ADDRESSED. THE REPORT MAY ONLY BE REPRODUCED IN FULL. PUBLICATION OF EXTRACTS FROM THIS REPORT IS NOT PERMITTED WITHOUT WRITTEN APPROVAL FROM QAI. ANY LIABILITY ATTACHED THERETO IS LIMITED TO THE FEE CHARGED FOR THE INDIVIDUAL PROJECT FILE REFERENCED. THE RESULTS OF THIS REPORT PERTAIN ONLY TO THE SPECIFIC SAMPLE(S) EVALUATED.

WWW.QAI.ORG  
info@qai.org

TEST SAMPLE: FUNBOX PVC Tarpaulin for Inflatables, nominal thickness 0.0225". (Control Samples)

TEST RESULTS: (Pass)

Specimen No.	Afterflaming duration (Sec)	Floor Flaming (Sec.)	Char Length (in.)
1	0	0	7"
2	0	0	9"
3	0	0	8"
4	0	0	10"
5	0	0	8"
6	0	0	8"
7	0	0	9"
8	0	0	8"
9	0	0	9"
10	0	0	9"

PERFORMANCE CRITERIA

- When any specimen continues flaming for more than 2 seconds after the flame is removed from the contact with the specimen, the material shall be recorded as having failed the test.
- When the char length of any single flat specimen exceeds 435mm (17.1 in.) the material shall be recorded as having failed the test.
- \* When at any time during or after the application of the test flame, any portions or residues of the material Being tested breaks or drips from the specimen and fall to the floor of the test apparatus, and continue Burning for more than 2 seconds after reaching the floor of the test apparatus, the material shall be Recorded as having failed the test.

THIS REPORT IS THE CONFIDENTIAL PROPERTY OF THE CLIENT ADDRESSED. THE REPORT MAY ONLY BE REPRODUCED IN FULL. PUBLICATION OF EXTRACTS FROM THIS REPORT IS NOT PERMITTED WITHOUT WRITTEN APPROVAL FROM QAI. ANY LIABILITY ATTACHED THERETO IS LIMITED TO THE FEE CHARGED FOR THE INDIVIDUAL PROJECT FILE REFERENCED. THE RESULTS OF THIS REPORT PERTAIN ONLY TO THE SPECIFIC SAMPLE(S) EVALUATED.

WWW.QAI.ORG  
info@qai.org

Appendix



FUNBOX PVC Tarpaulin for Inflatables, nominal thickness 0.0210" as received from client.

\*\*\*<<<END OF TEST REPORT>>>\*\*\*

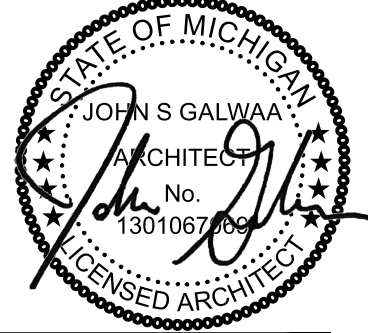
THIS REPORT IS THE CONFIDENTIAL PROPERTY OF THE CLIENT ADDRESSED. THE REPORT MAY ONLY BE REPRODUCED IN FULL. PUBLICATION OF EXTRACTS FROM THIS REPORT IS NOT PERMITTED WITHOUT WRITTEN APPROVAL FROM QAI. ANY LIABILITY ATTACHED THERETO IS LIMITED TO THE FEE CHARGED FOR THE INDIVIDUAL PROJECT FILE REFERENCED. THE RESULTS OF THIS REPORT PERTAIN ONLY TO THE SPECIFIC SAMPLE(S) EVALUATED.

WWW.QAI.ORG  
info@qai.org



APPLICANT:

PROFESSIONAL SEAL:



DESIGNER:

FUNBOX

4500 PARK GRANADA SUITE 202  
CALABASAS, CALIFORNIA  
91302

SHEET TITLE:

COMPONENTS

FIRE TEST REPORT

SCALE  
NOT TO SCALE

5

FIRE TEST REPORT

SCALE  
NOT TO SCALE

6

FIRE TEST REPORT

SCALE  
NOT TO SCALE

7



AIR BLOWER

SCALE  
NOT TO SCALE

4



AIR BLOWER

SCALE  
NOT TO SCALE

1

HUAWEI AIR BLOWER UL CERTIFICATION

SCALE  
NOT TO SCALE

2

HUAWEI AIR BLOWER UL

SCALE  
NOT TO SCALE

3

CERTIFICATE OF COMPLIANCE

Certificate Number 20130910-E230679  
Report Reference E230679-20050811  
Issue Date 2013-SEPTEMBER-10

Issued to: SHUNDE HUAWEI AIR-BLOWER MFG CO LTD  
32 BEIGUAN RD, SIJI RONGGUI  
SHUNDE ,FOSHAN  
GUANGDONG 528000 CHINA

This is to certify that  
representative samples of

FANS, ELECTRIC, COMPRESSORS, VACUUM PUMPS AND  
PNEUMATIC PAINT SPRAYERS  
Air Blower/Air Pump, Models W-1.5L, W-2L, W-2LA, W-3L, W-4L and  
W-4LA.

Note: Models W-1.5, W-1.5A, W-2, W-3 and W-4 were deleted per  
client's request; the related information below was reserved for  
reference only.

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.


Standard(s) for Safety:

UL1450 - Standard for Motor-Operated Air Compressors, Vacuum  
Pumps, and Painting Equipment  
CAN/CSA C22.2 No. 68-09 - Standard for Motor-Operated Appliances  
(Household and Commercial)

Additional Information:

See the UL Online Certifications Directory at  
[www.ul.com/database](http://www.ul.com/database) for additional information

Only those products bearing the UL Listing Mark for the US and Canada should be considered as  
being covered by UL's Listing and Follow-Up Service meeting the appropriate requirements for US  
and Canada.

The UL Listing Mark for the US and Canada generally includes: the UL in a circle symbol with "C" and  
"US" identifiers:  the word "LISTED"; a control number (may be alphanumeric) assigned by UL;  
and the product category name (product identifier) as indicated in the appropriate UL Directory.

Look for the UL Listing Mark on the product.

*William R. Canney*  
William R. Canney, Director, North American Certification Programs  
UL LLC

Any information and documentation including UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please  
contact a local UL Customer Service Representative at [www.ul.com/customer](http://www.ul.com/customer)

Page 1 of 1



ISSUES & REVISIONS: BY APP'D  
NO. DATE DESC.

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DRAWINGS, SPECIFICATIONS AND OTHER VISUAL AIDS, AS  
INSTRUMENTS OF SERVICE ARE THE PROPERTY OF THE  
DESIGNER WHETHER THE PROJECT FOR WHICH THEY ARE  
MADE BE EXECUTED OR NOT, AND THEY ARE NOT TO BE  
USED FOR ANY OTHER SITE THAN THE ONE FOR WHICH  
THEY ARE PREPARED, EXCEPT BY AGREEMENT IN WRITING.

FUNBOX 2020

OWNER/CLIENT:

PROJECT: FUNBOX

OAKLAND MALL  
LOCATION: 412 W 14 MILE RD  
TROY, MI  
48083

JOB #: DATE: SCALE: SHEET #:

- 02/17/24 NOTED

TD=1



**CITY OF TROY  
PRELIMINARY SITE PLAN APPLICATION**

CITY OF TROY PLANNING DEPARTMENT  
500 W. BIG BEAVER  
TROY, MICHIGAN 48084  
248- 524-3364  
FAX: 248-524-3382  
E-MAIL: [planning@troymi.gov](mailto:planning@troymi.gov)



PRELIMINARY SITE PLAN REVIEW FEE  
**\$1,000.00**  
ESCROW FEE  
**\$1,500.00**  
ADMINISTRATIVE SITE PLAN REVIEW FEE  
**\$300.00**

REGULAR MEETINGS OF THE CITY PLANNING COMMISSION ARE HELD ON THE SECOND AND FOURTH TUESDAYS OF EACH MONTH AT 7:00 P.M. AT CITY HALL.

PLEASE FILE A COMPLETE PRELIMINARY SITE PLAN APPLICATION, TOGETHER WITH THE APPROPRIATE FEE, NOT LESS THAN THIRTY (30) DAYS PRIOR TO THE DATE OF THAT MEETING.

1. NAME OF THE PROPOSED DEVELOPMENT: mk OAKLAND MALL OUTDOOR BounceHouse
2. ADDRESS OF THE SUBJECT PROPERTY: 412 W 14 mile Rd
3. ZONING CLASSIFICATION OF THE SUBJECT PROPERTY: General Business (GB)
4. TAX IDENTIFICATION NUMBER(S) OF SUBJECT PROPERTY: [REDACTED] 88-20-35-400-017
5. DESCRIPTION OF PROPOSED USE: Bring the world's largest bounce park franchise to the city of Troy to provide a fun and safe family experience, and give back to local foster organizations.

6. APPLICANT:

NAME Fouad Hassan  
COMPANY Lala Bounce LLC  
ADDRESS 4100 Eldorado Pkwy Ste 100-140  
CITY McKinney STATE TX ZIP 75070  
TELEPHONE (734) 934-7235  
E-MAIL fouad@funbox.com

PROPERTY OWNER:

NAME MARIO KIELI  
COMPANY mk oakland mall LLC  
ADDRESS 2600 W Big Beaver Suite 410  
CITY Troy STATE MI ZIP 48084  
TELEPHONE 248 729 7500  
E-MAIL mario@mkiceli.com

7. THE APPLICANT BEARS THE FOLLOWING RELATIONSHIP TO THE OWNER OF THE SUBJECT PROPERTY:

Applicant is the lessee of the Oakland Mall property

8. SIGNATURE OF APPLICANT Fouad Hassan DATE 01/26/2024
9. SIGNATURE OF PROPERTY OWNER [Signature] DATE 2/5/2024

BY THIS SIGNATURE, THE PROPERTY OWNER AUTHORIZES PLACEMENT OF A SIGN ON THE PROPERTY TO INFORM THE PUBLIC AS TO THIS REQUEST FOR PRELIMINARY SITE PLAN.

RECEIVED

FEB - 8 2024

Rev. Jan 2020

PLANNING





FUNBOX

# WORLD'S BIGGEST BOUNCE PARK®

## PRIOR AND CURRENT LOCATIONS

The Oaks Mall  
Westfield Topanga  
Del Amo Fashion Center  
Chandler Fashion Center  
Shops at Santa Anita  
Westfield Galleria at Roseville  
Superstition Springs Mall  
Westfield Plaza Bonita  
Westfield UTC

## MEMBERS OF



## AS SEEN AT





# FUNBOX: THE PARK

Total inflatable park is 25,000 sq ft.

The park includes 40 games, 40 characters, a 3-story palace, a mountain, and much more

FUNBOX is for all ages and family friendly

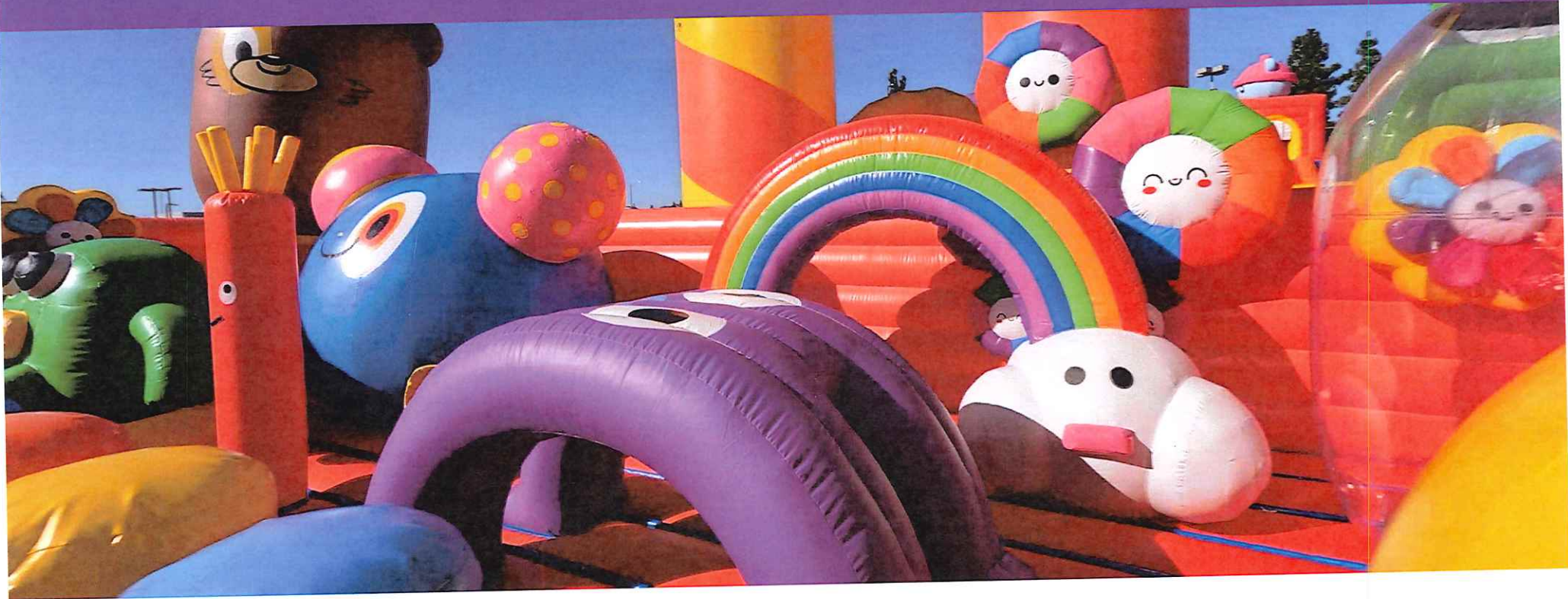




# Funbox Troy - Proposal

The use of the parking lot at Oakland Mall to operate a FUNBOX park

Dates: May 3, 2024 – July 7, 2024







# Benefits

FUNBOX provides a fun and exciting experience for Troy city residents

3,000-5,000 visitors a week (30,000-40,000 per campaign)

80-90% of visitors pre-book online

Nearby restaurants and entertainment businesses see a boost in sales

Attract people from all over the Detroit metro area

Gives back to the community







## OPERATIONS OVERVIEW

Visitors book 90 minute sessions online or in person

Park accommodates 500 people per session

We do not sell any food, only beverages and snow cones

10-12 Week Campaign

Open During Weekends

Self Sufficient

Closed during rain and severe winds





# Exposure

Park attracts local news coverage

\$50k-\$100k spent on local advertising

Generate 500,000 ads

Ads reach 35% of population 5-7 times

10-15% of patrons post FUNBOX on social media



**WORLD'S LARGEST BOUNCE PARK**

12NEWS

8:42  
62°

NBA: GSW VS CHARLOTTE 5:00 PM



**Typical Mall Layout:**  
35,000-45,000 sq.ft.

**Actual inflatable:**  
around 25,000 sq.ft.



## SAMPLE SITE PLANS

MALL PARKING LOT & FUNBOX

Mall parking lot & FUNBOX Zone - fenced area  
including turf, tents, tables, and other amenities



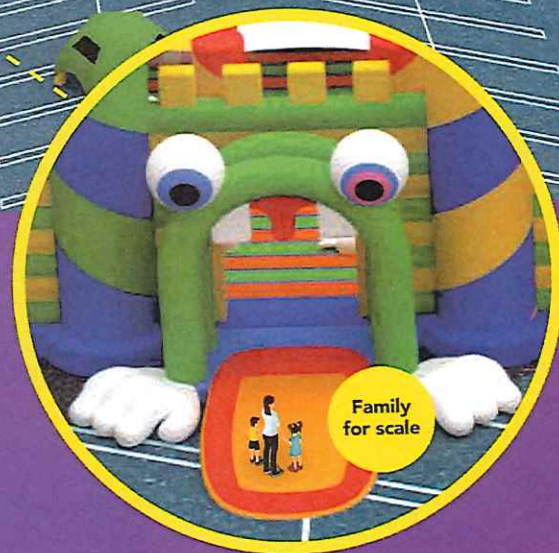




# SAMPLE SITE PLANS

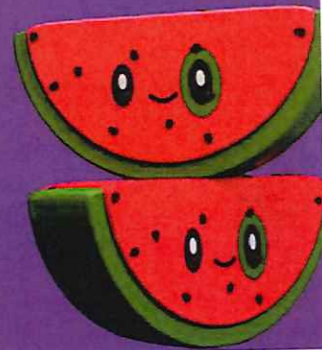
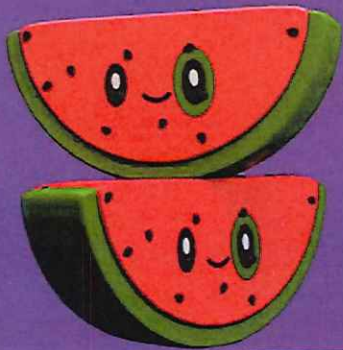
FUNBOX PARK

FUNBOX Zone - fenced area including turf,  
tents, tables, and other amenities



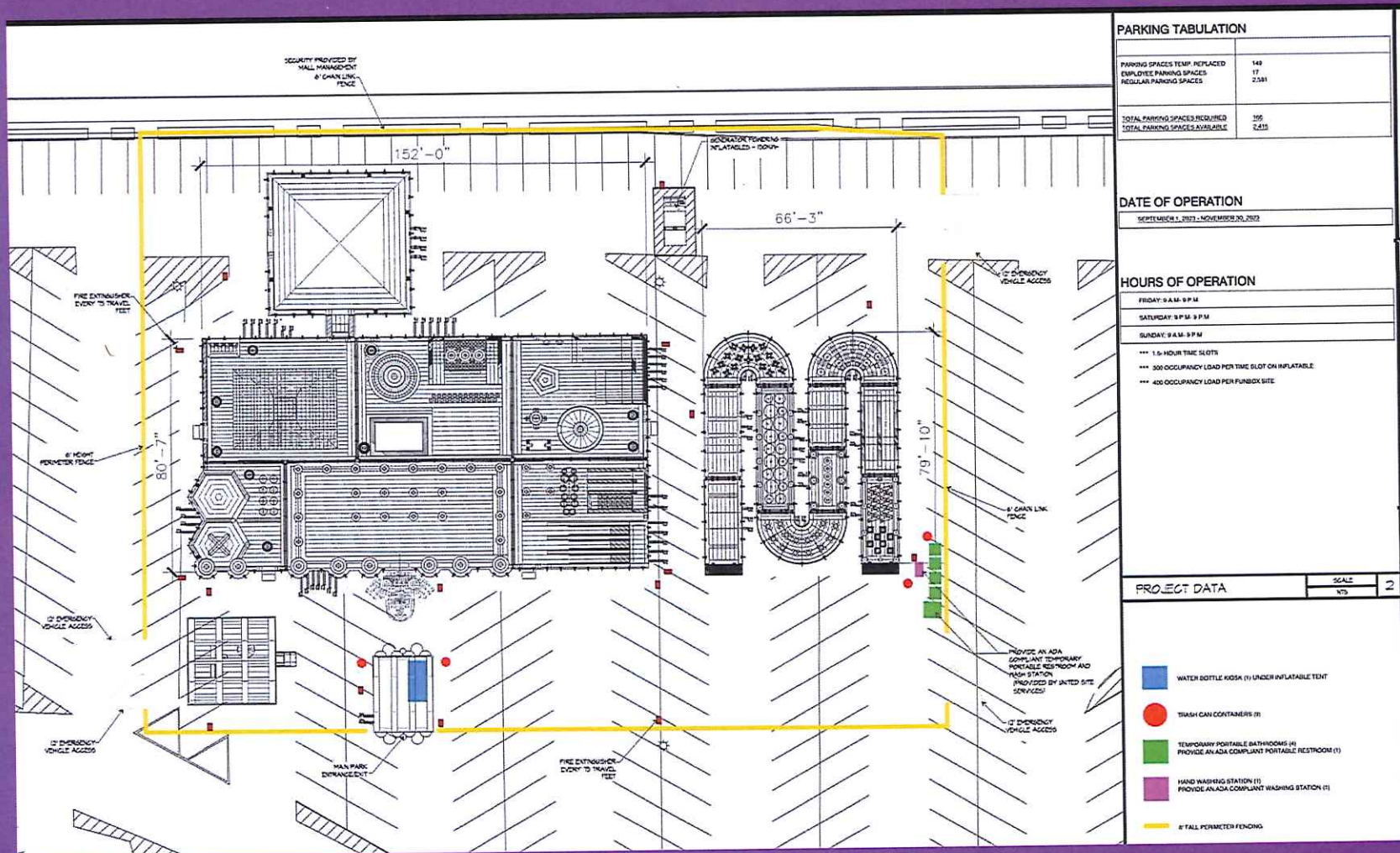


# Oakland Mall – Proposed Location





# Funbox Troy – Proposed Site Plan





# Risk Management

SAFETY IS OUR TOP PRIORITY

All customers sign a waiver prior to entering the park

All staff are trained on proper safety procedures

Inflatables are engineered for prolonged deflation

\$1,000,000 General Liability Coverage/\$3,000,000 Aggregate

Hosted over 400,000 visitors with no reported serious incidents to date





# Charity

We Donate \$1 for every ticket sold opening weekend to a local foster organization

We also host a private session for the children in the organizations



Received 4/4/2024  
after memo was  
completed

**From:** [Planning](#)  
**To:** [Brent Savidant](#); [Salim Huerta Jr](#)  
**Subject:** FW: Troy  
**Date:** Thursday, April 4, 2024 1:32:43 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image005.png](#)  
[image006.png](#)  
[2024-04-03\\_OAKLAND MALL OUTDOOR PARK\\_sealed.pdf](#)  
[Lala Bounce LLC - Response Letter to Planning Commmission Questions 040224.pdf](#)  
[Funbox Fire-1 PVC Method 2 Testing NFPA.pdf](#)  
[Funbox Inflatable Anchoring Engineering Evaluation.pdf](#)  
[Operating Manual 1 - XGE Operation and Installation for Obstacle Course.pdf](#)  
[Operating Manual 2 - XGE2 The installation instruction for Outdoor Park.pdf](#)  
[DTE - Oakland Mall - Troy MI - Light Spec.pdf](#)  
[image007.png](#)  
[image008.png](#)  
[image009.png](#)  
[image010.png](#)  
[image011.png](#)  
[image012.png](#)

---



**Jackie Ferencz**  
**Office Manager |**  
**City of Troy Planning Dept**  
O: 248.524.3364



---

**From:** John Galwaa <[john@mkiezi.com](mailto:john@mkiezi.com)>  
**Sent:** Thursday, April 4, 2024 1:04 PM  
**To:** Jackie Ferencz <[Jackie.Ferencz@troymi.gov](mailto:Jackie.Ferencz@troymi.gov)>; Planning <[planning@troymi.gov](mailto:planning@troymi.gov)>  
**Cc:** Marilyn Thomas <[marilyn@mkiezi.com](mailto:marilyn@mkiezi.com)>; Salim Huerta Jr <[Salim.HuertaJr@troymi.gov](mailto:Salim.HuertaJr@troymi.gov)>; Fouad Hassan <[fouad@funbox.com](mailto:fouad@funbox.com)>; Anum Hassan <[anum@funbox.com](mailto:anum@funbox.com)>  
**Subject:** RE: Troy

**CAUTION:** This email did not originate from within the City of Troy. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Jackie,

Please find attached updated documents for Bounce House at parcel 88-20-35-400-017. I will be dropping off two complete sets later today.

Included are the following:

Letter addressing concerns of the various departments and Carlisle Consulting  
24"x36" site plan, architectural drawings, and specs  
8 ½" x 11" Fire Testing Documentation  
8 ½" x 11" Structural Anchoring Calculations

8 ½" x 11" Lighting Specifications  
8 ½" x 11" Detailed Product Manual Install/Assembly (Obstacle Course & Bounce Park)

Thanks!

John Galwaa, RA NCARB | **MKiezi Investments**  
**Senior Design Manager**  
2600 W. Big Beaver, Suite 410  
Troy, MI 48084  
**Office** 248.729.7500 | **Cell** 248.229.3936

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---

**From:** Salim Huerta Jr <>  
**Sent:** Tuesday, March 26, 2024 9:53 AM  
**To:** Marilyn Thomas <[marilyn@mkiezi.com](mailto:marilyn@mkiezi.com)>  
**Subject:** Troy

Hello Marilyn,

Attached is the full review for the Bounce House at parcel 88-20-35-400-017.

Thank you,



Salim Huerta Jr.  
Commercial Project Collaborator

City of Troy | Planning Department  
O: 248.524.3352





4/2/2024

Dear Whom It May Concern,

This is Fouad & Anum Hassan, owners of Lala Bounce LLC Dba Funbox Troy, writing you a detailed response letter regarding the planning commission questions. Please see attached our responses and let us know if you have any further questions or concerns.

**1. Time length of application (how many months)?**

The intent for FunBox Operations is from May 3rd, 2024, through July 7th, 2024. The tentative schedule opens 3 pm to 7:30pm Friday and 10:30am to 7:30pm Saturday/Sunday and is staffed with 12 to 16 personnel per day.

**2. Since the use is temporary, would the Planning Commission like to limit approval to this year only and require the applicant to get reapproved in 2025?**

The application is for this year only, but even though the intent is to return yearly, the applicant understands that a new application must be filed if FunBox is to return in 2025.

**3. Is the 6-foot tall chain link fence sufficient or should additional screening be required?**

In our previous operations as well as other Funbox operations nationwide, most municipalities have been sufficient with a 6-foot screening fence, but the applicant will comply with the planning commissions suggestions.

**4. Confirm if food and drink will be sold within the park?**

Food is not part of the application and will not be sold on premises, but Funbox will be selling bottled water, sports drinks (i.e. Gatorade) and shaved ice and will file the additional permits with MDARD for proper inspection.

**5. Does the applicant plan for any ancillary uses outside of the park such as food trucks?**

As outlined in line item 4, only beverages are sold within FunBox. All other food and/or beverage, if any, would be handled under a separate application with no affiliation to FunBox.

**6. Provide security details and confirm security plan with Troy Police Department.**

Security details will be provided through the mall security team (Blue Line Protection) and estimate around 3 to 4 personnel during the hours of operations. The mall security team always has one individual on site throughout the night. Marcus Conrad, Head of Blue Line Protection, can coordinate a plan with Troy Police similarly to how it was handled during the 2023 Holiday Season. The inflatables are inflated in the morning and deflated in the evenings.

Additionally, use of water filled K-Rails will line the enclosure where concrete curbs do not exist. This provides vehicular barriers along the entire main front entrance (southeast and northeast elevation) and near adjacent access points along the outer ring road as indicated on SP-1.1.

**7. Lighting details of the site.**

The general lighting will be provided by site lighting – recently upgraded in early 2024 through DTE. The current site lighting is two 299-watt LED AR18 luminaries mounted 25' tall light poles providing compliance IESNA Guideline for



Security Lighting for People, Property and Public Spaces (G-1-16). This exceeds the basic requirements of standard parking facilities and provides ample light coverage. Two poles are within the chain link fence screening within an additional three light poles within the vehicular barricaded area. The inflatables are inflated in the morning and deflated in the evenings – all occurring during daylight hours. No additional site lighting will be provided. Refer to specification light sheet attached.

## **8. Vehicular Impact and Traffic Circulation**

Use of water filled K-Rails will line the enclosure where concrete curbs do not exist. This provides vehicular barriers along the entire main front entrance (southeast and northeast elevation) and near adjacent access points along the outer ring road as indicated on SP-1.1. Traffic cones and K-Rails as indicated on SP-1 depict traffic circulation intent and designated event parking area.

## **9. Building Official Additional Information for Salim Huerta**

Refer to sheet A-1 and A-2 for Occupancy, Life Safety, and Egress/Exiting Plan. PVC Vinyl Nominal thickness .0230" is tested and meets the performance criteria outlined in NFPA 701-2019. Refer to document "Funbox Fire-1 PVC Method 2 Testing NFPA" for flame/fire spread testing/smoke index. Refer to document "Funbox Inflatable Anchoring Engineering Evaluation" for anchoring details and load calculations as assessed by Hopper Engineering Associates. Refer to "Operating Manual 1 – XGE Operation for Obstacle Course" for detail specifications for obstacle course and "Operating Manual 2 – XGE2 The Installation Instruction for Outdoor Park" for the overall bounce park.

## **10. Building Plan Review for Tom Caporuscio**

This is not permanent – refer to prefabricated elements in manual for details on inflatables and A-1 and A-2 for plan layout.

## **11. Engineering for Antonio Cicchetti**

This is not permanent – refer to prefabricated elements in manual for details on inflatables and SP-1 and SP-1.1 for plan layout.

## **12. Fire for Michael Koehler**

Refer to Items 6, 7, and 8

## **13. Traffic Engineer for Scott Finlay**

Refer to Items 7 and 8

Kind Regards,

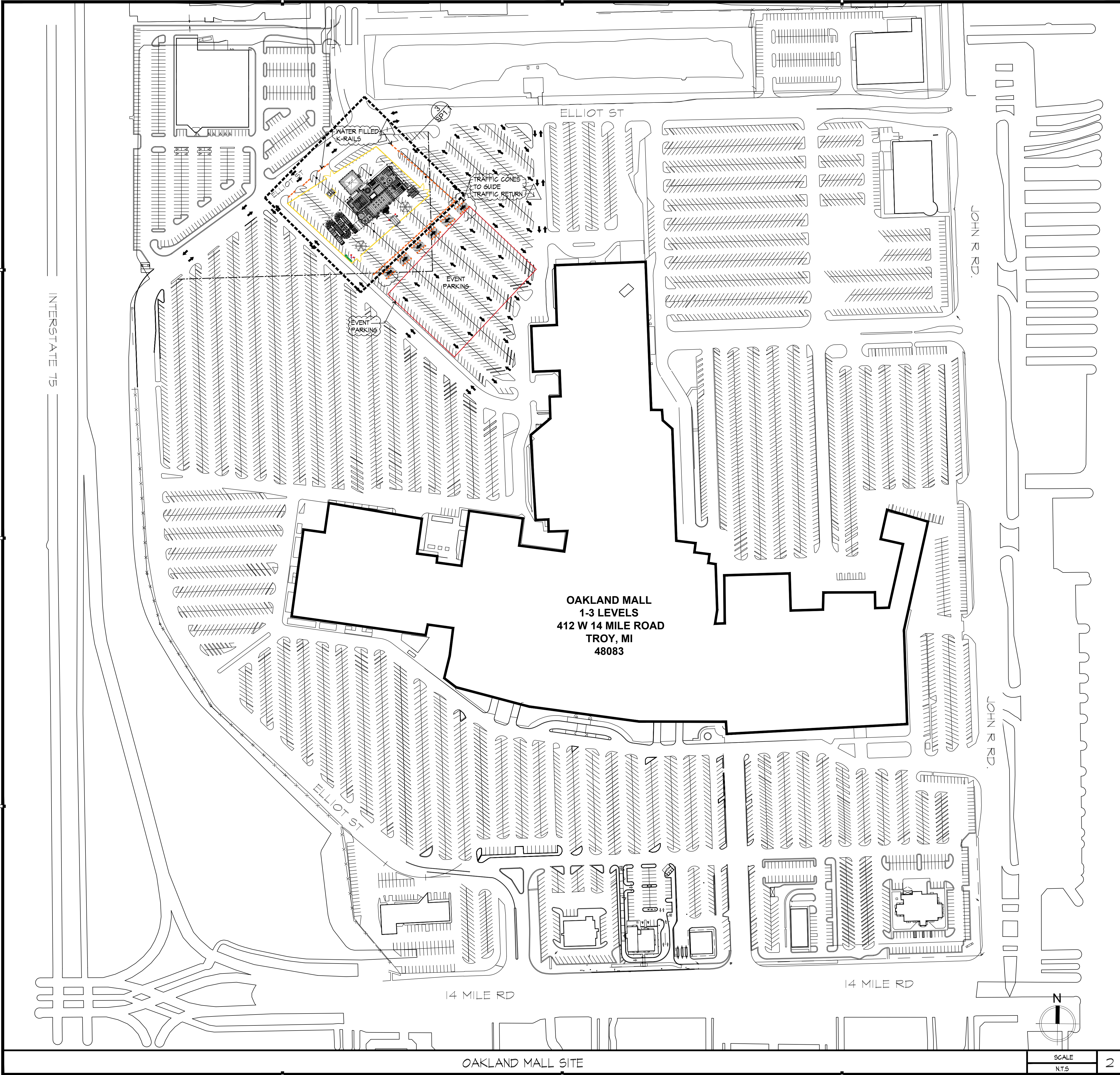
*Anum Hassan & Fouad Hassan*

Owners of Funbox Michigan

[anum@funbox.com](mailto:anum@funbox.com) | 469.274.8539

[fouad@funbox.com](mailto:fouad@funbox.com) | 734.934.7235





PARKING TABULATION

PARKING SPACES TEMP. REPLACED	200
EMPLOYEE PARKING SPACES	14
REGULAR PARKING SPACES	5,991
TOTAL PARKING SPACES REQUIRED	214
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DATE OF OPERATION

MAY 3, 2024 - JULY 7, 2024
----------------------------

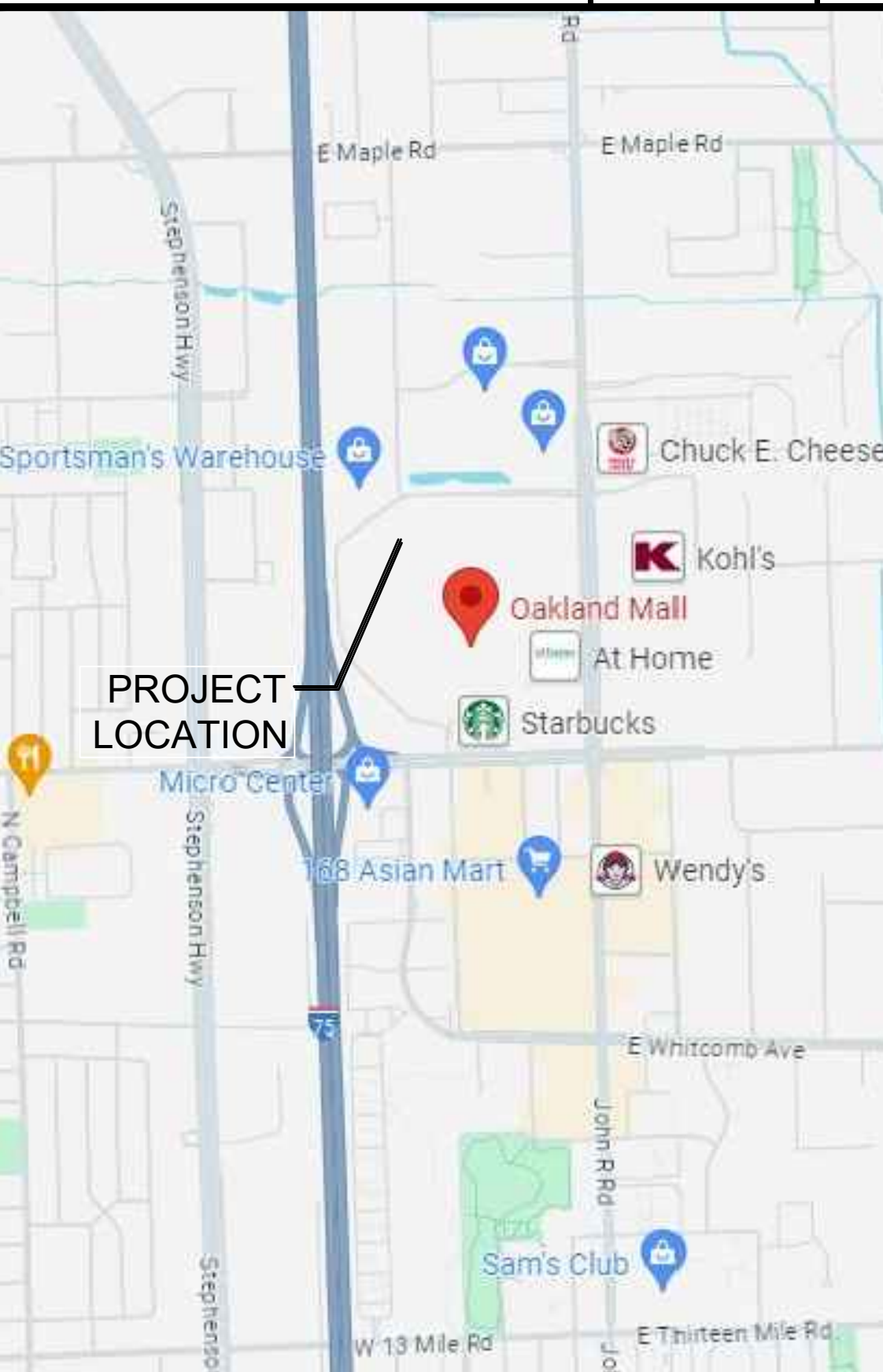
HOURS OF OPERATION

FRIDAY: 3 P.M- 7:30 P.M
SATURDAY: 10:30 A.M- 7:30 P.M
SUNDAY: 10:30 A.M- 7:30 P.M
*** 1.5- HOUR TIME SLOTS
*** 300 OCCUPANCY LOAD PERMITTED ON MAIN INFLATABLE
*** 400 OCCUPANCY LOAD MAX PERMITTED IN THE PARK

EMPLOYEES PER SHIFT

FRIDAY:
MANAGER + MAINTENANCE + STAFF OF 12 TO 16
SATURDAY & SUNDAY:
MANAGER + MAINTENANCE + STAFF OF 12 TO 16

PROJECT DATA



VICINITY



APPLICANT:

PROFESSIONAL SEAL:

DESIGNER:  
FUNBOX

4500 PARK GRANADA SUITE 202  
CALABASAS, CALIFORNIA  
91302

SHEET TITLE:  
SITE PLAN

ISSUES & REVISIONS:		BY	APP'D
NO.	DATE	DESC.	
△	04/01/24	PLAN CHECK RESPONSE	
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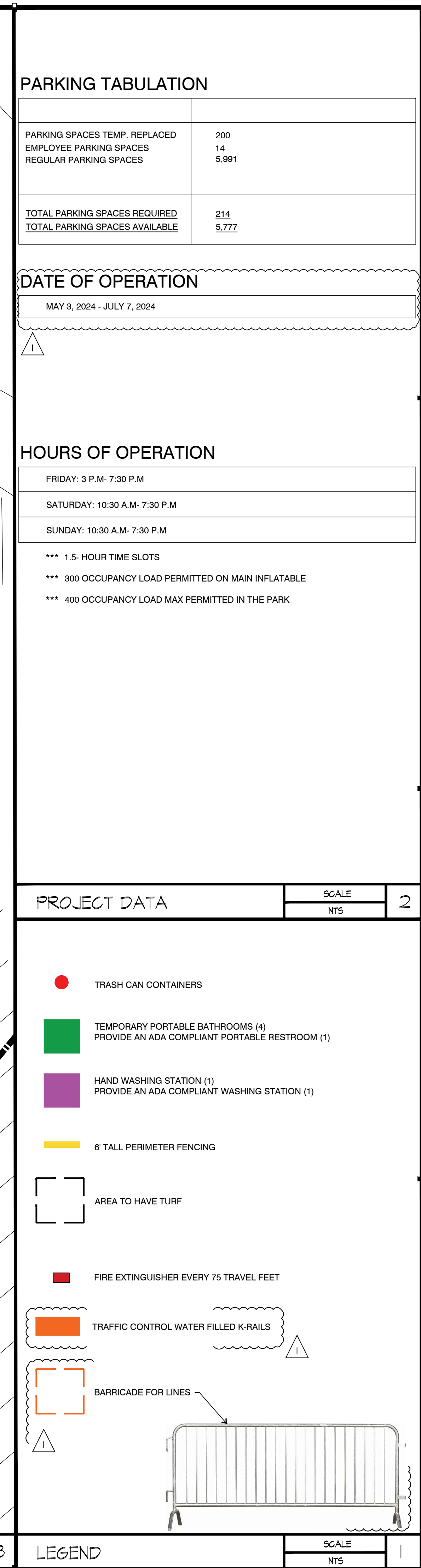
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FUNBOX 2020  
OWNER/CLIENT:

PROJECT: FUNBOX  
OAKLAND MALL  
LOCATION: 412 W 14 MILE RD  
TROY, MI  
48083

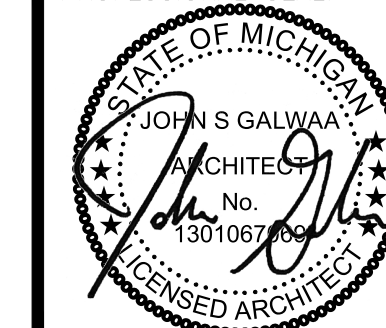
JOB #: 02/17/24 DATE: NOTED SCALE: SHEET #: SP-1





APPLICANT:

PROFESSIONAL SEAL:



DESIGNER:

FUNBOX

4500 PARK GRANADA SUITE 202  
CALABASAS, CALIFORNIA  
91302

SHEET TITLE:

TITLE: ENLARGED  
SITE PLAN

[illegible]

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FUNBOX 2020

OWNER/CLIENT:

PROJECT: FUNBOX

OAKLAND MALL

LOCATION: 412 W 14 MILE RD  
TROY, MI  
48083

JOB #:                      DATE:                      SCALE:                      SHEET #

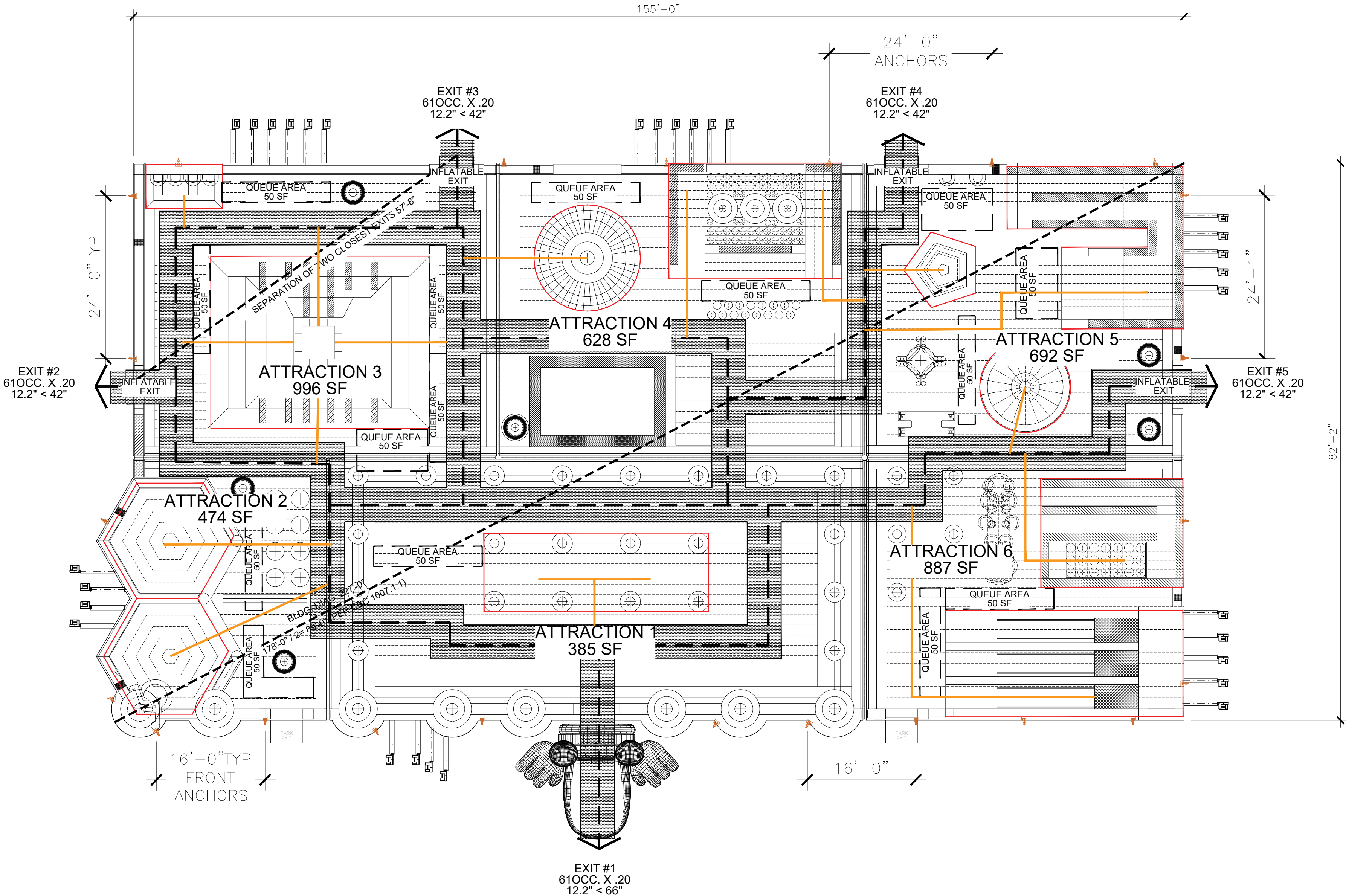
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LEGEND

- PERIMETER INFLATABLE WALL @ 7'-2" A.F.F.
- COMMON PATH OF EGRESS
- COMMON PATH TO EGRESS LESS THAN 75'



PLAY STRUCTURE OCCUPANCY LOAD  
( PER TABLE 1004.5 OF MICHIGAN 2015 BUILDING CODE )

AREA / SPACE	AREA	OCC GROUP	OCC FACTOR	TOTAL
CIRCULATION	8,619 SF	EXERCISE AREA	50 OCC.	172 OCC.
QUEUE	750 SF	WAITING AREA	15 OCC.	50 OCC.
ATTRACTION 1	385 SF	EXERCISE AREA	50 OCC.	8 OCC.
ATTRACTION 2	474 SF	EXERCISE AREA	50 OCC.	9 OCC.
ATTRACTION 3	996 SF	EXERCISE AREA	50 OCC.	20 OCC.
ATTRACTION 4	628 SF	EXERCISE AREA	50 OCC.	13 OCC.
ATTRACTION 5	692 SF	EXERCISE AREA	50 OCC.	14 OCC.
ATTRACTION 6	887 SF	EXERCISE AREA	50 OCC.	18 OCC.
PERIMETER WALLS	787 SF	-	ACCESSORY	0 OCC.
GRAND TOTAL	14,208 SF			304 OCC.

PLAY STRUCTURE AREA 14,208 SQ. FT. = 304 OCCUPANTS  
OCCUPANCY LOAD: 304 OCCUPANTS  
REQUIRED EXITS PER DOOR: (2) TWO EXITS REQUIRED (1-500)  
(5) FIVE EXITS PROVIDED  
MINIMUM EGRESS (DOORS) WIDTH REQUIRED: 304 OCC. X 0.2", 5" = 12.16"  
MINIMUM EGRESS WIDTH PROVIDED: 66" @ ENTRY, 42" @ SIDES, 42" @ REAR EXITS

EXITS WIDTH  
( PER TABLE 1005.1 OF MICHIGAN 2015 BUILDING CODE )

EXIT ELEMENT	WIDTH	CAPACITY	REQ. CAPACITY
EXIT # 1	66"	330 PERSONS	250 PERSONS
EXIT # 2	42"	210 PERSONS	125 PERSONS
EXIT # 3	42"	210 PERSONS	125 PERSONS
EXIT # 4	42"	215 PERSONS	125 PERSONS
EXIT # 5	42"	215 PERSONS	125 PERSONS
GRAND TOTAL	234"	1,180 PERSONS	750 PERSONS



ANCHOR POINTS



APPLICANT:

PROFESSIONAL SEAL:

STATE OF MICHIGAN  
JOHN S. GALWALA  
ARCHITECT  
No. 1301067  
LICENSED ARCHITECT

DESIGNER:  
FUNBOX

4500 PARK GRANADA SUITE 202  
CALABASAS, CALIFORNIA  
91302

SHEET TITLE:  
INFLATABLE PLAY  
STRUCTURE OCCUPANCY  
& EXITING PLAN

ISSUES & REVISIONS:			
NO.	DATE	DESC.	BY APP'D
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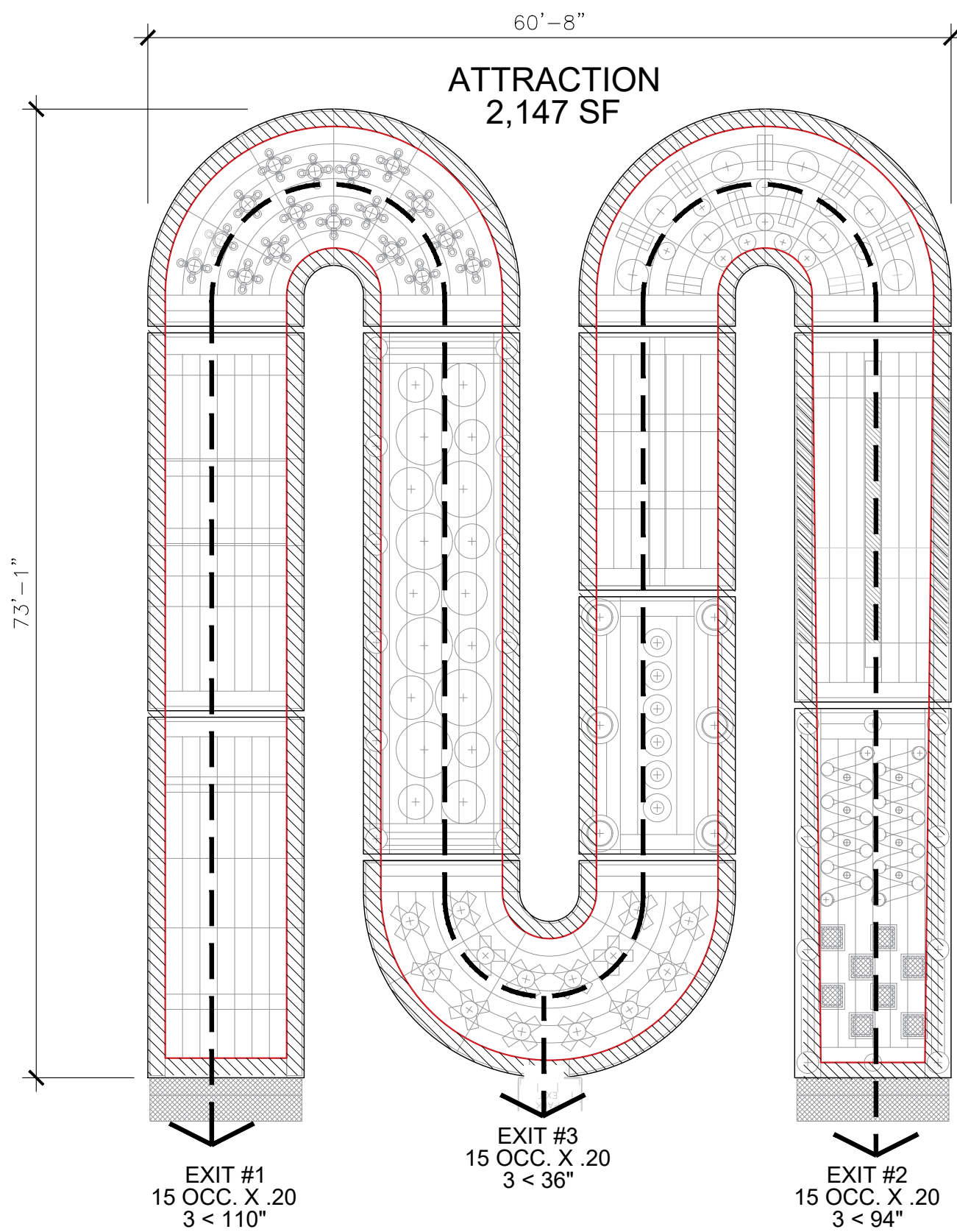
FUNBOX 2020

OWNER/CLIENT:

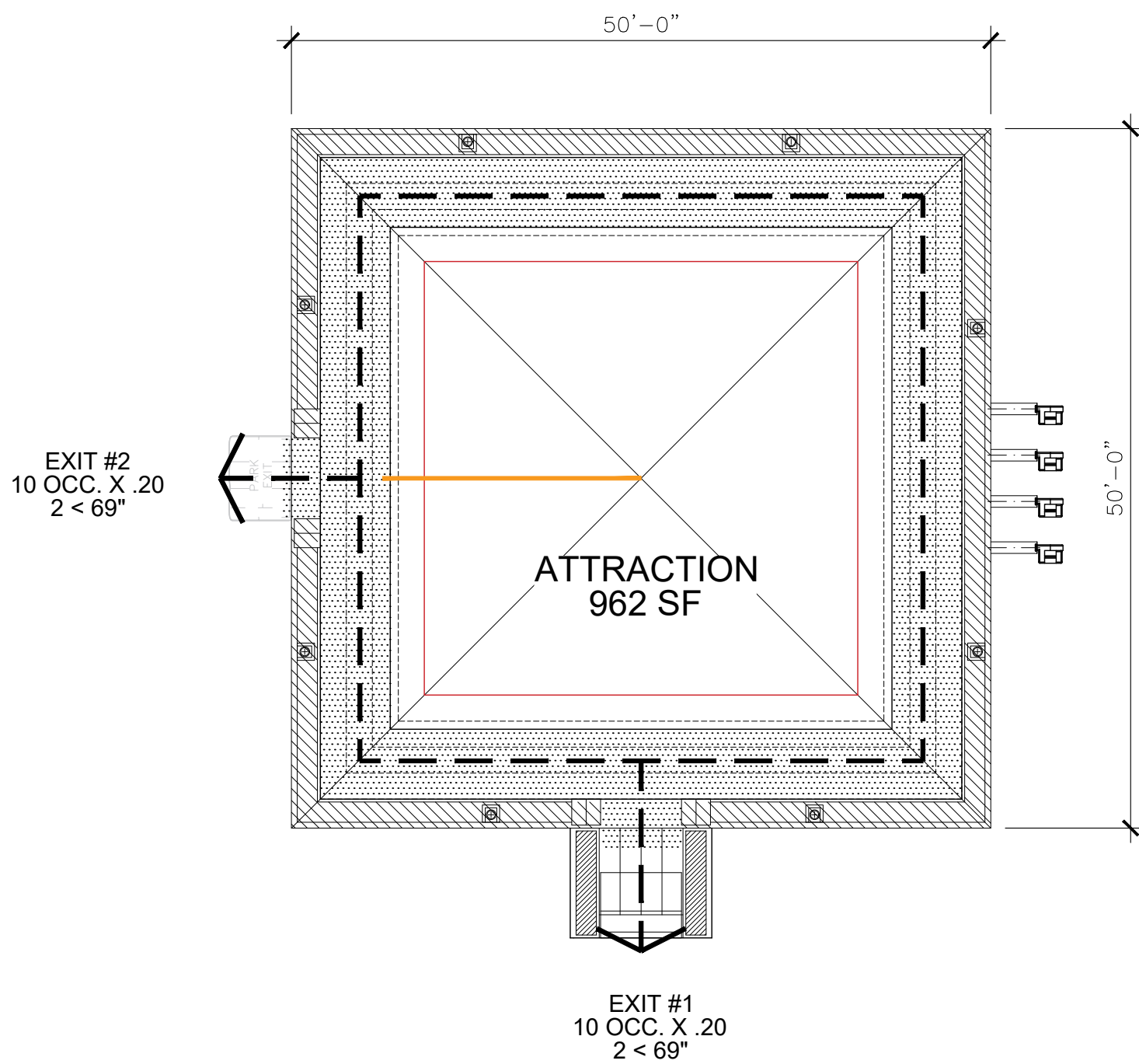
PROJECT: FUNBOX  
OAKLAND MALL  
LOCATION: 412 W 14 MILE RD  
TROY, MI  
48083

JOB #: 02/17/24 DATE: NOTED SCALE: SHEET #:





OBSTACLE COURSE



THE MOUNTAIN

LEGEND

PERIMETER INFLATABLE WALL @ 7'-2" A.F.F.

COMMON PATH OF EGRESS

COMMON PATH TO EGRESS LESS THAN 75'

OBSTACLE COURSE  
PLAY STRUCTURE OCCUPANCY LOAD

( PER TABLE 1004.5 OF MICHIGAN 2015 BUILDING CODE )

AREA / SPACE	AREA	OCC GROUP	OCC FACTOR	TOTAL
ATTRACTION	2,147 SF	EXERCISE AREA	50 OCC.	43 OCC.
PERIMETER WALLS	747 SF	-	ACCESORY	0 OCC.
GRAND TOTAL	2,894 SF			43 OCC.

THE MOUNTAIN  
PLAY STRUCTURE OCCUPANCY LOAD

( PER TABLE 1004.5 OF MICHIGAN 2015 BUILDING CODE )

AREA / SPACE	AREA	OCC GROUP	OCC FACTOR	TOTAL
ATTRACTION	962 SF	EXERCISE AREA	50 OCC.	20 OCC.
PERIMETER WALLS	373 SF	-	ACCESORY	0 OCC.
GRAND TOTAL	1,335 SF			20 OCC.



APPLICANT:

PROFESSIONAL SEAL:

JOHN S GALWALA  
ARCHITECT  
No. 1301067  
LICENSED ARCHITECT

DESIGNER:

FUNBOX

4500 PARK GRANADA SUITE 202  
CALABASAS, CALIFORNIA  
91302

SHEET TITLE:  
INFLATABLE PLAY  
STRUCTURE OCCUPANCY

ISSUES & REVISIONS:		BY	APP'D
NO.	DATE	DESC.	
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FUNBOX 2020

OWNER/CLIENT:

PROJECT: FUNBOX  
OAKLAND MALL  
LOCATION: 412 W 14 MILE RD  
TROY, MI  
48083

JOB #: - DATE: 02/17/24 SCALE: NOTED SHEET #: A=2



CLIENT: FUNBOX  
400 S. Baldwin, Suite S6  
Arcadia, CA 91007

Test Report No: RJ8554F-1 Date: June 08, 2022

SAMPLE ID: The Client submitted and identified the following test material as: FUNBOX PVC Tarpaulin for Inflatables, nominal thickness 0.0210". (Control Samples). See Photo in Appendix of this report.

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: Samples were received on May 26, 2022.

TESTING PERIOD: June 07, 2022.

AUTHORIZATION: Testing authorized by Josue Lovos for proposal 22RT051902 signed May 19, 2022.

TEST REQUESTED: The sample material was tested in accordance with the procedures outlined in NFPA 701 Fire Test method 2 (Large Scale) 2019 Edition "Standard Methods of Fire Tests for Flame-Resistant Textiles and Films". (Control Samples).

TEST CONDITIONING: The test samples were conditioned at 20 °C ± 5 °C (68 °F ± 9 °F) for 24 hours

TEST RESULTS: This tested material has met the performance requirements per NFPA 701 -2019, Test Method 2. (Large Scale)

\*See page 2 for Performance Criteria.

Prepared By:

*Victor A. Peinado*

Victor.A.Peinado  
Senior Test Technician

Signed for and on behalf of  
QAI Laboratories, Inc.

*Jason Friedrich*

Jason Friedrich P.E.  
Engineering Manager

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WWW.QAI.ORG  
info@qai.org

TEST SAMPLE: FUNBOX PVC Tarpaulin for Inflatables, nominal thickness 0.0225". (Control Samples)

TEST RESULTS: (Pass)

Specimen No.	Afterflaming duration (Sec)	Floor Flaming (Sec.)	Char Length (in.)
1	0	0	7"
2	0	0	9"
3	0	0	8"
4	0	0	10"
5	0	0	8"
6	0	0	8"
7	0	0	9"
8	0	0	8"
9	0	0	9"
10	0	0	9"

PERFORMANCE CRITERIA

- When any specimen continues flaming for more than 2 seconds after the flame is removed from the contact with the specimen, the material shall be recorded as having failed the test.
- When the char length of any single flat specimen exceeds 435mm (17.1 in.) the material shall be recorded as having failed the test.
- \* When at any time during or after the application of the test flame, any portions or residues of the material Being tested breaks or drips from the specimen and fall to the floor of the test apparatus, and continue Burning for more than 2 seconds after reaching the floor of the test apparatus, the material shall be Recorded as having failed the test.

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info@qai.org

Appendix



FUNBOX PVC Tarpaulin for Inflatables, nominal thickness 0.0210" as received from client.

\*\*\*<<<END OF TEST REPORT>>>\*\*\*

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WWW.QAI.ORG  
info@qai.org



APPLICANT:

PROFESSIONAL SEAL:



DESIGNER:

FUNBOX

4500 PARK GRANADA SUITE 202  
CALABASAS, CALIFORNIA  
91302

SHEET TITLE:

COMPONENTS

FIRE TEST REPORT

SCALE  
NOT TO SCALE

5

FIRE TEST REPORT

SCALE  
NOT TO SCALE

6

FIRE TEST REPORT

SCALE  
NOT TO SCALE

7



AIR BLOWER

SCALE  
NOT TO SCALE

4



AIR BLOWER

SCALE  
NOT TO SCALE

1

HUAWEI AIR BLOWER UL CERTIFICATION

SCALE  
NOT TO SCALE

2

HUAWEI AIR BLOWER UL

SCALE  
NOT TO SCALE

3

CERTIFICATE OF COMPLIANCE

Certificate Number 20130910-E230679  
Report Reference E230679-20050811  
Issue Date 2013-SEPTEMBER-10

Issued to: SHUNDE HUAWEI AIR-BLOWER MFG CO LTD  
32 BEIGUAN RD, SIJI RONGGUI  
SHUNDE ,FOSHAN  
GUANGDONG 528000 CHINA

This is to certify that  
representative samples of

FANS, ELECTRIC, COMPRESSORS, VACUUM PUMPS AND  
PNEUMATIC PAINT SPRAYERS  
Air Blower/Air Pump, Models W-1.5L, W-2L, W-2LA, W-3L, W-4L and  
W-4LA.

Note: Models W-1.5, W-1.5A, W-2, W-3 and W-4 were deleted per  
client's request; the related information below was reserved for  
reference only.

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.

Standard(s) for Safety:

UL1450 - Standard for Motor-Operated Air Compressors, Vacuum  
Pumps, and Painting Equipment  
CAN/CSA C22.2 No. 68-09 - Standard for Motor-Operated Appliances  
(Household and Commercial)

Additional Information:

See the UL Online Certifications Directory at  
[www.ul.com/database](http://www.ul.com/database) for additional information

Only those products bearing the UL Listing Mark for the US and Canada should be considered as  
being covered by UL's Listing and Follow-Up Service meeting the appropriate requirements for US  
and Canada.

The UL Listing Mark for the US and Canada generally includes: the UL in a circle symbol with "C" and  
"US" identifiers: the word "LISTED"; a control number (may be alphanumeric) assigned by UL;  
and the product category name (product identifier) as indicated in the appropriate UL Directory.

Look for the UL Listing Mark on the product.

*William R. Conroy*  
William R. Conroy, Director, North American Certification Programs  
UL LLC

Any information and documentation including UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please  
contact a local UL Customer Service Representative at [www.ul.com/customer](http://www.ul.com/customer)

Page 1 of 1



ISSUES & REVISIONS: BY APP'D  
NO. DATE DESC.

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MADE BE EXECUTED OR NOT, AND THEY ARE NOT TO BE  
USED FOR ANY OTHER SITE THAN THE ONE FOR WHICH  
THEY ARE PREPARED, EXCEPT BY AGREEMENT IN WRITING.

FUNBOX 2020

OWNER/CLIENT:

PROJECT: FUNBOX

OAKLAND MALL  
LOCATION: 412 W 14 MILE RD  
TROY, MI  
48083

JOB #: DATE: SCALE: SHEET #:

- 02/17/24 NOTED

TD=1



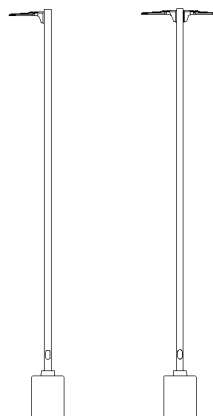
### Exhibit 3 to Master Agreement

#### Repair and Installation Services and Company Equipment

Terminate power supply to existing parking lot lighting from existing house service panel located in the electrical room in the Oakland Mall, update index panel index card, terminate exterior branch circuits near building structure, make safe all terminated electrical circuits, abandon all existing underground parking lot electrical circuits, remove all existing foundations and poles (one hundred fifteen), remove and scrap all existing HID luminaires (two hundred twenty-two).

Install one (1) new 75 kVa step down transformer next to pump house DTE transformer and install new ground mounted or pole mounted line controller relay(s) on DTE power pole or near existing pad mount transformers to feed all new underground parking lot lighting electric circuits, new underground cable in conduit installed via directional boring and trenching where possible to feed one hundred twenty-nine (129) new high band foundations, move less than 50' nine (9) removed pole/foundations locations to new pole locations for improved photometric lighting performance, install one hundred twenty-nine (129) - 22.5' - 5" square straight galvanized steel poles with vibration dampers (106 twins and 23 single head assemblies) for 25' luminaire mounting height, to support two hundred and twenty seven (227) new 299-watt LED AR18 side mount area luminaires, and eight (8) new 272-watt LED AR18 side mount area luminaires, all poles and luminaires to be customer selected dark bronze or black finish in smooth or textured pole finish. Restore all parking asphalt, or concrete saw cut locations for both removed, moved, and new installed foundations and bore set-ups with new asphalt, or concrete if underground work is completed in existing concrete surfaces. Operational control of the Parking Lot Lighting system will be achieved by utilizing dusk-to-dawn photo control devices on one hundred and twenty-nine (129) new LED (56.8% of all luminaires) and dusk-to-mid-night photo control devices on one hundred and six (106) new LED luminaires (43.2% of all luminaires) in the parking lot areas. Complete all underground cable connections to DTE Electric lighting standards, energize and commission new parking lot lighting equipment as per attached Exhibit 3 – DTE Proposed Oakland Mall Lighting Plan in parking location as identified in Exhibit 1.

New Parking Lot lighting performance exceeds Illuminating Engineering Society Lighting – Recommended Practices for Parking Facilities (ANSI/IES RP-8-18+A1) - Parking Lots and complies with Illuminating Engineering Society Lighting –Guide for Security Lighting for People, Property, and Critical Infrastructure (IES G-1-16) when security is an issue lighting performance requirement.



AR18  
(25' MH)



**CLIENT:** Plato Chemical  
BLK1, M/FL, Sun Cheong Ind. Bldg. 1 Cheng Shun St.  
Cheung Sha Wan, Kowloon, Hong Kong, China

**Test Report No: RJ8620F-1**

**Date: August 15, 2022**

**SAMPLE ID:** The test samples are identified as: **PVC Vinyl. Nominal thickness 0.0230"**

**SAMPLING DETAIL:** Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

**DATE OF RECEIPT:** Samples were received at QAI on July 21, 2022.

**TESTING PERIOD:** August 12, 2022.

**AUTHORIZATION:** Testing authorized by Lisa Yu QAI proposal No. 22RT0706-01, signed on July 06, 2022.

**TEST REQUESTED:** The sample material was tested in accordance with the procedures outlined in NFPA 701-19, Method 2 "Standard Methods of Fire Tests for Flame Propagation of Textiles and Films, flat specimens, Original Condition and 72 hrs water leaching.

**TEST RESULTS:** The PVC Vinyl material ***has met*** the performance requirements  
Per the Performance Criteria outlined in NFPA 701-2019. See page 2 for detailed results.

**Prepared By**



Victor.A.Peinado  
Senior Fire Technician

**Signed for and on behalf of  
QAI Laboratories, Inc.**



Jason Friedrich P.E.  
Engineering Manager



**FIRE TESTS FOR FLAME PROPAGATION****SAMPLE PREPARATION CHAPTER 13.1**

Test was conducted in accordance with NFPA-701 2019 edition. 10 Specimens were prepared from the submitted sample for original condition. Specimens were cut 125 mm x 1200 mm from the sample roll. The specimens were cut with the long dimension in the direction of the lengthwise of the material.

**CONDITIONING:**

The specimens were conditioned at a temperature of 68° F ± 9°F for at least 24 hours prior to testing.

**TEST PROCEDURE**

The flame was applied vertically at the center of the width of the lower end of the specimens for 2 minutes, then withdrawn, and the duration of flaming in the specimens after withdrawal of the burner recorded. After complete extinction of all flame and glow in the specimen, the length of char was measured.

**TEST RESULTS ORIGINAL CONDITION:**

Specimen No.	Char Length (inches)	After Flame, (seconds)	Time of Flaming of pieces on floor (seconds)
1	9	0	0
2	10	0	0
3	13	0	0
4	15	0	0
5	15	0	0
6	12	1	0
7	13	0	0
8	9.5	1	0
9	11	1	0
10	12	2	0

**FIRE TESTS FOR FLAME PROPAGATION****SAMPLE PREPARATION CHAPTER 13.1**

Test was conducted in accordance with NFPA-701 2019 edition. 10 Specimens were prepared from the submitted sample for original condition. Specimens were cut 125 mm x 1200 mm from the sample roll. The specimens were cut with the long dimension in the direction of the lengthwise of the material.

**CONDITIONING:**

The specimens were immersed in tap water for 72 hours. After the immersion period the samples were dried out at a temperature of 68° F ± 9°F for at least 24 hours prior to testing.

**TEST PROCEDURE**

The flame was applied vertically at the center of the width of the lower end of the specimens for 2 minutes, then withdrawn, and the duration of flaming in the specimens after withdrawal of the burner recorded. After complete extinction of all flame and glow in the specimen, the length of char was measured.

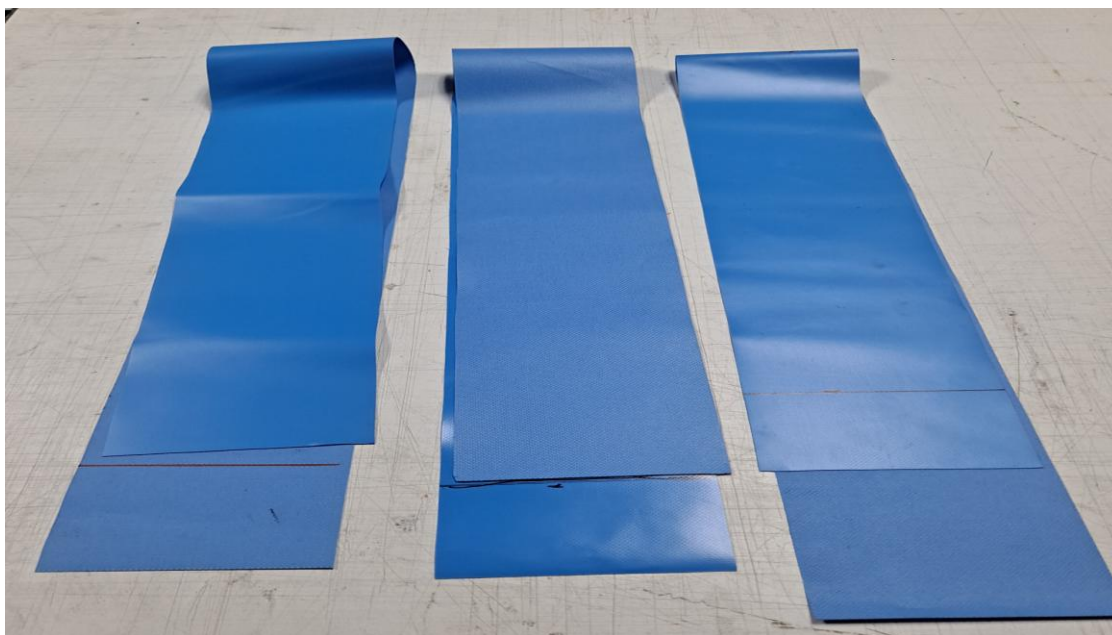
**TEST RESULTS 72 HOURS WATER LEACHING:**

Specimen No.	Char Length (inches)	After Flame, (seconds)	Time of Flaming of pieces on floor (seconds)
1	8.5	0	0
2	8	0	0
3	8	0	0
4	12	0	0
5	12.5	0	0
6	7	0	0
7	16.5	0	0
8	9	0	0
9	11	0	0
10	11	0	0

## PERFORMANCE CRITERIA

- 1) When any specimen continues flaming for more than 2 seconds after the flame is removed from the contact with the specimen, the material shall be recorded as having failed the test.
- 2) When the char length of any single flat specimen exceeds 435mm (17.1 in.) the material shall be recorded as having failed the test.
- 3) When at any time during or after the application of the test flame, any portions or residues of the material being tested breaks or drips from the specimen and fall to the floor of the test apparatus, and continue burning for more than 2 seconds after reaching the floor of the test apparatus, the material shall be recorded as having failed the test.

### Photograph



**Photo #1**

*PVC Vinyl. Nominal thickness 0.0230"*

**\*\*\*\*End of Report\*\*\*\***

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## HOPPER ENGINEERING ASSOCIATES

California License No.: 20498  
FAX: (310) 791-7308  
www.hopperengineering.com

300 Vista Del Mar  
Redondo Beach, CA 90277  
(310) 373-5573

August 30, 2023

### **VIA ELECTRONIC MAIL**

Laurence Hallier  
FunBox Holdings, LLC and Xi'An Giant Inflatables Ltd  
2510 East Sunset Rd. Suite 5-400  
Las Vegas, NV 89120

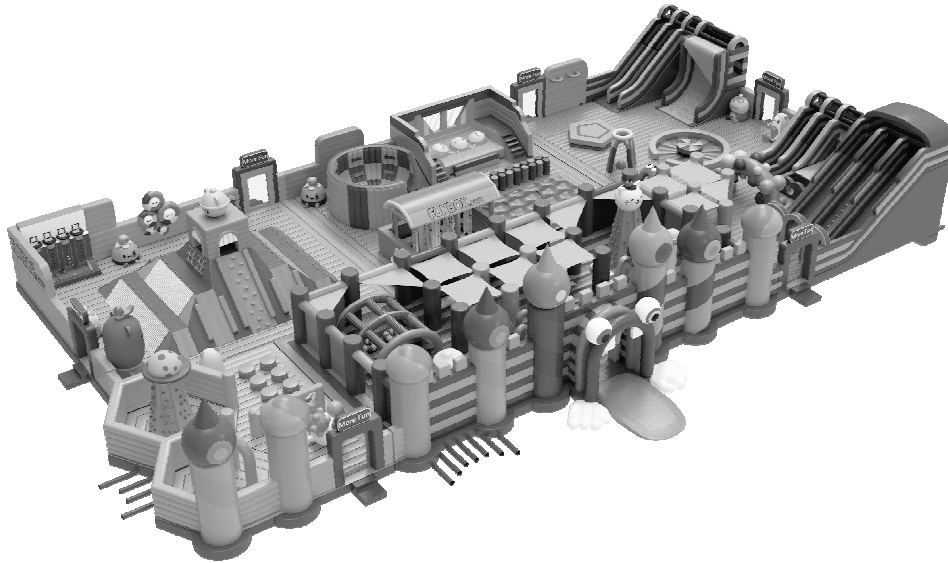
Subject: Stability Review for Inflatable Event

Per your request, we have completed our review of the stability and the anchorage for the temporary outdoor inflatable installation. Our review was completed using information provided by Funbox Holdings, LLC and Xi'An Giant Inflatables Ltd. Please allow the following to serve as a summary of our review. This review is applicable only as a temporary-only event in the state of Texas; for when the current adopted code is the 2015, 2018, or 2021 International Building Code (IBC); and the municipality allows for a reduced three-second gust wind speed rating of 30 mph with use of a high wind action plan (HWAP). The HWAP includes deflating of the inflatable structures when three-second gust wind speeds are predicted to reach 25 mph, this bounds the analysis.

The system being evaluated is an inflatable assembly that is anchored in place at its base using earth anchors spaced 16 feet apart along the front face, and 24 feet apart along the remaining perimeter walls. The footprint of the inflatable is approximately 164' x 92' and has a maximum height of approximately 27 feet. The inflatable itself gains its strength from the air pumped into it and the tensioned vinyl membrane. The vinyl is not within the scope of our analysis. Hopper Engineering scope is limited to evaluating the global stability of the system as a whole, i.e. hold downs.

Architectural considerations such as egress and fire safety along with injury to participants due to bouncing or utilization of the structure are not part of the scope of work. It is the event coordinator's responsibility to ensure a safe environment free from harm.

## HOPPER ENGINEERING ASSOCIATES



Representative Inflatable Park  
Individual Inflatables May Vary

### Analysis:

Given the large area of the inflatable compared to the lack of concentrated loads at elevated heights, wind loads govern over seismic loads.

A reduced 3-sec gust wind speed of 30 mph (allowable) is used to evaluate the structure. The high wind action plan calls for the structure to be deflated once wind speeds are predicted to reach 25 mph, therefore checking the structure for 30 mph is conservative. Deflating of the structure requires less than a minute, so this requirement is feasible.

A 30 mph allowable wind speed equates to an ultimate wind speed of 39 mph.

To determine the wind pressure, the system is treated as a sign with a  $G$  (gust) factor of 1.0 rather than 0.85 to account for structure flexibility.

The aspect ratio, as defined in the Figure provided in ASCE 7-16, is needed to determine the force coefficient. The average height of the inflatable is less than 16 ft. Since all anchors are spaced at 16' or more, the minimum aspect ratio is square (1:1). Hence, it is bounding to use a  $C_f$  of 1.45 in the calculations to determine the wind force.

# HOPPER ENGINEERING ASSOCIATES

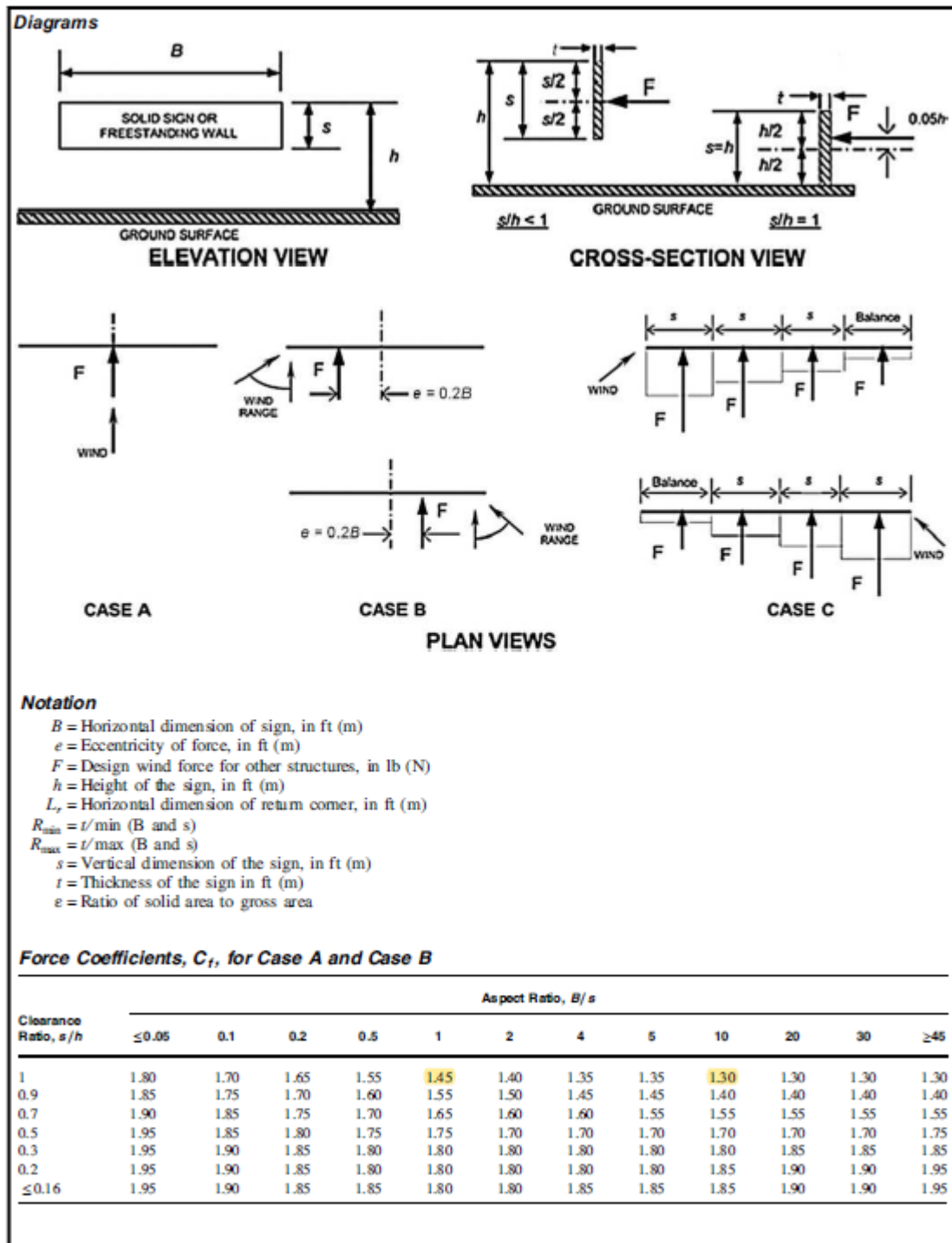


FIGURE 29.3-1 Design Wind Loads (All Heights): Force Coefficients,  $C_f$ , for Other Structures—Solid Freestanding Walls and Solid Freestanding Signs

ASCE 37-14: Force Coefficients, ASCE 7-16



# HOPPER ENGINEERING ASSOCIATES

The calculations following show the forces applied to the wall.

Service level allowable wind speed 30 mph, 1.0 load factor  
Equivalent ultimate wind speed 39 mph, 0.6 load factor

The following calculation uses the allowable wind speed as the basic wind speed.  
Therefore, a 1.0 load factor applies.

		<b><math>q_z = 0.00256 * K_z * K_{zt} * K_d * V^2 * I</math> (lb/ft<sup>2</sup>) velocity pressure (Eq 26.10-1)</b>	
		$V_{basic} = 30$ mph	Wind speed with use of HWAP
		$V_{ult} = 39$ mph	For reference only
		$K_d = 0.85$	Wind Directionality Factor (Table 26.6-1)
<b>Exposure:</b>	<b>C</b>	$K_z = 2.01 * (z/z_g)^{2/\alpha}$	Velocity Pressure Exposure <b>if 15' &lt; z &lt; z<sub>g</sub></b> (Table 26.10-1)
<i>If z &lt; 15' then Use: <math>2.01(15/z_g)^{2/\alpha}</math></i>		$z = 27$ ft	(height above ground level, total height is used)
		$z_g = 900$ ft	(Tab 26.11-1; atmospheric boundary layer height)
		$\alpha = 9.5$	(Tab 26.11-1; 3 second gust speed power law exponent)
		$K_z = 0.9607$	
		$K_{zt} = (1 + K_1 * K_2 * K_3)^2$	topographic factor (Eqn 26.8-1)
<i>If terrain is not flat than insert K<sub>#</sub> values from Figure 26.8-1</i>		<i>If terrain is flat then K<sub>zt</sub> = 1</i>	
		$K_1 = 1$	
		$K_2 = 1$	
		$K_3 = 0$	
		$K_{zt} = 1$	
		<b><math>q_z = 1.88</math> psf</b>	
Notes: 1) Wind Design is calculated in ASD. ASCE 7-16 is currently defaulting to an LRFD (Basic) wind load.			
<b>FOR A SIGN (Chap 29):</b>		<b><math>F = q_z * G * C_f * A_s</math> (psf) (Eq 29.3-1)</b>	
<i>U.N.O → Taken as rigid</i>		$G = 1$	gust effect factor (section 26.11)
		$C_f =$	force coefficients (Fig 29.3-1)
<i>for a sign:</i>		$s = 27$	(height of sign, ft)
		$h = 27$	(height off ground to top of sign, ft)
		$b = 200$	(base of sign, ft)
		$b/s = 7.41$	
		$s/h = 1$	
$WCS = 1.95$		$C_f = 1.45$	
<i>psf acting on the structure</i>		$q = 2.73$ psf	
		<b><math>q_{Pass} = 2.73</math> psf</b>	
<i>Projected Area normal to wind</i>		$A_f = 1$ ft <sup>2</sup>	
<i>Force acting on the Structure</i>		<b><math>F = 2.73</math> lbs</b>	
		<b><math>F_{Pass} = 2.73</math> lbs</b>	

Therefore, the wall will see a wind pressure of 2.73 psf.

## HOPPER ENGINEERING ASSOCIATES

The dead weights of the inflatable are provided by the client:

Yellow play	1179 lbs
Center DJ	1565 lbs
Palace	1687 lbs
Ninja section	1792 lbs
Green slide	1911 lbs
Main entrance	2742 lbs
Total	10876 lbs

The 6 pieces are secured to each other via three methods:

A 3" tactical belt buckle with a zinc alloy connector  
¼" double twisted nylon rope and metal grommets  
10" wide continuous strip of high contact Velcro

The perimeter walls are secured at their base 16 feet apart along the front face and 24 feet apart along the three other sides. An 11" long PE10 screw-in earth anchor with a minimum rated pullout strength of 1,000 lbs into asphalt shall be used. The anchor connects to the inflatable via metal ring attachment points that have been strength tested to 1500 lbs.

The maximum force into each anchor along the front face is calculated :

Force along front face:

Wind pressure = 2.73 psf

Tributary area = 16 ft (tributary length) \* 27 ft (max height) = 432 ft<sup>2</sup>

Wind Force = 2.73 psf \* 432 ft<sup>2</sup> = 1179 lbs

Weight of main entrance inflatable = 2742 lbs

Weight/Length of front = 2742 lbs / (164'/2) = 33.4 lbs/ft

Note, take the length of the main entrance as half the park length which is conservative since there are three structures along the park length.

Dead weight = 33.4 lbs/ft x 16 ft tributary length = 534 lbs

P1 = wind force - 0.6 x dead weight = 1179 lbs - 0.6 x 534 lbs = 859 lbs

The maximum force into an anchor at remaining perimeter walls is calculated:

Force along front face:

Wind pressure = 2.73 psf

Tributary area = 24 ft (tributary length) \* 16 ft (avg height) = 384 ft<sup>2</sup>

Wind Force = 2.73 psf \* 384 ft<sup>2</sup> = 1048 lbs

The lightest inflatable is the Yellow Play structure, 1179 lbs

Weight/Length = 1179 lbs / (164'/2) = 14.4 lbs/ft

14.4 lbs/ft x 24 ft tributary length = 346 lbs

P2 = Wind force - 0.6 x dead weight = 1048 lbs - 0.6 x 346 lbs = 840 lbs

## HOPPER ENGINEERING ASSOCIATES

Check overturning of the entire system:

Since there are anchors at 16' along the front and 24' along the back, scale the load on the front wall to convert to a 24' length

OTM on front face =  $1179 \times 16'/24' \times (27' \text{ max height} \times 2/3) = 14,148 \text{ lb-ft}$

OTM on back face =  $1048 \text{ lbs} \times (16' \text{ avg height} \times 2/3) = 11,179 \text{ lb-ft}$

Total Weight / Length =  $10,876 \text{ lbs} / 164' = 66 \text{ lb/ft}$

Dead weight =  $66 \text{ lb/ft} \times 24 \text{ ft} = 1584 \text{ lbs}$

Width = 92'

$0.6 \times \text{RM} = 0.6 \times 1584 \text{ lbs} \times 92'/2 = 43,718 \text{ lb-ft}$

$\text{OTM} - 0.6 \times \text{RM} = 14,148 + 11,179 - 43,718 = -18,391 \text{ lbs} < 0$  therefore no net uplift.

The dead weight of the structure resists overturning without engaging the anchors

$P = \max(P1 \text{ or } P2) = 859 \text{ lbs}$

The specified earth anchors are verified by the manufacturer for  $1,000 \text{ lbs} > P$ , so the anchorage is adequate.

Anchors must be embedded into hardpan asphalt.

Soil Class 1	Soil Class 2	Soil Class 3	Soil Class 4	Soil Class 4
Hardpan Asphalt	Sandy gravel Very dense sand	Silty/clayey sand Silty gravel	Loose/med dense sands Loose sands Firm clays	Loose fine un- compacted sand

Note 1: If grade is not hardpan asphalt, then double up anchor quantity and ensure "Soil Class 2" strength rating or better per manufacturer specifications. Note 1 cannot be combined with Note 2 below.

Note 2: If inflatable is to be located within any of the following locations, then double up anchor quantity

- flat, unobstructed area for a distance greater than 5000 ft;
- 600 ft from a shoreline;
- directly upwind of an urban area, wooded area, grassland or open country land



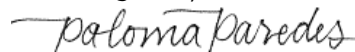
## HOPPER ENGINEERING ASSOCIATES

Please note the following:

- Hopper Engineering is only responsible for the anchorage reactions and stability of the inflatables. Installation of anchors shall be by a qualified person; any required site inspection is by others; verification of the connections to the inflatables is by others.
- PE10 anchors must be embedded into hardpan asphalt. Anchors shall be used at 16' centers along front face of the park, and 24' centers along the three remaining faces of the park perimeter.
  - If grade is not hardpan asphalt, then double up anchor quantity and ensure "Soil Class 2" strength rating manufacturer definition. For Soil Class 2, pull test anchors on-site to verify their capacity in the present condition meet the manufacturer rating of 700 lbs.
  - If inflatable is located within any of these locations (600 ft from a shoreline; a flat area for a distance greater than 5000 ft; directly upwind of an area) then anchor quantity shall be doubled. Only anchoring into hardpan asphalt is permitted for these types of locations.
- Despite the system being rated for the temporary wind speed of 30 mph, the structure shall be evacuated and completely deflated if 3-sec wind gusts are predicted to exceed 25 mph. This requirement is to limit danger due to debris in the air and large deflections of the inflatable vinyl. Moreover, it is recommended that sandbags (or similar) be used to weigh down the deflated vinyl.
- It is the responsibility of the event organizer to monitor the weather forecast to be prepared for high wind events.
- Engineering approval is for stability only. Architectural considerations such as egress and fire safety along with injury to participants due to bouncing or utilizing the structure are not part of the scope of work. It is the event coordinator's responsibility to ensure a safe environment free from harm.

Thank you for your consideration in this matter. If you have any questions, please contact the undersigned.

Kind Regards,



Paloma Paredes  
Professional Engineer

Timothy R. Santo  
Professional Engineer

*Enclosure*

## HOPPER ENGINEERING ASSOCIATES

### HIGH WIND ACTION PLAN - Funbox Inflatables

1. The purpose of the HWAP is to ensure that all structures in the park area remain safe during wind conditions.
  - a. The HWAP provides a means of safely responding to increasing wind loads during periods of install.
  - b. The HWAP is intended to provide a method for ensuring safety during periods of install when wind speeds are increasing.
2. The HWAP shall govern operating conditions during a time period that shall commence at the beginning of the pre-loading operations and shall continue to such time when all personnel and equipment have been removed from the venue at the close of the specific event.
3. HWAP Personnel
  - a. A mobilization meeting shall take place at the beginning of the load-in to define specific responsibilities for onsite HWAP personnel.
  - b. A HWAP crew manager shall have complete authority to implement the HWAP at any time and under any circumstances he/she sees fit.
4. Monitoring
  - a. Wind speeds shall be monitored and records shall be able to be reproduced on-site.
  - b. The wind speed shall be measured by an active, on-site alarmed anemometer. The anemometer shall be at a height which is at least as high as the tallest inflatable and located within 500 ft.
  - c. A competent, responsible person shall be present on site for the entirety of the event.
  - d. The weather forecast shall be monitored to anticipate and prepare for inclement weather events.
5. When the wind gusts are predicted to exceed or exceed 20 mph, 3 second gust:
  - a. A team of qualified personnel shall be assembled and on alert.
  - b. The team must be assembled within five minutes of alert and shall remain on alert until wind speeds remain below 25 mph for at least 30 minutes, or after the event has ended.
6. When the wind gusts are predicted to exceed or exceed 25 mph, 3 second gust:
  - a. The inflatable structures shall be deflated.
  - b. The area immediately surrounding the inflatable park shall be evacuated.



# American Earth Anchors

*The best screw you will have in the dirt™*

americanearthanchors.com

QUICK REFERENCE

## PE10 | Specifications

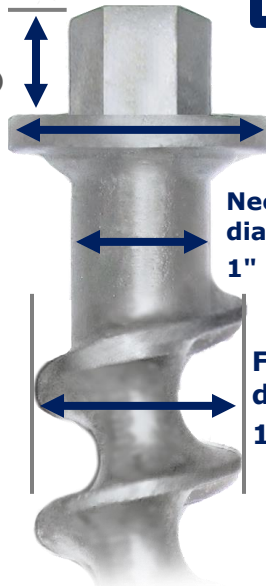
### 10" Penetrator™

- Aircraft-quality cast aluminum 356 alloy
- Heat-treated to T6 specification
- Install with 1" or 26 mm socket
- Removable

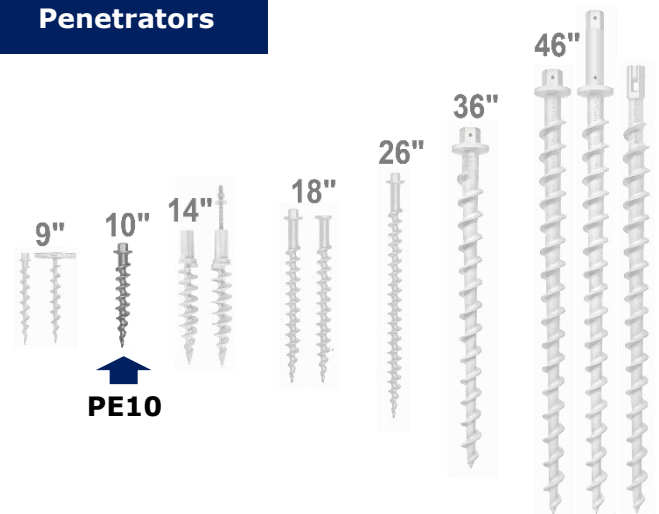
1 lb  
(.5 kg)



7/8"  
(22 mm)



#### Penetrators



#### Socket size

1" (26 mm)



6-point socket (instead of 12-point socket) will minimize wear and rounding of hex head for repeated installation/removal

#### LOAD CAPACITY

Pullout strength with flight fully embedded



Soil Class 1	Soil Class 2	Soil Class 3	Soil Class 4	Soil Class 4
Hardpan Asphalt	Sandy gravel Very dense sand	Silty/clayey sand Silty gravel	Loose/med dense sands Loose sands Firm clays	Loose fine un- compacted sand
<b>1,000 lb</b> 4.45 kN	<b>700 lb</b> 3.11 kN	<b>350 lb</b> 1.56 kN	<b>200 lb</b> 0.89 kN	<b>100 lb</b> 0.44 kN

Soil classification per ASTM D-2487/2488



American Earth Anchors  
info@americanearthanchors.com  
americanearthanchors.com

Contact us for CUSTOM WORK  
Size, length, shape, material,  
prototypes, cable assemblies



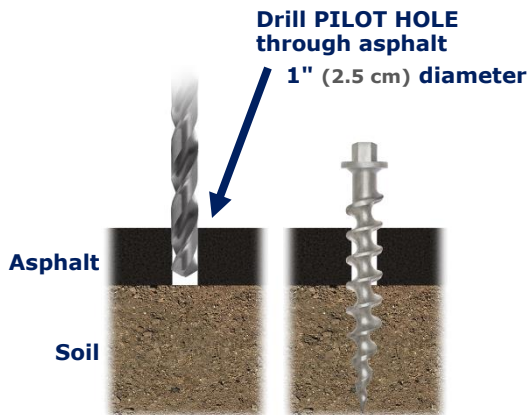
866-520-8511



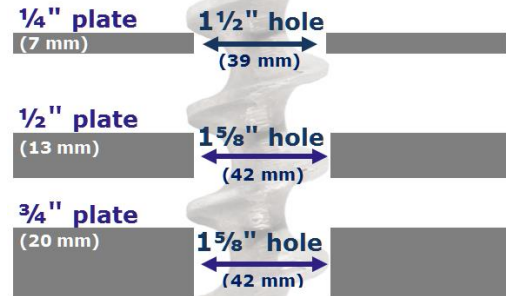
+1 508-520-8511



### Through asphalt



### Through metal plate



### Installation methods



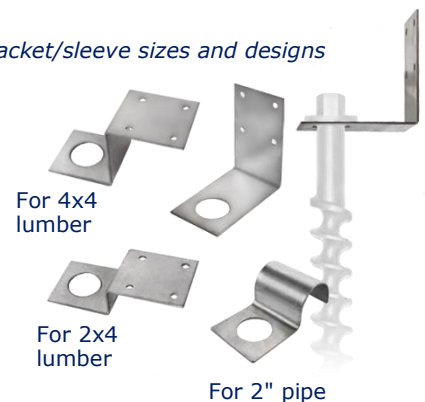
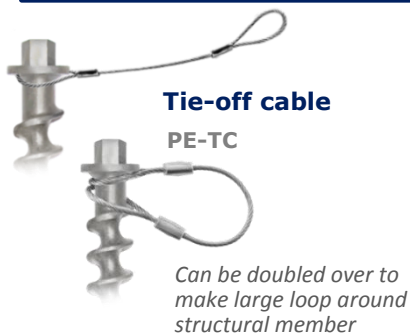
Impact wrench



### Attachment accessories



Contact us for custom bracket/sleeve sizes and designs



Brackets



# **Operation and Maintenance Introduction of Inflatable Amusement Equipment Xi'An Giant Equipment Co. Ltd**

XIANGIANT EQUIPMENT CO. LTD

ADD: Shaanxi, Chang'an, 210 Huyi, Shaanxi, Xi'an 710119

ADD: One Int'l Finance Centre, 1 Harbour View, Level 20, Central, Hong Kong, China

E-mail: fzhao01101970@gmail.com

E-mail: xiangiantequipmentco@ltd.hk

To Customers:

Sincerely Thanks very much for your trust and great kindness.

Welcome to use our products, during this time, we will be stay with you all the year through. Also can enjoy the excellent service from our after-service team , to work for you and help you to solve all the problem

Sincerely hope that you could make good income in every running day. Company, your life and family will be happy and happy. In order to use the toys well, please read the use manual before using.

## **1. Special Warning**

1.1. Our company will provide quality guarantee service for you, also please read the use manual and use the products in accordance with the use manual. Especially, please read carefully the after-service and quality commitment of this book, which detailed the products quality commitment terms 、 range and Method.

1.2 Please do not change the use conditions of our products. Such as use the dry slide as water slide Water slide for dry slide 、 Children's products for adult, the power could not meet the requirements. The product is strictly prohibited overcrowding, overweight, Overload, high use .Or it may affect products function, service life and lead to the accident. This consequence company is not liable.

1.3 Please keep the products certificate and after-service card

1.4 The products required in that group who is in good health ,Non-infectious diseases ,

skin diseases , high blood pressure, heart disease, fear of heights , Osteoporosis and other symptoms . Require children age 2 to 14 years old. No more than 2 meter tall and weighing does not exceed 100kgs.

1.5. The operation products should be away from high Voltage Wire. At least Horizontal 20 meters away from the high-Voltage line

1.6. The outdoor product is prohibited when encounter bad weather as Rain, snow and wind etc; when the wind is three levels or above, the outdoor products must be deflated and make corresponding measure against wind.

1.7. When the products don't run for a long, Should be wiped clean, dry and talcum powder packaging storage. The storage place required waterproof, moisture proof, rodents. Prevent damage.

1.8 When you read this manual if there is anything unclear or during operation, you met the problem, which could not find on the manual, please do not hesitate to contact our company.

1.9 Note instruction:

## **2. The requirement of blowing test and installation**

1.Site requirement

2.The ground requirement of inflatable amusement equipment: Bright, spacious, flat, surface without sharp objects. The installation place should far from inflammable and explosive dangerous objects. Tall trees and high-voltage wire. The site place should be complying with the design plan of horizontal distance and vertical drop. The electric circuit line should accord with the planning programming and site requirement. The ground should lay equipment protect layer and air permeable layer



A: The minimum distance of two inflatable equipment should be the sum of two adjacent equipment highest points.

B: The products which can easily to distinguish the front and behind, left and right. The overall drop between left and right should be plus or minus 20cm. The equipment of front and behind overall drop required:  $\text{Front} \leq \text{behind}$   $0 \leq \text{overall drop} \leq 80\text{cm}$ . Divide according to length increase step by step.

C : The products which can not easily distinguish its structure. The site requirement should no obvious overall drop. The overall drop required :  $0 \leq \text{overall drop} \leq \pm 20\text{cm}$

D: The carrier type inflatable amusement equipment (pools)The ground required measurement level precise  $0 \leq \text{overall drop} \leq \pm 4\text{cm}$

3. According to the site planning drawing to install the equipment: The infirmary, bathroom, dining area, rest area, storage room, locker, and security exits. Fire control facilities (configuration) according to the national standard, shading equipment, warning labels, warm tips cards. Prohibited putting crowded. Enclosed business park field 、 equipment the supporting facilities area ratio 1:0.4:01, with 30% of the evacuation space

### **3 The requirement of equipment:**

1. Facility requirement: All accessories are complete, Quality conformance; there is no any damage during delivery. Use according to the standard.

2. According to the Products configuration list to make the cargo acceptance (For example: Inflatable equipment, Electrical equipment, Product accessories), the package of products, and product quality. If the products weight above 150kgs, the goods should be use the Hosting equipment to load and unload the goods.

3. Please check all the goods if any damage during delivery. If any problem, please contact with the trucking company about this.

4. Please check the equipment operation if ok or not when the power on.

5. It is prohibited to drag and pull the products during the installation process , Or it may damage the structure of products. Please do not drag the toys without any cloth on the ground. It is prohibited the toys stand the press in a point or the area are less 5cm. The electrical equipment must be strictly according to the instruction for voltage, current, load Ann. Please install the protective of electric leakage and load, overheat protection and outside shield (The protection cover should be ventilation, water proof, Insulation, strong, easy to fixed on the ground)

#### **4. Installation requirement:**

1、 The installer should read the use manual careful before installing the products.

2. The inflatable products must flat on the ground without Warp and twine, Vertical structure and clear fold. The flat extension of the horizontal direction.

3. The inflatable equipment should use blower or pump according to the standard

configuration. Please do not add the blowers and reduce the blowers without instruction. The pump use required the voltage no less 110V to 120V, the standard power line.

4. Before testing the inflatable toys, all the air outlet, Zip mouth, outlet, Spare air intake should be closed.

5. All the combined inflatable toys should be installed according to the site layout. Distinguish the built-up sequence. Connect in proper order and inflate the toys or inflate the toys and then connect the toys. Reference to the products of special installation steps, Connect in order. From the least to the most important. From large to small, from down to up, from inside to outside.

6. Before blowing to test the products, Should be fixed the wind protection in turn (pull type connection), Fixed with the ground.

7. After combining the toys and install all the accessory (slide cloth, climbing cloth, and Soft ladder) and outside connect accessory (Such as sand filter system, pipe, and water pump)

8 .If the products complex, Company will send the engineer to guidance the installation. The customer should get some assistant as per the engineer requirement.

9. for the generally flat should be making the flat on the ground (from the front to end), Combine the equipment in the right order. Install or remove it should combine and install it according to the engineer guidance. The electricity equipment should get the branch power



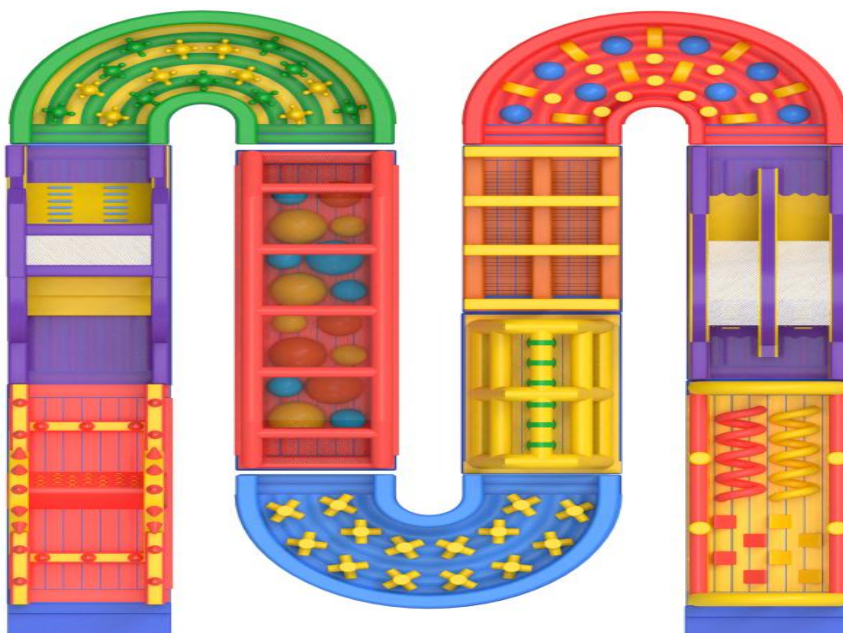
on. The connect part of wire should be make the protection of waterproof, anti-aging, fixing, insulation.

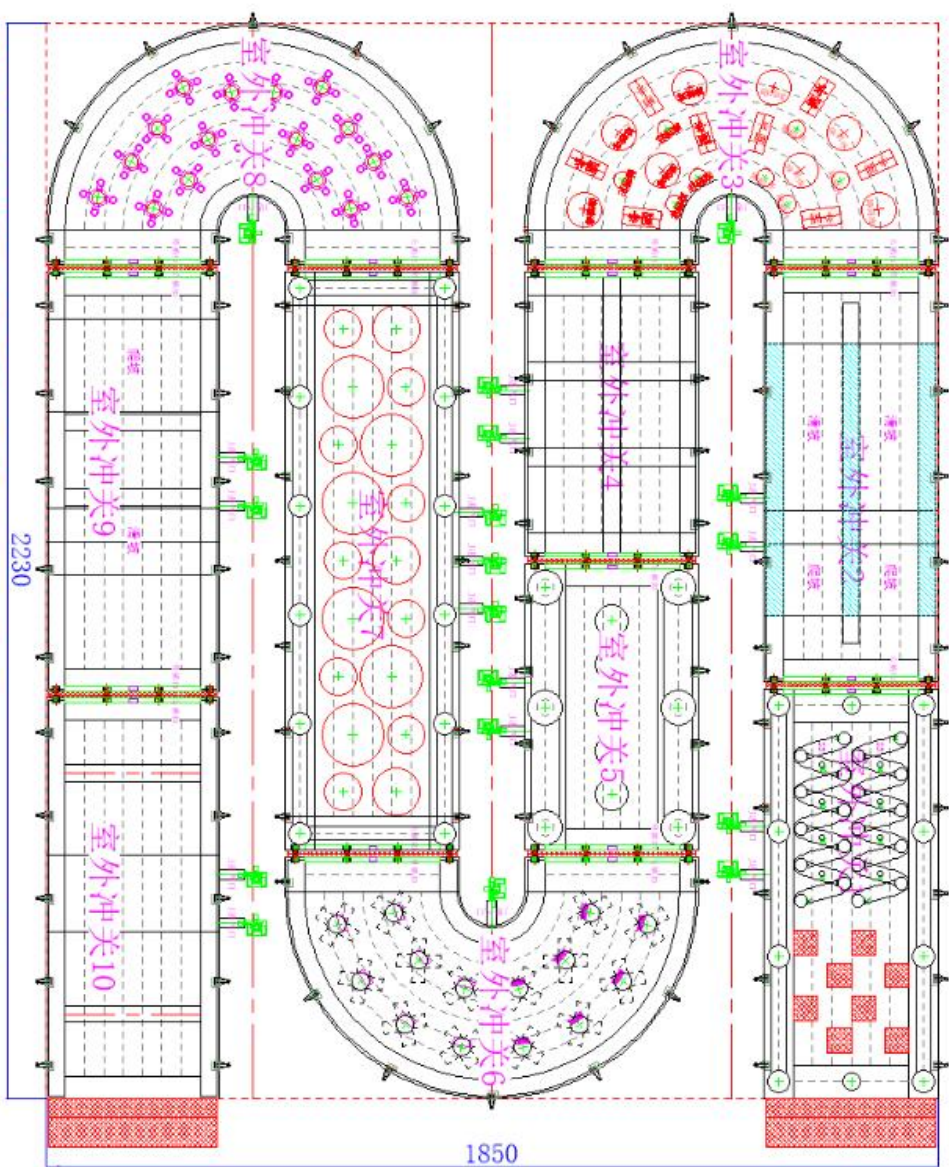
## 5. Installation steps :

1. Clean the ground to make sure no sharp objects
2. Put the carpet or plastic film on the ground



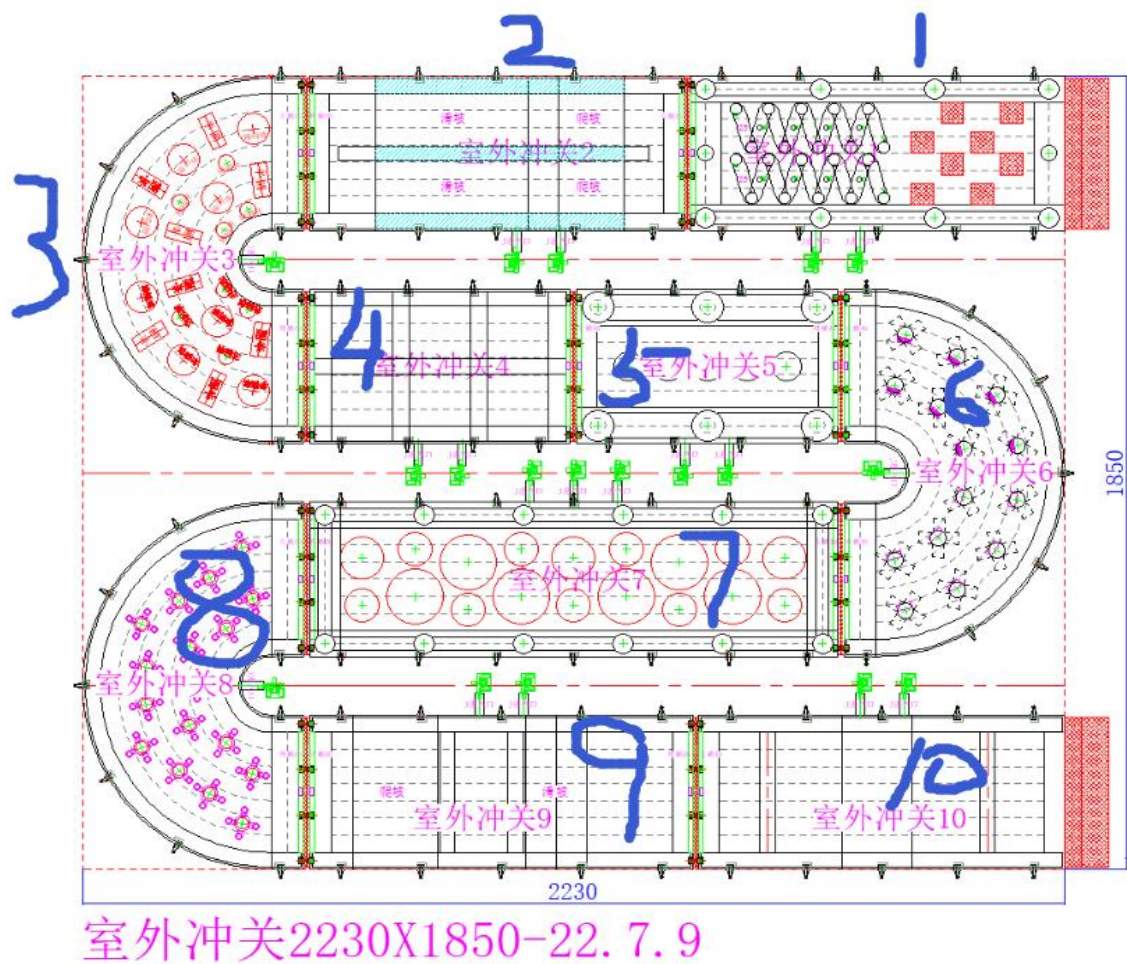
3. Check the packages marks outside packages Put the packages in the correct location according to the site ,put equipment on and pull it in the correct direction :





室外冲关2230X1850-22.7.9





4. Open the packages and pull each zone to the correct location according to above pictures







Spread the inflatable zone like this



5. Connected the blowers according to the blower allocation and blow it up :

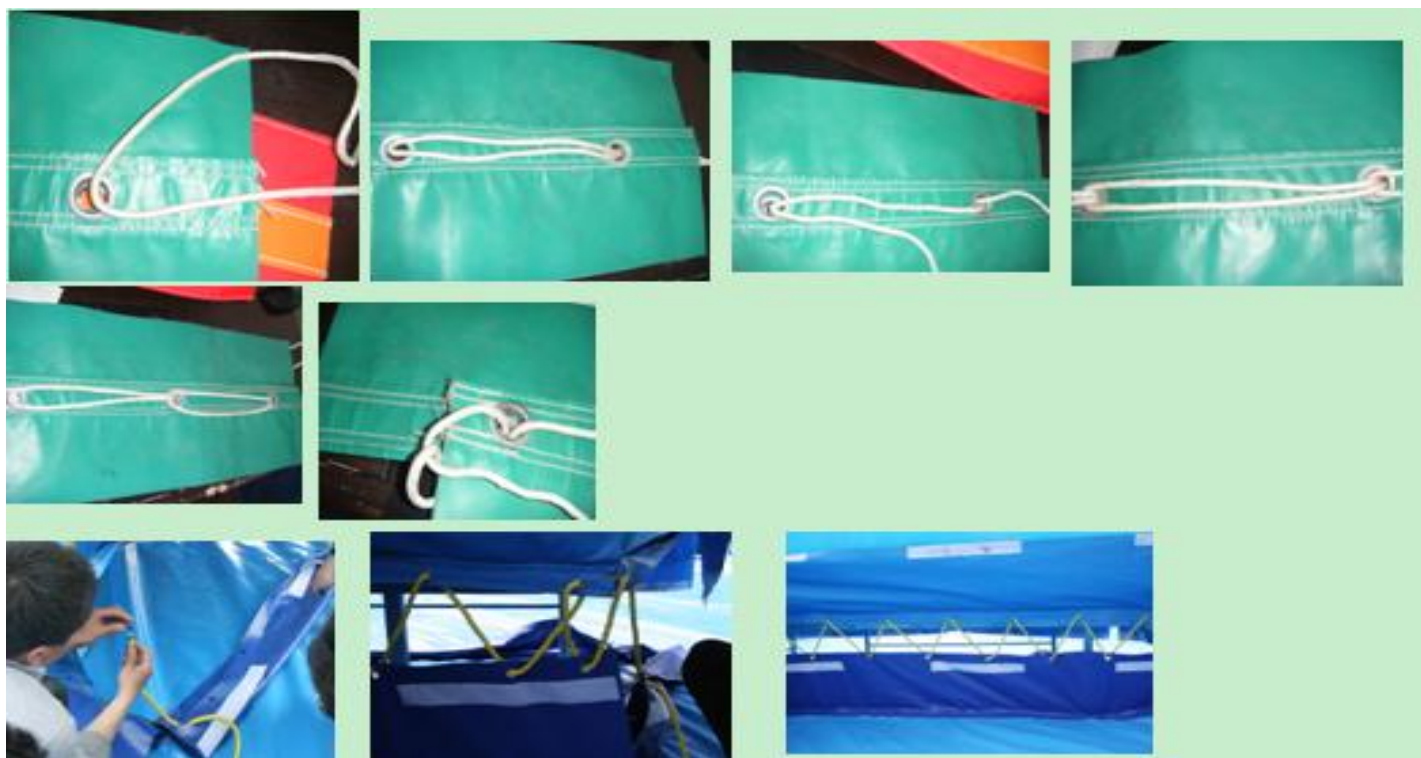






6. Connected the rope , belts , put on the Velcro cover





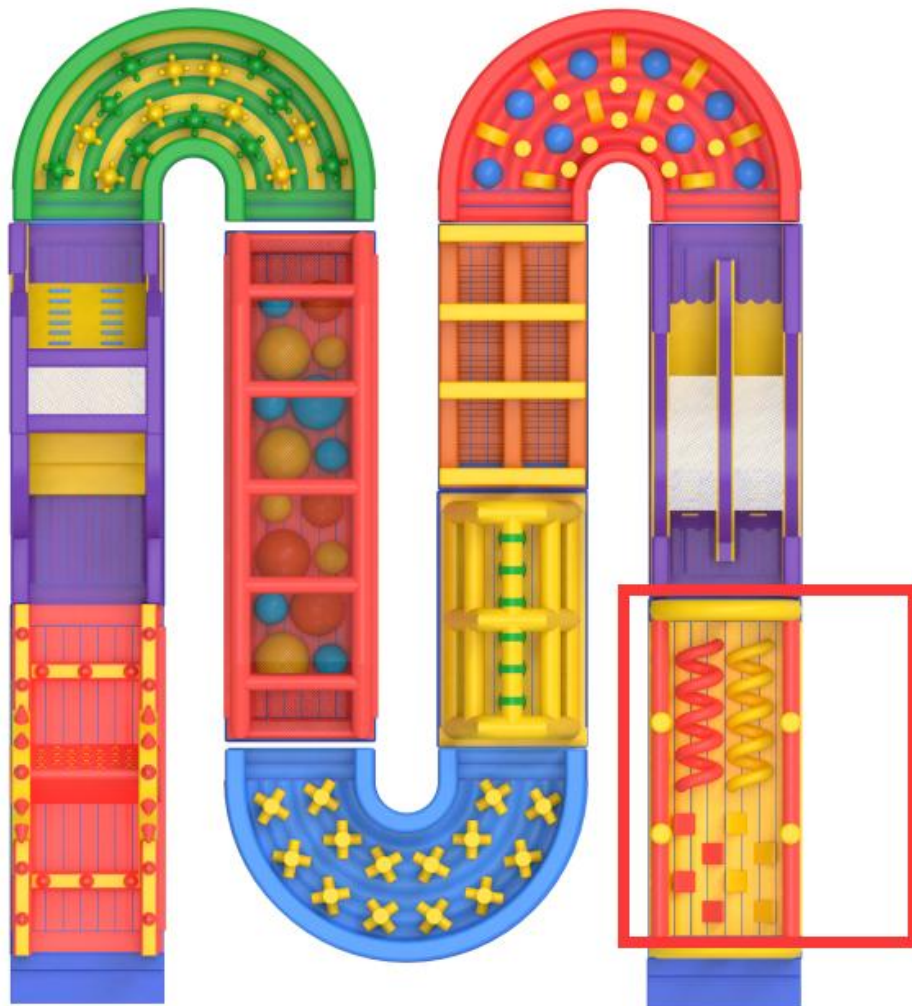




**NOTE :Same steps for Level one to Level Ten  
(put carpet on the ground ,Put The package  
in correct zone , open the package , put the  
equipment in correct direction,connected  
the blower tubes , connected each zone  
together with rope , belts , velcro cover ,  
turn on blowers )**

**Detail instruction of each zone :**

# 1. Level 1



Inflate the Level One UP , Connected the Blue steps for the entrance

## EVA Steps for inflatable obstacle course (Level One)



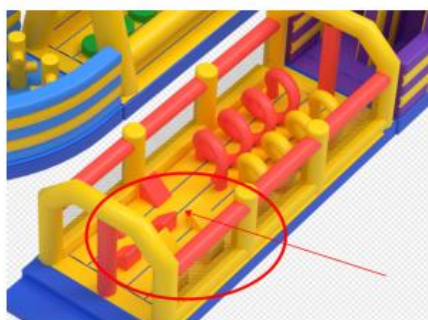




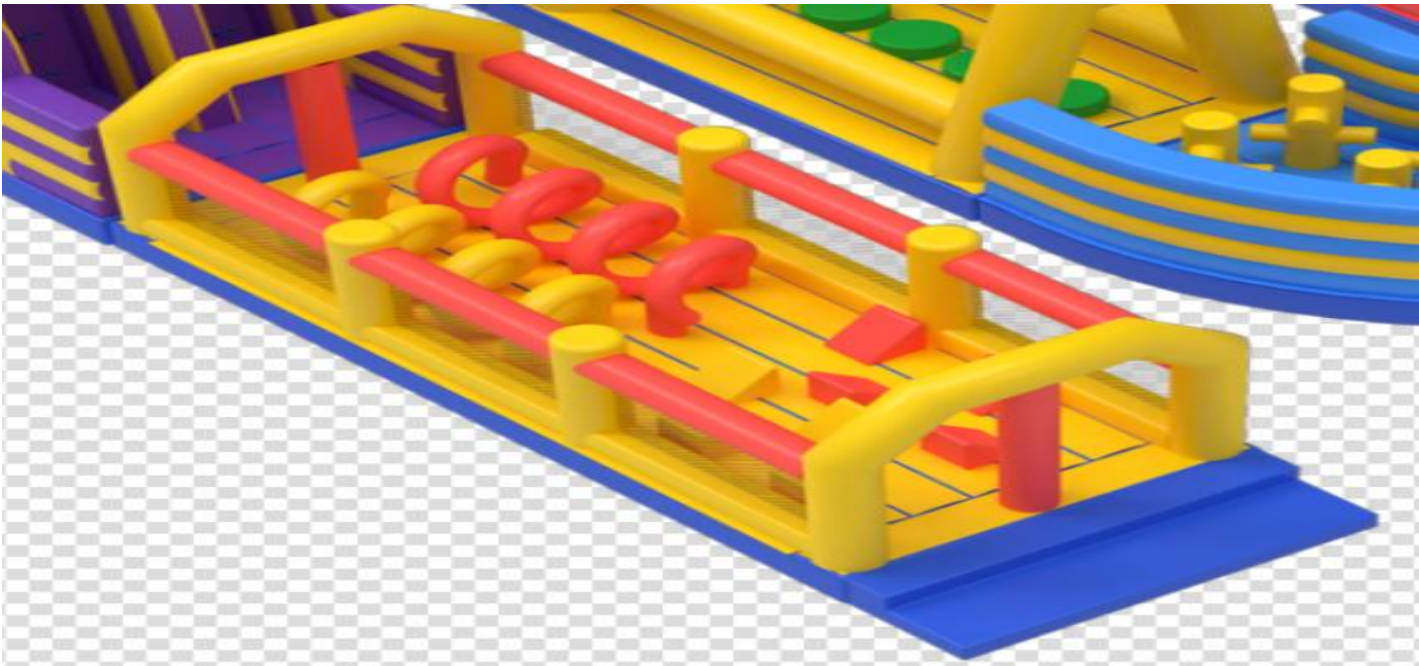
Put the black EVA into the correct bags



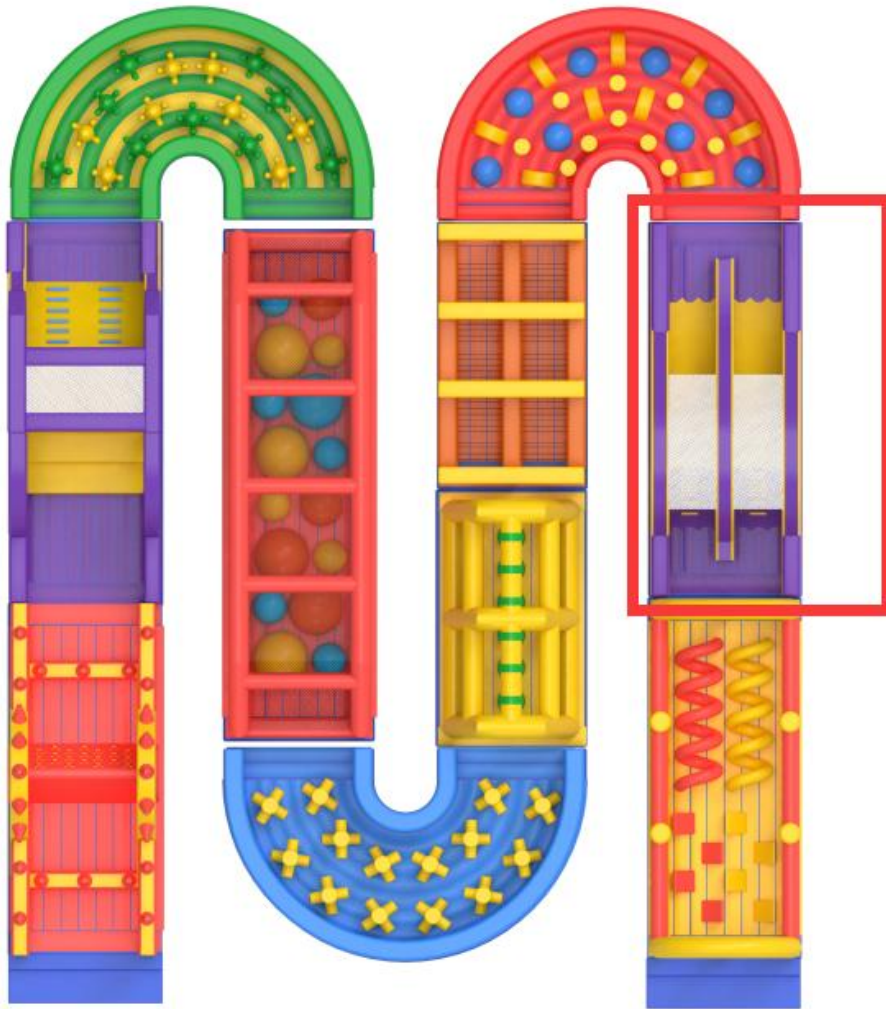
**Triangle EVA for inflatable obstacle course**





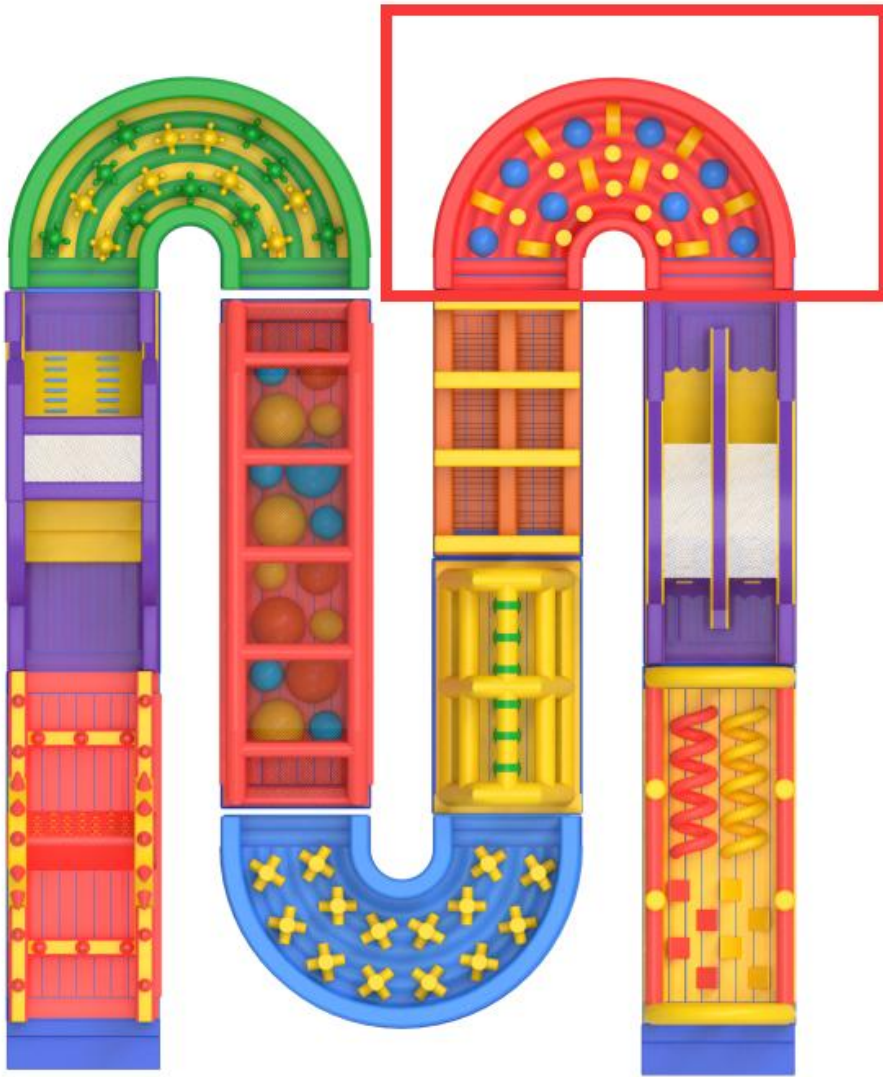


Level 2 ,

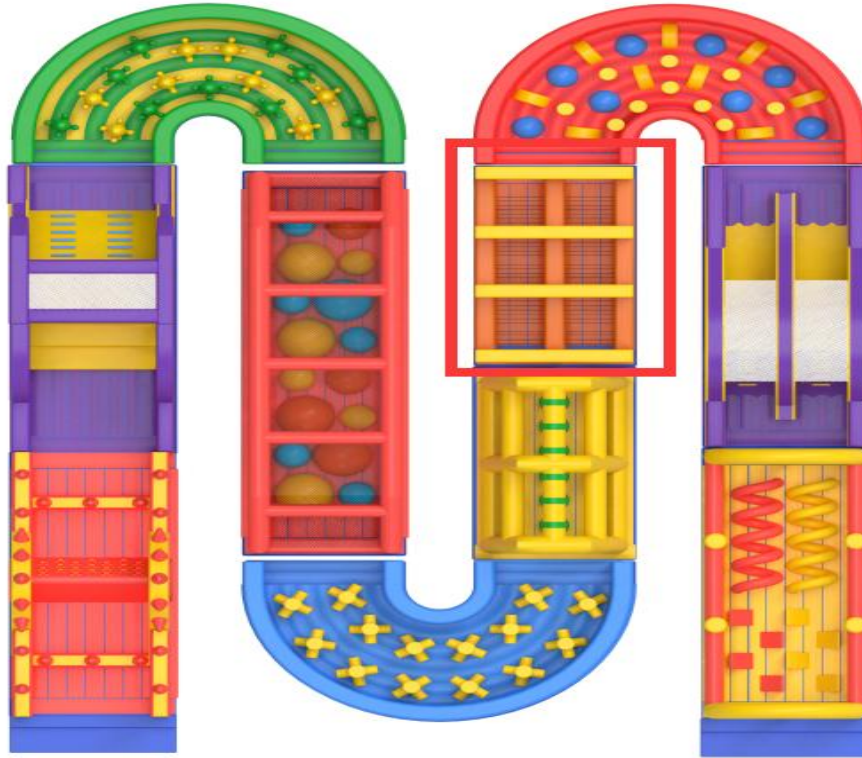


**Level Three**

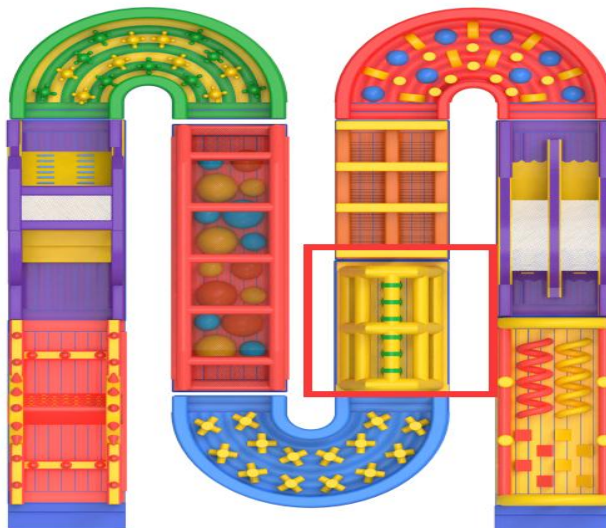




**Level Four**



## Level 5



Put the yellow frame on the mat







Paste the Velcro cover





Connected with the white rope



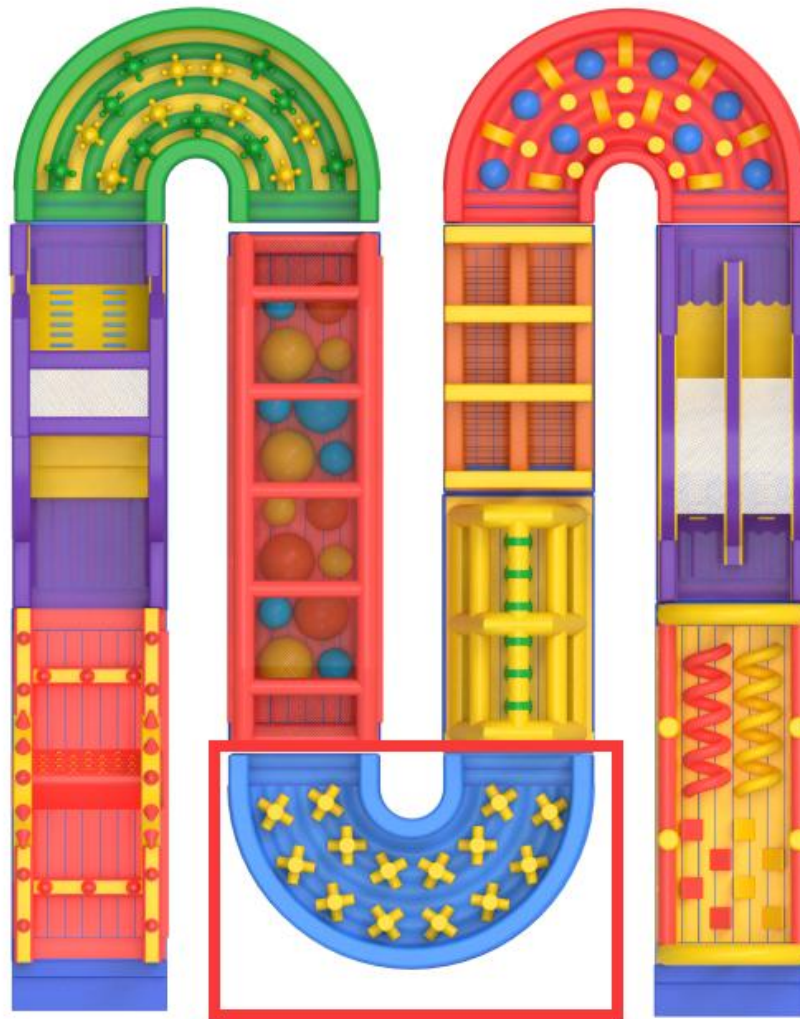
Put the round white Eva into the green bags and closed the zipper

## **Round EVA Mat(6 pcs) for inflatable obstacle course (Level Five) | 1/6**



## **Level Six**





## Level Seven

### Put the Airtight balls in the Level Seven Zone

Airtight ball( Yellow x 6 PCS) for inflatable obstacle course (Level Seven)

**D 1.3 m**

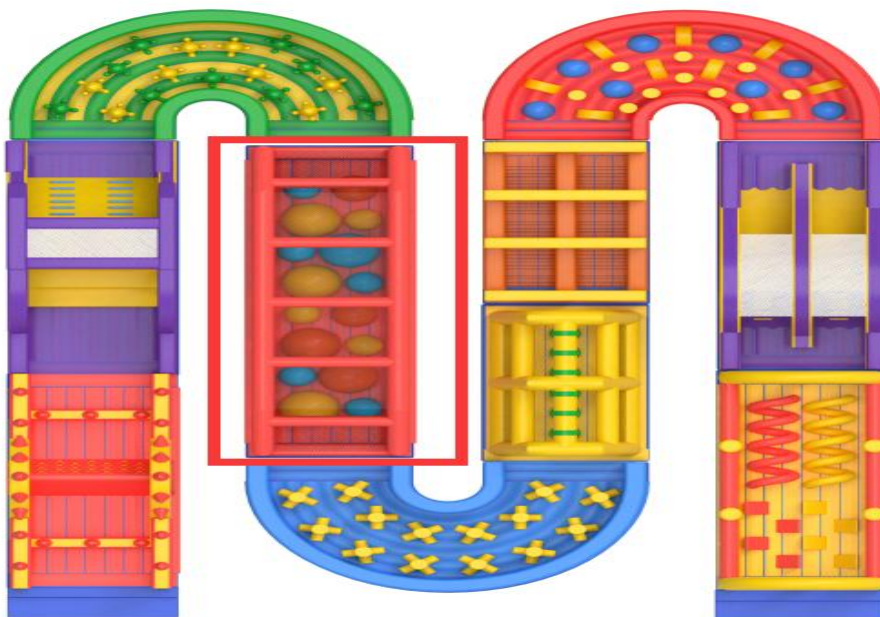


|

**Airtight ball( Blue x 3 PCS) for inflatable obstacle course  
(Level Seven)**

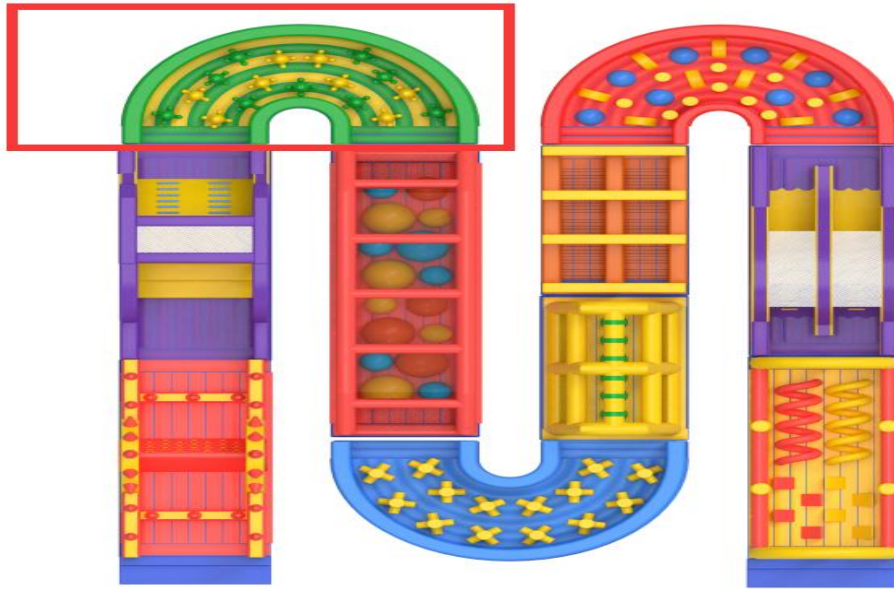


**Airtight ball(Red x 3 PCS) for inflatable obstacle course**

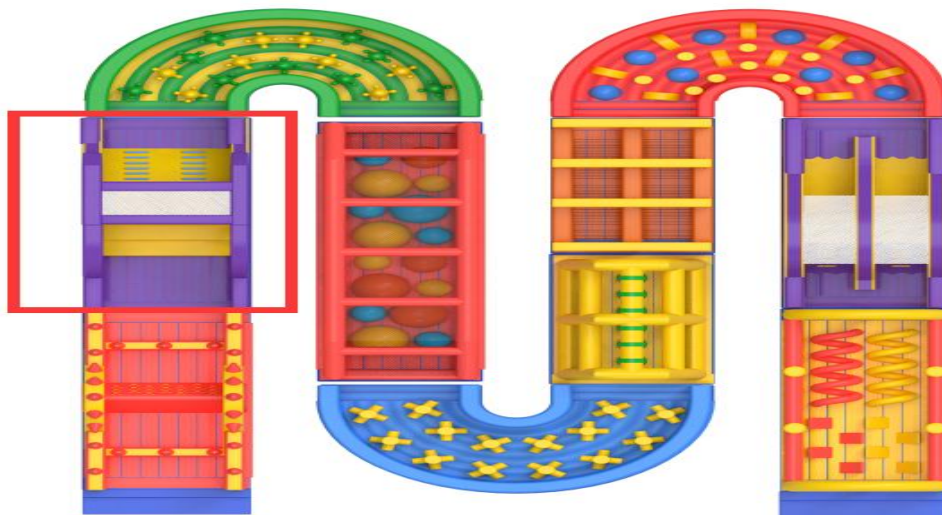


**Level Eight**

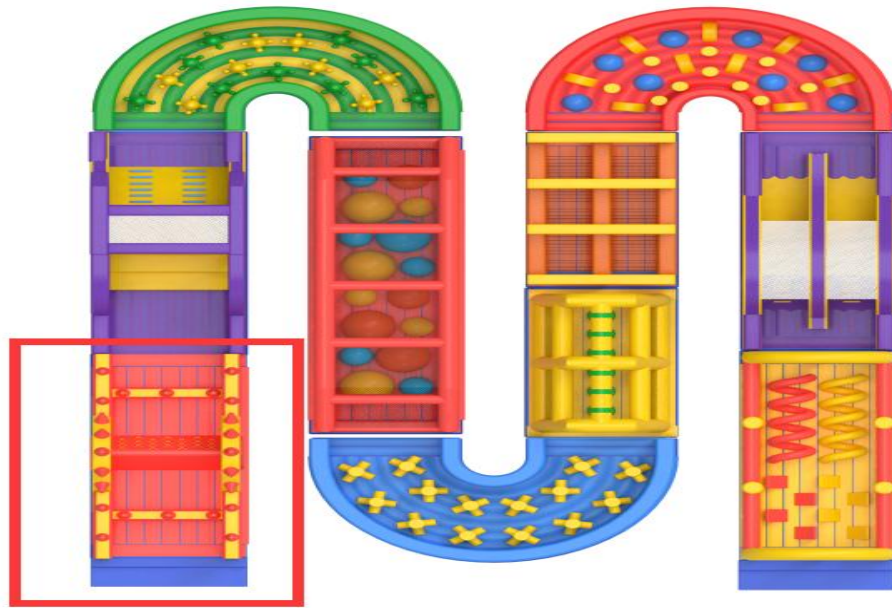




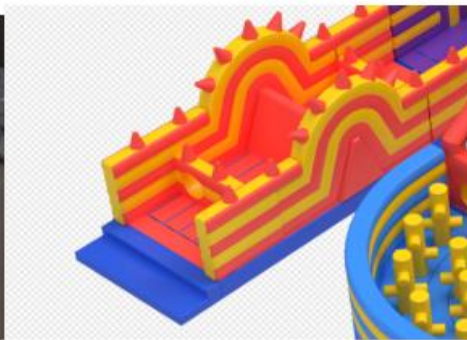
**Level Nine**



**Level Ten**



## EVA Steps for inflatable obstacle course (Level Ten)



### 6、 Preparation Before Management

#### 1.Preparation Before Management Every Day

- 2、 If there are many electrical appliances in the file, start the appliance in turn rather than simultaneous start of a number of appliances. After inflating clean the product and check the blowers and electrical equipments, if damaged or aging repair or replace in time.
- 3、 Staff should supervise the running state for 10-15 minutes every day before management, like deviation from fixed position, fixation or connection get loose.
- 4、 If the opening and closing of zipper or other metal structures are not smooth coat paraffin wax or spray lubrication on the structure surface and inside and after several times opening and closing it can running smoothly.

### 7、 Preparation Before Management Every Season

- 1、 Before quarterly operation of intermittent operation equipment, clean up site and detect



the power line.

- 2、Carry the equipment to site and install it as the initial installation sequence introduced.
3. Do complete inspection after installation and do clean maintenance.
- 4、Trail operation lasts 2-3 days, repair the equipment in time if there is any breakdown.

## **5、Operation Management**

### **8.Site Environment Management**

- 1.Forbid fire ignition in site.

Forbid operating the equipment in bad weather condition. Wind less than 3 level is safe state for operation; fix the equipment, stop operation and evacuate the tourists on equipment when wind is at 3-4 level; Wind above 4 level deflate the equipment and fix it well. Carry the equipment to safe place in hard wind or other bad weather conditions.

**Warning: the equipment is forbidden to be used when wind level is above 4, the maximum wind speed for air-filled amusement facilities is 8m/s(wind level is 4**

- 2Forbid putting articles on pedestrian passageway.

- 3.Tourists and staffs are forbidden moving or damaging public facilities.

- 4.Staffs are forbidden to get away from work.

- 5.If indoor operation catches fire, staffs guide tourists to cover nose and mouth with wet clothes handkerchief or napkin, and evacuate tourists to safe place to wait for rescue.

### **9.Equipment Management**

- 1.Forbid operating products if no one take charge.

- 2.Staffs are forbidden changing the operating state, position, structure, connect and accessories of equipment. (If necessary communicate with company)

- 3.Forbid setting up or refit electrical lines wantonly and exposing power line in the field.

- 4.Forbid soaking facilities in water (special facilities are excepted)

### **10.Forbid using broken-down facilities.**

- 1.Severe wear parts of electrical facilities which are not be changed.

- 2.aging power line.

- 3.Power line interface rust or spark.

- 3.1、Power goes down or pass the useful life even not be scrap.

- 3.2.The internal moving parts are wound or blocked by foreign body.

- 3.3.The outside protected shell of power line is damaged.

- 3.4.Power line interface melts because of the excessive power or long time using.

- 3.5.Electrical facilities become damp or get soak.

- 3.6、Power line become out of shape because of outside pressure.
  - 3.7、Electrical facilities get fever anomaly and distribute abnormal burnt smell because of friction or abnormal operating sound.
  - 3.8、Air-filled equipment internal structure breaks.
  - 3.9、Air-filled equipment surface gets severe wear or split seriously.
  - 3.10、The surface string get severe wear or break.
  - 3.11、Uneven heavy pressure make part material out of shape seriously.
  - 3.12、Local string cuts the material under the pressure and cause serious surface leakage.
  - 3.13、 Forbid overloading.
  - 3.14、 Electrical equipments must get ground wire, do ground water proof, rain proof, anti-collision, sun-proof, anti-human contact, leak protection and overload protection. Ensure the using environment sooth air, no heat, moisture, fire, earthquake, leakage, and illegal operation.
  - 3.15.Equipments operated by voltage, air pressure or tire pressure. The equipment temperature, water quality and site hardware must confirm to company standards.
- 1、 Prepare standby emergency power.
  2. Set up red warning line, warning signs at forbidden zone (like electrical facilities zone, buffer zone, special equipment zone, special equipment supporting zone, top of the inflatable equipment and its fence.). Set up kindly reminder in front of each equipment to sign the equipment name, characteristics, attentions and prohibitions. The sign must set up at the through channel of the equipment.
  - 3、 Forbidding pull the zipper or other accessories when the equipment is operated, or they will be damaged easily.


## **11、 Tourists:**

### **1. Requirement for Tourists:**

- 1、People diseased, weak, not doing exercise for long term, not achieving standard of weight and height, too old or too young are allowed to play to device.
- 2、 Forbid "Chasing" drinking "" trouble "" smoking "and" high density "crowd gathered" frightening people in site, no vehicles or pets getting in site like bikes, chute



board and skating shoes, no dangerous action like head down while playing slide and rotating ladder, no running on the device to avoid injuries.

- 3、Forbidding eating foods outside dining area, rest area and channel region, no eating on device and no taking and eating foods while playing.
- 4、Minors must be accompanied by guardian.
- 5、Forbidding wearing ornaments, watch, phone, glasses, keys and hairpin while playing.\_
- 6、If tourists feel discomfort, stop and go to rest rear or go to the doctor.
- 7、No playing in fatigue state, drink water in time and do sunscreen.
- 8、Wait in line while playing, no pushing and squeezing, no jumping(special device excepted), no reverse play at one-way channel. Ensure no push touch drag, scare, cut way, discard debris happen on device, no playing in channel, special area like jumping bounce, big water area allow playing together and rest but can not bother other. Competition or program shooting area not allowed getting in except staff and actors.
9. Staff supervise tourists use cableway, climbing, jumping, sliding and bungee jumping as required seriously. Slide: hand and legs together. Jump: while landing, no skip tourists. Cableway: repair in time if there is any break. Staffs need to check if the seat fasteners are docked well, tourists grab the sling well while playing.  
  
Bungee jumping: Staffs check if the device is good, repair in time if there is any problem, tourists dock the safety belt, jump with the elastic. Climbing: Staffs check if the device is good, repair in time if there is any problem, tourists dock the safety belt and sling well. Tell staffs if tired while climbing and fall safely.
- 10、Forbid taking sharp articles( like metal, rubber, plastic, wood, glass), inflammable and explosive goods, national contraband, simulation weapons, fragile and other items in to site.
- 11、No pet in site, expensive and important things deposit in service center.
- 12、Forbid uncivilized behavior like make cut, occupying, splitting and littering; Keep quiet while watching perform to avoid influence others.
- 13、children before school age is weak in leg muscle and ligament, long time jump or jump from high will damage their muscle or ligament and also influence the bone grow, guardian should ensure short time jump and watch them in safe space.
- 14、Roll up the long hair and wear swimming clothes or life jacket as require.

## **12、Requirement for Managerial Staffs**

- 1、Accessory inspection persons according to area to deal with emergency( one person each

500M2), and at least 1 managerial person each equipment.

- 2、Staffs supervise tourists in equipments and deal with emergency in time.
- 3、Small equipment accessory one managerial person each one, big equipment accessory one managerial person every 100M2.
- 4、Before clearance, staffs have to check all the equipment, corners, evacuate all tourists outside the site, then close the equipment and power.

### **13、Management after Operation**

#### **4.3.1、Management after Operation**

- 1、Management after operation everyday
- 2.Evacuate tourists, check the cableway, safe belt, climbing rope, swing. Check if the equipment corner, blind areas are normal. If there are damage, tear, local out of shape on the equipment, repair in time if there is any problem.
3. Clean the device, remove stains and foreign body, turn off power and deflate; Avoiding inflate component of water products falling in to water (add floating support under below water part).
- 4、After deflating, cover the equipment with rain proof clothes.

#### **14. Management after Operation each quarter**

- 1、Check and ensure the equipment is good, clean and dry it (Sprinkle talcum powder desiccant inside), fold and pack, and put it in air smooth and cool place, do mouse proof, mothproof, and stay away from flammable and explosive objects
- 2、Check and ensure the electrical facilities are good, clean it and pack them in seal package and put it in air smooth and cool place. Power it 10-15 minutes every 10-15 days.
- 3、Disassemble assemble facilities as required(eliminate stains and rust first).Avoid forced disassemble, folding package, pulling and hitting.
- 4、Damaged equipments should be repaired by staffs or contact the after sale service.

### **15、Clean and Maintenance of Equipments.**

#### **1、Daily Inspection Items**

##### **Daily Inspection of Site**

- 1.Sweep foreign body in time.
- 2.Clean foreign body in water channel, exclude ground water.
- 3.Check if the site fence is damaged.
- 4.Repair or change the ground laying cushion if damaged.
- 5.If rest facilities or fire facilities are damaged or moved, deal with them in time.
- 6.Set up warning signs and kindly reminder at set place.
- 7.Ensure then corner and blind areas are normal.

#### **16.Equipment Daily Inspection.**



1. Check electrical facilities one time each hour when temperature over 30 degree, one time every two hours below 30 degree, and find if there are abnormal heat, rotation rate, and burnt smell. If there is any problem, evacuate visitors repair or change the device. Inspect the air inlet and pump one time each hour to avoid them being covered by foreign body.
2. Inspect the equipments 15 minutes before operation, include pressure, air pressure, tire pressure, water quality, connection, fixing and structure, electrical facilities temperature, rotation rate, sound, and wear, and ensure all of them are normal, then open the equipments.
3. Do maintenance every 3 hours for equipment that smaller than 150M2, if equipment bigger than 150M2 or the structure is complicated, do limited management or time opening, evacuate tourists and close equipment for 10-15 minutes, eliminate stain, and ensure there is no damage on the surface, slippery cloth not be moved, buffer pad is normal( not be damaged on the connection with inflatable equipment), fixed well to ensure wind proof. Assembles connect well, accessories installed well, and operate well. Once inflated equipment need to be inspected every 2 hours and inflate again or reduce pressure in time.
4. Inspect the connection of air inlet with blowers and ensure they bind well every 2 hours.
5. If there is water on the surface of inflatable equipment, deal with it soon.
6. Inspect and ensure there is no big foreign body every 2 hours.
7. Inspect if the zipper is closed while operating.
8. Inspect the stick bar; if separate repair it in time.
9. Inspect the axial flow and centrifugal fan at regular time, if fans are stuck due to mechanical failure, the motor temperature rise and resulting in a short circuit fire,

## **17. Inspection Items At Regular Time.**

### **1. Inspect Site in Regular Time**

### **2. Inspect the fire emergency equipment and ensure it can be used normally and not be moved.**

3. Ensure the public facilities are complete, not be damaged, and change seriously damaged ones in time.
4. Inspect the ground, sewage facilities are normal, if damaged repair in time.
5. Removing rust, scouring, spraying protective layer for metal facilities at regular time.

## **18. Inspect Equipment At Regular Time**

1. Inspect the inside structure of the inflatable equipment, if there are damaging, ponding, or bulge, discharge the water in time, connect the installation personnel or after sale service to repair (warranty company will charge).

2. Inspect if there are water, damage, mildew between equipment and ground.
3. Inspect the vulnerable corner at regular time, if damaged, repair in time.
4. Remove rust and stain for metal facilities at regular time.
5. Inspect damage of assemble parts, reinforce them in time.
6. Inspect electrical facilities, if overload, aged, change in time. Change the wear parts, fix the screw and rivet, ensure there is no foreign or stuck inside the electrical facilities.
7. Inspect the channel surface (like slide way, buffer lad) every 500 people, if damaged due to overload, reinforce it and adjust the people amount.
8. Inspect the fix nose, if lines, cloth, sticking and needle tears due to long term strength, reinforce or stick it in time. Change the wind proof rope if aged.
9. Inspect the pressure, continuous inflated pressure keep in 800-1200pa, once inflated pressure keeps in 2000-4000pa, air tightness keep normal in 24 hours, pressure changes ( $2000-4000\text{pa} \times 1.12949$ ) with temperature (1 degree to 40degree), the biggest pressure is 4517.96pa. Special device require 8000-10000pa, air tight keep normal in 24 hours, pressure changes ( $8000-10000\text{pa} \times 1.12949$ ) with temperature (1 degree to 40degree), the biggest pressure is 11294.9pa. The biggest tear strength of high pressure products is 400N, if the equipment break or tear, repair in time, or it will led more serious damage. Ensure electrical facilities air pressure; accessories confirm to company standards, if not, repair or change it in time.
10. Inspect the zipper of air delete, water delete; ensure the function of sticks not invalid.

## **19. Repair and Maintenance**

### **1. Maintenance**

- 1.1 Clean the whole equipment with water and keep its clean.
- 1.2 Preserve the equipment in dry and cool place, do mouse proof. Inflate it for 30 minutes every month and discharge the moist air.
2. Maintenance:
  - 2.1 Adhesive bonding condition: dry, temperature above 20 degree, no water in repairing part.
  - 2.2 Adhesive bonding step: clean the stick bar and stick cloth, spray even and thin glue between stick bar and stick cloth, press stick bar on the stick cloth when glue become cool and white.
  - 2.3 Maintenance of electrical facilities takes reference of the professional introduction, change the abrasion part at regular time. Other adjusts or maintenance does by factory service center and use the original accessories.
  - 2.4 Do water disinfection every day and suction every 5-7 days.

### **20、 Common breakdown and solving method.**

	Common	Solving Method
--	--------	----------------

	Breakdown	
1	Abnormal pressure of new equipment	Inspect the connection of air inlet and blowers, cover air delete well.
2	Weak pressure and the air pad are soft.	a、 Inspect if there is damage, tear or big needle hole, if do, repair by glue and spalls in time; if tear bigger than 10cm, sew it with special needle first then stick it with spalls. b、 Inspect the power pressure. c、 Inspect blowers
3	Stick bar delaminates from reinforce part.	Repair with glue and spalls in time.
4	Blowers reverse	a、 Inspect power line, insure they connect right one. b、 Tight air inlet, restart the blower when it stops totally.
5	Damage of climbing and sliding cloth.	Repair climbing cloth with glue in time, change a new sliding cloth.
6	Abnormal heat or electrical accessories	Stop using in time, inspect it and if it is normal inside, restart 30 minutes later. If there is problem, repair it in service center.

## 21、 Special Treatment.

- 1、 Special articles like drugs need to be preserved specially.
- 2、 If there is problem that can not find dealing method in this instruction please contact our company in time.
- 3、 If emergency happened, evacuate tourists first and ensure tourists' safety

## 22、 After Sale Service

**Our company was founded in 1995, and has accumulated rich experience in manufacture, skill, and after sale service after decades years; customers will get careful and thoughtful after sale service. The company will service customers according to**



**formulated steps, if charges it must be reasonable and professional.**

# **Operation and Maintenance Introduction of Inflatable Amusement Equipment Xi'An Giant Equipment Co. Ltd**

XIANGIANT EQUIPMENT CO. LTD

ADD: Shaanxi, Chang'an, 210 Huyi, Shaanxi, Xi'an 710119

ADD: One Int'l Finance Centre, 1 Harbour View, Level 20, Central, Hong Kong, China

E-mail: fzhao01101970@gmail.com

To Customers:

Sincerely Thanks very much for your trust and great kindness.

Welcome to use our products, during this time, we will be stay with you all the year through. Also can enjoy the excellent service from our after-service team , to work for you and help you to solve all the problem

Sincerely hope that you could make good income in every running day. Company, your life and family will be happy and happy. In order to use the toys well, please read the use manual before using.

## **1. Special Warning**

1.1. Our company will provide quality guarantee service for you, also please read the use manual and use the products in accordance with the use manual. Especially, please read carefully the after-service and quality commitment of this book, which detailed the products quality commitment terms 、 range and Method.

1.2 Please do not change the use conditions of our products. Such as use the dry slide as water slide Water slide for dry slide 、 Children's products for adult, the power could not meet the requirements. The product is strictly prohibited overcrowding, overweight,



Overload, high use .Or it may affect products function, service life and lead to the accident. This consequence company is not liable.

1.3 Please keep the products certificate and after-service card

1.4 The products required in that group who is in good health ,Non-infectious diseases , skin diseases , high blood pressure, heart disease, fear of heights , Osteoporosis and other symptoms . Require children age 2 to 14 years old. No more than 2 meter tall and weighing does not exceed 100kgs .

1.5. The operation products should be away from high Voltage Wire. At least Horizontal 20 meters away from the high-Voltage line

1.6. The outdoor product is prohibited when encounter bad weather as Rain, snow and wind etc; when the wind is three levels or above, the outdoor products must be deflated and make corresponding measure against wind.

1.7. When the products don't run for a long, Should be wiped clean, dry and talcum powder packaging storage. The storage place required waterproof, moisture proof, rodents. Prevent damage.

1.8 When you read this manual if there is anything unclear or during operation, you met the problem, which could not find on the manual, please do not hesitate to contact our company.

1.9 Note instruction:

## **2. The requirement of blowing test and installation**

1.Site requirement

2.The ground requirement of inflatable amusement equipment: Bright, spacious, flat, surface without sharp objects. The installation place should far from inflammable and

explosive dangerous objects. Tall trees and high-voltage wire. The site place should be complying with the design plan of horizontal distance and vertical drop. The electric circuit line should accord with the planning programming and site requirement. The ground should lay equipment protect layer and air permeable layer

A: The minimum distance of two inflatable equipment should be the sum of two adjacent equipment highest points.

B: The products which can easily to distinguish the front and behind, left and right. The overall drop between left and right should be plus or minus 5cm. The equipment of front and behind overall drop required:  $\text{Front} \leq \text{behind}$   $0 \leq \text{overall drop} \leq 50\text{cm}$ . Divide according to length increase step by step.

C: The products which can not easily distinguish its structure. The site requirement should no obvious overall drop. The overall drop required :  $0 \leq \text{overall drop} \leq \pm 5\text{cm}$

D: The carrier type inflatable amusement equipment (poolsThe ground required measurement level precise  $0 \leq \text{overall drop} \leq \pm 2.5\text{cm}$

3. According to the site planning drawing to install the equipment: The infirmary, bathroom, dining area, rest area, storage room, locker, and security exits. Fire control facilities (configuration according to the national standard, shading equipment, warning labels, warm tips cards. Prohibited putting crowded. Enclosed business park field 、 equipment the supporting facilities area ratio 1:0.4:0.1, with 30% of the evacuation space

### **3 The requirement of equipment:**

1. Facility requirement: All accessories are complete, Quality conformance; there is no any damage during delivery. Use according to the standard.
2. According to the Products configuration list to make the cargo acceptance (For example: Inflatable equipment, Electrical equipment, Product accessories), the package of products, and product quality. If the products weight above 150kgs, the goods should be use the Hosting equipment to load and unload the goods.
3. Please check all the goods if any damage during delivery. If any problem, please contact with the trucking company about this.
4. Please check the equipment operation if ok or not when the power on.
5. It is prohibited to drag and pull the products during the installation process , Or it may damage the structure of products. Please do not drag the toys without any cloth on the ground. It is prohibited the toys stand the press in a point or the area are less 5cm. The electrical equipment must be strictly according to the instruction for voltage, current, load Ann. Please install the protective of electric leakage and load, overheat protection and outside shield (The protection cover should be ventilation, water proof, Insulation, strong, easy to fixed on the ground)

### **4. Installation requirement:**



- 1、 The installer should read the use manual careful before installing the products.
- 2.The inflatable products must flat on the ground without Warp and twine, Vertical structure and clear fold. The flat extension of the horizontal direction.
3. The inflatable equipment should use blower or pump according to the standard configuration. Please do not add the blowers and reduce the blowers without instruction. The pump use required the voltage no less 110V to 120V, the standard power line.
4. Before testing the inflatable toys, all the air outlet, Zip mouth, outlet, Spare air intake should be closed.
5. All the combined inflatable toys should be installed according to the site layout. Distinguish the built-up sequence. Connect in proper order and inflate the toys or inflate the toys and then connect the toys. Reference to the products of special installation steps, Connect in order. From the least to the most important. From large to small, from down to up, from inside to outside.
6. Before blowing to test the products, Should be fixed the wind protection in turn (pull type connection, Fixed with the ground.
7. After combining the toys and install all the accessory (slide cloth, climbing cloth, and Soft ladder and outside connect accessory (Such as sand filter system, pipe, and water pump
- 8 .If the products complex, Company will send the engineer to guidance the installation. The customer should get some assistant as per the engineer requirement.

9. for the generally flat should be making the flat on the ground (from the front to end), Combine the equipment in the right order. Install or remove it should combine and install it according to the engineer guidance. The electricity equipment should get the branch power on. The connect part of wire should be make the protection of waterproof, anti-aging, fixing, insulation.

### **5.Installation steps :**

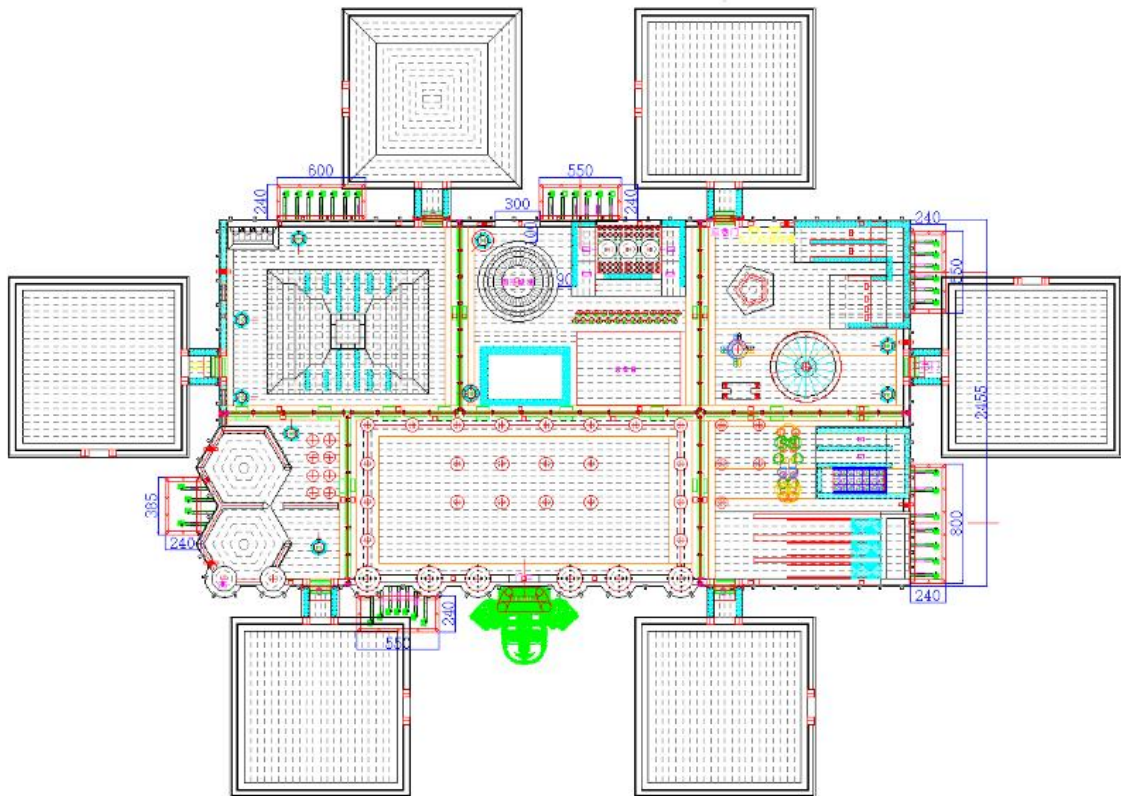
1. Clean the ground to make sure no shark objects
2. Put the carpet or plastic film on the ground



3. Check the packages marks outside packages Put the packages in the correct location according to the site ,put equipment on and pull it in the correct direction :







4. Open the packages and pull each zone to the correct location according to above pictures











Spread the inflatable zone like this



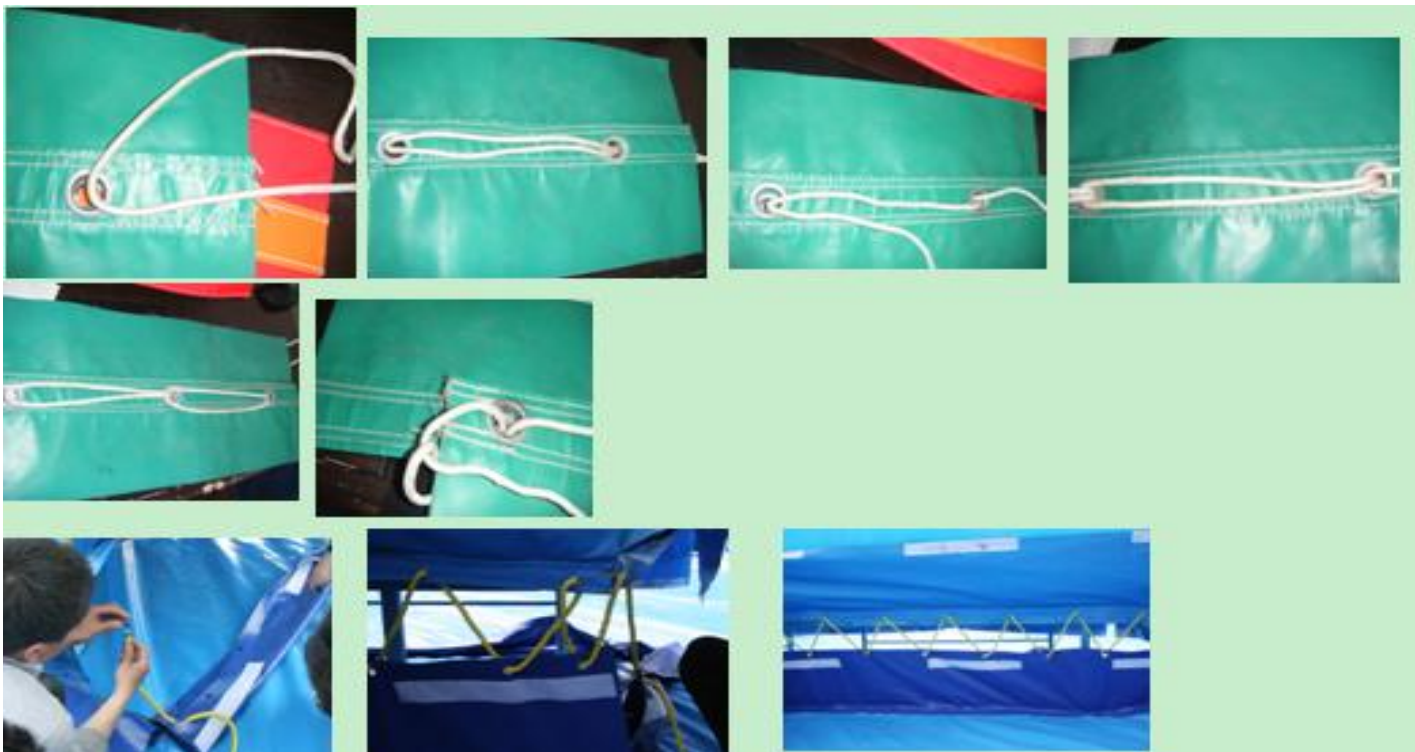
5. Connected the blowers according to the blower allocation and blow it up :



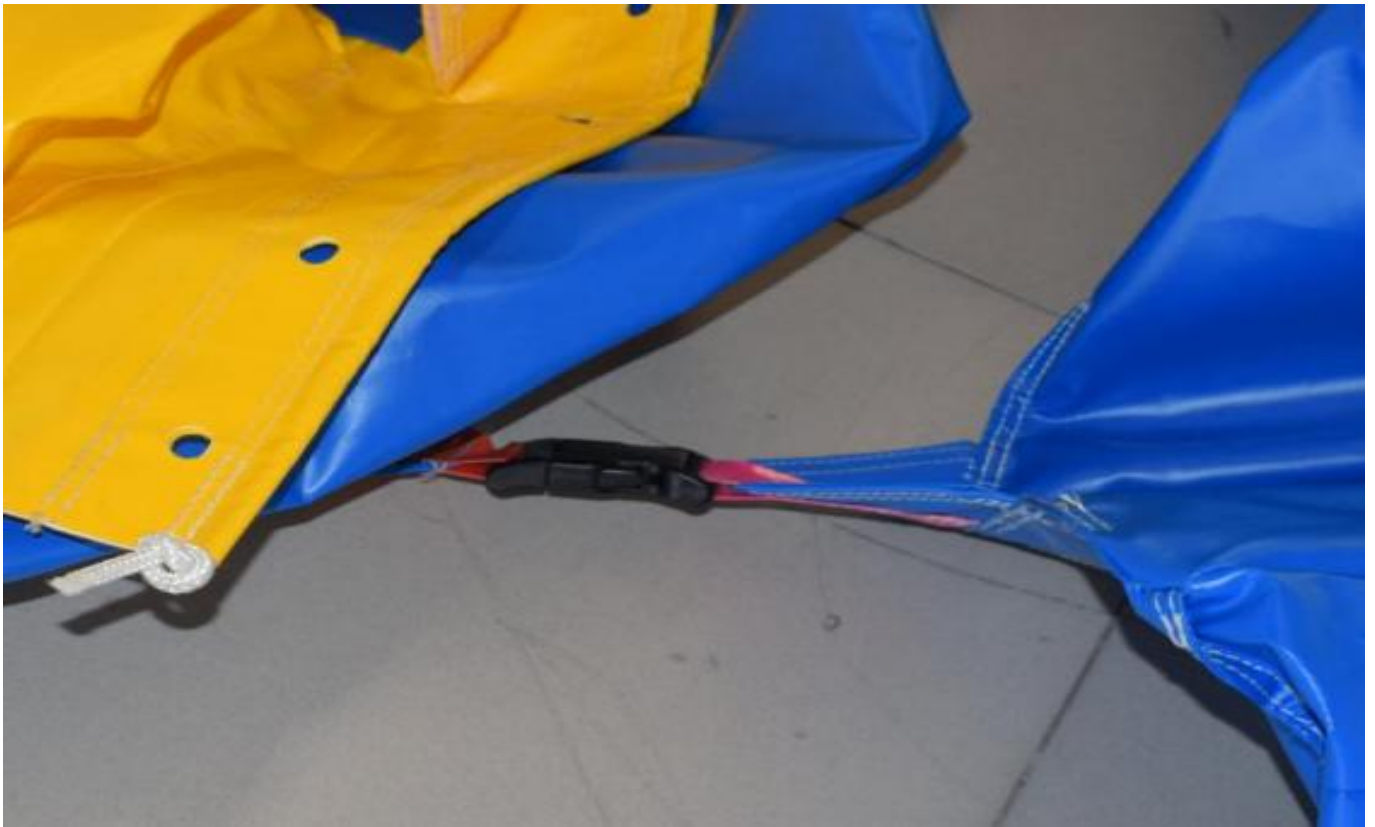




6. Connected the rope , belts , put on the Velcro cover





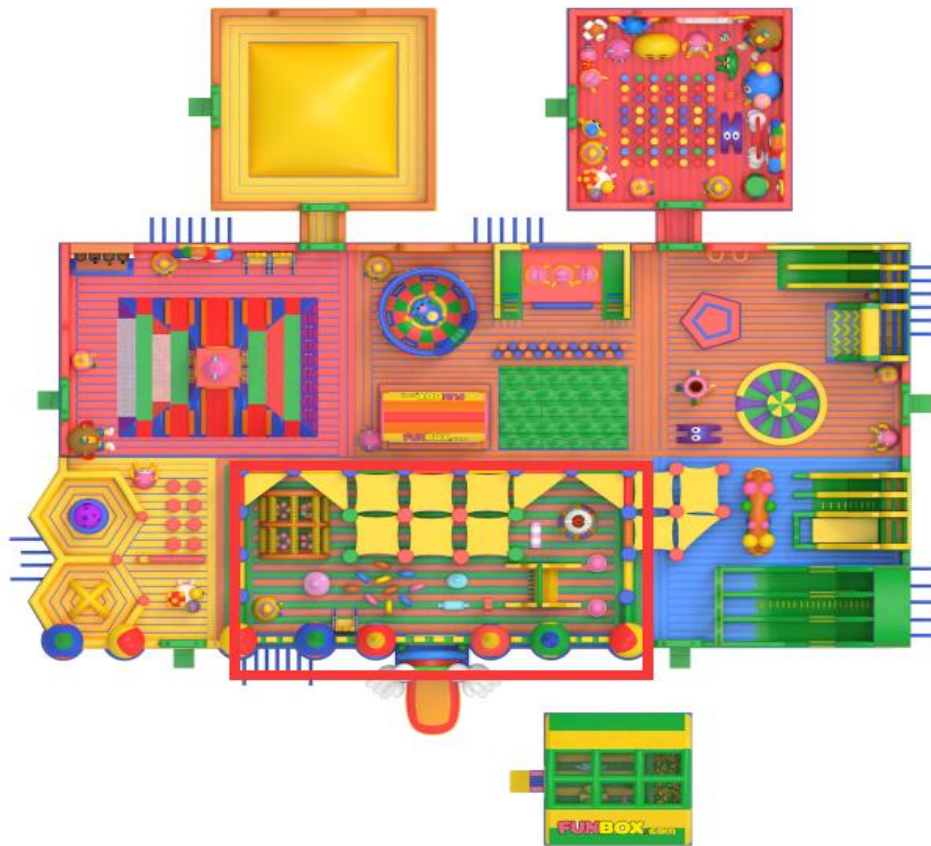




**NOTE :Same steps for Level one to Level Six  
(put carpet on the ground ,Put The package  
in correct zone , open the package , put the  
equipment in correct direction,connected  
the blower tubes , connected each zone  
together with rope , belts , velcro cover ,  
turn on blowers )**

**Detail instruction of each zone :**

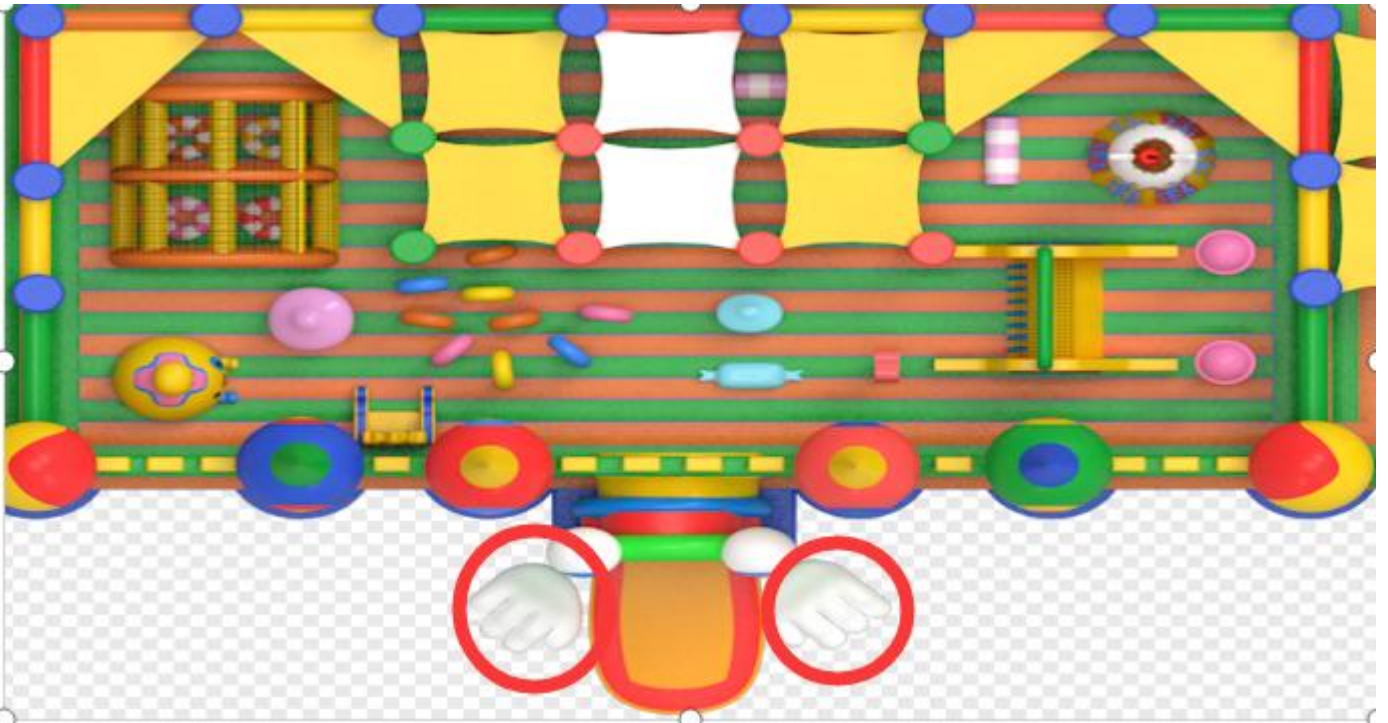
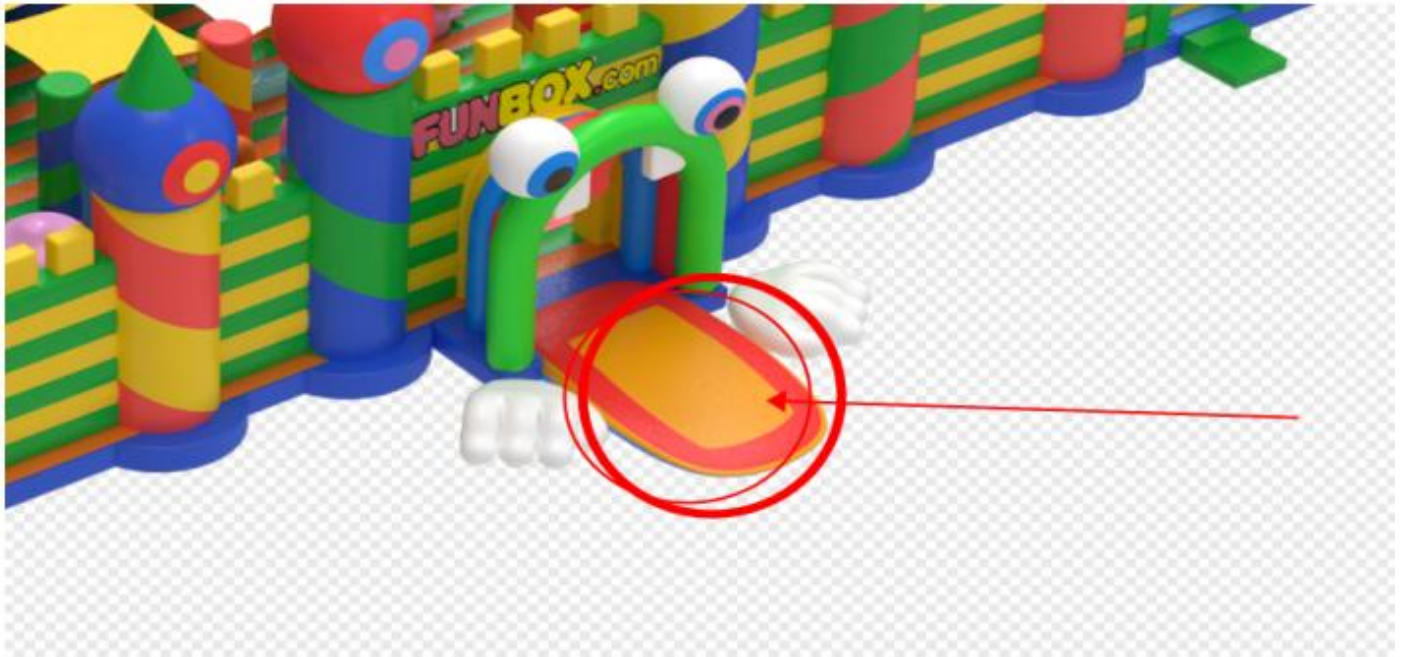
## 1. Level 1



Inflate the Level One UP , Connected the frog Tongue and white hands .

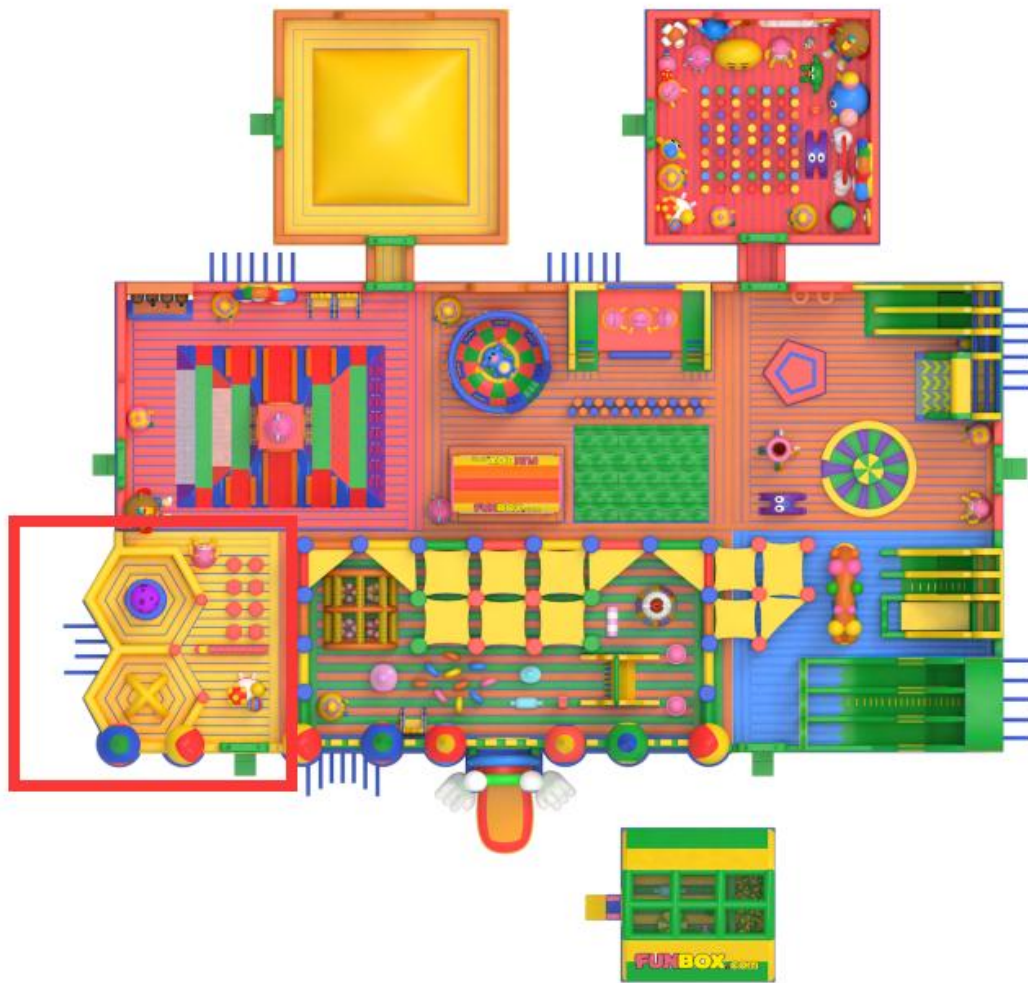






## Level 2 ,

1. Connected the green emergency steps with Velcro , same way for other emergency exit .







2. Put on the round EVA and airtight balls



3. Put on the yellow airtight balls on

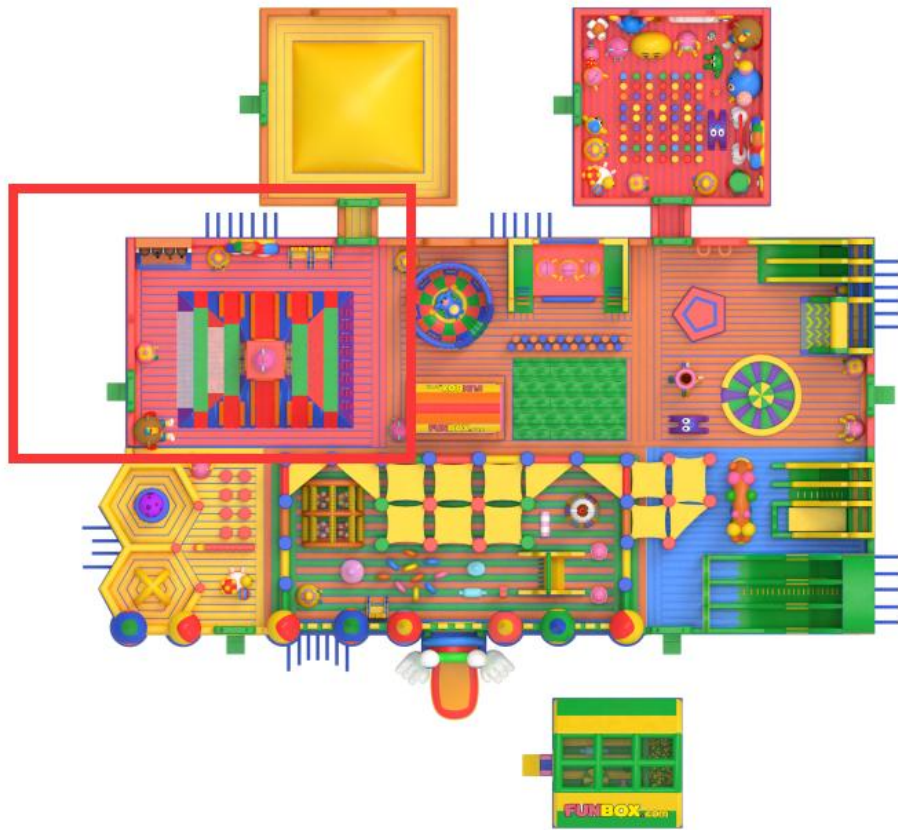


4. Put on the round EVA on





**Level Three**



Connected the green Steps to the Emergency entrance



## EVA Steps for Emergency Steps for Main park (Level Three)



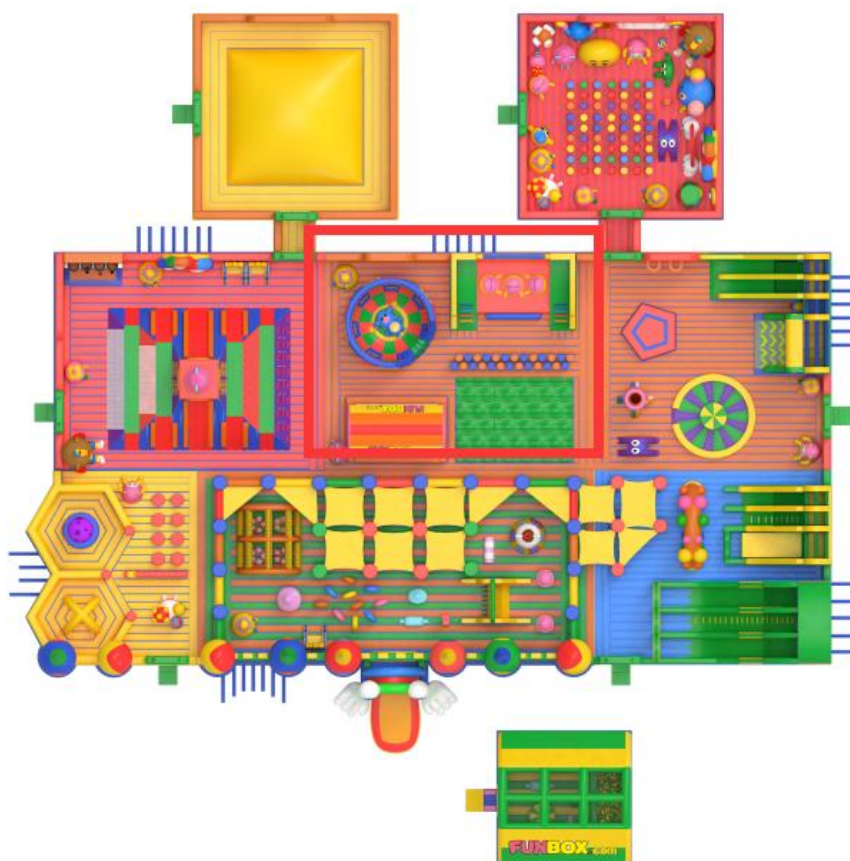
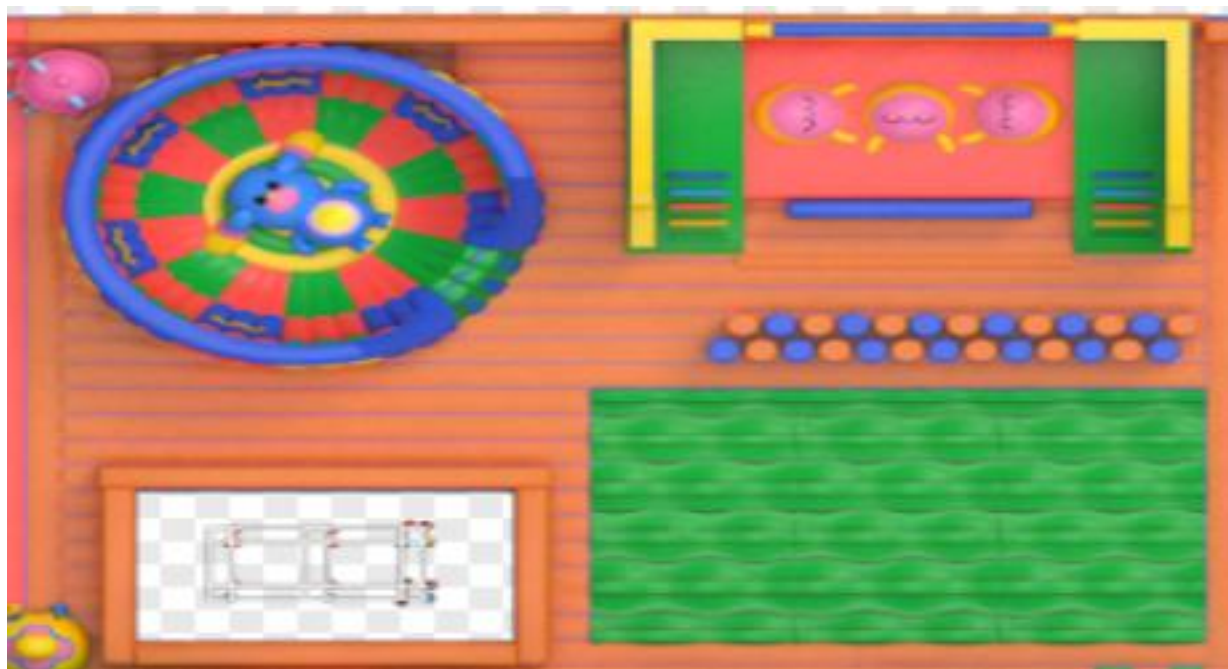
Connected the soft Ladder to the Correct Location



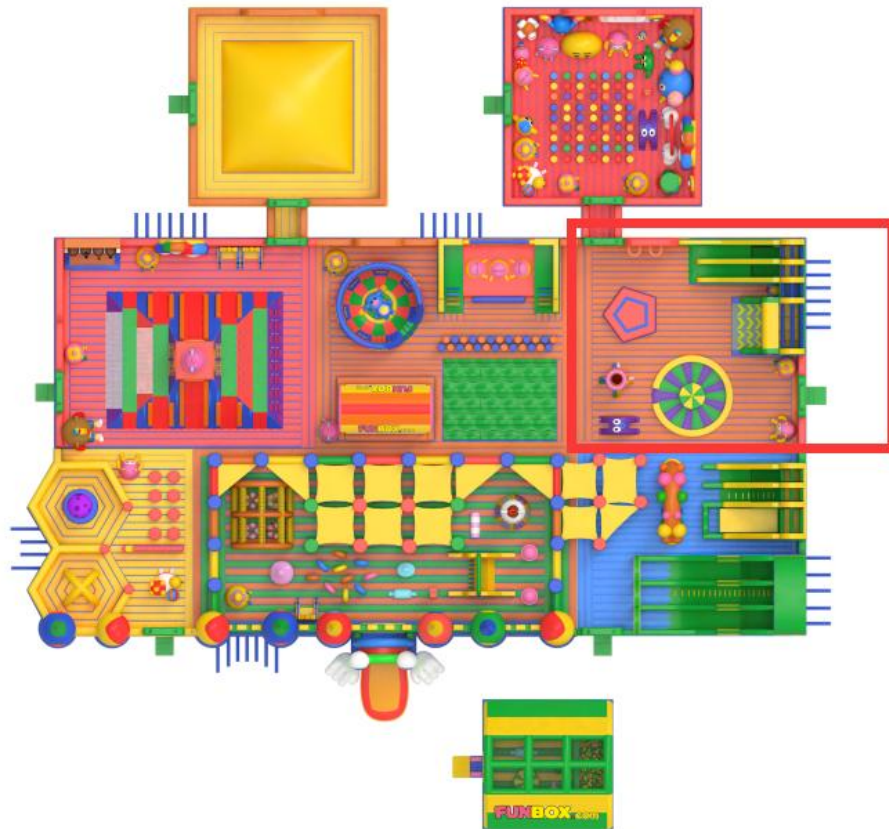
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1



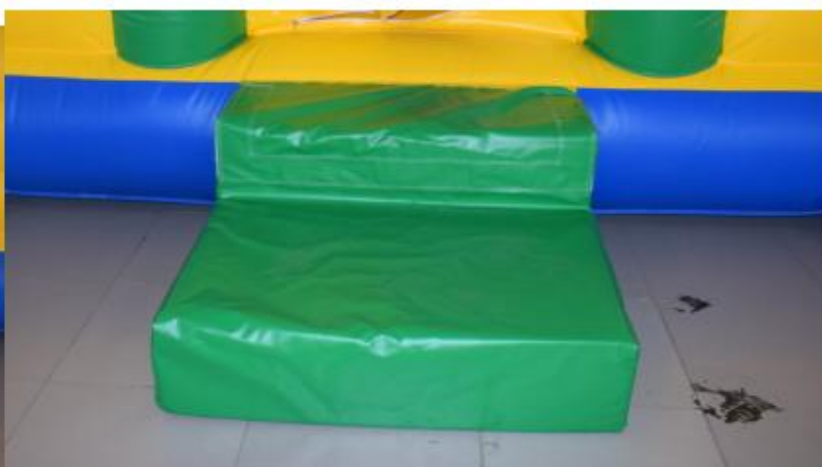
Level 5



**Connected the Green steps to the Emergency entrance**



## EVA Steps for Emergency Steps for Main park (Level Five)

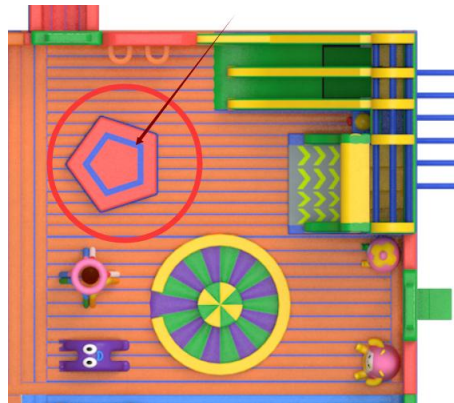


Paste and connected the yellow mat to the Nijiawall platform

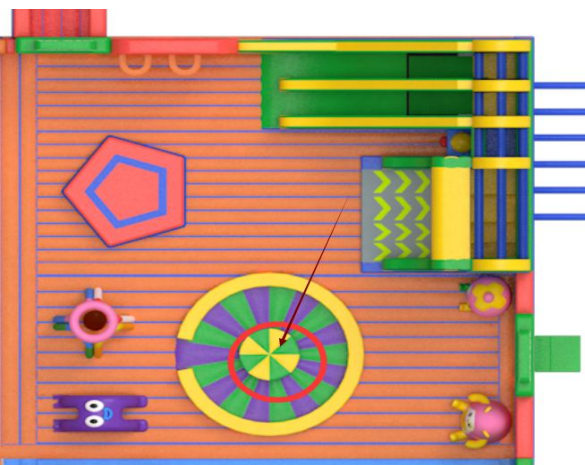
## EVA Mat for Nijia Wall slide of Main park (Level Five) N



Put the white circle to the Hexagon games

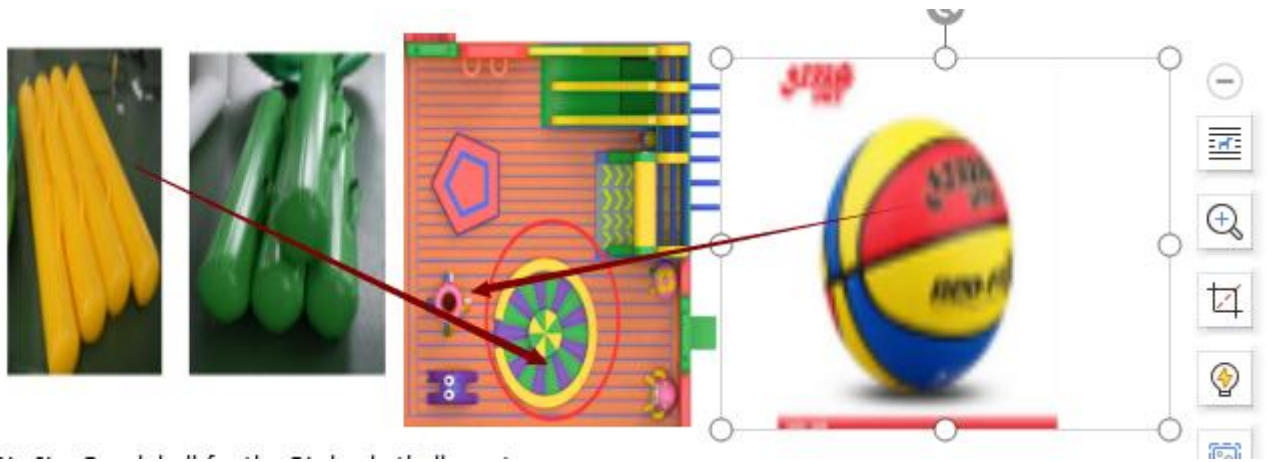


Put on the round airtight mat on the products

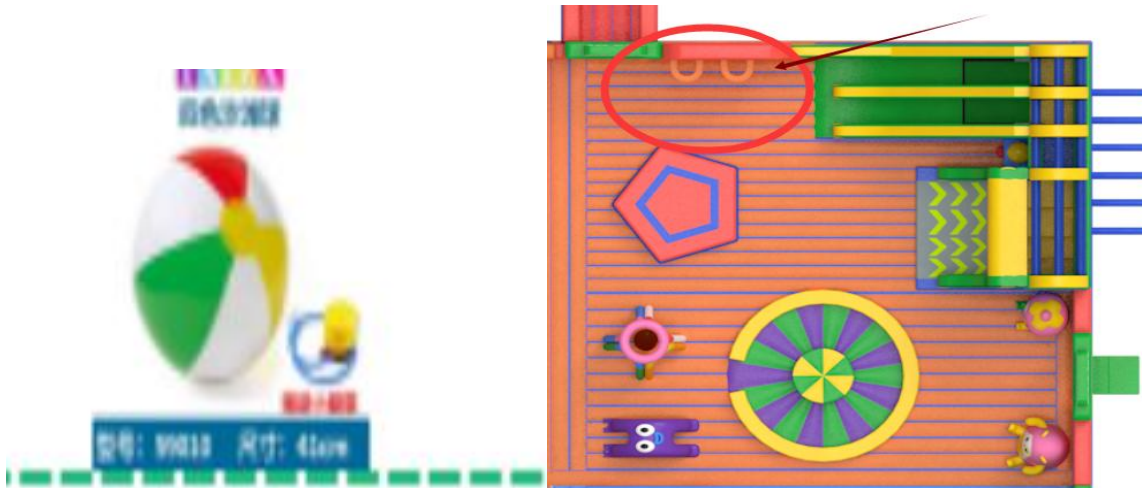


Airtight Column is for this games , Big size basketball for the basketball hook

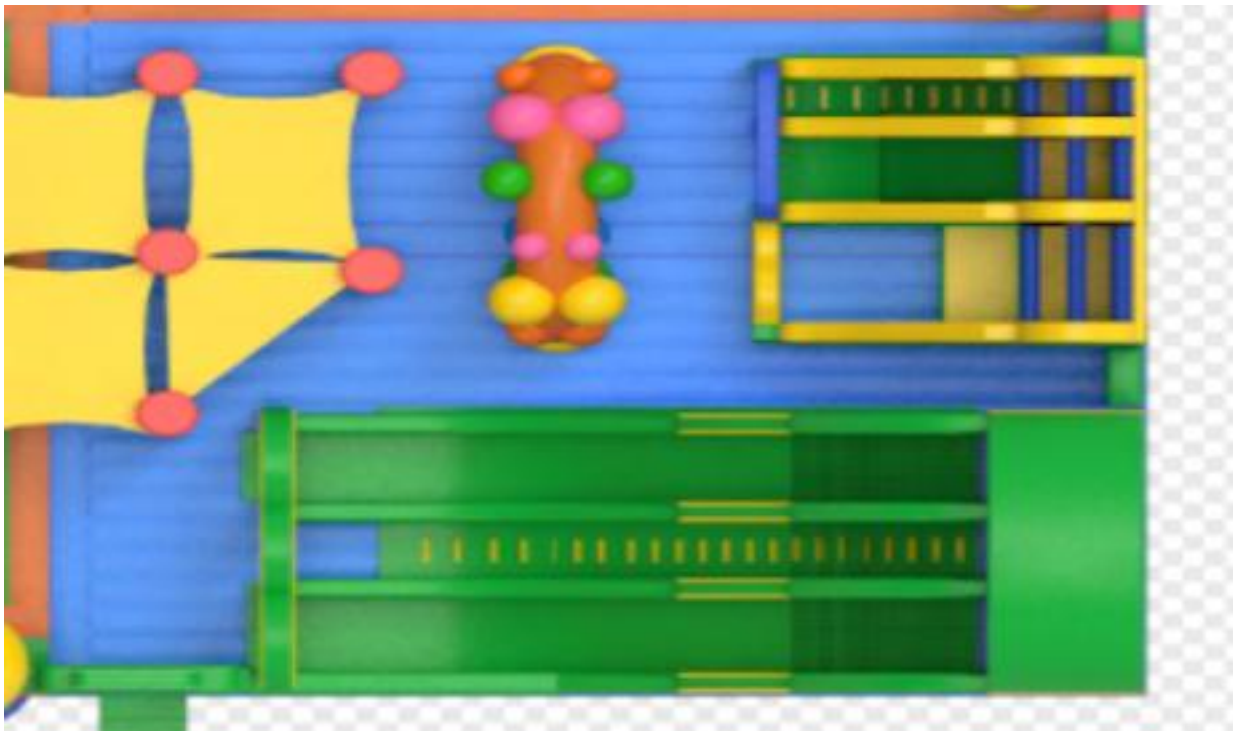




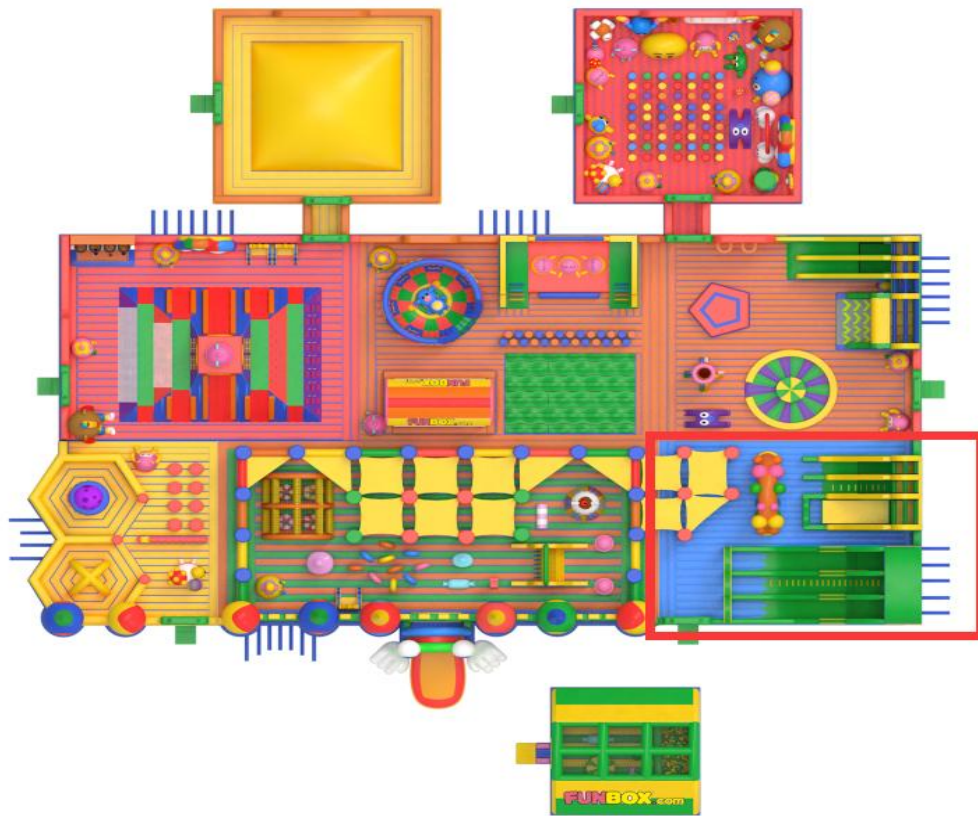
Big Size Beach ball for the Big basketball court



## Level Six







Connected the Green steps to the Emergency entrance

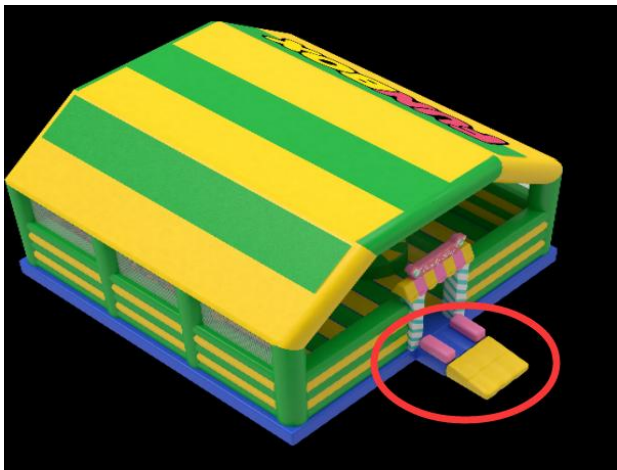
## EVA Steps for Emergency Steps for Main park (Level SIX)





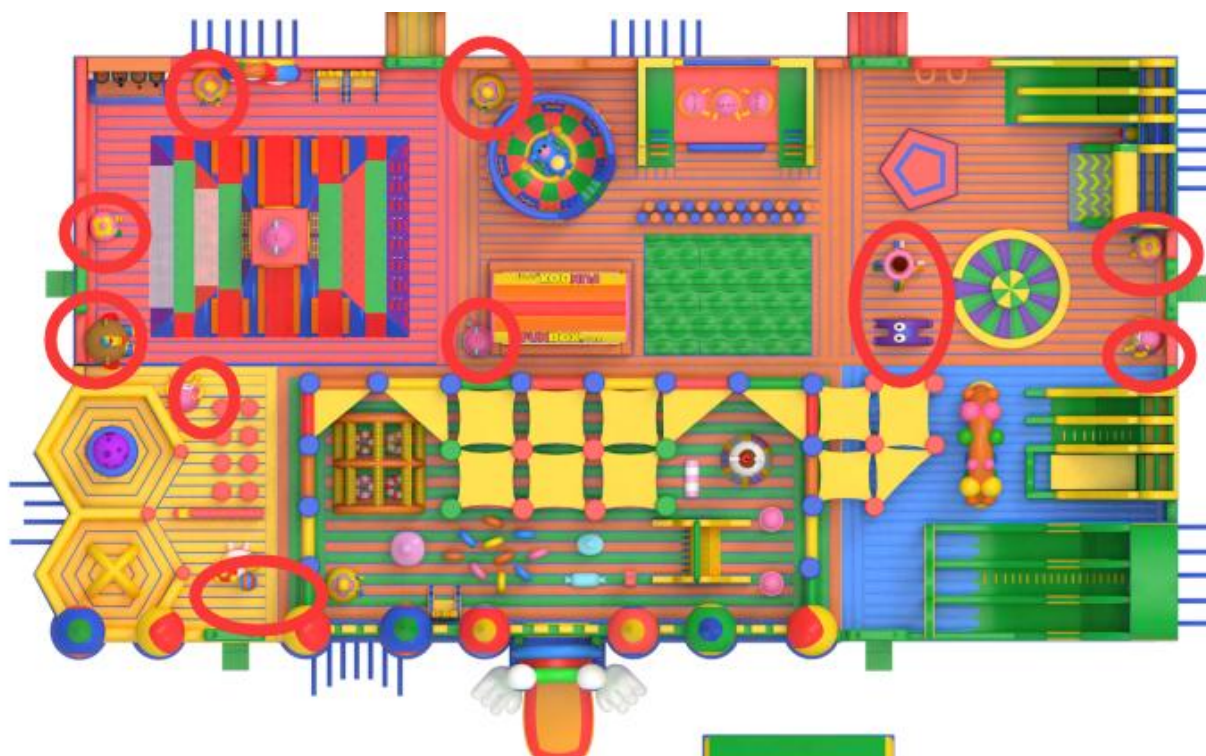
## Toddler Park

Put on the EVA steps to the entrance part with Velcro



Connected the airtight characters to the zone as showed on the effect design pictures



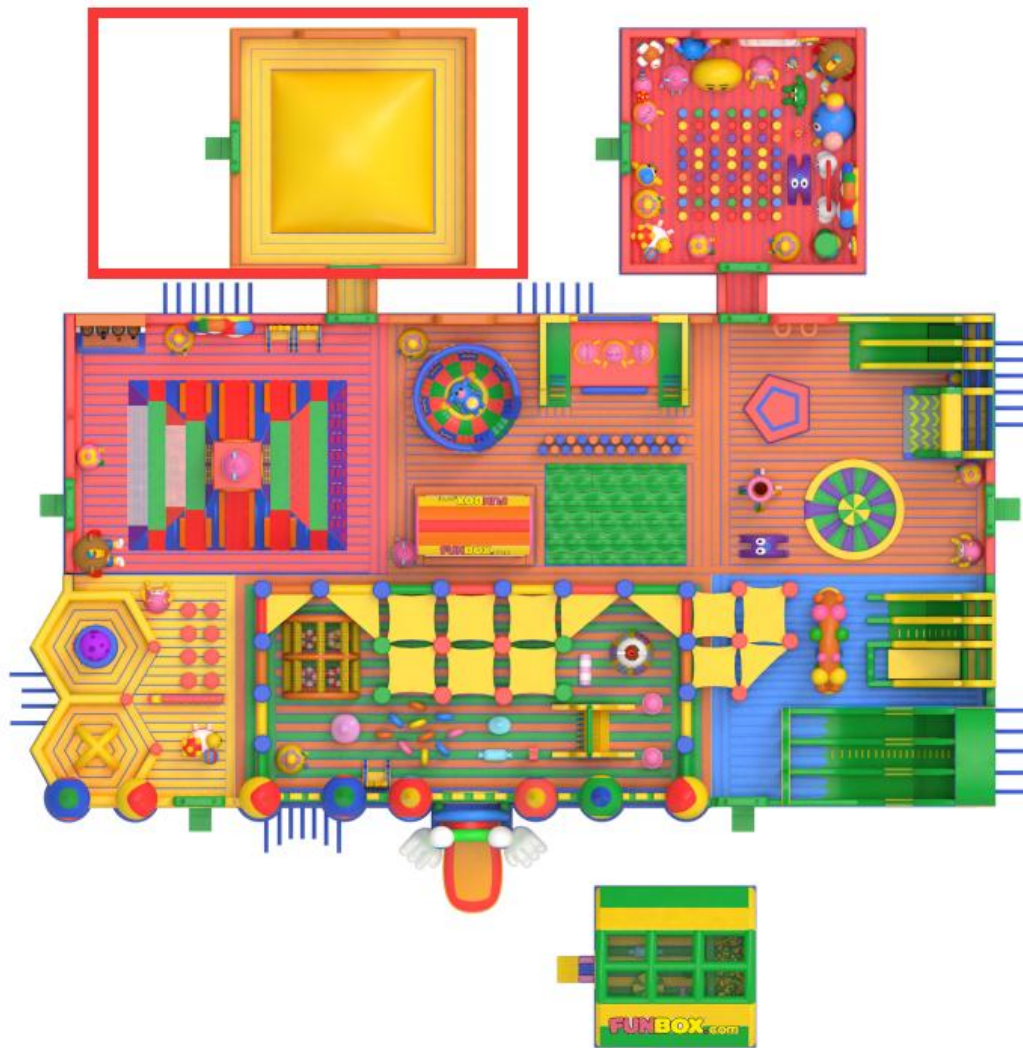


Tight the rope to the anchor point one by one , same way for other characters



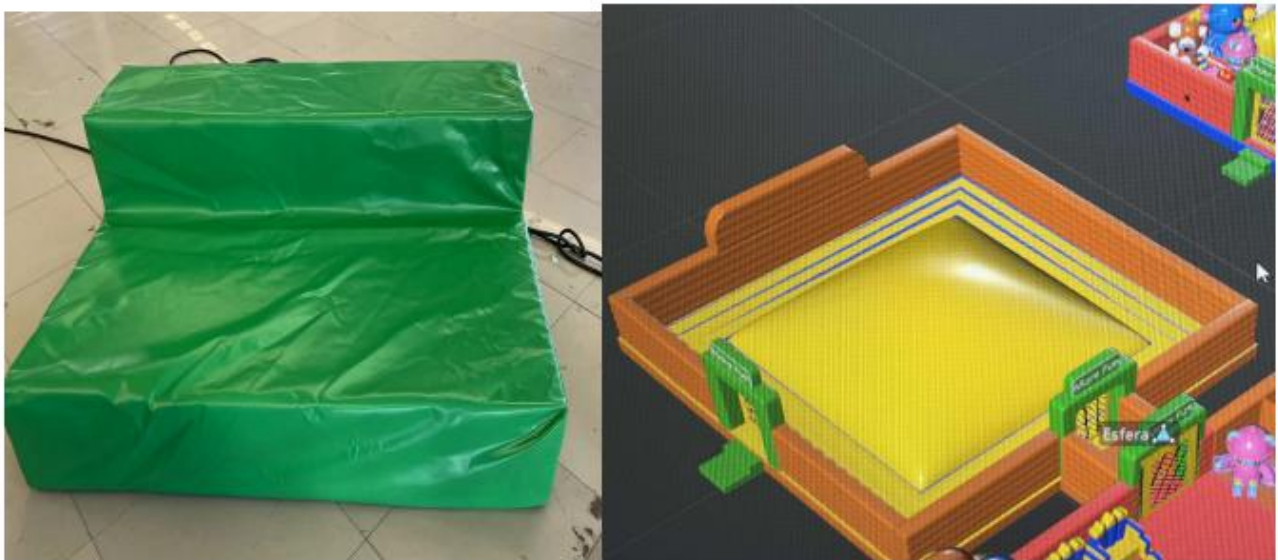
**Installation for yellow mountain**





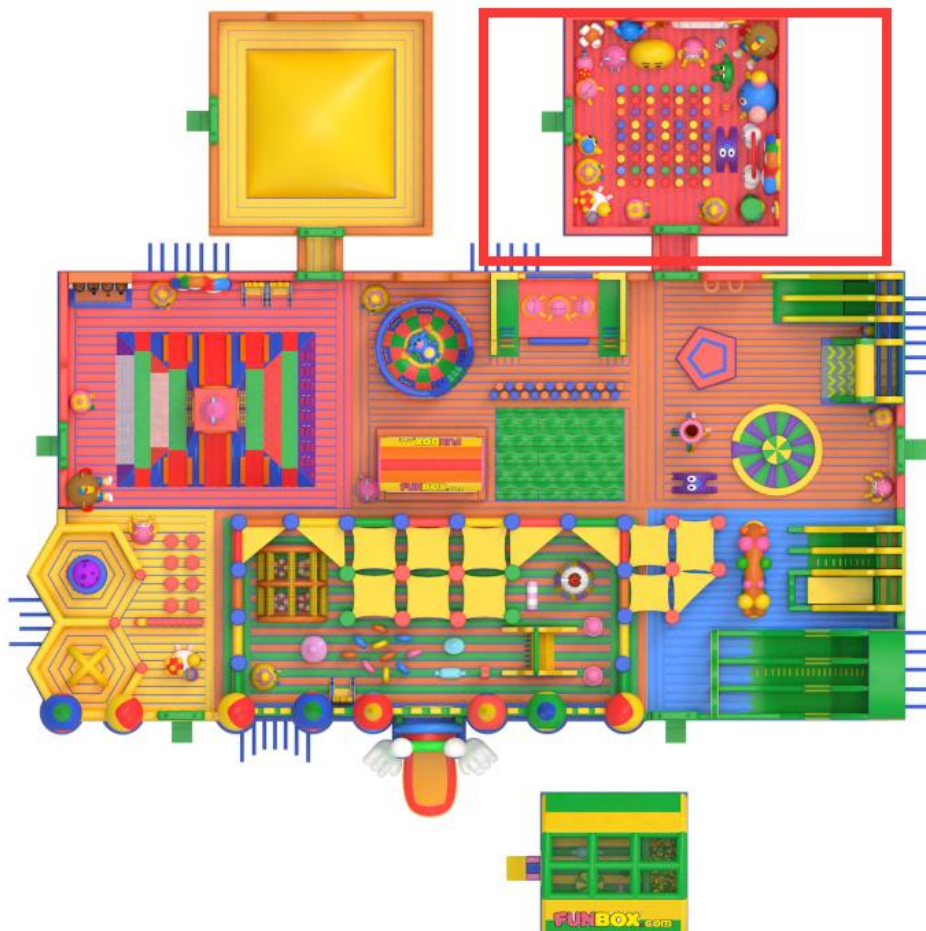
Connected the Green steps to the Emergency entrance

## EVA Steps for Yellow Mountain





## Chill zone installation





# EVA steps for Chill zone



## 6、 Preparation Before Management

1.Preparation Before Management Every Day

2、 If there are many electrical appliances in the file, start the appliance in turn rather than simultaneous start of a number of appliances. After inflating clean the product and check the blowers and electrical equipments, if damaged or aging repair or replace in time.

3、 Staff should supervise the running state for 10-15 minutes every day before management,



like deviation from fixed position, fixation or connection get loose.

- 4、 If the opening and closing of zipper or other metal structures are not smooth coat paraffin wax or spray lubrication on the structure surface and inside and after several times opening and closing it can running smoothly.

## **7、Preparation Before Management Every Season**

- 1、 Before quarterly operation of intermittent operation equipment, clean up site and detect the power line.
- 2、 Carry the equipment to site and install it as the initial installation sequence introduced.
3. Do complete inspection after installation and do clean maintenance.
- 4、 Trail operation lasts 2-3 days, repair the equipment in time if there is any breakdown.

## **5、Operation Management**

### **8.Site Environment Management**

- 1.Forbid fire ignition in site.

Forbid operating the equipment in bad weather condition. Wind less than 3 level is safe state for operation; fix the equipment, stop operation and evacuate the tourists on equipment when wind is at 3-4 level; Wind above 4 level deflate the equipment and fix it well. Carry the equipment to safe place in hard wind or other bad weather conditions.

**Warning: the equipment is forbidden to be used when wind level is above 4, the maximum wind speed for air-filled amusement facilities is 8m/s(wind level is 4**

- 2Forbid putting articles on pedestrian passageway.

- 3.Tourists and staffs are forbidden moving or damaging public facilities.

- 4.Staffs are forbidden to get away from work.

- 5.If indoor operation catches fire, staffs guide tourists to cover nose and mouth with wet clothes handkerchief or napkin, and evacuate tourists to safe place to wait for rescue.

## **9.Equipment Management**

- 1.Forbid operating products if no one take charge.

- 2.Staffs are forbidden changing the operating state, position, structure, connect and accessories of equipment. (If necessary communicate with company)

- 3.Forbid setting up or refit electrical lines wantonly and exposing power line in the field.

- 4.Forbid soaking facilities in water (special facilities are excepted)

## **10.Forbid using broken-down facilities.**

- 1.Severe wear parts of electrical facilities which are not be changed.

- 2.aging power line.

3.Power line interface rust or spark.

3.1、 Power goes down or pass the useful life even not be scrap.

3.2.The internal moving parts are wound or blocked by foreign body.

3.3.The outside protected shell of power line is damaged.

3.4.Power line interface melts because of the excessive power or long time using.

3.5.Electrical facilities become damp or get soak.

3.6、 Power line become out of shape because of outside pressure.

3.7、 Electrical facilities get fever anomaly and distribute abnormal burnt smell because of friction or abnormal operating sound.

3.8、 Air-filled equipment internal structure breaks.

3.9、 Air-filled equipment surface gets severe wear or split seriously.

3.10、 The surface string get severe wear or break.

3.11、 Uneven heavy pressure make part material out of shape seriously.

3.12、 Local string cuts the material under the pressure and cause serious surface leakage.

3.13、 Forbid overloading.

3.14 、 Electrical equipments must get ground wire, do ground water proof, rain proof, anti-collision, sun-proof, anti-human contact, leak protection and overload protection. Ensure the using environment sooth air, no heat, moisture, fire, earthquake, leakage, and illegal operation.

3.15.Equipments operated by voltage, air pressure or tire pressure. The equipment temperature, water quality and site hardware must confirm to company standards.

1、 Prepare standby emergency power.

2. Set up red warning line, warning signs at forbidden zone (like electrical facilities zone, buffer zone, special equipment zone, special equipment supporting zone, top of the inflatable equipment and its fence.). Set up kindly reminder in front of each equipment to sign the equipment name, characteristics, attentions and prohibitions. The sign must set up at the through channel of the equipment.

3、 Forbidding pull the zipper or other accessories when the equipment is operated, or they will be damaged easily.

## **11、 Tourists:**

### **1. Requirement for Tourists:**

- 1、People diseased, weak, not doing exercise for long term, not achieving standard of weight and height, too old or too young are allowed to play to device. Children device requirement: age 3-14, weight under 70kgs, height under 1.5m; jumping device is not allowed played by children in different height play in same area.
- 2、Forbid "Chasing" drinking "" trouble "" smoking "and" high density "crowd gathered" frightening people in site, no vehicles or pets getting in site like bikes, chute board and skating shoes, no dangerous action like head down while playing slide and rotating ladder, no running on the device to avoid injuries.
- 3、Forbidding eating foods outside dining area, rest area and channel region, no eating on device and no taking and eating foods while playing.
- 4、Minors must be accompanied by guardian.
- 5、Forbidding wearing ornaments, watch, phone, glasses, keys and hairpin while playing.\_
- 6、 If tourists feel discomfort, stop and go to rest rear or go to the doctor.
- 7、 No playing in fatigue state, drink water in time an do sunscreen.
- 8、Wait in line while playing, no pushing and squeezing, no jumping(special device excepted), no reverse play at one-way channel. Ensure no push touch drag, scare, cut way, discard debris happen on device, no playing in channel, special area like jumping bounce, big water area allow playing together and rest but can not bother other. Competition or program shooting area not allowed getting in except staff and actors.
9. Staff supervise tourists use cableway, climbing, jumping, sliding and bungee jumping as required seriously. Slide: hand and legs apart about 1.5 head space falling zone, not used by height fear tourists check if the device is good, any break. Staffs need to check if the seat fasteners are docked well, tourists grab the sling well while playing.  legs together. Jump: while landing, no skip tourists. Cableway: repair in time if there is any break. Staffs need to check if the seat fasteners are docked well, tourists grab the sling well while playing. Bungee jumping: Staffs check if the device is good, repair in time if there is any problem, tourists dock the safety belt, jump with the elastic. Climbing: Staffs check if the device is good, repair in time if there is any problem, tourists dock the safety belt and sling well. Tell staffs if tired while climbing and fall safely.
- 10、 Forbid taking sharp articles( like metal, rubber, plastic, wood, glass), inflammable and explosive goods, national contraband, simulation weapons, fragile and other items in to site.
- 11、 No pet in site, expensive and important things deposit in service center.
- 12、 Forbid uncivilized behavior like make cut, occupying, splitting and littering; Keep quiet while watching perform to avoid influence others.



13、 children before school age is weak in leg muscle and ligament, long time jump or jump from high will damage their muscle or ligament and also influence the bone grow, guardian should ensure short time jump and watch them in safe space.

14、 Roll up the long hair and wear swimming clothes or life jacket as require.

## **12、 Requirement for Managerial Staffs**

1、 Accessory inspection persons according to area to deal with emergency( one person each 500M2), and at least 1 managerial person each equipment.

2、 Staffs supervise tourists in equipments and deal with emergency in time.

3、 Small equipment accessory one managerial person each one, big equipment accessory one managerial person every 100M2.

4、 Before clearance, staffs have to check all the equipment, corners, evacuate all tourists outside the site, then close the equipment and power.

## **13、 Management after Operation**

### **4.3.1、 Management after Operation**

1、 Management after operation everyday

2.Evacuate tourists, check the cableway, safe belt, climbing rope, swing. Check if the equipment corner, blind areas are normal. If there are damage, tear, local out of shape on the equipment, repair in time if there is any problem.

3. Clean the device, remove stains and foreign body, turn off power and deflate; Avoiding inflate component of water products falling in to water (add floating support under below water part).

4、 After deflating, cover the equipment with rain proof clothes.

### **14. Management after Operation each quarter**

1、 Check and ensure the equipment is good, clean and dry it (Sprinkle talcum powder desiccant inside), fold and pack, and put it in air smooth and cool place, do mouse proof, mothproof, and stay away from flammable and explosive objects

2、 Check and ensure the electrical facilities are good, clean it and pack them in seal package and put it in air smooth and cool place. Power it 10-15 minutes every 10-15 days.

3、 Disassemble assemble facilities as required(eliminate stains and rust first).Avoid forced disassemble, folding package, pulling and hitting.

4、 Damaged equipments should be repaired by staffs or contact the after sale service.

## **15、 Clean and Maintenance of Equipments.**

### **1、 Daily Inspection Items**

#### **Daily Inspection of Site**

1.Sweep foreign body in time.

2.Clean foreign body in water channel, exclude ground water.

3. Check if the site fence is damaged.
4. Repair or change the ground laying cushion if damaged.
5. If rest facilities or fire facilities are damaged or moved, deal with them in time.
6. Set up warning signs and kindly reminder at set place.
7. Ensure then corner and blind areas are normal.

### **16. Equipment Daily Inspection.**

1. Check electrical facilities one time each hour when temperature over 30 degree, one time every two hours below 30 degree, and find if there are abnormal heat, rotation rate, and burnt smell. If there is any problem, evacuate visitors repair or change the device. Inspect the air inlet and pump one time each hour to avoid them being covered by foreign body.
2. Inspect the equipments 15 minutes before operation, include pressure, air pressure, tire pressure, water quality, connection, fixing and structure, electrical facilities temperature, rotation rate, sound, and wear, and ensure all of them are normal, then open the equipments.
3. Do maintenance every 3 hours for equipment that smaller than 150M2, if equipment bigger than 150M2 or the structure is complicated, do limited management or time opening, evacuate tourists and close equipment for 10-15 minutes, eliminate stain, and ensure there is no damage on the surface, slippery cloth not be moved, buffer pad is normal( not be damaged on the connection with inflatable equipment), fixed well to ensure wind proof. Assembles connect well, accessories installed well, and operate well. Once inflated equipment need to be inspected every 2 hours and inflate again or reduce pressure in time.
4. Inspect the connection of air inlet with blowers and ensure they bind well every 2 hours.
5. If there is water on the surface of inflatable equipment, deal with it soon.
6. Inspect and ensure there is no big foreign body every 2 hours.
7. Inspect if the zipper is closed while operating.
8. Inspect the stick bar; if separate repair it in time.
9. Inspect the axial flow and centrifugal fan at regular time, if fans are stuck due to mechanical failure, the motor temperature rise and resulting in a short circuit fire,

### **17. Inspection Items At Regular Time.**

#### **1. Inspect Site in Regular Time**

#### **2. Inspect the fire emergency equipment and ensure it can be used normally and not be moved.**

3. Ensure the public facilities are complete, not be damaged, and change seriously damaged ones in time.

4. Inspect the ground, sewage facilities are normal, if damaged repair in time.
5. Removing rust, scouring, spraying protective layer for metal facilities at regular time.

### **18. Inspect Equipment At Regular Time**

1. Inspect the inside structure of the inflatable equipment, if there are damaging, ponding, or bulge, discharge the water in time, connect the installation personnel or after sale service to repair (warranty company will charge).
2. Inspect if there are water, damage, mildew between equipment and ground.
3. Inspect the vulnerable corner at regular time, if damaged, repair in time.
4. Remove rust and stain for metal facilities at regular time.
5. Inspect damage of assemble parts, reinforce them in time.
6. Inspect electrical facilities, if overload, aged, change in time. Change the wear parts, fix the screw and rivet, ensure there is no foreign or stuck inside the electrical facilities.
7. Inspect the channel surface (like slide way, buffer lad) every 500 people, if damaged due to overload, reinforce it and adjust the people amount.
8. Inspect the fix nose, if lines, cloth, sticking and needle tears due to long term strength, reinforce or stick it in time. Change the wind proof rope if aged.
9. Inspect the pressure, continuous inflated pressure keep in 800-1200pa, once inflated pressure keeps in 2000-4000pa, air tightness keep normal in 24 hours, pressure changes ( $2000-4000pa \times 1.12949$ ) with temperature (1 degree to 40degree), the biggest pressure is 4517.96pa. Special device require 8000-10000pa, air tight keep normal in 24 hours, pressure changes ( $8000-10000pa \times 1.12949$ ) with temperature (1 degree to 40degree), the biggest pressure is 11294.9pa. The biggest tear strength of high pressure products is 400N, if the equipment break or tear, repair in time, or it will led more serious damage. Ensure electrical facilities air pressure; accessories confirm to company standards, if not, repair or change it in time.
10. Inspect the zipper of air delete, water delete; ensure the function of sticks not invalid.

### **19. Repair and Maintenance**

#### **1. Maintenance**

- 1.1 Clean the whole equipment with water and keep its clean.
- 1.2 Preserve the equipment in dry and cool place, do mouse proof. Inflate it for 30 minutes every month and discharge the moist air.
2. Maintenance:
  - 2.1 Adhesive bonding condition: dry, temperature above 20 degree, no water in repairing part.
  - 2.2 Adhesive bonding step: clean the stick bar and stick cloth, spray even and thin glue between stick bar and stick cloth, press stick bar on the stick cloth when glue become cool and white.



2.3 Maintenance of electrical facilities takes reference of the professional introduction, change the abrasion part at regular time. Other adjusts or maintenance does by factory service center and use the original accessories.

2.4 Do water disinfection every day and suction every 5-7 days.

## 20、Common breakdown and solving method.

	Common Breakdown	Solving Method
1	Abnormal pressure of new equipment	Inspect the connection of air inlet and blowers, cover air delete well.
2	Weak pressure and the air pad are soft.	a、Inspect if there is damage, tear or big needle hole, if do, repair by glue and spalls in time; if tear bigger than 10cm, sew it with special needle first then stick it with spalls. b、Inspect the power pressure. c、Inspect blowers
3	Stick bar delaminates from reinforce part.	Repair with glue and spalls in time.
4	Blowers reverse	a、Inspect power line, insure they connect right one. b、Tight air inlet, restart the blower when it stops totally.
5	Damage of climbing and sliding cloth.	Repair climbing cloth with glue in time, change a new sliding cloth.
6	Abnormal heat or electrical accessories	Stop using in time, inspect it and if it is normal inside, restart 30 minutes later. If there is problem, repair it in service center.

## 21、Special Treatment.

- 1、Special articles like drugs need to be preserved specially.
- 2、If there is problem that can not find dealing method in this instruction please contact our

company in time.

3、 If emergency happened, evacuate tourists first and ensure tourists' safety

## **22、 After Sale Service**

**Our company was founded in 1995, and has accumulated rich experience in manufacture, skill, and after sale service after decades years; customers will get careful and thoughtful after sale service. The company will service customers according to formulated steps, if charges it must be reasonable and professional.**

**ITEM #6**



DATE: April 5, 2024

TO: Planning Commission

FROM: R. Brent Savidant, Community Development Director

SUBJECT: PUBLIC HEARING - CITY OF TROY DRAFT MASTER PLAN

On February 19, 2024 City Council sent the draft Master Plan back to the Planning Commission for further study, specifically to review two Neighborhood Nodes (Wattles & Crooks and Square Lake & Livernois).

In an effort to expedite this process, the Subcommittee met on February 27, 2024 to discuss the two Nodes. The recommendations of the Subcommittee were discussed with the Planning Commission on March 12, 2024. The recommendations were incorporated into the Draft Master Plan. The attached memo summarizes the proposed revisions.

A public hearing has been scheduled for the April 9, 2024 Planning Commission Meeting.

Attachments:

1. Memo prepared by Carlisle/Wortman Associates, Inc.
2. Public Input since March 12, 2024.
3. Draft City of Troy Master Plan.



**Carlisle | Wortman**  
ASSOCIATES, INC.

117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

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**MEMORANDUM**

**TO:** Troy Planning Commission  
Brent Savident, Community Development Director

**FROM:** Benjamin R. Carlisle, AICP

**DATE:** April 2, 2024

**RE:** Node Language

---

At the March 12, 2024 meeting, the Planning Commission discussed the Steering Committee recommended language regarding Nodes F: Crooks and Wattles and Node L: Livernois and Square Lake. The language below reflects the comments from the public and discussion of the Planning Commission:

**Node F: Crooks and Wattles**

**Intent Statement (Redlined, based on Planning Commission March 12<sup>th</sup> Discussion)**

The southeast corner of this node satisfies the commercial, service and multi-family residential uses to serve the immediate neighborhoods. Any development or redevelopment of the northwest corner shall be of a scale and massing to complement the existing low-scale nature of the area and protect the existing natural resources including Lane Drain. **Additional commercial development is not desirable for this corner.** Low-scale single family and **low-scale** multiple family residential is **encouraged** ~~may be permissible~~ if it models the scale and orientation of the multiple family neighborhood at the northeast corner of the node ~~F E~~. **Development in the northwest corner shall ensure appropriate transition to adjacent properties via increased setbacks, reduced heights, and enhanced landscape buffers.**

**Due to existing traffic patterns and limited access along both Crooks and Wattles, incorporation of a park use, or low intensity and scale residential, including ~~The City recognizes that the~~ expansion of the Stonehaven subdivision into the southwest corner of this node, utilizing the already existing entrances from Crooks and Wattles would be appropriate. If a continuation of Stonehaven is not possible, any future development of this corner shall limit access to Crooks and Wattles, to not increase existing traffic conflicts. The City may consider rezoning the southwest corner to a one-family attached or single-family zoning designation. The City also**

recognizes that expansion of the White Chapel Cemetery or ~~the continuation of single-residential uses~~ in the northeast corner of this node would also be appropriate. ~~The City may consider rezoning the northeast corner to a single-family zoning designation.~~

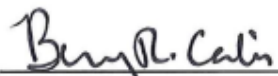
## **Node L: Livernois Road and Square Lake Road**

### **Intent Statement (Redlined, based on Planning Commission March 12<sup>th</sup> Discussion)**

Development in this area ~~historically known as Troy Corners~~ should be especially considerate of the ~~historic past of the area~~ and the ~~remaining existing~~ historic ~~housing and architectural design~~. Any new development should integrate various types of community gathering spaces, such as parks, public art, historical elements, plazas, community centers, and recreational facilities into the ~~design~~. ~~asset of the neighborhood~~. ~~When possible,~~ Adaptive reuse of existing historic structures ~~must~~ ~~should~~ be considered before demolition or relocation of these resources. ~~This node will have~~ low intensity uses ~~of a non-automotive oriented nature~~ that creates ~~working in conjunction with one another to form~~ a central neighborhood village, ~~that is~~ walkable, and accessible, ~~and compliments would create an ideal complement to the area's historic past~~. Any automotive oriented use shall not be considered in this node. ~~predominantly residential surroundings~~. Low scale multiple family residential may be permissible if it models the scale and orientation of the multiple family neighborhood at the northeast corner of node E.

We look forward to your review and comments.

Sincerely



---

CARLISLE/WORTMAN ASSOC., INC.  
Benjamin R. Carlisle, LEED AP, AICP



# Gerald & Tracy Rauch

4087 Penrose Court

Troy, MI 48098

April 5, 2024

City of Troy Planning Commission  
500 W. Big Beaver Rd.  
Troy, MI 48084

*Re:* Proposed Master Plan Amendment

Dear Commissioners,

Thank you for clearing up my confusion on the letter designations for the Nodes at your last meeting. I did note however that the Applewood/Summerfield development was also using the F designation in the proposed language provide by Mr. Carlisle when it should be E.

As for the wording for the changes to the northwest corner, I much preferred the original language using the word "permitted", instead of reducing it to "encouraged" when there is no mention of low density. I think everyone can agree the intent has been to reduce the density of development for this corner of the node. And that intent should be clearer like it was with the word "permitted".

One of the reasons for my density concern, is that the RT Zoning limits don't match the goal you have stated. And, the unusable portion of the main site on the NW corner increases actual density. The main site at the NW corner is 5.7 acres (per a current site plan application) of which about .82 acres is unusable. That nets about 4.9 acres east of and including the creek. With the RT zoning the minimum lot size per unit is 5,000 sq. Ft., which for 5.7 acres would allow 49.8 units. That ends up putting 49 units on 4.9 usable acres or 10 units per acre.

Applewood/Summerfield is 6.29 acres with 36 units or 5.72 units per acre. Using that model would limit the NW corner site to 33 units, which is 16 less than the RT permitted amount. What is worse, is that Applewood doesn't have .82 acres unusable, so comparing apples to apples (no pun intended) the site following the model would be limited to 28 units for the 4.9 usable acres.

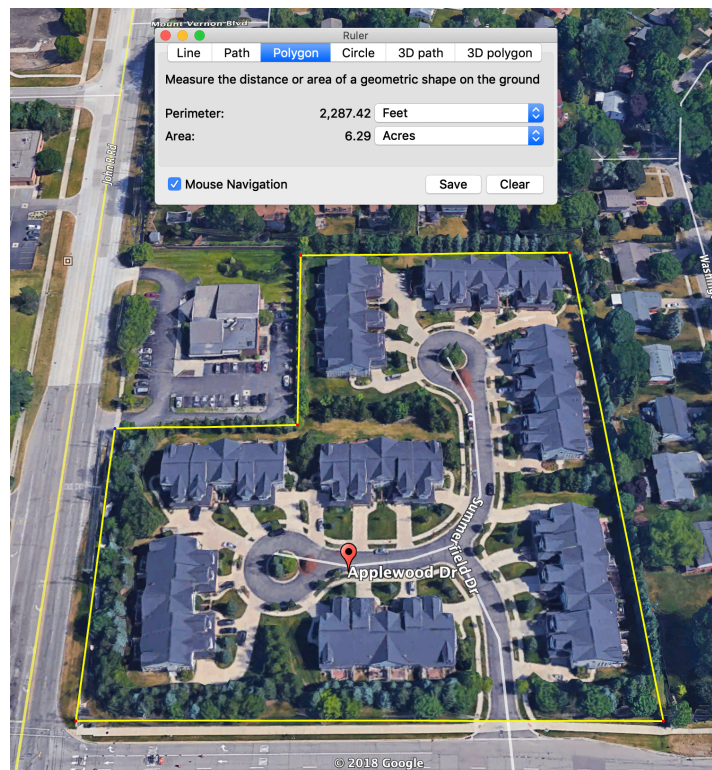
For the foregoing reasons, the Planning Commission should change the node back to its original language encouraging use as single family residential or at the most Attached Residential of comparable style and roofline as the adjacent homes.

Respectfully Submitted,



Jerry Rauch

**NN:E Applewood Development North East Corner of Wattles @ John R**







# PLAN TROY 2040



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Alex Bellak, *I.T. Director*

**CITY PLANNING CONSULTANT**

Carlisle/Wortman Associates

**PHOTOGRAPHER**

All Troy photos, unless otherwise  
credited, were provided by Acacia  
Photography of Troy, MI



**Resolution #2023** To Be Included





# Executive Summary

In 2008, the City of Troy adopted a new Master Plan, the first updated Master Plan since 1965. The 2008 Master Plan recognized Troy’s place in a changing post-Recession world. Rather than control growth, the 2008 Master Plan identified opportunities and strategies for competing in the global economy.

**2015 Revision:**

In 2015, the city determined that the 2008 Master Plan still represented Troy’s long-term vision, goals, and policies for development and growth. However, while the plan was still relevant and effective, due to shifts in economic, demographic, and development patterns the City felt that the 2015 plan update should focus on specific geographic areas. The 2015 plan update incorporated three (3) special area plans. Special area plans were chosen for areas where substantial development and redevelopment activity was likely to occur. Special area plans provide an illustrative framework to guide development in a way that fosters a sense of place and establishes community identity in key locations. The special area plans provide schematic representations of potential development areas at a variety of scales and levels of detail, and may include illustrative configurations for new streets, buildings, parking, open space, and circulation as may be appropriate to the area.

**2015 Special Area Plans:  
Rochester Road**

The Rochester Road Special area plan provides a unifying framework built around public and private improvements that will change the function and character of the corridor over time. The plan identifies three (3) complementary concepts for dealing with these issues and creating a solution that all users will welcome. The first concept deals with restructuring the pattern of land use and development lining the corridor, the second involves incorporating the redesign of the public right-of-way, and finally, the third creates a cohesive image and stronger identity for the corridor.

**Maple Road**

Maple Road presents an opportunity to build on the existing diversity of land uses, transportation options, and proximity to residential properties. For properties lining the corridor, revitalization requires a restructuring of development patterns, with less emphasis on land use and more focus on quality, accessibility, and innovative redevelopment. For those parcels in the industrial areas located off the corridor, a focus on protection and reinvestment of the industrial and technology development base should be emphasized. The repurposing of Maple Road offers three (3) key priorities based on the following land patterns: the development nodes at major mile intersections, the linear segments of the corridor between the major mile intersections, and the industrial and employment areas located off the corridor.

**North Troy**

North Troy faces a turning point. Its original development pattern must evolve to meet new challenges in the marketplace. Both employers and employees must be flexible and nimble to respond to demands in competition. As such, their facilities must adapt to fulfill evolving, diverse requirements in the workplace. Many of today’s knowledge workers expect entertainment and service amenities nearby as well as opportunities and spaces to connect and share ideas. The isolated buildings in North Troy do not reflect this trend. There is no central, defining place that represents the heart and vision of North Troy. Creating this balanced mix of uses and a sense of place will create a symbiotic relationship with the adjacent neighborhoods, where employment, service, and residential uses are interconnected. Fortunately, North Troy has ample opportunities to evolve and create a modern, preferred employment hub.

**2023 Revision:**

In 2020, the City again reviewed the Master Plan to determine if it was still relevant and continued to represent Troy’s long-term vision, goals, and policies for development and growth. This review was conducted during the COVID-19 Pandemic, one of the most impactful events of

the 21st Century. The City found that many of the strategies that aided the recovery from the Great Recession – flexibility in use, encouraging mixed use, permitting residential density in appropriate locations – are the same strategies that should assist the City as it recovers from the effects of the Pandemic.

At the start of the process, it was agreed upon that the Master Plan continued to be relevant. It was forward thinking at the time and many of the issues that were focused on are still applicable. However, there were a few key issues that needed updating, specifically the planning for the Neighborhood Nodes.

**Revised Neighborhood Node Intent Statement**  
The Neighborhood Node Intent Statement lays out the overall purpose of the neighborhood nodes. The revised intent statement reflects the historical past and current conditions, and better articulates the planned vision of the nodes.

**Revised Neighborhood Node Language**  
The City reviewed each node in detail to revise their specific intent based on the revised node intent statement, historical past, current conditions, and future anticipated vision. Each node was revised based on this detailed review.

**Language has been revised for the following nodes:**

- B (Maple and Dequindre)
- C (John R. and Maple)
- D (Big Beaver and Dequindre)
- E (Wattles and Dequindre)
- F (John R and Wattles)
- I (Crooks and Wattles)
- J (Dequindre and Long Lake)
- K (John R and Long Lake)
- N (Dequindre and Square Lake)
- O (John R and Square Lake)
- P (Rochester and Square Lake)
- Q (Livernois and Square Lake)
- R (John R and South)
- T (Livernois and South)
- U (Crooks and South)

**Based on detailed review, the City eliminated the following nodes:**

- A (Dequindre and Maple)
- G (Rochester and Wattles)
- H (Livernois and Wattles)
- L (Rochester and Long Lake)
- M (Livernois and Long Lake)
- S (Rochester and South)

**Concept Plans**  
To best visually portray the intended vision for the nodes, three (3) concept plans were included. These concept plans include elements of mixed use, architectural quality, transitions between intensity on roadways to adjacent single-family neighborhoods, infill development, and landscape buffers.

**Future Land Use Plan**  
The Future Land Use Plan was updated to reflect changes in Neighborhood Nodes. In addition, the Future Land Use Plan for Big Beaver Road on the northside of Big Beaver Road between Crooks and Coolidge is amended to be consistent with the existing zoning and land use pattern of the surrounding area, and to provide an appropriate transition.

**Introduction**  
The Master Plan introduction was strengthened to clearly articulate the relationship between Master Plan and Zoning Ordinance.

**Eliminate Big Beaver Pedestrian Special Area Plan**  
This was made redundant with the construction of the I-75 Diverging Diamond Interchange and the adoption of the Downtown Development Area Landscape Plan.

**Refresh Format and Layout**  
The Master Plan layout and format was updated including graphics and images. In addition, relevant data and demographics were updated based on the most current data.



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# 1 – Introduction

**Fueled by necessity and inspired by a changing population, economy, and region, the City of Troy has determined that the preparation and periodic revision of the Troy Master Plan is critical to help the community cope with the realities of the 21st Century in Michigan. The Master Plan is the official policy guide for the resolution of community development issues, and is relied upon to illustrate the desires of the City with regard to future growth and development.**

**The City derives its authority for the preparation of a Master Plan from the Municipal Planning Act, P.A. 33 of 2008.**

In 2008, the City of Troy adopted a new Master Plan. This document was the culmination of a comprehensive effort to rewrite the plan that was originally adopted in 1965. It represented a dramatic shift in land use policy. The 1965 plan was crafted to control the rapid growth that occurred from the 1960s through the 1990s. The 2008 Master Plan recognized Troy's place in a changing post-Recession world. Rather than control growth, the 2008 Master Plan identified opportunities and strategies for competing in the global economy.

The 2008 Master Plan was updated in 2015 with the inclusion of four (4) Special Area Plans: Rochester Road, Maple Road, North Troy and Big Beaver Road. The document otherwise remained essentially unchanged.

In 2020, the City again reviewed the Master Plan to determine if it was still relevant. This review was conducted during the COVID-19 Pandemic: one of the most impactful events of the 21st Century. The City found that many of the strategies that aided the recovery from the Great Recession – flexibility in use, encouraging mixed use, permitting residential density in appropriate locations – are the same strategies that should assist the City as it recovers from the effects of the Pandemic.

The 2008 Master Plan, as amended in 2015, remains relevant and needs little revision. However, specific goals and policies within this document have been revised to respond to the changes that have taken place in Troy. These changes in goals and policies are necessary to respond to new conditions and projected trends in order to continue to ensure that Troy is an attractive place to live and work. Community planning is the process which involves a willful effort to draw from a variety of sources to develop those new goals and policies. In addition, background data which serves as the foundation of the Plan has been updated.



What is this Master Plan’s true function?

The Plan serves many functions and is to be used in a variety of ways including, but not limited to, the following:


- **Vision:** The Master Plan lays out the future vision of Troy, as well as a road map - with goals policies, strategies and actions - to achieve that vision.
- **Aid in daily decision-making:** The Master Plan guides the Planning Commission, City Council, and other City bodies in their deliberations. It provides a stable, long-term basis for decision making.
- **Statutory Basis:** The Master Plan provides the statutory basis upon which zoning decisions are made. The Michigan Planning Enabling Act (P.A. 33 of 2008, as amended) requires that the zoning ordinance be based upon a plan designed to promote the public health, safety, and general welfare.
- **Public/Private Coordination:** The Master Plan attempts to coordinate public improvements and private developments supported by the Capital Improvements Plan. For example, public investments such as road or sewer and water improvements should be located in areas identified in the Plan as resulting in the greatest benefit to the City and its residents.
- The Master Plan serves as an educational tool and gives citizens, property owners, developers, and adjacent communities a clear indication of the City’s direction for the future.


The difference between the Master Plan & the Zoning Ordinance


<p><b>Master Plan</b></p> <ul style="list-style-type: none"><li>• Is a long-term guiding policy document</li><li>• Applies 5-20 years into the future</li><li>• Has goals and objectives based on community input</li><li>• Includes analysis and recommendations on economy development, housing, transportation, infrastructure, land use, etc.</li><li>• Must be reviewed once every 5 years by State Law</li><li>• Is not intended or expected to serve as law</li></ul>	<p><b>Zoning Ordinance</b></p> <ul style="list-style-type: none"><li>• Is the law</li><li>• Applies now</li><li>• Is subject to Federal and State law, and Federal and State case law</li><li>• Regulates land use, building size, form, placement, parcel area, width, depth, parking, landscaping, etc.</li><li>• Must be based on a Master Plan, per State Law</li><li>• Is used to implement the Master Plan</li></ul>
<p><b>Future Land Use Map</b></p> <ul style="list-style-type: none"><li>• Is a visual guide for future planning</li><li>• Applies now and up to 20 years into the future</li><li>• Has future land use categories, which describe what may be considered if zoning changes</li><li>• Provides descriptions on types of uses that are appropriate in particular areas and details on desired density, height, design, landscaping, etc.</li><li>• Show possibilities, not guaranteed changes</li><li>• Changed as a Master Plan Update, which has extensive community input, a recommendation by the Planning Commission, and approval by the City Council.</li></ul>	<p><b>Zoning Map</b></p> <ul style="list-style-type: none"><li>• Is the law</li><li>• Applies now</li><li>• Has zoning districts, which state what land uses, building types can be built now</li><li>• Mandates land use, building size, form, placement, parcel area, width, depth, etc. for each zoning district</li><li>• Must be followed for all new development</li><li>• Can only be changed by a Rezoning or Zoning Map Amendment process, a multi-step approval process that includes a public hearing and recommendation by the Planning Commission, and two readings before the City Council.</li></ul>


# What is a Master Plan?

A Master Plan is all of the numbered items working together. Planners need a Master Plan document and city planning principles to create a city that is functional and sustainable well into the future.

**1**  Guide for City Leaders to decide “what goes where”


**2**  Is used by City Staff to make policy decisions about transportation, parks, utilities, economic development, land use, etc.

**3**  Reflects the needs and balances the wants of residents, businesses, property owners, and other stakeholders.

**4**  Policy document that provides a “roadmap for the best path from a known present into an unknown future”

**What is city planning?**

City planning is used in tandem with a Master Plan. Planning helps guide city growth, influence policy decisions, ensure a successful future, and is critical for sustainable growth.



## The Creation and Care of the Master Plan

The Planning Commission of the City of Troy is the primary agency responsible for the preparation of the Troy Master Plan. Supported by City staff, consultants, and public involvement, it is the role of the Planning Commission to develop and adopt this Plan and encourage its implementation.

In a large, complex community such as Troy, however, the Planning Commission must broaden its planning process to go beyond conventional land use planning and explore a variety of topic areas which play a role in the development, redevelopment, and well-being of the community. This Plan was designed from the ground up to relate to a broad range of topics and build momentum for the future of Troy.

## Master Plan Leadership

The Master Plan is a document that should and must be embraced by as large a representation of the leadership of the City of Troy as possible. While ultimately the responsibility of the Planning Commission, the Master Plan must inspire consistent decision making throughout the community to live up to its potential. The Plan serves as a basis for the fundamental responsibilities of the Planning Commission, such as review of development proposals and maintenance of the Zoning Ordinance, but also serves a larger purpose to inspire informed, innovative community development. In that spirit, it is also the responsibility of the Planning Commission to advocate for the Master Plan outside of its own reach, to ensure that it is implemented community-wide.

## Studies Related to the Master Plan

The concepts introduced in the Master Plan are drawn from many sources, including the previous Master Plan, other planning documents in the City, such as the Big Beaver Corridor Study, the goals of the City Council, and the Ten Tenets of Smart Growth, (see sidebar, next page) explored in depth during this Plan's development. The Big Beaver Corridor Study shall be considered an integrated component of this Master Plan, and is also adopted as part of the Master Plan adoption process.

The Plan was further inspired by the previous efforts of the Troy Futures Group; an organization of motivated "civic entrepreneurs" who collectively developed a document entitled "Vision 2020." Troy Futures consisted of over 150 volunteers who served on seven (7) separate task forces eager to work on important issues such as infrastructure, community image, lifestyles, learning, mobility, the role of Troy in the region, and economics. These areas of study, along with the Ten Tenets of Smart Growth, in part inspired the topic areas covered in this Master Plan.



## The Ten Tenets of Smart Growth are those principles adopted by the Smart Growth Network to encourage the idea that growth can improve conditions. These Tenets are:

1. Create a range of housing opportunities and choices.
2. Create walkable communities.
3. Encourage community and stakeholder collaboration in development decisions.
4. Foster distinctive, attractive communities with a strong sense of place.
5. Make development decisions consistent, fair, and cost-effective.
6. Mix land uses.
7. Preserve open space, farmland, natural beauty, and critical environmental areas.
8. Provide a variety of transportation options.
9. Strengthen and direct development towards existing communities.
10. Take advantage of compact building design.

[www.smartgrowth.org](http://www.smartgrowth.org)

## Organization of the Plan

In order to bring together the wide variety of topic areas relating to community development beyond conventional land use planning, the Troy Master Plan represents a new generation of community planning document. The Plan is more strategic in nature and focuses on a series of subjects, such as transportation, urban design, or housing, and is designed to go beyond a simple basis for decision making. The Plan will also act as a vehicle for the development of new ideas in the City.

In many traditional community plans, the Master Plan is arranged around the process, and seeks to explain the steps taken to complete the Plan, rather than focus on the subject matter itself. While this conventional approach has worked in the past, it is far more useful to a smaller, less developed community for which land use allocation is still a primary concern. In a community such as Troy, where the City is nearly built out and in which the land use pattern is firmly established, new issues emerge. A more focused and strategic approach is necessary to fully appreciate the character, assets, and potential of the community.

In addition, many conventional master plans are simply impractical to use on a daily basis. A burdensome document with hundreds of pages of background data and exhaustive analysis is difficult to navigate. While this Plan is supported by similar research and analysis, such supporting elements are collected in an appendix and are distributed throughout the document within the topic areas where they are most appropriate. Therefore, when the reader is investigating a topic such as transportation, the salient research and data necessary to substantiate the policies for that topic are found in the most relevant Chapter.

The Plan is also designed to be used as a series of stand-alone documents, where an individual interested in a topic can rely upon the applicable Chapter of the Plan to learn where the City stands and where it desires to go.



In that spirit, the Plan has been arranged around the following topics:

**Infrastructure: The Assets and Care of the City**

In order to implement most of the measures that will ultimately be recommended by the Master Plan, upgrading and maintaining civil infrastructure must be considered. In that regard, this Chapter will contain the Master Plan’s discussion of sewer, water, and stormwater infrastructure. It will describe some of the key needs or opportunities with regard to these utilities and discuss the City’s ability to maintain them, while describing and recommending alternative methods of meeting the needs of the City.

**Green City: Responsibility to Natural & Energy Resources**

This Chapter will provide the City with a forum for establishing itself as a regional and national leader in the responsible treatment of natural resources and energy. The concept of sustainability will appear throughout the Chapter in many areas, from stormwater management to green building technology, to the preservation of natural features.

Specific techniques to preserve the quality of existing natural spaces and features related to development and redevelopment will be discussed. Formal programs such as Low Impact Development (LID) for watershed protection and Leadership in Energy and Environmental Design (LEED) for architecture and site design will be included.

Potential next steps beyond Master Planning will be outlined to provide additional guidance to the City in an effort to allow for the continued growth of green elements in the City while allowing for a balance of new construction and reconstruction.

**People: Planning a Community for All Ages & Stages**

This Chapter will analyze the changing nature of Troy’s population and compare local trends to regional and national trends. Topics such as household size and age will be used to make recommendations to improve the utility of the City’s housing stock to meet the changing demand for housing types of many varieties. The concepts of affordability and housing an aging population will be covered in detail.

**Land Patterns: City Design & Image**

The goals and objectives established in the previous Chapters of this Plan will be translated into land use policy within this Chapter. The Future Land Use Map will formalize the input, research, and conclusions of the Plan by establishing clear land use policy. While it is intended to be a fluid document, the Future Land Use Map establishes a continuous basis for land use decision-making through changes in the makeup of elected and appointed boards, and therefore encourages the implementation of the long-term goals and objectives adopted within the Master Plan.

This Chapter will also expand on the Future Land Use Map and discuss visual and design characteristics in the City of Troy. The physical differences which affect the daily function and success of developed areas, especially corridors, will be pointed out in order to more accurately focus on those areas which could benefit from change.

The Chapter will promote smart growth principles related to compact, mixed-use development, and will describe the benefits to Troy in this regard. This Chapter will center on a series of sub-area plans and will highlight the importance and utility of form-based codes.

**Special Area Plans**

As part of the 2015 Master Plan update, the City undertook a special area study of four (4) areas of the city: Rochester Road, Maple Road, North Troy, and Big Beaver.

While the future land use plan ensures compatible and coordinated growth throughout Troy, key areas of the City will undergo significant change. In those areas where substantial development and redevelopment activity is likely, special area plans provide an illustrative framework to guide development in a way that fosters a sense of place and establishes community identity in key locations.

The plans provide schematic representations of potential development areas at a variety of scales and levels of detail, and may include illustrative configurations for new streets, buildings, parking, open space, and circulation as may be appropriate to the area. They are accompanied by descriptive text that explains existing site characteristics, planning challenges, design considerations, and planning goals for each area.



**How Will the Plan Be Used?**

**Day-To-Day**

On a daily basis, the City staff will refer to the Master Plan when conducting the regular business of the City. Whether discussing development options with a potential developer, working on drafting new Zoning Ordinance amendments, or making recommendations to the Planning Commission or City Council, the Master Plan will inform and guide the policies of the City’s professionals. In addition, the Plan will serve as a reference for neighborhood groups, the local investment community, and for non-profit community development organizations.

**Month-To-Month**

On a weekly or monthly basis, the elected and appointed officials of the City will refer to the Master Plan when making decisions about land use development proposals, and in the setting of City policies relating to community development. The improvement of infrastructure, development of regulations and ordinances, and budgeting of the City will all be influenced by the goals and policies established by this Master Plan.

**Year-To-Year**

It is critical that the Master Plan be annually evaluated to ensure that it still represents the policy direction of the City. The City should audit its effort on a regular basis to reflect on the Plan and recognize the accomplishments it has made towards the execution of the goals and policies of the Plan. Revisions and updates to the Plan should be considered annually to make sure the Plan continues to enjoy widespread support.

## Community Participation

The development of a community’s Master Plan must involve not only elected and appointed officials within that community, but also leaders within the community at large. The community participation measures taken throughout the process are essential in establishing public support for the policies within the document, and to ensure that the plan is indicative of the preferences of as broad a representation of the population as possible.

Therefore, during the planning process, the importance of “civic entrepreneurship,” such as that displayed by the Troy Vision 2020 group, becomes significant. These and other community leaders have brought their considerable knowledge and experience to the table to ask difficult questions about the future of the City, and to do their part to help the City evolve. The Planning Commission has called on groups such as Troy Vision 2020 to participate in the planning process, as well as other boards, commissions, and agencies throughout City government and beyond.

### Civic Entrepreneurs

The phrase “Civic Entrepreneur” was coined in 1997 in the book “Grassroots Leaders for a New Economy—How Civic Entrepreneurs are Building Prosperous Communities” by Collaborative Economics. The main theme of civic entrepreneurship as stated by the authors is that an individual of influence, be it social, economic, political, or some combination of these, chooses to volunteer their time and attention for a greater good at a large scale. Often associated with regional initiatives, civic entrepreneurs are known to use their connections and resources to lead opinions and bring visibility to large-scale initiatives.

Collaborative Economics state that civic entrepreneurs “...have the personality traits commonly associated with entrepreneurial business leaders. They are risk takers. They are not afraid of failure. They possess courage born of strong conviction. They are people of vision. They are passionate and energetic. They bring out the best in people and know how to encourage them along.”

### Workshop

An extensive public engagement program was conducted in conjunction with the Master Plan adopted in 2008. A Master Plan workshop which involved a selected participant list of over 150 invitees initiated the public engagement process. Those invited to participate on the workshop process represented a wide cross section of Troy’s population, and included residents, business owners, City officials, volunteers, and other participants.

In this workshop, the participants were engaged to employ the “Smart Growth Readiness Assessment Tool,” (SGRAT) a new program designed by the Michigan Land Policy Institute at Michigan State University. The tool is designed to help communities learn how to incorporate “Smart Growth” principles into their land use management practices. “Smart Growth” is a term conceived in 1996, when the Environmental Protection Agency led a group of organizations to form the Smart Growth Network. The Smart Growth Network is a group dedicated to creating new land development practices which “...boost the economy, protect the environment, and enhance community vitality,” as stated by the Smart Growth Network.

A comprehensive document including the results of the June 21, 2007 workshop and an analysis of the findings uncovered by the SGRAT can be found in an appendix to this Plan.

### The five common traits of civic entrepreneurs according to the authors of “Grassroots Leaders for a New Economy” are that they:

- 1. See opportunity in the new economy
- 2. Possess an entrepreneurial personality
- 3. Provide collaborative leadership
- 4. Are motivated by broad, enlightened, long-term interests
- 5. Work in teams, playing complementary roles

(Information from “Grassroots Leaders for a New Economy— How Civic Entrepreneurs are Building Prosperous Communities” Collaborative Economics, 1997 and “The civic entrepreneur— a new leadership model is taking root, but not here” Charleston Regional Business Journal 07/30/2001, [http://www.charlestonbusiness.com/pub/4\\_16/news/1875-1.html](http://www.charlestonbusiness.com/pub/4_16/news/1875-1.html))



## 2015 Master Plan Public Engagement

For the 2015 revision of the Master Plan, public engagement was equally extensive but more targeted to specific subject matter. The following summarizes the content of each workshop:

### Real Estate Forum

The City of Troy hosted a Real Estate Forum on Tuesday, April 29, 2014 at the Troy Community Center. Over 60 community leaders, business owners, real estate developers, and interested citizens participated in a productive dialogue regarding the future direction of key economic areas of the city, specifically Maple Road, Big Beaver, North Troy, and Rochester Road. Participants were presented with target area snapshots and were asked to identify and describe the assets and challenges of these four areas. Participants also offered strategies for reinforcing assets, re-envisioning challenges, and ultimately attracting new development that is right for the corridor and the community. Participants emphasized the need for collaboration between city departments and community stakeholders, as well as a coordinated vision that is responsive to market demands and focused on quality of life. By building on the unique strengths of each area, activating established nodes and reinforcing new development with pedestrian amenities, transit connections, and a desirable mix of uses those sites that were once viewed as challenges will appear as opportunities for reinvestment.



Key takeaways from Real Estate Forum:

- Density is key
- Plan should be market driven and forward thinking
- Transportation and pedestrian improvements are important
- Zoning should align with the Master Plan and offer flexibility to encourage the right development at the right time
- North/South corridors provide important connections between the target areas and adjacent communities
- Residential development should attract and accommodate different ages, lifestyles, and income levels
- New developments should be connected
- Strategic, tactical, and creative placemaking strategies can activate node

High School Forum

In order to gain input from the future leaders, a session was held with twenty high school students (ten each from Troy and Athens High Schools). The students were intended to serve as a cross-section of the high school population.

Attendants were asked to use one word to describe Troy today and one word to describe Troy in 10 years:

Troy Today	Troy in 10 Years
Versatile	Fun
Peaceful	Advanced
Family-oriented	Utopia
Upscale	Safer
Quiet	Educated
Potential	Expanded
Diverse	More Diverse
Well-rounded	Innovative
Residential	Modern
Safe	Creative
Fun	Changing
Busy	Less-Congested
Close	Professional

Engaging	Busy
Boring	Beautiful
Suburbia	Affordable
Opportunity	Home-owner oriented

The students were then asked a series of questions about Troy including what they like best about living in Troy, what they like least, their desire to move back to Troy after school, and Troy’s most pressing needs. The full results are located in the appendix. The students enjoy the quality of schools; however, most students noted that they do not plan on moving back to Troy in the future. If they did move back to Troy, it would be because of family and the quality of the schools. They note that Troy is missing entertainment options, and “cool” housing options, and does not provide walkable or bike-able places. Most students desire to live in a big city after college graduation.

Neighborhood Association Forum

City of Troy hosted a neighborhood forum with Presidents and representatives from the various neighborhood associations. All geographic residential portions of the city were represented.

We started the discussion with asking those in attendance one word to describe Troy today and one word to describe Troy in 10 years:

Troy Today	Troy in 10 Years
Suburban	Advanced
Future	Economic Leader
Random	Attractive
Evolving	Progressive
Bedroom-community	Education
Attractive	Birmingham; More Parking
Youth	Envied
Opportunity	Futuristic
Diverse	The standard
Accommodating	Smart
Modern	Advanced

Participants were asked a series of 15 questions. The full results are located in the appendix. The questions focused on neighborhood issues affecting their neighborhoods including property upkeep and maintenance, transportation improvements, land use transitions and buffers, desired community amenities, and need for housing options.

There were two big takeaways from the neighborhood forum discussion. The first takeaway was that residents like living in Troy and cited a number of reasons including high quality of the public schools, entertainment options, safety, and housing stability. Maintaining a quality school district was cited as of critical importance, especially for neighborhood and property value stabilization. The second major takeaway was the biggest issue facing Troy is a lack of services within walking distance and lack of non-automobile transportation options.

Boomer & Shaker Forum

The City of Troy hosted a Boomer and Shaker Forum on Monday, August 17, 2015 at the Troy Community Center. The purpose of the forum was to meet with Troy residents to identify issues and determine strategies to ensure Troy assists its aging population and creates an aging friendly place. The intent was to focus on issues facing Troy’s baby boomer and senior population but also address issues that cross-generational lines:

- Housing
- Transportation
- Placemaking
- Walkability
- Safety and Security
- Health Services
- Recreation and Cultural Activities

Over 80 community residents participated in a productive input session to make Troy an aging friendly location.

Most of the participating residents are likely to remain living in Troy as they age. Many noted the high quality of life living in the city. For those that identified that they are likely to leave Troy, the most listed reason was a lack of housing option and a lack of transportation options. Underserved senior housing options and a need for increased public and dedicated senior transportation options was a common discussion point of the Forum.

The first major takeaway was there is an identified underserved housing type of senior-friendly housing such as smaller, single-family homes, condominiums, or apartments with first floor master bedrooms. Housing affordability was listed as a significant housing limitation. Many remarked that they are on a fixed income and cannot afford a \$400,000 house/condo. They noted that affordable, smaller housing options are difficult to find in Troy and the city should push development of those types.

The second major takeaway was the need for improved transportation options, particularly serving seniors. Most attendees noted that because they are able to drive, they are able to obtain their daily needs (health services, retail goods, social, recreational, and cultural). However, they are unsure if they will be able to do so once they are unable to drive.

To improve transportation options, the City should work with SMART to increase bus hours and locations. While RIDE, a transportation service for Troy disabled residents and those age 60 years and older, provides a valuable service, the hours are limited and should be expanded. Medi-go should be complimented with a dedicated transportation system or on-call shuttle service for seniors for daily needs in addition to just medical appointments, like grocery shopping, recreation activities, etc. Lastly, the City should focus on improving the sidewalk system and street crossing at major thoroughfares, and build trails. The results from the community engagement were used to establish the vision, priorities, and policies as set forth in the plan.



# 2022 Master Plan Public Engagement

For the current revision of the Master Plan, public engagement was equally extensive but more targeted with a focus on updating vision and policy of Neighborhood Nodes.

## Survey

An online and paper survey was created to seek resident and stakeholder input. The survey was advertised in emails, social media posts, on the City website, as well as a flyer posted at public locations such as the library, city hall, and community center.

The survey sought input on identified important city topics including the future of neighborhoods, parks and green space, housing options, and overall quality of life.

Over 1,650 people, responded to the survey conducted in the spring of 2021. Survey results are in the appendix and referred to throughout the Master Plan.

### Top MP priorities

- 1 - Need for additional parks and open space (overwhelmingly)
- 2 - Desire to protect existing neighborhoods
- 3 - Desire to protect natural environment

Survey Flyer >



## Neighborhood Nodes Walk & Talk

In October and November, Troy held a series of six (6) walking tours of selected neighborhood nodes. The walking tours were open to all residents and stakeholders. The purpose was to visually survey the nodes, collect stakeholder input about existing development, and discern a vision for the neighborhood nodes in general.

### Major Overall Takeaways

- Each node needs a unique approach. One size does not fit all.
- Where appropriate, limit specific uses, specifically townhomes, that are inconsistent with the surrounding housing type.
- Design matters, especially in terms of size of yards, height, building materials, and landscaping.
- Onsite mixed use in nodes is appropriate and desired.
- The zoning should allow or incentivize uses that serve the local neighborhood.
- Building placement at roadway and parking behind creates a better built environment, but a greater buffer between roadway to building should be provided. Multiple participants expressed safety concerns about parking in the rear yards only, but felt comfortable with parking in side yards.
- Landscaping can soften the built environment.
- One-story is appropriate; however no more than two stories even at the corner.
- As much buffering and landscape as possible should be preserved and/or required.



Images from Nodes Walk & Tour

## Steering Committee

The Master Plan Node Steering Committee, which consisted of four (4) members of the Planning Commission, met three (3) times to discuss revisions to the Master Plan vision of the neighborhood nodes. The Steering Committee went through each node individually to discuss specific strategies.

- First Meeting: Revised node intent statement and an individual review of Nodes A-I.
- Second meeting: Draft revised node intent statement language and an individual review of Nodes J-U.
- Third meeting: Final revisions and review of the Dequindre and Long Lake concept plan.

The Steering Committee drafted a revised node intent statement, revised language for each node, and provided direction on concept plans.

## Planning Commission

Four members serving on the Steering Committee and all members of the Planning Commission played an active role in the vision, strategy, and drafting of the 2022 Master Plan amendment. In addition to holding a public hearing and attending various public engagement sessions, the Planning Commission discussed, reviewed, and provided insight into the Master Plan at eight (8) separate meetings. On \_\_\_\_\_, 2023, the Planning Commission held a public hearing and recommended unanimously to the City Council to adopt the 2022 amendment to the Master Plan.

## City Council

The City Council has been actively engaged in the planning process. On March 12, the City Council toured three (3) neighborhood nodes to consider previous Planning Commission and resident input and make their own recommendations. This input was utilized to formulate the Neighborhood Node strategies. On \_\_\_\_\_2023, the City Council by Resolution, adopted the 2022 Master Plan update.



## 2 – Troy's Context: From Local to Global

### Troy is a Leader in Michigan.

Home to a large number of international corporations, and about 6,000 individual businesses, the City of Troy has a workforce of over 129,000 and a daytime population of over 170,000. Given the scale of these estimates, it is clear that Troy possesses a business culture rivaling any major city in the Midwest. Building on this success, the City has seized upon the opportunity to establish itself as the international gateway to Southeast Michigan for the global business community.

The national manufacturing economy is becoming a “Knowledge Economy.” The Knowledge Economy, which will be explored in subsequent Chapters, is essentially a new competitive environment empowered by the availability of information from new sources. This Master Plan includes many topics which relate directly to managing change in Troy to capitalize on this fundamental shift. Troy has a head start in this regard, given its substantial office presence, and its lesser dependence on conventional manufacturing land uses, when compared with other local communities.

Knowledge Economy businesses depend on global communication and 21st century technology to reach out to markets around the world. The emergence of such businesses demands a new

set of assets for a City to attract the best new companies and workforce. Knowledge-based businesses, for instance, rely on telecommuting and home-based businesses more than ever before. Businesses that conduct much of their business over the internet may have specific building and use needs, which could benefit Troy in that it has a great deal of available light industrial and office complex property.

The integration of communities like Troy into these worldwide markets also creates opportunities for them to expand their horizons and introduce themselves to new, expanding, or relocating businesses that may never have been aware of them otherwise. **Competing for these businesses and the workforce necessary to support them will be a major focus of this Master Plan.**

### A Global Market

Troy has adopted a strategy to position itself globally, in terms of international business connections and with regard to marketing its assets to attract worldwide investment. Southeast Michigan is a region founded on innovation in industry. Troy is a community within that region with unique attributes which will empower it to serve as a gateway in the 21st century between this important region and the rest of the world.

### City of Troy Facts

Population (Census 2020) - **87,294**  
 Retail Space - **7,000,000 sq. ft.**  
 Office Space - **21,000,000 sq. ft.**  
 Industrial Space - **16,000,000 sq. ft.**  
 Businesses - **6,000**  
 Employment - **125,000**  
 Number of Households - **34,488**  
 Median Housing Value - **\$335,000**  
 Median Household Income - **\$107,550**

source: U.S. Census Bureau, [www.troymi.gov](http://www.troymi.gov)



The International Population

Troy has embraced international populations and now benefits from a great deal of diversity. Troy has a much higher percentage of foreign-born residents than any community in the area, over 38 percent, or almost three times that of the Oakland County average. Troy’s foreign-born population is overwhelmingly southeast Asian, which provides a unique opportunity to link Troy with the fast-growing markets of Asia. The Troy Vision 2020 Wealth Creation Task Force specifically mentioned Troy’s Asian population as an asset for worldwide outreach.

By engaging the international population of Troy more actively and collaborating with people from around the world, Troy will benefit from broad points of view and an international perspective.

Empowering International Investors

This City plays a central role in the establishment of a new business or the redevelopment of an old business. Approvals and permitting for new facility construction, provision of City services, taxing policies, and other elements of City governance are taken into account when a business investigates potential locations or markets. These complex elements become even more intimidating for international businesses, who may be facing hurdles with regard to language or understanding of Federal, State, or local laws and regulations.

With this in mind, the City has formed a strong partnership with Automation Alley, home of the International Business Center.

Troy in the Regional Economy

The use of effective communication is a key ingredient of building and nurturing partnerships or celebrating social, economic, and physical diversity. Communication must include all forms of transmission and media. The importance of regional collaboration, a sentiment echoed by Troy Vision 2020 stresses that Troy is part of a greater region. The Regionalism Task Force for Troy Vision

2020 dealt exclusively with developing visions for all of Southeast Michigan, with the goal of contributing to a region with a cooperative spirit, willing to coordinate and consolidate services, and to improve relationships pertaining to water and sewer regional service.

Cities cannot thrive alone. Systems and relationships are needed between the public, private, and non-profit environments. Coordination and consolidation efforts between public entities are also critical as resources become more expensive and services more difficult to sustain. Partnerships between the City and these other agencies, as well as partnerships that are regional in scope, have a place for the City of Troy. Through communication and partnering, the City can take an active part in making all of Southeast Michigan a better place to live and work.

Troy will continue to take the lead within Oakland County and Southeast Michigan to arrange networking functions, lead regional discussions, host events and functions, and take responsibility for managing projects relating to regional cooperation.

The City of Troy can advocate for common goals in the region by sharing its findings, plans, and studies with other communities. The City can be a model community, and develop consensus on important issues like the environment and transportation.

Leadership

Becoming a regional leader in the areas of transit, environmental concerns, and civic infrastructure is an important theme of the Master Plan. While the City does have an opportunity to advocate for regional cooperation, it must also establish firm precedents that will gain it increased credibility in the region to position itself as a leader and authority.

In order to provide the most successful example of a community thriving in the 21st Century economy, Troy must think strategically about focused areas which represent community

values and which will differentiate Troy amongst its peers. If Troy is to provide leadership to other Southeast Michigan communities to establish firm partnerships geared toward regional improvement, it must select focused areas that serve the dual purpose of inspiring other communities, and in which Troy can be competitive. The City must find niche markets which build upon its strengths in order to lead the Midwest and the nation. Two areas where the City of Troy can excel, and which are important throughout the region, are preservation of the natural environment and enhanced transportation.

Transportation

Troy is a complex place that contains diverse neighborhoods, business districts, industrial and educational campuses, and a wide variety of roads, from freeways to neighborhood streets. These ingredients are in place and complement one another to make up the City of Troy. To sustain the positive relationship between land uses and street characters, linking and connecting the City through multiple methods is critical. Linking the City to other communities and to the greater region is just as important.

Advocating for enhanced regional transportation is an important step in Troy’s goal to become a regional leader. The development of the Troy Transit Center in 2014 brought Troy to the forefront of Southeast Michigan in providing an example of coordinated planning for new transportation options in Michigan.

Mobility, which is presented in a comprehensive Chapter later in this Master Plan, will be a crucial area for the City moving forward with regional cooperation and enhancement. Connecting the employment centers of Troy with a wide variety of housing markets in the area, including those in other nearby communities, and regional shopping, entertainment, and educational facilities is an important strategy for bringing Southeast Michigan together. Shared access to a successful multi-modal transportation framework will be a major step in providing access between communities for all residents, to allow people to experience other regional communities in new ways.

Regional Collaboration

The City of Troy, in collaboration with public and private-sector partners, is focused on helping businesses grow. The City of Troy has formed a strong alliance with key stakeholders including Automation Alley, Walsh College, Troy Chamber of Commerce, Oakland County’s Economic Development Office, and the Michigan Economic Development Corporation to provide targeted business assistance. Troy’s economic development staff assists local companies by identifying specific business needs and providing the information, infrastructure, and connectivity necessary to address those needs. By leveraging Troy’s unique community assets, partnerships, and available tools to promote business growth, the City is creating an environment for investment.

One of the key regional assets that the City makes use of is Automation Alley. There is no better example of regional collaboration than Automation Alley with the bulk of its members located in Oakland, Macomb, Wayne, and Washtenaw Counties and membership growing in Livingston, Genesee, Ingham, and St. Clair Counties.



## Sustainable Development

An area where the City can accomplish a variety of objectives is the adoption of a strong philosophy toward sustainable development. Continuing to incorporate sustainable development standards into City policies will encourage environmentally, socially, and economically responsible development and enhance the preservation of the City and regional assets. This philosophy will also demonstrate to the greater Southeast Michigan Community that Troy is leading the effort to promote sustainability.

This important topic is being addressed in many Michigan communities, providing Troy with another opportunity to promote regional cooperation.

Another positive benefit from a City-wide philosophy encouraging sustainable development would be the creation of a new global reputation for environmental stewardship, under which the City could market itself to eco-conscious businesses throughout the world. The Master Plan will describe many techniques for enhancing the City's natural features in Chapter 7.

By demonstrating and marketing the City's commitment to sustainability, and specifically eco-friendliness, a new niche to attract green energy and other environmentally concerned businesses would emerge. Troy can become the model of an environmentally friendly community envisioned by the Image and Feel Task Force of Vision 2020, while enhancing its attraction to the Creative Class and welcoming Knowledge Economy businesses operating with a renewed interest in environmental protection.



**FIGURE 2.3: Sustainable Development**  
Graphic by Carlisle/Wortman, Content from Johann Dréo

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Sustainable development essentially means improving quality of life without increasing the use of natural resources to the point of exhaustion or compromising economic or social well-being.

Sustainability covers many areas, including the environment, economics, and social responsibility. In terms of the Master Plan, sustainable development may be the most important concept to be familiar with. Environmentally friendly building design and a reduced dependence on the automobile, for instance, are elements that contribute to a philosophy of sustainable development. A simple, common definition for sustainable development was originally presented in the report “Our Common Future.”

Information from <http://www.epa.gov/sustainability/>, World Commission on Environment and Development (WCED). *Our common future*. Oxford: Oxford University Press, 1987 p. 43 and <http://www.sdgateway.net/introsd/definitions.htm>

## Troy Transit Center

Located on a three-acre parcel of land behind the Midtown Square at Coolidge Highway and Maple Road in Troy, the Troy Transit Center serves as a central hub for train, taxi, rental car, or bus service. Opened in 2014, the project replaced the train in Birmingham with the new facility, located in the City of Troy.

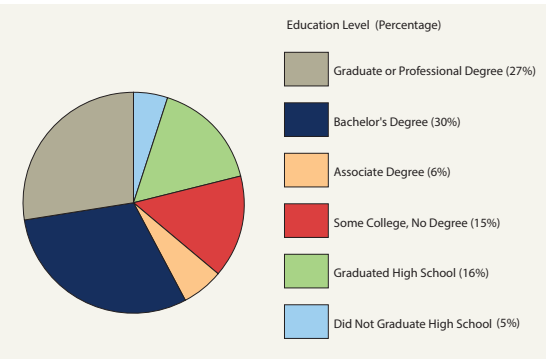
[www.michigan.gov/mdot](http://www.michigan.gov/mdot)

## 3 – A Place to Learn & Play: The Quality of Life in Troy



**Quality of life is what makes a community thrive. Elements like schools, parks, and cultural amenities contribute to the quality of life, but must be complemented by innovative development and supporting infrastructure. A dedication to learning, healthy citizens, and strong institutions will help create a community which attracts a workforce of educated and talented members of young generations. Excellence in these areas will enhance Troy beyond expectations, and therefore this Chapter provides a foundation for all other areas of this Master Plan.**

People have a choice of where to live, and every community has its own unique elements to attract residents. What makes Troy a special community where people aspire to live and work? Troy Vision 2020 explored this issue in depth. Beyond strong employment, attractive and affordable housing, and efficient access to goods and services, people seek communities with the amenities that will enhance their lives.



**FIGURE 3:1 EDUCATIONAL ACHIEVEMENT OF RESIDENTS OVER 25 YEARS OF AGE**  
U.S. Census

Troy has invested greatly in its parks and cultural amenities and must continue to do so to grow as a community and differentiate itself from other Southeast Michigan communities. Troy must embrace innovative development styles which capitalize on economic and social diversity, and cultural, educational, and recreational amenities. In that spirit, this Chapter will focus on the enhancement of quality of life issues to secure Troy’s status as a global city.

**A Philosophy of Learning**

A critical theme to emerge from the Troy Vision 2020 was the concept of “Lifetime Learning.” In order to become a competitive community in the Knowledge Economy and a community renowned for its attention to the enhancement of its citizens’ changing educational needs, the City must adopt a new philosophy. This philosophy includes, but goes beyond, conventional formal education and introduces the idea that all aspects of community life must consider and promote the continued enhancement of Troy’s citizens. The way in which learning is regarded in the City of Troy will continue to support and impact the future enrichment of the community in this area.

As indicated in the results of the 2020 American Community Survey, over eighty-three percent of Troy’s residents have some college education. Sixty-three percent of residents have bachelors and graduate/professional degrees. Only 4 percent of residents did not graduate high school.

The Troy Vision 2020 Lifetime Learning Task Force developed ideas to ensure that “Troy will be globally recognized as a community that provides its citizens with the opportunity to achieve social enrichment and personal growth via lifetime learning.” The Troy Vision 2020 Report indicates that the Lifetime Learning Task Force was asked to examine “access to personal, professional, and organizational intellectual stimulus and growth” within the Troy community. The Executive Summary from this Chapter of the Report states that the Task Force created a vision statement and goals for learning in Troy:

**“Our vision is for Troy to be globally recognized as a community that places a high value on lifetime learning for its citizens. A collective**

**community effort is required for this effort to be successful. The vision can be achieved by taking action on five broad goals:”**

1. Coordinate the efforts of our learning institutions: establish a new City of Troy committee focused on lifetime learning, with the responsibility for strategic coordination of Troy’s learning resources. This will strengthen the connection between the needs of the community and Troy’s lifetime learning assets.
2. Improve communication about the learning opportunities that are available in the Troy community: establish and maintain a “Learning Clearinghouse” and make it the primary resource for information about lifetime learning resources within the Troy community. This will increase the awareness of lifetime learning opportunities, establish a focal point for this information, and make efficient use of the resources of the Troy Public Library.
3. Utilize the expertise and knowledge of Troy citizens: maintain and expand programs (ex. Sights & Sounds, APT to Succeed) that encourage the shared personal knowledge and discourse among different cultural, professional, public, and private organizations. This benefit will strengthen the sense of community in Troy.
4. Invest in world-class lifetime learning services and facilities: build a bigger and better library. Now. The Troy Public Library is extremely popular and far too small. Additional parking and program space are desperately needed.
5. Provide opportunity, encouragement, and recognition for the highest levels of academic achievement: actively pursue regional and national academic competitions (ex. Math Olympiad) and host them in Troy. Publicly celebrate academic achievement more often than once a year. This will enhance Troy’s reputation as a center of high-quality K-16 education.

These formal goals must be supported by other measures which enhance Troy’s culture of learning. To attract the Creative Class, Troy must continue to evolve into a regional leader for innovation. Troy Vision 2020 accurately observes that Southeast Michigan has historically been an “incubator” for innovative ideas, within the industrial sector

especially. Troy has an opportunity to rekindle this reputation.

The development of formal City programs and facilities, like the “Learning Clearinghouse” introduced by Troy Vision 2020, and the further improvement or replacement of the Troy Library represent active steps the City can take to establish a basis for lifetime learning. Continuing education, higher education, job training, career counseling, and a renewed cooperation with local public and private schools, colleges and universities are measures Troy should take to build momentum for a culture of learning.

The enhancement of educational opportunities throughout all phases of community life will allow people from a wider variety of economic and age groups to enjoy a quality of life

**High Quality Schools**

The Troy School District operates an Early Childhood Center, twelve elementary schools, four middle, and three high schools within the City. In addition to the schools, the Troy School District has other properties in the City, including the Troy Continuing Education Building, the Administration Building, bus garage, and several vacant properties. The Troy School District encompasses most of the City, but small segments along its perimeter are served by six other school districts. Three of these school districts, Birmingham School District, Warren Consolidated Schools, and Avondale Schools, have elementary schools in Troy.





already enjoyed by the most educated residents of Troy. Increased job opportunities and better income, as well as a more visible and meaningful role in community life can in this way be made available to anyone in the City. Complemented by the strong reputation of Troy schools, the regional image of Troy as a community dedicated to lifelong enhancement and engagement will continue to grow.

**The Integral Role of Educational & Cultural Institutions**

Schools, parks, vibrant downtowns, natural features, and many other land uses which factor into a community’s quality of life consequently play a large role in the physical development of the community. The location of schools, for instance, has a profound effect on residential housing values. In fact, central civic uses like schools have always driven the success of whole communities, especially colleges and universities, which can greatly influence community development.

**School Location**

With this in mind, the City must closely monitor the demographics to prepare for the changing nature of schools. Given that schools, from elementary through college, are such a critical component of how cities develop, the continued presence of existing facilities and the placement of future facilities must be anticipated by the City through close communication with local public and private school leaders, and university and college officials. This Master Plan can suggest physical planning and land use policies which support and

improve the educational framework in the City by enhancing access and vitality of those areas where educational centers are located. Given the correlation between a good neighborhood school and its effect on nearby property values, the City must ensure that these institutions remain relevant and successful.

In order to secure continued enrollment in neighborhood schools, the City must permit residential densities within their districts which support and are compatible with their student capacity. Furthermore, the City can integrate safe, walkable school access into new mixed-use development in instances where such development is nearby existing or proposed neighborhood schools. As the demand for new or different schools arises, the City must partner with local school leaders to encourage the establishment of schools within mixed-use areas, rather than automobile-dependent locations, to promote interaction between classrooms and the greater community.

**A City of Villages**

Troy does not have a conventional “city center” or downtown. The vibrant core of many successful communities known for their ability to attract the creative class is often cited as a primary determinant of that community’s image. Respondents to the Master Plan survey felt strongly that while Troy may not be able to have a single focused center, it must create activity nodes throughout the City, capitalizing on the diversity of Troy for shopping and entertainment experiences. This type of response was preceded by Troy

**Safe Routes to School**

Michigan’s Safe Routes to School program is managed by the Michigan Department of Transportation (MDOT), with support from the Governor’s Council on Physical Fitness, Health and Sports. A State coalition and steering committee provide leadership for all aspects of the program. The Federal Safe Routes to School program was created by Section 1404 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), (P.L. 109-59) of August 10, 2005 ([www.saferoutesmichigan.org](http://www.saferoutesmichigan.org)) The purposes of the Safe Routes to School program are:

- To enable and encourage children, including those with disabilities, to walk and bicycle to school;
- To make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age;

For the period from 2005 to 2009, at total of 612 million dollars has been set aside for this program across the United States. In this period, Michigan will receive a total over five years of 19.26 million dollars, based on its share of national enrollment in grades K-8.



Vision 2020, which introduced the concept of “Villaging” in Troy. The idea of “Villaging” could be described as a means of staging complementary development in a focused manner intended to create vibrant “nodes” of activity which have an identifiable character. Similar to smaller towns, these areas would be compact, would have a clear edge, would generally be supported by a common theme, and would incorporate dense, mixed-use development. Such “Villages” should incorporate common community elements, be designed to encourage active living, and should have uses which support a successful business foundation.

The Big Beaver Corridor Study supports the concept of focused development areas. The area described by the Study as the “Troy City Center” is intended to be the “ultimate people place,” an area which would build off of its most successful commercial and office tenants, such as Somerset Collection, to foster a mixed-use, vibrant area with significant year-round activity. The Study aspires for the Troy City Center to become the “heart” of Troy, where urban residents can live, work and play in a single area. The predominant building uses prescribed by the Study in the City Center are large mixed-use buildings with retail at grade and office and residential uses on upper floors.

**Cultural Spaces**

The Big Beaver Study also includes an area labeled “The Promenade” designed for restaurants and entertainment uses in close proximity to hotels and business meeting places. The Promenade would also serve as a large local draw, and could include a gathering public space for enjoyment for residents, visitors, workers, etc. Within Troy’s focus areas, the City has an opportunity to leverage physical development to casually introduce cultural life to the City.



How can a City “casually” introduce cultural life? What should a Master Plan, a document focused on land use and physical planning, have to do with cultural life? While it may not be the direction of this document to introduce techniques for programming cultural activities, it can establish a direction for the provision of space for such activities to occur, either formally or informally. A city must have central, unprogrammed open spaces in close proximity to its homes and businesses to encourage a flourishing cultural atmosphere.

While many communities are home to traditional brick-and-mortar cultural facilities, such as theaters and art museums, those communities renowned for cultural atmosphere are so recognized for the things that take place in public spaces. Art in the park, street performers, summer theater programs, and many other forms of cultural expression are common in cities that allow for such activity by providing central, unprogrammed open space. Thousands of European cities have supported central parks or small unprogrammed open spaces for centuries.

The introduction of small, intimate public open spaces in select areas could be a positive step in encouraging a thriving cultural atmosphere in Troy. Those efforts outside of the Master Plan, such as the introduction of formal cultural facilities, are critical for the enhancement of Troy, but they must not be left to stand alone if Troy wishes to achieve the regional reputation expressed by Troy Vision 2020. To be successful, these spaces must have some of these traits:

- Little or no programming; that is, the space cannot be dominated by formal gardens or active recreation, such as baseball fields.
- The space must be located directly adjacent to vibrant, mixed-use development with both residential and commercial concerns nearby, to draw people throughout the day.

- The spaces must be walkable and accessible for pedestrians.
- The space must be located in a central area. Large unprogrammed spaces are located in many European cities at the intersection of major roads. In a community like Troy, they could be best located very near a major corridor, such as Big Beaver, but surrounded by a mixed-use development.
- The space should be intimate, that is, surrounded on several sides by buildings, to provide a feeling of enclosure and protection from the elements.

The creation of common areas for social interaction is a theme that threads throughout the Big Beaver Corridor Study. Along Big Beaver, the Study described potential “Experiential Moments,” like a walk along the boulevard, interaction within a large public plaza enhanced by public art, and experiencing pocket parks throughout the community. The Study specifically calls for mixed-use development that makes Big Beaver a round-the-clock “people place,” which attracts cultural and entertainment uses to the Corridor.

The central philosophy of the Big Beaver Corridor Study is that social interaction, and therefore quality of life, can be improved by the careful design of new elements and select redevelopment within the Big Beaver Corridor. The provision of public greens for example, is described in the Pedestrian Circulation and Greenspace Plan as focal points amid denser development to help draw people to these focus areas: a strategy for implementing the casual introduction of cultural life in Troy.

### Quality of Life, the Knowledge Economy, and the Creative Class

In order to attract a premium workforce and support the long-term health of the City, Troy must recognize that the working world is changing. Many of the most valuable members of the new

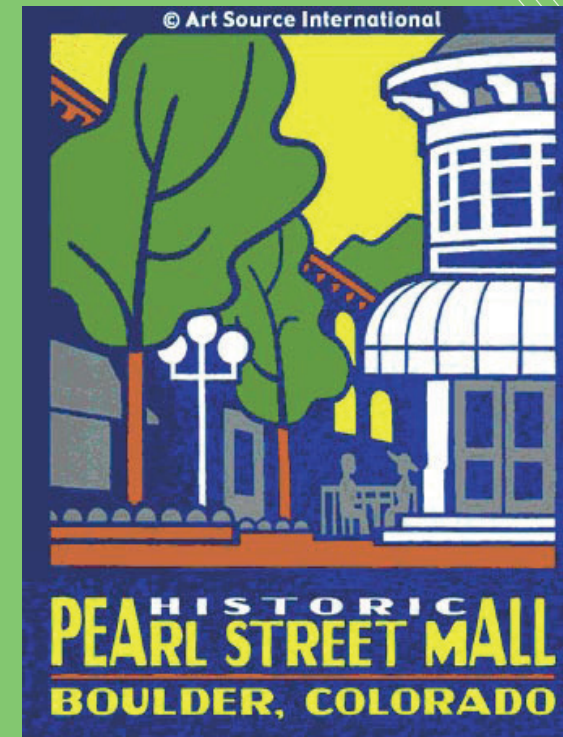
workforce come from the Creative Class. The term was coined by the sociologist Richard Florida who describes the Creative Class as an emerging class of working professional from a younger generation. The Creative Class is a demographic of worker with more education and a greater focus on high-tech or intellectual fields, rather than the previous generations, which were primarily based on agriculture and industry.

The Knowledge Economy, put very simply, is a competitive economy centered on knowledge-based industries which require high-tech facilities and which are empowered by the availability of information from new sources around the world. Knowledge-based businesses are less likely to manufacture a product as they are to conceive or design one.

In light of the struggling manufacturing economy of Michigan, the State has initiated programs to help communities more fully understand what they can do to attract the workforce and the employers functioning in these new areas. Troy Vision 2020 explored this concept and developed specific ideas about what Troy can do to become a leader in the cultivation of the Creative Class in Southeast Michigan.

Today, employers are no longer tied to railroads, rivers, highways, or resources to succeed. Knowledge-based businesses, especially, rely totally on the availability of a good workforce comprised of the most talented and creative individuals available. Quite commonly, emerging knowledge-based businesses will succeed in college towns or other communities reputed for an educated workforce and a high quality of life. This is a critical notion: the idea that communities with a high quality of life attract the potential workers who attract the businesses that need them.

What attracts the valuable workforce for knowledge-based businesses? In addition to diverse, vibrant mixed-use areas, which will be explored in depth in subsequent chapters of this Master Plan, these individuals seek communities that embody the lifetime learning philosophy and the availability of amenities that enhance



A good example in the United States of unprogrammed open space is Boulder, Colorado’s Pearl Street Mall. Pearl Street Mall is a section of blocks in the center of Boulder which were closed off to automobile traffic and finished with seating areas, landscaping, and most of all, large areas of open, unprogrammed space. These areas have become popular for political and artistic expression in the summer months. Given their strategic location and limited space, they provide a series of intimate outdoor “rooms” that enhance the surrounding businesses.



Pearl Street Mall in Boulder, Colorado. Photo by Mark Ruckman

“...the casual introduction of cultural life is part of the historic mission of cities.”

-Jane Jacobs , Death and Life of Great American Cities



their lives, like quality parks and recreation programs, cultural amenities, and a diverse and welcoming community.

Parks & Recreation

Similar to schools and downtown areas, parks have the potential to transform a neighborhood. Recreational development in Troy is guided by the Parks and Recreation Plan, which is developed under criteria established by the Michigan Department of Natural Resources (MDNR). The current Parks and Recreation Plan was developed with strong public input and contains a series of goals and objectives relating to recreation improvements.

The City must be diligent in executing the Parks and Recreation Plan, which calls for many improvements to the City’s existing parks and recreation inventory, and provides a basis for the introduction of new facilities. Successful parks, with good access and a focus on active lifestyles, will be a strong asset in the competition for a globally recognized workforce.

Much of the public input suggests that people consider trails and pathways to be more than simple recreational amenities, and genuinely consider them valid transportation corridors for access to the important places and institutions discussed in this section. Furthermore, they drive property values and can be seen as an amenity for real estate development.

The development of a trail system in Troy is the City’s number one recreational priority based on the results of the public input. There is a wide range of benefits associated with the establishment of a trail system:

- Improves health and physical fitness
- Increases property values
- Promotes community enrichment/character
- Provides connectivity to neighboring communities
- Improves landscape aesthetics
- Offers recreation for diverse users
- Provides income for Michigan’s tourism related business
- Linkages for a statewide network of trails
- Safe non-motorized transportation routes

Top 10 Reasons Parks Are Important:

1. Public parks provide the opportunity to be physically active. Physical activity is an essential part of an individual’s efforts to stay healthy, fight obesity and prevent chronic conditions that lead to coronary disease, high blood pressure and diabetes.
2. Parks have true economic benefits. Proximity to a park improves property value. Parks provide increased local and regional revenue from heritage tourism, steady jobs, and numerous small business benefits.
3. Parks provide vital green space in a fast-developing American landscape, and keep our living environment healthy.
4. Parks preserve critical wildlife habitat while providing enjoyment and educational opportunities for children and families.
5. Parks provide a meeting place where community members can develop social ties, and where healthy behavior is modeled and admired.
6. Leisure activities in parks improve moods, reduce stress and enhance a sense of wellness.
7. Recreational programs provide organized, structured, enjoyable activities for all ages. Quality recreational programs facilitate safety, good sportsmanship and community participation.
8. Community recreation services provide a refuge of safety for at-risk youth and give valuable life lessons to help steer young people to success.
9. Therapeutic recreation is an outlet that individuals with disabilities have to be physically active, socially engaged and cognitively stimulated.
10. Public parks embody the American tradition of preserving public lands for the benefit and use of all.

Summarized from the original by Richard J. Dolesh, Monica Hobbs Vinluan and Michael Phillips

- Conservation of green space and wildlife habitat
- Environmental quality education opportunities
- Transportation alternative
- Connect with existing and proposed bicycle lanes

In 2018, the City implemented Troy’s first trail facility, a project decades in the making. The 1.3-mile asphalt trail runs from the Troy Town Center, through P. Terry & Barbara Knight Park, past Wattles Road (where a pedestrian safety island has been installed), and finishes at Troy Historic Village. The hope is that this trail will spur further pathway development with connections to surrounding regional and national trail systems.



Cultural Amenities

Cultural institutions, like museums and theaters, must be complemented by a wider appreciation of the importance of cultural life in the community. As noted earlier in this Chapter, perhaps the most critical thing Troy can do to enhance the cultural life of the City is to provide the venue for cultural life to emerge in small parks and unprogrammed open spaces.

The Task Force most closely examining the issue of cultural facilities or events was the Vision 2020 Lifestyles Task Force. This group explored a number of concepts selected to help Troy continue to grow into a truly diverse, unique, global community. The Lifestyles Task Force established a direct call for the improvement and encouragement of existing and new cultural facilities in its “Preferred Future 5” which states that “In 2020, Troy is a ‘Gotta Have Art’ type of place, with opportunities to celebrate and experience all of the fine arts. This preferred future describes potential public spaces to experience art and suggests music in the park events, theater, a symphony, art galleries, and public art as areas of focus.

Another important area where the City can be active in introducing cultural amenities is the encouragement of diverse, mixed-use development. One of the many positive attributes of mixed-use development, which will be explored throughout this Master Plan, is the creation of new areas for social





interaction. Rather than isolate homes from entertainment and dining venues and separate places of work from places of play, mixed-use development is uniquely capable of creating energetic, memorable places where a person can experience new points of view, witness personal expression, and enjoy a variety of activities with other people. While this can be said for many types of communities, those places where mixed-use development occurs are more likely to succeed.

Public Art

The importance of public art can not be overstated. Many of the great communities of the world are identified by their public works of art. Public art makes a statement that the community supports the arts and contributes greatly to the creation of unique, memorable urban places. The City of Troy can support public art by encouraging private development to include public art, by reserving public funds for art projects, and by pursuing grants for public art initiatives. As part of the development review process, the City has been incorporating public art in private development.



The City of Troy offers a wide range of recreational facilities and programming to its residents. Troy has six community parks, ten neighborhood parks, and one dog park covering over 400 acres of land. All parks are open daily from sunrise to sunset. The City also owns and maintains a number of special use facilities, including the following:

- Jeanne M. Stine Community Park
- Troy Community Center
- Two (2) 18-hole golf courses
- Lloyd A. Stage Nature Center
- Troy Farm
- Troy Family Aquatic Center and Recreation Center
- Daisy Knight Dog Park
- Troy Trail
- Troy Historic Village and Museum
- Troy Skate Park

A comprehensive study of each facility can be found in the Troy Parks and Recreation Plan at <https://rec.troymi.gov/parksfacilities/parks/index.php>

Troy is home to several notable formal cultural amenities and is in a region famous for its cultural diversity. Some amenities in the City of Troy itself include:

- The Troy Museum and Historic Village, which is intended to encourage hands-on learning, especially on topics relating to Troy’s heritage. The Museum is also responsible for the preservation of cultural heritage through physical structures, collection of artifacts, and archival materials. The Museum is located in the former Troy Township and City Hall.
- The Lloyd A. Stage Nature Center is a 100 acre sanctuary with a wide range of programs, including school programs.
- The Troy Public Library is a popular, award winning facility which provides free wireless internet service. The Troy Public Library is #1 in Michigan among libraries serving populations of 50,000 or greater per Hennen’s American Public Library Rating Index.
- The Ridgedale Playhouse is home to the Ridgedale Players, one of the oldest community theaters in Michigan. The Players are in their 75th season.

4 – A Place of Prosperity:  
The Economy of Troy



**Troy is in a unique position among Southeast Michigan communities. The assets of Troy lend themselves to a rapid transition from the manufacturing economy to the knowledge economy. The high quality of life, availability of prime office and light industrial real estate, and an emerging regional commitment to building a new foundation for global economic leadership make Troy a competitive choice for 21st Century businesses. County-wide programs that focus on Mobility and Defense such as the Oakland County Emerging Sectors program and regional organizations like Automation Alley provide the resources for a community like Troy to emerge as a national leader in business growth.**

This Chapter will expand on the concepts alluded to in Chapter 2, will discuss sustainability in business, and will describe the needs of new businesses in the changing economy. It is these changing needs that Troy can focus on, coupled with the quality of life elements described in Chapter 3, to become an economically stronger and more sustainable place to live and work.

### A Hub For Employment

With a large number of employees and robust economic activity, it is not surprising that Troy is home to nearly 170,000 jobs. Of the people who work in Troy only 14% actually reside in Troy.

The major industry of employment are knowledge-based services, which will continue to grow at a much higher rate than any other employment sectors. Currently, 35% of the

workforce is employed in a knowledge-based industry. The next three highest sources of employment are retail trade, private education, and health care.

### Sustainable Business

A critical theme in Troy Vision 2020 was the concept of sustainability. As noted in Chapter 2, sustainability involves social responsibility, environmental stewardship, and economic vitality. These three elements contribute to one another. A commitment to sustainability makes good business sense in that companies can realize a reduction in operating costs, energy consumption, and win over customers with reduced prices and a good image by becoming a good neighbor. In other words, the first two elements of sustainability, social and environmental responsibility, can contribute to the third component, economic vitality.

The City can promote sustainability in a variety of ways. Leading by example by managing and governing itself using sustainable practices is a start, but the City can also promote sustainable development amongst its businesses, residents, and visitors. It is critical that the City of Troy encourage sustainable development practices to enhance the quality of life for this generation and future generations. Furthermore, the City can secure a positive financial future while protecting the natural environment by supporting sustainable business practices.

There are many measures the City can take with regard to sustainability, perhaps most notably those measures directly relating to environmental protection. Alternative fuel city-owned vehicles, innovative stormwater management, recycling programs and many other programs allow communities to lead by example. Many of these techniques will be described in Chapter 7.

Troy's Economic Development Plan will focus in on "Best Practices" which include Business Retention, Expansion, and Attraction. Business Retention is the cornerstone of Troy's plan. Working to retain our existing business base by calling on advanced manufacturers, engineering, financial, and mobility firms will ensure that Troy continues to lead Oakland County with knowledge based businesses.



Sustainable Business is a non-traditional strategy that strives to maximize efficiency and effectiveness while restoring environmental quality, building social equity, and increasing long-term profitability. Since the industrial revolution, industry has intensified environmental degradation by exploiting natural resources and releasing unfathomable quantities of hazardous pollutants into the biosphere. On the other hand, business has spent billions of dollars to comply with governmental regulations aimed at minimizing contamination by prescribing the amount of toxic substances that can enter the air, water and landfills. An adversarial relationship has developed between business people and environmentalists, each seeing the other as a main source of the world's problems.

Emerging just under two decades ago, a movement began within the business sector to change the way companies operate. People began to recognize that environmental degradation and commerce do not have to go hand in hand. Some of the changes have included:

- The reduction and, in some cases, elimination of hazardous materials from industrial processes
- Equitable treatment of employees, which in turn increases productivity and worker retention
- Operating as a responsible member of the community

The same business practices that improve social and environmental capital have been shown to also improve long-term profitability. When implemented, sustainable business practices provide an avenue to achieve mutual benefits in the natural world, the community, and the economy.

Aquinas College Center for Sustainability [www.ceneterforsustainability.org](http://www.ceneterforsustainability.org)



There are expansion projects that evolve from our Business Retention program because these are national and international firms that reside in Troy. These firms compete against other divisions nationally and internationally for new product lines. Troy will focus on assisting these firms with their business cases in order to win new business that will create additional jobs and investment in Troy which help pay for the great city services like fire and police that we provide to our residents.

Business Attraction is a key element for the continued growth of Troy’s business community. Promoting Troy as a destination for mobility firms defined as electric/hybrid/autonomous fits the profile of Troy’s firms. Business travel nationally and internationally is a component of business attraction. A Troy representative, or representatives when appropriate, will travel alone or with the Detroit Regional Partnership/Michigan Economic Development Corporation to market why Troy is a great location for a new business.

Troy can assist in areas such as business development, market analysis, logistics, Geographic Information Systems (GIS), finance, human resources development, talent recruitment, supported employment, site selection, utility issues, building permits and inspections, planning, zoning, and other areas. By leveraging Troy’s unique community assets,

partnerships, and available tools to promote business growth, the City is creating an environment for investment. The advantage the City of Troy enjoys in this regard is that developers seek Troy as a desirable place to live and work with a broad portfolio of assets. This puts the community in a position to offer benefits to those who choose to develop sustainable projects which include mixed-use, innovative stormwater management, green buildings, and excellent architecture in exchange for increased density or other benefits. In other words, the City can become the carrot rather than the stick.

The Changing Economic Environment

Shopping, working, communicating, and socializing are all aspects of our daily lives that have been impacted by the advent of the internet. While industrial properties have traditionally been located near railroads or waterways, new technology-based clean industries are locating nearly anywhere. In many cases, the prime determination a company must make is where does it want to locate, rather than where must it locate. Chapter

3 detailed the quality of life characteristics of successful communities in the knowledge economy and recommended courses of action to raise the City’s profile in this regard. This section will address three core areas of the local business environment and describe ways in which the City can preserve and enhance its position in these areas:

- retail and service
- office and information technology
- research and research technology

Retail and Services

The past 20 years have seen a revolution in the way people buy goods and secure services. The emergence of the internet has forever changed the way companies do business around the world. Small shops and family owned businesses can reach customers around the world, while giant corporations can maximize economics of scale and improve their position immeasurably. In this way, the internet can be both a blessing and curse for retail. Those businesses that have embraced the internet to promote and sell their goods and services have an advantage over all but the strongest brick and mortar stores. Convenience and selection have become greater than ever.

There are a number of immediate advantages that traditional retail establishments have over e-commerce businesses. First, web-based businesses do not allow for consumers to see products in person or to speak face-to-face with salespeople who can assist the buyer in determining needs and preferences. Convenience is also a factor in many consumers’ choice to purchase goods in person. Selecting an item in person and taking it home immediately requires a trip to the store but usually does not involve a wait or additional costs associated with shipping.

Perhaps one of the more critical elements of retail success is the act of shopping as a social activity. Troy has an advantage in that it has a critical mass of large-scale retail developments, such as Somerset Collection and Oakland Mall, and has the opportunity along Big Beaver Road and other corridors to encourage retail in mixed-use

B2B—Business-To-Business

A transaction that occurs between two companies, as opposed to a transaction involving a consumer. The term may also describe a company that provides goods or services for another company.

B2C—Business-To-Consumer

A transaction that occurs between a company and a consumer, as opposed to a transaction between companies. The term may also describe a company that provides goods or services for consumers.

www.investorwords.com

developments with integrated residential units, open spaces, and other uses. The emerging trend of walkable, mixed-use areas enhances traditional retail establishments in that it counts on retail uses as anchors for neighborhood development. Book stores, coffee shops, shopping centers, and other retail and restaurant uses allow for social interaction and contribute to the City’s quality of life.

B2B and B2C

It would be unwise to not consider the impact of e-commerce on the traditional retail community. E-commerce sales in the United States 2021 accounted for over 14 percent of total retail sales, up from about 7 percent in 2015<sup>1</sup>. Troy serves as a retail hub for the region and must be prepared to support brick and mortar retail establishments in order to help them remain viable moving forward. Given the central role the primary retail areas in Troy have within the City, it is critical that the continued success of these areas is taken into consideration.

It is important for the City to understand and consider that there are two types of retail or service businesses: business to business (B2B) and business to consumer (B2C). B2C businesses are those conventional retail establishments offering goods and services

Michigan’s Premier Address for Business, Retail and Commerce

Troy is a prime location for businesses like yours. Troy’s business environment is progressive and diverse with a solid mix of major corporations and small local businesses. Troy is an internationally recognized business center in a variety of sectors including Technology, Research & Development, Engineering, Advanced Manufacturing, Financial Services, and Health Care.

Grow Your Business Here

The City of Troy, in collaboration with our public and private sector partners, is focused on helping your business grow. Troy’s economic development staff assists our local companies by identifying specific business needs and providing the information, infrastructure, and connectivity necessary to address those needs.

By leveraging Troy’s unique community assets, partnerships and available tools to promote business growth, the City is creating an environment for investment.

https://www.troymi.gov/WorkHere/LocateYourBusinessHere

1: United States Census Bureau

directly to consumers. Comparison shopping, convenience shopping, and restaurant and service uses fall in this category.

Given Troy's considerable office, commercial, and industrial presence, the City should devote significant marketing and promotional efforts specifically towards B2B uses to make up for any real decline of conventional B2C uses due to e-commerce or other factors. While conventional retail and service remain strong in Troy for many of the reasons outlined above, there is no guarantee that this trend will continue indefinitely. In many cases, B2B companies are not the first to come to mind when planning for commercial uses. Given that these uses are not always open to the public, often require warehousing, and rarely market themselves directly to the public, they are not as readily understood.

B2B businesses have embraced the internet as well, and where brick and mortar B2C businesses are still relevant for both practical and social reasons, B2B businesses cater to a market concerned only with convenience, quality, cost, service, and availability. B2B businesses, in other words, may have an even easier time transitioning to an e-commerce platform than conventional retail.

The City should investigate the needs of B2B businesses in the information age. The availability of office space in Troy can provide easy entry for a B2B business, while the available high-quality industrial properties in Troy's strategic location allows for B2B businesses to develop warehousing and shipping centers nearby. The presence of a significant business community in Troy and throughout Southeast Michigan provides an immediate market for B2B businesses.

## Office and Information Technology

The Wealth Creation Task Force for Troy Vision 2020 suggests that Troy must become a link to international business. The City has a head start in that many of its largest office tenants are international corporations based in countries around the world. Troy has 14 million square feet of office space, providing facilities in every imaginable shape,



size, and form with any package of amenities a potential tenant may require. The Big Beaver Corridor is home to over 100 businesses and the headquarters for companies like Kelly Services, Kojaian Companies, Bank of America, Behr, National City Bank, Altair Engineering, and Kirco.<sup>2</sup>

What are information technology and other knowledge economy businesses looking for when seeking new office space? Assuming that many new information-based businesses can be very selective in their location, given that they are no longer tied to availability of materials or railroads, etc., when a business has chosen Troy based on other factors, what is a company looking for in a specific facility? If Troy is able to attract new office and high-tech businesses, it must then address the second part of the equation and ensure that the City's office spaces are qualified for the businesses it attracts.

Infrastructure for advanced technology offices and businesses includes fiber optics, wireless communication, multiple carriers, power redundancy, and other components. Troy must ensure that new office spaces have this essential technology infrastructure. When new buildings are developed incorporating new technology standards, they enjoy lower vacancy rates and increased lease income based on higher rents.<sup>3</sup>

The City should consider encouraging physical

components to ensure that new or redeveloped office spaces are more conducive to knowledge economy businesses. These elements will contribute to the economic sustainability of the structure and, when complemented by green building design, will ensure that new or redeveloped structures are competitive and viable for generations to come. These elements could include:

- Elevated Ceiling Heights
- High Floor Load Capacity
- Power Redundancy Components
- Telecommunications Space
- Raised Flooring
- Flexible Connectivity
- Advanced Fire Protection Systems
- Closed Circuit Security Television Monitoring
- Tenant Controlled HVAC
- Flexible Work Stations

Given a choice between a conventional office space and one having many or all of the features described above, with all other factors being equal, the facility with these upgrades will be far more competitive. The City can explore incentives and regulations which enhance the City's stock of existing office space with an even more technologically advanced stock of desirable spaces. In this way, the City can ensure that those businesses attracted to Troy by the quality of life and other factors will find a physical space which allows them to excel in their sector and provide an optimal environment to attract the highest quality workforce.

## Research and Research Technology

Troy has a tradition of innovation in research and research technology in a variety of sectors. Troy's top employers include Magna, Kelly Services, Aptiv, Altair and PNC Regional Headquarters. It is a mix of companies like these, and especially companies in a growing field such as green energy like ECD Ovonic, for which the City of Troy must compete moving forward.

Oakland County strategy includes:

- Attracting high-tech businesses from around the world to Oakland County.
- Facilitating new collaborations between existing

Oakland County businesses and outside companies looking to expand into North America.

- Assisting Oakland County companies as they identify and promote new applications for their existing technologies in domestic and international markets.
- Linking research and development projects at local universities with proven entrepreneurs to accelerate participation in the global marketplace.
- Aggressively identifying and increasing local sources of venture and growth capital for emerging sector companies.
- Continuing to attract and develop a highly-skilled workforce.<sup>4</sup>

One of the primary initiatives the City of Troy has undertaken with regard to targeting technology businesses is the establishment of the Smart Zone. The Big Beaver Corridor Study envisions the Smart Zone as an area in which high-technology uses at the cutting edge of innovation are cultivated. The Study calls this location a "paragon of innovation" and prescribes a combination of "signature" light industrial, research and development, and office uses.

As noted previously, Troy is also part of Automation Alley and is home to the Automation Alley headquarters and Technical Center. Automation Alley is actually a broader multi-community Great Lakes Interchange Smart Zone, with a focus on business and technology in the advanced automotive, information technology, and defense sectors.<sup>5</sup>

## The Land Use Balance

A balanced tax base is an essential element of effective community governance. A balanced tax base ensures that residential taxes can be kept at reasonable levels without having to sacrifice quality of services.

The City has a reputation of strong, diversified tax base. However, as with many Michigan communities, there are challenges. The

2: Real Estate Knowledge Center

3: Troy Chamber of Commerce: <http://www.troychamber.com/gli/whytroy.htm#office>

4. Troy Chamber of Commerce: <http://www.troychamber.com/gli/whytroy.htm#office>

5. Real Estate Knowledge Center



## Automation Alley

Automation Alley is a “regionally-focused technology organization” intended to bring local business, educational institutions, and local units of government together in order to coordinate and promote technology-based businesses in Southeast Michigan.

The organization’s members are located in Genesee County, Livingston County, Macomb County, Monroe County, Oakland County, St. Clair County, Washtenaw County, Wayne County, and the City of Detroit. The mission of the organization is to “...act as a catalyst to enhance the image of Southeast Michigan to help members grow their businesses.”

Automation Alley provides products and services to its members to stimulate and highlight technological excellence and economic diversity. Ultimately, Automation Alley aims to help industry, government, and academia attract, develop and retain the skilled workforce required to be competitive in the new knowledge-based economy.

Automation Alley assists its members through three specific programs:

- International Business Center: the Automation Alley International Business Center helps small and medium size companies become export ready, organizes trade missions and conducts international business attraction services.
- Technology Center: the Automation Alley Technology Center leverages businesses, educators and government to help entrepreneurs bring new technologies to market quicker and more efficiently.
- GLIMA Network: GLIMA, Automation Alley’s association for technology professionals, provides significant learning opportunities for individuals within Michigan’s technology community.

[www.automationalley.com](http://www.automationalley.com)

community’s taxable value was \$5.0 billion for fiscal 2020. This compares to \$4.8 billion for fiscal 2019 values and indicates a recovery from the significant declines incurred from the 2008 great recession.

In the 2020-2021 fiscal year, the City issued 2,689 (valued at \$220M) building and construction permits. Troy includes two Fortune 500 company headquarters and 5 North American headquarters.

Despite the challenges faced by the great recession, Troy’s diversified business community, strong residential market and conservative financial management perpetuates a stable economy through regional and national market fluctuations. A wide range of industries in the business community, well maintained neighborhoods, excellent schools, and continued investment into roads and infrastructure all contribute to Troy’s resilience.

### Mixed-Use and Tax Base

One of the many advantages of mixed-use development is its ability to help offset residential development’s impact on the tax base by integrating it with commercial development. That is, while new residential development alone would help tilt the land use balance towards residential overall — therefore requiring that residential pay a larger portion of the overall tax obligation — incorporating commercial, office, or even light industrial development can offset that obligation. Depending on the scale, nature, and location of the mixed use project, the non-residential component could be calculated to directly offset any increased burden created by adding the new residential uses. Employed consistently, mixed-use development could ensure that the tax base balance is maintained as new residential units are developed in Troy.

## Troy as a Hub for the Regional Economy

In many ways, Troy is a primary center of urban

Oakland County. Over 100,000 people come into Troy every day for work, and thousands more City residents also work in the City. Troy’s workforce is approximately 130,000 people, yet only about fourteen (14%) percent of those workers actually reside in the City.

Troy is an educational hub, with its strong tradition of higher education and exemplary school systems. Troy is also a financial center in Southeast Michigan, as it is home to a large number of international banking and financial institutions. Troy is also home to regionally acclaimed retail and entertainment, and is a central location for shopping in Southeast Michigan. The City must capitalize on these facts and adopt the philosophies contained in Chapter 3 in order to encourage more of its daytime workforce to consider Troy the best place to live.

### The DDA as a Center for the Regional Hub

The Downtown Development Authority Area is highly visible when compared to the rest of Troy and when compared to the surrounding area. While Troy may not have a traditional, small-scale downtown, its DDA is a regional center of activity. Within Troy’s Downtown Development Authority boundary, there is approximately 1.1 billion dollars of building market value. The parcels within the DDA comprise only 3 percent of those in the City as a whole, and 1.6 percent of the acreage, but account for about 36 percent of the overall community building market value.

The City of Troy can capitalize on this role by allowing the evolution of the DDA to include increased residential uses and other mixed uses as envisioned in the Big Beaver Corridor Study.

The Study is a forward-thinking blueprint to the continued development of the Corridor, and includes a series of recommendations that will help Troy capture more of the dollars spent by the over 100,000 commuters who enter and leave Troy everyday. Mixed-use projects with integrated residences will allow more people to live and work in Troy. The inclusion of more such properties will open Troy up as a popular place for young professionals who seek new residential styles in close proximity to their places of employment. Often, these individuals have money to spend at Troy retail businesses, and can contribute to the dynamic and vibrant community Troy desires to be.



## Oakland County

- Oakland County is Michigan's employment hub with nearly 690,000 workers employed here
- More than 260,000 workers commute into Oakland County everyday
- The county has seen the addition of more than 97,000 jobs since the low-point of the recent recession in the first quarter of 2010
- Oakland County is forecast to add another 49,032 jobs through 2017
- Oakland County has a diverse economy with the top three employment sectors being Professional and Business Services (26%); Trade, Transportation, and Utilities (18%), and Private Education and Health Services (16%)
- The county's unemployment rate has dropped to 4.9% since hitting a high of 15.0% in July 2009; the rate is forecast to drop even further, to 4.3%, by 2017
- With a per capita income of \$57,035, Oakland County has the highest per capita income in the state and the 12th highest nationally among all counties with at least a million residents
- Oakland County is home to more than 1,000 firms from 39 foreign countries
- With nearly \$54 billion in goods exported from the area, the Metro Detroit region ranks 4th nationally for total exports

Sources: U.S. BLS, U.S. Census Bureau, U.S. ITA, Oakland County Economic Outlook



## 5 – The City in Motion: Local and Regional Mobility

### Mobility is changing as rapidly as the economy.

Companies are more mobile than ever, telecommuting is rising as a popular way to work, and e-commerce is taking a share of the conventional retail market, all of which have a dramatic effect on transportation needs. Fuel prices have changed the way consumers choose their homes or even plan their daily errands. Non-motorized transportation is becoming a viable option in many communities, especially when integrated with other forms of transportation to create a true multi-modal system. In that spirit, this Chapter will analyze the existing transportation network within the City of Troy and explore new ways the City can think about transportation.

Previous work by the Vision 2020 Task Force established a series of five preferred futures in the City. These five visions address the need for safer transportation, more transportation options for all age groups, and the desire for a regionally prominent non-motorized transportation network. Vision 2020 also acknowledged the emergence of virtual pathways and their importance as communication supplants transportation in many applications. The final vision of the Mobility Task Force was that Troy will become a “green” city where a series of actions contribute to make Troy an environmentally sustainable place within which to travel.



Stakeholder input also reveals that strong support exists for many of the concepts envisioned by Troy Futures, and specifically for the enhancement of non-motorized transportation options in the form of pathways or bike lanes.

### Troy's Existing Transportation Infrastructure

This Section will detail the existing conditions of the transportation infrastructure in Troy and also describe City programs and entities charged with maintaining and developing that infrastructure.

#### Existing Conditions: Roadways

The primary method of transportation as it stands today in Troy is the private automobile. The City has a comprehensive roadway network, described in the following subsection.

#### Streets and Roads

The surface street network in the City of Troy is developed and maintained jointly by the City of Troy and the Road Commission for Oakland County (RCOC). Table 5.1, on the following page, demonstrates the major roadway jurisdictions in Troy, from north to south, then west to east.

The complete road network consists of 364 miles of roads, when all local and County roads are included. The City also maintains over 500 miles of sidewalks in Troy.<sup>1</sup>

<sup>1</sup>: [www.troymi.gov](http://www.troymi.gov)



**Table 5.1: Roadway Jurisdiction**  
**Source: City of Troy Traffic Engineering**

Roadway	Jurisdiction
Interstate 75	State of Michigan
South Blvd.	Road Commission of Oakland County
Square Lake Rd.	City of Troy
Long Lake Rd.	Road Commission of Oakland County
Wattles Rd.	City of Troy
Big Beaver Rd.	Road Commission of Oakland County
Maple Rd.	City of Troy and Road Commission of Oakland County
14 Mile Rd.	Road Commission of Oakland County
Adams Rd.	Road Commission of Oakland County
Coolidge Highway	City of Troy
Crooks Rd.	Road Commission of Oakland County
Livernois Rd.	City of Troy and Road Commission of Oakland County
Rochester Rd.	City of Troy
Stephenson Highway	City of Troy
John R. Rd.	Road Commission of Oakland County
Dequindre Rd.	Road Commission of Oakland County

**Roadway Improvement Program**

The City has a sophisticated Roadway Improvement Program which forecasts maintenance and enhancement needs for the City’s streets. This program identifies timetables, projected costs and scheduling, and assists the City in obtaining transportation dollars and grant funding for road projects.<sup>2</sup>

2: City of Troy Traffic Engineering Department

**Functional Classification**

The National Functional Classification (NFC) System is a planning and identification tool used by most transportation agencies. The classifications are used to group streets and highways into classes according to the character of traffic service they are designed for.

**Principal Arterials**

These roadways are at the top of the classification hierarchy. The primary function of such roadways is to carry relatively long distance, through-travel movements. Examples include interstates and other freeways as well as state routes between larger cities.

**Minor Arterials**

Minor arterials include roads connecting intra-urban land uses. These roads tend to accommodate slightly shorter trips than principal arterials.

**Major Collectors**

Major collectors provide access and mobility within residential, commercial, or industrial use and connect local roads to arterials. Major collectors generally carry more traffic than minor collectors.

**Minor Collectors**

Minor collectors also provide access amongst varying land uses, but generally have less traffic than Major Collectors.

**Local Roads**

Local Roads provide access to individual properties and typically have moderate to low speeds. The improvement of local roads typically rates the lowest priority. Most residential streets in Troy are classified as local roads, and are often located in subdivisions.



**FAST-TRAC**

The City of Troy is a participant in the Road Commission for Oakland County FAST-TRAC (Faster And Safer Travel Through Routing and Advanced Controls) program. The system is a computerized real-time traffic signal timing program employing hardware and software to monitor and adjust traffic signalization in order to constantly optimize signals based on current traffic demands at times when traffic demand exceeds roadway capacity. The City of Troy has participated in the program since 1992 and has grown its reach within the City from 28 signals to over 300 signals.<sup>3</sup>

**Traffic Committee**

The City of Troy has a Traffic Committee which consists of seven members appointed to three-year terms. The Committee includes the Police Chief, Fire Chief, and Traffic Engineer as ex-officio members. The Traffic Committee advises the City Manager and City Council with regard to traffic regulations and safety considerations.

**Existing Conditions: Highway Access**

The City of Troy is bisected by Interstate 75. The Interstate has access to the City at 14 Mile Road, Rochester Road, Big Beaver Road, Crooks Road, and Adams Road. Interstate 75 is over 1775 miles long and extends from southern Florida to Northern Michigan and provides regional access to the City of Detroit, Canada, Northern Oakland County, and beyond.

**Existing Conditions: Air Travel**

The Oakland/Troy Airport is owned and managed by Oakland County and provides executive airport service for private, corporate, and charter air travel. The Oakland/Troy Airport is located at 2672 Industrial Row and is also used for limited air freight service. Aircraft maintenance and fuel are also available.

The Oakland County International Airport is located in Waterford and is the nation’s 6th busiest general aviation airport. Originally known as Pontiac Municipal Airport, it provides corporate and general aviation service to Oakland County and

3: Road Commission of Oakland County

Metro Detroit and also provides a more advanced ground support network including major repair and full contract maintenance, fueling, catering, and charter services.

The majority of commercial air passengers in Troy utilize the Detroit Wayne County Metropolitan Airport in Romulus, Michigan. The Airport is owned and operated by Wayne County and is managed by The Wayne County Airport Authority. Detroit Wayne County Metropolitan Airport has undergone significant enhancement in recent years, including the construction of a new terminal and runway.

**Existing Conditions: Transit**

The City of Troy is served by the SMART (Suburban Mobility Authority for Regional Transportation) System. SMART is Southeast Michigan’s bus system, which provides fixed route service over 44 routes and also provides a variety of curb-to-curb services, including Dial-A-Ride and flexible routes, to access otherwise inaccessible locations.

SMART’s primary routes within the City of Troy provide access to Big Beaver Road between Coolidge Road and Livernois Road, all across the City’s south boundary, and north to Auburn Hills via Coolidge Road, Long Lake Road, and Interstate 75.

The SMART system extends throughout Oakland, Wayne, and Macomb Counties, and provides regional service to and from major employment centers in Southeast Michigan, including the City of Detroit. SMART also provides a wide variety of special, charter, private, and remote access services.

**Transit Center**

As mentioned in Chapter 2, the City developed the Troy Transit Center to provide a central, multi-modal hub primarily for rail and bus service. The Troy Transit Facility will serve the region by strengthening the existing transit options in the area through a centralized facility that will allow users to access intercity rail service, regional bus routes and other modes such as air and taxi services. A bridge over the railway line will provide a barrier-free non-motorized link between the regional bus terminal in Troy with the rail platform in Birmingham. This facility is included as a hub in the Detroit Regional Mass Transit plan (DRMT) and

will serve included as a hub in the Detroit Regional Mass Transit plan (DRMT) and will serve as a catalyst for coordinated regional and mass transit in Southeastern Michigan.

The Future of Mobility in Troy

Mobility needs are continuing to evolve. As mentioned in the opening paragraph of this Chapter, many significant factors are changing the way Americans address transportation. This section will introduce new measures intended to ensure that all people in Troy, regardless of age, remain mobile, that the attributes of the City and region are accessible, and that the transportation infrastructure of Troy contributes to a positive quality of life in the City.

Thoroughfare Plan

The City of Troy Thoroughfare Plan (see map, next page) is incorporated as a part of this Master Plan. The Thoroughfare Plan enables the City to better direct resources for roadway improvement by basing its decisions on the planned right-of-way and other enhancements provided on the Plan. The Thoroughfare Plan also enables the coordination of efforts between various levels of government responsible for the building and improving of roads.

Transit Improvements

On November 8, 2022, the residents of Oakland County approved the Oakland County Public Transportation millage. This voter-approved, 10-year, .95 millage is dedicated to maintaining and expanding public transit services throughout Oakland County. As a result of the transit millage, SMART is planning a new bus route, called the "492 Rochester" Route, which would be a fixed route with service on Rochester Road north from Troy to downtown Rochester and continue west on Walton Blvd through Auburn Hills.

Access Management

Access management is the development of a program intended to ensure that the major arterials, intersections, and freeway systems serving a community or region will operate safely and efficiently while adequately meeting the access needs of the abutting land uses along

the roadway. Implementing access management techniques can help increase roadway capacity, manage congestion, and reduce crashes. In the case of businesses, there are also less obvious benefits such as a reduction in maintenance and other costs by utilizing shared driveways or eliminating entrance and exit points. Increased road frontage and improved aesthetics are also a result of eliminating driveways.<sup>4</sup>

The Big Beaver Corridor Study included an analysis of access management concerns within the Big Beaver Corridor. The Study concludes that while there are many positive attributes with regard to access management in this critical area, there is room for improvement in the future. Specifically, poor spacing between driveways, frequency of driveways, and driveways too close to certain intersections are areas where access issues have a significant effect on traffic management in the Corridor.

Successful access management practices in the Big Beaver Corridor that were noted by the Study include the area surrounding Somerset Collection, where limited, protected driveway “throats” provide access to consolidated areas. This design results in fewer overall driveways and reduces potential conflict between internal circulation and the entering traffic from Big Beaver Road. The Study also identifies several areas throughout the Corridor where consolidated driveways to Big Beaver Road or to other major north-south roads are used to provide access to multiple sites via collector streets or internal shared driveways.

Complete Streets

The Michigan Complete Streets legislation was signed into law in 2010 through two public acts, Public Act 134 and Public Act 135. The Michigan Planning Act was also amended to require the consideration of complete streets in the Master Plan. The legislation defines Complete Streets as “roadways planned, designed, and constructed to provide appropriate access to all legal users... whether by car, truck, transit, assistive device, foot or bicycle.” It gives new responsibilities to local government and county and state transportation agencies to address transportation needs of all

4: Federal Highway Administration

SMART — Suburban Mobility Authority for Regional Transportation

SMART is Southeast Michigan’s bus system. SMART provides fixed route service over 44 routes and also provides a variety of curb-to-curb service including Dial-A-Ride and flexible routes, to access otherwise inaccessible locations.

SMART bus routes provide access to more than 67,000 businesses and 850,000 jobs. Over 9 million people including seniors, students and professionals use SMART to travel to work, school, doctor’s offices and shopping centers annually

SMART serves nearly all of Wayne and Oakland Counties and all of Macomb County.

www.smartbus.org

Thoroughfare Plan





legal users (including pedestrians and bicyclists) in their community Master Plans.

Communities with Complete Streets policies help to ensure that roadways are designed to accommodate all users, not just motorists. Facilities that make a street “complete” depend on existing conditions and the intended users. It’s never a “one-size-fits-all” scenario. Examples include curb ramps, audible or tactile signals for blind pedestrians, longer crossing times, smooth sidewalks, and bike lanes that are free of obstacles.

The Road Commission for Oakland County (RCOC) developed Complete Streets guidelines for use when designing future road improvements and considering the transportation needs of all legal users. The guidelines evaluate issues such as liability, funding, maintenance, connectivity, local involvement, environmental concerns, and specific user needs.

To that end, the City will need to address the following key principles in all planning related to Complete Streets:

1. Consider all legal users — vehicles, bicycles and pedestrians of all ages and abilities — in the discussion of its transportation system.
2. Encompass all modes of transportation.
3. Ensure that the improvements identified in the Plan are appropriate to the context of the community.
4. Identify the means of cooperating with the Road Commission or MDOT when implementing transportation elements of the plan.

Non-Motorized Transportation Plans

The City of Troy has initiated a significant City-led effort to construct and improve trails and pathways in the City. As evidenced by the overwhelming support for trails received during the Parks and Recreation Master Plan development, the Master Plan Survey, and within Troy Vision 2020, the community has expressed a great deal of interest in alternative transportation.

With that in mind, the City of Troy created the Troy Trails and Pathways Committee, a group charged

with developing a world-class trails system in Troy. The Committee was allocated funding for assistance in developing strategies for trails and pathways. The City intends to fund the Parks and Recreation Department for Committee activities in each budget year for the foreseeable future.

The Trails and Pathways Committee determined that there are three main purposes for the development of trails in Troy:

- Interconnectivity between retail, restaurants, public facilities, and other trails
- Recreation
- Improved walkability and an opportunity for non-motorized transportation

In the summer of 2007, the Trails and Pathways Committee developed a series of long term and short term goals. Some of the predominant themes in the long term goals are:

- Provision of scenic trails throughout the City
- Overall safety, security, and sustained funding
- The inclusion of bike lanes, trails, and pathways into road construction projects
- The development of bicycle and pedestrian friendly destinations throughout Troy
- The incorporation of trails and pathway systems into private developments
- The development of community education programs about trails and alternative transportation

As noted in Chapter 3, the responses collected from the Parks and Recreation Plan Survey and the input of the SGRAT suggest that people consider trails and pathways to be more than simple recreational amenities and genuinely consider them valid transportation options that drive property values up and can be seen as an amenity for real estate development.

The Transit Center and Transit-Oriented Development

A central theme of the Master Plan includes the establishment of activity nodes with a connected sense of place, centered on a range of different concepts or themes. These areas would be compact, walkable, and would provide a mix of

Access Management

Basic design principles:

1. Provide a specialized road system; design roadways according to the function they are intended to provide.
2. Limit direct access to major roadways; preserve the traffic function of higher volume roads serving regional thru traffic.
3. Promote intersection hierarchy; transition from one classification of roadway to another.
4. Locate signals to favor through movements; proper placement of signals allows for better coordination of signals, continuous movement of traffic at the desired speed and reduces delays.
5. Preserve the functional areas of intersections and interchanges; the area where motorists respond to the intersection or interchange, decelerate, accelerate, or complete turns.
6. Limit the number of conflict points; collisions and mistakes occur when the driving environment is complex.
7. Separate conflict areas; traffic conflicts can also be reduced by separating conflict areas.
8. Remove turning vehicles from through traffic lanes; when turning vehicles are removed from through traffic lanes, better traffic flow and is maintained, capacity is preserved and safety is improved.
9. Use non-traversable medians to manage left-turn movements; the majority of access-related crashes involve left turns.
10. Provide a supporting street system and circulation system; interconnected street and circulation systems better support alternative forms of transportation.

TRB Access Management Manual, 2003

uses to contribute to an atmosphere of vitality and diversity. The “Villages” throughout the City would each have a unique character and would allow visitors or residents to have access to services, entertainment, and even employment within walking distance, with access to the other nodes, the rest of the City, and areas around the region available by transit.

The “Villaging” concept can be achieved by following the principles of Transit Oriented Development, or TOD. The TOD principles are centered on the basic idea that mixed-use, walkable, compact development surrounding transit stations contributes to the health of the community and helps support the transit itself. The non-profit group Reconnecting America, an organization dedicated to encouraging TOD development, states that a TOD is more than development near transit, it is also development that achieves the following:

- It increases “location efficiency” so people can walk, bike, and take transit
- It boosts overall transit ridership and minimizes the impacts of traffic
- It provides a rich mix of housing, jobs, shopping, and recreation
- It provides a value to the public and private sectors, and for both new and existing residents
- It creates a sense of community and sense of place<sup>5</sup>

In order for TOD to work, there are a number of coordinated efforts that must succeed. First, the City must demonstrate commitment to the provision of transit. The City of Troy has already expressed its support of transit, and the regional SMART system shows that the region is interested in expanding and enhancing its transit capabilities. The Transit Center project constitutes a strong local commitment to the provision of efficient, equitable, and world-class transit options for Troy residents.

A successful TOD strategy must also have the support and leadership of elected officials and investors. This is ultimately expressed by the adoption of policies that coordinate development with transit corridors and facilities. Strategies can

5: Reconnecting America, “Why Transit Oriented Development and Why Now?”  
6: [http://www.mass.gov/envir/smart\\_growth\\_toolkit/pages/mod-tod.html](http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-tod.html)



### Complete Streets

Complete Streets provide a number of benefits including, but not limited to:

- Improved safety for all users, including pedestrians, bicyclists, transit riders and drivers;
- Improved human health by encouraging walking and bicycling;
- Decreased car traffic, reducing dependence on gasoline and petroleum products, and improved air quality;
- More transportation options; and
- Fosters livable communities and improved quality of life.

be incentive-based or regulatory and could include the development of station area plans, the adoption of higher density, mixed use zoning, the development of design guidelines for station areas, strong public investment policies, and incentives like the sharing of infrastructure development costs, providing for brownfield remediation, or streamlining the development process for TOD projects.<sup>6</sup>

### Virtual Pathways

New advances in telecommunications could have dramatic impacts on transportation in the future, but the actual effects are still uncertain. In particular, the advent of telecommuting will allow a great number of people to work remotely, usually out of their homes or satellite offices. This kind of arrangement was not possible before high speed internet and other technological breakthroughs.

According to data scientists at Ladders, Inc., remote opportunities increased from under 4% of all high paying jobs before the pandemic to about 9% at the end of 2020, and to more than 15% by the end of 2021. They further project that 25% of all jobs in North America will be remote by the end of 2022, and remote opportunities will continue to increase through 2023.<sup>7</sup>

On its face, telecommuting would appear to relieve traffic congestion by taking more drivers off the streets and reducing the number of trips per day. However, in the long term, telecommuting could have the same effect that the emergence of knowledge based businesses has had in that workers will no longer be required to locate near their employers. While many employers locate strategically to secure a solid workforce, there are also firms which exist virtually online. That is, employees work all over the country and contribute via the internet.

Given this phenomenon, communities like Troy may have to rely even more heavily on

the quality of life elements of the City to retain residents even if industry and professional offices succeed in the community. In fact, on a regional scale, telecommuting could result in a greater demand for more remote development and could ultimately contribute to urban sprawl. Without the requirement of proximity to an employer, employees can live wherever they wish.

### Impacts of Telecommuting

The Research and Innovative Technology Administration of the Bureau of Transportation Statistics, a department within the United States Department of Transportation, identified a number of key issues with regard to the impact of telecommuting on transportation demand. They include, but are not limited to, the following:

- The actual amount and impact of telecommuting in any particular region will depend strongly on the local transportation environment and travel demand measures.
- The congestion and air quality improvements potentially attainable through telecommuting could be substantially diminished if telecommuters removed from the highways are replaced by the emergence of latent travel demand.
- Telecommuting could stimulate urban sprawl and have other adverse impacts on land use and public transportation.
- Factors which will impact the rate of growth of telecommuting include uncertainty of benefits for employers and the considerable time and effort inherently required to bring about major changes in work styles and ways of doing business.

The City must continue to consider the potential needs of telecommuters in order to combat the potential flight of knowledge economy workers in the City.<sup>8</sup>

7: Source: theladders.com: "Research: Remote Work Now Accounts for Nearly 15% of All High Paying Jobs"  
8: Transportation Implications of Telecommuting, Bureau of Transportation Statistics

### Transit-oriented development (TOD)

TOD is compact, walkable development centered around transit stations, generally including a mix of uses, such as housing, shopping, employment, and recreational facilities. TOD is designed with transit and pedestrians as high priorities, making it possible for visitors and residents to move around without complete dependence on a car.

Components of TOD include:

- Walkable design with pedestrian as the highest priority
- Train station as prominent feature of town center
- A regional node containing a mixture of uses in close proximity including office, residential, retail, and civic uses
- High density, high-quality development within 10-minute walk circle surrounding train station
- Collector support transit systems including trolleys, streetcars, light rail, and buses, etc
- Designed to include the easy use of bicycles, scooters, and rollerblades as daily support transportation systems
- Reduced and managed parking inside 10-minute walk circle around town center / train station

Massachusetts Bay Transportation Authority, [http://www.mbta.com/projects\\_underway/tod.asp](http://www.mbta.com/projects_underway/tod.asp)  
and <http://www.transitorienteddevelopment.org/index.html>



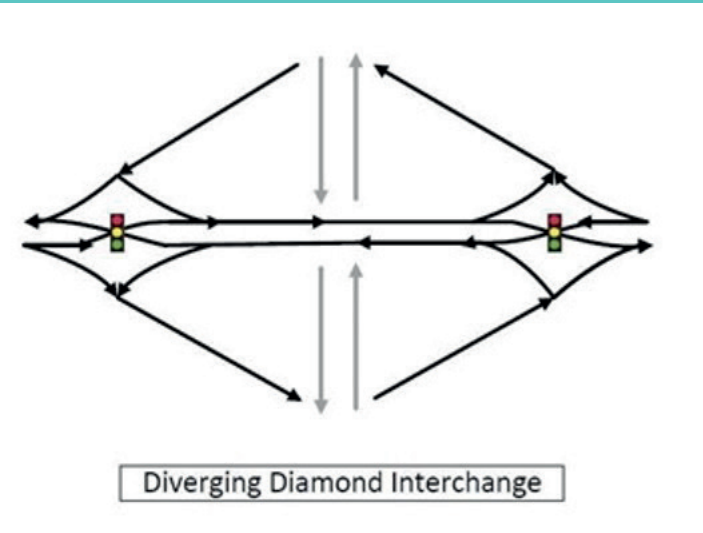
### What is a Diverging Diamond Interchange (DDI)?

The Michigan Department of Transportation (MDOT) began construction of the I-75 Modernization Project in 2016. The Project featured a wide range of improvements including widening I-75 and introducing the first High Occupancy Vehicle (HOV) lanes in Michigan, plus replacing numerous bridges and interchanges in Oakland County. Road construction activity in Troy was completed in 2021.

Diverging Diamond Interchanges (DDI's) were constructed in Troy as part of the I-75 Modernization Project. DDI's are currently located along I-75 at Big Beaver (opened in spring 2021) and 14 Mile (opened in fall 2021) in Troy. Both interchanges were constructed as part of the I-75 road widening project completed by MDOT.

A Diverging Diamond Interchange is:

- An innovative interchange design that improves safety and mobility.
- Similar to a conventional diamond interchange, which is the most common in the United States, where the exit/entrance ramps make a diamond shape between the freeway and surface street. Right-hand turns are handled the same at both a DDI and a diamond interchange.
- Different in how it handles left turns, since:
  - The intersections with the freeway ramps smoothly move traffic on the surface street from the right side of the roadway to the left side of the roadway as the road crosses the freeway.
  - Traffic is on the left-hand side of the roadway between the signals at ramp intersections, all left turns occur at the entrance/exit ramps without having to cross opposing traffic.
- Road geometry, signs, and pavement markings working together to make driving through the DDI very simple.



### What are the benefits of DDI's?

DDI's help facilitate safer movement for vehicles, pedestrians, and cyclists while increasing throughput.

#### Safety Benefits:

- Reduces conflict points between vehicles and non-motorists by nearly 50 percent.
- Eliminates many of the most severe crashes, which happen at right-angles.
- Increases visibility for drivers turning.
- Reduces potential of people driving the wrong way on entry ramps.
- Separates non-motorized users (bikes and pedestrians) by routing them through the median or along the sides of the roadway.
- Simplifies crosswalks and involves crossing fewer lanes at a time.

#### Operational Benefits

- Provides a simple two-phase signal design with shorter cycle lengths (total time for the traffic signal to give a green light for ramp traffic and a green light for the surface street traffic).
- Allows simple left and right turns from all directions.
- Increases the number of left-turning vehicles without the need for additional lanes.
- There is more space between the signalized intersections at the ramps and one less signal.

#### Cost-Effective Solution

- Reduces the construction cost compared to other interchange forms.
- Requires fewer lanes, and therefore, existing bridges and right-of-way can be utilized.
- Utilizes a smaller project footprint, which means fewer impacts to adjacent areas.

Source: Michigan Department of Transportation (Modernize75.com)





**TPL**  
troy public library

## 6 – Infrastructure: The Assets & Care of the City

**A critical component to Troy's quality of life is the quality of its municipal services.**

Excellent water, efficient storm and sanitary sewer facilities, and well-maintained roads are elements that have provided the foundation for Troy's success. For a community of Troy's population and considerable size, providing these services is a vast undertaking.

Infrastructure, such as water and sewer lines, plays a significant role in what can be developed where and must be planned in concert with land use to ensure that the City's capacity matches the City's vision for itself. In other words, planning for highly intensive uses is fruitless if the municipal services in the area are unable to support those uses. The converse is also true; planning for low-density uses in an area where desirable land has ready access to excellent sewer and water service is not practical. Fortunately for Troy, the City has a comprehensive system that allows a great deal of flexibility.

With this in mind, this Chapter will describe significant opportunities and issues related to physical infrastructure and discuss the City's efforts to maintain them. Integral to the discussion of infrastructure is adherence to three key principles: investment, coordination, and innovation. The investment portion of this Chapter will provide an overview of the scope of the City's services and briefly describe how services are currently provided. Coordination will emphasize the importance of planning for infrastructure improvements and address the relationship between land use development and infrastructure. The coordination section will also describe how the City can play a role in regional smart growth based on the strength of its infrastructure. The innovation section will identify and reference concepts to improve current practices with sustainability in mind, and will describe regional initiatives to improve water quality and stormwater management. This Chapter will focus only on the physical assets of the City, and will not discuss the City's public services, such as fire and police protection.

### Investment

The City of Troy prides itself on providing the highest quality municipal services. In partnership with the Detroit Water and Sewerage Department (DWSD), the Michigan Department of Environmental Quality (EGLE), and the Oakland County Drain Commission, residents and businesses in Troy enjoy reliable, affordable municipal services.

Water and sanitary sewer service in the City are managed by the City's Water and Sewer Division within the Department of Public Works. The Division is responsible for ensuring that the quality of the City's water supply exceeds expectations and that water is always available and sufficient to fight fires.

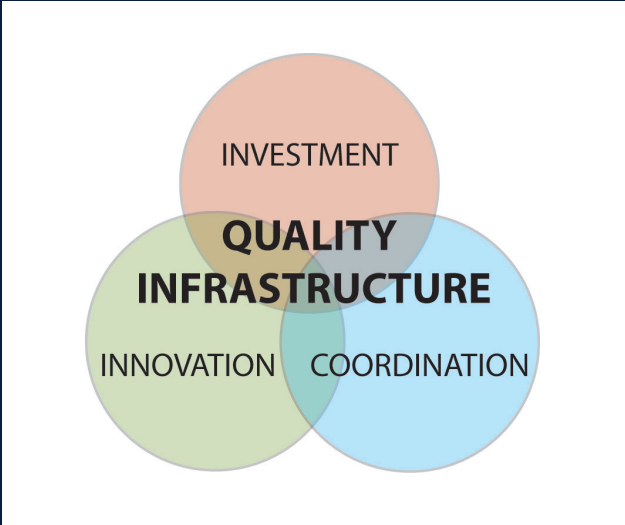
Troy is one of 126 customer communities who work with DWSD for regional water service. In Troy, there are 550 miles of water main, more than 6,100 fire hydrants, and over 29,000 water meters. Troy residents and businesses use more than 422 MCF of water annually.<sup>1</sup>

<sup>1</sup>: 2022 City of Troy



**“A civilization’s rise and fall is linked to its ability to feed and shelter its people and defend itself. These capabilities depend on infrastructure — the underlying, often hidden foundation of a society’s wealth and quality of life. A society that neglects its infrastructure loses the ability to transport people and food, provide clean air and water, control disease, and conduct commerce.”**

United States National Science Foundation, 1995



The Water and Sewer Division is also responsible for monitoring the discharge of wastewater to the Detroit Water and Sewerage Department (DWSD) waste treatment facility.

Stormwater in the City of Troy is managed in partnership with the Oakland County Drain Commission. The City’s Streets and Storm Drains Division investigates residential stormwater issues and maintains the City’s stormwater drainage as regulated by Oakland County Storm Water Permit and the EGLE. In addition to the hundreds of miles of water mains in the City, there are also many hundreds of miles of storm drains, which empty into 134 detention basins and the City’s 6 lakes.<sup>2</sup>

The City of Troy falls within two watersheds. The northwest quarter of the City lies within the Rouge River Watershed, specifically, it is entirely within the Main 1-2 Subwatershed of the Rouge River. The remainder of the City is located within the Red Run Subwatershed of the Clinton River Watershed. The City is served by a complex and extensive network of County Drains and many are enclosed. Major open drains in the City include Sprague Ditch, Sturgis Ditch, Big Beaver Creek, and Gibson Drain.

The Streets and Storm Drains Division is responsible for a network of 370 miles of roads and 520 miles of sidewalks, as well as traffic control devices and signs. Troy is a community that is very tightly integrated with its surrounding communities and, as such, is home to many major regional roads and highways. Many of the City’s major thoroughfares are under the jurisdiction of other agencies, as was demonstrated in Chapter 5.

2: 2007/8 Streets and Drains Budget

**Coordination**

Management of infrastructure assets must include coordination between jurisdictions. Just as with its natural systems, Troy’s infrastructure is largely part of a regional joint effort. Coordination also refers to that between departments and between boards and commissions within the City’s administration itself.

Troy is a leader in many areas within the region. The City is a center of commerce and is second only to the City of Detroit in the State of Michigan in terms of total property valuation. Consequently, relative to other communities in the area, the City has a low millage rate and excellent property values. This results in a financially stable City prepared to maintain its infrastructure at a very high level.<sup>3</sup>

**Regional Smart Growth Development Patterns and Infrastructure Improvements**

Given the high quality of Troy’s sanitary sewer, water, and stormwater infrastructure, Troy is able to continue to absorb new development in selected areas. This situation makes Troy unique to other regional communities that suffer from aging infrastructure, facilities already at their maximum capacity, and insufficient finances to update the systems without relying on outside assistance. Therefore, Troy can serve a larger smart growth purpose that extends beyond its own borders in that it can accept a larger regional share of new development than outlying areas in the region.

A national study conducted by the United States Department of Commerce Economic Development Administration (USEDA) showed conclusively that money spent updating or building new urban water and sewer facilities yielded much greater economic benefits than money spent on new systems in largely rural areas. Although construction costs for infrastructure projects in urban locations was slightly higher (1.3 times higher) than those in rural areas, the study concluded that the improvements in urban areas allowed new businesses to create 1.9 times as many

3: <http://www.troychamber.com/gli/whytroy.htm>

new, permanent jobs than those in rural areas. Furthermore, the urban improvements were linked to 2.8 times as much private investment as rural areas realized, and added 2.9 times as much to the tax base as similar improvements in rural areas.<sup>4,5</sup>

With this in mind, it is plain to see that investment in infrastructure improvements in already established communities results in significant economic and smart growth benefits to the region as a whole. Tenet nine of the Ten Tenets of Smart Growth challenges communities to “Strengthen and direct development towards existing communities.” Given the quality of its infrastructure, Troy is in an excellent position to accommodate and absorb new development. This philosophy towards Troy’s position in the regional growth pattern complements findings of the Big Beaver Corridor Study and Troy Vision 2020 to be both strategic and selective regarding growth.

In other words, by accepting a degree of new development and redevelopment, Troy can use its strong position in terms of infrastructure capacity to accommodate a significant portion of the region’s growth. Consequently, Troy can help alleviate pressure on outlying areas.

**Coordination Between Land Use Planning & Capital Improvements**

Troy’s capital improvement planning is largely done as part of the City’s budgeting process. As part of the Capital Improvements Plan process, the City forecasts needs and plans projects 5 years in advance. Capital improvement planning done as part of budgeting includes planning for roadway, drain, sewer, sidewalk, and water main maintenance and improvements.

In the next 5 years, the City anticipates investing more than 118 million dollars into the continued improvement of its infrastructure.

As noted previously, it is critical that areas planned for additional development be coordinated with capital improvement planning to ensure that City facilities can accommodate the vision for that specific area. Conversely, the City should be aware that spending on infrastructure improvements in some areas may not be a priority, given the recommendations of this Master Plan.

4: United States Department of Commerce Economic Development Administration, “Public Works Program: Performance Evaluation”  
5: Bagli, Fagiri, “Economic Impact of Water/Sewer Facilities on Rural and Urban Communities,” Rural America Vol. 17, Issue 4

Innovation

The City has an opportunity to encourage and practice innovative infrastructure design and management, as well as encourage practices that help protect water supplies and reduce the stress on stormwater management, sanitary sewer, and water services. The primary area where the City of Troy can have an immediate impact with regard to environmental sustainability as it relates to infrastructure is stormwater management.

Low Impact Development

Later in this Master Plan, Chapter 7 will include Low Impact Development (LID) in its discussion of environmental sustainability. LID represents design techniques that manage rainfall at the source using uniformly distributed, decentralized techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source.

The primary concept behind LID is that stormwater runoff must be treated as a resource, rather than a waste product to be eliminated as efficiently as possible. Irrigation is perhaps the most obvious use for collected stormwater, but LID includes far more potential techniques for maximizing the potential of runoff. LID techniques generally stress infiltration rather than detention and reduce the dependency on central stormwater systems. By allowing rainwater to infiltrate on site, there are many environmental benefits and often cost savings which result in a reduced need for underground systems. Innovation in stormwater management must be encouraged in both commercial and residential development.

Specific LID techniques include, but are not limited to, the following:

- Use permeable pavers for emergency stopping areas, crosswalks, sidewalks, road shoulders, on-street parking areas, vehicle crossovers, and low-traffic roads.
- Disconnect the downspouts from roofs and direct the flow to permeable pavement or other vegetated infiltration and filtration practices.
- Use multi-functional open drainage systems in lieu of more conventional curb-and-gutter systems.
- Use green roofs for runoff reduction, energy savings, improved air quality, and enhanced aesthetics.

- Landscape with a rain garden to provide on-lot detention, filtering of rainwater, groundwater recharge, and to reduce runoff volume.
- Redirect the flow from gutters and downspouts to a rain garden or retain rooftop runoff in a rain barrel for later on-lot use in lawn and garden irrigation.
- Combine rain gardens with grassed swales to replace a curb-and-gutter system.
- When parking demands do not dictate, build narrower residential streets or restrict parking and sidewalk areas to one side of the road rather than both. Replace the space gained with pervious areas, bioretention (planted areas designed to retain and filter runoff), or vegetated channels.
- Use a linear bioretention cell in the highway median to treat runoff.<sup>6</sup>

Water Quality

The limitation of contaminants which ultimately enter the water system is the best way to ensure that water supplies will remain clean and viable. This is an area where SEMCOG has invested a great deal of energy locally and which the City of Troy can play a large role. SEMCOG’s “Seven simple steps to clean water” is an example of a successful approach to limiting water supply contamination at its source. This program is designed to educate individuals about basic techniques that they can adopt in order to help limit pollution. They include:

- 1: Help keep pollution out of storm drains: Sweep, rather than hose off your driveway, and keep storm drains clean.
- 2: Fertilize sparingly and caringly: Use fertilizer with low or no phosphorus, allow your lawn to remain taller, and prevent fertilizer from getting on the driveway or other impermeable surfaces, where it is likely to be swept up in runoff.
- 3: Carefully store and dispose of household cleaners, chemicals, and oil: Practice responsible disposal of potential pollutants.

6: Low Impact Development Center, [www.lid-stormwater.net](http://www.lid-stormwater.net)

- 4: Clean up after your pet: Practice appropriate pet waste disposal by using refuse containers or by flushing material down the toilet.
- 5: Practice good car care: Wash your car on the grass or go to a car wash facility, where dirty water is treated before it is allowed to leave the site.
- 6: Choose earth friendly landscaping: Choose native plants, use mulch around the base of trees to retain water, and be conservative with watering and irrigation.
- 7: Save water: Collect rainwater for irrigation or use less water generally for lawns and other plants.<sup>7</sup>

7: [www.semCog.org/OursToProtect](http://www.semCog.org/OursToProtect)



## 7 – Green City: Responsibility to Natural & Energy Resources

### Every level of government bears responsibility for the protection of the natural environment.

The United States Government sets policy and protects national resources, like the national parks and other important wildlife refuges. The State of Michigan regulates wetlands and sets uniform statewide policies for the protection of critical Michigan resources. The State also empowers local units of government to establish laws to protect those resources in their own front yards. Local units of government are the front line of environmental protection and natural resource conservation. This Chapter will establish the philosophy of environmental sustainability in Troy, framed around a series of policies designed to make the most of the tools available to the City.

Troy is characterized as a vibrant and engaging place to live and work, where environmental and ecological resources play a role in creating a community that will draw the best workforce in the region. Troy can be an environmental leader, demonstrating to others how to grow while embracing its natural resources and making wise use of energy resources. As discussed in Chapter 2, sustainable cities integrate the concepts of sustainability into policies covering social, economic, and environmental topics. Troy and its citizens can use the community's environmental resources responsibly without compromising the ability of tomorrow's residents to meet their needs.

### Preservation and Enhancement of Existing Natural Features

Economic growth and environmental preservation are elements that are commonly perceived as two forces that must be at odds. However, environmental considerations have the ability to enhance economic development. Efficiency reduces the cost of products and services, and preservation of natural features increases the value of developed properties.

The City of Troy is nearly built out. However, the City manages over 900 acres of parkland. Some of the existing park land is used for active recreation areas, and some is maintained as natural areas for passive recreation and general open space. The City's current Parks and Recreation Master Plan identifies these City-owned properties and provides a brief description of each.

### Development and Natural Feature Preservation

The value of home sites adjacent to open space, parks, wetlands, greenbelts and other green amenities is greater, all things being equal, to similar sites not adjacent to such amenities. A report published by the Metropolitan Council, a regional planning agency for the Twin Cities of Minneapolis and St. Paul and surrounding seven-county metropolitan area, showed a conclusive positive impact of open space on residential property values.<sup>1</sup>

In addition, preservation of the existing natural systems can reduce infrastructure costs. For example, the preservation of woodlands and open space reduces the amount of stormwater infrastructure necessary to accommodate the site's runoff. Clustering of home sites is another preservation technique that reduces costs in that the developer does not need to unnecessarily extend underground infrastructure to accommodate a more sprawling site layout. The reduction of infrastructure costs results in a greater return on investment.

<sup>1</sup>: <http://www.metrocouncil.org/Directions/development/dev2006/OpenSpaceStudyNov06.htm>



## Low Impact Development

Low Impact Development (LID) represents a different way of thinking about stormwater. It is a series of design techniques that manage rainfall at the source using uniformly distributed, decentralized techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source.

Under LID, stormwater runoff is not a waste product, but a resource. For instance, LID techniques such as cisterns and rain barrels use collected rain water for irrigation, or as gray water for toilet flushing. LID also advances the idea that almost all elements of a site plan (open space and built features) can be used for stormwater control. For instance, the parking lot can be made out of porous pavement. When stormwater drains through the pavement, it recharges the groundwater. Similarly, rooftops can be used as planting areas, soaking up rainwater and reducing runoff.

LID techniques often cost less to construct than traditional closed designs. Case studies conducted by the Low Impact Development Center show a 25-30 percent reduction in site development costs over traditional techniques. One reason for the lower costs is that LID techniques keep stormwater on top of the ground, rather than building the infrastructure underground to handle stormwater. Another reason is that small infiltration areas are generally less expensive to construct than one large detention area, particularly if the site is designed to limit the amount of stormwater generated by impervious surfaces.

Low Impact Development Center, [www.lowimpactdevelopment.org](http://www.lowimpactdevelopment.org)

Encouraging natural feature preservation can be accomplished through ordinance regulations or guidelines that ensure the least amount of impact on a site so that it continues to function at its pre-development level. This can be done by limiting disturbance, imitating natural systems with built replacements, and mitigating the reduction in vegetation and infiltration when the land is covered with impervious surfaces. These design techniques are called Low Impact Development (LID) techniques. While these techniques generally concentrate on stormwater management, they also help preserve existing natural features, like woodlands, that contribute more to the community than just absorbing stormwater runoff. Troy does not have wetland or woodland protection ordinances in place.

The City of Troy must engage its neighbors to preserve features that cross more than one jurisdiction, such as a wetland system or watershed. Natural features provide significantly more benefits if they are maintained in larger units, such as a complex system of woodlands, wetlands, and rivers or streams. These larger, connected systems are more successful at maintaining their ecological integrity. The less fragmented natural features are, the higher quality they remain.

## Urban Redevelopment

Troy Futures suggested several development methods that will influence natural feature preservation within the City. Villaging, for instance, will act to cluster commercial and cultural services in higher density locations within the community. This, in turn, will allow the few remaining greenfields, or undeveloped areas, to be less densely developed, enhancing the possibility of natural feature preservation on these sites.

For the remaining undeveloped parcels, emphasis should be placed on preserving any existing natural features to the greatest extent possible, clustering in already cleared areas of each site, and ensuring that open spaces are contiguous with adjoining open spaces.

Redevelopment of obsolete or underutilized properties provides opportunities to restore or

recreate vegetated communities that enhance the site’s ecological value. While not completely natural systems, tree plantings mimic woodlands or native wildflowers plantings that simulate a meadow can be aesthetically pleasing and provide environmental benefits. For instance, one LID technique is to plant deep rooted plants, such as tall grasses typically found in a prairie. The root systems of these grasses grow up to 8 feet deep, and as they grow and die, they provide tiny waterways through the soil that improves infiltration of stormwater runoff. While these techniques would provide benefits in any situation, they could be especially effective in the case of a redevelopment property.

## Brownfield Redevelopment Authority

The City Council established the Brownfield Redevelopment Authority in 1999, expressing Troy’s interest in redeveloping brownfield and other idle or underutilized sites in the City. The Brownfield Redevelopment Authority can offer financial incentives for cleanup and redevelopment or for demolition of functionally obsolete buildings in the form of Tax Increment Financing (TIF) reimbursements.

TIF Reimbursement: The Brownfield Authority may capture the incremental real and personal property tax revenues generated by a developer’s project to pay for eligible environmental clean up and contamination prevention incurred on the property.

Single Business Tax Credit: A tax credit of 10 percent up to ten million dollars is available for an owner or operator of a facility for capital and equipment expenditures for redevelopment.

The Troy Brownfield Redevelopment Authority has assisted in the redevelopment of sites throughout the community. Its first project was the redevelopment of the former Ford New Holland Tractor Plant at the southwest corner of Maple Road and Coolidge Highway. The site, which sat underutilized for nearly a decade because of liability and other issues concerning contamination, is now know as Midtown Square, a \$200 million mixed use development boasting 600,000 square feet of retail space and 285 residential units.

## Benefits of Brownfield Redevelopment

There are obvious environmental benefits to cleaning up brownfield sites in a community. These actions create a cleaner and safer environment, reducing risks to public health, safety and welfare, and other benefits:

- Redeveloping a brownfield site transforms property that is most likely not generating substantial tax revenues to a property that contributes to the local tax base, eliminating an opportunity cost. Also, by not redeveloping brownfields, they could potentially have a depressing effect on property values, leading to further tax revenue loss.
- Idle properties that were once viable businesses do not contribute to the job base. Turning them over for new, productive uses creates new job opportunities.
- It is likely that brownfield sites have the infrastructure in place to serve a new land use. This can represent a substantial savings by a community or developer compared to building on a green field site.
- Re-using property in urban areas decreases development pressure in green fields, which in turn, increases the opportunity to preserve open space and combat urban sprawl.

Brownfield Redevelopment Guide; Consumers Renaissance Development Corporation; 1998.



Redevelopment Incentives

Ordinance regulations are the first line of environmental stewardship in many communities. However, there are other ways of encouraging sustainable development. The following incentive-based techniques encourage sustainable development:

- Fee adjustments for infill housing: Riverside, California waives certain fees, such as grading permit fees and water distribution fees, if the property being redeveloped meets the definition of residential infill.<sup>2</sup>
- Smart Growth Zone: Developments in Smart Growth Zones in the City of Austin Texas are charged reduced fees for zoning, subdivision, and site plan applications, and for water and wastewater capital recovery fees.<sup>3</sup>
- Primary employer incentives: Incentives such as application fee waivers, utility and transportation improvements, streetscape improvements, and expedited processing of development applications are offered by the City of Austin, Texas to guide large employers to the Desired Development Zone. These types of employers generate significant levels of growth, both within their specific project and in the surrounding area.<sup>4</sup>
- Built Green Program: In partnership with local counties and builders, the City of Seattle promotes best known practices in energy, air quality, stormwater management, and water efficiency to give homeowners added value and home builders a competitive advantage. To stimulate growth in Built Green-certified homes, the City launched a design competition, and highlighted winners on their website.<sup>5</sup>
- Green Review Track: King County, Washington, offers a dedicated “Green Track” for green buildings and projects that incorporate Low Impact Development techniques. Proposals on this track are assigned to a green team, composed of County staff with expertise in green development practices. Staff

provides assistance to customers on sustainable development techniques including green roofs, alternative energy systems (solar, wind, geothermal), rain water collection, resource efficient framing, recycled materials, and Low Impact Development site design. Green developments follow a customized review schedule with a single point of contact.<sup>6</sup>

Transportation

Methods to reduce the dependence on the automobile were introduced in Chapter 5. Improving opportunities for non-motorized transportation, transit-oriented development, mixed-use, and technological pathways will contribute to the changing mobility needs of Troy.

Green Building

There is an emerging, global trend to encourage the development of environmentally sustainable buildings and neighborhoods. Commonly referred to as “green building,” this trend has been fueled by numerous organizations who have worked to develop standards around which architects and builders can design their projects. The most prominent of these groups is the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) program.

The LEED rating system was originally designed for individual buildings. LEED Certification can be achieved through the use of green techniques applied to new construction or renovations to existing buildings, including historic structures. Over 4,000 buildings have either already been LEED certified or are registered and going through the certification process in the U.S. Michigan has almost 200 LEED-certified buildings including office buildings, university buildings, churches, nature centers and private residences.

Many green buildings across the country have been completed because the owner was self-motivated, based on the benefits those buildings enjoy. However, communities can also develop incentives to encourage green buildings and green site design techniques. Incentives could include property tax credits, tax abatement and tax exemptions, density

bonuses, expedited permit review, and waiving of permit fees.

In Troy, several notable green buildings have gained regional notoriety. The Kresge Foundation, highlighted on this page, is a model of green development located on Big Beaver Road. Walsh College is also adopting a green building philosophy. The College’s 15 million dollar expansion at the Troy Campus will seek LEED Certification by choosing recycled or environmentally sensitive material, incorporating rain water harvesting for irrigation and other uses, and using design techniques to capitalize on solar energy for heating.

Troy is also home to the first previously existing building in Michigan to earn LEED Certification. Bank of America’s facility in Troy earned gold status due to its use of many environmentally-friendly technologies. The Bank of America facility has the second largest green roof in Michigan, over 53,000 square feet in area. The building also uses heat generated from the computer servers to warm the building, heat water, and melt snow. Other features include the use of underground well to provide water to the decorative fountain, whose wastewater is used to irrigate the landscaping and pull heat from the building during hotter periods.

In addition to LEED, the National Association of Homebuilders have developed their own, voluntary certification program for residential construction, which the Michigan Association of Homebuilders have adopted as part of their program known as GreenBuilt. GreenBuilt is a program intended to allow Michigan homebuilders to create more sustainable home developments that are energy efficient and more respectful of natural resources. The GreenBuilt program requires that all members who elect to secure GreenBuilt status attend a 3-hour GreenBuilt training session. GreenBuilt also provides professional assistance to members.<sup>7</sup>

In Troy, the Cedar Pines of Troy project is the only entirely GreenBuilt project in southeast Michigan. This project includes homes that are designed to use 52 percent less electricity, 54 percent less natural gas, and 46 percent less water. The development also features homes with dual flush toilets, rain water harvesting, low flow faucets, renewable flooring

7: [www.greenbuiltmichigan.org](http://www.greenbuiltmichigan.org)

materials, no VOC Paints, trim made from sustainable forests and plantations, high efficiency dual stage furnaces, high efficiency water heaters, and photovoltaic solar cells.<sup>8</sup>

Other green development techniques are reflected in projects such as Caswell Town Center, which incorporated innovative stormwater management techniques.

Urban Form and Neighborhood Design

Neighborhoods can be designed to reduce energy consumption by providing opportunities for shorter vehicle trips and the use of alternative forms of transportation. Some techniques include the locating of residential units near neighborhood shops and existing utilities, the provision of bicycle and transit facilities, and proximity to schools and parks.

The U.S. Green Building Council is piloting a program for energy-efficient neighborhoods. The LEED Neighborhood Development Pilot Program includes many site design techniques that preserve natural features, habitat, and open space, such as:<sup>9</sup>

- Limit parking to encourage people to use alternative methods of transportation, like walking or bicycling.
- Promote local food production to minimize the impacts of transporting food long distances. Farmer’s markets allow such goods to be sold locally.
- Use energy saving technology for infrastructure needs such as street lights, water, and waste water pumps.
- Capture and use stormwater runoff and use in place of potable water for irrigation and toilet flushing.
- Use recycled concrete and asphalt for roadways and parking lots.

8: Wake-Pratt Construction Company  
9: Pilot Version, LEED for Neighborhood Development Rating System, U.S. Green Building Council

2: [www.riversideca.gov/planning/infill.htm](http://www.riversideca.gov/planning/infill.htm)  
3&4: [www.ci.austin.tx.us/smartgrowth/sgincentives.htm](http://www.ci.austin.tx.us/smartgrowth/sgincentives.htm)  
5: [www.seattle.gov/dpd/GreenBuilding/OurProgram/DesignToolsStrategies/BuiltGreen/default.asp](http://www.seattle.gov/dpd/GreenBuilding/OurProgram/DesignToolsStrategies/BuiltGreen/default.asp)

6: <http://www.metrokc.gov/dnrp/swd/greenbuilding/>

Sustainable Design Projects (SDP)

Troy’s SDP program promotes environmentally sustainable and energy efficient design and development practices for the construction of new and the rehabilitation of existing buildings and sites within the City. It is a voluntary option that encourages property owners to incorporate features designed to minimize the adverse impacts on the environment.

There are numerous categories from which the applicant can seek relief, including lot coverage and front yard parking. Each category has specific design measures that must be met to qualify as a Sustainable Design Project. The design measures offset the effects of granting relief. For example, to offset the relief granted to exceed lot coverage, the applicant could provide measures related to stormwater quality control, stormwater quantity control, and reduction of the heat island effect.

An example of an approved and constructed SDP project is 966 Livernois. The applicant, O’Brien Construction Co. Inc., sought to construct four front yard parking spaces in the IB Industrial and Business Zoning District. To offset the effects of the impervious parking spaces, the applicant provided the following improvements:

- Rain garden and swale
- Underground storage tank to capture rainwater runoff from roof
- Runoff from garage captured in rainbarrels
- Exterior lights on timers

The applicant met the three Prerequisite Measures (Stormwater Quality and Quantity and Light Pollution) and one Qualifying Measure (Water Efficient Landscaping).

City Demonstration Projects

Many of the ideas presented in this chapter for environmental preservation and energy efficiency are long-term techniques. However, there are many initiatives the City can accomplish relatively quickly to communicate its commitment to the environment. These “next steps” will engage citizens and inspire community members to think about the environmental issues Troy is facing.

What is LEED?

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings’ performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. LEED provides a roadmap for measuring and documenting success for every building type and phase of a building lifecycle.

United States Green Building Council, [www.usgbc.org](http://www.usgbc.org)



Hands-On Projects

One way to foster a bond between residents and a particular natural feature, such as a wetland or stream, is to get them involved in a hands-on restoration or clean-up project on City-owned properties. Once people have been introduced to the plants in the ecosystem, and the function that those plants play, they have a greater understanding and appreciation for that place. Hands-on projects give residents a chance to learn about the ecosystems in the City. Once the project is complete, interpretive signage should be installed to describe the “why,” “what,” and “who” of the project.

Maintenance of Parks and Recreation Facilities

Another relatively short-term effort is to ensure that the City staff maintain parks and natural areas in an environmentally friendly way. New alternatives for maintaining turf, ball fields, roadways, and other elements of City parks are now available. Better practices ensure that facility maintenance does not negatively impact adjacent wetlands or other natural features. A regular evaluation of how City activities are done should be considered in light of natural feature preservation objectives. If practices do change, interpretive signage can be used to inform the public of changes to a park’s visual appearance.

Planting Trees

Climate change and stormwater management are two important environmental topics. One common thread between these two is the impact trees have on each. Trees sequester a large amount of carbon. For example, a 2.5 acre Oak woodland can sequester about 3 tons of carbon in one year. Trees also intercept and absorb a large amount of stormwater. A typical woodland can absorb 20,000 gallons of rain in one hour through holding water on its leaves and trunk, absorption into the tree, and absorption into the deep leaf litter on the woodland floor.

The City can lead community planting programs and encourage additional trees with incentive techniques in the Zoning Ordinance.

Planting trees can be an annual community event that is also relatively inexpensive. The City is now working with the Alliance of Rouge Communities (ARC) to conduct a City-wide tree canopy survey using City Green software to quantify and evaluate the City’s urban forest.



Kresge Foundation

In 2006, the Kresge Foundation has completed renovations to its headquarters in Troy in 2006 and 2015, which include the addition of a new a series of environmentally friendly site improvements. The project also restored 19th Century farm buildings on the 3 acre site. The use of green roof materials, geothermal wells, and recycled materials help the facility function efficiently. The Kresge Foundation is one of the top 20 largest private foundations in the U.S. The Kresge Foundation advances its mission to promote human progress by expanding opportunity for people with low incomes in America's cities. A staff of over 100 employees work to expand opportunities in America’s cities for people with low incomes through grantmaking and social investing nationally in arts and culture, education, environment, health, human services and placed-based work in Detroit, Memphis, New Orleans and other parts of the country. (see <https://kresge.org/about-us/careers/>) .

Source: [www.worldarchitecturenews.com](http://www.worldarchitecturenews.com)



LEED Across Michigan

Michigan is a national leader in the area of green building. As of 2013 there are 410 LEED certified projects in Michigan. West Michigan is especially successful in its encouragement of green building. In fact, the City of Grand Rapids has been recognized by the U.S. Green Building Council as a national award-winner in green building. Grand Rapids has more square footage per capita of LEED certified buildings than any other city in the United States. The City itself lead the way with the development of its own new LEED certified Water and Environmental Services Facility, which uses 23 percent less gas and 35 percent less water than similar buildings of its use and size.

Private industry in Grand Rapids has also taken the green building initiative seriously. Steelcase and Herman Miller have voluntarily followed environmentally safe procedures for manufacture of furniture and Crystal Flash, a gasoline station chain, has begun offering biodiesel on a more widespread scale.

These and other Michigan companies, including large corporations like Ford, have begun to realize the benefits to green building in more ways than one. Not only do these companies realize actual savings in terms of building maintenance and energy use, but they also contribute to their public image by encouraging environmental stewardship.

Michigan Business Report; Michigan Economic Development Corporation, Volume 5, Issue 2, 2007



Waste Reduction

While the City has an extensive recycling program for its residents, the City could also institute a waste reduction program for its own operations. Waste reduction makes good business sense because it saves money through reduced purchasing and waste disposal costs. The US Environmental Protection Agency has a program called “WasteWise” that provides free technical assistance to help develop, implement, and measure waste reduction activities.

Adaptive Reuse

The economic impacts of the Covid-19 Pandemic, particularly the office market, continue to play out over time. Many zoning districts in Troy permit flexibility in the use of space, including the repurposing of offices into residential buildings. In October, 2022, the Planning Commission granted Preliminary Site Plan Approval to Forum Flats, a 200-unit multi-family development on Kirts Boulevard. This project included the conversion of a vacant 3-story office into 90 apartments. In addition, the development included two new 4-story, 55-unit apartments. This project had the effect of replacing underperforming office space while adding 200 new housing units to the market. This adaptability is important as Troy continues to evolve.

The City should also continue to identify opportunities for adaptive reuse of obsolete properties within its own facilities network. A good example of City-initiated adaptive reuse is the creation of the Sanctuary lakes Golf Course from a former landfill site. This 18-hole golf course is a critically acclaimed asset to the City and makes use of challenging property to create a significant asset for the community.

Electric Vehicles and EV Charging Stations

Electric vehicles offer an alternative to gasoline and diesel-powered vehicles. The benefits of electric vehicles and EV infrastructure include reduced air pollution and noise and reduced expenditures on gasoline. As the automobile industry ramps up efforts to produce more electric vehicles, EV infrastructure must also expand.

The Southeast Michigan EV Resource Kit and Planning Hub gives local communities and stakeholders quick access to key data and background information, the current status of

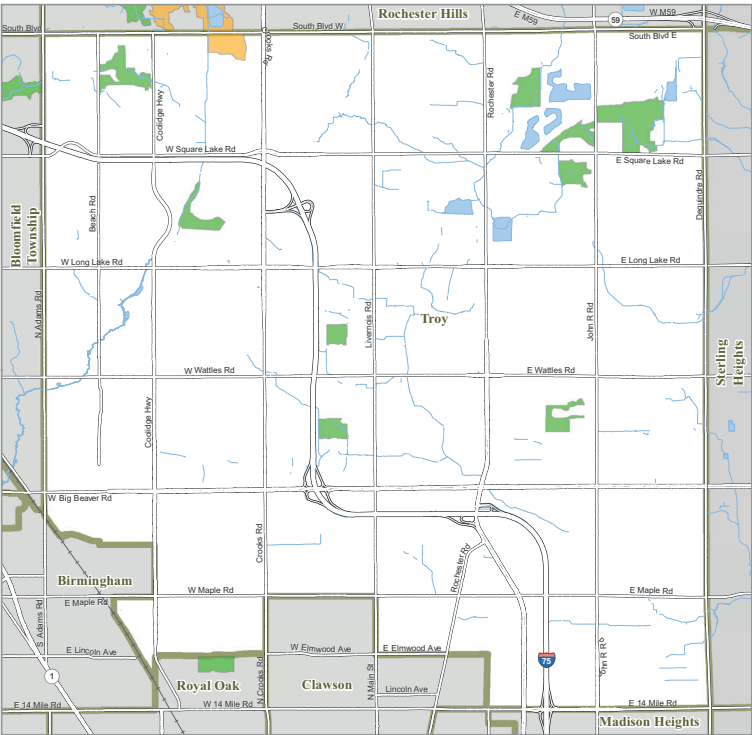
Natural Features Inventory

The Michigan Natural Features Inventory has been documenting and tracking the location and condition of Michigan’s rare species and habitats for more than 40 years. The program is now run by the Michigan State University Extension since 2000.

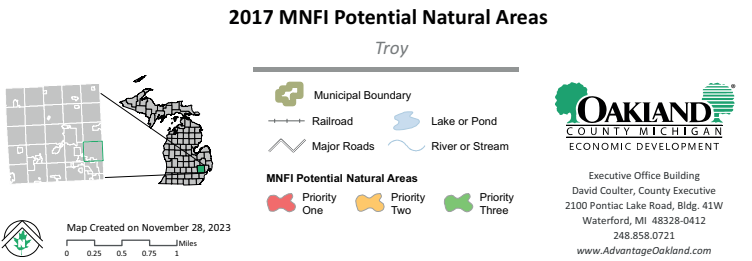
In 2017, MNFI prepared an update for Oakland County. Portions of Troy have been designated as Priority II and Priority III areas. Most of the areas in the MNFI data are located along waterways or related to floodplains that are part of the Gibson Drain, Lane Drain, or Ferry Drain systems that are tributaries to the Clinton River. Additionally other sites are located along the River Rouge watershed tributaries and floodplains within the city.

The MNFI and Oakland County examined each natural area based upon specific scaled criteria to prioritize sites. Criteria included size, stream corridor, landscape connectivity, restorability of surrounding lands, vegetation quality, parcel fragmentation, and number of known rare species and natural communities. Based on scored criteria, sites were ranked high (priority I), medium (II), and low (III) for priority protection status.

For more information please visit:  
<https://www.oakgov.com/home/showpublisheddocument/494/638027377124100000>



The information provided herewith has been compiled from recorded deeds, plats, tax maps, surveys and other public records. It is not a legally recorded map or survey and is not intended to be used as one. Users should consult the information sources mentioned above when questions arise.



infrastructure and deployment, funding opportunities, and local case studies and best practices. The EV Hub will be updated and expanded as needed to address emerging issues and respond to changes in technology, the market, grant programs, laws and regulations, state and federal Policies, and requests and recommendations from communities, organizations, educational institutions, and other stakeholders.

The Hub maintains real time data related to publicly accessible charging locations by community. As of November 23, 2022, Troy had the most EV charging stations in Oakland County with 21. Zoning is not a barrier for the construction of EV charging stations in Troy. EV charging stations are permitted by right on any property, subject to review and approval of appropriate permits including electrical permit. (Source: SEMCOG, Electric Vehicle Resource Kit & Planning Hub).



## 8 – People: Planning a Community for All Ages & Stages

### Since 2008, Troy's housing market has changed dramatically.

While the focus on “Urban Villages” and promoting mixed use residential has been a positive force on the market, the foreclosure crisis, economic recession, and the pandemic had serious consequences for homeowners and housing developers. What did we learn in the last 15 years? When change is the only constant, diversity is the City's key to success.

A diverse mix of housing types is essential to meeting the needs of current residents, while attracting new households to the community. The City of Troy is a leader in the Knowledge Economy and should continue to meet the needs of this young, ambitious workforce by providing desirable entry level housing options. The City is also a leader in public education, recreation amenities, and community services; such quality of life factors make Troy an attractive community for families and empty nesters. Housing diversity provides a mixture of housing options that allows people with different housing needs to be able to live in Troy and remain when their needs change. This requires a diversity of housing types at a range of price points, available to rent or own.

The City should continue to protect homeowners and the character of residential neighborhoods, while providing new opportunities and greater housing flexibility. Supporting missing-middle and other multi-family housing options as infill development will allow residents to transition through the various housing types while staying rooted in the Troy community.

This Chapter will analyze the changing nature of Troy's population and compare certain local demographic and housing trends to regional and national trends. Household size, age, and other characteristics of the population will be used to make recommendations designed to improve the utility of the City's housing stock as well as other community elements to meet the changing demand.

The driving force behind many changes Troy will experience is changing characteristics of its population. The median age of Troy's population has increased and according to SEMCOG, by 2045 over 22% of the population will be over 65. While the City will remain very attractive for families, both the younger and older population will desire a community that looks somewhat different than the current one.

Changing demographics can have the most profound impact on housing. A mix of housing types allows communities to retain existing residents while attracting new residents. The supply of entry level housing and housing which allows aging residents to “age in place” must be proportional to the population of those potential buyers. In a community that is also seeking to position itself as a leader in the Knowledge Economy, the most desirable housing to attract a younger workforce must exist at a variety of housing values in order to capitalize on other quality of life factors in the City. In other words, the City must strive to have the right housing for the right workforce at the right time, all without jeopardizing the previous generation's ability to continue their life in Troy.

A healthy and livable city is also one that provides a variety of elements that contribute to a high quality of life including; economic and education opportunities; access to cultural, religious, recreation, shopping and entertainment resources; quality built and natural environment; and the ability to have a safe and healthy lifestyle.



Housing Options in Troy

Ranked as one of the “Best Places to Live” in America in 2012, the City has become a desirable place to call home for people of all backgrounds (CNN Money, 2012). As the greatest challenge to long range planning for housing, a changing population involves taking account of the existing housing stock in the City and understanding in what areas it could be augmented to meet the anticipated changes in demand based on population trends and characteristics. For many years, Troy has been a magnet for families. Excellent schools, a safe environment, and attractive amenities have made Troy a very desirable place to live. The characteristics of the population have also driven the housing stock. As depicted in Figure 8.5, housing in Troy is overwhelmingly single-family detached.

There are several critical themes facing the City with regard to housing. First, national trends and local projections indicate that the residents of Troy are aging. As people mature, their needs change with regard to housing as a result of changes in employment, household size, mobility, income, and personal needs. Secondly, the City desires to encourage homeownership and must therefore be concerned with ensuring that high-quality but affordable housing options are available. Finally, as the City labors to provide modern amenities and foster a globally recognized center for knowledge economy businesses, it must ensure that this workforce finds Troy to be rich with the best housing options in the region.

Nothing in this plan is intended to change the overwhelmingly single family nature of the community. However, changes in the age and characteristics of the population will influence the characteristic of the housing stock. Large three and four bedroom homes appeal to families, but may not be ideal for seniors, young professionals, or small families.

Plans for the future must include a variety of housing options for both a younger workforce as well as an aging population.

Housing an Aging Population

The next generation of older adults is one with a new perspective on aging, one that includes being physically active, staying close to family and friends, moving into a new second career, pursuing education, or accomplishing a lifelong dream. Given the expected shift in the City of Troy’s population, this Plan must address how the housing needs of active seniors will be met. It is important to note that population age shifts and the resulting housing demands are largely cyclical, though not necessarily consistent from cycle to cycle. Many of the concepts described here also provide options both for a younger population as well as persons with disabilities in Troy.

Where the previous generation of older Americans may have aspired to live in a resort-style destination community, today’s active seniors are staying active longer than ever before.

To that end, there is an overwhelming desire of the “over 65” population to age in place. Given the complications, limitations, and expense in retrofitting existing homes to meet the needs of an aging tenant, many homes no longer remain practical as the homeowner ages.

Promoting an Aging in Places strategy will more fully address the full complement of the needs of an aging population. While Aging in Place is the preference of the vast majority of seniors, there can be limitations in fulfilling every need. Active seniors are looking for a rich social environment, walkable neighborhoods, and access to needed services in addition to living in a comfortable home. A full environment for active seniors can be created by addressing housing, well being, and social engagement needs on a more complete basis.

“Universal Design” and “Visitability” are first steps towards making a community and its housing more inclusive and one which can empower a homeowner to age in place. Universal Design is a broad concept which involves design products and spaces so they can be used by the widest range of possible users. Coined in the 1980s, the term “visitability” is used to describe a few basic, affordable design options which

Today’s Seniors  
How they are different

- Living longer
- Wealthy but with debt
- Highly educated
- Remaining in workforce
- Diverse
- Technologically savvy
- More single living arrangements
- Physically active

broaden the equity in housing accessibility without necessarily stressing full accessibility for persons with disabilities, or older adults: These design elements are far more important to the functionality and safety of a home than many traditional full-accessibility standards, such as lower mirrors and sinks, etc. These features are critical to even permit the entry of a disabled or aging person into the structure. The elements include:

- At least one no-step entrance;
- All doors and hallways wide enough to navigate through with a walker or wheelchair; and,
- A bathroom on the first floor big enough to get into in a wheelchair and close the door.

In any new development or redevelopment, designers can easily gain a wider market by thinking about access and visitability at the concept phase. The visitability movement argues all new homes should be made visitable, which allows for them to be more easily converted to full-accessibility for an aging resident or to a resident with disabilities, and to provide for increased mobility for all persons, and therefore increased social equity. The proponents of visitability argue that if only those homes occupied by disabled or older adults are designed for visitability or full accessibility, that housing suitable for aging in place of older adults will be effectively cut-off from the mainstream public.

For those residents desiring a more structured housing situation or those that need a higher level of care or assistance, a wide variety of housing

Key Findings of Boomers and Shakers Forum

Most of the participating residents are likely to remain living in Troy as they age. Many noted the high quality of life living in the City. For those that identified that they are likely to leave Troy, the most listed reason was a lack of housing option and a lack of transportation options. Underserved senior housing options and a need for increased public and dedicated senior transportation options was a common discussion point of the Forum.

The most identified underserved housing type was senior-friendly housing such as smaller, single-family homes, condominiums, or apartments with first floor master bedrooms. Housing affordability was listed as a significant housing limitation. Many remarked that they are on a fixed income and cannot afford a \$400,000 house/condo. They noted that affordable, smaller housing options are difficult to find in Troy and the City should push development of those types.

products are available. Traditional age-restricted multiple-unit senior housing developments continue to thrive in communities across the United States. Assisted living and nursing home care centers, which can provide different levels of care from basic assistance to full dementia care, are also growing.

Missing Middle Housing

In order to capitalize on the quality of life elements that this Plan suggests to create a lively and vibrant community, the City must also have the right housing to retain and attract the changing population. Mobility and proximity between civic elements, quality parks, shopping, dining and other amenities is critical, but what is even more critical is the proximity of those elements to innovative new housing.



Kitchen with accessible countertop, sink and storage. Source: I&E

Over 125,000 people work in Troy every day, but only about 12,000 of those people reside in the City. The City must identify ways to capture more new residents from this critical group. Two factors contributing to this phenomenon could be the cost barrier and the availability of innovative housing styles. The predominant housing type in the City of Troy (73 percent) is a single-family detached home. Twenty-percent of units are multi-unit apartments with the remaining 7 percent being one-family attached homes or duplexes and townhomes.

While most people characterized as part of knowledge economy workforce benefit from rising incomes and a great deal of investment mobility, not all members of this valuable demographic have the means to buy into new housing. Many members of this workforce will be first time homebuyers.

With average median home values above \$300,000, many new home buyers, young families, and senior are priced out of the market. The increase in housing costs is attributable to new construction, the increased popularity of the City of Troy as a residential and business setting within the metropolitan Detroit community, and general rises in housing costs within southeast Michigan.

With new white-collar business also comes a need for additional service industry businesses, which require a high-quality workforce themselves. Many members of the service workforce are priced out of communities they work in and must commute into places like Troy.

There is a mismatch between the current housing stock in Troy and both the characteristics and desires of the population. There is increased preference for living in a walkable environment, near shopping and parks. The solution is found in building neither large single family homes nor traditional multiple family apartments.

The type of housing option that is lacking in Troy is the “Missing Middle.” Missing middle housing is composed of smaller single family homes, duplexes, fourplexes, lofts, townhouses, mid-scale apartments, and live-work units. Missing middle housing achieves moderate density that can be appealing to both younger and older populations. Missing middle housing offers a range of multi-unit or clustered housing types compatible in scale with single-family homes.

High quality entry-level housing does not necessarily mean subsidized or public housing. Housing becomes affordable when supply and demand for different housing types are balanced. For instance, if a majority of housing units in a community are small lot, small square footage, older homes, the few large, new homes with property may be all the more desirable, and vice versa. Conversely, if a community is exclusively single family detached homes and the only attached units are downtown luxury condominiums with 2,000 or more square feet, entry-level housing becomes scarce and the market for it becomes competitive.

In order to combat this in Troy, the City must encourage a variety of housing types to allow for a balanced housing stock. Smaller units for sale in newer developments allow for new homebuyers to invest in the City without a high cost barrier for entry.

Visitability Standards

The concept of “visitability” emerged in the 1980s and has been a growing trend nationwide. Some of the states and localities that have already incorporated visitability standards include Naperville, Bollingbrook, and Champagne, Illinois, Atlanta, Vermont, Texas, Kansas, and Arizona. The term refers to single-family housing designed to be lived in or visited by people with disabilities.

(<http://www.accessiblesociety.org/topics/housing/visitability>)

The Seven Principles of Universal Design

- 1: Equitable Use: The design is useful and marketable to people with diverse abilities.
- 2: Flexibility in Use: The design accommodates a wide range of individual preferences and abilities.
- 3: Simple and Intuitive Use: The design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level.
- 4: Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities.
- 5: Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions.
- 6: Low Physical Effort: The design can be used efficiently and comfortably and with minimum fatigue.
- 7: Size and Space for Approach and Use: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user’s body size, posture, or mobility.

When Places are Created, an Integrated Picture Looks Like This:



Creating an Aging in Places Framework for Troy

Aging in Places has three spheres:

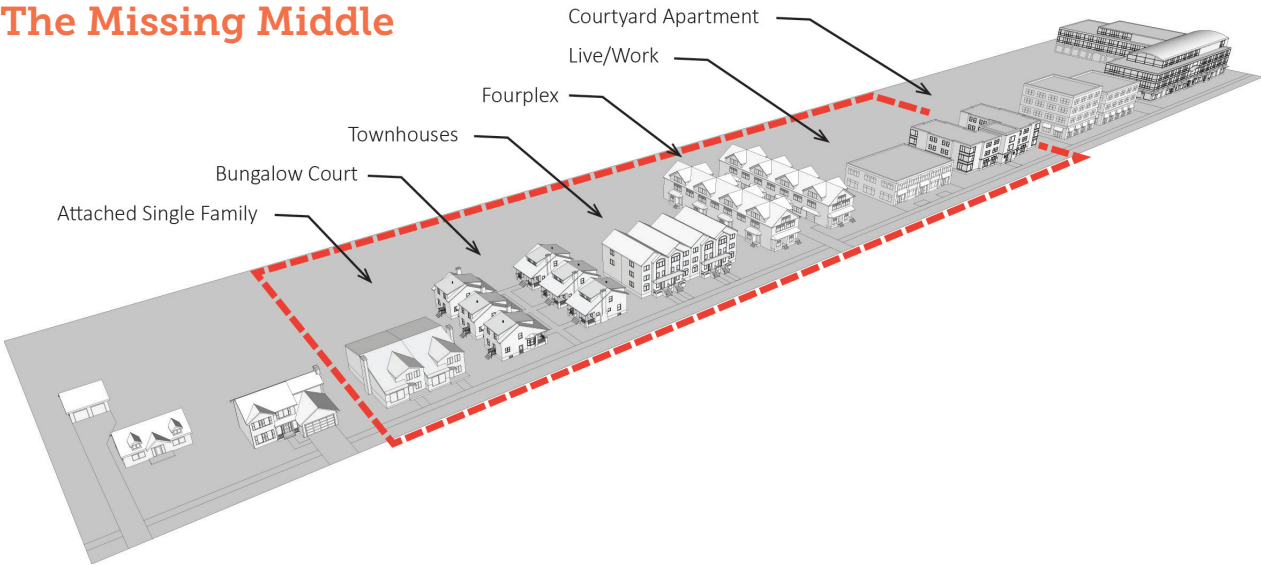




“Missing Middle” Housing can include attached single-family, fourplex, townhome, live-work, or apartment.



The Missing Middle



Characteristics of Missing Middle Housing

- Walkable context and sense of community - location within an area which is in walking distance of services and amenities is essential. Sense of community is created through shared community space, either within or in close proximity to the development.
- Transitional density - The Missing Middle Market offers an opportunity to create housing at densities which fall between traditional single family and multiple family. Introducing a mixture of design and styles can reduce the perception of density.
- Smaller, well designed units - Combined with smaller footprints, there is a strong emphasis on quality and efficient use of space.
- De-emphasizing parking - Providing too much parking on-site defeats many of the efficiencies to be achieved. Again, location in a walkable environment, preferably near transit, can reduce the need for on-street parking.

(Source: Dan Parolek, blog post, Apr. 3, 2012, Better Cities and Towns)



Targeted Locations in Troy for Missing Middle

- Neighborhood Nodes
- Maple Road
- Big Beaver, as part of mixed use development
- Rochester Road



## 9 – Land Patterns: City Design and Image

### Future Land Use Categories

- 88 // Single Family Residential
- 89 // Neighborhood Nodes
- 108 // High Density Residential
- 110 // Big Beaver Road
- 112 // Rochester Road
- 114 // Maple Road
- 116 // South John R Road
- 118 // Northfield
- 119 // Smart Zone
- 121 // Automall
- 123 // Transit Center
- 125 // 21st Century Industry
- 126 // Recreation and Open Space
- 126 // Public and Quasi-Public

**The term “Future Land Use” brings to mind a prescription for isolated, parcel-by-parcel land use classifications that permit the development of a very limited number of land uses.**

This model tends to perpetuate the separation of land uses, even when it is not always the best option. This type of traditional land use planning was brought about in an age when zoning was in its infancy and land was readily available. There was less concern about the conservation of natural resources, and economic factors took precedence. While frequently effective, this kind of planning has had unintended consequences.

As cities and regions have grown over the years, traditional land use plans have fostered sprawl in Southeast Michigan and impeded compact communities served by close proximity to jobs, schools, and community services. At risk has been quality of life, an area which is critical to remaining competitive in the 21st Century, as discussed in detail in many Chapters of this Plan.

Today, Troy and many other communities have begun looking for new ways to improve quality of life by creating vibrant, mixed-use areas where jobs, great schools, opportunities for social interaction, excellent services and shopping, and high-quality neighborhoods exist in close proximity. Techniques such as Planned Unit Development (PUD) have been developed for just this reason. PUDs demonstrate that different land uses are compatible and supportive of each another.

As a result, this Future Land Use Plan will expand on the concept of “villaging” established by Troy Vision 2020 and translate that concept into policies that manifest themselves on the Future Land Use Map. It will introduce the concept of the “Social Neighborhood” and describe how it is intended to interact with the “Economic Neighborhood.” It will describe the character and role of places like the Big Beaver Corridor and Oakland Mall, an alternative way to think about Maple and Rochester Roads, and the industrial areas of the City.



There are many traditional land use elements that should be maintained in Troy. Adherence to conventional approaches in all areas of the community will not allow the City to realize its vision. A shortfall of traditional land use planning is the primary focus on land use and the lack of attention toward physical form. The Troy Master Plan will incorporate city design and image as primary areas of focus. This Chapter will establish future land use categories on which the Plan is based and define the urban design characteristics of established categories.

Land Use and City Design

The Troy Future Land Use Map does not allocate specific uses on a parcel-by-parcel basis but represents a graphic illustration of the overall policies of this Plan and describes the intended character of the various areas of the City. The primary categories will be supported by urban design guidelines and, in certain cases, sub-area plans which provide additional detail with regard to the intended styles and patterns of development. The Future Land Use Plan of the City of Troy will be implemented through a variety of techniques. The most significant of these tools is the application of Zoning Classifications consistent with the Plan. It is important to note, however, that the Future Land Use Map is a long-range guide and is not a “Zoning Map” intended to indicate the geographic extent of all land use classifications or to enable all indicated uses to occur immediately. The Future Land Use Map is included on page 86. Neighborhoods are vital components of the City. Historically, neighborhoods provide societal, educational, recreational, and economic needs within a half-mile walking distance. The Vision 2020 strategy establishes the idea of fostering “villages” within the City. Residents want to enjoy a personal sense of place which is best found at the neighborhood scale. For Troy, the ingredients are in place for classic walkable neighborhoods. Major thoroughfares delineate square mile grid patterns. Elementary and Middle Schools are centrally located within many of the neighborhoods. The corners of most neighborhoods are developed with convenience retail and service businesses.

The Master Plan recognizes that current lifestyles warrant modifying the walkable neighborhood concept. Not every person will walk a half-mile to get to a store or school. Most people will walk five minutes, or about one quarter of a mile. Typical comparison shopping for clothing, hardware, and the like are measured by service radii related to drive times which are not realistically walkable. Furthermore, Michigan has cold winters that limit year-round walkability. Troy’s neighborhoods, now and in the foreseeable future, will serve its residents in two roles: the Social Neighborhood and the Economic Neighborhood. The Social and Economic Neighborhoods of the City are shown on this Neighborhoods Map on page 87. The circles surrounding the Neighborhood Nodes and the circles within the Social Neighborhoods are meant to demonstrate a rough service area for each neighborhood. While not necessarily precise, the circles are meant to demonstrate the basic relationship between the Social Neighborhood and the Economic Neighborhood. The circles are not meant to establish a formal land use category or policy in and of themselves, but rather to validate the planned uses at and around the Economic Nodes.



Elements of Great Streets and Neighborhoods

Great Streets:

- Accommodate many users with various modes of transportation.
- Connect smoothly with the rest of the street network.
- Encourage social interaction.
- Allow for safe and pleasant pedestrian activity.
- Have a unique sense of public space created through physical elements.
- Consider the scale and architecture of surrounding building infrastructure.
- Benefits from community involvement.
- Reflect the culture or history of the community.
- Complement the visual qualities of the community.
- Utilize green and sustainable practices.

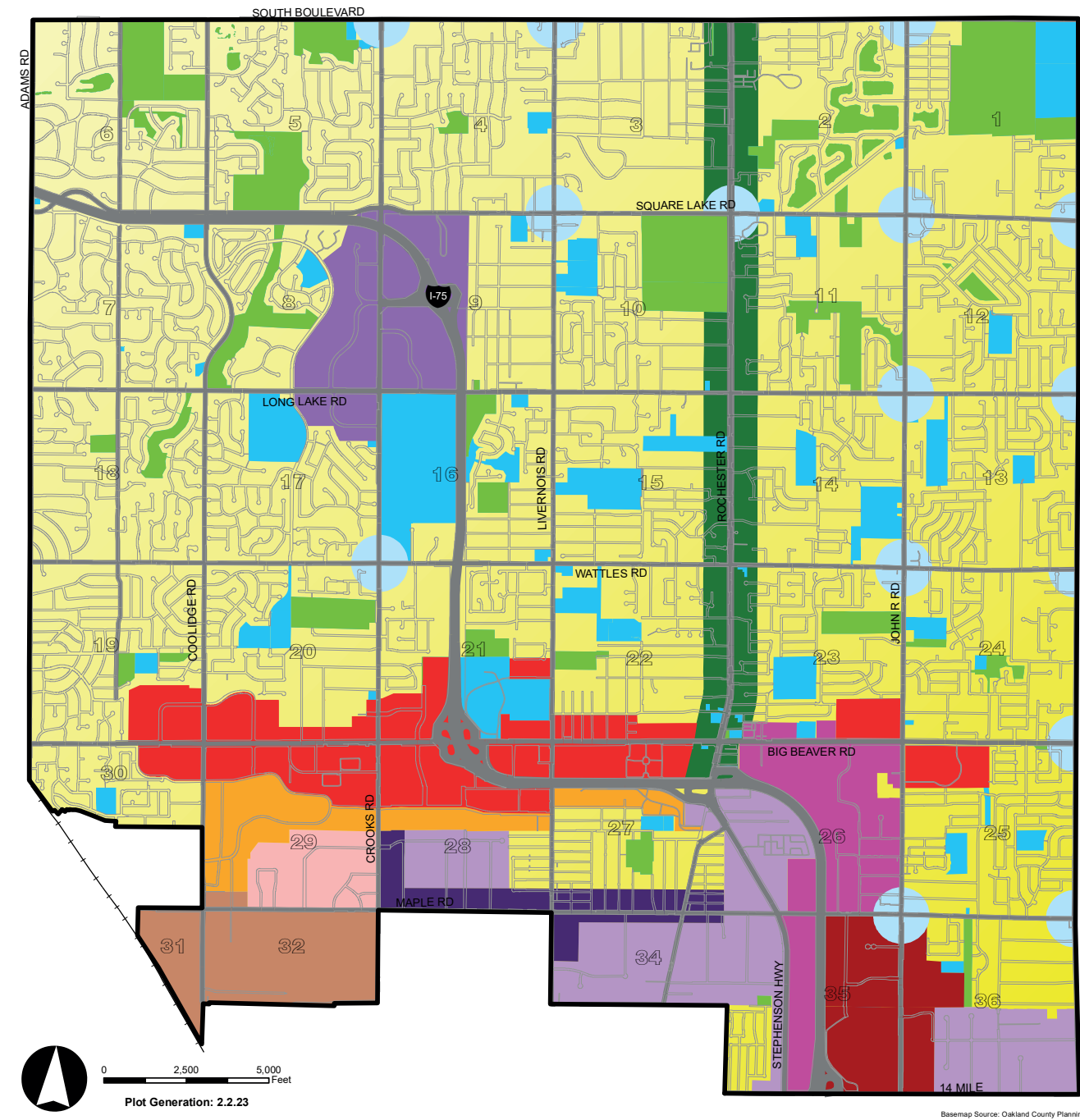
Great Neighborhoods:

- Consider the scale and architecture of the building infrastructure.
- Foster social interaction.
- Enable multiple modes of transportation safely and efficiently.
- Are safe.
- Are good stewards of the natural environment.
- Reflect the community’s character and have unique characteristics that provide a sense of place.
- Retain the community’s history.
- Promote and protect air quality and stewardship of natural resources.
- Protect or enhance the local environment and biodiversity.

Great Streets and Neighborhoods:

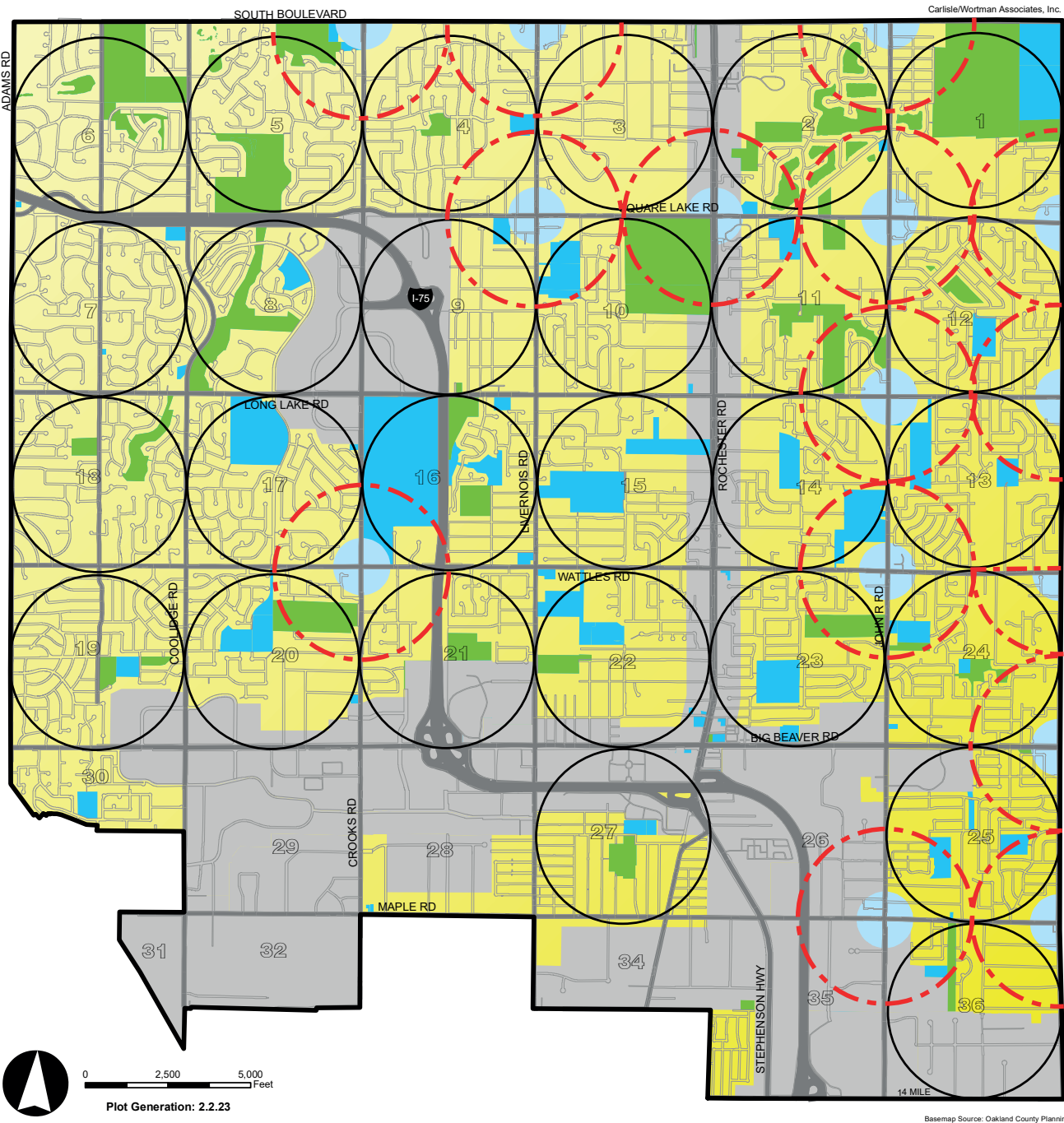
- Implement LEED standards in construction and neighborhood design.
- Have planted street trees.
- Reuse materials when possible.
- Make recycling convenient.
- Facilitate non-motorized and/or public transportation.





Future Land Use

- |                           |                           |
|---------------------------|---------------------------|
| Single Family Residential | The Smart Zone            |
| High Density Residential  | Automall                  |
| Neighborhood Nodes        | The Transit Center        |
| South John R. Road        | 21st Century Industrial   |
| Big Beaver Road           | Public and Quasi-Public   |
| Rochester Road            | Recreation and Open Space |
| Maple Road                | Section Number            |
| Northfield                |                           |

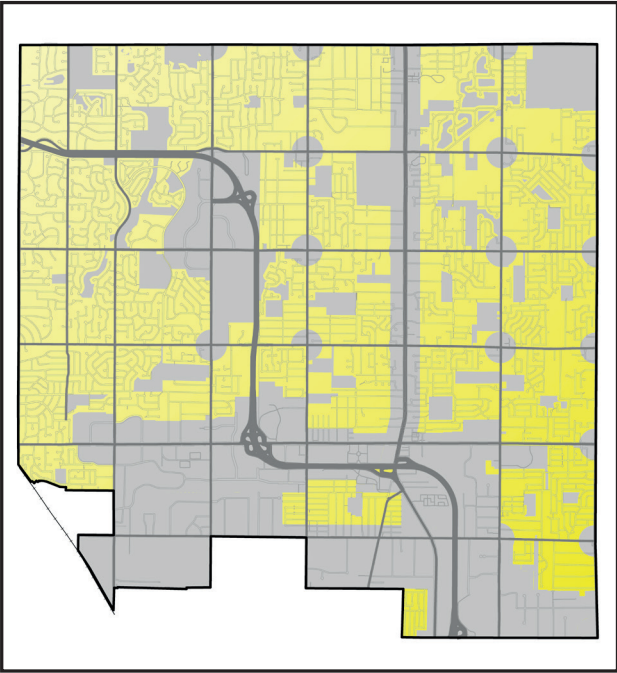


Neighborhoods

- |  |   |
|--|---|
| Social Neighborhood                                | Recreation and Open Space: Extraordinary Amenities              |
| Single Family Residential: The Social Neighborhood | Public and Quasi-Public: The Foundation of Troy's Neighborhoods |
| Economic Neighborhood                              | All Other Uses  |
| Neighborhood Nodes: The Economic Neighborhood      | Section Number  |



Single-Family Residential:  
The Social Neighborhood



- **Social units of the City.**
- **Walkable, safe places to live.**
- **Centered on schools or other community facilities.**
- **Linked with nearby services.**

The predominant land use in the City of Troy is single-family residential. This category is intended to preserve the existing quality residential neighborhoods of the City while recognizing the need for other uses that support the main function of residential areas. The single-family areas of the City are arranged around Social Neighborhoods. Social Neighborhoods are unique, self-contained areas bounded by Troy’s main thoroughfares. They are mostly single-family areas centered on community elements like schools or parks. Social Neighborhoods are described in more depth at the end of this Chapter and are illustrated by the solid circles shown on the Neighborhoods Map on page 87.

In the Single Family Residential areas of the City, non-residential uses will be considered only

when the use is clearly incidental to and ancillary to single-family residential, or when the use is a park, school, or other community-oriented public or quasi-public use.

The Social Neighborhoods of the City are bounded by the mile square grid pattern of Troy’s thoroughfares. These defined areas can provide the sense of place that Vision 2020 and this Master Plan are striving for. In most cases, they have a school as central focus. Schools continue to be a means of stimulating social interaction on many fronts; children establish their first friendships, parents meet other local parents, schools often host public events. Furthermore, the play areas at school provide readily accessible recreation opportunities. Many Social Neighborhoods in Troy have sidewalks promoting accessibility and exercise, and Troy schools have walking paths that are open to the public.

The ideal Social Neighborhood will exemplify the safer, more enjoyable walking environments envisioned by the “Safe Routes to School” program.

DESIGN CONCEPT

- Neighborhoods are approximately 15 minutes walking from end-to-end.
- A wide variety of residential architecture characterizes the various neighborhoods of the City. Non-residential architecture for schools and places of worship complement the residential setting.

BUILDING LOCATION

- Homes must be located in relation to the street in a manner that complements surrounding, established homes.

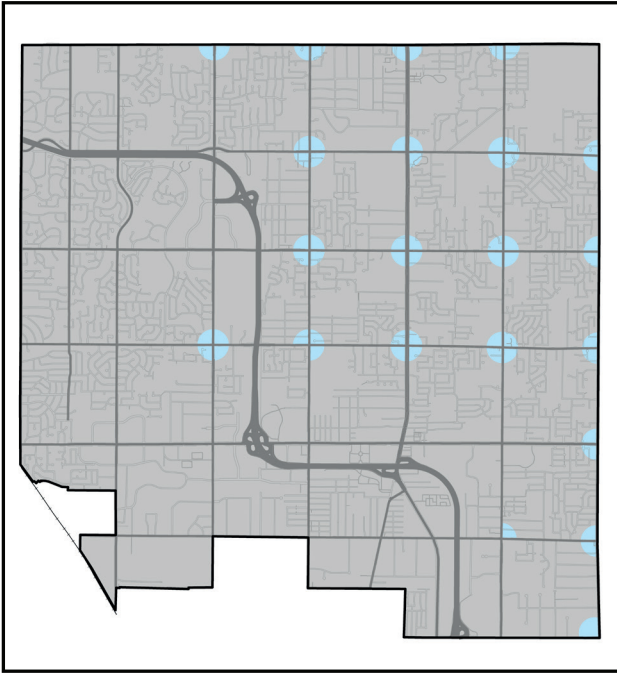
SITE DESIGN ATTRIBUTES

- Walks which link residences to destinations such as schools, libraries, abutting neighborhood commercial service areas, coffee shops, and other neighborhoods are critical.
- The neighborhoods must include improved perimeter walks that are functional and aesthetically pleasing. These exterior walks will directly connect to the activity nodes at major intersections and adjacent neighborhoods. Wide walks will be constructed which will incorporate landscaping and innovative stormwater detention

areas. These areas will be artistically developed, but functional landforms that carry visual interest. The perimeter walks have the ability to bring residents of adjacent neighborhoods together.

- Neighborhoods should be connected to one another to increase the area where residents can readily navigate on foot and expand the boundaries of social interaction. Crosswalks near the mid-mile areas of each grid will improve outside linkages.
- Lighting will not encroach on adjacent properties and will be used carefully to provide safety and security, and for accent illumination.

Neighborhood Nodes:  
The Economic Neighborhood



- **Located at intersections of the City’s main roads.**
- **Work together with Social Neighborhoods to create a more livable community.**
- **Mixed use.**
- **Provide neighborhood gathering places.**
- **Accommodate the daily needs of residents.**

Neighborhood Nodes are intended to be commercial and mixed-use centers situated at major intersections of Troy thoroughfares that serve as the center of the City’s Economic Neighborhoods. The nodes are specifically identified on pages 91 and 92. Economic Neighborhoods are destinations created as “go to” places that take on a social role, serving both as a place to meet basic needs of the community and as 21st Century village centers. The attributes of Economic Neighborhoods are described in more detail in the final section of this Chapter, and the design characteristics of Neighborhood Nodes will be described in depth in Chapter 10. The nodes may permit a mix of commercial, office, mixed use with a residential component, open space and pocket parks. The predominant uses in any Neighborhood Node development must be in keeping with the node characteristics described on pages 91 and 92. Industrial uses will not be permitted in the Neighborhood Nodes.

The Economic Neighborhoods of Troy also center on the square mile grid system. Unlike the social neighborhood, the Economic Neighborhoods are centered on major road intersections where commercial, office, and mixed use development occurs. When destinations are created, these nodes become a “go to” place and take on a social role. Each of these nodes serves up to four quadrants of the overlapping social neighborhoods and has the ability to bring residents of all abutting neighborhoods together. These nodes are intended to serve the neighborhoods they abut. Non-motorized connections should be considered when appropriate from nodes into neighborhoods and be accessible by bicycle or pedestrians.

These Economic Neighborhood nodes are destinations that draw people, visually distinguished from the balance of corridor strips through greater density and scale. Variation in building height will often be used to separate the node from the surrounding area but will not be so extreme as to visually overpower abutting neighborhoods. The separation of building heights at intersections with the “between” segments of corridors stimulates the visual concept of “pulsing” development and sets up a system of visual anchors.

Moderately dense residential environments within

mixed use developments may be encouraged within some nodes to provide steady activity for longer periods of the day. Residences may be mixed with offices on upper floors or be developed immediately adjacent to the commercial areas. Residential uses should be an accessory use in a node. Development within nodes on the same or adjacent parcels shall be seamlessly integrated with a focus on pedestrian connections. During the course of multiple planning processes, the Planning Commission closely analyzed the role, function, and location of neighborhood nodes throughout the City.

DESIGN CONCEPT

- These nodes are within a fifteen minute walking distance of residential neighborhoods to encourage alternative modes of transportation such as bicycle and pedestrian.
- Development may be denser and taller than the surrounding area, encouraging visual prominence to signal a gathering space.
- Nodes should be generally confined to a 1,000 foot radius from a major intersection.
- The nodes provide uses and spaces that attract and welcome neighborhood residents.
- First floor is intended to be commercial in nature.

SITE DESIGN ATTRIBUTES

- Buildings should be separated from the street by a landscaped greenbelt and a pedestrian walk.
- Primary parking areas will be located within rear or interior side yards.
- Off-street parking should be screened from the public right-of-way preferably by a hedge or row of shrubs. If landscaping is not possible, parking should be screened by a knee wall or low decorative fence.
- Walks will connect adjacent developments and the public sidewalks.
- Well-defined crosswalks with timed signalization will permit safe crossings.
- Provide a flexible use of space allowing modest outdoor gathering spaces. This may include plazas with seating, landscape and open space features, water features, public art, or a similar feature.

- Encourage a creative mix of open space and landscaping to provide an amenity to the residents, visual relief to passersbys, and a buffer to adjacent properties.

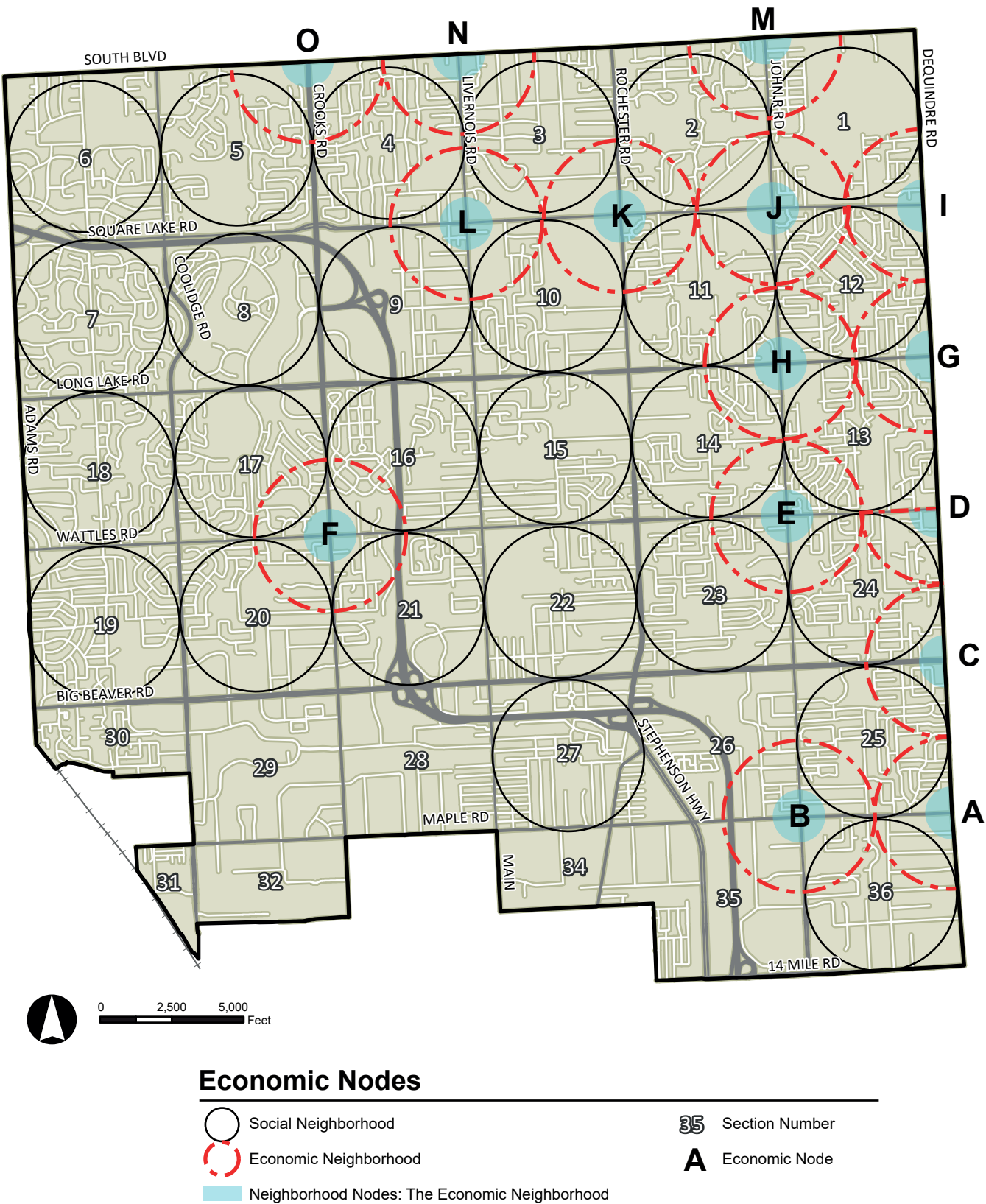
BUILDING DESIGN ATTRIBUTES

- One-story buildings should have a minimum exterior height of sixteen feet. In multiple story buildings, the ground level story should have a minimum height of twelve feet from finished floor to finished ceiling.
- Three stories may be permitted for mixed use development with the first floor being a commercial use and two upper stories of residential.
- Multiple story buildings should be placed along major thoroughfare and not adjacent to residential uses.
- Facades facing major thoroughfares will be treated as fronts and should have a minimum of half transparent glass and special architectural design treatments.
- Fenestration (the arrangement of windows and doors) should be highlighted through the use of awnings, overhangs, or trim detailing.
- Lighting will be carefully managed so as not to encroach on adjacent residential areas. One-story buildings should have a minimum exterior height of sixteen feet.
- A ground level story should have a minimum height of twelve feet from finished floor to finished ceiling.

	Node/Intersection	Primary Uses and Character
A	Maple Road and Dequindre Road	<p>The unique neighborhood node is home to a collection of uses serving the local Polish population. Uses complementary to the cultural center and bank which help this area serve as a gathering place and focus area for the neighborhood could include service uses, or specialty retail and dining. Infill commercial development within existing underutilized parking lots should be explored. However, infill or redevelopment of existing commercial properties should provide an appropriate buffer and transition to the adjacent residential uses.</p> <p>There may be opportunities for limited infill residential development in the northwest corner of the node. The residential should be of a scale and massing to complement the existing low-scale nature of the area.</p>
B	John R. Road and Maple Road	<p>The node should expand to all four corners. The City should be open to redevelopment of all parcels in the node to best serve the area with a predominantly commercial mix of uses catering to the immediate residential and employment areas.</p>
C	Big Beaver Road and Dequindre Road	<p>Any redevelopment in this area should be designed to create a very noticeable “gateway” into Troy. Redevelopment south of Big Beaver should focus on commercial uses that serve the adjacent neighborhoods but also provide an appropriate transition and buffer to the adjacent residential neighborhood. The City should encourage continued investment in the commercial property on the northwest corner</p>
D	Wattles Road and Dequindre Road	<p>The north side of the node should be removed and reclassified to residential use which may include single-family, cluster, low-scaled multiple family, or assisted living to provide creative housing options in the area. South side should continue to focus on office uses. However, limited commercial and service uses designed to complement the main focus of the area as an office node may also be permissible.</p>
E	John R Road and Wattles Road	<p>This node should focus on mixed-use, service, or commercial uses to serve the immediate neighborhoods. Any development or redevelopment shall be of a scale and massing to complement the existing low scale nature of the area. Low scale multiple family may be permissible if it models the scale and orientation of the multiple family neighborhood at the northeast corner of the node.</p>
F	Crooks Road and Wattles Road	<p>The southeast corner of this node satisfies the commercial, service and multi-family residential uses to serve the immediate neighborhoods. Any development or redevelopment of the northwest corner shall be of a scale and massing to complement the existing low-scale nature of the area and protect the existing natural resources including Lane Drain. Additional commercial development is not desirable for this corner. Low-scale single family and low-scale multiple family residential is encouraged if it models the scale and orientation of the multiple family neighborhood at the northeast corner of the node E. Development in the northwest corner shall ensure appropriate transition to adjacent properties via increased setbacks, reduced heights, and enhanced landscape buffers.</p> <p>Due to existing traffic patterns and limited access along both Crooks and Wattles, incorporation of a park use, or low intensity and scale residential, including the expansion of the Stonehaven subdivision into the southwest corner of this node, utilizing the already existing entrances from Crooks and Wattles would be appropriate. If a continuation of Stonehaven is not possible, any future development of this corner shall limit access to Crooks and Wattles, to not increase existing traffic conflicts. The City may consider rezoning the southwest corner to a one-family attached or single-family zoning designation. The City also recognizes that expansion of the White Chapel Cemetery or the continuation of single-residential uses in the northeast corner of this node would also be appropriate. The City may consider rezoning the northeast corner to a single-family zoning designation.</p>
G	Dequindre Road and Long Lake Road	<p>Predominantly commercial, catering to both local needs and regional traffic, new development and redevelopment should be mostly commercial, identifying opportunities for small office and mixed-use. Large undeveloped parcels to the north and south of Long Lake Road should be low scale multiple family, which provides an appropriate transition and buffer to adjacent residential neighborhoods.</p> <p>Inter-pedestrian connections and pedestrian access to the adjoining area and effective screening should be primary areas of focus during the site design process.</p>



	Node/Intersection	Primary Uses and Character
H	John R Road and Long Lake Road	<p>New development and redevelopments should either be compact, walkable mixed-use development with a combination of uses serving the immediate surroundings or low-scale multiple family, such as duplexes, triplexes, or senior housing which provide an appropriate transition and buffer to adjacent residential neighborhoods.</p> <p>Integrated compact development which would allow a user to park once and meet several daily needs would be a positive contribution to the node.</p> <p>Because the node has a significant amount of open space, preservation of green space shall be incorporated into any development or redevelopment within the node.</p>
I	Dequindre Road and Square Lake Road	<p>Redevelopment should include an integrated compact residential component, live/work units, or small office. Service oriented use development in combination with new residential development would provide a unique setting here. New residential can include low scale multiple family, such as duplexes or triplexes, which provides an appropriate transition and buffer to adjacent residential neighborhoods</p>
J	John R Road and Square Lake Road	<p>This node must be careful to respect this important natural resource. New development or redevelopment should complement the churches and limited commercial uses in the area and should incorporate robust landscaping, natural buffers, and conscientious site design to enhance the known natural features in the area.</p>
K	Rochester Road and Square Lake Road	<p>Existing commercial uses should continue to provide a foundation for this neighborhood node. As tenants change, new service uses, retail, and limited office uses should provide service to the immediate residential neighborhood</p>
L	Livernois Road and Square Lake Road	<p>Development in this area historically known as Troy Corners should be especially considerate of the historic past of the area and the existing historic housing and architectural design. Any new development should integrate various types of community gathering spaces, such as parks, public art, historical elements, plazas, community centers, and recreational facilities into the design. Adaptive reuse of existing historic structures should be considered before demolition or relocation of these resources. This node will have low intensity uses of a non-automotive oriented nature that creates a central neighborhood village, that is walkable, accessible, and compliments the area’s historic past. Any automotive oriented use shall not be considered in this node. Low scale multiple family residential may be permissible if it models the scale and orientation of the multiple family neighborhood at the northeast corner of node E.</p>
M	John R Road and South Boulevard	<p>Small local commercial uses and office uses should be the focus of this node to complement the large-scale office development across the City’s boundary to the north, within the City of Rochester Hills.</p> <p>The southwest corner provides a significant opportunity for a mixed-use development that provides a low-scale multiple family development with neighborhood-oriented retail on the first floor.</p> <p>Any new development should incorporate distinctive elements to create a “gateway” feeling into Troy. Distinctive elements include gateway signage, streetscape, and unique architecture.</p>
N	Livernois Road and South Boulevard	<p>Limited local commercial and housing for seniors should remain the primary focus of this neighborhood node. Any new development should incorporate distinctive elements to create a “gateway” feeling into Troy. Distinctive elements include gateway signage, streetscape, and unique architecture.</p>
O	Crooks Road and South Boulevard	<p>Area should remain predominantly commercial, catering to local needs of the surrounding neighborhoods. New development and redevelopment should be either be mixed use or commercial that serves to further enhance this successful commercial area. Any new development should incorporate distinctive elements to create a “gateway” feeling into Troy. Distinctive elements include gateway signage, streetscape, and unique architecture.</p>





# DESIGN ATTRIBUTES / GUIDELINES

1. Multiple-story mixed-use with first floor retail serving the adjacent neighborhood.

2. Low-scale multiple-family development serving as a transition from commercial uses along the corridor to adjacent residential uses.

3. Infill development replaces underutilized parking lots.

4. Parking is conveniently provided behind buildings and screened with landscaping. Pedestrian elements are also provided.

5. Multiple-row landscape buffer provides visual buffer between land uses.

6. Access and circulation is improved by creating shared-access points, properly spacing driveways, and creating delineations between pedestrian and vehicular zones.

7. Properly designed sidewalks and crosswalks of the appropriate width, with street trees, street furniture, and a defined semi-public edge.

8. A defined "street wall" is formed by buildings fronting on a street with consistent setbacks. Placement, scale, and design quality of the street wall determine the character of the streetscape.

Commercial uses that directly front on major mile road

Low-scale multiple-family developments serving as a transition between commercial and adjacent single-family residential

Single-family residential







# RESIDENTIAL

Three levels of intensity as you move away from the main corridor:

- 1. Commercial uses that directly front on major mile road
- 2. Low-scale multiple-family developments serve as a transition between commercial and adjacent single-family residential
- 3. Single-family residential

Design elements such as:

- A. Curvilinear streets
- B. Shared driveways
- C. Sideloaded and recessed garages increase visual appeal by reducing the impact of garage doors and softening the view from the road with greenscape

Node-wide design elements for residential:

- D. Direct pedestrian connections from residential to commercial uses and public sidewalks along the main corridor
- E. Multiple-row landscape edges provide buffer between land uses





# JOHN R & E LONG LAKE ROADS

The redesigned intersection includes a variety of elements which blend in to the surrounding neighborhood, including:

- 1. Duplexes
- 2. Two- to three-story mixed-use commercial and residential

- 3. A 1.2-acre neighborhood park
- 4. Curvilinear entry drive connecting Orchard Crest and Wilmet Drives
- 5. Two- to three-story townhomes along John R with rear facing garages
- 6. Reconfigured retail including existing pharmacy and new small scale retail tenants.

Node-wide design elements for residential:

- Direct pedestrian connections from residential to commercial uses and public sidewalks along the main corridor
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— FEMA Regulated Floodway (approximate)  
— Proposed park boundary





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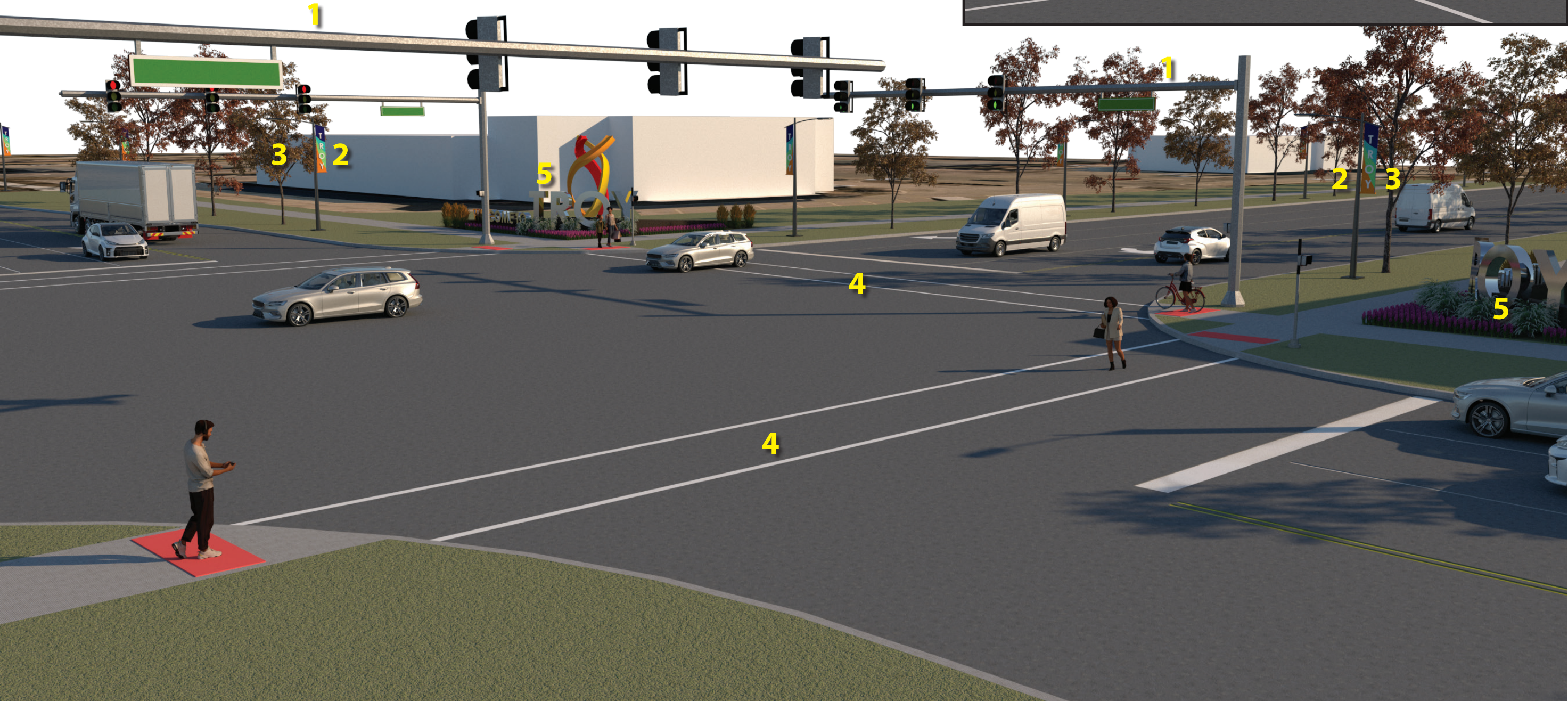
# CITY GATEWAY DESIGN ATTRIBUTES / GUIDELINES

1. Upgraded traffic signal and street sign poles.

2. Street lights with pole banners.

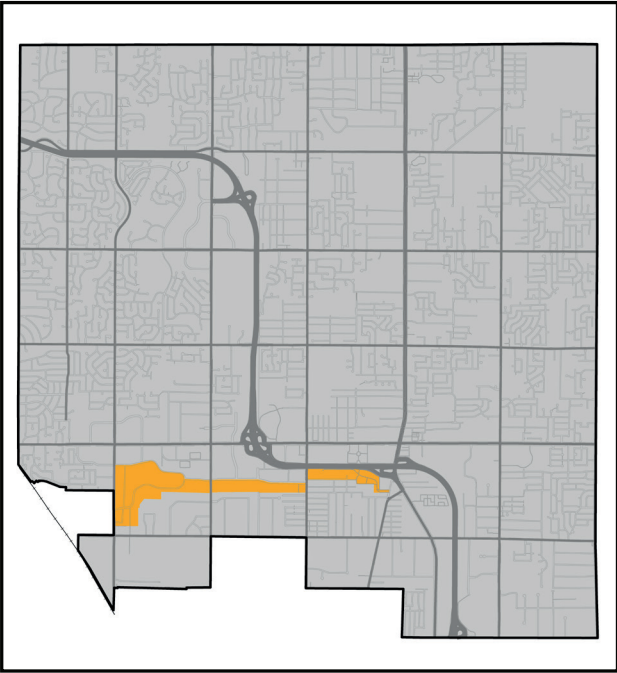
3. Street trees.

4. Marked crosswalks with pedestrian activated signals, curb cuts, and textured warning strips to meet ADA guidelines.
5. “Welcome to Troy” signage with landscaping. Additional art or sculptural elements can be included at key intersections.





High Density Residential:  
Housing Choice



- In close proximity to the most high-intensity nonresidential areas of the City.
- Diversify the City’s housing stock.
- Excellent regional access and multi-modal access.
- Complementary to Big Beaver Road.

The High Density Residential classification primarily includes multiple-family residential development made up of housing having three or more dwelling units per structure. This classification may have some limited mixed-use elements, especially those non-residential uses primarily geared towards day-to-day service needs of the resident population, although it is intended primarily to serve as the most dense residential development permitted by the City. The primary use in any development within this area must be residential.

The High-Density Residential classification is not the only area in the City in which high-density residential development may be appropriate. This category is, however, specifically identified for areas where high-density residential should be the primary, or exclusive land use. Other areas of the community, where mixed-use development is called for, may

also integrate high-density residential as part of a mixed-use development. High-density residential development may also be appropriate along Maple Road in redevelopment projects or new development projects with a focus on open-floorplan, loft-style housing in new or renovated buildings.

The High-Density Residential classification may also include some redevelopment areas which may be better used for uses that support high-density residential. On a limited basis, small scale commercial development designed to cater to the day-to-day needs of the residents may be appropriate. The City should continually monitor the status of this classification to ensure that it remains viable, given the growing trend of integrating high-density residential projects in mixed-use settings.



Urban townhouses in Ann Arbor, Michigan; Photo by CWA

DESIGN CONCEPT

- The high-density residential district is integrated with surrounding land uses and not simply considered a transitional use between traditionally intense and less-intense land uses.
- These areas will have a path system for access, exercise, and leisurely strolls, designed to link residential communities, provide more land use efficiency with open space, and offer access to neighborhood shopping and other services.
- Buildings frame the street network enclosing outdoor spaces.

SITE DESIGN ATTRIBUTES

- Front greenbelts with large street trees, decorative trees, and low landscaping soften the environment between the street and building.
- Creative storm water detention should be designed as a focal point, including the use of appropriate landscaping and sitting areas.
- A path system that connects the building entries, parks, public sidewalk system, and adjacent developments should be included in new development.
- Sites will be well-appointed with large trees and landscaping.

ARCHITECTURAL ATTRIBUTES

- Buildings will be between two and four stories.
- Front porches and tenant entries will be clearly defined through the use of canopies, overhangs, façade treatments, or landscaping.
- Fenestration will be accentuated with architectural trim work or decorative brick or stonework.



Urban townhouses in Ann Arbor, Michigan; Photo by CWA



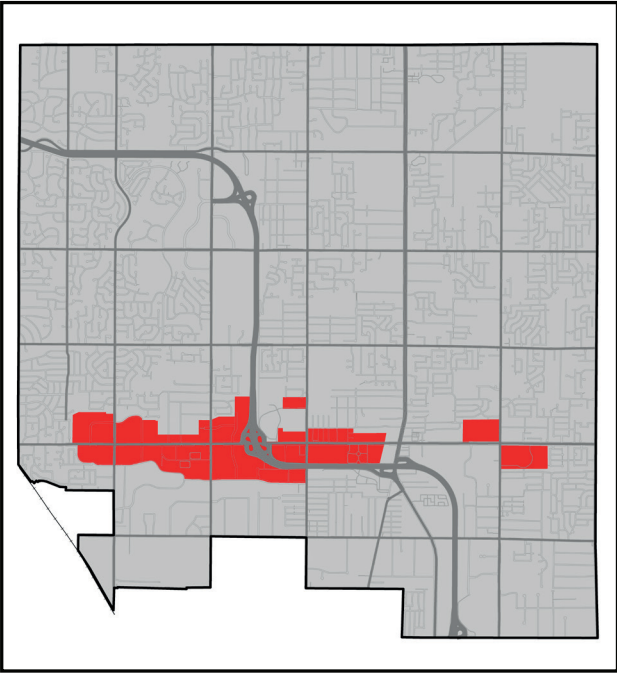
Internal public spaces in a high-density residential development



Innovative facade and architecture in a high-density setting



Big Beaver Road:  
A World Class Boulevard



- Home to large, landmark projects and mixed-use regional destinations.
- Central gathering area of the community.
- A collection of international corporations, local companies, and establishments which complement these high-visibility uses.

The Big Beaver Road corridor is responsible for the first impression many people have throughout Michigan when they think of the City of Troy. The high-rise buildings, Somerset Collection, and its immediate proximity to I-75 are frequently the main elements visitors remember about the Corridor and the City. In order to remain competitive and continue to be a leader in economic development in Southeast Michigan, Troy must plan for this Corridor to evolve in light of a changing economy. In that spirit, the City adopted the key concepts of the Big Beaver Corridor Study in 2006:

- Gateways, Districts, and Transitions
- Trees and Landscape as Ceilings and Walls
- Walking Becomes Entertainment - Much to Observe & Engage In

- Mixing the Uses Turns on the Lights - Energetic Dynamic of Mixed Uses with a Focus on Residential
- The Automobile & Parking are No Longer #1
- Civic Art as the Wise Sage of the Boulevard

The uses and character of this future land use category are driven by the recommendations of the Big Beaver Corridor Study and subsequent efforts of the Planning Commission to create new zoning techniques to implement those recommendations.

This Study provided a comprehensive analysis of the existing and potential characteristics of this important area. The planned future land uses in the Big Beaver Corridor are in large part considered mixed-use to allow for a wave of new residential development and the redevelopment of individual sites to make a more meaningful contribution to the quality of life of the City. The main difference between the various mixed-use districts planned in the Study is building height. The intended characteristics of the various districts are also very different, and are the topic of in-depth analysis in the Study. Some important recommendations of that Study are listed below.

- Moving toward the creation of distinct physical districts by building from lot line to lot line along the right-of-way rather than continuing to be a collection of isolated towers.
- Becoming flexible with land use relationships. The use of vertically integrated mixed-use commercial, office, and residential towers should be promoted. The use of prominent ground floor retail, restaurants, and cafes allows visual interest and activity for visitors and residents.
- Contain parking in structures that are shared by surrounding developments. Do not allow off-street parking to be visible from major thoroughfares.
- Landscape Big Beaver and intersecting thoroughfares with rows of mature trees.

DESIGN CONCEPT

- This will be a vibrant high-rise business and residential district.



Concept Sketch from the Big Beaver Corridor Study; Birchler Arroyo Associates, Inc.

- Pedestrian use will be promoted through massive landscaping, wide sidewalks, outdoor cafes, and public art.
- The Big Beaver Corridor Study and Big Beaver Development Code provide for a specific land development pattern.
- Architectural design must create an interesting visual experience for both sidewalk users at close range and for those viewing the skyline from a distance.

SITE DESIGN ATTRIBUTES

- Parking should be located in rear yards.
- Development should include intense street tree planting along Big Beaver.
- Cafes, plazas, parks, and similar amenities to draw pedestrians will be encouraged.
- Buildings will frame the street network by building to the front and side property lines. Exceptions for cafes, plazas, and access roads may be permitted.
- Appropriate transition with abutting single family residential neighborhoods.

BUILDING DESIGN ATTRIBUTES

- Buildings should rise in height toward Crooks Road in the east-west direction.
- Buildings should rise in height toward Big Beaver in the north-south direction.
- Ground level stories should be a minimum of twelve feet in height with large expanses of transparent glass.



Big Beaver Corridor Study; Birchler Arroyo Associates, Inc.

- Fenestration at the ground level should be highlighted through the use of awnings, overhangs, or trim detailing, and building caps or roofs should provide a visually interesting skyline.



## Rochester Road: Green Corridor



- Regional model for a green corridor
- A strong focus on access management
- Heightened emphasis on strong stormwater management techniques
- Retail catering to regional traffic
- Innovative site design techniques applied through PUD use to allow for redevelopment for shallow lots

Rochester Road carries high volumes of traffic causing backups at intersections. The abutting development pattern from Big Beaver Road north to Long Lake Road is a continuous row of highway-oriented commercial uses. North of Long Lake Road, the land use pattern evolves, becoming a mix of commercial and office near the intersections and older single-family homes and multiple-family complexes in between.

If Rochester Road is to have a defined role and pleasing character in the City, it must undergo a significant transformation over time. Ultimately, the Rochester Road Corridor will become a regional showcase for effective stormwater management and enhancement of the natural

environment, while encouraging a combination of high-quality land uses. Effective landscaping focused on native plantings and improved land use and access management along Rochester will create a green corridor that provides a high level of service for motorists and which provides an effective natural buffer between high traffic volumes and people visiting adjacent properties. The creation of this green corridor would occur primarily in the right-of-way along road frontages and in the median of a future boulevard.

While the emphasis on innovative stormwater management is specifically called on for the Rochester Road Corridor, new low-impact techniques are to be encouraged elsewhere throughout the City of Troy. As noted in Chapter 7, innovative stormwater management is a priority for the community. Rochester Road will play an important role in this City-wide initiative by proving a regional showcase for such techniques.

New construction along the corridor may include detention and retention basins that work together from site-to-site with other features to create a continuous, linear landscape feature. By connecting properties, the basins create visual relief from traffic. Low impact development methods will be used throughout the corridor to filter stormwater runoff. Rochester Road will also be characterized by effective new signage, high-quality lighting, and effective, complementary site and architectural design.

Uses along Rochester Road will include a variety of mixed uses, establishing a pattern where the most intense mixed-use or non-residential development will occur on the parcels that are adjacent to the main intersections. Lower-impact uses, such as small scale retail or residential, should be encouraged along the corridor between higher intense uses at the intersection and adjacent neighborhoods.

## DESIGN CONCEPT

- Commercial strip development should be limited and gradually replaced with mixed-use.
- Commercial development should be encouraged to expand in the form of dense multi-story mixed-use concentrations at major

intersections. Concentrations are limited to within 1,000 feet of the intersection.

- The areas between nodes should develop as lower-rise office and multiple-family. The height differences encourage a visual “pulse.”

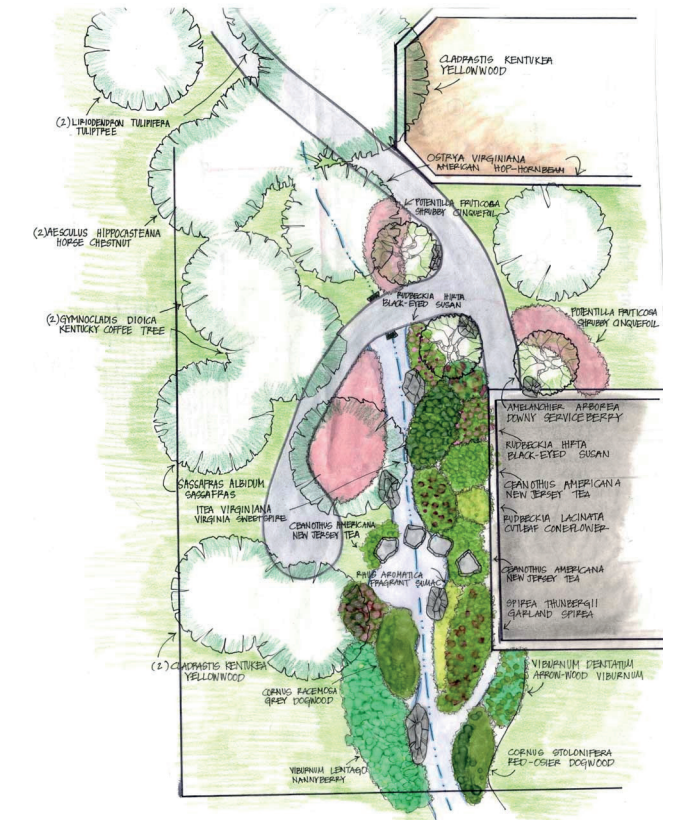
## SITE DESIGN ATTRIBUTES

- Parking areas should be within rear yards or interior parts of the site. A single row of parking may be appropriate in front and exterior side yards in limited applications.
- Parking will connect to adjacent sites, eventually linking several developments with a rear access lane. The number of drives connecting to Rochester Road should be minimized.
- Defined internal walks will connect the businesses and buildings together.
- Internal walks will be connected to the public sidewalk system.
- Buildings will be separated from street traffic by a greenbelt or sculptural storm water detention basin.
- Height and size of signage will be reduced to contain visual clutter.
- Appropriate transition with abutting single family residential neighborhoods

## BUILDING DESIGN ATTRIBUTES

- The height between nodes should not exceed two stories.
- Ground level stories should be, at a minimum, twelve feet in height, with large expanses of transparent glass at intersection nodes.
- Fenestration for the ground level of buildings in nodes will be accentuated through the use of awnings, overhangs, or trim detailing.

Additional goals, policies, and strategies for Rochester Road are set forth in the Rochester Road Special Area Plan on Page 113.



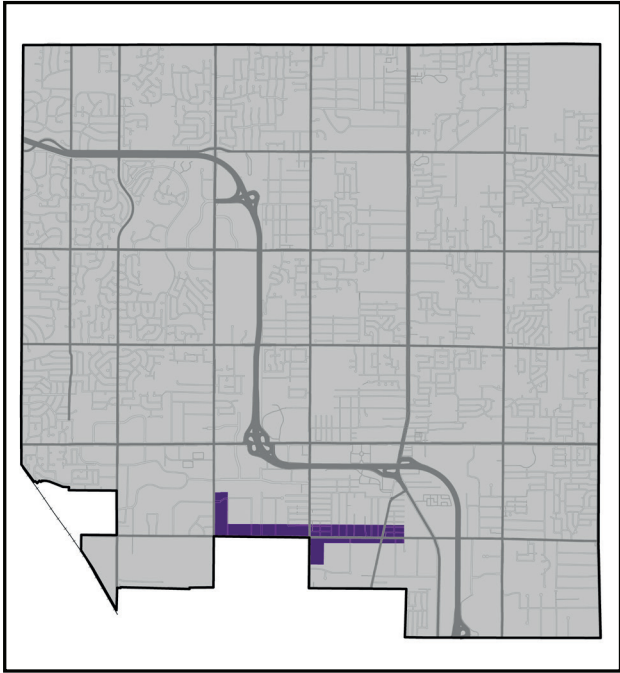
## Design for a Rain Garden in Troy; City of Troy



**Lovell Pond in Troy; an example of an innovative, urban stormwater basin;  
Photo by Jennifer Lawson**



Maple Road:  
Mixed-Use



- **Predominantly industrial area but with limited opportunities for transitional or service-oriented uses that complement the primary adjacent industrial areas**
- **Potential for urban-style open floorplan housing in redeveloping areas**
- **Focus on the quality of access management throughout Maple Road**

The Maple Road Corridor provides an opportunity for new, emerging land use types in the City of Troy. Limited development of industrial-style three to four story buildings with open-floorplan housing, developed in a transit-oriented setting, for instance, may be appropriate in some places. This type of development would help diversify the City’s housing stock and provide a more effective

buffer between the Corridor and the industrial uses located in the immediate area. Uses designed to support the workforce in the area may also be appropriate. Local commercial or small, mixed-use developments having a combination of such uses could greatly improve the character and image of this area. Such amenities would also help smaller, local industrial uses to recruit the best workforce.

DESIGN CONCEPT

- This area will be a high-quality, eclectic mix of land uses and architectural types.
- Emphasis should be placed less on land use and more on building and site design. Design should not reflect traditional forms of “colonial” architecture.
- Development should be linked together visually and functionally throughout the corridor.

SITE DESIGN ATTRIBUTES

- Uniform “build-to” lines guiding a uniform containment of open space within the right-of-way should be established.
- Primary parking areas should be within rear or interior side yards.
- Landscape design creativity will be encouraged by setting general parameters relating to environmental sustainability such as limiting stormwater runoff.
- Larger sites with deep set buildings should redevelop with buildings near the Maple Road right-of-way line.
- Mass transit stops should be accommodated.

BUILDING DESIGN ATTRIBUTES

- Maximum height should not exceed four stories and limited to two stories for properties abutting single-family residential neighborhoods.
- Design creativity with regard to materials will be encouraged, although low quality materials or building designs that inhibit activity on the corridor will not be permitted.
- Primary parking areas within rear or interior side yards.
- Landscape design creativity should be encouraged by setting broad general parameters relating to environmental sustainability such as limiting stormwater runoff or reusing gray water for irrigation.

Additional goals, policies, and strategies for Maple Road are set forth in the Maple Road Special Area Plan.



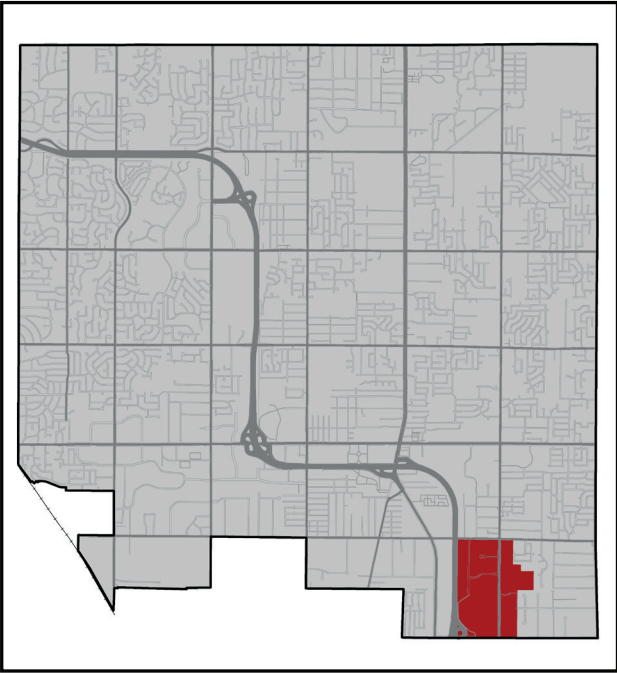
Maple Road may provide a unique venue to expand opportunities for public art placement and for area artists to work and live.



New loft style, open floorplan residential development in Nashville



South John R Road:  
Connections



- Provides a significant entryway into the City
- Walkable, mixed-use development and redevelopment
- Provides a central focus for the southeast area of the City
- Enhanced focus on Transit Oriented Design

The South John R Road future land use designation is reserved for Oakland Mall and the immediate surrounding area along John R Road. This classification is intended to allow for the continued operation and long term improvement to the area, focused on the provision of “comparison” commercial products. This area serves a large region, beyond the City of Troy, and blends with the area to the south, outside the City’s boundaries.

However, the City recognizes that the nature of traditional retail is changing throughout the United States and that many conventional enclosed shopping centers are being

redeveloped into a variety of new uses. Mixed-use developments with office and residential, and walkable outdoor shopping centers are two examples of uses that have replaced former enclosed shopping centers. The current configuration of Oakland Mall and its surrounding area may no longer be competitive in the near future and may necessitate additional study for this area.

Redevelopment in this area should carefully consider the opportunity for restoration of natural features. Existing underground drains, for instance, should be analyzed for potential to be integrated within redevelopment projects, native landscaping and innovative stormwater management techniques should be considered in the area. The resurrection of urban waterways may provide an opportunity to introduce a valuable asset and differentiating feature for redevelopment projects in the South John R area.

Arcadia Creek Festival Place in Downtown Kalamazoo, Michigan, offers an excellent case study of the renovation of an historic urban stream to create a new, vibrant urban gathering place.

**DESIGN CONCEPT**

- This area will be a mix of retail, office, and higher-density uses in multi-story buildings in an urban village.
- Building height will increase toward the center of the site.
- Height should not compete with the Big Beaver area.
- This area of opportunity will transform to a district of linked developments accentuated by significant landscaping and open space to off-set the increased height and density.
- Workforce housing, a part of the City’s economic strategy, can be incorporated here.

SITE DESIGN ATTRIBUTES

- Buildings setback from the major road right-of-way should have a minimum distance that permits a greenbelt, single row of parking, and wide sidewalk.
- Primary parking areas should be within rear or interior side yards, separated into modest-sized components for better storm water management and landscaping
- Internal walk system connects businesses, adjacent developments, and the public sidewalks. Walks designed with trees, landscaping, water features, or similar features to enhance the experience.
- Stormwater detention should be captured in pedestrian friendly landscaped designs.
- Mass transit stops should be accommodated.

BUILDING DESIGN ATTRIBUTES

- A maximum of three stories or equivalent height in feet should be allowed at the perimeter of a site.
- A minimum of three stories and maximum of six stories or equivalent height in feet should be allowed near the center. One-story retail buildings should have a minimum height of twenty four feet.
- Ground level stories should have a minimum height of twelve feet from finished floor to finished ceiling.
- Facades should be over half transparent glass.
- Entries must be well-defined.
- Fenestration should be highlighted through the use of awnings, overhangs, or trim detailing.



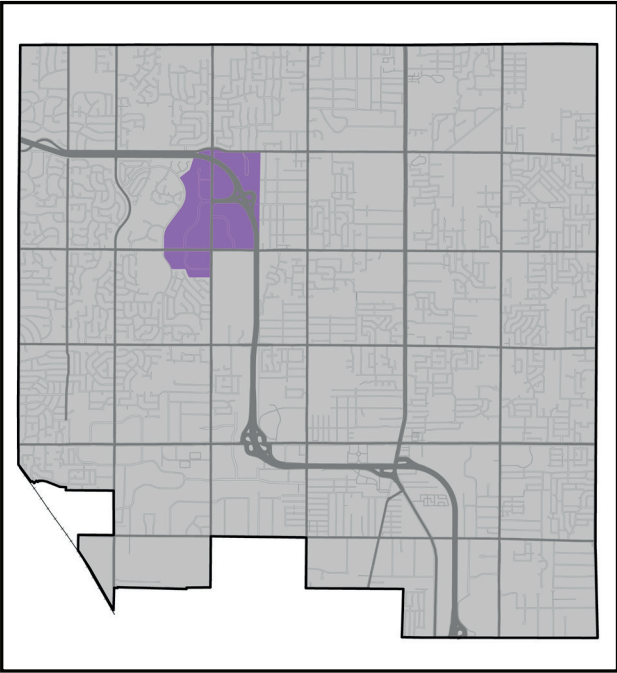
Walkable, mixed-use development with integrated parking



The San Antonio Riverwalk



Northfield:  
A Focus On Innovation



- A complement to the Smart Zone but with an even broader mix of uses
- Outlot development to provide services to workers in the area
- Consistent site design throughout the District to create a unique identity

The Master Plan identifies two primary districts for the encouragement of 21st Century, Knowledge Economy business development. The Smart Zone is situated along Big Beaver Road and an area to the south, along Interstate 75. Northfield, the second office and research area, is similar to the Smart Zone in its makeup but will reflect its own unique style of development.

In terms of use, the emphasis in Northfield will be placed on office and planned research-office uses. Other uses primarily relating to the support of workers and activities in Northfield, such as supporting commercial uses, will also be considered on a limited basis. Residential uses, traditional industrial uses, and regional

commercial uses will be encouraged within mixed-use developments only when they are designed to support the primary function of the Northfield area.

Medical, professional, general, service-related office uses, and research - based uses, especially those planned in a campus or park-like setting, will be the primary focus in Northfield. These uses are intended to be enclosed within a building, and in the case of research and development uses, external effects are not to be experienced beyond their property boundaries.

DESIGN CONCEPT

- The contemporary architectural image should be continued.
- Infill construction will provide a physical link between semi-isolated towers.
- Demarcated crosswalks, an internal and external walk system, and plazas/pocket parks will support physical linkages.
- Higher-density housing of twenty units per acre will be encouraged at the immediate periphery.
- Streets will be framed and the public right-of-way space will be delineated.

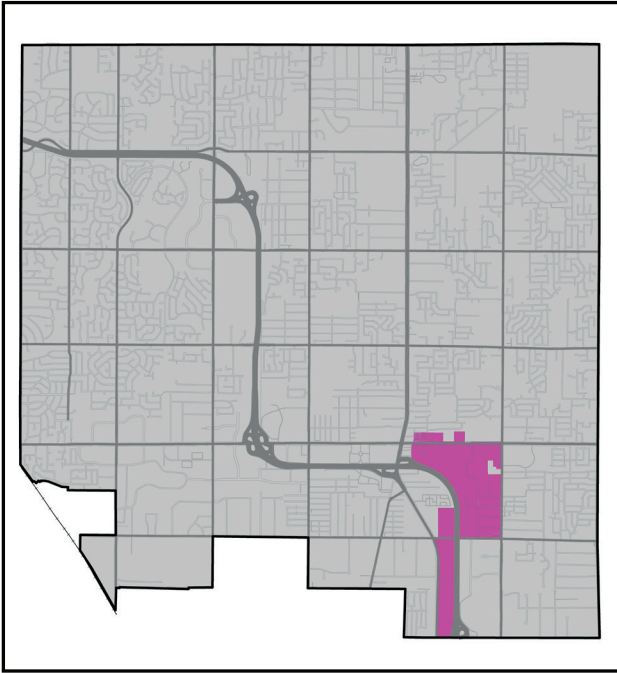
SITE DESIGN ATTRIBUTES

- Primary parking areas will be within rear or interior side yards and separated into modest-sized components by stormwater management and landscaping.
- Walks will connect businesses, adjacent developments, and public sidewalks.
- Stormwater detention should be captured in pedestrian friendly landscape designs.
- Outdoor cafes, plazas, pocket parks, and similar pedestrian amenities will be key features.
- Mass transit stops should be accommodated.

BUILDING DESIGN ATTRIBUTES

- Ground level story should have a minimum height of twelve feet from finished floor to finished ceiling.
- Facades should be half transparent glass.
- Entries should be well-defined.
- Fenestration on the ground level should be highlighted through the use of awnings, overhangs, or trim detailing.

The Smart Zone:  
Big Beaver and Beyond



- A special focus on high-technology uses that complement one another
- Potential high-density housing in proximity to 21st Century knowledge economy employers
- Regionally prominent location for technologically advanced companies

The Smart Zone was strongly emphasized in the Big Beaver Corridor Study and is the only proposed district within the Study to be called out specifically as a Future Land Use category in the Master Plan. The Study envisions the Smart Zone as a unique area dominated by high-technology uses which are at the cutting edge of innovation. The Study calls this location a “paragon of innovation” and prescribes a combination of “signature” light industrial, research and development, and office uses.

The Master Plan uses this category in an area expanded beyond the boundaries shown in the Big Beaver Corridor Study. The area south of the main Smart Zone area, situated around Interstate 75 provides an opportunity to foster additional Smart Zone uses and development.

Furthermore, much of this area is occupied by vacant or underutilized office and industrial facilities that could be readily redeveloped into Knowledge Economy uses or into uses that work in direct support of those uses. This area is highly visible from Interstate 75. Business-to-business functions, such as materials suppliers or office support uses, also represent an ideal fit in this southern section of the Smart Zone.

DESIGN CONCEPT

- New construction and redeveloped properties should be set in an integrated campus environment.
- Paths, generous landscaping, water features, and similar features found in first-class business parks should be infused throughout the site.
- Mass-transit stops should be located along routes to accommodate the workforce.

SITE DESIGN ATTRIBUTES

- Primary parking areas will be within rear or interior side yards and separated into modest-sized components by stormwater management and landscaping.
- All parking should be screened from view by landscaping or walls.
- Walks should connect businesses, adjacent developments, and the public sidewalks.
- Stormwater detention should be captured in pedestrian friendly landscaped designs.
- Mass transit stops should be provided on the exterior and within the interior of the district.

ARCHITECTURAL ATTRIBUTES

- Height should be encouraged in cases where the development makes unique contributions to the area.
- Non-industrial portions of businesses should face the street system.
- Durable metal, glass, masonry, and other materials should be used to promote the scientific image of emerging technology.
- Entries should be well-defined.





Automation Alley Technology Park in Troy; Photo by Brent Savidant

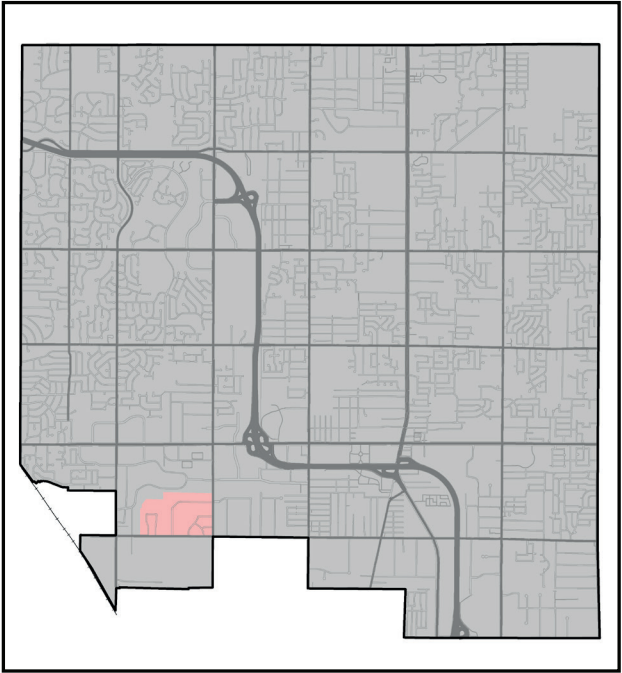


Ford Rouge LEED Rated Assembly Plant and Visitor Center



High-tech industry within the Smart Zone; Photos by Brent Savidant

Automall: A Unique Approach & Competitive Advantage



- A coordinated collection of automobile sales lots that have a competitive advantage in that they provide a comparison shopping experience in one area
- New development should include walkable elements to allow for users to experience more than one dealership without moving their car
- Coordinated site design characteristics throughout the area

The Automall is a category that is unique to Troy. This area is home to a comprehensive collection of retailers of nearly every automobile make in the country, and their grouping in one small, planned district provides a distinct advantage over similar automobile retailers around the region. In this location, potential buyers can see a variety of makes and models up close and make more informed buying decisions. The City continues to encourage the development of the Automall for this purpose. While the predominant use in this location is auto dealerships, other ancillary uses directly relating and in support of these dealerships will also be considered.

Auto dealerships in the Automall should be encouraged to develop outstanding automotive displays and engaging facades. The combination of these upscale automobile dealerships in a dense collection, offering unique permanent displays, will complement one another to create a showcase for automotive design as well as for automobile sales and service.

The Michigan Design Center, located at the northwest corner of the Automall area on Stutz Drive, provides a unique asset for Troy. This facility offers a unique collection of over 40 showrooms in a 215,000 square foot facility. These showrooms display the latest in home furnishings and interior design elements. Primarily geared toward design professionals, the facility also provides an exceptional resource for design students. Potential future opportunities for open floorplan, artist-loft residential development, or other land uses located to capitalize on and strengthen the relationship to the Michigan Design Center should be strongly encouraged in the western section of the Automall area.

DESIGN CONCEPT

- The unique atmosphere of the Automall will be enhanced. Vehicle displays will provide the enhancement.
- Showrooms will provide the setting for the people and products.
- Large expanses of transparent glass and uniquely designed outdoor lighting will define the experience.

SITE DESIGN ATTRIBUTES

- Install pervious surfaces for walks and low-use parking areas to limit surface stormwater runoff.
- Development should conform to a uniform “build-to” line corresponding to the line of existing buildings.
- Support businesses for the dealerships shall locate on Maple Road and not infill between dealerships.



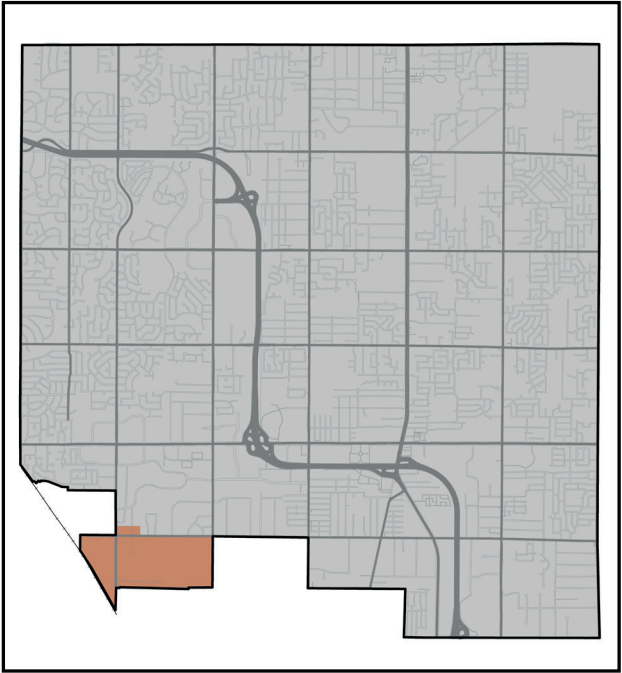
**BUILDING DESIGN ATTRIBUTES**

- Showrooms should have a minimum height of sixteen feet.
- A minimum of 75 percent of a showroom façade should be sheathed in transparent glass.
- Support businesses not conducting individual customer sales will locate the office portion of the business along the public street. Site and building maintenance will be the primary design emphasis.
- Dealerships should visually differentiate themselves from one another; the variety of architectural styles will enhance the diversity of the product offerings.



High quality display area within the Automall; Photo by Brent Savidant

**The Transit Center: Air, Train, and Transit in a Unique Setting**



- **Uses focused on providing pedestrian access**
- **New infill development designed to be compact and complement the Troy/ Birmingham Transit Center and airport**
- **Integration of new transit options as they become available will make this area a true hub for multi-modal transportation and a gateway for the community for those entering by rail, plane, or bus, or for those people seeking a rental car**

The Transit Center is a mixed use area made up of a complementary combination of residential, commercial, and service-oriented land uses. This mixed-use area is centered between the existing Oakland/Troy Airport and the planned Troy/ Birmingham Transit Center.

**The combination of air, rail, bus, and non-motorized transportation in one compact area, supported by a high-density residential development and regional commercial uses, will work to create a vibrant gateway to the southwest corner of Troy.**

The Transit Center provides a unique amenity to the area in that it will ultimately evolve into a fully walkable area where visitors to the City can experience a variety of activities and enjoy access to more than one transportation option to get around Troy or the Southeast Michigan Region. The continuation of the existing development pattern in this area is encouraged, as are the long-term infill of existing open areas and underutilized parking areas with uses complementary to the vision of a vibrant multimodal transit hub. Cooperation with the City of Birmingham provides a valuable opportunity for establishing a strong working relationship with adjacent communities. The Troy Oakland Airport is a critical part of the Transit Center.

**DESIGN CONCEPT**

- This will be a high-density, mid-rise area in close proximity to the proposed train station and business airport.
- The area will become a lively village for residents and business customers alike.
- The amount of surface parking will be limited.

**SITE DESIGN ATTRIBUTES**

- New construction will provide parking at the periphery of development sites.
- The internal street network is encouraged to use a grid pattern of access streets to divide the larger area into a network of development “blocks.”
- Stormwater detention will be captured in pedestrian friendly landscaped designs.
- Outdoor cafes, plazas, pocket parks and similar pedestrian amenities will be key features.
- Non-motorized transportation will be encouraged and enhanced by pathways and storage for bicycles, rollerblades, skateboards, and new emerging types of personal transportation.



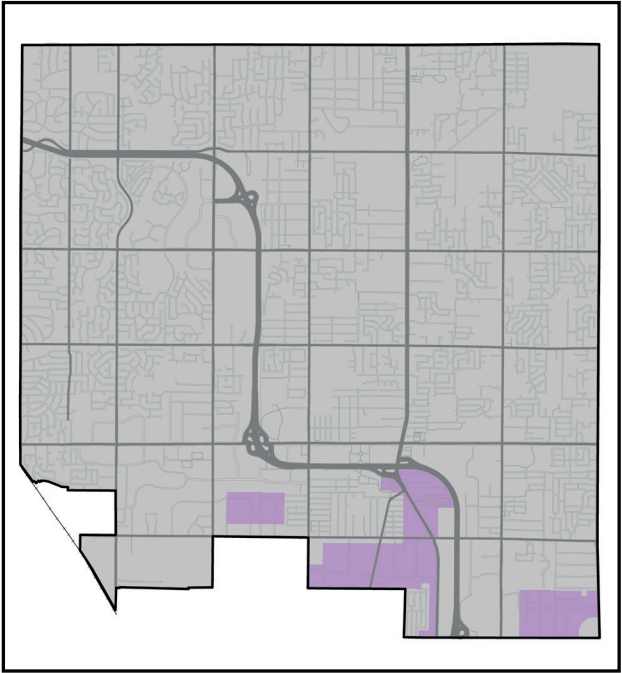
**BUILDING DESIGN ATTRIBUTES**

- Height should be between two and four stories or equivalent height in feet. Federal Aviation Administration requirements limiting building height take precedence.
- Building massing will frame external and internal streets.
- The ground level story should have a minimum height of twelve feet from finished floor to finished ceiling.
- Facades should be at least half transparent glass to promote connectivity between the interior private space and exterior public space.
- Entries will be well-defined.
- Fenestration should be highlighted through the use of awnings, overhangs, or trim detailing.
- Materials that instill a sense of permanence will be encouraged.



CALDOT Transit-Oriented Development in Oakland, CA City Center

**21st Century Industry:  
A New Opportunity for Growth**



- Continued encouragement of a variety of industrial uses
- Light industrial uses with no outdoor storage or external nuisances are especially encouraged
- The emphasis for site design should be on screening, landscaping, buffering, and effective transitioning to allow this important category to succeed without negative impacts on residential or commercial areas of the City

The 21st Century Industry classification provides areas for conventional manufacturing and assembly uses but with a broader interpretation of what industrial areas can become. In addition to conventional industrial uses, shops, and warehousing, this category can be home to business-to-business uses that don't require a significant public presence but which work in tandem with the Knowledge Economy uses encouraged within the Smart Zone and Northfield. Suppliers, fabricators, printers, and many other supporting uses which strengthen the City's appeal as a home to 21st Century businesses are all encouraged in this category.

An alternative use that may be considered on a very limited basis in the 21st Century Industrial area is loft-style residential development in reclaimed industrial buildings. Opportunities for artist lofts and open-floorplan residential development may exist within new, innovative, mixed-use projects. Such projects would be an ideal fit within the 21st Century Industrial area. Such housing will only be considered when all potential environmental limitations have been identified and, if necessary, neutralized.

The majority of the industrial property in Troy surrounds the Maple Road and the southern portion of Troy. Existing land uses along Maple Road vary widely and do not have a clear, identifiable character. Maple Road is primarily experienced as a series of nodes that center on north-to-south traffic leading into and out of Troy from the Big Beaver Corridor. For this reason, Maple Road is planned as a series of areas designed to support the Big Beaver Corridor and the Smart Zone, such as the business-to-business uses noted above.

**DESIGN CONCEPT**

- This area will recognize that manufacturing and distribution will continue to provide valuable jobs and a tax base. Emphasis will be on maintaining a strong image by concentrating on site and building maintenance as well as redevelopment, rather than redevelopment alone.
- Code enforcement will be a critical tool to maintain the visual and physical health of the district.
- As land becomes available, green space should double and storm water management should improve.

**SITE DESIGN ATTRIBUTES**

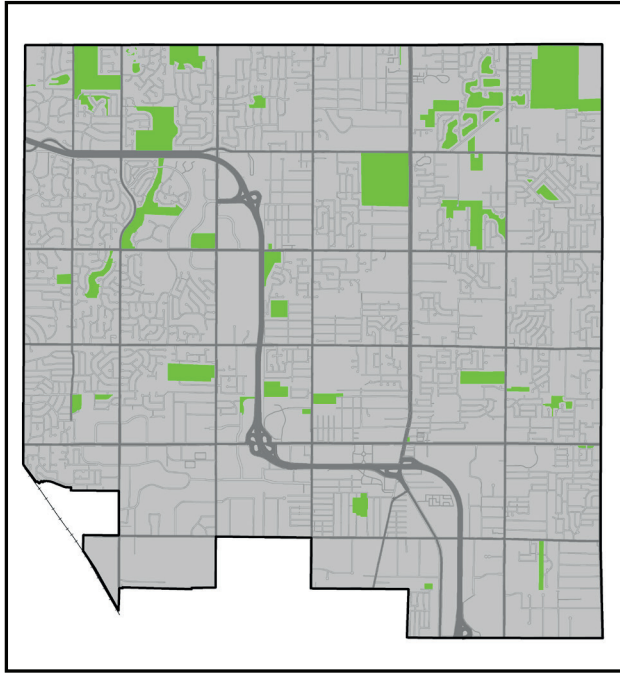
- Primary parking areas are located within rear or interior side yards.
- Front yards will be landscaped and well-maintained to contribute to an improving image.
- Green space will be placed along property perimeters to assist with controlling surface stormwater runoff.

**BUILDING DESIGN ATTRIBUTES**

- The office portion of industrial developments will locate nearest to the public street.

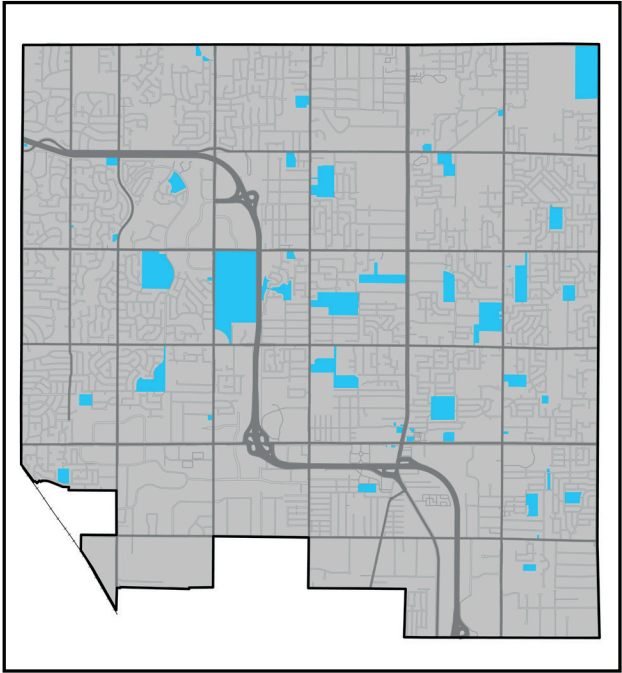


Recreation and Open Space:  
Extraordinary Amenities



The designation of Recreation and Open Space provides areas for both active recreation and conservation of natural resources. This land use can be either publicly or privately owned. Maintenance of these areas are essential to the preservation of fish and wildlife habitat, water quality, wetlands, scenic amenities, and outdoor recreation opportunities. Other significant areas are designated throughout the City and include private parks and common open areas associated with other private development.

Public and Quasi-Public: The  
Foundation of Troy's Neighborhoods



The Future Land Use Plan designates existing areas set aside for institutional uses such as schools, cemeteries, and other public and quasi-public activities. These sites are scattered throughout the City and are often at the center of the social neighborhood. Schools, especially, play a large role in the creation of social neighborhoods and provide a community center function.

This category also includes the Civic Center site, which contains the main operations of the City of Troy. Since the acquisition of the former Troy High School site in 1993 and construction of the Troy Community Center, this location has empowered the City to greatly enhance its operations and plan for future growth, which provides the City with an outstanding opportunity to showcase innovative and responsible development practices in a visible location. It is expected that the current City, Court, and Library functions will continue at the present location.

This future land use category also includes the Beaumont Health Care Campus on Dequindre Road. The City supports the long term development of this site and encourages its growth and success.

Finally, the quality of utilities and service are inextricably tied to the quality of living, working and conducting business in the City. This category includes some areas reserved for meeting the basic needs and expectations of City residents through utility installations. Detention and retention basins are also included in this category.



## 10 – Special Area Plans

### Special Area Plans

- 132 // Rochester Road
- 150 // Maple Road
- 182 // North Troy

**As part of the 2015 Master Plan update, the City undertook a special area study of four areas of the city: Rochester Road, Maple Road, North Troy, and Big Beaver.**

The Michigan Planning Enabling Act, PA 33 of 2008 requires that the Master Plan shall be reviewed by the Planning Commission at least every five (5) years. The purpose of such review is to determine if the Plan requires revision. The Planning Commission reviewed the Plan and made a determination that a complete revision of the Plan was not necessary, although there were several specific areas of the Plan which should be addressed.

While the Future Land Use Plan ensures compatible

and coordinated growth throughout Troy, there are identified areas of the City that are undergoing significant change. In those areas where substantial development and redevelopment activity is likely, special area plans provide an illustrative framework to guide development in a way that fosters a sense of place and establishes community identity in key locations. The plans are intended to act as a catalyst for future economic redevelopment within the boundaries established by each plan.

The plans provide schematic representations of potential development areas at a variety of scales and levels of detail and may include illustrative configurations for new streets, buildings, parking, open space, and circulation as may be appropriate to the area. They are accompanied by descriptive text that explains existing site characteristics, planning challenges, design considerations, and planning goals for each area.

### Public Engagement

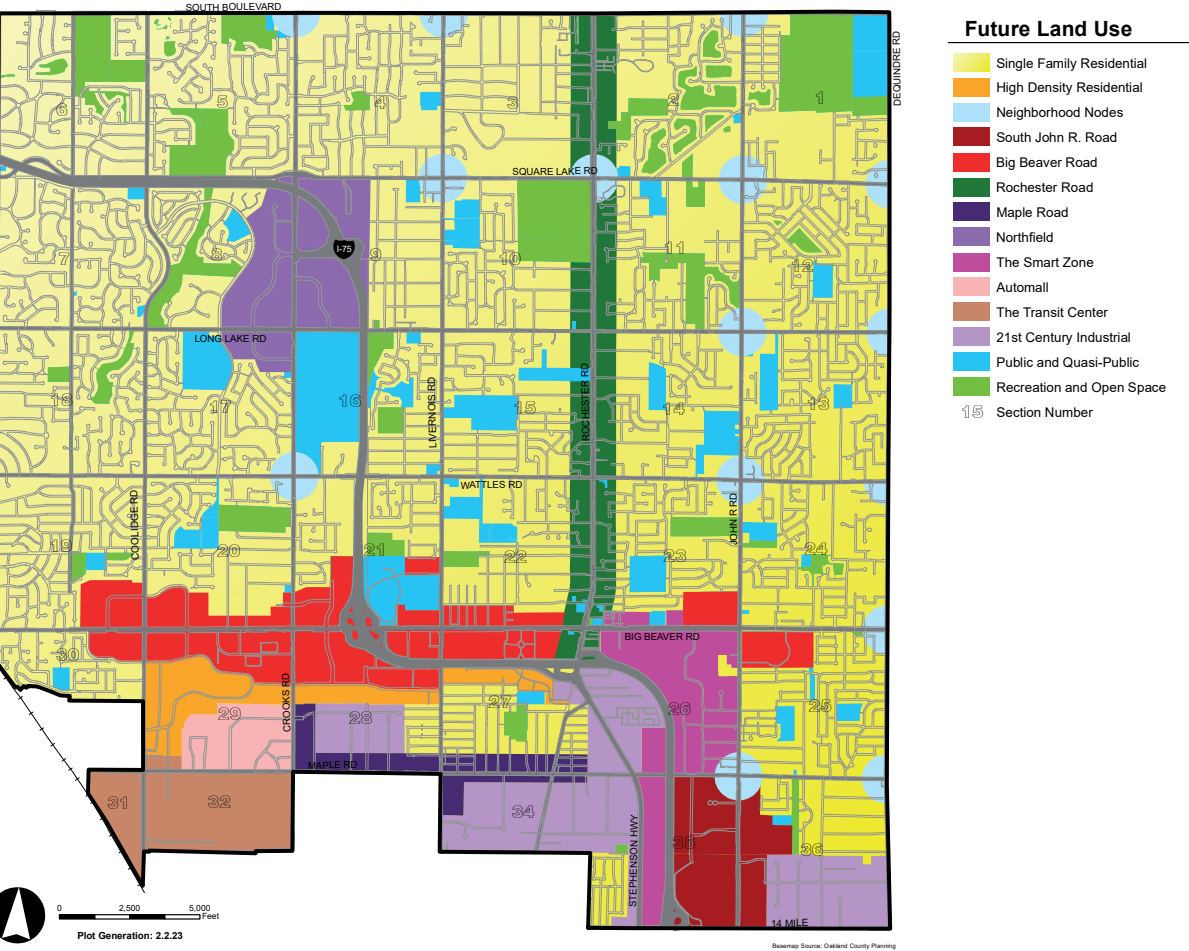
The City pursued a unique approach in public engagement by holding a series of targeted forums focusing on specific issues. Feedback from the community guided the overall direction of the plan. The following summarizes the content of each forums:

#### Real Estate Forum

The City of Troy hosted a Real Estate Forum on Tuesday, April 29, 2014 at the Troy Community Center. Over 60 community leaders, business owners, real estate developers, and interested citizens participated in a productive dialogue regarding the future direction of key economic areas of the City, specifically Maple Road, Big Beaver, North Troy, and Rochester Road. Participants were presented with target area snapshots and were asked to identify and describe the assets and challenges of these four areas. Participants also offered strategies



Target Area	Geographic Area	Focus of Study
1. Maple Rd and IB Zoning Area	The Transit Center, Maple Road, 21st Century Industrial, and the Smart Zone as described in Master Plan that are located along Maple Road/ Stephenson Road and south to the city border	Market issues, pedestrian circulation, and minor zoning code amendments.
2. Rochester Rd	Big Beaver Road to Wattles Road	Address concerns of adjacent neighbors regarding height, and land use buffers and transitions. Will require amendments to zoning regulations for GB and CB.
3. North Troy	The Northfield area as described in Master Plan	Office vacancy and diversifying land uses



for reinforcing assets, re-envisioning challenges, and ultimately attracting new development that is right for the corridor and the community. Participants emphasized the need for collaboration between City departments and community stakeholders as well as a coordinated vision that is responsive to market demands and focused on quality of life. By building on the unique strengths of each area, activating established nodes, and reinforcing new development with pedestrian amenities, transit connections, and a desirable mix of uses, those sites that were once viewed as challenges will appear as opportunities for reinvestment.

Key takeaways from the Real Estate Forum:

- Density is key
- Plan should be market driven and forward thinking
- Transportation and pedestrian improvements are important
- Zoning should align with the Master Plan and offer flexibility to encourage the right development at the right time
- North/South corridors provide important connections between the target areas and adjacent communities
- Residential development should attract and accommodate different ages, lifestyles, and income levels
- New developments should be connected
- Strategic, tactical, and creative placemaking strategies can activate node

High School Forum

In order to gain input from the future leaders, a session way held with twenty high school students (ten each from Troy and Athens High Schools). The students were intended to serve as a cross-section of the high school population. The students were quite impressive and were motivated at their responses. Attendances were asked to use one word to describe Troy today and one word to describe Troy in 10 years: The students were then asked a series of questions about Troy including what they like best about living in Troy, what they like least, their desire to move back to Troy after school, and Troy’s most pressing needs. The full results are located in

the appendix. The students enjoy the quality of schools; however most students noted that they do not plan on moving back to Troy in the future. If they did move back to Troy it would be because of family and the quality of the schools. They note that Troy is missing entertainment options, and “cool” housing options, and does not provide walkable or bike-able places. Most students desire to live in a big city after college graduation.

Neighborhood Association Forum

City of Troy hosted a neighborhood forum with Presidents and representatives from the various neighborhood associations. All geographic residential portions of the city were represented.

We started the discussion with asking those in attendance one word to describe Troy today and one word to describe Troy in 10 years: Participants were asked a series of 15 questions. The full results are located in the appendix. The questions focused on neighborhood issues affecting their neighborhoods including property upkeep and maintenance, transportation improvements, land use transitions and buffers, desired community amenities, and need for housing options.

There were two big takeaways from the neighborhood forum discussion. The first takeaway was that residents like living in Troy and cited a number of reasons including high quality of the public schools, entertainment options, safety, and housing stability. Maintaining a quality school district was cited of critical importance, especially for neighborhood and property value stabilization. The second major takeaway was the biggest issue facing Troy is a lack services within walking distance and lack of non-automobile transportation options.

Boomer and Shaker Forum

The City of Troy hosted a “Boomer and Shaker” Forum on Monday, August 17, 2015 at the Troy Community Center. The purpose of the forum was to meet with Troy residents to identify issues and determine strategies to ensure Troy assists its aging population and creates an aging friendly place. The intent was to focus on issues facing Troy’s boomer and senior population but also



address issues that cross-generational lines:

- Housing
- Transportation
- Placemaking
- Walkability
- Safety and Security
- Health Services
- Recreation and Cultural Activities

Over 80 community residents participated in a productive input session to make Troy an aging friendly location.

Most of the participating residents are likely to remain living in Troy as they age. Many noted the high quality of life living in the City. For those that identified that they are likely to leave Troy, the most listed reason was a lack of housing option and a lack of transportation options. Underserved senior housing options and a need for increased public and dedicated senior transportation options was a common discussion point of the Forum.

The first major takeaway was there is an identified underserved housing type of senior-friendly housing such as smaller, single-family homes, condominiums, or apartments with first floor master bedrooms. Housing affordability was listed as a significant housing limitation. Many remarked that they are on a fixed income and cannot afford a \$400,000 house/condo. They noted that affordable, smaller housing options are difficult to find in Troy and the City should push development of those types. The second major takeaway was the need for improved transportation options, particularly serving seniors. Most attendees noted that because they are able to drive they are able to obtain their daily needs (health services, retail goods, social, recreational, and cultural). However, they are unsure if they will be able to once they are unable to drive.

To improve transportation options, the City should work with SMART to increase bus hours and locations. While Medi-go, a transportation service for Troy disabled residents and those age 60, provides a valuable service, the hours are limited and should be expanded. Medi-go should be complimented with a dedicated transportation system or on-call shuttle service for seniors

for daily needs in addition to just medical appointments, like grocery shopping, recreation activities, etc. Lastly, the City should focus on improving the sidewalk system and street crossing at major thoroughfares, and build trails.

Troy Today	Troy in 10 Years
Versatile	Fun
Peaceful	Advanced
Family-oriented	Utopia
Upscale	Safer
Quiet	Educated
Potential	Expanded
Diverse	More Diverse
Well-rounded	Innovative
Residential	Modern
Safe	Creative
Fun	Changing
Busy	Less-Congested
Close	Professional
Engaging	Busy
Boring	Beautiful
Suburbia	Affordable
Opportunity	Home-owner oriented

Troy Today	Troy in 10 Years
Suburban	Advanced
Future	Economic Leader
Random	Attractive
Evolving	Progressive
Bedroom-community	Education
Attractive	Birmingham; More Parking
Youth	Envied
Opportunity	Futuristic
Diverse	The standard
Accommodating	Smart
Modern	Advanced



# Rochester Road: Special Area Plan

## Introduction

The Rochester Road corridor is a major north-south thoroughfare traversing Oakland County, with convenient access to I-75, M-59, Big Beaver Road, Maple Road, and Stephenson Highway. Recent road improvements and the creation of a boulevard have improved traffic flow along the corridor, but the vision of a green corridor as envisioned in the 2008 Master Plan has not yet been realized. Development along the corridor has been inconsistent with variation in the size and location of buildings. Other challenges include the location of parking areas, outdated façades, and nondescript architecture, landscaping, lighting, and signage. The goal of this Plan is to provide a unifying framework built around public and private improvements that will change the function and character of the corridor over time. Rochester Road has the potential to become a hub for small businesses, independent restaurants, neighborhood services, and live-work development.

## Evolving to Meet New Challenges

Rochester Road offers a convenient local commercial node close to the Big Beaver corridor. Adjacent to attractive neighborhoods of primarily single-family homes in a great

school district, it is principally service and retail use. The challenge for Rochester Road is to develop an active, aesthetically pleasing, commercial corridor that will attract customers, increase taxable value, and grow the Troy economy, while protecting the adjacent residential neighborhoods.

In general, the vision for the future of Rochester Road poses some contradictions. In terms of traffic, commuters are trying to get through the area as fast as possible, while residents and businesses are calling for a much slower pace that will provide a safe, pedestrian friendly environment. The new boulevard has improved traffic; however, it is only the first step to effectively addressing the pedestrian realm and access management. Continued public/private investment will be needed to transform the corridor. In terms of development, real estate professionals reiterate that “density is key” for corridor revitalization, while residents push to maintain height restrictions. The area is dominated by shallow, narrow lots with limited pedestrian access and inconsistent setbacks. Most users agree that excessive signage and inconsistent façade design result in the perception of visual clutter.

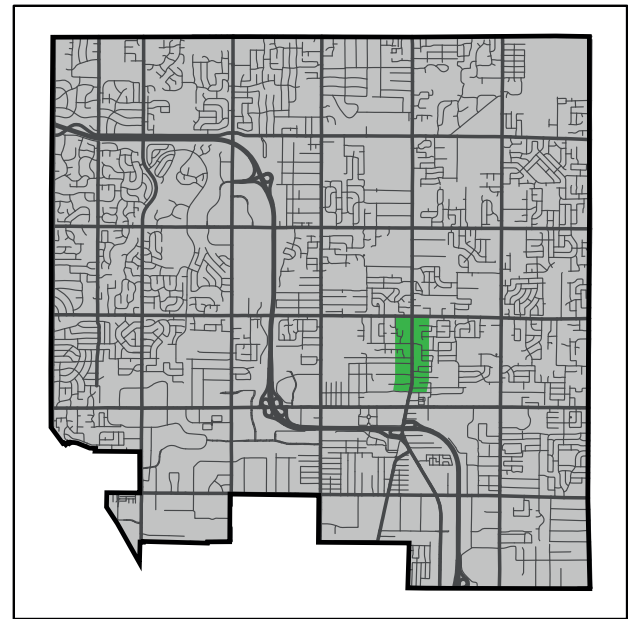
Development along the corridor has been uneven with tremendous variation in the size and scope, location of parking areas and roadway access, architecture, landscaping, lighting, and signage. The goal of this Plan is to provide a unifying framework built around public and private improvements that will change the function and character of the corridor over time. The Plan identifies three complementary concepts for dealing with these issues and creating a solution that all users will welcome. The first concept deals with restructuring the pattern of land use and development lining the corridor, the second involves incorporating the redesign of the public right-of-way, and finally, the third creates a cohesive image and stronger identity for the corridor.

## Vision Statement

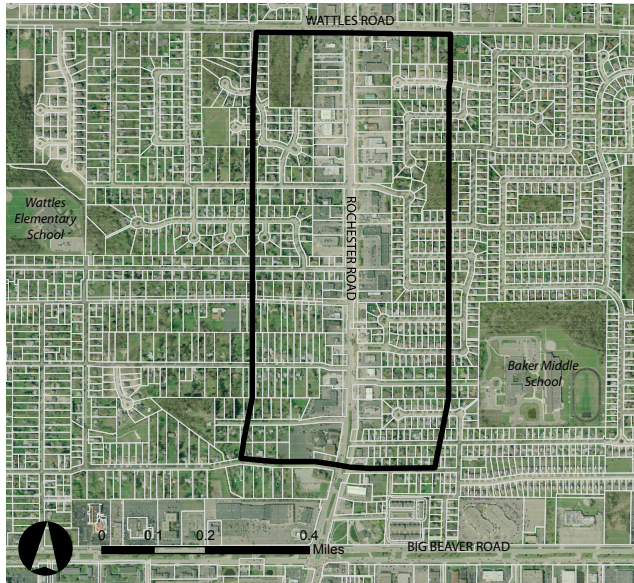
Rochester Road will be a welcoming, pedestrian friendly neighborhood shopping destination known for its small business incubation and stormwater management best practices. Green infrastructure, landscaping, and streetscaping enhance the character of the corridor, while also providing a buffer between commercial areas and adjacent residential uses.



Existing Conditions



Locator map



Target Area map

2013 Target area statistics

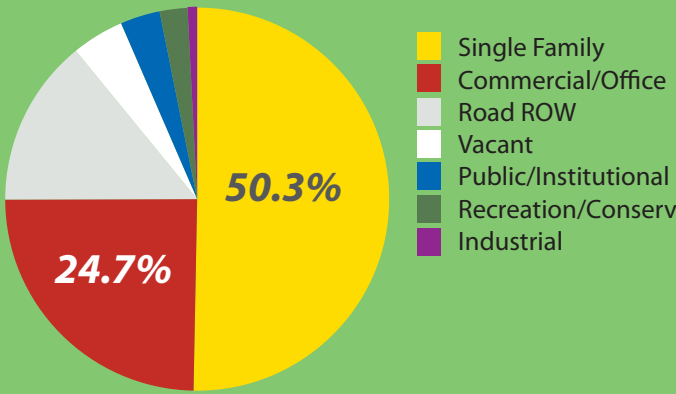
Total taxable value	\$43,612,770
Total area (acres)	164
Total businesses	131
Total employees	1,037

2010 Market area statistics<sup>1</sup>

Population	9,651
Households	3,321
Percent owner occupied	81.4 %
Median household income	\$86,712
Per capita income	\$34,928

1: Esri 2013 Estimates Business Summary from Oakland County EDCA, Census 2010, City of Troy GIS data 2013 Note: 1. Market Area includes households within 1 mile of Target Area. 2. Employee and Business data use NAICS codes.

Land Use<sup>2</sup>



2. Land Use calculations include all parcels within the Target Area.

Property Data

	Target Area	Commercial	Industrial	Residential
Total Parcels	392	57	1	334
Total Structures	376	53	1	322
Total Acres	164	50	1	113
Median Year Structure Built		1982	NA	1976
Total Floor Area (SF)		379,321	NA	601,131
Median Floor Area (SF)		4,800	NA	1,709
Total Taxable Value	\$ 43,612,770	\$ 14,911,860	NA	\$ 28,700,910

Source: City of Troy GIS data 2013

Top Industries in Target Area by Employment<sup>3</sup>

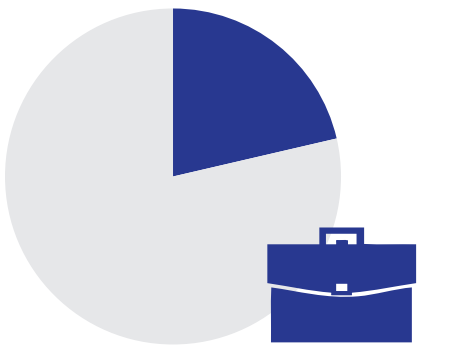


32.1% Finance & Insurance

	Employees	Percent (%)
Finance & Insurance	333	32.1
Administrative & Support & Waste Management	135	13.0
Accommodation & Food Services	124	12.0
Retail Trade	109	10.5
Professional, Scientific & Tech Services	83	8.0

3: Esri 2013 Estimates Business Summary from Oakland County EDCA

Top Industries in Target Area by Number of Businesses



21.4 % Professional, Scientific & Tech Services

	Businesses	Percent (%)
Professional, Scientific & Tech Services	28	21.4
Administrative & Support & Waste Management	22	16.8
Retail Trade	15	11.5
Other Services (except Public Administration)	11	8.4
Health Care & Social Assistance	10	7.6

Source: Esri 2013 Estimates Business Summary from Oakland County EDCA



Gateways

- Wattles Road
- Big Beaver Road

Assets

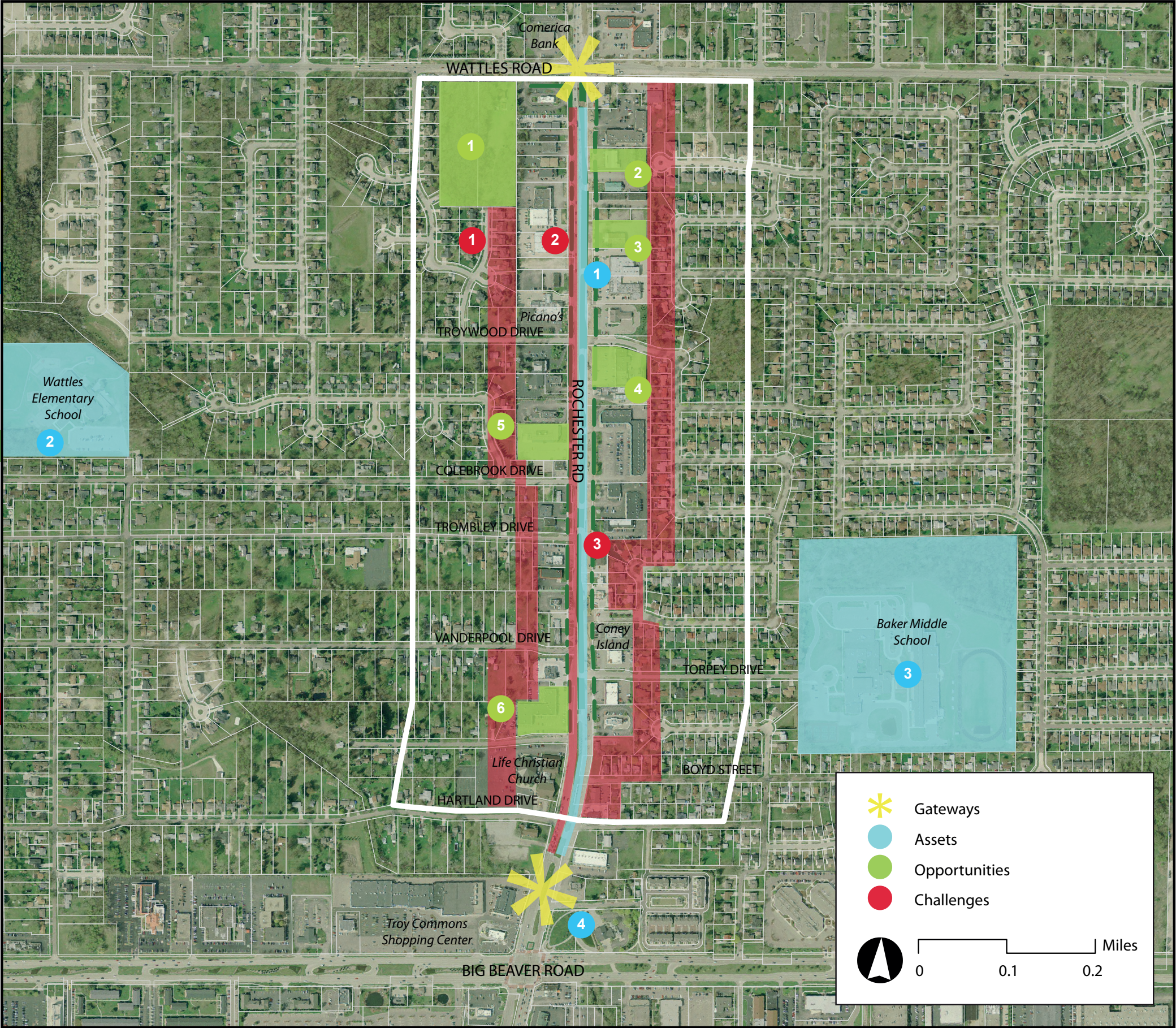
- 1: Rochester Road street improvements
- 2: Wattles Elementary School
- 3: Baker Middle School
- 4: Gateway Park on Big Beaver Road

Opportunities

- 1: Potential development site
- 2: Recent redevelopment
- 3: Potential development site
- 4: SE of Rochester Rd and Troywood Drive
- 5: NW of Rochester Rd and Colebrook Driv
- 6: Troy Pointe Plaza
- 7: Mom and Pop character

Challenges

- 1: Boundary/transition between single-family residential Boundary/transition between single-family residential
- 2: Inconsistent building setback
- 3: Shallow depth of commercial frontage





Rochester Road Public Engagement Findings

Rochester Road offers a convenient economic node close to residential neighborhoods. It is primarily service and retail use. The corridor could be marketed as the “Entrepreneurial Center” for the City as it provides an incubator for small start-up businesses. The area is dominated by shallow, narrow lots with limited pedestrian access and inconsistent setbacks. Excessive signage and inconsistent façade design result in the perception of visual clutter. New development may require the consolidation of parcels, but there are concerns from the community about increasing building heights where adjacent to residential properties.

There needs to be a conscious effort in branding Rochester Road and making it a notable place. Streetscape should not be underestimated. Sidewalk connections and pedestrian access must be accommodated in new developments. Infrastructure can be used to mask the visual clutter and give the corridor a unified image.

Considerations

- Keep integrity of residential as more commercial frontage is developed
- Reface retail and create more pedestrian friendly intersections
- Clean corridor and remove or revitalize obsolete buildings by finding incentives for redevelopment
- Reduce setbacks and parking associated with strip malls
- Develop retail and restaurants that reflect the needs of nearby residents
- Encourage senior housing and compatible uses

Priorities and Strategies

This Plan recommends three priorities for establishing Rochester Road as a vibrant and walkable corridor with ample pedestrian amenities, convenient neighborhood services, and great accessibility. These priorities and strategies include:

1. Enhance the image and identity through private investment and public/private partnerships

Strategies:

- Adopt Design Guidelines/Standards
- Establish building improvement programs
- Coordinate streetscape improvements
- Encourage innovative stormwater management

2. Improve access management

Strategies:

- Implement Rochester Road Access Management Plan between Big Beaver and Wattles Road
- Support lot consolidation
- Require consistent building and parking location placement

3. Preserve adjacent residential character and encourage compatible development

Strategies:

- Provide rear setback and landscape buffers between Rochester Road frontage parcel and adjacent residential properties

Priority and Strategy Interconnection:

These priorities and their strategies are not mutually exclusive; rather they reinforce each other and together they have the ability to attract users and spark investment and ultimately achieve these aims of vibrancy, identity, and walkability.

Priority 1: Enhance image and identity through private investment and public/private partnerships

Rochester Road offers a different kind of retail environment, one that is focused on neighborhood service and affordable to small businesses. Despite recent improvements to the right-of-way, Rochester Road lacks a unified identity and cohesion. Excessive signage and outdated strip malls result in the corridor feeling visually cluttered. Updating existing buildings, eliminating blight, and creating a cohesive streetscape will require financial incentives, comprehensive planning, and coordinated public and private investment. However, with targeted interventions and plan implementation, the corridor can elevate the aesthetic quality of the area and embrace its green corridor identity.

Renovating commercial storefronts and addressing code violations will enhance the corridor’s appearance and economic strength.



Rochester Road Image and Identity



Priority 1: Enhance image and identity through private investment and public/private partnerships

Strategy: Develop Design Guidelines

The City has made a significant investment in the public portion of Rochester Road, and private development should reflect that high quality investment. Design guidelines will facilitate the phased redevelopment of the corridor. These standards are a paradigm shift from customary single use zoning and automobile oriented development patterns to development decisions focused on building placement, integrated use, universal access, and pedestrian amenities. The fundamental element of the Design Guidelines is the relationship of the building to the street which includes building mass, site access, parking arrangement, and treatment of the pedestrian realm.

It is important that the Design Guidelines be crafted to encourage quality design while not reducing development incentives.

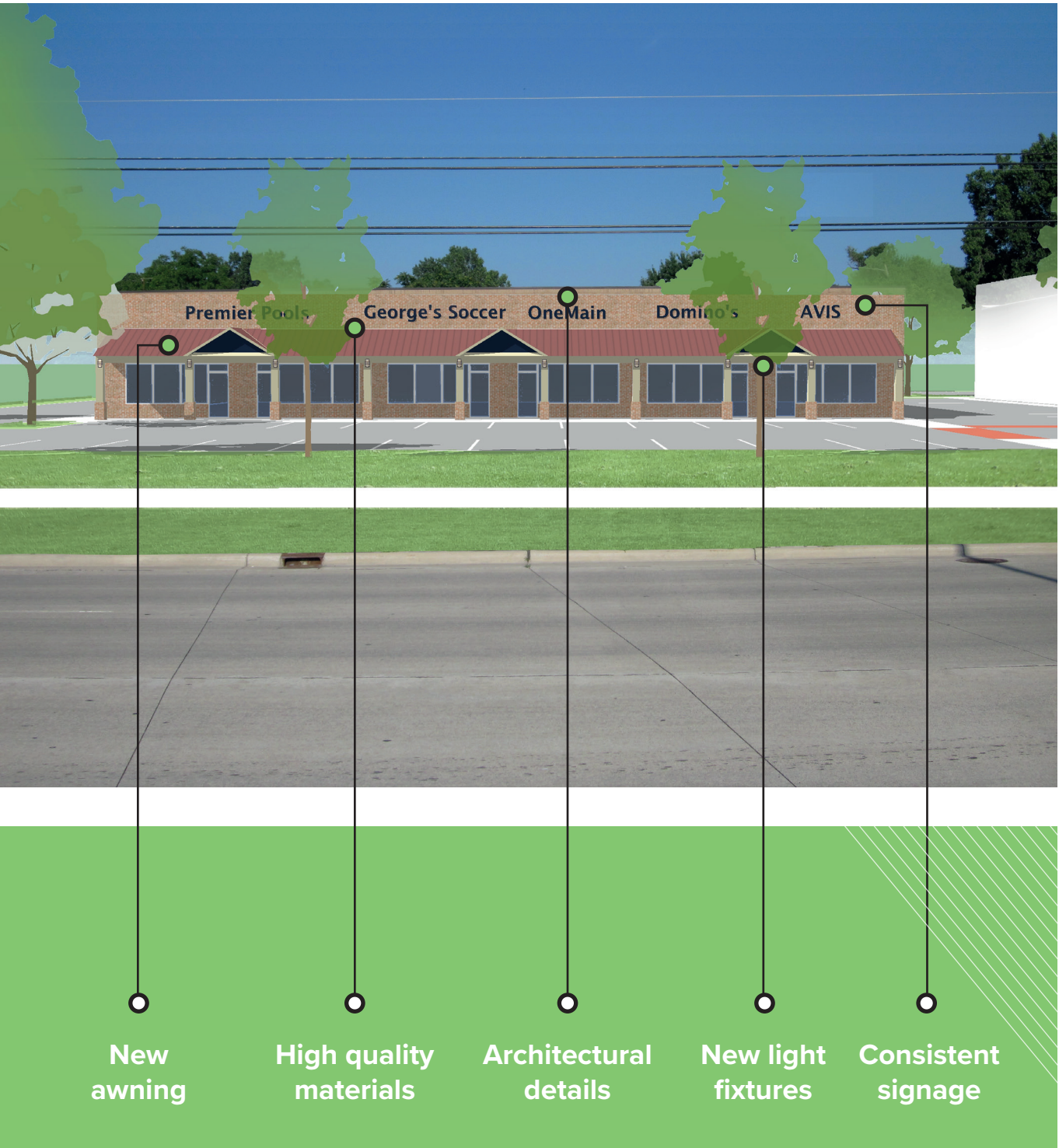
Strategy: Establish Building Improvement Programs

Many of the commercial buildings along Rochester Road are over 30 years old, including a few structures built in the 1950s and 60s. Establishing a façade improvement grant program will provide the necessary incentive and guidance to update and enhance tired exteriors. Increased focus on beautification and code enforcement is necessary and can be promoted through social media and neighborhood groups. Even the newer buildings constructed in the last 10 years will benefit from formal design guidelines.

Existing Conditions



Potential Building Improvements





Priority 1: Enhance image and identity through private investment and public/private partnerships

Strategy: Coordinate streetscape improvements

Streetscape elements can identify an area as a special and distinct place for residents, shoppers, visitors, and employees. The City should establish a conceptual Streetscape Plan that sets recommended standards for landscaping, signage, lighting, sidewalks, intersections and access. The Rochester Road streetscape should provide:

- A defined edge between the pedestrian and automobile areas
- A unified relationship between the public/pedestrian realm and private domain
- The use of street trees and landscaping, furniture, paving, lighting, and other streetscape elements
- Attractive street lighting that reinforces the corridor image and minimizes extraneous light

Streetscape may occur corridor wide or occur as redevelopment does.

Strategy: Encourage innovative stormwater management

The 2008 Plan identified Rochester Road as a green corridor, as this section of the corridor is intersected by the Shanahan and Lane Drains. Use of green infrastructure in coordination with infrastructure and nonstructural stormwater best management practices (BMP) should be incorporated. New development should protect natural flow pathways and reduce impervious surfaces. The Plan encourages installing rain gardens, vegetated filter, pervious pavement, vegetated roof, and native plants. Project considerations should include land use, runoff quality, site factors, costs, construction coordination, and maintenance issues. Property owners should reference the Low Impact Development (LID) Manual for Michigan produced by SEMCOG.

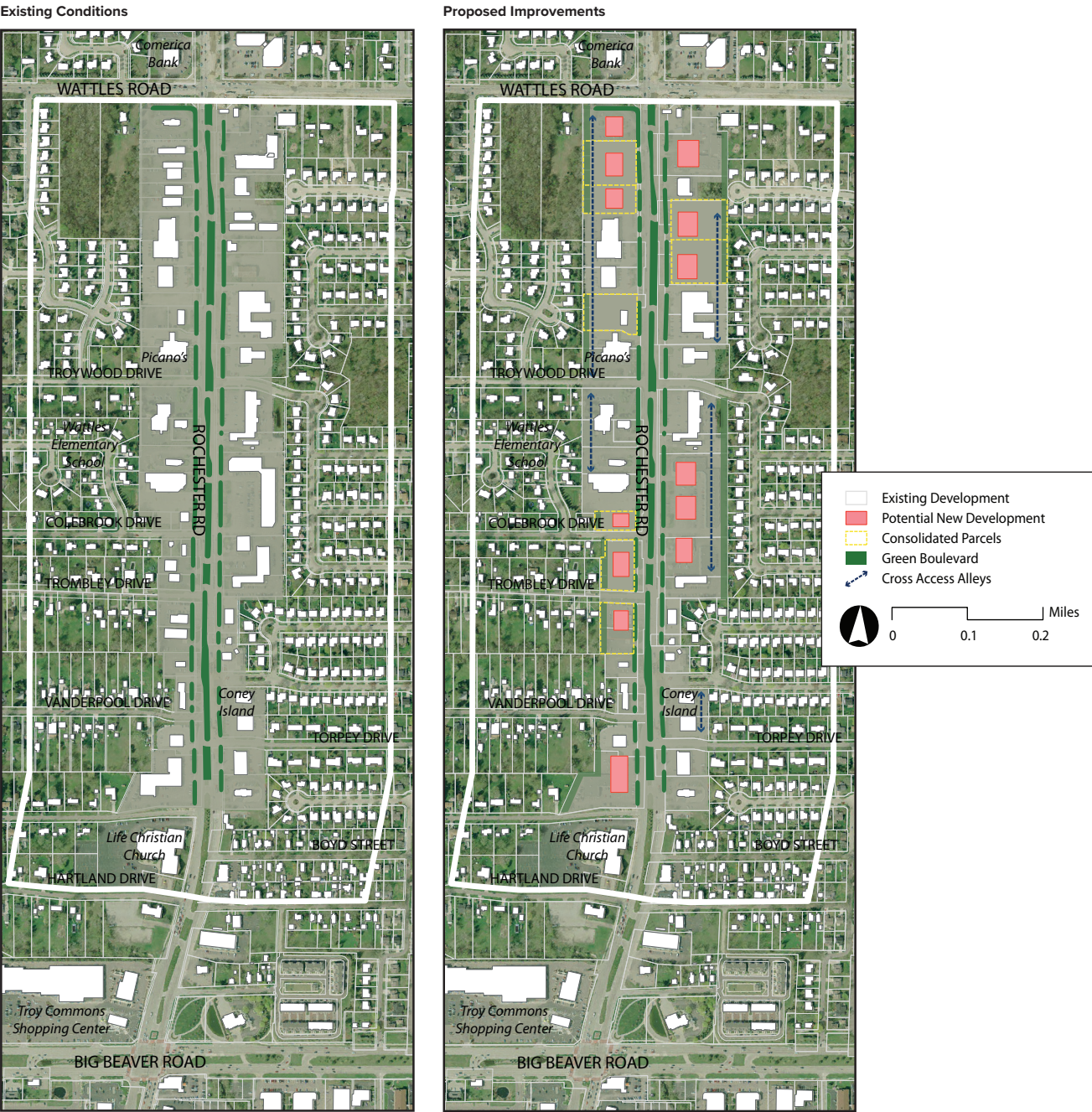




Priority 2: Improve site access and building orientation

Drivers often experience difficulty entering and exiting sites along Rochester Road. Curb cuts and inconsistent setbacks also deter pedestrian and non-motorized traffic. Access management along Rochester Road is necessary to ensure roadway safety and efficient operations while providing reasonable access to the adjacent land uses. Eliminating driveway redundancy and establishing consistent building placement and parking locations actually increase business access and visibility and also create a safer, more inviting automobile and pedestrian environment.

This graphic represents the strategy to improve Rochester Road through infill development and access management.



Priority 2: Improve site access and building orientation

Strategy: Implement Rochester Road Access Management Plan between Big Beaver and Wattles Road

In 2011, the City of Troy participated in the creation of the Rochester Road Access Management Plan along with four other communities, Southeast Michigan Council of Governments (SEMCOG), Michigan Department of Transportation (MDOT), and Road Commission of Oakland County (RCOC). Based on MDOT’s Access Management Guidebook, the Plan recommends improved road design, modified access, increased walking and biking, and coordinated low impact development along the entire corridor. In addition to these overarching principles, the following corridor segment specific recommendations should be implemented for the portion of Rochester Road between Big Beaver and Wattles Road:

- Reduce driveway density by removing 11 of the 38 total existing access points
- Increase visibility of the un-marked bike route crossing at Bishop/Troywood
- Connect properties at the rear with parking lot connections, access easements, or an alley

The City has recently made significant roadway improvements, introducing a boulevard. Recommendations from the Access Management Plan should be implemented as development occurs. The City should also coordinate implementation with other local initiatives, capital improvements, and road construction projects.



Building oriented to Rochester Road

Access management is a set of techniques that state and local governments can use to control access to highways, major arterials, and other roadways, increase the capacity of these roads, manage congestion, and reduce crashes.

Source: Federal Highway Administration

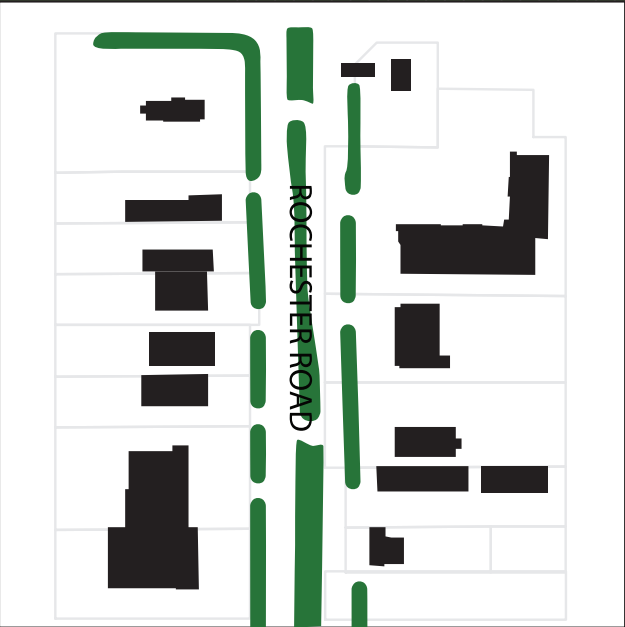
Benefits of Access Management:

- **Safety** – reduces crashes
- **Capacity** – improves traffic flow
- **Walkability/Transit** - reduces conflicts
- **Aesthetics**– increases landscaped areas
- **Business Vitality** – improves customer ingress/egress
- **Preserve Investment** – very cost effective

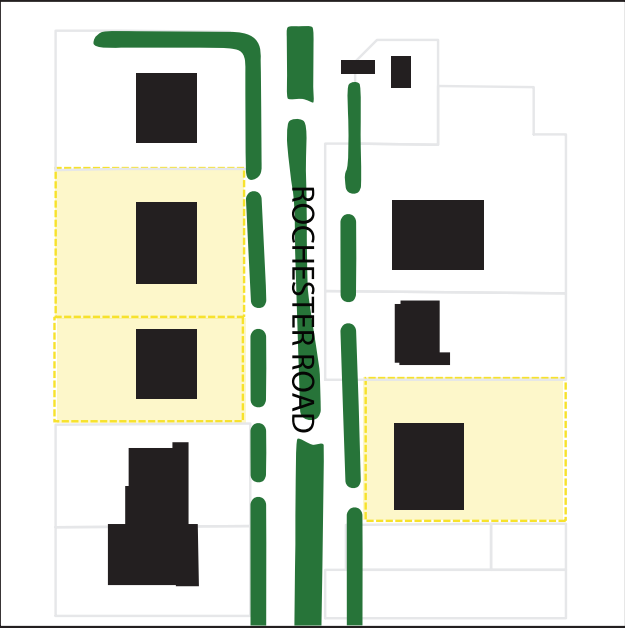
Source: Rochester Road Access Management Plan, 2011



Existing Conditions



After Lot Consolidation



A street wall is formed when buildings front onto a street with consistent setbacks. The placement, scale and design quality of the building's street wall determine the character of the streetscape and reinforce pedestrian objectives.

Strategy: Support lot consolidation

Lot consolidation provides two significant benefits. First, lot consolidation permits the elimination of curb cuts. Reducing curb cuts increases safety for motorists, cyclists, and pedestrians reducing points of vehicular conflict. Secondly, lot consolidation creates larger lots, which permit greater design flexibility and are easier to develop. Contiguous parcels on Rochester Road create challenges for coordinated development and design continuity. Land assembly can work to the advantage of both a developer and property owners. Property owners benefit from increased property values, and developers get a large enough parcel to build on for today's markets.

Strategy: Require a consistent building placement and parking location

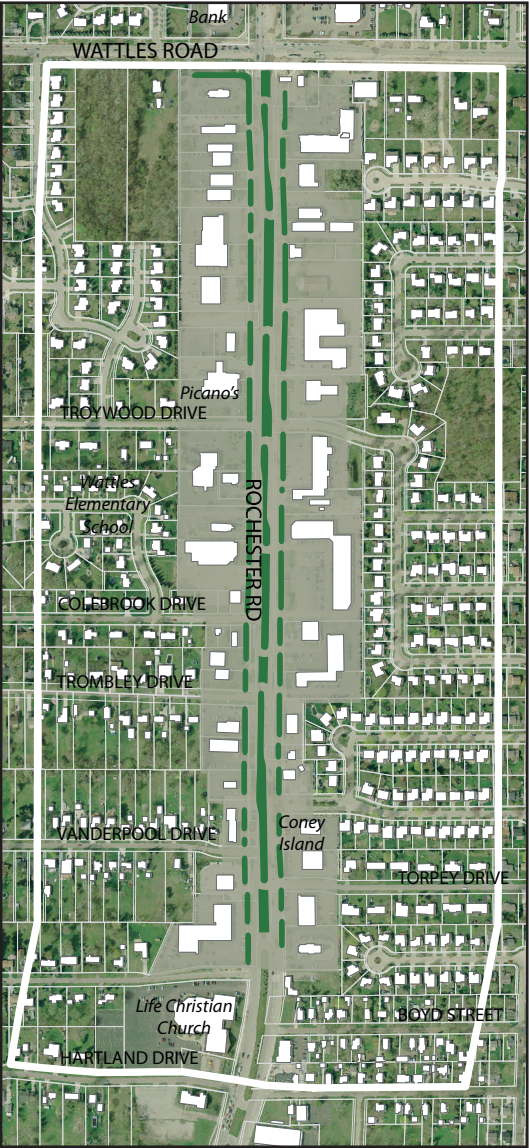
A consistent building placement and parking location will help improve access management and establish a defined street wall. As noted in the Rochester Road Access Management Plan, some of the buildings are set too close to the right-of-way to allow cross access between properties. On the other hand, the strip retail centers are set back to accommodate parking, providing limited pedestrian connections and little to no landscaping in the parking area. Orientation should avoid overcrowding and allow for functional use of the space between buildings and in the front and rear yards. Parking should not be the dominant visual element on the site; instead, the building should provide a welcoming entrance – preferably covered – that provides convenient access to all users.

Priority 3: Preserve adjacent residential character and encourage compatible development

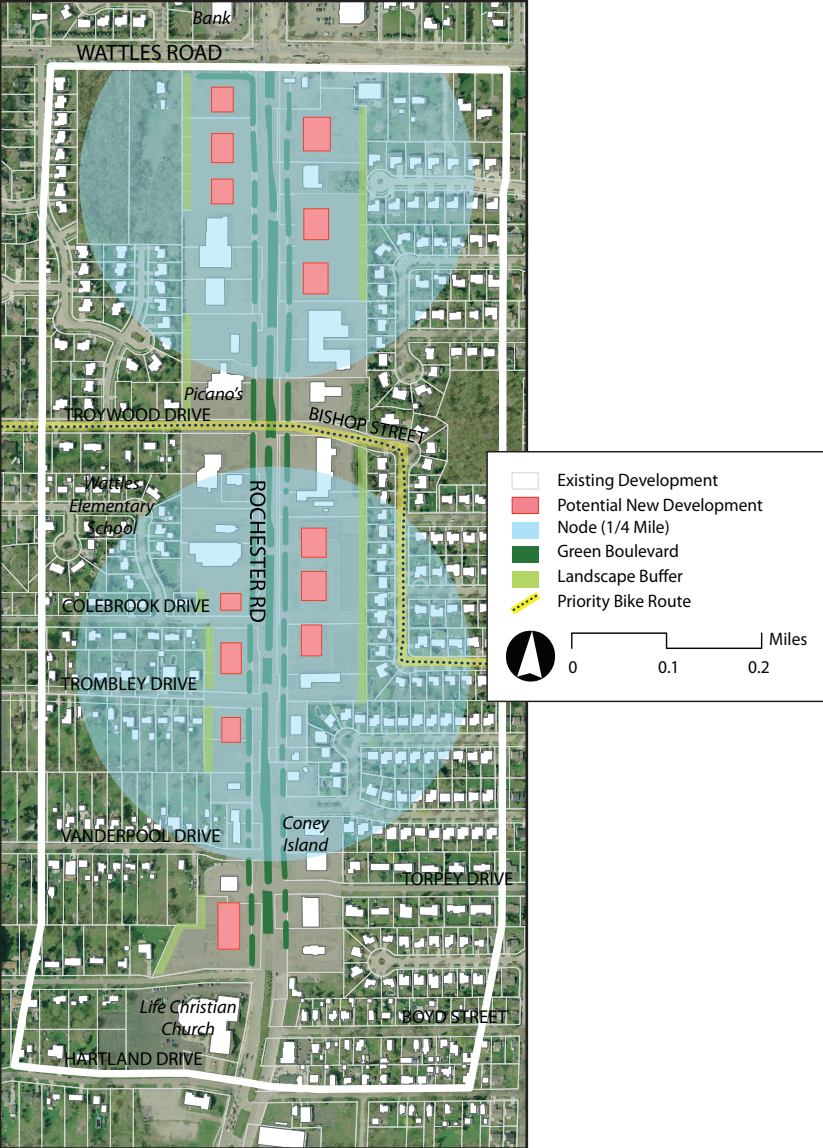
Rochester Road functions as a link, connecting the single family neighborhoods to the larger commercial corridors and regional highways. This function presents both an opportunity and a challenge for the corridor. Redevelopment along Rochester Road must respond to a range of land use patterns and existing conditions.

A tenet of both the Master Plan and Zoning Ordinance is the protection of residential properties. Balancing development priorities and surrounding neighborhood character will be vital to the success and health of the corridor. Senior housing, casual dining, professional office, and neighborhood services are some of the desirable uses for this community. Mixing uses, horizontally and vertically, will also provide for a more walkable and vibrant area. Too much flexibility can appear inconsistent at times, so establishing clear regulations on building form and use is essential. Many of the commercial properties are outdated, particularly the strip retail stores. Through lot consolidation, the larger properties near the Wattles intersection offer great potential for redevelopment.

Existing Conditions



Proposed Improvements





Priority 3: Preserve adjacent residential character and encourage compatible development

Strategy: Provide buffer and landscape between Rochester Road frontage parcel and adjacent residential properties

Shallow parcel depth along Rochester Road is a constraint on site design. Parcels range in size from 90 to 300 feet deep, with frontages ranging from 60 to 460 feet. In order to protect residential properties, additional buffers and transitions should be applied for commercial and industrial developments adjacent to residential uses. The buffers can be in the form of setbacks, greenbelts, and increased landscape requirements.



Transition between Commercial Uses and Residential Uses

Action Plan and Implementation

The Rochester Road Plan is organized into multiple projects so the vision can be refined and implemented in phases over time in a flexible manner. Priority transformative projects like the streetscape projects and facade improvement programs entail multiple phases given their scale and ambition and serve as economic catalysts enhancing the image of the corridor. The timeframe to implement the Plan will depend on many factors, including market conditions, financing, approvals, and other City initiatives.

Priority 1 Enhance the image and identity through private investment and public/private partnerships	Strategy	Actions	Phasing	Responsibility
	Design Guidelines	Develop and adopt Design Guidelines	Near	City
		Incorporate Design Guidelines into Zoning Ordinance	Near	City
		Implement Design Guidelines as development occurs	Near/Mid	City, Private entities
	Establish building improvement program	Research building improvement programs and best practices	Mid	City
		Determine managing body and identify program resources and funding	Mid	City
		Adopt criteria from Design Guidelines/Standards	Mid	City
		Develop and implement Building Improvement Program	Mid	City
	Coordinate streetscape improvements	Develop Rochester Road Streetscape Plan	Near	City
		Implement Streetscape Plan comprehensively or as development occurs	Near/Mid	City, Private entities
Priority 2 Improve access management	Implement Rochester Road Access Management Plan between Big Beaver and Wattles Road	Eliminate identified access points as development occurs	Near	City, Private entities
		Create parking connections as development occurs	Near	City
		Improve crossing safety for bicycles at Troywood/Bishop	Near	City
	Support lot consolidation	Create Rochester Road Overlay or amend Community Business (CB) and General Business (GB) District zoning regulations	Near	City
		Encourage/require lot consolidation as development occurs	Near	City
	Require a consistent building placement and parking location	Create Rochester Road Overlay or amend CB and GB zoning regulations	Near	City
Priority 3 Protect adjacent residential	Strategy	Actions	Phasing	Responsibility
	Provide buffer and landscape between Rochester Road frontage parcel and adjacent residential properties	Create Rochester Road Overlay or amend CB and GB zoning regulations	Near	City





## Maple Road: Special Area Plan

### Introduction

The six (6) mile stretch of Maple Road serves as a primary regional east-west roadway connecting Troy with the surrounding communities of Birmingham and Bloomfield to the west and Sterling Heights to the east. Historically, the Maple Road and Stephenson Highway corridors have been home to Troy's industrial and technology development base. The Maple Road area also includes the Troy Smart Zone Campus and is home to the Automation Alley headquarters. Industries along the corridor provide essential services, including business-to-business (B2B) and business-to-consumer (B2C) transactions, and help diversify Troy's economy. It is vital to Troy's long-term economic standing to maintain a viable industrial base. Over the past 30 years of growth and development, Maple Road has evolved incrementally. It is now comprised of an eclectic mix of uses including industrial, research and development, automobile dealerships, big box retail, smaller neighborhood retail, office, and both single-family and multiple-family residential. Due to a diversification of land uses, mixed parcel sizes, and abutting municipal boundaries, the pattern

and character of Maple Road is difficult to classify. To ensure that future development is intentional and of high quality, Troy recognizes that a new focus for Maple Road needs to be considered.

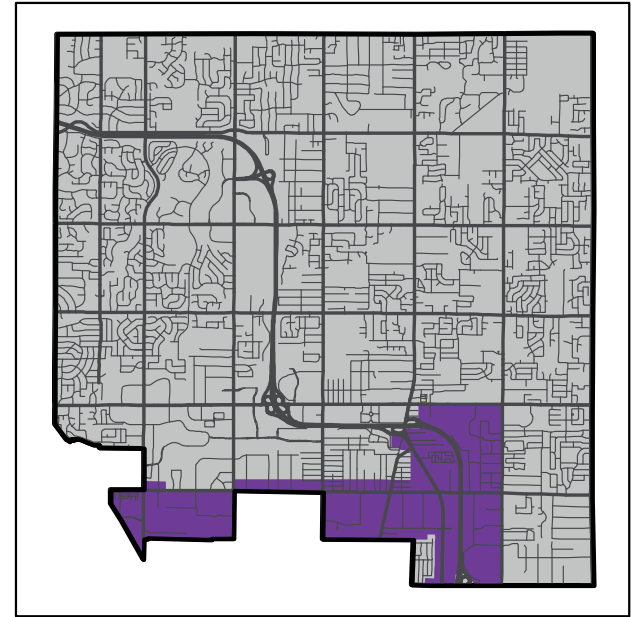
### Evolving to Meet New Challenges

Maple Road exemplifies the car-dominated environment that is typical of the modern American landscape. Recent redevelopment interest along Maple Road and the success of the Big Beaver corridor to the north provides an opportunity to change the rules for new development so that the corridor will be more economically viable and people-oriented. Maple Road is a corridor of contrast in terms of land use, building placement, and investment. Comprehensive corridor redevelopment requires careful attention to both sides of the corridor's right-of-way line. While Maple Road has experienced recent reinvestment, there are pockets of disinvestment, resulting in vacant, abandoned, and underused properties. Nevertheless, Maple Road presents an opportunity to build on the existing diversity of land uses, transportation options, and proximity to residential. For properties lining the corridor, revitalization requires a restructuring of development patterns, with less emphasis on land use and more focus on quality, accessibility, and innovative redevelopment. For those parcels in the industrial areas located off the corridor, a focus on protection and reinvestment of the industrial and technology development base should be emphasized. The repurposing of Maple Road offers three key priorities based on the following land patterns: the development nodes at major mile intersections, the linear segments of the corridor between the major mile intersections, and the industrial and employment areas located off the corridor.

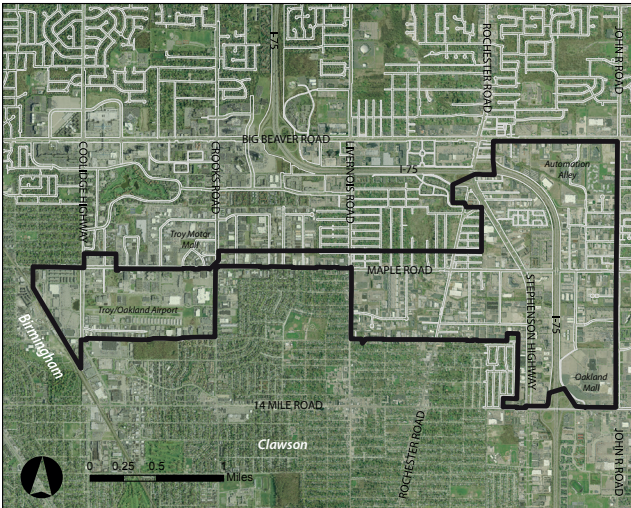
### Vision Statement

There are moments in the development of a city where an opportunity presents itself and where entrepreneurs are rewarded. With less focus on land use, and more focus on quality development, businesses incubation, creation of anchors, and reinvestment through entrepreneurship, Maple Road can become a choice location.





Locator map



Target Area map

Existing Conditions

2013 Target area statistics

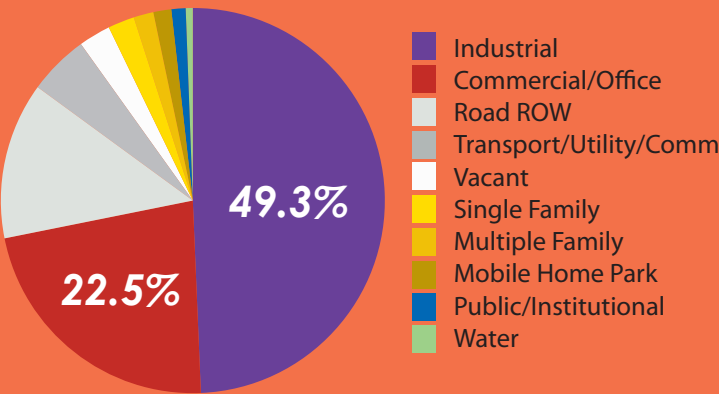
Total taxable value	\$341,823,442
Total area (acres)	1,828
Total businesses	1,625
Total employees	24,576

2010 Market area statistics<sup>1</sup>

Population	10,677
Households	4,681
Percent owner occupied	58.5%
Median household income	\$52,475
Per capita income	\$28,402

Source: Esri 2013 Estimates Business Summary from Oakland County EDCA, Census 2010, City of Troy GIS data 2013  
Note: 1. Market Area includes households within 1 mile of Target Area.  
2. Employee and Business data use NAICS codes.

Land Use

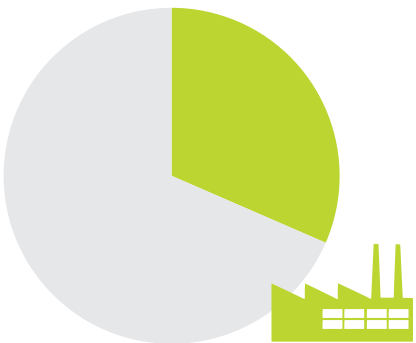


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Source: City of Troy GIS data 2013

Top Industries in Target Area by Employment<sup>3</sup>

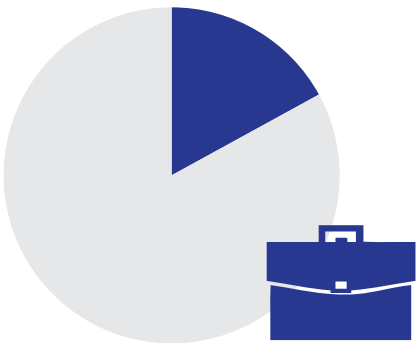


31.5% Manufacturing

	Employees	Percent (%)
Manufacturing	7,745	31.5
Professional, Scientific & Tech Services	3,723	15.1
Retail Trade	2,918	11.9
Wholesale Trade	2,199	8.9
Health Care & Social Assistance	1,675	6.8

3: Esri 2013 Estimates Business Summary from Oakland County EDCA

Top Industries in Target Area by Number of Businesses



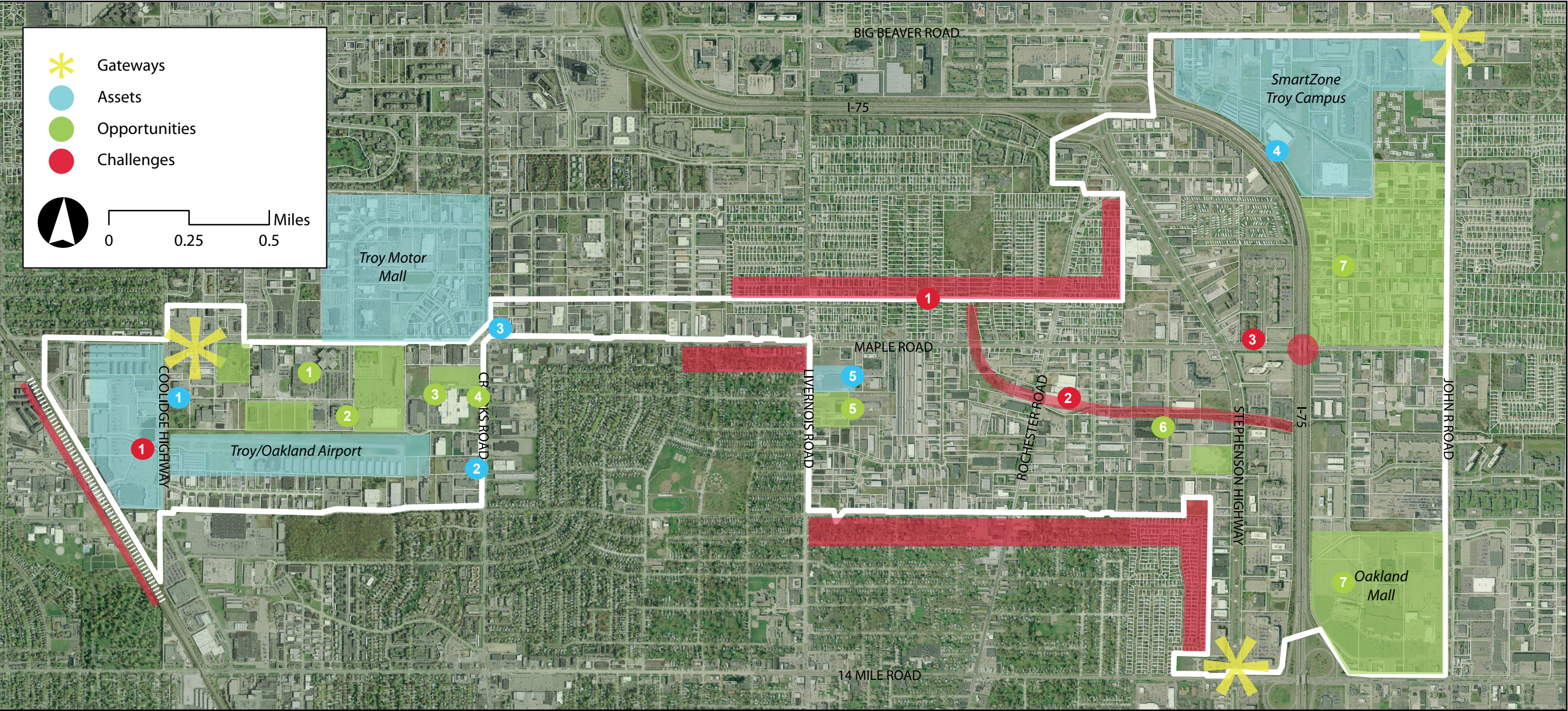
17.0% Professional, Scientific & Tech Services

	Businesses	Percent (%)
Professional, Scientific & Tech Services	277	17.0
Wholesale Trade	211	13.0
Manufacturing	205	12.6
Retail Trade	204	12.6
Administrative & Support & Waste Management & Remediation	130	8.0

Source: Esri 2013 Estimates Business Summary from Oakland County EDCA



Gateways	Assets	Opportunities	Challenges
<ul style="list-style-type: none"><li>• Wattles Road</li><li>• Big Beaver Road</li></ul>	<ul style="list-style-type: none"><li>1: Rochester Road street improvements</li><li>2: Wattles Elementary School</li><li>3: Baker Middle School</li><li>4: Gateway Park on Big Beaver Road</li></ul>	<ul style="list-style-type: none"><li>1: Potential development site</li><li>2: Recent redevelopment</li><li>3: Potential development site</li><li>4: SE of Rochester Rd and Troywood Drive</li><li>5: NW of Rochester Rd and Colebrook Drive</li><li>6: Troy Pointe Plaza</li><li>7: Mom and Pop character</li></ul>	<ul style="list-style-type: none"><li>1: Boundary/transition between single-family residential Boundary/transition between single-family residential</li><li>2: Inconsistent building setback</li><li>3: Shallow depth of commercial frontage</li></ul>





Maple Road Public Engagement Findings

Maple Road provides a great central location with a well-established traffic flow and close proximity to residential areas. Midtown Square, Automation Alley, and the new MJR theater can serve as anchors for the corridor and should be reinforced by complementary uses including retail, dining, and multi family residential. Industrial and office spaces offer architecturally unique redevelopment opportunities and could foster a live/work culture if marketed to local startups, small tech companies, or creative design firms with a need for light manufacturing facilities or collaborative work spaces.

Access, connectivity, and convenient parking are major challenges for sites along Maple Road. Strip development and industrial uses are segregated and offer limited connection to the surrounding residential communities and current business sector. While the Zoning Ordinance provides site design flexibility through the Sustainable Development Project (SDP) option, the City staff may need to educate potential investors on how to take advantage of this development tool and communicate the overall vision for Maple Road.

Considerations

- Think creatively about attracting companies and investment
- Encourage circulation planning that integrates public transit stops and connects pedestrian nodes to greenway trails and residential sidewalks
- Cluster pedestrian activities through redevelopment of underutilized properties
- Support mixed-use development with strong ties to the Transit Center and transit-oriented development
- Expand SmartZone and establish an overall vision for Maple Road
- Consider transit impact study for I-75 access onto Maple Road

Priorities and Strategies

This Plan recommends three priorities for establishing Maple Road as a safe, active, and vibrant district with opportunities for investment, entrepreneurship, and innovation. These priorities and strategies include:

1. Generate investment at development nodes

Strategies:

- Encourage high-quality commercial /mixed-use development at major mile intersections
- Engage surrounding residential neighborhoods through linkages
- Incentivize development through zoning

2. Encourage entrepreneurship and redevelopment

Strategies:

- Preserve and enhance traditional-innovative-entrepreneurial industrial areas
- Promote creation of districts and encourage compatible industries

3. Enhance and strengthen segments between major mile intersections

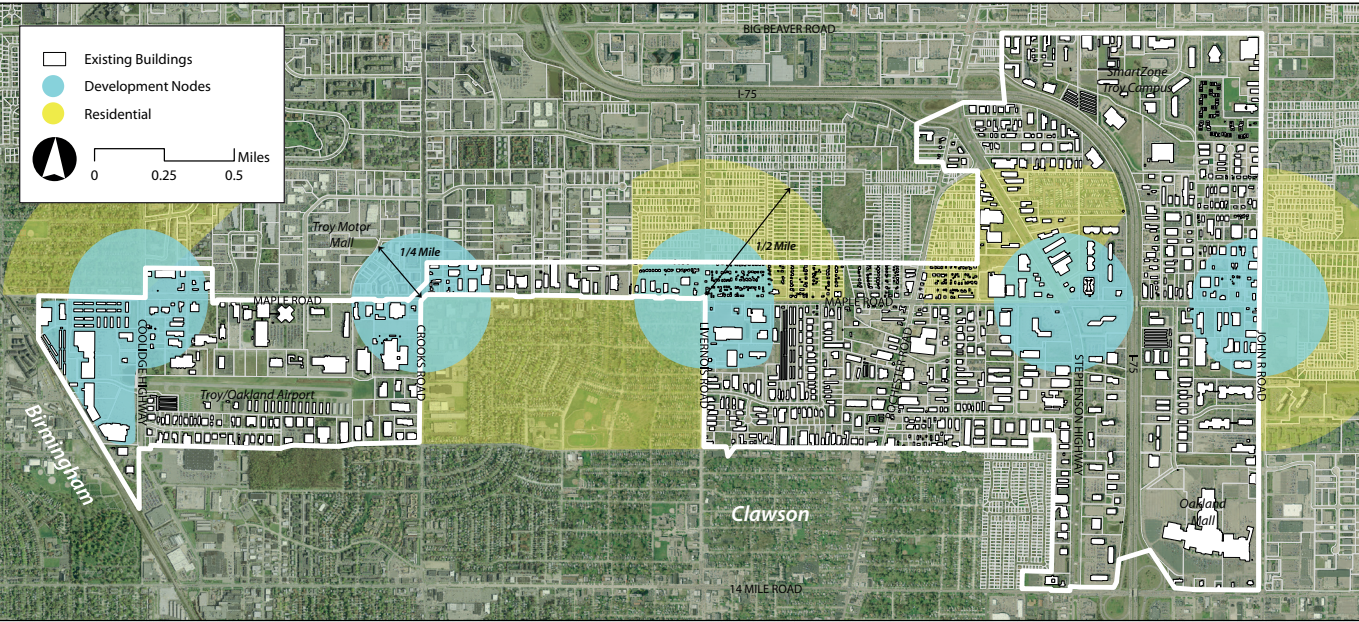
Strategies:

- Identify alternative value for challenging sites
- Implement zoning amendments to permit flexibility
- Improve pedestrian access
- Improve pedestrian crossing

Priority and Strategy Interconnection:

These priorities and their strategies are not mutually exclusive; rather, they reinforce each other and together they have the ability to attract users and spark investment and ultimately achieve these aims of vibrancy, identity, and economic resiliency.

Priority 1: Generate Investment at Development Nodes



Existing Conditions



Coolidge Highway



Coolidge Highway



Crooks Road



Livernois Road



Stephenson Highway



John R Road



Priority 1: Generate Investment at Development Nodes

The age, scale, and condition of structures along Maple Road vary considerably. This incremental and inconsistent development pattern has also resulted in incompatibilities between land uses. Mixing land uses can be effective and prosperous when implemented in conjunction with standards and policies. Maple Road is a major east-west thoroughfare bordered by residential neighborhoods that depend on services and convenience retail within walking distance. Maple Road serves many important functions as a commercial and industrial corridor, but its lack of identity, cohesion, and consistency are very apparent to residents, employees, and investors.

In response to increasing traffic and aging infrastructure conditions, changing patterns of retail development that favor newer sites in outlying areas, and the evolving needs of the industrial sector, many properties along Maple Road are suffering from ongoing disinvestment. Although Maple Road has pockets of investment, there are many underperforming areas with high vacancy rates, lower sales per square foot, and a lack of money to reinvest in aging structures.

In order to realign the Maple Road corridor to be consistent with the forces of market demand, portions of the corridor should be significantly and deliberately restructured into a form in which property owners, developers, and communities will once again invest. Since market-driven forces in the retail industry are cause for the change along commercial corridors, Maple Road planning should start with a reevaluation of commercial, particularly retail, development patterns along the corridor.

To compete, the Maple Road corridor will need to evolve beyond its aging commercial center reality to better appeal to prospective customers, residents, and businesses. The strategy for the corridor’s future should focus on improved aesthetics and creation of exciting new mixed-use clusters at major mile intersection nodes.

8 Principles of Good Urban Design

- 1. **Imageability:** Quality of a place that makes it distinct, recognizable, and memorable.
- 2. **Enclosure:** Degree to which streets and other public spaces are visually defined by buildings, walls, trees, and other vertical elements.
- 3. **Human Scale:** Size, texture, and articulation of physical elements that match the size and proportions of humans, and equally important, correspond to the speed at which humans walk.
- 4. **Transparency:** Degree to which people can see or perceive what lies beyond a building façade.
- 5. **Complexity:** Visual richness of a place including number and kinds of buildings, architectural diversity, landscape elements, street furniture, signage, and human activity.
- 6. **Coherence:** Sense of visual order including scale, character and arrangement of buildings, landscaping, street furniture, and other physical elements.
- 7. **Legibility:** Ease with which the spatial structure of a place can be understood and navigated as a whole.
- 8. **Linkage:** Physical and visual connections- from building-to-street, building-to-building, space-to-space, or one side of the street to the other that tend to unify disparate elements.

Source: Pedestrian & Transit-Oriented Design (2013)

Priority 1: Generate Investment at Development Nodes

**Strategy: Encourage high-quality commercial/ mixed-use development at major mile intersections**

Maple Road has a scattered mix of retail development along the corridor; however, many of the parcels along the corridor are not ideal for intense retail or mixed use development. Some of the parcels between nodes lack depth and size, which are essential elements for retail development. They also have limited access, limited visibility, lower traffic counts, and are adjacent to residential, which are hindrances to retail development. Alternatively, many of the parcels located at major mile intersections have significant size and depth and offer greater access options, visibility, and higher traffic counts.

The 6-mile study section of Maple Road includes six (6) major mile intersections including Coolidge, Crooks, Livernois, Rochester/Stephenson, John R, and Dequindre. The restructuring along Maple Road should encourage and accommodate the transformation from a linear strip retail corridor to one with clustered retail at the major mile intersections. These intersections can become successful economic nodes that concentrate activity by virtue of the intensity of development and the density of their mix of uses. The greater development intensity of nodes makes them easy to distinguish and areas of economic activity, distinguishing from other parts of the corridor.

These nodal intersections should be visibly taller, denser, and busier than other sections of the corridor. The key characteristics of successful economic nodes are activity, demand, and mix. Retail, food service, and entertainment venues are primary activity-generating uses, the key ingredients for street life and urban vitality.

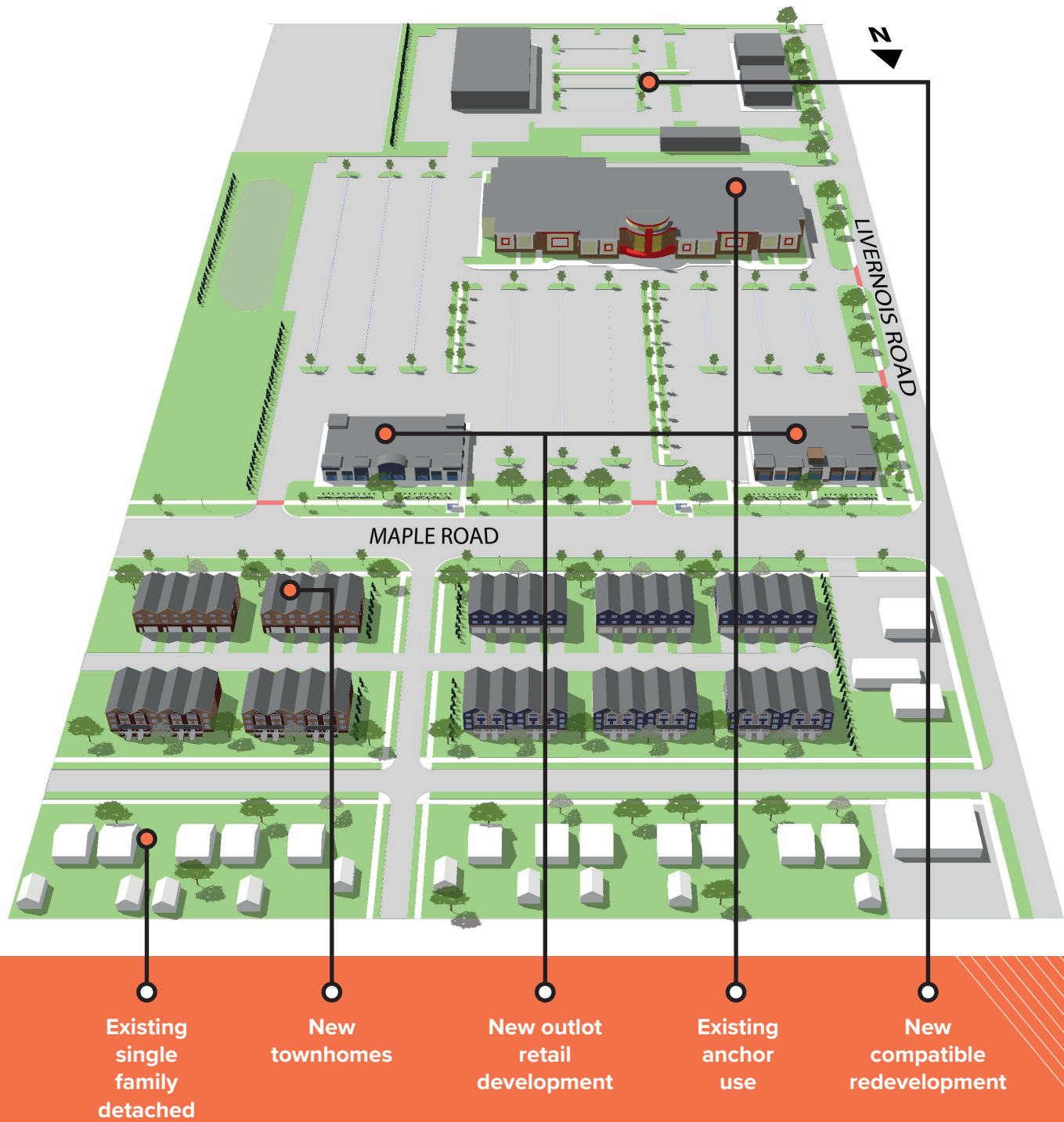
Key Principles:

- Encourage and incentivize lot consolidation
- Consider internal pedestrian connectivity to create walkable developments
- Require shared parking facilities and cross access easements
- Ensure every hard corner has a building rather than parking
- Ground-level retail should be a focus of buildings in activity zones
- Build off existing anchors such as the MJR theater at Livernois and Maple
- Encourage a variety in design yet overall consistency
- Ensure a balanced and compatible mix of uses to create more reasons for people to frequent the district over the course of a day
- Ensure that outlot development is compatible and connected with anchor development
- Require good design including consistent signage, pedestrian lighting, and increased landscaping along roadways and in parking lots

Priority 1: Generate Investment at Development Nodes

Strategy: Encourage high-quality commercial/mixed-use development at major mile intersections

Potential redevelopment strategy at Maple and Livernois



Priority 1: Generate Investment at Development Nodes

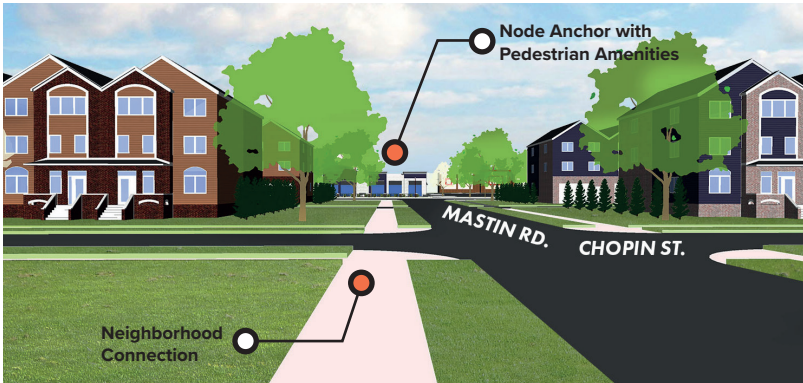
Strategy: Engage surrounding residential neighborhoods through linkages

As traffic congestion rises, there is increasing attention devoted to the role of infrastructure investments in affecting travel behavior. Bringing trip origins and destinations closer together is a necessary step to reduce overall travel distances and promote use of “active transportation” modes such as walking and bicycling.

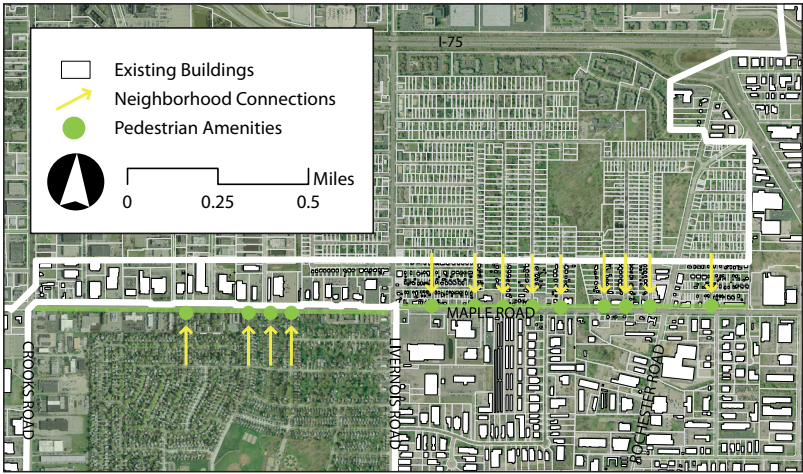
Within a half mile walking distance of the Maple Road major mile intersections, there are thousands of residents from the communities of Troy, Clawson, Sterling Heights, and Birmingham. One-half (½) mile is the typical maximum distance people without mobility limitations are willing to walk. These residents are a captive market who desire shopping areas and service uses that can serve their daily needs within walking distance.

Future development at the Maple Road nodes should provide a link between the Maple Road and adjacent neighborhoods. Linkages can be defined as features that promote the interconnections of different places and provide convenient access between them. Linkages may be in the form of physical or visual connections.

Additional improvements to engage the surrounding residential neighborhood include improved public transportation and an improved linkage to the new Troy Transit Center. The City should work with SMART to improve bus service along the corridor and upgrade the SMART bus stops to shelters.



Maple Road and Livernois Road Node



Neighborhood Connections

Key Recommendations:

- Focus on the half mile radius of the major mile nodes
- Uses should provide everyday services and evening/weekend amenities including restaurants, retail, service, open space, and entertainment appropriate for the market
- Provide convenient neighborhood access to sites
- Utilize the appropriate landscape buffering/screening
- Improve public transportation and linkages to the new Troy Transit Center



Priority 1: Generate Investment at Development Nodes

Strategy: Incentivize development through zoning

Current zoning permits the type of development envisioned: taller, denser, and busier; however, current Maple Road market realities may not be reflective of the development density and intensity permitted by zoning. While zoning cannot create a market, it can be used to incentivize the type of development desired.

To promote redevelopment and stimulate reinvestment along the corridor, the Maple Road form-based zoning can be amended to provide flexibility to create a system of development incentives that entice transformative development. The development flexibility must provide a benefit to the developer and the community.

Potential flexibility incentives may include:

- Drive-through use;
- Build-to-line flexibility;
- Increase in building height;
- Site reclassification;
- Increased signage; and/or
- Parking in front of the building.

As a trade-off for providing flexibility incentives, the applicant must provide a benefit. Potential benefits may include:

- Lot consolidation;
- Mixed-use development;
- Transit amenity;
- Sustainable design and development;
- Pedestrian facility and/or amenity; or
- Public art.

Providing greater site design flexibility will encourage investment in challenging sites. In return, the applicant can provide certain amenities or benefits to the community. The chart to the right shows the relationship between potential flexibility incentives and community benefits.

Mixed Use Development



Transit Amenity - Troy Transit Center



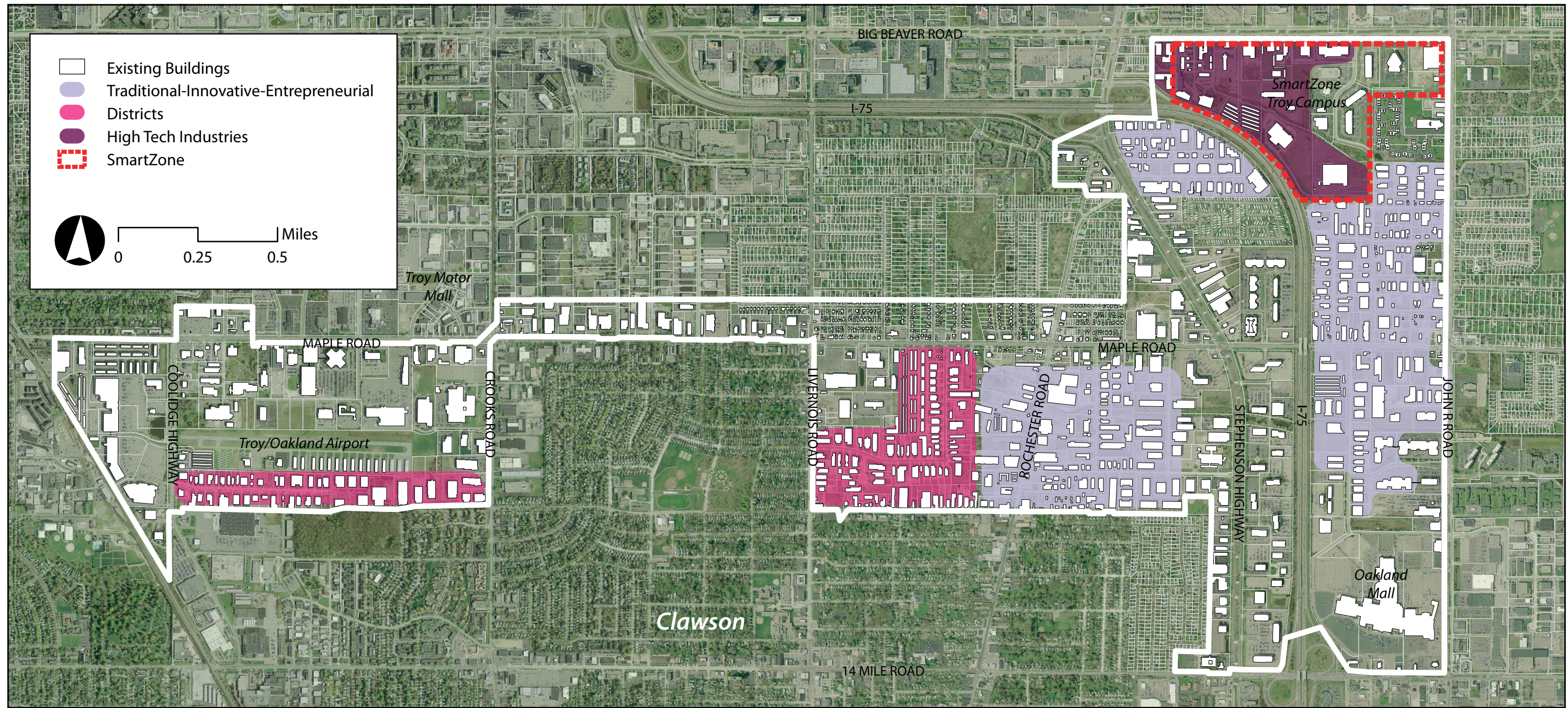
Pedestrian Amenity in Orland Park, IL



	Flexibility in Application of Zoning Standards				
Recognized Benefit	(1) Drive-thru	(2) Build-to-Line Flexibility	(3) Increased Building Height	(4) Site Reclassification	(5) Increased Signage
(a) Lot Consolidation				x	
(b) Mixed Use Development	x	x	x		x
(c) Inclusion of Transit Amenity		x	x		x
(d) Sustainable Design and Development	x	x	x		x
(e) Pedestrian Facilities and/or Amenity			x		x
(f) Public Art					x



Priority 2: Encourage entrepreneurship and redevelopment





Priority 2: Encourage entrepreneurship and redevelopment

The character and land use pattern of Maple Road, also known regionally as 15 Mile Road, changes dramatically between the City of Walled Lake to the west and Clinton Township to the east. For example, it has a distinctly residential character through West Bloomfield Township and Bloomfield Township to the west, while it is one of the main roads in Birmingham’s downtown. In Troy, the Maple Road corridor is known for its commercial and industrial uses. To many residents and visitors, this segment of Maple Road — between Eton Street and John R Road — presents an assortment of uses and building typologies. Revitalizing the properties along Maple Road and reinvesting at the major nodes is critical for the long-term success and sustainability of this corridor, but the Plan must also address the areas to the north and south of Maple Road.

These areas consist primarily of industrial buildings and warehouses. The structures range in age and square footage, although many share similar architectural qualities including few windows, large warehouse doors, and brick or masonry block construction. Generally, these areas lack walkability, curb appeal, and a vibrant pedestrian realm but they serve a very important function for the City of Troy.

These industrial areas are home to a variety of uses including manufacturing and equipment repair, construction trades and material suppliers, staff and business services, event rentals and beverage suppliers, marketing and communications, as well as professional design services. In short, these areas offer diversity within Troy’s economy.

The significance of a Special Area Plan is to recognize the intricacies of these target areas and to redefine that which was once considered a shortcoming when viewed out of context. The businesses located in the industrial areas north and south of Maple Road can be classified into three categories: traditional, innovative, and entrepreneurial.

If one were to view the City metaphorically as machine, one might consider that Maple Road keeps the community and its economy in motion. Improving public services and infrastructure and expanding business development and financial support are strategies to support existing and future businesses. Changing the perception of Maple Road’s industrial core is not just about the physical environment, it also requires marketing and rebranding. There are clusters of entrepreneurial energy and complementary industries within this industrial fabric that should be identified and reinforced.

Traditional:

The traditional businesses are characterized as long-standing companies and traditional industrial and manufacturing uses.

Innovative:

The innovative businesses have a good reputation and highly-rated services. Due to lower land costs, these companies have been able to focus on product innovation rather than overhead costs.

Entrepreneurial:

Finally, the entrepreneurial businesses are comprised of lifestyle businesses and startup companies, including cross fit gyms, pet daycare facilities, and several photography studios.

Existing Conditions



Rochester-Rankin



Chicago-Bellingham



Industrial Row



Park-Combermere



Bellingham



Automation Alley



Priority 2: Encourage entrepreneurship and redevelopment

Strategy: Preserve and enhance traditional-innovative-entrepreneurial industrial areas

There are three distinct industrial areas that fit into the traditional-innovative-entrepreneurial industry classification: Rochester and Rankin, Naughton-Wheaton-Piedmont, and Bellingham-Chicago. Home to a wide range of manufacturing and equipment repair facilities from automotive, marine, and aviation to HVAC and computer technology, these areas form the backbone of Troy’s industrial and technology base. They also provide for the health, safety, and welfare of the community and support important regional economic sectors.

These areas allow companies big and small to focus on product and service innovation rather than overhead costs and also afford opportunities for startup companies. Preservation of this industrial fabric is desirable for the overall sustainability of Troy’s economy. Public infrastructure improvements related to the construction of sidewalks, installation of street lights at intersections, and stormwater management improvements are essential to maintain these areas as viable Industrial areas. Again, this strategy is not just about physical improvement; traditional-innovative-entrepreneurial businesses may also benefit from local incentives and targeted use of state and federal funds.



Construction Business



Tree Service Business

Priority 2: Encourage entrepreneurship and redevelopment

Strategy: Promote creation of districts and encourage compatible industries

Similar to the original land use pattern of Birmingham’s Eton Road Corridor, Industrial Row and Parks-Combermere provide ideal locations for the creation of “districts.” Industrial Row and Parks-Combermere have notable concentrations of similar industries, including construction trades and material suppliers, creative and marketing services, landscaping, and professional design firms. These existing businesses provide the foundation for an industry specific rebranding. Districts are not limited to a certain use but they tend to have an overarching theme.

- Design-Creative: construction trades, design, interior furnishings, landscaping
- Technology: Engineering, software, research
- Entertainment: microbrewery, distillery, music hall, comedy club
- Health and Wellness: personal training, nutrition, indoor sports, gymnastics

Industrial Row and Parks-Combermere are located adjacent to the proposed development nodes at Coolidge Highway and Livernois Road respectively. The curation of a mixed-use environment with a dynamic edge focused on related enterprises can be an important component of placemaking.

These districts have the potential to become catalysts for collaboration and engagement between businesses, residents, and the community. This will be the place to encourage adaptive reuse and sustainable technology, social networking, and strategic placemaking through public/private partnerships. Bridging the space between development nodes and residential neighborhoods, the districts will ultimately foster a richer work-live environment.



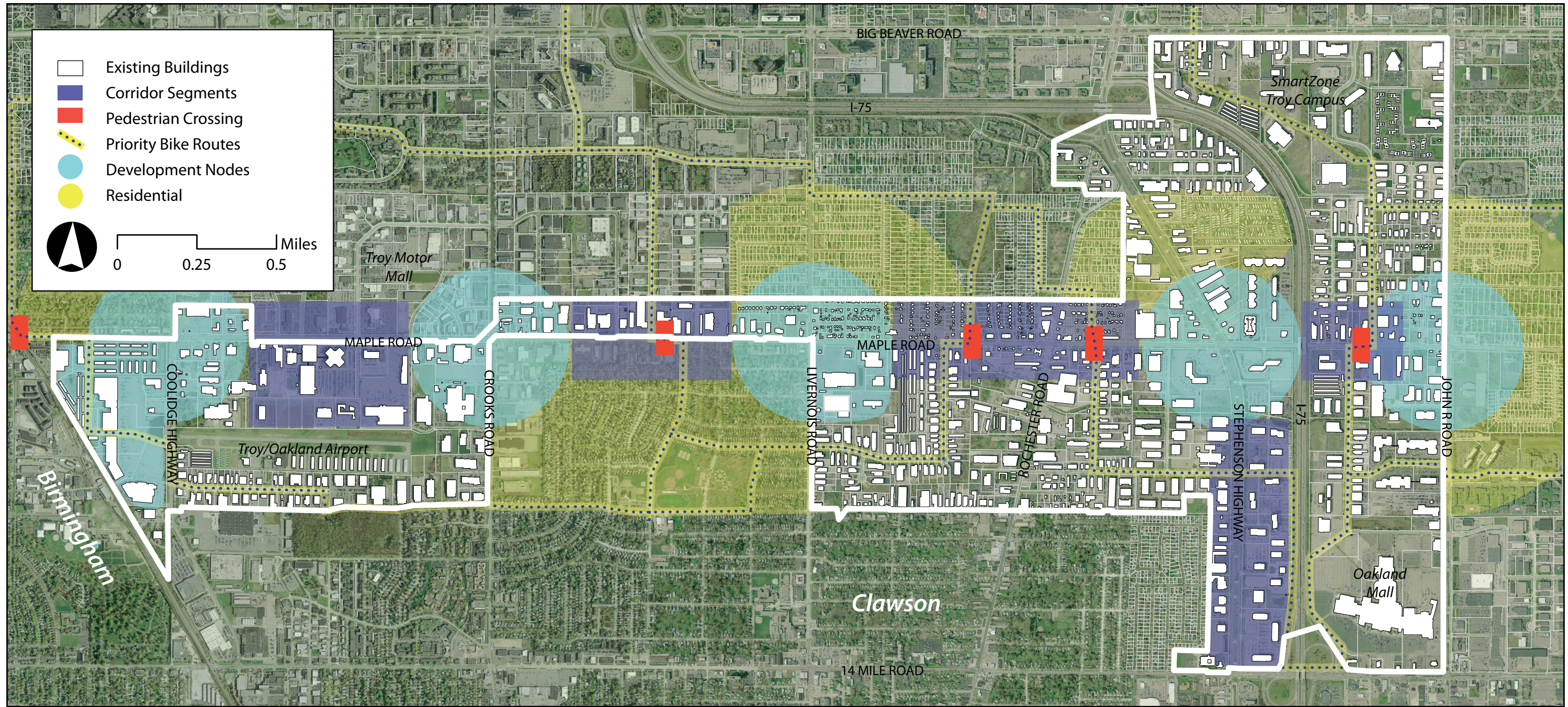
Eton Road Corridor in Birmingham, MI



Container Park in Las Vegas, NV



Priority 3: Enhance and strengthen segments between major mile intersections





Priority 3: Enhance and strengthen segments between major mile intersections

By focusing retail development into major mile intersections, the interior corridor segments—the long portions of corridor between centers—need consideration. These segments, one-half (1/2) mile long, include hundreds of separately owned parcels. While the character and uniqueness of these parcels vary, many of them currently lack the necessary size and depth for redevelopment for commercial purpose. The Plan must consider strategies to enhance and strengthen the interior corridor segments between major mile intersections.

Strategy: Identify Alternative Value

The extensive and effective retail trade competition offered by major mile road intersection development nodes, Big Beaver, and Oakland Mall reduce the potential for new retail development along the interior corridor segments of Maple Road. Development nodes, Big Beaver, and Oakland Mall sites offer either existing cluster shopping locations or the potential to combine parcels to create cluster shopping locations. The parcels in the segments between the major mile intersections are often too shallow or too narrow to support cluster retail uses. As such, the segments between major mile intersections should be planned for alternatives to strip retail and shopping centers.

The corridor’s future opportunities along these segments should be focused on entrepreneurial development and growth. This strategy focuses on eliminating barriers and creating a sense of entrepreneurship to identify and promote new uses and development types that can restore values. The Plan’s intent is to accommodate the widest possible spectrum of uses to ensure flexibility and provide for entrepreneurship.



Shopping Center



Family Business



Entrepreneurial Business

Priority 3: Enhance and strengthen segments between major mile intersections

Reinforce and build on value already in place

If a corridor segment is doing well, leave well enough alone. For example, the interior corridor segment between Coolidge and Crooks is an automobile dealership, supply, and service cluster. The Plan supports these stable assets and supports the extension of their market draw by promoting investment in similar or complementary uses on nearby property.

Permit alternative land uses including residential and usable open space

For segments without a strong existing market, alternative uses, including residential and usable open space, may be a market driven solution. Troy has started to experience a demand for alternative housing options. Segments along Maple Road supply vast areas of underused land that is available to meet the demand for alternative housing types. Because many sections of Maple Road are bordered by residential neighborhoods, it is much easier for these segments to attract reinvestment by integrating with the surrounding neighborhoods rather than compete with larger, developable parcels at major mile intersections. Furthermore, since many established residential neighborhoods are only one parcel off of Maple Road, converting some segments to residential replaces the conflicting land use with a compatible land use that completes the neighborhood along the Maple Road boundary. Re-making sections of the corridor by putting some residential on the frontage is an opportunity to complete the residential neighborhood and provide an appropriate transition.

The usable open space of parks and squares are the civic glue that binds an area. These are the places that create community culture and pride; are the gathering areas for planned and chance meetings; serve as the front door to development; and make both the motorized and non-motorized experience more enjoyable. A network of usable open space comprises both the distinct parks and plazas but also the linkages – streets and trails – that connect them.

Additional housing, particularly the missing middle, and usable open space along the corridor would enhance the retail development nodes at the intersections.



Residential-Missing Middle Housing



Residential



Priority 3: Enhance and strengthen segments between major mile intersections

Strategy: Implement zoning amendments to permit flexibility

While it is recognized that zoning cannot create a market, it can surely stifle one. Acknowledging that the interior corridor segments have less of a market demand and that some parcels along the corridor do not have the necessary parcel size, the Plan recommends that targeted zoning amendments be considered.

Build-to-line Flexibility

Redevelopment in the interior corridor segments should focus less on building placement and rather emphasize quality architecture and design. By relaxing the build-to-line requirements, zoning in these segments becomes less of a hindrance to site redevelopment. The recommendation of build-to-line flexibility is intended for the interior segments of Maple Road but not at the nodes (intersections of major mile roads).

Extend Maple Road Form Base District North to Chopin Road

The north side of Maple Road between Livernois and Rochester has very limited depth, as little as 100 feet. A 100-foot parcel depth is not sufficient to accommodate any reasonable commercial or office development without significantly encroaching on the single family residential it abuts. Alternatively, extending the Maple Road Form Based District north to Chopin Road would permit greater land assemblage which would allow for the redevelopment of those parcels. The target land use for this section would be multiple-family residential, which would provide an alternative housing option. The change in zoning would permit these single-family homes to remain in perpetuity but increase their property values with increased redevelopment opportunities.

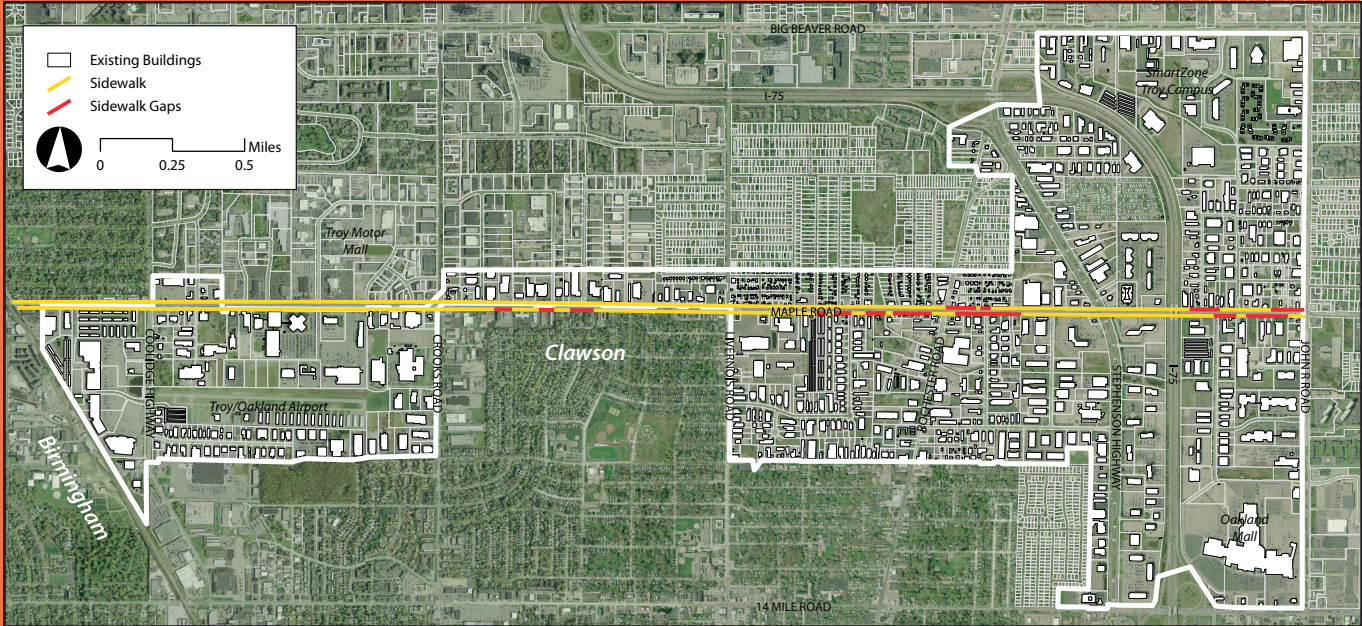
Strategy: Improve pedestrian access

The street is the largest public open space along the Maple Road and should be considered part of the public realm. The corridor segments between the nodes are a tremendous untapped resource that provides a link between the adjacent residential neighborhoods and the commercial nodes at the major mile intersections. In order to provide for a pedestrian friendly corridor, pedestrian amenities must be improved. Maple Road should be made more a comfortable place to walk by providing continuous, wide sidewalks and recognizing the importance of the public realm in “place” creation through the inclusion of elements such as trees, landscaping, lighting, public art, special pavement treatments, and bus shelters, etc.

Sidewalk connections and cross-access easements

Additional pedestrian amenities should be considered along the corridor. The City should consider coordinated streetscape improvements along Maple Road. Streetscape elements can identify an area as a special and distinct place for residents, shoppers, visitors, and employees. The City should establish a conceptual Streetscape Plan that sets recommended standards for landscaping, signage, lighting, sidewalks, intersections, and access.

In addition, there are existing gaps in the sidewalk along the Maple Road. Most of the gaps are along the south side, including some in the City of Clawson; however, there are some gaps on the north side. Even if redevelopment does not occur, the City of Troy should work with property owners to fill in these sidewalk gaps and should encourage the City of Clawson to do the same.



Existing Sidewalk Gaps



The Maple Road streetscape should provide:

- A defined edge between the pedestrian and automobile areas
- A unified relationship between the public/pedestrian realm and private domain
- The use of street trees and landscaping, furniture, paving, lighting, and other streetscape elements
- Attractive street lighting that reinforces the corridor image and minimizes extraneous light

Streetscape may occur corridor wide or occur as redevelopment does.

Streetscape Improvements:

- Street trees and landscaping
- Decorative fencing
- Transit amenity
- Furniture
- Pedestrian style lighting



Priority 3: Enhance and strengthen segments between major mile intersections

Strategy: Improve pedestrian crossings

Due to the auto-centric nature of Maple Road, including multiple travel lanes and long blocks, employees and residents who venture out on foot to destinations have difficulty crossing. Providing safe crossings for pedestrians and cyclists is an integral strategy for walkability. Maple Road crossing improvements should take place both at major mile intersections and mid-block. Improvements at major mile intersections may include better marked crosswalks and improvements to pedestrian signals.

Mid-block crossings for Maple Road will further integrate and strengthen the connection with the adjacent residential neighborhood. Pedestrian refuge islands and signalized crossings are some of the techniques for providing mid-block crossing. Applicability should be determined based on site context and budget.

Priority pedestrian crossing improvements should be considered:

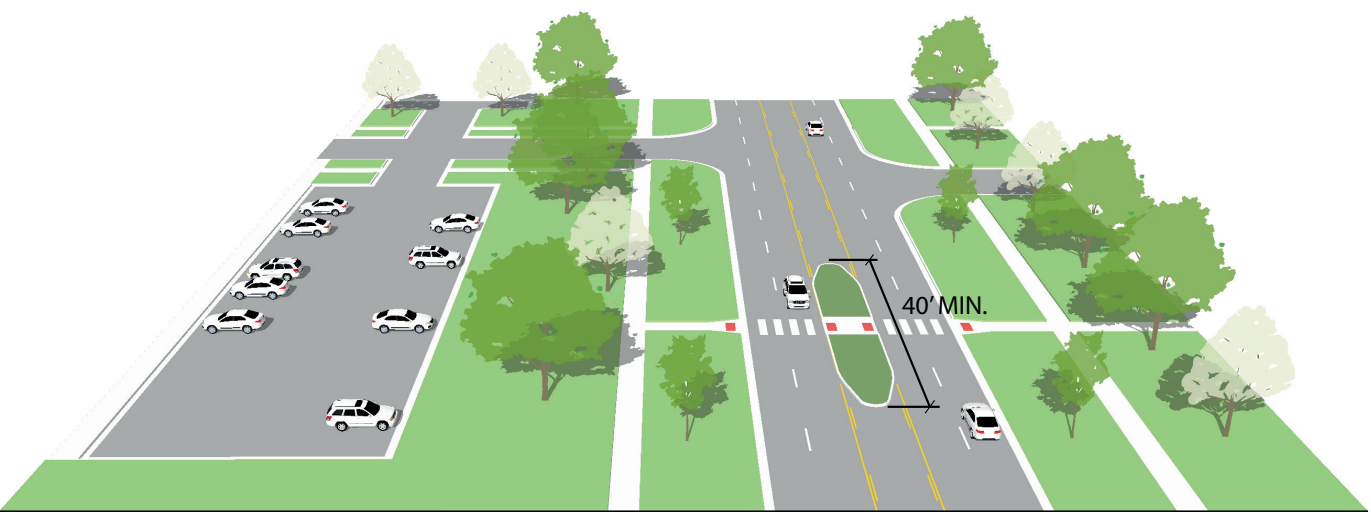
- At all major mile road intersections
- Improvements to existing crossing at Edenborough Road (Birmingham)/Doyle Drive
- Crosswalk at light at Maplawn
- Mid-block crossing near Heide Drive/Bywood Avenue (Clawson)
- Improvements to existing crossing at Combermere Drive
- Mid-block crossing near Bellingham Drive/ Chicago Road



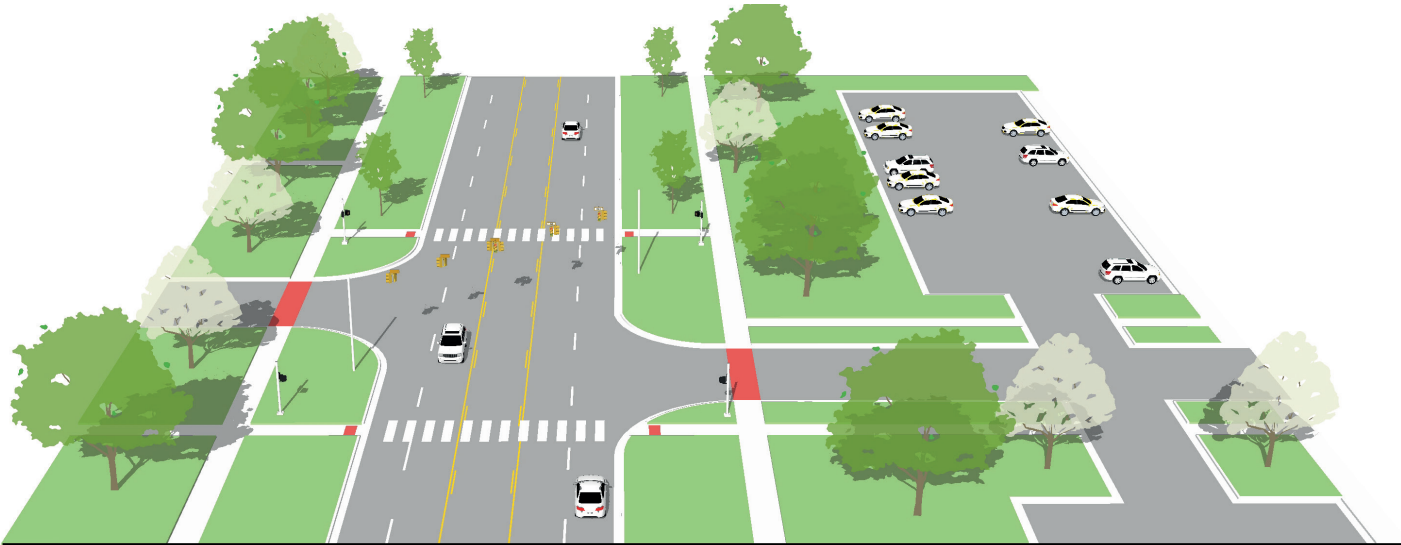
Provide Pedestrian Crossing near SMART Bus Stops



Improve Striping at Intersection Crosswalks



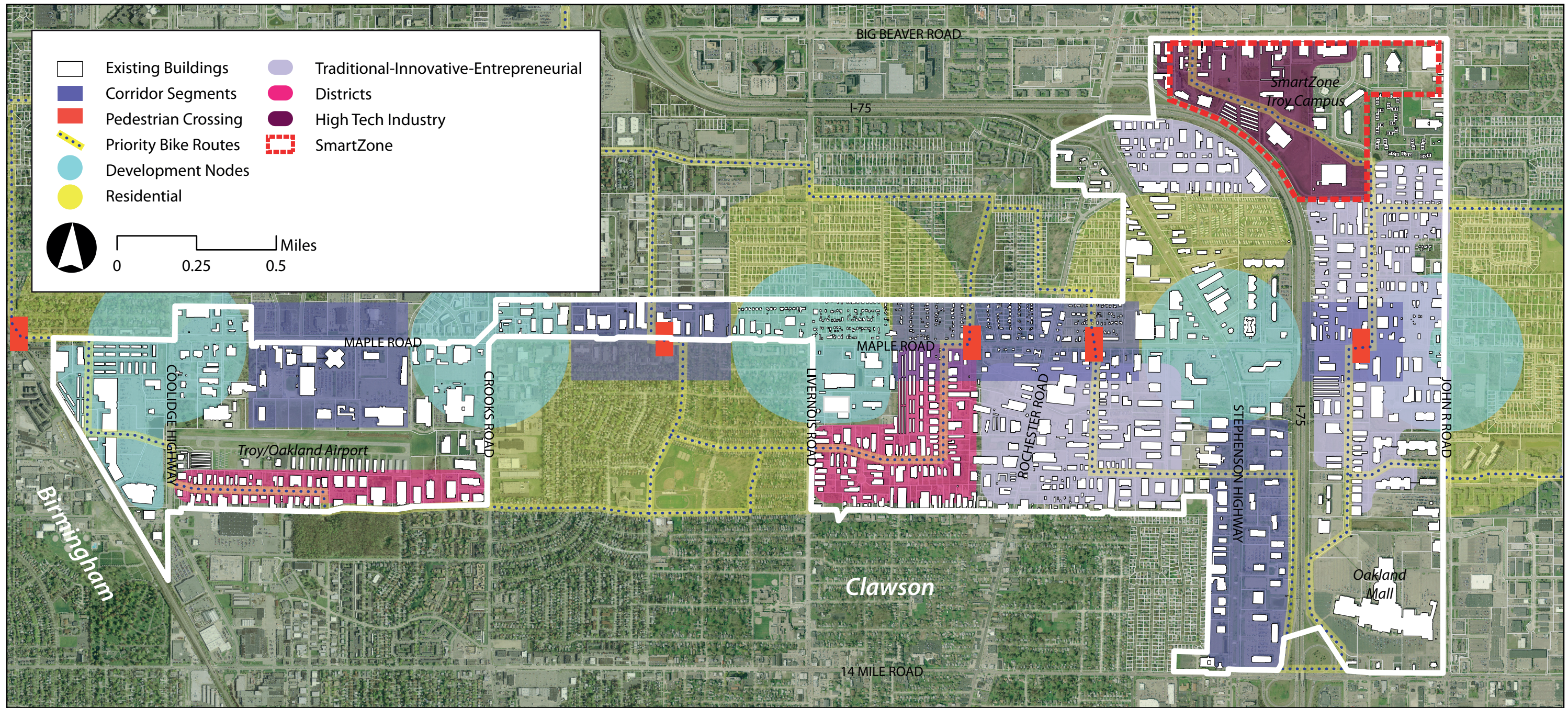
Unsignalized Pedestrian Mid-Block Crossing      SIDEWALK      PEDESTRIAN REFUGE ISLAND      SIDEWALK



SIDEWALK      SIGNALIZED INTERSECTION WITH STRIPED CROSSWALK      SIDEWALK      Signalized Pedestrian Mid-Block Crossing



Maple Road Strategic Plan Map





Action Plan and Implementation

The Maple Road Plan is organized into multiple projects so the vision can be refined and implemented in phases over time in a flexible manner. Priority transformative projects like the streetscape projects and facade improvement programs entail multiple phases given their scale and ambition and serve as economic catalysts enhancing the image of the corridor. The timeframe to implement the Plan will depend on many factors, including market conditions, financing, approvals, and other city initiatives.

Priority 1 Generate investment at development nodes	Strategy	Actions	Phasing	Responsibility
	Encourage high-quality commercial /mixed-use development at major mile intersections	Evaluate all tools to encourage and incentivize lot consolidation	Near	City
		When evaluating new developments: •Review cross-access easements and pedestrian access to create walkable developments •Require shared parking facilities where appropriate •Ensure a balanced and compatible mix of uses to that provide everyday services and evening/ weekend amenities including restaurants, retail, service, open space, and entertainment appropriate for the market •Ensure that outlot development is compatible with anchor development •Require good design including consistent signage, pedestrian lighting, and increased landscaping along roadways and in parking lots	Near	
		Ensure redevelopment of corners of major mile intersections are redeveloped with buildings at the hard corner	Mid/Long	City, Private entities
	Engage surrounding residential neighborhoods through linkages	Evaluate pedestrian infrastructure improvements within ½ mile radius of the major mile nodes	Long	City
		Evaluate zoning to require appropriate landscape buffering / screening	Near	City
		Work with SMART to improve public transportation along the corridor and link to the new Troy Transit Center	Mid	City, SMART
	Incentivize development through zoning	Develop Rochester Road Streetscape Plan	Near	City, Private entities
		Implement Streetscape Plan comprehensively or as development occurs	Near	City
		Implement zoning flexibility and development benefits into zoning ordinance	Near	City

Priority 2 Encourage entrepreneurship and redevelopment	Strategy	Actions	Phasing	Responsibility
	Preserve and enhance tradition-innovation-entrepreneurship industrial areas	Evaluate public infrastructure needs in industrial areas	Mid	City
		Work with existing firms in industrial areas to provide city resources and assist in obtaining regional, state, and federal resources	Near	City
	Promote creation of districts and encourage compatible industries	Evaluate city codes and policies to remove any barriers to adaptive reuse	Near	City

Priority 3 Enhance and strengthen segments between major mile intersections	Strategy	Actions	Phasing	Responsibility
	Identify alternative value	Evaluate interior corridor segments for areas of stable assets and encourage entrepreneurial development and growth	Mid	City
		Permit alternative land uses including residential and useable open space	Mid	City
		Find opportunities along corridor to install public spaces	Mid	City, Private entities
	Implement zoning amendments to permit flexibility	Evaluate the existing zoning for interior corridor segments and amend zoning as necessary	Near	City
		Reach out to property owners regarding rezoning Chopin Road to Maple Road Form Base District	Mid	City
		Rezone Chopin Road area to Maple Road Form Base District	Mid	City, Private entities
	Improve pedestrian access	Develop Maple Road Streetscape Plan	Mid	City
		Infill sidewalk gaps and implement Streetscape Plan comprehensively or as development occurs	Mid	City
		Evaluate new developments for cross-access easements and pedestrian access	Mid	City, Private entities
	Improve pedestrian crossings	Evaluate and improve pedestrian crossings at all major mile road intersections	Near	City
		Improve existing pedestrian crossings at Edenborough Road (Birmingham) / Doyle Drive and Combermere Drive	Near	City
		Install crosswalk and crosswalk light at Mapelawn Road	Mid	City
		Evaluate and install new midblock crossing near Heide Drive/Bywood Avenue (Clawson) and near Bellingham Drive/ Chicago Road	Long	City



# North Troy: Special Area Plan

## Introduction

North Troy serves as the business and employment hub for the north side of the City. The area is dominated by office use, specifically mid-rise buildings and towers with large footprints built primarily in the mid-1980s to early 1990s. These buildings provide Class A and B space with ample parking, convenient highway access, fiber optic connections, and well manicured grounds. They have been marketed as ideal for corporate headquarters facilities. However, in order to maintain this position as a business and employment hub for the future, the area must evolve to serve the future office worker. Providing a compatible mix of uses, increasing amenities, and creating unique identity will help attract new tenants and keep employees and residents in the area beyond the work hour.

## Evolving to Meet New Challenges

In today's world, many of the qualities that made North Troy so successful in the 20th Century run counter to current market trends. Whereas earlier generations of American

workers fled urban areas for newly constructed suburban campuses and car-accessible employment centers, today's innovation workers seek the greater connectivity, convenient amenities, and vitality that comes from a denser mix of uses, as well as a firmer commitment to sustainability.

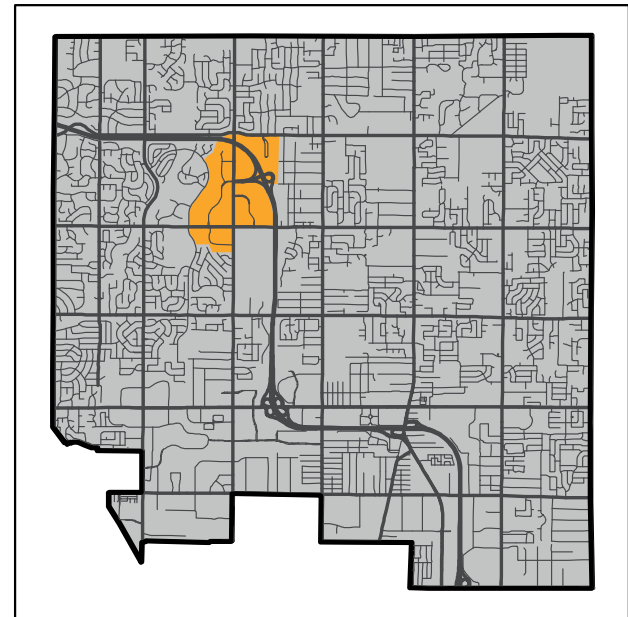
North Troy faces a turning point. Its original development pattern should evolve to meet new challenges in the marketplace. Both employers and employees must be flexible and nimble to respond to demands in competition. As such, their facilities must adapt to fulfill evolving, diverse requirements in the workplace. Many of today's knowledge workers expect entertainment and service amenities nearby as well as opportunities and spaces to connect and share ideas. The isolated buildings in North Troy do not reflect this trend. There is no central, defining place that represents the heart and vision of North Troy. Creating this balanced mix of uses and a sense of place will create a symbiotic relationship with the adjacent neighborhoods, where employment, service, and residential uses are interconnected. Fortunately, North Troy has ample opportunities to evolve and create a modern, preferred employment hub. The challenge and opportunity is determining how and where the potential can be unlocked.

## Vision Statement

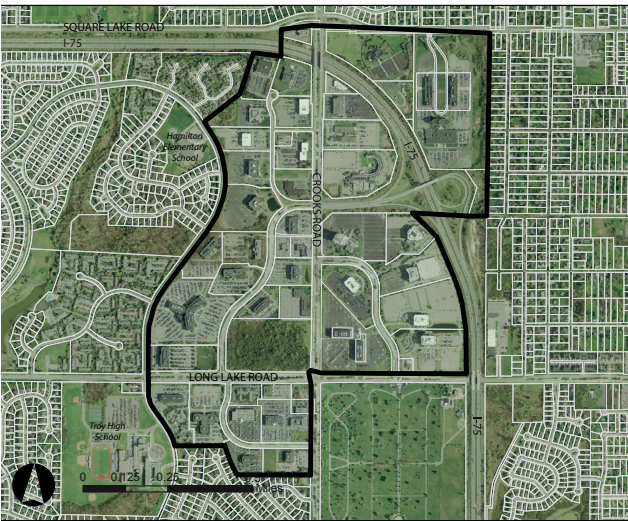
North Troy will be a dynamic, high-amenity employment district with where the business and office core contributes to the health and welfare of the employees. The area will include a balanced mix of uses that supports the needs of the community and businesses by providing services and amenities for all individuals, from employer to employee to resident. The physical environment will promote an active lifestyle, while the new uses and creative programming encourage healthy choices and work together to build social capital.



Existing Conditions



Locator map



Target Area map

2013 Target area statistics

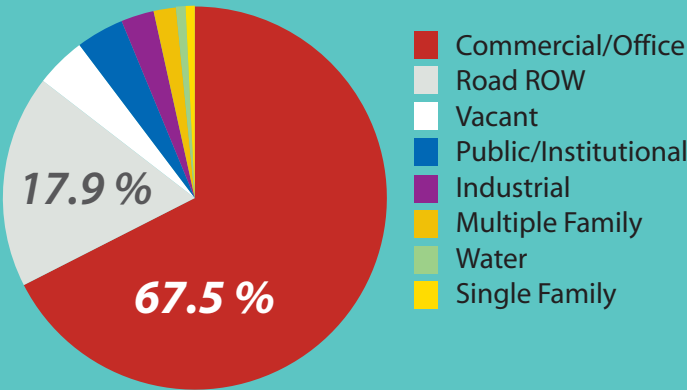
Total taxable value	\$119,423,759
Total area (acres)	461
Total businesses	282
Total employees	5,042

2010 Market area statistics<sup>1</sup>

Population	5,908
Households	2,370
Percent owner occupied	86.6%
Median household income	\$86,217
Per capita income	\$44,887

Source: Esri 2013 Estimates Business Summary from Oakland County EDCA, Census 2010, City of Troy GIS data 2013  
Note: 1. Market Area includes households within 1 mile of Target Area.  
2. Employee and Business data use NAICS codes.

Land Use

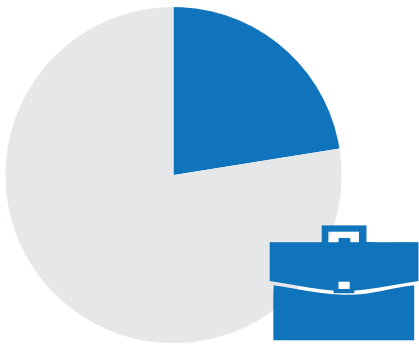


Property Data

	Target Area	Commercial	Industrial	Residential
Total Parcels	61	55	3	3
Total Structures	48	45	3	NA
Total Acres	461	415	17	29
Median Year Structure Built		1988	1998	NA
Total Floor Area (SF)		95,916	44,457	NA
Median Floor Area (SF)		5,232,280	143,213	NA
Total Taxable Value	\$119,423,759	\$114,897,329	\$4,370,860	NA

Source: City of Troy GIS data 2013

Top Industries in Target Area by Employment<sup>2</sup>

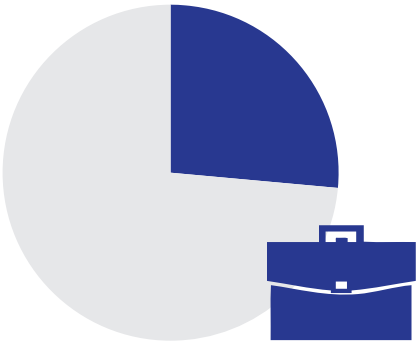


21.5 % Professional, Scientific & Tech Services

	Employees	Percent (%)
Manufacturing	1,035	20.5
Professional, Scientific & Tech Services	1,084	21.5
Finance & Insurance	683	13.5
Administrative & Support & Waste Management	521	10.3
Real Estate	408	8.1

Source: Esri 2013 Estimates Business Summary from Oakland County EDCA

Top Industries in Target Area by Number of Businesses



27.0 % Professional, Scientific & Tech Services

	Businesses	Percent (%)
Professional, Scientific & Tech Services	76	27.0
Finance & Insurance	37	13.1
Manufacturing	17	6.0
Real Estate	17	6.0
Administrative & Support & Waste Management	43	15.2
Other Services (except Public Administration)	17	6.0

Source: Esri 2013 Estimates Business Summary from Oakland County EDCA



Gateways

- Square Lake Road
- Corporate Drive
- Corporate Drive

Assets

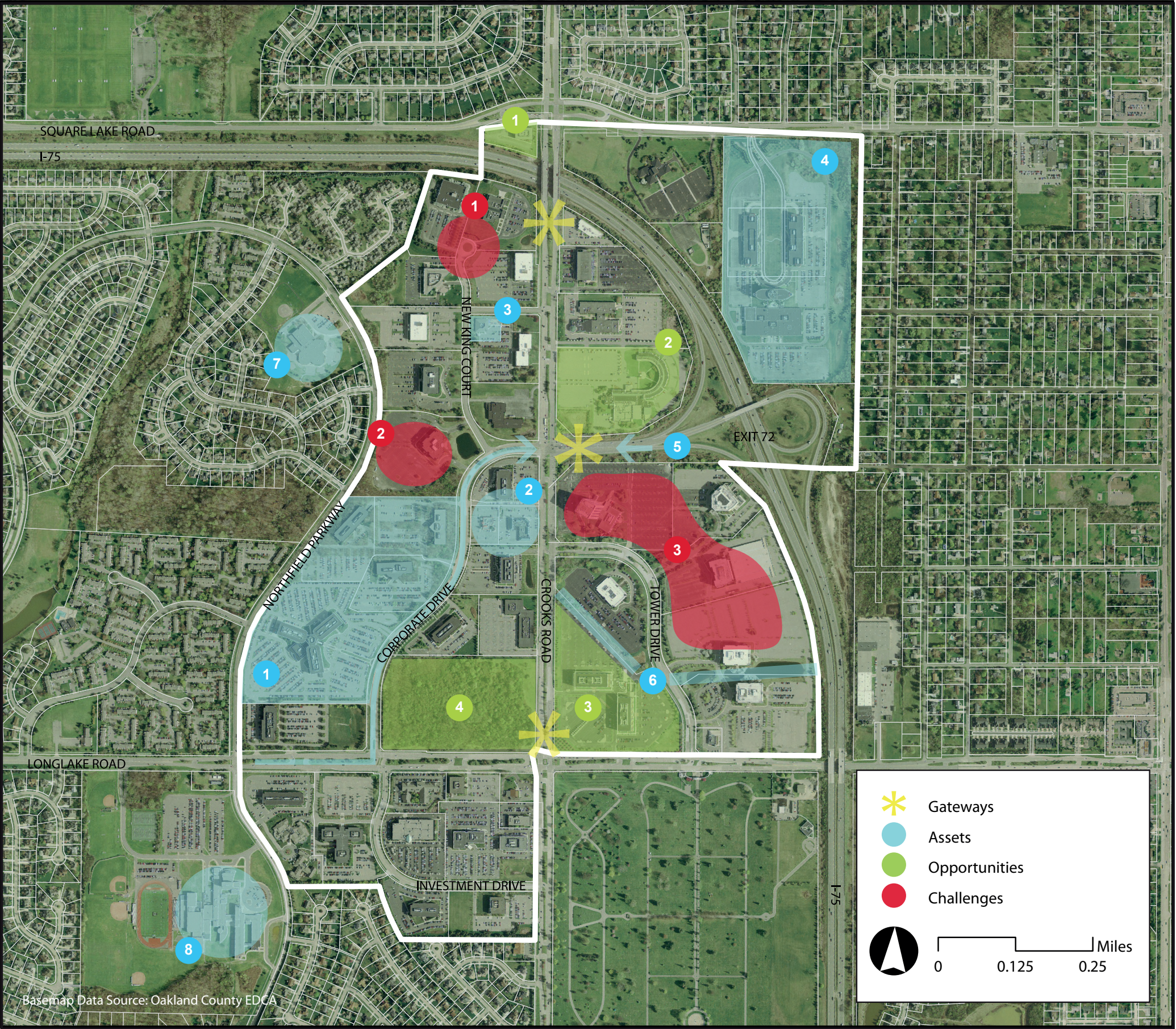
- 1: Flagstar Bank Headquarters
- 2: Northfield Point Marketplace
- 3: The Learning Experience childcare facility
- 4: Delphi Headquarters
- 5: Direct access to and from I-75
- 6: Quality stormwater management design
- 7: Hamilton Elementary School
- 8: Troy High School

Opportunities

- 1: SW corner Crooks Road and Square Lake Road
- 2: Infill at MET Hotel
- 3: NW corner Crooks Road and Long Lake Road
- 4: NE corner Crooks Road and Long Lake Road

Challenges

- 1: Access management along New King Court
- 2: Lack of pedestrian connection to New King Court and Corporate Drive development
- 3: Large surface parking lots surrounding Tower Drive properties





North Troy Public Engagement Findings

North Troy consists primarily of office use with excellent freeway access to I-75 and close proximity to a large employee base. Large setbacks and wooded areas provide a desirable campus setting for certain sites. Natural features provide amenities and may help attract mixed-use and multi-family development, if desired by the community. Existing corporate companies may look to build or expand in under-utilized areas. Looking at the area as a whole, North Troy lacks identity and character. Office space has been slow to fill resulting in high vacancy. Regional access is good, but internal connectivity and pedestrian access is not optimal. The area is dominated by cars with few alternative mobility options or usable green space. It also lacks entertainment for younger families. Road repair around the area needs to be addressed.

Downtown Detroit has been experimenting with pop-ups and initiating corporate programs to get employees out of the office. High quality food trucks provide indirect competition to brick and mortar establishments. Ultimately it’s about options and getting people exposed to business. Right now North Troy is just an employment center. It needs uses and amenities to complement the office uses and to keep people around after 5 pm.

Considerations

- Establish more convenience uses such as restaurants, retail, and daycare
- Experiment with tactical placemaking, such as food trucks and pedestrian improvements, to provide more amenities to workforce
- Increase flexibility of current zoning to widen development of potential uses
- Encourage more parking structures
- Encourage quality stormwater management for improved drainage and connected green space

Priorities and Strategies

This plan recommends three priorities for establishing North Troy as a safe, active, and walkable district with premiere office space and generous amenities for employees and residents. These priorities and strategies include:

1. Provide a Compatible and Vibrant Mix of Use

Strategies:

- Promote service infill through property repurposing
- Promote residential infill through property repurposing
- Develop and strengthen core
- Create a community gathering space

2. Improve Multi-modal Circulation and Safety

Strategies:

- Study and implement road diets
- Introduce pedestrian mid-block crossings
- Establish consistent landscape buffer and setbacks

3. Inspire Tactical Placemaking to Create a Lively Place

Strategies:

- Create an identity through gateways and wayfinding
- Facilitate health and wellness initiatives
- Encourage creative programming

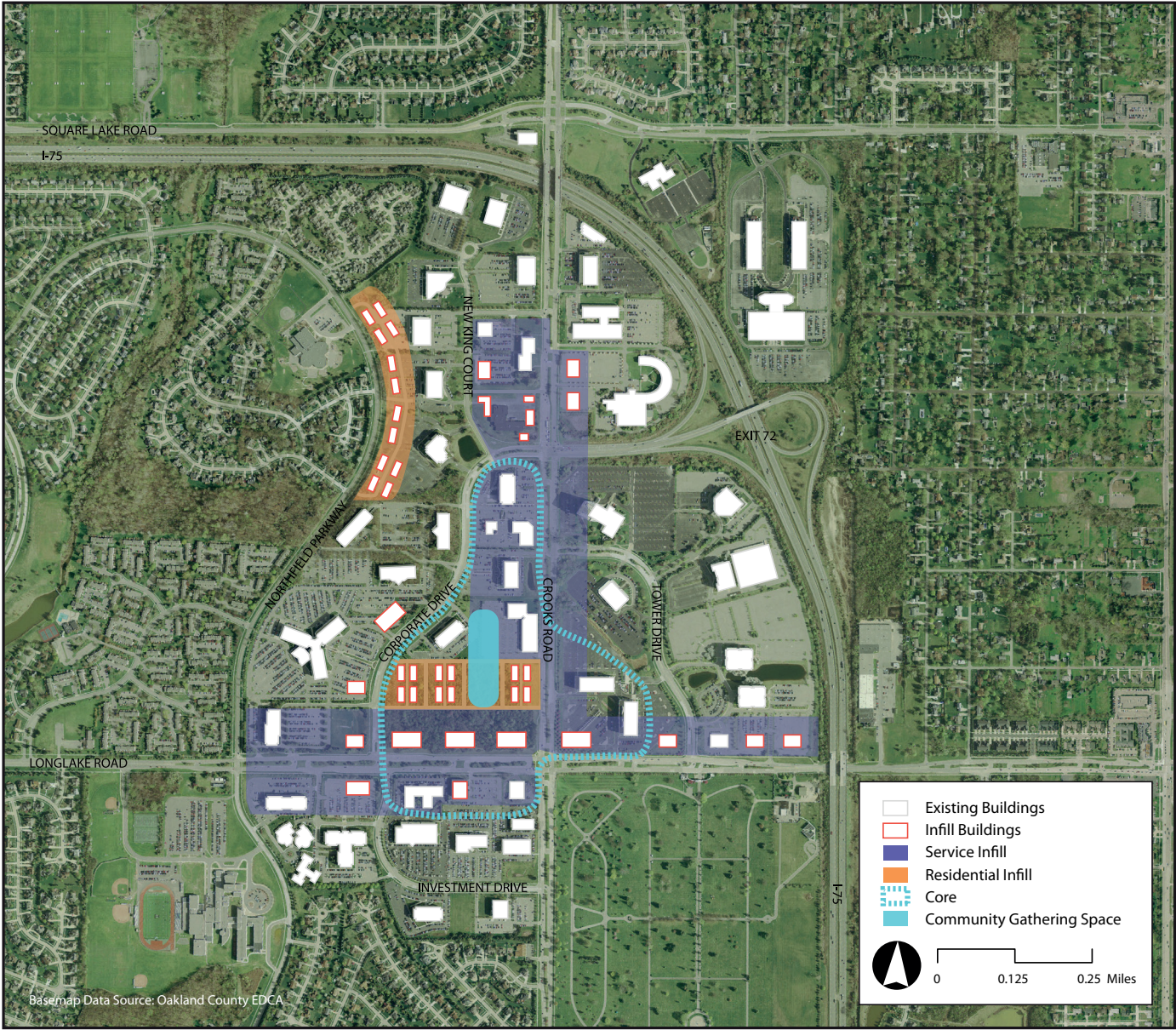
Priority and Strategy Interconnection:

These priorities and their strategies are not mutually exclusive; rather, they reinforce each other and together they have the ability to attract users and spark investment and ultimately achieve these aims of vibrancy, identity, and walkability.

Priority 1: Provide a Compatible and Vibrant Mix of Uses

Located at the intersection of two main arterial roads with a direct access ramp to I-75, North Troy is strategically located to serve as a major employment hub for Oakland County. North Troy currently is home to over 5,000 primarily daytime employees; in addition, there are over 2,000 households within one mile of the area. However, the area is dominated by single-use office buildings with limited interconnections and few amenities for these workers and nearby residents.

Preparing North Troy for the next generation of growth will require a broader and more creative real estate strategy that will tap into regional trends and market opportunities in order to create a more vibrant, attractive, and flexible work environment. A compatible and vibrant mix of uses will create a life and vibrancy, provide interconnections and a relationship with the adjacent neighborhoods, reduce automobile trips, and enhance walkability by providing destinations.





Priority 1: Provide a Compatible and Vibrant Mix of Uses

Strategy: Promote service infill through property repurposing

The land use pattern of North Troy is primarily single use office space. Given the existing market conditions, many of these buildings are over-served by parking. As a means to attract new business to North Troy, these under-utilized parking areas may be repurposed for service infill development. Infill development is increasingly recognized as an effective way to achieve a variety of goals, including making better use of existing infrastructure; locating community services, jobs, and shopping in close proximity to neighborhoods; and reducing auto trips by supporting walking, biking, and transit.

Location

Service infill should be focused on Crooks Road, Long Lake Road, and the area around Northfield Market Place.

Uses

Mixed use, casual and family dining, personal services, dry cleaning services, health and wellness, grocery, pharmacy, and childcare.

Characteristics

Mixed use buildings, placed closed to the street, use of high quality materials, naturalized stormwater treatment, and woodland protection. Specific design features can promote this interconnections including the layout and orientation of buildings, the network of sidewalks and pathways, the location of parking relative to structures and walkways, and the amount and placement of green space, landscaping, benches, and other amenities.



Big Beaver retail development in Troy, MI



Grocery store in Kansas City, MO

Strategy: Promote residential infill through property repurposing

North Troy has the opportunity to re-envision the underutilized land adjacent to Northfield Parkway. A variety of housing options will provide residents with convenient access to work, schools, and the new infill service amenities. It will also provide an appropriate transition between the more intense multiple story office use and the less intense single family neighborhoods.

Rezoning transitional areas between the service core and surrounding social neighborhoods as mixed use would also enable property owners to repurpose the upper stories of underutilized office buildings as residential use. Introducing housing to North Troy will provide attractive housing options for rising professionals as well as active seniors.

Location

East side of Northfield Parkway.

Uses

Single-family attached residential, live-work lofts

Characteristics

Two-to-three story urban style residential development set close to the street with appropriate landscaping buffer, use of high quality materials, and alleys or rear loading garages. Vehicular access should be limited off Northfield Parkway.



Rochester Commons PUD in Troy, MI



Townhomes in Victoria, BC



Priority 1: Provide a Compatible and Vibrant Mix of Uses

Strategy: Develop and strengthen the core

The Master Plan addresses the need for concentrated investment, activity, and services within the Target Areas.

Within each Target Area, the Plan identifies specific sites and nodes that can be utilized to build this physical fabric and social atmosphere, and support economic development. Building off the surrounding employment base and the highly trafficked Northfield Point Marketplace, the vacant parcel on the northwest corner of Long Lake and Crooks Road was approved for mixed use development. The development of this vital site will provide a compatible mix of uses and should be the starting place of other strategies in the Plan, including pedestrian circulation improvements, landscaping, wayfinding, and creative programming. At the heart of the core is the community gathering space.

Strategy: Create a community gathering space

The community gathering space will serve as the heart of North Troy, providing physical amenities and social programming for employees and residents. Given that the area is known primarily as an office campus, North Troy is fairly green. Many of the corporate sites offer attractive landscaping, mature trees, and even water features, but most of these facilities are designed for aesthetics not for use.

Creating a community gathering space in the vacant land and underutilized parking area will enhance North Troy’s sense of place. This area should combine landscaping and hardscape, and include amenities such as cafe seating, movable chairs, bike racks, water features, permanent and seasonal shaded areas, public art, and performance space. This combination of plaza and green space will provide a space for corporate programming and neighborhood recreation, supporting the adjacent office, service, and residential uses.



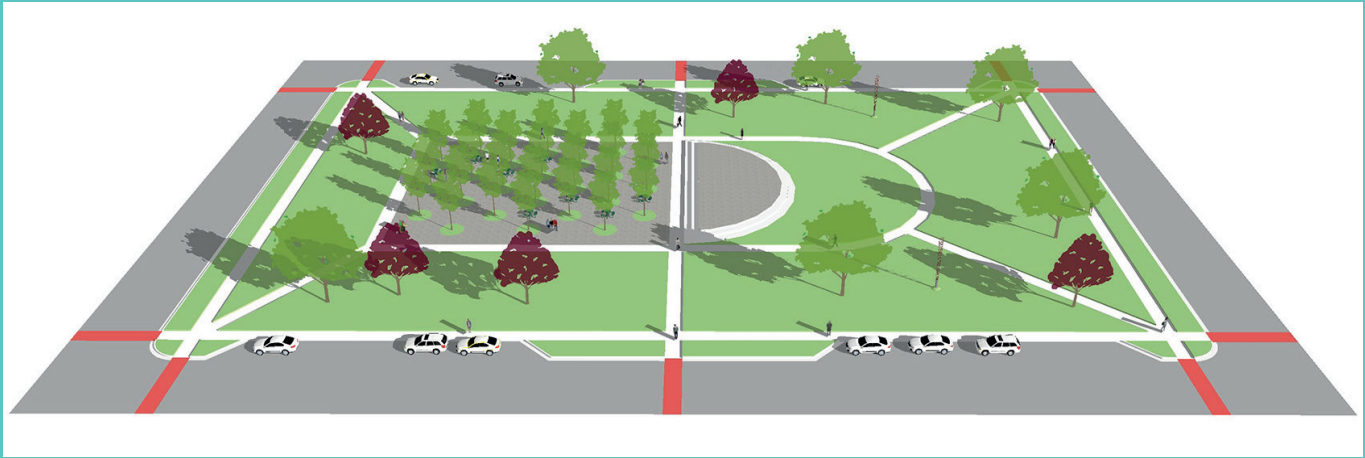
Town Center in Novi, MI



Shopping Center in Orland Park, IL



Conceptual design for North Troy community gathering space



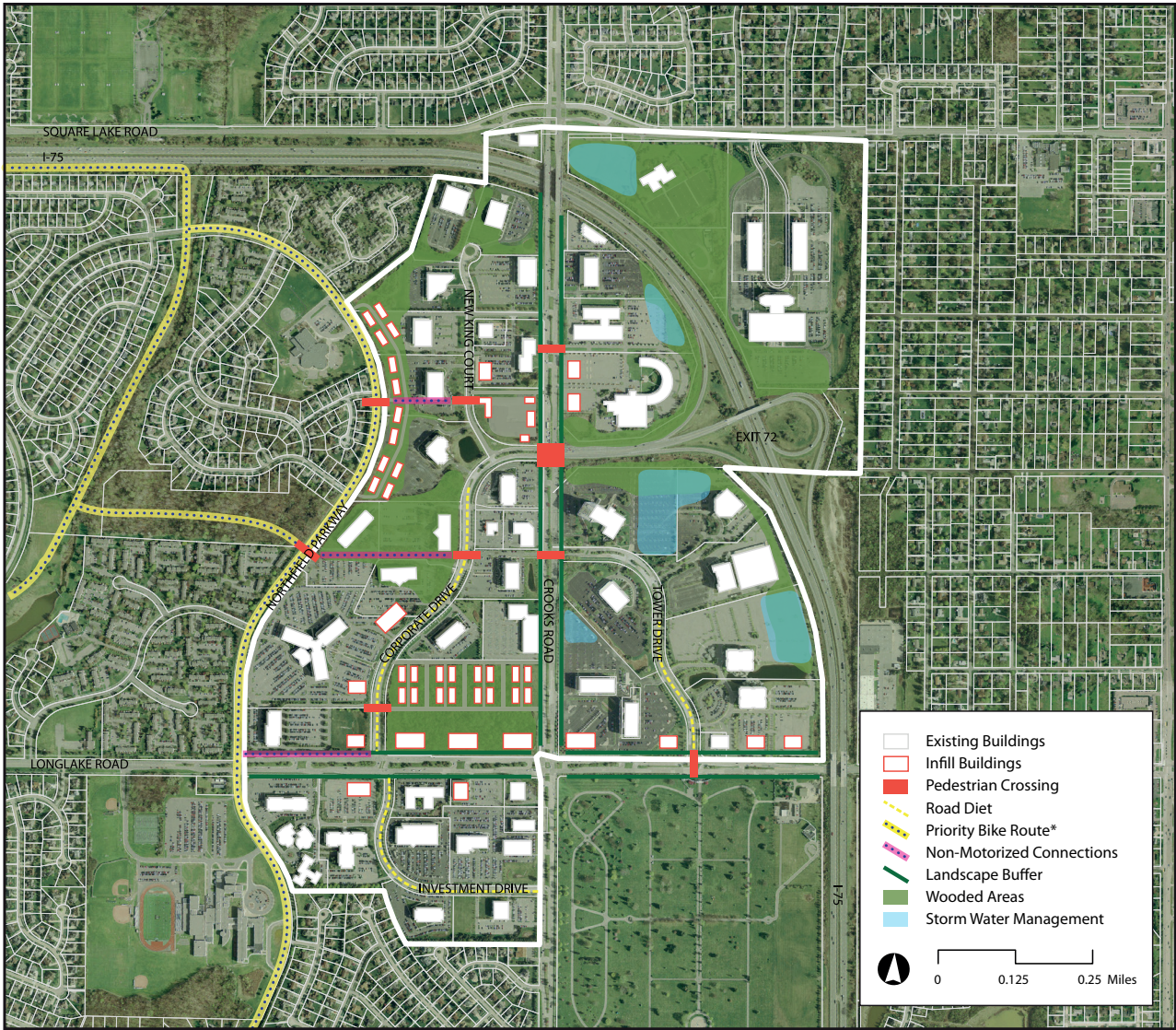
Conceptual design for North Troy community gathering space



Priority 2: Improve Multi-modal Circulation and Safety

At some point during our commute to work or school, everyone becomes a pedestrian. North Troy provides a beautiful campus setting with large lawns, water features, and woodland areas, but it is auto-oriented and lacks walkability. There are sidewalks, but they don't really function for pedestrians and cyclists, they don't lead to desired destinations, and they often follow indirect routes. Changes to landscaping and transportation infrastructure within the right-of-way, coupled with strategic infill, will improve safety and encourage walkability.

It will be important to link new circulation paths across North Troy to the non-motorized facilities along Northfield Parkway. Northfield Parkway is highlighted as a Priority Bike Route on the Priority Bike Routes Neighborhood Greenways Map\* in the 2009 City of Troy Trails and Pathways Master Plan. In the short term, Long Lake Road will serve as the primary connection to the parkway, and, as development occurs, there will be more opportunities to create non-motorized connections using public easements. In addition to perimeter sidewalks, private developers should be encouraged to improve internal pedestrian circulation, creating convenient, logical, and attractive walkways.



Priority 2: Improve Multi-modal Circulation and Safety

Strategy: Study and implement road diets

North Troy was designed for the automobile in the mid-1980s, and cars remain the dominant transportation choice. In order to provide for multi-model transportation options, the City should look to integrate principles of complete streets and best management practices (BMP) into capital projects. Road diets offer a strategy for reconfiguring travel lanes to better accommodate non-motorized transportation such as walking, biking, and transit, while also incorporating landscaping and green infrastructure. As secondary connector streets with large right-of-way (ROW) widths and less than 1,000 vehicles per hour (vph) at peak times, Investment Drive (86 foot ROW), Corporate Drive (120 foot ROW), and Tower Drive (105-120 ROW) provide appropriate locations to implement 4-to-3 lane conversions with striped bike lanes or a protected multi-use pathway.

FIGURE A.1: Corporate Drive Existing Conditions (120 foot ROW)

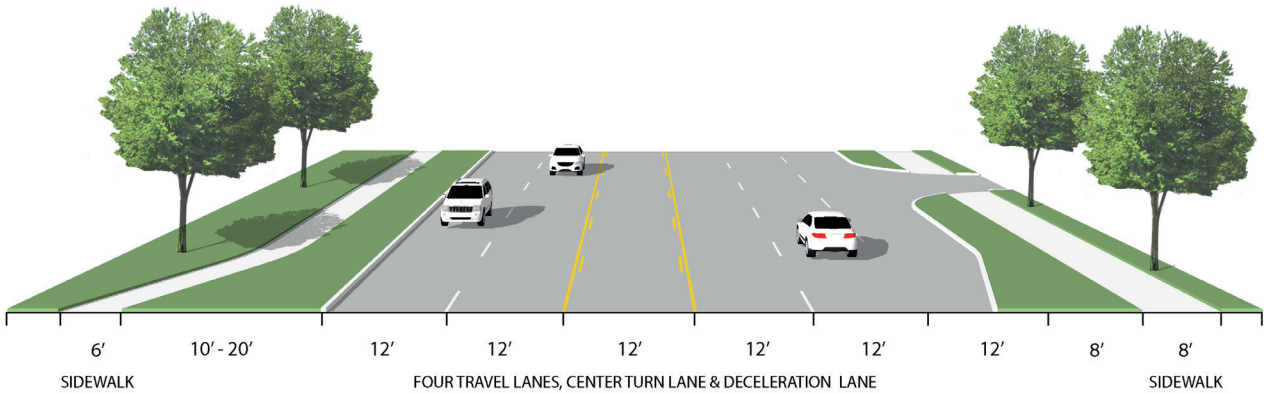
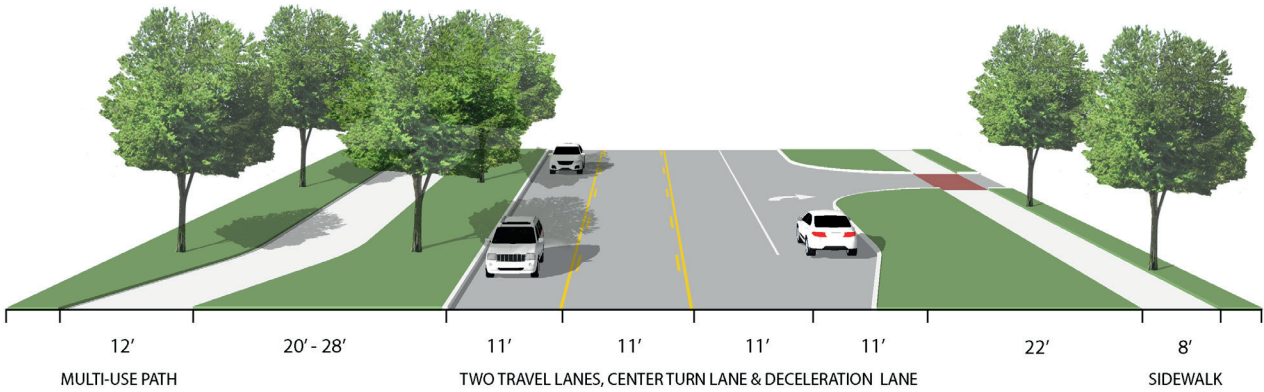


FIGURE A.2: Corporate Drive Proposed Conversion (120 foot ROW)



**Complete Streets**

"Complete streets means roadways planned, designed, and constructed to provide appropriate access to all legal users in a manner that promotes safe and efficient movement of people and goods whether by car, truck, transit, assistive device, foot, or bicycle."

Together Michigan Public Act 134 and Public Act 135 of 2010 form the Complete Streets legislation. These laws affect project planning and coordination between government and state transportation agencies and ensure that Complete Streets policies consider the local context, functional road classification, project costs, and most importantly, the mobility of all legal users.



FIGURE A.3: Investment Drive  
Existing Conditions (86 foot ROW)

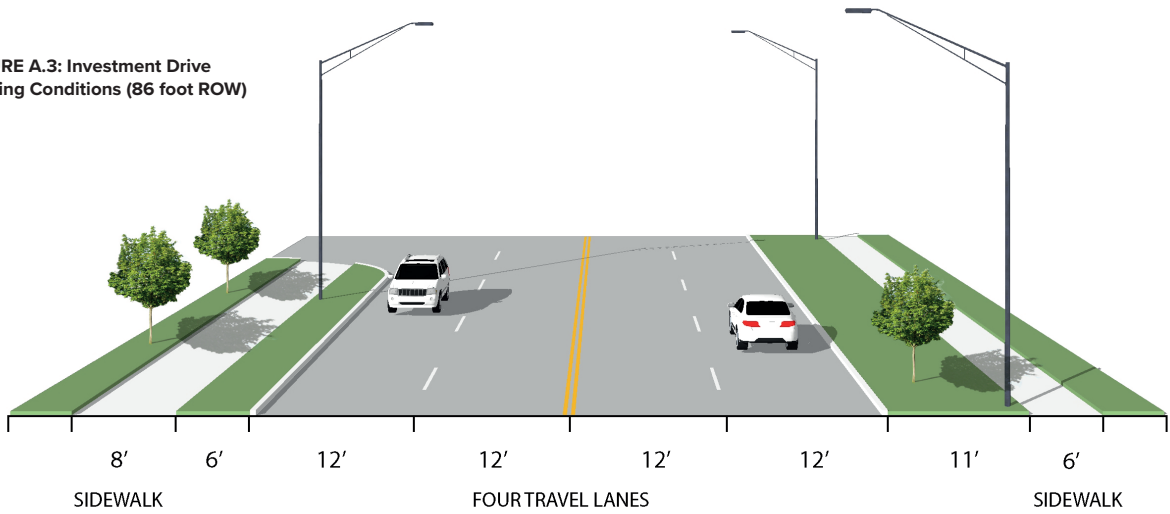


FIGURE A.4: Investment Drive  
Proposed Conversion 1 (86 foot ROW)

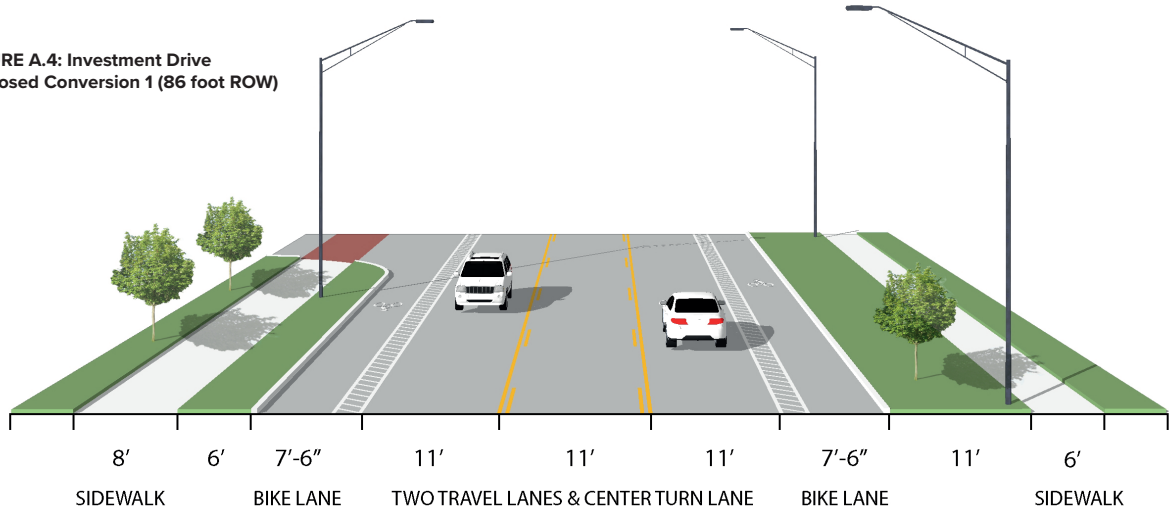
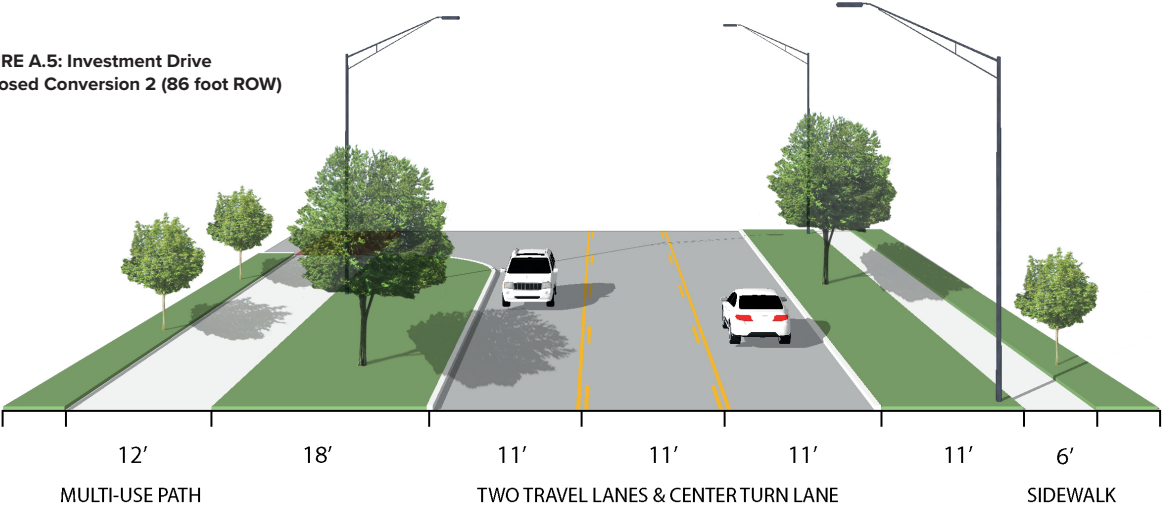


FIGURE A.5: Investment Drive  
Proposed Conversion 2 (86 foot ROW)



Priority 2: Improve Multi-modal Circulation and Safety

Strategy: Introduce pedestrian mid-block crossing

Due to the auto-centric nature of North Troy, including multiple travel lanes, curving roads with reduced visibility, and long blocks, employees and residents who venture out on foot to destinations such as the Northfield Pointe Marketplace have difficulty crossing Corporate Drive and Crook Road. Providing safe mid-block crossings for pedestrians and cyclists is an integral strategy for walkability. Mid-block crossings for Northfield Parkway will further integrate and strengthen the connection with the adjacent residential neighborhood. Pedestrian refuge islands and signalized crossings are some techniques for providing mid-block crossing. Applicability should be determined based on site context and budget. Priority pedestrian routes will develop based on new infill development.

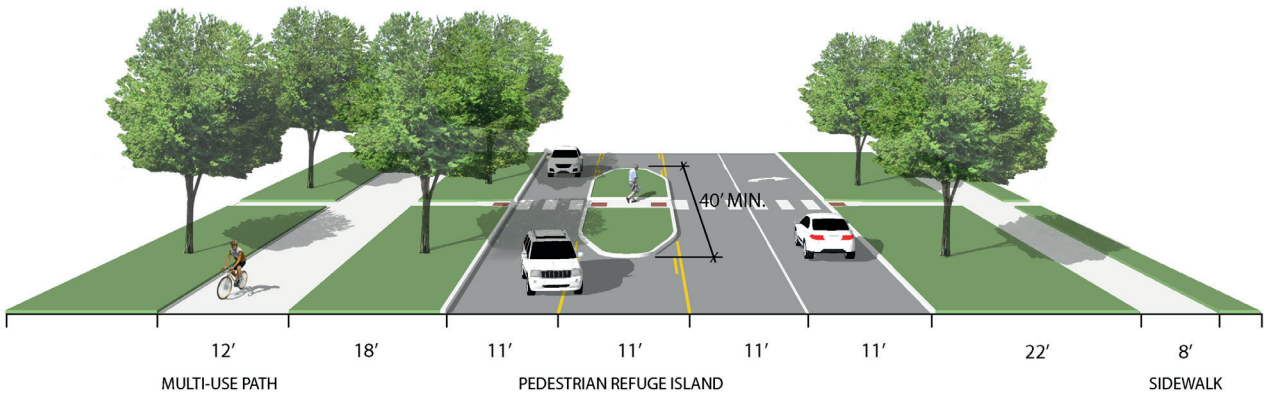


Cyclist at Corporate Drive and Crooks Road



Crosswalk in Chicago, IL

FIGURE A.7: Long Lake Road and Crooks Road Improved Landscape Buffer





Priority 2: Improve Multi-modal Circulation and Safety

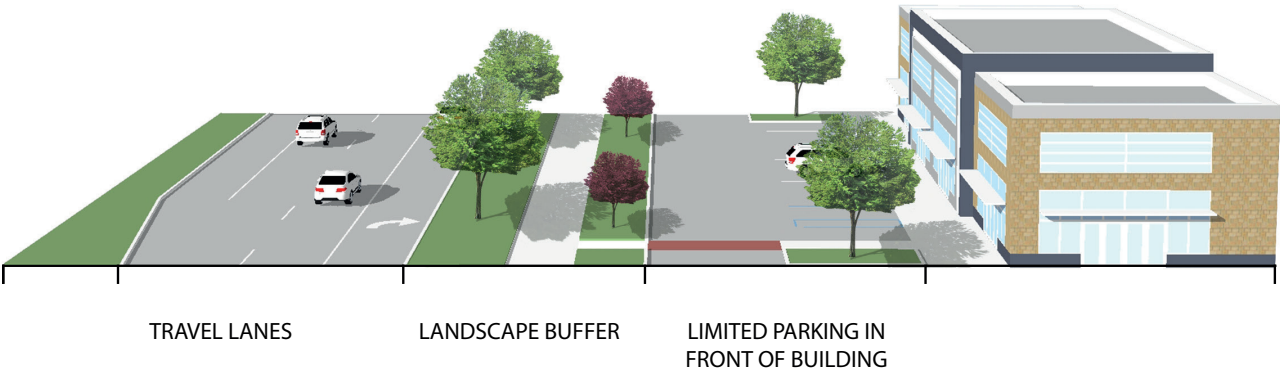
Strategy: Establish consistent landscape buffer and setbacks

The office uses in North Troy have large setbacks and landscaping designed to produce a dramatic approach via car. Pedestrians are walled off by vegetation, forced to walk through parking lots, or left on sidewalks that lead to nowhere. New residential and service development should front the street, creating a more consistent street wall. Sidewalks along Crooks Road and Long Lake Road should be pushed back away from the edge of pavement to accommodate vertical elements such as street lights and street trees in the landscape buffer. These elements provide real and perceived protection to pedestrians on the sidewalk. Low shrubs also offer a separation between the flow of traffic and the pedestrian realm.



New Development along Big Beaver in Troy, MI

FIGURE A.7: Long Lake Road and Crooks Road Improved Landscape Buffer



Priority 3: Tactical Placemaking

Tactical placemaking will allow the City and private partners to experiment with physical interventions and social programs using a lighter, quicker, cheaper approach to transforming the image and identity of North Troy. Placemaking is as much about the process of engagement as it is about improving the physical environment. Through community education and public-private partnerships, there are things the City can start work on today to get employees and residents interacting with the place and each other. Tactical placemaking feeds into the North Troy’s overall strategy of strategic placemaking, which has recently become Michigan’s statewide approach to economic development. The MI Place Initiative includes business and talent attraction and retention.

Strategy: Create an identity through gateways and wayfinding

North Troy currently lacks an identity. Public wayfinding and site identification and directional signs are important elements of a project. North Troy’s location offers a prime opportunity to capitalize upon the entrance into the City of Troy along I-75. In addition, several smaller gateways will provide project identification for the business park development. Directional and information signs, as well as street signs, will help users navigate the area.

Strategy: Facilitate health and wellness initiatives

Many North Troy employees already walk during the lunch hour. Establishing a walking and biking loop with wayfinding and mile markers will encourage this culture. These non-motorized pathways should be connected to the priority bike route along Northfield Parkway. Public-private programming, similar to Oakland County’s Count Your Steps Initiative or the University of Michigan’s BlueBike rental program, can encourage employees to utilize non-motorized facilities.

Strategy: Encourage creative programming

North Troy would benefit from the City’s “Lunch in Troy” program which brings in mobile food vendors, or food trucks, to sites with few brick and mortar dining options for workers. The City can expand this program by working with member vendors of the Michigan Mobile Food Vendors Association (MMFVA). Introducing movable chairs and tables will help create an atmosphere for socializing. Other corporate sponsored programming will expand vibrancy to the area.

Eleven Principles for Creating Great Community Places

- 1. Recognize the community as the expert
- 2. Create a place, not a design
- 3. Look for partners
- 4. Observe existing spaces
- 5. Establish a vision
- 6. Use Lighter, Quicker, Cheaper approach
- 7. Triangulate by linking streetscape elements, amenities, and activity
- 8. Build on small projects
- 9. Allow form to support function
- 10. Remember that money is not the issue
- 11. Embrace Placemaking as a process rather than a product





North Troy Corporate Park signage



Flagstar Bank Headquarters driveway



Wayfinding signage



Mark's Carts in Ann Arbor, MI



Clinton River Trail in Rochester, MI

Action Plan and Implementation

The North Troy Plan is organized into multiple projects so the vision can be refined and implemented in phases over time in a flexible manner. Priority transformative projects like the road diet projects entail multiple phases given their scale and ambition and serve as economic catalysts for tapping the development potential of the area for years to come. The timeframe to implement the Plan will depend on many factors, including market conditions, financing, approvals, and other City initiatives.

Priority 1 Provide a Compatible and Vibrant Mix of Uses	Strategy	Actions	Phasing	Responsibility
	Promote service infill through property repurposing	Identify sites for infill and meet with property owners	Near	City, Private entities
		Amend zoning if necessary	Near	City
	Promote residential infill through property repurposing	Identify sites for infill and meet with property owners	Mid/Long	City, Private entities
		Amend zoning if necessary	Mid/Long	City
	Develop and strengthen core	Implement infrastructure improvements	Mid/Long	City, Private entities
		Encourage development of the core	Mid/Long	City, Private entities
	Create a community gathering space	Design and construct public space	Mid/Long	City, Private entities

Priority 2 Improve Multi-modal Circulation and Safety	Strategy	Actions	Phasing	Responsibility
	Study and implement road diets	Implement Road Diet for Investment Drive	Mid	City, Private entities
		Implement Road Diet for Corporate Drive	Long	City, Private entities
		Implement Road Diet for Tower Drive	Long	City, Private entities
	Introduce pedestrian mid-block crossing	Identify location(s) for mid-block crossing	Near	City, Private entities
		Identify type of crossing based on location and funding source	Near	City, Private entities
		Implement crossing	Near	City
	Establish consistent landscape buffer and setbacks	Amend zoning if necessary and implement appropriately scaled landscape buffers and setbacks when new development occurs	Near	City, Private entities
		Implement new streetscape along Crooks and Long Lake Road	Long	City, Private entities

Priority 3 Inspire Tactical Placemaking to Create a Lively Place	Strategy	Actions	Phasing	Responsibility
	Create an identity through gateways and wayfinding	Create and install gateway and wayfinding program	Mid	City, private entities
		Work with existing corporations to establish common identification signage	Mid	Private entities
	Facilitate health and wellness initiatives	In cooperation with gateway and wayfinding program, identify North Troy walking and biking loop	Mid	Private entities
		City to establish initial programming efforts such as City's "Lunch in Troy" program	Near	City
	Encourage creative programming	Work with existing corporations to establish long-term programming	Mid	City, Private entities



# 11 – Appendix

**To engage the civic entrepreneurs of Troy, on June 21, 2007, the City conducted a Master Plan workshop which involved a selected participant list of over 150 invitees.**

Those invited to participate on the workshop process represented a wide cross section of Troy's population, and included residents, business owners, City officials, volunteers, and other participants.

In this workshop, the participants were engaged to employ the "Smart Growth Readiness Assessment Tool," (SGRAT) a new program designed by the Michigan Land Policy Institute at Michigan State University. The tool is designed to help communities learn how to incorporate "Smart Growth" principles into their land use management practices. "Smart Growth" is a term conceived in 1996, when the Environmental Protection Agency lead a group of organizations to form the Smart Growth Network. The Smart Growth Network is a group dedicated to creating new land development practices which "...boost the economy, protect the environment, and enhance community vitality," as stated by the Smart Growth Network.

The Tool is intended to assess how well a community is prepared to develop according to the Ten Tenets, to allow communities to measure progress over time, and to supply resources for communities interested in growing smart. The SGRAT is the most comprehensive such tool in the nation.

Though produced 8 years ago, the results of the SGRAT greatly influenced the creation of the 2008 Master Plan. Recognizing their importance, this appendix includes the detailed results of the SGRAT survey.

## Survey Responses

A primary source from which many of the ideas in this Plan have been derived is the supplemental survey given to SGRAT Workshop participants, City department heads, and the Planning Commission. The following are a selection of questions and responses which helped inform this Chapter.

### **What can the City of Troy do to continue to attract world-class businesses?**

- Streamline the start up process. Be proactive in soliciting business – domestic and worldwide. Help business to find locations and reasons to locate in Troy (incentives). Accelerate development of the transit center. Improve road conditions and traffic movement.

### **What steps would you take to make Troy a more vibrant and engaging place to live and work?**

- Provide mass transit options to access entertainment in metro Detroit.

### **What is the most important improvement that Troy can make to ensure that all residents have access to safe and efficient transportation?**

- Lobby and work towards a high density regional transit system with a City component connected to the system.
- Create regional public transportation that is efficient, safe and inexpensive.
- Make it affordable and convenient not just within the City.
- Keep the roads nice – for all transportation.
- Promote multi model transportation options in City.
- Transit – regional transportation initiative.



**Should Troy play a role in the development of improved regional transportation?**

- Yes, we should work on developing the proposed Transit Center and expand from there.
- Yes. We need a method for our residents to get to their place of employment without using single occupant vehicles. We need a method of transportation for youth and seniors. Lastly, we need a method to bring employees to the businesses located in Troy. Continue to develop walkability.
- Mass transit will be critical to future vitality of all communities. The leader regionally in mass transit will create financial stability for all. Troy should be the leader in Oakland County.

**Should the City be a model for responsible care of the natural environment?**

- Yes. The City needs to promote green growth in new developments and within its own buildings. City owned property does not need to be all developed into parks, it can be just left in its natural state. Encourage and educate about mass transit and walkability.
- Yes, we only have a natural environment once. The trees, parks and water resources must be protected. The City of Troy is the steward of the resources in the community.

**Do you feel it is important for the City of Troy to promote the advancement of or mandate the practice of sustainable development, such as, but not limited to, the construction of certified “green buildings” and Low Impact Development techniques for stormwater management?**

- I believe promotion is desired for construction of certified “green buildings”. Low impact Development techniques for stormwater management are a practice that should be mandated. Economics will determine the practical nature of these areas of development.
- Absolutely – we are doing that now with planning.

**What does the Smart Growth Readiness Assessment Tell Us?**

Throughout this Master Plan, each Chapter will contain a brief summary of those SGRAT results which most directly inform the topics covered by that Chapter. The SGRAT responses will also play a critical role in the development of implementation policies.

Tenets 3 and 5 contained a series of questions addressing cooperation and collaboration, public outreach, and the practices and procedures which regulate land development in the City. The following summaries provide a short description of the City’s score in these areas .

**Tenet 3: Encourage community and stakeholder collaboration in development decisions.**

Troy was awarded approximately 40 percent of the available points for Tenet 3. While the participants perceived the City of Troy to be very good about collaboration in formal settings, such as the development of new Zoning Ordinance amendments or Master Plan revisions, the perception of collaboration outside of those programs was poor. In other words, respondents felt that the City has room to improve when it comes to general encouragement of an open, collaborative environment with special interest groups, adjoining communities, and the general public, especially as it relates to smart growth principles.

Another area where the City could improve its score in this area is to develop stronger community outreach programs with regard to planning and growth issues. While collaboration with schools scored well, education and collaboration with the general public, especially when initiated by the City itself, was not perceived well.

**Tenet 5: Make development decisions predictable, fair, and cost-effective.**

The City scored very well with regard to Tenet 5. The City received nearly 75 percent of the available points in this area, thanks to a strong perception that the City diligently maintains its Zoning Ordinance, Master Plan, and other community planning documents, its consistency between its zoning and planning, and perception of fairness to the development community. Respondents felt that developers are given a fair chance to innovate in Troy and that most new development makes a strong contribution to the City as a whole.

The City could score even higher in this area were it to permit additional density for developers who propose more smart-growth oriented developments. Also, participants felt that more attention to long-range planning could be paid, although there was a positive recognition that current practices for ongoing development were strong and fair.

The City received extra points for supporting participation in elected and appointed official training programs, such as the Michigan State University Extension Citizen Planner Program, and continuing education in the area of planning.



Survey Responses

A primary source from which many of the ideas in this Plan have been derived is the supplemental survey given to SGRAT Workshop participants, City department heads, and the Planning Commission. The following are a selection of questions and responses which helped inform this Chapter.

What kind of image do you want people to think of when they are asked about Troy?

- Excellent schools, nice residential, strong City government and services, shopping.
- A well maintained City with excellent schools, neighborhoods, corporations, and good services.
- Home to Walsh College, branches for the University of Phoenix, Central Michigan University, Spring Arbor University, ITT Technical Institute and Michigan State University Management Center.

What can the City of Troy do to continue to attract world-class businesses?

- In cooperation with Troy School district (plus other educational facilities) continue to promote education, diversity of ethnic groups which constitute the vibrant Troy community.
- Offer reasonable incentives. Maintain quality infrastructure. Continue to offer quality City services & A ++ rated schools. Make it attractive for the business community to also want to live here in Troy.

What steps would you take to make Troy a more vibrant and engaging place to live and work?

- A need exists for the young teenagers to meet, and hang out in a secure environment. The young adults (18-22 years old) also need a place to meet and congregate. These activities need to be available to these groups year around.
- Add paths and trail system in City; increase property maintenance standards; increase art in public places; create synergy.

What is the most important improvement that Troy can make to ensure that all residents have access to safe and efficient transportation?

- Create a comprehensive pedestrian pathway system (walking, biking, rollerblading, etc.) that system would help to reduce short trip car drives that add to roadway congestion.

How can the City better accommodate non-motorized transportation?

- Emphasize bike paths. Develop specific requirements for safe walk & bike access.
- Increase the numbers of walkable/bikeable areas....more trails and information letting people know where the trails and sidewalks are.
- Plan the City in small village components that can service the daily needs of nearby residents by sufficient shopping areas central to each village.

What steps would you take to make Troy a more vibrant and engaging place to live and work?

- Build an arts center or better venues for music, stand-up comedy, performing arts, night life, etc..., utilize more mixed use development, and connect these elements with pedestrian pathways.
- Develop the Civic Center that becomes a focal point for residents to interact and learn.

Many land use issues result between single-family residential areas adjacent properties proposed for higher density. How can these conflicts be reduced?

- Include some “entertainment” areas or common areas for use of both groups.

What does the Smart Growth Readiness Assessment Tell Us?

The SGRAT did not include any questions directly related to the care and management of educational facilities, nor did it specifically address cultural facilities. As a tool primarily directed towards the examination of the Smart Growth Tenets, which are mostly related to physical development and infrastructure, the areas where the SGRAT may most readily apply for this Chapter are related to access to such facilities.

The City scored 33 percent of the available SGRAT points for Tenet 8, “Provide a variety of transportation options.” The assessment demonstrated that the City can improve its transportation score in a variety of areas, especially by providing stronger access to public transit, rail service, or a multi-modal method of access to a regional airport. Troy could also gain points by encouraging better infrastructure for cycling as a viable option, and the provision of park-and-ride areas for bus service. Further, the City does not make extensive use of traffic calming devices, which can restrict automobile traffic, but encourage safer non-motorized transportation in certain circumstances.

These results were drawn in part from the City’s response to these questions:

Does your community provide infrastructure to promote bicycling as a viable, healthy transportation option by any of the following? (Check all that apply, if any).

- A. Providing well-maintained bike lanes, five feet in width along or between local transportation corridors.
- B. Providing non-motorized paths that connect recreation facilities and other community destinations.
- C. Implementing access management strategies that improve safety and efficiency of both bicycle and vehicular travel.
- D. Providing appropriate signage and bike racks in common community destinations such as schools, public buildings, work places and shopping centers.

Best Answer: A, B, C, D

Troy’s Response: None

Does your community encourage bicycling through any of the following?

- A. Inventorying existing conditions and developing a strategy or plan to improve biking conditions.
- B. Programs that promote bicycling to work, school or for recreational purposes.
- C. Accommodating advanced or experienced riders, basic or less confident riders and children.

Best Answer: A, B, C

Troy’s Response: A

Survey Responses

A primary source from which many of the ideas in this Plan have been derived is the supplemental survey given to SGRAT Workshop participants, City department heads, and the Planning Commission. The following are a selection of questions and responses which helped inform this Chapter.

What kind of image do you want people to think of when they are asked about Troy?

- A commerce metropolis, clean and modern.
- A strong business presence; thriving neighborhoods, a balanced mix of residential and business tax base; the cutting edge of environmental sensitivity and walkability.
- A center of knowledge; an economy based on information technology.

What can the City of Troy do to continue to attract world-class businesses?

- Offer reasonable incentives. Maintain quality infrastructure. Continue to offer quality City services & A ++ rated schools. Make it attractive for the business community to also want to live here in Troy.
- Promote Troy as a high-tech corridor and streamline the process of establishing and maintaining a Troy business. Make guidelines for developers very clear, concise, fair and predicable.
- Start by realizing that Troy needs the business community. Not long ago, businesses paid more than 50 percent of the taxes, making Troy a very desirable place to live; it has shifted the other way. Work with the Chamber of Commerce and diversify the business base.

What is the role of the City of Troy in the region? What role should the region play in the future of Troy?

- Cooperative neighbor that shares ideas and challenges in open communication with neighboring communities, taking on a leadership role when it is in the best interest for all.
- Troy should provide an example of how a city can balance between successful business and a qualified residential base. Recent economic trouble for the state and region has tarnished that image. Troy can provide an example of leadership in how a community can excel as it matures.
- A leader and model of an environmentally friendly community.
- Troy is perceived as a strong entity and therefore we can be a leader in moving the region to think, govern, buy, and plan regional. The image of the entire region will affect the ability of Troy to attract and retain jobs and the creative class. We need to work together to solve issues of blight, economy, education and mass transit.
- Troy should be a role model city of how a community can balance commercial and residential needs so each complements each other. The City should lead in being flexible to accommodate future needs of the residents.

What is the future of traditional industrial land uses, such as manufacturing or fabrication, in the City of Troy?

- We need to be creative as these traditional uses become obsolete. Our PUDs are a positive start for the future of these areas.
- Manufacturing is not coming back. Those buildings need to be used for other things. Allow residential use.
- Allow some to be developed as described in the Maple Road study. Especially, the work/home development for entrepreneurs. It is important that these work/home developments are visually pleasing.
- Information about how industrial parcels could be converted to alternative uses should be made available. Selectively purchase vacant industrial properties that can be used as parking lots to other nearby buildings and allow those buildings to have alternative commercial uses.

What does the Smart Growth Readiness Assessment Tell Us?

Many of the questions asked in the SGRAT have some bearing on the local economy, either directly or indirectly. Those questions which asked about the current trends in the City with regard to redevelopment of existing properties and the ability to develop mixed-use properties relate to the City’s strategy for transitioning to the 21st Century marketplace. Questions which relate to live-work units and brownfield redevelopment show how the City can improve its ability to accept new development types and encourage manufacturing era properties to redevelop as knowledge economy facilities.

Are developers actively redeveloping vacant, under-utilized, and/or brownfield properties?

- A. Yes
- B. No

Best Answer: A

Troy’s Response: A

Does your Zoning Ordinance and Master Plan provide strategies and incentives for redeveloping existing urban areas?

- A. Yes
- B. No

Best Answer: A

Troy’s Response: B

In which of the following zoning districts is mixed-use permitted? (Check all that apply, if any).

- A. Central business district
- B. Neighborhood commercial districts
- C. Special mixed-use overlay district
- D. Planned Unit Development Districts
- E. Other

Best Answer: A, B, C, D, E

Troy’s Response: D

Has your local government adopted zoning codes that give as much opportunity for a mixed-use development as for a typical single-use project (e.g., a medium density housing subdivision, strip mall or office park)?

- A. Yes
- B. No

Best Answer: A

Troy’s Response: B



Survey Responses

A primary source from which many of the ideas in this Plan have been derived is the supplemental survey given to SGRAT Workshop participants, City department heads, and the Planning Commission. The following are a selection of questions and responses which helped inform this Chapter.

What can the City of Troy do to continue to attract world-class businesses?

- Strategic parking plans to make businesses easy to find and convenient and safe for customers and employees to use.
- Improve our roads and pedestrian pathways, maintain high standards in architecture, rigorously enforce zoning violations, retain residential character of our neighborhoods in spite of the majority of City Council pushing to commercialize them with large commercial vehicles and large group child care homes, start the customer solutions department, and more.
- Provide good roads that are well maintained and well operated.

What steps would you take to make Troy a more vibrant and engaging place to live and work?

- Mass transit options to access entertainment in metro Detroit.
- Add paths and trail system in City; increase property maintenance standards; increase art in public places; create synergy.

Should Troy play a role in the development of improved regional transportation?

- Yes, we should work on developing the proposed Transit Center and expand from there.
- Absolutely, we need a creative connector (trolley to Big Beaver Corridor from Maple/Eton Station. More Bike, walking paths from subs to parks. Destination emphasis planning.
- Yes, Troy should play an important role in improving regional transportation. Mass regional transportation will enable people to move from “here to work” economically and efficiently. We can’t build wide enough roads to move traffic; we need to economically and efficiently move people during the course of the day.
- It would help make the City more family friendly. We would be sharing transportation options. It would also help attract world – class business. It is a good selling point.
- Yes. If we are to be the hub of business and fun activities (family, night life, etc) we must make it easy for people in nearby communities to visit Troy without getting into a traffic jam.
- Yes. We need a method for our residents to get to their place of employment without using single occupant vehicles. We need a method of transportation for youth and seniors. Lastly, we need a method to bring employees to the businesses located in Troy. Continue to develop walkability.

What is the most important improvement that Troy can make to ensure that all residents have access to safe and efficient transportation?

- Affordable regional mass public transportation.
- Create a comprehensive pedestrian pathway system (walking, biking, rollerblading, etc.) that system would help to reduce short trip car drives that add to roadway congestion.
- Provide a means within the City to get the residents to the collection points for the regions/ transportation system.
- Create regional public transportation that is efficient, safe and inexpensive.
- Make it affordable and convenient not just within the City.

- Keep the roads nice for all modes of transportation.
- Promote the transit center and the transit services to be housed in it. Then make sure adequate walking and bike paths are connected throughout the whole City.

How can the City better accommodate non-motorized transportation?

- Emphasize bike paths. Include in all developments specific requirements for safe walk & bike access.
- Follow ADA guidelines. Create refugee islands on highways, increase the “walk” time on traffic lights, make bike paths to get bikers off pedestrian sidewalks, and provide adequate lighting.
- Better cross town connected bike routes that also have destinations, i.e. mall or civic center. Have a dedicated 4 foot lane for bicycles.
- Complete the trailways initiative with a completed infrastructure as recommended by Vision 2020.
- The development of pathways and trails is a start. We need an alternate mode of transportation that is cost affective and reliable.
- Promote mixed-use development.
- Plan the City in small village components that can service the daily needs of nearby residents by sufficient shopping areas central to each village.

What does the Smart Growth Readiness Assessment Tell Us?

The SGRAT included a section dedicated to the provision of transportation options. Tenet 8 of the Smart Growth Tenets, “Provide a variety of transportation options” was covered by 15 questions ranging from topics like mass transit to air travel. The assessment granted 33 percent of the available points to Troy for Tenet 8. The City received many points for its strong capital improvements planning, access management standards, well-developed subdivision regulations, provision of transportation options for the mobility impaired (either by income restrictions or physical limitations), and the mitigation of the negative impacts of parking on surrounding areas.

The assessment demonstrated that the City can improve its transportation score in a variety of areas, especially by providing stronger access to public transit, rail service, or a multi-modal method of access to a regional airport. Troy could also gain points by encouraging better infrastructure for cycling as a viable option, and the provision of park-and-ride areas for bus service. Further, the City does not make extensive use of traffic calming devices, which can restrict automobile traffic, but encourage safer non-motorized transportation in certain circumstances. Specific questions from this section included:

Does your community have a Transportation Plan (or a transportation element within your Master Plan) that does any of the following? (Check all that apply, if any).

- A. Establishes consistent policies that reflect and support the Master Plan, Zoning Ordinance, capital improvement program, access management plan and new development on a regional basis?
- B. Coordinates and supports multi-jurisdictional land use and transportation planning along regional transportation corridors?
- C. Provides goals, objectives and strategies to enhance an interconnected pedestrian network which serves the entire community?
- D. Provides goals, objectives and strategies to implement infrastructure and initiatives to promote bicycling and other non-motorized transportation options?
- E. Provides goals, objectives and strategies to implement public transit systems that are appropriate to the size, scale and need of your community?
- F. Provides goals, policies and objectives that prioritize improvements and maintenance of existing roads rather than the construction of new roads?
- G. Identifies where and when public funding will be necessary to implement context sensitive solutions to transportation issues?

Best Answer: A, B, C, D, E, F, G

Troy’s Response: A, B, D, E

Does your transportation plan support and your Zoning Ordinance allow different street widths, depending on the functional classification of the roadway, character of the area, the projected volume of traffic, and/or the desired speed of traffic?

A. Yes

B. No

Best Answer: A

Troy’s Response: A

Does your community provide infrastructure to promote bicycling as a viable, healthy transportation option by any of the following? (Check all that apply, if any).

- A. Providing well-maintained bike lanes, five feet in width along or between local transportation corridors.
- B. Providing non-motorized paths that connect recreation facilities and other community destinations.
- C. Implementing access management strategies that improve safety and efficiency of both bicycle and vehicular travel.
- D. Providing appropriate signage and bike racks in common community destinations such as schools, public buildings, work places and shopping centers.

Best Answer: A, B, C, D

Troy’s Response: None

Does your community have transportation policies or programs that increase mobility options for residents who face financial or physical impediments to driving an automobile?

A. Yes

B. No

Best Answer: A

Troy’s Response: A

Does your region provide an airport that is supported by efficient multi-modal access to your community, regional distribution centers, public transit, highways and emergency response?

A. Yes

B. No

Best Answer: A

Troy’s Response: B



Survey Responses

A primary source from which many of the ideas in this Plan have been derived is the supplemental survey given to SGRAT Workshop participants, City department heads, and the Planning Commission. The following are a selection of questions and responses which helped inform this Chapter.

**What kind of image do you want people to think of when they are asked about Troy? (i.e., an office building? A shopping center? A fine restaurant or an evening at a show? A residential neighborhood? Something else?)?**

- Efficient, low cost government (low cost – not cheap). I want Troy to continue to be know as the one place you can drive after (or during) a snow storm; a good place to shop, work and live, a place with helpful people in City hall.
- A well maintained City with excellent schools, neighborhoods, corporate residents and good city services.

**Do you feel it is important for the City of Troy to promote the advancement of or mandate the practice of sustainable development, such as, but not limited to, the construction of certified “green buildings” and Low Impact Development techniques for stormwater management?**

- I believe promotion is desired for construction of certified “green buildings”. Low impact Development techniques for stormwater management are a practice that should be mandated. Economics will determine the practical nature of these areas of development.
- The City should promote such efforts thru various incentives and demonstration but should not mandate.
- Yes – storm water will only become a bigger problem as the years progress. We need to promote sustainable development at the very least and perhaps it should be required or mandated. However, we should be prepared to address the arguments that these activities are cost prohibitive.

**What can the City of Troy do to continue to attract world-class businesses?**

- Clean and well-maintained infrastructure.
- Offer reasonable incentives. Maintain quality infrastructure. Continue to offer quality City services & A ++ rated schools. Make it attractive for the business community to also want to live here in Troy.
- Provide good services, good infrastructure, low tax rate, good debt ratings, and a solid residential community.

What does the Smart Growth Readiness Assessment Tell Us?

The provision of excellent municipal services is clearly a critical element to the future growth and development (or redevelopment) of the City. However, the Ten Tenets of Smart Growth do not specifically speak to infrastructure in and of itself. Consequently, none of the Sections of the SGRAT are directed exclusively towards infrastructure. There were individual questions, though, designed to bring attention to the issue of utilities and City services. The following questions, taken from Section 9, “Strengthen and direct development towards existing communities,” address infrastructure issues:

**Does your community know the capacity of its infrastructure and natural environment to accept new development, by location, type and amount of new development?**

- A. Yes
- B. No

Best Answer: A

Troy’s Response: A

**If your community provides public sewer and/or water (or is included in a public sewer/water district), does the public sewer and water service area include:**

- A. Only developed areas with streets or areas immediately adjacent to the developed areas planned for urban growth?
- B. Undeveloped areas outside the urban service area not immediately adjacent to the developed area and not planned for urban growth?

Best Answer: A

Troy’s Response: A

**Has your community adopted a “fix-it-first” policy as part of the Capital Improvement Program process that sets priorities for upgrading existing facilities and infrastructure before new facilities or infrastructure are built?**

- A. Yes
- B. No
- C. No, the community is all built out with no opportunity for new facilities in new locations

Best Answer: A, C

Troy’s Response: A

Survey Responses

A primary source from which many of the ideas in this Plan have been derived is the supplemental survey given to SGRAT Workshop participants, City department heads, and the Planning Commission. The following are a selection of questions and responses which helped inform this Chapter.

**What is the role of the City of Troy in the region? What role should the region play in the future of Troy? Are there any other additional thoughts or input with regard to community character or image not reflected in the questions of this Section?**

- A leader and model of an environmentally friendly community.
- Preserve as much open and park land as possible.

**Should the City be a model for responsible care of the natural environment?**

- Oh yes! Lead the way! Look at Chicago’s efforts! Bring others on board, garden groups, retailers, community organizations.
- Yes, we only have a natural environment once. The trees, parks and water resources must be protected. The City of Troy is the steward of the resources in the community.
- Yes, but they aren’t. They are not “totally” neglected, but many opportunities have arisen over the years where they looked the other way or they have not acted to become more responsible for the natural environment.
- Yes. The City needs to promote green growth in new developments and within its own buildings. City owned property does not need to be all developed into parks, it can be just left in its natural state. Encourage and educate about mass transit and walkability.
- Yes, we are doing good things but we can always do better. Don’t develop every inch because someone can make a profit, do things for the good of the community.
- It would be very difficult for a City the size of Troy to be such a model in all its various parts. Responsible stewardship and promotion of sustainable building can be done. Troy needs to keep growing its tax base to maintain its level of services, thus redevelopment is needed and that cannot always be done in an environmentally friendly way.

**Do you feel it is important for the City of Troy to promote the advancement of or mandate the practice of sustainable development, such as, but not limited to, the construction of certified “green buildings” and Low Impact Development techniques for stormwater management?**

- I believe promotion is desired for construction of certified “green buildings.” Low Impact Development techniques for stormwater management are a practice that should be mandated. Economics will determine the practical nature of these areas of development.
- If it helps our environment and future generations – yes.
- Sure, if we can afford it. Who pays?
- The City should promote such efforts thru various incentives and demonstration but should not mandate.

**What do you consider to be natural features worth preserving in the City of Troy?**

- Our lakes within neighborhoods, the rivers, park system, Nature Center/Troy Farm, trees and landscaping within our rights-of-way.
- The rookery area, wetlands preservation, the parks, and lakes in the City. The streams need to be safe guarded.
- The few remaining wetland and lake prairie areas left (situated in the northern part of the City in the Square Lake Road area) and head waters of the River Rouge.

What does the Smart Growth Readiness Assessment Tell Us?

The implementation of Smart Growth principles over time can have a positive and meaningful impact on the preservation of natural features. Compact development — leading to fewer, shorter vehicle trips and a reduction in impervious surface — complemented by other benefits of Smart Growth techniques help preserve areas that could have otherwise been threatened by conventional development. Tenet 7, in fact, is directly related to the preservation of natural features, open space, and farmland. A selection of SGRAT questions which relate to natural features preservation directly or indirectly are included here.

**Does your community Master Plan establish goals, policies and strategies to preserve forest lands (e.g. exclusive forestry district, purchase of development rights program, quarter-quarter zoning, TDR, etc.).**

- A. Yes
- B. No
- Best Answer: A
- Troy’s Response: B

**Does your community have provisions within the Site Plan Review standards of the Zoning Ordinance to identify and protect renewable resource lands such as farmland and forest land?**

- A. Yes
- B. No
- Best Answer: A
- Troy’s Response: B

**Are developers implementing projects which contain public open spaces (such as parks or natural areas) that connect to adjacent open spaces and/or preserve sensitive natural features?**

- A. Yes
- B. No
- Best Answer: A
- Troy’s Response: B

**In public and private meetings, do community leaders and elected officials:**

- A. Promote cluster housing development as an approach to preserve open space in the community?
- B. Oppose the development of cluster housing development?
- Best Answer: A
- Troy’s Response: A



Survey Responses

A primary source from which many of the ideas in this Plan have been derived is the supplemental survey given to SGRAT Workshop participants, City department heads, and the Planning Commission. The following are a selection of questions and responses which helped inform this Chapter.

What steps would you take to make Troy a more vibrant and engaging place to live and work?

- We need to start redeveloping our community to fit into the requirements of a global economy. The ways in which we lived in 1957 is not how we live today or will live in 2020. Areas where we can redevelop should be mixed use of housing, retail and business. They should incorporate the latest technology and be green.

What new and innovative approaches should be encouraged in the City of Troy to provide a better housing stock for the aging population?

- Facilitate loans for home repair and improvement to keep aging populations in their older homes and to prevent blight. Keep housing affordable. Canvas the aging population to determine what they are looking for and what they would buy
- Allow some more assisted – living facilities/nursing homes. More single story condos.
- Mixed use developments with independent and assisted living components, with barrier free walkability.
- High end options are needed. Currently there is no where in Troy to appeal to seniors selling their \$400,00+ houses. Multi family units on city golf course? Seniors want activities.
- Smaller single family homes on one floor.
- Variety of housing stock. Site condo that look like ranch style homes, condos, assisted living, nursing care. Location needs to provide proximity to shopping, health care, transportation, necessary services and recreation.
- Keep prices reasonable! Many are so expensive only the really well to do can afford to stay in Troy. Ask all the seniors what they want, you may be surprised.
- The City should encourage any type of residential use that will attract economically desirable residents. The current interest in mixed uses should be encouraged as well as all new future types that will attract solid citizens

Is the available housing stock in Troy sufficient to serve the City’s needs?

- No, fewer children and many older residents wanting to stay without upkeep require creative building ideas and economy and green spaces.
- We don’t have residential units that also serve as business. Troy’s ordinances work against having both a residence and a business in the same building. Changes should be made to allow for that. Some residential areas could serve in that function and zoning (a new zoning class) should be made.
- Number of units is sufficient, but more condos should be available for those not choosing to cut grass and shovel snow.

Do you have any additional thoughts or input with regard to housing?

- Starter homes. Young families with lower income don’t have much opportunity to buy in Troy.
- We need a development of mixed use housing for seniors that included individual small residents, assisted living, senior apartments, nursing home so that a person can remain at one development. Incorporate recreation, transportation and other amenities for seniors.
- We need more affordable housing for younger population. Not everyone can afford million dollar homes. Get them young and keep them to move up.

What does the Smart Growth Readiness Assessment Tell Us?

The SGRAT includes a section dedicated to Tenet 1: “Create a range of housing opportunities and choices.” The results of this portion of the analysis in Troy revealed that while Troy has made some steps towards smart growth as it relates to affordability of a wide variety of housing types, it has room for improvement. For instance, while the City has funded training for City staff for housing affordability programs, it has not actively promoted housing affordability. Further, while there are a variety of housing types in the City that may allow for an array of people to become homeowners, the City has not proactively pursued funding assistance or renovation assistance for the lowest ends of the economic spectrum. Specific questions contributing to these results include:

Are homes or apartments readily available in your community that people of all income levels can buy or rent (from service industry workers, to teachers, police and small business owners, to the elderly, young marrieds, professionals and executives)?

A. Yes  
B. No  
Best Answer: A  
Troy’s Response: A

Do community leaders and elected officials actively promote a wide range of housing types to meet the full spectrum of household incomes and preferences?

A. Yes  
B. No  
Best Answer: A  
Troy’s Response: B

Do many of the people who work in your community live in another community because they cannot afford housing in your community?

A. Yes, most workers, especially those earning low/moderate incomes, live outside the community.  
B. No, most of the people who work in our community, including low to moderate income workers, live in our community.  
Best Answer: B  
Troy’s Response: A

Does the Zoning Ordinance provide for areas zoned multi-family residential or for mobile home parks that are close to job centers and transit or other access opportunities? In order to answer yes, areas must be zoned and not fully developed in order to count.

A. Yes  
B. No  
Best Answer: A  
Troy’s Response: B

Survey Responses





# PLAN TROY 2040

**ITEM #7**



DATE: January 2, 2024

TO: Planning Commission

FROM: R. Brent Savidant, Community Development Director

SUBJECT: PLANNED UNIT DEVELOPMENT (File Number PUD 020 JPLN2023-0021) – CONCEPT DEVELOPMENT PLAN (CDP) AND PRELIMINARY DEVELOPMENT PLAN (PD) APPROVAL – The Village of Hastings PUD, East side of Livernois, north of Square Lake, PIN 88-20-03-301-088, -023, -024, -025 and 88-20-03-351-004, Section 3, Presently zoned NN (Neighborhood Node “Q”) and R-1B (One Family Residential) Zoning Districts

The applicant GFA Development, Inc. seeks Conceptual Development Plan (CDP) and Preliminary Development Plan (PDP) approval for the Village of Hastings Planned Unit Development (PUD). The project features a total of 33 residential units comprised of 4 different housing types (single family detached, ranch style detached, single family attached and duplex).

The Planning Commission is a recommending body for this application.

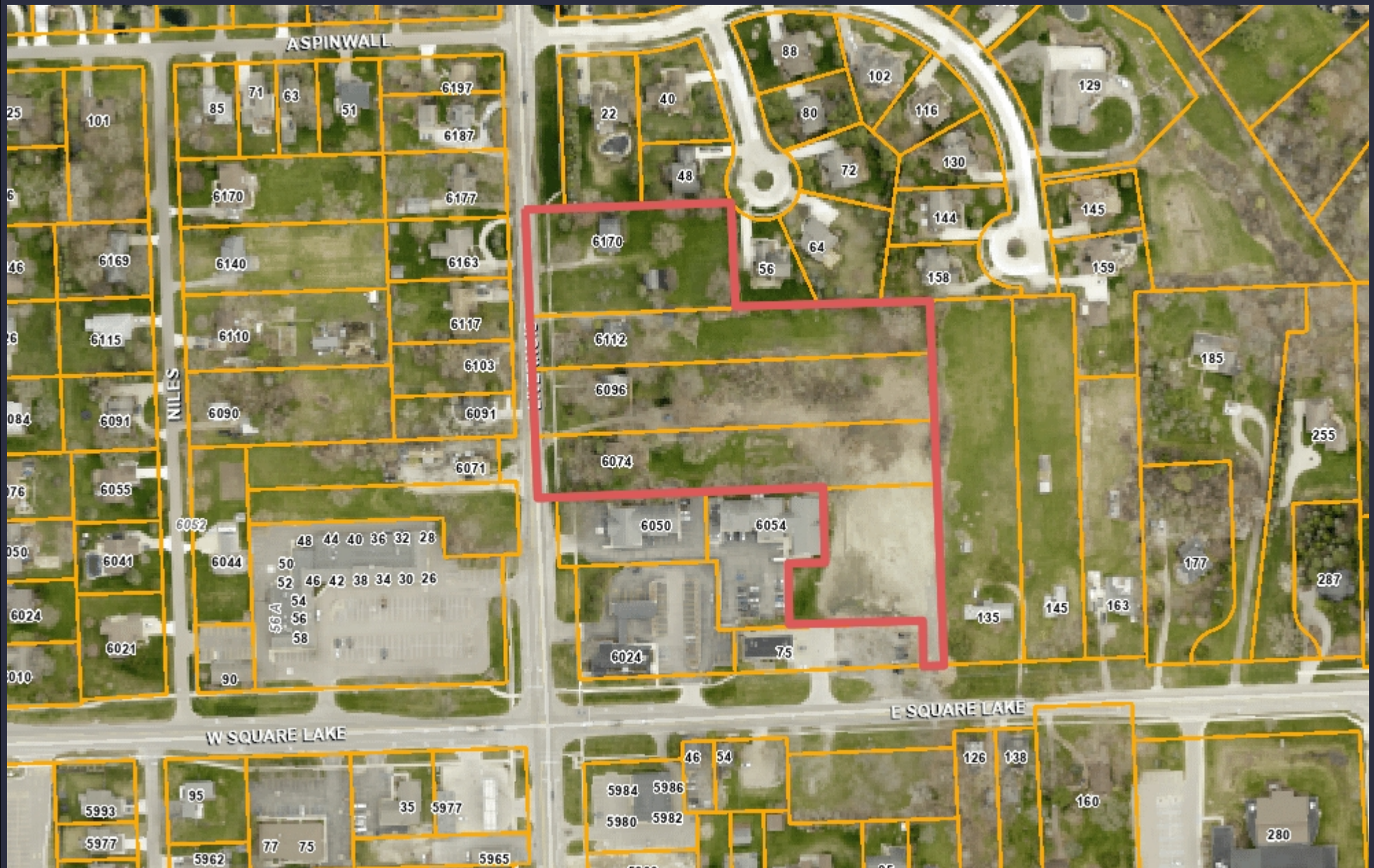
The Planning Commission last considered this item on January 9, 2024. The motion to recommend approval failed 4-5. The applicant resubmitted a revised site plan with two (2) fewer units and seeks to continue to negotiate with the City.

The attached report prepared by Carlisle/Wortman Associates, Inc. (CWA), the City's Planning Consultant, summarizes the project as revised. CWA prepared the report with input from various City departments including Planning, Engineering, Public Works and Fire. City Management supports the findings of fact contained in the report and the recommendations included therein.

Attachments:

1. Maps
2. Minutes from January 9, 2024 Planning Commission Regular meeting (excerpt)
3. Report prepared by Carlisle/Wortman Associates, Inc.
4. PUD Application/Site Plan
5. Public comment submitted in March 2024.

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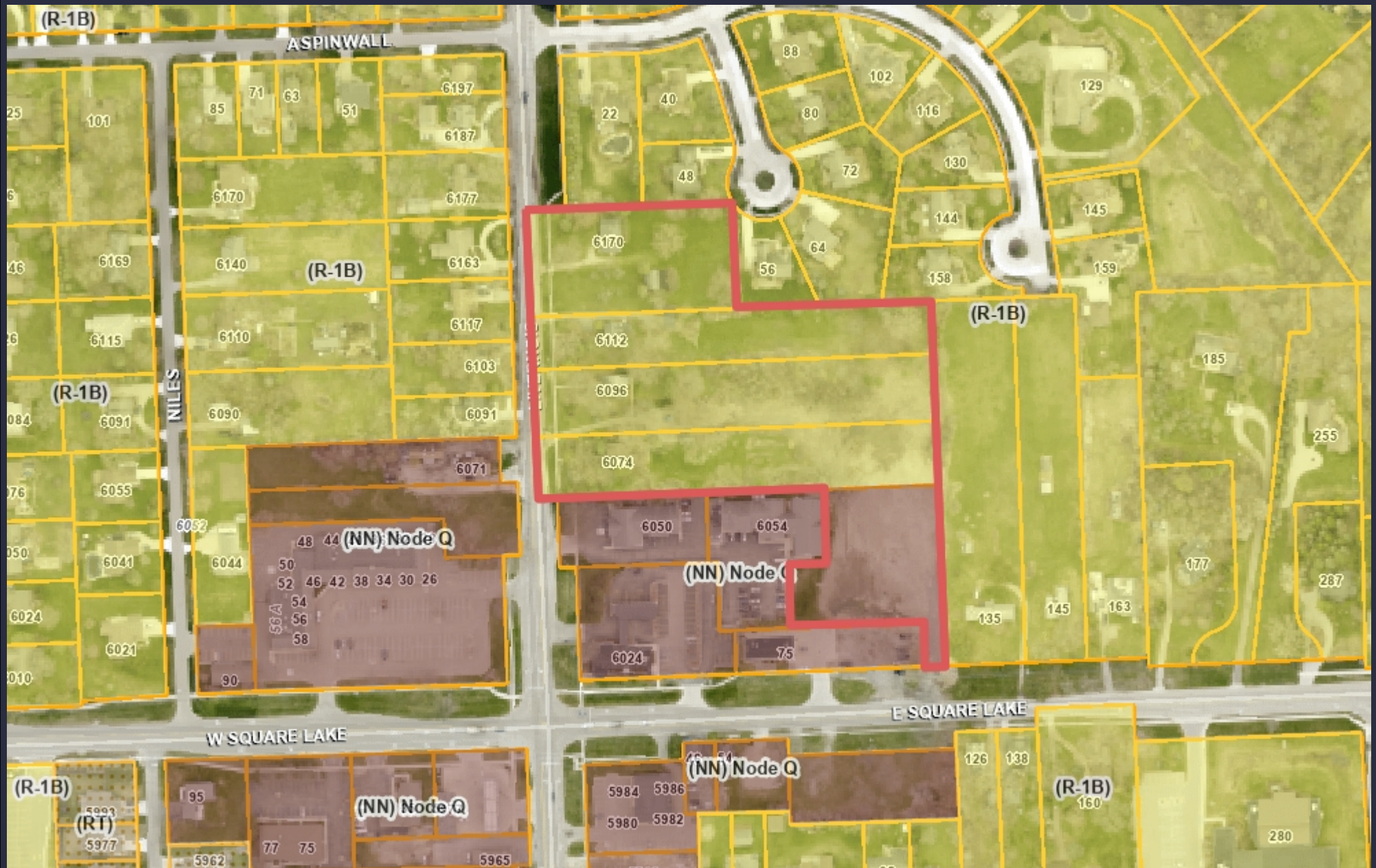


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Note: The information provided by this application has been compiled from recorded deeds, plats, tax maps, surveys, and other public records and data. It is not a legally recorded map survey. Users of this data are hereby notified that the source information represented should be consulted for verification.





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Note: The information provided by this application has been compiled from recorded deeds, plats, tax maps, surveys, and other public records and data. It is not a legally recorded map survey. Users of this data are hereby notified that the source information represented should be consulted for verification.

Yes: Buechner, Faison, Fox, Hutson, Krent, Lambert, Malalahalli, Perakis  
Abstain: Tagle

**MOTION CARRIED**

4. PUBLIC COMMENT – For Items Not on the Agenda

There was no one present who wished to speak.

**PLANNED UNIT DEVELOPMENT**

5. PLANNED UNIT DEVELOPMENT (File Number PUD 020 JPLN2023-0021) - CONCEPT DEVELOPMENT PLAN (CDP) AND PRELIMINARY DEVELOPMENT PLAN (PD) APPROVAL – The Village of Hastings PUD, East side of Livernois, North of Square Lake, PIN 88-20-03-301-088, -023, -024, -025 and 88-20-03-351-004, Section 3, Presently Zoned NN (Neighborhood Node “Q”) and R-1B (One Family Residential) Zoning Districts

Mr. Carlisle said he would highlight the changes to The Village of Hastings PUD application since last reviewed at the November 28, 2023 Planning Commission meeting.

Mr. Carlisle noted the following changes proposed by the applicant:

- Construct 32 new residential units and preserve 3 existing older homes on site, for a total of 35 units. The applicant removed 9 units from the development and is preserving an additional existing older home on site.
- Provide 3 internal T-turnarounds on the site to better facilitate traffic movement.
- Erect a privacy fence between the existing older homes and the adjacent new housing units.

Mr. Carlisle pointed out the City Traffic Consultant OHM concluded the traffic impact of this project on the adjacent road network is negligible and would be imperceptible to most road users.

In summary, Mr. Carlisle asked the Planning Commission to consider if the application (1) meets the PUD Standards for Approval (Section 11.03), (2) meets the Site Plan Review Design Standards (Section 8.06), (3) that the architectural styles, building materials and color scheme work together from an architectural and aesthetic standpoint, and (4) if fencing off the existing homes from adjacent new housing units allows for site integration.

Mr. Carlisle said if the Planning Commission recommends to the City Council approval of the PUD and Preliminary Development Plan, the site plan issues identified in his report dated December 22, 2023 should be addressed. He stated the Planning Commission is a recommending body and that the City Council would be making the final determination.



Mr. Carlisle also noted that the Planning Department received thirty-plus written correspondences that were either provided in the Planning Commission digital agenda packet or distributed in hard copy to the Board prior to the beginning of this evening's meeting.

Some of the comments during discussion among the administration related to:

- Proposed fencing between existing older homes and new housing units, as relates to purpose, integration, standard practice.
- Communication received from Jen Peters, Executive Director of Troy Historic Village, as relates to applicant's consideration of the older homes that exist on the site.

Mr. Abitheira presented a brief history of the purchase of parcels with the intent to construct residential homes. He said the Planning Department advised the PUD application would be the most viable development approach to keep the charm, beauty and historical feel of the neighborhood. Mr. Abitheira said reducing the number of units and preserving the third older home offers more walkability and green space. He addressed the proposed solar panel lighting, three T-turnarounds to provide a better traffic flow for both the residents and City emergency and service vehicles, and the Emergency Vehicle Access (EVA). Mr. Abitheira said he does not have control of existing power outages, existing sanitary sewer backup into residential basements, street flooding after a rainstorm and cut-through traffic by residents and emergency vehicles.

Mr. Abitheira addressed how the application relates to the Master Plan and the PUD Intent in Section 11.01 of the Zoning Ordinance.

Several Planning Commission members thanked Mr. Abitheira for addressing the concerns of the Board and residents.

There was discussion, some comments related to:

- Option to own/lease housing units.
- Walkability of site.
- Intent of fence; initially to obscure headlights. The applicant noted there are sufficient trees and vegetation to obscure headlights.
- Preservation / maintenance of older homes.
- Orientation of homes; primary entrance to face street or alternatives such as green space.
- T-turnarounds; compliant with International Fire Code.
- Cohesion of architectural design, color scheme and building materials. The applicant provided samples of building materials.
- Similarity of the Enclave development located on John R and Wattles, as relates to acreage, number of units, orientation of homes, guest parking, amenities.
- Types of mixed housing that might result in lower density.
- Future development expansion to the east.
- Consideration to renovate older homes to commercial business.
- Intent to keep the historical feel of Troy Corners.
- Communication/ information provided by the Troy Historical Society.

Mr. Abitheira said he would take into consideration reducing density and the orientation of housing units, and that he would remove the fence between the older homes and new housing units. Mr. Abitheira said his preference is to develop the site as presented in the PUD application.

Mr. Savidant acknowledged the applicant received several extensions to develop the 14-unit townhome development that received approval in 2018. He said the extensions were offered because of Covid implications and a personal medical condition of the applicant. Mr. Savidant indicated extensions for development were given to other developers because of Covid implications, not just Mr. Abitheira.

Mr. Tagle thanked the applicant for his efforts over the past few years and stated support for the proposed development. He said he disagrees with transitioning the older homes into commercial businesses and with the orientation of the homes to face a street. He shared that the site layout before the Board this evening is the best approach the applicant has presented.

Mr. Faison said he is fairly supportive of the application as relates to density, green space, housing mix, building height and walkability.

Ms. Malalahalli encouraged the applicant to consider reducing the density as an effort to lessen traffic congestion. She voiced concerns with the City Traffic Consultant's analysis of traffic based on the number of schools located in the area.

Mr. Fox said he supports the application. He said the applicant already reduced the density which resulted in more green space and a community gathering space that can be used by residents and their children.

Chair Lambert briefly addressed the public prior to opening the floor for public comment. He asked the public to present concerns that have not already been expressed at the Public Hearing in November and not to applaud. He informed the public their comments are limited to three minutes, and they would have another opportunity to speak at the City Council public hearing.

Chair Lambert opened the floor for public comment.

- David Cole, 211 Ottawa; addressed concerns of traffic congestion.
- Joseph Colby, 5125 Shady Creek; supports development as relates to density, addressed need for housing diversity.
- Sheila Lenz-Shomo, 6464 Fredmoor; addressed concerns with T-turnarounds, lack of green space, traffic congestion, displaced wildlife, not a fit for area.
- Marcia Bossenberger, 369 Ottawa; agrees orientation of homes should face street, addressed missing items from the site plan and road access to the 14 unit townhome development.



- Ann Coleman, 6091 Livernois; addressed the intent of the Master Plan and PUD intent, recent survey of residents as relates to types of housing, infrastructure and drainage.
- Dawn Collins, 317 Lesdale; addressed concerns with drainage, infrastructure, electrical grid.
- Christopher Sobota, 348 Tara; addressed concerns with noise from sports court, specifically pickleball use.
- Melissa Zaluski, 5749 Whitehaven; addressed concerns with density, traffic congestion, safety, traffic review analysis.
- Carol Koch, 6055 Niles; addressed concerns about traffic congestion, PUD not fit for the area.
- Lloyd Melton, 785 Trinway; former owner of “historical” older homes, addressed restoration of older homes, property as relates to meadow, woods and greenery.
- Mary Rettig, 6860 Westaway; addressed need for housing especially ranch homes, desire for bigger lots, questioned snow removal, internal traffic flow, parking, drainage and electrical grid.
- Shane Coleman, 6839 Westaway; addressed unintended consequences as relates to traffic congestion, impact on schools, displaced wildlife.
- Stephanie Heidt, 6644 Montclair; addressed concerns with density, cut-through traffic, future development to east, desire for open space, setting a precedent.
- Dan Lopez-Sota, 2200 Crooks; said project is positive step in right direction, addressed City’s population growth/decline, need for public transportation to lessen traffic congestion.
- Linda Swanson, 6083 Blackwell; addressed need for single family homes, concerns with drainage and lack of green space.
- Jeff Williams, 159 Telford; addressed concerns that the application does not relate to the Master Plan, PUD intent or PUD Standards.
- Deborah Louzecky, 6327 Donaldson; addressed the Master Plan, SEMCOG’s forecast as relates to seniors and children, concerns with drainage, flooding, parking, safety of EVA, historical preservation of older homes.
- John Malott, 72 Telford; addressed impact on surrounding residential, concerns with density, limited green space, safety of children playing.
- Rosemarie Thommes, 335 Ottawa; voiced opposition, addressed better signage for proposed developments, concerns with density, transition to surrounding residential.
- Leasa Williams, 159 Telford; opposes PUD rezoning, addressed concerns with transition to single family residential, asked if there would be a deceleration lane, questioned EVA access for emergency vehicles as relates to width and angle.
- Benjamin Blaszak, 761 Ottawa; provided 2015 FEMA Hazard Study handout to members, addressed concerns with progressively worse drainage in area, backfill covering his windows, traffic congestion, high taxes and need for affordable housing.

Chair Lambert closed the floor for public comment.

Stephen Dearing, Sr. Traffic Engineer with OHM Advisors, City Traffic Consultant, said the proposed development is considered small enough that the City of Troy did not ask for a formal traffic impact study. He gave an in-depth analysis of the methodology used to conclude the number of vehicles generated during peak hours would be negligible. Mr. Dearing said the density of the project as proposed reflects a nominal increase of traffic, acknowledging that existing traffic congestion resulting from local schools could possibly be addressed and minimized should the City and the School District work together.

Ms. Malalahalli said the traffic impact analysis does not reflect reality. She shared individual experiences with the existing traffic congestion.

Mr. Savidant said that should the PUD application be granted by the City Council, the application would go through the final engineering approval process to assure the plan meets stormwater engineering standards. He said theoretically the proposed development might improve existing flooding issues.

Mr. Savidant said the EVA access will be designed to meet compliance standards for emergency vehicles. He noted school children walking to/from school can cross at the intersection with the safety of a traffic control button and possibly a crosswalk could be provided in the future.

Mr. Savidant said the draft PUD Agreement would provide legal protection for the preservation, alteration, and maintenance of the older homes on site. He said the City does not have a provision in its Zoning Ordinance with respect to protection of wildlife.

Mr. Carlisle confirmed the proposed sports court is designated as a generalized sports court. He confirmed there is a right-hand turn deceleration lane that would be required to meet engineering standards if the application is approved. Mr. Carlisle said snow removal is not a site plan requirement. He said in similar developments the snow would typically be plowed to the end of the T-turnarounds and that the developer is responsible to remove the snow by truck if necessary.

Mr. Fox referenced public comments relating to the option of leasing and/or owning the units. He said both owners and renters are welcome in the City.

**Resolution # PC-2024-01-**

Moved by: Krent

Seconded by: Fox

**WHEREAS**, The applicant GFA Development, Inc. seeks Conceptual Development Plan (CDP) and Preliminary Development Plan (PDP) approval for the Village of Hastings Planned Unit Development (PUD), located on the east side of Livernois, north of Square Lake, in Section 3, approximately 6.05 acres in area; and

**WHEREAS**, The Village of Troy PUD features 3 detached single-family homes, 8 ranch style single family homes, 18 two-story attached homes and 6 single family duplex homes, for a total of 35 residential units; and



**WHEREAS**, The PUD provides a walkable urban environment that is compact and designed to human scale, and

**WHEREAS**, The PUD provides a compatible mix of open space, landscaped areas and pedestrian amenities; and

**WHEREAS**, The PUD proposes appropriate land use transitions between the PUD and surrounding properties, and

**WHEREAS**, The PUD will reasonably mitigate impacts to the transportation system and enhance non-motorized facilities and amenities.

**WHEREAS**, The PUD provides a complementary variety of housing types; and

**BE IT RESOLVED**, That the Planning Commission recommends to the City Council that Concept Development Plan Approval and Preliminary Development Plan Approval for the proposed Village of Hastings, be granted, subject to the following design considerations:

1. Remove the fence between the existing “historic” homes and the adjacent new housing units.
2. Confirm trash pickup and provide trash vehicle circulation plan.
3. Provide a photometric plan.
4. That the PUD Agreement includes appropriate language to assure that the three older homes remain historical in nature in perpetuity.

Discussion on the motion on the floor.

Ms. Dufrane said the City raised the bar when this Board granted a PUD development at Long Lake and Crooks. She encouraged the Board to make it clear in its Resolution that the proposed development meets a sufficient number of PUD Standards for Approval set forth in Section 11.03 of the Zoning Ordinance. Ms. Dufrane said the Resolution should be specific to that regard for review and deliberation by the City Council.

There was discussion on:

- What constitutes a sufficient number?
- Must all 18 PUD Standards for Approval, or a preponderance of the 18 Standards, be met?
- Planning Commission to address each of the 18 PUD Standards for Approval.
- Consideration should be given to setting a precedent for future PUD applications.
- Concurrence PUD Standards for Approval should be addressed in the Resolution.

Mr. Fox read and addressed each Standard of the 18 PUD Standards for Approval. He said he believes the application meets all the Standards with the exceptions of 11, 13 and 15(d) because they are not applicable, noting 11 and 13 relate to obsolete buildings and 15(d) relates to commercial use. He did note that the Planning Commission might want to discuss further Standards 7, 8 and 14.

Mr. Savidant said deciding what is a sufficient number of Standards to be met is subjective based on the opinion of each Planning Commission member.

Ms. Malalahalli said she reserves her judgment on the application not meeting Standards 2, 6, 8 and 14. She said she would vote favorably for approval if the applicant would consider lowering the density.

Ms. Perakis said the application does not meet Standards 2, 3, 5, 6, 7, 8, 9, 10, 14, and 15(a) and that she would not vote for approval. She indicated disappointment because the developer is willing to work with the Board and the residents to make a better project. Ms. Perakis said she relates the density to the number of units proposed and not the traffic impact.

Mr. Buechner stated it's a tough decision and one should be careful what is wished for.

Mr. Faison said Standards 6 and 12 are questionable but the plan for consideration this evening is a much better plan than the original plan.

Mr. Fox said the developer was encouraged to pursue a PUD development because it allows the developer the flexibility to lessen any negative effect or concern of the adjacent residential properties.

Mr. Tagle said if the concern is density, then a case should be made to reduce the density by one unit, or by three units, or whatever the number of units desired. He said if the density is in relation to the traffic concerns, he reminded the Board that OHM determined a minimal traffic impact.

Mr. Hutson said the Resolution and the mix of Standards that have been or not have been met in discussion among the Board members will not be helpful to the City Council in its deliberation.

Chair Lambert stated his appreciation for the applicant's willingness to work with the Board and the neighbors. He said based on the comments of the City Assistant Attorney and the public comment, he would vote no on the motion.

Vote on the motion on the floor inclusive of PUD Standards for Approval

**Resolution # PC-2024-01-003**

Moved by: Krent

Seconded by: Fox

**WHEREAS**, The applicant GFA Development, Inc. seeks Conceptual Development Plan (CDP) and Preliminary Development Plan (PDP) approval for the Village of Hastings Planned Unit Development (PUD), located on the east side of Livernois, north of Square Lake, in Section 3, approximately 6.05 acres in area; and



**WHEREAS,** The Village of Troy PUD features 3 detached single-family homes, 8 ranch style single family homes, 18 two-story attached homes and 6 single family duplex homes, for a total of 35 residential units; and

**WHEREAS,** The PUD provides a walkable urban environment that is compact and designed to human scale, and

**WHEREAS,** The PUD provides a compatible mix of open space, landscaped areas and pedestrian amenities; and

**WHEREAS,** The PUD proposes appropriate land use transitions between the PUD and surrounding properties, and

**WHEREAS,** The PUD will reasonably mitigate impacts to the transportation system and enhance non-motorized facilities and amenities; and

**WHEREAS,** The PUD provides a complementary variety of housing types; and

**WHEREAS,** The PUD meets the PUD Standards for Approval except Standards 11, 13 and 15(d), which are not applicable.

**BE IT RESOLVED,** That the Planning Commission recommends to the City Council that Concept Development Plan Approval and Preliminary Development Plan Approval for the proposed Village of Hastings, be granted, subject to the following design considerations:

1. Remove the fence between the existing “historic” homes and the adjacent new housing units.
2. Confirm trash pickup and provide trash vehicle circulation plan.
3. Provide a photometric plan.
4. That the PUD Agreement includes appropriate language to assure that the three older homes remain historical in nature in perpetuity.

Yes: Faison, Fox, Krent, Tagle

No: Buechner, Hutson, Lambert, Malalahalli, Perakis

**MOTION FAILED**

### **OTHER ITEMS**

#### **6. ELECTION OF OFFICERS**

Chair Lambert opened the floor for nominations for Chair.

Chair Lambert nominated Marianna Perakis. Mr. Hutson supported the nomination.

Acknowledging there were no further nominations, Chair Lambert closed the floor to nominations.



**Carlisle | Wortman**  
ASSOCIATES, INC.

117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

Date: October 10, 2023  
December 19, 2023  
February 21, 2024  
March 15, 2024

## **PUD and Preliminary Development Plan Approval Review For City of Troy, Michigan**

**Applicant:** GFA Development Inc

**Project Name:** Village of Hastings

**Plan Date:** January 24, 2024  
**Location:** East side of Livernois, north of Square Lake

**Zoning:** R-1B, Single Family Residential (approx. 4.9 acres) & NN-Q  
Neighborhood Node, (approx. 1.1 acres)

**Proposed Zoning:** Planned Unit Development

**Action Requested:** PUD and Preliminary Development Plan Approval Review

### **BACKGROUND**

An application has been submitted to conditionally rezone a +/-6.0 acre site to PUD in order to construct thirty (30) new residential units and preserve three (3) existing homes on site. Eight (8) will be ranch style single-family homes, eighteen (18) will be two-story attached row homes, and four (4) will be single-family duplex homes. The site currently has four (4) existing single-family homes of which three (3) will be preserved and incorporated into the entire development. The site includes five (5) parcels. Approximately 4.9 acres of the site is currently zoned R-1B, which does not permit multi-family residential; while approximately 1.1 acres of the site is zoned Neighborhood Node, which does allow multi-family residential.



The subject site is located on the east side of Livernois, north of Square Lake. Access is via a new twenty-eight (28) foot wide private road off Livernois along with an emergency vehicle access road off Square Lake in the southeast corner of the development. The 30-units will be distributed in the format outlined below:

- Four (4) one (1) unit detached ranches. Four (4) units total.
- Two (2) two (2) unit attached ranches. Four (4) units total.
- Three (3) five (5) unit multi-unit row homes. Fifteen (15) units total.
- One (1) three (3) unit multi-unit row homes. Three (3) units total.
- Two (2) two (2) unit single-family duplex homes. Four (4) units total.
- Three (3) existing (1) unit single family homes. Three (3) units total.

Total of Units: 30 new units + 3 existing units = 33 units.

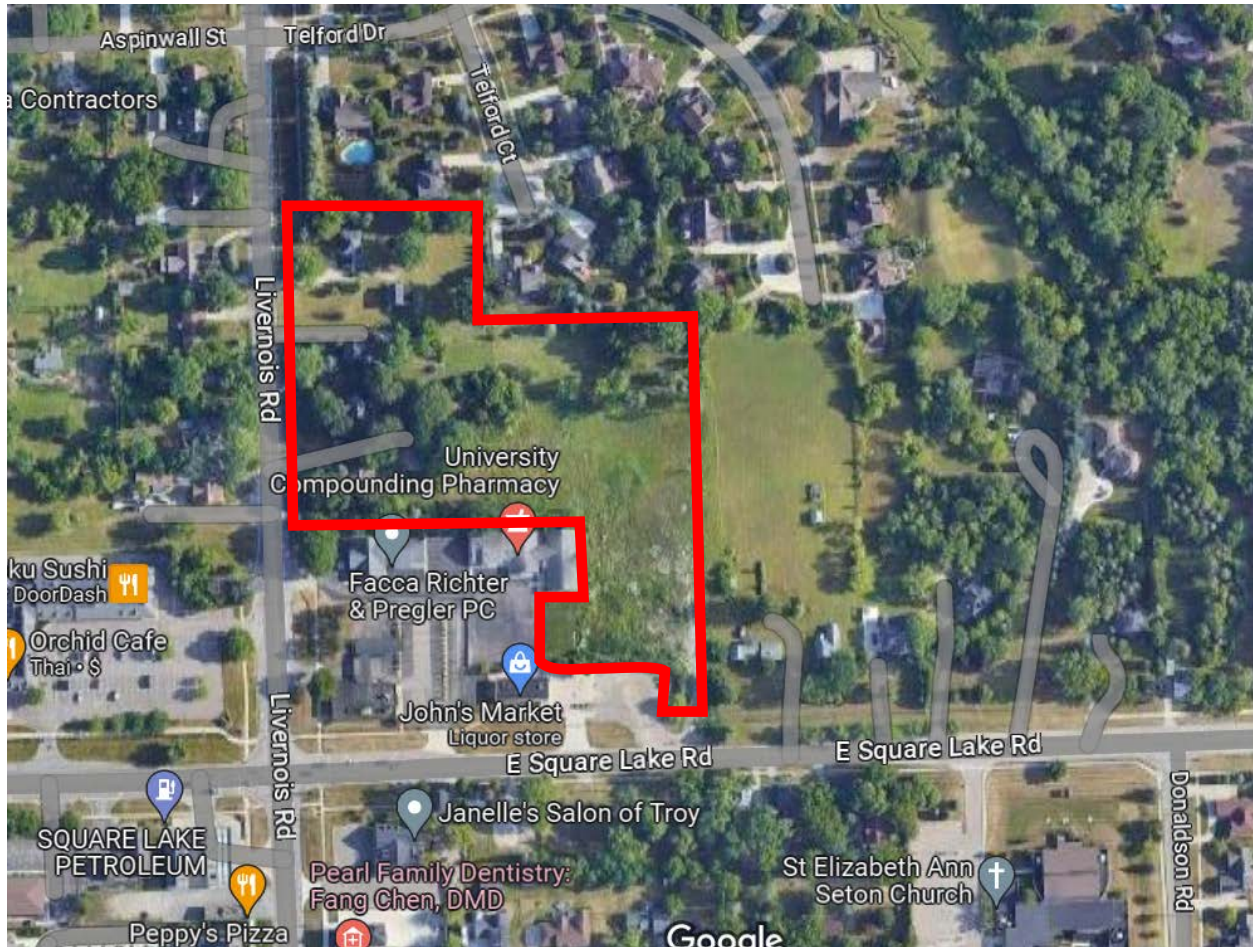
All duplex and multi-unit row homes are two stories. One (1) duplex unit measures roughly 1,900 square feet and one (1) row home unit measures roughly 2,000 square feet.

The following benefits have been noted by the applicant:

1. *Preservation of three existing homes built.*
2. *Offer multiple styles of housing.*
3. *Emergency Vehicle Access from Square Lake Road.*
4. *1.3 acres of open space including communal sport court, putting green, and butterfly garden.*
5. *Landscaping will be viable, interesting, and inviting to encourage outdoor recreation and exercise.*
6. *Extensive interior sidewalks to promote walkability.*
7. *Maximum Building Height shall not exceed 2 stories or 30' in height.*
8. *Maximum lot area covered by buildings will be 18%.*

If the PUD is recommended for approval by the Planning Commission, a PUD Agreement will be drafted between the applicant and the City Attorney's office prior to consideration by the City Council.

Location of Subject Site:



Current Zoning:

R-1B, Single Family Residential & NN-Q Neighborhood Node.

Proposed Uses of Subject Parcels:

Thirty-three (33) multi-family and single-family dwelling units.

Current Use of Subject Properties:

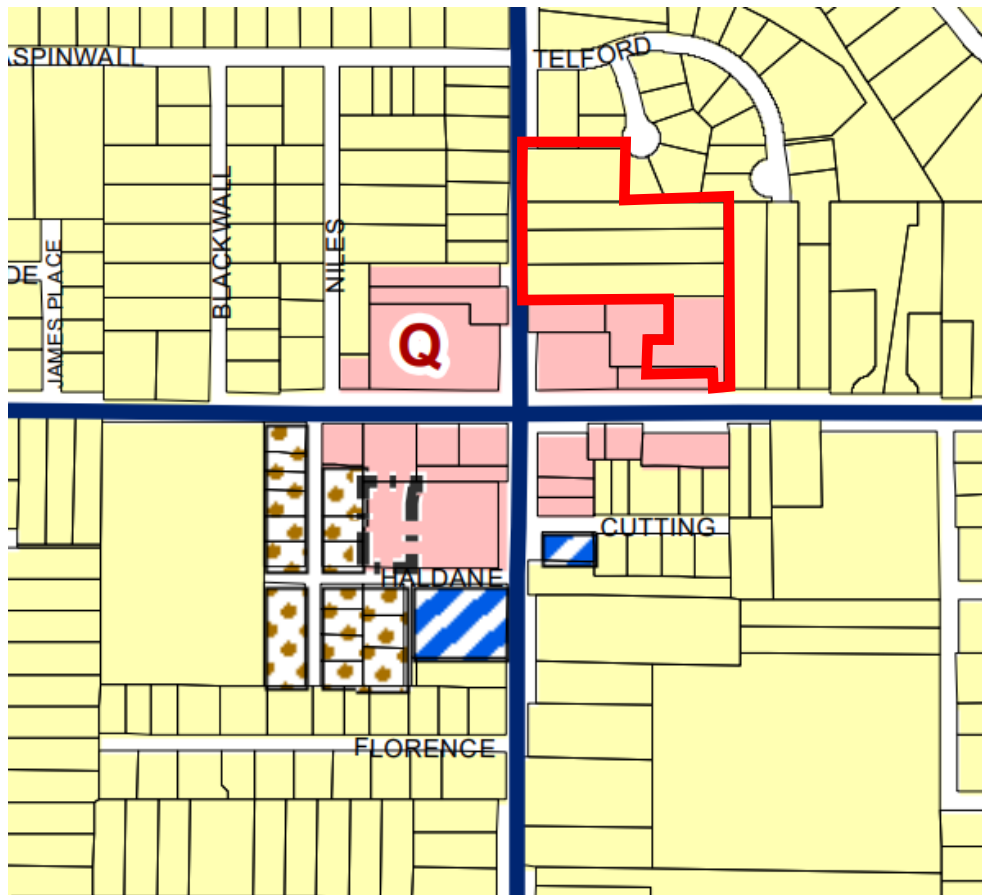
Single Family Homes and undeveloped land.

Surrounding Property Details:

Direction	Zoning	Use
North	R-1B	Single Family Housing
South	NN-Q	Commercial / Office
East	R-1B	Single Family Housing
West	R-1B / NN-Q	Single Family Housing / Commercial



## ZONING



The site includes a mix of zoned R1-B (one family residential) and NN, Neighborhood Node Zoning. Uses along this portion of Livernois and Square Lake Road are primarily low intensity office and retail located near the intersection. Institutional uses exist along Square Lake Road with Troy Preschool to the west of the intersection and Saint Elizabeth Ann Seton Church to the east of the intersection. Newer dense multi-family housing does exist south of the intersection along Livernois.

## PUD PROCESS

A Planned Unit Development project is viewed as an integrated development concept. To that end, the provisions of this Article are not intended to be used as a device for avoiding the zoning requirements that would otherwise apply, but rather to allow flexibility and mixture of uses, and to improve the design, character and quality of new development. The use of a Planned Unit Development to permit variations from other requirements of this Ordinance shall only be approved when such approval results in improvements to the public health, safety and welfare in the area affected, and in accordance with the intent of this Article.

The approval of a Planned Unit Development (PUD) is a three-step process:

**Step 1-Concept Plan:** *The first step shall be application for and approval of a Concept Development Plan, which requires a legislative enactment amending the zoning district map so as to reclassify the property as a Planned Unit Development. A proposed Development Agreement shall be included and incorporated with the Concept Development Plan, to be agreed upon and approved coincident with said Plan. The Concept Development Plan and Development Agreement shall be approved by the City Council following the recommendation of the Planning Commission. Such action, if and when approved, shall confer upon the applicant approval of the Concept Development Plan and shall rezone the property to PUD in accordance with the terms and conditions of the Concept Development Plan approval.*

**Step 2- Preliminary Development Plan Approval:** *The second step of the review and approval process shall be the application for and approval of a Preliminary Development Plan (preliminary site plan) for the entire project, or for any one or more phases of the project. City Council shall have the final authority to approve and grant Preliminary Development Plan approvals, following a recommendation by the Planning Commission.*

**Step 3- Final Development Plan Approval:** *The third step of the review and approval process shall be the review and approval of a Final Development Plan (final site plan) for the entire project, or for any one or more phases of the project, and the issuance of building permits. Final Development Plans for Planned Unit Developments shall be submitted to the Zoning Administrator for administrative review, and the Zoning Administrator, with the recommendation of other appropriate City Departments, shall have final authority for approval of such Final Development Plans.*

The applicant is seeking a recommendation of approval for their Preliminary Development Plan.



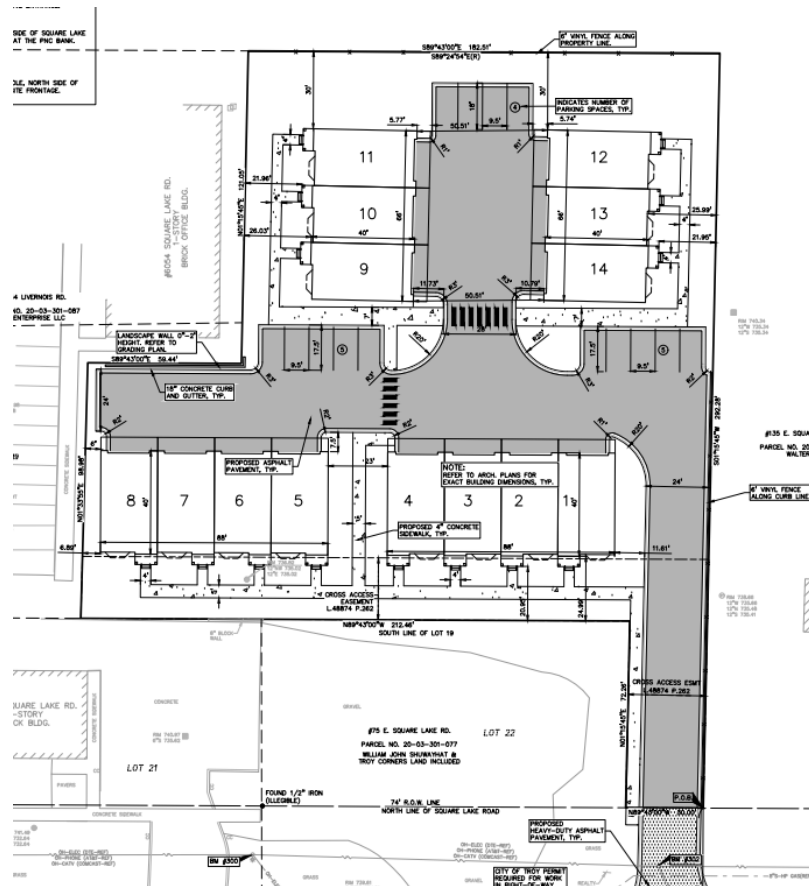
## PUD INTENT

As set forth in Section 11.01, the intent of the Planned Unit Development option is to permit flexibility in the design and use of residential and non-residential land which, through the implementation of an overall development plan, when applicable to the site, will:

1. Encourage developments that will result in a long-term contribution to social, environmental and economic sustainability in the City of Troy.
2. Permit development patterns that respond to changing public and private needs.
3. Encourage flexibility in design and use that will result in a higher quality of development and a better overall project than would be accomplished under conventional zoning, and which can be accommodated without sacrificing established community values.
4. Provide for the long-term protection and/or preservation of natural resources, natural features, and/or historic and cultural resources.
5. Promote the efficient use and conservation of energy.
6. Encourage the use, redevelopment and improvement of existing sites where current ordinances do not provide adequate protection and safeguards for the site or its surrounding areas, or where current ordinances do not provide the flexibility to consider redevelopment, replacement, or adaptive re-use of existing structures and sites.
7. Provide for enhanced housing, employment, recreation, and shopping opportunities for the citizens of Troy.
8. Ensure the compatibility of design and use between various components within the PUD and with neighboring properties and uses.
9. Ensure development that is consistent with the intent of the Master Plan.

## PREVIOUS PLANNING COMMISSION REVIEWS

The following 14-unit townhome development was approved in 2018:



2018 approved 14-unit site plan.

The applicant is revising the approved site layout shown above and expanding the project to the northwest.

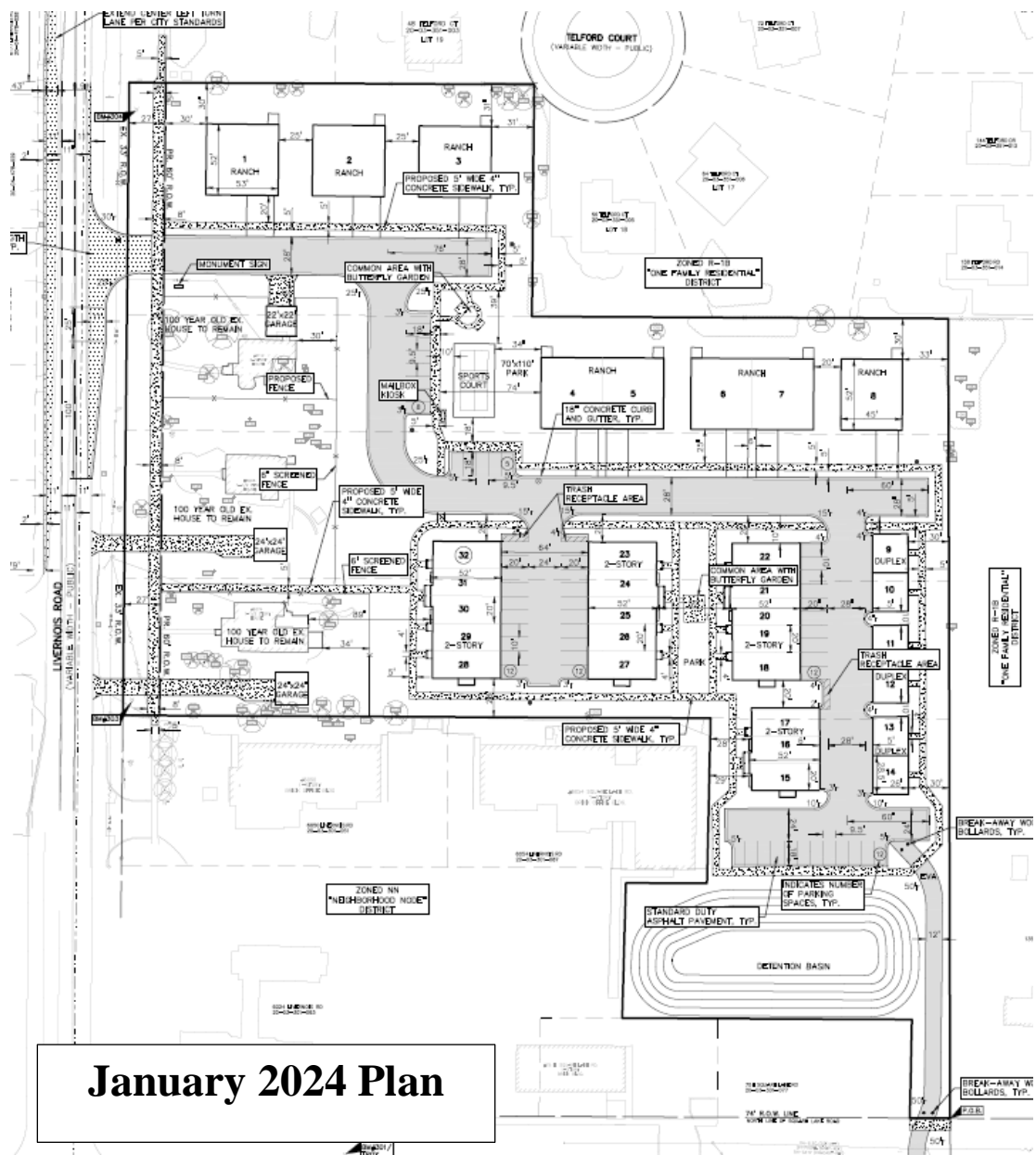
The Concept Plan was first reviewed by the Planning Commission in July 2022. Discussion included:

- Previously approved development, housing types, timing and validity of approval, currently in engineering process
- Existing homes; historical in nature, and listed in Historic Preservation Chapter
- Neighborhood Node “Q” toured by Planning Commission and City Council
- Public benefit, preservation of two existing homes, housing types offered
- Intent of PUD development: provide flexibility from Zoning Ordinance regulations to allow a more creative and negotiable product



- Planning Commission members expressed opposition to 3-story tall buildings
- Applicant was encouraged to:
  - Create more green space
  - Retain “old Troy” feel of neighborhood
  - Create a community feel; a village
  - Create a different and unique development
  - Let element of historical homes shine on their own

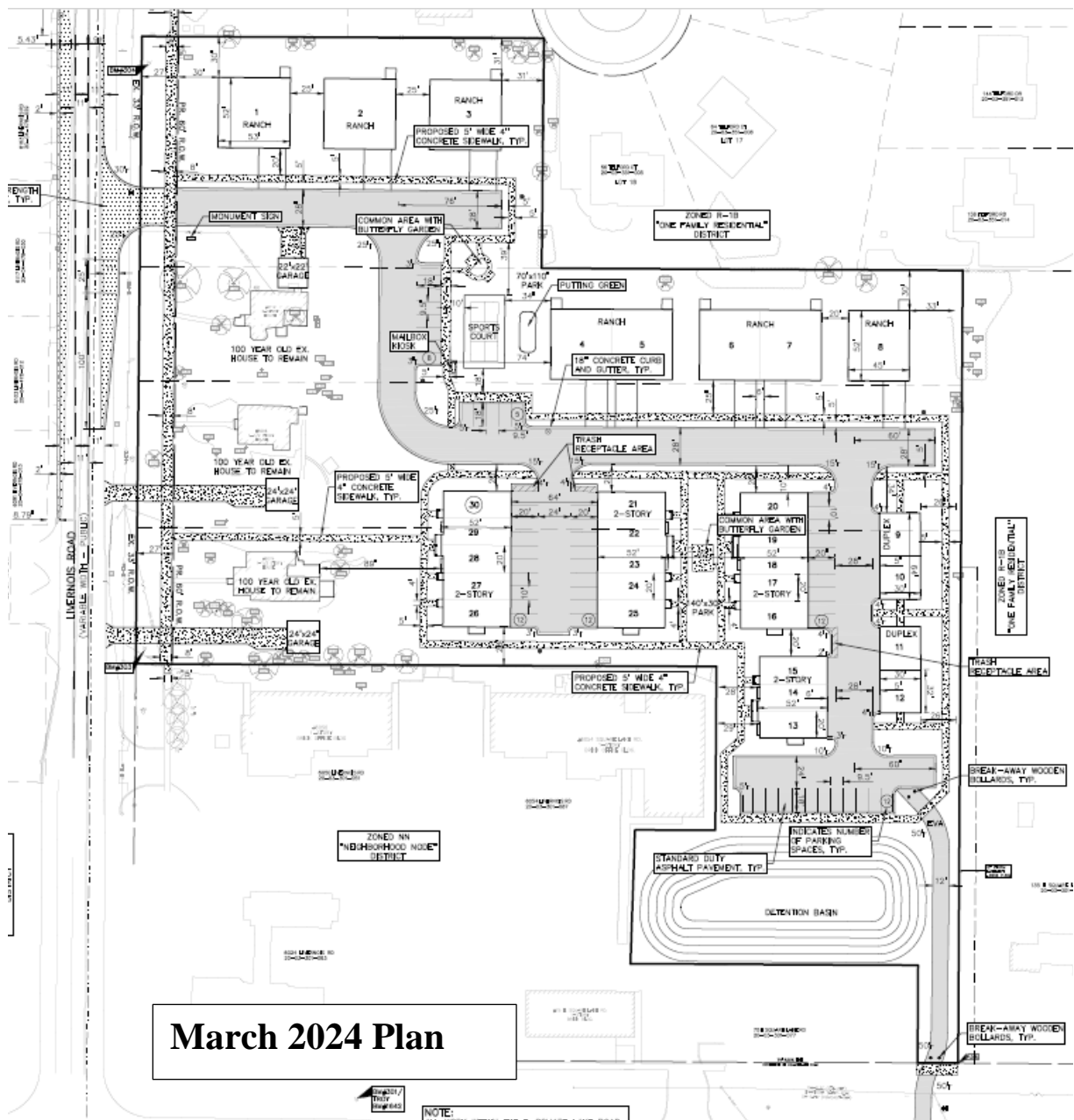
On January 9, 2024, the Planning Commission considered a revised plan. After public commentary and lengthy deliberation, a vote to recommend approval of the plan to the City Council failed 4-5. No further action was taken.



## REVISED PLAN

The applicant has requested to submit a revised plan for further Planning Commission consideration. Per further discussion at the January 9, 2024 meeting, the applicant has provided the following revisions:

- Removal of the proposed privacy fence between the existing older homes and the adjacent new housing units.
- Reduction of two (2) units. Revisions include the removal of two (2) duplex units on the east side of the development.
- The four (4) remaining duplex units have a new footprint and layout.





## NATURAL FEATURES

- Topography:** A topographic survey has been provided on sheet P-1.0. The site is relatively flat with the exception of the southeast corner where a natural depression exists and will be converted into the detention basin.
- Wetlands:** There are no state regulated wetlands on the site.
- Floodplain:** The site is not located within a flood hazard zone.
- Woodlands:** A tree inventory and replacement plan have been provided on Sheet T.1.0-T.1.1. The applicant surveyed a total of 305 trees on site. The composition of trees is predominantly woodland and invasive species with a small amount of landmark trees. Invasive species include silver maples, box elder, black walnut, elm, white mulberry, american elm, norway maple, catalpa, white poplar, green ash and cottonwood. Of the 305 on-site trees, 44 woodland trees and 5 landmark trees will be saved. Preserved trees will be primarily along the borders of the site and adjacent to the three (3) existing homes.

Replacement Details		
Protected Tree	Inches Removed	Replacement Required
Landmark	172 inches	172 inches
Woodland	329 inches	165 inches
Protected Tree	Inches Preserved	Credit
Landmark	94 inches	188 inches
Woodland	440 inches	880 inches
Protected Replacement Required	337 Inches	
Preservation Credit	1,068 Inches	
<b>Total</b>	<b>0 inches of replacement required</b>	
<b>Total Tree Mitigation</b>	<b>0 inches of replacement required</b>	

**Items to be Addressed:** None.

## SITE ARRANGEMENT/SETBACKS/HEIGHT CONSIDERATION

The applicant is proposing to construct thirty (30) new residential units and maintain three (3) existing houses on site. Eight (8) new units will be ranch style single-family homes, eighteen (18) will be two-story attached row homes, and four (4) will be single-family duplex homes. The site currently has four (4) existing single-family homes of which three (3) will be preserved and incorporated into the entire development.

A detention basin is proposed for the southeastern portion of the site, which will be bordered by neighboring properties to the south and west, the site emergency vehicle access drive to the east, and on-site parking to the north. The plans include two (2) outdoor recreational areas: the northern central portion of the site features a sports court, butterfly garden, and putting green; and the southern central portion features a 420 square foot park with butterfly garden.

We note that there is inconsistency within the plans regarding rear and side yard setbacks. For example, the applicant states that the rear yard setback is 30 feet; meanwhile, the plans show this setback as 26 feet. Additionally, the 26-foot side setback illustrated in the plans is not measured from the building up to the lot line.

**Items to be Addressed:** *Modify plans to reflect consistent building and lot dimensions.*

## PARKING

Section 13.06.G of the Zoning Ordinance requires:

	Required	Provided	Complies
<b>Multiple-Family Residential</b>			
1 space per each efficiency dwelling unit 2 spaces per each dwelling unit	2*33 units= 66 spaces	25 surface lot spaces 42 driveway spaces 30 garage spaces = 97 total	Complies

**Items to be Addressed:** *None*

## SITE ACCESS AND CIRCULATION

### Vehicular Access

The site will be accessed from Livernois Road via a two-lane entry. There is a one lane emergency vehicle access proposed from Square Lake Road into the southeastern portion of the development. No signage information was provided regarding this access point but it is recommended that signage be included to indicate the lane is meant for emergency vehicles only.

### Pedestrian Circulation

Five (5) foot sidewalks are shown throughout the development providing pedestrian connection to multiple units and open space amenities. To promote safety, the applicant should add three (3) crosswalks be provided. One crosswalk should connect the sidewalk south of the sports court to the adjacent sidewalk north of Unit 30. On the south side of the main road, two more crosswalks should be provided where the sidewalk ends for vehicular entry into each parking lot.



In an August 23, 2023 memo, OHM outlines a number of pedestrian and circulation improvements.

**Items to be Addressed:** 1). The Emergency Vehicle Access Road located in southeast corner of the development needs clear signage stating its restricted use 2). Crosswalks should be provided as described and 3). Incorporate OHMs August 23rd memo circulation improvements.

## LANDSCAPING

A landscaping plan has been provided on Sheets L-1.0 and L-1.1. The following table discusses the development's compliance with the landscape requirements set forth in Section 13.02.

	Required	Provided	Compliance
<b>Greenbelt Planting</b>			
Livernois: 1 tree per 30 feet of frontage	$463 / 30 = 15$	15	Complies
<b>Property Lines</b>			
<u>North (Residential):</u> 1 large evergreen tree per 10 lineal feet OR 1 narrow evergreen tree per 3 lineal feet	297-feet along western half / 10 = 30 trees	30 large evergreen trees	Complies
	305-feet along eastern half / 10 = 31 trees	31 large evergreen trees	Complies
<u>East (Residential):</u> 1 large evergreen tree per 10 lineal feet OR 1 narrow evergreen tree per 3 lineal feet	170-feet along northern quarter/3 = 57 trees	57 narrow evergreen trees	Complies
	586-feet along southern three quarters/3 = 195 trees	195 narrow evergreen trees	Complies
<u>South (Office):</u> Not required	N/A	2 trees	N/A
<b>Parking Lot</b>			
1 tree per 8 surface lot parking spaces	$25 / 8 = 3$ trees	None in parking lot; but 52 provided along the road	Complies

Subdivision and Site Condominium Landscaping			
1 tree per 50 lineal feet of public or private road frontage	1,281 LF / 50= 26 trees	52 trees	Complies
Overall			
Site landscaping: A minimum of 20% of the site area shall be comprised of landscape material	20%	26%	Complies

### Trash Pickup

Three (3) trash receptacles areas are presented within the central parking lots. It is unclear whether any of the units will receive personal garbage/recycling bins or whether they will be expected to transport personal rubbish to one of the areas. We ask that the applicant clarify the intended arrangement for trash pickup and provide a trash vehicle circulation plan.

**Items to be Addressed:** *Confirm trash pickup arrangement and provide trash vehicle circulation plan.*

## TRAFFIC

In an August 23rd, 2023 memo, OHM has reviewed traffic.

### Traffic Counts:

Land Use	Number of Units	ITE Land Use Code	Number of Site Generation Trips								
			AM Peak Hour			PM Peak Hour			Daily		
			In	Out	Total	In	Out	Total	In	Out	Total
Single Family Detached	6	210	1	5	6	4	3	7	38	38	76
Single Family Attached	38	215	4	10	14	11	8	19	120	120	240
Site Totals – 44 units			5	15	20	15	11	26	158	158	316

### OHM Conclusion

*Traffic volumes are closely correlated with the number of residential units. Essentially all the trips generated by the Village of Hastings development will be delivered directly to Livernois Road, an arterial roadway, which will increase slightly over current conditions. The traffic generated by the proposed development would be minimal, adding less than 30 vehicle trips during the peak (“busiest”) hour. This equates to approximately one vehicle every 2-3 minutes during the peak*



*hours. The traffic impact of this site on the adjacent road network is negligible and would be imperceptible to the majority of road users.*

## PHOTOMETRICS

The types of fixtures and footcandle measurements proposed are compliant with lighting standards. We note that although fixture types are compliant, we have not been able to determine their overall height. The applicant must ensure that no lights exceed 25 feet in height. Lower pole heights, 15-feet or less, should be utilized around the sports court.

In addition, we note that the photometric plans provided include six (6) single family duplex homes rather than four (4) as indicated elsewhere in the plans.

***Items to be Addressed:*** 1). *Ensure lights do not exceed 25 feet in height.;* and 2). *Lower pole heights, 15-feet or less, shall be utilized around the sports court.*

## FLOOR PLAN AND ELEVATIONS

### Floor Plans

Standard Duplex Unit: The first floor of this unit is where the living room, dining area, kitchen, pantry, and one (1) restroom are located. The first floor also features a 19' x 20' garage. The second floor features three (3) bedrooms, two (2) restrooms, and a laundry room. One (1) restroom is located in a common area and the other is solely accessible through the primary bedroom.

Ranch Unit: The front façade of the ranch allows entry into the unit via the front door and through the 2-car garage. The unit features three (3) bedrooms, two (2) restrooms, a great room, kitchen, nook area, and laundry room. We note that the applicant also presents an identical floor plan featuring a 3-car garage instead of a 2-car garage. It is unclear how many ranch units will have a 2-car garage and how many will have a 3-car garage. The 2-car garage compared to the 3-car garage are not indicated on the site plan.

Ranch Duplex Unit: There are two (2) sets of two (2) ranch duplex units for a total of four (4) ranch duplex units altogether. The floor plans present Unit 1 as smaller than Unit 2, although no measurements are provided. The first floor of Unit 1 includes a single car garage, basement, one (1) restroom, mechanical equipment area, and stairs. A patio is presented on the side of the unit; although, this patio is not presented elsewhere in the plans. The second floor includes the living room, kitchen, laundry room, one (1) bedroom, and one (1) additional restroom.

The first floor of Unit 2 features a 2-car garage and a small basement area where mechanical equipment and washer/dryer are located. The second floor includes the living room, kitchen, two (2) bedrooms, and one (1) restroom.

We note that the difference in unit size as presented in the floor plans does not match the site plan. Sheet P-2.0 indicates that Units 1 and 2 are identical in size. Furthermore, the floor plans indicate that Unit 1 shall feature a patio on the side of the unit; however, no patio is shown on Sheet P-2.0 or anywhere else in the plans. Building dimensions and site features must be consistent throughout the entire plan set.

### **Elevations and Building Materials**

Building materials have not been provided by the applicant. Applicant shall provide material details. We find that the proposed architecture does not incorporate creativity or best building design practices. Ranch units feature “snout nose” garages and bedrooms, seemingly hiding the unit’s front door. Ranch duplex units as proposed are tall, rectangular boxes with minimal natural light and feature little architectural details.

We recommend the Planning Commission evaluate the proposed architecture in accordance with Site Plan Review Design Standards of Section 8.06.

***Items to be Addressed:*** 1). Clarify how many ranch units have a 2-car garage versus a 3-car garage. 2). Modify plans to reflect consistent building dimensions and site features. 3). Provide building materials including proposed colors. 4). Planning Commission to evaluate proposed architecture in accordance with Site Plan Review Design Standards of Section 8.06.

### **PUD STANDARDS**

As set forth in section 11.03, Standards for Approval, it should be demonstrated that the following standards will be met, as reasonably applicable to the site:

1. *The applicant shall demonstrate that through the use of the PUD option, the development will accomplish a sufficient number of the following objectives, as are reasonably applicable to the site, providing:*
2. *A mixture of land uses that would otherwise not be permitted without the use of the PUD provided that other objectives of this Article are also met.*
3. *A public improvement or public facility (e.g. recreational, transportation, safety and security) which will enhance, add to or replace those provided by public entities, thereby furthering the public health, safety and welfare.*
4. *A recognizable and material benefit to the ultimate users of the project and to the community, where such benefit would otherwise be infeasible or unlikely to be achieved absent these regulations.*
5. *Long-term protection and preservation of natural resources, natural features, and historic and cultural resources, of a significant quantity and/or quality in need of protection or preservation, and which would otherwise be unfeasible or unlikely to be achieved absent these regulations.*
6. *A compatible mixture of open space, landscaped areas, and/or pedestrian amenities.*
7. *Appropriate land use transitions between the PUD and surrounding properties.*



8. *Design features and techniques, such as green building and low impact design, which will promote and encourage energy conservation and sustainable development.*
9. *Innovative and creative site and building designs, solutions and materials.*
10. *The desirable qualities of a dynamic urban environment that is compact, designed to human scale, and exhibits contextual integration of buildings and city spaces.*
11. *The PUD will reasonably mitigate impacts to the transportation system and enhance non-motorized facilities and amenities.*
12. *For the appropriate assembly, use, redevelopment, replacement and/ or improvement of existing sites that are occupied by obsolete uses and/or structures.*
13. *A complementary variety of housing types that is in harmony with adjacent uses.*
14. *A reduction of the impact of a non-conformity or removal of an obsolete building or structure.*
15. *A development consistent with and meeting the intent of this Article, which will promote the intent of the Master Plan or the intent of any applicable corridor or sub-area plans. If conditions have changed since the Plan, or any applicable corridor or sub-area plans were adopted, the uses shall be consistent with recent development trends in the area.*
16. *Includes all necessary information and specifications with respect to structures, heights, setbacks, density, parking, circulation, landscaping, amenities and other design and layout features, exhibiting a due regard for the relationship of the development to the surrounding properties and uses thereon, as well as to the relationship between the various elements within the proposed Planned Unit Development. In determining whether these relationships have been appropriately addressed, consideration shall be given to the following:*
  - a. *The bulk, placement, and materials of construction of the proposed structures and other site improvements.*
  - b. *The location and screening of vehicular circulation and parking areas in relation to surrounding properties and the other elements of the development.*
  - c. *The location and screening of outdoor storage, loading areas, outdoor activity or work areas, and mechanical equipment.*
  - d. *The hours of operation of the proposed uses.*
  - e. *The location, amount, type and intensity of landscaping, and other site amenities.*
17. *Parking shall be provided in order to properly serve the total range of uses within the Planned Unit Development. The sharing of parking among the various uses within a Planned Unit Development may be permitted. The applicant shall provide justification to the satisfaction of the City that the shared parking proposed is sufficient for the development and will not impair the functioning of the development, and will not have a negative effect on traffic flow within the development and/or on properties adjacent to the development.*
18. *Innovative methods of stormwater management that enhance water quality shall be considered in the design of the stormwater system. 18. The proposed Planned Unit Development shall be in compliance with all applicable Federal, State and local laws and ordinances, and shall coordinate with existing public facilities.*

## SITE PLAN REVIEW STANDARDS

Site Plan review standards provide the Planning Commission with direction when reviewing the proposed site plan and design features of this development.

### Section 8.06 outlines Site Plan Review Design Standards.

1. *Development shall ensure compatibility to existing commercial districts and provide a transition between land uses.*
  - a. *Building design shall enhance the character of the surrounding area in relation to building and parking placement, landscape and streetscape features, and architectural design.*
  - b. *Street fronts shall provide a variety of architectural expression that is appropriate in its context and prevents monotony.*
  - c. *Building design shall achieve a compatible transition between areas with different height, massing, scale, and architectural style.*
2. *Development shall incorporate the recognized best architectural building design practices.*
  - a. *Foster a lasting impact on the community through the provision of high quality design, construction, and detailing.*
  - b. *Provide high quality, durable materials, such as but not limited to stone, brick, glass, and metal. E.I.F.S. or material equivalent shall only be used as an accent material.*
  - c. *Develop buildings with creativity that includes balanced compositions and forms.*
  - d. *Design roofs that are appropriate to the architectural style of the building and create an appropriate visual exterior mass of the building given the context of the site.*
  - e. *For commercial buildings, incorporate clearly defined, highly visible customer entrances using features such as canopies, porticos, arcades, arches, wing walls, ground plane elements, and/or landscape planters.*
  - f. *Include community amenities that add value to the development such as patio/seating areas, water features, art work or sculpture, clock towers, pedestrian plazas with park benches or other features located in areas accessible to the public.*
3. *Enhance the character, environment and safety for pedestrians and motorists.*
  - a. *Provide elements that define the street and the pedestrian realm.*
  - b. *Create a connection between the public right of way and ground floor activities.*
  - c. *Create a safe environment by employing design features to reduce vehicular and pedestrian conflict, while not sacrificing design excellence.*
  - d. *Enhance the pedestrian realm by framing the sidewalk area with trees, awnings, and other features.*
  - e. *Improve safety for pedestrians through site design measures.*



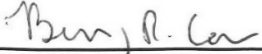
## SUMMARY

The Planning Commission is asked to hold a public hearing and consider public testimony. As part of the deliberations, the Planning Commission should consider if the project is consistent with the Master Plan, whether it meets the site plan design standards, and whether it meets the PUD standards.

If the Planning Commission recommends approval of the PUD, and Preliminary Development Plan approval, the following site plan items should be addressed by the applicant:

- 1.) *Modify plans to reflect consistent building and lot dimensions.*
- 2.) *Provide clear signage near the Emergency Vehicle Access Road stating its restricted use.*
- 3.) *Incorporate three (3) crosswalks as described.*
- 4.) *Incorporate circulation improvements as requested in OHM memo dated August 23, 2023.*
- 5.) *Confirm trash pickup arrangement and provide trash vehicle circulation plan.*
- 6.) *Ensure exterior lights do not exceed 25 feet in height.*
- 7.) *Lower pole heights, 15-feet or less, shall be utilized around the sports court.*
- 8.) *Clarify how many ranch units have a 2-car garage versus a 3-car garage.*
- 9.) *Provide building materials including proposed colors.*
- 10.) *Planning Commission to evaluate proposed architecture in accordance with Site Plan Review Design Standards of Section 8.06.*

Sincerely,

  
\_\_\_\_\_  
**CARLISLE/WORTMAN ASSOC., INC.**  
Benjamin R. Carlisle, AICP, LEED AP  
President

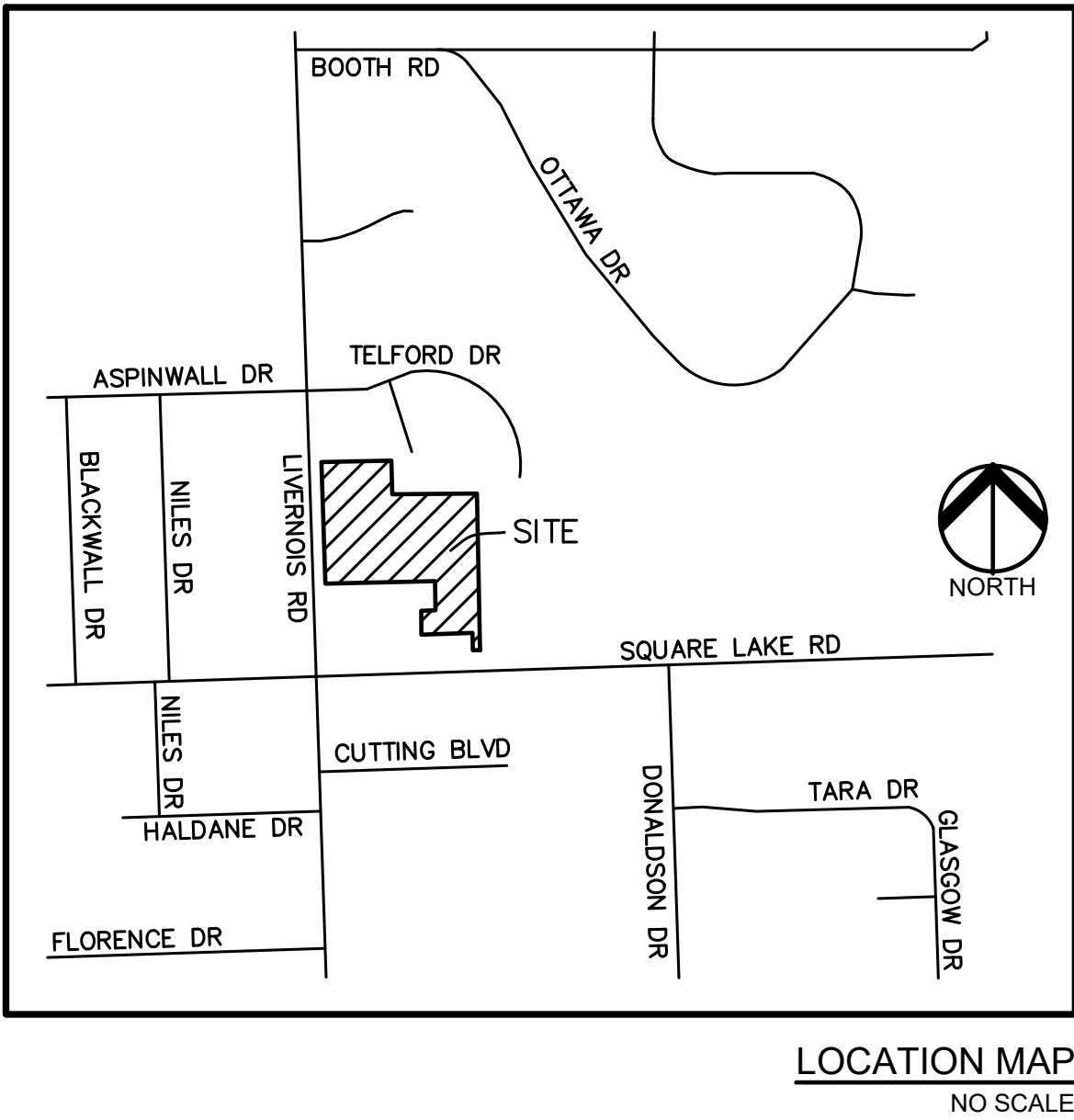
  
\_\_\_\_\_  
**CARLISLE/WORTMAN ASSOC., INC.**  
Shana Kot  
Community Planner

PLANNED UNIT DEVELOPMENT  
CONCEPT DEVELOPMENTAL PLAN

THE VILLAGE OF HASTINGS

PART OF THE SW 1/4 OF SECTION 3, T. 02N., R. 11E.,  
CITY OF TROY, OAKLAND COUNTY, MICHIGAN

PERMIT / APPROVAL SUMMARY		
DATE SUBMITTED	DATE APPROVED	PERMIT / APPROVAL



INDEX OF DRAWINGS	
NUMBER	TITLE
	COVER SHEET
P-1.0	TOPOGRAPHIC SURVEY
P-2.0	PRELIMINARY SITE PLAN
P-3.0	PRELIMINARY GRADING PLAN
P-4.0	PRELIMINARY UTILITY PLAN
L-1.0	PRELIMINARY LANDSCAPE PLAN
L-1.1	LANDSCAPE DETAILS
T-1.0	TREE PRESERVATION PLAN
T-1.1	TREE PRESERVATION LIST
	<u>ARCHITECTURAL PLANS</u>
A1	LIVERNOIS FIRST FLOOR UNIT PLANS
A2	LIVERNOIS SECOND FLOOR UNIT PLANS
A3	LIVERNOIS NORTH & SOUTH ELEVATION
A4	LIVERNOIS EAST & WEST ELEVATION
A5	LIVERNOIS AXO
A6	STANDARD FIRST FLOOR UNIT PLANS
A7	STANDARD SECOND FLOOR UNIT PLANS
A8	STANDARD NORTH & SOUTH ELEVATION
A9	STANDARD EAST & WEST ELEVATION
A10	STANDARD AXO
A11	AERIAL VIEW
A12	RENDERS
A13	RENDERS

DESIGN TEAM

OWNER/APPLICANT/DEVELOPER	CIVIL ENGINEER
GFA DEVELOPMENT, INC. 986 ELMSFORD DRIVE TROY, MI 48063 CONTACT: GARY ABITHEIRA PHONE: 248.840.2828 EMAIL: GABITHEIRA@WIDOPENWEST.COM	PEA GROUP 1849 POND RUN AUBURN HILLS, MI 48326 CONTACT: JOHN B. THOMPSON, PE PHONE: 844.813.2949 EMAIL: JTHOMPSON@PEAGROUP.COM
	LANDSCAPE ARCHITECT
	PEA GROUP 45 W. GRAND RIVER AVE., STE. 501 DETROIT, MI 48226 CONTACT: KIMBERLY DIETZEL, RLA PHONE: 844.813.2949 EMAIL: KDIETZEL@PEAGROUP.COM



REVISIONS	
DESCRIPTION	DATE
ORIGINAL ISSUE DATE	6/1/2023
REVISED PER PLANNER COMMENTS DATED 6/2/2023	8/9/2023
REVISED PER PLANNER COMMENTS DATED 8/24/2023	11/17/2023
REVISED PER PLANNING COMMISSION COMMENTS DATED 11/28/2023	12/7/2023
REVISED PER PLANNING COMMISSION COMMENTS DATED 1/9/2024	1/24/2024





**GFA  
DEVELOPMENT,  
INC.**  
3301 MIRAGE DRIVE  
TROY, MI 48063

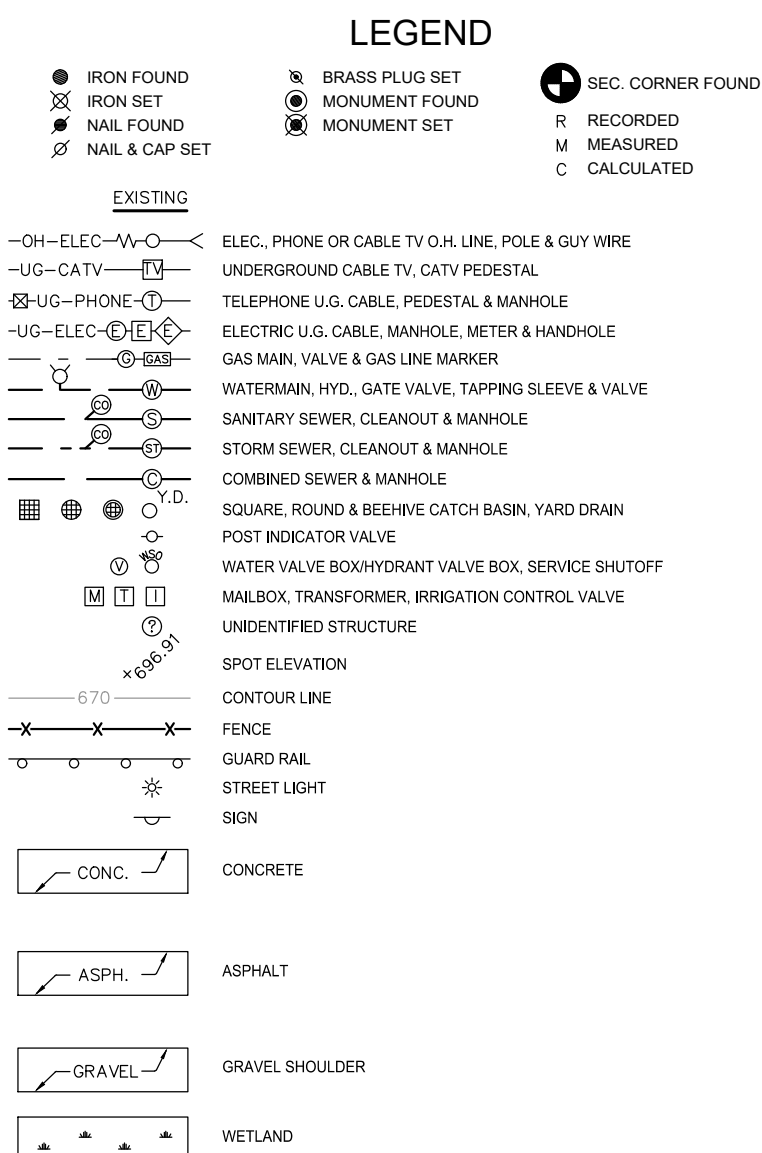
**THE VILLAGE  
OF HASTINGS**  
PART OF THE SW 1/4 OF  
SECTION 3, T. 02N., R. 11E.,  
TROY, MI

REVISIONS	
REV. PER COMMENTS 6/2/2023	8/9/2023
REV. PER COMMENTS 8/24/2023	11/17/2023
REV. PER PC COMMENTS 11/28/2023	12/7/2023
REV. PER PC COMMENTS 1/9/2024	1/24/2024

DRAWING TITLE

**TOPOGRAPHIC  
SURVEY**

PEA JOB NO.	2017-009
P.M.	KR
DN.	EH
DES.	EH
DRAWING NUMBER:	



CABLE	COMCAST MAP NO. 1319-404, DATED 4/03/07
ELECTRIC	DTF MAP 316-404 & 319-404, DATED 2/15/2017
PHONE	AT&T SKETCH VIA EMAIL, DATED 01/15/2017
GAS	CONSUMERS ENERGY QUARTER SECTION MAP NO. 02-61-03-3, DATED 10-16-14
WATER MAIN	CITY OF TROY GS ONLINE
SEWANTER SEWER	CITY OF TROY GS ONLINE
SEWER & WATER	CITY OF TROY GS ONLINE
STORM SEWER	CITY OF TROY GS ONLINE
	OAKLAND COUNTY WATER RESOURCES COMMISSION - KING DRAIN MAP SHEET #11 SW SECTION 3
DRAIN	KING DRAIN, OAKLAND COUNTY DRAIN COMMISSION JOB NO. 880119, SHEET NO. 3, DATED 5-10-93, AS-BUILT 5-1-98
	STORM DRAIN SYSTEMS, SHEET 01T, WATER RESOURCES COMMISSION

Part of Lots 19 and 22 of "Supervisors Plat No. 7" as recorded in Liber 45 on pages 21 and 21A, Oakland County Records, together with part of the Southwest 1/4 of Section 3, Town 2 North, Range 11 East, City of Troy, Oakland County Michigan and being more particularly described as Commencing at the Southwest Corner of said Section 3; thence along the south line of said section, S89°43'00"E, 135.35 feet; thence N00°08'00"E, 100.00 feet to the north line of said Section 3; thence N00°08'00"E, 100.00 feet to the east line of said Section 3; thence E00°00'00", 100.00 feet to the northeast corner of said Section 3; thence N89°43'00"W, 29.62 feet; thence N01°15'45"E, 72.28 feet to the north line of said Lot 22, said line also being the south line of said Lot 19; thence along said south line N89°43'00"W, 212.46 feet; thence N01°33'55"E, 98.89 feet; thence S89°43'00"E, 59.44 feet; thence N01°15'45"E, 121.05 feet to the easterly extension of the north line of Lot 18 of said Supervisors Plat; thence along said north line, N89°43'00"W, 430.98 feet to the east line of Liverios Road, 33 feet wide; thence along said east line, N00°33'00"E, 463.76 feet to the easterly extension of the south line of said Section 3; thence S89°43'00"E, 100.00 feet to the south line of said Section 3; thence S89°43'00"E, 297.00 feet to the west line of said Telford Ridge; thence along said west line, S00°34'30"W, 170.00 feet to the south line of said Telford Ridge, said line also being the north line of the south 660 feet of the southwest 1/4 of said Section 3; thence along said south line, S89°43'00"W, 305.34 feet to the west line of tax parcel 20-031-0031-0033; thence along said west line, S00°08'00"E, 586.02 feet to the aforementioned north line of Telford Telford Lake Road beginning. Containing 61.33 acres of land more or less.

BM #300  
SET BENTITE IN SOUTHEAST FACE OF POWER LIGHT POLE, NORTH SIDE OF  
SQUARE LAKE ROAD APPROX. 70' SOUTHEAST OF SOUTHEAST BUILDING  
CORNER OF JOHN'S MARKET AT EAST SIDE OF DRIVE ENTRANCE.  
ELEV. - 743.36

BM #301 - CITY OF TROY BM #1642  
NARROW ON A HYDRANT LOCATED ON THE NORTH SIDE OF SQUARE LAKE  
ROAD, APPROX. 200' EAST OF LIVERNOIS ROAD AT THE PNC BANK.  
ELEV. - 750.08

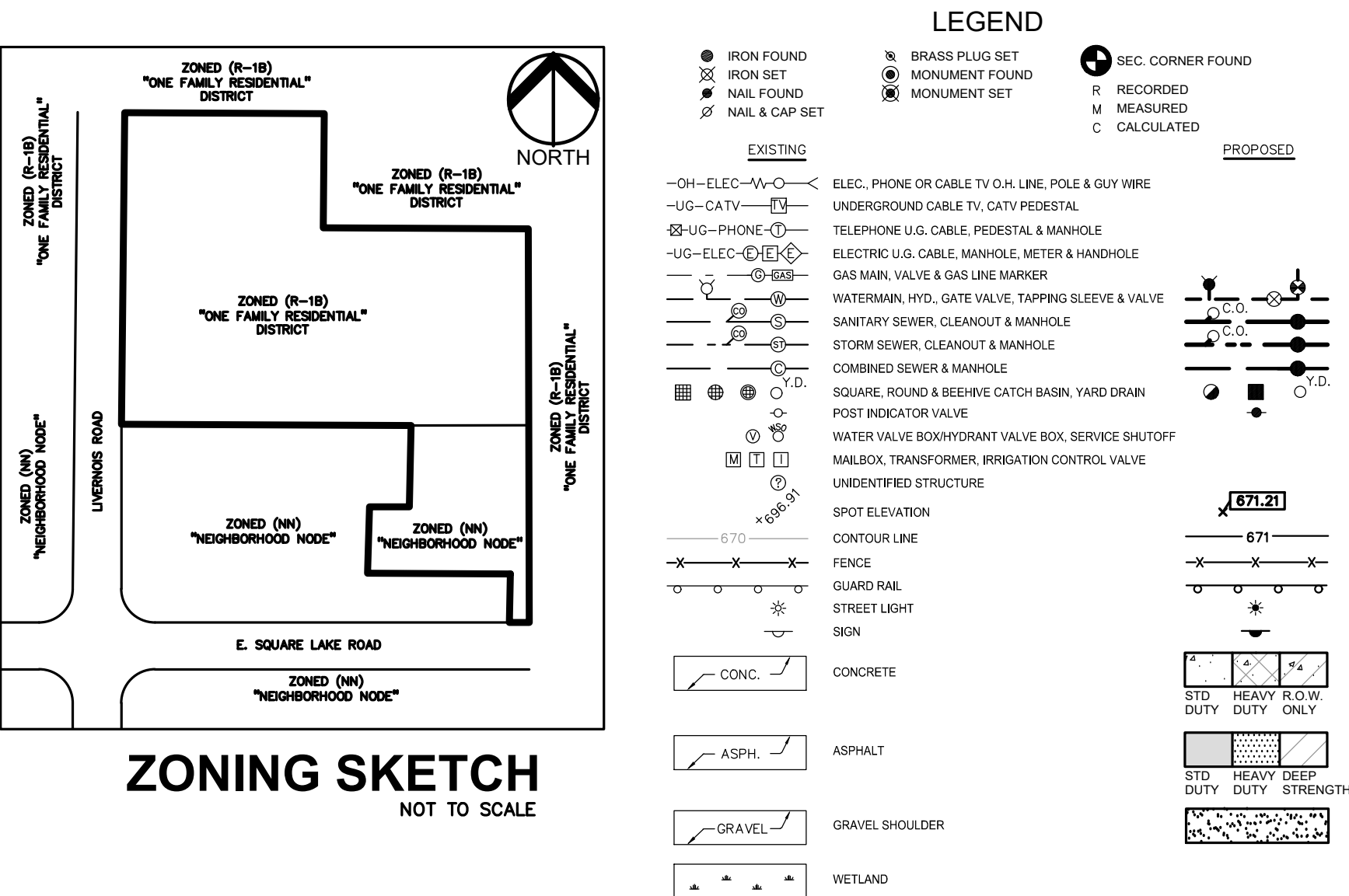
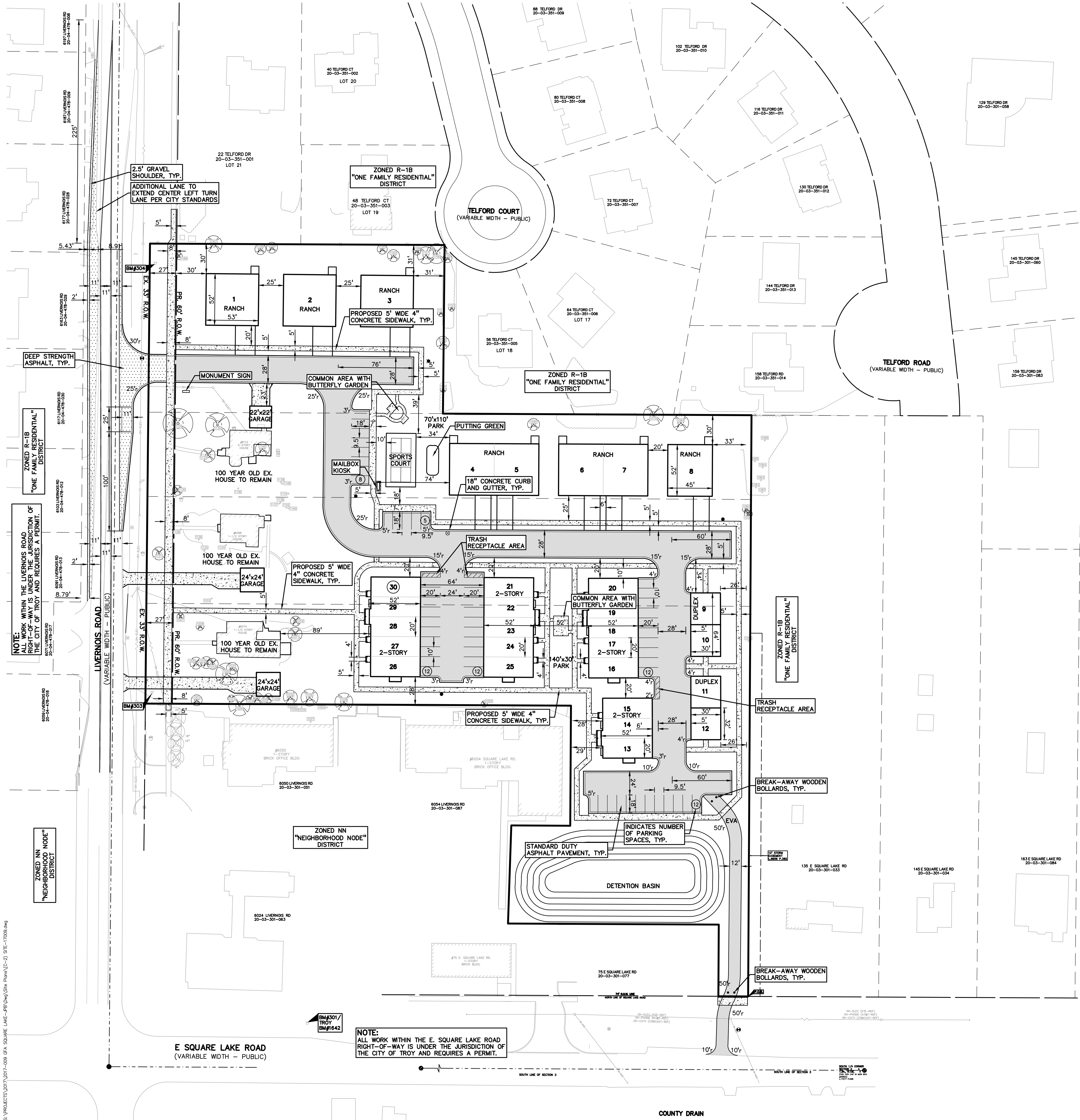
BM #302  
FOUND BOAT SPIKE IN SOUTH FACE OF UTILITY POLE, NORTH SIDE OF  
SQUARE LAKE ROAD, AT THE CENTERLINE OF 30' WIDE SITE FRONTAGE  
ELEV - 737.51

BM #303  
ARROW ON HYDRANT, EAST SIDE OF LIVERNOIS, APPROX. 75' SOUTHWEST  
OF #6074 LIVERNOIS.  
ELEV - 750.66

BM #304  
ARROW ON HYDRANT, EAST SIDE OF LIVERNOIS, APPROX. 80' WEST OF  
#6170 LIVERNOIS.  
ELEV - 755.18



S:\PROJECTS\2017\2017-009 GFA SQUARE LAKE - JRB\DWG\Site Plans\10-2 SITE-10009.dwg



#### SITE DATA:

LOCATION OF PROJECT: LIVERNOS ROAD, NORTH OF SQUARE LAKE ROAD		
SIZE OF PROPERTY: 6.31 ACRES GROSS, 6.05 ACRES NET		
PROPOSED USE OF PROPERTY: THREE (3) EXISTING HOMES TO REMAIN, EIGHT (8) RANCH STYLE SINGLE FAMILY HOMES, EIGHTEEN (18) 2 STORY ATTACHED SINGLE FAMILY HOMES, FOUR (4) SINGLE FAMILY DUPLEX HOMES.		
CURRENT ZONING: R-1B, ONE-FAMILY RESIDENTIAL DISTRICT AND (NN) NEIGHBORHOOD NODE Q, SITE TYPE NN-B, BUILDING FORM: C		
PROPOSED ZONING: PUD, PLANNED RESIDENTIAL DEVELOPMENT		
SURROUNDING PROPERTY DETAILS:		
DIRECTION NORTH SOUTH EAST WEST	ZONING R-1B, ONE-FAMILY RESIDENTIAL DISTRICT COMMERCIAL Q R-1B, ONE-FAMILY RESIDENTIAL DISTRICT NEIGHBORHOOD NODE Q	USE SINGLE-FAMILY HOMES COMMERCIAL SINGLE-FAMILY HOMES COMMERCIAL
REQUIRED AND PROVIDED LOT DIMENSIONS:		
FRONT	REQUIRED: 10'(NN) & 40'(R-1B) SETBACK	PROVIDED: 30' SETBACK
REAR	30'(NN) & 45'(R-1B) SETBACK	30' SETBACK
SIDES	N/A(NN) & 12.5'(R-1B) SETBACK	16' SETBACK
MAXIMUM HEIGHT	4 STORIES/55'(NN), 2.5 STORIES/30'(R-1B)	30 FEET, 2 STORY
OPEN SPACE	15%(NN)	26%
LOT COVERAGE BY ALL BLDGS	30%(NN)	18%
PARKING: REQUIRED: 2 SPACES PER DWELLING UNIT = 2 SPACES x 30 UNITS = 60 REQUIRED PARKING SPACES PROVIDED: 25 SURFACE LOT SPACES + 42 DRIVEWAY SPACES + 30 GARAGES SPACES = 97 PARKING SPACES		

**PROJECT AND SITE DESCRIPTION:**  
PROPOSED DEVELOPMENT OF A 33-UNIT RESIDENTIAL CONDOMINIUM LOCATED ON LIVERNOS ROAD NORTH OF SQUARE LAKE ROAD. THE SITE CONSISTS OF 26 ATTACHED UNITS AND 4 DETACHED SINGLE FAMILY UNITS, ACCOMPANYING THE DEVELOPMENT IS THE PRESERVATION OF 3 CENTENNIAL SINGLE FAMILY HOUSES. ACCESS TO ALL UNITS WILL BE VIA CONNECTION TO LIVERNOS ROAD, WITH TWO OF THE PRESERVED HOUSES HAVING DIRECT ACCESS TO LIVERNOS, AND AN EMERGENCY VEHICLE ACCESS (EVA) WILL BE PROVIDED TO SQUARE LAKE ROAD. THE PROPOSED RESIDENTIAL USE IS PERMITTED BY-RIGHT IN THE (NN) NEIGHBORHOOD NODE Q DISTRICT AND THE R-1B PORTION OF THE SITE. DUE TO THE MIXED HOUSING PRODUCTS AND MIXED ZONING A PUD IS PROPOSED FOR THIS PROPERTY.

**NATURAL RESOURCES:**  
THE SITE CURRENTLY HAS MODERATE TREE COVER.

**FLOODPLAIN:**  
THE PROPERTY IS NOT LOCATED WITHIN THE FLOOD HAZARD AREA INDICATED BY FLOOD INSURANCE RATE MAP (FIRM) NO. 26125C0532F DATED: SEPTEMBER 29, 2006 (ZONE X).

**WETLAND:**  
PER THE 2022 SEMCOG WETLAND DATA, THE SITE CONTAINS NO WETLANDS.

**ACCESS AND CIRCULATION:**  
VEHICULAR ACCESS AND CIRCULATION:  
VEHICULAR ACCESS TO ALL UNITS WILL BE VIA A PRIVATE ROAD OFF OF LIVERNOS ROAD. THE NEW ROAD WILL HAVE A TWENTY-EIGHT (28) FOOT WIDE ACCESS AGREEMENT. AN EVA WILL BE PROVIDED TO SQUARE LAKE ROAD.

**PEDESTRIAN ACCESS AND CIRCULATION:**  
SIDEWALKS ARE PROVIDED AT BUILDING ENTRANCES TO PARKING FIELDS. THIS WILL BE A WALK FRIENDLY DEVELOPMENT WITH CIRCULATION THROUGHOUT THE DEVELOPMENT WITH CONNECTIONS TO LIVERNOS ROAD VIA THE EVA.

**UTILITIES:**  
UTILITIES ARE PLACED WITHIN EASEMENTS APPROVED AS TO SIZE AND LOCATION BY THE CITY ENGINEER.

ALL SITES ARE SERVED BY PUBLIC WATER, SANITARY SEWER, STORM WATER AND DETENTION/RETENTION SYSTEMS CONSTRUCTED TO CITY STANDARDS, AT THE EXPENSE OF THE DEVELOPER. EASEMENTS OVER THESE SYSTEMS SHALL BE CONVEYED AND RECORDED BEFORE OCCUPANCY PERMITS ARE ISSUED FOR DWELLING UNITS.

100-YEAR DETENTION IS PROPOSED WITH A RESTRICTED OUTLET DISCHARGING THROUGH CITY OF TROY STORM SEWER.

**CAUTION!!**  
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT  
**GFA DEVELOPMENT, INC.**  
3301 MIRAGE DRIVE  
TROY, MI 48063

PROJECT TITLE  
**THE VILLAGE OF HASTINGS**  
PART OF THE SW 1/4 OF SECTION 3, T. 02N., R. 11E., TROY, MI

REVISIONS		
REV. PER COMMENTS	6/2/2023	8/9/2023
REV. PER COMMENTS	8/24/2023	11/17/2023
REV. PER PC COMMENTS	11/28/2023	12/7/2023
REV. PER PC COMMENTS	1/9/2024	1/24/2024

ORIGINAL ISSUE DATE:  
JUNE 1, 2023

DRAWING TITLE  
**PRELIMINARY SITE PLAN**

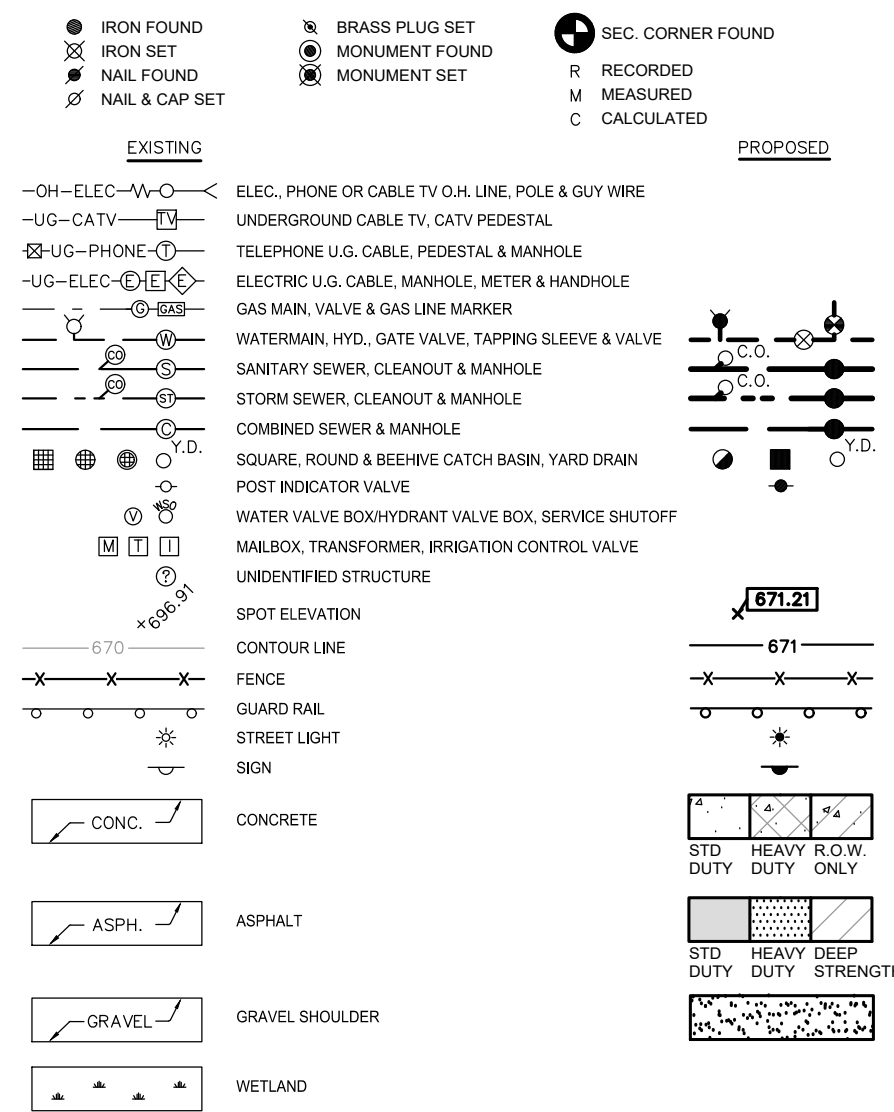
PEA JOB NO.	2017-009
P.M.	JBT
DN.	KMB
DES.	DSK
DRAWING NUMBER:	

**P-2.0**

NOT FOR CONSTRUCTION



LEGEND



BENCHMARKS  
(CITY OF TROY DATUM)

BM #300  
SET BENCHMARK IN SOUTHEAST FACE OF POWER LIGHT POLE, NORTH SIDE OF  
SQUARE LAKE ROAD APPROX. 70' SOUTHEAST OF SOUTHEAST BUILDING  
CORNER OF JOHN'S MARKET AT EAST SIDE OF DRIVE ENTRANCE.  
ELEV. - 743.36

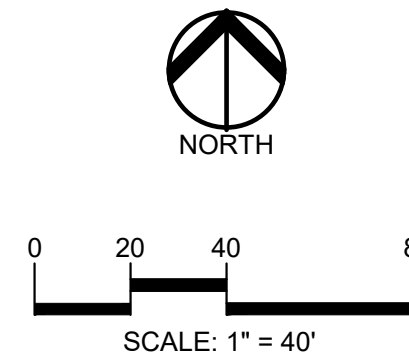
BM #301 - CITY OF TROY BM #1642  
ARROW ON A HYDRANT LOCATED ON THE NORTH SIDE OF SQUARE LAKE  
ROAD, APPROX. 200' EAST OF LIVERNOIS ROAD AT THE PNC BANK.  
ELEV. - 750.08

BM #302  
FOUND BOAT SPIKE IN SOUTH FACE OF UTILITY POLE, NORTH SIDE OF  
SQUARE LAKE ROAD, AT THE CENTERLINE OF 30' WIDE SITE FRONTAGE.  
ELEV. - 737.51

BM #303  
ARROW ON HYDRANT, EAST SIDE OF LIVERNOIS, APPROX. 75' SOUTHWEST  
OF #6074 LIVERNOIS.  
ELEV. - 750.66

BM #304  
ARROW ON HYDRANT, EAST SIDE OF LIVERNOIS, APPROX. 80' WEST OF  
#6170 LIVERNOIS.  
ELEV. - 755.18





CAUTION!!  
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CLIENT  
**GFA DEVELOPMENT, INC.**  
3301 MIRAGE DRIVE  
TROY, MI 48063

PROJECT TITLE  
**THE VILLAGE OF HASTINGS**  
PART OF THE SW 1/4 OF  
SECTION 3, T. 02N., R. 11E.,  
TROY, MI

REVISIONS  
REV. PER COMMENTS 6/2/2023 8/9/2023  
REV. PER COMMENTS 8/24/2023 11/17/2023  
REV. PER PC COMMENTS 11/28/2023 12/7/2023  
REV. PER PC COMMENTS 1/9/2024 1/24/2024

ORIGINAL ISSUE DATE:  
JUNE 1, 2023

DRAWING TITLE  
**PRELIMINARY  
UTILITY PLAN**

PEA JOB NO. 2017-009

P.M. JBT

DN. KMB

DES. DSK

DRAWING NUMBER:

P-4.0

WATER MAIN BASIS OF DESIGN: (Unit Factors Based on Oakland County Unit Assignment Factors) Residential Dwelling	
<b>ULTIMATE DESIGN</b>	
Number of Units	41.0
REU	41.0
People / REU	3.5
Average Flow (150 GPCPD)	144 People
	21,600 G.P.D.
	0.033 C.F.S.
	0.022 M.G.D.
Design Max. Flow = (2*avg)	43,200 G.P.D.
	0.067 C.F.S.
	0.043 M.G.D.

SQUARE LAKE SANITARY SEWER BASIS OF DESIGN: (Unit Factors Based on Oakland County Unit Assignment Factors) Residential Dwelling	
<b>ULTIMATE DESIGN</b>	
Number of Units	35.0
REU (1.0 Per Dwelling)	35.0
Population / REU	3.5
Average Flow (100 GPCPD)	123 People
	12,300 G.P.D.
	0.019 C.F.S.
	0.123
	4.22
P (1000s)	
Peaking Factor (PF)	
PF = (18+sqrt(P))/(4+sqrt(P))	
Peak Flow (G.D.P.)	51,880 G.P.D.
Peak Flow (C.F.S.)	0.080 C.F.S.
8" Pipe Capacity Provided	0.906 C.F.S.

LIVERNOIS SANITARY SEWER BASIS OF DESIGN: (Unit Factors Based on Oakland County Unit Assignment Factors) Residential Dwelling	
<b>ULTIMATE DESIGN</b>	
Number of Existing Units	4.0
Number of Existing Units Removed	2.0
Number of Proposed Units	6.0
Net REUs Added (1.0 Per Dwelling)	4.0
People / REU	3.5
Population (P)	14 People
Average Flow (100 GPCPD)	1,400 G.P.D.
	0.002 C.F.S.
	0.014
	4.40
P (1000s)	
Peaking Factor (PF)	
PF = (18+sqrt(P))/(4+sqrt(P))	
Peak Flow (G.D.P.)	6,159 G.P.D.
Peak Flow (C.F.S.)	0.010 C.F.S.
8" Pipe Capacity Provided	0.906 C.F.S.

LEGEND	
● IRON FOUND	⊗ BRASS PLUG SET
⊗ IRON SET	⊗ MONUMENT FOUND
⊗ NAIL FOUND	⊗ MONUMENT SET
⊗ NAIL & CAP SET	⊗ SEC. CORNER FOUND
	⊗ RECORDED
	⊗ MEASURED
	⊗ CALCULATED
<b>EXISTING</b>	
— OH-ELEC —	ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
— UG-CATV —	UNDERGROUND CABLE TV, CATV PEDESTAL
— UG-PHONE —	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
— UG-ELEC —	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
— GAS —	GAS MAIN, VALVE & GAS LINE MANHOLE
— WATER —	WATERMAIN, HYD. GATE VALVE, TAPPING SLEEVE & VALVE
— SANITARY —	SANITARY SEWER, CLEANOUT & MANHOLE
— STORM —	STORM SEWER, CLEANOUT & MANHOLE
— COMBINED —	COMBINED SEWER & MANHOLE
— SQUARE —	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
— POST —	POST INDICATOR VALVE
— VALVE —	WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
— MBOX —	MARLBOROUGH, TRANSFORMER, IRRIGATION CONTROL VALVE
— UNIDENTIFIED —	UNIDENTIFIED STRUCTURE
— SPOT —	SPOT ELEVATION
— CONTOUR —	CONTOUR LINE
— FENCE —	FENCE
— GUARD —	GUARD RAIL
— STREET —	STREET LIGHT
— SIGN —	SIGN
— CONC. —	CONCRETE
— ASPHL —	ASPHALT
— GRAVEL —	GRAVEL SHOULDER
— WETLAND —	WETLAND
— STD —	STD. HEAVY FLOW DUTY ONLY
— STD —	STD. HEAVY DEEP DUTY STRENGTH

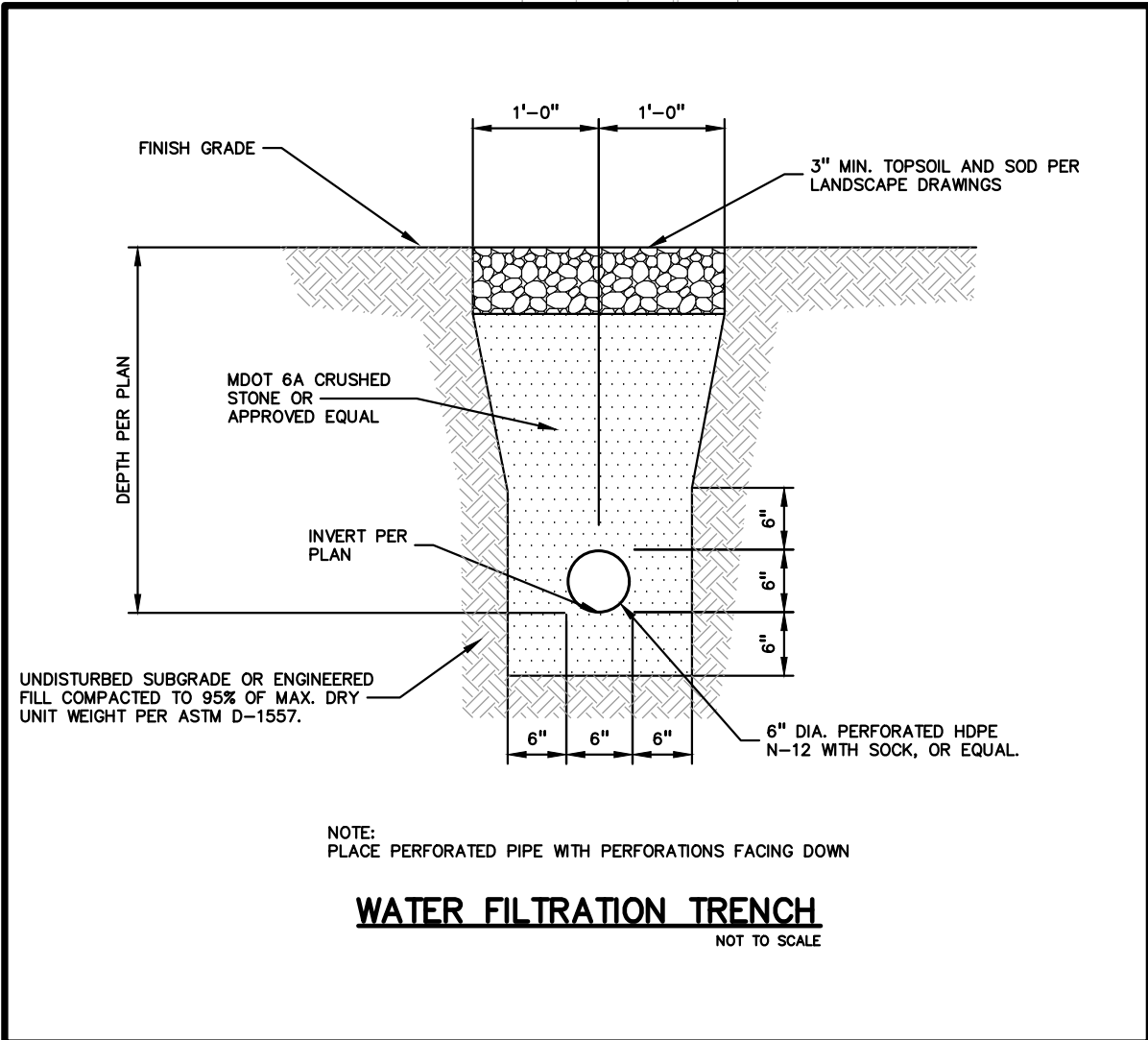
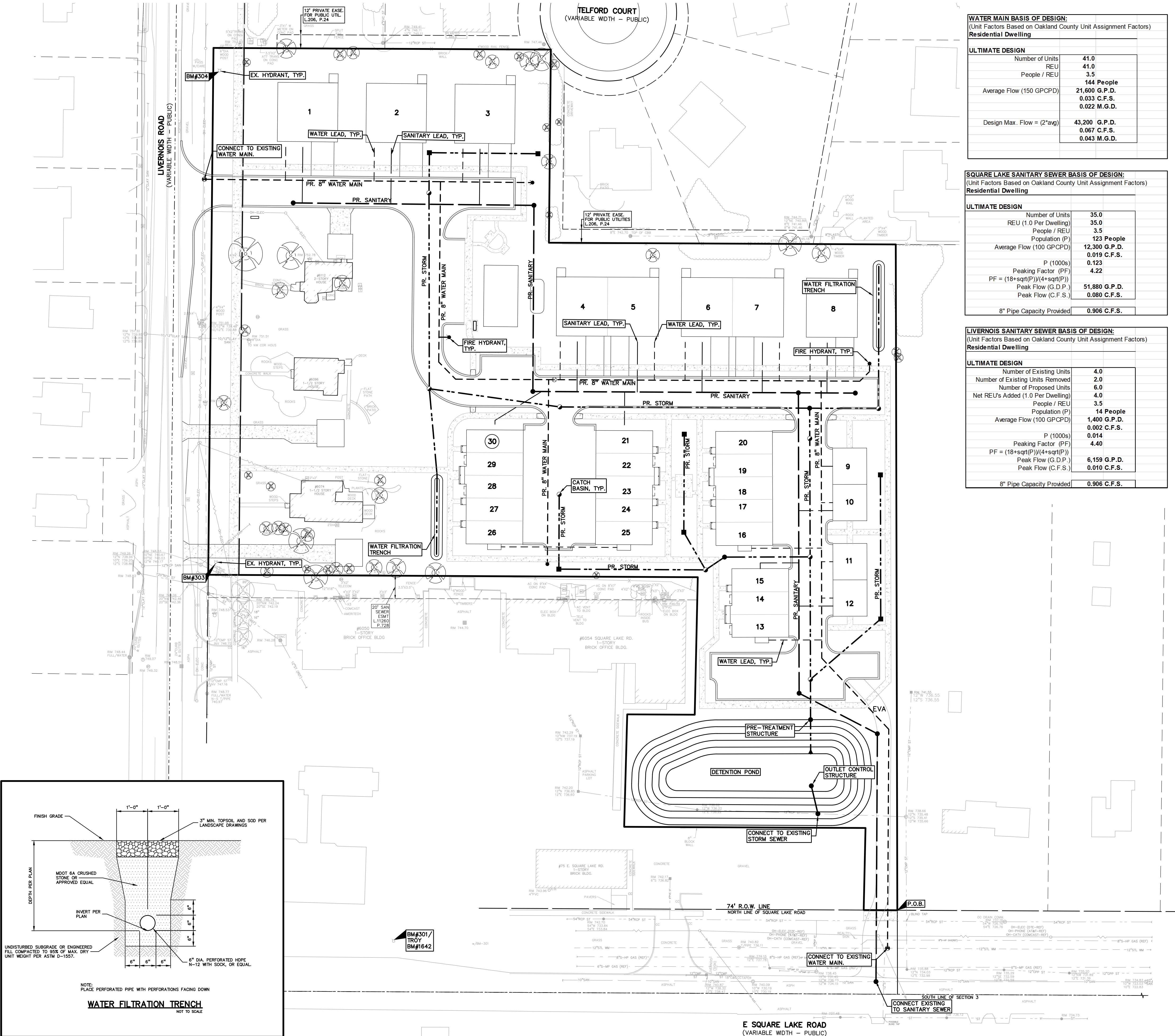
Site Drainage Data	
Select County:	Oakland
<b>Existing</b>	
Natural Greenspace area:	0.00 acre C = 0.35
Select NCRS Soil type:	D
Select NCRS Soil type:	D
Impervious Area:	0.00 acre C = 0.95
Greenbelt Area:	6.31 acre C = 0.35
Total Area (A):	6.31 acre
Weighted Coefficient of Runoff (C):	0.35
<b>Proposed</b>	
Natural Greenspace area:	0.00 acre C = 0.35
Select NCRS Soil type:	D
Improved Greenspace area:	3.07 acre C = 0.35
Select NCRS Soil type:	D
Wooded Area:	0.00 acre C = 0.35
Select NCRS Soil type:	D
Impervious Area:	2.96 acre C = 0.95
Greenbelt Area:	3.07 acre C = 0.35
Total Area (A):	6.03 acre
Weighted Coefficient of Runoff (C):	0.64
<b>Rainfall Intensity</b>	
Flood Control Time of Concentration, Tc =	20.00 min

Rainfall Intensity	
Time of Concentration (Tc)	20.00 min
Since 15<Tc<60, use intensity equation	1.97 in/hr
I1 = 30.2 / (T + 9.17)^0.81	
I10 = 50.12 / (T + 9.17)^0.81	3.26 in/hr
I100 = 83.3 / (T + 9.17)^0.81	5.42 in/hr
<b>CPVC: Channel Protection Volume Control Volume</b>	
Vcpvc = (4719)CA	18,212 cf
<b>CPVC: Channel Protection Rate Control Volume: Extended Detention</b>	
VED = (6897)CA	26,617 cf
<b>CPVC Allowable Outlet Rate</b>	
QVED = VED / (48*60*60)	0.15 cfs
<b>Water Quality Control</b>	
Forebay Volume = (545)CA	2,103 cf
Forebay Release Rate: QVF = VF/(48*60*60)	0.012 cfs
<b>100-Year Allowable Outlet Rate</b>	
Since 2<A<100, Qver = 1.1055-0.206ln(A)	
QVER =	0.74 cfs/ac
<b>100-Year Peak Allowable Discharge</b>	
Q100P = QVER(A)	4.43 cfs
<b>100-Year Runoff Volume</b>	
V100R = (18,985)CA	73,267 cf
<b>100-Year Peak Inflow</b>	
Q100IN = Q100P/A	20.92 cfs
<b>Storage Curve Factor (Vs/Vr)</b>	
R = 0.206-0.15 x ln(Q100P/Q100IN)	0.439
<b>100-Year Storage Volume</b>	
Vs = R(V100R)	32,164 cf
<b>No infiltration will be provided, so no CPVC deduction is taken.</b>	
V100 = Vs	32,164 cf
<b>V100 must be larger or equal to VED:</b>	
Is V100 >= VED?	Yes
<b>V100 =</b>	
	32,164 cf

Design Requirements	
CPVC Storage Volume: VCP,R =	NA cf
CPVC Storage Outflow Rate: QCP,R =	NA cfs
CPVC Extended Detention: VED =	26,617 cf
CPVC Allowable Outlet Rate: QVED =	0.15 cfs
100-Year Storage Volume: V100 =	32,164 cf
100-Year Allowable Outlet Rate: QVER =	4.43 cfs
100 Year Peak Inflow: Q100IN =	20.92 cfs

Detention Basin			
CPVC Storage Elevation:		740.00	26,617 cf
100-yr Storage Elevation:		740.42	32,164 cf
Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
736.00	0	0	0
737.00	4,575	2,288	2,288
738.00	6,817	5,696	7,984
739.00	9,236	8,027	16,010
740.00	11,880	10,558	26,568
741.00	14,751	13,316	39,884

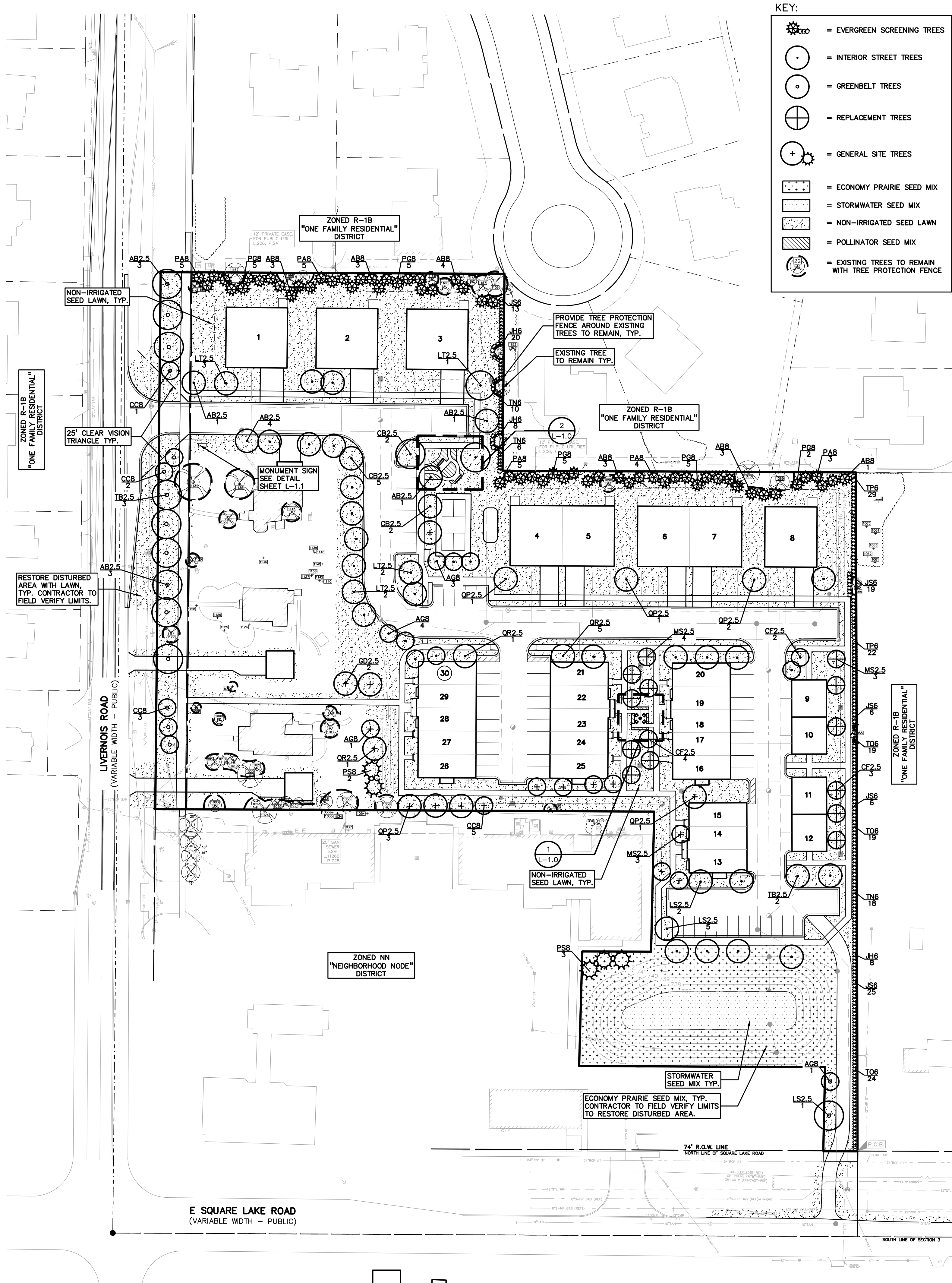
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\\peagroup\projects\2017\2017-2019 GFA SQUARE LANE-AB (L-1.0) LANDSCAPE-17029.dwg



KEY:

- = EVERGREEN SCREENING TREES
- = INTERIOR STREET TREES
- = GREENBELT TREES
- = REPLACEMENT TREES
- = GENERAL SITE TREES
- = ECONOMY PRAIRIE SEED MIX
- = STORMWATER SEED MIX
- = NON-IRRIGATED SEED LAWN
- = POLLINATOR SEED MIX
- = EXISTING TREES TO REMAIN WITH TREE PROTECTION FENCE

DECIDUOUS TREE LIST:

QUANTITY	KEY SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC
13	AB2.5	Bowhall Maple	<i>Acer rubrum 'Bowhall'</i> (columnar)	2.5" Cal.	B&B
9	AG8	Autumn Brilliance Serviceberry	<i>Amelanchier x grandiflora 'Autumn Brilliance'</i>	8-10' Ht.	B&B
9	CB2.5	European Hornbeam	<i>Carpinus betulus</i>	2.5" Cal.	B&B
11	CC8	Eastern Redbud	<i>Cercis canadensis</i>	8-10' Ht.	B&B
9	CF2.5	Cherokee Brave Flowering Dogwood	<i>Cornus florida 'Combo NO.1'</i>	2.5" Cal.	B&B
2	GD2.5	Kentucky Coffee Tree	<i>Gymnocladus dioica- male only</i>	2.5" Cal.	B&B
8	LS2.5	Sweetgum	<i>Liquidambar styraciflua</i>	2.5" Cal.	B&B
8	LT2.5	Tulip Tree	<i>Liriodendron tulipifera</i>	2.5" Cal.	B&B
10	MS2.5	Royal Star Magnolia	<i>Magnolia stellata 'Royal Star'</i>	2.5" Cal.	B&B
8	QP2.5	Regal Prince Oak	<i>Quercus robur x bicolor 'Long'</i> (columnar)	2.5" Cal.	B&B
7	QR2.5	Red Oak	<i>Quercus rubra</i>	2.5" Cal.	B&B
5	TB2.5	Boulevard Linden	<i>Tilia americana 'Boulevard'</i> (columnar)	2.5" Cal.	B&B
99		TOTAL DEC			

EVERGREEN TREE PLANT LIST:

QUANTITY	KEY SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC
17	AB8	Balsam Fir	<i>Abies balsamea</i>	8' Ht.	B&B
22	PA8	Norway Spruce	<i>Picea abies</i>	8' Ht.	B&B
22	PG8	Black Hills Spruce	<i>Picea glauca 'Densata'</i>	8' Ht.	B&B
5	PS8	Eastern White Pine	<i>Pinus strobus</i>	8' Ht.	B&B
66		TOTAL EVERGREEN			

NARROW EVERGREEN LIST:

QUANTITY	KEY SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC
62	TO6	Techny Arborvitae	<i>Thuja occidentalis 'Techny'</i>	6' Ht.	B&B
34	TN6	Dark Green Arborvitae	<i>Thuja occidentalis 'Nigra'</i>	6' Ht.	B&B
51	TP6	Pyramidal Arborvitae	<i>Thuja occidentalis 'Pyramidalis'</i>	6' Ht.	B&B
36	JH6	Hetz Columnar Juniper	<i>Juniperus chinensis 'Hetzii Columnaris'</i>	6' Ht.	B&B
69	JS6	Blue Arrow Juniper	<i>Juniperus scopulorum 'Blue Arrow'</i>	6' Ht.	B&B
252		TOTAL NARROW EVERGREEN			

LANDSCAPE CALCULATIONS:

PER CITY OF TROY ZONING ORDINANCE - FORM BASE DISTRICT (NN) NEIGHBORHOOD NODE Q; SITE TYPE NN:B; BUILDING FORM C

5.03 C-1a. = GENERAL SITE LANDSCAPE:

REQUIRED: 15% OF SITE AREA SHALL BE LANDSCAPE MATERIAL

274,863.6 SF \* 15% = 41,229.5 SQ FT REQUIRED

PROVIDED: 71,465 SQ FT LANDSCAPE (26%)

13.02 B. = SCREENING BETWEEN USES:

REQUIRED: ABUTS R-1B USE SPACE TO THE NORTH AND EAST

REQUIRES SCREEN ALT. 1 (1 LARGE EVG. / 3')

OR ALT. 2 (1 LARGE EVG. TREE / 10 LF)

NORTH PROPERTY LINE -

WESTERN SEGMENT 297 LF AND EASTERN SEGMENT 305 LF.

ALT. 2: 297 LF / 10 = 30 AND 305 LF / 10 = 31 LARGE EVG. TREES

PROVIDED: WESTERN SEGMENT: 30 8' HT LARGE EVG. TREES

EASTERN SEGMENT: 31 8' HT LARGE EVG. TREES

EAST PROPERTY LINE -

NORTHERN SEGMENT 170 LF AND SOUTHERN SEGMENT 586 LF.

ALT. 1: 170 LF / 3 = 57 AND 586 LF / 3 = 195 NARROW EVG. TREES

PROVIDED: NORTHERN SEGMENT: 57, 6' HT. NARROW EVG. / 3' OC.

SOUTHERN SEGMENT: 195, 6' HT. NARROW EVG. / 3' OC.

13.02 F. INTERIOR STREET TREES:

REQUIRED: 1 TREE PER 50 LF OF INTERIOR STREETS

1281 LF / 50 = 26 TREES REQUIRED (EACH SIDE)

PROVIDED: 52 PROPOSED TREES

13.02 D2. GREENBELT:

REQUIRED: 1 TREE / 30 LF OF FRONTAGE TO PUBLIC RD.

LIVERNOS ROAD - 463 LF FRONTAGE / 30 = 15 TREES

E. SQUARE LAKE ROAD - 42 LF FRONTAGE / 30 = 2 TREES

PROVIDED: LIVERNOS ROAD: 15 TREES

E. SQUARE LAKE ROAD: 2 TREES

REPLACEMENT TREES:

SEE SHT. T-1.0 AND T-1.1 FOR EXISTING TREE LIST AND TREE

PRESERVATION PLAN.

REQUIRED: 35" DBH TO REPLACE REMOVED REGULATED TREES

PROVIDED: 14 TREES AT 2.5" (14 \* 2.5 = 35") PROVIDED

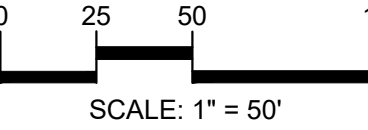
GENERAL PLANTING NOTES:

- LANDSCAPE CONTRACTOR SHALL VISIT SITE, INSPECT EXISTING SITE CONDITIONS AND REVIEW PROPOSED PLANTING AND RELATED WORK. IN CASE OF DISCREPANCY BETWEEN PLAN AND PLANT LIST, PLAN SHALL GOVERN QUANTITIES. CONTACT LANDSCAPE ARCHITECT WITH ANY CONCERNS.
- CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ON SITE UTILITIES PRIOR TO BEGINNING CONSTRUCTION ON HIS/HER PHASE OF WORK. ELECTRIC, GAS, TELEPHONE, CABLE TELEVISION MAY BE LOCATED BY CALLING MISS DIG 1-800-482-7171. ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF CONTRACTOR. CONTRACTOR SHALL COORDINATE ALL RELATED ACTIVITIES WITH OTHER TRADES ON THE JOB AND SHALL REPORT ANY UNACCEPTABLE JOB CONDITIONS TO OWNER'S REPRESENTATIVE PRIOR TO COMMENCING.
- ALL PLANT MATERIAL TO BE PREMIUM GRADE NURSERY STOCK AND SHALL SATISFY AMERICAN ASSOCIATION OF NURSEYMEN STANDARD FOR NURSERY STOCK. ALL LANDSCAPE MATERIAL SHALL BE NORTHERN GROWN, NO. 1. GRADE.
- CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON LANDSCAPE PLAN PRIOR TO PRICING THE WORK.
- THE OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO REJECT ANY PLANT MATERIAL NOT MEETING SPECIFICATIONS.
- ALL SINGLE STEM SHADE TREES TO HAVE STRAIGHT TRUNKS AND SYMMETRICAL CROWNS.
- ALL SINGLE TRUNK SHADE TREES TO HAVE A CENTRAL LEADER; TREES WITH FORKED OR IRREGULAR TRUNKS WILL NOT BE ACCEPTED.
- ALL MULTI STEM TREES SHALL BE HEAVILY BRANCHED AND HAVE SYMMETRICAL CROWNS. ONE SIDED TREES OR THOSE WITH THIN OR OPEN CROWNS SHALL NOT BE ACCEPTED.
- ALL EVERGREEN TREES SHALL BE HEAVILY BRANCHED AND FULL TO THE GROUND, SYMMETRICAL IN SHAPE AND NOT SHEARED FOR THE LAST FIVE GROWING SEASONS.
- ALL TREES TO HAVE CLAY OR CLAY LOAM BALLS, TREES WITH SAND BALLS WILL BE REJECTED.
- NO MACHINERY IS TO BE USED WITHIN THE DRIP LINE OF EXISTING TREES. HAND GRADE ALL LAWN AREAS WITHIN THE DRIP LINE OF EXISTING TREES.
- ALL TREE LOCATIONS SHALL BE STAKED BY LANDSCAPE CONTRACTOR AND ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF THE PLANT MATERIAL.
- IT IS MANDATORY THAT POSITIVE DRAINAGE IS PROVIDED AWAY FROM ALL BUILDINGS.
- ALL PLANTING BEDS SHALL RECEIVE 3" SHREDDED HARDWOOD BARK MULCH WITH PRE EMERGENT, SEE SPECIFICATIONS. SHREDDED PALETTE AND DYED MULCH WILL NOT BE ACCEPTED.
- ALL LANDSCAPED AREAS SHALL RECEIVE 3" COMPACTED TOPSOIL.
- SEE SPECIFICATIONS FOR ADDITIONAL COMMENTS, REQUIREMENTS, PLANTING PROCEDURES AND WARRANTY STANDARDS.
- FOR NON-LAWN SEED MIX AREAS, AS NOTED ON PLAN, BRUSH MOW ONCE SEASONALLY FOR INVASIVE SPECIES CONTROL.
- CONTRACTOR SHALL NOT INSTALL PLANTS UNDER BUILDING OVERHANG AND SHALL NOTIFY LANDSCAPE ARCHITECT IF DRAWINGS CONFLICT WITH BUILDING OVERHANGS.
- TREES SHALL NOT CONFLICT/ BLOCK PROPOSED REGULATORY/ DIRECTION SIGNAGE, MONUMENT SIGNS, ADDRESS OR LIGHT POLES. SHIFT TREES AS NECESSARY TYP.

PEA  
GROUP

t: 844.813.2949

www.peagroup.com



CAUTION!!  
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. THE CONTRACTOR IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT

GFA  
DEVELOPMENT,  
INC.  
3301 MIRAGE DRIVE  
TROY, MI 48063

PROJECT TITLE

THE VILLAGE  
OF HASTINGS  
PART OF THE SW 1/4 OF  
SECTION 3, T. 02N., R. 11E.,  
TROY, MI

REVISIONS

REV. PER COMMENTS 6/2/2023	8/9/2023
REV. PER COMMENTS 8/24/2023	11/17/2023
REV. PER PC COMMENTS 11/28/2023	12/7/2023
REV. PER PC COMMENTS 1/9/2024	1/24/2024

ORIGINAL ISSUE DATE:

JUNE 1, 2023

DRAWING TITLE

PRELIMINARY  
LANDSCAPE  
PLAN

PEA JOB NO. 2017-009

P.M. JBT

DN. LAW

DES. LAW

DRAWING NUMBER:

L-1.0

NOT FOR CONSTRUCTION



<b>Forbs &amp; Shrubs:</b>	
<i>Asclepias syriaca</i>	Common Milkweed
<i>Asclepias tuberosa</i>	Butterfly Weed
<i>Chamaecrista fasciculata</i>	Partridge Pea
<i>Coreopsis lanceolata</i>	Sand Coreopsis
<i>Echinacea purpurea</i>	Broad-leaved Purple Coneflower
<i>Helianthus annuus</i>	False Sunflower
<i>Lupinus perennis</i>	Wild Lupine
<i>Monarda fistulosa</i>	Wild Bergamot
<i>Penstemon digitalis</i>	Foxglove Beard Tongue
<i>Pycnanthemum virginianum</i>	Common Mountain Mint
<i>Ratibida pinnata</i>	Yellow Coneflower
<i>Rudbeckia hirta</i>	Black-Eyed Susan
<i>Solidago speciosa</i>	Showy Goldenrod
<i>Symphoricarpos laevis</i>	Smooth Blue Aster
<i>Symphoricarpos novae-angliae</i>	New England Aster

<b>Forbs &amp; Shrubs:</b>	
<i>Alisma spp.</i>	Water Plantain (Various Mix)
<i>Asclepias incarnata</i>	Swamp Milkweed
<i>Bidens spp.</i>	Bidens (Various Mix)
<i>Helenium autumnale</i>	Sneezeweed
<i>Iris virginica</i>	Blue Flag
<i>Lycopus americanus</i>	Common Water Horehound
<i>Mimulus ringens</i>	Monkey Flower
<i>Oligoneuron riddellii</i>	Riddell's Goldenrod
<i>Penthorum sedoides</i>	Ditch Stonecrop
<i>Polygonum spp.</i>	Pinkweed (Various Mix)
<i>Rudbeckia subtomentosa</i>	Sweet Black-Eyed Susan
<i>Rudbeckia triloba</i>	Brown-Eyed Susan
<i>Sagittaria latifolia</i>	Common Arrowhead
<i>Senna hebecarpa</i>	Wild Senna
<i>Symphoricarpon novae-angliae</i>	New England Aster
<i>Thalictrum dasycarpum</i>	Purple Meadow Rue

<b>Forbs:</b>	
<i>Allium cernuum</i>	Nodding Onion
<i>Aquilegia canadensis</i>	Wild Columbine
<i>Asclepias syriaca</i>	Common Milkweed
<i>Chamaecrista fasciculata</i>	Partridge Pea
<i>Coreopsis lanceolata</i>	Sand Coreopsis
<i>Dalea purpurea</i>	Purple Prairie Clover
<i>Liatrias aspera</i>	Rough Blazing Star
<i>Lupinus perennis v. occidentalis</i>	Wild Lupine
<i>Monarda punctata</i>	Horse Mint
<i>Penstemon hirsutus</i>	Hairy Beard Tongue
<i>Solidago nemoralis</i>	Old-Field Goldenrod
<i>Symphoricarpon ericoides</i>	Heath Aster
<i>Zizia aurea</i>	Golden Alexanders

**LIMESTONE:**  
SUBMIT SAMPLE FOR APPROVAL

SUBMIT SHOP DRAWINGS FOR REVIEW FOR APPROVAL

2" LIMESTONE RECESSED SIGN PANEL WITH STUD MOUNTED DIMENSIONAL LETTERING. REFER TO SIGN CONTRACTOR FOR LETTERING SPECS.

PANEL ANCHORS. ATTACH TO TOPS AND BOTTOM OF LIMESTONE SIGN PANEL AND CMU BLOCK. SUBMIT SAMPLES

FINISH GRADE

COMPACTED SUBGRADE  
95% MOD. PROCTOR

2'-6"

2'-0"

3'-0" LONG LIMESTONE CAP. END CAP TO TAPER 3 SIDES. SEAL JOINTS WITH EPOXY SEALANT.

RIGID COPPER FLASHING

4" THICK BRICK VENEER

C.M.U. BLOCK WITH #4 REBAR AT 12" O.C. WITH GROUT FILLED CELLS

HORIZONTAL JOINT REINFORCED LADDER, EVERY 2 COURSES

MORTAR FILLED BACK UP

5" THICK LIMESTONE BASE WITH 1" CHAMFER

1" THICK MIN. MORTAR SETTING BED

CAST-IN-PLACE CONCRETE FOUNDATION

#5 REBAR @ 12" O.C. E.W.

2'-6" X 17'-6"

**NOTE:**

- BRICK MASONRY VENEER :  
MANUF. BELDEN BRICK  
COLOR: BELCREST 500
- LIMESTONE:  
SUBMIT SAMPLE FOR  
APPROVAL
- SUBMIT SHOP DRAWINGS  
FOR REVIEW FOR  
APPROVAL

**Assembly Details:**

- RIGID COPPER FLASHING
- 3" THICK LIMESTONE DECORATIVE STONE
- 2 1/2" LIMESTONE RECESSED SIGN PANEL WITH STUD MOUNTED DIMENSIONAL LETTERING. REFER TO LETTER CONTRACTOR FOR LETTERING SPECS.
- PANEL ANCHORS, ATTACH TO TOPS AND BOTTOM OF LIMESTONE SIGN PANEL AND CMU BLOCK. SUBMIT SAMPLES
- C.M.U. BLOCK WITH #4 REBAR AT 12" O.C. WITH GROUT FILLED CELLS
- 2" THICK LIMESTONE DECORATIVE STONE WITH 1" CHAMFER
- HORIZONTAL JOINT REINFORCED LADDER, EVERY 2 COURSES
- MORTAR FILLED BACK UP 5" THICK LIMESTONE BASE WITH 1" CHAMFER
- 1" THICK MIN. MORTAR SETTING BED
- CAST-IN-PLACE CONCRETE FOUNDATION
- #5 REBAR @ 12" O.C. E.W.
- COMPACTED SUBGRADE 95% MOD. PROCTOR

**Dimensions:**

- Top width: 3'-4" SQ.
- Base width: 3'-6" SQ.
- Total height: 6'-5"
- Vertical segments from top: 6"-5/8", 1"-3/8", 1'-2", 2'-7", 1'-0", 4'
- Horizontal joint reinforcement every 2 courses.
- Rebar spacing: 12" O.C.

4  
C-1.0

3'-0"

7'-0"

LIMESTONE PIER CAP  
WITH 1" OVERHANG

VERTICAL EXPANSION JOINT BETWEEN  
WALL AND PIER - REFER TO DETAIL

2'-0"

2'-0"

BRICK MASONRY PIER  
BELOW

BRICK MASONRY  
WALL BELOW

5  
L-1.0

LIMESTONE WALL CAP  
WITH 1" OVERHANG

120° 120° 120°

**STAKING/GUYING LOCATION**

PLANT SO THAT TOP OF ROOT BALL IS FLUSH TO GRADE OR 1-2" HIGHER IF IN POORLY DRAINED SOILS

STAKE JUST BELOW BRANCHES WITH 2"-3" WIDE NYLON OR PLASTIC STRAPS CONNECTED FROM TREE TO STAKE AND ALLOW FOR FLEXIBILITY. REMOVE AFTER (1) ONE YEAR. (DO NOT USE WIRE & ROPE)

THREE 2"x2" HARDWOOD STAKES OR STEEL T-POSTS DRIVEN A MIN. OF 18" DEEP FIRMLY INTO SUBGRADE PRIOR TO BACKFILLING

SHREDDED HARDWOOD BARK MULCH TO DRIFLINE, 3" DEEP AND LEAVE 3" CIRCLE OF BARE SOIL AROUND TREE TRUNK. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK. FORM SAUCER WITH 4" HIGH CONTINUOUS RIM

FINISH GRADE

SPECIFIED PLANTING MIX, WATER & TAMP TO REMOVE AIR POCKETS, AMEND SOIL PER SITE CONDITIONS & TREE REQUIREMENTS

EXPOSE ROOT FLARE OF TREE. CONTRACTOR MAY HAVE TO REMOVE EXCESS SOIL FROM TOP OF ROOTBALL BEFORE ALL BURLAP FROM TOP 1/3 OF ROOTBALL DISCARD ALL NON-BIODEGRADABLE MATERIAL OFF SITE

PLACE ROOTBALL ON UNEXCAVATED OR TAMPEDED SOIL

3"

18" MIN. TYP.

12" MIN. TYP.

PLANT SO THAT TOP OF ROOT BALL IS FLUSH TO GRADE OR 1-2" HIGHER IF IN POORLY DRAINED SOILS

SECURE TREE WRAP WITH BIODEGRADABLE MATERIAL AT TOP & BOTTOM, REMOVE AFTER FIRST WINTER

DO NOT PRUNE TERMINAL LEADER PRUNE ONLY DEAD, BROKEN BRANCHES AS DIRECTED BY LANDSCAPE ARCHITECT

STAKE JUST BELOW BRANCHES WITH 2"-3" WIDE NYLON OR PLASTIC STRAPS. CONNECT FROM TREE TO STAKE AND ALLOW FOR FLEXIBILITY. REMOVE AFTER (1) ONE YEAR. (DO NOT USE WIRE & HOSE)

(3) THREE 2"x2" HARDWOOD STAKES DRIVEN A MIN. OF 18" DEEP FIRMLY INTO SUBGRADE PRIOR TO BACKFILLING

SHREDDED HARDWOOD BARK MULCH TO DRIFLINE. 3" DEEP AND LEAVE 3" CIRCLE BARE SOIL AROUND TREE TRUNK. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK. FORM SAUCER WITH 4" HIGH CONTINUOUS RIM

SPECIFIED PLANTING MIX, WATER & TAMP TO REMOVE AIR POCKETS. AMEND SOIL PER SITE CONDITIONS & TREE REQUIREMENTS

FINISH GRADE

EXPOSE ROOT FLARE OF TREE. CONTRACTOR MAY HAVE TO REMOVE EXCESS SOIL FROM TOP OF ROOTBALL. REMOVE ALL BURLAP TOP OF ROOTBALL. DISCARD ALL

120° 120° 120°

STAKING/GUYSING LOCATION

3"

18" MIN. TYPE

FENCE SHALL BE PLACED IN A CIRCLE WITH A  
MINIMUM RADIUS OF 1' PER 1" DIAMETER OF THE  
TREE MEASURED AT 4.5' ABOVE GROUND

A cross-sectional diagram showing a retaining wall on the left. The wall is labeled "4' HIGH PROTECTIVE FENCING WITH STEEL POSTS - 10' O.C.". To the right of the wall is a sloped area labeled "EXISTING SOIL". The diagram includes a horizontal line at the top representing the ground surface and a vertical line on the left representing the wall face.



**811** Know what's below.  
Call before you dig.

CLIENT

**GFA  
DEVELOPMENT,  
INC.**

3301 MIRAGE DRIVE  
TROY, MI 48063

PROJECT TITLE  
**THE VILLAGE  
OF HASTINGS**  
PART OF THE SW 1/4 OF  
SECTION 3, T. 02N., R. 11E.,  
TROY, MI

REVISIONS	
REV. PER COMMENTS 6/2/2023	8/9/2023
REV. PER COMMENTS 8/24/2023	11/17/2023
REV. PER PC COMMENTS 11/28/2023	12/7/2023
REV. PER PC COMMENTS 1/9/2024	1/24/2024

ORIGINAL ISSUE DATE:  
JUNE 1, 2023

DRAWING TITLE

**LANDSCAPE  
DETAILS**

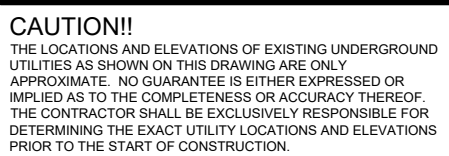
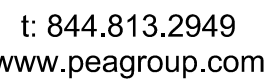
PEA JOB NO.	2017-009
P.M.	JBT
DN.	LAW
DES.	LAW
DRAWING NUMBER:	

**NOT FOR CONSTRUCTION**

## L-1.1

c:\projects\2017-009 GFA SQUARE LAKE-JFB\dwg\Site Plans\(-1.1) LANDSCAPE DETAILS-17009.dwg



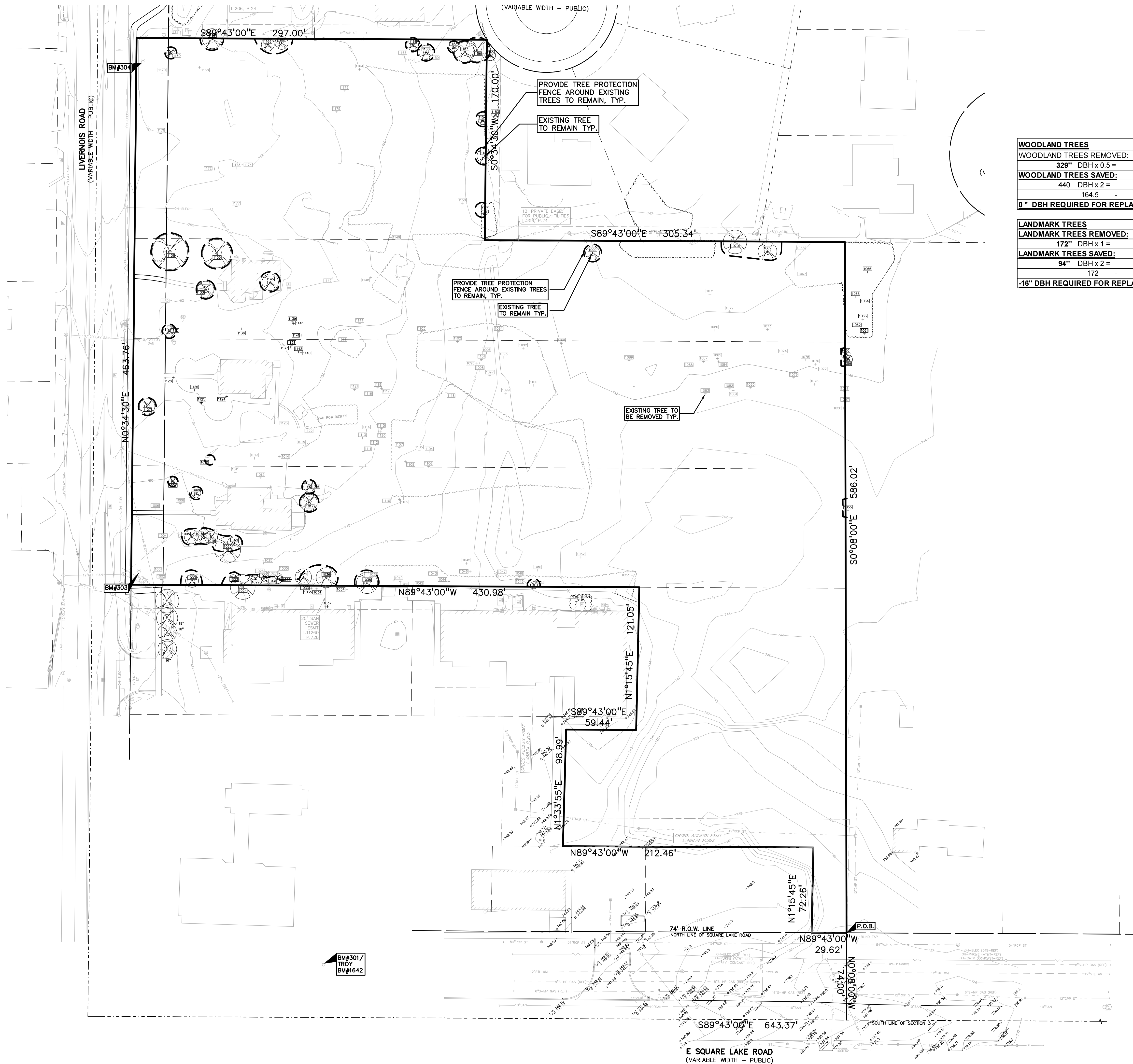


**GFA  
DEVELOPMENT,  
INC.**  
3301 MIRAGE DRIVE  
TROY, MI 48063

PART OF THE SW 1/4 OF  
SECTION 3, T. 02N., R. 11E  
TROY, MI

DRAWING NUMBER:

<b>LANDMARK TREES</b>			
<b>LANDMARK TREES REMOVED:</b>	10	<b>(REPLACE AT 100% OF REMOVED DBH)</b>	
172" DBH x 1 =		172" REPLACEMENT	
<b>LANDMARK TREES SAVED:</b>	5	<b>(CREDIT OF 2X DBH)</b>	
94" DBH x 2 =		188" CREDIT	
172	-	188	= -16
<b>-16" DBH REQUIRED FOR REPLACEMENT</b>			



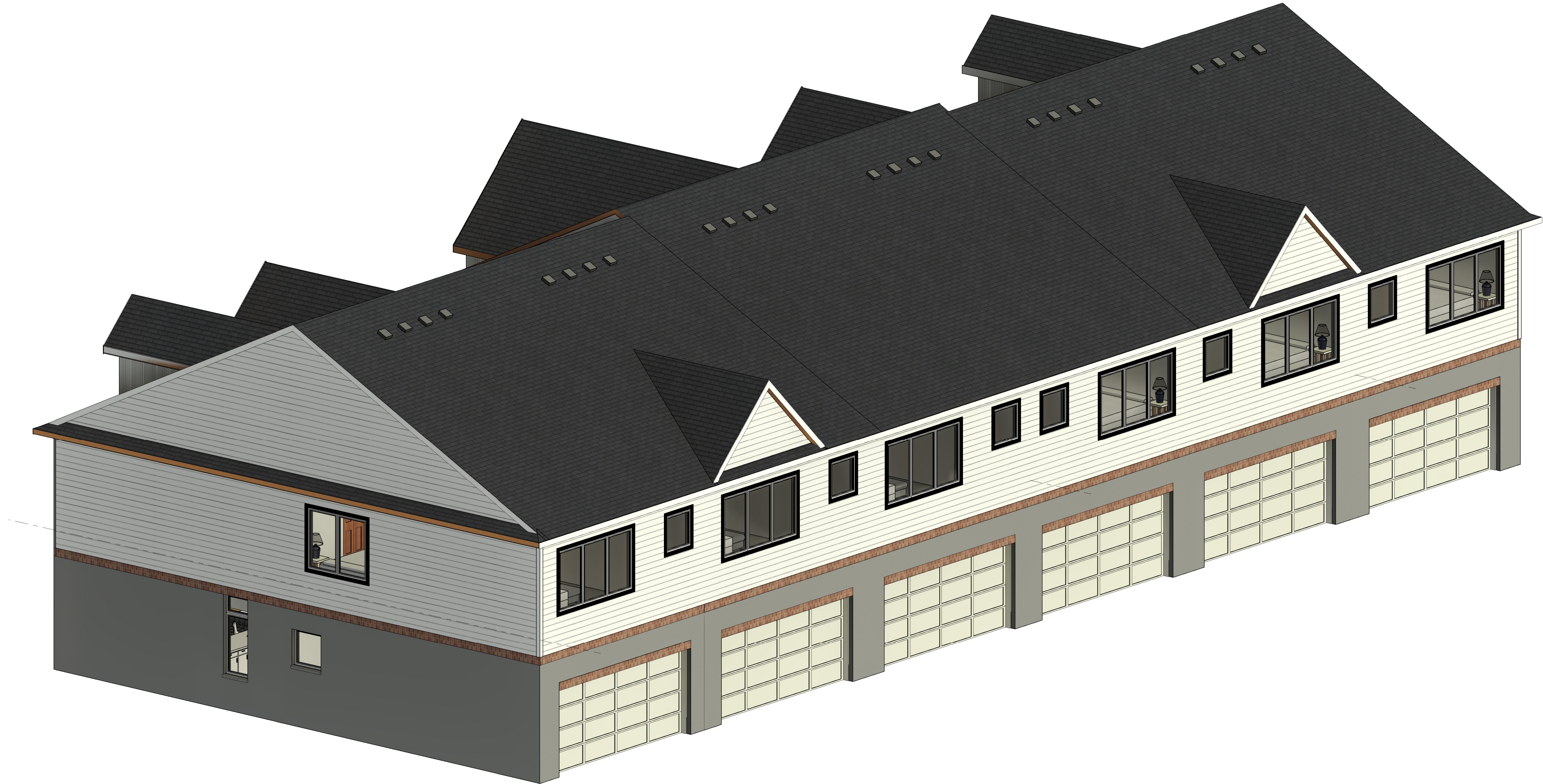
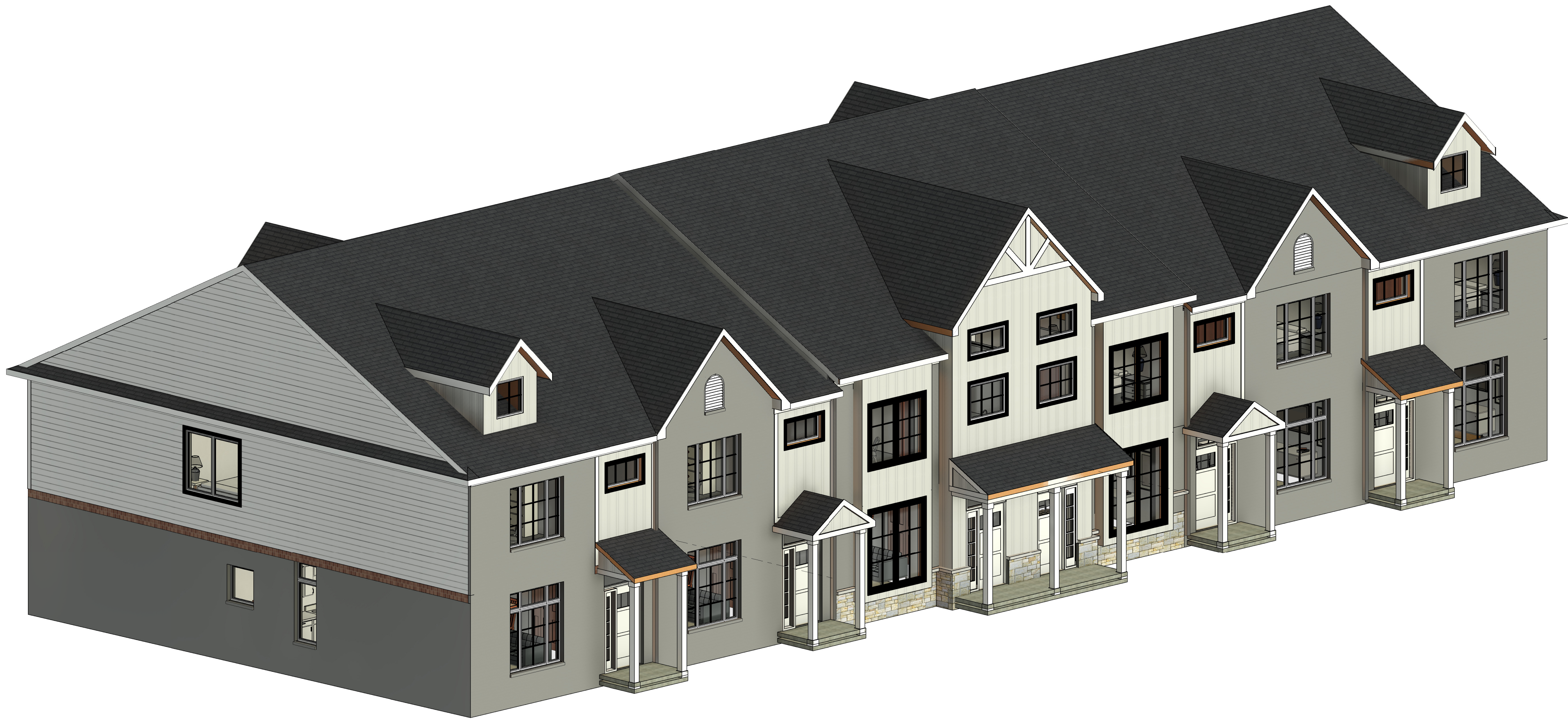
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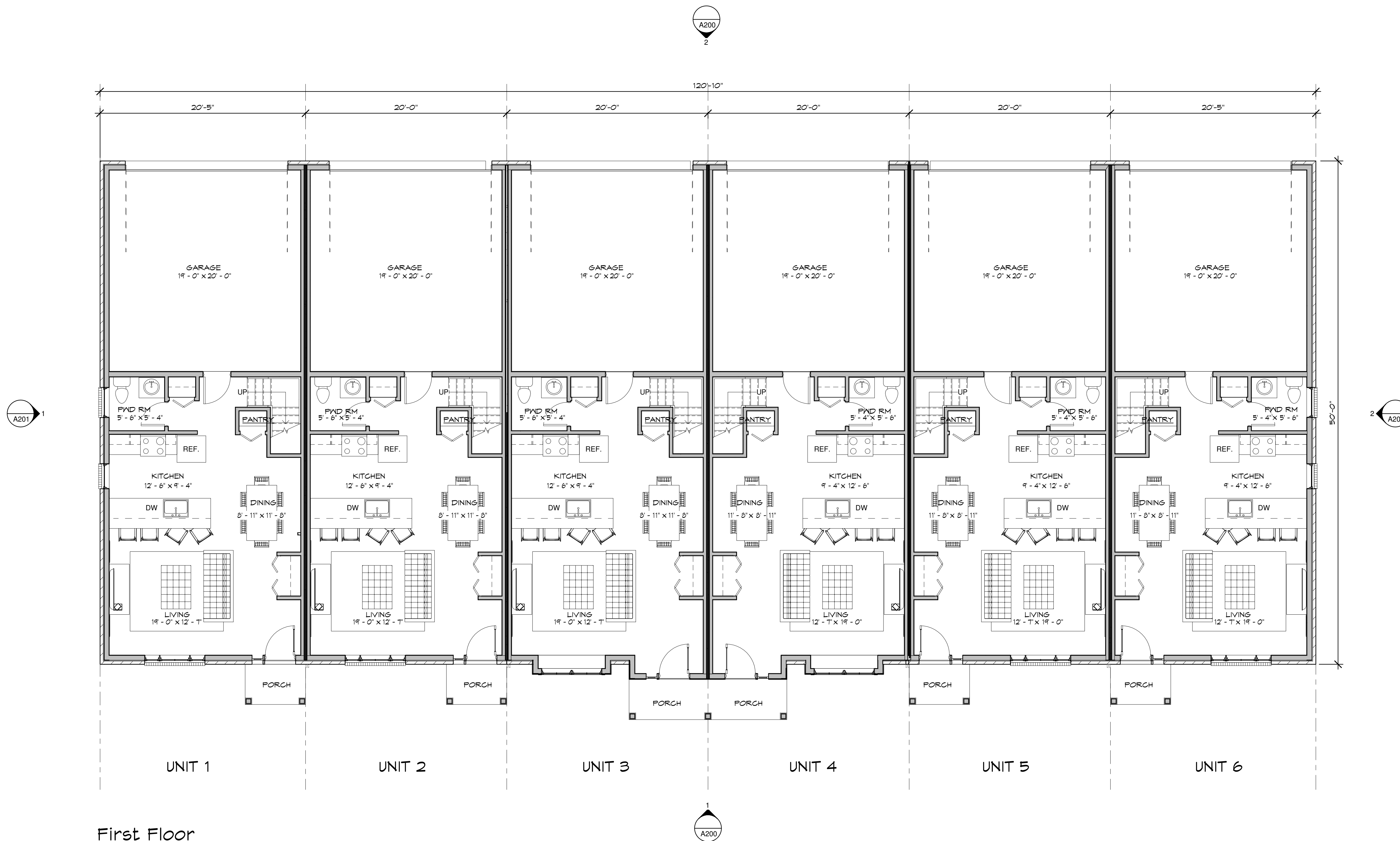
TAG	CODE	DBH	COMMON NAME	LATIN NAME	CONDITION	NOTE	CLASS	SAVE / REMOVE	ON-SITE
1	E	6	American Elm	Ulmus americana	Poor		INVASIVE	S	Y
2	E	7	American Elm	Ulmus americana	Very Poor		INVASIVE	S	Y
3	CT	11	Cottonwood	Populus deltoides	Poor		INVASIVE	S	Y
4	BW	13	Black Walnut	Juglans nigra	Very Poor		WOODLAND	S	Y
5	B	8	Basswood	Tilia americana	Fair		WOODLAND	S	Y
6	BX	8	Box elder	Acer negundo	Very Poor		INVASIVE	S	Y
7	B	9	Basswood	Tilia americana	Fair		WOODLAND	S	Y
8	BX	6	Box elder	Acer negundo	Poor		INVASIVE	S	Y
9	E	9	American Elm	Ulmus americana	Fair		INVASIVE	S	Y
10	E	6	American Elm	Ulmus americana	Fair		INVASIVE	S	Y
11	B	6	Basswood	Tilia americana	Poor		WOODLAND	S	Y
12	E	9	American Elm	Ulmus americana	Fair		INVASIVE	S	Y
13	BX	8	Box elder	Acer negundo	Poor		INVASIVE	S	Y
14	BX	7	Box elder	Acer negundo	Poor		INVASIVE	S	Y
15	E	7	American Elm	Ulmus americana	Very Poor		INVASIVE	S	Y
16	E	7	American Elm	Ulmus americana	Fair		INVASIVE	S	Y
17	E	9	American Elm	Ulmus americana	Fair		INVASIVE	S	Y
18	CT	8	Cottonwood	Populus deltoides	Poor		INVASIVE	S	Y
19	NM	11	Norway Maple	Acer platanoides	Fair		INVASIVE	S	Y
20	E	12	American Elm	Ulmus americana	Poor		INVASIVE	S	Y
21	BX	12	Box elder	Acer negundo	Very Poor		INVASIVE	S	Y
22	E	9	American Elm	Ulmus americana	Poor		INVASIVE	S	Y
23	E	7	American Elm	Ulmus americana	Fair		INVASIVE	S	Y
24	CT	11	Cottonwood	Populus deltoides	Good		INVASIVE	S	Y
25	B	9	Basswood	Tilia americana	Poor		WOODLAND	S	Y
26	CT	8	Cottonwood	Populus deltoides	Poor		INVASIVE	S	Y
27	BX	7	Box elder	Acer negundo	Poor		INVASIVE	S	Y
28	E	10	American Elm	Ulmus americana	Good		INVASIVE	S	Y
29	E	13	American Elm	Ulmus americana	Fair		INVASIVE	S	Y
30	B	7	Basswood	Tilia americana	Poor		WOODLAND	S	Y
31	NM	15	Norway Maple	Acer platanoides	Good		INVASIVE	S	Y
32	NM	15	Norway Maple	Acer platanoides	Very Poor		INVASIVE	S	Y
33	B	7	Basswood	Tilia americana	Poor		WOODLAND	S	Y
34	B	10	Basswood	Tilia americana	Poor		WOODLAND	S	Y
35	B	11	Basswood	Tilia americana	Poor		WOODLAND	S	Y
36	E	6	American Elm	Ulmus americana	Fair		INVASIVE	S	Y
37	E	9	American Elm	Ulmus americana	Fair		INVASIVE	S	Y
38	BC	7	Wild Black Cherry	Prunus serotina	Fair		WOODLAND	S	Y
39	E	6	American Elm	Ulmus americana	Poor		INVASIVE	S	Y
40	B	7	Basswood	Tilia americana	Poor		WOODLAND	S	Y
41	B	9	Basswood	Tilia americana	Fair		WOODLAND	S	Y
42	B	8	Basswood	Tilia americana	Poor		WOODLAND	S	Y
43	B	8	Basswood	Tilia americana	Very Poor		WOODLAND	S	Y
44	B	6	Basswood	Tilia americana	Very Poor		WOODLAND	S	Y
45	BC	10	Wild Black Cherry	Prunus serotina	Good		WOODLAND	S	Y
46	B	8	Basswood	Tilia americana	Very Poor		WOODLAND	S	Y
47	B	8	Basswood	Tilia americana	Fair		WOODLAND	S	Y
48	B	8	Basswood	Tilia americana	Very Poor		WOODLAND	S	Y
49	B	11	Basswood	Tilia americana	Poor		WOODLAND	S	Y
50	B	7	Basswood	Tilia americana	Poor		WOODLAND	S	Y
51	B	7	Basswood	Tilia americana	Fair		WOODLAND	S	Y
52	B	7	Basswood	Tilia americana	Fair		WOODLAND	S	Y
53A	GA	7	Green Ash	Fraxinus pennsylvanica	Very Poor		INVASIVE	S	Y
53B	E	9	American Elm	Ulmus americana	Fair		INVASIVE	S	Y
54	E	7	American Elm	Ulmus americana	Poor		INVASIVE	S	Y
55	BW	8	Black Walnut	Juglans nigra	Fair		WOODLAND	S	Y
56	B	11	Basswood	Tilia americana	Fair		WOODLAND	S	Y
57	E	10	American Elm	Ulmus americana	Fair		INVASIVE	S	Y
58	B	12	Basswood	Tilia americana	Fair		WOODLAND	S	Y
59	BX	7	Box elder	Acer negundo	Poor		INVASIVE	S	Y
60	BX	7	Box elder	Acer negundo	Poor		INVASIVE	S	Y
61	CT	11	Cottonwood	Populus deltoides	Poor		INVASIVE	S	Y
62	NM	12	Norway Maple	Acer platanoides	Good		INVASIVE	S	Y
63	B	10	Basswood	Tilia americana	Fair		WOODLAND	S	Y
64	CT	21	Cottonwood	Populus deltoides	Good		INVASIVE	S	Y
65	B	10	Basswood	Tilia americana	Fair		WOODLAND	S	Y
66	B	12	Basswood	Tilia americana	Fair		WOODLAND	S	Y
67	CT	12	Cottonwood	Populus deltoides	Poor		INVASIVE	S	Y
68	NM	7	Norway Maple	Acer platanoides	Poor		INVASIVE	S	Y
69	NM	15	Norway Maple	Acer platanoides	Good		INVASIVE	S	Y
70	BX	9	Box elder	Acer negundo	Poor		INVASIVE	S	Y
71	B	11	Basswood	Tilia americana	Fair		WOODLAND	S	Y
72	BX	7	Box elder	Acer negundo	Poor		INVASIVE	S	Y
73	BX	7	Box elder	Acer negundo	Poor		INVASIVE	S	Y
74	B	13	Basswood	Tilia americana	Fair		WOODLAND	S	Y
75	B	12	Basswood	Tilia americana	Fair		WOODLAND	S	Y
76	B	11	Basswood	Tilia americana	Fair		WOODLAND	S	Y
77	B	11	Basswood	Tilia americana	Fair		WOODLAND	S	Y
78	BX	9	Box elder	Acer negundo	Fair		INVASIVE	S	Y
79	CT	14	Cottonwood	Populus deltoides	Fair		INVASIVE	S	Y
80	B	7	Basswood	Tilia americana	Fair		WOODLAND	S	Y
81	CT	12	Cottonwood	Populus deltoides	Fair		INVASIVE	S	Y
82	B	7	Basswood	Tilia americana	Poor		WOODLAND	S	Y
83	B	7	Basswood	Tilia americana	Poor		WOODLAND	S	Y
84	CT	12	Cottonwood	Populus deltoides	Fair		INVASIVE	S	Y
85	BX	8	Box elder	Acer negundo	Poor		INVASIVE	S	Y
86	PW	14	White Poplar	Populus alba	Good		INVASIVE	S	Y
87	BX	8	Box elder	Acer negundo	Poor		INVASIVE	S	Y
88	E	9	American Elm	Ulmus americana	Poor		INVASIVE	S	Y
89	BX	11	Box elder	Acer negundo	Poor		INVASIVE	S	Y
90	E	10	American Elm	Ulmus americana	Good		INVASIVE	S	Y
91	E	8	American Elm	Ulmus americana	Fair		INVASIVE	S	Y
92	BX	11	Box elder	Acer negundo	Poor		INVASIVE	S	Y
93	BX	13	Box elder	Acer negundo	Poor		INVASIVE	S	Y
94	B	14	Basswood	Tilia americana	Very Poor		WOODLAND	S	Y
95	BX	16	Box elder	Acer negundo	Poor		INVASIVE	S	Y
96A	B	9	Basswood	Tilia americana	Poor		WOODLAND	S	Y
96B	B	9	Basswood	Tilia americana	Poor		WOODLAND	S	Y
97	BX	10	Box elder	Acer negundo	Poor		INVASIVE	S	Y
98	BX	11	Box elder	Acer negundo	Very Poor		INVASIVE	S	Y
99	CT	11	Cottonwood	Populus deltoides	Fair		INVASIVE	S	Y
100	RO	8	Red Oak	Quercus rubra	Poor		WOODLAND	S	Y
101	B	7	Basswood	Tilia americana	Fair		WOODLAND	S	Y
102	BX	12	Box elder	Acer negundo	Poor		INVASIVE	S	Y
103	BX	8	Box elder	Acer negundo	Poor		INVASIVE	S	Y

TAG	CODE	DBH	COMMON NAME	LATIN NAME	CONDITION	NOTE	CLASS	SAVE / REMOVE	ON-SITE
104	BX	7	Box elder	Acer negundo	Very Poor		INVASIVE	S	Y
105	BX	9	Box elder	Acer negundo	Very Poor		INVASIVE	S	Y
106	BX	12	Box elder	Acer negundo	Poor		INVASIVE	S	Y
107	BX	17	Box elder	Acer negundo	Poor		INVASIVE	S	Y
108	BX	9	Box elder	Acer negundo	Poor		INVASIVE	S	Y
109	B	12	Basswood	Tilia americana	Fair		WOODLAND	S	Y
110	B	10	Basswood	Tilia americana	Fair		WOODLAND	S	Y
111	B	12	Basswood	Tilia americana	Fair		WOODLAND	S	Y
112	B	10	Basswood	Tilia americana	Fair		WOODLAND	S	Y
113	B	8	Basswood	Tilia americana	Fair		WOODLAND	S	Y
114	B	8	Basswood	Tilia americana	Fair		WOODLAND	S	Y
115	BX	7	Box elder	Acer negundo	Fair		INVASIVE	S	N
116	BX	8	Box elder	Acer negundo	Fair		INVASIVE	S	N
117	PW	6	White Poplar	Populus alba	Good		INVASIVE	S	N
1001	BS	10	Blue Spruce	Picea pungens	Poor		WOODLAND	R	Y
1002	AU	15	Austrian Pine	Pinus nigra	Fair		WOODLAND	R	Y
1003	SC	11	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	S	Y
1004	B	23	Basswood	Tilia americana	Good		LANDMARK	R	Y
1005	SM	12	Silver Maple	Acer saccharinum	Fair		INVASIVE	S	Y
1006	NS	14	Norway Spruce	Picea Abies	Fair		WOODLAND	R	Y
1007	WS	7	White Spruce	Picea glauca	Poor		WOODLAND	S	Y
1008	NM	27	Norway Maple	Acer platanoides	Good		INVASIVE	R	Y
1009	WS	14	White Spruce	Picea glauca	Fair		WOODLAND	S	Y
1010	TH	7	Thornapple/Hawthorne	Cragaeus spp.	Poor		WOODLAND	S	Y
1011	TH	11	Thornapple/Hawthorne	Cragaeus spp.	Poor		WOODLAND	S	Y
1012	SU	17	Sugar Maple	Acer saccharum	Fair		LANDMARK	S	Y
1013	NM	10	Norway Maple	Acer platanoides	Fair		INVASIVE	R	Y
1014	NM	13	Norway Maple	Acer platanoides	Good		INVASIVE	R	Y
1015	NM	11	Norway Maple	Acer platanoides	Good		INVASIVE	R	Y
1016	WS	10	White Spruce	Picea glauca	Poor		WOODLAND	S	Y
1017	SU	14	Sugar Maple	Acer saccharum	Very Poor	dead	WOODLAND	S	Y
1018	SC	12	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	S	Y
1019	NM	11	Norway Maple	Acer platanoides	Good		INVASIVE	S	Y
1020	SM	22	Silver Maple	Acer saccharinum	Fair		INVASIVE	S	Y
1021	SC	20	Scotch Pine	Pinus sylvestris	Good		LANDMARK	S	Y
1022	NM	12	Norway Maple	Acer platanoides	Fair		INVASIVE	S	Y
1023	SC	7	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	S	Y
1024	NM	21	Norway Maple	Acer platanoides	Good		INVASIVE	S	N
1025	SC	13	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1026	NM	8	Norway Maple	Acer platanoides	Good		INVASIVE	R	Y
1027	NM	10	Norway Maple	Acer platanoides	Good		INVASIVE	R	Y
1028	NM	10	Norway Maple	Acer platanoides	Good		INVASIVE	S	Y
1029	NM	8	Norway Maple	Acer platanoides	Good		INVASIVE	S	Y
1030	NM	9	Norway Maple	Acer platanoides	Good		INVASIVE	R	Y
1031	NM	9	Norway Maple	Acer platanoides	Good		INVASIVE	S	Y
1032	BX	14	Box elder	Acer negundo	Fair		INVASIVE	S	Y
1033	BX	11	Box elder	Acer negundo	Fair		INVASIVE	S	N
1034	AU	16	Austrian Pine	Pinus nigra	Fair		WOODLAND	S	N
1035	NM	6	Norway Maple	Acer platanoides	Good		INVASIVE	S	N
1036	AU	17	Austrian Pine	Pinus nigra	Very Poor	dead	WOODLAND	S	Y
1037	NM	12	Norway Maple	Acer platanoides	Fair		INVASIVE	S	N
1038	BX	18	Box elder	Acer negundo	Fair		INVASIVE	S	Y
1039	WC	6	White Cedar	Thuja occidentalis	Good		WOODLAND	R	Y
1040	WC	6	White Cedar	Thuja occidentalis	Fair		WOODLAND	R	Y
1041	BX	10	Box elder	Acer negundo	Fair		INVASIVE	R	Y
1042	NM	12	Norway Maple	Acer platanoides	Good		INVASIVE	R	Y
1043	SM	12	Silver Maple	Acer saccharinum	Fair		INVASIVE	R	Y
1044	SC	11	Scotch Pine	Pinus sylvestris	Very Poor	dead	WOODLAND	R	Y
1045	SM	43	Silver Maple	Acer saccharinum	Fair		INVASIVE	R	Y
1046	NM	8	Norway Maple	Acer platanoides	Good		INVASIVE	R	Y
1047	SM	16	Silver Maple	Acer saccharinum	Fair		INVASIVE	R	Y
1048	SC	14	Scotch Pine	Pinus sylvestris	Poor		WOODLAND	R	Y
1049	SC	14	Scotch Pine	Pinus sylvestris	Poor		WOODLAND	R	Y
1050	SM	6	Silver Maple	Acer saccharinum	Fair		INVASIVE	S	Y
1051	SM	22	Silver Maple	Acer saccharinum	Good		INVASIVE	R	Y
1052	NM	8	Norway Maple	Acer platanoides	Very Poor		INVASIVE	R	Y
1053	SM	30	Silver Maple	Acer saccharinum	Poor		INVASIVE	R	Y
1054	SU	7	Sugar Maple	Acer saccharum	Good		WOODLAND	S	N
1055	TH	7	Thornapple/Hawthorne	Cragaeus spp.	Very Poor	x2 dead	WOODLAND	S	Y
1056	SC	13	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1057	SC	12	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1058	SC	13	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1059	BX	8	Box elder	Acer negundo	Fair		INVASIVE	S	Y
1060	BX	8	Box elder	Acer negundo	Fair	x2	INVASIVE	S	Y
1061	BS	6	Blue Spruce	Picea pungens	Fair		WOODLAND	S	N
1062	NS	6	Norway Spruce	Picea Abies	Fair		WOODLAND	S	N
1063	NS	6	Norway Spruce	Picea Abies	Fair		WOODLAND	S	N
1064	NS	7	Norway Spruce	Picea Abies	Good		WOODLAND	S	N
1065	NS	6	Norway Spruce	Picea Abies	Fair		WOODLAND	S	N
1066	SC	17	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	S	N
1067	CT	25	Cottonwood	Populus deltoides	Good		INVASIVE	R	Y
1068	WP	21	(Eastern) White Pine	Pinus strobus	Fair		LANDMARK	R	Y
1069	BW	16	Black Walnut	Juglans nigra	Good		WOODLAND	S	Y
1070	AU	20	Austrian Pine	Pinus nigra	Good		LANDMARK	S	Y
1071	MH	16	Bitternut Hickory	Carya cordiformis	Good	bitternut hickory	LANDMARK	R	Y
1072	SH	16	Shagbark Hickory	Carya ovata	Good	hickory	LANDMARK	R	Y
1073	SH	8	Shagbark Hickory	Carya ovata	Very Poor	hickory	WOODLAND	R	Y
1074	SC	12	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1075	SC	10	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1076	SC	10	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1077	SC	9	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1078	SC	9	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1079	SC	8	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1080	SC	14	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1081	SC	8	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1082	SC	13	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1083	SC	16	Scotch Pine	Pinus sylvestris	Fair	x1	WOODLAND	R	Y
1084	SM	10	Silver Maple	Acer saccharinum	Good		INVASIVE	R	Y
1085	SC	14	Scotch Pine	Pinus sylvestris	Fair		WOODLAND	R	Y
1086	BT	9	Butternut	Juglans cinerea	Good		LANDMARK	R	Y
1087	SM	10	Silver Maple	Acer saccharinum	Fair		INVASIVE	R	Y
1088	SM	16	Silver Maple	Acer saccharinum	Good		INVASIVE	R	Y
1089	BX	12	Box elder	Acer negundo	Fair		INVASIVE	R	Y
1090	BS	12	Blue Spruce	Picea pungens	Good		WOODLAND	S	Y
1091	SM	12	Silver Maple	Acer saccharinum	Fair		INVASIVE	R	Y





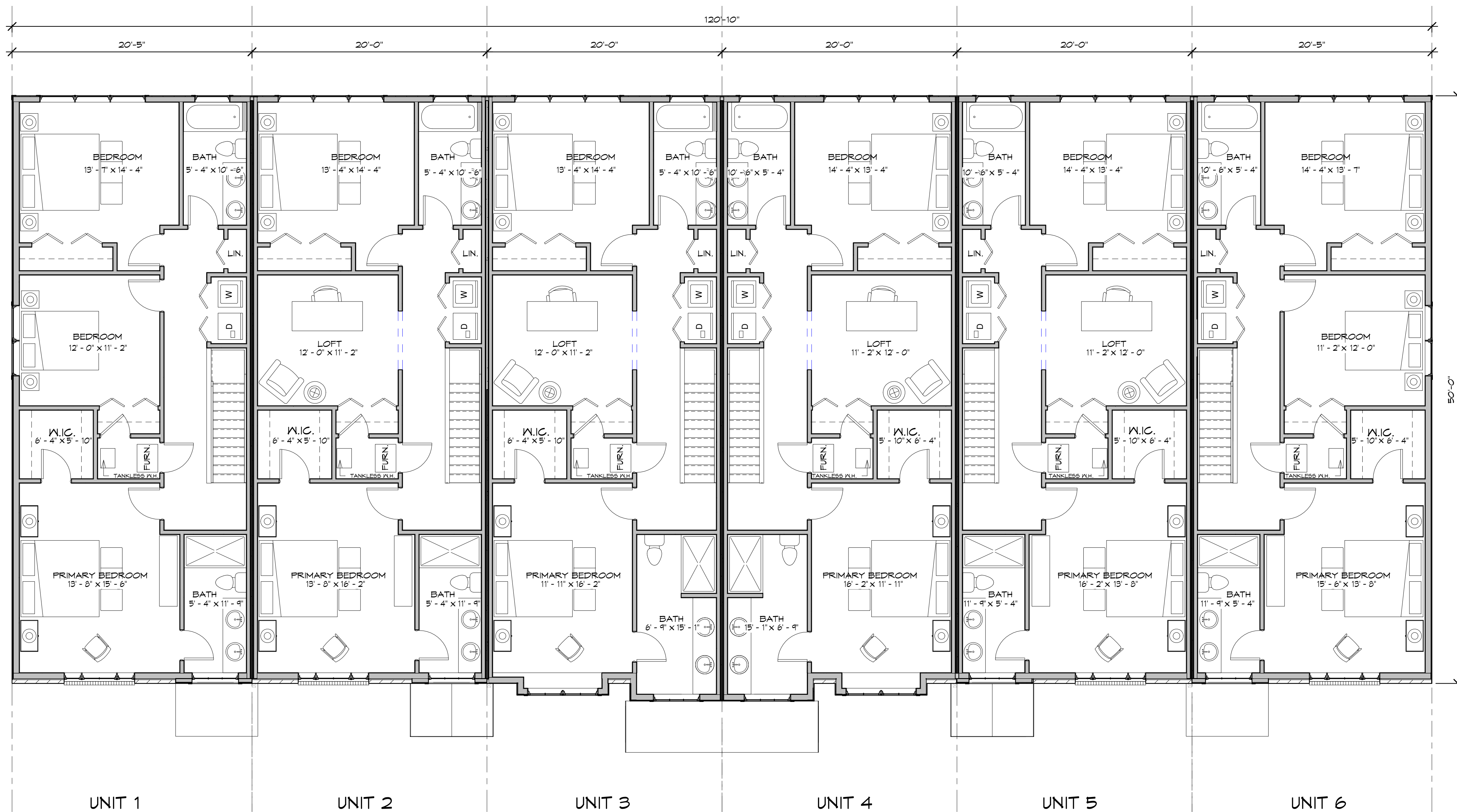




First Floor

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



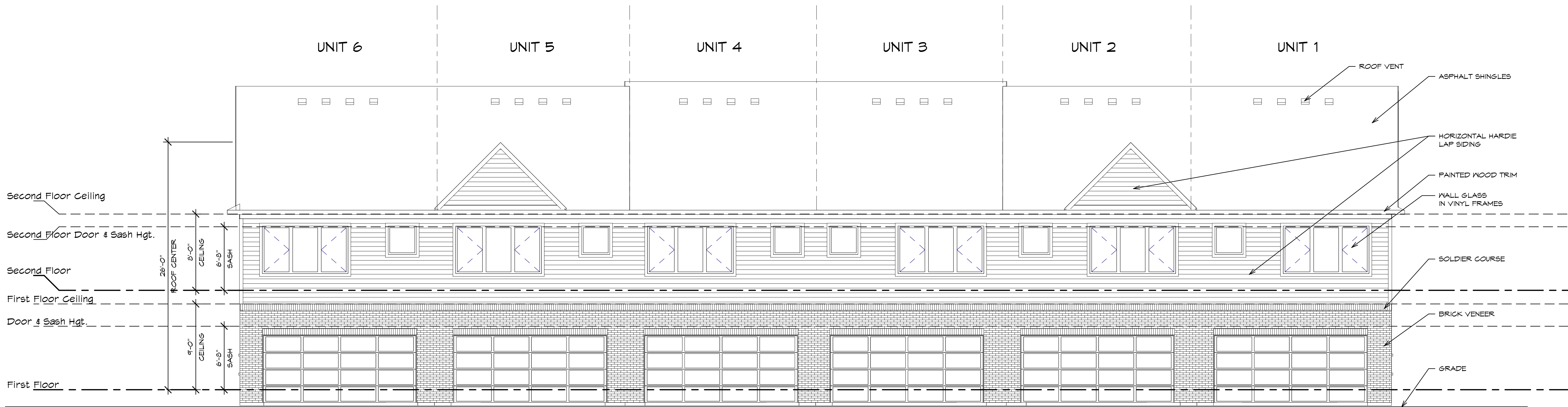


Second Floor

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

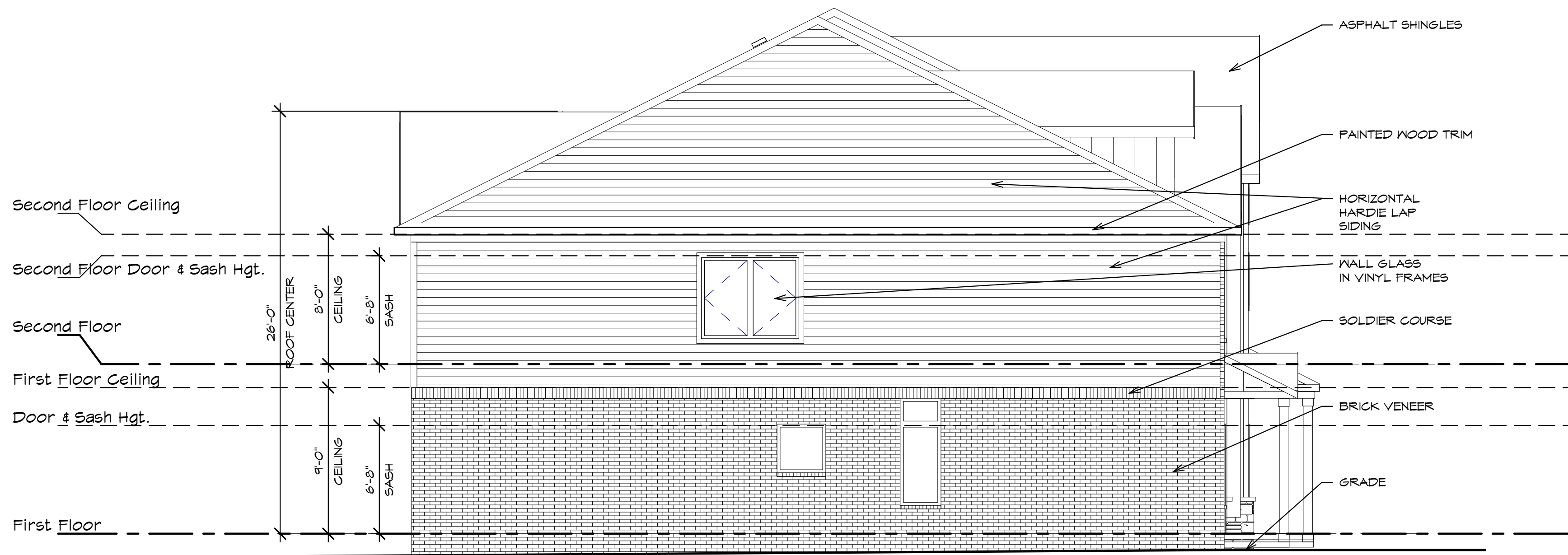


1 SOUTH ELEVATION  
A101 Scale: 3/16" = 1'-0"

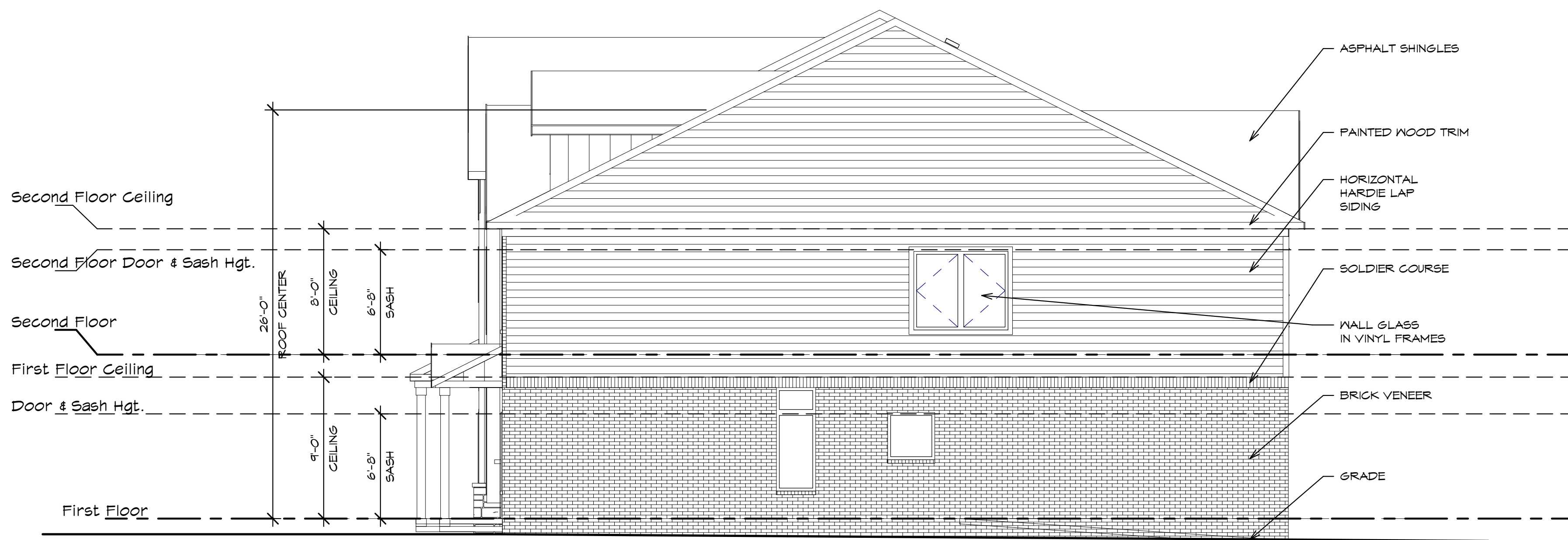


2 NORTH ELEVATION  
A101 Scale: 3/16" = 1'-0"





1 WEST ELEVATION  
A101 Scale: 3/16" = 1'-0"



2 EAST ELEVATION  
A101 Scale: 3/16" = 1'-0"

2 STORY HEIGHTS





RANCH UNIT



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[www.mga-architects.net](http://www.mga-architects.net)

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Client:

GFA  
Development

Project Title:

RANCH UNIT

Troy, MI

Sheet Title:

3D VIEWS

Project Number: 22312

Drawn By: JS

Checked By: AJM

Approved By: AJM

Date: 06-16-2023

Issued:

Owner's Review

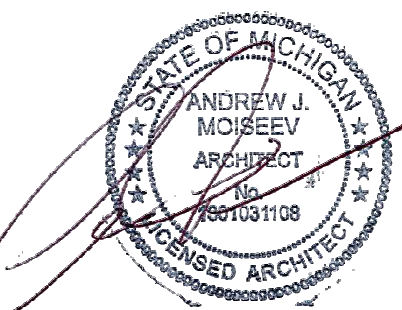
Owner's Review

06-16-23

11-09-2023

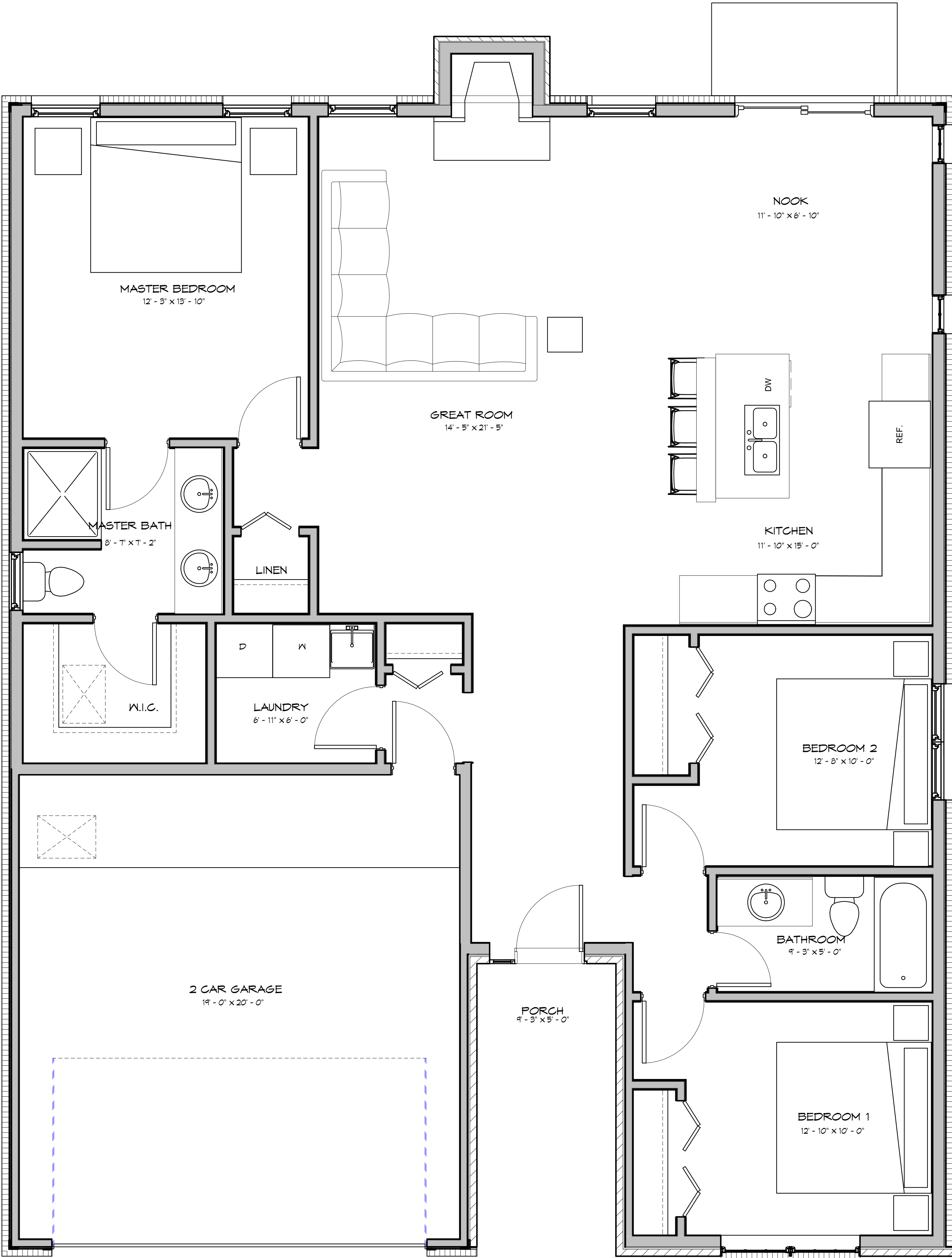
Sheet Number:

A300



11/9/2023 1:59:28  
PM





FIRST FLOOR PLAN  
Scale: 3/8" = 1'-0"



Moiseev/Gordon Associates, Inc.  
4351 Delemere Court  
Royal Oak, MI 48073

248.549.4500 voice  
248.549.7300 faxes.

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Client:

GFA  
Development

Project Title:

RANCH UNIT

Troy, MI

Sheet Title:

FIRST FLOOR  
UNIT PLAN

Project Number: 22312

Drawn By: AJM, JS

Checked By: AJM

Approved By: AJM

Date: 06-16-2023

Issued:

Owner's Review

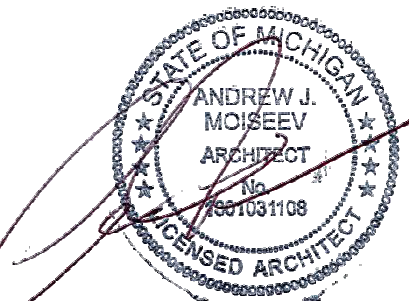
06-16-23

Owner's Review

11-09-2023

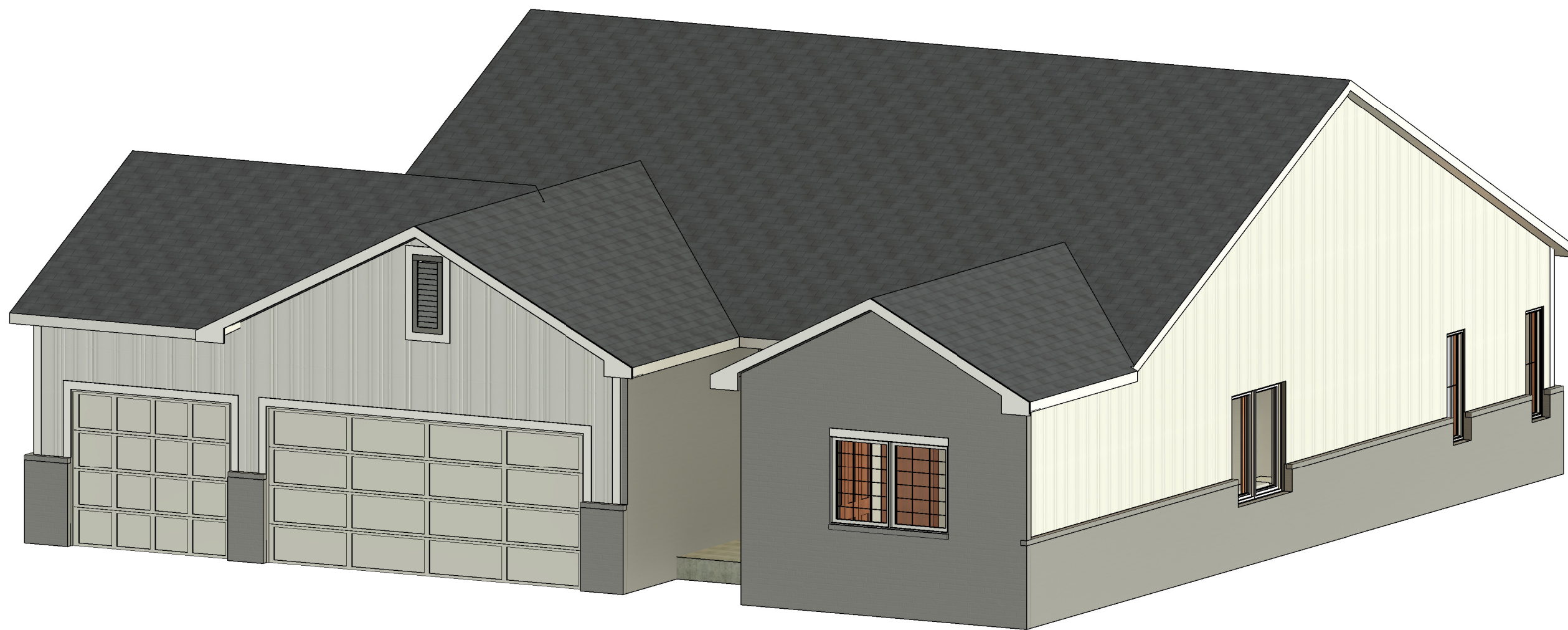
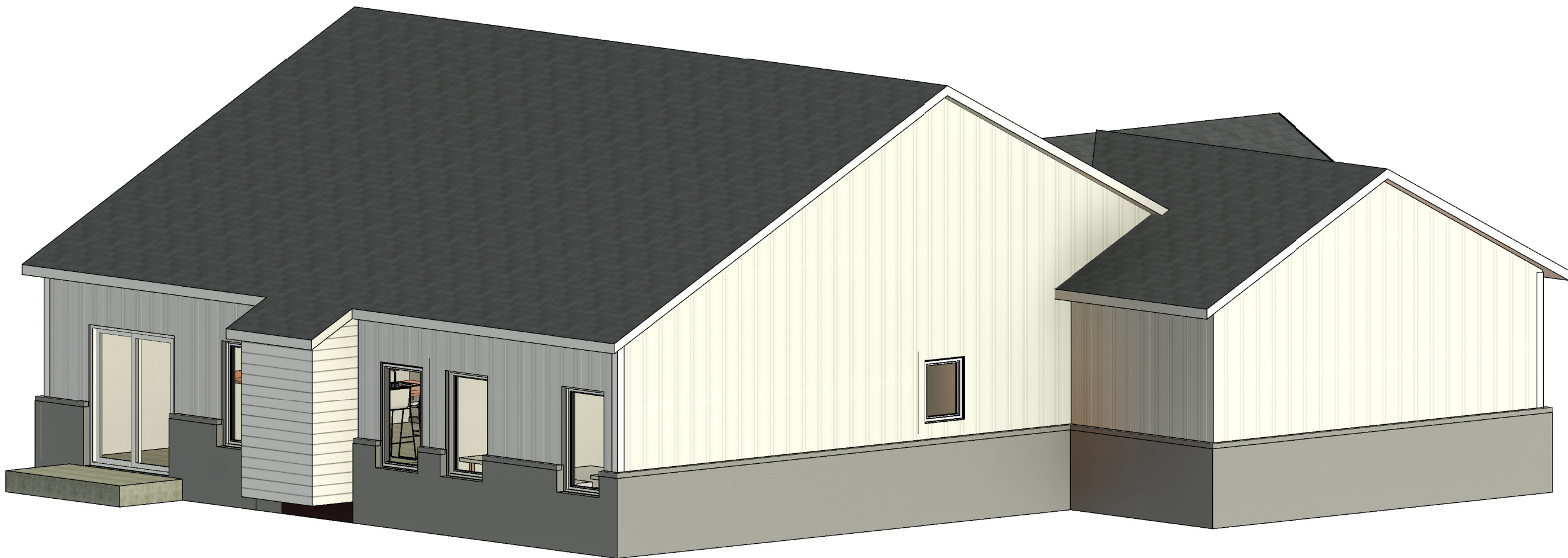
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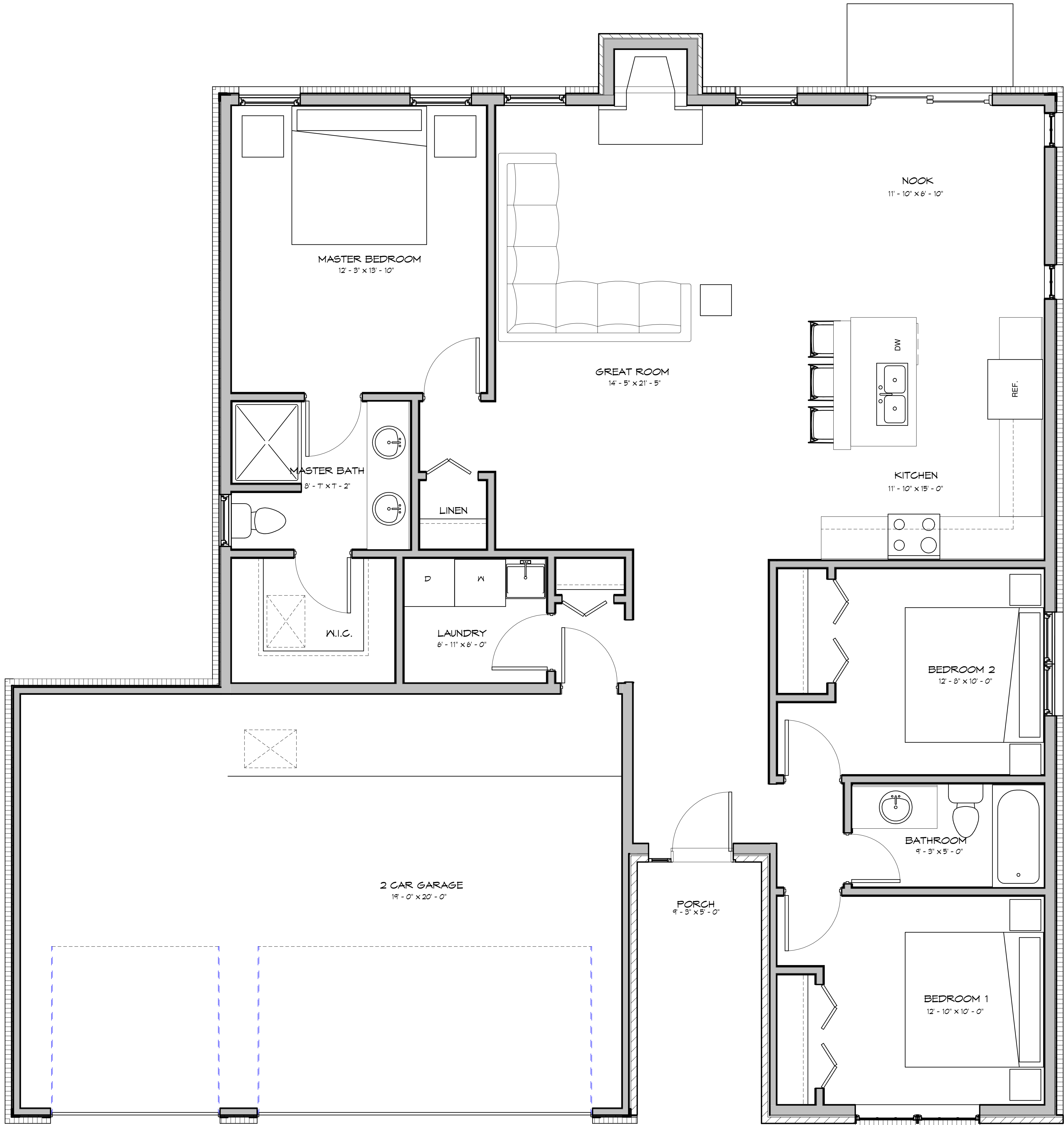
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RANCH UNIT -  
3 CAR  
GARAGE





FIRST FLOOR PLAN  
Scale: 3/8" = 1'-0"



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Client:

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Development

Project Title:

3 CAR  
- RANCH UNIT

Troy, MI

Sheet Title:

FIRST FLOOR  
UNIT PLAN

Project Number: 22312

Drawn By: AJM, JS

Checked By: AJM

Approved By: AJM

Date: 06-16-2023

Issued:

Owner's Review

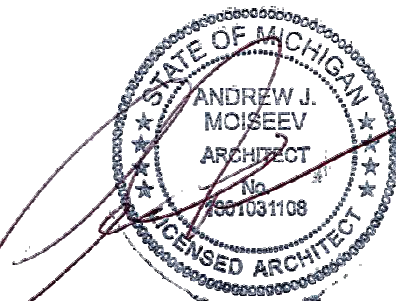
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Owner's Review

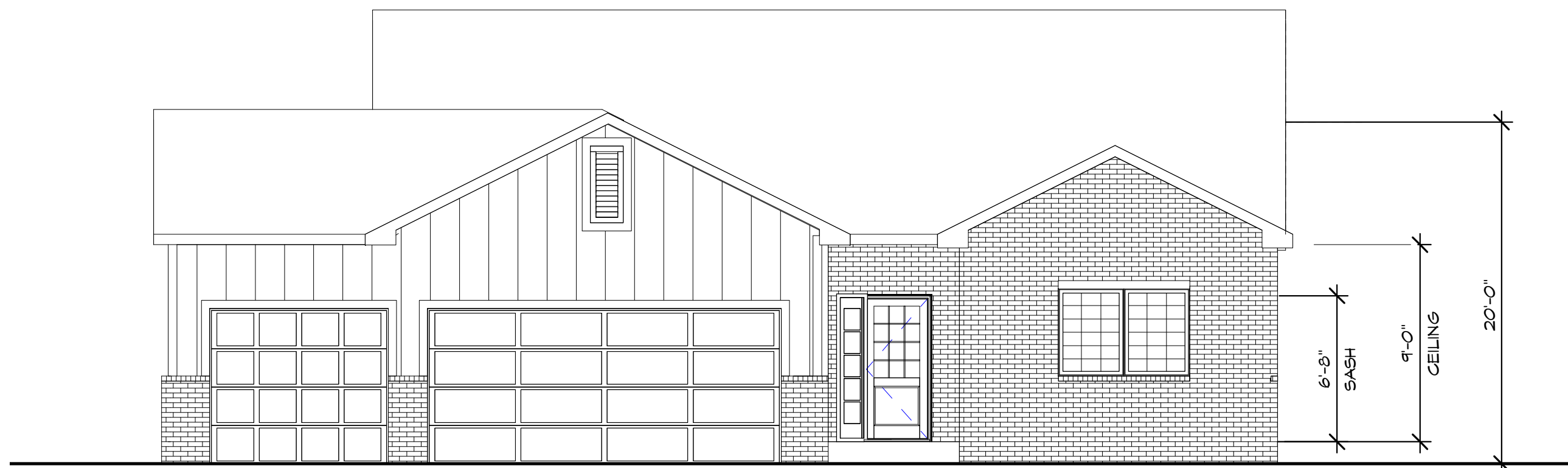
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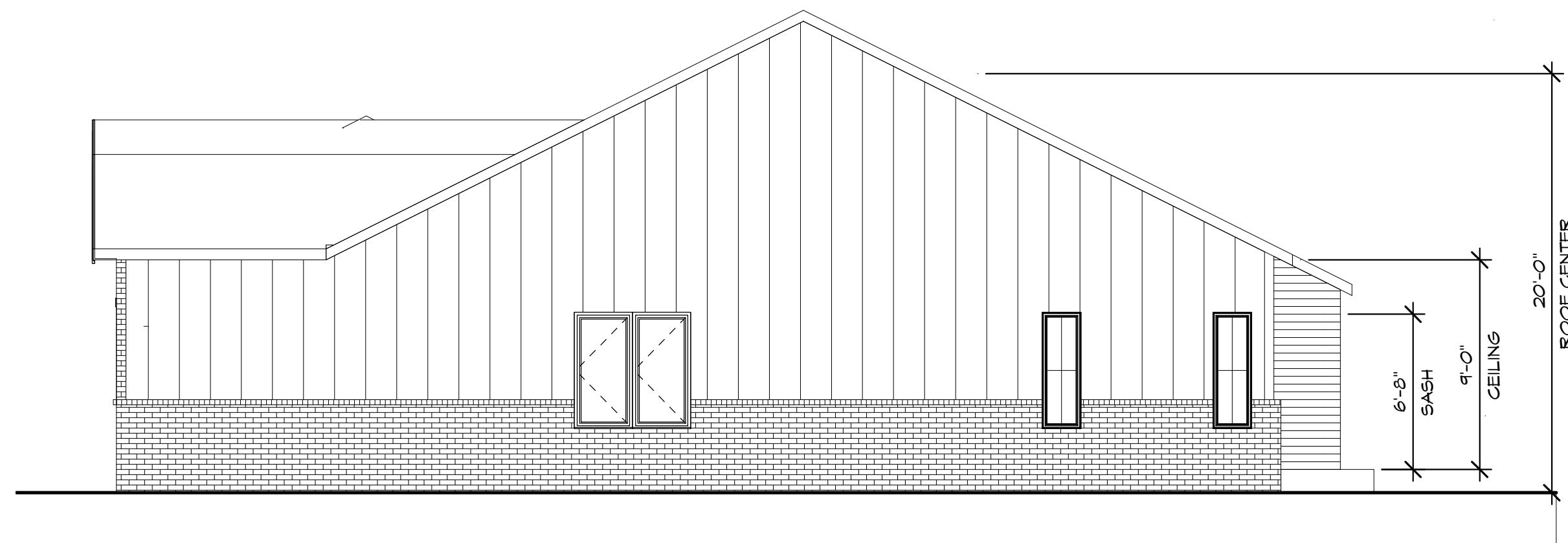
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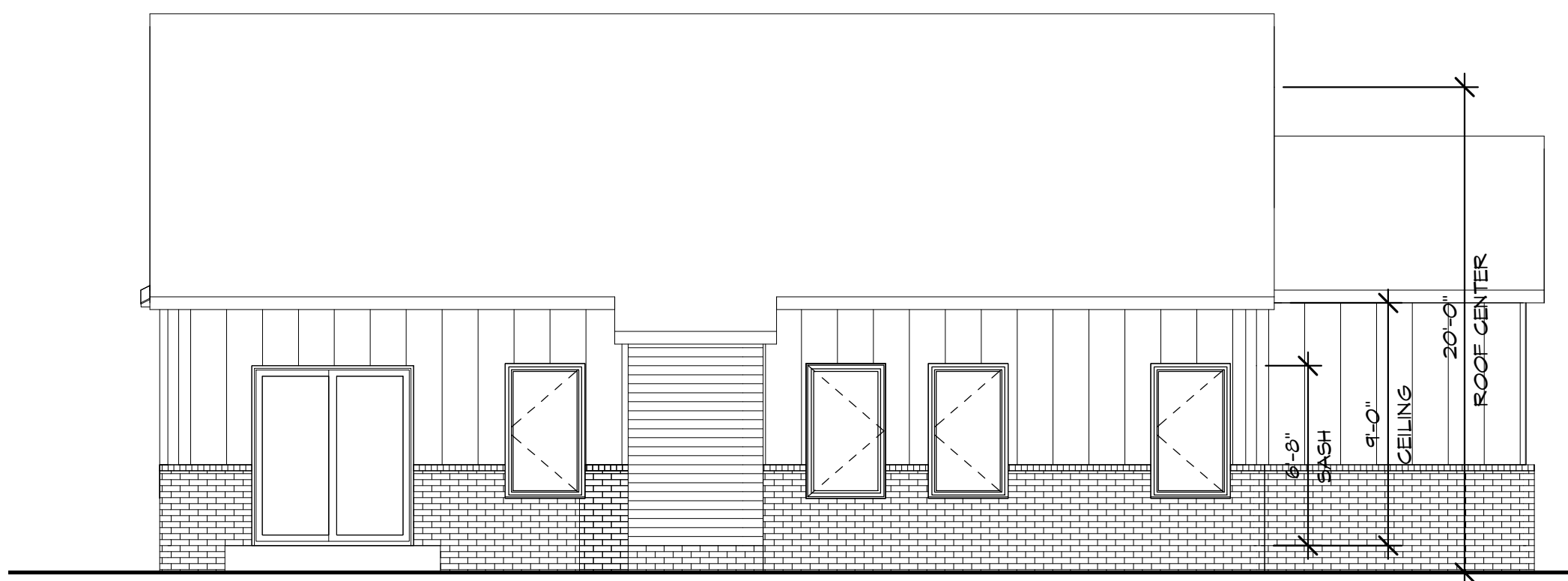
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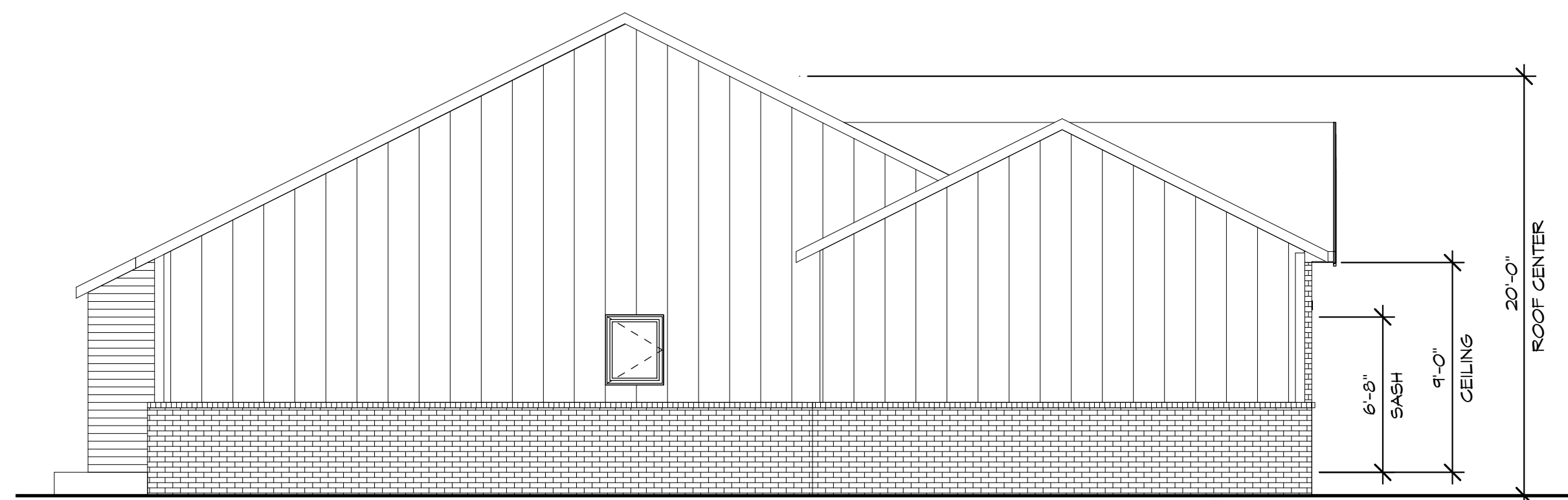
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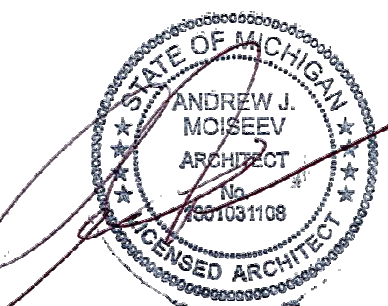
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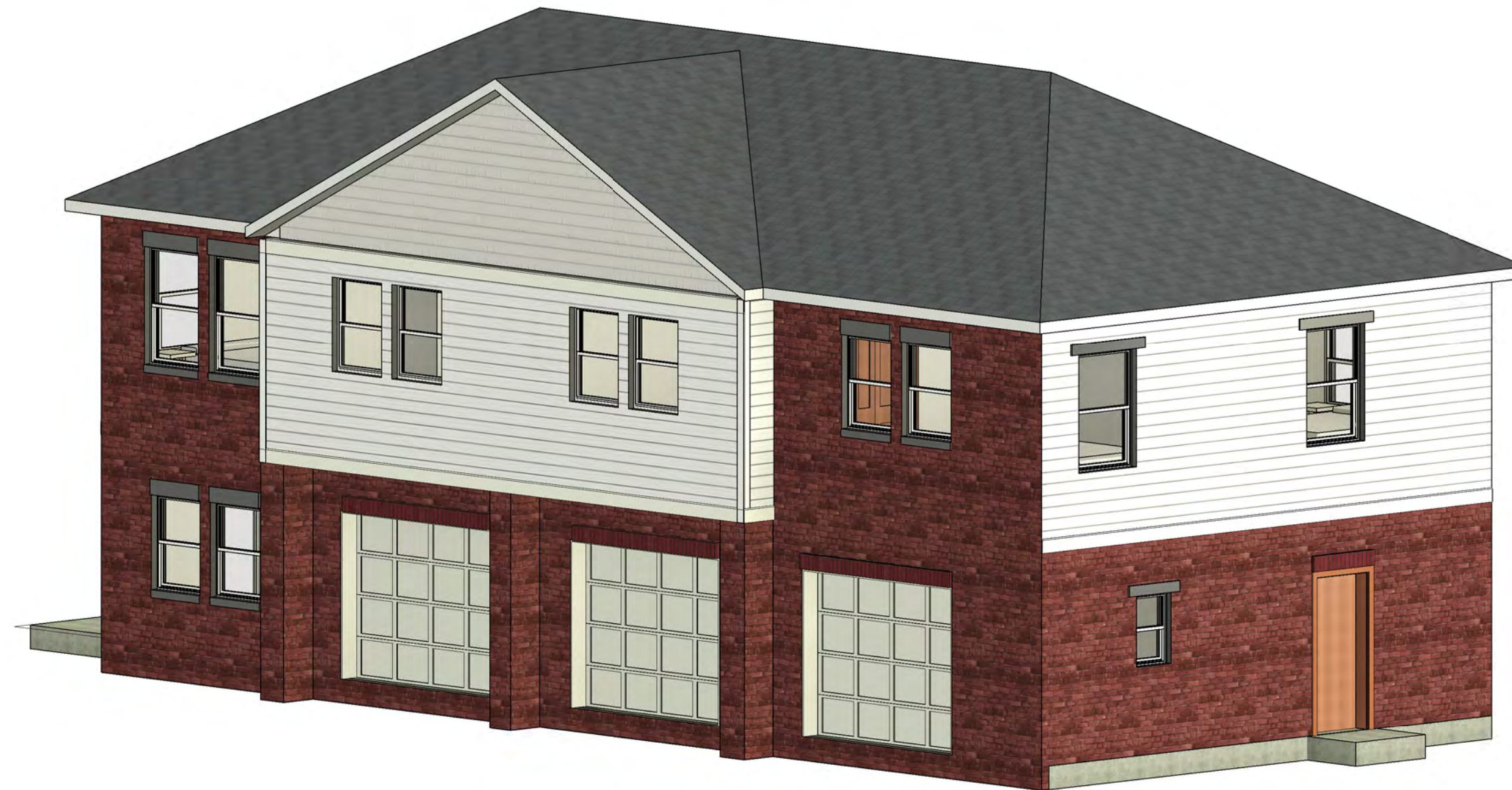
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3 LEFT ELEVATION  
Scale: 3/16" = 1'-0"

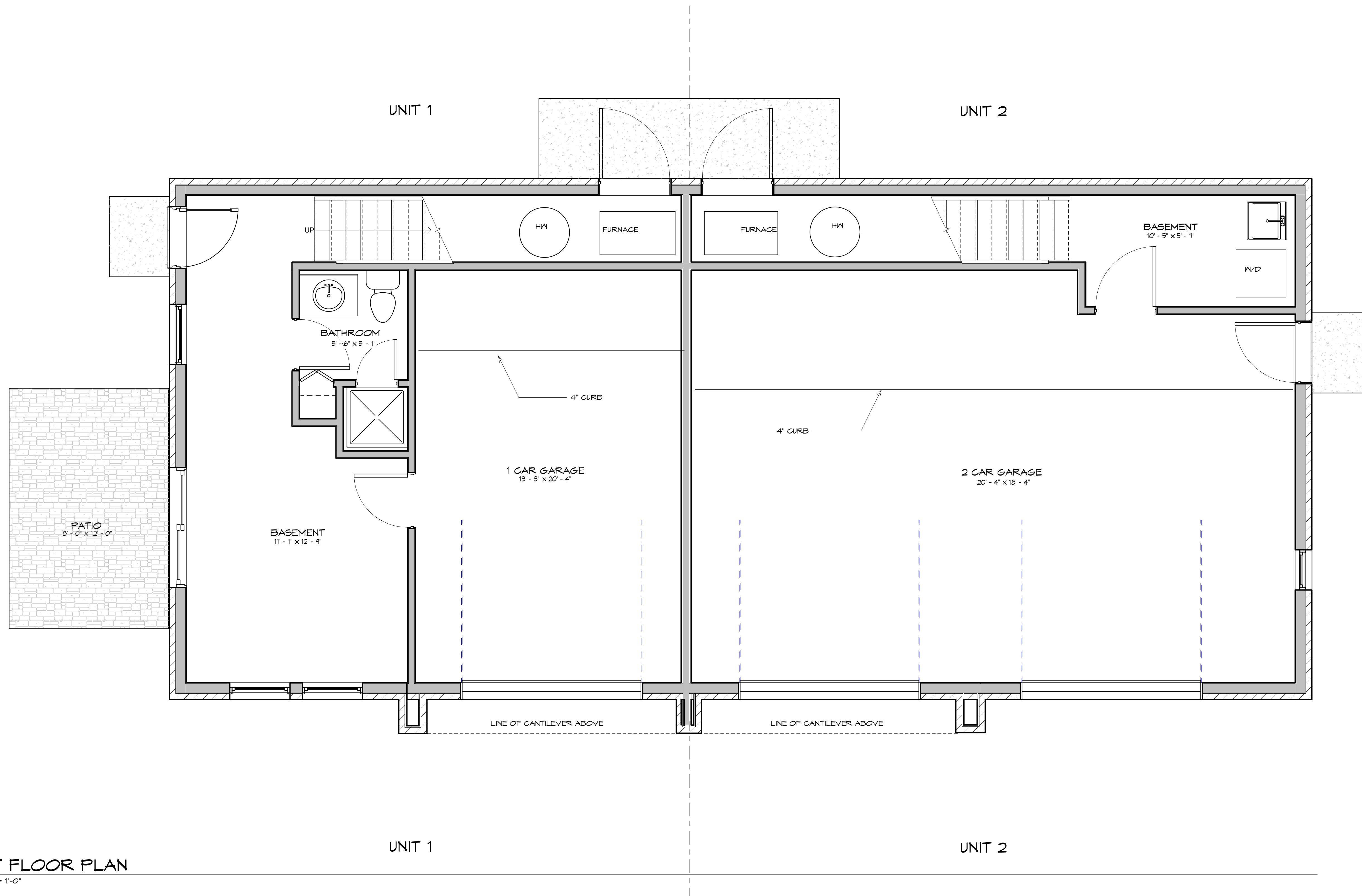






2 STORY  
DUPLEX





FIRST FLOOR PLAN

Scale: 3/8" = 1'-0"



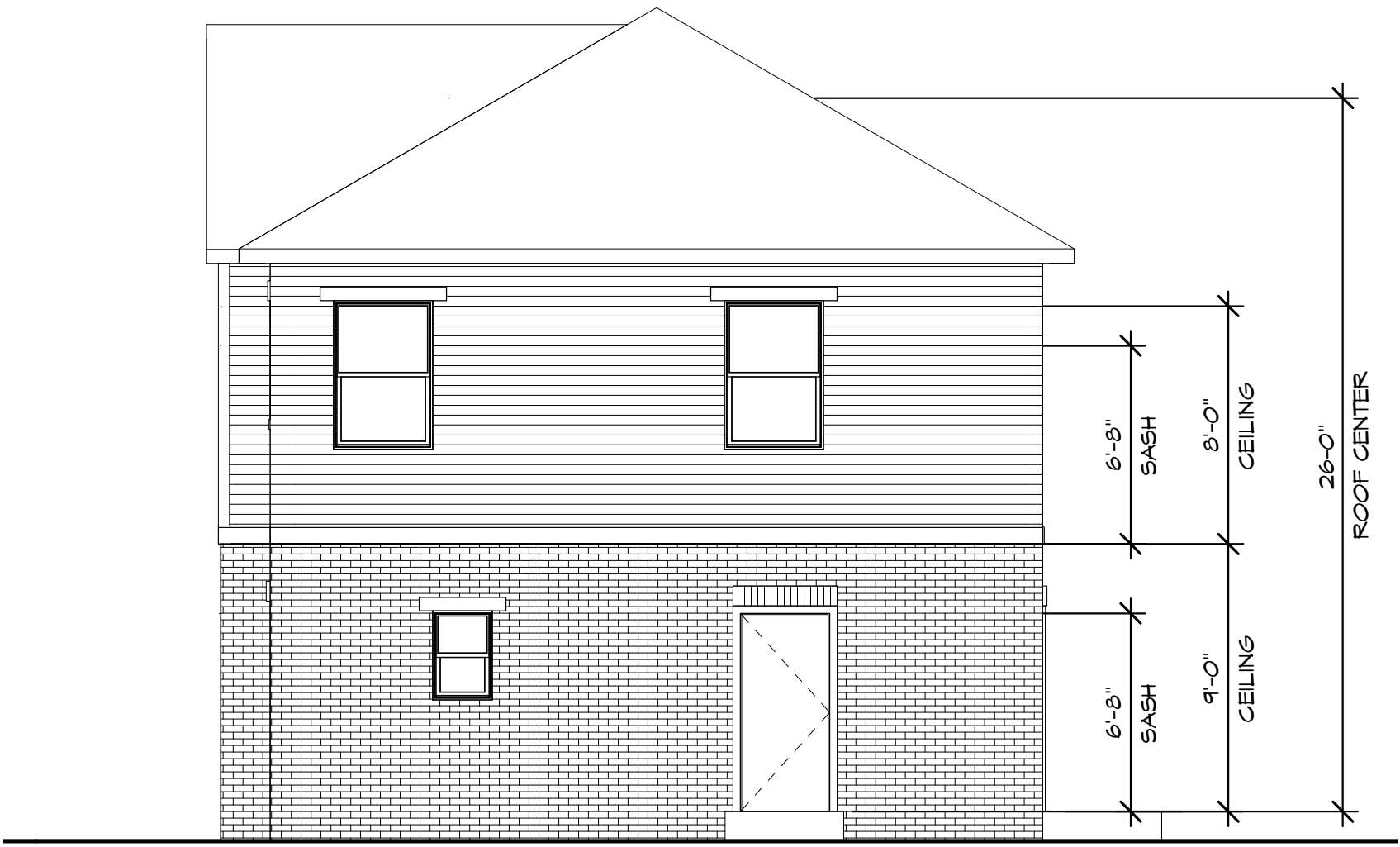


## SECOND FLOOR PLAN

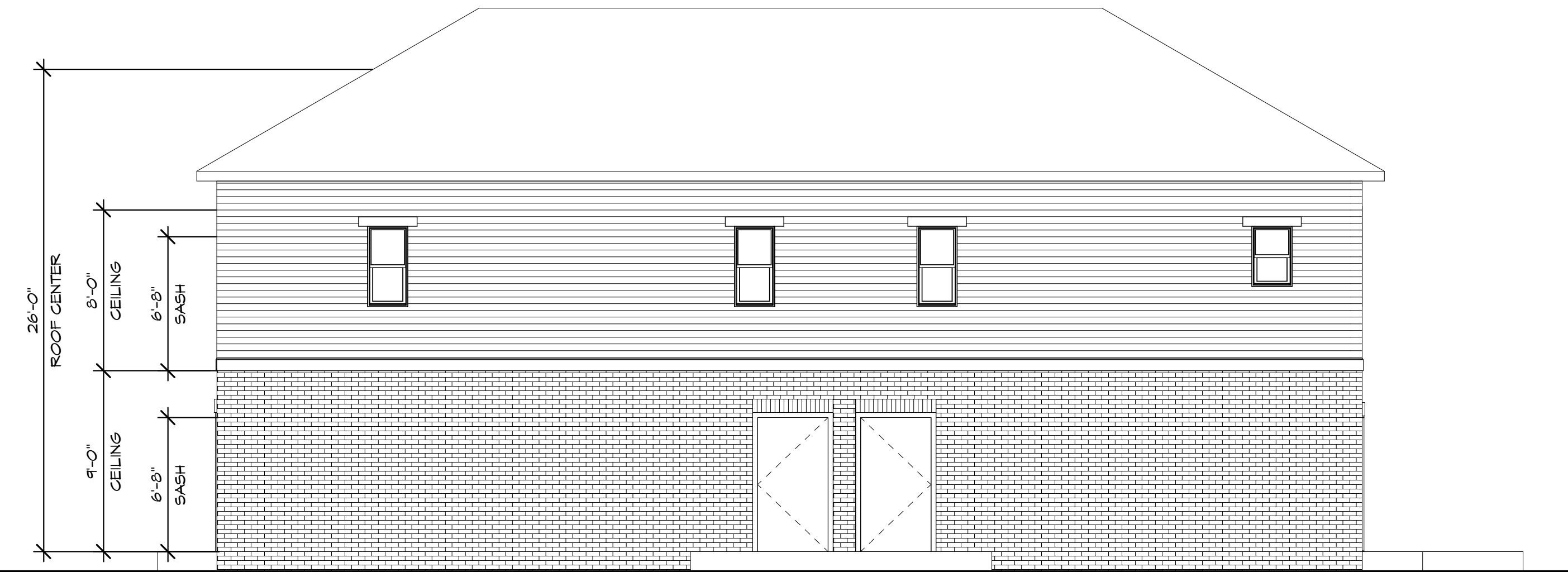
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1 FRONT ELEVATION  
Scale: 3/16" = 1'-0"



3 RIGHT ELEVATION  
Scale: 3/16" = 1'-0"



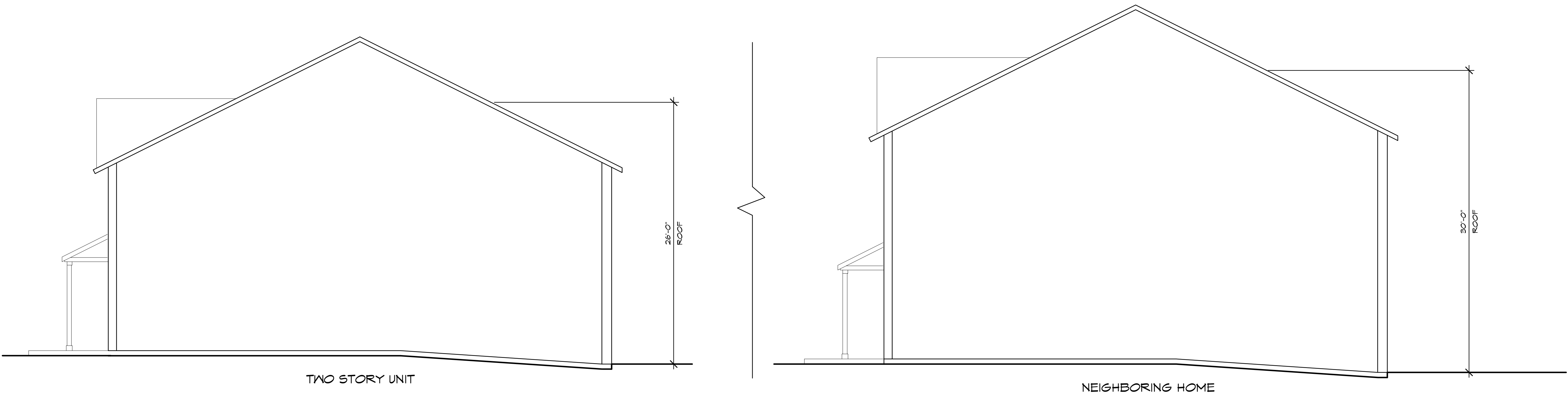
2 REAR ELEVATION  
Scale: 3/16" = 1'-0"



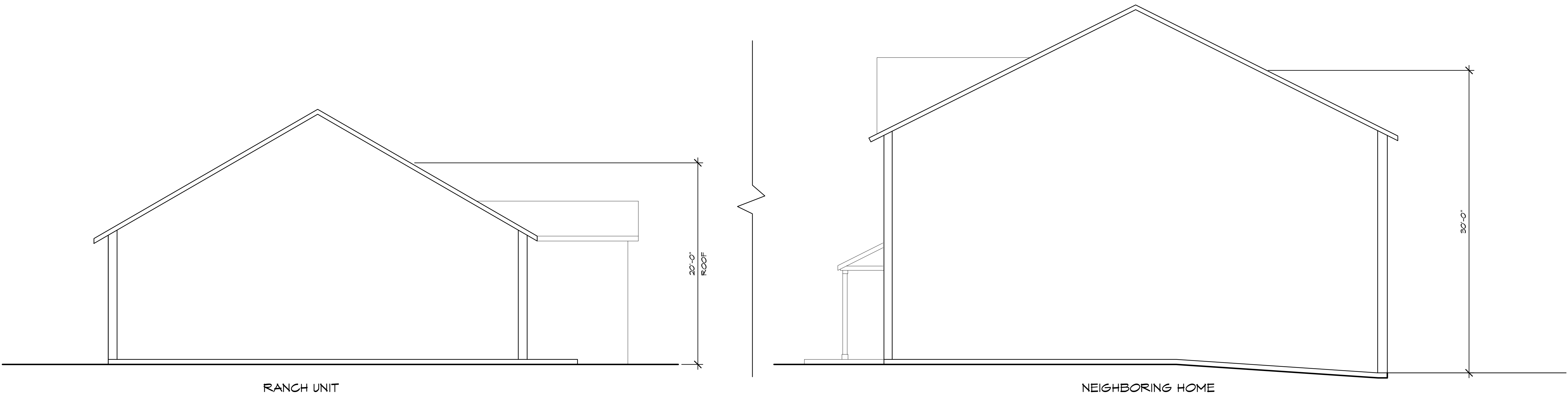
4 LEFT ELEVATION  
Scale: 3/16" = 1'-0"

RANCH  
DUPLEX  
HEIGHTS





BUILDING HEIGHTS  
COMPARISON





2024-01-05

**Project name : LMUS\_23110127\_The Village of Hastings\_Rev.3**

Submitted By:

Ligman Lighting USA  
7144 NE Progress Ct  
Hillsboro, Oregon.  
97124

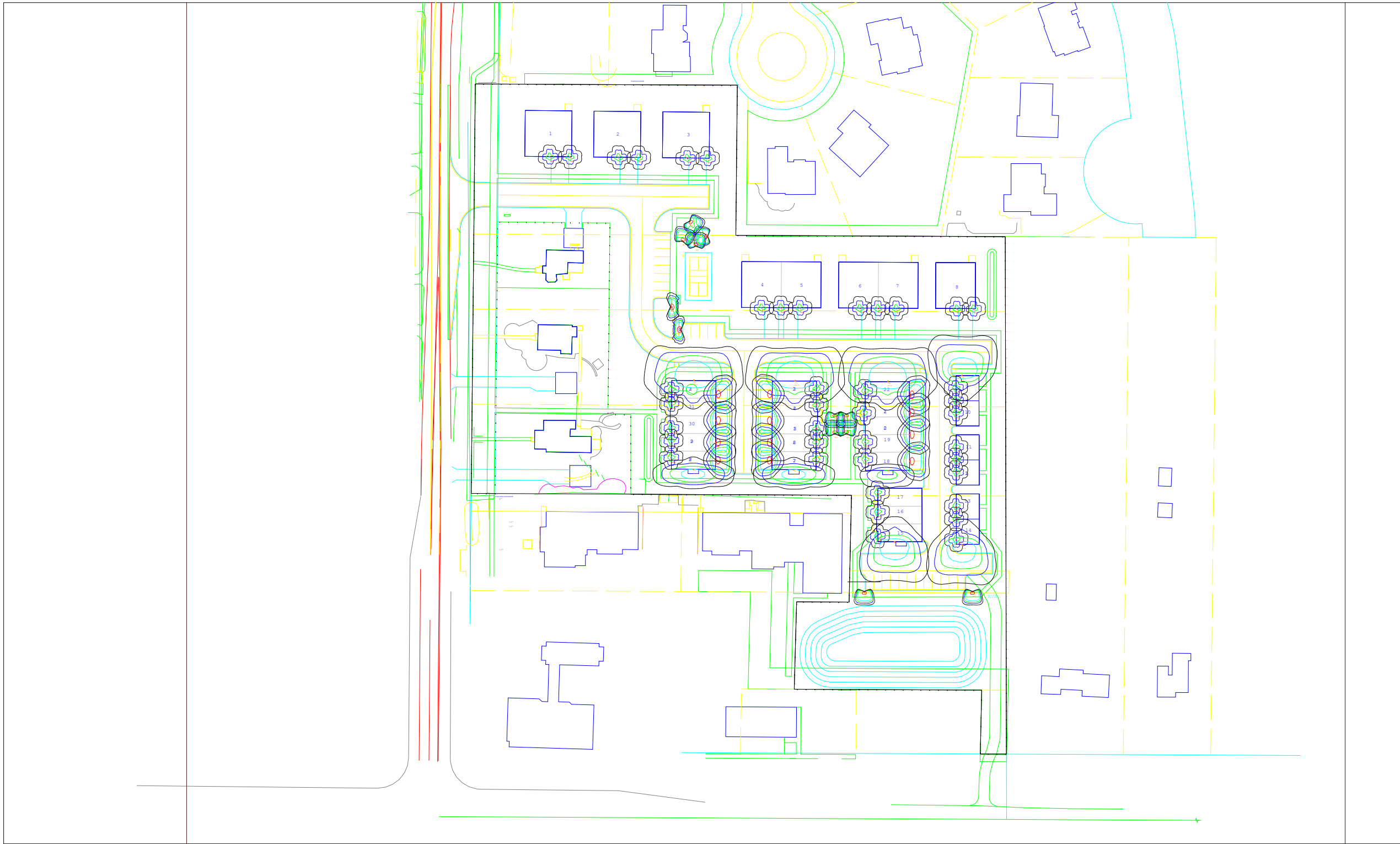
Tel.: +1 503 645 0500 Fax.: +1 503 645 8100

info@ligmanlightingusa.com [www.ligmanlightingusa.com](http://www.ligmanlightingusa.com)

**DISCLAIMER**

Calculations have been performed according to IES standard and good practice. Some differences between measured values and calculated values may occur due to tolerances in calculation methods, testing procedures, component performance, measurement techniques and field conditions such as voltage and temperature Variations. Input data used to generate the attached calculations such as room Dimensions, reflectances, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input Data, differences will occur between measured and calculated values.





Scale: 1 inch= 120 Ft.

Calculation Summary								
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	Description
Private historic home horizontal	Illuminance	Fc	0.00	0.0	0.0	N.A.	N.A.	Point spacing 10'
Property line horizontal	Illuminance	Fc	0.00	0.1	0.0	N.A.	N.A.	Point spacing 10'

Luminaire Schedule									
Symbol	Qty	Label	Description	LLF	Arrangement	Luminaire Watts	Luminaire Lumens	Arrangement Watts	Arrangement Luminaire Lumens
	40	A	WS-W24218	0.900	Single	11.7463	378	11.746	378
	2	B1	UPRA-10063-T3M-8030	0.900	Single	6	501	6	501
	10	B2	UPRA-10063-T4B-8030	0.900	Single	6	549	6	549
	1	C02	ULEW-30001-T2-W30	0.900	Single	7.7	597	7.7	597
	2	C12	ULEW-30011-T2-W30	0.900	Single	13.8	1430	13.8	1430
	12	C14	ULEW-30011-T4-W30	0.900	Single	13.8	1385	13.8	1385
	3	C24	UVK-30002-T4-W30	0.900	Single	27.9	2873	27.9	2873
	3	C33	UVK-30003-T3-W30	0.900	Single	36.4	4509	36.4	4509



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2	2024/01/03	-
1	2023/12/28	-
-	2023/11/17	Design Development
Rev.	Issue Date	Amendment

ARCHITECT

CLIENT

PROJECT NAME

The Village of Hastings

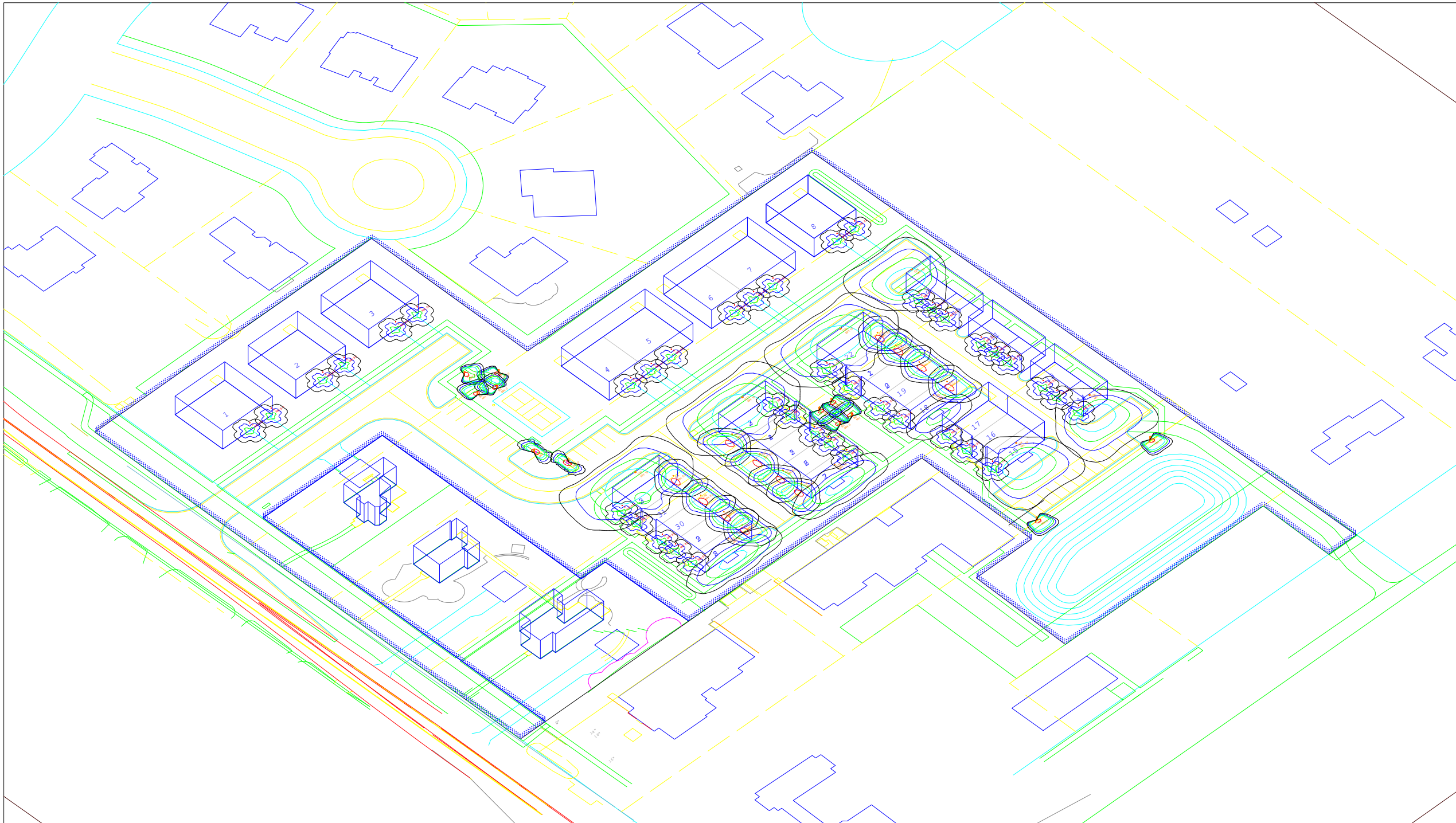
DRAWING TITLE

Luminaire list  
Horizontal Boundary/ Property line  
Calculation result

SCALE	REVISION
AS SHOWN @ A3	3

PROJECT NO.	DATE
LMUS_23110127	2024-01-05

DESIGN DEVELOPMENT



Scale: 1 inch= 84 Ft.

Calculation Summary								
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	Description
Private historic home Vetical_III_Seg1	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Private historic home Vetical_III_Seg2	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Private historic home Vetical_III_Seg3	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Private historic home Vetical_III_Seg4	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Private historic home Vetical_III_Seg5	Obtrusive - III	Fc	0.09	0.1	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg1	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg10	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg11	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg12	Obtrusive - III	Fc	0.10	0.1	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg13	Obtrusive - III	Fc	0.09	0.1	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg2	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg3	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg4	Obtrusive - III	Fc	0.00	0.1	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg5	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg6	Obtrusive - III	Fc	0.02	0.1	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg7	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg8	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'
Property line vertical_III_Seg9	Obtrusive - III	Fc	0.00	0.0	0.0	N.A.	N.A.	5' above grade level, Grid point spacing 2 x 2'



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-	2023/11/17	Design Development

Rev.	Issue Date	Amendment
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ARCHITECT

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PROJECT NAME

The Village of Hastings

DRAWING TITLE

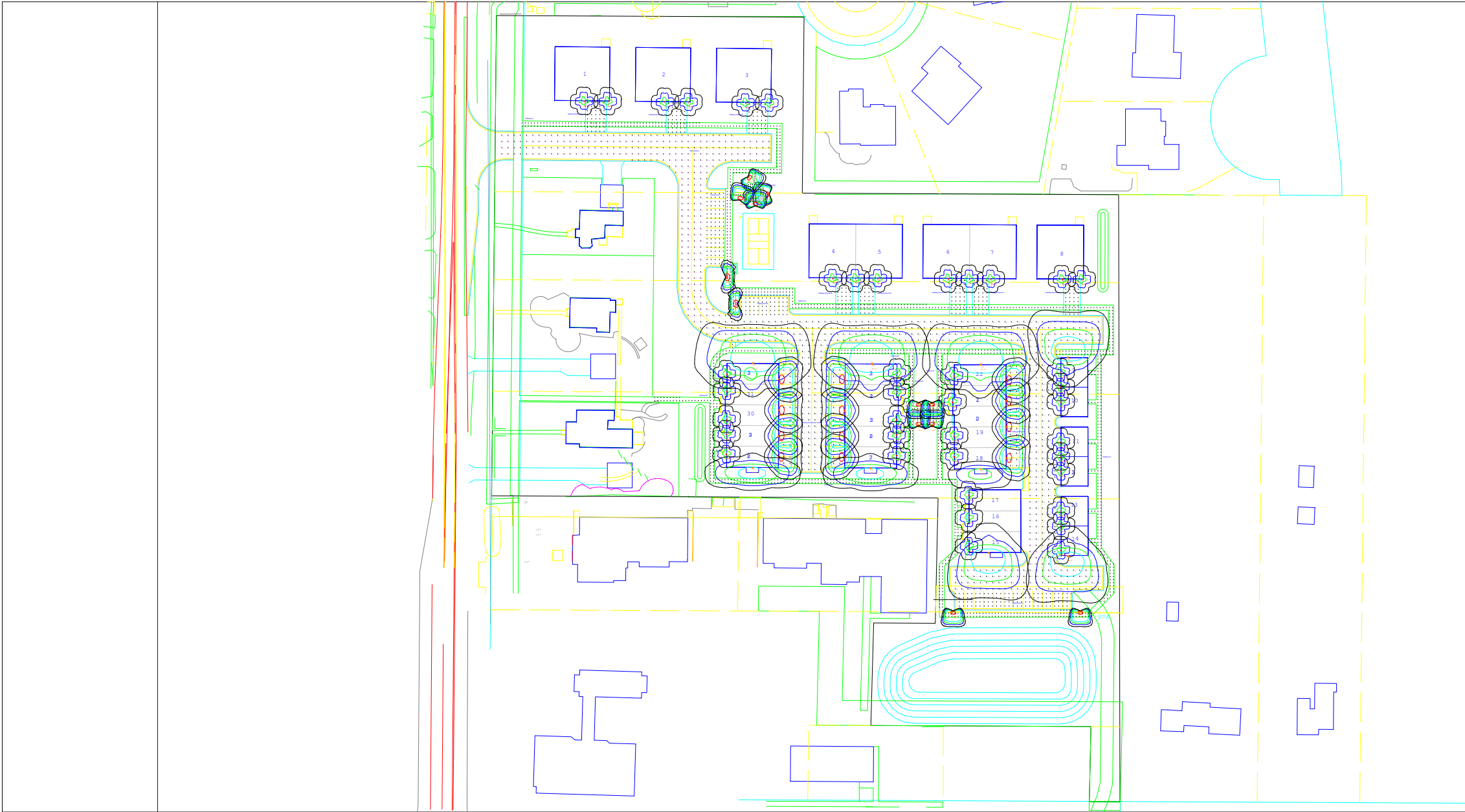
Vertical Boundary/ Property line  
Calculation result

SCALE	REVISION
AS SHOWN @ A3	3

PROJECT NO.	DATE
LMUS_23110127	2024-01-05

DESIGN DEVELOPMENT





Scale: 1 inch= 120 Ft.

Calculation Summary								
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	Description
Building entrance 01	Illuminance	Fc	0.18	0.7	0.0	N.A.	N.A.	Grid point spacing 4 x 4'
Building entrance 02	Illuminance	Fc	0.18	0.7	0.0	N.A.	N.A.	Grid point spacing 4 x 4'
Building entrance 03	Illuminance	Fc	0.18	0.7	0.0	N.A.	N.A.	Grid point spacing 4 x 4'
Building entrance 04	Illuminance	Fc	0.19	0.6	0.1	1.90	6.00	Grid point spacing 4 x 4'
Building entrance 05	Illuminance	Fc	0.20	0.7	0.1	2.00	7.00	Grid point spacing 4 x 4'
Building entrance 06	Illuminance	Fc	0.21	0.7	0.1	2.10	7.00	Grid point spacing 4 x 4'
Building entrance 07	Illuminance	Fc	0.21	0.7	0.1	2.10	7.00	Grid point spacing 4 x 4'
Building entrance 08	Illuminance	Fc	0.21	0.7	0.1	2.10	7.00	Grid point spacing 4 x 4'
Butterfly garden	Illuminance	Fc	2.31	4.1	0.6	3.85	6.83	Grid point spacing 2 x 2'
Front building parking area	Illuminance	Fc	2.09	6.4	0.4	5.23	16.00	Grid point spacing 6 x 6'
Parking area 01	Illuminance	Fc	0.00	0.2	0.0	N.A.	N.A.	Grid point spacing 4 x 4'
Parking area 02	Illuminance	Fc	0.03	0.6	0.0	N.A.	N.A.	Grid point spacing 4 x 4'
Parking area 03	Illuminance	Fc	0.14	0.2	0.1	1.40	2.00	Grid point spacing 4 x 4'
Parking area between building	Illuminance	Fc	1.08	5.8	0.0	N.A.	N.A.	Grid point spacing 6 x 6'
Road surface	Illuminance	Fc	0.22	1.7	0.0	N.A.	N.A.	Grid point spacing 6 x 6'
Seating area	Illuminance	Fc	3.34	7.4	1.6	2.09	4.63	Grid point spacing 3 x 3'
Walkway 01	Illuminance	Fc	0.18	7.2	0.0	N.A.	N.A.	Grid point spacing 3 x 3'
Walkway 03	Illuminance	Fc	0.22	2.4	0.0	N.A.	N.A.	Grid point spacing 3 x 3'
Walkway 04	Illuminance	Fc	0.35	2.4	0.0	N.A.	N.A.	Grid point spacing 3 x 3'
Walkway 05	Illuminance	Fc	0.43	7.7	0.0	N.A.	N.A.	Grid point spacing 3 x 3'
Walkway 06	Illuminance	Fc	1.05	2.6	0.3	3.50	8.67	Grid point spacing 3 x 3'
Walkway 07	Illuminance	Fc	0.02	0.2	0.0	N.A.	N.A.	Grid point spacing 3 x 3'
Walkway 08	Illuminance	Fc	0.42	2.3	0.1	4.20	23.00	Grid point spacing 3 x 3'
Walkway 09	Illuminance	Fc	0.38	2.2	0.1	3.80	22.00	Grid point spacing 3 x 3'



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Rev.	Issue Date	Amendment

ARCHITECT

CLIENT

PROJECT NAME

The Village of Hastings

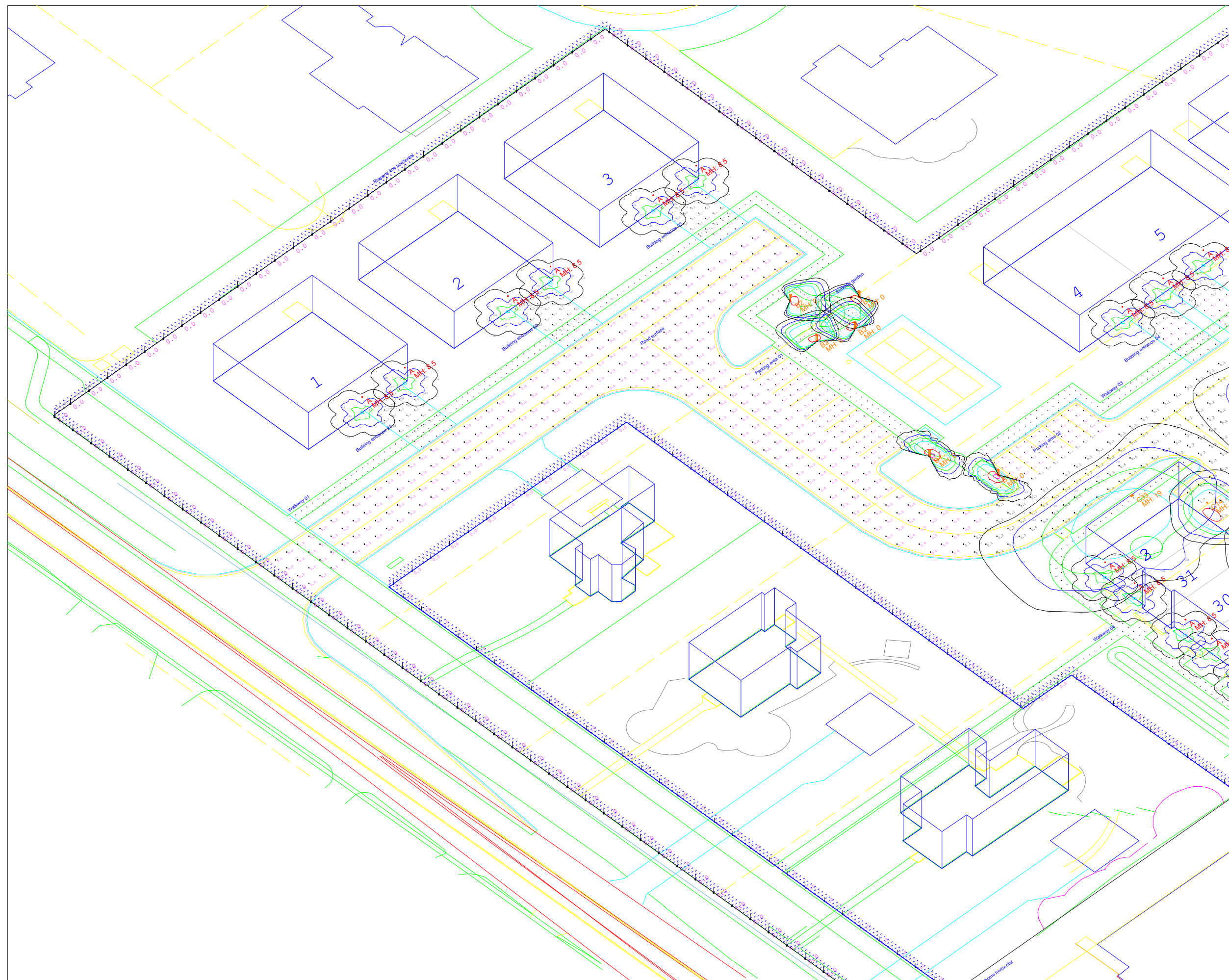
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Horizontal calculation result

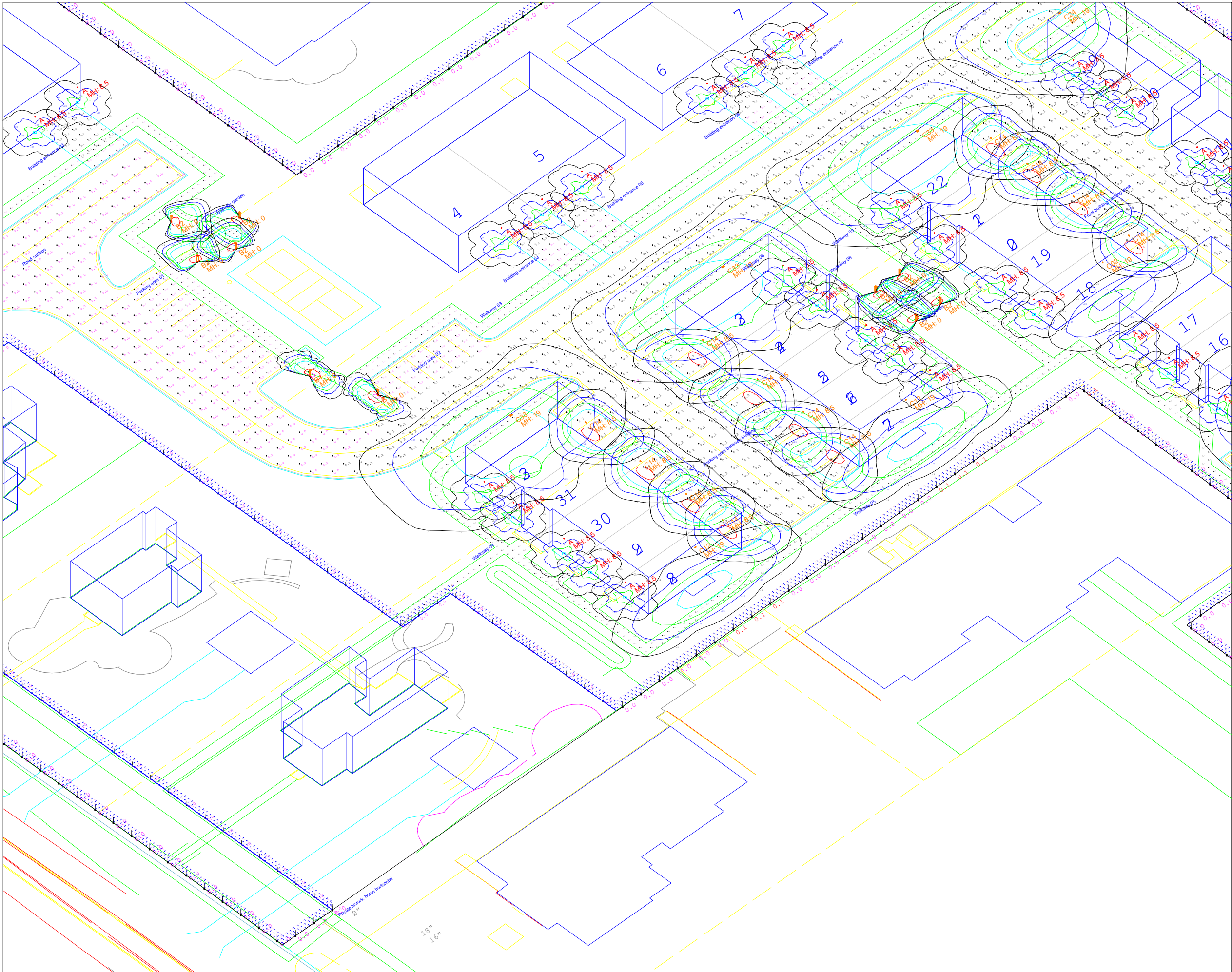
SCALE	REVISION
AS SHOWN @ A3	3

PROJECT NO.	DATE
LMUS_23110127	2024-01-05

DESIGN DEVELOPMENT







Scale: 1 inch= 36 Ft.



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Rev.	Issue Date	Amendment

ARCHITECT

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PROJECT NAME

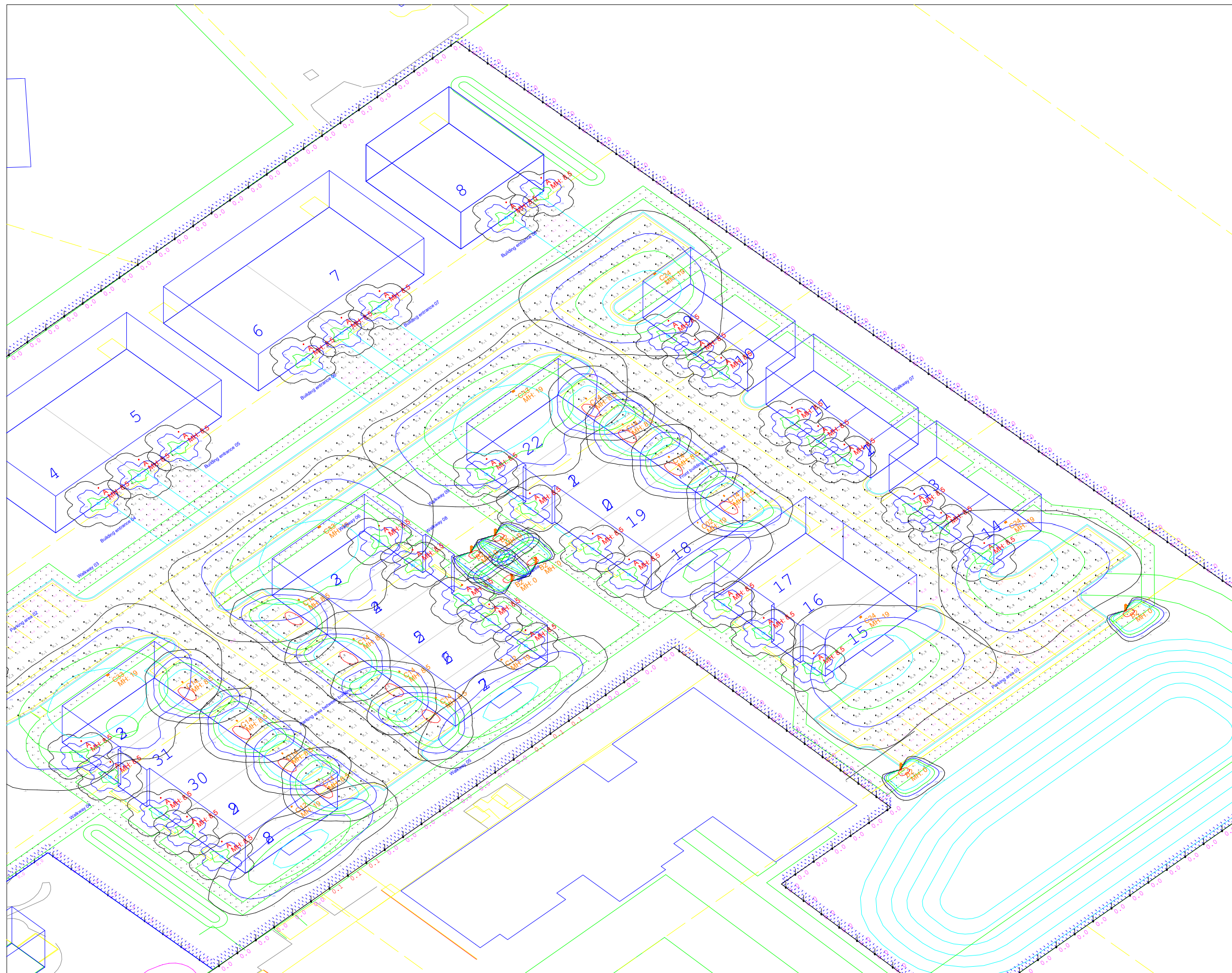
The Village of Hastings

DRAWING TITLE

Calculation result

SCALE	REVISION
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PROJECT NO.	DATE
LMUS_23110127	2024-01-05

DESIGN DEVELOPMENT



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<b>Rev.</b>	<b>Issue Date</b>	<b>Amendment</b>

ARCHITECT

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PROJECT NAME

## The Village of Hastings

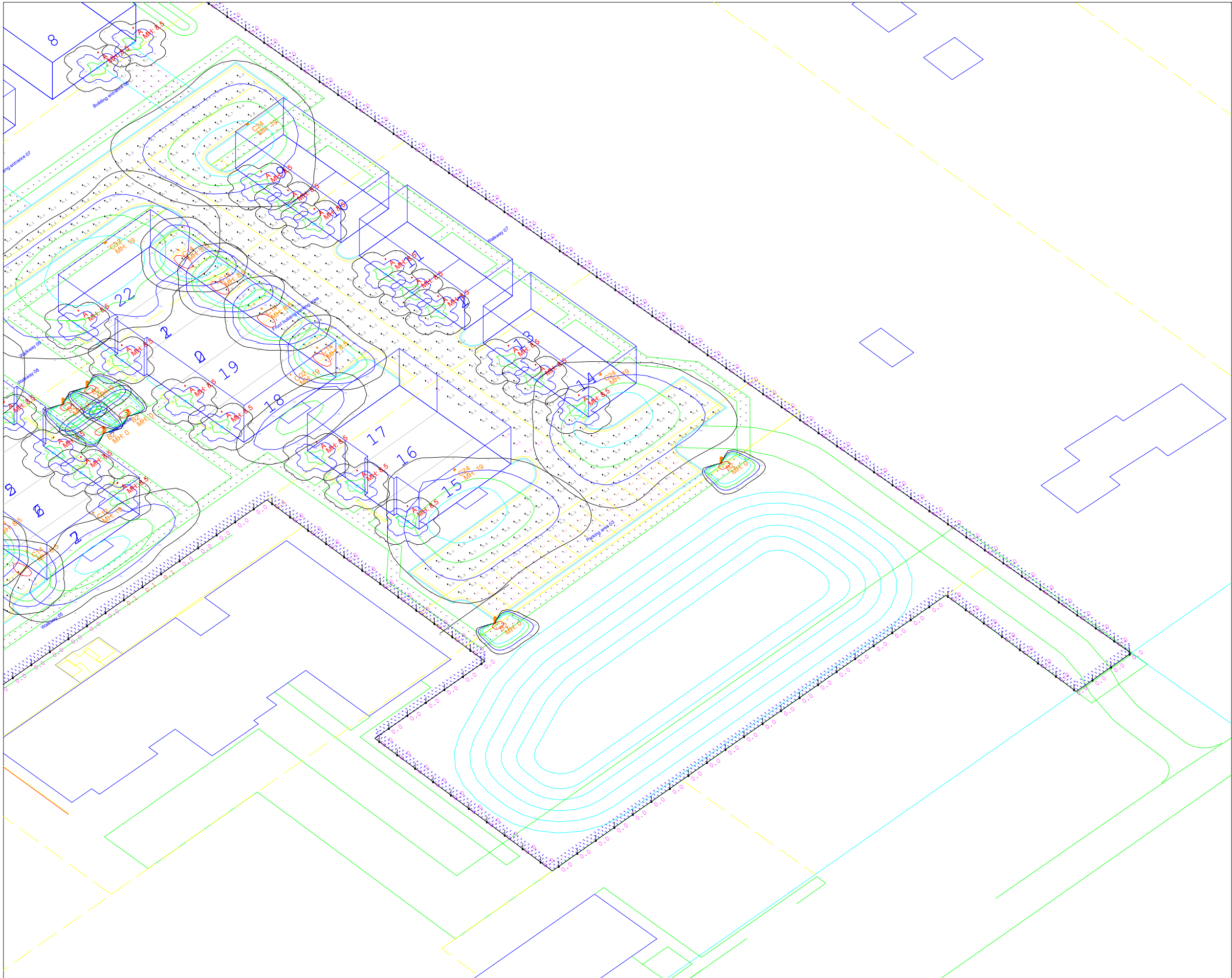
**DRAWING TITLE**

### Calculation result

<b>SCALE</b>	<b>REVISION</b>
AS SHOWN @ A3	3
<b>PROJECT NO.</b>	<b>DATE</b>
LMUS_23110127	2024-01-05

## DESIGN DEVELOPMENT





Scale: 1 inch= 36 Ft.



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-	2023/11/17	Design Development
Rev.	Issue Date	Amendment

ARCHITECT

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PROJECT NAME

The Village of Hastings

DRAWING TITLE

Calculation result

SCALE	REVISION
AS SHOWN @ A3	3

PROJECT NO.	DATE
LMUS_23110127	2024-01-05

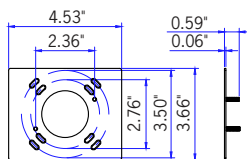
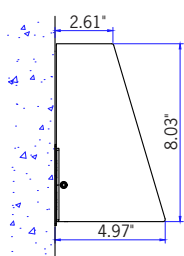
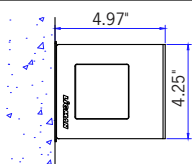
DESIGN DEVELOPMENT

# ULEW-30001

## Leeds 1 Small Surface Wedge Downlight



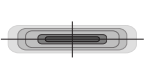
5.5w LED 570 Lumens  
IP65 • Suitable For Wet Locations  
IK07 • Impact Resistant  
Weight 5 lbs



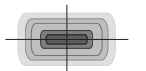
Mounting Detail



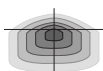
Ligman's micro Variable Optical System provides the ability to interchange, mix & rotate optics to provide specific light distributions for optimized spacing and uniformity.



Type I



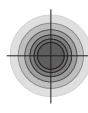
Type II



Type III



Type IV



Type V

### Construction

#### Aluminum

Less than 0.1% copper content - Marine Grade 6060 extruded & LM6 Aluminum High Pressure die casting provides excellent mechanical strength, clean detailed product lines and excellent heat dissipation.

#### Pre paint

8 step degrease and phosphate process that includes deoxidizing and etching as well as a zinc and nickel phosphate process before product painting.

#### Memory Retentive -Silicon Gasket

Provided with special injection molded "fit for purpose" long life high temperature memory retentive silicon gaskets. Maintains the gaskets exact profile and seal over years of use and compression.

#### Thermal management

LM6 Aluminum is used for its excellent mechanical strength and thermal dissipation properties in low and high ambient temperatures. The superior thermal heat sink design by Ligman used in conjunction with the driver, controls thermals below critical temperature range to ensure maximum luminous flux output, as well as providing long LED service life and ensuring less than 10% lumen depreciation at 50,000 hours.

#### Surge Suppression

Standard 10kv surge suppressor provided with all fixtures.

#### BUG Rating

Contact Factory

#### Finishing

All Ligman products go through an extensive finishing process that includes fettling to improve paint adherence.

#### Paint

UV Stabilized 4.9Mil thick powder coat paint and baked at 200 Deg C. This process ensures that Ligman products can withstand harsh environments. Rated for use in natatoriums.

#### Inspired by Nature Finishes

The Inspired by nature Finishing is a unique system of decorative powder coating. Our metal decoration process can easily transform the appearance of metal or aluminum product into a wood grain finish.

This patented technology enables the simulation of wood grain, and even marble or granite finish through the use of decorative powder coating.

The wood grain finish is so realistic that it's almost undistinguishable from real wood, even from a close visual inspection. The system of coating permeates the entire thickness of the coat and as a result, the coating cannot be removed by normal rubbing, chipping, or scratching.

#### The Coating Process

After pre-treatment the prepared parts are powder coated with a specially formulated polyurethane powder. This powder provides protection against wear, abrasion, impact and corrosion and acts as the relief base color for the finalized metal decoration.

The component is then wrapped with a sheet of non-porous film with the selected decoration pattern printed on it using special high temperature inks.

This printed film transfer is vacuum-sealed to the surface for a complete thermo print and then transferred into a customized oven. The oven transforms the ink into different forms within the paint layer before it becomes solid. Finally, the film is removed, and a vivid timber look on aluminum remains.

Wood grain coating can create beautiful wood-looking products of any sort. There are over 300 combinations of designs currently in use. Wood grains can be made with different colors, designs, etc.

Our powder coatings are certified for indoor and outdoor applications and are backed by a comprehensive warranty. These coatings rise to the highest conceivable standard of performance excellence and design innovation.

#### Added Benefits

- Resistance to salt-acid room, accelerated aging
- Boiling water, lime and condensed water resistant
- Anti-Graffiti, Anti-Slip, Anti-Microbial, Anti-Scratch
- Super durable (UV resistant)
- TGIC free (non-toxic)

#### Hardware

Provided Hardware is Marine grade 316 Stainless steel.

#### Anti Seize Screw Holes

Tapped holes are infused with a special anti seize compound designed to prevent seizure of threaded connections, due to electrolysis from heat, corrosive atmospheres and moisture.

#### Crystal Clear Low Iron Glass Lens

Provided with tempered, impact resistant crystal clear low iron glass ensuring no green glass tinge.

#### Optics & LED

Precise optic design provides exceptional light control and precise distribution of light. LED CRI > 80

#### Lumen - Maintenance Life

L80 /B10 at 50,000 hours (This means that at least 90% of the LED still achieve 80% of their original flux)

Clean, beautiful, surface wall fixtures with class leading performance. Minimalist form, yet the most powerful and flexible lighting tool of its type, offering packages up to 2,400 lumens and microVos technology.

A range of small, square and rectangular, ADA compliant wall mounted luminaires with options of upward or downward light distributions. Ideally suited to illuminate the wall and surfaces in front of wall and for light accents on vertical surfaces using high efficiency LED's. The Leeds is suitable for indoor and outdoor applications and provides a clean, visually appealing solution for small, unobtrusive wall mounted luminaires.

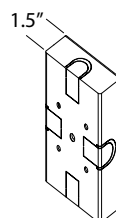
This luminaire is available in 3 different sizes and in combinations of down, up or up/down light distributions.

This fixture utilizes microVos technology, meaning the ability to do Type I,II,III,IV & V distributions as well as hybrid distributions to suit the designer's requirements.

Using the microVos optics allows for very wide spacing to mounting height ratios, while still providing perfect uniformity and code compliant light levels.

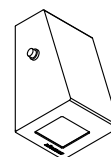
To meet International Dark Sky criteria, 3000k or warmer LEDs must be selected and luminaire fix mounted (+/- 15° allowable to permit leveling).

Additional Options (Consult Factory For Pricing)



SCDT  
Surface Conduit Decorative Trim

NOTE: This decorative trim does not function as a junction box. Wire connections should be made inside the luminaire



BPC  
Button Photocell



# ULEW-30001

Leeds 1 Small Surface Downlight



PROJECT					DATE	
QUANTITY		TYPE		NOTE		

ORDERING EXAMPLE || ULEW - 30001 - 5.5w - T2 - W30 - 02 - 120/277v - Options

ULEW-30001					
LAMP	BEAM	LED COLOR	FINISH COLOR	VOLTAGE	
5.5w LED 570 Lumens	T1 - Type I Distribution T2 - Type II Distribution T3 - Type III Distribution T4 - Type IV Distribution M - Medium 30° W - Wide 56° EW - Extra Wide 99°x102°	W27 - 2700K W30 - 3000K W35 - 3500K W40 - 4000K	01 - BLACK RAL 9011 02 - DARK GREY RAL 7043 03 - WHITE RAL 9003 04 - METALLIC SILVER RAL 9006 05 - MATTE SILVER RAL 9006 06 - LIGMAN BRONZE 07 - CUSTOM RAL	120/277v Other - Specify	

ADDITIONAL OPTIONS		

- NAT - Natatorium Rated

SCE - Surface Conduit Decorative Trim

F - Frosted Lens
- BPC - Button Photocell

AMB - Turtle Friendly Amber LED

SCDT - Surface Conduit Decorative Trim

INSPIRED BY NATURE FINISHES

SW01 - OAK FINISH

SW02 - WALNUT FINISH

SW03- PINE FINISH

DF - DOUGLAS FIR FINISH

CW - CHERRY WOOD FINISH

NW - NATIONAL WALNUT FINISH

SU01 - CONCRETE FINISH

SU02 - SOFTSCAPE FINISH

SU03 - STONE FINISH

SU04 - CORTEN FINISH

THERE IS AN ADDITIONAL COST FOR THESE FINISHES

## More Custom Finishes Available Upon Request

Consult factory for pricing and lead times

<div>Oak</div> <div>Walnut</div> <div>Pine</div>	<div>Cherry</div> <div>Chestnut</div> <div>Mahogany</div>	<div>Beech</div> <div>Bamboo</div> <div>Birch</div>	<div>Carbon</div> <div>Galvanized</div> <div>Steel</div>
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# Leeds Product Family



Leeds 1 - Up/Down

• ULEE-30031-2x5.5w-2x570lm



Leeds 2 - Down

• ULEE-30001-5.5w-570lm



Leeds 3 - Up/Down

• ULEE-30041-2x14w-2x1660lm



Leeds 4 - Down

• ULEE-30011-14w-1660lm



Leeds 5 - Up/Down

• ULD-30051-2x20w-2x2422lm



Leeds 6 - Down

• ULEE-30021-20w-2422lm

# Leeds Wedge Product Family



Leeds Wedge 1

• ULEW-30001-5.5w-570lm



Leeds Wedge 2

• ULEW-30011-14w-1660lm



Leeds Wedge 3

• ULEW-30021-20w-2422lm

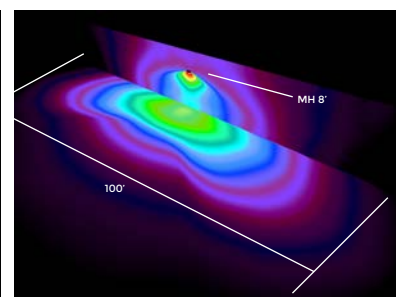
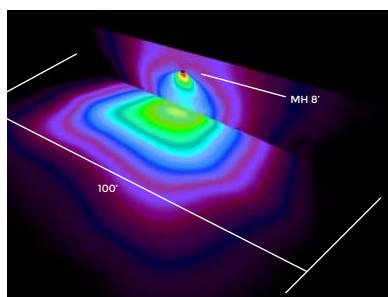
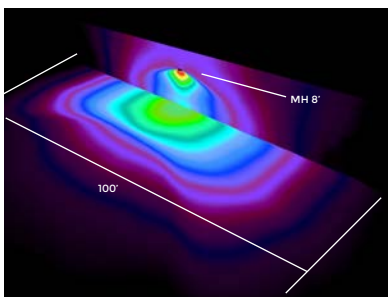
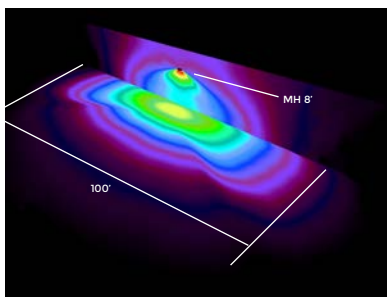


Type II Distribution

Type III Distribution

Type IV Distribution

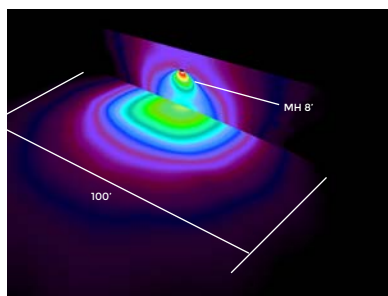
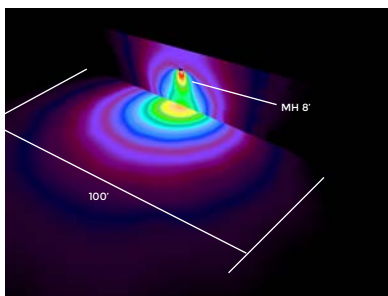
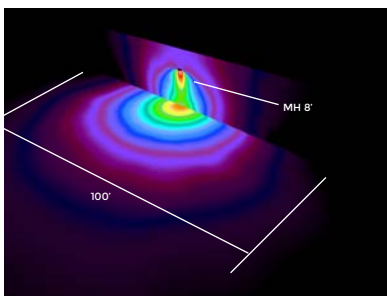
Type ME Distribution



Medium Beam - 30°

Wide Beam - 56°

Extra Wide Beam - 99° x 102°



# ULEW-30011

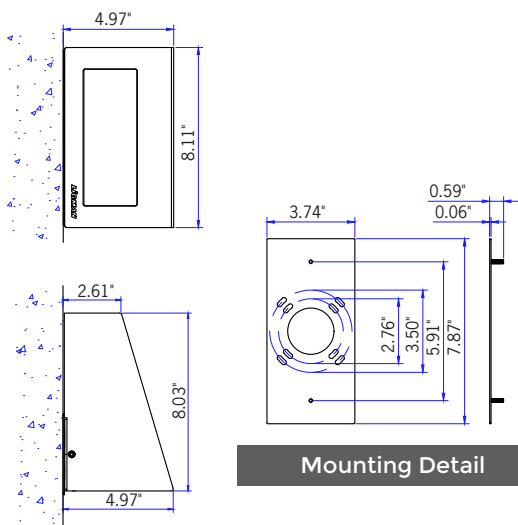
## Leeds 2 Medium Surface Wedge Downlight

microVos  
TECHNOLOGY

LIGMAN  
LIGHTING USA

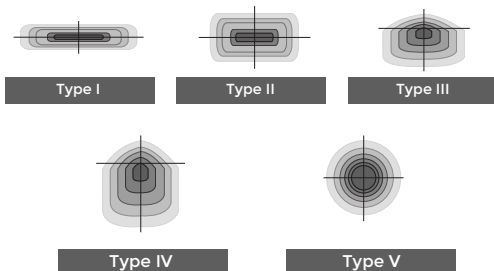


14w LED 1660 Lumens  
IP65 • Suitable For Wet Locations  
IK07 • Impact Resistant  
Weight 12 lbs

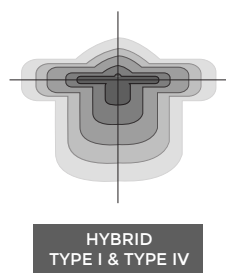


microVos  
TECHNOLOGY

Ligman's micro Variable Optical System provides the ability to interchange, mix & rotate optics to provide specific light distributions for optimized spacing and uniformity.



The variable optic system allows for the designer to create hybrid distributions for precise lighting requirements.



### Construction

#### Aluminum

Less than 0.1% copper content - Marine Grade 6060 extruded & LM6 Aluminum High Pressure die casting provides excellent mechanical strength, clean detailed product lines and excellent heat dissipation.

#### Pre paint

8 step degrease and phosphate process that includes deoxidizing and etching as well as a zinc and nickel phosphate process before product painting.

#### Memory Retentive -Silicon Gasket

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#### Surge Suppression

Standard 10kv surge suppressor provided with all fixtures.

#### BUG Rating

Contact Factory

#### Finishing

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#### Paint

UV Stabilized 4.9Mil thick powder coat paint and baked at 200 Deg C. This process ensures that Ligman products can withstand harsh environments. Rated for use in natatoriums.

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#### The Coating Process

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The component is then wrapped with a sheet of non-porous film with the selected decoration pattern printed on it using special high temperature inks.

This printed film transfer is vacuum-sealed to the surface for a complete thermo print and then transferred into a customized oven. The oven transforms the ink into different forms within the paint layer before it becomes solid. Finally, the film is removed, and a vivid timber look on aluminum remains.

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#### Added Benefits

- Resistance to salt-acid room, accelerated aging
- Boiling water, lime and condensed water resistant
- Anti-Graffiti, Anti-Slip, Anti-Microbial, Anti-Scratch
- Super durable (UV resistant)
- TGIC free (non-toxic)

#### Hardware

Provided Hardware is Marine grade 316 Stainless steel.

#### Anti Seize Screw Holes

Tapped holes are infused with a special anti seize compound designed to prevent seizure of threaded connections, due to electrolysis from heat, corrosive atmospheres and moisture.

#### Crystal Clear Low Iron Glass Lens

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#### Optics & LED

Precise optic design provides exceptional light control and precise distribution of light. LED CRI > 80

#### Lumen - Maintenance Life

L80 /B10 at 50,000 hours (This means that at least 90% of the LED still achieve 80% of their original flux)

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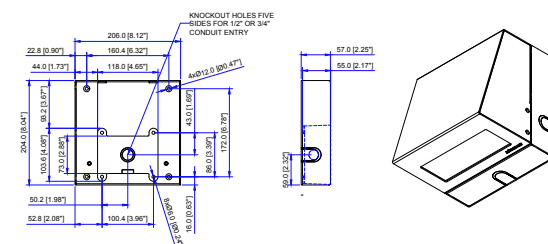
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Using the microVos optics allows for very wide spacing to mounting height ratios, while still providing perfect uniformity and code compliant light levels.

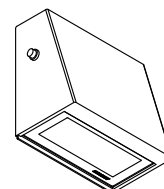
To meet International Dark Sky criteria, 3000k or warmer LEDs must be selected and luminaire fix mounted (+/- 15° allowable to permit leveling).

### Additional Options (Consult Factory For Pricing)



### SCBT Surface Conduit Box Trim

NOTE: This trim covers a shallow single gang, surface mount junction box [Provided by contractor]  
Example: Hubbell - 5322-0 - 1-Gang Weatherproof Box, Five 1/2" in. Threaded Outlets - or - 5332-0 - 1-Gang Weatherproof Box, Five 3/4 in. Threaded Outlets



### BPC Button Photocell

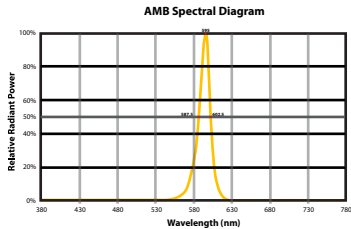


PROJECT					DATE	
QUANTITY		TYPE		NOTE		

ORDERING EXAMPLE || ULEW - 30011 - 14w - T2 - W30 - 02 - 120/277v - Options

ULEW-30011					
	LAMP	BEAM	LED COLOR	FINISH COLOR	VOLTAGE
	14w LED 1660 Lumens	T1 - Type I Distribution T2 - Type II Distribution T3 - Type III Distribution T4 - Type IV Distribution M - Medium 30° W - Wide 56° EW - Extra Wide 99°x102°	W27 - 2700K W30 - 3000K W35 - 3500K W40 - 4000K	01 - BLACK RAL 9011 02 - DARK GREY RAL 7043 03 - WHITE RAL 9003 04 - METALLIC SILVER RAL 9006 05 - MATTE SILVER RAL 9006 06 - LIGMAN BRONZE 07 - CUSTOM RAL	120/277v Other - Specify
<div>INSPIRED BY NATURE FINISHES</div> <div>SW01 - OAK FINISH SW02 - WALNUT FINISH SW03- PINE FINISH DF - DOUGLAS FIR FINISH CW - CHERRY WOOD FINISH NW - NATIONAL WALNUT FINISH SU01 - CONCRETE FINISH SU02 - SOFTSCAPE FINISH SU03 - STONE FINISH SU04 - CORTEN FINISH</div> <div>THERE IS AN ADDITIONAL COST FOR THESE FINISHES</div>					
ADDITIONAL OPTIONS					
NAT - Natatorium Rated      AMB - Turtle Friendly Amber LED SCBT - Surface Conduit Box Trim      BPC - Button Photocell F - Frosted Lens					

CITY OF FLAGSTAFF & TURTLE FRIENDLY COMPLIANT



**Narrow-Spectrum Amber LEDs**  
Peak wavelength between 585 & 595 nanometers and a full width of 50% power no greater than 15 nanometers.

More Custom Finishes Available Upon Request

Consult factory for pricing and lead times

Oak	Cherry	Beech	Carbon
Walnut	Chestnut	Bamboo	Galvanized
Pine	Mahogany	Birch	Steel



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• ULEE-30001-5.5w-570lm



Leeds 3 - Up/Down

• ULEE-30041-2x14w-2x1660lm



Leeds 4 - Down

• ULEE-30011-14w-1660lm



Leeds 5 - Up/Down

• ULD-30051-2x20w-2x2422lm



Leeds 6 - Down

• ULEE-30021-20w-2422lm

# Leeds Wedge Product Family



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Leeds Wedge 2

• ULEW-30011-14w-1660lm



Leeds Wedge 3

• ULEW-30021-20w-2422lm

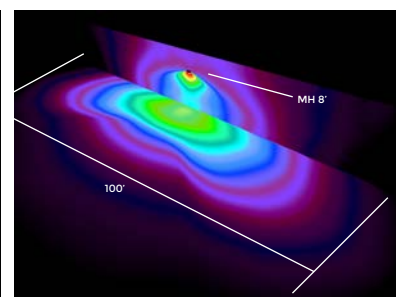
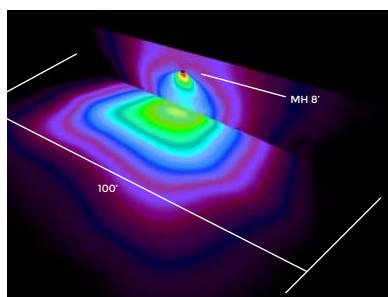
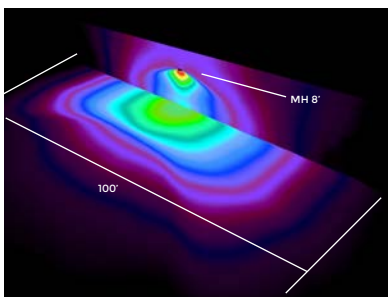
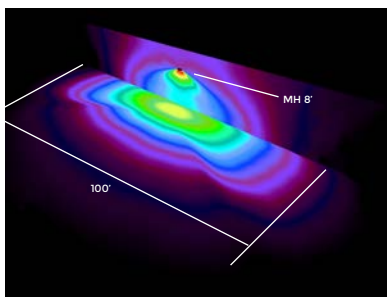


Type II Distribution

Type III Distribution

Type IV Distribution

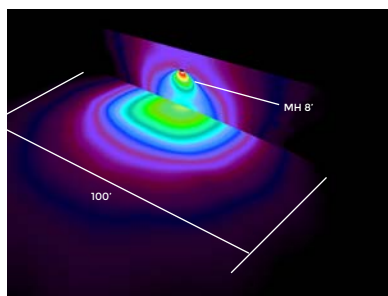
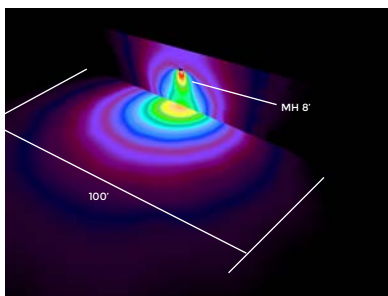
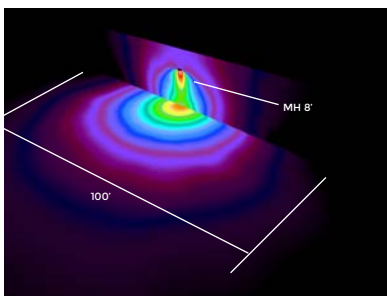
Type ME Distribution



Medium Beam - 30°

Wide Beam - 56°

Extra Wide Beam - 99° x 102°

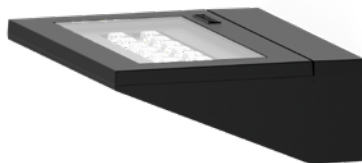
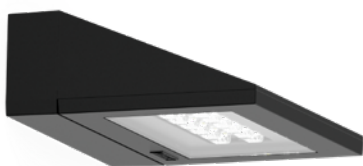


# UVK-30002

## Vekter 1 Medium Surface

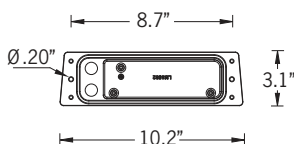
microVOS  
TECHNOLOGY

LIGMAN  
LIGHTING USA



28w LED 3308 Lumens  
IP65 • Suitable For Wet Locations  
IK08 • Impact Resistant (Vandal Resistant)  
Weight 7 lbs

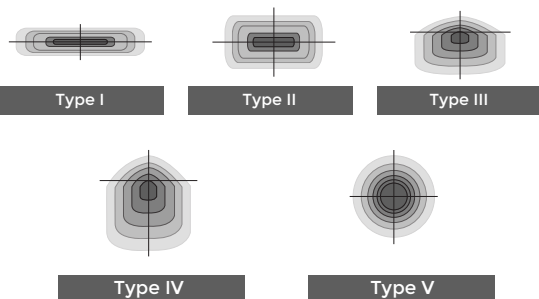
10.2" 7.7"



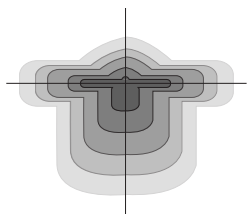
### Mounting Detail

microVOS  
TECHNOLOGY

Ligman's micro Variable Optical System provides the ability to interchange, mix & rotate optics to provide specific light distributions for optimized spacing and uniformity.



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HYBRID  
TYPE I & TYPE IV

### Construction

#### Aluminum

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#### Pre paint

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#### Surge Suppression

Standard 10kv surge suppressor provided with all fixtures.

#### BUG Rating

B2 - U0 - G0

#### Finishing

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#### Paint

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#### Hardware

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Tapped holes are infused with a special anti seize compound designed to prevent seizure of threaded connections, due to electrolysis from heat, corrosive atmospheres and moisture.

#### Crystal Clear Low Iron Glass Lens

Provided with tempered, impact resistant crystal clear low iron glass ensuring no green glass tinge.

#### Optics & LED

Precise optic design provides exceptional light control and precise distribution of light. LED CRI > 80

#### Lumen - Maintenance Life

L80 /B10 at 50,000 hours (This means that at least 90% of the LED still achieve 80% of their original flux)

### Flexible wall-mounted floodlighting and area luminaires. Sleek, angular, technical and powerful professional lighting solutions.

A wedge shaped range of small profile wall mounted luminaires, with no visible external hardware for use in uplight or downlight applications. This product is provided with a range of high powered LEDs with a selection of optics.

The Vekter is unique as it is available with Type II, III, IV & V light distribution options that facilitates wider spacing and even light distribution between the light fixtures. Wide spacings of up to 40' on center can be achieved using a type II optic with uniformity that complies to path of egress requirements. This provides higher energy saving and reduced installation costs. The Vekter can be manufactured using different type beam optics to achieve custom distribution, e.g using type II and type IV optics inside the same luminaire.

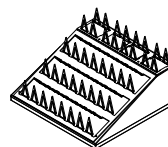
Integral electronic control gear is housed in a special waterproof box that can be detached from the optical chamber for easy installation. Mounting plate for 3" and 4" junction box is provided with the fixture. Matching surface mount conduit boxes are available as an option.

The Vekter is suitable for lighting footpaths, building facades, building entrances and parking areas around buildings.

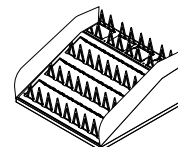
This luminaire can be mounted in downward or upward positions.

To meet International Dark Sky criteria, 3000k or warmer LEDs must be selected and luminaire fix mounted (+/- 15° allowable to permit leveling).

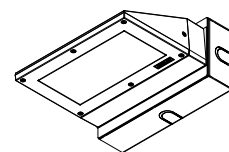
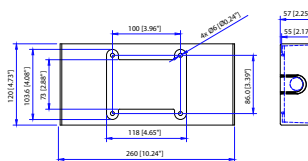
### Additional Options (Consult Factory For Pricing)



BS1  
Bird Spikes  
[Option 1]



BS2  
Bird Spikes  
[Option 2]



SCBT  
Surface Conduit Box Trim

NOTE: This trim covers a shallow single gang, surface mount junction box [Provided by contractor]  
Example: Hubbell: - 5322-0 - 1-Gang Weatherproof Box, Five 1/2" in. Threaded Outlets - or -  
5332-0 - 1-Gang Weatherproof Box, Five 3/4 in. Threaded Outlets



# UVK-30002

## Vekter 1 Medium Surface



PROJECT					DATE	
QUANTITY		TYPE		NOTE		

ORDERING EXAMPLE || UVK - 30002 - 28w - T2 - W30 - 02 - 120/277v - Options

UVK-30002					
LAMP	BEAM	LED COLOR	FINISH COLOR	VOLTAGE	
28w LED 3308 Lumens	T1 - Type I Distribution T2 - Type II Distribution T3 - Type III Distribution T4 - Type IV Distribution M - Medium 31° W - Wide 53° VW - Very Wide 66° EW - Extra Wide 110°	W27 - 2700K W30 - 3000K W35 - 3500K W40 - 4000K	01 - BLACK RAL 9011 02 - DARK GREY RAL 7043 03 - WHITE RAL 9003 04 - METALLIC SILVER RAL 9006 05 - MATTE SILVER RAL 9006 06 - LIGMAN BRONZE 07 - CUSTOM RAL	120/277v Other - Specify	

ADDITIONAL OPTIONS		

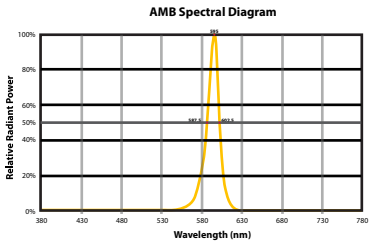
- |                                 |                              |
|---------------------------------|------------------------------|
| F - Frosted Lens                | AMB - Turtle Friendly Amber  |
| NAT - Natatorium Rated          | RPA - Round Pole Adapter     |
| DIM - 0-10v Dimming             | BS1 - Bird Spikes [Option 1] |
| SCBT - Surface Conduit Box Trim | BS2 - Bird Spikes [Option 2] |
| EMR - Remote Emergency Pack     |                              |

INSPIRED BY NATURE FINISHES

SW01 - OAK FINISH	
SW02 - WALNUT FINISH	
SW03 - PINE FINISH	
DF - DOUGLAS FIR FINISH	
CW - CHERRY WOOD FINISH	
NW - NATIONAL WALNUT FINISH	
SU01 - CONCRETE FINISH	
SU02 - SOFTSCAPE FINISH	
SU03 - STONE FINISH	
SU04 - CORTEN FINISH	

THERE IS AN ADDITIONAL COST FOR THESE FINISHES

### CITY OF FLAGSTAFF & TURTLE FRIENDLY COMPLIANT



**Narrow-Spectrum Amber LEDs**  
Peak wavelength between 585 & 595 nanometers and a full width of 50% power no greater than 15 nanometers.





















### More Custom Finishes Available Upon Request

Consult factory for pricing and lead times

Oak	Cherry	Beech	Carbon
Walnut	Chestnut	Bamboo	Galvanized
Pine	Mahogany	Birch	Steel



# Vekter Product Family

				
<p>Vekter 1</p> <ul style="list-style-type: none"><li>• UVK-30001-20w-2446lm</li><li>• UVK-30002-28w-3330lm</li></ul>	<p>Vekter 2</p> <ul style="list-style-type: none"><li>• UVK-30003-37w-5143lm</li><li>• UVK-30004-54w-6954lm</li></ul>	<p>Vekter 3</p> <ul style="list-style-type: none"><li>• UVK-10001-20w-2473lm</li><li>• UVK-10002-28w-3330lm</li></ul>	<p>Vekter 4</p> <ul style="list-style-type: none"><li>• UVK-10011-2x20w-2x2473lm</li><li>• UVK-10012-2x28w-2x3330lm</li></ul>	<p>Vekter 5</p> <ul style="list-style-type: none"><li>• UVK-90001-37w-5143lm</li><li>• UVK-90002-54w-6954lm</li></ul>
				
<p>Vekter 6</p> <ul style="list-style-type: none"><li>• UVK-90011-2x37w-2x5143lm</li><li>• UVK-90012-2x54w-2x6954lm</li></ul>	<p>Vekter 7</p> <ul style="list-style-type: none"><li>• UVK-30011-20w-2473lm</li><li>• UVK-30012-28w-3330lm</li></ul>	<p>Vekter 8</p> <ul style="list-style-type: none"><li>• UVK-30031-37w-5143lm</li><li>• UVK-30032-54w-6954lm</li></ul>	<p>Vekter 9</p> <ul style="list-style-type: none"><li>• UVK-30021-20w-2473lm</li><li>• UVK-30022-28w-3330lm</li></ul>	<p>Vekter 10</p> <ul style="list-style-type: none"><li>• UVK-30041-37w-5143lm</li><li>• UVK-30042-54w-6954lm</li></ul>
				
<p>Vekter 11 - 13.1'</p> <ul style="list-style-type: none"><li>• UVK-20001-20w-2473lm</li><li>• UVK-20002-28w-3330lm</li></ul>	<p>Vekter 12 - 13.1'</p> <ul style="list-style-type: none"><li>• UVK-20003-37w-5143lm</li><li>• UVK-20004-54w-6954lm</li></ul>	<p>Vekter 13 - 13.1'</p> <ul style="list-style-type: none"><li>• UVK-20011-2x20w-2x2473lm</li><li>• UVK-20012-2x28w-2x3330lm</li></ul>	<p>Vekter 14 - 13.1'</p> <ul style="list-style-type: none"><li>• UVK-20013-2x37w-2x5143lm</li><li>• UVK-20014-2x54w-2x6954lm</li></ul>	<p>Vekter 15</p> <ul style="list-style-type: none"><li>• UVK-90021-4x20w-4x2473lm</li><li>• UVK-90022-4x28w-4x3330lm</li></ul>
				
<p>Vekter 16</p> <ul style="list-style-type: none"><li>• UVK-90031-4x37w-4x5143lm</li><li>• UVK-90032-4x54w-4x6954lm</li></ul>	<p>Vekter 17 - 19.6'</p> <ul style="list-style-type: none"><li>• UVK-20021-20w-2473lm</li><li>• UVK-20022-28w-3330lm</li></ul>	<p>Vekter 18 - 19.6'</p> <ul style="list-style-type: none"><li>• UVK-20023-37w-5143lm</li><li>• UVK-20024-54w-6954lm</li></ul>	<p>Vekter 19 - 19.6'</p> <ul style="list-style-type: none"><li>• UVK-20031-2x20w-2x2473lm</li><li>• UVK-20032-2x28w-2x3330lm</li></ul>	<p>Vekter 20 - 19.6'</p> <ul style="list-style-type: none"><li>• UVK-20033-2x37w-2x5143lm</li><li>• UVK-20034-2x54w-2x6954lm</li></ul>

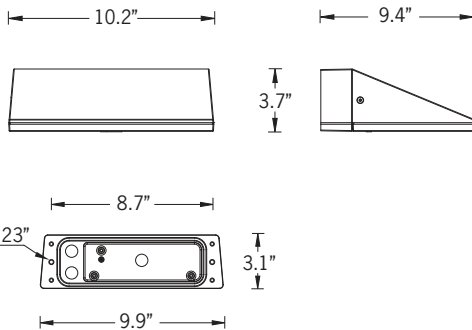


# UVK-30003

## Vekter 2 Large Surface



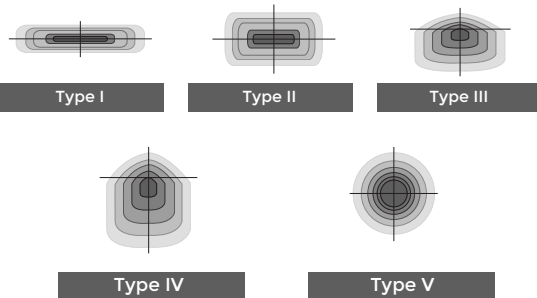
**37w LED 5073 Lumens**  
**IP65 • Suitable For Wet Locations**  
**IK08 • Impact Resistant (Vandal Resistant)**  
**Weight 10.8 lbs**



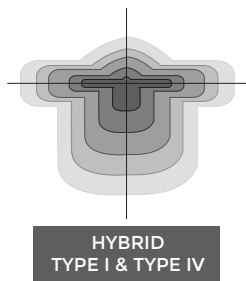
### Mounting Detail



Ligman's micro Variable Optical System provides the ability to interchange, mix & rotate optics to provide specific light distributions for optimized spacing and uniformity.



The variable optic system allows for the designer to create hybrid distributions for precise lighting requirements.



### Construction

**Aluminum.**  
 Less than 0.1% copper content - Marine Grade 6060 extruded & LM6 Aluminum High Pressure die casting provides excellent mechanical strength, clean detailed product lines and excellent heat dissipation.

**Pre paint**  
 8 step degrease and phosphate process that includes deoxidizing and etching as well as a zinc and nickel phosphate process before product painting.

**Memory Retentive -Silicon Gasket**  
 Provided with special injection molded "fit for purpose" long life high temperature memory retentive silicon gaskets. Maintains the gaskets exact profile and seal over years of use and compression.

**Thermal management**  
 LM6 Aluminum is used for its excellent mechanical strength and thermal dissipation properties in low and high ambient temperatures. The superior thermal heat sink design by Ligman used in conjunction with the driver, controls thermal below critical temperature range to ensure maximum luminous flux output, as well as providing long LED service life and ensuring less than 10% lumen depreciation at 50,000 hours.

**Surge Suppression**  
 Standard 10kv surge suppressor provided with all fixtures.

**BUG Rating**  
 B3 - U0 - G0

**Finishing.**  
 All Ligman products go through an extensive finishing process that includes fettling to improve paint adherence.

**Paint**  
 UV Stabilized 4.9Mil thick powder coat paint and baked at 200 Deg C. This process ensures that Ligman products can withstand harsh environments. Rated for use in natatoriums.

**Inspired by Nature Finishes**  
 The Inspired by nature Finishing is a unique system of decorative powder coating. Our metal decoration process can easily transform the appearance of metal or aluminum product into a wood grain finish.

This patented technology enables the simulation of wood grain, and even marble or granite finish through the use of decorative powder coating.

The wood grain finish is so realistic that it's almost undistinguishable from real wood, even from a close visual inspection. The system of coating permeates the entire thickness of the coat and as a result, the coating cannot be removed by normal rubbing, chipping, or scratching.

**The Coating Process**  
 After pre-treatment the prepared parts are powder coated with a specially formulated polyurethane powder. This powder provides protection against wear, abrasion, impact and corrosion and acts as the relief base color for the finalized metal decoration.

The component is then wrapped with a sheet of non-porous film with the selected decoration pattern printed on it using special high temperature inks.

This printed film transfer is vacuum-sealed to the surface for a complete thermo print and then transferred into a customized oven. The oven transforms the ink into different forms within the paint layer before it becomes solid. Finally, the film is removed, and a vivid timber look on aluminum remains.

Wood grain coating can create beautiful wood-looking products of any sort. There are over 300 combinations of designs currently in use. Wood grains can be made with different colors, designs, etc.

Our powder coatings are certified for indoor and outdoor applications and are backed by a comprehensive warranty. These coatings rise to the highest conceivable standard of performance excellence and design innovation.

- Added Benefits**
- Resistance to salt-acid room, accelerated aging
  - Boiling water, lime and condensed water resistant
  - Anti-Graffiti, Anti-Slip, Anti-Microbial, Anti-Scratch
  - Super durable (UV resistant)
  - TGIC free (non-toxic)

**Hardware**  
 Provided Hardware is Marine grade 316 Stainless steel.

**Anti Seize Screw Holes**  
 Tapped holes are infused with a special anti seize compound designed to prevent seizure of threaded connections, due to electrolysis from heat, corrosive atmospheres and moisture.

**Crystal Clear Low Iron Glass Lens**  
 Provided with tempered, impact resistant crystal clear low iron glass ensuring no green glass tinge.

**Optics & LED**  
 Precise optic design provides exceptional light control and precise distribution of light. LED CRI > 80

**Lumen - Maintenance Life**  
 L80 /B10 at 50,000 hours (This means that at least 90% of the LED still achieve 80% of their original flux)

### Flexible wall-mounted floodlighting and area luminaires. Sleek, angular, technical and powerful professional lighting solutions.

A wedge shaped range of small profile wall mounted luminaires, with no visible external hardware for use in uplight or downlight applications. This product is provided with a range of high powered LEDs with a selection of optics.

The Vekter is unique as it is available with Type II, III, IV & V light distribution options that facilitates wider spacing and even light distribution between the light fixtures. Wide spacings of up to 40' on center can be achieved using a type II optic with uniformity that complies to path of egress requirements. This provides higher energy saving and reduced installation costs. The Vekter can be manufactured using different type beam optics to achieve custom distribution, e.g using type II and type IV optics inside the same luminaire.

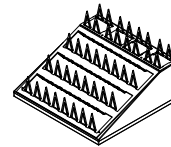
Integral electronic control gear is housed in a special waterproof box that can be detached from the optical chamber for easy installation. Mounting plate for 3" and 4" junction box is provided with the fixture. Matching surface mount conduit boxes are available as an option.

The Vekter is suitable for lighting footpaths, building facades, building entrances and parking areas around buildings.

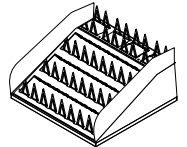
This luminaire can be mounted in downward or upward positions.

To meet International Dark Sky criteria, 3000k or warmer LEDs must be selected and luminaire fix mounted (+/- 15° allowable to permit leveling).

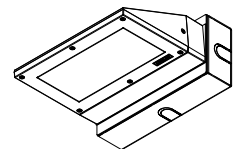
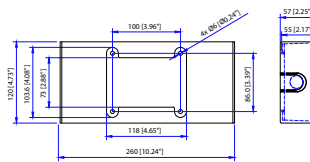
### Additional Options (Consult Factory For Pricing)



**BS1**  
**Bird Spikes**  
**[Option 1]**



**BS2**  
**Bird Spikes**  
**[Option 2]**



**SCBT**  
**Surface Conduit Box Trim**

NOTE: This trim covers a shallow single gang, surface mount junction box [Provided by contractor]  
 Example: Hubbell: - 5322-0 - 1-Gang Weatherproof Box, Five 1/2" in. Threaded Outlets - or -  
 5332-0 - 1-Gang Weatherproof Box, Five 3/4 in. Threaded Outlets

# UVK-30003

Vekter 2 Large Surface



PROJECT					DATE	
QUANTITY		TYPE		NOTE		

## ORDERING EXAMPLE || UVK - 30003 - 37w - T2 - W30 - 02 - 120/277v - Options

UVK-30003					
LAMP	BEAM	LED COLOR	FINISH COLOR	VOLTAGE	
37w LED 5073 Lumens	T1 - Type I Distribution T2 - Type II Distribution T3 - Type III Distribution T4 - Type IV Distribution M - Medium 32° W - Wide 52° VW - Very Wide 65° EW - Extra Wide 108°	W27 - 2700K W30 - 3000K W35 - 3500K W40 - 4000K	01 - BLACK RAL 9011 02 - DARK GREY RAL 7043 03 - WHITE RAL 9003 04 - METALLIC SILVER RAL 9006 05 - MATTE SILVER RAL 9006 06 - LIGMAN BRONZE 07 - CUSTOM RAL	120/277v Other - Specify	
			<b>INSPIRED BY NATURE FINISHES</b> SW01 - OAK FINISH SW02 - WALNUT FINISH SW03 - PINE FINISH DF - DOUGLAS FIR FINISH CW - CHERRY WOOD FINISH NW - NATIONAL WALNUT FINISH SU01 - CONCRETE FINISH SU02 - SOFTSCAPE FINISH SU03 - STONE FINISH SU04 - CORTEN FINISH		
			THERE IS AN ADDITIONAL COST FOR THESE FINISHES		

ADDITIONAL OPTIONS

F - Frosted Lens  
NAT - Natatorium Rated  
DIM - 0-10v Dimming  
SCBT - Surface Conduit Box Trim  
EMR - Remote Emergency Pack

AMB - Turtle Friendly Amber  
RPA - Round Pole Adapter  
BS1 - Bird Spikes [Option 1]  
BS2 - Bird Spikes [Option 2]

## More Custom Finishes Available Upon Request

Consult factory for pricing and lead times



Example: Inspired by Nature Finish





# Vekter Product Family



Vekter 1

- UVK-30001-20w-2446lm
- UVK-30002-28w-3330lm



Vekter 2

- UVK-30003-37w-5143lm
- UVK-30004-54w-6954lm



Vekter 3

- UVK-10001-20w-2473lm
- UVK-10002-28w-3330lm



Vekter 4

- UVK-10011-2x20w-2x2473lm
- UVK-10012-2x28w-2x3330lm



Vekter 5

- UVK-90001-37w-5143lm
- UVK-90002-54w-6954lm



Vekter 6

- UVK-90011-2x37w-2x5143lm
- UVK-90012-2x54w-2x6954lm



Vekter 7

- UVK-30011-20w-2473lm
- UVK-30012-28w-3330lm



Vekter 8

- UVK-30031-37w-5143lm
- UVK-30032-54w-6954lm



Vekter 9

- UVK-30021-20w-2473lm
- UVK-30022-28w-3330lm



Vekter 10

- UVK-30041-37w-5143lm
- UVK-30042-54w-6954lm



Vekter 11 - 13.1'

- UVK-20001-20w-2473lm
- UVK-20002-28w-3330lm



Vekter 12 - 13.1'

- UVK-20003-37w-5143lm
- UVK-20004-54w-6954lm



Vekter 13 - 13.1'

- UVK-20011-2x20w-2x2473lm
- UVK-20012-2x28w-2x3330lm



Vekter 14 - 13.1'

- UVK-20013-2x37w-2x5143lm
- UVK-20014-2x54w-2x6954lm



Vekter 15

- UVK-90021-4x20w-4x2473lm
- UVK-90022-4x28w-4x3330lm



Vekter 16

- UVK-90031-4x37w-4x5143lm
- UVK-90032-4x54w-4x6954lm



Vekter 17 - 19.6'

- UVK-20021-20w-2473lm
- UVK-20022-28w-3330lm



Vekter 18 - 19.6'

- UVK-20023-37w-5143lm
- UVK-20024-54w-6954lm



Vekter 19 - 19.6'

- UVK-20031-2x20w-2x2473lm
- UVK-20032-2x28w-2x3330lm



Vekter 20 - 19.6'

- UVK-20033-2x37w-2x5143lm
- UVK-20034-2x54w-2x6954lm

**From:** [Fred Eckhout](#)  
**To:** [Planning](#)  
**Subject:** Troy Development Concerns  
**Date:** Monday, March 11, 2024 3:30:48 PM

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You don't often get email from feckhout@gmail.com. [Learn why this is important](#)

**CAUTION:** This email did not originate from within the City of Troy. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Commissioners:

I am writing to express my concern about excessive development in Troy. Every little parcel of land, every small stand of woods, every green space (outside of the Civic Center) is being replaced by a building. Troy will soon look like Birmingham--a city with no undeveloped land and a very unfavorable circumstance.

Over my forty years of residing in Troy, I have watched corn fields turn into subdivisions, roads change from small two-lane pathways to four-lane boulevards, and wooded corners evolve into small shopping centers. It seems like enough has been done. Overdevelopment is now characterized by a lack of architectural cohesion to the detriment of aesthetics. Many instances can be cited but a couple stand out: small tear downs being replaced by stand-alone big-foots and a 7-11 totally mismatched with the neighboring apartments (Wattles and Crooks; the kiddie corner apartment proposal should be rejected and the much ballyhooed housing shortage addressed through vacant office space conversion).

Great care should be taken with developing the vacant KMart site. It doesn't matter how long it takes to get the concept right. Somerset Mall was well-done and has stood the test of time; Somerset Apartments, not so much. Aesthetics, green space, and continued professional property management will go a long way to making the property a lasting treasure.

Thank you for your service and attention to these matters.

Fred Eckhout  
Troy Resident



**From:** [Dr Claudia](#)  
**To:** [Planning](#)  
**Subject:** Master Plan concerning the Wattles/Crooks neighborhood node  
**Date:** Sunday, March 10, 2024 4:21:56 PM

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You don't often get email from drdaude@mindspring.com. [Learn why this is important](#)

**CAUTION:** This email did not originate from within the City of Troy. Do not click links or open attachments unless you recognize the sender and know the content is safe.

To Whom It May Concern,

I understand you will be discussing the master plan regarding the Wattles and Crooks neighborhood node. I am aware that the same developer from a couple years ago will propose a new, yet very similar complex in that area. I wish to voice our opposition to this and our support of changing this neighborhood node.

Quite frankly, if this new proposal is even allowed before the commission, we find it a slap in the face to the HUNDREDS of neighbors who showed up in opposition the last time this was brought before you. Hundreds of hours, dedicated volunteers, emails rallying neighbors, money spent....this was all done to show Troy what is important to us and what we are willing to fight against. We do not need multiplexes of single family apartments that will congest the area and increase the population at our schools. Our son's class now sits at 27 students, too many students for one teacher to adequately educate. Continuing to allow these complexes to be built will overcrowd and have an affect on the current fabulous reputation of the Troy School District.

Please show the residents of Troy, specifically in the area of Wattles and Crooks, that you not only appreciated and heard our concerns but that you will act accordingly for our future.

Thank you,

Scott and Claudia Leman

1075 Fountain Dr

Troy, MI 48098

**From:** [Nannette Gearhart](#)  
**To:** [Planning](#); [Nannette Gearhart](#)  
**Subject:** Troy  
**Date:** Tuesday, March 12, 2024 6:20:39 PM

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I'm in total agreement with the last 2 articles in the Troy Times!!! I support approving single family homes over rezoning for multi family buildings especially in areas that are not appropriate such as the Square Lake and Livernois "Hastings Village" proposal and the 400 Ottawa proposal. We don't need any additional developers disrespecting or disrupting our current neighborhoods in Troy!!! Please leave our wildlife ie deer and wild turkeys alone!!!

Thank you, Nannette Gearhart 6197 Livernois Road, Troy

Sent from my iPhone



**From:** [Karen Shaw](#)  
**To:** [Planning](#)  
**Cc:** [treasurer@woodlandsoftroy.com](mailto:treasurer@woodlandsoftroy.com); [mlipinski@advtechnologies.com](mailto:mlipinski@advtechnologies.com)  
**Subject:** Wattles & Crooks Node Deveopment  
**Date:** Sunday, March 10, 2024 1:06:30 PM

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[You don't often get email from kshawmi@comcast.net. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

CAUTION: This email did not originate from within the City of Troy. Do not click links or open attachments unless you recognize the sender and know the content is safe.

I am writing to you as a concerned citizen living in the Woodlands Sub-division. Once again the residents of the area must band together to fight the over-development of our main intersection, Wattles & Crooks. Two to three years ago we fought to prevent a multi-dwelling housing project just north of Wattles on the west side of Crooks proposed by the same developer. Lengthy research was submitted by several residents that convinced the commission that this was not a good thing for those living in the immediate area. After months of fighting, the residents won their case and the development was denied.

Nothing has changed so For all of the same reasons that existed then, the addition of either a daycare center or an apartment complex is NOT wanted now. Why do you continue to entertain plans such as this for that corner? Take a look at the previous case and you have all the reasons this development should not take place. And, by the way, why hasn't the zoning for this node been updated to reflect what the area citizens want?

I, for one, voted for the mayor & city council members because their campaign platforms supported a change to the Master Plan concerning the nodes. Nothing has been done to change our node since those elections. These officials do not seem to be listening to the residents adjacent to the Wattles and Crooks node. I think it's about time they did. I am VERY UNHAPPY with the performance of my city's officials at this time.

Karen Shaw  
4040 Glencastle Dr.  
Troy, MI 48098  
Sent from my iPad