REGULAR MEETING OF THE PLANNING BOARD
WEDNESDAY – MAY 25, 2016
7:30 PM
CITY COMMISSION ROOM
151 MARTIN STREET, BIRMINGHAM

A. Roll Call
B. Review and Approval of the Minutes of the regular meeting of **May 11, 2016**
C. Chairpersons' Comments
D. Review of the Agenda

E. Special Land Use Permit Reviews

1. **100 Townsend – The Corner Bar** – Request for a Special Land Use Permit and Revised Final Site Plan & Design to remodel the Corner Bar to a private dining and meeting venue, including a small addition at the corner of the building.

F. Final Site Plan Reviews

1. **100 Townsend – The Corner Bar** – Request for a Special Land Use Permit and Revised Final Site Plan & Design to remodel the Corner Bar to a private dining and meeting venue, including a small addition at the corner of the building.

G. Preliminary Site Plan Reviews/Community Impact Studies

1. **856 N. Old Woodward (vacant)** - Request a Revised Preliminary Site Plan & Community Impact Study for new construction of a four story mixed use building over 20,000 sq.ft. in size.

2. **748 – 750 Forest (existing office buildings)** – Request for Preliminary Site Plan & Community Impact Study Review to allow construction of a new 5 story mixed use building, 3 stories along Elm.

H. Meeting Open to the Public for items not on the Agenda

I. Miscellaneous Business and Communications:
   a. Communications
   b. **Administrative Approval** Correspondence
   c. Draft Agenda for the next Regular Planning Board Meeting **(June 8, 2016)**
   d. Other Business

J. Planning Division Action Items
   a. Staff Report on Previous Requests
   b. Additional Items from tonight's meeting

K. Adjournment

Notice: Due to Building Security, public entrance during non-business hours is through the Police Department—Pierce St. Entrance only. Individuals with disabilities requiring assistance to enter the building should request aid via the intercom system at the parking lot entrance gate on Henrietta St.

Persons with disabilities that may require assistance for effective participation in this public meeting should contact the City Clerk's Office at the number (248) 530-1880, or (248) 644-5115 (for the hearing impaired) at least one day before the meeting to request help in mobility, visual, hearing, or other assistance.

Las personas con incapacidad que requieren algún tipo de ayuda para la participación en esta sesión pública deben ponerse en contacto con la oficina del escribano de la ciudad en el número (248) 530-1800 o al (248) 644-5115 (para las personas con incapacidad auditiva) por lo menos un dia antes de la reunión para solicitar ayuda a la movilidad, visual, auditiva, o de otras asistencias. (Title VI of the Civil Rights Act of 1964).

CITY OF BIRMINGHAM
PLANNING BOARD ACTION ITEMS
OF WEDNESDAY, MAY 11, 2016

Item	Page
STUDY SESSION ITEMS	
1. Glazing	**2**
Motion by Mr. Williams **Seconded by Ms. Whipple-Boyce to set a public hearing for June 8, 2016 to consider the proposed changes to Article 04, Section 4.90 WN -01 and Article 07, Section 7.05 of the Zoning Ordinance to amend the glazing standards.**	**2**
Motion carried, 7-0.	**2**

CITY OF BIRMINGHAM
REGULAR MEETING OF THE PLANNING BOARD
WEDNESDAY, MAY 11, 2016
City Commission Room
151 Martin Street, Birmingham, Michigan

Minutes of the regular meeting of the City of Birmingham Planning Board held on May 11, 2016. Vice-Chairperson Gillian Lazar convened the meeting at 7:30 p.m.

Present: Board Members Stuart Jeffares, Bert Koseck, Gillian Lazar, Daniel Share, Janelle Whipple-Boyce, Bryan Williams; Student Representative Colin Cusimano

Absent: Chairman Scott Clein; Board Member Robin Boyle.

Administration: Jana Ecker, Planning Director
Carole Salutes, Recording Secretary

05-81-16

APPROVAL OF THE MINUTES OF THE REGULAR PLANNING BOARD MEETING OF APRIL 27, 2016

Mr. Jeffares:
Page 7- Second sentence, change to "Ninety percent of what buffers the neighborhood now is either commercial or an eight-lane highway." That same paragraph, second to last line after "proposed," add "A single-family home would not receive such scrutiny by the Planning Board."

Motion by Mr. Jeffares
Seconded by Mr. Koseck to approve the Minutes of April 27, 2016 as amended.

Motion carried, 4-0.

VOICE VOTE
Yeas: Jeffares, Koseck, Lazar, Whipple-Boyce
Nays: None
Abstain: Share, Williams
Absent: Boyle, Clein

05-82-16

CHAIRPERSON'S COMMENTS (none)

05-83-16

APPROVAL OF THE AGENDA (no change)

05-84-16

STUDY SESSION ITEMS

1. Glazing

Ms. Ecker recalled the only changes from the last meeting were:

(1) That the board determined they would like minimum glazing required on any façade that has a public entrance, even if it is not in the front. That alteration was made to Article 4.90 WN-01 (B) Ground floor building elevations that now states "Building elevations on the ground floor that do not face a frontage line but contain a public entrance shall be no less than 30% glazing between 1 and 8 feet above grade." However, if the façade is on a frontage line and faces the street, 70% glazing is required.

(2) Also (C) Blank walls of longer than 20 ft. on the ground floor shall not face a plaza, park, parking area or pubic street.

For Chairperson Lazar, Ms. Ecker explained that Article 4.90 WN-01 (B) (5) means the bottom part of the window has to be in the pedestrian zone, which is no more than 3 ft. above the adjacent exterior grade.

Motion by Mr. Williams
Seconded by Ms. Whipple-Boyce to set a public hearing for June 8, 2016 to consider the proposed changes to Article 04, Section 4.90 WN -01 and Article 07, Section 7.05 of the Zoning Ordinance to amend the glazing standards.

At 7:40 p.m. there was no public to comment on the motion.

Motion carried, 7-0.

ROLLCALL VOTE
Yeas: Williams, Lazar, Jeffares, Koseck, Share, Whipple-Boyce
Nays: None
Absent: Boyle, Clein

05-85-16

2. Outdoor Storage and Display

Ms. Ecker thought the board is getting close to a determination on this item as well. She summarized what was discussed at the last meeting. The comments were whether ice machines and propane storage should be prohibited in the front and put around on the side or the rear of buildings. Also the board talked about simplifying the draft ordinance, eliminating the use of parking spaces for display, and requiring design review for outdoor display regardless of the use. Accordingly, the draft ordinance language has been amended to reflect the requested changes.

Further, the board had asked for examples of storage based on building frontage.

Board members agreed that ice machines and propane storage should not be between the building and any frontage line on a street. Mr. Share suggested using the term propane containers rather than tanks. Mr. Williams thought the board should only identify those items that they want to prohibit or limit, propane being one. Ms. Whipple-Boyce suggested saying that seasonal goods such as flower displays need to be on a concrete or paved surface.

Ms. Ecker noted a section had been added to the draft ordinance saying all outdoor displays at gasoline service stations are required to obtain Site Plan and Design Review. Any other outdoor displays for other principal uses on a site only have to get Design Review, which costs less. It was noted that convenience stores are offenders also and they should be required to obtain Site Plan and Design Review as well, regardless of the Zone District.

Ms. Ecker presented layouts showing how many square feet would be taken up for storage given a 1 x 1, 2 x 1 and 3 x 1 ratio of the front linear footage. The consensus was to use a .5 x 1 ratio.

Motion by Ms. Whipple-Boyce
Seconded by Mr. Koseck to set a public hearing to June 8, 2016 to discuss outdoor storage and display.

Discussion considered that the ordinance amendments would only affect any new business or new storage and display unless a sunset provision is added. It was decided that issue should be sent to the City Attorney for his opinion on the use of sunset clauses and how soon a sunset clause could be invoked.

Ms. Whipple-Boyce and Mr. Koseck withdrew their motion.

05-86-16

3. Transitional Zoning (TZ-2)

Mr. Williams stated the Planning Board does not know what this new City Commission wants. Therefore, the board should see if it can agree on what the standards should be for TZ-2. Either let individual property owners come before this board to apply for rezoning to the district, or at the June joint meeting with the City Commission ask the Commission how they want to handle the various properties that were included within the previous recommendation for TZ-2. What was sent back was primarily what the uses and standards were. He thought the TZ-2 uses are more permissive now than the TZ-3 and it should be reversed. Therefore TZ-2 in relationship to TZ-3 uses should be tonight's focus. If this becomes too difficult in terms of Special Land Use Permits ("SLUPS") the buildings will either remain vacant or they won't change in accordance with what the board wants to achieve. He thinks there should be fewer SLUP requirements in TZ-3. Mr. Share raised the point that there isn't enough difference between TZ-2 and TZ-3 to spend any time saying they are different.

The board went over the uses for TZ-2 and TZ-3 to see which ones make sense and which ones can be changed to not requiring a SLUP. Consensus was as follows:

TZ-2 Commercial Permitted Uses	**TZ-3 Commercial Permitted Uses**
Art gallery Artisan use Bakery Bank or credit union (no drive-through) Bookstore Boutique Coffee Shop Delicatessen Drugstore (limited by size restriction) Drycleaner pickup Gift shop/flower shop Hardware (limited by of size restriction) Jewelry store Office (limited by size restriction) Specialty food shop Tailor	Art gallery Artisan use Bank or credit union (no drive-through) Bakery Barber/beauty salon Bookstore Boutique Coffee shop Delicatessen Drugstore (limited by size restriction) Drycleaner pickup Gift shop/flower shop Hardware (limited by size restriction) Health club/studio Jewelry store Convenience store Office (limited by size restriction) Specialty food shop Tailor

TZ-2 Uses Requiring a SLUP	**TZ-3 Uses Requiring a SLUP**
Any permitted commercial use with interior floor area over 3,000 sq. ft. per tenant Assisted living Bank or credit union (w/drive-through) Barber/beauty salon Church and religious institution Essential services	Any permitted commercial use with interior floor area over 4,000 sq. ft. per tenant Assisted living Bank or credit union (w/drive-through) Church and religious institution Drycleaner with a plant Essential services

Church and religious institution Government office/use Health club/studio Independent senior living	Food and drink establishment Government office/use Grocery store Hospice facility Independent senior living Parking structure School – private and public Skilled nursing facility Veterinary clinic

Board members were in agreement with talking to the City Commission at the June 20 joint meeting about tweaking TZ-3 somewhat. Present the chart along with definitions. The Planning Board has been responsive to the neighbors throughout the study, so Ms. Ecker agreed to go back and figure out what uses the board has outlawed starting from the beginning of the O-1 and O-2 study.

05-87-16

4. Wayfinding Update

Ms. Ecker advised the City of Birmingham proposed a series of neighborhood identification signs as a part of the City Wayfinding and Signage Design Program. To date, gateway signage has been installed at several primary and secondary gateways into the City; however there have not been any neighborhood identification signs installed so far.

Requests have recently been made for the City to provide neighborhood identification signs to individual neighborhoods as recommended in the Wayfinding Plan. So Staff put together a draft policy for consideration by the City Commission. If the neighborhood association votes to approve the location and to set aside some money to pay for one or more signs then the City of Birmingham would fund and supply one neighborhood identification sign per qualified neighborhood association provided that the neighborhood association also provides funding for one or more neighborhood identification sign(s). Once the funds from the neighborhood association have been paid to the City, the City could then purchase two neighborhood identification signs to be installed within the neighborhood.

The City Commission sent this matter to the Planning Board for further study and direction.

Mr. Koseck's opinion was that the pictures show that the signs add to clutter. Ms. Ecker noted that since all houses in the City are not in a specific neighborhood association, that confuses it further. Ms. Whipple-Boyce thought the Wayfinding Plan needs to be re-visited, and along with that branding of the City should be addressed. She volunteered to work on that, but doesn't expect that labeling the neighborhoods will be the result.

Mr. Jeffares thought that neighborhood identification signs would offer a sense of community. Maybe something could be done with the existing street signs. Mr. Share did not understand what the point of having a neighborhood sign is. Until that determination exists, he did not know how this board could effectively analyze anything about it. Vice-Chairperson Lazar thought this type of signage almost seems like competitiveness. Further, it misconstrues the term wayfinding.

05-88-16

MEETING OPEN TO THE PUBLIC FOR ITEMS NOT ON THE AGENDA (no public was present)

05-89-16

MISCELLANEOUS BUSINESS AND COMMUNICATIONS

a. Communications

Ms. Ecker advised the City Commission has sent the height of railings on outdoor dining platforms to the Planning Board for discussion. Board members agreed that the railings around platforms should be lower to improve the experience for diners.

b. Administrative Approval Correspondence

- 2400 E. Lincoln St., The Sheridan at Birmingham – Design and material changes.
- 559 W. Brown St., - Request to add two (2) dormers east and west side as originally proposed on Preliminary Site Plan Approval.
- 480 Pierce, Munder Bldg. – Replacing exposed aggregate.
- 33779 Woodward Ave. – Revised screening and landscaping.

c. Draft Agenda for the Regular Planning Board Meeting on May 25, 2016

- 856 N. Old Woodward Ave., Revised Preliminary Site Plan.
- Townsend Hotel, Final Site Plan and SLUP for 30 sq. ft. addition to fill in the Corner Bar and make it into meeting rooms and private dining space.
- 748-750 Forest, Preliminary Site Plan Review & CIS - first-floor office use and residential.

d. Other Business (not discussed)

05-90-16

PLANNING DIVISION ACTION ITEMS

a. Staff report on previous requests (none)

b. Additional items from tonight's meeting (none)

05-91-16

ADJOURNMENT

No further business being evident, board members motioned to adjourn at 9:46 p.m.

Jana Ecker
Planning Director

AGENDA

City of Birmingham
A Walkable Community

MEMORANDUM

Planning Department

DATE: **May 19, 2016**

TO: **Planning Board**

FROM: **Sean Campbell, Assistant Planner**

SUBJECT: **Final Site Plan & Design Review and Special Land Use Permit - Corner Bar**

Executive Summary

The subject site is a 1,778 sq. ft. commercial space inside the Townsend Hotel located at the corner of Pierce St. and Merrill St. The applicant is proposing exterior renovations to the north and east elevations as well as interior work to the existing Corner Bar establishment. The applicant has indicated that the former establishment will be remodeled into a private dining and meeting venue.

The applicant is seeking approval for a Special Land Use Permit (SLUP) pursuant to Article 6, Section 6.02 which requires existing and new establishments with alcoholic beverage sales to obtain a SLUP upon a change in name or ownership of establishment, or upon application for a site plan review.

1.0 Land Use and Zoning

1.1 Existing Land Use – The portion of the building that will undergo renovations is currently a bar and restaurant establishment.

1.2 Existing Zoning – The property is currently zoned B-4, Business-Residential, and D-4 in the Downtown Birmingham Overlay District. The existing use and surrounding uses appear to conform to the permitted uses of each Zoning District.

1.3 2016 Report – The subject site is located within the boundaries of the Downtown Birmingham 2016 Overlay District. The Regulating P{an applies in this case.

1.4 Summary of Land Use and Zoning - The following chart summarizes existing land use and zoning adjacent to and/or in the vicinity of the subject site.

	North	South	East	West
Existing Land Use	Government Office (City Hall)	Commercial/ Retail	Parking Structure (Pierce Street Parking Garage)	Public Park (Shain Park)
Existing Zoning District	PP, Public Property	B-4, Business-Residential	B-2, General Business	PP, Public Property
Existing Overlay Zoning	C, Community Use	D-2, Downtown Two or Three Stories	D-3, Downtown Three or Four Stories	C, Community Use

2.0 Setback, Height, and Floor Area Requirements

A summary of all standards is provided for your review on the attached Zoning Compliance Summary. The summary demonstrates that the proposed plan does meet all the setback, height and floor area requirements for a B-4 (Business-Residential) development.

3.0 Screening and Landscaping

2.1 Dumpster Screening – The proposed plans do not indicate any new outdoor trash receptacles.

2.2 Parking Lot Screening – The subject site is located in the Parking Assessment District, which does not require on-site parking for commercial uses. The required parking will be provided in a public parking facility and therefore does not require any screening.

2.3 Mechanical Equipment Screening – The applicant does not propose any rooftop or grounded-mounted mechanical equipment. Thus, no mechanical screening is required.

2.4 Landscaping **–** In Accordance with Article, Section 4.20 (C) (1) of the Zoning Ordinance, properties located in the Downtown Birmingham Overlay District are not required to provide any plantings. However, the applicant proposes one (1) Boxwood Topiary to be placed on each side of the door on the north elevation.

4.0 Parking, Loading, Access, and Circulation

3.1 Parking – As the subject site is located within the Parking Assessment District, no on-site parking is required for the proposed commercial use.

3.2 Loading – The proposed remodel of the subject site neither requires nor indicates a loading space.

3.3 Vehicular Access & Circulation - Vehicular access to the building will not be altered.

3.4 Pedestrian Access & Circulation –Pedestrian access is made available via sidewalks along Pierce and Merrill. City sidewalks will connect to two entrances along the north elevation of the subject building. The existing corner entrance and step will be eliminated.

3.5 Streetscape – The applicant is proposing two new rectangular 18" x 18" x 18" lead planters to flank the new entrance. One new street tree will also be added.

5.0 Lighting

The applicant is not proposing any changes to the existing lighting on site.

6.0 Departmental Reports

6.1 Engineering Division – No concerns were reported by the Engineering Division.

6.2 Department of Public Services – No concerns were reported from DPS.

6.3 Fire Department – No concerns were reported from the Fire Dept.

6.4 Police Department - No concerns were reported from the Police Dept.

6.5 Building Division –Standard comments were provided by the Building Division.

7.0 Design Review

The applicant is proposing to utilize the following materials for the exterior renovations:

- Benjamin Moore Gray 2121-10 paint
- Brushed stainless steel sign letters
- Sunbrella 64 Charcoal Tweed awnings
- Brass doors

The applicant proposes to remove the revolving door and adjoining staircase located at the corner of Pierce St. and Merrill St. and replace it with three (3) 2' x 6.5' windows; add three (3) new 2.25' x 2' windows above the existing metal entrance canopy; build out the entrance with 30 sq. ft. of matching limestone to align with existing curved building corner frontage; replace wood framed windows next on north elevation adjacent to entrance with two (2) 3' x 9' windows; replace existing wood doors at north elevation with two (2) new brass doors; insert two (2) boxwood plants on both sides of brass entry door; build a limestone border around the new brass entry door; replace the green fabric awning above the north elevation door with a 6" tall metal canopy; paint

both the existing and proposed metal canopies with Benjamin Moore “Gray” 2121-10; install 8” applied brushed stainless steel letters along the canopies at the corner entrance; and replace fabric on all existing awnings with Sunbrella Charcoal Tweed.

Article 3, section 3.04(E), Downtown Overlay District, of the Zoning Ordinance contains architectural and design standards that will apply to this building, including specific requirements for the design and relief of front façades, glazing requirements, window and door standards and proportions, roof design, building materials, awnings and other pedestrian scaled architectural features.

In accordance with Article 3, Downtown Birmingham Overlay District, of the Zoning Ordinance, the proposed work for 100 Townsend St. demonstrates no blank, windowless walls, provides direct access to the space from the public sidewalk, and proposes awnings 11’ above the sidewalk grade. The Downtown Overlay standards, per Article 3, Section 3.04, (E) (4) of the Zoning Ordinance, require that all buildings must have a minimum of 70% glazing on the first floor between 1 and 8 feet above grade. The submitted plans do not indicate the required glazing for the first floor frontage. However, the existing first floor glazing has been grandfathered in and will not be reduced with the alterations as proposed in the submitted plans and therefore will be permitted.

8.0 Signage Review

The applicant is proposing to remove the existing sign that reads “CORNER BAR” along the valence of the northwest metal canopy and to replace it with a 8” tall, 19’-6” long, brushed stainless steel name letter sign. The sign will display “THE TOWNSEND HOTEL” to match the north main entrance canopy sign. The proposed sign will be 13 square feet, which meets the requirements for area in accordance with Article 1, Section 1.05, Table B of the Sign Ordinance.

9.0 Approval Criteria for Final Site Plan

In accordance with Article 7, section 7.27 of the Zoning Ordinance, the proposed plans for development must meet the following conditions:

(1) The location, size and height of the building, walls and fences shall be such that there is adequate landscaped open space so as to provide light, air and access to the persons occupying the structure.

(2) The location, size and height of the building, walls and fences shall be such that there will be no interference with adequate light, air and access to adjacent lands and buildings.

(3) The location, size and height of the building, walls and fences shall be such that they will not hinder the reasonable development of adjoining property not diminish the value thereof.

(4) The site plan, and its relation to streets, driveways and sidewalks, shall be such as to not interfere with or be hazardous to vehicular and pedestrian traffic.

(5) The proposed development will be compatible with other uses and buildings in the neighborhood and will not be contrary to the spirit and purpose of this chapter.

(6) The location, shape and size of required landscaped open space is such as to provide adequate open space for the benefit of the inhabitants of the building and the surrounding neighborhood.

10.0 Approval Criteria for Special Land Use Permits

Article 07, section 7.34 of the Zoning Ordinance specifies the procedures and approval criteria for Special Land Use Permits. Use approval, site plan approval, and design review are the responsibilities of the City Commission. This section reads, in part:

> Prior to its consideration of a special land use application (SLUP) for an initial permit or an amendment to a permit, the **City Commission shall refer the site plan and the design to the Planning Board for its review and recommendation. After receiving the recommendation, the City Commission shall review the site plan and design of the buildings and uses proposed** for the site described in the application of amendment.
>
> The City Commission's approval of any special land use application or amendment pursuant to this section shall constitute approval of the site plan and design.

11.0 Suggested Action

Based on a review of the site plans submitted, the Planning Division recommends that the Planning Board RECOMMEND APPROVAL of the applicant's request for Final Site Plan and a SLUP to allow exterior and interior work for the former Corner Bar at 100 Townsend St.

12.0 Sample Motion Language

Based on a review of the site plans submitted, the Planning Division recommends that the Planning Board RECOMMEND APPROVAL of the applicant's request for Final Site Plan and a SLUP to allow the exterior and interior work for the former Corner Bar at 100 Townsend St.

OR

Motion to recommend DENIAL of the Final Site Plan and SLUP amendment to the City Commission for the commercial space at 100 Townsend St. for the following reasons:

_____

_____

OR

Motion to POSTPONE the Final Site Plan and SLUP to the City Commission for the commercial space at 100 Townsend St, with the following conditions:

1._____ _____
2._____

Zoning Compliance Summary Sheet
Preliminary Site Plan Review
100 Townsend St – Townsend Hotel – (Former) Corner Bar

Existing Site:

Zoning: B-4, Business-Residential, D-4 Overlay
Land Use: Food and drink establishment

Existing Land Use and Zoning of Adjacent Properties:

	North	South	East	West
Existing Land Use	Government Office (City Hall)	Commercial/ Retail	Parking Structure (Pierce Street Parking Garage)	Public Park (Shain Park)
Existing Zoning District	PP, Public Property	B-4, Business-Residential	PP, Public Property	PP, Public Property
Existing Overlay Zoning	C, Community Use	D-2, Downtown Two or Three Stories	D-3, Downtown Three or Four Stories & P Parking	C, Community Use

Land Area:	existing: proposed:	1,778 sq. ft. Same as existing
Minimum Lot Area:	required: proposed:	N/A Existing
Minimum Floor Area:	required: proposed:	600 sq ft (efficiency or one bedroom) 800 sq ft (two bedroom) 1,000 sq ft (three or more bedroom) Existing
Maximum Total Floor Area:	required: proposed:	100% for commercial/offices uses Existing
Minimum Open Space:	required: proposed:	N/A Existing
Maximum Lot Coverage:	required: proposed:	N/A Existing

Front Setback:	required:	0 ft
	proposed:	Existing
Side Setbacks:	required:	0 ft
	proposed:	Existing
Rear Setback:	required:	N/A
	proposed:	Existing
Max. Bldg. Height:	required:	60 ft
	proposed:	Existing
Minimum Eave Height:	required:	N/A
	proposed:	Existing
First Floor Ceiling:	required:	N/A
	proposed:	Existing

Front Entry: required: Principal pedestrian entrances must be on frontage line.

proposed: Removing corner entrance, keeping main entrance as principal entrance

Parking:	required:	Not required for commercial properties in Parking Assessment District
	proposed:	N/A
Loading Area:	required:	N/A
	proposed:	N/A

Screening:

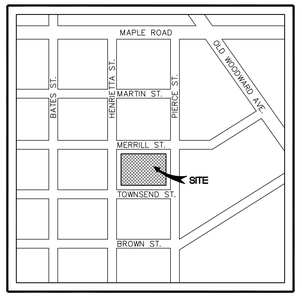
Parking:	required:	N/A
	proposed:	N/A
AC/Mech. units:	required:	N/A
	proposed:	N/A
Dumpster:	required:	N/A
	proposed:	N/A

INTERIOR ALTERATIONS & FACADE IMPROVEMENTS FOR:

CORNER BAR

100 Townsend Street

Birmingham, Michigan 48009



Site Location Map
Not To Scale

Scope of Work:
The following drawings refer to the exterior alteration and renovation of the existing Corner Bar at The Townsend Hotel to a private dining and meeting venue. Removal of current revolving door and adding 30sf to complete the curved corner all the way to the ground floor. New limestone border (to match existing) around new brass entry doors on W Merrill St along with a new metal canopy above. Existing metal canopies to be painted. Replace fabric on existing awnings on Pierce St and Merrill St.

Owner:
THC Investors
100 Townsend
Birmingham, MI 48009
T: 248.433.1270
Contact: David Sillman

Architect:
Saroki Architecture
430 N. Old Woodward / Suite 300
Birmingham, Michigan 48009
T: 248.258.5707
F: 248.258.5515
Contact: Victor Saroki, FAIA

Mechanical, Electrical, & Plumbing:
Design-Build Delivery

General Contractor:
Frank Rewold & Son, Inc.
333 East Second Street
Rochester, Michigan 48307
T: 248-651-7242
F: 248-651-5174
Contact: Frank Rewold

Building / Construction Information:
2012 Michigan Building Code
2012 Michigan Plumbing Code
2012 Michigan Mechanical Code
2011 National Electrical Code
2009 Michigan Uniform Energy Code
2012 Edition NFPA 101
Barrier Free Requirements per PA Act 1 of 1966 as amended, ADAAG 2010, and ICC / ANSI A117.1-2009 Edition

Use Group:
Primary: A-2 (Assembly/Restaurant) (Existing) No Change

Construction Type:
Construction Type: (Existing) No Change
Fire Protection: (Existing) No Change

Building Information:
Allowable Height:

Building Height (Existing) No Change
Zoning (Existing) No Change
Parking Requirements (Existing) No Change
Loading Space Requirements (Existing) No Change

Occupant Load:
Use Group:
Dining & Pre Function Area 1,778 GSF
Total Occupant Load for Rugby Grille 1,778 GSF / 15 Net = 118.53 ~ 119 occupants

Means of Egress: (2) 6'-0" Exterior doors facing Merrill

Sheet Index:

● REVISED
○ ISSUED FOR REFERENCE ONLY

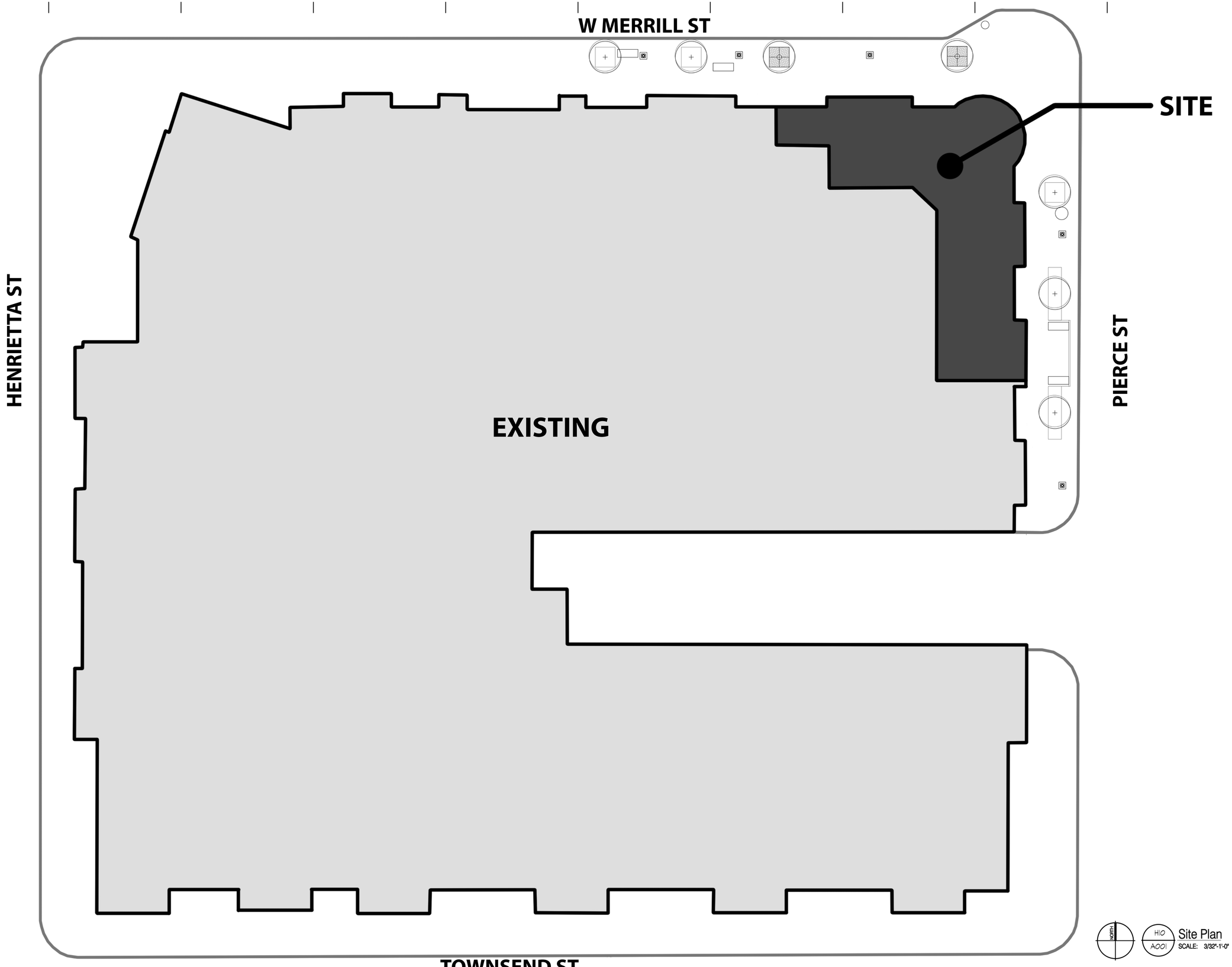
		DESIGN REVIEW BOARD 04-22-2016
A000	COVER SHEET	●
A001	SITE PLAN	●
	ARCHITECTURAL	
A100	PROPOSED FLOOR PLAN	●
A200	PROPOSED NORTH ELEVATION	●
A201	PROPOSED EAST ELEVATION	●

SAROKI ARCHITECTURE
430 N. OLD WOODWARD
BIRMINGHAM, MI 48009
P. 248.258.5707
F. 248.258.5515
SarokiArchitecture.com

Project:
Corner Bar
100 Townsend St.
Birmingham, MI 48009

Date:	Issued For:
04-22-2016	DESIGN REVIEW

Sheet No.:
A000
COVER SHEET



SAROKI
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SarokiArchitecture.com

Project:

Corner Bar
100 Townsend St.
Birmingham, MI 48009

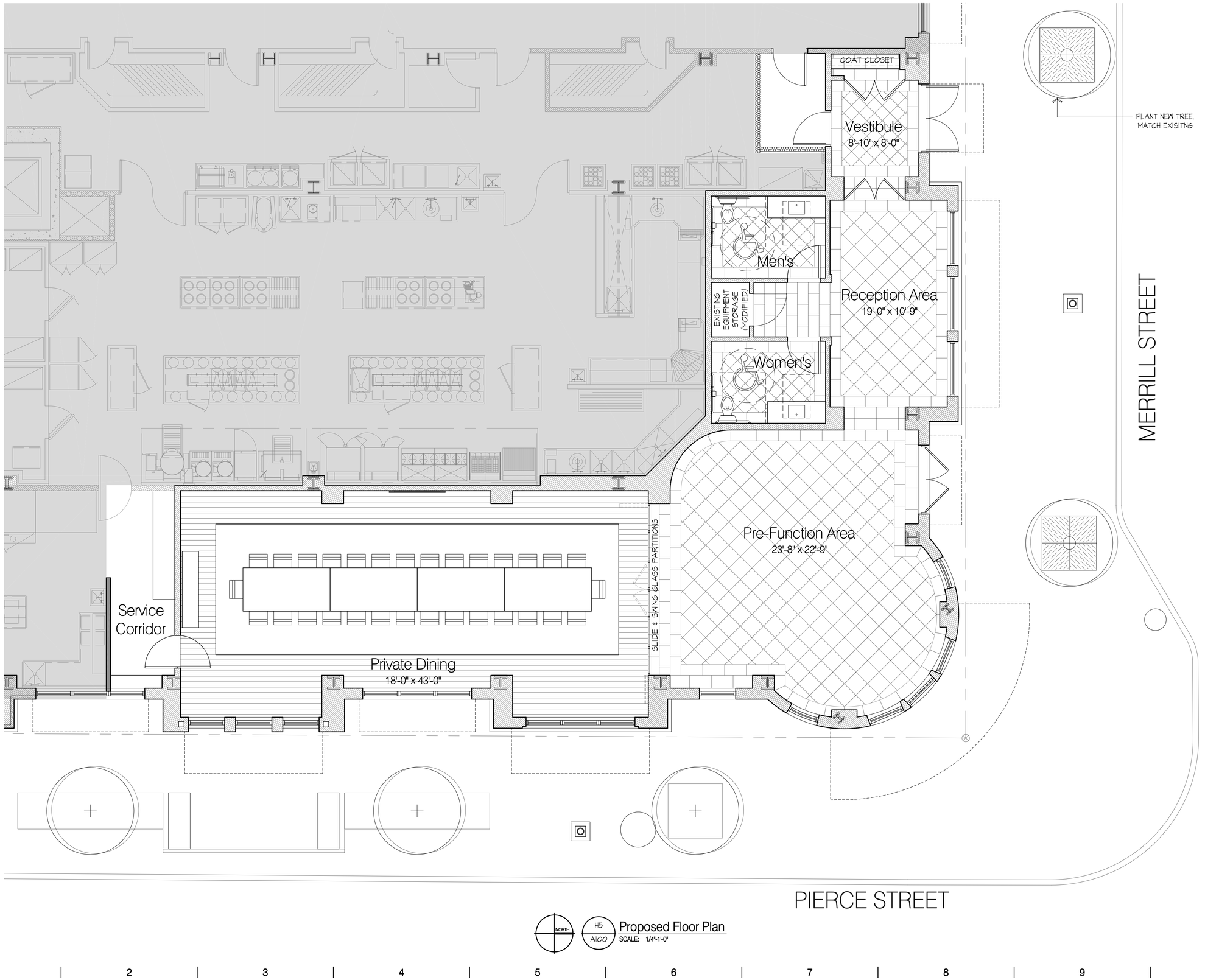
Date:	Issued For:
04-22-2016	DESIGN REVIEW

Sheet No.:

A001
Site Plan

NORTH

H10 / A001 Site Plan
SCALE: 3/32"-1'-0"



NORTH

H5
A100

Proposed Floor Plan

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

SAROKI
ARCHITECTURE

430 N. OLD WOODWARD
BIRMINGHAM, MI 48009

P. 248.258.5707
F. 248.258.5515

SarokiArchitecture.com

Project:

Corner Bar
100 Townsend St.
Birmingham, MI 48009

Date:	Issued For:
04-22-2016	DESIGN REVIEW

Sheet No.:

A100

PROPOSED FLOOR PLAN

Permanent Business Sign Standards:

PRINCIPAL BUILDING FRONTAGE	=	159'-8"
MAXIMUM ALLOWABLE SIGNAGE AREA	=	159.8 S.F.

Canopy Sign Proposed:

LENGTH AND HEIGHT OF VALANCE	=	32'-0" x 1'-3"
AREA OF VALANCE	=	40 S.F.
MAXIMUM ALLOWABLE SIGNAGE AREA	=	13.33 S.F.

Permanent Business Sign Size:

PERMANENT BUSINESS SIGN A AREA (THE TOWNSEND HOTEL CANOPY - proposed)	=	13 S.F.
PERMANENT BUSINESS SIGN B AREA (THE TOWNSEND HOTEL PLAQUE - existing)	=	4 S.F.
PERMANENT BUSINESS SIGN C AREA (THE TOWNSEND HOTEL CANOPY - existing)	=	13 S.F.
PERMANENT BUSINESS SIGN D AREA (THE TOWNSEND HOTEL PLAQUE - existing)	=	4 S.F.
TOTAL PERMANENT BUSINESS SIGN AREA	=	34 S.F.

H5 / A200 Proposed North Elevation
SCALE: 3/32"-1'-0"

SAROKI ARCHITECTURE
430 N. OLD WOODWARD
BIRMINGHAM, MI 48009
P. 248.258.5707
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Project:

Corner Bar
100 Townsend St.
Birmingham, MI 48009

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Sheet No.:

A200
Proposed North Elevation

H5 / A201 Proposed East Elevation

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

SAROKI ARCHITECTURE
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Project:

Corner Bar
100 Townsend St.
Birmingham, MI 48009

Date:	Issued For:
04-22-2016	DESIGN REVIEW

Sheet No.:

A201

Proposed East Elevation


13-1
Summit
electric
248-689-0300
TROY, MI
USDOT 1897596


THE CORNER
877-476-8294
Licensed Limo
7-476-8294
MICHIGAN GREEN CARS


STOP
ALL WAY
PARK
Pierce
Street
P


THE CORNER


THE CORNER


Birmingham

THE TOWNSEND HOTEL

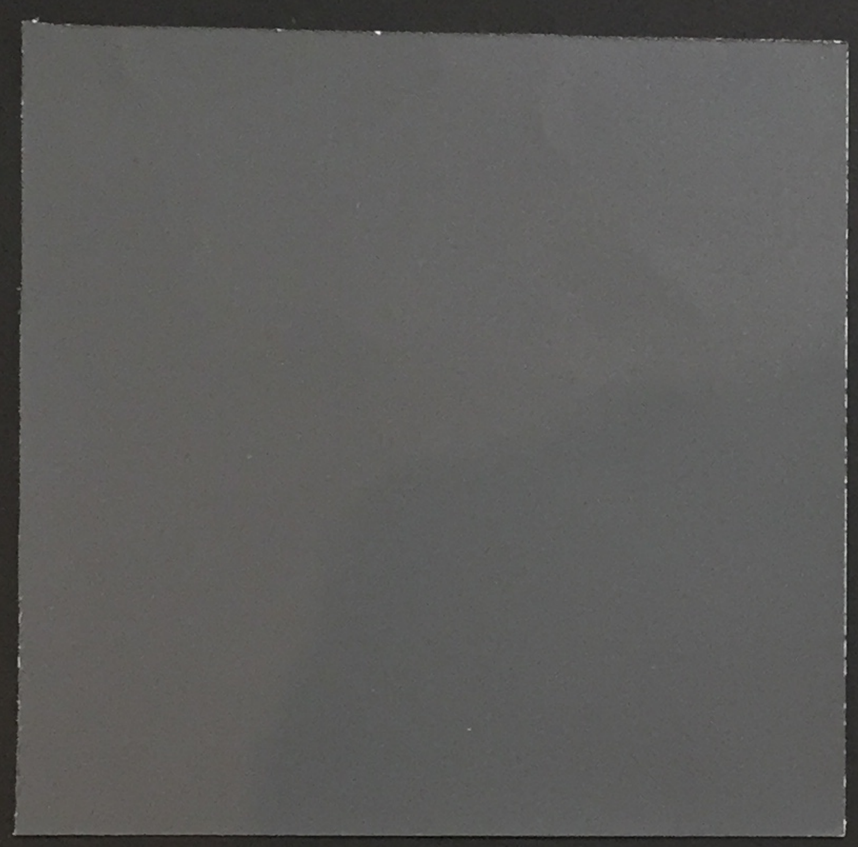
THE TOWNSEND HOTEL

VALET PARKING

HOTEL CHECK-IN ON TOWNSEND STREET

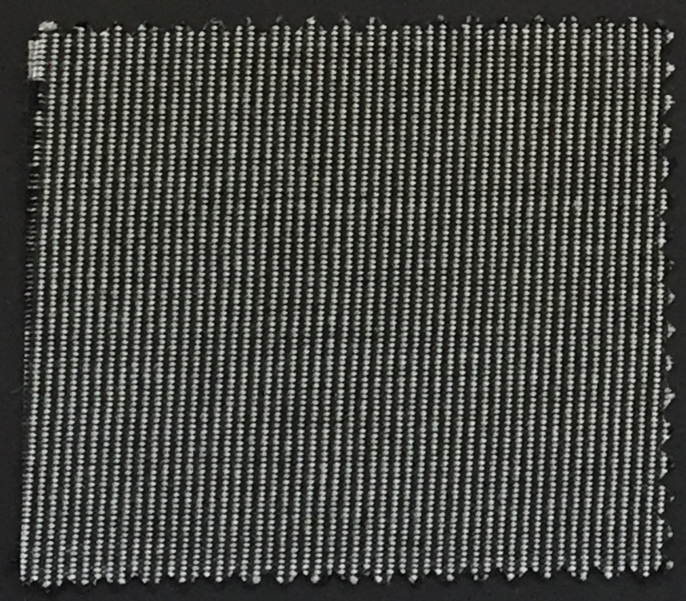
Forbes

THE TOWNSEND HOTEL RENOVATION



BENJAMIN MOORE GRAY 2121-10

BRUSHED STAINLESS STEEL



SUNBRELLA 64 CHARCOAL TWEED

BRASS

AGENDA

City of Birmingham
A Walkable Community

MEMORANDUM

Planning Division

DATE: **May 16, 2016**

TO: **Planning Board members**

FROM: **Jana Ecker, Planning**

SUBJECT: **856 N. Old Woodward**
Revised Preliminary Site Plan Review (changes in blue type)

The parcel at 856 N. Old Woodward is currently vacant. The applicant intends to build a four-story mixed use building at the subject site, with an additional level of underground parking. The site has a total land area of .56 acres and is located on the east side of N. Old Woodward south of Oak Street.

It is proposed that the lower level of the building will have parking and the first floor is proposed to contain parking fronted by retail space and a residential lobby. The second, third and fourth floors are now proposed to contain **26 residential units (previously 27)**. On street parking will also be provided on N. Old Woodward. The footprint of the building proposed is 20,428 S.F., giving the building an approximate total of 102,000 G.S.F. Thus, the applicant was required to prepare a Community Impact Study in accordance with Article 7, section 7.27(E) of the Zoning Ordinance as they are proposing one new building containing more than 20,000 sq. ft. of gross floor area.

On December 9, 2015, the Planning Board reviewed the Community Impact Study for the proposed development, and after much discussion, both the Community Impact Study and the Preliminary Site Plan review were postponed to January 13, 2016 to allow the applicant to address outstanding issues.

On January 13, 2016, the Planning Board reviewed the Community Impact Study for the proposed development, including updates and revisions submitted by the applicant with regards to traffic and environmental issues. The Planning Board voted to accept the CIS with the provision that if the number of units or stories change or there are other significant changes the applicant would have to provide an update to the impacts for administrative approval. The Planning Board further postponed the Preliminary Site Plan review until February 24, 2016.

On February 24, 2016, the Planning Board reviewed the site plan and traffic study further, and voted unanimously to approve the Preliminary Site Plan.

1.0 Land Use and Zoning

1.1 Existing Land Use – The existing property is currently vacant. There are no structures on the site. Office, commercial, and multi-family uses surround the site.

1.2 Zoning – The property is currently zoned O2, Office/Commercial and is located at the northern edge of the Downtown District. The surrounding uses conform to the permitted uses of each Zoning District. The parcel is also in the Downtown Overlay District. It has an overlay zoning of D2.

1.3 Summary of Adjacent Land Use and Zoning - The following chart summarizes existing land use and zoning adjacent to and/or in the vicinity of the subject site, including the proposed 2016 Regulating Plan zones.

	North	**South**	**East**	**West**
Existing Land Use	Commercial	Office/ Commercial	Rouge River	Multi-Family Residential
Existing Zoning District	B2B General Business	O2 Office/ Commercial	PP Public Property	R6 Multi-Family Residential
Overlay Zoning District	D2	D2	N/A	N/A

2.0 Setback and Height Requirements

The proposed development meets the minimum eave height of 20' and the maximum height requirement of 56'. However, no rooftop plans were provided to ensure that any proposed mechanical equipment would not extend past the 56' maximum. **The applicant has now provided a building section with rooftop mechanical equipment that does not exceed 56' in height.** Also, the maximum number of stories in the D2 zone is three if the third story is used solely for residential use. The applicant is proposing four stories, with both the third and fourth stories proposed for residential use. **The applicant has setback the proposed fourth story 10', but has setback the third story an additional 10' as required in the D2 zone. The applicant will be required to eliminate the fourth floor and setback the third story 10', or obtain a variance from the Board of Zoning Appeals.** The Building Official has determined that the underground parking level is a basement, and does not constitute an additional story.

The building is not on the frontage line, however, it is **setback 10.8' (previously 22')**. In accordance with Article 3, section 3.04(B), the Planning Board may adjust the front setback to match the front setback of any abutting building **The applicant has now provided the front and rear setbacks for both adjacent buildings to the north and south, and the proposed building must have a front and rear setback equal to the front and rear setback of any of the adjacent buildings. The front setback of the building to the north is 10.8', and the rear setback of the building to the south is 12.8'. Thus, the proposed building has front and rear setbacks equal to those of adjacent buildings as required.** The proposed development is in accordance with Article 4, Section 4.52 PK-08 as the first story off-street parking is located greater than 20' from the front façade and is masked by a 49' deep retail space.

Please see the attached Zoning Compliance Summary Sheet for detailed zoning compliance information.

3.0 **Screening and Landscaping**

3.1 Dumpster Screening – **The applicant is proposing to locate all trash receptacles within the building with access from the underground parking area (previously on the ground floor).** The materials for the walls or the doors screening the dumpster are not specified on the submitted plans, however the trash room is fully enclosed within the building.

3.2 Parking Lot Screening – All parking facilities must be screened in accordance with Article 4, section 4.49 of the Zoning Ordinance. All of the required parking is proposed to be located within the first floor and in the lower level of the building. The proposal complies with Article 4, Section 4.52 PK-08 as the first story off-street parking is located greater than 20' from the front façade as the applicant is proposing retail space with a depth of 49' along N. Old Woodward. **The front entry to the at-grade and below-grade parking is located at the southwestern corner (previously the northwestern corner) of the site. Parking is also proposed in the right-of-way (previously in the right-of-way and on private property along the front of the building) to provide additional parking to match the ROW parking to the south. The Engineering Department approves of the design intent, but has stated that the applicant will be required to provide the City with an access easement for ingress/egress and maintenance of these proposed public parking spaces.**

3.3 Mechanical Equipment Screening – **One electrical transformer is now proposed at the rear of the property outside of the building (previously two were proposed within the building).** The transformer will be screened by the building itself, but it will be visible from the river. No specifications have been provided for exterior mechanical equipment, but **a rooftop plan has now been submitted**.

The applicant has submitted a building section showing a 5' deep well (previously 10' deep) on the roof for rooftop mechanical equipment. The applicant has now provided a building section that shows the depth of the mechanical well and the height of the proposed rooftop mechanical equipment. The applicant will be required to provide specification sheets at the time of Final Site Plan and Design Review.

3.4 Landscaping –Article 04 section 4.20 LA-01(G) of the Zoning Ordinance requires at least 1 street tree for each 40 linear feet of frontage. As the property has 169' of street frontage along N. Old Woodward, 4 street trees are required. The plans submitted show 4 street trees along N. Old Woodward. As the site is located within the Downtown Overlay District, there are no other landscape requirements for this site. **A detailed landscape plan has not been submitted, however the plans now identify the proposed street trees as Red Maples. The applicant will be required to submit a detailed landscape plan at the time of Final Site Plan and Design Review.**

3.5 Streetscape - The applicant is proposing 6 new 24" square concrete planters with unspecified flowering perennials and annuals and 2 new city standard benches along N. Old Woodward in front of the new building. The applicant is not proposing to add any street lights or bike racks along N. Old Woodward in front of the building. These must be shown on the plans at Final Site Plan and Design Review. **The applicant has now revised the streetscape plans, and is now proposing a 7' sidewalk, with one bench at the northwestern corner of the site, and one at the southwestern corner of the site, in the plaza area facing south. Four bike racks are proposed adjacent to each of the benches as well. Concrete planters are no longer proposed. Two double light fixtures are now shown in the median next to the northbound lane of N. Old Woodward, but no specification sheet has been provided. The applicant is required to add pedestrian-scale street lights along N. Old Woodward.**

4.0 Parking, Loading and Circulation

4.1 Parking – In accordance with Article 4, section 4.34 of the Zoning Ordinance, the proposed development is required to have a total of 56 parking spaces (previously 55) **(now 22 two room units x 1.5 spaces per unit [33] 4 three room units x 2 spaces per unit [8] and one space for every 300 sq.ft. of retail space [15]. The applicant is proposing 62 total parking spaces located on the first floor and lower levels of the building, and thus has met the requirements for parking. In addition, 6 extra spaces are proposed in the ROW in front of the building (previously 16). However, the applicant has not yet provided floor plans of the individual units to evidence that all units are two or three rooms as noted.** All proposed parking spaces meet the minimum 180 sq.ft. size requirement. The proposed development complies with Article 4, Section 4.52 PK-08 as the first story off-street parking is located greater than 20' from the façade with a 49' deep retail space screening the parking area.

The applicant has now relocated the bike parking to the ground floor parking level, and added 10 bike racks. Cyclists would no longer have to use the ramp or elevator to access the bike parking area.

4.2 Loading – Article 4, section 4.24 of the Zoning Ordinance provides that no off-street loading spaces are required as the retail area of the building is less than 5,000 sq.ft. in size. **However, the applicant has now added one 12' by 40' loading space on the first level adjacent to the trash room. It is fully enclosed within the building.**

4.3 Vehicular Circulation and Access –**The applicant proposes a driveway on the southwest corner (previously northwest corner) to access the enclosed first floor parking and the lower level parking.** The vehicular opening in the building is permitted to be 25' or less in width in accordance with Article 3 of the Zoning Ordinance. The plans submitted show a proposed width of 22', which meets the Downtown Overlay requirement. **The proposed vehicular entry will now have two glass in bronze overhead garage doors framed by stone columns (previously one large door). The revised plans submitted show parking aisle widths for all levels of parking at 20' to 21.25' in width.**

4.4 Pedestrian Circulation and Access – The applicant is proposing a new sidewalk to connect with the sidewalk on the property to the south. **The architectural plans submitted show the sidewalk width as 7' (previously 5').** There are five proposed entrances along the front façade. **The applicant is now showing two proposed entrances to the retail space, one entrance into the residential lobby of the building, and two entrances that connect to the rear parking and stair towers for egress. The residential lobby for this building is now located in the southwestern portion of the building abutting the entrance to the underground parking. There are two entrances to the lobby, one from the inside of parking area, and one from the front of the building. This lobby includes one elevator, a mail kiosk area, and a staircase.**

5.0 Lighting

A photometric plan has now been provided, however no specification sheets have been submitted at this time, but will be required at Final Site Plan and Design Review. The elevation drawings indicate the use of bronze metal backlit disk lights on the upper floors to add architectural interest. Lighting will be reviewed in detail at Final Site Plan and Design Review.

6.0 Departmental Reports

6.1 **Engineering Division – The Engineering Division has reviewed the revised site plan and the following comments are offered:**

1. **It appears that the front face alignment of the building at grade will allow the existing sidewalk and public parking area to the south to be extended north on the same alignment. The following relates to this part of the plan:**
   a. **The traffic study has been revised, and now indicates that the Level of Service for northbound traffic at Oak St. will not be materially affected by the shortened right turn lane that will result from this project. If our traffic consultant agrees with this analysis, the proposed dimensions of the new parking area are generally satisfactory.**
   b. **The public street level parking area has been reduced from the previous concept. Nevertheless, a portion of the basement will extend under the public sidewalk, and a portion of the public parking area driveway. The supported slab will have to be constructed out of reinforced concrete independent of the adjoining parking lot. In order to create a consistent appearance, we will require that the entire new parking area be constructed of concrete.**
   c. **Long term maintenance of the supported slab over the basement will take extra care over and above normal concrete flatwork. As a part of the building permit, the easement document being signed over to the City for public ingress/egress of this area shall have other terms outlined in it, particularly with regard to concrete maintenance. The agreement shall indicate that the owner shall be responsible to patch and maintain the supported slab concrete as needed to keep the area safe, and to respond to written notices that may be issued by the City if such maintenance is not satisfactory. If the owner does not respond in a suitable manner to maintenance needs in this area, the City shall have the right to occupy this area and repair the same, with all such repair costs billable to the adjacent property owner.**

2. **The proposed development will impact the 100-year floodplain. It appears that the design intent is to comply with the floodplain development requirement of not causing any net fill within the floodplain boundary. We will review this in more detail during review of the plans prior to the issuance of a building permit.**

3. **Due to its direct connection to the Rouge River, the developer is encouraged to design all storm water flow into an on-site storm water cleaning facility prior to discharging into the river. Doing so will allow the developer to avoid requirements under the Storm Water Runoff permit requirements. Although detailed utility plans have been submitted, there is no reference to a storm water discharge to the river. Since the City is going to be enacting a storm water quality ordinance within the next year modeled after the ordinance being formulated by Oakland Co., the engineer is encouraged to review those standards and design accordingly.**

The following permits will be required from the Engineering Division for this project:

A. Right-of-Way Permit (for excavations in the right-of-way).
B. Street Obstruction Permit (for all obstructions in the right-of-way during construction).
C. Sidewalk/Drive Approach Permit (for all pavement installed in the right-of-way).
D. Soil Erosion and Sedimentation Control Permit.

6.2 The Department of Public Services - **The DPS will provide comments prior to the Planning Board meeting on May 25, 2016.**

6.3 Fire Department – The Fire Department had previously stated that the following requirements must be met:

1. Emergency Responder radio coverage is required.
2. Fire suppression with a minimum of a 6" water main is required.
3. Fire Alarm with smoke detectors required.
4. Knox Box is required.

At this time, the Fire Department has noted that their previous concerns that have been addressed in an email response from John Marusich. However, the following concern remains:

The FDC for the suppression system shall be located on the street front in accordance with the International Fire Code. The current configuration of the driveway, islands and parking spots will not allow access to the front of the building by the fire engines. Possible considerations are to reconfigure the front access to the building for the fire engines or place the FDC out front in the island, accessible to the FD from Woodward.

6.4 Police Department – The Police Department has no concerns.

6.5 Building Division – **Earlier this year, the Building Division provided the following comments:**

1. The applicant has resolved comments 1, 2, and 4 from my initial review dated January 7, 2016. The exit discharge for the lower level appears to comply; the exterior doors at the public sidewalk are revised to not swing over the sidewalk; and the basement level will not be considered a story in accordance with the definition of building height.

2. MDEQ approval/permit will be required for the work occurring in and over the 100-year floodplain.

3. The apartments will need to comply with the accessibility requirements in Chapter 11 of the building code for Type A and B dwelling units.

4. The proposed design does not appear to comply with the specific height standards in Section 3.04 (1). The third story, if permitted, needs to continue in a different plane beginning at the eave line by either sloping not greater than 45 degrees or stepping back 10-feet from the façade. This point appears to be the intended location to measure maximum eave height. The peak or ridge of any sloped roof then has a maximum height of 46-feet.

No new comments have been received at this time.

7.0 Design Review

At this time the applicant has provided elevation drawings, but specific details or specification sheets on the materials have not yet been provided. The plans submitted indicate that the applicant is proposing to utilize the following materials:

- Stone (knee walls and upper level panels);
- Bronze metal (C channels, railings metal panels and awnings);
- Glass windows and storefront door systems with bronze frames and glass in bronze frame garage doors; and
- Bronze security screening and decorative bronze metal fencing in the easement south of the building.

The Planning Division will reserve detailed comments regarding architectural standards and design related issues for the Final Site Plan and Design Review. **However, based on the plans submitted at this time, it appears that a variance may not be needed for the required glazing on the ground level storefront along N. Old Woodward, as 70% is required and the plans state 70.08% is proposed. The plans also show 28.4% glazing on the upper floors, which is below the maximum of 35%.** The use of glass for railings as previously submitted is not permitted in the Downtown Overlay.

8.0 Approval Criteria

In accordance with Article 7, section 7.27 of the Zoning Ordinance, the proposed plans for development must meet the following conditions:

(1) The location, size and height of the building, walls and fences shall be such that there is adequate landscaped open space so as to provide light, air and access to the persons occupying the structure.

(2) The location, size and height of the building, walls and fences shall be such that there will be no interference with adequate light, air and access to adjacent lands and buildings.

(3) The location, size and height of the building, walls and fences shall be such that they will not hinder the reasonable development of adjoining property not diminish the value thereof.

(4) The site plan, and its relation to streets, driveways and sidewalks, shall be such as to not interfere with or be hazardous to vehicular and pedestrian traffic.

(5) The proposed development will be compatible with other uses and buildings in the neighborhood and will not be contrary to the spirit and purpose of this chapter.

(6) The location, shape and size of required landscaped open space is such as to provide adequate open space for the benefit of the inhabitants of the building and the surrounding neighborhood.

9.0 Recommendation

Based on a review of the site plan submitted, the Planning Division recommends that the Planning Board approve the Revised Preliminary Site Plan for 856 N. Old Woodward with the following conditions:

1. The applicant eliminate the fourth floor or obtain a variance from the Board of Zoning Appeals;
2. Provide the City with an access easement for ingress/egress and maintenance of the proposed public parking spaces;
3. Provide floor plans for all units to verify correct parking is provided;
4. Provide specification sheets for all mechanical equipment at the time of Final Site Plan and Design review;
5. Submit a landscape plan and lighting specification sheets at the time of Final Site Plan and Design Review;
6. Add pedestrian scale street lights along N. Old Woodward; and
7. Comply with the requirements of all City departments.

10.0 Suggested Motion Language

Based on a review of the site plan submitted, the Planning Division recommends that the Planning Board APPROVE the Revised Preliminary Site Plan for 856 N. Old Woodward with the following conditions:

1. The applicant eliminate the fourth floor or obtain a variance from the Board of Zoning Appeals;
2. Provide the City with an access easement for ingress/egress and maintenance of the proposed public parking spaces;
3. Provide floor plans for all units to verify correct parking is provided;

4. Provide specification sheets for all mechanical equipment at the time of Final Site Plan and Design review;
5. Submit a landscape plan and lighting specification sheets at the time of Final Site Plan and Design Review;
6. Add pedestrian scale street lights along N. Old Woodward; and
7. Comply with the requirements of all City departments.

OR

Motion to DENY the Revised Preliminary Site Plan for 856 N. Old Woodward.

OR

Based on a review of the site plan submitted, the Planning Division recommends that the Planning Board POSTPONE a decision on the Revised Preliminary Site Plan.

Planning Board Minutes
December 9, 2015

COMMUNITY IMPACT STUDIES ("CIS") AND PRELIMINARY SITE PLAN REVIEWS

1. 856 N. Old Woodward Ave. (vacant land)
Application for a CIS and Preliminary Site Plan Review to consider a request to construct a new four-story mixed-use over 20,000 sq. ft. in size (postponed from November 11, 2015)

Ms. Ecker explained the site has a total land area of .56 acres and is located on the east side of N. Old Woodward Ave. south of Oak St.

Ms. Ecker advised that the applicant is proposing to construct a four-story mixed-use building. The lower level of the building will have parking and residential storage spaces. The first floor is proposed to contain parking fronted by retail space and a residential lobby. The second, third and fourth floors will contain 27 residential units. On-street parking will be provided on N. Old Woodward Ave. The building will have an approximate total of 106,513.7 gross sq. ft. Thus, the applicant was required to prepare a Community Impact Study in accordance with Article 7, section 7.27(E) of the Zoning Ordinance as they are proposing one new building containing more than 20,000 sq. ft. of gross floor area.

CIS
The CIS acts as a foundation for discussion between the Planning Board and the applicant, beyond the normal scope of information addressed in the Preliminary Site Plan Review application. The Planning Board "accepts" the CIS prior to taking action on a Preliminary Site Plan.

Planning and Zoning Issues:

- Use - The site is currently zoned O-2 Office and falls within the D-2 Overlay District as provided in the Downtown Birmingham 2016 Plan The proposed residential units, retail space and parking facility are permitted principal and/or accessory uses in the 0-2 and D-2 Zone District.

- Overlay District Compliance - The proposed development implements some of the recommendations contained in the 2016 Plan. However, the proposed building contains one extra floor of residential above the three stories recommended in the 2016 Plan. Although it is four stories, the building conforms to the maximum height of 56 ft. limit in the D-2 Zone of the Overlay District. The Building Official will have to make a final determination as to whether it is clear they can only have three stories. ***If that is the case, the applicant will need a variance from the Board of Zoning Appeals ("BZA") for the fourth story.***

- Master Plan Compliance, 2016 Plan - The CIS presented does not fully discuss the goals and objectives of the City's Master Plan to demonstrate whether the City can support the proposed development. However, a number of goals and objectives of the Downtown

Birmingham 2016 Master Plan do demonstrate that the City can support the proposed development.

Land Development Issues: While the applicant has submitted a soil boring report, the received materials do not confirm that the soils within the subject site are suitable to support the proposed development. The applicant will be required to provide a full soil analysis when applying for a Building Permit. On August 13, 2015, PM Environmental conducted a subsurface investigation and discovered a whole list of contamination concerns that exceed the limits. The applicants plan to submit a Brownfield Application to the City.

The existing site also contains steep slopes. The applicant proposes a below grade parking garage that will substantially remove the existing site erosion and runoff conditions into the adjacent Rouge River. Areas of existing steep slopes will be stabilized during construction to prevent erosion. The CIS states that an Erosion Control Plan will be prepared to meet all municipal soil erosion control requirements to mitigate any potential discharge of materials into the river. Mr. Share was certain the construction will disturb some of the contaminated soils. He did not think the Michigan Dept. of Environmental Quality ("MDEQ") will be proactive so the City ought be concerned. Ms. Ecker clarified that is generally something that the Brownfield Redevelopment Authority would handle when a Brownfield Plan is submitted for reimbursement. She added the City can call the MDEQ and bring this to their attention. Also, she can submit this information to the City's environmental attorney to ensure everyone is fully aware about what is going on. Chairman Clein suggested that the applicant provide background information on their mitigation plan for the City to review and take proper action to protect the City's interest in the natural environment. Further, Mr. Boyle wanted to see some resolution regarding the roles and responsibilities of the different agencies in detailing whether this facility can mitigate the contamination that exists at present.

Utilities, Noise and Air Issues: All required utility easements have not been verified. However, the applicant has noted that the civil engineer and construction manager will provide verification of easements for all proposed and additional utilities prior to construction. In accordance with the 2016 Plan, all utilities on the site should be buried to visually enhance the site. The CIS does not indicate that utilities will be buried to meet this provision.

A sound study was performed by Kolano and Saha Engineers to analyze existing ambient noise and estimated future noise levels on the site. The prepared noise report states the site has a measured sound level of DNL 63 dB, and thus falls within HUD guidelines for residential land use. Kolano and Saha have provided information detailing the types of units that will produce the least amount of sound.

The CIS notes that the proposed project is not expected to create excessive noise that would exceed existing code standards.

The CIS states that the closest air monitoring stations are located in Oak Park and Pontiac. Current ambient air quality standards are well under the existing minimum standards mandated by the Environmental Protection Agency "(EPA"). The applicant has indicated that all new HVAC equipment will be selected to provide minimum pollutant discharge and maximum filtration.

Environmental Design and Historic Values: The applicant will be required to provide the City with a public access easement for the western portion of the site that is proposed for public parking and a public sidewalk.

Refuse, Sewer and Water: The CIS states that there will be a refuse room on the first level that will be adequate in size to service the development. No details have been provided on the size of the trash containers, nor has information been provided to detail the collection and separation of recyclables. The CIS further states that there is adequate water service to the site and that the existing sanitary and combined sewers on the site will be sufficient to service the development.

The applicant has stated that the proposed wastewater system will be adequately designed by an engineer to service the facility and that design capabilities of the facilities will not be exceeded as a result of this project.

The proposed storm water system will be designed to meet the City standards for storm water management. The applicant anticipates that the design capacity of storm water facilities will not be exceeded. The CIS has indicated that elements have been incorporated into the project to reduce the amount of storm water entering the sewer. This will be carried out through a proposed underground detention system.

The applicant has indicated that the proposed water service system will be adequately designed to service the facility. The applicant anticipates that the existing water quality is safe from both chemical and bacteriological standpoints and will provide verification of this prior to final site plan review. The applicant also anticipates the water supply design to be compatible with the existing City system.

Public Safety: The applicant has not indicated whether the proposed development location or design provide adequate access for police, fire and emergency vehicles and individuals. However, the applicant has indicated that the project design will be reviewed by all public safety services and recommendations for conformance will be implemented into the final design.

Transportation Issues**:** The applicant has submitted a Traffic Impact Study prepared by Stonefield Engineering and Design. The City's traffic consultant, Fleis & Vandenbrink, has completed a review of the traffic study and provided a number of comments and concerns. The traffic study should be revised to meet all City requirements and approved by the City's traffic consultant.

The applicant is proposing 19 parking spaces on the first level located behind the retail. Thirty-seven parking spaces are proposed on the lower level and nine parking spaces are proposed in the open space parking outside along the western edge of the property for a total of 65 spaces. The CIS states that there will be no more than 75 parking spaces, but both the engineering and architectural drawings show 65 parking spaces.

Natural Features**:** The applicant has indicated that there are no water quality issues known regarding the existing Rouge River to the east of the site. The CIS indicates that the proposed

project will involve an increase in impervious surface area. An underground detention system has been designed to accommodate the additional impervious surfaces and reduce the overall runoff from the site. The CIS indicates that the project will not affect surface water flows on water levels of ponds or water bodies. The MDEQ has been notified and does not anticipate any adverse effects. The CIS also states that the project is located within the 100-year floodplain. As such, the applicant indicates that the project will meet all state and local floodplain regulations.

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The proposed development will not destroy a natural feature, but it will isolate the river from public access. However, there is not currently public access to the river from this site. No natural feature will pose a safety hazard to the development nor will the proposed project destroy any existing wildlife or habitats.

Mr. Tim Ponton, Stonefield Engineering and Design, spoke on behalf of the applicant and explained to the board their design process and some of the challenges they encountered in terms of getting the development to work. Very deep piles along with a grid system will be needed beneath the project. Their property line comes out 20 ft. as compared to the remainder of the block. What that means for them is the opportunity for additional parking and extending the boulevard.

Mr. Ponton explained that they will be required to file a Due Care Plan with MDEQ who will then monitor their construction, ultimately do additional testing, and then sign off. Therefore, the site will be cleaned up to meet at least the minimum standards for residents to be living there. In addition the county will be taking a look at it to make sure from a soil erosion and sediment control standpoint nothing gets into the Rouge River. They intend to submit a Brownfield Plan. In terms of the traffic, they are confident they can mitigate any issues and satisfy the City traffic engineer. They hope to develop the site into something that is consistent with the existing development patterns and are under the assumption that they will go before the BZA for a height variance.

Motion by Mr. Williams
Seconded by Mr. Share to receive and file the letter from Norman Ziegelman dated October 26, 2015 and also a letter from Carolyn Butcher which is marked received on November 30, 2015.

Motion carried, 7-0.

VOICE VOTE
Yeas: Williams, Share, Boyle, Clein, Jeffares, Lazar, Whipple-Boyce
Nays: None
Absent: Koseck

At 9:40 p.m. the chairman opened discussion to the public on the CIS.

Mr. David Underdown, owner of the Douglas Cleaners property, said he doesn't think they contributed to the contamination because they dispose of their waste and years ago there was a gas station on that site.

Chairman Clein personally thought that a lot of information needs to be tightened up, particularly related to the number of stories and their impact, and the traffic.

Motion by Mr. Williams
Seconded by Ms. Whipple-Boyce that consideration of the CIS and Preliminary Site Plan be postponed to January 13, 2016.

Mr. Ponton spoke from the audience at 9:50 p.m. He noted with respect to the shortage of parking in that area that they have an abundance of 15 spaces on-site. Therefore, they don't need to count the spots in front towards their goal.

Motion carried, 7-0.

VOICE VOTE
Yeas: Williams, Whipple-Boyce, Boyle, Clein, Jeffares, Lazar, Share
Nays: None
Absent: Koseck

Planning Board Minutes
January 13, 2016

COMMUNITY IMPACT STUDY ("CIS") AND PRELIMINARY SITE PLAN REVIEWS

1. 856 N. Old Woodward Ave. (vacant land)
Application for Community Impact Study and Preliminary Site Plan Review to allow construction of new four-story building with first-floor retail and residential above (postponed from December 9, 2015)

Ms. Ecker stated that the site has a total land area of .56 acres and is located on the east side of N. Old Woodward Ave. south of Oak St. The site has been vacant over a decade.

At this time, the applicant is proposing to construct a four-story mixed-use building. The lower level of the building will have parking and residential storage spaces. The first floor is proposed to contain parking fronted by retail space and a residential lobby. The second, third and fourth floors will contain 27 residential units. On-street parking will be provided on N. Old Woodward Ave. The building will have an approximate total of 106,513.7 gross sq. ft. Thus, the applicant was required to prepare a Community Impact Study in accordance with Article 7, section 7.27(E) of the Zoning Ordinance as they are proposing one new building containing more than 20,000 sq. ft. of gross floor area.

On December 9, 2015, the applicant appeared before the Planning Board for a review of the CIS and Preliminary Site Plan. After much discussion, the Planning Board voted to postpone consideration of the CIS and Preliminary Site Plan to January 13, 2016 to allow the applicant to provide additional information with regards to the height of the building, to address traffic concerns, and to provide additional information regarding potential MDEQ issues.

The proposed building contains one extra floor of residential above what was recommended in the 2016 Plan. Although it is four stories, the building conforms to the maximum height limit of 56' in the D-2 Zone of the Overlay District. The Building Official has now provided an interpretation that although the building does not exceed the maximum height of 56 ft. in the D-2 District, it does exceed three stories. Further, the Building Official has indicated that the proposed underground parking level does not meet the definition of basement in the Zoning Ordinance, and is therefore considered a story. The underground level is not more than 50% below grade. ***Thus, the applicant must obtain a variance for two additional stories.***

The applicant has submitted a summary letter from PM Environmental dated January 7, 2016 that outlines the geology, hydrology and contamination issues on the existing site. This letter also outlines in detail construction mitigation measures, response activities and the applicant's due care obligations to deal with the on-site contamination.

The applicant has now shown all proposed utility lines and connections on the civil plans and provided written confirmation that all utilities will be buried to comply with City regulations.

The applicant will be required to provide the City with a public access easement for the western portion of the site that is proposed for public parking and a public sidewalk. The applicant has advised in writing that they will provide a 22.5 ft. wide public access easement.

The applicant submitted a revised traffic study dated December 30, 2015 and new SYNCHRO data to the City's transportation consultant, Fleis and Vandenbrink ("F&V"), to address all of the issues previously raised. The traffic consultant noted several concerns that he outlined in a letter presented today.

The CIS shows a total of 70 parking spaces including those in the right-of-way. The drawings now confirm 17 parking spaces on the first level behind the retail, 37 spaces in the underground parking level, 9 on-street spaces on private property, and 7 more in the public right-of-way. They have 63 spaces, not including those in the right-of-way. The requirement is for 66 spaces. Given the improvements proposed in the right-of-way, the applicant may be entitled to include the 3 parking spaces in the right-of-way in their parking counts with approval by the City Commission.

Motion by Mr. Williams
Seconded by Mr. Jeffares to include the letter from Michael Labadie dated January 13, 2016.

Motion carried, 7-0.

VOICE VOTE
Yeas: Williams, Jeffares, Boyle, Clein, Koseck, Lazar, Share
Nays: None
Absent: Whipple-Boyce

Mr. Labadie summarized his findings. He pointed out that the right turn lane queue heading north along N. Old Woodward Ave. onto Oak blocks the site driveway during peak hours. If the right-of-way parking is used, there is not enough sight distance. To reduce the problem he suggested modifying the driveway operation to make it right-in/right-out only.

Mr. Frank Filochoto, Stonefield Engineering and Design, Inc., summarized how they have worked with F&V over the past couple of months in regards to resolving some of the traffic related issues. The reality is the queue will back up past the driveway during peak hours. However, this use is not intensive from a trip generation standpoint. They are looking at about forty trips during peak hours, combined retail and residential. The driveway cannot be moved to the south. They think the streetscape they are providing is consistent with and enhances the area. The minor negatives of sight distance and loss of storage in the right turn lane are mitigated by the benefit given back to the community of seven on-street parking spaces and streetscape enhancements. He doesn't think there is enough traffic to warrant right-in/right-out and therefore he disagrees. Parking demand will be offset because the retail uses will not be parking at night when the residents are home.

Mr. Tim Ponton, also with Stonefield Engineering and Design, Inc., thought they could potentially make up the area being given back for public benefit by adding one story that is still

within the allowable height of 56 ft. Additionally, they disagree with the Building Official's interpretation of a basement. Approximately eighty-five percent of the overall perimeter of their structure meets the exact definition of a basement.

Chairman Clein questioned how four stories above the N. Old Woodward plane fits into context with the surroundings. Mr. Ponton replied it is important to note that they are still within the building height from a zoning perspective. When you look at the whole big picture of what they are giving back in terms of parking for the City and that this is completely in line with the 2016 Plan, they think they are right there.

With respect to the basement level, Mr. Koseck thought there is a case to be made for unique circumstance.

In response to Mr. Boyle, Mr. John Marusich, the architect, talked about the size of the units they are hoping to construct which will be 1,500 to 1,700 sq. ft. with two bedrooms. They will be upscale, moderate units.

Mr. Bret Donaldson with J.B. Nelson and Co. explained their plan for staging trucks and equipment. They hope to make an arrangement with the property owner to the east to load off the parking lot that fronts on Woodward Ave. If they can't, they will ask the City for a permit to close some of the pavement on Woodward Ave. If they can't get the lots, they will have to park somewhere else and shuttle back to the site.

At 9:04 p.m. the chairman offered members of the public an opportunity to comment.

Mr. Fred Najor who owns a couple of properties to the south of the site spoke in support of the project.

Ms. Carolyn Butcher, who works for Mr. Norman Ziegelman, owner of the adjacent building to the south, said she will be happy to see the Carrie Lee hole built on. She questioned a four-story building in an area where the other buildings are two stories. Parking in this area is very difficult and she doesn't understand how more retail can be added in Birmingham without providing parking. There is no parking for employees. She has a parking permit, but it is impossible to find a space.

Mr. Drew Dutley, 740 Brookside, echoed the concerns about the size and mass of the building. It doesn't really fit into the context of the neighborhood. Looking from the southeast, the building is 67 ft. high; not 56 ft. Second, the parking and the traffic will be a problem. Further, given the condition of the soil, it is important of keep the water and air quality up.

Mr. Boyle received clarification that the stop for bus rapid transit would be in the vicinity of Oak and Woodward Ave. Therefore, he noted this parcel will be right in the middle of a Transit Oriented Development area. Within about two years this site might become extremely important in terms of accessing parking and getting a stop for the bus service. Ms. Ecker added that a certain percentage of people may choose to take the bus rapid transit to the site rather than driving.

Mr. Share indicated he does not understand the extent to which remediation is going to happen with regard to the heavy metals and some of the volatile organic compounds ("VOCs"). Mr. Jamie Entenovich, Engineer with PM Environmental, talked about hazards to residents and users of the site and adjacent area. Seven thousand cubic yards of fill coming out will address a lot of the VOCs. Also, when the property is developed the surface cover will also be a barrier. Nothing will go off the property during construction before it is covered. The volatiles are not a direct contact concern. Construction will be conducted in a manner not to exacerbate the existing issues of the property. Ground water will be addressed in a manner that will not make it worse as far as how the building and utilities are put in. Based on what has been identified, additional steps will not be needed to prevent migration of metals down into the Rouge River. Mr. Entenovich thought the property owner along with the design team are more than willing to commit to having the environmental team present during construction to ensure that all local, state and DEQ regulations are met. The owner intends to submit a Brownfield Plan for the site.

In response to Ms. Lazar, Mr. Entenovich clarified that a slurry wall will be constructed on the property boundary as a barrier to prevent migration of contamination from the dry cleaner onto this property.

Mr. Williams said he is uncomfortable with moving on when the building is two floors out of compliance with D-2 zoning. He objects to the process where the Planning Board is forced to make a preliminary determination on a jurisdictional issue they don't have control over. He feels the legal process in Birmingham is flawed and the City Commission should address the issue.

The chairman said he tends to think the traffic impact can be resolved. However, he is not supportive of the Site Plan as presented, related to traffic. Ms. Lazar asked if the board accepts the CIS as it is, how many stories would they be accepting it for. Mr. Koseck thought that only allowing three floors may have been a density control. Mr. Boyle said the CIS allows the board to look in detail at the impact of the development on the environment. Mr. Jeffares said it seems that everything that will be looked at can only get better by becoming less intense.

Chairman Clein said he is not satisfied that the traffic and the parking situation is adequately addressed in the CIS. He has serious concerns about the proximity of the entry into the garage that close to the intersection with Oak. In that regard, he is not in a position to vote favorably on a Preliminary Site Plan. Mr. Boyle thought there is value in concluding the conversation on the CIS, but that doesn't mean they should immediately approve the site plan.

Motion by Mr. Share
Seconded by Mr. Boyle to accept the CIS with the provision that if the number of units or stories change or there are other significant changes the applicant would have to provide an update to the impacts for administrative approval.

Motion carried, 7-0.

ROLLCALL VOTE
Yeas: Share, Boyle, Clein, Jeffares, Koseck, Lazar, Williams
Nays: None

Absent: Whipple-Boyce

Motion by Mr. Williams
Seconded by Mr. Share to postpone the Preliminary Site Plan Approval for 856 N. Old Woodward Ave. to February 24, 2016.

There were no public comments related to the motion at 9:38 p.m.

Motion carried, 7-0.

VOICE VOTE
Yeas: Williams, Share, Boyle, Clein, Jeffares, Koseck, Lazar
Nays: None
Absent: Whipple-Boyce

Planning Board Minutes
February 24, 2016

PRELIMINARY SITE PLAN REVIEWS

1. 856 N. Old Woodward Ave. (vacant land)

Application for Preliminary Site Plan Review to allow construction of new mixed-use building with first floor retail and residential above (postponed from January 13, 2016)

Motion by Mr. Williams
Seconded by Mr. Koseck to receive and file two items:

- **E-mail dated Wednesday, February 24, 2016 from John Marusich;**
- **Letter dated February 19, 2016 from Fleis and Vandenbrink signed by Michael Labadie.**

Motion carried, 7-0.

VOICE VOTE
Yeas: Williams, Koseck, Jeffares, Boyle, Clein, Lazar, Whipple-Boyce
Nays: None
Absent: None

Ms. Ecker advised that the parcel is currently vacant. The applicant intends to build a four-story mixed-use building at the subject site, with an additional level of underground parking. The site has a total land area of .56 acres and is located on the east side of N. Old Woodward Ave. south of Oak St.

Ms. Ecker recalled they have discussed this on two occasions: back on December 9, 2015 and on January 13, 2016. On January 13 the Planning Board voted to accept the Community Impact Study ("CIS") with the provision that if the number of units or stories change or there are other significant changes the applicant would have to provide an update to the impacts for administrative approval. The board will hear the Preliminary Site Plan Review tonight.

There were two big issues that were mentioned last time this was discussed. One was that the applicant is asking for a fourth story in a zone that allows three stories. Also, the issue had come up with regards to the interpretation of the lower underground parking level as to whether or not it is a basement, and if not whether it constitutes an additional story and actually they had five stories. The building official has since determined that it is a basement and therefore it is not an additional story.

The proposed development meets the minimum eave height of 20 ft. and the maximum height requirement of 56 ft. in the D-2 Zone. Also, the maximum number of stories in the D-2 Zone is three if the third story is used solely for residential. The applicant is proposing four stories with both the third and fourth stories planned for residential use. Therefore the building height is allowable but the number of stories is not allowable. ***The applicant will be required to eliminate the fourth floor and set back the third story 10 ft., or obtain a variance from the Board of Zoning Appeals ("BZA") for the fourth floor.***

The applicant is required to have 55 parking spaces and they have provided 62 on-site plus they have an additional 16 in the right-of-way for public access. Twelve spaces are required for the retail component. Parking in that area is pretty tight and this will help out some of the properties around there.

Design Review
The plans submitted indicate that the applicant is proposing to utilize the following materials:

- Stone (knee walls and upper level panels);
- Brown brick (columns);
- Bronze metal (C channels, railings and overhead doors);
- Glass windows and storefront door systems; and
- Steel decorative metal fencing in the easement south of the building.

The applicant has provided glazing calculations on the upper floors that demonstrate 38% glazing is proposed. ***However, a maximum of 35% glazing is permitted on the upper floors and thus the applicant must reduce the glazing or obtain a variance from the BZA.*** The Planning Division will reserve detailed comments regarding architectural standards
and design related issues for the Final Site Plan and Design Review.

Mr. Tim Ponton, Stonefield Engineering and Design, summarized some of the major points that have been completed since the last meeting. They have come up with what think is the most feasible project for such a challenging site. They are open to any type of trees that the board would like to see. It is their intention to seek a variance for the extra floor because they are losing density because of setback restrictions based on the existing buildings. Six retail employees will be allowed to use the underground parking.

Mr. John Marusich, the architect, explained how they plan to control access in and out and to whom through the entrance. With respect to parking, they feel they are offering a lot even though it doesn't solve the dynamics of parking in the City.

Mr. Frank Filochoto, also from Stonefield, talked about turning movements and ingress and egress from the site as well as storage along N. Old Woodward Ave. To eliminate left turn conflicts they have decided to eliminate left turn ingress at the north end and have all ingress occur at the south end. They still believe that left turn egress is possible. With respect to the northbound right turn lane storage, the actual impact of their driveway is less than 10 ft. The impact of 10 ft. on storage getting through the light is negligible. They will be working with Fleis and Vandenbrink to resolve outstanding traffic issues and feel confident they will be able to address all concerns.

Chairman Clein asked the applicant to present as part of the packet some diagrams showing how the northern approach will work. The proximity to the intersection gives him pause so he would like to see a plan that shows where the movements are. Also, provide graphics how the entrance to the south will work. He asked why the driveway is at the worst possible spot. Mr. Filochoto replied that a driveway anywhere else would require them to break up the storefront. Mr. Marusich added that parking opportunity is maximized by that particular arrangement. Mr. Cusimano suggested another possible configuration.

Mr. Koseck was glad to see that someone is taking over this very challenging site with what looks like a quality building. However, he suspected the applicant would not receive a variance from the BZA. He wanted to have an understanding whether there is a better way to do this along with proof that it can be accomplished.

Mr. Williams stated that the extra floor is not in compliance. To him the question is how to address that fundamental issue. It is a huge structural concern that affects everything going forward. So it seems to him the Planning Board should get this proposal in front of the BZA as quickly as possible.

Mr. Ponton said the fourth story isn't necessarily directly related to density. If it isn't approved what will happen is they are going to come back with a number of small units on three floors.

There were no comments from members of the public at 9:25 p.m.

Chairman Clein indicated his main concern is that the traffic and circulation are still not settled. Mr. Boyle questioned if it would be possible to reconfigure the corner to add a dedicated lane for people in the garage to get out onto N. Old Woodward Ave. Then there would be two dedicated lanes to turn right onto Oak, doubling the storage.

Motion by Mr. Williams
Seconded by Ms. Whipple-Boyce that the Planning Board approves the Preliminary Site Plan for 856 N. Old Woodward Ave. with the following conditions:

1. The applicant eliminate the fourth floor and set back the third floor by 10 ft., or
obtain variances from the Board of Zoning Appeals ("BZA");
2. Provide the front setback of both abutting buildings to determine the required setback for the proposed building;
3. Provide the City with an access easement for ingress/egress and maintenance of these proposed public parking spaces;
4. Provide specification sheets and a roof plan at the time of Final Site Plan and
Design review;
5. Submit a landscape plan and photometric plan at the time of Final Site Plan
and Design Review;
6. Add pedestrian scale street lights along N. Old Woodward Ave.;
7. Provide dimensions on the architectural site plan and elevation drawings at
the time of Final Site Plan and Design Review to demonstrate that the width requirements have been met for the vehicular entry;
8. Address the engineering and traffic issues identified by the City's traffic consultant and as raised by the Planning Board tonight. The Planning Board specifically does not approve ingress, egress, or parking as part of the Preliminary Site Plan approval;
9. Reduce the upper floor glazing or obtain a variance from the Board of Zoning
Appeals; and
10. Comply with the requirements of all City departments.

There were no comments from the audience on the motion at 10:10 p.m.

Motion carried, 7-0.

ROLLCALL VOTE
Yeas: Williams, Whipple-Boyce, Koseck, Jeffares, Boyle, Clein, Lazar
Nays: None
Absent: None

Zoning Compliance Summary Sheet
For Preliminary Site Plan Review
856 N. Old Woodward

Existing Site:

Zoning: O2, Office/Commercial and D2, Downtown Overlay
Land Use: Vacant

Existing Land Use and Zoning of Adjacent Properties:

	North	**South**	**East**	**West**
Existing Land Use	Commercial	Office/ Commercial	Rouge River	Multi-Family Residential
Existing Zoning District	B2B General Business	O2 Office/ Commercial	PP Public Property	R6 Multi-Family Residential
Overlay Zoning District	D2	D2	N/A	N/A

Land Area:	existing:	24,718 sq. ft. or .56 Acres
	proposed:	Same as existing
Minimum Lot Area:	required:	N/A
	proposed:	N/A
Minimum Floor Area:	required:	N/A
	proposed:	N/A
Maximum Total Floor Area:	required:	N/A
	proposed:	N/A
Minimum Open Space:	required:	N/A
	proposed:	N/A
Maximum Lot Coverage:	required:	N/A
	proposed:	N/A

Front Setback:	required:	D2: 0', building must be on or within 3' of frontage line (Planning Board may adjust to average of any abutting building)
	proposed:	10.8' from frontage line (setback of abutting building to the south is 6', setback of abutting building to the north is 10.8')
Side Setbacks:	required:	D2: 0'
	proposed:	11' easement (to South), 0' (to North)
Rear Setback:	required:	D2: 10' if alley, if no alley, equal to rear setback of adjacent, pre-existing building (12.8' & 24.8')
	proposed:	12.8'
Max. Bldg. Height:	permitted:	D2- 56' (including the mechanical and other equipment) and 3 stories, if the third story is used for residential, and setback 10'
	proposed:	56' & 4 stories, third and fourth stories are setback 10'
Minimum Eave Height:	required:	20'
	proposed:	30'
First Floor Ceiling:	required:	10' minimum clearance finished floor to finished ceiling on first floor
	proposed:	18' floor to ceiling

Applicant must provide finished floor to finished ceiling height of first floor.

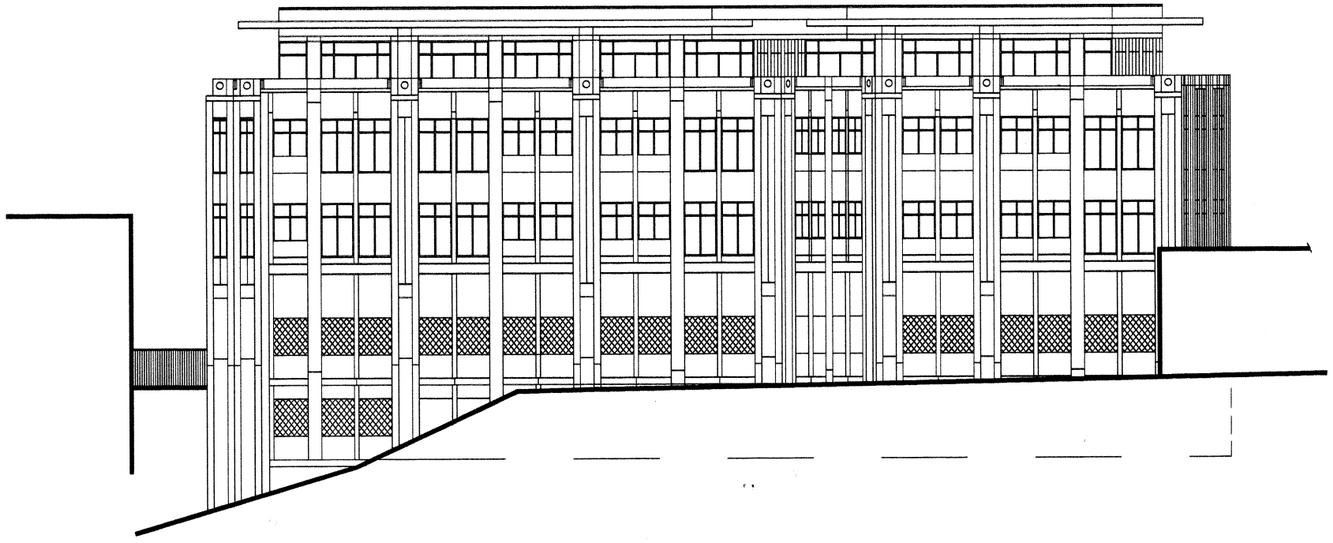
Front Entry:	required:	Principal pedestrian entrance on frontage line, Planning Board may adjust.
	proposed:	The principal entrances are located on the frontage line facing N. Old Woodward
Parking:	required:	55 spaces (1.5 spaces x 22 for 2 or less room units = 33, 2 spaces x 5 for 3 or more room unit =10, and 3500 sq.ft / 300 =12 for retail)
	proposed:	62 spaces (53 within building, 9 on private property in front of building)
	required:	Parking on first floor cannot be located within 20' of the frontage line or front façade.
	proposed:	Parking on first floor is located 49' back from the front façade.
Loading Area:	required:	N/A
	proposed:	N/A

Screening:

Parking:	required:	32” masonry screen wall
	proposed:	All required parking will be screened behind a 49’ deep retail space along the front of the building. Six additional spaces are proposed in front of the building on private property that appears to be in the ROW.
AC/Mech. units:	required:	Screening to compliment the building
	proposed:	Mechanical units will be screened within a mechanical well on the rooftop of the building.
Elect. Transformer:	required:	Fully screened from public view
	proposed:	The electrical transformer will be located at the rear of the building, screened by the building itself
Dumpster:	required:	6’ high capped masonry wall with wooden gates
	proposed:	Dumpster will be located inside building; access to dumpster is within the underground parking level.

1 WEST ELEVATION (FRONT) - OLD NORTH WOODWARD

1" = 10' - 0"
05/ 06 /2016

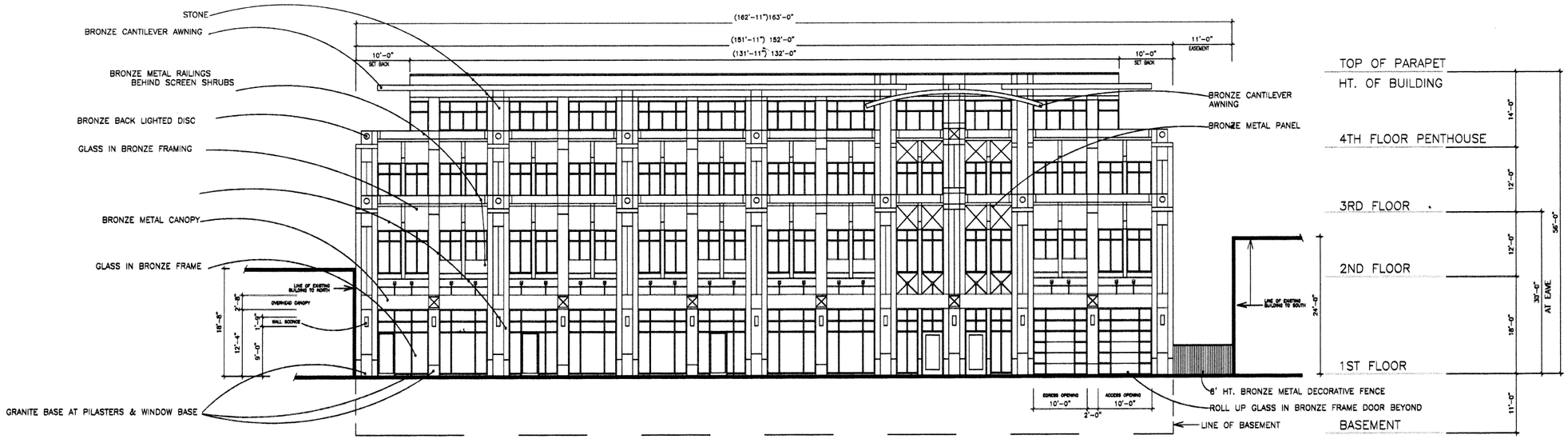


2 EAST (REAR) ELEVATION - OVERLOOKING THE ROUGE RIVER / PUBLIC LANDS -A

1" = 10' - 0"

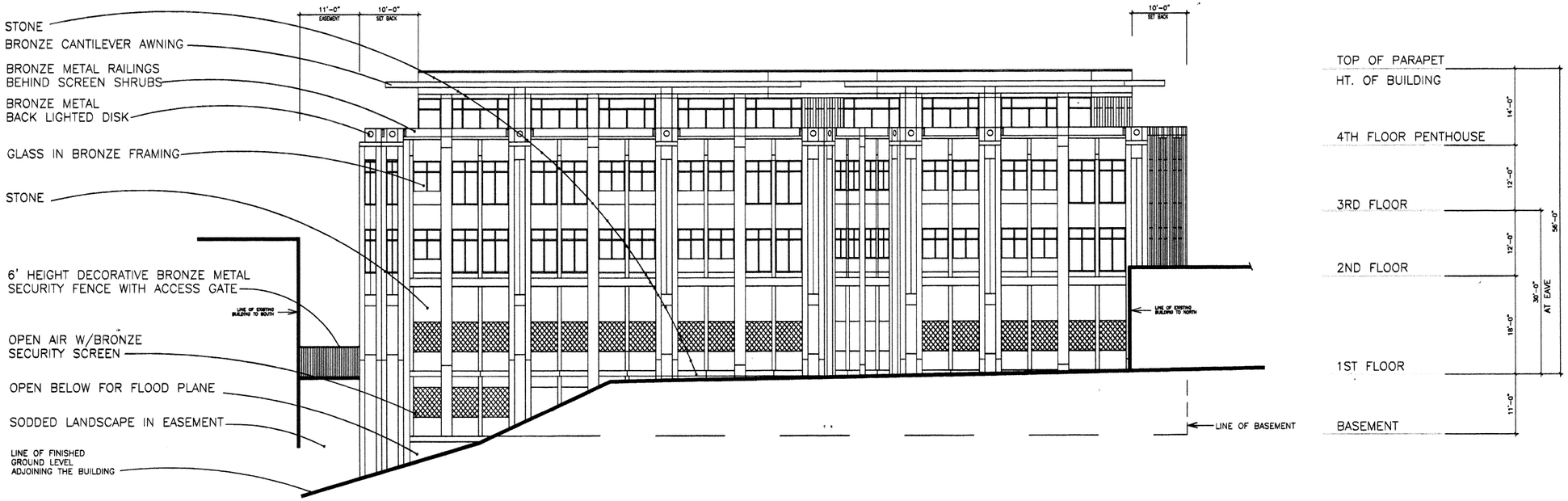
856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

05/ 06/ 2016



1 WEST ELEVATION (FRONT) - OLD NORTH WOODWARD

1" = 10' - 0"
05/ 06 /2016



2 EAST (REAR) ELEVATION - OVERLOOKING THE ROUGE RIVER / PUBLIC LANDS

1" = 10' - 0"

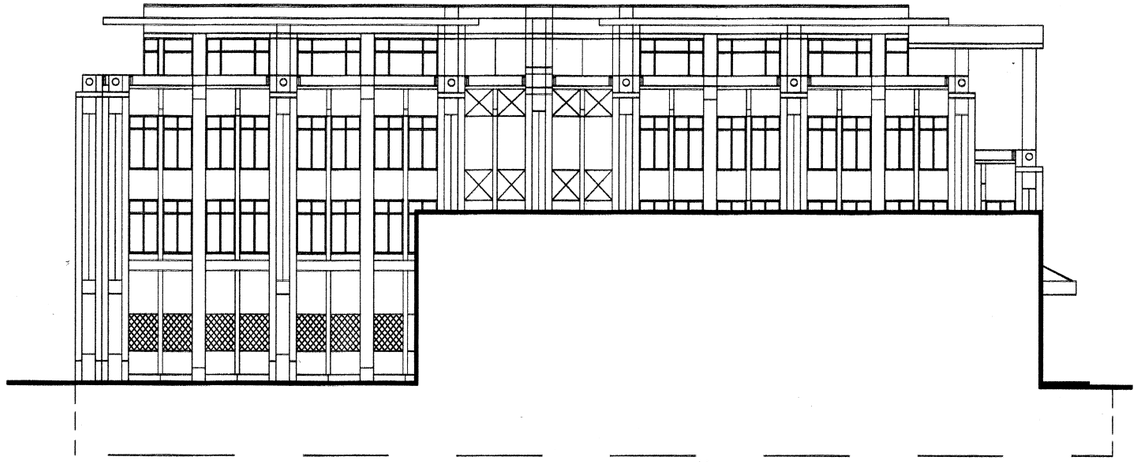
856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

05/ 06/ 2016

4 SOUTH ELEVATION (AT EASEMENT)

1" = 10' - 0"

05 / 19 / 2016

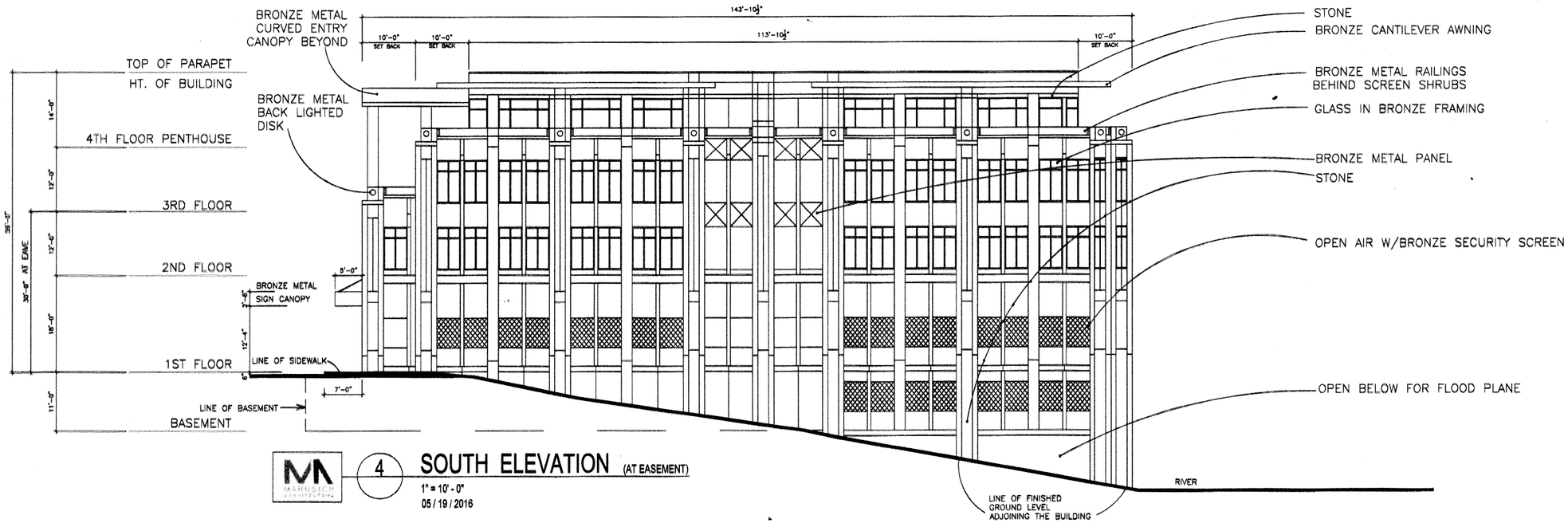


4 NORTH ELEVATION

1" = 10' - 0"

856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

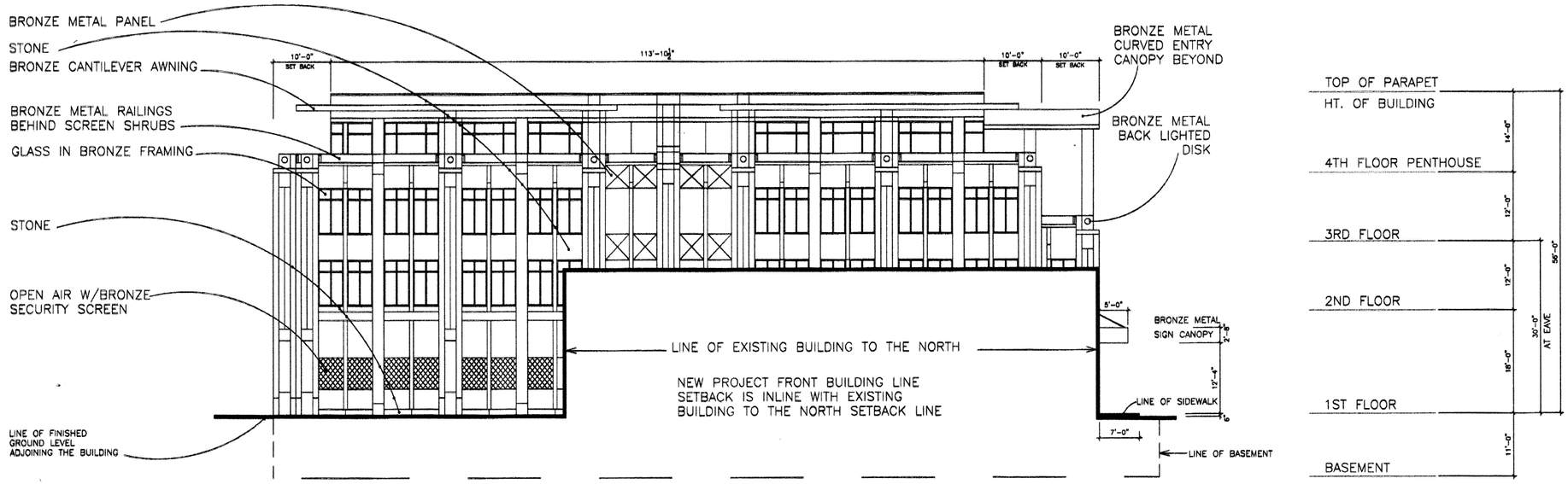
05 / 19 / 2016



4 **SOUTH ELEVATION** (AT EASEMENT)

1" = 10' - 0"

05 / 19 / 2016

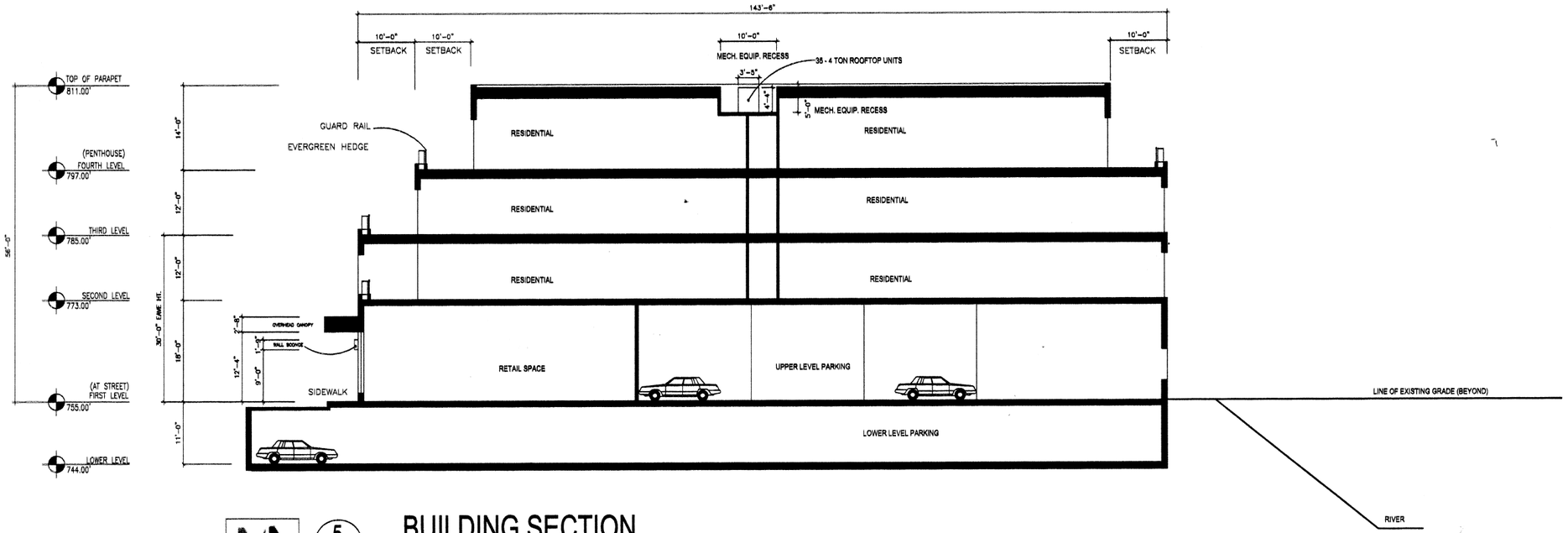


4 **NORTH ELEVATION**

1" = 10' - 0"

856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

05 / 19 / 2016



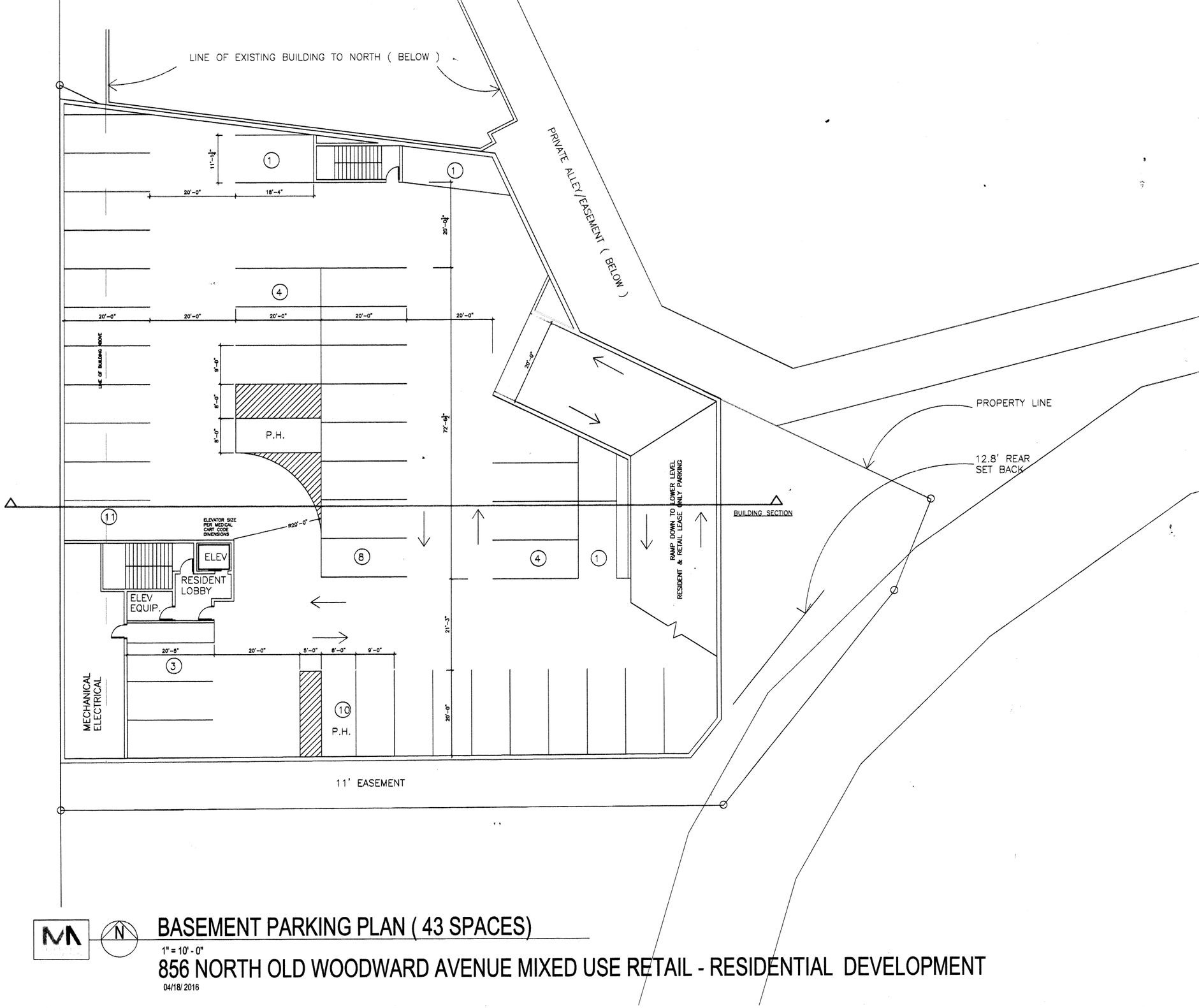
5

BUILDING SECTION

1" = 10' - 0"

856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

05/ 12/ 2016



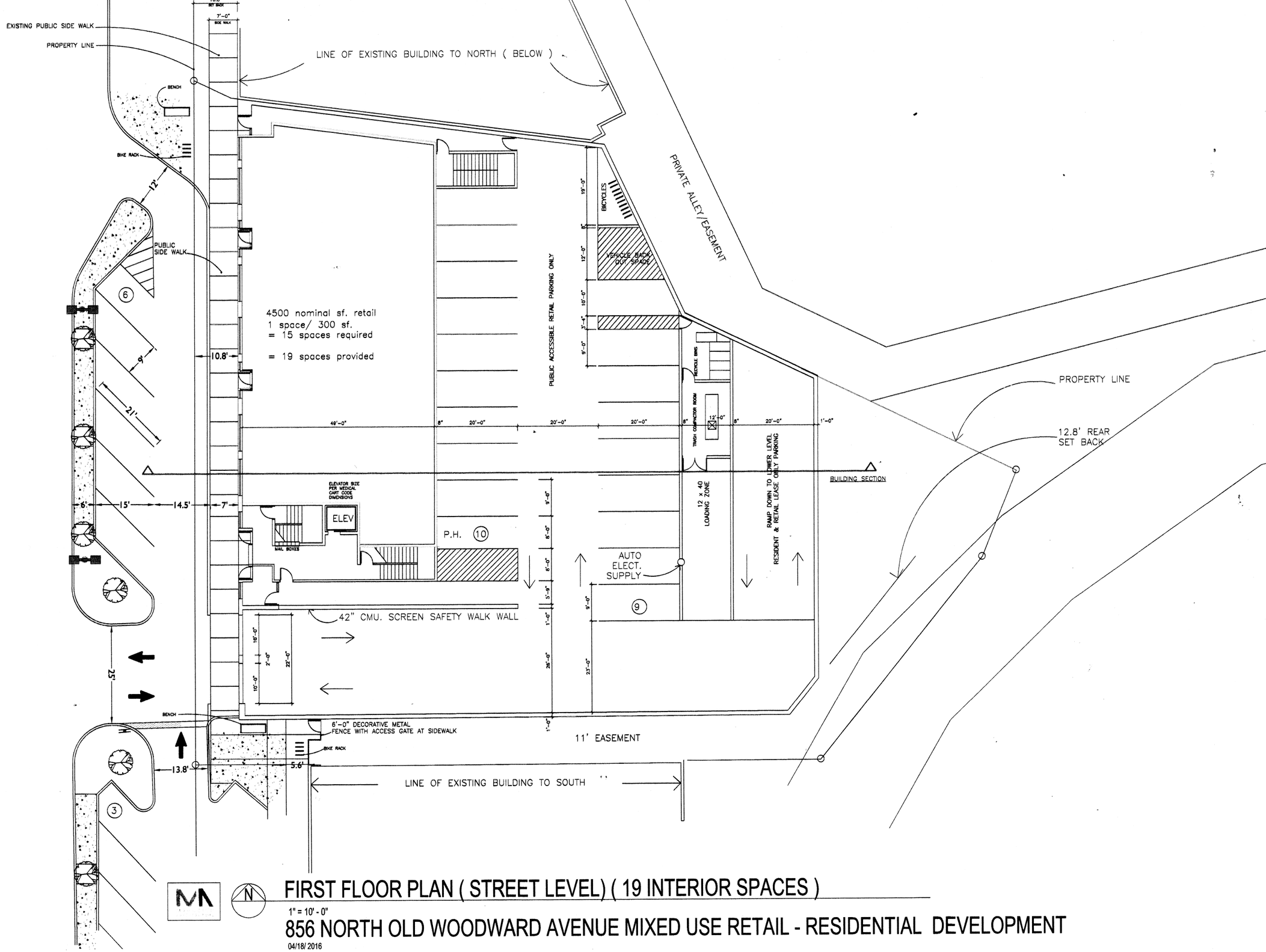
N

BASEMENT PARKING PLAN (43 SPACES)

1" = 10' - 0"

856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

04/18/ 2016

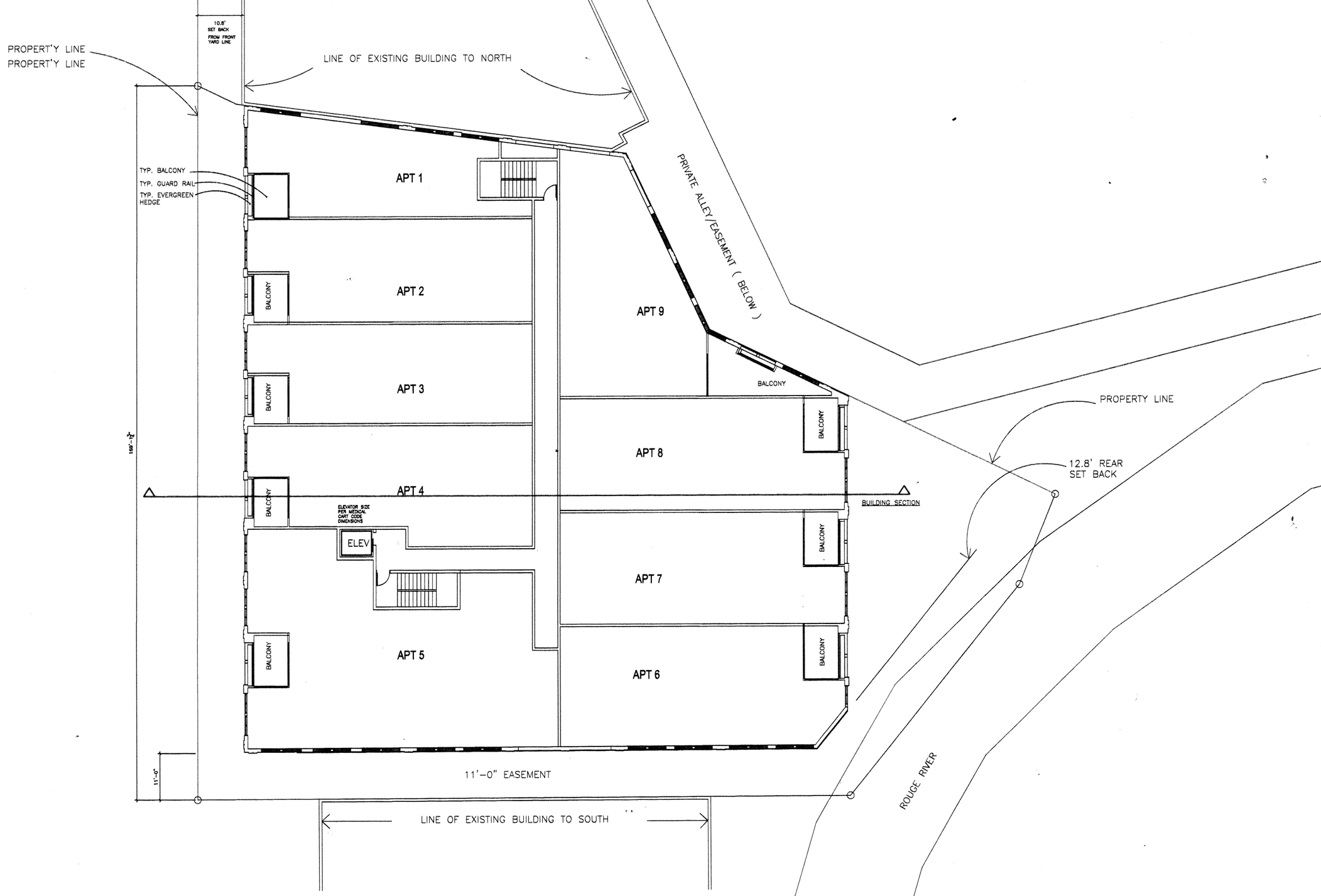


FIRST FLOOR PLAN (STREET LEVEL) (19 INTERIOR SPACES)

1" = 10' - 0"

856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

04/18/ 2016

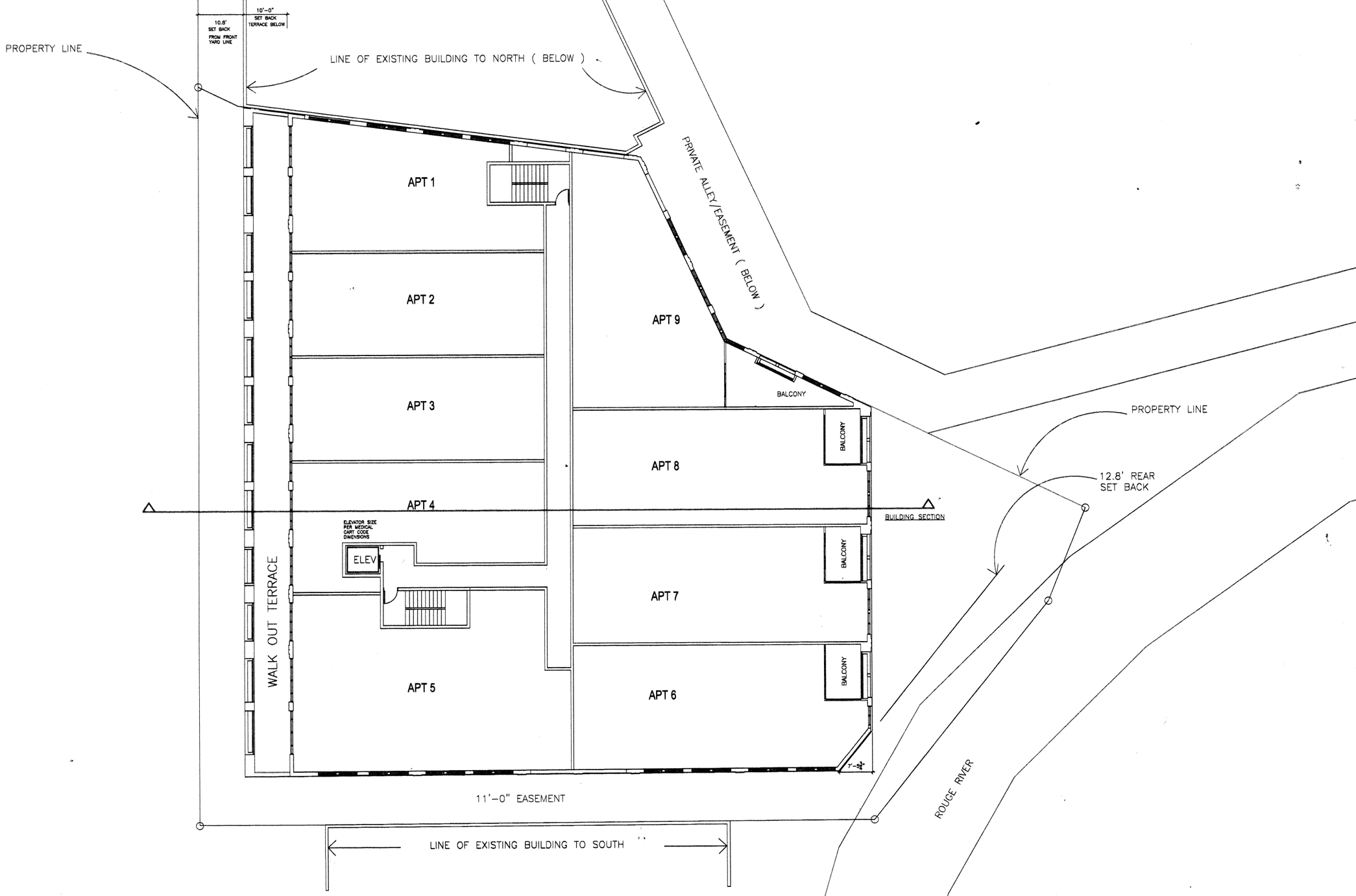


4 SECOND FLOOR PLAN / RESIDENTIAL

1" = 10' - 0"

856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

04/18/2016

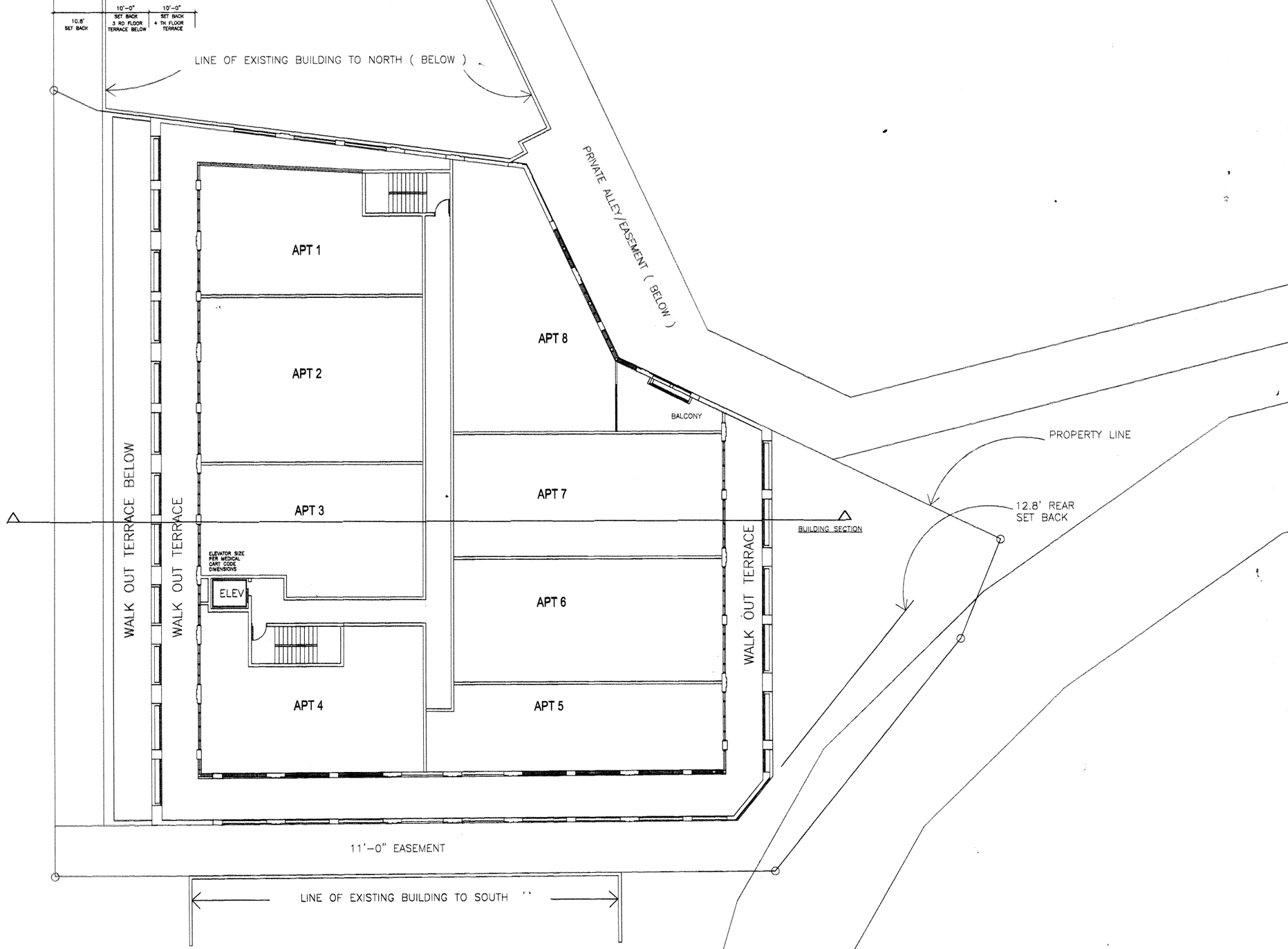


4 THIRD FLOOR PLAN / RESIDENTIAL

1" = 10' - 0"

856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

04/18/ 2016

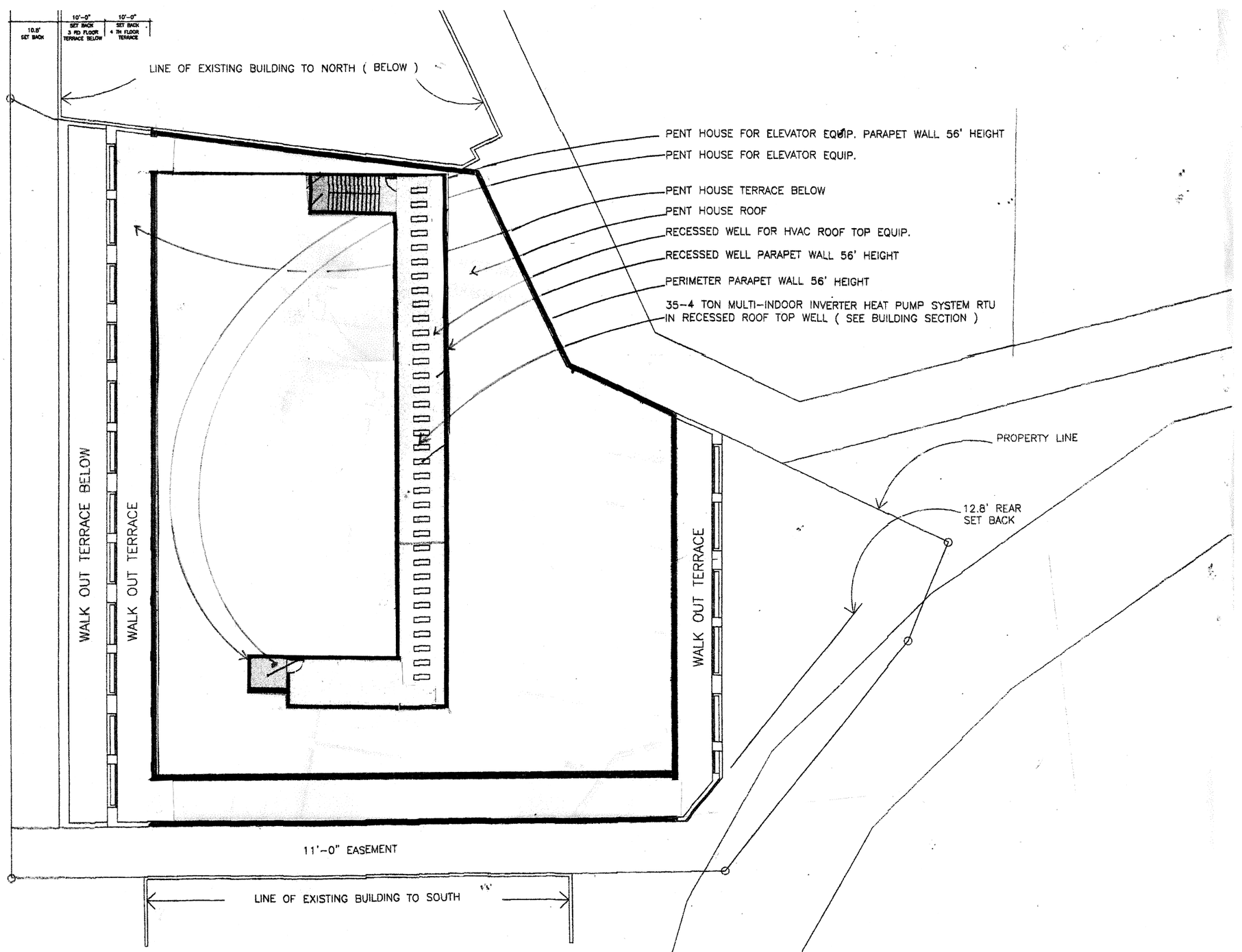


4 FOURTH FLOOR PLAN / RESIDENTIAL

1" = 10' - 0"

856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

05/09/ 2016



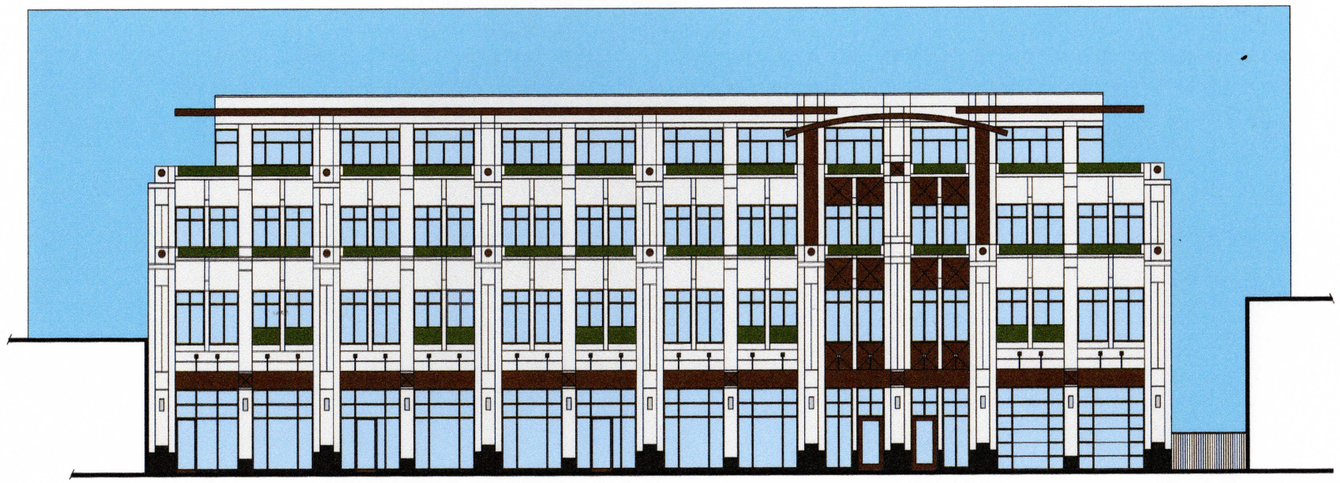
MARUSICH ARCHITECTURE

4 ROOF TOP PLAN - PENTHOUSE -

1" = 10' - 0"

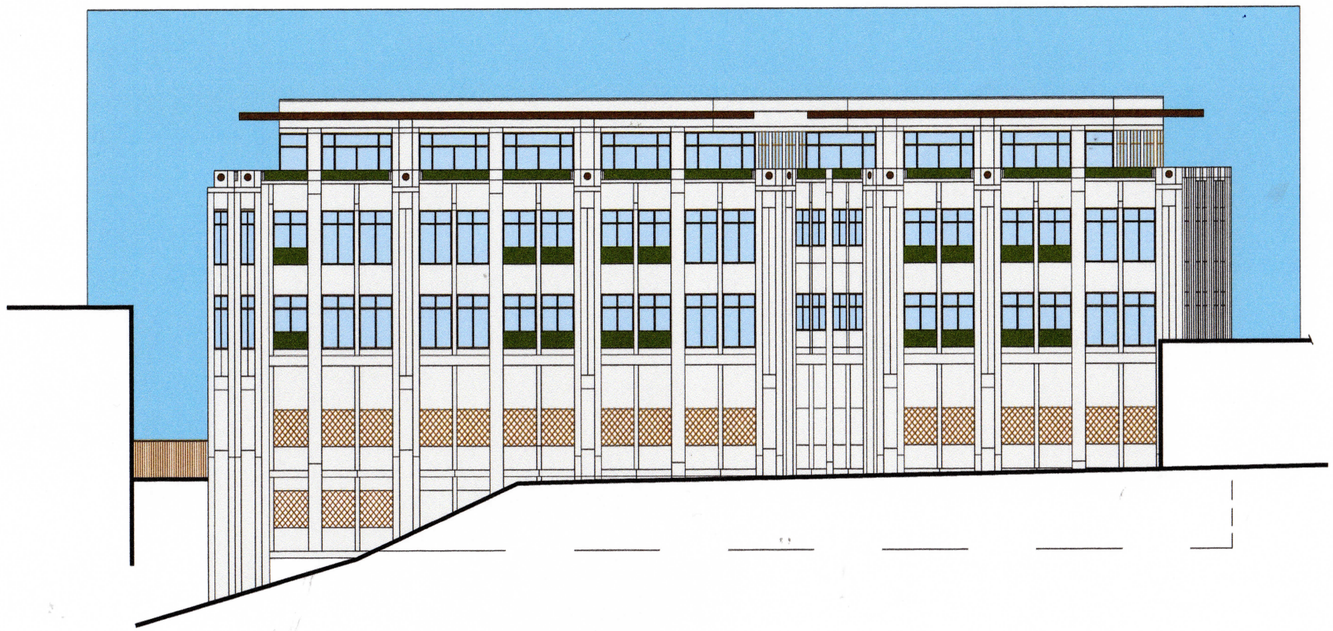
856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

04/18/2016



1 WEST ELEVATION (FRONT) - OLD NORTH WOODWARD

1" = 10' - 0"
05/ 06 /2016



2 EAST (REAR) ELEVATION - OVERLOOKING THE ROUGE RIVER / PUBLIC LANDS -A

1" = 10' - 0"

856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

05/ 06/ 2016

4 SOUTH ELEVATION (AT EASEMENT)

1" = 10' - 0"

09/14/2016

4 NORTH ELEVATION

1" = 10' - 0"

856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

09/14/2016

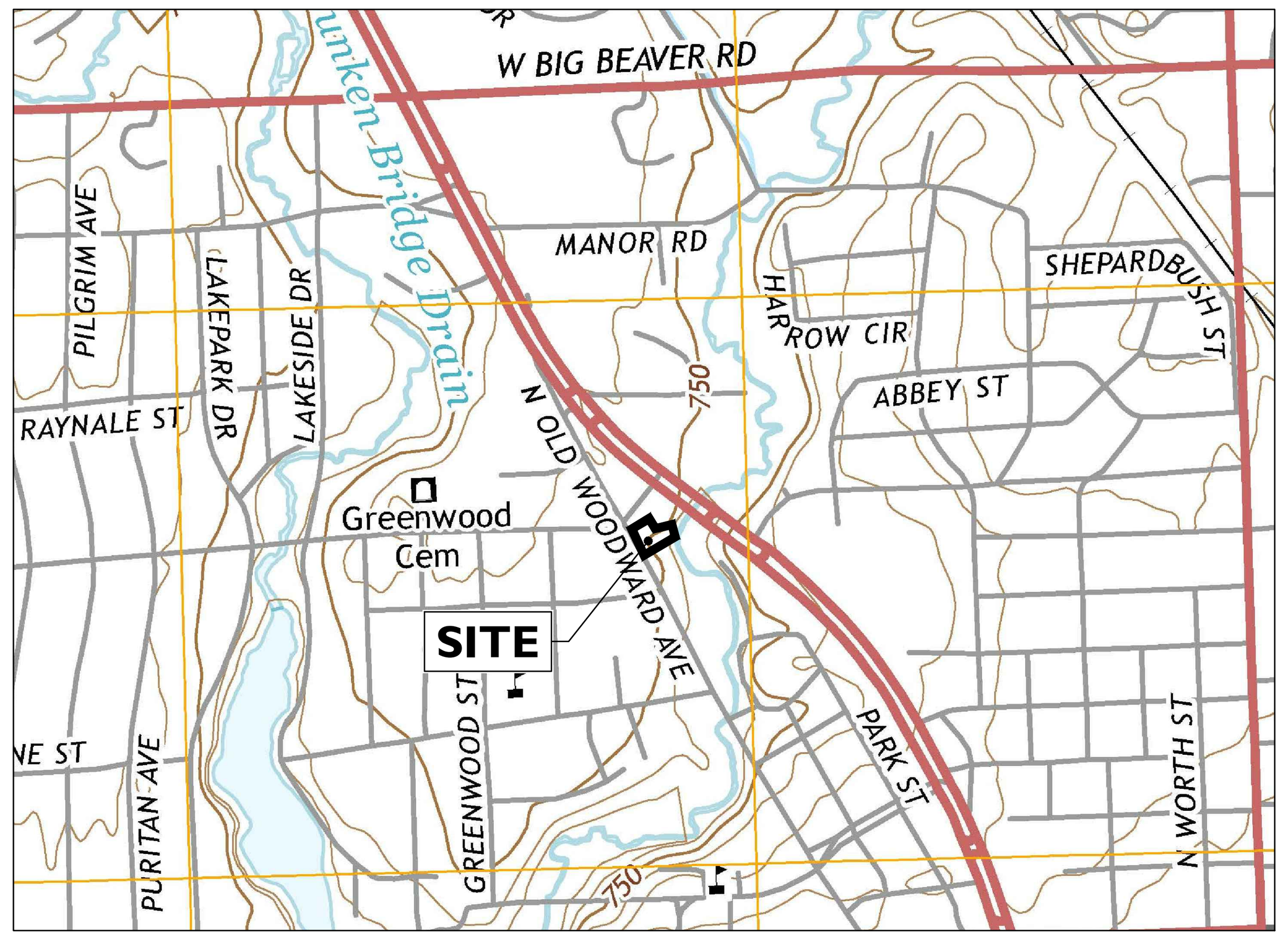
SITE DEVELOPMENT PLANS

FOR

856 OLD NORTH WOODWARD

PROPOSED 4 STORY MULTI-FAMILY BUILDING WITH RETAIL

PARCEL ID: 19-25-328-001
856 NORTH OLD WOODWARD AVENUE
CITY OF BIRMINGHAM, OAKLAND COUNTY, MICHIGAN

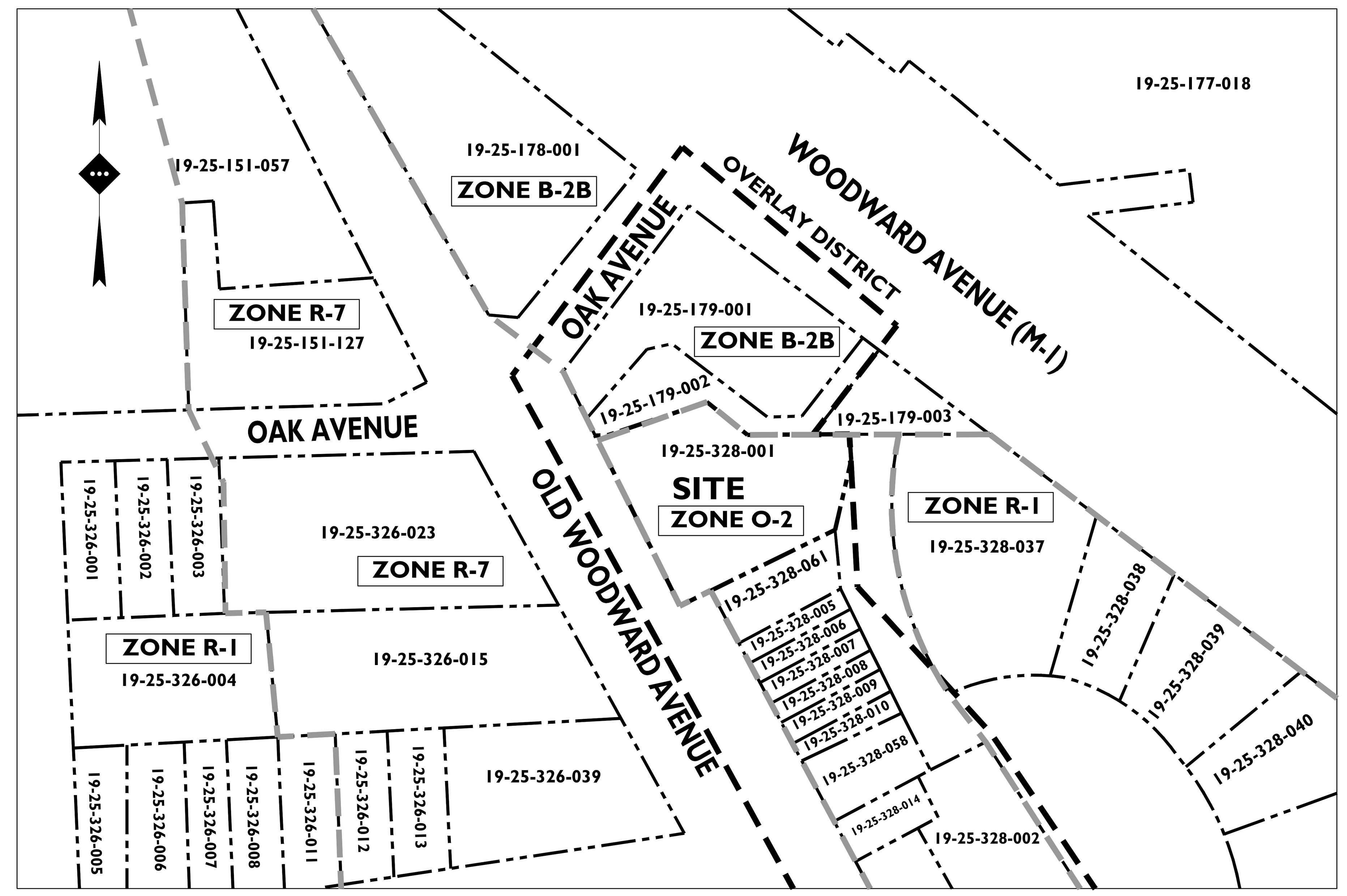


SOURCE: USGS MAPS

LOCATION MAP
SCALE: 1" = 2,000'±

SOURCE: GOOGLE EARTH PRO

AERIAL MAP
SCALE: 1" = 100'±



SOURCE: BIRMINGHAM ZONING MAPS & OAKLAND COUNTY PROPERTY GATEWAY

ZONING MAP
SCALE: 1" = 100'±

APPLICANT/OWNER

FLS PROPERTIES #5, LLC
2950 WALNUT LAKE ROAD
WEST BLOOMFIELD, MICHIGAN 48323

SURVEYOR

KEM-TEC ASSOCIATES
22556 GRATIOT AVENUE
EASTPOINTE, MICHIGAN 48021

PLAN REFERENCE MATERIALS:

1. THIS PLAN SET REFERENCES THE FOLLOWING DOCUMENTS INCLUDING, BUT NOT LIMITED TO:
   - ALTA/ACSM & TOPOGRAPHIC SURVEY PREPARED BY KEM-TEC ASSOCIATES, LAST REVISED 11/05/2015.
   - ARCHITECTURAL PLANS PREPARED BY MARUSICH ARCHITECTURE
   - GEOTECHNICAL REPORT PREPARED BY G2 CONSULTING GROUP
   - TRAFFIC REPORT PREPARED BY STONEFIELD ENGINEERING & DESIGN, LLC
   - BASELINE ENVIRONMENTAL ASSESSMENT PREPARED BY PM ENVIRONMENTAL
   - AERIAL MAP OBTAINED FROM GOOGLE EARTH PRO
   - ZONING MAP OBTAINED FROM THE CITY OF BIRMINGHAM ZONING MAP & OAKLAND COUNTY PROPERTY VIEWER
   - LOCATION MAP OBTAINED FROM USGS MAPS ONLINE
2. ALL REFERENCE MATERIAL LISTED ABOVE SHALL BE CONSIDERED A PART OF THIS PLAN SET AND ALL INFORMATION CONTAINED WITHIN THESE MATERIALS SHALL BE UTILIZED IN CONJUNCTION WITH THIS PLAN SET. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN A COPY OF EACH REFERENCE AND REVIEW IT THOROUGHLY PRIOR TO THE START OF CONSTRUCTION.

811
Know what's **below**
Call before you dig.

PLANS PREPARED BY:

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www.stonefieldeng.com

2350 Franklin Road, Suite 210, Bloomfield Hills, MI 48302
Phone 248.247.1115

SHEET INDEX

DRAWING TITLE	SHEET #
COVER SHEET	C-1
EXISTING CONDITIONS PLAN	C-2
FIRST FLOOR SITE PLAN	C-3
GRADING PLAN	C-4
UTILITY PLAN	C-5
SOIL EROSION & SEDIMENT CONTROL PLAN	C-6

ISSUE	DATE	BY	DESCRIPTION
5	04/12/2016	JAM	REVISED PER CITY COMMENTS & ZONING BOARD SUBMISSION
4	03/10/2016	JAM	REVISED PER CITY COMMENTS & ZONING BOARD SUBMISSION
3	02/17/2016	JAM	REVISED PER CITY COMMENTS
2	01/06/2016	JAM	REVISED PER CITY REVIW LETTER COMMENTS
1	11/11/2015	JAM	SUBMISSION FOR PRELIMINARY SITE PLAN APPORAL

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SITE DEVELOPMENT PLANS
856 OLD NORTH WOODWARD
PROPOSED 4 STORY MULTI-FAMILY BUILDING WITH RETAIL
PARCEL ID: 19-25-328-001
856 NORTH OLD WOODWARD ROAD
CITY OF BIRMINGHAM
OAKLAND COUNTY, MICHIGAN

STATE OF MICHIGAN
JEFFREY A. MARTELL
ENGINEER
No. 6201061061
LICENSED PROFESSIONAL ENGINEER
[illegible]
MICHIGAN LICENSE No. 6201061061
LICENSED PROFESSIONAL ENGINEER

STONEFIELD
engineering & design, llc.

SCALE: AS SHOWN | PROJECT ID: M-15120

TITLE: COVER SHEET

DRAWING: C-1

V:\M2015\M-15120-KEM-TEC-856 N. OLD WOODWARD, BIRMINGHAM, MI\CADD\PLOTS\SDP-01-COVR.DWG

SYMBOL / DESCRIPTION

SYMBOL	DESCRIPTION
●	SET 1/2" REBAR WITH CAP P.S. 47976
◉	FOUND MONUMENT (AS NOTED)
	FOUND SECTION CORNER (AS NOTED)
(R&M)	RECORD AND MEASURED DIMENSION
(R)	RECORD DIMENSION
(M)	MEASURED DIMENSION
○	UTILITY POLE
◎	GAS LINE MARKER
Ⓢ	SANITARY MANHOLE
⊕	ROUND CATCH BASIN
▦	SQUARE CATCH BASIN
	FIRE HYDRANT
Ⓦ	WATER GATE MANHOLE
WV ⋈	WATER VALVE
Ⓜ	UNKOWN MANHOLE
•	BOLLARD
☼	LIGHTPOST/LAMP POST
	SINGLE POST SIGN
	PARCEL BOUNDARY LINE
	PLATTED LOT LINE
	ADJOINER PARCEL LINE
	SECTION LINE
	EASEMENT (AS NOTED)
	EASEMENT CENTERLINE
	CONCRETE CURB
	EDGE OF CONCRETE (CONC.)
	EDGE OF ASPHALT (ASPH.)
	EDGE OF GRAVEL
x	FENCE (AS NOTED)
	WALL (AS NOTED)
OH OH	OVERHEAD UTILITY LINE
S	SANITARY LINE
D	STORM LINE
W	WATER LINE

PARCEL AREA

24,719± SQUARE FEET = 0.57± ACRES

BASIS OF BEARING

SOUTH 23°57'44" EAST, BEING THE NORTHERLY RIGHT OF WAY LINE OF N. OLD WOODWARD AVENUE.

BENCHMARK

NORTHWEST BOLT OF STREET LIGHT, LOCATED ON THE EASTERLY SIDE OF N. OLD WOODWARD AVENUE, ELEVATION = 756.31' (CITY OF BIRMINGHAM DATUM)

FLOOD NOTE

SUBJECT PARCEL LIES WITHIN:

SPECIAL FLOOD HAZARD AREA (ZONE AE): BASE FLOOD ELEVATIONS DETERMINED.

FLOODWAY AREAS IN ZONE AE: THE FLOODWAY IS THE CHANNEL OF A STREAM PLUS ANY ADJACENT FLOODPLAIN AREAS THAT MUST BE KEPT FREE OF ENCROACHMENT SO THAT THE 1% ANNUAL CHANCE FLOOD CAN BE CARRIED WITHOUT SUBSTANTIAL INCREASES IN FLOOD HEIGHTS.

ZONE X: AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

AS SHOWN ON FLOOD INSURANCE RATE MAP: MAP NUMBER 26125C0537F, COMMUNITY - PANEL NUMBER 260168 0537 F, DATED SEPTEMBER 29, 2006, PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

PROPERTY DESCRIPTION

LAND SITUATED IN THE CITY OF BIRMINGHAM, COUNTY OF OAKLAND, STATE OF MICHIGAN IS DESCRIBED AS FOLLOWS:

LOTS 3 AND 4, ASSESSOR'S PLAT No. 29 AS RECORDED IN LIBER 6, PAGE 45 OF PLATS, OAKLAND COUNTY RECORDS, ALSO PART OF THE NORTHWEST 1/4 OF SECTION 25, TOWN 2 NORTH, RANGE 10 EAST, CITY OF BIRMINGHAM, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS BEGINNING AT A POINT DISTANT SOUTH 88 DEGREES 16 MINUTES 00 SECONDS EAST 10.15 FEET FROM THE NORTHWEST CORNER OF SAID LOT 3; THENCE SOUTH 88 DEGREES 16 MINUTES 00 SECONDS EAST 124.70 FEET; THENCE NORTH 49 DEGREES 21 MINUTES 00 SECONDS WEST 46.41 FEET; THENCE SOUTH 73 DEGREES 32 MINUTES 00 SECONDS WEST 93.28 FEET TO BEGINNING.

TITLE REPORT NOTE

ONLY THOSE EXCEPTIONS CONTAINED WITHIN THE LAND TITLE AGENCY, LLC COMMITMENT No. 201523630, DATED MAY 25, 2015, AND RELISTED BELOW WERE CONSIDERED FOR THIS SURVEY. NO OTHER RECORDS RESEARCH WAS PERFORMED BY THE CERTIFYING SURVEYOR.

5. TERMS AND CONDITIONS OF EASEMENT AGREEMENT AS DISCLOSED BY INSTRUMENT RECORDED IN LIBER 43760, PAGE(s) 251, OAKLAND COUNTY RECORDS. (AS SHOWN)

6. TERMS AND CONDITIONS OF AGREEMENT RESPECTING LAND AS DISCLOSED BY INSTRUMENT RECORDED IN LIBER 42730, PAGE(s) 32, OAKLAND COUNTY RECORDS. (AS SHOWN, SEE DOCUMENT FOR TERMS AND CONDITIONS)

7. BUILDING AND USE RESTRICTIONS AND OTHER PROVISIONS, BUT OMITTING RESTRICTIONS, IF ANY, BASED ON RACE, COLOR, RELIGION OR NATIONAL ORIGIN, AS CONTAINED IN THE INSTRUMENT RECORDED IN LIBER 3890, PAGE(s) 335, OAKLAND COUNTY RECORDS, WHICH APPLY SPECIFICALLY TO OTHER LANDS BUT MAY CONSTITUTE A GENERAL PLAN OF DEVELOPMENT. (DOCUMENT NOT PROVIDED AT TIME OF SURVEY)

SURVEYOR'S CERTIFICATION

TO FLS PROPERTIES #5, LLC, OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY AND LAND TITLE AGENCY, LLC:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDED ITEMS 1, 2, 4, 5, 7A, 8, 9 AND 11B OF TABLE A, THEREOF. THE FIELD WORK WAS COMPLETED ON AUGUST 21, 2015.

DATE OF PLAT OR MAP: AUGUST 25, 2015

SURVEY NOTES:

1. THE SURVEY LISTED WITHIN THE PLAN REFERENCES ON THE COVER SHEET SHALL BE CONSIDERED A PART OF THIS PLAN SET AND ALL INFORMATION CONTAINED WITHIN THE SURVEY AND ASSOCIATED DOCUMENTS SHALL BE UTILIZED IN CONJUNCTION WITH THIS PLAN SET. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN A COPY OF THE SURVEY AND REVIEW IT THOROUGHLY PRIOR TO THE START OF CONSTRUCTION.

20' 0' 20' 40'

GRAPHIC SCALE IN FEET
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
5	04/12/2016	JAM	REVISED PER CITY COMMENTS & ZONING BOARD SUBMISSION
4	03/10/2016	JAM	REVISED PER CITY COMMENTS & ZONING BOARD SUBMISSION
3	02/17/2016	JAM	REVISED PER CITY COMMENTS
2	01/06/2016	JAM	REVISED PER CITY REVIW LETTER COMMENTS
1	11/11/2015	JAM	SUBMISSION FOR PRELIMINARY SITE PLAN APPORAL

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Phone 248.247.1115

SITE DEVELOPMENT PLANS

856 OLD NORTH WOODWARD

PROPOSED 4 STORY MULTI-FAMILY BUILDING WITH RETAIL

PARCEL ID: 19-25-328-001
856 NORTH OLD WOODWARD ROAD
CITY OF BIRMINGHAM
OAKLAND COUNTY, MICHIGAN

STATE OF MICHIGAN
JEFFREY A. MARTELL
ENGINEER
No.
6201061061
LICENSED PROFESSIONAL ENGINEER

[illegible]

MICHIGAN LICENSE No. 6201061061
LICENSED PROFESSIONAL ENGINEER

STONEFIELD
engineering & design, llc.

SCALE: 1" = 20' **PROJECT ID:** M-15120

TITLE:

EXISTING CONDITIONS PLAN

DRAWING:

C-2

V:\M2015\M-15120-KEM-TEC-856 N. OLD WOODWARD, BIRMINGHAM, MI\CADD\PLOTS\SDP-02-EXST.DWG

BASEMENT FLOOR LAYOUT

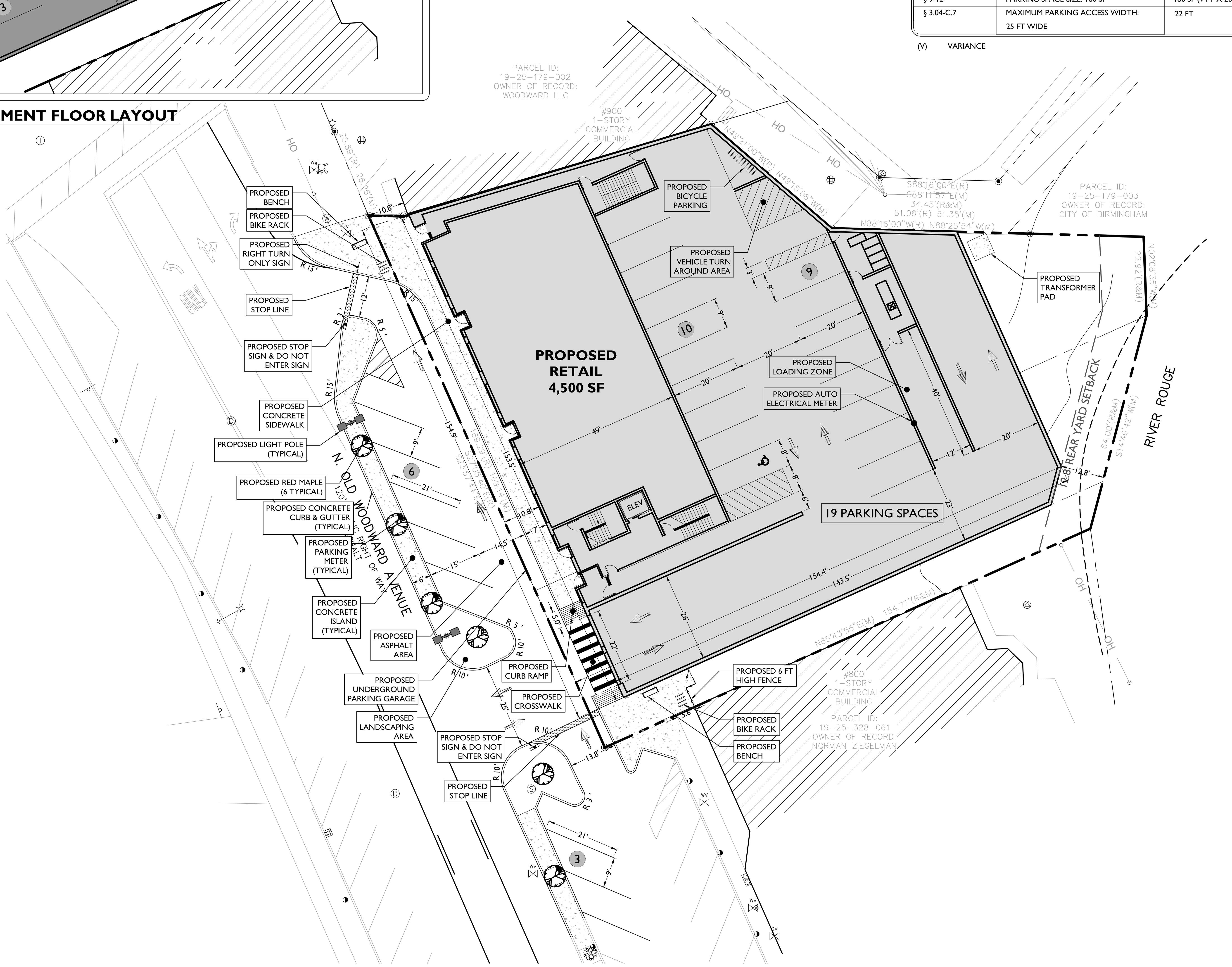

TABLE OF LAND USE AND ZONING

PARCEL ID: 19-25-328-001

DOWNTOWN BIRMINGHAM OVERLAY DISTRICT (D-2)

PROPOSED USE

DWELLING-MULTIPLE-FAMILY	PERMITTED USE
RETAIL	PERMITTED USE

ZONING REQUIREMENT	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	24,718 SF (0.56 AC)
MAXIMUM BUILDING HEIGHT	3 STORIES	4 STORIES (V)
MAXIMUM OVERALL HEIGHT	56 FT	56 FT
BUILDING FOOTPRINT AREA	N/A	20,428 SF
FRONT YARD SETBACK	0 FT	0 FT
MINIMUM FRONT YARD SETBACK(FACADE)	0 FT	10.8 FT
MINIMUM SIDE YARD SETBACK	0 FT	0 FT
MINIMUM REAR YARD SETBACK*	12.8 FT	12.8 FT

(V) VARIANCE
* THE NORTHERN ADJACENT BUILDING PROVIDES A 12.8 FT REAR YARD SETBACK PER § 3.04(B)

OFF-STREET PARKING REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 4.52 PK-08.A	**RESIDENTIAL (2 OR LESS ROOMS):** 1.5 SPACES PER UNIT (22 UNITS)(1.5/UNITS) = 33 SPACES **RESIDENTIAL (3 OR MORE ROOMS):** 2 SPACES PER UNIT (5 UNITS)(2/UNITS) = 10 SPACES **RETAIL** 1 SPACES PER 300 SF (4,500 SF)(1/300 SF) = 15 SPACES **TOTAL: 33 + 10 + 15 = 58 SPACES**	19 SPACES AT GROUND LEVEL 43 SPACES ON LOWER LEVEL **62 SPACES TOTAL ONSITE** 9 SPACES IN PUBLIC R.O.W **71 SPACES TOTAL**
§ 9-12	PARKING SPACE SIZE: 180 SF	180 SF (9 FT X 20 FT)
§ 3.04-C.7	MAXIMUM PARKING ACCESS WIDTH: 25 FT WIDE	22 FT

(V) VARIANCE

SYMBOL	DESCRIPTION
▬ ▬ ▬	PROPERTY LINE
═	PROPOSED CURB
╌	PROPOSED FLUSH CURB
⊸	PROPOSED SIGN
▭	PROPOSED BUILDING
▨	PROPOSED CONCRETE
←	PROPOSED TRAFFIC FLOW MARKINGS
(12)	PARKING STALL COUNTER

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY AND FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS AND THE PROPOSED SCOPE OF WORK (INCLUDING DIMENSIONS, LAYOUT, ETC.) PRIOR TO INITIATING THE IMPROVEMENTS IDENTIFIED WITHIN THESE DOCUMENTS. SHOULD ANY DISCREPANCY BE FOUND BETWEEN THE EXISTING SITE CONDITIONS AND THE PROPOSED WORK THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND ENSURE THAT ALL REQUIRED APPROVALS HAVE BEEN OBTAINED PRIOR TO THE START OF CONSTRUCTION. COPIES OF ALL REQUIRED PERMITS AND APPROVALS SHALL BE KEPT ON SITE AT ALL TIMES DURING CONSTRUCTION.
3. ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS STONEFIELD ENGINEERING & DESIGN, LLC. AND IT'S SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES AND LIABILITIES INCLUDING ATTORNEY'S FEES ARISING OUT OF CLAIMS BY EMPLOYEES OF THE CONTRACTOR IN ADDITION TO CLAIMS CONNECTED TO THE PROJECT AS A RESULT OF NOT CARRYING THE PROPER INSURANCE FOR WORKERS COMPENSATION, LIABILITY INSURANCE, AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE.
4. THE CONTRACTOR SHALL NOT DEVIATE FROM THE PROPOSED IMPROVEMENTS IDENTIFIED WITHIN THIS PLAN SET UNLESS APPROVAL IS PROVIDED IN WRITING BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF CONSTRUCTION.
6. THE CONTRACTOR SHALL NOT PERFORM ANY WORK OR CAUSE DISTURBANCE ON A PRIVATE PROPERTY NOT CONTROLLED BY THE PERSON OR ENTITY WHO HAS AUTHORIZED THE WORK WITHOUT PRIOR WRITTEN CONSENT FROM THE OWNER OF THE PRIVATE PROPERTY.
7. THE CONTRACTOR IS RESPONSIBLE TO RESTORE ANY DAMAGED OR UNDERMINED STRUCTURE OR SITE FEATURE THAT IS IDENTIFIED TO REMAIN ON THE PLAN SET. ALL REPAIRS SHALL USE NEW MATERIALS TO RESTORE THE FEATURE TO ITS EXISTING CONDITION AT THE CONTRACTORS EXPENSE.
8. CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE SHOP DRAWINGS, PRODUCT DATA, AND OTHER REQUIRED SUBMITTALS FOR REVIEW. STONEFIELD ENGINEERING & DESIGN, LLC. WILL REVIEW THE SUBMITTALS IN ACCORDANCE WITH THE DESIGN INTENT AS REFLECTED WITHIN THE PLAN SET.
9. THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
10. THE CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN THE PUBLIC RIGHT-OF-WAY IN ACCORDANCE WITH THE APPROPRIATE GOVERNING AUTHORITY AND SHALL BE RESPONSIBLE FOR THE PROCUREMENT OF STREET OPENING PERMITS.
11. THE CONTRACTOR IS REQUIRED TO RETAIN AN OSHA CERTIFIED SAFETY INSPECTOR TO BE PRESENT ON SITE AT ALL TIMES DURING CONSTRUCTION & DEMOLITION ACTIVITIES.
12. SHOULD AN EMPLOYEE OF STONEFIELD ENGINEERING & DESIGN, LLC. BE PRESENT ON SITE AT ANY TIME DURING CONSTRUCTION, IT DOES NOT RELIEVE THE CONTRACTOR OF ANY OF THE RESPONSIBILITIES AND REQUIREMENTS LISTED IN THE NOTES WITHIN THIS PLAN SET.

ZONING RELIEF TABLE

DESIGN STANDARDS	REQUIRED	PROPOSED
§ 3.04-A.1	MAXIMUM BUILDING HEIGHT: 3 STORIES (56 FT)	4 STORIES (56 FT)

(V) VARIANCE

20' 0' 20' 40'
GRAPHIC SCALE IN FEET
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
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NOT APPROVED FOR CONSTRUCTION

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SITE DEVELOPMENT PLANS

856 OLD NORTH WOODWARD

PROPOSED 4 STORY MULTI-FAMILY BUILDING WITH RETAIL

PARCEL ID: 19-25-328-001
856 NORTH OLD WOODWARD ROAD
CITY OF BIRMINGHAM
OAKLAND COUNTY, MICHIGAN

STATE OF MICHIGAN
JEFFREY A. MARTELL
ENGINEER
No. 6201061061
LICENSED PROFESSIONAL ENGINEER

[illegible]

MICHIGAN LICENSE No. 6201061061
LICENSED PROFESSIONAL ENGINEER

STONEFIELD
engineering & design, llc.

SCALE: 1" = 20' **PROJECT ID:** M-15120

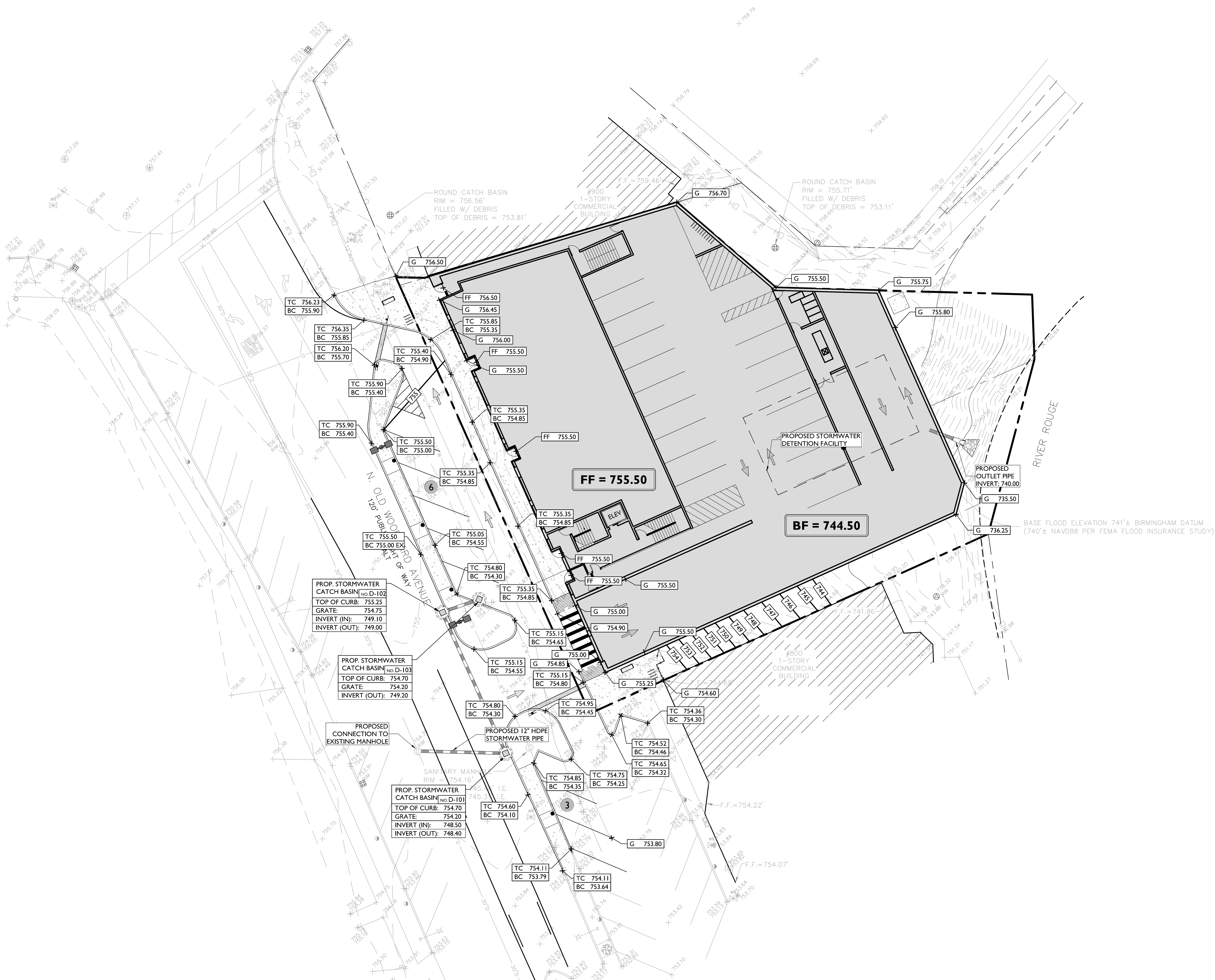
TITLE:

FIRST FLOOR SITE PLAN

DRAWING:

C-3

V:\M2015\M-15120-KEM-TEC-856 N. OLD WOODWARD, BIRMINGHAM, MI\CADD\PLOT\SDP-03-SITE.DWG



SYMBOL	DESCRIPTION
	PROPERTY LINE
100	PROPOSED GRADING CONTOUR
RIDGELINE	PROPOSED GRADING RIDGELINE
	PROPOSED DIRECTION OF DRAINAGE FLOW
G 100.00	PROPOSED GRADE SPOT SHOT
TC 100.50 / BC 100.00	PROPOSED TOP OF CURB / BOTTOM OF CURB SPOT SHOT
FC 100.00	PROPOSED FLUSH CURB SPOT SHOT
DC 100.12 / BC 100.00	PROPOSED DEPRESSED CURB / BOTTOM OF CURB SPOT SHOT
TW 102.00 / BW 100.00	PROPOSED TOP OF WALL / BOTTOM OF WALL SPOT SHOT

GRADING NOTES

1. ALL SOIL AND MATERIAL REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. ANY GROUNDWATER DE-WATERING PRACTICES SHALL BE PERFORMED UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL. THE CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY PERMITS FOR THE DISCHARGE OF DE-WATERED GROUNDWATER. ALL SOIL IMPORTED TO THE SITE SHALL BE CERTIFIED CLEAN FILL. CONTRACTOR SHALL MAINTAIN RECORDS OF ALL FILL MATERIALS BROUGHT TO THE SITE.
2. THE CONTRACTOR IS REQUIRED TO PROVIDE TEMPORARY AND/OR PERMANENT SHORING WHERE REQUIRED DURING EXCAVATION ACTIVITIES, INCLUDING BUT NOT LIMITED TO UTILITY TRENCHES, TO ENSURE THE STRUCTURAL INTEGRITY OF NEARBY STRUCTURES AND STABILITY OF THE SURROUNDING SOILS.
3. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 4 INCHES TO 7 INCHES ABOVE EXISTING GRADES UNLESS OTHERWISE NOTED. THE CONTRACTOR WILL SUPPLY ALL STAKEOUT CURB GRADE SHEETS TO STONEFIELD ENGINEERING & DESIGN, LLC. FOR REVIEW AND APPROVAL PRIOR TO POURING CURBS.
4. THE CONTRACTOR IS RESPONSIBLE TO SET ALL PROPOSED UTILITY COVERS AND RESET ALL EXISTING UTILITY COVERS WITHIN THE PROJECT LIMITS TO PROPOSED GRADE IN ACCORDANCE WITH ANY APPLICABLE MUNICIPAL, COUNTY, STATE AND/OR UTILITY AUTHORITY REGULATIONS.
5. MINIMUM SLOPE REQUIREMENTS TO PREVENT PONDING SHALL BE AS FOLLOWS:
   - CURB GUTTER: 0.50%
   - CONCRETE SURFACES: 1.00%
   - ASPHALT SURFACES: 1.00%
5. A MINIMUM SLOPE OF 1.00% SHALL BE PROVIDED AWAY FROM ALL BUILDINGS. THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE FROM THE BUILDING IS ACHIEVED AND SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IF THIS CONDITION CANNOT BE MET.
6. FOR PROJECTS WHERE BASEMENTS ARE PROPOSED, THE DEVELOPER IS RESPONSIBLE TO DETERMINE THE DEPTH TO GROUNDWATER AT THE LOCATION OF THE PROPOSED STRUCTURE. IF GROUNDWATER IS ENCOUNTERED WITHIN THE BASEMENT AREA, SPECIAL CONSTRUCTION METHODS SHALL BE UTILIZED AND REVIEWED/APPROVED BY THE CONSTRUCTION CODE OFFICIAL. IF SUMP PUMPS ARE UTILIZED, ALL DISCHARGES SHALL BE CONNECTED DIRECTLY TO THE PUBLIC STORM SEWER SYSTEM WITH APPROVAL FROM THE GOVERNING STORM SEWER SYSTEM AUTHORITY.

ADA NOTES

1. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION WITHIN THE ADA PARKING SPACES AND ACCESS AISLES.
2. THE CONTRACTOR SHALL PROVIDE COMPLIANT SIGNAGE AT ALL ADA PARKING AREAS IN ACCORDANCE WITH STATE GUIDELINES.
3. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 5.00% RUNNING SLOPE AND A MAXIMUM OF 2.00% CROSS SLOPE ALONG WALKWAYS WITHIN THE ACCESSIBLE PATH OF TRAVEL (SEE THE SITE PLAN FOR THE LOCATION OF THE ACCESSIBLE PATH). THE CONTRACTOR IS RESPONSIBLE TO ENSURE THE ACCESSIBLE PATH OF TRAVEL IS 36 INCHES WIDE OR GREATER UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
4. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION AT ALL LANDINGS. LANDINGS INCLUDE, BUT ARE NOT LIMITED TO, THE TOP AND BOTTOM OF AN ACCESSIBLE RAMP, AT ACCESSIBLE BUILDING ENTRANCES, AT AN AREA IN FRONT OF A WALK-UP ATM, AND AT TURNING SPACES ALONG THE ACCESSIBLE PATH OF TRAVEL. THE LANDING AREA SHALL HAVE A MINIMUM CLEAR AREA OF 60 INCHES BY 60 INCHES UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
5. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 8.33% RUNNING SLOPE AND A MAXIMUM 2.00% CROSS SLOPE ON ANY CURB RAMPS ALONG THE ACCESSIBLE PATH OF TRAVEL. WHERE PROVIDED, CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 10.00% IF A LANDING AREA IS PROVIDED AT THE TOP OF THE RAMP. FOR ALTERATIONS, A CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 8.33% IF A LANDING AREA IS NOT PROVIDED AT THE TOP OF THE RAMP. CURBS RAMPS SHALL NOT RISE MORE THAN 6 INCHES IN ELEVATION WITHOUT A HANDRAIL. THE CLEAR WIDTH OF A CURB RAMP SHALL BE NO LESS THAN 36 INCHES WIDE.
6. ACCESSIBLE RAMPS WITH A RISE GREATER THAN 6 INCHES SHALL CONTAIN COMPLIANT HANDRAILS ON BOTH SIDES OF THE RAMP AND SHALL NOT RISE MORE THAN 30" IN ELEVATION WITHOUT A LANDING AREA IN BETWEEN RAMP RUNS. LANDING AREAS SHALL ALSO BE PROVIDED AT THE TOP AND BOTTOM OF THE RAMP.
7. A SLIP RESISTANT SURFACE ALL BE CONSTRUCTED ALONG THE ACCESSIBLE PATH AND WITHIN ADA PARKING AREAS.
8. THE CONTRACTOR SHALL ENSURE A MAXIMUM OF ¼ INCHES VERTICAL CHANGE IN LEVEL ALONG THE ACCESSIBLE PATH. WHERE A CHANGE IN LEVEL BETWEEN ¼ INCHES AND ½ INCHES EXISTS, CONTRACTOR SHALL ENSURE THAT THE TOP ¼ INCH CHANGE IN LEVEL IS BEVELED WITH A SLOPE NOT STEEPER THAN 1 UNIT VERTICAL AND 2 UNITS HORIZONTAL (2:1 SLOPE).
9. THE CONTRACTOR SHALL ENSURE THAT ANY OPENINGS (GAPS OR HORIZONTAL SEPARATION) ALONG THE ACCESSIBLE PATH SHALL NOT ALLOW PASSAGE OF A SPHERE GREATER THAN ½ INCH.

20' 0' 20' 40'

GRAPHIC SCALE IN FEET
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
5	04/12/2016	JAM	REVISED PER CITY COMMENTS & ZONING BOARD SUBMISSION
4	03/10/2016	JAM	REVISED PER CITY COMMENTS & ZONING BOARD SUBMISSION
3	02/17/2016	JAM	REVISED PER CITY COMMENTS
2	01/06/2016	JAM	REVISED PER CITY REVIW LETTER COMMENTS
1	11/11/2015	JAM	SUBMISSION FOR PRELIMINARY SITE PLAN APPORAL

NOT APPROVED FOR CONSTRUCTION

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www.stonefieldeng.com
2350 Franklin Road, Suite 210, Bloomfield Hills, MI 48302
Phone 248.247.1115

SITE DEVELOPMENT PLANS

856 OLD NORTH WOODWARD

PROPOSED 4 STORY MULTI-FAMILY BUILDING WITH RETAIL

PARCEL ID: 19-25-328-001
856 NORTH OLD WOODWARD ROAD
CITY OF BIRMINGHAM
OAKLAND COUNTY, MICHIGAN

STATE OF MICHIGAN
JEFFREY A. MARTELL
ENGINEER
No.
6201061061
LICENSED PROFESSIONAL ENGINEER

[illegible]

MICHIGAN LICENSE No. 6201061061
LICENSED PROFESSIONAL ENGINEER

STONEFIELD
engineering & design, llc.

SCALE: 1" = 20' PROJECT ID: M-15120

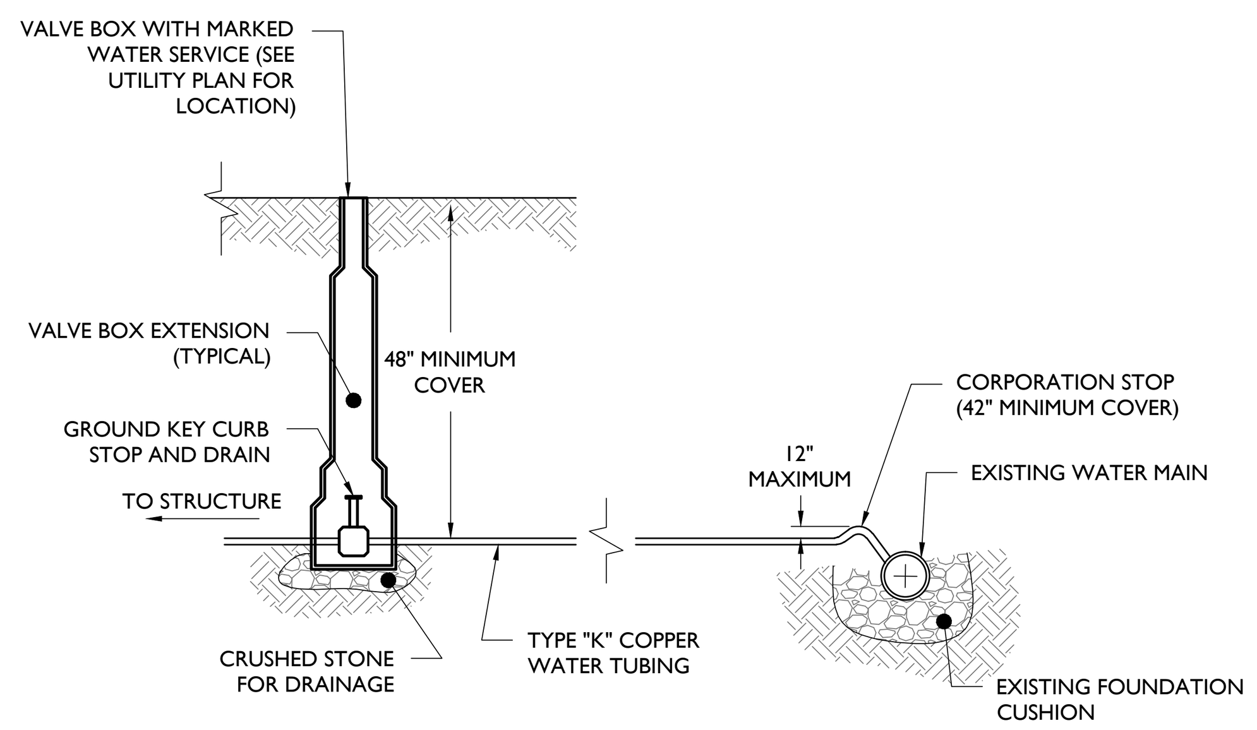
TITLE:

GRADING PLAN

DRAWING:

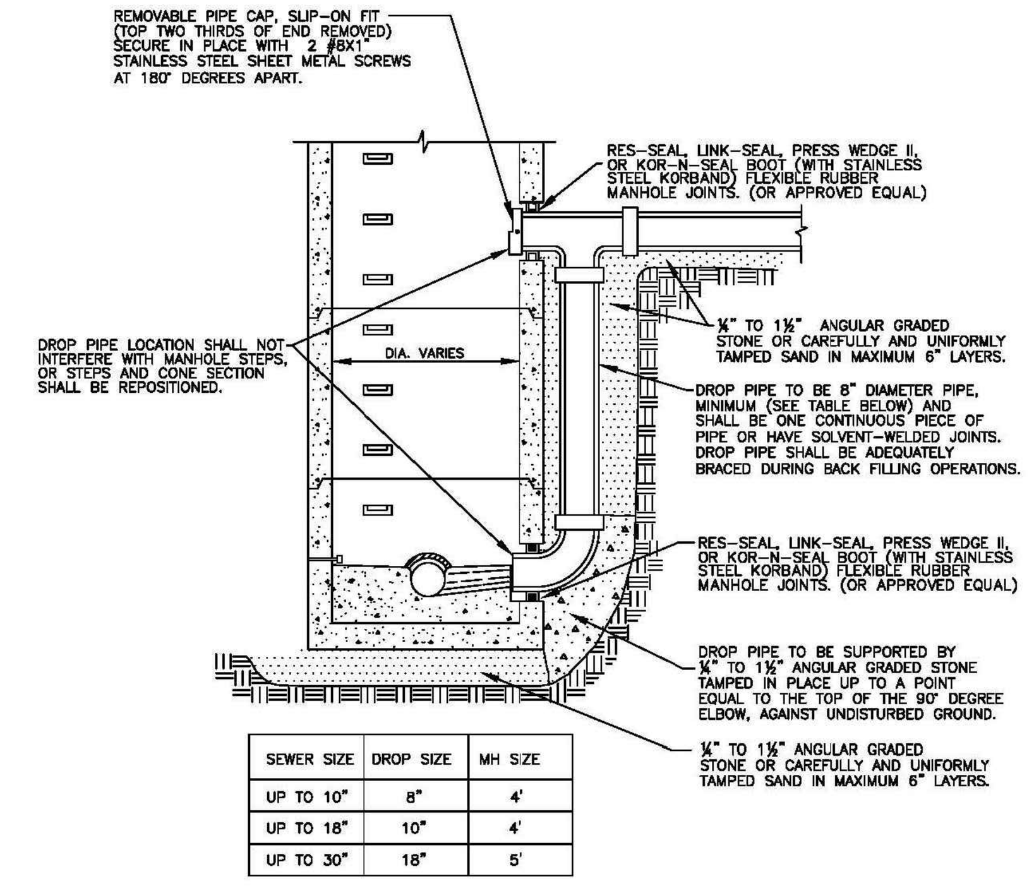
C-4

V:\M2015\M-15120-KEM-TEC-856 N. OLD WOODWARD, BIRMINGHAM, MI\CADD\PLOT\SDP-04-GRAD.DWG



WATER CONNECTION DETAIL

NOT TO SCALE



SEWER SIZE	DROP SIZE	MH SIZE
UP TO 10"	8"	4'
UP TO 18"	10"	4'
UP TO 30"	18"	5'

EXTERIOR DROP CONNECTION

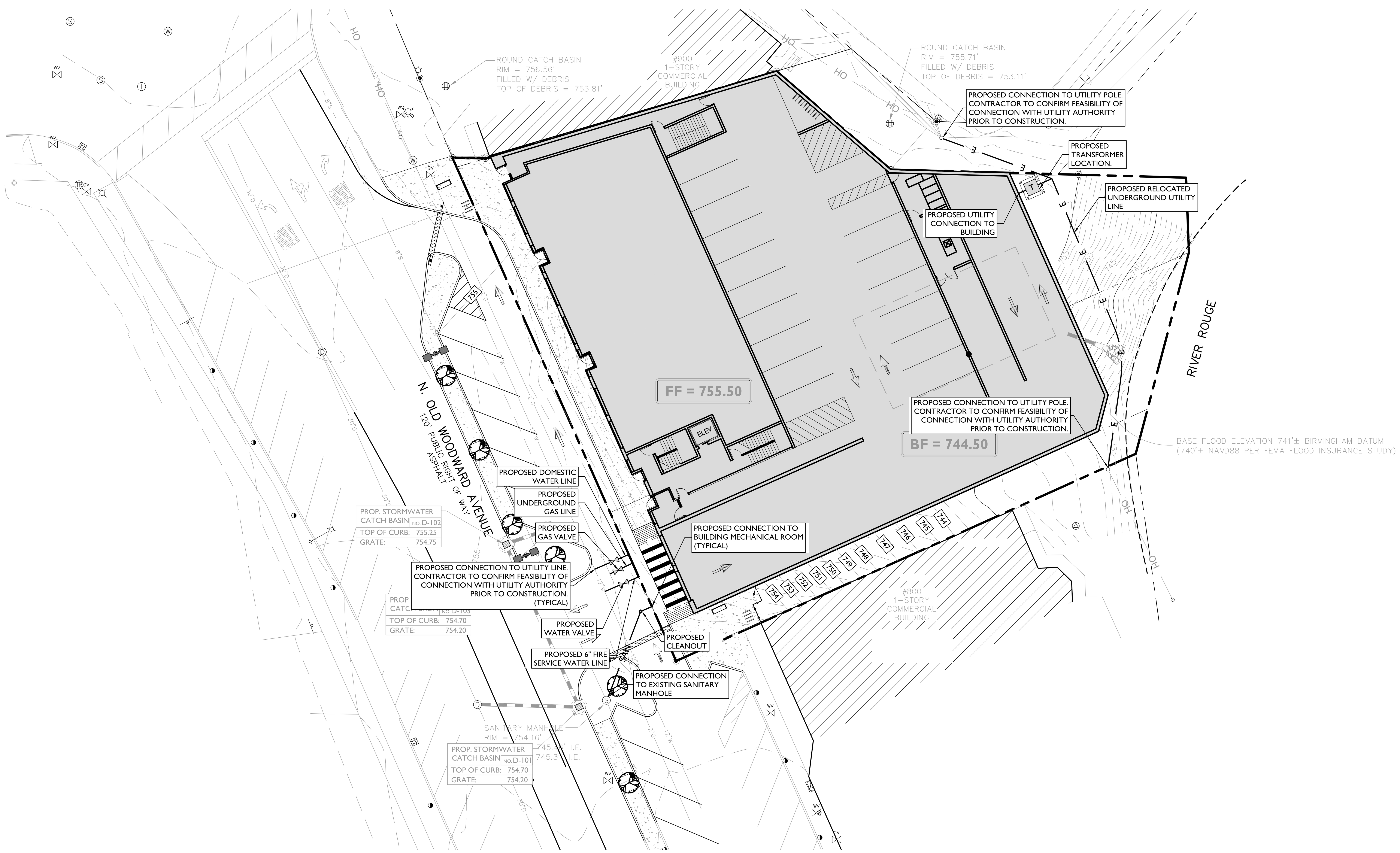
SANITARY CONNECTION DETAIL

NOT TO SCALE

SYMBOL	DESCRIPTION
— — — —	PROPERTY BOUNDARY
—— SAN ——	PROPOSED SANITARY SEWER
—— 2"W ——	PROPOSED UNDERGROUND WATER LINE
—— GAS ——	PROPOSED GAS LINE
—— E/T/C ——	PROPOSED UNDERGROUND ELECTRIC/PHONE/CABLE LINE
◌ ◎ ▣ ◦	PROPOSED STRUCTURES

DRAINAGE AND UTILITY NOTES

1. THE CONTRACTOR IS REQUIRED TO CALL THE APPROPRIATE AUTHORITY FOR NOTICE OF CONSTRUCTION/EXCAVATION AND UTILITY MARK OUT PRIOR TO THE START OF CONSTRUCTION IN ACCORDANCE WITH STATE LAW. CONTRACTOR IS REQUIRED TO CONFIRM THE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES IN THE FIELD. SHOULD A DISCREPANCY EXIST BETWEEN THE FIELD LOCATION OF A UTILITY AND THE LOCATION SHOWN ON THE PLAN SET OR SURVEY, THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IMMEDIATELY IN WRITING.
2. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN IN OPERATION ALL UTILITIES NOT DESIGNATED TO BE REMOVED.
3. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO ANY EXISTING UTILITY IDENTIFIED TO REMAIN WITHIN THE LIMITS OF THE PROPOSED WORK DURING CONSTRUCTION.
4. A MINIMUM HORIZONTAL SEPARATION OF 10 FEET IS REQUIRED BETWEEN ANY SANITARY SEWER SERVICE AND ANY WATER LINES. IF THIS SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASEMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. ALL WATER LINES SHALL BE VERTICALLY SEPARATED ABOVE SANITARY SEWER LINES BY A MINIMUM DISTANCE OF 18 INCHES. IF THIS SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASEMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN, LLC.
6. THE CONTRACTOR TO PERFORM A TEST PIT PRIOR TO CONSTRUCTION (RECOMMEND 30 DAYS PRIOR) AT LOCATIONS OF EXISTING UTILITY CROSSINGS FOR WATER AND SANITARY SEWER CONNECTION IMPROVEMENTS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IN WRITING.
7. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING GAS, ELECTRIC AND TELECOMMUNICATION CONNECTIONS WITH THE APPROPRIATE GOVERNING AUTHORITY.
8. CONTRACTOR SHALL START CONSTRUCTION OF ANY GRAVITY SEWER AT THE LOWEST INVERT AND WORK UP-GRADIENT.
7. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD SET OF PLANS REFLECTING THE LOCATION OF EXISTING UTILITIES THAT HAVE BEEN CAPPED, ABANDONED, OR RELOCATED BASED ON THE DEMOLITION/REMOVAL ACTIVITIES REQUIRED IN THIS PLAN SET. THIS DOCUMENT SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.
8. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD OF THE AS-BUILT LOCATIONS OF ALL PROPOSED UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR SHALL NOTE ANY DISCREPANCIES BETWEEN THE AS-BUILT LOCATIONS AND THE LOCATIONS DEPICTED WITHIN THE PLAN SET. THIS RECORD SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.



20' 0' 20' 40'

GRAPHIC SCALE IN FEET
1" = 20'

V:\M2015\M-15120-KEM-TEC-856 N. OLD WOODWARD, BIRMINGHAM, MI\CADD\PLOT\SDP-05-UTIL.DWG

ISSUE	DATE	BY	DESCRIPTION
5	04/12/2016	JAM	REVISED PER CITY COMMENTS & ZONING BOARD SUBMISSION
4	03/10/2016	JAM	REVISED PER CITY COMMENTS & ZONING BOARD SUBMISSION
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1	11/11/2015	JAM	SUBMISSION FOR PRELIMINARY SITE PLAN APPORAL

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SITE DEVELOPMENT PLANS

856 OLD NORTH WOODWARD

PROPOSED 4 STORY MULTI-FAMILY BUILDING WITH RETAIL

PARCEL ID: 19-25-328-001
856 NORTH OLD WOODWARD ROAD
CITY OF BIRMINGHAM
OAKLAND COUNTY, MICHIGAN

STATE OF MICHIGAN
JEFFREY A. MARTELL
ENGINEER
No. 6201061061
LICENSED PROFESSIONAL ENGINEER

[illegible]

MICHIGAN LICENSE No. 6201061061
LICENSED PROFESSIONAL ENGINEER

STONEFIELD
engineering & design, llc.

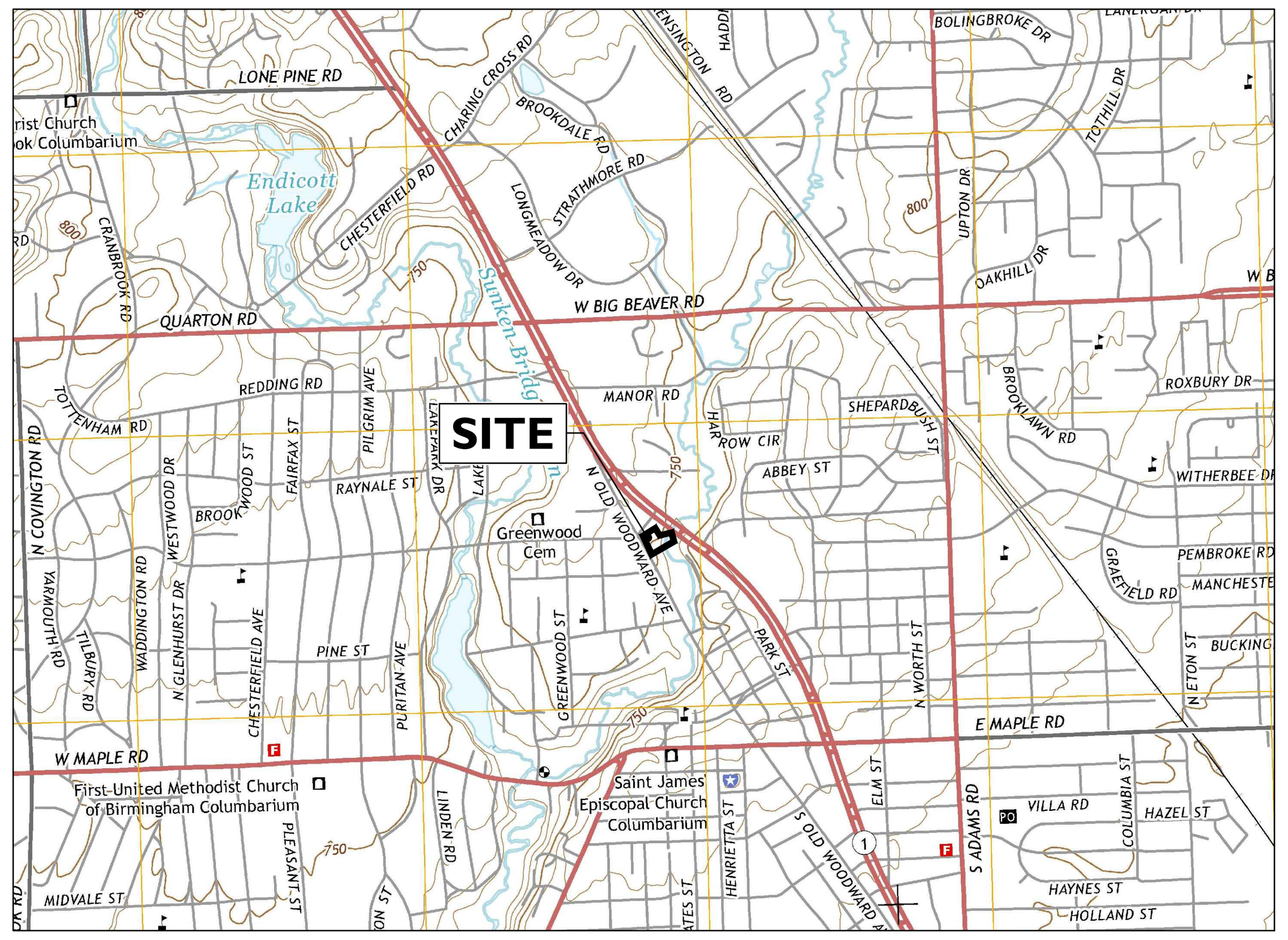
SCALE: 1" = 20'	PROJECT ID: M-15120

TITLE:

UTILITY PLAN

DRAWING:

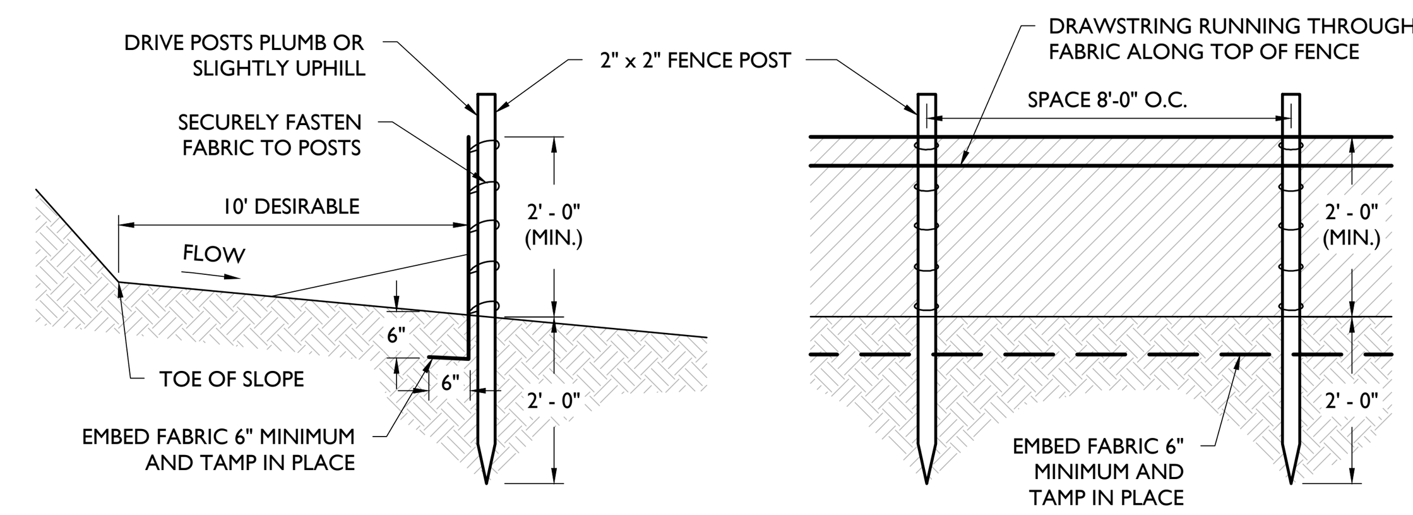
C-5



SOURCE: USGS MAP

LOCATION MAP

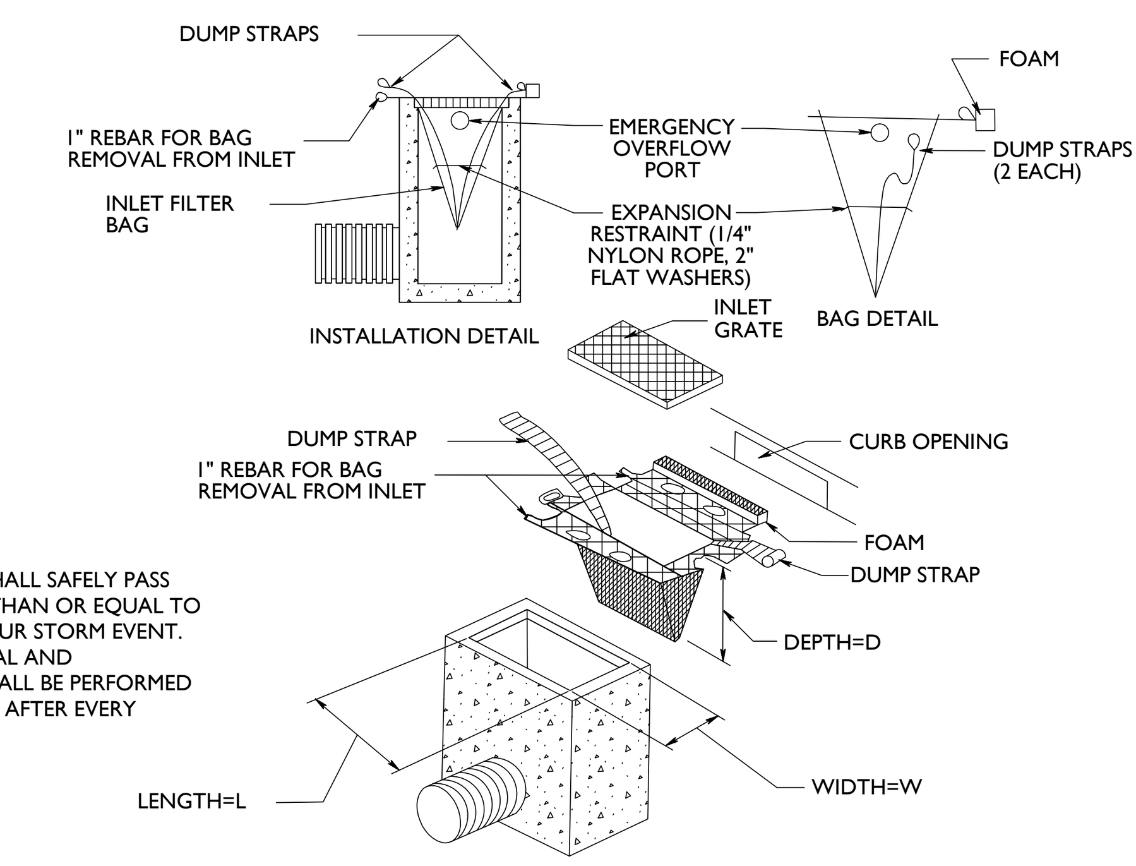
SCALE: 1" = 2000'±



NOTES:
1. SECURELY FASTEN GEOTEXTILE TO FENCE POST BY USE OF WIRE TIES, HOG RINGS, STAPLES OR POCKETS. FOUR TO SIX FASTENERS PER POST.
2. GEOTEXTILE FABRIC TO BE EMBEDDED 6" (MIN.) AND TAMP IN PLACE.
3. SECURELY FASTEN ENDS OF INDIVIDUAL ROLLS OF GEOTEXTILE TO A POST BY WRAPPING EACH END OF THE GEOTEXTILE AROUND THE POST TWICE AND ATTACHING AS SPECIFIED IN NOTE 1 ABOVE. SPLICING OF INDIVIDUAL ROLLS SHALL NOT OCCUR AT LOW POINTS.
4. SET SILT FENCE WITHIN PROJECT LIMITS. 10'-0" IS DESIRABLE.

SILT FENCE DETAIL

NOT TO SCALE



NOTES:
1. THE FILTER BAG SHALL SAFELY PASS FLOWS GREATER THAN OR EQUAL TO THE 1-YEAR 24-HOUR STORM EVENT.
2. SEDIMENT REMOVAL AND MAINTENANCE SHALL BE PERFORMED FREQUENTLY AND AFTER EVERY STORM EVENT.

INLET FILTER BAG DETAIL

NOT TO SCALE

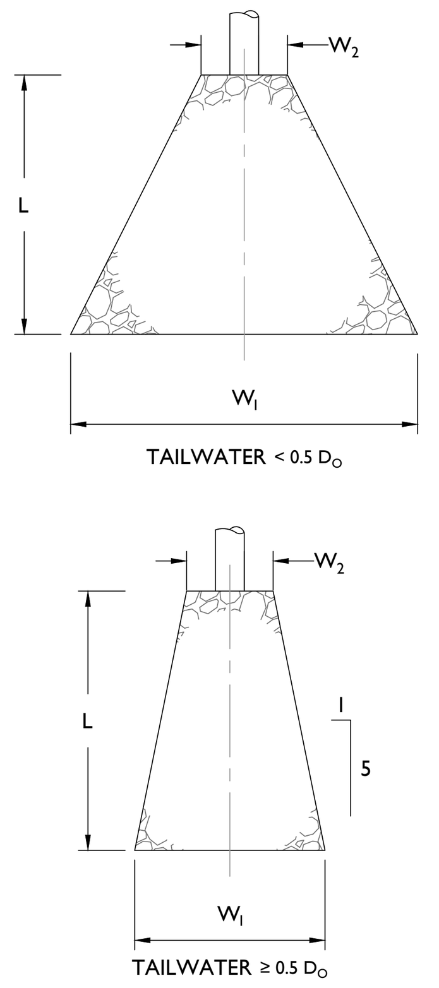
SYMBOL	DESCRIPTION
—— LOD ——	LIMIT OF DISTURBANCE
—— SF ——	SILT FENCE
▨	PROPOSED INLET FILTER

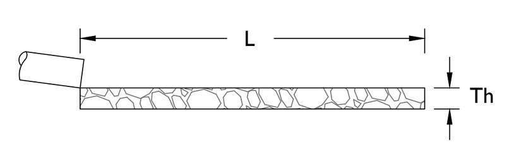
59 - URBAN LAND	
SOIL CHARACTERISTICS	
HYDROLOGIC SOIL GROUP	D
DEPTH TO RESTRICTIVE LAYER	MORE THAN 200 INCHES
SOIL PERMEABILITY	N/A
DEPTH TO WATER TABLE	MORE THAN 80 INCHES

SEQUENCE OF CONSTRUCTION

1. INSTALL SILT FENCE AND CONSTRUCTION ENTRANCE (2 DAYS).
2. DEMOLISH EXISTING STRUCTURES, PAVEMENT, AND GRAVEL (45 DAYS).
3. ROUGH GRADING AND TEMPORARY SEEDING (20 DAYS).
4. EXCAVATE AND INSTALL UNDERGROUND BASIN, WATER QUALITY UNIT, DRAINAGE PIPING, AND INLETS (20 DAYS).
5. INSTALL INLET FILTERS (1 DAY).
6. BUILDING CONSTRUCTION AND SITE IMPROVEMENTS (275 DAYS).
7. CONSTRUCT RIGHT OF WAY IMPROVEMENTS (180 DAYS).
8. LANDSCAPING IMPROVEMENTS AND FINAL SEEDING (7 DAYS).
9. REMOVE SOIL EROSION MEASURES (1 DAY).

NOTE: TIME DURATIONS ARE APPROXIMATE AND ARE INTENDED TO ACT AS A GENERAL GUILE TO THE CONSTRUCTION TIMELINE. ALL DURATIONS ARE SUBJECT TO CHANGE BY CONTRACTOR. CONTRACTOR SHALL SUBMIT CONSTRUCTION SCHEDULE TO TOWNSHIP AND ENGINEER. CONTRACTOR SHALL PHASE CONSTRUCTION ACCORDINGLY





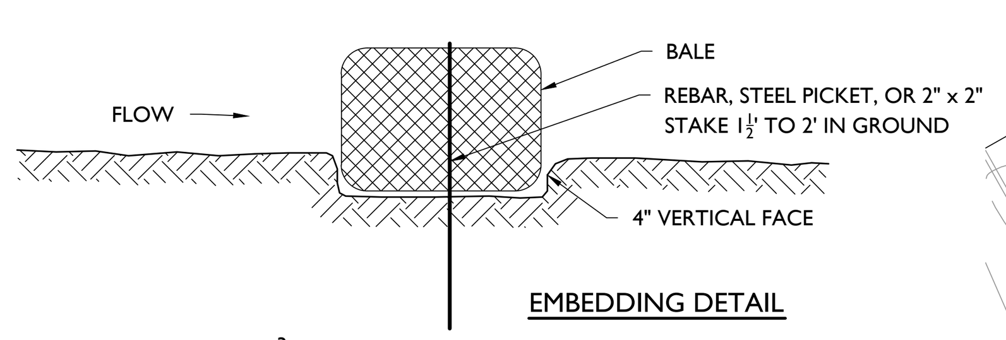
RIP-RAP SIZING CHART

FES #	L (ft)	W_1 (ft)	W_2 (ft)	D_{50} (in)	Th* (in)
1	10.0	15.0	4.0	6.0	12.0
2	11.0	15.0	3.0	6.0	12.0
3	14.0	18.0	3.0	6.0	12.0
4	14.0	16.0	5.0	6.0	12.0

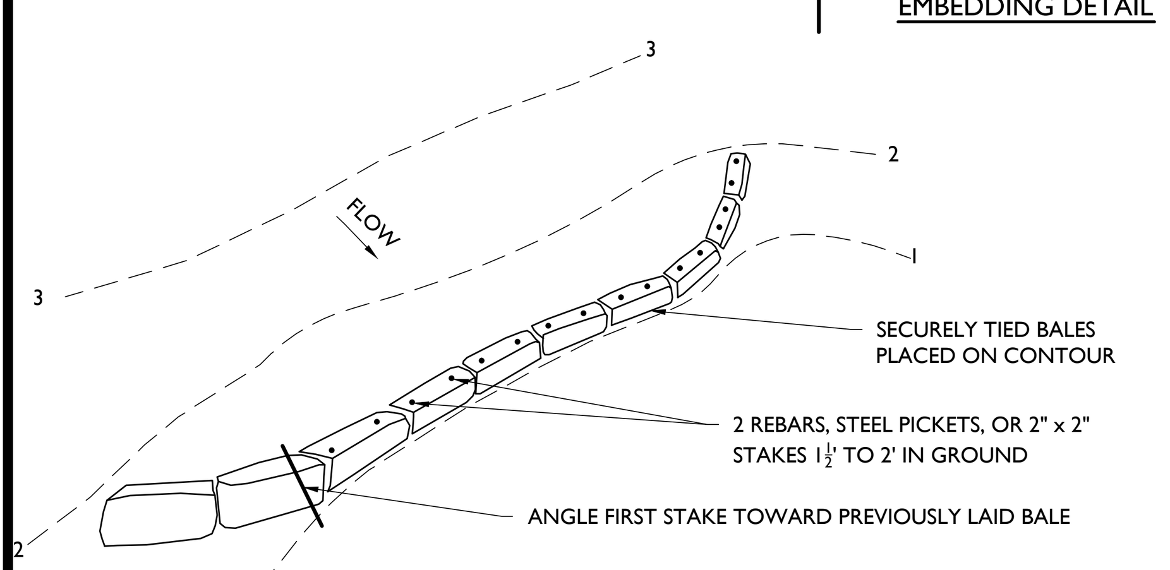
(*) = MINIMUM APRON THICKNESS SHALL BE TWO TIMES THE D_{50} SIZE FOR THE APRON.

RIP-RAP PAD

NOT TO SCALE

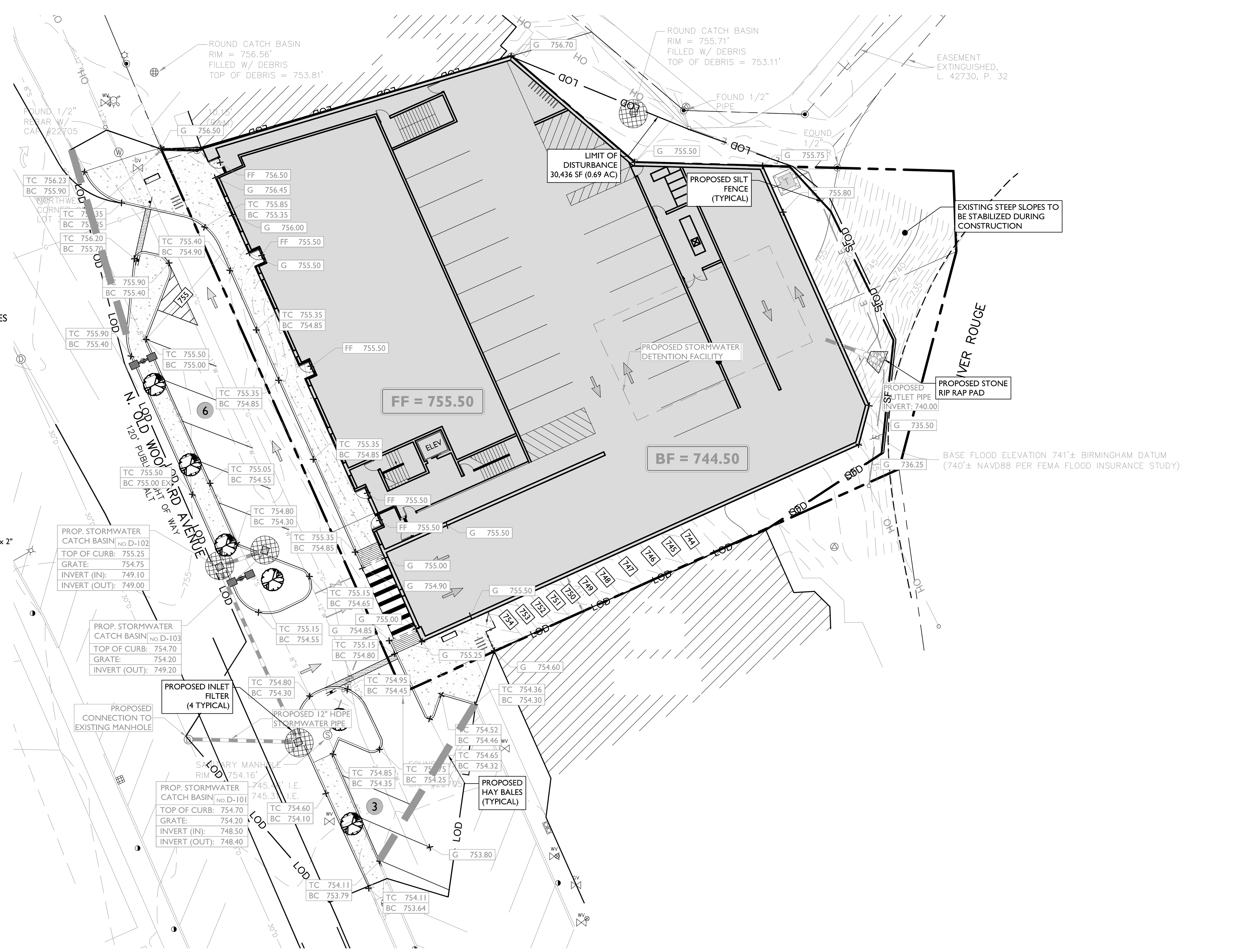


EMBEDDING DETAIL



HAY BALE DETAIL

NOT TO SCALE



FLOOD HAZARD AREA NOTES:

1. THERE ARE NO RIPARIAN ZONES ON SITE.
2. THERE ARE FLOODWAYS ON SITE.
3. PORTIONS OF THE SITE ARE WITHIN THE 100-YR FLOOD AREA
4. ALL ELEVATIONS SHOWN ARE BASED ON THE CITY OF BIRMINGHAM DATUM.

ENVIRONMENTAL NOTES:

1. THERE ARE NO WETLANDS ON SITE.
2. THE ROUGE RIVER IS LOCATED ONSITE.
3. REFER TO STORMWATER MANAGEMENT REPORT FOR SOIL INFORMATION AND LAND USE FOR SURROUNDING AREA

PARCEL AREA

24,719± SQUARE FEET = 0.57± ACRES

BASIS OF BEARING

SOUTH 23°57'44" EAST, BEING THE NORTHERLY RIGHT OF WAY LINE OF N. OLD WOODWARD AVENUE.

BENCHMARK

NORTHWEST BOLT OF STREET LIGHT, LOCATED ON THE EASTERLY SIDE OF N. OLD WOODWARD AVENUE, ELEVATION = 756.31' (CITY OF BIRMINGHAM DATUM)

FLOOD NOTE

SUBJECT PARCEL LIES WITHIN:

SPECIAL FLOOD HAZARD AREA (ZONE AE): BASE FLOOD ELEVATIONS DETERMINED.

FLOODWAY AREAS IN ZONE AE: THE FLOODWAY IS THE CHANNEL OF A STREAM PLUS ANY ADJACENT FLOODPLAIN AREAS THAT MUST BE KEPT FREE OF ENCROACHMENT SO THAT THE 1% ANNUAL CHANCE FLOOD CAN BE CARRIED WITHOUT SUBSTANTIAL INCREASES IN FLOOD HEIGHTS.

ZONE X: AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

AS SHOWN ON FLOOD INSURANCE RATE MAP: MAP NUMBER 26125C0537F, COMMUNITY - PANEL NUMBER 260168 0537 F, DATED SEPTEMBER 29, 2006, PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

PROPERTY DESCRIPTION

LAND SITUATED IN THE CITY OF BIRMINGHAM, COUNTY OF OAKLAND, STATE OF MICHIGAN IS DESCRIBED AS FOLLOWS:

LOTS 3 AND 4, ASSESSOR'S PLAT No. 29 AS RECORDED IN LIBER 6, PAGE 45 OF PLATS, OAKLAND COUNTY RECORDS, ALSO PART OF THE NORTHWEST 1/4 OF SECTION 25, TOWN 2 NORTH, RANGE 10 EAST, CITY OF BIRMINGHAM, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS BEGINNING AT A POINT DISTANT SOUTH 88 DEGREES 16 MINUTES 00 SECONDS EAST 10.15 FEET FROM THE NORTHWEST CORNER OF SAID LOT 3; THENCE SOUTH 88 DEGREES 16 MINUTES 00 SECONDS EAST 124.70 FEET; THENCE NORTH 49 DEGREES 21 MINUTES 00 SECONDS WEST 46.41 FEET; THENCE SOUTH 73 DEGREES 32 MINUTES 00 SECONDS WEST 93.28 FEET TO BEGINNING.

EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
2. THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL AND COMPLIANCE WITH LOCAL, STATE, AND FEDERAL AIR QUALITY STANDARDS.
3. THE CONTRACTOR IS RESPONSIBLE TO INSPECT ALL SOIL EROSION MEASURES WEEKLY AND AFTER A PRECIPITATION EVENT GREATER THAN 1 INCH. THE CONTRACTOR SHALL MAINTAIN AN INSPECTION LOG ON SITE AND DOCUMENT CORRECTIVE ACTION AS REQUIRED TAKEN THROUGHOUT THE COURSE OF CONSTRUCTION.

20' 0' 20' 40'

GRAPHIC SCALE IN FEET
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
5	04/12/2016	JAM	REVISED PER CITY COMMENTS & ZONING BOARD SUBMISSION
4	03/10/2016	JAM	REVISED PER CITY COMMENTS & ZONING BOARD SUBMISSION
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856 OLD NORTH WOODWARD

PROPOSED 4 STORY MULTI-FAMILY BUILDING WITH RETAIL

PARCEL ID: 19-25-328-001
856 NORTH OLD WOODWARD ROAD
CITY OF BIRMINGHAM
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[illegible]

MICHIGAN LICENSE No. 6201061061
LICENSED PROFESSIONAL ENGINEER

STONEFIELD
engineering & design, llc.

SCALE: 1" = 20'	PROJECT ID: M-15120

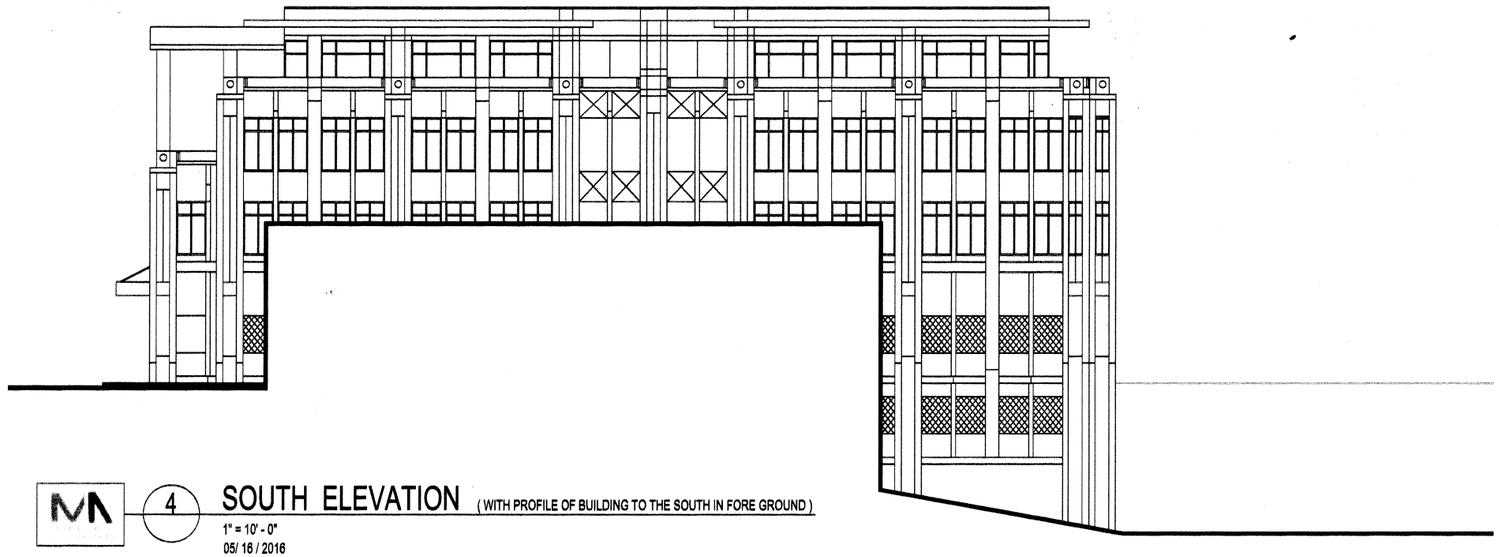
TITLE:

SOIL EROSION & SEDIMENT CONTROL PLAN

DRAWING:

C-6

V:\M2015\M-15120-KEM-TEC-856 N. OLD WOODWARD, BIRMINGHAM, MI\CADD\PLOT\SDP-06-SESC.DWG



4 SOUTH ELEVATION (WITH PROFILE OF BUILDING TO THE SOUTH IN FORE GROUND)

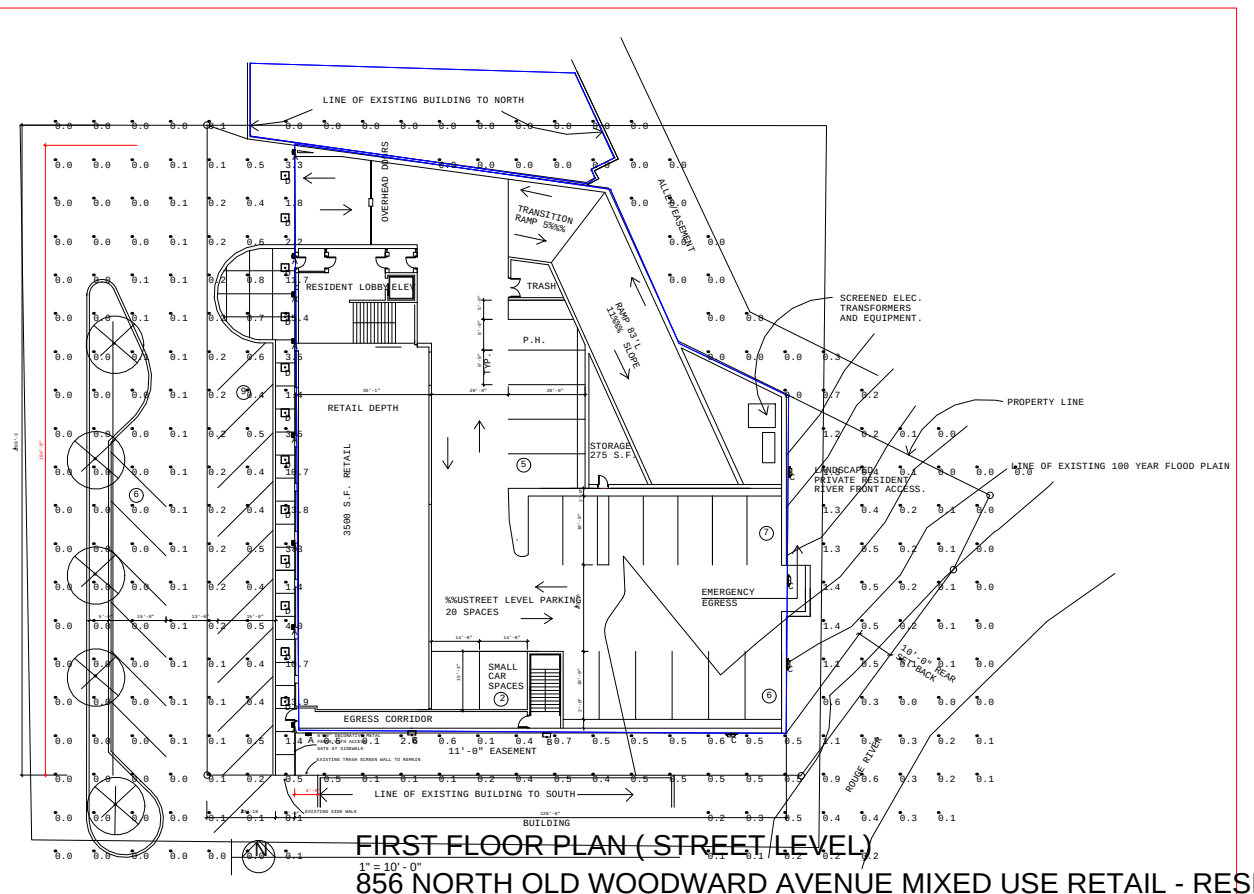
1" = 10' - 0"
05/ 16 / 2016

1 WEST ELEVATION (FRONT) - FACADE IMPACT AT OLD NORTH WOODWARD STREETSCAPE

1" = 10' - 0"
05/ 16 /2016

Resource Lighting Group
3950 W. Eleven Mile Rd
Berkley, MI 48072
Voice Number : 248-545-9555
Fax Number : 248-545-4320
Email Address : www.resourcelightinggroup.com

Shawn Stevenson



FIRST FLOOR PLAN (STREET LEVEL)

1" = 10' - 0"

856 NORTH OLD WOODWARD AVENUE MIXED USE RETAIL - RESIDENTIAL DEVELOPMENT

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description	Tag
	9	822633-S_Photometrics	SINGLE	1589	0.950	1084-18	A
	2	MSL1-35K-12-BZ Led security l	SINGLE	N.A.	0.950	MLS1-35K-12	B
	12	2SQ-827N1-WWH	SINGLE	N.A.	0.950	2SQ-827N1-WWH	D
	4	VWPH-LED18-740-T2	SINGLE	N.A.	0.950	VWPH-LED18_740-T2-EDD-INV-UNV	C

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Entire Site_1	Illuminance	Fc	0.59	15.4	0.0	N.A.	N.A.
StatArea_1	Illuminance	Fc	0.75	15.4	0.0	N.A.	N.A.

Luminaire Location Summary

LumNo	Label	X	Y	Z	Orient	Tilt	Tag (Qty)
3	822633-S_Photometrics	78.906	190.13	6.6	179.868	0	A (1)
5	822633-S_Photometrics	78.805	153.055	6.6	177.614	0	A (1)
6	822633-S_Photometrics	78.843	140.961	6.6	176.986	0	A (1)
7	822633-S_Photometrics	78.787	116.426	6.6	180	0	A (1)
8	822633-S_Photometrics	78.803	88.34	6.6	180	0	A (1)
9	822633-S_Photometrics	78.787	66.425	6.6	176.948	0	A (1)
10	822633-S_Photometrics	78.762	41.009	6.6	180.541	0	A (1)
14	822633-S_Photometrics	83	38.203	6.6	270	0	A (1)
16	MSL1-35K-12-BZ Led security l	110.001	38.325	5.5	269.926	0	B (1)
22	2SQ-827N1-WWH	77	184	12	0	0	D (1)
23	2SQ-827N1-WWH	77	173	12	0	0	D (1)
25	2SQ-827N1-WWH	77	147.211	12	0	0	D (1)
27	2SQ-827N1-WWH	77	122.211	12	0	0	D (1)
28	2SQ-827N1-WWH	77	110	12	0	0	D (1)
29	2SQ-827N1-WWH	77	97	12	0	0	D (1)
30	2SQ-827N1-WWH	77	84	12	0	0	D (1)
31	2SQ-827N1-WWH	77	72	12	0	0	D (1)
32	2SQ-827N1-WWH	77	60	12	0	0	D (1)
33	2SQ-827N1-WWH	77	47	12	0	0	D (1)
36	VWPH-LED18-740-T2	193.112	38.444	30	270.205	0	C (1)
37	VWPH-LED18-740-T2	207.846	56.757	30	359.69	0	C (1)
38	VWPH-LED18-740-T2	208.036	78.547	20	0.35	0	C (1)
47	822633-S_Photometrics	78.862	163.135	6.5	177.615	0	A (1)
48	2SQ-827N1-WWH	77	160	12	270	0	D (1)
49	2SQ-827N1-WWH	77	134	12	90	0	D (1)
51	MSL1-35K-12-BZ Led security l	145.114	37.8	15	270	0	B (1)
53	VWPH-LED18-740-T2	208.36	106.777	15	359.768	0	C (1)

Total Quantity: 27

STONEFIELD
engineering & design

March 10, 2016

Ms. Jana L. Ecker
Planning Director
City of Birmingham
151 Martin Street
Birmingham, Michigan 48012

RE: Response to F&V Review Letter
Proposed Mixed-Use Development
Parcel ID 19-25-328-001
856 North Old Woodward Avenue
City of Birmingham, Oakland County, Michigan
SE&D Job No. S-15206

Dear Ms. Ecker:

Stonefield Engineering and Design, LLC ("Stonefield") is in receipt of the Synchro Model and Site Plan Review prepared by Fleis & Vandenbrink ("F&V") and dated February 19, 2016 (copy enclosed) in connection with the above-referenced application. Stonefield has coordinated with F&V since the issuance of their review and offers the following responses to F&V's comments in attempt to address the traffic engineering requirements for this project. In light of the recent Site Plan changes, specifically the reconfiguration of the driveway at the south end of the subject property, Stonefield re-established the Build Condition Traffic Volumes for the study intersections and driveways, as shown in appended Figure 1.

Synchro Model Review

1. Peak Hour Factors (PHFs) at the service road driveways should be applied by intersection approach. In cases where traffic volumes along Old Woodward Avenue were not collected at the service road driveways, PHFs should be adjusted to match downstream PHFs at intersections where counts were taken.

   Response: Peak Hour Factors at the service road driveways were revised based on the approach values. Since northbound and southbound through movements were not counted at these site driveways, the peak hour factors of the northbound and southbound approaches at the intersection of North Old Woodward Avenue and Oak Avenue were utilized at the service road driveways.

2. SimTraffic simulations must be run, calibrated and validated according to the procedures outlined in the *MDOT Electronic Traffic Control Guidelines Section 5.3*. Due to the proximity of the proposed site driveway to the Old Woodward Avenue & Oak Avenue intersection, F&V recommends developing separate Synchro models for SimTraffic simulations configured to more accurately replicate turn lane storage for the NB Old Woodward approach at Oak Avenue.

   Response: SimTraffic simulations were run, calibrated, and validated for all conditions and time periods and raw output sheets are provided within the enclosed Technical Appendix. As outlined in the MDOT Electronic Traffic Control Guidelines, Measures of Effectiveness (MOEs) were calculated to determine the total vehicular delay, total number of stops, total travel time, and the average speed. The MOEs for total vehicular delay,

total number of stops, and total travel time are cumulative measures that encompass all vehicles on the study roadway network during the peak hour. Increases in these MOEs from the No-Build to Build Condition within the overall network analysis are primarily a result of additional driveways and intersections within the Build Condition microsimulation.

***Tables 1** through **3** compare the MOEs between the Existing, No-Build, and Build Conditions for the signalized intersection of North Old Woodward Avenue and Oak Avenue. **Tables 4** through **6** compare the MOEs for the study network as a whole. SimTraffic outputs for all study time periods for the Existing, No-Build, and Build Conditions are appended on pages A6-A27.*

TABLE 1: COMPARISON OF SIGNALIZED INTERSECTION OPERATIONS – MORNING

Measure of Effectiveness	Existing Condition	No-Build Condition	Build Condition	Percent Change (between No-Build & Build)
Total Delay (hours)	5.8	6.3	6.4	2%
Total Stops	799	856	891	4%
Total Travel Time (hours)	12.4	12.9	13.2	2%
Average Speed (mph)	12	12	12	0%

TABLE 2: COMPARISON OF SIGNALIZED INTERSECTION OPERATIONS – EVENING

Measure of Effectiveness	Existing Condition	No-Build Condition	Build Condition	Percent Change (between No-Build & Build)
Total Delay (hours)	5.1	5.4	5.8	7%
Total Stops	856	897	938	5%
Total Travel Time (hours)	11.3	11.6	11.9	3%
Average Speed (mph)	12	12	11	-8%

TABLE 3: COMPARISON OF SIGNALIZED INTERSECTION OPERATIONS – SATURDAY

Measure of Effectiveness	Existing Condition	No-Build Condition	Build Condition	Percent Change (between No-Build & Build)
Total Delay (hours)	3.0	3.1	3.3	6%
Total Stops	523	529	546	3%
Total Travel Time (hours)	7.1	7.2	7.2	0%
Average Speed (mph)	13	13	13	0%

TABLE 4: COMPARISON OF STUDY NETWORK OPERATIONS – MORNING

Measure of Effectiveness	Existing Condition	No-Build Condition	Build Condition	Percent Change (between No-Build & Build)
Total Delay (hours)	6.6	7.1	7.3	3%
Total Stops	826	871	943	8%
Total Travel Time (hours)	22.4	23.1	24.0	4%
Average Speed (mph)	17	16	16	0%

TABLE 5: COMPARISON OF STUDY NETWORK OPERATIONS – EVENING

Measure of Effectiveness	Existing Condition	No-Build Condition	Build Condition	Percent Change (between No-Build & Build)
Total Delay (hours)	6.0	6.4	7.2	13%
Total Stops	896	947	1035	9%
Total Travel Time (hours)	23.1	23.7	25.6	8%
Average Speed (mph)	17	17	16	-6%

TABLE 6: COMPARISON OF STUDY NETWORK OPERATIONS – SATURDAY

Measure of Effectiveness	Existing Condition	No-Build Condition	Build Condition	Percent Change (between No-Build & Build)
Total Delay (hours)	3.5	3.6	3.8	6%
Total Stops	573	575	618	7%
Total Travel Time (hours)	14.0	14.7	15.0	2%
Average Speed (mph)	17	17	17	0%

The summary tables show that the overall impact is minor and that the traffic generated by the proposed development would not significantly impact the operations of the roadway network. Because traffic volumes on the roadway network are projected to increase from the No-Build to Build Condition, the cumulative MOEs (total vehicular delay, total number of stops, and total travel time) are expected marginally throughout the network. Despite the increase in traffic, the average speed of vehicles on the network is not anticipated to change during the weekday morning and Saturday midday peak hour and is calculated to decrease by one (1) mile per hour during the weekday evening peak hour, which is imperceptible to most drivers.

Separate simulations were developed to analyze the queuing conditions of the northbound left-turn lane at the signalized intersection of North Old Woodward Avenue and Oak Avenue as discussed with F&V. ***Tables 7*** *through* ***9*** *evaluate whether the left-turn queue would obstruct the southerly proposed driveway. The Queuing & Blocking Reports are provided on appended pages A28-A34.*

TABLE 7: SUMMARY OF LEFT-TURN QUEUING – WEEKDAY MORNING PEAK HOUR

	No-Build Condition	Build Condition
Average Queue	11 feet	14 feet
95th Percentile Queue	36 feet	40 feet
Maximum Queue	47 feet	67 feet
Distance From Stop Bar to Southerly Proposed Driveway		210 feet
Does Maximum Queue Obstruct the Southerly Proposed Driveway?		**NO**

TABLE 8: SUMMARY OF LEFT-TURN QUEUING – WEEKDAY EVENING PEAK HOUR

	No-Build Condition	Build Condition
Average Queue	18 feet	21 feet
95th Percentile Queue	49 feet	80 feet
Maximum Queue	65 feet	148 feet
Distance From Stop Bar to Southerly Proposed Driveway		210 feet
Does Maximum Queue Obstruct the Southerly Proposed Driveway?		**NO**

TABLE 9: SUMMARY OF LEFT-TURN QUEUING – SATURDAY MIDDAY PEAK HOUR

	No-Build Condition	Build Condition
Average Queue	19 feet	18 feet
95th Percentile Queue	49 feet	45 feet
Maximum Queue	64 feet	50 feet
Distance From Stop Bar to Southerly Proposed Driveway		210 feet
Does Maximum Queue Obstruct the Southerly Proposed Driveway?		**NO**

Based on the simulations, the maximum queue within the left-turn lane does not conflict with the operations of the southerly ingress-only site driveway during the study peak hours. During the weekday evening peak hour simulation, the maximum left-turn queue was calculated to block the site northerly site driveway. As left-turn egress is proposed to be restricted during the weekday evening peak hour (between 5:00 p.m. and 6:00 p.m. only), the left-turn queue would not interfere with the traffic operations of the northerly proposed driveway.

During all other times studied, the left-turn queue does not obstruct the northerly proposed site driveway and would not interfere with the traffic operations of the site.

3. The simulation settings along Old Woodward Avenue at the service road site driveways should be altered to block the driveways.

   Response: As requested, the SimTraffic simulations were adjusted to include blocking of site driveways by mainline vehicles.

Site Development Plans, February 16, 2016

4. Per F&V's review letter dated January 13, 2016, the proposed site driveway should be configured as a right-in/right-out only driveway.

   Response: As noted in testimony provided at the February 24, 2016 Planning Commission hearing, the applicant will restrict the left-turn ingress movement at the proposed northerly site driveway at all times. Additionally, the applicant has agreed to restrict left-turn egress during the busiest hour of the weekday (5:00 p.m. to 6:00 p.m.). Traffic volumes along North Old Woodward Avenue are less outside of the 5:00 p.m. to 6:00 p.m. peak hour. Therefore, left-turn egress at the proposed northerly site driveway is feasible and we recommend that it be permitted during all other times to avoid recirculation throughout the roadway network and cut-through movements on residential side streets. It is important to note that the maximum number of projected left-turn egress movements is seven (7) in a single hour. The analysis and microsimulation both demonstrate that the movement can be accommodated efficiently outside of the weekday evening peak hour.

5. An AutoTURN analysis should be completed using a Passenger Car at the parking lot access driveway at the southern end of the subject site for ingress left turns.

   Response: An AutoTURN analysis is provided within the Technical Appendix on page A5 and demonstrates that a passenger vehicle based on AASHTO dimensions can successfully complete a left-turn into the site and maneuver through the parking aisle in the northbound direction.

6. The southernmost parking space on the east side of the proposed service drive extension should be eliminated due to its proximity to the proposed stop line. The empty areas within the parking lot where parking is prohibited should be clearly demarcated with striping or with raised curb.

   Response: As requested, the southernmost parking space on the east side of the service drive has been removed. Please refer to the attached revised Site Plan.

7. The proposed service drive extension along the subject property frontage will result in reduced storage for the existing exclusive NB right turn lane at the signalized intersection of Old Woodward Avenue & Oak Avenue. A queueing evaluation should be completed based on SimTraffic simulations to determine the adequacy of the future proposed storage length.

   Response: As stated in testimony during the February 24, 2016 Planning Commission hearing, the reduction in the effective length of the exclusive northbound right-turn lane is approximately 10 feet (i.e., 94 feet existing compared to 85 feet proposed). A Queuing & Blocking evaluation of the study periods under Build Conditions using SimTraffic was performed and SimTraffic outputs are included within the Technical Appendix on pages A28-A34. ***Tables 10*** *through* ***12*** *summarize the results of the Queuing & Blocking Reports for the northbound right-turn movement at the signalized intersection of North Old Woodward Avenue and Oak Avenue.*

TABLE 10: SUMMARY OF RIGHT-TURN QUEUING – WEEKDAY MORNING PEAK HOUR

	No-Build Condition	Build Condition
Exclusive Right-turn Lane 95th Percentile Queue	60 feet	60 feet
Exclusive Right-turn Lane Storage Length	94 feet	85 feet
Does 95th Percentile Queue Exceed the Storage Bay?	**NO**	**NO**
Shared Through/Right-turn Lane 95th Percentile Queue	76 feet	88 feet
Distance From Stop Bar to Southerly Proposed Driveway	--	210 feet
Does 95th Percentile Queue Obstruct the Southerly Proposed Driveway?	**N/A**	**NO**

TABLE 11: SUMMARY OF RIGHT-TURN QUEUING – WEEKDAY EVENING PEAK HOUR

	No-Build Condition	Build Condition
Exclusive Right-turn Lane 95th Percentile Queue	124 feet	131 feet
Exclusive Right-turn Lane Storage Length	94 feet	85 feet
Does 95th Percentile Queue Exceed the Storage Bay?	**YES**	**YES**
Shared Through/Right-turn Lane 95th Percentile Queue	167 feet	178 feet
Distance From Stop Bar to Southerly Proposed Driveway	--	210 feet
Does 95th Percentile Queue Obstruct the Southerly Proposed Driveway?	**N/A**	**NO**

TABLE 12: SUMMARY OF RIGHT-TURN QUEUING – SATURDAY MIDDAY PEAK HOUR

	No-Build Condition	Build Condition
Exclusive Right-turn Lane 95th Percentile Queue	79 feet	90 feet
Exclusive Right-turn Lane Storage Length	94 feet	85 feet
Does 95th Percentile Queue Exceed the Storage Bay?	**NO**	**YES**
Shared Through/Right-turn Lane 95th Percentile Queue	112 feet	145 feet
Distance From Stop Bar to Southerly Proposed Driveway	--	210 feet
Does 95th Percentile Queue Obstruct the Southerly Proposed Driveway?	**N/A**	**NO**

During the weekday morning peak-hour simulation, the 95th percentile queue did not exceed the storage length of the exclusive right-turn lane in the No-Build or Build Conditions. During the weekday evening peak-hour simulation, the 95th percentile queue exceeded the storage length of the exclusive right-turn lane in the No-Build and Build Conditions. However, the 95th percentile queue in the shared through/right-turn lane did not block the southerly proposed driveway. During the Saturday midday peak-hour simulation, the 95th percentile

queue exceeded the exclusive right-turn storage length by approximately five (5) feet in the Build Condition. Similarly to the weekday evening peak hour, the 95th percentile queue length in the shared through/right-turn lane did not block the southerly proposed driveway. With the exception of the Saturday midday peak hour, whose traffic volume is significantly less than the weekday morning and weekday evening peak hours, the nine (9)-foot reduction in storage length of the exclusive right-turn lane does not change the queuing results between the No-Build and Build Conditions. In all three study periods, the increase in the calculated queue length within the exclusive right-turn lane amounts to less than the length of one (1) vehicle, which is not significant.

If you have any questions please do not hesitate to contact our office.

Best regards,

Charles D. Olivo, PE, PTOE
MI License No. 6201058003
Stonefield Engineering and Design, LLC

Frank A. Filiciotto, PE
MI License No. 6201061674
Stonefield Engineering and Design, LLC

Enclosures: Technical Appendix; Synchro 9 (.syn) files, SimTraffic (.sim) files, History (.hst) files

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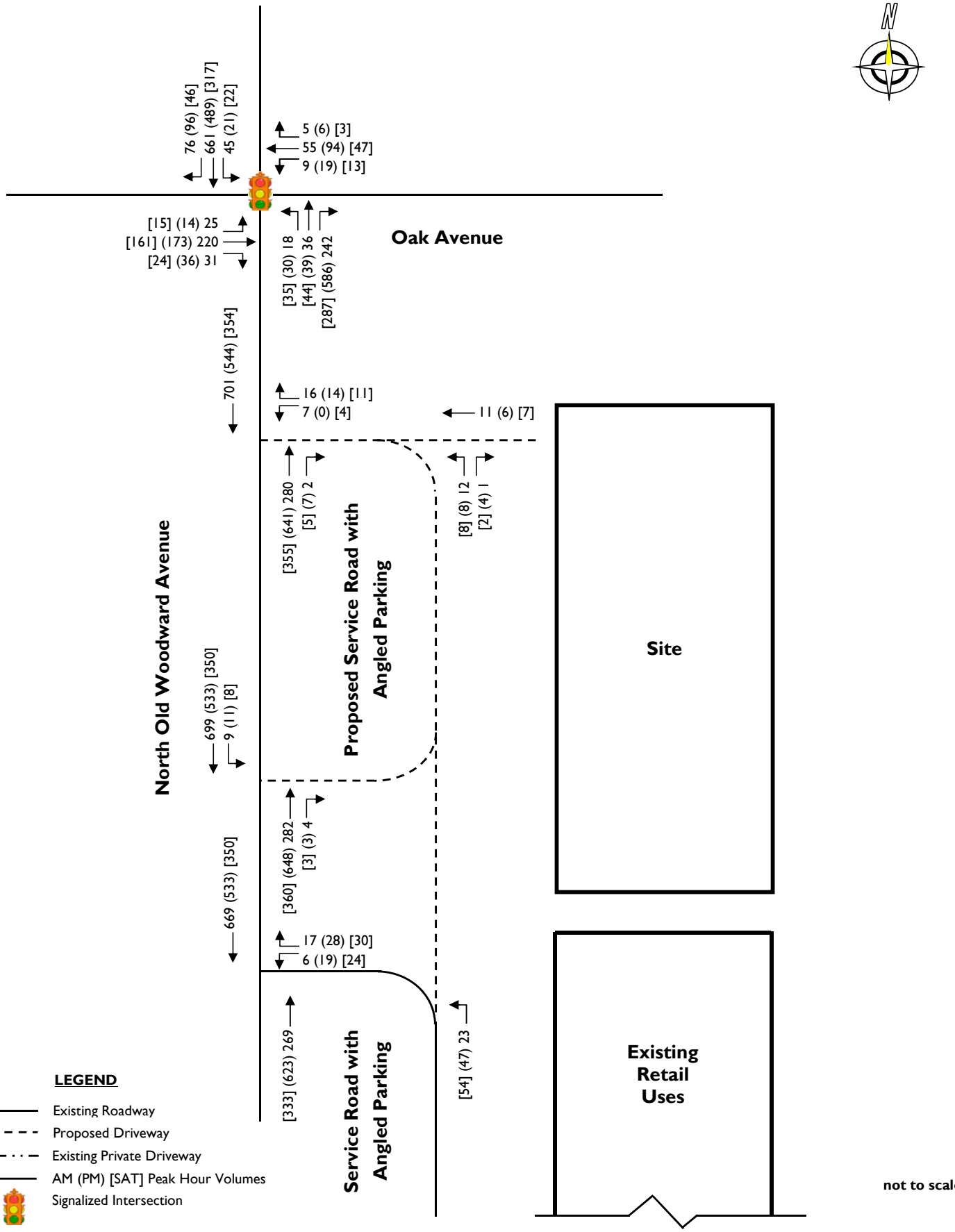
TECHNICAL APPENDIX

2017 BUILD CONDITION VOLUME FIGURE

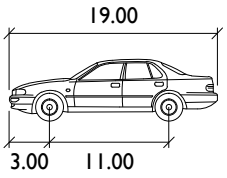


STONEFIELD engineering & design

Proposed Mixed-Use Development
856 North Old Woodward Avenue
City of Birmingham, Oakland County, Michigan
Traffic Impact Letter Report

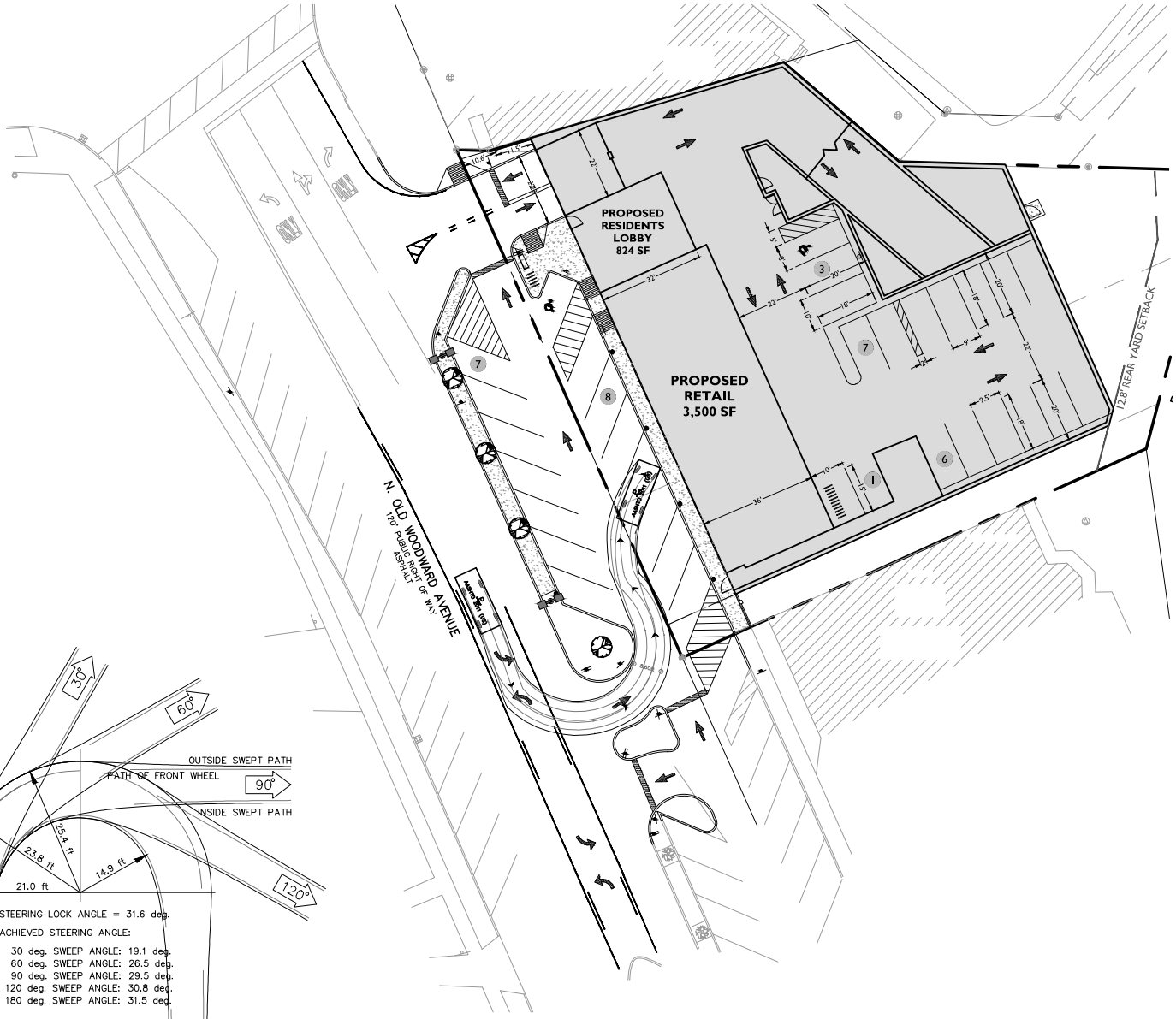
FIGURE 1
2017 Build Traffic Volumes

AUTOTURN ANALYSIS



P feet

Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6



50' 0' 50' 100'

GRAPHIC SCALE IN FEET

1" = 50'

AUTOTURN EXHIBIT

856 NORTH OLD WOODWARD AVE

PROPOSED 4 STORY MULTI-FAMILY BUILDING WITH RETAIL

PARCEL ID: 19-25-328-001
856 NORTH OLD WOODWARD AVENUE
CITY OF BIRMINGHAM, OAKLAND COUNTY, MICHIGAN

DRAWN BY:	JE
CHECKED BY:	JRC
DATE:	03/10/2016
SCALE:	1"50'
PROJECT ID:	S-15206

PASSENGER CAR TURNING EXHIBIT

A5

\\SEDDETFS01\Share Two\M1201 5\M-15120-Ken-Tec-856 N. Old Woodward, Birmingham, MI\CADD\Exhibit\2016-03-10_PCar Turning Exhibit.dwg

SIMTRAFFIC MEASURES OF EFFECTIVENESS

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1
Total Delay (hr)	0.1	1.6	0.2	0.0	0.3	0.0	0.2	0.1	0.3	0.2	2.6	0.1
Total Stops	10	176	28	5	42	4	14	19	87	40	335	39
Travel Time (hr)	0.2	3.0	0.4	0.1	0.4	0.0	0.2	0.2	0.8	0.5	5.9	0.6
Avg Speed (mph)	11	11	12	3	4	10	3	10	13	13	14	16
Vehicles Exited	14	239	33	6	67	9	16	42	226	47	650	72
Hourly Exit Rate	14	239	33	6	67	9	16	42	226	47	650	72
Input Volume	25	219	30	9	55	5	17	36	211	44	629	75
% of Volume	55	109	109	65	122	189	96	117	107	107	103	96

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.3
Total Delay (hr)	5.8
Total Stops	799
Travel Time (hr)	12.4
Avg Speed (mph)	12
Vehicles Exited	1421
Hourly Exit Rate	1421
Input Volume	1354
% of Volume	105

2: North Old Woodward Avenue & Northerly Existing Driveway Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.2	0.3
Total Stops	8	19	0	0	27
Travel Time (hr)	0.0	0.0	1.1	1.8	3.0
Avg Speed (mph)	3	6	24	21	22
Vehicles Exited	8	19	264	689	980
Hourly Exit Rate	8	19	264	689	980
Input Volume	6	17	246	668	938
% of Volume	128	110	107	103	104

3: North Old Woodward Avenue & Southerly Existing Driveway Performance by movement

Movement	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.2	0.3
Total Stops	0	0	0	0
Travel Time (hr)	0.3	0.0	3.1	3.4
Avg Speed (mph)	23	16	23	23
Vehicles Exited	264	24	697	985
Hourly Exit Rate	264	24	697	985
Input Volume	246	23	674	943
% of Volume	107	104	103	104

Total Network Performance

Denied Delay (hr)	0.3
Total Delay (hr)	6.6
Total Stops	826
Travel Time (hr)	22.4
Avg Speed (mph)	17
Vehicles Exited	1456
Hourly Exit Rate	1456
Input Volume	4618
% of Volume	32

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1
Total Delay (hr)	0.1	1.5	0.2	0.1	0.2	0.0	0.2	0.1	0.3	0.2	3.3	0.2
Total Stops	17	153	28	8	24	4	18	17	98	34	404	51
Travel Time (hr)	0.2	2.8	0.4	0.1	0.2	0.0	0.2	0.2	0.8	0.4	6.9	0.6
Avg Speed (mph)	11	12	11	3	5	11	4	12	13	10	12	15
Vehicles Exited	18	235	33	11	45	7	17	41	216	31	685	71
Hourly Exit Rate	18	235	33	11	45	7	17	41	216	31	685	71
Input Volume	25	220	30	9	55	5	17	38	227	45	653	76
% of Volume	71	107	109	119	82	147	101	109	95	69	105	93

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.3
Total Delay (hr)	6.3
Total Stops	856
Travel Time (hr)	12.9
Avg Speed (mph)	12
Vehicles Exited	1410
Hourly Exit Rate	1410
Input Volume	1400
% of Volume	101

2: North Old Woodward Avenue & Northerly Existing Driveway Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.3	0.3
Total Stops	7	8	0	0	15
Travel Time (hr)	0.0	0.0	1.1	2.0	3.1
Avg Speed (mph)	2	6	24	21	22
Vehicles Exited	7	8	266	729	1010
Hourly Exit Rate	7	8	266	729	1010
Input Volume	6	17	263	693	980
% of Volume	112	46	101	105	103

3: North Old Woodward Avenue & Southerly Existing Driveway Performance by movement

Movement	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.3	0.3
Total Stops	0	0	0	0
Travel Time (hr)	0.3	0.0	3.3	3.6
Avg Speed (mph)	23	16	23	23
Vehicles Exited	266	14	733	1013
Hourly Exit Rate	266	14	733	1013
Input Volume	263	23	698	984
% of Volume	101	61	105	103

Total Network Performance

Denied Delay (hr)	0.4
Total Delay (hr)	7.1
Total Stops	871
Travel Time (hr)	23.1
Avg Speed (mph)	16
Vehicles Exited	1430
Hourly Exit Rate	1430
Input Volume	4791
% of Volume	30

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1
Total Delay (hr)	0.2	1.7	0.2	0.1	0.3	0.0	0.2	0.1	0.3	0.2	2.9	0.2
Total Stops	32	179	27	8	37	4	24	25	98	35	353	69
Travel Time (hr)	0.5	3.0	0.4	0.1	0.4	0.0	0.2	0.2	0.7	0.4	6.4	0.8
Avg Speed (mph)	11	11	13	3	4	5	3	7	10	12	13	16
Vehicles Exited	35	230	35	9	52	8	24	44	233	38	665	98
Hourly Exit Rate	35	230	35	9	52	8	24	44	233	38	665	98
Input Volume	25	220	31	9	55	5	18	38	242	45	661	76
% of Volume	139	105	114	97	95	168	135	117	96	84	101	129

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.4
Total Delay (hr)	6.4
Total Stops	891
Travel Time (hr)	13.2
Avg Speed (mph)	12
Vehicles Exited	1471
Hourly Exit Rate	1471
Input Volume	1425
% of Volume	103

2: North Old Woodward Avenue & Northerly Existing Driveway Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.1
Total Stops	6	18	0	0	24
Travel Time (hr)	0.0	0.0	1.0	0.4	1.5
Avg Speed (mph)	2	4	24	23	23
Vehicles Exited	7	18	275	713	1013
Hourly Exit Rate	7	18	275	713	1013
Input Volume	6	17	269	699	991
% of Volume	112	104	102	102	102

3: North Old Woodward Avenue & Southerly Existing Driveway Performance by movement

Movement	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.2	0.2
Total Stops	0	0	0	0
Travel Time (hr)	0.3	0.0	2.9	3.2
Avg Speed (mph)	22	16	23	23
Vehicles Exited	274	25	721	1020
Hourly Exit Rate	274	25	721	1020
Input Volume	269	23	706	998
% of Volume	102	109	102	102

4: North Old Woodward Avenue & Southerly Proposed Driveway Performance by movement

Movement	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.1
Total Stops	0	0	2	0	2
Travel Time (hr)	0.2	0.0	0.0	0.6	0.7
Avg Speed (mph)	22	14	12	23	22
Vehicles Exited	290	3	5	713	1011
Hourly Exit Rate	290	3	5	713	1011
Input Volume	282	4	9	699	995
% of Volume	103	75	54	102	102

5: North Old Woodward Avenue & Northerly Proposed Driveway Performance by movement

Movement	NBT	NBR	SBT	SWL	SWR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.3
Total Stops	0	0	0	8	11	19
Travel Time (hr)	0.2	0.0	1.3	0.0	0.0	1.5
Avg Speed (mph)	22	15	20	2	6	20
Vehicles Exited	288	3	711	8	11	1021
Hourly Exit Rate	288	3	711	8	11	1021
Input Volume	280	2	703	7	16	1008
% of Volume	103	150	101	119	68	101

6: Northerly Proposed Driveway & Service Road Performance by movement

Movement	WBL	NBL	NER	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0
Total Stops	0	7	0	7
Travel Time (hr)	0.0	0.0	0.0	0.0
Avg Speed (mph)	14	6	9	10
Vehicles Exited	12	7	3	22
Hourly Exit Rate	12	7	3	22
Input Volume	11	12	2	25
% of Volume	112	58	150	89

Total Network Performance

Denied Delay (hr)	0.4
Total Delay (hr)	7.3
Total Stops	943
Travel Time (hr)	24.0
Avg Speed (mph)	16
Vehicles Exited	1518
Hourly Exit Rate	1518
Input Volume	6906
% of Volume	22

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total Delay (hr)	0.1	1.1	0.2	0.2	0.3	0.0	0.2	0.1	1.1	0.1	1.6	0.1
Total Stops	7	125	28	22	49	2	34	15	309	17	214	34
Travel Time (hr)	0.1	2.2	0.4	0.3	0.4	0.0	0.3	0.2	2.5	0.3	3.9	0.6
Avg Speed (mph)	10	12	12	3	5	8	5	10	11	11	15	19
Vehicles Exited	7	186	38	24	88	4	35	35	568	23	467	84
Hourly Exit Rate	7	186	38	24	88	4	35	35	568	23	467	84
Input Volume	14	172	35	19	94	6	28	40	557	21	465	94
% of Volume	49	108	109	125	93	67	126	88	102	111	100	89

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.2
Total Delay (hr)	5.1
Total Stops	856
Travel Time (hr)	11.3
Avg Speed (mph)	12
Vehicles Exited	1559
Hourly Exit Rate	1559
Input Volume	1546
% of Volume	101

2: North Old Woodward Avenue & Northerly Existing Driveway Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.2	0.2	0.4
Total Stops	16	24	0	0	40
Travel Time (hr)	0.1	0.1	2.7	1.4	4.3
Avg Speed (mph)	2	3	23	21	22
Vehicles Exited	19	28	614	531	1192
Hourly Exit Rate	19	28	614	531	1192
Input Volume	19	28	595	522	1164
% of Volume	99	101	103	102	102

3: North Old Woodward Avenue & Southerly Existing Driveway Performance by movement

Movement	NBT	NBR	SBT	All
Denied Delay (hr)	0.1	0.0	0.0	0.1
Total Delay (hr)	0.1	0.0	0.1	0.2
Total Stops	0	0	0	0
Travel Time (hr)	0.8	0.1	2.4	3.2
Avg Speed (mph)	21	16	23	23
Vehicles Exited	619	45	547	1211
Hourly Exit Rate	619	45	547	1211
Input Volume	595	47	538	1180
% of Volume	104	96	102	103

Total Network Performance

Denied Delay (hr)	0.4
Total Delay (hr)	6.0
Total Stops	896
Travel Time (hr)	23.1
Avg Speed (mph)	17
Vehicles Exited	1624
Hourly Exit Rate	1624
Input Volume	5498
% of Volume	30

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total Delay (hr)	0.1	1.0	0.1	0.1	0.6	0.0	0.2	0.2	1.2	0.1	1.7	0.1
Total Stops	11	112	19	13	70	3	20	16	322	18	240	53
Travel Time (hr)	0.2	2.0	0.3	0.2	0.7	0.0	0.2	0.2	2.7	0.2	4.1	0.8
Avg Speed (mph)	12	12	14	3	4	4	5	9	11	10	14	18
Vehicles Exited	15	174	29	18	96	5	21	42	590	17	470	101
Hourly Exit Rate	15	174	29	18	96	5	21	42	590	17	470	101
Input Volume	14	173	35	19	94	6	29	41	573	21	479	96
% of Volume	105	101	83	94	102	83	73	103	103	82	98	105

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.3
Total Delay (hr)	5.4
Total Stops	897
Travel Time (hr)	11.6
Avg Speed (mph)	12
Vehicles Exited	1578
Hourly Exit Rate	1578
Input Volume	1580
% of Volume	100

2: North Old Woodward Avenue & Northerly Existing Driveway Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.3	0.2	0.6
Total Stops	17	21	12	0	50
Travel Time (hr)	0.1	0.1	2.8	1.4	4.4
Avg Speed (mph)	1	3	23	21	21
Vehicles Exited	18	25	625	518	1186
Hourly Exit Rate	18	25	625	518	1186
Input Volume	19	28	613	536	1196
% of Volume	94	90	102	97	99

3: North Old Woodward Avenue & Southerly Existing Driveway Performance by movement

Movement	NBT	NBR	SBT	All
Denied Delay (hr)	0.1	0.0	0.0	0.1
Total Delay (hr)	0.1	0.0	0.2	0.3
Total Stops	0	0	0	0
Travel Time (hr)	0.8	0.1	2.3	3.2
Avg Speed (mph)	21	16	23	23
Vehicles Exited	624	42	535	1201
Hourly Exit Rate	624	42	535	1201
Input Volume	613	47	553	1212
% of Volume	102	90	97	99

Total Network Performance

Denied Delay (hr)	0.4
Total Delay (hr)	6.4
Total Stops	947
Travel Time (hr)	23.7
Avg Speed (mph)	17
Vehicles Exited	1637
Hourly Exit Rate	1637
Input Volume	5632
% of Volume	29

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total Delay (hr)	0.2	1.0	0.2	0.2	0.5	0.0	0.1	0.1	1.0	0.3	2.0	0.1
Total Stops	16	118	27	22	57	3	18	14	307	19	276	61
Travel Time (hr)	0.3	2.1	0.4	0.3	0.6	0.0	0.2	0.1	2.1	0.5	4.5	0.8
Avg Speed (mph)	11	12	14	2	4	11	4	6	8	5	14	18
Vehicles Exited	21	173	42	23	92	3	23	33	619	19	511	111
Hourly Exit Rate	21	173	42	23	92	3	23	33	619	19	511	111
Input Volume	14	173	36	19	94	6	30	40	586	21	489	96
% of Volume	147	100	117	119	98	50	77	82	106	92	104	116

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.3
Total Delay (hr)	5.8
Total Stops	938
Travel Time (hr)	11.9
Avg Speed (mph)	11
Vehicles Exited	1670
Hourly Exit Rate	1670
Input Volume	1605
% of Volume	104

2: North Old Woodward Avenue & Northerly Existing Driveway Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.1	0.2	0.0	0.3
Total Stops	11	26	0	0	37
Travel Time (hr)	0.1	0.1	2.6	0.3	3.0
Avg Speed (mph)	1	3	23	23	22
Vehicles Exited	12	32	638	562	1244
Hourly Exit Rate	12	32	638	562	1244
Input Volume	19	28	623	533	1203
% of Volume	62	115	102	105	103

3: North Old Woodward Avenue & Southerly Existing Driveway Performance by movement

Movement	NBT	NBR	SBT	All
Denied Delay (hr)	0.1	0.0	0.0	0.1
Total Delay (hr)	0.1	0.0	0.2	0.3
Total Stops	0	0	0	0
Travel Time (hr)	0.8	0.1	2.3	3.2
Avg Speed (mph)	20	15	23	22
Vehicles Exited	639	53	577	1269
Hourly Exit Rate	639	53	577	1269
Input Volume	623	47	553	1223
% of Volume	103	113	104	104

4: North Old Woodward Avenue & Southerly Proposed Driveway Performance by movement

Movement	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.0	0.0	0.1
Total Stops	7	0	7	0	14
Travel Time (hr)	0.4	0.0	0.0	0.5	0.9
Avg Speed (mph)	19	14	5	23	20
Vehicles Exited	670	1	12	562	1245
Hourly Exit Rate	670	1	12	562	1245
Input Volume	650	3	11	533	1197
% of Volume	103	31	107	105	104

5: North Old Woodward Avenue & Northerly Proposed Driveway Performance by movement

Movement	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.2	0.0	0.2	0.5
Total Stops	13	26	0	0	39
Travel Time (hr)	0.1	0.7	0.0	1.0	1.8
Avg Speed (mph)	2	16	14	20	17
Vehicles Exited	13	660	10	579	1262
Hourly Exit Rate	13	660	10	579	1262
Input Volume	14	641	7	548	1210
% of Volume	93	103	143	106	104

6: Service Road & Northerly Proposed Driveway Performance by movement

Movement	EBT	WBT	NBL	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0
Total Stops	0	0	7	7
Travel Time (hr)	0.0	0.0	0.0	0.0
Avg Speed (mph)	9	13	6	9
Vehicles Exited	10	7	6	23
Hourly Exit Rate	10	7	6	23
Input Volume	7	6	8	21
% of Volume	143	112	77	110

Total Network Performance

Denied Delay (hr)	0.4
Total Delay (hr)	7.2
Total Stops	1035
Travel Time (hr)	25.6
Avg Speed (mph)	16
Vehicles Exited	1752
Hourly Exit Rate	1752
Input Volume	8139
% of Volume	22

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.8	0.1	0.1	0.2	0.0	0.1	0.1	0.4	0.1	0.9	0.0
Total Stops	8	102	19	7	26	2	18	21	149	17	124	30
Travel Time (hr)	0.2	1.9	0.3	0.1	0.2	0.0	0.2	0.2	1.1	0.3	2.3	0.4
Avg Speed (mph)	12	13	13	4	6	6	7	9	12	12	15	19
Vehicles Exited	12	169	30	10	48	5	27	38	270	24	285	53
Hourly Exit Rate	12	169	30	10	48	5	27	38	270	24	285	53
Input Volume	15	161	23	13	47	3	33	44	258	22	289	45
% of Volume	79	105	130	75	102	154	82	86	105	110	99	118

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.1
Total Delay (hr)	3.0
Total Stops	523
Travel Time (hr)	7.1
Avg Speed (mph)	13
Vehicles Exited	971
Hourly Exit Rate	971
Input Volume	954
% of Volume	102

2: North Old Woodward Avenue & Northerly Existing Driveway Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.1	0.2
Total Stops	21	29	0	0	50
Travel Time (hr)	0.0	0.0	1.3	0.9	2.2
Avg Speed (mph)	5	6	24	22	22
Vehicles Exited	22	32	304	326	684
Hourly Exit Rate	22	32	304	326	684
Input Volume	24	30	304	326	684
% of Volume	93	106	100	100	100

3: North Old Woodward Avenue & Southerly Existing Driveway Performance by movement

Movement	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	0.1
Total Stops	0	0	0	0
Travel Time (hr)	0.3	0.1	1.5	1.9
Avg Speed (mph)	22	16	24	23
Vehicles Exited	305	53	346	704
Hourly Exit Rate	305	53	346	704
Input Volume	304	54	349	707
% of Volume	100	98	99	100

Total Network Performance

Denied Delay (hr)	0.2
Total Delay (hr)	3.5
Total Stops	573
Travel Time (hr)	14.0
Avg Speed (mph)	17
Vehicles Exited	1048
Hourly Exit Rate	1048
Input Volume	3376
% of Volume	31

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.6	0.1	0.0	0.2	0.0	0.3	0.1	0.4	0.1	1.1	0.0
Total Stops	11	82	24	2	30	3	32	20	138	15	148	24
Travel Time (hr)	0.2	1.5	0.4	0.0	0.3	0.0	0.4	0.2	1.1	0.2	2.6	0.3
Avg Speed (mph)	15	14	15	5	4	12	6	10	13	11	14	19
Vehicles Exited	19	145	37	7	49	5	43	44	295	20	298	43
Hourly Exit Rate	19	145	37	7	49	5	43	44	295	20	298	43
Input Volume	15	161	23	13	47	3	34	46	277	22	310	46
% of Volume	125	90	161	53	104	154	126	96	106	92	96	93

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.1
Total Delay (hr)	3.1
Total Stops	529
Travel Time (hr)	7.2
Avg Speed (mph)	13
Vehicles Exited	1005
Hourly Exit Rate	1005
Input Volume	998
% of Volume	101

2: North Old Woodward Avenue & Northerly Existing Driveway Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.1	0.2
Total Stops	20	26	0	0	46
Travel Time (hr)	0.1	0.1	1.4	0.9	2.5
Avg Speed (mph)	4	5	24	21	22
Vehicles Exited	23	33	345	341	742
Hourly Exit Rate	23	33	345	341	742
Input Volume	24	30	325	346	725
% of Volume	97	109	106	98	102

3: North Old Woodward Avenue & Southerly Existing Driveway Performance by movement

Movement	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	0.1
Total Stops	0	0	0	0
Travel Time (hr)	0.4	0.1	1.6	2.0
Avg Speed (mph)	22	16	23	23
Vehicles Exited	348	53	363	764
Hourly Exit Rate	348	53	363	764
Input Volume	325	54	370	750
% of Volume	107	98	98	102

Total Network Performance

Denied Delay (hr)	0.2
Total Delay (hr)	3.6
Total Stops	575
Travel Time (hr)	14.7
Avg Speed (mph)	17
Vehicles Exited	1078
Hourly Exit Rate	1078
Input Volume	3547
% of Volume	30

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	0.1	0.8	0.1	0.0	0.3	0.0	0.2	0.1	0.3	0.1	1.2	0.1
Total Stops	16	91	20	4	32	1	23	17	139	14	156	33
Travel Time (hr)	0.3	1.8	0.3	0.1	0.3	0.0	0.2	0.2	0.8	0.2	2.7	0.4
Avg Speed (mph)	12	14	15	4	3	12	5	6	10	11	14	19
Vehicles Exited	21	176	28	7	44	2	39	40	271	19	305	56
Hourly Exit Rate	21	176	28	7	44	2	39	40	271	19	305	56
Input Volume	15	161	24	13	47	3	35	46	287	22	317	46
% of Volume	138	109	117	53	93	62	111	87	94	87	96	122

1: North Old Woodward Avenue & Oak Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.2
Total Delay (hr)	3.3
Total Stops	546
Travel Time (hr)	7.2
Avg Speed (mph)	13
Vehicles Exited	1008
Hourly Exit Rate	1008
Input Volume	1016
% of Volume	99

2: North Old Woodward Avenue & Northerly Existing Driveway Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.0	0.0	0.0	0.1
Total Stops	29	15	0	0	44
Travel Time (hr)	0.1	0.0	1.2	0.2	1.5
Avg Speed (mph)	4	5	24	24	23
Vehicles Exited	32	15	324	338	709
Hourly Exit Rate	32	15	324	338	709
Input Volume	24	30	333	350	737
% of Volume	135	50	97	97	96

3: North Old Woodward Avenue & Southerly Existing Driveway Performance by movement

Movement	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	0.1
Total Stops	0	0	0	0
Travel Time (hr)	0.4	0.1	1.5	1.9
Avg Speed (mph)	22	15	23	23
Vehicles Exited	324	61	370	755
Hourly Exit Rate	324	61	370	755
Input Volume	333	54	374	761
% of Volume	97	112	99	99

4: North Old Woodward Avenue & Southerly Proposed Driveway Performance by movement

Movement	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Stops	0	0	3	0	3
Travel Time (hr)	0.2	0.0	0.0	0.3	0.5
Avg Speed (mph)	23	14	8	23	23
Vehicles Exited	339	1	5	340	685
Hourly Exit Rate	339	1	5	340	685
Input Volume	360	3	8	351	722
% of Volume	94	31	65	97	95

5: North Old Woodward Avenue & Northerly Proposed Driveway Performance by movement

Movement	WBL	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.1
Total Stops	4	9	1	0	0	14
Travel Time (hr)	0.0	0.0	0.3	0.0	0.6	0.9
Avg Speed (mph)	4	6	22	14	20	20
Vehicles Exited	4	10	337	2	341	694
Hourly Exit Rate	4	10	337	2	341	694
Input Volume	4	11	355	5	355	730
% of Volume	94	93	95	38	96	95

6: Service Road & Northerly Proposed Driveway Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0
Total Stops	0	0	7	4	11
Travel Time (hr)	0.0	0.0	0.0	0.0	0.0
Avg Speed (mph)	9	13	7	7	8
Vehicles Exited	2	6	7	4	19
Hourly Exit Rate	2	6	7	4	19
Input Volume	5	7	8	2	22
% of Volume	38	89	90	200	87

Total Network Performance

Denied Delay (hr)	0.2
Total Delay (hr)	3.8
Total Stops	618
Travel Time (hr)	15.0
Avg Speed (mph)	17
Vehicles Exited	1115
Hourly Exit Rate	1115
Input Volume	5095
% of Volume	22

SIMTRAFFIC QUEUING & BLOCKING ANALYSIS

Intersection: 1: North Old Woodward Avenue & Oak Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	R	L	T	R
Maximum Queue (ft)	50	236	26	77	47	97	90	119	423	120
Average Queue (ft)	13	106	5	34	11	45	18	28	208	33
95th Queue (ft)	43	194	21	69	36	76	60	85	330	106
Link Distance (ft)		742		125		725			626	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	20		45		100		94	40		40
Storage Blk Time (%)	9	52	0	8		0	0	3	35	0
Queuing Penalty (veh)	22	13	0	1		0	0	24	42	2

Intersection: 1: North Old Woodward Avenue & Oak Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	R	L	T	R
Maximum Queue (ft)	50	287	26	73	67	135	95	119	349	120
Average Queue (ft)	11	130	2	24	14	46	18	31	204	41
95th Queue (ft)	39	239	12	54	40	88	60	86	308	121
Link Distance (ft)		742		122		725			625	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	20		45		100		85	40		40
Storage Blk Time (%)	11	56	0	3		1	0	4	31	0
Queuing Penalty (veh)	28	14	0	0		2	0	31	38	1

Intersection: 1: North Old Woodward Avenue & Oak Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	R	L	T	R
Maximum Queue (ft)	49	278	56	114	65	196	114	46	267	120
Average Queue (ft)	9	110	9	45	18	92	55	12	154	35
95th Queue (ft)	38	201	33	96	49	167	124	33	247	107
Link Distance (ft)		742		127		725			625	
Upstream Blk Time (%)				0						
Queuing Penalty (veh)				0						
Storage Bay Dist (ft)	20		45		100		94	40		40
Storage Blk Time (%)	3	44	1	10		5	1	1	31	0
Queuing Penalty (veh)	7	6	1	2		19	4	6	37	2

Intersection: 1: North Old Woodward Avenue & Oak Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	R	L	T	R
Maximum Queue (ft)	25	216	55	95	148	215	105	120	281	120
Average Queue (ft)	2	96	17	49	21	99	66	24	140	35
95th Queue (ft)	15	183	49	95	80	178	131	75	242	107
Link Distance (ft)		742		135		724			629	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	20		45		100		85	40		40
Storage Blk Time (%)	2	45	8	12		8	1	9	27	1
Queuing Penalty (veh)	4	6	8	2		28	6	58	31	3

Intersection: 1: North Old Woodward Avenue & Oak Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	R	L	T	R
Maximum Queue (ft)	50	214	26	74	64	165	113	119	218	120
Average Queue (ft)	6	86	8	19	19	60	25	15	108	18
95th Queue (ft)	30	166	27	49	49	112	79	60	190	75
Link Distance (ft)		742		134		725			625	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	20		45		100		94	40		40
Storage Blk Time (%)	3	37	0	2		1	0	2	30	0
Queuing Penalty (veh)	7	6	0	0		1	0	6	21	0

Intersection: 1: North Old Woodward Avenue & Oak Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	R	L	T	R
Maximum Queue (ft)	50	170	26	51	50	201	105	119	244	120
Average Queue (ft)	10	69	7	22	18	78	35	13	92	13
95th Queue (ft)	39	121	25	55	45	145	90	54	174	51
Link Distance (ft)		742		129		725			626	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	20		45		100		85	40		40
Storage Blk Time (%)	5	41	0	3		4	0	1	28	0
Queuing Penalty (veh)	9	6	0	1		7	1	3	19	1

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MEMORANDUM

TO: Frank Simon
FLS Properties

FROM: Catherine St. Pierre, PE, PTOE

DATE: May 16, 2016

SUBJECT: Traffic Engineering Services for Proposed 856 North Old Woodward Avenue Mixed Use Development
Birmingham, Michigan

Parsons has completed a traffic impact study for the proposed mixed-use development at 856 North Old Woodward Avenue in Birmingham, Michigan. The development site is located along the east side of Old Woodward just south of the Old Woodward/Oak Avenue intersection; Figure 1 illustrates the site location. The estimated build-out year for the site is 2017. Two access driveways are proposed on the east side of Old Woodward. The purpose of this study was to determine the impact the new development will have on the area roadways and identify any improvements needed to mitigate its impact. The following represents the data collection, analysis, findings and recommendations from this review.

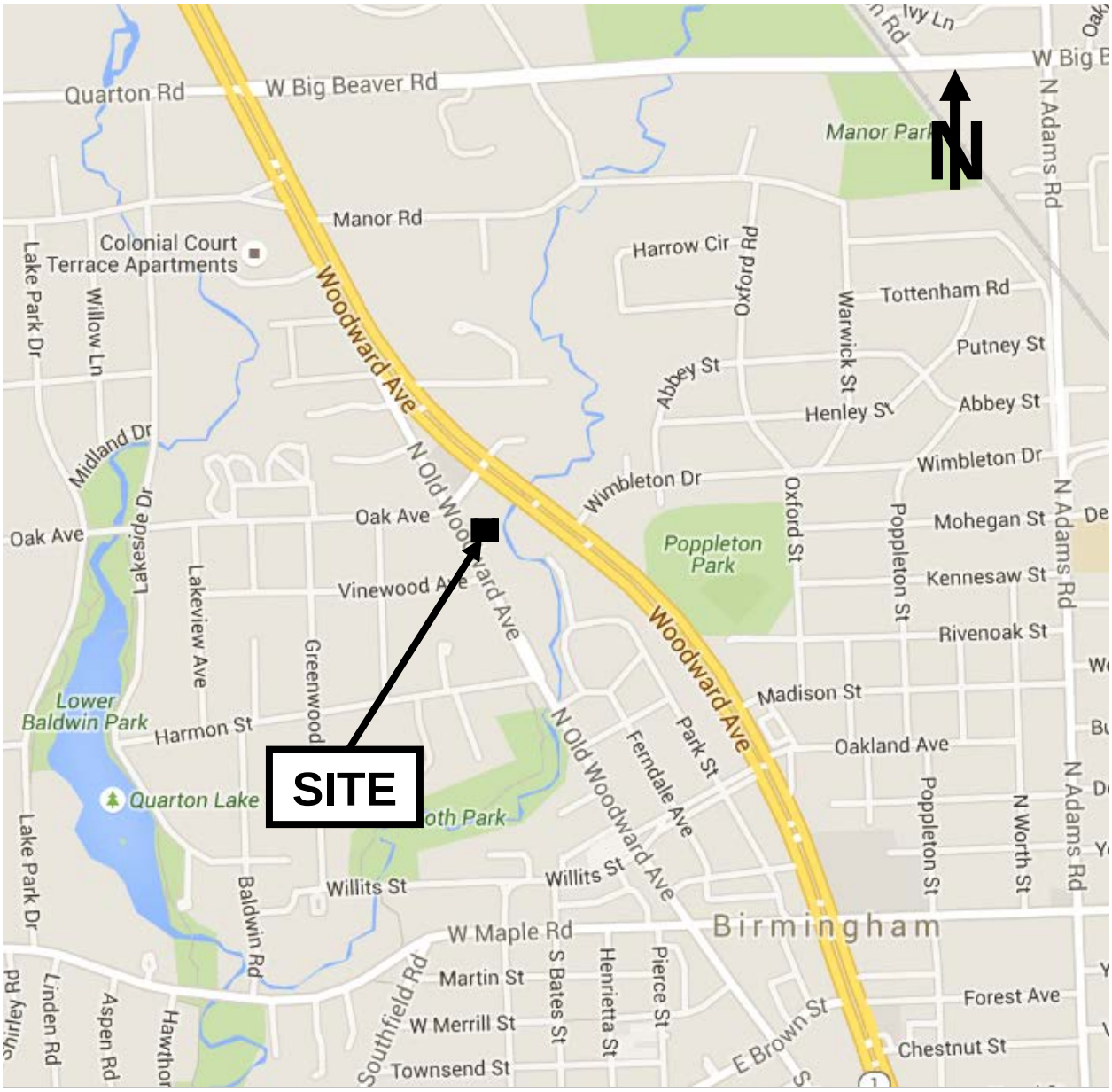
AREA ROADWAY SYSTEM

The primary roadways serving the site are Old Woodward, Oak Avenue, and M-1 (Woodward Avenue) and are described as follows:

Old Woodward is a three-lane, north-south paved roadway in the site vicinity with one through lane in each direction and one continuous two-way left-turn lane with intermittent raised medians. Its intersection with Oak Avenue is signalized. Old Woodward is under the jurisdiction of the Road Commission for Oakland County (RCOC) and has a posted speed limit of 30 miles per hour (mph) north of Oak Avenue and 25 mph south of Oak Avenue.

Oak Avenue is a two-lane, east-west paved roadway west of Old Woodward with one through lane in each direction and a four-lane paved roadway east of Old Woodward. Oak Avenue is also under the jurisdiction of the RCOC and has a posted speed limit of 25 mph.

M-1 (Woodward Avenue) is an eight-lane, north-south paved boulevard in the site vicinity with four lanes in each direction. Its intersection with Oak Avenue is signalized. M-1 is under the jurisdiction of MDOT and has a posted speed limit of 50 mph north of the M-1/Old Woodward split and 45 mph to the south.


Quarton Rd
W Big Beaver Rd
Manor Rd
Colonial Court
Terrace Apartments
Woodward Ave
Harrow Cir
Oxford Rd
Warwick St
Tottenham Rd
Putney St
Abbey St
Henley St
Abbey St
Wimbleton Dr
Wimbleton Dr
Oak Ave
Oak Ave
Vinewood Ave
Poppleton Park
Oxford St
Poppleton St
Mohegan St
Kennesaw St
Rivenoak St
Madison St
Oakland Ave
Harmon St
Lower
Baldwin Park
Quarton Lake
SITE
Willits St
Willits St
W Maple Rd
Martin St
W Merrill St
Townsend St
Birmingham
Forest Ave
Chestnut St
E Brown St
Park St
Ferndale Ave
Pierce St
Henrietta St
S Bates St
Southfield Rd
Baldwin Rd
Lake Park Dr
Willow Ln
Midland Dr
Lakeside Dr
Lakeview Ave
Greenwood
Linden Rd
Aspen Rd
Hawthorn
N Adams Rd
N Worth St
Poppleton St
N Old Woodward Ave
Ivy Ln
W Big B
Manor Park
N

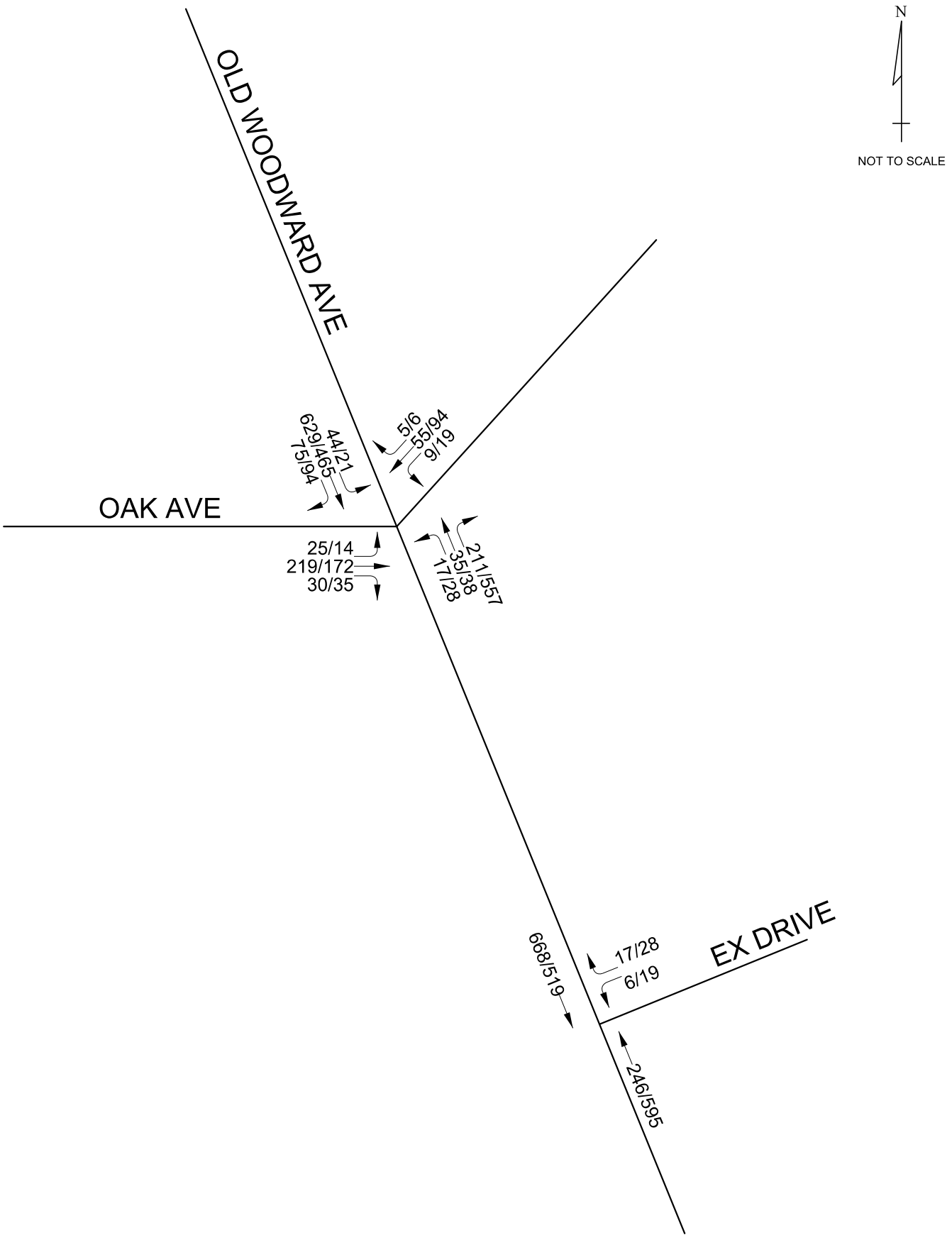
PROPOSED ACCESS PLAN

The proposed development would have two access driveways located on the east side of Old Woodward, south of Oak Avenue. Based on the site plan dated April 12, 2016, the southern drive (Site Drive #1) would be approximately 250 feet south of Oak Avenue and be a full access driveway with a 25-foot cross-section. This proposed driveway is intended to replace the existing driveway just south of the site and be connected with the adjacent public parking. A second driveway (Site Drive #2), approximately 100 feet south of Oak Avenue, would accommodate right-out only traffic and would have a 12-foot wide cross-section.

EXISTING TRAFFIC VOLUMES AND CONDITIONS

A field reconnaissance was conducted of the site and its environs to obtain an inventory of existing conditions. The peak periods for the adjacent roadways would typically occur during weekday early morning and late afternoon times. Stonefield Engineering & Design, LLC (Stonefield) conducted traffic turning movement counts at the Old Woodward/Oak Avenue intersection on Thursday, October 22, 2015 from 7:00 to 9:00 AM and from 4:00 to 7:00 PM.

Summaries of the turning movement counts indicate that the weekday AM peak hour of traffic occurs from 8:00 to 9:00 AM and the PM peak hour of traffic occurs from 5:00 to 6:00 PM. The existing peak hour traffic volumes are illustrated on Figure 2. The traffic turning movement count data is contained in Attachment A.



LEGEND:
XXX/XXX: AM PEAK (8:00-9:00) / PM PEAK (5:00-6:00)

EXISTING 2015
PEAK HOUR TRAFFIC VOLUME
FIGURE 2

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BACKGROUND TRAFFIC GROWTH

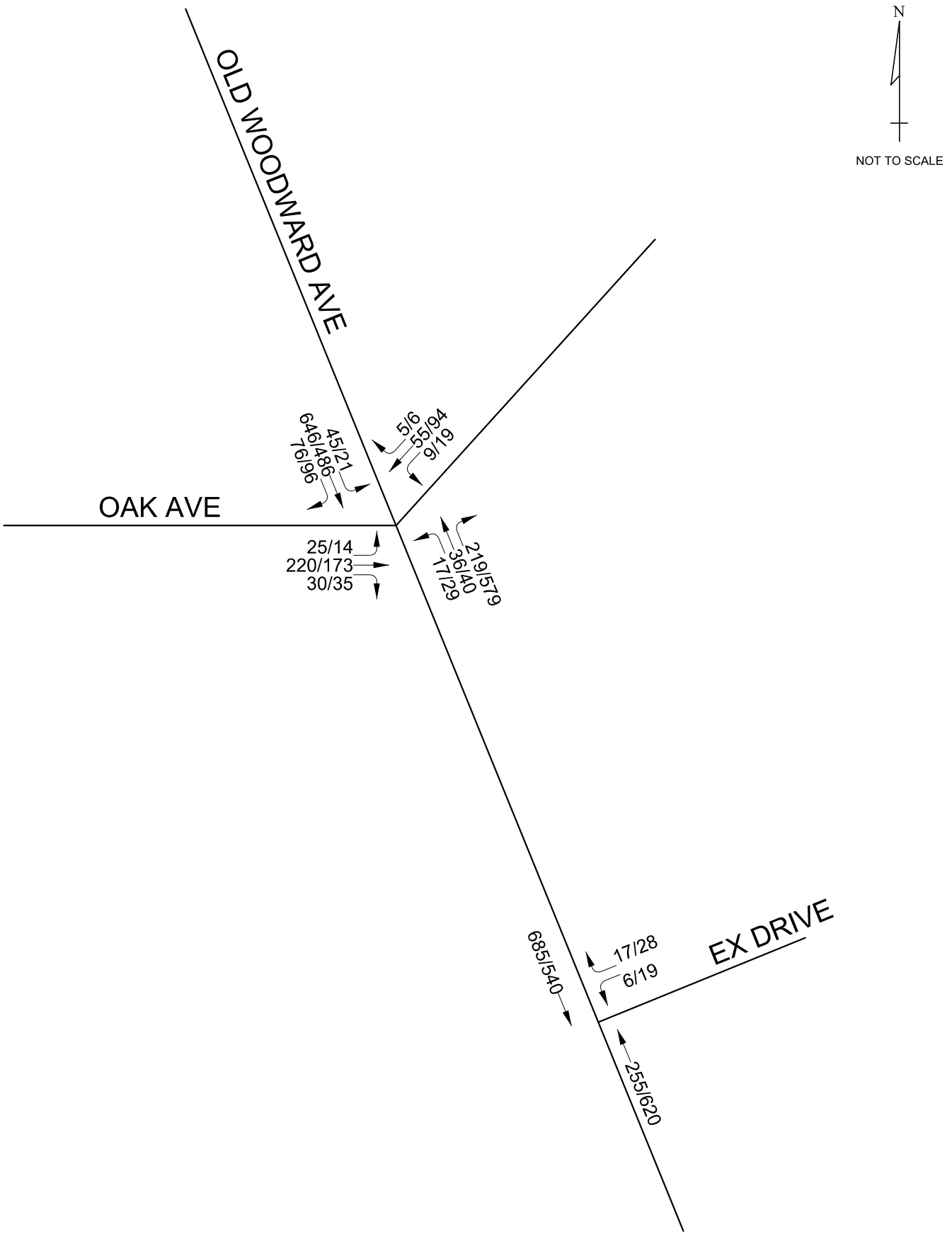
Background traffic takes into account the additional traffic on the roadway system that will be generated by approved developments and projected traffic growth due to any unknown developments in the area that may be completed by the time the build-out of the site occurs. As per Fleis and Vandenbrink (F&V), the City's traffic consulting firm, and the Stonefield Traffic Impact Letter Report dated November 11, 2015, there is one development that has been approved in the near vicinity of the proposed site. It is a five-story mixed-use development with 23 residential condominium units and 20,000 square feet of ground-level retail.

This mixed-use development, Brookside Development, is planned for construction in 2017 and will be constructed on the west side of Old Woodward north of Willits Street. In order to predict the background traffic at the North Woodward/Oak Avenue intersection associated with this development, estimated traffic volumes that would be generated were taken from the traffic impact study prepared by Clearzoning and are shown in Table 1.

Table 1
TRIP GENERATION FOR APPROVED MIXED-USE DEVELOPMENT

ITE Code	Land Use	Quantity	Unit	AM Peak Hour Trip Rate		PM Peak Hour Trip Rate	
				In	Out	In	Out
230	Residential Condominium	23	Dwelling Units	16		18	
				19%	81%	67%	33%
				3	13	12	6
826	Specialty Retail	20	1,000 Square Feet	19		69	
				63%	37%	43%	57%
				12	7	30	39
Potential Driveway Trips				15	20	42	45
15% Downtown Reduction + Internal Capture (PM only)				0	0	4	6
Net Driveway Trips				**15**	**20**	**38**	**39**

In order to account for the traffic growth due to other unknown developments or traffic changes that may occur prior to build-out of this site, annual growth rates were calculated from the SEMCOG regional forecast maps. The annual traffic growth rate arrived at and approved by F&V is 0.97% percent for Old Woodward and 0.15% for Oak Avenue. These growth rates were applied to the existing 2015 traffic volumes for two years (estimated time of build-out of the proposed site is 2017). The site traffic for the approved mixed-use development was then added to the additional background traffic that would result from traffic growth to arrive at the total background peak hour traffic volumes that are illustrated on Figure 3.



LEGEND:
XXX/XXX: AM PEAK (8:00-9:00) / PM PEAK (5:00-6:00)

BACKGROUND 2017
PEAK HOUR TRAFFIC VOLUME

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FIGURE 3

TRIP GENERATION FOR PROPOSED MIXED-USE DEVELOPMENT

The proposed development will consist of 27 apartments and 4,200 square feet of specialty retail space. The number of trips that would be generated by the proposed development was estimated based on rates and equations published in ITE *Trip Generation, 9th Edition* and are shown in Table 2.

Table 2
TRIP GENERATION FOR PROPOSED MIXED-USE DEVELOPMENT

ITE Code	Land Use	Quantity	Unit	AM Peak Hour Trip Rate		PM Peak Hour Trip Rate	
				In	Out	In	Out
220	Apartment	27	Dwelling Units	17		33	
				20%	80%	65%	35%
				3	14	21	12
826	Specialty Retail Center[1]	4.2	1,000 Square Feet	4		32	
				62%	38%	44%	56%
				2	2	14	18
Net External Trips[2]				**5**	**16**	**35**	**30**

[1]The average rate for a shopping center (ITE Code 820) was used for the AM peak hour. Trip generation data for a specialty retail center is not provided by ITE but to be conservative, a small amount of traffic can be expected during the AM peak hour while the retail store is preparing to open.
[2]To be conservative and due to the small size of the proposed site, internal capture and pass-by trips were not considered.

TRIP DISTRIBUTION

The directional distribution of the trips generated by the development was based on existing traffic patterns and regional characteristics and varies between the residential and retail uses. The resulting directional distribution provided by F&V is shown in Table 3.

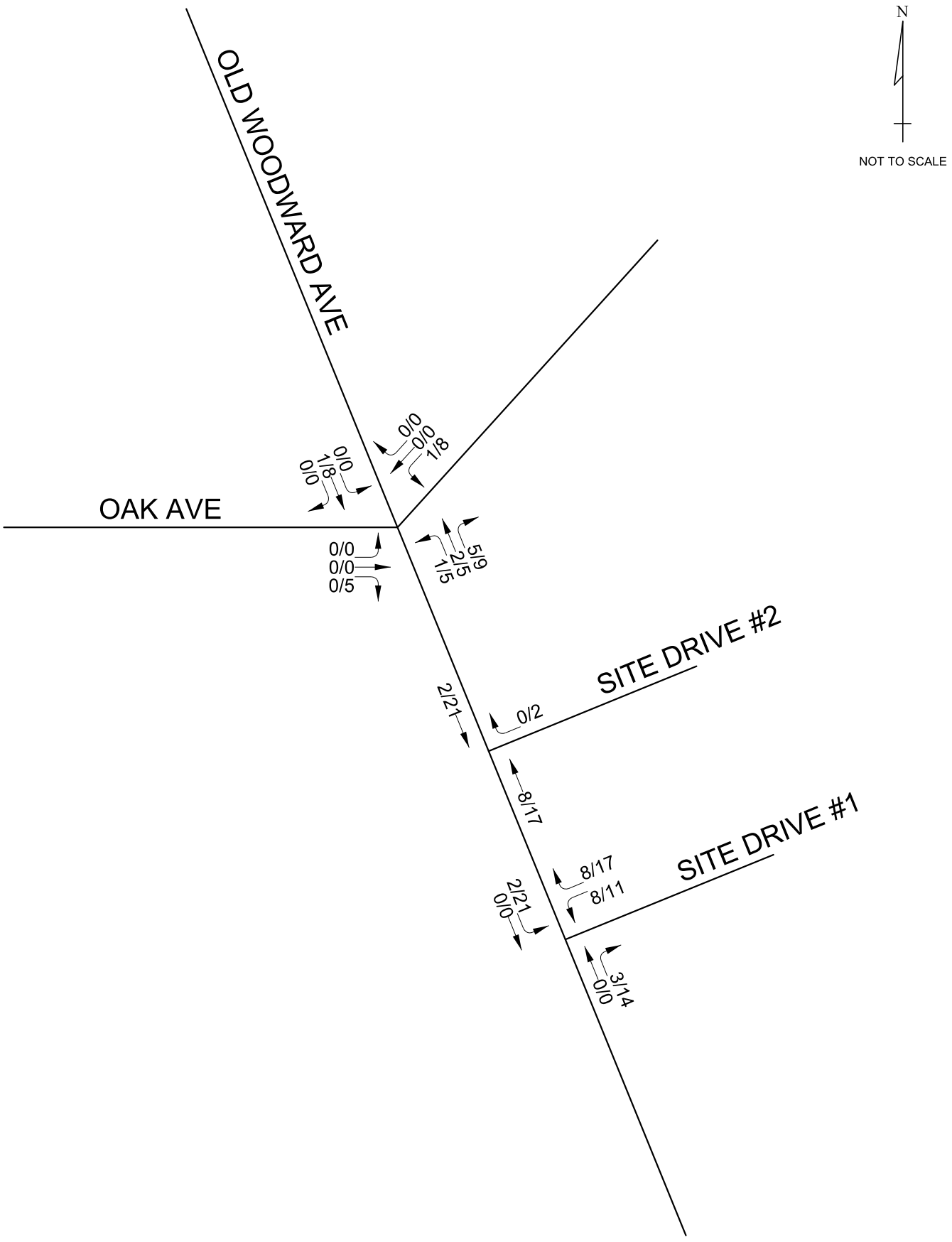
Table 3
ESTIMATED DIRECTIONAL DISTRIBUTION

	Peak Hour Distribution	
Direction	**AM**	**PM**
Residential Distribution		
To/From North on Old Woodward Ave	5%	35%
To/From South on Old Woodward Ave	50%	40%
To/From East on Oak Ave	35%	10%
To/From West on Oak Ave	10%	15%
Total	**100%**	**100%**
Retail Distribution		
To/From North on Old Woodward Ave	55%	5%
To/From South on Old Woodward Ave	20%	35%
To/From East on Oak Ave	5%	45%
To/From West on Oak Ave	20%	15%
Total	**100%**	**100%**

TRIP ASSIGNMENT

The projected AM and PM peak hour traffic volumes for the development in Table 2 were assigned to the adjacent street system based on the estimated directional distribution in Table 3. The total net site-generated trips are illustrated on Figure 4.

The total net site-generated peak hour traffic volumes shown on Figure 4 were then added to the background peak hour traffic volumes shown on Figure 3 to arrive at the total future peak hour traffic volumes shown on Figure 5. It should be noted that the existing drive on Figure 3 is proposed to be moved and incorporated into this site and the estimated site traffic was added to the background traffic.



LEGEND:
XXX/XXX: AM PEAK (8:00-9:00) / PM PEAK (5:00-6:00)

TOTAL NET SITE-GENERATED
PEAK HOUR TRAFFIC VOLUME

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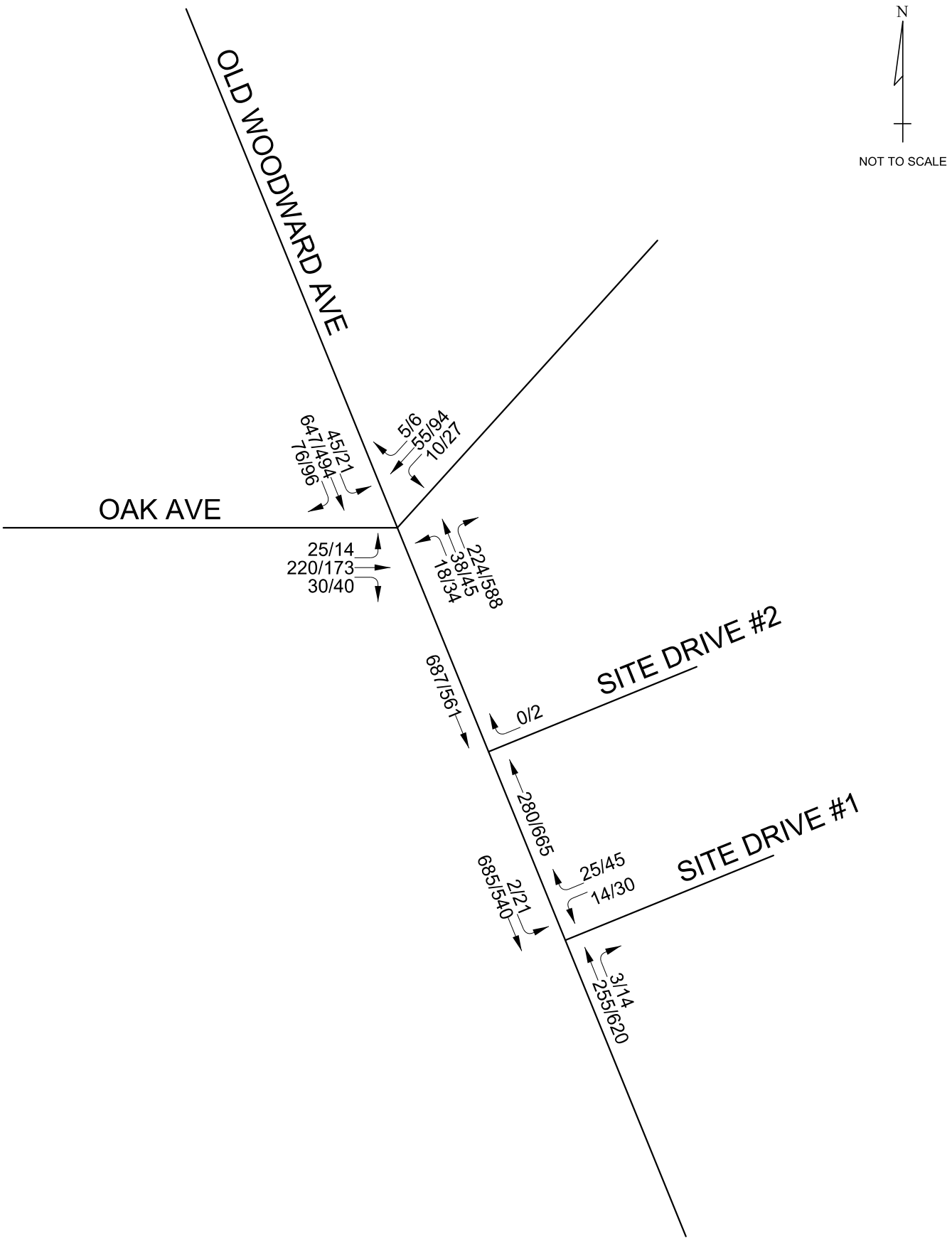
FIGURE 4



LEGEND:
XXX/XXX: AM PEAK (8:00-9:00) / PM PEAK (5:00-6:00)

TOTAL FUTURE 2017
PEAK HOUR TRAFFIC VOLUME

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FIGURE 5

CAPACITY ANALYSIS

The Old Woodward/Oak Avenue intersection and the existing and proposed site driveways were analyzed according to the methodologies published in the *2010 Highway Capacity Manual*. The analysis determines the "Level of Service" (LOS) of the intersection and driveways and is based on factors such as the number and types of lanes, signal timing, traffic volumes, pedestrian activity, etc. Levels of service are expressed in a range from "A" through "F," with "A" being the highest level of service, and "F" representing the lowest level of service. In Tables 4 and 5 the thresholds for Levels of Service "A" through "F" are shown for signalized and unsignalized intersections, respectively.

Table 4
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service	Delay/Vehicle (seconds)	Description
A	≤ 10.0	Most vehicles do not stop at all.
B	10.1 to 20.0	Some vehicles stop.
C	20.1 to 35.0	The number of vehicles stopping is significant, although many pass through without stopping.
D	35.1 to 55.0	Many vehicles stop. Individual cycle failures are noticeable.
E	55.1 to 80.0	Considered to be the limit of acceptable delay. Individual cycle failures are frequent.
F	> 80.0	Unacceptable delay.

SOURCE: Transportation Research Board, Highway Capacity Manual, 2010.

Table 5
LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service	Delay/Vehicle (seconds)	Description
A	≤ 10.0	Little or no delay, very low main street traffic.
B	10.1 to 15.0	Short traffic delays, many acceptable gaps.
C	15.1 to 25.0	Average traffic delays, frequent gaps still occur.
D	25.1 to 35.0	Long traffic delays, limited number of acceptable gaps.
E	35.1 to 50.0	Very long traffic delays, very small number of acceptable gaps.
F	> 50.0	Extreme traffic delays, virtually no acceptable gaps in traffic.

SOURCE: Transportation Research Board, Highway Capacity Manual, 2010.

Capacity analyses were conducted for the following conditions using Sycnhro/SimTraffic, Version 9:

- Existing 2015 conditions
- Projected 2017 conditions without development of the site (background)
- Projected 2017 conditions including the site (future)

The models were calibrated and validated according to the procedures outlined in Section 5.3.2 of the MDOT Electronic Traffic Control Device Guidelines. The capacity analyses worksheets are presented in Attachment B, summarized in Table 6, and discussed in the following paragraphs.

Table 6
CAPACITY ANALYSES - EXISTING, BACKGROUND AND FUTURE TRAFFIC CONDITIONS

	EXISTING TRAFFIC				BACKGROUND TRAFFIC				FUTURE TRAFFIC			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
Old Woodward and Oak Avenue (Signalized)												
Overall	**14.4**	**B**	**12.9**	**B**	**14.5**	**B**	**13.1**	**B**	**14.5**	**B**	**13.3**	**B**
NB Approach	8.3	A	11.3	B	8.3	A	11.6	B	8.3	A	11.7	B
SB Approach	12.8	B	11.6	B	13.1	B	11.8	B	13.1	B	12.0	B
EB Approach	22.6	C	19.8	B	22.6	C	19.8	B	22.6	C	19.9	B
WB Approach	19.6	B	18.3	B	19.6	B	18.3	B	19.7	B	18.6	B
Old Woodward and Site Drive #1 (Unsignalized)[2]												
WB Left + Rt	12.4	B	26.1	D	12.6	B	28.3	D	14.1	B	37.2	E
SB Left	-	-	-	-	-	-	-	-	7.8	A	10.1	B
Old Woodward and Site Drive #2 (Unsignalized)[2]												
WB Right	-	-	-	-	-	-	-	-	0.0	A	17.1	C

[1]Delay is measured in seconds per vehicle.
[2]Capacity analyses for two-way stop controlled intersections provide the LOS at the critical movements, not for the overall intersection.

Old Woodward and Oak Avenue Intersection

As shown in Table 6, the intersection of Old Woodward and Oak Avenue, under ***existing conditions,*** is operating at an overall level of service (LOS) "B" during the weekday AM and PM peak hours, with all approaches operating at acceptable LOS "C" or better.

Under ***background*** (*without site traffic) and* ***future*** (*with site traffic)* ***conditions,*** the intersection will continue to operate at an overall LOS "B" during the weekday AM and PM peak hours, with all approaches operating at acceptable LOS "C" or better.

Old Woodward and Site Drive #1 Intersection

Since the existing exit-only driveway just south of the proposed site on Old Woodward is anticipated to be relocated slightly north and connected to the proposed site, ***existing*** and ***background*** capacity analyses were conducted for this existing driveway (also referred to as Site Drive #1). The critical movements at this drive are the westbound left- and right-turns from the existing public parking. As shown in Table 6, the shared left- and right-turn movement currently operates at LOS "B" during the AM peak hour and LOS "D" during the PM peak hour, and will continue to do so during the background conditions.

Capacity analyses for the ***future*** conditions were conducted at the proposed relocated Site Drive #1. The critical movements would be the westbound shared left- and right-turn movement exiting the site and the southbound left-turns into the site. As shown in Table 6, the westbound shared left- and right-turn movement would operate at LOS "B" during the AM peak hour and LOS "E" during the PM peak hour and the southbound left-turn movement would operate at LOS "A" during the AM peak hour and LOS "B" during the PM peak hour.

The LOS "E" during the PM peak hour for the westbound exiting movement is due to the high northbound right-turn volume at the Old Woodward/Oak Avenue intersection which produces an almost continuous flow of traffic and provides few gaps. As witnessed in the field during the PM peak, it was difficult at times to make a left-turn from the existing driveway but it was much easier to turn right. If queuing on-site becomes an issue, it may be prudent to prohibit the left-turn movement during the PM peak hour and just allow right turn movements; the right-turning traffic would have better opportunities to find gaps to turn into.

Old Woodward and Site Drive #2 Intersection

Capacity analyses for the ***future*** conditions were conducted at the proposed Site Drive #2 onto Old Woodward for the AM and PM peak hours. The critical movement would be the westbound right-turn from the site drive.

As shown in Table 6, the westbound right-turn movement would operate at LOS "A" during the AM peak hour and LOS "C" during the PM.

QUEUING ANALYSIS

A queuing evaluation using SimTraffic was also completed for the Old Woodward/Oak Avenue intersection to determine whether the proposed site drive locations would be in conflict with the turn lane storage at Oak Avenue. Since the queue length observed in the field was closer to the average queue length reported in SimTraffic as opposed to the 95th percentile or maximum queue, it was compared against the distance to Site Drive #1 (250 feet). The queuing reports are presented in Attachment C, summarized in Table 7, and discussed in the following paragraphs.

Table 7
QUEUING SUMMARY FOR NB OLD WOODWARD APPROACH AT OAK AVENUE

	EXISTING TRAFFIC		BACKGROUND TRAFFIC		FUTURE TRAFFIC	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
NB left-turn lane queue length (feet)						
Average	11	29	15	31	16	31
NB shared thru/right-turn lane queue length (feet)						
Average	43	248	45	282	43	207
NB right-turn lane queue length (feet)						
Average	16	80	19	83	22	74

As shown in Table 7, only the PM peak hour condition experiences an average queue length beyond Site Drive #1. As per SimTraffic, this occurs only approximately 23 percent of the time which coincides with the 15-minute surge when people are leaving work at the end of the day. The average queue length is actually shown to decrease in the future condition but based on a car length of 20 feet, it is only a difference of two cars which is insignificant. It should be noted that SimTraffic operates on random arrivals and the results can vary between simulation runs which is why an average of five runs was used for analysis.

SIGHT DISTANCE ANALYSIS

The RCOC standards for intersection site distance require, based on the posted speed limit of 25 mph, a minimum sight distance of 280 feet. Figure 6 shows the proposed site plan overlaid on an aerial with the sight distance of 280 feet dimensioned at each proposed driveway from a distance of 15 feet from the edge of the travelled way. It is acknowledged that the sight lines go through the proposed angle parking from each driveway; however, due to the low speed limit, the proposed small amount of peak hour volume exiting the driveways, and the fact that most drivers would move into a position where they can see clearly, we do not anticipate any issues with the location of the driveways.

On-street parking is commonly allowed in central business districts, and as can be seen just south of the proposed site, the same sight distance situation currently exists at the existing driveway which appears to be operating adequately. Typically, drivers stop at the stop bar and once they are clear of pedestrians on the sidewalk, pull out closer to the roadway to have a better view of traffic. If in the future it is found that the planned configuration of the proposed driveways present a safety issue, the first few parking spaces could be blocked out to clear the line of sight.

CONCLUSIONS AND RECOMMENDATIONS

The following represent the conclusions and recommendations based on the results of this analysis:

1. The Old Woodward/Oak Avenue intersection currently operates at an acceptable level of service during the weekday peak hours and will continue to do so under background and future conditions. The site traffic alone will not add significant delay to the intersection

and mitigation measures would not be required.

2. The northern proposed site drive on Old Woodward is expected to operate at acceptable levels of service under future conditions.

3. At the southern proposed site drive (i.e. relocated existing drive) on Old Woodward, the exiting westbound shared left/right-turn movement is expected to operate at LOS "E" during the PM peak hour. However, outside of the PM peak hour, this shared movement is expected to operate at acceptable levels. It should be noted that the proposed site is projected to add only 11 left-turns and 17 right-turns in the PM peak hour.

   If necessary, it may be prudent to prohibit the left turn movement during the PM peak hour at the driveway.

4. The sight lines at the proposed driveways go through the proposed angle parking; however, due to the low speed limit, the proposed small amount of peak hour volume exiting the driveways, the same sight distance condition is present today at the existing driveway, and the fact that most people will move their vehicles into a position where they can see clearly south down Old Woodward before turning, we do not anticipate any issues with the location of the driveways.

PROPOSED DRIVEWAY SIGHT DISTANCE

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FIGURE 6

ATTACHMENTS

A - TURNING MOVEMENT COUNT DATA
B - HCM 2010 SUMMARY REPORTS
C - QUEUING AND BLOCKING REPORTS

ATTACHMENT A

TURNING MOVEMENT COUNT DATA

Stonefield Engineering & Design, LLC

2350 Franklin Road, Suite 210, Bloomfield Hills, MI 48302
248.247.1115 t.

Intersection of Oak Avenue (E/W)
and North Old Woodward Avenue (N/S)
City of Birmingham, Oakland County, MI
Thursday, October 22, 2015

File Name : S-15206 TMC Wkday Oak & N. Old Woodward
Site Code : 00015206
Start Date : 10/22/2015
Page No : 1

Groups Printed- Auto - HV - B/SB

	Oak Avenue Eastbound					Oak Avenue Westbound					N. Old Woodward Avenue Northbound					N. Old Woodward Avenue Southbound					
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
07:15 AM	11	40	0	0	51	1	8	1	0	10	0	7	14	24	45	10	74	8	0	92	198
07:30 AM	5	41	4	1	51	2	12	0	0	14	1	1	22	24	48	10	138	12	1	161	274
07:45 AM	13	56	9	5	83	3	17	0	0	20	4	1	24	15	44	9	130	18	3	160	307
Total	29	137	13	6	185	6	37	1	0	44	5	9	60	63	137	29	342	38	4	413	779
08:00 AM	7	56	0	0	63	3	18	0	1	22	8	1	39	6	54	16	163	21	0	200	339
08:15 AM	7	52	4	0	63	3	20	0	1	24	3	13	53	5	74	9	146	16	0	171	332
08:30 AM	7	60	12	0	79	1	9	2	0	12	4	10	39	12	65	9	181	21	0	211	367
08:45 AM	4	51	14	0	69	2	8	1	0	11	2	11	48	9	70	10	139	17	0	166	316
Total	25	219	30	0	274	9	55	3	2	69	17	35	179	32	263	44	629	75	0	748	1354
*** BREAK ***																					
04:00 PM	6	50	4	0	60	2	7	0	0	9	5	8	57	32	102	9	88	14	1	112	283
04:15 PM	2	38	5	0	45	1	9	0	0	10	5	11	86	21	123	8	110	20	0	138	316
04:30 PM	0	44	5	0	49	2	14	1	0	17	10	10	84	29	133	8	102	18	0	128	327
04:45 PM	4	39	8	0	51	4	16	1	0	21	4	14	44	47	109	12	117	15	0	144	325
Total	12	171	22	0	205	9	46	2	0	57	24	43	271	129	467	37	417	67	1	522	1251
05:00 PM	1	48	6	0	55	4	25	3	0	32	12	5	117	98	232	3	125	24	0	152	471
05:15 PM	4	42	3	0	49	5	27	0	0	32	0	15	86	36	137	6	116	16	0	138	356
05:30 PM	5	35	17	0	57	7	23	1	0	31	8	10	86	27	131	8	120	30	1	159	378
05:45 PM	4	47	6	3	60	3	19	2	0	24	8	8	81	26	123	4	104	23	0	131	338
Total	14	172	32	3	221	19	94	6	0	119	28	38	370	187	623	21	465	93	1	580	1543
06:00 PM	5	34	9	0	48	5	13	3	0	21	10	6	79	16	111	9	105	19	0	133	313
06:15 PM	2	29	11	0	42	8	15	0	0	23	12	6	56	15	89	3	78	17	0	98	252
06:30 PM	3	38	6	0	47	1	5	2	0	8	13	13	61	10	97	6	86	19	0	111	263
06:45 PM	5	50	10	0	65	6	5	3	0	14	16	12	93	11	132	5	73	12	0	90	301
Total	15	151	36	0	202	20	38	8	0	66	51	37	289	52	429	23	342	67	0	432	1129
Grand Total	95	850	133	9	1087	63	270	20	2	355	125	162	1169	463	1919	154	2195	340	6	2695	6056
Apprch %	8.7	78.2	12.2	0.8		17.7	76.1	5.6	0.6		6.5	8.4	60.9	24.1		5.7	81.4	12.6	0.2		
Total %	1.6	14	2.2	0.1	17.9	1	4.5	0.3	0	5.9	2.1	2.7	19.3	7.6	31.7	2.5	36.2	5.6	0.1	44.5	
Auto	94	840	130	8	1072	62	258	19	1	340	125	160	1156	462	1903	149	2168	337	5	2659	5974
% Auto	98.9	98.8	97.7	88.9	98.6	98.4	95.6	95	50	95.8	100	98.8	98.9	99.8	99.2	96.8	98.8	99.1	83.3	98.7	98.6
HV	0	5	3	1	9	1	4	1	1	7	0	2	3	1	6	4	14	2	0	20	42
% HV	0	0.6	2.3	11.1	0.8	1.6	1.5	5	50	2	0	1.2	0.3	0.2	0.3	2.6	0.6	0.6	0	0.7	0.7
B/SB	1	5	0	0	6	0	8	0	0	8	0	0	10	0	10	1	13	1	1	16	40
% B/SB	1.1	0.6	0	0	0.6	0	3	0	0	2.3	0	0	0.9	0	0.5	0.6	0.6	0.3	16.7	0.6	0.7

Stonefield Engineering & Design, LLC

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248.247.1115 t.

Intersection of Oak Avenue (E/W)
and North Old Woodward Avenue (N/S)
City of Birmingham, Oakland County, MI
Thursday, October 22, 2015

File Name : S-15206 TMC Wkday Oak & N. Old Woodward
Site Code : 00015206
Start Date : 10/22/2015

	Oak Avenue Eastbound					Oak Avenue Westbound					N. Old Woodward Avenue Northbound					N. Old Woodward Avenue Southbound					
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	7	56	0	0	63	3	18	0	1	22	8	1	39	6	54	16	163	21	0	200	339
08:15 AM	7	52	4	0	63	3	20	0	1	24	3	13	53	5	74	9	146	16	0	171	332
08:30 AM	7	60	12	0	79	1	9	2	0	12	4	10	39	12	65	9	181	21	0	211	367
08:45 AM	4	51	14	0	69	2	8	1	0	11	2	11	48	9	70	10	139	17	0	166	316
Total Volume	25	219	30	0	274	9	55	3	2	69	17	35	179	32	263	44	629	75	0	748	1354
% App. Total	9.1	79.9	10.9	0		13	79.7	4.3	2.9		6.5	13.3	68.1	12.2		5.9	84.1	10	0		
PHF	.893	.913	.536	.000	.867	.750	.688	.375	.500	.719	.531	.673	.844	.667	.889	.688	.869	.893	.000	.886	.922
Auto	25	217	29	0	271	9	53	3	1	66	17	35	177	32	261	41	619	74	0	734	1332
% Auto	100	99.1	96.7	0	98.9	100	96.4	100	50.0	95.7	100	100	98.9	100	99.2	93.2	98.4	98.7	0	98.1	98.4
HV	0	1	1	0	2	0	2	0	1	3	0	0	1	0	1	2	5	1	0	8	14
% HV	0	0.5	3.3	0	0.7	0	3.6	0	50.0	4.3	0	0	0.6	0	0.4	4.5	0.8	1.3	0	1.1	1.0
B/SB	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	1	5	0	0	6	8
% B/SB	0	0.5	0	0	0.4	0	0	0	0	0	0	0	0.6	0	0.4	2.3	0.8	0	0	0.8	0.6
Peak Hour Analysis From 12:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	1	48	6	0	55	4	25	3	0	32	12	5	117	98	232	3	125	24	0	152	471
05:15 PM	4	42	3	0	49	5	27	0	0	32	0	15	86	36	137	6	116	16	0	138	356
05:30 PM	5	35	17	0	57	7	23	1	0	31	8	10	86	27	131	8	120	30	1	159	378
05:45 PM	4	47	6	3	60	3	19	2	0	24	8	8	81	26	123	4	104	23	0	131	338
Total Volume	14	172	32	3	221	19	94	6	0	119	28	38	370	187	623	21	465	93	1	580	1543
% App. Total	6.3	77.8	14.5	1.4		16	79	5	0		4.5	6.1	59.4	30		3.6	80.2	16	0.2		
PHF	.700	.896	.471	.250	.921	.679	.870	.500	.000	.930	.583	.633	.791	.477	.671	.656	.930	.775	.250	.912	.819
Auto	14	171	30	2	217	19	94	6	0	119	28	38	367	187	620	21	461	93	1	576	1532
% Auto	100	99.4	93.8	66.7	98.2	100	100	100	0	100	100	100	99.2	100	99.5	100	99.1	100	100	99.3	99.3
HV	0	1	2	1	4	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	6
% HV	0	0.6	6.3	33.3	1.8	0	0	0	0	0	0	0	0	0	0	0	0.4	0	0	0.3	0.4
B/SB	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	2	0	0	2	5
% B/SB	0	0	0	0	0	0	0	0	0	0	0	0	0.8	0	0.5	0	0.4	0	0	0.3	0.3

ATTACHMENT B

HCM 2010 SUMMARY REPORTS

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	17	35	211	44	629	75	25	219	30	9	55	5
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	2000	1986	1980	1905	1980	1980	2000	1976	2000	2000	1898	2000
Adj Flow Rate, veh/h	19	0	263	49	707	84	29	252	34	12	76	7
Adj No. of Lanes	1	0	2	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.87	0.87	0.87	0.72	0.72	0.72
Percent Heavy Veh, %	0	0	1	5	1	1	0	1	1	0	4	4
Cap, veh/h	326	0	1961	722	1139	959	478	574	77	335	577	53
Arrive On Green	0.57	0.00	0.59	0.59	0.57	0.57	0.32	0.34	0.32	0.34	0.34	0.31
Sat Flow, veh/h	696	0	3338	1076	1980	1669	1319	1701	230	1103	1710	158
Grp Volume(v), veh/h	19	0	263	49	707	84	29	0	286	12	0	83
Grp Sat Flow(s),veh/h/ln	696	0	1669	1076	1980	1669	1319	0	1931	1103	0	1868
Q Serve(g_s), s	1.5	0.0	2.8	1.6	18.9	1.8	1.3	0.0	9.2	0.7	0.0	2.5
Cycle Q Clear(g_c), s	20.4	0.0	2.8	1.6	18.9	1.8	3.7	0.0	9.2	9.9	0.0	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		0.08
Lane Grp Cap(c), veh/h	326	0	1961	722	1139	959	478	0	652	335	0	630
V/C Ratio(X)	0.06	0.00	0.13	0.07	0.62	0.09	0.06	0.00	0.44	0.04	0.00	0.13
Avail Cap(c_a), veh/h	326	0	1961	722	1139	959	478	0	652	335	0	630
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.0	0.0	7.4	7.1	11.2	7.6	20.4	0.0	20.7	24.5	0.0	18.4
Incr Delay (d2), s/veh	0.3	0.0	0.1	0.2	2.6	0.2	0.2	0.0	2.1	0.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.3	0.5	11.0	0.9	0.5	0.0	5.3	0.2	0.0	1.3
LnGrp Delay(d),s/veh	18.3	0.0	7.5	7.3	13.8	7.8	20.6	0.0	22.8	24.7	0.0	18.9
LnGrp LOS	B		A	A	B	A	C		C	C		B
Approach Vol, veh/h		282			840			315			95	
Approach Delay, s/veh		8.3			12.8			22.6			19.6	
Approach LOS		A			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		50.0		30.0		50.0		30.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		44.0		24.0		44.0		24.0
Max Q Clear Time (g_c+I1), s		22.4		11.2		20.9		11.9
Green Ext Time (p_c), s		5.9		1.4		6.0		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	6	17	246	0	0	668
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	89	100	100	89
Heavy Vehicles, %	0	0	1	2	2	1
Mvmt Flow	7	18	276	0	0	751

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1027	276	0	0	276	0
Stage 1	276	-	-	-	-	-
Stage 2	751	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	262	768	-	-	1287	-
Stage 1	775	-	-	-	-	-
Stage 2	470	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	262	768	-	-	1287	-
Mov Cap-2 Maneuver	262	-	-	-	-	-
Stage 1	775	-	-	-	-	-
Stage 2	470	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	511	1287	-
HCM Lane V/C Ratio	-	-	0.049	-	-
HCM Control Delay (s)	-	-	12.4	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	28	38	557	21	465	94	14	172	35	19	94	6
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	2000	2000	2000	2000	2000	2000	2000	1954	2000	2000	2000	2000
Adj Flow Rate, veh/h	42	0	869	23	511	103	15	187	38	20	101	6
Adj No. of Lanes	1	0	2	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.67	0.67	0.67	0.91	0.91	0.91	0.92	0.92	0.92	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	1	0	0	0
Cap, veh/h	414	0	1895	454	1100	926	495	570	116	412	677	40
Arrive On Green	0.55	0.00	0.56	0.56	0.55	0.55	0.35	0.36	0.35	0.36	0.36	0.34
Sat Flow, veh/h	820	0	3370	646	2000	1685	1293	1573	320	1165	1868	111
Grp Volume(v), veh/h	42	0	869	23	511	103	15	0	225	20	0	107
Grp Sat Flow(s),veh/h/ln	820	0	1685	646	2000	1685	1293	0	1892	1165	0	1978
Q Serve(g_s), s	2.6	0.0	12.2	1.3	12.4	2.3	0.6	0.0	6.9	1.0	0.0	2.9
Cycle Q Clear(g_c), s	15.0	0.0	12.2	1.3	12.4	2.3	3.6	0.0	6.9	7.9	0.0	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		0.06
Lane Grp Cap(c), veh/h	414	0	1895	454	1100	927	495	0	686	412	0	717
V/C Ratio(X)	0.10	0.00	0.46	0.05	0.46	0.11	0.03	0.00	0.33	0.05	0.00	0.15
Avail Cap(c_a), veh/h	414	0	1895	454	1100	927	495	0	686	412	0	717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	10.3	7.9	10.9	8.6	19.1	0.0	18.5	21.3	0.0	17.2
Incr Delay (d2), s/veh	0.5	0.0	0.8	0.2	1.4	0.2	0.1	0.0	1.3	0.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	5.8	0.3	7.2	1.1	0.2	0.0	3.8	0.3	0.0	1.7
LnGrp Delay(d),s/veh	15.9	0.0	11.1	8.2	12.3	8.9	19.2	0.0	19.8	21.5	0.0	17.7
LnGrp LOS	B		B	A	B	A	B		B	C		B
Approach Vol, veh/h		911			637			240			127	
Approach Delay, s/veh		11.3			11.6			19.8			18.3	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		48.0		32.0		48.0		32.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		42.0		26.0		42.0		26.0
Max Q Clear Time (g_c+I1), s		17.0		8.9		14.4		9.9
Green Ext Time (p_c), s		9.6		1.4		10.0		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	19	28	595	0	0	519
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	67	100	100	91
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	21	30	888	0	0	570

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1458	888	0	0	888	0
Stage 1	888	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	144	345	-	-	763	-
Stage 1	405	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	144	345	-	-	763	-
Mov Cap-2 Maneuver	144	-	-	-	-	-
Stage 1	405	-	-	-	-	-
Stage 2	570	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.1	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	221	763	-
HCM Lane V/C Ratio	-	-	0.231	-	-
HCM Control Delay (s)	-	-	26.1	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0	-

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	17	36	219	45	646	76	25	220	30	9	55	5
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	2000	1986	1980	1905	1980	1980	2000	1976	2000	2000	1898	2000
Adj Flow Rate, veh/h	19	0	273	51	726	85	29	253	34	12	76	7
Adj No. of Lanes	1	0	2	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.87	0.87	0.87	0.72	0.72	0.72
Percent Heavy Veh, %	0	0	1	5	1	1	0	1	1	0	4	4
Cap, veh/h	315	0	1961	717	1139	959	478	575	77	334	577	53
Arrive On Green	0.57	0.00	0.59	0.59	0.57	0.57	0.32	0.34	0.32	0.34	0.34	0.31
Sat Flow, veh/h	683	0	3338	1067	1980	1669	1319	1702	229	1102	1710	158
Grp Volume(v), veh/h	19	0	273	51	726	85	29	0	287	12	0	83
Grp Sat Flow(s),veh/h/ln	683	0	1669	1067	1980	1669	1319	0	1931	1102	0	1868
Q Serve(g_s), s	1.5	0.0	2.9	1.7	19.7	1.8	1.3	0.0	9.3	0.7	0.0	2.5
Cycle Q Clear(g_c), s	21.2	0.0	2.9	1.7	19.7	1.8	3.7	0.0	9.3	10.0	0.0	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		0.08
Lane Grp Cap(c), veh/h	315	0	1961	717	1139	959	478	0	652	334	0	630
V/C Ratio(X)	0.06	0.00	0.14	0.07	0.64	0.09	0.06	0.00	0.44	0.04	0.00	0.13
Avail Cap(c_a), veh/h	315	0	1961	717	1139	959	478	0	652	334	0	630
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.5	0.0	7.4	7.1	11.4	7.6	20.4	0.0	20.7	24.5	0.0	18.4
Incr Delay (d2), s/veh	0.4	0.0	0.1	0.2	2.7	0.2	0.2	0.0	2.2	0.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.4	0.5	11.6	0.9	0.5	0.0	5.3	0.2	0.0	1.3
LnGrp Delay(d),s/veh	18.9	0.0	7.6	7.3	14.1	7.8	20.6	0.0	22.8	24.7	0.0	18.9
LnGrp LOS	B		A	A	B	A	C		C	C		B
Approach Vol, veh/h		292			862			316			95	
Approach Delay, s/veh		8.3			13.1			22.6			19.6	
Approach LOS		A			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		50.0		30.0		50.0		30.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		44.0		24.0		44.0		24.0
Max Q Clear Time (g_c+I1), s		23.2		11.3		21.7		12.0
Green Ext Time (p_c), s		6.0		1.4		6.2		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	6	17	255	0	0	685
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	89	100	100	89
Heavy Vehicles, %	0	0	1	2	2	1
Mvmt Flow	7	18	287	0	0	770

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1057	287	0	0	287	0
Stage 1	287	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	251	757	-	-	1275	-
Stage 1	766	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	251	757	-	-	1275	-
Mov Cap-2 Maneuver	251	-	-	-	-	-
Stage 1	766	-	-	-	-	-
Stage 2	460	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	496	1275	-
HCM Lane V/C Ratio	-	-	0.05	-	-
HCM Control Delay (s)	-	-	12.6	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	29	40	579	21	486	96	14	173	35	19	94	6
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	2000	2000	2000	2000	2000	2000	2000	1954	2000	2000	2000	2000
Adj Flow Rate, veh/h	43	0	904	23	534	105	15	188	38	20	101	6
Adj No. of Lanes	1	0	2	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.67	0.67	0.67	0.91	0.91	0.91	0.92	0.92	0.92	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	1	0	0	0
Cap, veh/h	399	0	1895	442	1100	926	495	571	115	411	677	40
Arrive On Green	0.55	0.00	0.56	0.56	0.55	0.55	0.35	0.36	0.35	0.36	0.36	0.34
Sat Flow, veh/h	802	0	3370	625	2000	1685	1293	1574	318	1164	1868	111
Grp Volume(v), veh/h	43	0	904	23	534	105	15	0	226	20	0	107
Grp Sat Flow(s),veh/h/ln	802	0	1685	625	2000	1685	1293	0	1893	1164	0	1978
Q Serve(g_s), s	2.8	0.0	12.8	1.3	13.1	2.4	0.6	0.0	6.9	1.0	0.0	2.9
Cycle Q Clear(g_c), s	15.9	0.0	12.8	1.3	13.1	2.4	3.6	0.0	6.9	7.9	0.0	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		0.06
Lane Grp Cap(c), veh/h	399	0	1895	442	1100	927	495	0	686	411	0	717
V/C Ratio(X)	0.11	0.00	0.48	0.05	0.49	0.11	0.03	0.00	0.33	0.05	0.00	0.15
Avail Cap(c_a), veh/h	399	0	1895	442	1100	927	495	0	686	411	0	717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.9	0.0	10.5	7.9	11.1	8.6	19.1	0.0	18.5	21.3	0.0	17.2
Incr Delay (d2), s/veh	0.5	0.0	0.9	0.2	1.5	0.2	0.1	0.0	1.3	0.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	6.1	0.3	7.6	1.2	0.2	0.0	3.8	0.3	0.0	1.7
LnGrp Delay(d),s/veh	16.5	0.0	11.3	8.2	12.6	8.9	19.2	0.0	19.8	21.6	0.0	17.7
LnGrp LOS	B		B	A	B	A	B		B	C		B
Approach Vol, veh/h		947			662			241			127	
Approach Delay, s/veh		11.6			11.8			19.8			18.3	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		48.0		32.0		48.0		32.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		42.0		26.0		42.0		26.0
Max Q Clear Time (g_c+I1), s		17.9		8.9		15.1		9.9
Green Ext Time (p_c), s		10.0		1.4		10.4		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	19	28	620	0	0	540
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	67	100	100	91
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	21	30	925	0	0	593

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1518	925	0	0	925	0
Stage 1	925	-	-	-	-	-
Stage 2	593	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	132	329	-	-	739	-
Stage 1	389	-	-	-	-	-
Stage 2	556	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	132	329	-	-	739	-
Mov Cap-2 Maneuver	132	-	-	-	-	-
Stage 1	389	-	-	-	-	-
Stage 2	556	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.3	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	205	739	-
HCM Lane V/C Ratio	-	-	0.249	-	-
HCM Control Delay (s)	-	-	28.3	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0	-

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	18	38	224	45	647	76	25	220	30	10	55	5
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	2000	1986	1980	1905	1980	1980	2000	1976	2000	2000	1898	2000
Adj Flow Rate, veh/h	20	0	281	51	727	85	29	253	34	14	76	7
Adj No. of Lanes	1	0	2	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.87	0.87	0.87	0.72	0.72	0.72
Percent Heavy Veh, %	0	0	1	5	1	1	0	1	1	0	4	4
Cap, veh/h	314	0	1961	712	1139	959	478	575	77	334	577	53
Arrive On Green	0.57	0.00	0.59	0.59	0.57	0.57	0.32	0.34	0.32	0.34	0.34	0.31
Sat Flow, veh/h	683	0	3338	1059	1980	1669	1319	1702	229	1102	1710	158
Grp Volume(v), veh/h	20	0	281	51	727	85	29	0	287	14	0	83
Grp Sat Flow(s),veh/h/ln	683	0	1669	1059	1980	1669	1319	0	1931	1102	0	1868
Q Serve(g_s), s	1.6	0.0	3.0	1.7	19.7	1.8	1.3	0.0	9.3	0.8	0.0	2.5
Cycle Q Clear(g_c), s	21.3	0.0	3.0	1.7	19.7	1.8	3.7	0.0	9.3	10.1	0.0	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		0.08
Lane Grp Cap(c), veh/h	314	0	1961	712	1139	959	478	0	652	334	0	630
V/C Ratio(X)	0.06	0.00	0.14	0.07	0.64	0.09	0.06	0.00	0.44	0.04	0.00	0.13
Avail Cap(c_a), veh/h	314	0	1961	712	1139	959	478	0	652	334	0	630
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.6	0.0	7.4	7.2	11.4	7.6	20.4	0.0	20.7	24.5	0.0	18.4
Incr Delay (d2), s/veh	0.4	0.0	0.2	0.2	2.7	0.2	0.2	0.0	2.2	0.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.4	0.5	11.6	0.9	0.5	0.0	5.3	0.3	0.0	1.3
LnGrp Delay(d),s/veh	19.0	0.0	7.6	7.3	14.2	7.8	20.6	0.0	22.8	24.8	0.0	18.9
LnGrp LOS	B		A	A	B	A	C		C	C		B
Approach Vol, veh/h		301			863			316			97	
Approach Delay, s/veh		8.3			13.1			22.6			19.7	
Approach LOS		A			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		50.0		30.0		50.0		30.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		44.0		24.0		44.0		24.0
Max Q Clear Time (g_c+I1), s		23.3		11.3		21.7		12.1
Green Ext Time (p_c), s		6.1		1.4		6.2		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	280	0	0	687
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	92	89	100	100	89
Heavy Vehicles, %	2	0	1	2	2	1
Mvmt Flow	0	0	315	0	0	772

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1087	315	0	0	315	0
Stage 1	315	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	239	730	-	-	1245	-
Stage 1	740	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	239	730	-	-	1245	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	740	-	-	-	-	-
Stage 2	456	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1245	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	14	25	255	3	2	685
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	89	89	89	89
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	15	27	287	3	2	770

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1062	288	0	0	290	0
Stage 1	288	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	250	756	-	-	1283	-
Stage 1	766	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	250	756	-	-	1283	-
Mov Cap-2 Maneuver	250	-	-	-	-	-
Stage 1	766	-	-	-	-	-
Stage 2	457	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	438	1283	-
HCM Lane V/C Ratio	-	-	0.097	0.002	-
HCM Control Delay (s)	-	-	14.1	7.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	45	588	21	494	96	14	173	40	27	94	6
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	2000	2000	2000	2000	2000	2000	2000	1951	2000	2000	2000	2000
Adj Flow Rate, veh/h	51	0	923	23	543	105	15	188	43	29	101	6
Adj No. of Lanes	1	0	2	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.67	0.67	0.67	0.91	0.91	0.91	0.92	0.92	0.92	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	1	0	0	0
Cap, veh/h	394	0	1895	436	1100	926	495	556	127	407	677	40
Arrive On Green	0.55	0.00	0.56	0.56	0.55	0.55	0.35	0.36	0.35	0.36	0.36	0.34
Sat Flow, veh/h	795	0	3370	614	2000	1685	1293	1533	351	1159	1868	111
Grp Volume(v), veh/h	51	0	923	23	543	105	15	0	231	29	0	107
Grp Sat Flow(s),veh/h/ln	795	0	1685	614	2000	1685	1293	0	1884	1159	0	1978
Q Serve(g_s), s	3.4	0.0	13.2	1.4	13.4	2.4	0.6	0.0	7.1	1.5	0.0	2.9
Cycle Q Clear(g_c), s	16.8	0.0	13.2	1.4	13.4	2.4	3.6	0.0	7.1	8.6	0.0	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.19	1.00		0.06
Lane Grp Cap(c), veh/h	394	0	1895	436	1100	927	495	0	683	407	0	717
V/C Ratio(X)	0.13	0.00	0.49	0.05	0.49	0.11	0.03	0.00	0.34	0.07	0.00	0.15
Avail Cap(c_a), veh/h	394	0	1895	436	1100	927	495	0	683	407	0	717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	0.0	10.5	8.0	11.1	8.6	19.1	0.0	18.6	21.7	0.0	17.2
Incr Delay (d2), s/veh	0.7	0.0	0.9	0.2	1.6	0.2	0.1	0.0	1.3	0.3	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	6.3	0.3	7.9	1.2	0.2	0.0	4.0	0.5	0.0	1.7
LnGrp Delay(d),s/veh	17.0	0.0	11.4	8.2	12.7	8.9	19.2	0.0	19.9	22.0	0.0	17.7
LnGrp LOS	B		B	A	B	A	B		B	C		B
Approach Vol, veh/h		974			671			246			136	
Approach Delay, s/veh		11.7			12.0			19.9			18.6	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		48.0		32.0		48.0		32.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		42.0		26.0		42.0		26.0
Max Q Clear Time (g_c+I1), s		18.8		9.1		15.4		10.6
Green Ext Time (p_c), s		10.1		1.4		10.7		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	2	665	0	0	561
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	92	67	100	100	91
Heavy Vehicles, %	2	0	0	2	2	0
Mvmt Flow	0	2	993	0	0	616

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1609	993	0	0	993	0
Stage 1	993	-	-	-	-	-
Stage 2	616	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	115	300	-	-	696	-
Stage 1	359	-	-	-	-	-
Stage 2	539	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	115	300	-	-	696	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	359	-	-	-	-	-
Stage 2	539	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	300	696	-
HCM Lane V/C Ratio	-	-	0.007	-	-
HCM Control Delay (s)	-	-	17.1	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	45	620	14	21	540
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	67	67	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	33	49	925	21	23	593

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1576	936	0	0	946	0
Stage 1	936	-	-	-	-	-
Stage 2	640	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	122	324	-	-	734	-
Stage 1	385	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	118	324	-	-	734	-
Mov Cap-2 Maneuver	118	-	-	-	-	-
Stage 1	385	-	-	-	-	-
Stage 2	512	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	37.2	0	0.4
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	191	734	-
HCM Lane V/C Ratio	-	-	0.427	0.031	-
HCM Control Delay (s)	-	-	37.2	10.1	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	2	0.1	-

ATTACHMENT C

QUEUING AND BLOCKING REPORTS

Intersection: 27: Old Woodward & SB Woodward

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 292: Oak & Old Woodward

Movement	NB	NB	NB	SB	SB	SB	NE	NE	SW	SW
Directions Served	L	TR	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	48	106	83	74	403	75	49	248	32	92
Average Queue (ft)	11	43	16	20	205	26	14	112	7	27
95th Queue (ft)	35	83	53	63	356	77	45	195	27	68
Link Distance (ft)		1063			368			1419		162
Upstream Blk Time (%)					1					
Queuing Penalty (veh)					12					
Storage Bay Dist (ft)	100		100	50		50	25		50	
Storage Blk Time (%)		0	0	1	29	0	8	48	0	3
Queuing Penalty (veh)		0	0	7	35	1	20	12	0	0

Intersection: 5126: Oak & NB Woodward

Movement	NW	NW	NW	NW	NE	NE	NE
Directions Served	T	T	T	T	L	L	L
Maximum Queue (ft)	221	240	225	178	12	31	31
Average Queue (ft)	158	165	137	96	0	6	4
95th Queue (ft)	210	228	201	162	6	25	21
Link Distance (ft)	1585	1585	1585	1585	31	31	31
Upstream Blk Time (%)					0	7	3
Queuing Penalty (veh)					0	9	4
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 7126: Oak & SB Woodward

Movement	SE	SE	SE	SE	NE	NE	NE
Directions Served	T	T	T	TR	T	T	TR
Maximum Queue (ft)	197	216	194	150	100	156	162
Average Queue (ft)	145	143	116	73	49	81	95
95th Queue (ft)	188	195	178	129	105	130	146
Link Distance (ft)	705	705	705	705		162	162
Upstream Blk Time (%)						0	0
Queuing Penalty (veh)						0	1
Storage Bay Dist (ft)					75		
Storage Blk Time (%)					1	11	
Queuing Penalty (veh)					1	14	

Intersection: 9988: Old Woodward

Movement	NB	SB
Directions Served	R	T
Maximum Queue (ft)	54	27
Average Queue (ft)	28	1
95th Queue (ft)	47	11
Link Distance (ft)	368	324
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 116

Intersection: 27: Old Woodward & SB Woodward

Movement	SB	SB
Directions Served	L	LT
Maximum Queue (ft)	116	146
Average Queue (ft)	7	9
95th Queue (ft)	110	136
Link Distance (ft)	1349	1349
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 84: Bend

Movement	NW
Directions Served	T
Maximum Queue (ft)	126
Average Queue (ft)	4
95th Queue (ft)	91
Link Distance (ft)	759
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 292: Oak & Old Woodward

Movement	NB	NB	NB	SB	SB	SB	NE	NE	SW	SW
Directions Served	L	TR	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	113	1010	125	64	312	75	49	191	61	138
Average Queue (ft)	29	248	80	19	146	35	11	95	16	59
95th Queue (ft)	91	789	144	59	282	87	42	164	46	113
Link Distance (ft)		2244			368			1422		162
Upstream Blk Time (%)					2					0
Queuing Penalty (veh)					12					0
Storage Bay Dist (ft)	100		100	50		50	25		50	
Storage Blk Time (%)	0	23	19	7	22	0	6	45	2	18
Queuing Penalty (veh)	0	81	72	38	25	1	12	6	2	4

Intersection: 5126: Oak & NB Woodward

Movement	NW	NW	NW	NW	NE	NE	NE
Directions Served	T	T	T	T	L	L	L
Maximum Queue (ft)	274	264	236	211	18	34	42
Average Queue (ft)	169	175	148	100	1	12	19
95th Queue (ft)	233	235	214	168	8	36	44
Link Distance (ft)	1585	1585	1585	1585	31	31	31
Upstream Blk Time (%)					0	15	26
Queuing Penalty (veh)					0	32	54
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 7126: Oak & SB Woodward

Movement	SE	SE	SE	SE	NE	NE	NE
Directions Served	T	T	T	TR	T	T	TR
Maximum Queue (ft)	244	256	222	189	100	198	206
Average Queue (ft)	158	156	130	94	92	164	172
95th Queue (ft)	214	217	195	166	117	213	215
Link Distance (ft)	705	705	705	705		162	162
Upstream Blk Time (%)						21	30
Queuing Penalty (veh)						83	117
Storage Bay Dist (ft)					75		
Storage Blk Time (%)					11	50	
Queuing Penalty (veh)					23	105	

Intersection: 9988: Old Woodward

Movement	NB	SB
Directions Served	R	T
Maximum Queue (ft)	54	102
Average Queue (ft)	28	14
95th Queue (ft)	47	143
Link Distance (ft)	368	324
Upstream Blk Time (%)		1
Queuing Penalty (veh)		7
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 674

Intersection: 27: Old Woodward & SB Woodward

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 292: Oak & Old Woodward

Movement	NB	NB	NB	SB	SB	SB	NE	NE	SW	SW
Directions Served	L	TR	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	54	123	74	74	395	76	49	217	50	102
Average Queue (ft)	15	45	19	24	201	32	20	108	8	32
95th Queue (ft)	42	85	50	67	349	86	53	187	33	77
Link Distance (ft)		1063			368			1419		162
Upstream Blk Time (%)					2					0
Queuing Penalty (veh)					13					0
Storage Bay Dist (ft)	100		100	50		50	25		50	
Storage Blk Time (%)		0	0	1	29	0	13	48	1	5
Queuing Penalty (veh)		0	0	4	35	2	32	12	0	1

Intersection: 5126: Oak & NB Woodward

Movement	NW	NW	NW	NW	NE	NE	NE
Directions Served	T	T	T	T	L	L	L
Maximum Queue (ft)	223	232	202	181	22	34	28
Average Queue (ft)	158	160	138	93	1	6	3
95th Queue (ft)	207	211	191	159	7	25	17
Link Distance (ft)	1585	1585	1585	1585	31	31	31
Upstream Blk Time (%)					0	7	3
Queuing Penalty (veh)					0	9	4
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 7126: Oak & SB Woodward

Movement	SE	SE	SE	SE	NE	NE	NE
Directions Served	T	T	T	TR	T	T	TR
Maximum Queue (ft)	222	207	178	158	100	178	182
Average Queue (ft)	148	142	116	75	50	92	105
95th Queue (ft)	196	188	169	138	108	153	163
Link Distance (ft)	705	705	705	705		162	162
Upstream Blk Time (%)						1	1
Queuing Penalty (veh)						1	2
Storage Bay Dist (ft)					75		
Storage Blk Time (%)					1	14	
Queuing Penalty (veh)					1	19	

Intersection: 9988: Old Woodward

Movement	NB	SB
Directions Served	R	T
Maximum Queue (ft)	53	42
Average Queue (ft)	29	3
95th Queue (ft)	48	28
Link Distance (ft)	368	324
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 134

Intersection: 27: Old Woodward & SB Woodward

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 292: Oak & Old Woodward

Movement	NB	NB	NB	SB	SB	SB	NE	NE	SW	SW
Directions Served	L	TR	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	122	1081	125	74	307	75	49	208	50	124
Average Queue (ft)	31	282	83	18	141	31	13	99	14	52
95th Queue (ft)	94	931	147	57	263	82	45	172	39	99
Link Distance (ft)		2244			368			1422		162
Upstream Blk Time (%)					0					0
Queuing Penalty (veh)					0					0
Storage Bay Dist (ft)	100		100	50		50	25		50	
Storage Blk Time (%)	0	25	19	6	23	0	6	44	1	15
Queuing Penalty (veh)	2	91	78	39	27	1	12	6	1	3

Intersection: 5126: Oak & NB Woodward

Movement	NW	NW	NW	NW	NE	NE	NE
Directions Served	T	T	T	T	L	L	L
Maximum Queue (ft)	232	252	250	210	31	38	35
Average Queue (ft)	158	175	150	101	3	12	16
95th Queue (ft)	212	227	213	167	18	36	41
Link Distance (ft)	1585	1585	1585	1585	31	31	31
Upstream Blk Time (%)					1	14	22
Queuing Penalty (veh)					3	31	46
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 7126: Oak & SB Woodward

Movement	SE	SE	SE	SE	NE	NE	NE
Directions Served	T	T	T	TR	T	T	TR
Maximum Queue (ft)	243	237	211	180	100	198	201
Average Queue (ft)	161	155	132	94	93	169	174
95th Queue (ft)	217	215	194	157	116	209	211
Link Distance (ft)	705	705	705	705		162	162
Upstream Blk Time (%)						24	31
Queuing Penalty (veh)						94	126
Storage Bay Dist (ft)					75		
Storage Blk Time (%)					7	52	
Queuing Penalty (veh)					16	111	

Intersection: 9988: Old Woodward

Movement	NB
Directions Served	R
Maximum Queue (ft)	50
Average Queue (ft)	26
95th Queue (ft)	47
Link Distance (ft)	368
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 688

Intersection: 27: Old Woodward & SB Woodward

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 45: Bend

Movement	SE	SE	SE
Directions Served	T	T	T
Maximum Queue (ft)	278	279	293
Average Queue (ft)	10	10	10
95th Queue (ft)	199	200	210
Link Distance (ft)	1472	1472	1472
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 292: Oak & Old Woodward

Movement	NB	NB	NB	SB	SB	SB	NE	NE	SW	SW
Directions Served	L	TR	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	52	93	90	74	368	75	50	244	44	107
Average Queue (ft)	16	43	22	23	191	31	15	115	8	32
95th Queue (ft)	45	82	56	64	312	86	47	202	30	76
Link Distance (ft)		1063			368			1419		162
Upstream Blk Time (%)					0					
Queuing Penalty (veh)					1					
Storage Bay Dist (ft)	100		100	50		50	25		50	
Storage Blk Time (%)		0	0	1	28	0	9	50	0	5
Queuing Penalty (veh)		0	0	8	34	1	22	13	0	1

Intersection: 5126: Oak & NB Woodward

Movement	NW	NW	NW	NW	NE	NE	NE
Directions Served	T	T	T	T	L	L	L
Maximum Queue (ft)	238	250	223	196	18	31	31
Average Queue (ft)	151	157	133	96	1	6	4
95th Queue (ft)	200	209	189	162	9	25	20
Link Distance (ft)	1585	1585	1585	1585	31	31	31
Upstream Blk Time (%)					0	7	4
Queuing Penalty (veh)					1	9	5
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 7126: Oak & SB Woodward

Movement	SE	SE	SE	SE	NE	NE	NE
Directions Served	T	T	T	TR	T	T	TR
Maximum Queue (ft)	214	206	184	152	100	174	177
Average Queue (ft)	153	147	119	77	59	93	107
95th Queue (ft)	206	198	169	135	115	155	165
Link Distance (ft)	705	705	705	705		162	162
Upstream Blk Time (%)						1	1
Queuing Penalty (veh)						2	2
Storage Bay Dist (ft)					75		
Storage Blk Time (%)					1	15	
Queuing Penalty (veh)					1	20	

Intersection: 9988: Old Woodward

Movement	NB	SB
Directions Served	R	T
Maximum Queue (ft)	54	6
Average Queue (ft)	30	0
95th Queue (ft)	47	4
Link Distance (ft)	368	324
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 120

Intersection: 27: Old Woodward & SB Woodward

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 292: Oak & Old Woodward

Movement	NB	NB	NB	SB	SB	SB	NE	NE	SW	SW
Directions Served	L	TR	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	114	798	125	63	341	75	49	191	74	116
Average Queue (ft)	31	207	74	17	156	32	10	95	22	50
95th Queue (ft)	92	707	138	52	276	85	38	162	56	96
Link Distance (ft)		2244			368			1422		162
Upstream Blk Time (%)					1					
Queuing Penalty (veh)					7					
Storage Bay Dist (ft)	100		100	50		50	25		50	
Storage Blk Time (%)	1	18	14	4	24	0	6	44	4	16
Queuing Penalty (veh)	3	67	59	26	28	1	12	6	4	4

Intersection: 5126: Oak & NB Woodward

Movement	NW	NW	NW	NW	NE	NE	NE
Directions Served	T	T	T	T	L	L	L
Maximum Queue (ft)	247	240	238	184	18	31	39
Average Queue (ft)	164	173	147	102	1	9	18
95th Queue (ft)	222	224	214	170	9	30	43
Link Distance (ft)	1585	1585	1585	1585	31	31	31
Upstream Blk Time (%)					1	12	22
Queuing Penalty (veh)					1	25	47
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 7126: Oak & SB Woodward

Movement	SE	SE	SE	SE	NE	NE	NE
Directions Served	T	T	T	TR	T	T	TR
Maximum Queue (ft)	263	256	239	195	100	202	208
Average Queue (ft)	163	159	133	96	92	166	173
95th Queue (ft)	215	217	195	169	117	216	212
Link Distance (ft)	705	705	705	705		162	162
Upstream Blk Time (%)						19	28
Queuing Penalty (veh)						78	113
Storage Bay Dist (ft)					75		
Storage Blk Time (%)					9	50	
Queuing Penalty (veh)					20	109	

Intersection: 9988: Old Woodward

Movement	NB	SB
Directions Served	R	T
Maximum Queue (ft)	136	65
Average Queue (ft)	36	4
95th Queue (ft)	121	64
Link Distance (ft)	368	324
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 611

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

May 20, 2016

VIA EMAIL

Ms. Jana L. Ecker
Planning Director
City of Birmingham
151 Martin Street
Birmingham, MI 48012

RE: **Traffic Impact Study Review**
856 N. Old Woodward Ave
Birmingham, Michigan

Dear Ms. Ecker:

Fleis & VandenBrink (F&V) staff has completed our review of the proposed mixed use development at 856 N. Old Woodward Avenue Traffic Impact Study (TIS) dated May 16, 2016 and site plan dated April 12, 2016 that were received by F&V on May 16, 2016. Based on this review, we have the following comments and observations:

1. The TIA evaluated 27 apartment units and 4,200 SF of retail space; however, the proposed site plan shows 4,500 SF of retail space. The TIS and/or site plan should be reviewed and revised as necessary.
2. The proposed site provides 62 off-street parking spaces, including three accessible parking spaces. The proposed parking meets the minimum number assessable parking spaces and the total number of parking spaces (58 spaces) required per City ordinance.
3. The TIS should include a discussion of how the proposed site development will include the appropriate components of the City's Multi-Modal Transportation Plan, including: access for buses, bikes and pedestrians conflicts at the site driveways.
4. The results of the analysis show the proposed Site Drive #1 (parking garage access) will be blocked by northbound vehicle queues from Oak Street during the PM hour. The queues are expected to block the driveway for approximately 15 minutes during the PM peak period, which is not significant.
5. The TIS recommends that it may be necessary to prohibit left-turns during the PM peak hour at Site Drive #1.

27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334
P: 248.536.0080
F: 248.536.0079
www.fveng.com

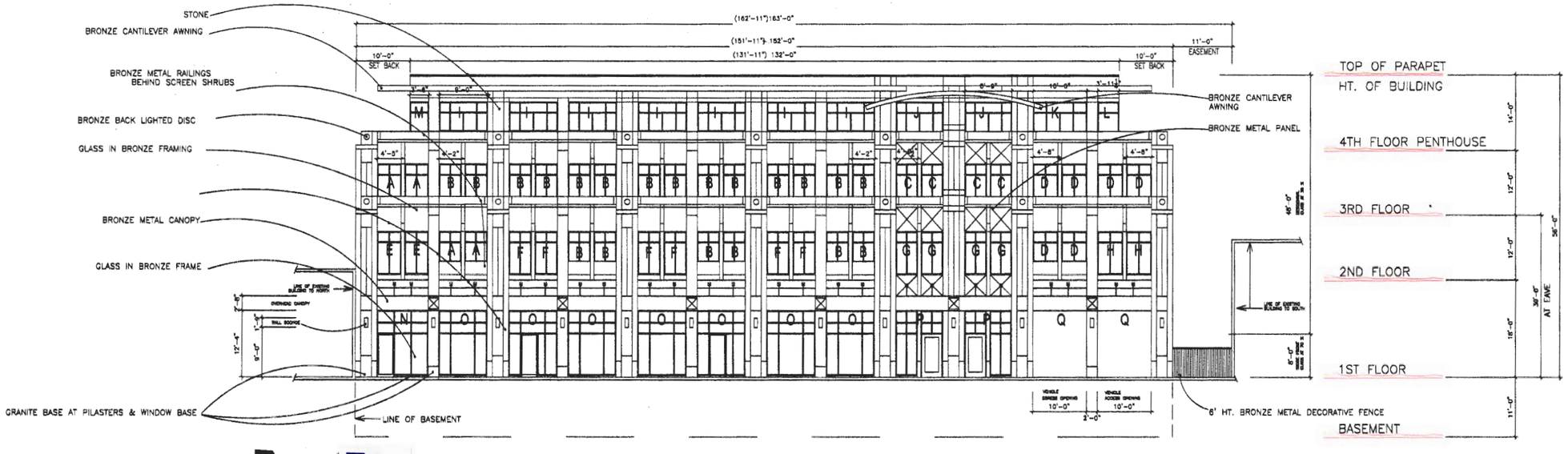
We hope that this review satisfies the City's current planning needs regarding this project. If you have any questions or concerns, please contact our office.

Sincerely,

FLEIS & VANDENBRINK ENGINEERING, INC.

Michael J. Labadie, PE
Group Manager

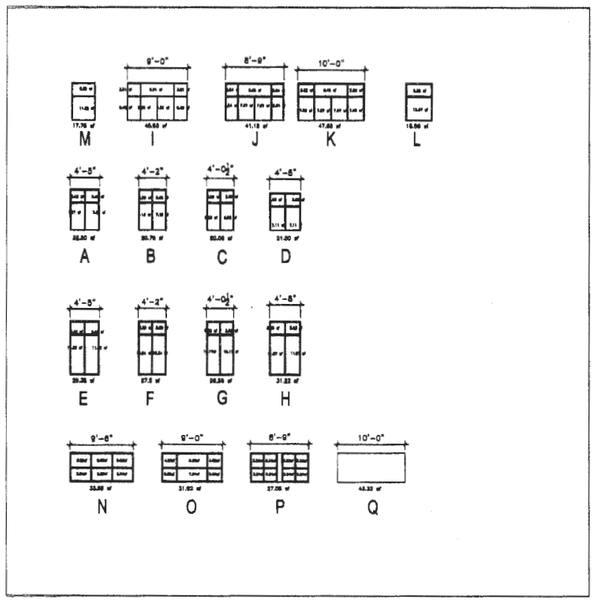
JMK:mjl

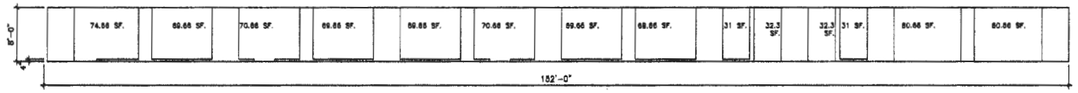


MARUSICH ARCHITECTURE

1 WEST ELEVATION (FRONT) - OLD NORTH WOODWARD/ glass cal. 8' aff. 7091.88 SF. GROSS FACADE
glass cal. 8' below. 1215.93 SF. GROSS FACADE

1" = 10' - 0"
04/ 24 /2016





1 STORE FRONT GLASS - 70.08 %

1" = 10' - 0"
04/ 24/ 16

GLASS S.F. SURVEY AT 8 FT. A.F.F.

4 x A	@ 22.2 S.F.	= 88.8	S.F.
20 X B	@ 20.78 S.F.	= 415.6	S.F.
4 X C	@ 20.06 S.F.	= 82.4	S.F.
6 X D	@21.5 S.F.	= 129	S.F.
2 X E	@ 29.38 S.F.	= 58.76	S.F.
6 X F	@ 27.5 S.F.	= 165	S.F.
4 X G	@ 26.36 S.F.	= 106.24	S.F.
2 X H	@ 31.22 S.F.	= 62.44	S.F.
7 X I	@ 48.93 S.F.	= 342.5	S.F.
2 X J	@ 41.15 S.F.	= 82.3	S.F.
1 X K	@ 47.65	= 47.65	S.F.
1 X L	@ 18.56 S.F.	= 18.56	S.F.
1 X M	@ 17.78 S.F.	= 17.78	S.F.
1 X N	@ 33.88 S.F.	= 33.88	S.F.
7 X O	@ 31.92 S.F.	= 223.44	S.F.
2 X P	@ 27.06 S.F.	= 54.12	S.F.
2 X Q	@ 43.33 S.F.	= 86.66	S.F.
TOTAL S.F. GLASS		= 2,015.13	S.F.

2,015.13 S.F./ 7091.88 S.F. **= 28.4 % GLASS**

AGENDA

City of Birmingham
A Walkable Community

MEMORANDUM

Planning Division

DATE: **May 19, 2016**

TO: **Planning Board members**

FROM: **Matthew Baka, Senior Planner**

SUBJECT: **750-748 Forest – CIS & Preliminary Site Plan Review**

I. INTRODUCTION

The subject site is composed of two parcels, 750 and 748 Forest Ave. 750 is a fitness and health club, while 748 is an interior design office space. The combined parcels are 13,200 square feet and are located on the southeast corner of Forest Ave and Elm Street. The applicant is proposing to demolish the existing buildings to construct a mixed use, office and residential development occupying both lots. The proposed building consists of 22 residential units and 850 square feet of office space.

The applicant is required to prepare a Community Impact Study in accordance with Article 7, section 7.27(E) of the Zoning Ordinance as they are proposing a new building containing more than 20,000 square feet of gross floor area.

II. COMMUNITY IMPACT STUDY

As stated above, the applicant was required to prepare a Community Impact Study given the size of the proposed development. The Zoning Ordinance recognizes that buildings of a certain size may affect community services, the environment, and neighboring properties. The CIS acts as a foundation for discussion between the Planning Board and the applicant, beyond the normal scope of information addressed in the preliminary site plan review application. The Planning Board "accepts" the CIS prior to taking action on a Preliminary Site Plan.

A. Planning & Zoning Issues:

Use

The site is currently zoned 0-2 Office Commercial and falls within the MU5 and MU3 zones of the Triangle Overlay District. The proposed residential units, office space and parking facility are permitted principal and/or accessory uses in the Triangle Overlay District in accordance with Article 3, section 3.07 of the Zoning Ordinance.

Master Plan Compliance: Triangle District Urban Design Plan

The Triangle District Urban Design Plan ("Triangle Plan") and form based code was approved on August 20, 2007. The purpose of the Triangle Plan is to:

- Improve the visual appearance of the area, its streets, alleys, public spaces, and buildings by establishing guidelines for design and implementation of public and private projects;
- Improve the economic and social vitality by encouraging diversity of use and opportunities for a variety of experiences;
- Better utilize property through more compact, mixed-use development;
- Link with Downtown across Woodward's high traffic barrier;
- Improve the comfort, convenience, safety, and enjoyment of the pedestrian environment by create an inviting, walkable, pedestrian neighborhood and setting aside public plazas;
- Organize the parking and street system to facilitate efficient access, circulation, and parking to balance vehicular and pedestrian needs;
- Encourage sustainable development; and to
- Protect the integrity of established residential neighborhoods.

The Triangle Plan encourages proper building mass and scale to create an environment that is more comfortable to pedestrians and helps bridge the gap to the Downtown across Woodward Avenue. The proposed development will help improve the visual appearance of the area, by creating a denser, more compact development with enough height to create a street wall along Forest. A wider sidewalk on Forest and Elm Street will increase the comfort of pedestrians, as will the addition of street furniture, street trees and pedestrian scaled lighting. **The proposed building contains primarily residential units on the upper levels with parking, a residential lobby and a small retail/office space on the first floor. However, the majority of the first floor is proposed to be parking and far exceeds the 60 foot maximum street frontage permitted for parking areas.**

In addition, the Triangle Plan encourages pedestrian-scale features which should be incorporated on the first floor of buildings and at entrances to help relate buildings to the streetscape. The plan for the proposed building includes a metal canopy along the Forest elevation, as well as extensive glazing, as well as pedestrian scale lighting along both the Forest and Elm façades.

Streetscape components are an integral part of the Triangle Plan. As discussed above, the applicant is proposing pedestrian scale street lighting, street trees along Forest and Elm, and the addition of 2 benches and 1 trash receptacle in the public right-of-way. These additions create a pedestrian scale at this corner in accordance with the recommendations contained in the Triangle Plan. **However, based on the plans submitted the proposal does not meet the Triangle District requirement for 12' sidewalks on the north elevation of the site.** The applicant has provided a full streetscape plan. A full design review will be conducted at the time of Final Site Plan and Design Review.

Energy efficiency should also be considered when locating and orienting buildings on a site. Green building practices, which minimize the environmental impact of buildings both in the construction phase and throughout the life of the building, are encouraged in the construction of new facilities. The applicant has indicated that the proposed development will utilize extensive glazing to increase daylighting of the interior. The applicant has also advised that the entire building and site will be non-smoking, and each unit will have individually controlled HVAC systems. **No details have been provided on the efficiency of the systems proposed, nor on other energy reduction features, such as LED lighting, automatic shut offs, graywater recycling etc. While it is not known at this time whether the applicant will be utilizing sustainable building techniques or applying for LEED certification, the Planning Division highly recommends this be considered as part of the proposed project.**

The Triangle Plan also encourages integrating parking into the design of the buildings in order to achieve the desired pedestrian-oriented streetscapes. This development is proposing to utilize covered parking within the first floor of the building. As stated above, **the proposed building design greatly exceeds the limits set forth in the Triangle Overlay requirements for street frontage that may be occupied by parking.** The applicant also states that they are proposing to provide covered bike storage for the occupants', although the plans do not indicate where this storage is intended to be.

Finally, the Triangle Plan also ensures that established residential neighborhoods should be protected. The building is proposed to be stepped down from 5 stories at the west end of the parcel to 3 stories at the east end adjacent to the single family homes.

B. Land Development Issues:

The applicant has provided a survey of existing site conditions, including existing drainage. A drainage plan for the proposed new development has also been submitted as a required component of the Community Impact Study. The drainage plan proposes a sewer connecting from Elm Street, running west through the proposed parking area, connecting to a drainage structure under the parking lot.

The applicant has not submitted a Phase 1 Environmental Site Assessment at this time. The CIS document submitted by the applicant states the following:

> *"Since almost the entire site is covered currently with impervious materials this will have to wait until we have moved the tenants out and start construction. However, since there are two substantial structures that have been there a long time it would suggest that soils are not a problem."*

The Zoning Ordinance requires that soil conditions be provided as a part of the CIS review.

C. Utilities, Noise and Air Issues:

In accordance with the Triangle Plan, all utilities on the site should be buried to visually enhance the site. Thus, the applicant will be required to bury all utilities on the site. The applicant has indicated that DTE will be providing electricity to the site, and that all new lines will be fed from existing overhead lines. AT&T and Comcast will also provide utility service to the site.

As noted in the CIS, **the applicant has not yet provided a noise study**. However, Kolano and Saha Engineers, Inc. have been hired to create a report that the applicant will submit to the City in the near future.

The applicant has stated in the CIS that this site is located in Southeast Michigan Air Quality District, with monitoring stations in the Pontiac, Rochester, Oak Park and Allen Park, as well as others in the district. This district has attained and surpassed the National Ambient Air Quality Standards for Carbon Monoxide, Nitrogen Dioxide, Ozone, Sulfur Dioxide and particulate matter less than 10 microns and has attained the standard for Annual and 24-hour Fine Particulates, but is awaiting that designation by the EPA.

D. Environmental Design and Historic Values:

The applicant has indicated that no demonstrable destruction of natural features will take place at the site, as the site is largely impervious. Demolition will include the elimination of two buildings and a surface parking lot. The proposed building will be designed to fit harmoniously with the site, surroundings and neighborhood. **The CIS states that the proposed building is larger than the two existing structures and larger than the building to the west and is very compatible with the building across the street to the north. The proposed building meets the Zoning Ordinance in all ways as to height and scale.** The proposed building is taller than other buildings in the area and will change the skyline and change some of the view from the adjoining properties, but the proposed building height conforms to the Zoning Ordinance. The goal is for the building to be prominent but also blend into the urban fabric of the street. The CIS states that the existing site trees and shrubs will be removed during construction, but new trees will be planted in the public right-of-way once construction is complete. The new building will occupy the entire site and therefore no onsite landscaping is proposed. A complete design review, including streetscape elements, will be conducted as a part of the Final Site Plan review process.

The site is not listed on the National Register of Historic Places, nor is it on the City's list of historic sites. Review by the SHPO and HDC is not required. The CIS states that there are no properties or elements within the site plan boundaries that are historic. No properties in the surrounding area are on the

Historic Register.

E. Refuse, Sewer and Water:

The proposed site plan shows all trash and recycling collection taking place within the building. **No details on this have been provided at this time to indicate how recycling will be collected within the building.**

The CIS further states that there is a 12" existing water service to the site that will be adequate to service the site. The CIS states that the applicant will use low flow toilets and Energy Star appliances to reduce water consumption in the building. The CIS indicates that an existing 24" combined sewer on the site will be sufficient to service the development, and that there are no feasible options to reduce runoff on the site due to the size of the site, layout of the proposed building and soil conditions.

F. Public Safety:

The applicant has stated that the proposed development provides adequate access for police, fire and emergency vehicles from Elm, Forest and the alley. The CIS and the plans state that the surface drives will be designed to support the heaviest City emergency vehicle. In addition, the CIS states that the elevators in the building will accommodate a medical cart, stretchers and emergency equipment.

The Police Department has not expressed any concerns. The applicant has advised that the building will conform to all applicable Fire Codes for layout, access, hydrant coverage and water connections. **The Fire Department will require further information to ensure that all life safety issues have been addressed, including details on the fire suppression system, fire access and the Knox Box location.** This was not provided in the CIS and will be required at the time of Final Site Plan review. The CIS states that the building will be designed with security features and a third party monitoring and security system. The main lobby door will also be controlled via an intercom system connected to the apartments. The apartment units' entrance lobby door and all other building access doors will be locked, with access by a master key or by keypad code. The lobby door will also be controlled via an intercom system connected to the units. **The Police Department has not granted approval of the proposed security system at this time. The applicant will need to submit this information for approval after final design is complete.**

G. Transportation Issues:

The CIS states that on site car parking will be sufficient to support the proposed development. The applicant is also proposing on site covered bicycle storage, which will encourage mode shift by residents for local trips. In addition, bus service is currently available along both Maple and Woodward, and the Amtrak station is located 0.25 miles to the east.

The applicant has provided a transportation study prepared by Tetra Tech, dated May 9, 2016. The transportation report concluded that the proposed development is not anticipated to have a significant impact on the operation of the adjacent roadway system. Specifically, the report found that new vehicular traffic generated by the proposed development will increase the number of trips generated to the site by 95 on a typical week. The report also concluded that the proposed development will not have a negative effect on the Birmingham Multi-model plan.

The City's transportation consultant has provided their comments which are attached to this report.

H. Parking Issues:

The applicant indicates that a total of 36 parking spaces are proposed, with 34 spaces located in the parking lot under the building and two space located on Elm. A total of 42 parking spaces are required (1.5 spaces/two (2) or less room unit, 2 spaces/3 or more room unit and 1/300 sq ft of commercial space). A thorough discussion of the parking requirements is contained in the attached Preliminary Site Plan report.

I. Natural Features:

The applicant has indicated that there will be little impact on natural features or bodies of water as a result of the proposed development, as the site is located in an urban area and the site is currently predominately impervious surface.

J. Departmental Reports

1. Engineering Division –A few minor things to comment on during the construction review, but they have designed the site in accordance with our standards - I have nothing to say at this time.

2. Department of Public Services – No comments have been received from the DPS.

3. Fire Department – The Fire Department needs the alley on the south side posted as "no parking fire lane" to provide access for emergency evacuation from upper balconies if needed. Additionally, this is considered a high rise bldg under the Michigan Building Code and is required to comply with high rise requirements. A Fire Suppression system with a minimum 6" main and an FDC fronting on Elm Street is required.

4. Police Department – The Police Department has no concerns with this project.

5. Building Division – The Building Division has provided their standard

comments, and has the following additional comments:

1. The configuration of the interior exit stairways and the exit discharge are not in compliance with Section 1022 and 1027 of the Building Code.

2. The basement is proposed to have only one exit stairway. It appears that current layout will require two exit stairs.

3. The exit access doors to the exit stairway enclosures will need to be separated from each other a distance of at least one third of the overall diagonal distance of the building to comply with Section 1015.2.1 of the Building Code.

4. Applicant should verify that the second level balconies encroaching into the public right-of-way will comply with Chapter 32 of the Building Code.

K. Summary of CIS:

The following issues remain outstanding with regards to the CIS:

(1) Applicant has not provided a soil analysis of the site;
(2) Compliance with the requirements of the Triangle Overlay District ;
(3) Noise impacts on the single family residential east of the site;
(4) Information on all life safety issues and Fire Dept. approval;
(5) Information on the proposed security system for approval by the Police Department; and

L. Suggested Action:

1. **To <u>Postpone</u> the Community Impact Study as provided by the applicant for the proposed development at 750 Forest to allow the applicant time to provide the following information:**
   (1) Applicant has not provided a soil analysis of the site;
   (2) Compliance with the requirements of the Triangle Overlay District ;
   (3) Noise impacts on the single family residential east of the site;
   (4) Information on all life safety issues and Fire Dept. approval;
   (5) Information on the proposed security system for approval by the Police Department; and
   (6) Provision of required easements for portions of public sidewalk on private property.

Or

2. To <u>approve</u> action on the Community Impact Study as provided by the applicant for the proposed development at 750 Forest, with the following conditions;

Or

3. To decline the Community Impact Study as provided by the applicant for the proposed development at 750 Forest for the following reasons:
   a. _____

   b. _____

   c. _____

III. Preliminary Site Plan Review

Please see the attached Zoning Compliance Summary Sheet for detailed zoning compliance information.

1.0 Land Use and Zoning

1.1. Existing Land Use – The existing land uses on the site include Forest Fitness and Health and Forest Avenue Design Management. Both are proposed to be demolished to allow construction of the new mixed use building.

1.2 Zoning – The underlying zoning is O-2, Office Commercial, and the Overlay zoning is MU-5 and MU-3 in the Triangle District Overlay. The existing use and surrounding uses appear to conform to the permitted uses of the Zoning District.

1.3 Summary of Adjacent Land Use and Zoning - The following chart summarizes existing land use and zoning adjacent to and/or in the vicinity of the subject site.

	North	**South**	**East**	**West**
Existing Land Use	Office, Commercial	Office, Commercial	Residential	Office, Commercial
Existing Zoning District	O-2, Office Commercial	O-2, Office Commercial	R-2, Residential	O-2, Office Commercial
Triangle District Overlay	MU-5, Mixed Use 5 Story and MU-3, Mixed Use 3 Story	MU-5, Mixed Use 5 Story and MU-3, Mixed Use 3 Story	ASF-3 Attached Single 3 Story	MU-5 Mixed Use 5 story

2.0 Setback and Height Requirements

The attached zoning summary analysis provides the required and proposed bulk, area, and placement regulations for the proposed project. There are conflicts with minimum building frontage and minimum parking lot frontage percentages on the north and east sides of the building. There is also a conflict with the rear setback requirement for the portion of the building in the MU-3 Triangle District Overlay Zone.

3.0 Screening and Landscaping

3.1 Dumpster Screening – The applicant is proposing one trash area on the ground floor between the lobby and the parking lot. The area is contained within the building.

3.2 Parking Lot Screening – The parking lot is contained within the building, therefore no screening required. However, as indicated in the CIS section of this report. The parking lot frontage as proposed exceeds the permitted 60' allowed by section 3.08 of the Zoning Ordinance

3.3 Mechanical Equipment Screening – The electrical transformer is located within the building. No HVAC units have been indicated at this time.

3.4 Landscaping – N/A
Parking Lot Landscaping – N/A

4.0 Streetscape

The following streetscape requirements are outlined within the Triangle Overlay District:

- Sidewalks: Must be a minimum of 12' wide; the applicant is proposing 12' sidewalks along Elm St, and 10' along Forest Ave. **The applicant must provide an easement of 2' on the north side facing Forest Ave in order to meet the 12' minimum sidewalk standards of Article 3.12(B) of the Zoning Ordinance, or obtain a variance from the Board of Zoning Appeals.**

- Street Trees: One canopy street tree planted within tree grates in the sidewalk is required for every 40' of street frontage. The cumulative frontage of Forest Avenue and Elm Street is 229'8''. The applicant is proposing 5 street trees, 3 on Elm Street and 2 on Forest Avenue, which satisfies the ordinance requirements.

  The 5 proposed street trees are Liquidambar Styraciflua, also known as the Emerald Sentinel Sweet Gum. The planned trees are 3'' in caliper which meets the minimum size requirements of Article 4.20(D.7-a.2) of the Zoning Ordinance. The Streetscape Site Plan indicates 5'x5' tree grates per district standard, but the Street Tree Planting Detail indicates a size of 4'x4'. **The applicant must clarify the size of the tree grates.**

- Street Lights: Pedestrian level street lighting of a decorative nature shall be installed along sidewalks and shall be designed to promote the traditional neighborhood character of the area. Light fixtures shall meet the specifications of the City of Birmingham and hanging

planters must be installed on all light fixtures as directed by the Planning Board. **The plans indicate a total of 5 street lights per city standards.**

- Street Furniture: Benches and trash receptacles need to be provided where the Planning Board determines that pedestrian activity will benefit from these facilities. **The applicant has yet to provide details of benches and trash receptacles in the right of way.**

- Bicycle Facilities: Sufficient bike racks to allow parking of a minimum of 1 bike for every 10 cars, or 1 bike for every 3,000 sq. ft. of building floor area, whichever is greater. **The applicant must provide 4 bike racks (39 parking spaces/10= 3.9).**

5.0 Parking, Loading and Circulation

5.1 Parking – In accordance with Article 4, section 4.45 (PK) of the Zoning Ordinance, 36 spaces are required for the mixed use, office and residential building. The Zoning Ordinance requires 1.5 parking spots per residential unit of 2 rooms or less, 2 parking spots per residential unit of 3 rooms or more, and 1 parking spot per 300 square feet of office space. The applicant is proposing 10 residential units of 2 rooms or less, 12 units of 3 rooms or more, and 850 square feet of office space.

10 residential units*1.5 spaces=15 parking spaces
12 units *2 spaces = 24 parking spaces
850 sq. ft. office space/300 sq. ft= 3 parking spaces
Total required = 36 parking spaces

Article 3.08(G.1-b): For a corner lot, the cumulative total of both frontages occupied by parking shall be no more than 25%, or 60 feet, whichever is less, and the building shall be located at the corner of the lot adjacent to the intersection.

Total Lot Frontage to Public Right of Way= 229'8"
Total Parking Frontage = 134'8"
(134.7'/229.7') = 59%
Frontage Occupied by Parking = 59%

The applicant must reduce parking frontage to 25% of street frontage length to meet 3.08(G.1.b) requirements of the Zoning Ordinance or apply for a variance from the Board of Zoning Appeals.
(229.7' * 25% = 57' of maximum parking frontage)

Article 3.08(F): 75% of the length of the ground level street-facing façade of the building must be built within 5 feet of the front lot line.

Article 3.08(G.4): Where a parking structure is provided or parking is located on the ground level below the building, usable building space to a depth of at least 20 feet shall be provided in front of the parking for the minimum required building length.

Total Lot Frontage to Public Right of Way = 229'8"
Total Building frontage = 95'
(95'/229.7) = 41%

The applicant must develop a minimum of 75% of building frontage to be within 5' of the street frontage length. The building must have usable building space to a depth of at least 20 feet along a minimum of 75% of the total street frontage length when parking is located on the ground level, or the applicant must obtain a variance from the Board of Zoning Appeals.

5.2 Loading – In accordance with Article 4, section 4.24 of the Zoning Ordinance, no loading spaces are required for the proposed development.

5.3 Vehicular Circulation and Access –
The proposed development includes the removal of one curb cut from the existing site at 748 Forest Ave. Vehicular access to the proposed development will be from Forest Ave, Elm Street, and the alley on the south side of the property. The Forest Avenue and Elm Street entrances to the parking lot will each require a new curb cut.

Vehicles entering the site from Forest Ave and Elm Street may park in the ground level lot via a 20' open entrance. Vehicles entering the site from the alley must pass through one of six retractable garage doors. Dimension of the garage doors have not been provided.

5.4 Pedestrian Circulation and Access – The applicant has provided pedestrian entrances at two locations on Forest Ave. One is on the northeast corner of the building providing access to the office space. The second provides residential access to the lobby from the mid sections of the north side.

6.0 Lighting

The applicant has not provided a photometric plan.

7.0 Departmental Reports

1. Engineering Division –A few minor things to comment on during the construction review, but they have designed the site in accordance with our standards - I have nothing to say at this time.

2. Department of Public Services – No comments have been received from the DPS.

3. Fire Department – The Fire Department needs the alley on the south side posted as "no parking fire lane" to provide access for emergency evacuation from upper balconies if needed. Additionally, this is considered a high rise bldg under the Michigan Building Code and is required to comply with high rise requirements. A Fire Suppression system with a minimum 6" main and an FDC fronting on Elm Street is required.

6. Police Department – The Police Department has no concerns with this project.

7. Building Division – The Building Division has provided their standard comments, and has the following additional comments:

    4. The configuration of the interior exit stairways and the exit discharge are not in compliance with Section 1022 and 1027 of the Building Code.

    5. The basement is proposed to have only one exit stairway. It appears that current layout will require two exit stairs.

    6. The exit access doors to the exit stairway enclosures will need to be separated from each other a distance of at least one third of the overall diagonal distance of the building to comply with Section 1015.2.1 of the Building Code.

    4. Applicant should verify that the second level balconies encroaching into the public right-of-way will comply with Chapter 32 of the Building Code.

8.0 Design Review

The building consists of five stories on the western section, and three stories on the eastern section, both of which have flat rooftops. The flat roof of the eastern section will serve as an outdoor terrace. The ground level of the western section consists of a masonry wall with a grey finish which will enclose the parking lot. The exterior of the building is blue and navy blue. The windows are vertically proportioned and appear to be transparent. The residential units have balconies with concrete bases and metallic checkered fencing. A complete Design Review will be provided at Final Site Plan Review.

Triangle District Overlay

In accordance with Article 3.09(F) of the Zoning Ordinance, buildings situated at a corner shall possess a level of architectural design that incorporates accents and details that accentuate its prominent location, particularly at intersections created by the angle of Woodward Avenue and the grid street network. This can

be accomplished through height projections incorporated into a design feature such as building peak, tower, or similar accent with the highest point located at the intersecting corner, which may be up to an additional 10 feet above the height limit. The building architecture can be designed to focus on accentuating the geometry of the corner location. A main entrance must be on a street-facing wall and either at the corner or within 25 feet of the corner.

In accordance with 3.09(A) of the Zoning Ordinance, walls that face a public street, plaza, green, or park shall include windows and architectural features customarily found on the front of a building, such as awnings, cornice work, edge detailing or decorative finish material.

In accordance with 3.09(A.2) of the Zoning Ordinance, all buildings shall have a main entrance that is located on at least one street front. Main entrances shall have design details that enhance the appearance and prominence of the entrance so that it is recognizable from the street and parking areas.

Current plans indicate two entrances located on Forest Avenue. Each entrance is setback 3 feet, and the doors appear to be 50 feet apart from each other with architectural variation of glazing and blue exterior finish between them. A black lining is designed as a decorative feature for the ground level office space and lobby.

The current plan does not indicate decorative designs or features for the office entrance at the corner of Forest Ave and Elm Street. As per Article 3.09(F), and 3.09(A), the applicant must provide architectural designs for a main entrance at the corner of Forest Ave and Elm Street, or within 25 feet of the corner, that incorporates accents and details that accentuate its prominent location. The design details should also enhance the appearance and prominence of the entrance.

A ground level façade made predominantly of glass surrounds the office and lobby space on the Forest Ave and Elm Street frontages. The glazing abuts a grey masonry wall which encloses the parking lot on both the north and east facing sides of the building. The masonry walls have window openings and vehicles entryways to prevent a blank wall of more than 20 feet. **No glazing calculations for the first floor have been provided at this time.** As per Article 3.09(B.1) of the Zoning Ordinance, No less than 70% of the storefront/ground floor façade between 1 and 8 feet above grade shall be clear glass panels and doorway.

Openings above the first story are planned for the residential units. The upper stories consist of blue and navy blue exterior finish, with vertically proportioned windows and balconies for the residential units. The balconies are composed of metal railings and a checkered design. **No glazing calculations for the upper stories have been provided at this time.** As per Article 3.09(B.3) of the Zoning Ordinance, Openings above the first story shall be a maximum of 50% of the total façade area.

The roof is flat for both sections of the building, and is enclosed by a white parapet. The parapet is 3.5 ft. in height and extends over the edge of the building by 2.5 ft.

No rooftop mechanical plans or building material plans have been submitted at this time.

A flat, black awning projects over the residential entrance at the north facing mid-section of the building. **Dimensions of the awning have yet to be provided.** As per Article 3.09(E.1), Awnings may project over the public sidewalk with a minimum 8 foot clearance provided from the sidewalk, but must be a minimum of 5 feet from the street curb.

Via Activation Overlay

The current design adjacent to the via on the south side of the building includes a masonry wall with 6 garage doors. The garage doors facing the via provide access to 12 parking spaces on the ground level of the building. **The Planning Board may wish to recommend design amenities that will enhance the character, visual interest, and surveillance of the building facing the via.** The current function of the space facing the via is to provide access for parking. If the function of the space facing the via is ever to change, designs and amenities should be able to accommodate different uses permitted in the Triangle and Via Activation Overlay Districts.

In accordance with Article 3.16(E.1.a) of the Zoning Ordinance, for publicly owned vias, the applicant must provide broom finish concrete with exposed aggregate for visual interest in all vias.

Via lighting must be provided by adjoining property owners where needed to ensure the safety of pedestrians as per article 3.16(G.1) of the Zoning Ordinance. The Planning Board may wish to recommend surface lighting luminaires with scale, color, and materials that will architecturally enhance the building features, and activate the via space.

Article 3.16(H) of the Zoning Ordinance states that all portions of buildings and sites directly adjoining a via must maintain a human scale and a fine grain building rhythm that provides architectural interest for pedestrians and other users, and provide windows and doors overlooking the via to provide solar access, visual interaction, and surveillance of the via. **The Planning Board may wish to recommend windows and architectural features customarily found on the front façade of a building, such as awnings, cornice work, edge detailing or decorative finish material to improve the aesthetic experience of the via.**

9.0 Approval Criteria

In accordance with Article 7, section 7.27 of the Zoning Ordinance, the proposed plans for development must meet the following conditions:

(1) The location, size and height of the building, walls and fences shall be such that there is adequate landscaped open space so as to provide light, air and access to the persons occupying the structure.

(2) The location, size and height of the building, walls and fences shall be such that there will be no interference with adequate light, air and access to adjacent lands and buildings.

(3) The location, size and height of the building, walls and fences shall be such that they will not hinder the reasonable development of adjoining property not diminish the value thereof.

(4) The site plan, and its relation to streets, driveways and sidewalks, shall be such as to not interfere with or be hazardous to vehicular and pedestrian traffic.

(5) The proposed development will be compatible with other uses and buildings in the neighborhood and will not be contrary to the spirit and purpose of this chapter.

(6) The location, shape and size of required landscaped open space is such as to provide adequate open space for the benefit of the inhabitants of the building and the surrounding neighborhood.

10.0 Recommendation

Based on a review of the site plan revisions submitted, the Planning Division recommends that the Planning Board POSTPONE the Preliminary Site Plan Review for 750 Forest Avenue to allow the applicant additional time to address the following issues:

1. The applicant provide an easement of 2' on the north side facing Forest Ave in order to meet the 12' minimum sidewalk standards;
2. The applicant provide 6 additional parking spaces or obtain a variance from the Board of Zoning Appeals;
3. The applicant reduce parking frontage to 25% of total street frontage length or 60ft, whichever is less;
4. The applicant develops a minimum of 75% of total street frontage length to have building frontage within 5' of the lot line;
5. The applicant provides a minimum depth of 20ft. of usable building space along a minimum of 75% of the total street frontage length;

6. The applicant provides architectural designs for a main entrance at the corner of Forest Ave and Elm Street, or within 25 feet of the corner, that incorporates accents and details that accentuate its prominent location;
7. The applicant meets the rear setback requirements of 10' for the section of the building in the MU-3 Triangle District Zone;
8. The applicant provides glazing calculations for the first floor and upper level floors;
9. The applicant provides details of benches and trash receptacles in the right of way as recommended by the Planning Board;
10. The applicant provides 4 bike racks as per city standards;
11. The applicant clarifies the size of the tree grates;
12. The applicant provides a photometric plan;
13. The applicant provides building material plans;
14. The applicant complies with requests from City Departments.

11.0 Sample Motion Language

Motion to POSTPONE the Preliminary Site Plan Review for 750 Forest to allow the applicant additional time to address the following issues:

1. The applicant provide an easement of 2' on the north side facing Forest Ave in order to meet the 12' minimum sidewalk standards;
2. The applicant provide 6 additional parking spaces or obtain a variance from the Board of Zoning Appeals;
3. The applicant reduce parking frontage to 25% of total street frontage length or 60ft, whichever is less;
4. The applicant develops a minimum of 75% of total street frontage length to have building frontage within 5' of the lot line;
5. The applicant provides a minimum depth of 20ft. of usable building space along a minimum of 75% of the total street frontage length;
6. The applicant provides architectural designs for a main entrance at the corner of Forest Ave and Elm Street, or within 25 feet of the corner, that incorporates accents and details that accentuate its prominent location;
7. The applicant meets the rear setback requirements of 10' for the section of the building in the MU-3 Triangle District Zone;
8. The applicant provides glazing calculations for the first floor and upper level floors;
9. The applicant provides details of benches and trash receptacles in the right of way as recommended by the Planning Board;
10. The applicant provides 4 bike racks as per city standards;
11. The applicant clarifies the size of the tree grates;
12. The applicant provides a photometric plan;
13. The applicant provides building material plans;
14. The applicant complies with requests from City Departments.

OR

Motion to DENY the Final Site Plan and Design for 750 Forest Avenue

OR

Motion to APPROVE the Preliminary Site Plan Review for 750 Forest Avenue for the following reasons:

1._____
2._____
3._____

Zoning Compliance Summary Sheet
for
Preliminary Site Plan Review
750 Forest

Existing Site: 750 Forest is a Fitness & Health Club, 748 Forest is an Interior Design Office Space

Zoning: O-2, Office Commercial of the Underlay Zoning District, 750 Forest Ave is MU-3, and 748 Forest Ave is MU-5 in the Triangle District Overlay

Land Use: Proposed Office and Residential Units

Existing Land Use and Zoning of Adjacent Properties:

	North	**South**	**East**	**West**
Existing Land Use	Office, Commercial	Office, Commercial	Residential	Office, Commercial
Existing Zoning District	O-2, Office Commercial	O-2, Office Commercial	R-2, Residential	O-2, Office Commercial
Triangle District Overlay	MU-5, Mixed Use 5 Story and MU-3, Mixed Use 3 Story	MU-5, Mixed Use 5 Story and MU-3, Mixed Use 3 Story	ASF-3 Attached Single 3 Story	MU-5 Mixed Use 5 story

Land Area: existing: 13,200 sq ft, or 0.303 acres
proposed: Same as existing

Minimum Lot Area: required: N/A
proposed: N/A

Minimum Floor Area: required: N/A
proposed: N/A

Maximum Total Floor Area: required: 200% Floor Area Ratio for office uses not in parking assessment district
proposed: 850 sq. ft of Office Space (27%)

Minimum Open Space: required: N/A
Proposed: N/A

Maximum Lot Coverage: required: N/A
proposed: N/A

Front Setback:	required:	3.08(B-C): Zero minimum front yard setback. The building façade shall be built to within 5' of the front lot line for a minimum of 75% of the street frontage length. 3.08(G.4): Where a parking structure is provided or parking is located on the ground level below the building, usable building space to a depth of at least 20 feet shall be provided in front of the parking for the minimum required building length.
	proposed:	0' foot setback for 95ft. of building frontage. (95ft. building frontage/229.7ft. total frontage) =41% of the building frontage. **Applicant must develop a minimum of 75% of building frontage to be within 5' of the street frontage length.** **When parking is located on the ground level, the building must have usable space to a depth of at least 20ft. along a minimum of 75% of the total street frontage length, or the applicant must obtain a variance from the Board of Zoning Appeals.**
Side Setbacks:	required:	MU-3 and MU-5: 0' setback with walls facing lot lines that don't contain windows; 10' for walls with windows.
	proposed:	0' on the ground level, 10' on the 2nd through 5th floor to for the west facing side.
Rear Setback:	required:	10' for MU-3, N/A for MU-5
	proposed:	0' **Applicant must set back portion of building within the MU-3 Zone a minimum of 10', or obtain a variance from the Board of Zoning Appeals.**
Max. Bldg. Height:	permitted:	MU-3 flat roof no more than 42', 3 stories maximum height, first story shall be minimum of 14' in height, floor to floor; MU-5 flat roof no more than 66'; first story shall be minimum of 14' in height, floor to floor.
	proposed:	MU-5 eave line 60' and peak 63'6'' to parapet;

MU-3 eave line 37', and 40' to parapet.

Parking: required: Article 4, Table A: 1 Parking Space for each 300 sq. ft. of Office Space floor area, 1.5 Parking Spaces per residential unit with 2 or less rooms, and 2 parking spaces per residential unit with 3 or more rooms in the O2 zone.

850 sq. ft. Office Space = 3 parking spaces
10 Residential Units/2 rooms or less = 15 parking spaces;
12 Residential units/3 rooms or more = 24 parking spaces;

Total= 42 parking spots

Article 3.08(G.1.b): For a corner lot, the cumulative total of both frontages occupied by parking shall be no more than 25%, or 60 feet, whichever is less, and the building shall be located at the corner of the lot adjacent to the intersection.

3.08(B-C): Zero minimum front yard setback. The building façade shall be built to within 5' of the front lot line for a minimum of 75% of the street frontage length.

3.08(G.4): Where a parking structure is provided or parking is located on the ground level below the building, usable building space to a depth of at least 20 feet shall be provided in front of the parking for the minimum required building length.

proposed: 36 spaces; 34 on site, 2 on street.
Total Lot Frontage to Public Right of Way =229'8''
Total Parking Frontage = 134'8''
(134.7ft/229.7ft) = 59%

The applicant must provide 6 additional parking spaces or satisfy the requirement as permitted in Article 03 section 3.08 G (7) or obtain a variance from the Board of Zoning Appeals

The applicant must reduce parking frontage

		to a maximum of 25% of total street frontage length to meet 3.08(G.1.b) requirements of the Zoning Ordinance, or obtain a variance from the Board of Zoning Appeals. (229.7' * 25% = 57') **When parking is located on the ground level, the building must have usable space to a depth of at least 20ft. along a minimum of 75% of the total street frontage length, or the applicant must obtain a variance from the Board of Zoning Appeals.**
Loading Area:	required: proposed:	N/A N/A
Screening:		
Parking:	required:	no screening required when parking lots are within the building structure
	proposed:	14' masonry wall enclosing the onsite parking around the ground level.
AC/Mech. units:	required: proposed:	Screening to compliment the building. None Provided
Elect. Transformer:	required: proposed:	Fully screened from public view The transformer is enclosed within the building.
Dumpster:	required: proposed:	6' high capped masonry wall with wooden gates The garbage pickup area is located within the building.
Streetscape:		
Sidewalks:	required: proposed:	Sidewalks a minimum 12' wide 10' **Applicant must provide 2' Easement for public sidewalk, or obtain Variance from Board of Zoning Appeals.**
Street Trees:	required: proposed:	1 canopy tree every 40' of frontage planted in tree grates in sidewalk 2 along Forest Ave, 3 along Elm St.
Street Lights:	required: proposed:	Pedestrian level street lighting along sidewalks with hanging planters installed (approximately 1 light per 40' of frontage) 3 along Forest Ave; 2 provided along Elm with hanging planters

Street Furniture:	required:	Benches and trash receptacles along sidewalks where Planning Board determines pedestrian activity will benefit.
	proposed:	**The applicant has yet to provide details of benches and trash receptacles in the right of way.**
Bicycle Facilities:	required:	Sufficient bike racks to allow parking of a minimum of 1 bike for every 10 cars, or 1 bike for every 3,000 sq. ft. of building floor area, whichever is greater. The applicant must provide 4 bike racks. (42 parking spaces/10) = 4.2
	proposed:	**The applicant has yet to provide details of bike racks. Applicant must provide 4 bike racks, or obtain a variance from the Board of Zoning Appeals.**

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

May 20, 2016

VIA EMAIL

Ms. Jana L. Ecker
Planning Director
City of Birmingham
151 Martin Street
Birmingham, Michigan 48012

RE: 750 Forest Avenue – Mixed Use Development
Traffic Impact Assessment and Site Plan Review

Dear Ms. Ecker:

Fleis & VandenBrink (F&V) staff has completed our review of the proposed mixed use development at 750 Forest Avenue Traffic Impact Assessment (TIA) and site plan dated May 9, 2016 that were received by F&V on May 13, 2016. Based on this review, we have the following comments and observations:

1. The TIA evaluated 22 apartment units and 850 SF of retail space; however, the proposed site plan shows 850 SF of office space. The TIA and/or site plan should be reviewed and revised as necessary.
2. The proposed site provides 34 off-street parking spaces (including two accessible parking spaces) and two on-street parking spaces, for a total of 36 parking spaces. However, for this district, the City ordinance requires a minimum of 39 parking spaces; therefore, the proposed site does not provide adequate parking for the proposed development.
3. There are four existing public parking spaces on Elm Street adjacent to the site. With the addition of the proposed development, two of the on-street public parking spaces on Elm Street will be eliminated.

We hope that this review satisfies the City's current planning needs regarding this project. If you have any questions or concerns, please contact our office.

Sincerely,

FLEIS & VANDENBRINK

Michael J. Labadie, PE
Group Manager

JMK:mjl

27725 Stansbury Boulevard, Suite 150
Farmington Hills, MI 48334
P: 248.536.0080
F: 248.536.0079
www.fveng.com

750 FOREST // ROBERTSON-LARSON LLC

SHEET INDEX

COVER SHEET
A1.0 ZONING INFORMATION
A1.1 SITE PHOTOS
A1.2 EXISTING SITE PLAN
A2.1 GROUND FLOOR PLAN
A2.2 SECOND + THIRD FLOOR PLAN
A2.3 FOURTH FLOOR PLAN
A2.4 FIFTH FLOOR PLAN
A2.5 BASEMENT FLOOR PLAN
A3.0 MASSING VIEW - AERIAL
A3.1 STREET VIEW - FOREST AVE
A3.2 CORNER VIEW - ELM & FOREST
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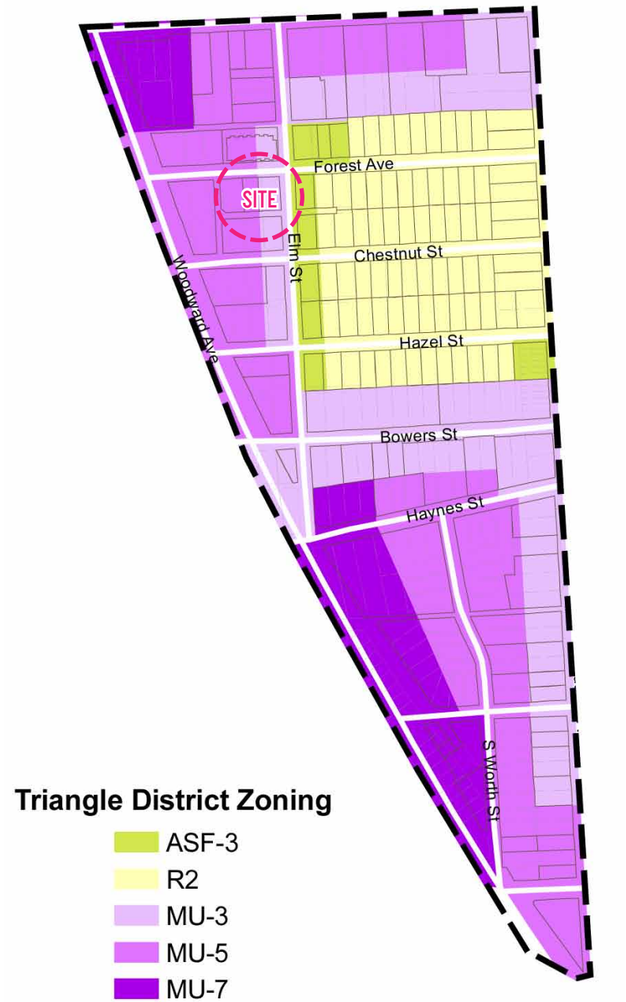
A4.1 ELEVATIONS
SP1 BOUNDARY / TOPOGRAPHIC / TREE SURVEY
SP2 ENGINEERING SITE PLAN
L1 LANDSCAPE PLAN

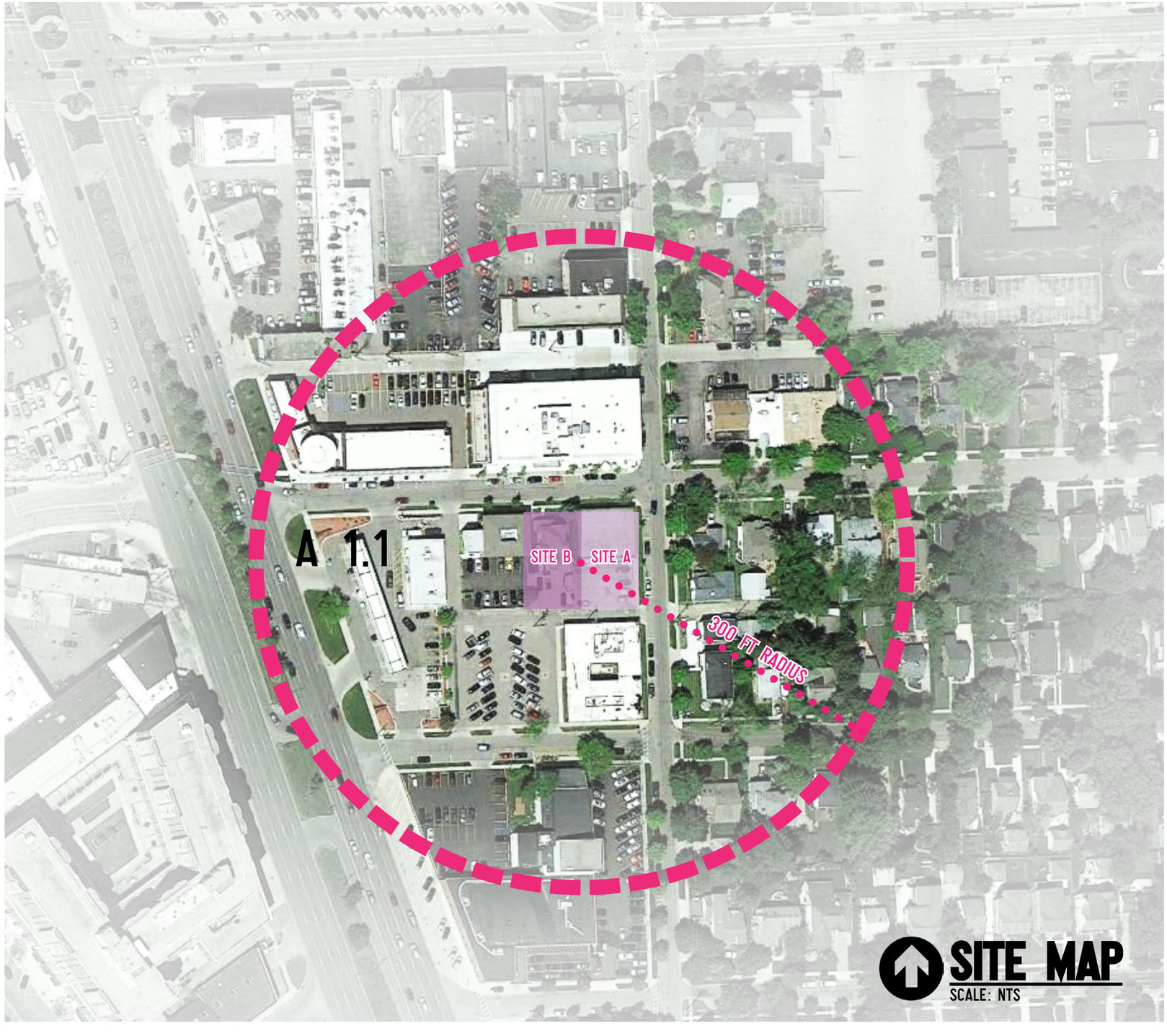
MAY 9, 2016

PRELIMINARY SITE PLAN REVIEW

MCINTOSH
PORIS ASSOCIATES

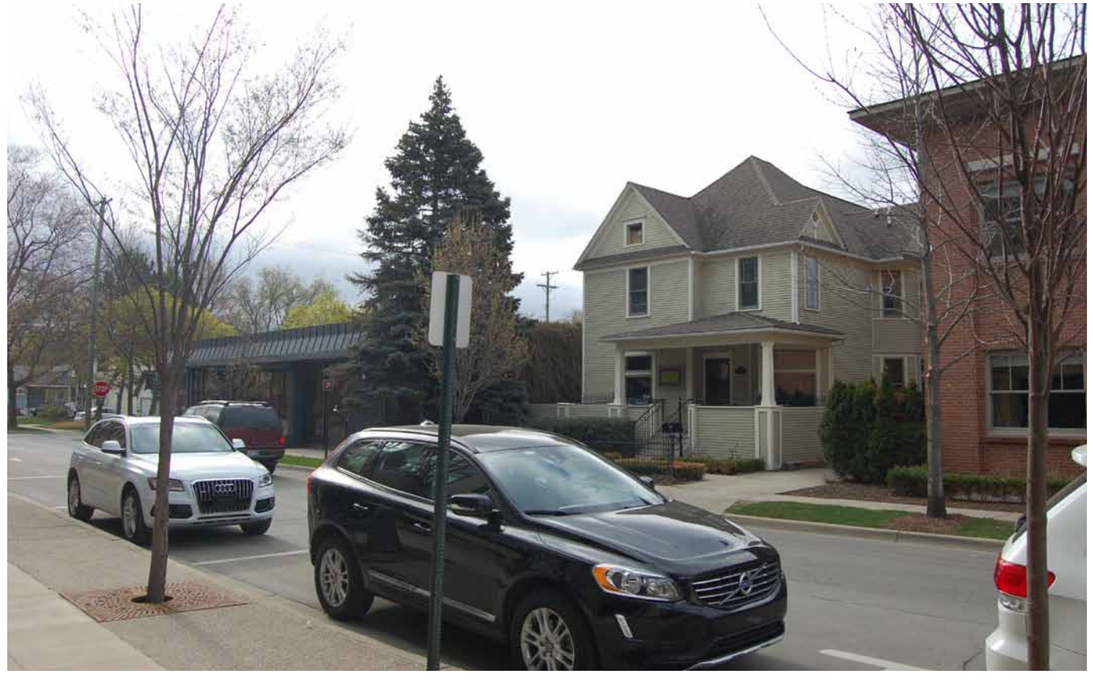
SITE OVERVIEW





SITE - NORTHEAST CORNER - FOREST

SITE - EXISTING STREETSCAPE - FOREST LOOKING EAST



SITE - NORTHWEST CORNER - FOREST

SITE - EXISTING STREETSCAPE - FOREST LOOKING WEST

FOREST AVE. (50' R.O.W.)

N89°51'00"E 120.00'(R&M)

S89°51'00"W 120.00'(R&M)

20' PUBLIC ALLEY

ASPHALT PAVEMENT

20' PUBLIC ALLEY

N00°00'00"E 110.00'(R&M)

S00°00'00"E 110.00'(R&M)

ELM ST. (50' R.O.W.)

ASPHALT PAVEMENT W/CONCRETE CURB & GUTTER

PARCEL 1

748 FOREST AVE.

OWNER:
HEATH & WELLS/
TEMPLETON BLDG.

TAX ID NO.
19-36-228-003

EX. 2-1/2 STORY
22' HIGH BLDG.
W/BASEMENT
1,093 SQ. FT.

F.F. 770.15

ZONED: O-2,
OFFICE COMMERCIAL

PARCEL 2

750 FOREST AVE.

TAX ID NO.
19-36-228-004

OWNER:
750 FOREST LLC

ZONED: O-2,
OFFICE COMMERCIAL

EX. ONE STORY
15' HIGH
BLOCK & GLASS
BLDG. W/BASEMENT
3,913 SQ. FT.

F.F. 766.53

EX. TWO STORY
BRICK BUILDING

700 FOREST AVE.

TAX ID NO.
19-36-228-002

OWNER:
700 FOREST STREET LLC

CAMPBELL'S SUBDIVISION
(L. 4, P. 30)
LOT 3

LOT 2

LOT 1

BLOCK 4

751 CHESTNUT LLC

COMBINED MH
RIM 766.83
6" SW. INV 760.93
10" W. INV 760.48
8" S. INV 759.18
12" E. INV 758.58

FND. IRON
0.20' S.
0.21' W.

FND. IRON
0.18' S.
0.29' W.

FND. IRON
0.08' N.
0.27' W.

FND. PK NAIL
0.04' N.
0.27' W.

FND. IRON
0.18' W.

FND. IRON
0.41' N.
0.16' W.

G.V. & WELL
RIM 765.51
E.-W. T/PIPE 760.51

G.V. & WELL
RIM 765.23
12" N.-S. T/PIPE 760.23

HYDRANT
FG 765.37

STOP BOX
RIM 765.30

PHONE MH
RIM 765.44

BENCHMARK
TOP OF HYDRANT
ELEVATION 768.01
NAVD 88 DATUM

CAUTION!!
2" GAS MAIN

EXCERPT FROM
SHEET SP-1. SEE
FULL SIZE SHEET
INCLUDED IN
SUBMITTAL

N

EX. 1-1/4" GAS MAIN

EX. 6" WATER MAIN

EX. 12" COMBINED SEWER

EX. 5/8" GAS SERVICE

EX. 1-1/4" GAS SERVICE

EX. 8" STORM

EX. 24" COMBINED SEWER

EX. 12" WATER MAIN

EX. OH. LINES

1-1/4" GAS MAIN

T/WATER 761.49

RAMP TILE

R.O.W. LINE

CONCRETE

EXPOSED AGGREGATE

ASPHALT

ASPHALT PAVEMENT W/CONC. CURB & GUTTER

CONC. WALK

IRON FENCE

WOOD FENCE

PUBLICLY DEDICATED

TREE W/ GRATE (TYP)

BENCH

3" TREE

4" TREE

6" TREE

8" TREE

9" TREE

10" TREE

24" PINE

8" PINE

50.00'(R&M)

70.00'(R&M)

110.00'(R&M)

26.00'

19.90'

14.10'

8.00'

2.00'

3.30'

1.45'

F.F. 766.49

BLDG. COR.
0.37' N.
OF P/L

BLDG. COR.
0.24' W.
OF P/L

BLDG. COR.
0.11' W.
OF P/L

LOT LINE (TYP)

E. 10' LOT 2

47.55'

52.19'

28.50'

27.60'

2.00'

8.19'

9.87'

3.00'

2.20'

67.15'

OVERHANG

GAS METER (3)

AC UNIT (5)

F.F. 766.52

GAS METER
ELECTRIC METER

WINDOW WELL W/ GRATE

WINDOW WELL W/ GRATE

COVERED PORCH

F.F. 770.26

RAMP

WOOD RAMP W/RAIL

WALL

STEPS

MB

GM

AC

AC

SHELTER AREA

STEPS

COVERED PORCH

EM

D.E. PAD

STORM MH
RIM 765.94
8" E. INV 755.84

BUMPER BLOCK (TYP)

3' HIGH BLOCK WALL

3' HIGH BRICK

CATCH BASIN
RIM 765.59

CURB

CONC.

CONC. WALK

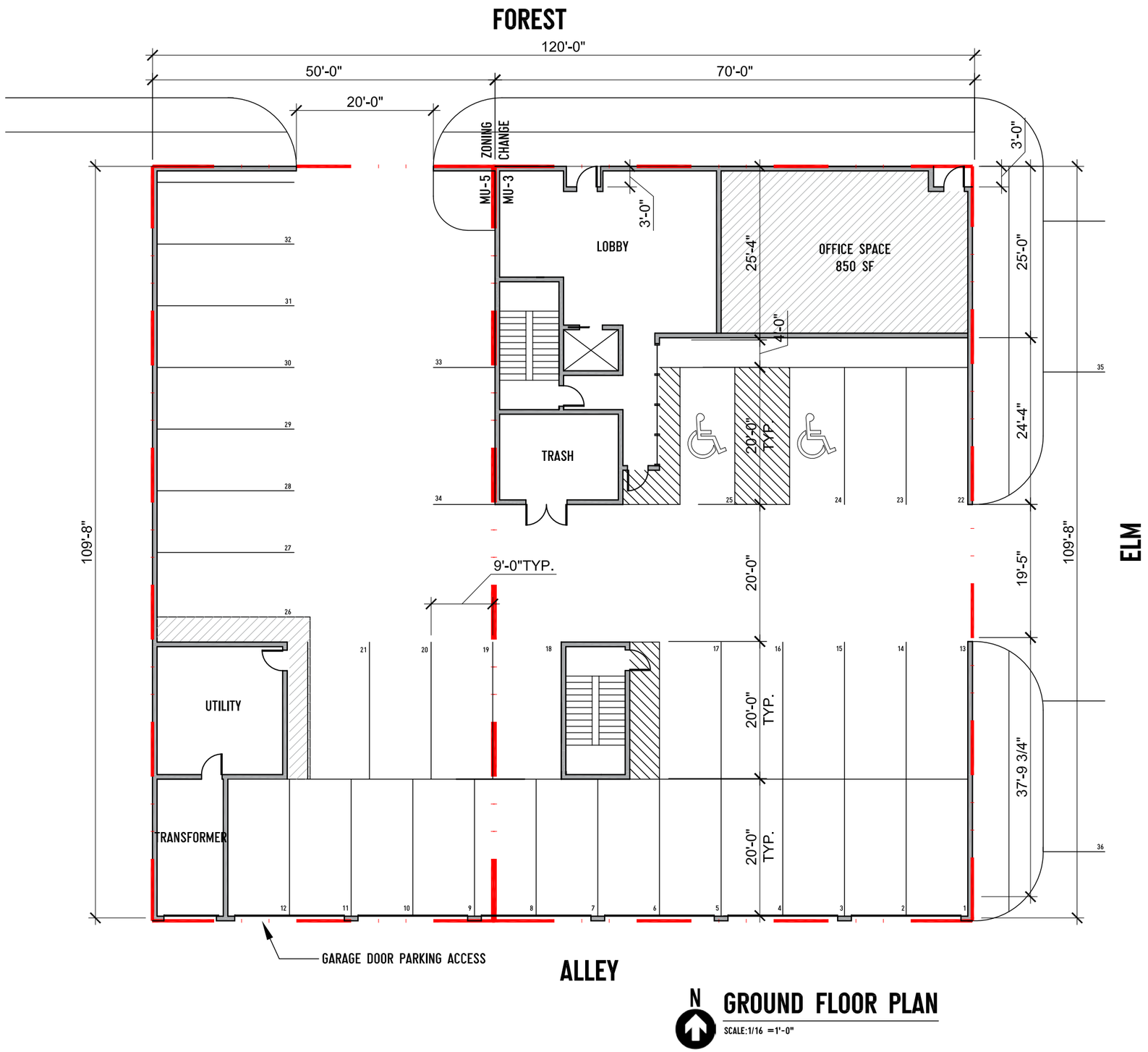
ASPHALT

ZONED: O-2

4

5

6



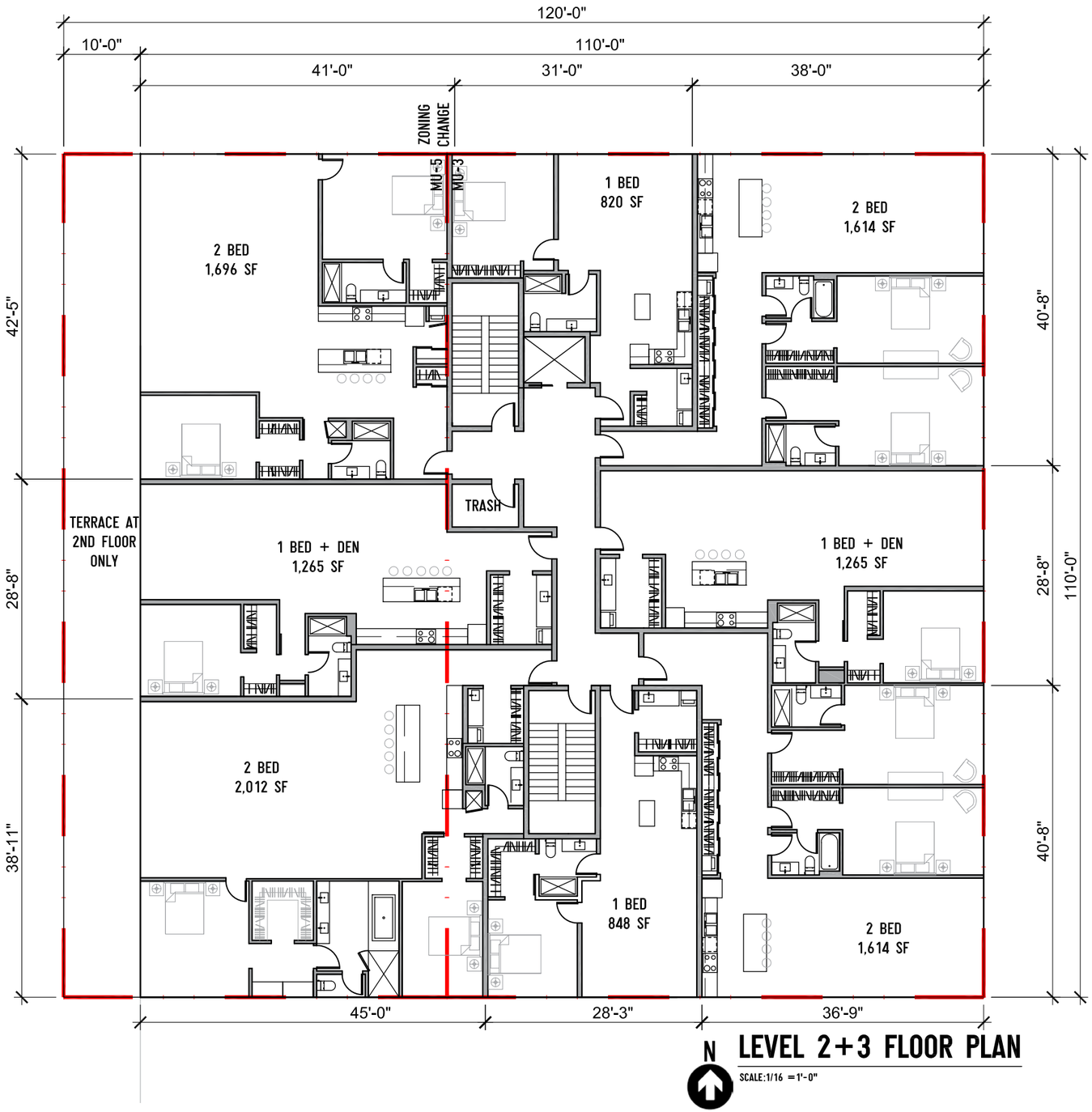
GROUND FLOOR PLAN

SCALE:1/16 =1'-0"

SITE INFORMATION

TOTAL SITE AREA	13,200 SF (.30 AC)
BUILDING USES	
BASEMENT - GROSS AREA	2,015 SF
Common Area/Storage	2,015 SF
1ST FLOOR - GROSS AREA	13,200 SF
Residential Lobby/Common Areas	2,134 SF
Retail	850 SF
Parking	10,216 SF (34 spaces)
2nd FLOOR - GROSS AREA	12,100 SF
8 Residential Units	11,134 SF
Common Area	966 SF
3rd FLOOR - GROSS AREA	12,100 SF
8 Residential Units	11,134 SF
Common Area	966 SF
4th FLOOR - GROSS AREA	6,600 SF
3 Residential Units	5,680 SF
Common Area	920 SF
5th FLOOR - GROSS AREA	6,600 SF
3 Residential Units	5,680 SF
Common Area	920 SF
TOTAL UNITS	22
GROSS BUILDING AREA	42,399 SF
SALEABLE AREA	34,478 SF

PARKING	
PARKING REQ'D	36 SPACES
Residential (1.5 for each unit)	33 SPACES
Retail (1 per 600 SF)	3 SPACES
TOTAL PARKING PROVIDED	36 SPACES
HC spaces req'd	2 SPACES
Offstreet Parking	32 SPACES
Onstreet Parking (Elm)	2 SPACE
TOTAL LOT FRONTAGE TO PUBLIC RIGHT OF WAY	220 FT
TOTAL PARKING FRONTAGE	(18%) 40 FT



LEVEL 2+3 FLOOR PLAN

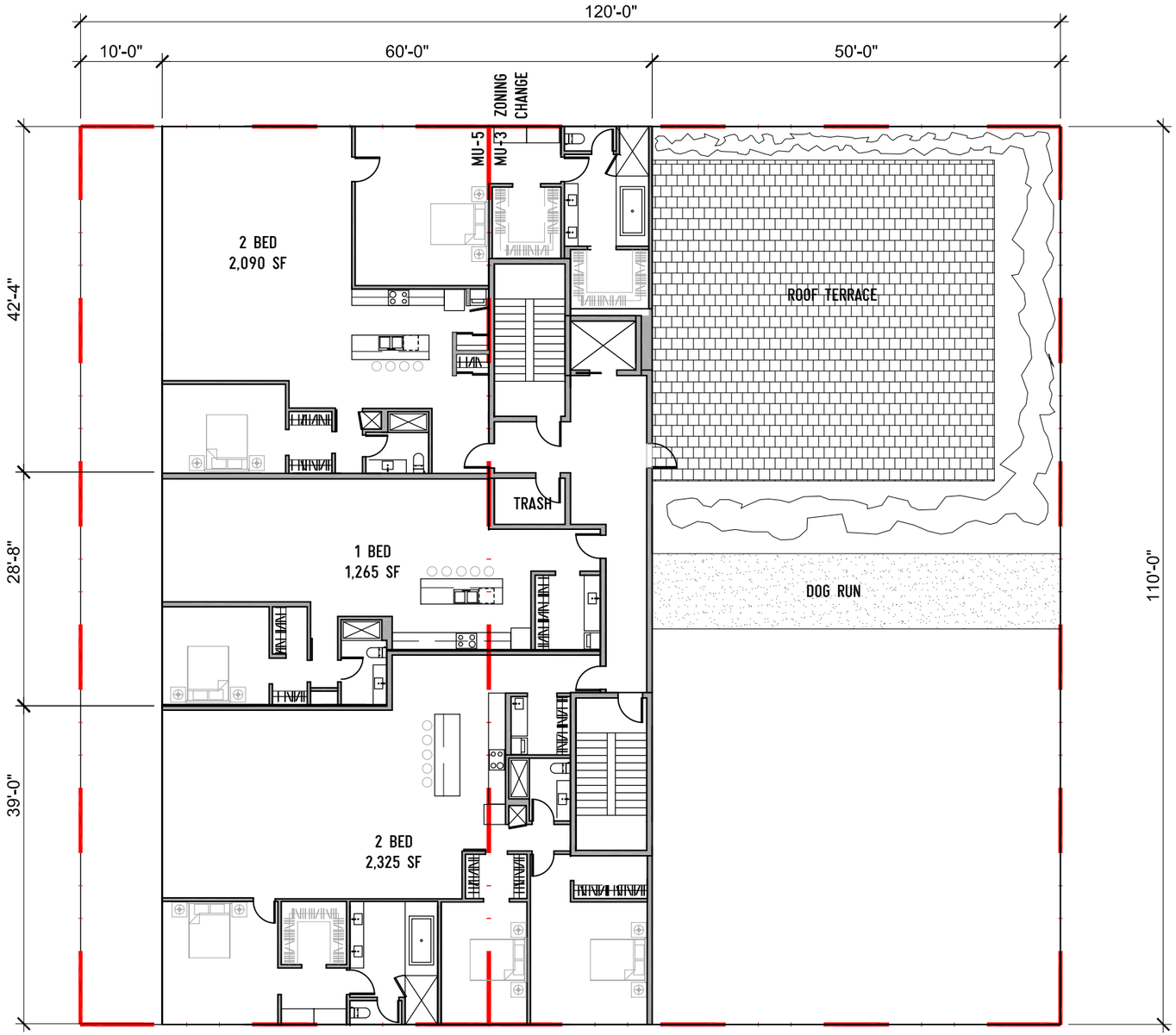
SCALE:1/16 =1'-0"

APARTMENT UNIT MIX

8 UNITS PER FLOOR (16 TOTAL)

UNIT TYPE	AREA (sf)	QTY	TOTAL AREA (sf)
1 BED	820	1	820
1 BED	848	1	848
1 BED + DEN	1,265	2	2,530
2 BED	1,614	2	3,228
2 BED	1,696	1	1,696
2 BED	2,012	1	2,012
UNIT TOTALS		8 UNITS	11,134 SF
GROSS FLOOR AREA			12,100 GSF

92.0% EFF



N

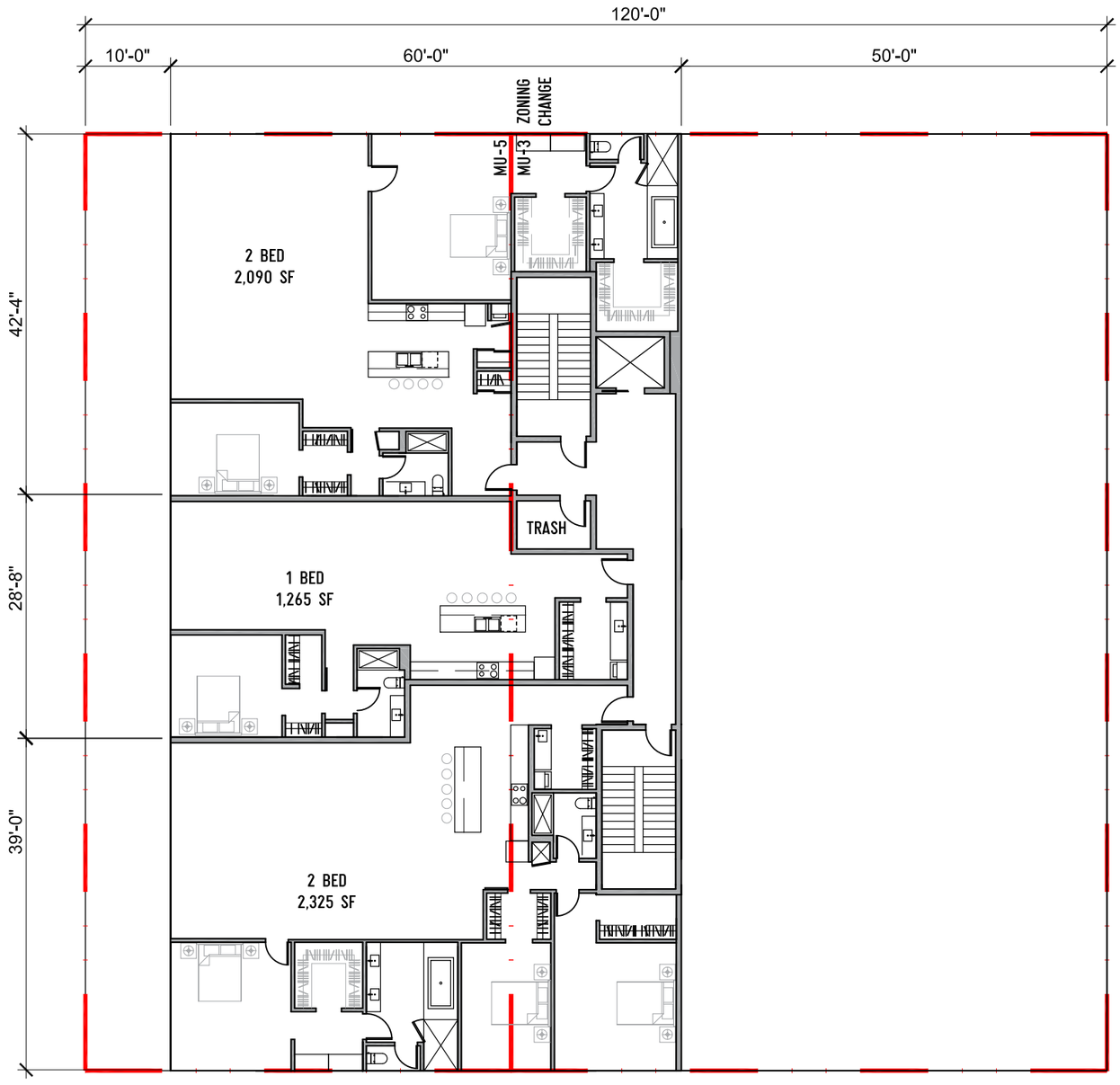
LEVEL 4 FLOOR PLAN

SCALE: 1/16 = 1'-0"

APARTMENT UNIT MIX

3 UNITS			
UNIT TYPE	AREA (sf)	QTY	TOTAL AREA (sf)
1 BED + DEN	1,265	1	1,265
2 BED	2,090	1	2,090
2 BED	2,325	1	2,325
UNIT TOTALS		3 UNITS	5,680 SF
GROSS FLOOR AREA			6,600 GSF
			86.0% EFF

MCINTOSH PORIS ASSOCIATES



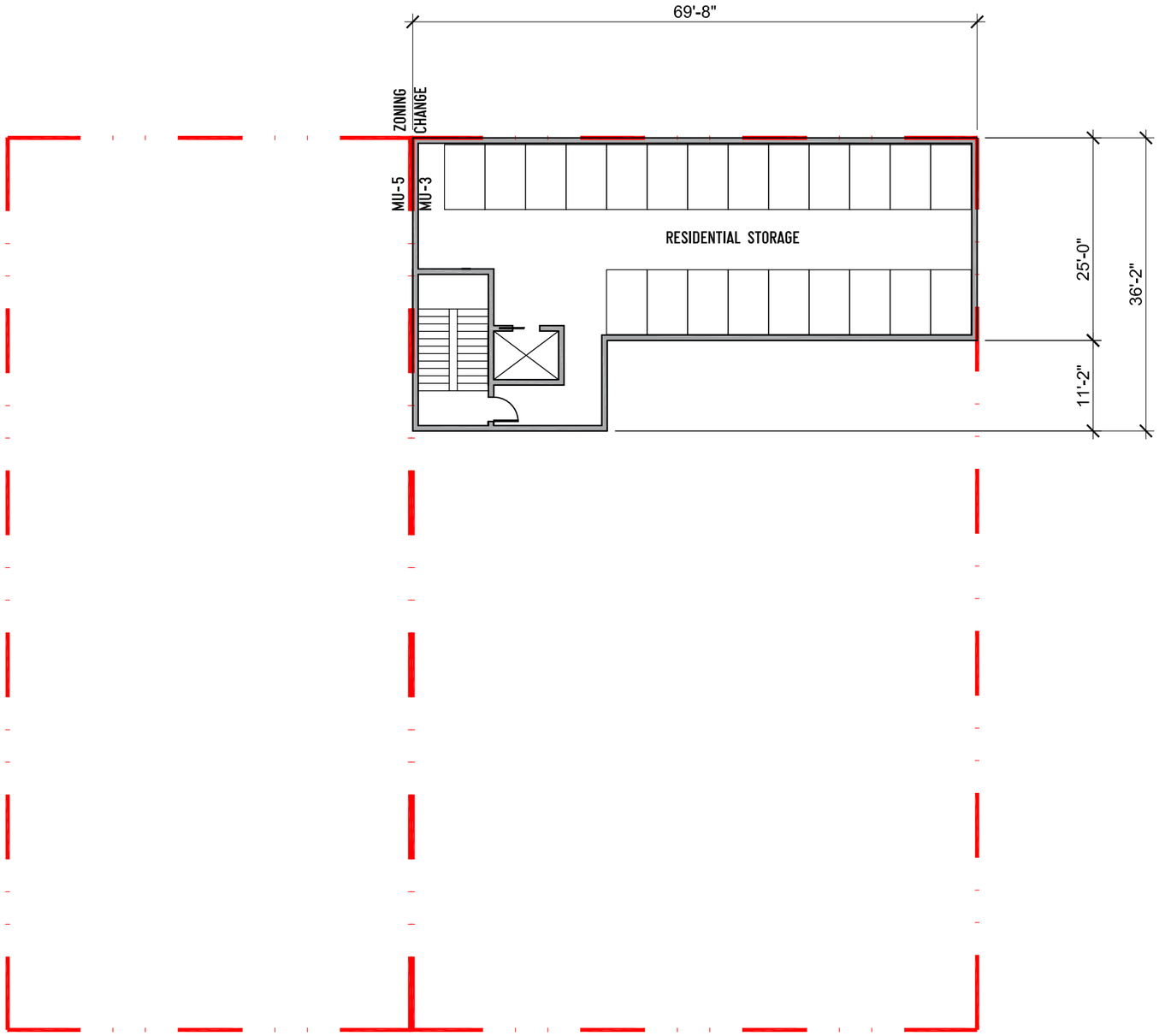
N

LEVEL 5 FLOOR PLAN

SCALE: 1/16 = 1'-0"

APARTMENT UNIT MIX

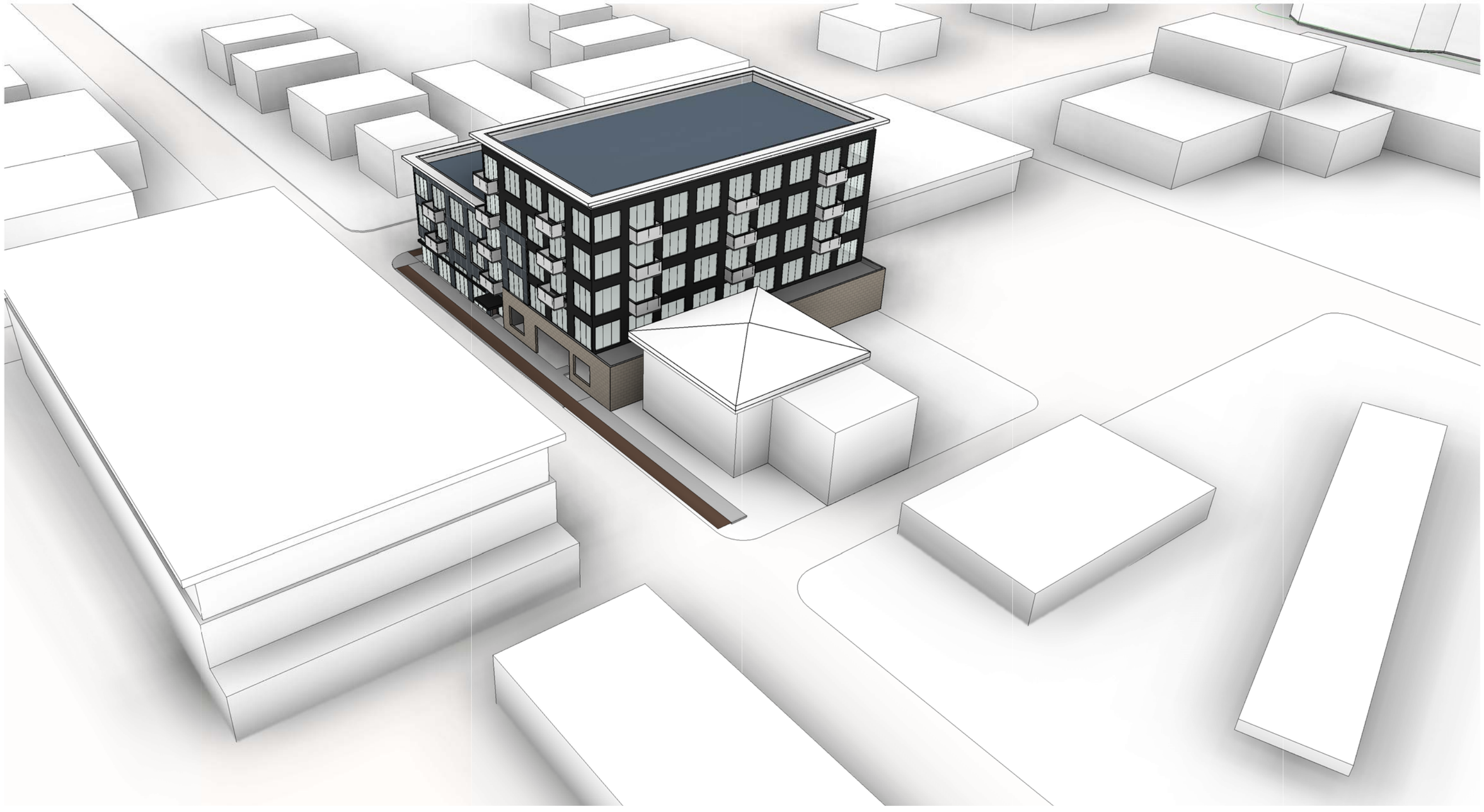
3 UNITS			
UNIT TYPE	AREA (sf)	QTY	TOTAL AREA (sf)
1 BED + DEN	1,265	1	1,265
2 BED	2,090	1	2,090
2 BED	2,325	1	2,325
UNIT TOTALS		3 UNITS	5,680 SF
GROSS FLOOR AREA			6,600 GSF
			86.0% EFF



N

BASEMENT FLOOR PLAN

SCALE: 1/16 = 1'-0"



A 3.0

750 FOREST AVE | BIRMINGHAM, MI // ROBERTSON LARSON LLC // May 9, 2016

MASSING - AERIALS

MCINTOSH PORIS ASSOCIATES

A 3.1

750 FOREST AVE | BIRMINGHAM, MI // ROBERTSON LARSON LLC // May 9, 2016

STREET VIEW - FOREST AVE

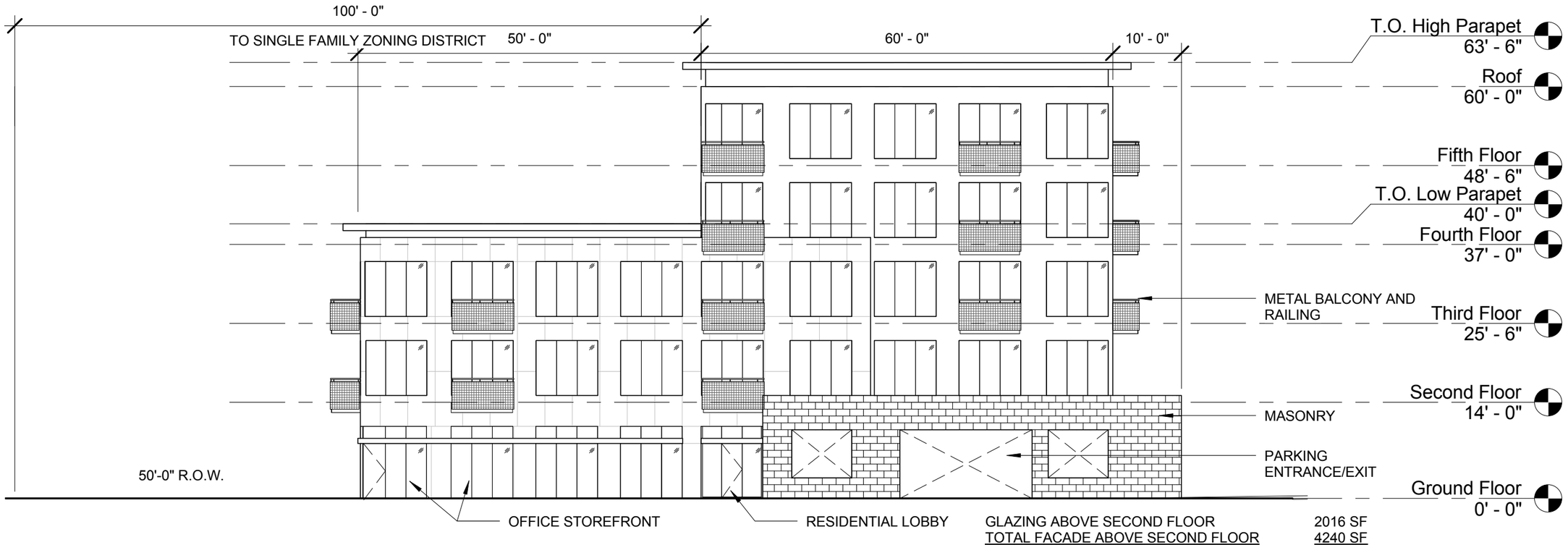
MCINTOSH PORIS ASSOCIATES

A 3.2

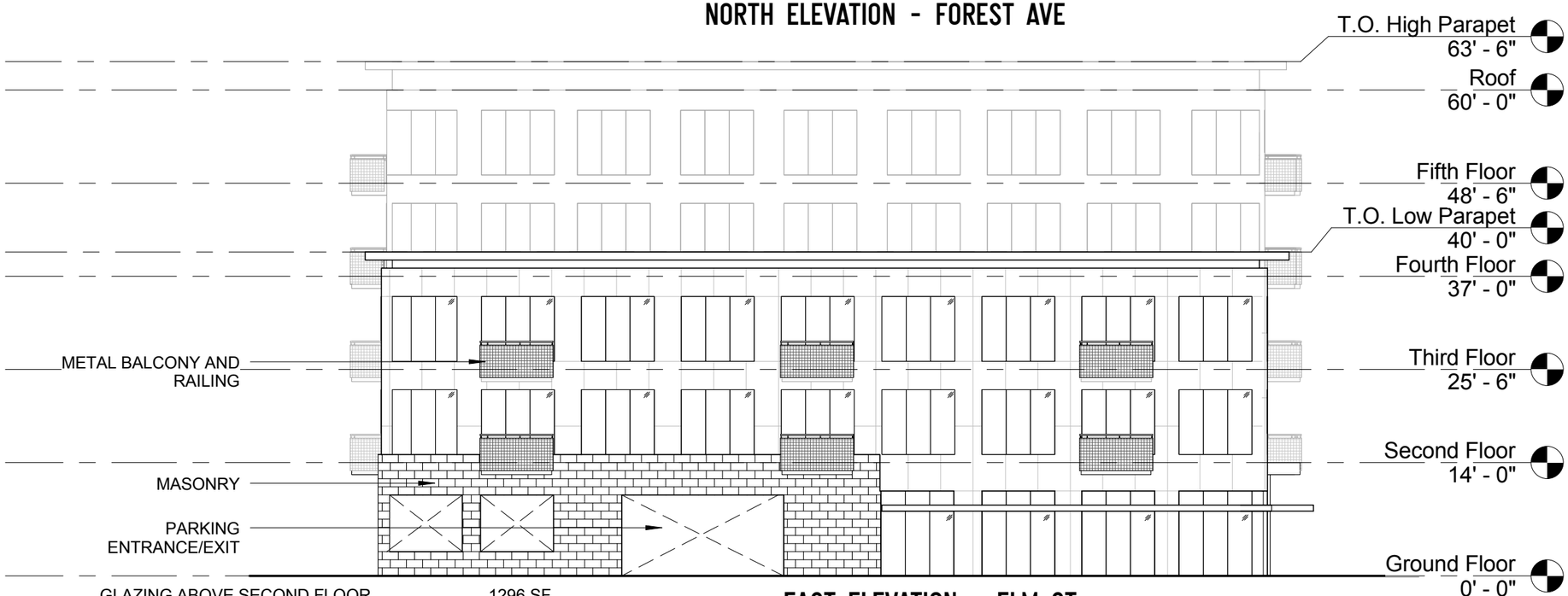
750 FOREST AVE | BIRMINGHAM, MI // ROBERTSON LARSON LLC // May 9, 2016

FOREST AND ELM VIEW

MCINTOSH PORIS ASSOCIATES



NORTH ELEVATION - FOREST AVE



EAST ELEVATION - ELM ST

ELEVATIONS | 1/16" = 1'-0"

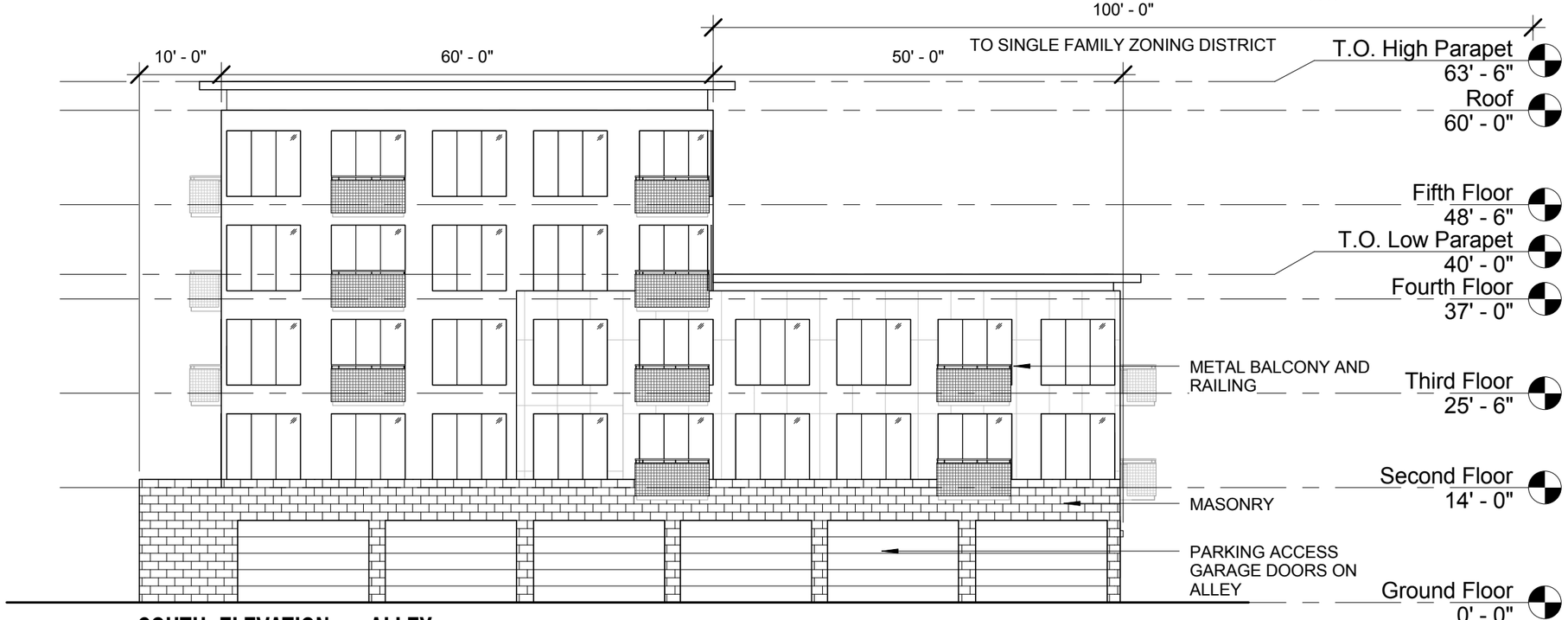
A 4.0

750 FOREST AVE | BIRMINGHAM, MI // ROBERTSON LARSON LLC // May 9, 2016

MCINTOSH PORIS ASSOCIATES

WEST ELEVATION

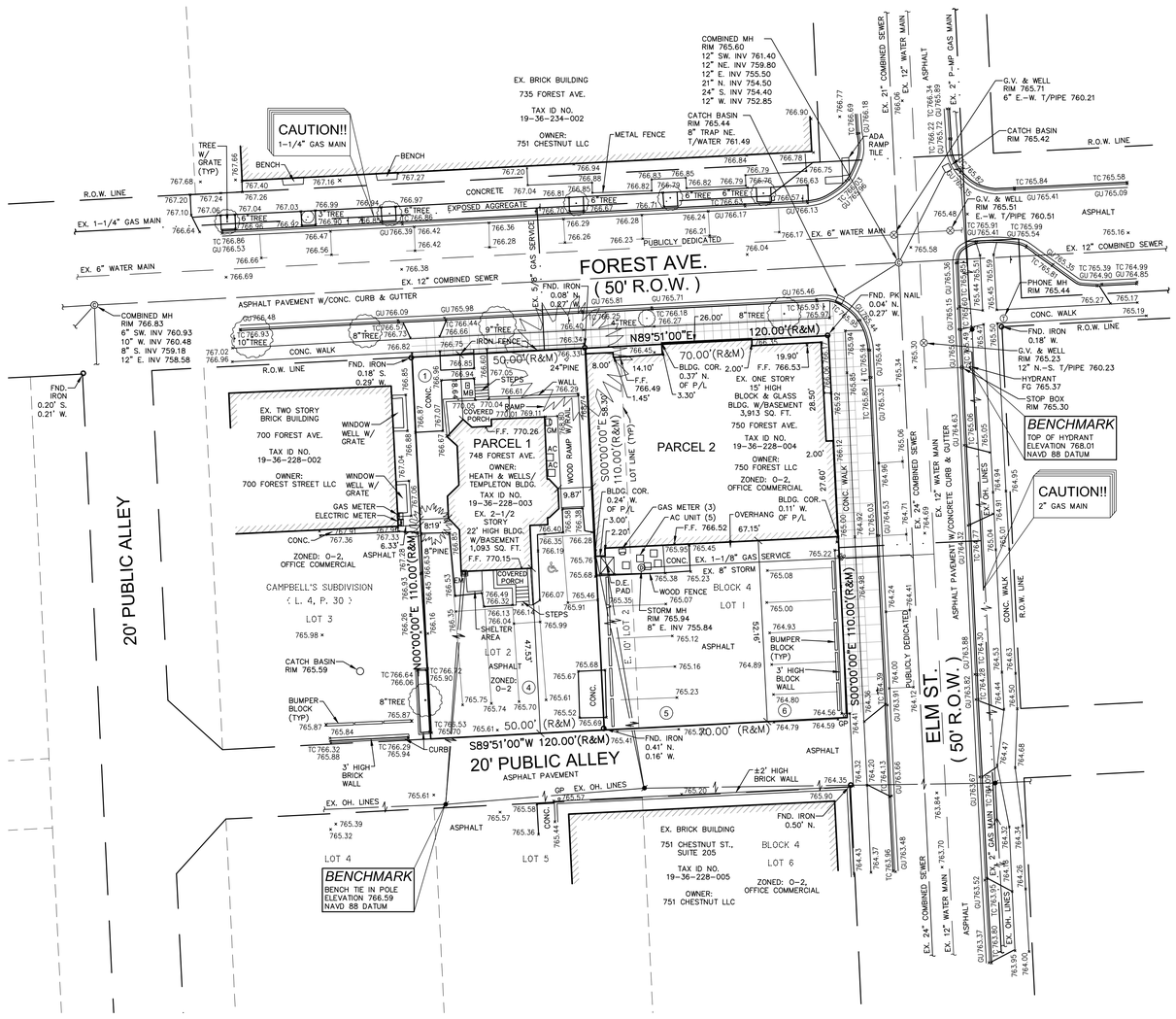
GLAZING ABOVE SECOND FLOOR	2592 SF
TOTAL FACADE ABOVE SECOND FLOOR	5212 SF
	50%

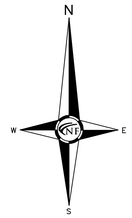


SOUTH ELEVATION - ALLEY

GLAZING ABOVE SECOND FLOOR	2016 SF
TOTAL FACADE ABOVE SECOND FLOOR	4240 SF
	48%

ELEVATIONS | 1/16" = 1'-0"





Location Map
N.T.S.

SITE DATA

SITE AREA:
PARCEL 1: 5,499.98 SQUARE FEET OR 0.126 ACRES
PARCEL 2: 7,699.97 SQUARE FEET OR 0.177 ACRES
TOTAL: 13,199.95 SQUARE FEET OR 0.303 ACRES

ZONING:
PARCEL 1: O-2, OFFICE COMMERCIAL DISTRICT
PARCEL 2: O-2, OFFICE COMMERCIAL DISTRICT

PARKING SPACES:
PARCEL 1: 5 PARKING SPACES (INCLUDING 1 BARRIER-FREE SPACES)
PARCEL 2: 11 PARKING SPACES

MINIMUM LOT AREA: N/A

MINIMUM OPEN SPACE: N/A

MAXIMUM LOT COVERAGE: N/A

MAXIMUM BUILDING HEIGHT: 28 FEET / 2 STORIES

BUILDING SETBACKS:
FRONT: 0 FEET
SIDE: 0 FEET
REAR: 10 FEET WHEN THE REAR OPEN SPACE ABUTS A P, B1, B2, B2B, B2C, B3, B4, O1, OR O2 ZONING DISTRICT
MINIMUM COMBINED FRONT AND REAR SETBACK: N/A

ZONING DATA NOTE

THE CLIENT HAS NOT PROVIDED THE SURVEYOR WITH A ZONING REPORT OR LETTER, THEREFORE NO DATA IS SHOWN HEREON. A ZONING ENDORSEMENT LETTER SHOULD BE OBTAINED FROM THE CITY OF ROYAL OAK TO INSURE CONFORMITY AS WELL AS MAKE A FINAL DETERMINATION OF THE REQUIRED BUILDING SETBACK REQUIREMENTS.

LEGAL DESCRIPTION

LAND SITUATED IN THE CITY OF BIRMINGHAM, OAKLAND COUNTY, STATE OF MICHIGAN, IS DESCRIBED AS FOLLOWS:

PARCEL 1:

LOT 2, EXCEPT THE EAST 10 FEET OF BLOCK 4 OF CAMPBELL'S SUBDIVISION ACCORDING TO THE PLAT THEREOF RECORDED IN LIBER 4 OF PLATS, PAGE 30, OAKLAND COUNTY RECORDS.

TAX ITEM NO. 19-36-228-003
ADDRESS: 748 FOREST AVENUE, BIRMINGHAM, MI 48009

PARCEL 2:

LOT 1 AND THE EAST 10 FEET OF LOT 2 OF BLOCK 4 OF CAMPBELL'S SUBDIVISION ACCORDING TO THE PLAT THEREOF RECORDED IN LIBER 4 OF PLATS, PAGE 30 OAKLAND COUNTY RECORDS.

TAX ITEM NO. 19-36-228-004
ADDRESS: 750 FOREST AVENUE, BIRMINGHAM, MI 48009

BASIS OF BEARING NOTE

ALL BEARINGS ARE IN RELATION TO THE PREVIOUSLY ESTABLISHED SOUTH LINE OF FOREST AVENUE OF "CAMPBELL'S SUBDIVISION" AS RECORDED IN LIBER 4 OF PLATS, PAGE 30, OAKLAND COUNTY RECORDS. (N.89°51'00"E.)

DATUM NOTE

ELEVATIONS AS SHOWN ON THIS SURVEY ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (N.A.V.D. 88). THE CITY OF BIRMINGHAM DATUM IS ONE (1) FOOT HIGHER THAN THE N.A.V.D. 88.

FLOOD HAZARD NOTE

THIS PROPERTY IS NOT LOCATED WITHIN THE FLOOD HAZARD AREA INDICATED BY FLOOD INSURANCE RATE MAP (FIRM) NO. 26163C0064E DATED: FEBRUARY 2, 2012 (ZONE X)

TOPOGRAPHIC SURVEY NOTES

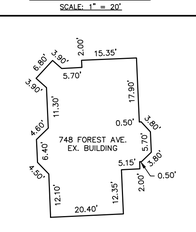
ALL ELEVATIONS ARE EXISTING ELEVATIONS, UNLESS OTHERWISE NOTED.

UTILITY LOCATIONS WERE OBTAINED FROM MUNICIPAL OFFICIALS AND RECORDS OF UTILITY COMPANIES, AND NO GUARANTEE CAN BE MADE TO THE COMPLETENESS, OR EXACTNESS OF LOCATION.

THIS SURVEY MAY NOT SHOW ALL EASEMENTS OF RECORD UNLESS AN UPDATED TITLE POLICY IS FURNISHED TO THE SURVEYOR BY THE OWNER.

BUILDING DETAIL

SCALE: 1" = 20'



LEGEND

MANHOLE(MH)	EXISTING COMBINED SEWER
MANHOLE(MH)	EXISTING SANITARY SEWER
	EXISTING SAN. CLEAN OUT
HYDRANT / GATE_VALVE	EXISTING WATER MAIN
MANHOLE / CATCH_BASIN(CB)	EXISTING STORM SEWER
	EX. R.Y. CATCH BASIN
UTILITY POLE / GUY POLE	EX. UNDERGROUND (UG.) CABLE
UP / GUY WIRE	OVERHEAD (OH.) LINES
LP	LIGHT POLE
	SIGN
	EXISTING GAS MAIN
EM	ELECTRIC METER
CONC.	CONCRETE
FND.	FOUND
GP	GUARD POST
R.O.W.	RIGHT-OF-WAY
P/L	PROPERTY LINE
(TYP)	TYPICAL
(R)	RECORD
(M)	MEASURED
D.E.	DETROIT EDISON
GM	GAS METER
AC	AIR CONDITIONING UNIT
F.F.	FINISH FLOOR
MB	MAILBOX

NF ENGINEERS
CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257

SEAL

STATE OF MICHIGAN
KEVIN NAVAROLI
PROFESSIONAL SURVEYOR
NO. 53503
LICENSED PROFESSIONAL SURVEYOR

PROJECT
750 Forest Avenue
Condominium Project
Birmingham, MI 48009

CLIENT
Robertson Brothers Homes
6905 Telegraph Road,
Suite 200
Bloomfield Hills, MI 48301

Contact: Jim Clarke
248.282.1428 - Phone
248.282.1432 - Fax

PROJECT LOCATION
Part of the SE 1/4
of Section 36
T.2N., R.10E.
City of Birmingham,
Oakland County, Michigan

SHEET
Boundary / Topographic /
Tree Survey

811 Know what's below Call before you dig.

REVISIONS
05-09-16 ISSUED FOR SITE PLAN REVIEW

DRAWN BY:
M. Carnaghi
DESIGNED BY:
APPROVED BY:
K. Navaroli
DATE:
May 5, 2016
SCALE: 1" = 20'
20 10 0 10 20 30

NFE JOB NO. J189
SHEET NO. SP1

GENERAL PAVING NOTES

PAVEMENT SHALL BE OF THE TYPE, THICKNESS AND CROSS SECTION AS INDICATED ON THE PLANS AND AS FOLLOWS:

CONCRETE: PORTLAND CEMENT TYPE IA (AIR–ENTRAINED) WITH A MINIMUM CEMENT CONTENT OF SIX SACKS PER CUBIC YARD, MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,500 PSI AND A SLUMP OF 1 1/2 TO 3 INCHES.

ASPHALT: BASE COURSE – MDOT BITUMINOUS MIXTURE NO. 1100L, 20AA; SURFACE COURSE – MDOT BITUMINOUS MIXTURE NO. 1100T, 20AA; ASPHALT CEMENT PENETRATION GRADE 85–100, BOND COAT – MDOT SS–1H EMULSION AT 0.10 GALLON PER SQUARE YARD; MAXIMUM 2 INCH LIFT.

PAVEMENT BASE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT. EXISTING SUB–BASE SHALL BE PROOF–ROLLED IN THE PRESENCE OF THE ENGINEER TO DETERMINE STABILITY.

ALL CONCRETE PAVEMENT, DRIVEWAYS, CURB & GUTTER, ETC., SHALL BE SPRAY CURED WITH WHITE MEMBRANE CURING COMPOUND IMMEDIATELY FOLLOWING FINISHING OPERATION.

ALL CONCRETE PAVEMENT JOINTS SHALL BE FILLED WITH HOT POURED RUBBERIZED ASPHALT JOINT SEALING COMPOUND IMMEDIATELY AFTER SAWCUT OPERATION. FEDERAL SPECIFICATION SS–S164.

ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE MUNICIPALITY AND THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, CURRENT EDITION.

ALL TOP OF CURB ELEVATIONS, AS SHOWN ON THE PLANS, ARE CALCULATED FOR A 6" CONCRETE CURB UNLESS OTHERWISE NOTED.

ALL SIDEWALK RAMPS, CONFORMING TO PUBLIC ACT NO. 8, 1993, SHALL BE INSTALLED AS INDICATED ON THE PLANS.

CONSTRUCTION OF A NEW OR RECONSTRUCTED DRIVE APPROACH CONNECTING TO AN EXISTING STATE OR COUNTY ROADWAY SHALL BE ALLOWED ONLY AFTER AN APPROVED PERMIT HAS BEEN SECURED FROM THE AGENCY HAVING JURISDICTION OVER SAID ROADWAY.

FOR ANY WORK WITHIN THE PUBLIC RIGHT–OF–WAY, THE CONTRACTOR SHALL PAY FOR AND SECURE ALL NECESSARY PERMITS AND LIKEWISE ARRANGE FOR ALL INSPECTION.

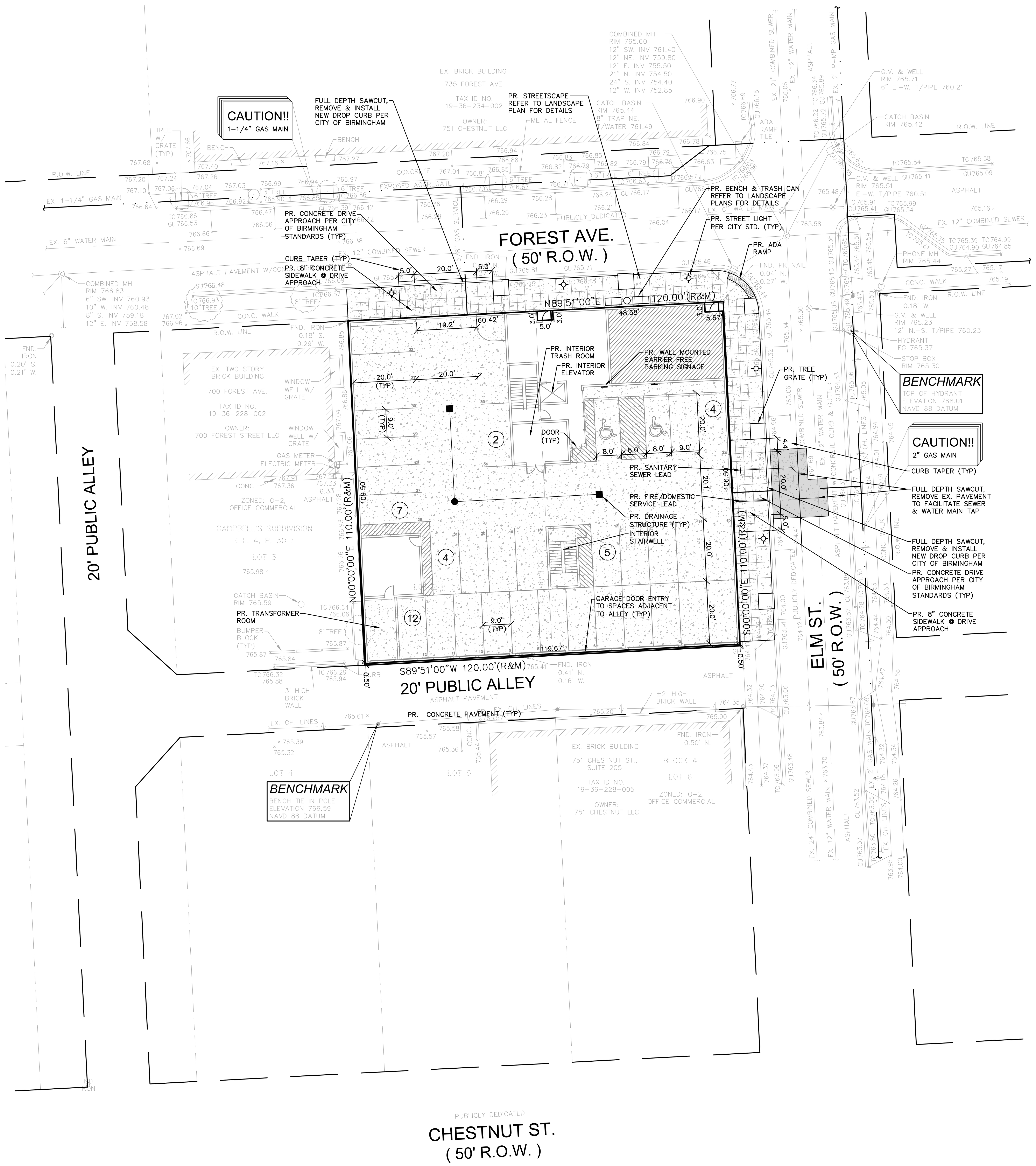
EXISTING TOPSOIL, VEGETATION AND ORGANIC MATERIALS SHALL BE STRIPPED AND REMOVED FROM PROPOSED PAVEMENT AREA PRIOR TO PLACEMENT OF BASE MATERIALS.

EXPANSION JOINTS SHOULD BE INSTALLED AT THE END OF ALL INTERSECTION RADII.

SIDEWALK RAMPS, CONFORMING TO PUBLIC ACT NO. 8, 1973, SHALL BE INSTALLED AS SHOWN AT ALL STREET INTERSECTIONS AND AT ALL BARRIER FREE PARKING AREAS AS INDICATED ON THE PLANS.

ALL PAVEMENT AREAS SHALL BE PROOF–ROLLED UNDER THE SUPERVISION OF A GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF BASE MATERIALS AND PAVING MATERIALS.

FILL AREAS SHALL BE MACHINE COMPACTED IN UNIFORM LIFTS NOT EXCEEDING 9 INCHES THICK TO 98% OF THE MAXIMUM DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT.



Location Map
N.T.S.

NF ENGINEERS

CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
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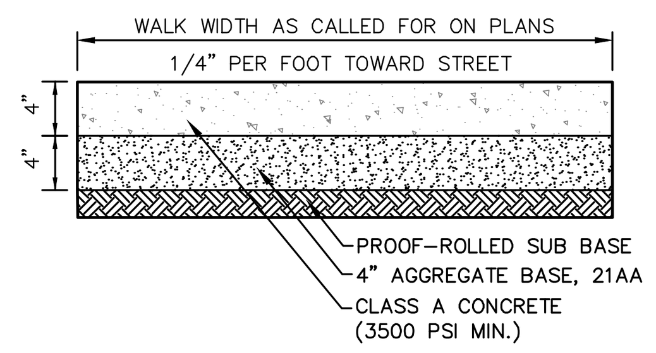
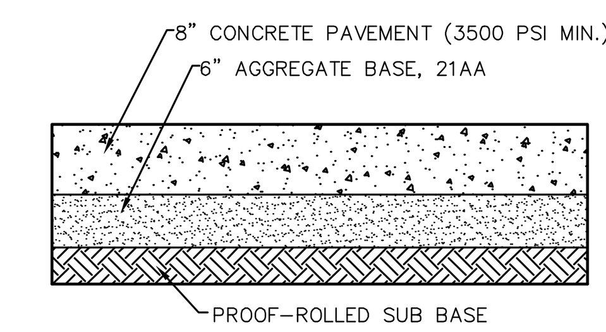
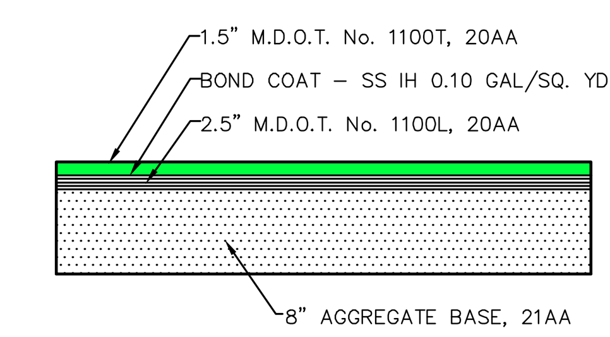


CONCRETE SIDEWALK SECTION
N.T.S.



CONCRETE PAVEMENT SECTION
N.T.S.



ASPHALT PAVEMENT SECTION
(DRIVE AND PARKING)

SEAL

STATE OF MICHIGAN
BRAD W. BRICKEL
ENGINEER NO. 54071
LICENSED PROFESSIONAL ENGINEER

PROJECT
750 Forest Avenue
Condominium Project
Birmingham, MI 48009

CLIENT
Robertson Brothers Homes
6905 Telegraph Road,
Suite 200
Bloomfield Hills, MI 48301

Contact: Jim Clarke
248.282.1428 - Phone
248.282.1432 - Fax

PROJECT LOCATION
Part of the SE 1/4
of Section 36
T.2N., R.10E.
City of Birmingham,
Oakland County, Michigan

SHEET
Engineering Site Plan

LIGHTING NOTE

CITY LIGHTS WILL BE INSTALL BY DTE ENERGY THROUGH A CITY CONTRACT (TYP)

TRASH COLLECTION NOTE

TRASH TO BE COLLECTED INTERNALLY, NO EXTERIOR DUMPSTER ENCLOSURE REQUIRED FOR THIS PROJECT.

PAVING LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT

LEGEND

- MANHOLE — EXISTING SANITARY SEWER
- SAN. CLEAN OUT
- HYDRANT, GATE VALVE — EXISTING WATERMAIN
- MANHOLE, CATCH BASIN — EXISTING STORM SEWER
- EX. R. Y. CATCH BASIN
- EXISTING BURIED CABLES
- UTILITY POLE, GUY POLE, GUY WIRE — OVERHEAD LINES
- LIGHT POLE
- SIGN
- EXISTING GAS MAIN
- C.O., MANHOLE — PR. SANITARY SEWER
- HYDRANT, GATE VALVE — PR. WATER MAIN
- INLET, C.B., MANHOLE — PR. STORM SEWER
- PR. R. Y. CATCH BASIN
- PROPOSED LIGHT POLE
- TC 600.00 — PR. TOP OF CURB ELEVATION
- GU 600.00 — PR. GUTTER ELEVATION
- TW 600.00 — PR. TOP OF WALK ELEVATION
- TP 600.00 — PR. TOP OF PVMT. ELEVATION
- FG 600.00 — FINISH GRADE ELEVATION

SITE DATA

SITE AREA
GROSS/NET: 13,199.95 SQ. FT. OR 0.30 ACRES

ZONING
EXISTING: O2 (OFFICE COMMERCIAL)

SITE AREA	13,199.95 SFT.	100.0%
BUILDING FOOTPRINT	13,071.46 SFT.	99.0%
PARKING & DRIVES	128.49 SFT.	1.0%
OPEN SPACE	0.00 SFT.	0.0%

SETBACK REQUIREMENTS	REQUIRED	PROVIDED
FRONT:	0.0' (N. & E.)	0.0' (N. & E.)
SIDE:	0.0' (S. & W.)	0.5'S. & 0.0'W.
REAR:	N/A	N/A

PARKING REQUIREMENTS
RESIDENTIAL: 1.5 SPACE PER UNIT
22 UNITS x 1.5 = 33 SPACES
RETAIL: 1 SPACE PER 600 SF
1,800 SFT. / 600 = 3 SPACES

TOTAL PARKING REQUIRED = 36 SPACES

PARKING PROVIDED:

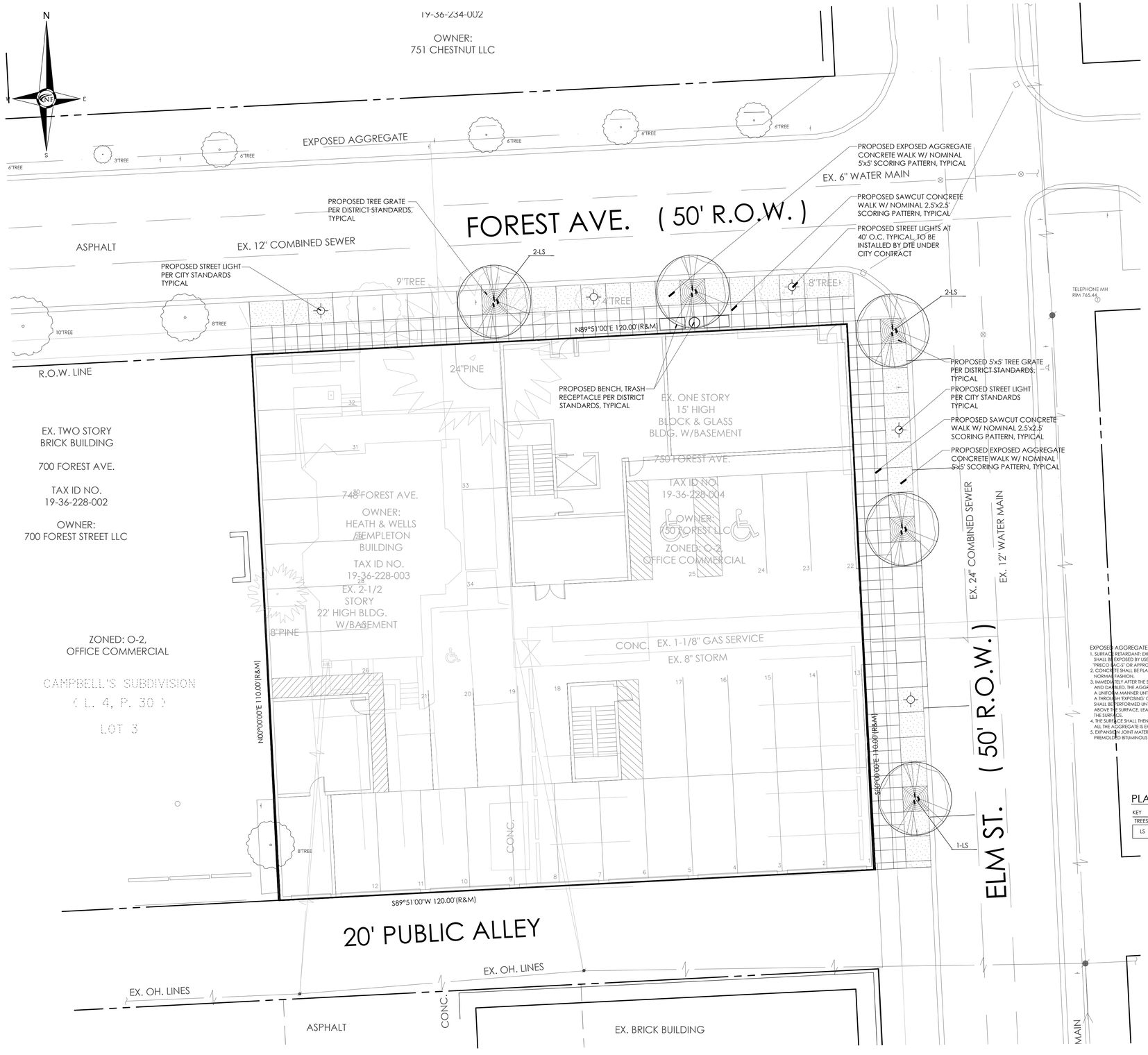
36 SPACES PROVIDED INCLUDING 2 BARRIER FREE SPACES
34 INTERIOR PARKING SPACES & 2 ONSTREET SPACES LOCATED ON ELM ST.

811
Know what's **below**
Call before you dig.

REVISIONS
05–09–16 ISSUED FOR SITE PLAN REVIEW

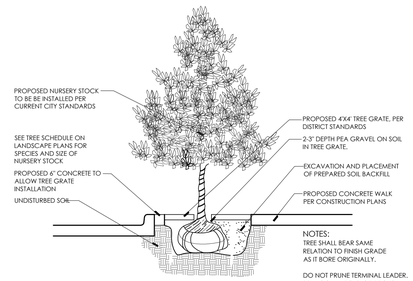
DRAWN BY: R. Johnson
DESIGNED BY: B. Brickel
APPROVED BY: B. Brickel
DATE: May 5, 2016
SCALE: 1" = 20'
20 10 0 10 20 30

NFE JOB NO. **J189**
SHEET NO. **SP2**



GENERAL LANDSCAPE NOTES

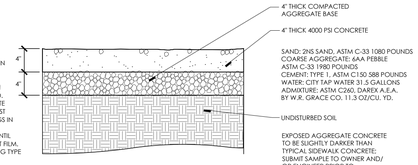
1. LANDSCAPE CONTRACTOR SHALL VISIT SITE, INSPECT EXISTING CONDITIONS AND REVIEW PROPOSED PLANTING AND RELATED WORK, IN CASE OF DISCREPANCY BETWEEN PLAN AND PLANT LIST, THE PLAN SHALL GOVERN QUANTITIES. CONTACT THE LANDSCAPE ARCHITECT WITH ANY CONCERNS.
2. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ON-SITE UTILITIES PRIOR TO BEGINNING CONSTRUCTION ON HIS/HER PHASE OF WORK. ANY DAMAGE OR INTERUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL COORDINATE ALL RELATED ACTIVITIES WITH OTHER TRADES, AND SHALL REPORT ANY UNACCEPTACIBLE SITE CONDITIONS TO THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT.
4. PLANTS SHALL BE FULL, WELL-BRANCHED, AND IN HEALTHY VIGOROUS GROWING CONDITION.
5. PLANTS SHALL BE WATERED BEFORE AND AFTER PLANTING IS COMPLETE.
6. ALL TREES MUST BE STAKED, FERTILIZED AND MULCHED AND SHALL BE GUARANTEED TO EXHIBIT A NORMAL GROWTH CYCLE FOR AT LEAST ONE (1) YEAR FOLLOWING PLANTING.
7. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED IN THE MOST RECENT EDITION OF THE "AMERICAN STANDARDS FOR NURSERY STOCK".
8. CONTRACTOR WILL SUPPLY FINISHED GRADE AND EXCAVATE AS NECESSARY TO SUPPLY PLANT MIX DEPTH IN ALL PLANTING BEDS AS INDICATED IN PLANT DETAILS AND A DEPTH OF 4" IN ALL LAWN AREAS.
9. PROVIDE CLEAN BACKFILL SOIL, USING MATERIAL STOCKPILED ON-SITE. SOIL SHALL BE SCREENED AND FREE OF DEBRIS, FOREIGN MATERIAL, AND STONE.
10. SLOW-RELEASE FERTILIZER SHALL BE ADDED TO THE PLANT PITS BEFORE BEING BACKFILLED. APPLICATION SHALL BE AT THE MANUFACTURERS RECOMMENDED RATES.
11. AMENDED PLANT MIX (PREPARED TOPSOIL) SHALL CONSIST OF 1/3 SCREENED TOPSOIL, 1/3 SAND, AND 1/3 PEAT, MIXED WELL AND SPREAD TO A DEPTH AS INDICATED IN PLANTING DETAILS.
12. ALL PLANTINGS SHALL BE MULCHED WITH SHREDDED HARDWOOD BARK. SPREAD TO A DEPTH OF 4" FOR TREES AND SHRUBS, AND 2" ON ANNUALS, PERENNIALS, AND GROUNDCOVER PLANTINGS. MULCH SHALL BE FREE FROM DEBRIS AND FOREIGN MATERIAL, AND PIECES ON INCONSISTENT SIZE.
13. NO SUBSTITUTIONS OR CHANGES OF LOCATION, OR PLANT TYPE SHALL BE MADE WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE.
14. THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS PRIOR TO INSTALLATION.
15. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL PLANT MATERIAL IN A VERTICAL CONDITION THROUGHOUT THE GUARANTEED PERIOD.
16. THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE SHALL HAVE THE RIGHT TO REJECT ANY WORK OR MATERIAL THAT DOES NOT MEET THE REQUIREMENTS OF THE PLANS AND/OR SPECIFICATIONS.
17. THE LANDSCAPE CONTRACTOR SHALL SEED AND MULCH OR SOD (AS INDICATED ON PLANS) ALL AREAS DESIGNATED AS SUCH ON THE PLANS, THROUGHOUT THE CONTRACT LIMITS. FURTHER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING AREAS DISTURBED DURING CONSTRUCTION, NOT IN THE CONTRACT LIMITS, TO EQUAL OR GREATER CONDITION.
18. ALL LANDSCAPE AREAS SHALL HAVE PROPER DRAINAGE THAT PREVENTS EXCESSIVE WATER FROM PONDING ON LAWN AREAS OR AROUND TREES AND SHRUBS.
19. ALL LANDSCAPE AREAS SHALL BE IRRIGATED WITH AN AUTOMATIC UNDERGROUND SYSTEM.



STREET TREE PLANTING DETAIL

NTS

EXPOSED AGGREGATE CONCRETE NOTES:
1. SURFACE RETARDANT: EXPOSED AGGREGATE FINISH SHALL BE EXPOSED BY USE OF SURFACE RETARDANT "PRECO AC-2" OR APPROVED EQUAL.
2. CONCRETE SHALL BE PLACED, LEVELED AND FLOATED IN NORMAM FASHION.
3. IMMEDIATELY AFTER THE SLAB HAS BEEN SCREENED AND DARBIED, THE AGGREGRATE SHALL BE "WASHED" IN A UNIFORM MANNER UNTIL ENTIRE SURFACE IS EXPOSED. A THROUGH 'EXPOSING' OF THE EMBEDDED AGGREGATE SHALL BE PERFORMED UNTIL ALL AGGREGATE IS LEFT JUST ABOVE THE SURFACE, LEAVING NO HOLES OR OPENINGS IN THE SURFACE.
4. THE SURFACE SHALL THEN BE BRUSHED AND WASHED UNTIL ALL THE AGGREGATE IS EXPOSED AND FREE OF CEMENT FILM.
5. EXPANSION JOINT MATERIAL: RESILIENT, NON-EXTRUDING TYPE PREMOLDED BITUMINOUS IMPREGNATED FIBERBOARD.



EXPOSED AGGREGATE WALK DETAIL

NTS

PLANT SCHEDULE

KEY	QTY	BOTANICAL/COMMON NAME	SIZE	SPACING	ROOT	COMMENT
TREES						
LS	5	Liquidambar styraciflua 'Emerald Sentinel' Emerald Sentinel Sweet Gum	3" CAL	SEE PLAN	B&B	FULLY BRANCHED HEADS

LANDSCAPE REQUIREMENTS

EXISTING SITE AREA: 13,199.95 S.F. OR 0.30 ACRES

STREET FRONTAGE TREES
FOREST AVE:
120 L.F. / 40 L.F. = 3 TREES REQUIRED
2 PROVIDED
ELM STREET:
110 L.F. / 40 = 2.75 OR 3 TREES REQUIRED
3 PROVIDED

NF ENGINEERS
CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257

SEAL

PROJECT
750 Forest Avenue
Condominium Project
Birmingham, MI 48009

CLIENT
Robertson Brothers Homes
6905 Telegraph Road,
Suite 200
Bloomfield Hills, MI 48301

Contact: Jim Clarke
248.282.1428 - Phone
248.282.1432 - Fax

PROJECT LOCATION
Part of the SE 1/4
of Section 36
T.2N., R.10E.
City of Birmingham,
Oakland County, Michigan

SHEET
Landscape Plan

811 Know what's below Call before you dig.

REVISIONS

DRAWN BY:
G. Ostrowski

DESIGNED BY:
G. Ostrowski

APPROVED BY:
G. Ostrowski

DATE:
May 5, 2016

SCALE: 1" = 30'

10 5 0 5 10 15

NFE JOB NO. J189

SHEET NO. L1

750 Forest Avenue

Birmingham MI 48009

COMMUNITY IMPACT STUDY

(Combined C.I.S. and Site Plan Review)

750 Forest Avenue

Owner/Applicant:	Paul C. Robertson, Chairman 6905 Telegraph, Suite 200 Bloomfield Hills MI 48301 248-282-1450
Architect:	McIntosh/Poris Associates 36801 Woodward Ave. Suite 200, Birmingham, MI 48009
Civil Engineer:	Nowak & Fraus Engineers 46777 Woodward Ave Pontiac MI 48342-5032
Land Surveyor:	Nowak & Fraus Engineers 46777 Woodward Ave Pontiac MI 48342-5032
Traffic:	Tetra Tech of Michigan, P.C. 123 Brighton Lake Road, Suite 123 Brighton, MI 48116
Acoustical:	Kolano and Saha Engineers, Inc. 3559 Sashabaw Road, Waterford, MI 48329-2656
Soils:	McDowell & Associates 21355 Hatcher Ave. Ferndale, MI 48220

COMMUNITY IMPACT STUDY – 750 Forest Avenue

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Section 1. Combined CIS & Site Plan Review Application

City of Birmingham
A Walkable Community

Preliminary Site Plan Review Application
Planning Division

Form will not be processed until it is completely filled out.

1. Applicant
Name: ROBERTSON BROTHERS CO.
Address: [redacted] 6905 TELEGRAPH RD #200
BLOOMFIELD HILLS, MI 48301
Phone Number: 248-644-3400
Fax Number: 248-282-1451
Email Address: probertson@robertsonhomes.com

Property Owner
Name: 750 FOREST LLC
Address: 750 FOREST
BIRMINGHAM
Phone Number: (313) 300-1052
Fax Number: ERIC LARSON
Email Address: elarson@larsonrg.com

HERMA & [redacted] WOLF, LLC
748 FOREST
BIRMINGHAM
248-521-4204
STEVE TEMPLETON

2. Applicant's ~~Attorney~~/Contact Person
Name: PAUL C. ROBERTSON
Address: SEE ABOVE
Phone Number:
Fax Number:
Email Address:

Project Designer/Developer
Name: MICHAEL DORIS / MCINTOSH DORIS
Address: 36801 WOODWARD AVE #200
BIRMINGHAM, MI 48009
Phone Number: 248-258-9346
Fax Number:
Email Address: MDoris@MCINTOSHDORIS.com

3. Required Attachments

- Warranty Deed with legal description of property
- Required fee (see Fee Schedule for applicable amount)
- Two (2) folded copies of scaled plans including a certified land survey, color elevations showing all materials, site plan, landscape plan, photometric plan, and interior floor plan
- Photographs of existing site and buildings
- Samples of all materials to be used
- Catalog sheets for all proposed lighting, mechanical equipment & outdoor furniture
- Completed Checklist
- Digital copy of plans
- Additional information as required

4. Project Information

Address/Location of Property: 750 & 748 FOREST.
Name of Development: TBD - "750 FOREST"
Sidwell #: 19-36-228-003 [redacted] & 004
Current Use: O-2
Current Zoning: O-2
Is property located in the floodplain? NO

Name of Historic District site is in, if any: NONE
Date of HDC Approval, if any:
Date of DRB Approval, if any:
Area in Acres:
Proposed Use:
Zoning of Adjacent Properties:
Will proposed project require the division of platted lots?

5. Details of the Nature of Work Proposed (Attach separate sheet if necessary)

750 Forest

750 Forest is a joint venture between Robertson Brothers Homes and the Larson Realty Group. It is a five story midrise on the sites of 750 Forest a 7700 sf office building and 748 Forest a home that has been converted to office use 1035 sf. The proposed building with be essentially parking on the first floor with a concrete or block and plank podium structure with 4 stories of wood construction above. The first floor will include at least 850 sf of retail or office and the residential lobby, trash, utility and transformer space. There will be a small basement under the residential lobby for individual unit storage.

The site is divided between two zoning classifications...MU-3 and MU-5. So the east half of the building is three stories high and west half of the building is five stories high. The building conforms to all the setback and massing requirements under the ordinance. The parking is all enclosed within the building so there is no need for screening walls like you would have with an open parking lot. The same thing applies with the trash, transformers and utilities. They are all inside the building.

The gross square footage under air in the building is 40,384 with 2134 sf in the lobby and 850 in the office units and 3772 in common hallways. So there is 37,400 sf of leasable or salable square footage plus 19 balconies at approximately 50 sf each. One of the other great feature of this building is a common area for all the residents on the roof top of the three story part of the building. It will include a seating area, fire pit and social space plus a dog run. This great common area feature should be a strong selling point for the units.

Using stick construction with an elevator will allow us to keep our lease rates or sale price in a more "affordable" range of $400,000 to $1,000,000. The 2 bedroom units will get 2 parking spaces and the 1 bedroom units will get one parking space. We will also offer "car lifts" as an option so residents will be able to buy an additional space over their existing one. Another great feature for those who have an extra car. We are not worried about the parking situation at all since we are convinced that over the next 10 years Uber or Google or? will supply us with plenty of on-demand second cars that won't need a garage.

The elevation will be very interesting by using the garage section of the first floor as our solid masonry base for much of the building allowing us to use strong window details on the office/retail and residential lobby potion. We will being using two different color schemes for the floors two to five that sort of interlock and give uniqueness to the building. The balconies are critical to making the building feel residential in character. This detail is still being worked on and will be ready with the final site plan as will the roof parapets which are also crucial to making this building feel "right and comfortable" in the this neighborhood. They are also being worked on and refined for final site plan review.

6. Buildings and Structures

Number of Buildings on site: 2
Height of Building & # of stories: 1 1/2 & 2

Use of Buildings: OFFICE
Height of rooftop mechanical equipment: 7'

7. Floor Use and Area (in square feet)

Commercial Structures:

Total basement floor area:
Number of square feet per upper floor: 12,100SF x 2, 6600SF x 2
Total floor area: 40,384 SF
Floor area ratio (total floor area divided by total land area): 1.0
Open space: 0
Percent of open space: 0%

Office space: 850 SF
Retail space: 0
Industrial space: 0
Assembly space:
Seating Capacity:
Maximum Occupancy Load:

Residential Structures:

Total number of units: 22
Number of one bedroom units: 10
Number of two bedroom units: 12
Number of three bedroom units: 0
Open space: 0
Percent of open space: 0%

Rental units or condominiums?: TBD
Size of one bedroom units: 820SF to 1265SF | 1093SF
Size of two bedroom units: 1614SF to 2325SF | 1892SF
Size of three bedroom units: 0
Seating Capacity: 0
Maximum Occupancy Load: 0

8. Required and Proposed Setbacks

Required front setback: 0
Required rear setback: 0
Required total side setback: 0
Side setback: 0

Proposed front setback: 0
Proposed rear setback: 0
Proposed total side setback: 0
Second side setback: 0

9. Required and Proposed Parking

Required number of parking spaces: 22 x 1.5 = 33 + 3 = (36)
Typical angle of parking spaces: 90°
Typical width of maneuvering lanes: 20'
Location of parking on the site: INSIDE BUILDING –
Location of off site parking: NONE
Number of light standards in parking area: INSIDE BLDG
Screenwall material: INSIDE BLDG.

Proposed number of parking spaces: (36)
Typical size of parking spaces: 9.5' x 20'
Number of spaces < 180 sq. ft.: 0
Number of handicap spaces: 2
Shared Parking Agreement?: NONE
Height of light standards in parking area: NONE
Height of screenwall: NONE

10. Landscaping

Location of landscape areas: SIDEWALK AREAS
See LANDSCAPE PLAN –
STANDARD STREET LIGHTS, PAVING TREE, BENCH & TRASH DETAILS.

Proposed landscape material:
FIVE STREET TREES

11. Streetscape

Sidewalk width: EXISTING 11'+12'
Number of benches: 2
Number of planters: 0
Number of existing street trees: 3
Number of proposed street trees: 5
Streetscape Plan submitted?: [redacted] YES ATTACHED

Description of benches or planters: CITY STANDARD
Species of existing street trees: [redacted] ?
Species of proposed street trees: SWEET GUM

12. Loading

Required number of loading spaces: 0
Typical angle of loading spaces: 0
Screenwall material: 0
Location of loading spaces on the site: 0

Proposed number of loading spaces: 0
Typical size of loading spaces: 0
Height of screenwall: 0

13. Exterior Trash Receptacles

Required number of trash receptacles: See Civil Plan
Location of trash receptacles:
Screenwall material:

Proposed number of trash receptacles:
Size of trash receptacles:
Height of screenwall:

14. Mechanical Equipment

Utilities & Transformers:

Number of ground mounted transformers:
Size of transformers (LxWxH): See Arch. Plan.

Number of utility easements:
Screenwall material:

Location of all utilities & easements: See Arch. Plans

Height of screenwall:

Ground Mounted Mechanical Equipment:

Number of ground mounted units: 0 NONE
Size of ground mounted units (LxWxH):

Screenwall material:

Location of all ground mounted units: None

Height of screenwall:

Rooftop Mechanical Equipment:

Number of rooftop units: 22 ROOF-TOP CONDENSORS
Type of rooftop units:

Screenwall material: NONE
Location of screenwalls:

Location of all rooftop units: BOTH ROOFS
Size of rooftop units (LxWxH): TBD.

Height of screenwall: NONE
Percentage of rooftop covered by mechanical units:
Distance from rooftop units to all screenwalls:

15. Accessory Buildings

Number of accessory buildings: NONE
Location of accessory buildings: _____
Size of accessory buildings: _____
Height of accessory buildings: _____

16. Building Lighting

Number of light standards on building: WITH PHOTOMETRIC
Size of light fixtures (LxWxH): PLAN @ FINAL
Maximum wattage per fixture: _____
Light level at each property line: SITE PLAN
Type of light standards on building: _____
Height from grade: _____
Proposed wattage per fixture: _____
Number & location of holiday tree lighting receptacles: _____

The undersigned states the above information is true and correct, and understands that it is the responsibility of the applicant to advise the Planning Division and / or Building Division of any additional changes made to an approved site plan. The undersigned further states that they have reviewed the procedures and guidelines for site plan review in Birmingham, and have complied with same. The undersigned will be in attendance at the Planning Board meeting when this application will be discussed.

Signature of ~~Owner~~ APPLICANT: _____ Date: MAY 6, 2016

Print Name: PAUL C. ROBERTSON

Signature of ~~Applicant~~ OWNER: _____ Date: MAY 9, 2016

Print Name: FRED LAWSON

Signature of Architect: _____ Date: _____

Print Name: _____

Office Use Only

Application #: _____ Date Received: _____ Fee: _____

Date of Approval: _____ Date of Denial: _____ Accepted by: _____

COMMUNITY IMPACT STUDY CHECKLIST

PLANNING DIVISION

Applicant: _____
Case #: _____Date:_
Address:_____
Project: 750 Forest Avenue

All Community Impact Studies prepared for approval must contain the following information:

General Information
__X__ 1. Name and address of applicant and proof of ownership;
__X__ 2. Name of Development (if applicable);
__X__ 3. Address of site and legal description of the real estate;
__X__ 4. Name and address of the land surveyor;
__X__ 5. Legend and notes, including a graphic scale, north point, and date;
__X__ 6. A separate location map;
__X___7. A map showing the boundary lines of adjacent land and the existing zoning of the area proposed to be developed as well as the adjacent land;
__X__8. Details of all proposed site plan changes;

Planning & Zoning Issues
__X__ 9. Recommended land use of the subject property as designated on the future land use map of the city's Master Plan;
__X___10. Goals and objectives of the city's Master Plans that demonstrate the city's support of the proposed development;
__X___11. Whether or not the project site is located within an area of the city for which an Urban Design Plan has been adopted by the Planning Board in which special design criteria or other Supplemental development requirements apply;
_X____12. The current zoning classification of the subject property;
_X____13. The zoning classification required for the proposed development;
_X____14. The existing land uses adjacent to the proposed project;
_X____15. Complete the attached "Zoning Requirements Analysis" chart;

Land Development Issues
__X__ 16. A survey and site drainage plan;
__X___17. Identify any sensitive soils on site that will require stabilization or alteration in order to Support the proposed development;
__X___ 18. Whether or not the proposed development will occur on a steep slope, and if so, the measures that will be taken to overcome potential erosion, slope stability and runoff;
__X___19. The volume of excavated soils to be removed from the site and /or delivered to the site, and a map of the proposed haul routes;

__X___20. Identify the potential hazards and nuisances that may be created by the proposed development and the suggested methods of mitigating such hazards;

Private Utilities

__X___21. Indicate the source of all required private utilities to be provided;
__X___22. Provide verification that all required utility easements have been secured for necessary private utilities;

Noise Levels

_X__ 23. Provide a reading of existing ambient noise and estimated future noise levels on the site;
_X__ 24. Indicate whether the project will be exposed to or cause noise levels which exceed those levels prescribed in Chapter 50, Division 4, Section 50-72 through 50-77 of the Birmingham City Code , as amended;
_X__ 25. Indicate whether the site is appropriate for the proposed activities and facilities given the existing ambient noise and the estimated future noise levels of the site;

Air Quality

_ X____26. Indicate whether the project is located in the vicinity of a monitoring station where air quality violations have been registered and, if so, provide information as to whether the project will increase air quality problems in the area;
__X___27. Indicate if the nature of the project or its potential users would be particularly sensitive to existing air pollution levels and, if so, indicate how the project has been designed to mitigate possible adverse effects;
__X___ 28. Indicate whether the proposal will establish a trend which, if continued, may lead to violation of air quality standards in the future;
__X___ 29. Indicate whether the proposed project will have parking facilities for more than 75 cars and indicate percentage of required parking that is proposed;

Environmental Design and Historic Values

__X___30. Indicate whether there will be demonstrable destruction or physical alteration of the natural or human-made environment on site or in the right-of-way (ie. clearance of trees, substantial regarding, etc.);
__X___31. Indicate whether there will be an intrusion of elements out of character or scale with the existing physical environment (i.e. significant changes in size, scale of building, floor levels, entrance patterns, height, materials, color or style from that of surrounding developments);
__X___32. Indicate all elements of the project that are eligible for LEED points if the building were to be LEED certified (i.e. Extensive use of natural daylight, use of low VOC paint, use of renewable recycled resources, energy efficient mechanical systems, use of wind and solar power, geothermal heating, etc.);
__X___33. Indicate whether the proposed structure will block or degrade views, change the skyline or create a new focal point;

__X___34. Indicate whether there will be objectionable visual pollution introduced directly or Indirectly due to loading docks, trash receptacles or parking, and indicate mitigation measures for same;
__X___35. Indicate whether there will be an interference with or impairment of ambient conditions necessary for the enjoyment of the physical environment (i.e. vibration, dust, odor, heat, glare, etc.);
__X___36. Indicate whether the project area and environs contain any properties listed on the National Register of Historic Places or the city's inventory of historic structures;
__X___37. Provide any information on the project area that the State Historic Preservation Office (SHPO) may have;
__X___38. Indicate whether there will be other properties within the boundaries or in the vicinity of the project that appear to be historic and thus require consultation with the SHPO as to eligibility for the National register;
__X___39. Indicate whether the Department of the Interior has been requested to make a determination of eligibility on properties the SHPO or HDC deems eligible and affected by the project;
__X___40. Provide proof that the HDC has been given an opportunity to comment on properties that are listed on or have been found eligible for the National Register and which would be affected by the project;

Refuse
__X___41. Indicate whether the existing or planned solid waste disposal system will adequately service the proposed development including space for separation of recyclable materials;
__X___42. Indicate whether the design capacity of the existing or planned solid waste disposal system will be exceeded as a result of the project;

Sanitary Sewer
__X___43. Indicate whether existing or planned waste water systems will be able to adequately service the proposed development;
__X___44. Indicate whether the design capacity of these facilities will be exceeded as a result of the project;
__X___45. Indicate the elements of the project that have been incorporated to reduce the amount of entering the sewer system (such as low flush toilets, Energy Star appliances, restricted flow faucets, grey-water recycling etc.);

Storm Sewer
__X__ 46. Indicate whether existing or planned storm water disposal and treatment systems will adequately serve the proposed development;
__X_ 47. Indicate whether the design capacity of these facilities will be exceeded as a result of the project;

__X_ 48. Indicate the elements of the project that have been incorporated to reduce the amount of storm water entering the sewer system (such as the use of pervious concrete, rain gardens, grey-water recycling, green pavers etc.);

Water Service

__X__ 49. Indicate whether either the municipal water utility or on-site water supply system is adequate to serve the proposed project;

__X___50. Indicate whether the water quality is safe from both a chemical and bacteriological standpoint;

__X___51. Indicate whether the intended location of the service will be compatible with the location of the service will be compatible with the location and elevation of the main;

Public Safety

__X__ 52. Whether or not the project location provides adequate access to police, fire and emergency medical services;

__X___53. Whether or not the proposed project design provides easy access for emergency vehicles and individuals (i.e. are there obstacles to access, such as one-way roads, narrow bridges etc.);

__X___54. Whether or not there are plans for a security system which can be expanded, and whether approval for same has been granted by the police department.

__X__ 55. Detailed description of all fire access to the building, site, fire hydrants and water connections;

__X__ 56. Whether or not there are plans for adherence to all city and N.F.P.A. fire codes;

__X___57. Proof that one elevator has been designed to accommodate a medical cart;

__X__ 58. Detailed specifications on all fire lanes/parking lot surfaces/alleys/streets to demonstrate the ability to accommodate the weight of emergency/fire vehicles;

__X___59. Detailed description of all fire suppression systems;

Transportation issues

__X___60. Provide completed FORM A – Transportation Study Questionnaire (Abbreviated);

__X__ 61. Provide completed FORM B – Transportation Study Questionnaire if required by the city's transportation consultant;

__X___62. Indicate whether transportation facilities and services will be adequate to meet the needs of all users (i.e. access to public transportation, bicycle accommodations, pedestrian connections, disabled, elderly etc.);

__X___63. Indicate how the project will improve the mobility of all groups by providing transportation choices;

__X___64. Indicate how the users of the building will be encouraged to use public transit and non-motorized forms of transportation;

__X___65. Indicate the elements that have been incorporated into the site and surrounding right-of- way to encourage mode shift away from private vehicle trips;

__X___66. Indicate the elements of the project that have been provided to improve the comfort and safety of cyclists (such as secured or covered bicycle parking, lockers, bike lanes/paths, bicycle share program etc.);

__X___ 67. Indicate the elements of the project that have been provided to improve the comfort and safety of pedestrians (such a s wheelchair ramps, crosswalk markings, pedestrian activated signal lights, bulb outs, benches, landscaping, lighting etc.);
__X___ 68. Indicate the elements of the project that have been provided to encourage the use of sustainable transportation modes (such as receptacles for electric vehicle charging, parking for scooters/Smart cars etc.);

Natural Features

__X___69. Indicate whether there are any visual indicators of pond and / or stream water quality problems on or near the site;

__X___ 70. Indicate whether the project will involve any increase in impervious surface area and, if so, indicate the runoff control measures that will be undertaken;
__X___ 71. Indicate whether the project will affect surface water flows on water levels of ponds or other
__X___72. Indicate whether the project may affect or be affected by a wetland, flood plain, or floodway;
__X___73. Indicate whether the project location or construction will adversely impact unique natural features on or near the site;
__X___74. Indicate whether the project will either destroy or isolate a unique natural feature from public access;
__X___75. Indicate whether any unique natural feature will pose safety hazards for the proposed development;
__X___76. Indicate whether the project will damage or destroy existing wildlife habitats;

Other Information

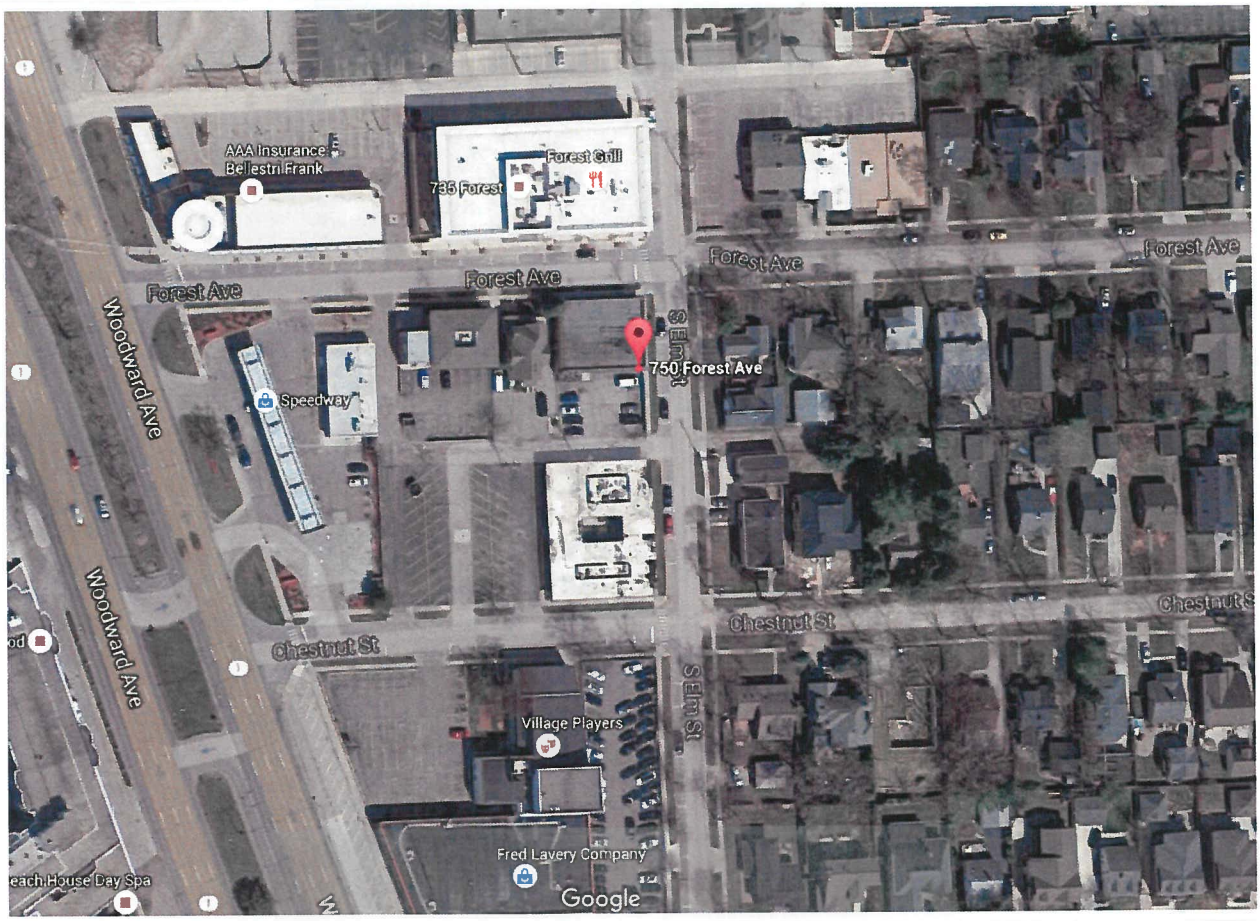
__X___ 77. Any other information as may reasonably be required by the city to assure an adequate analysis of all existing and proposed site features and conditions.

Professional Qualifications

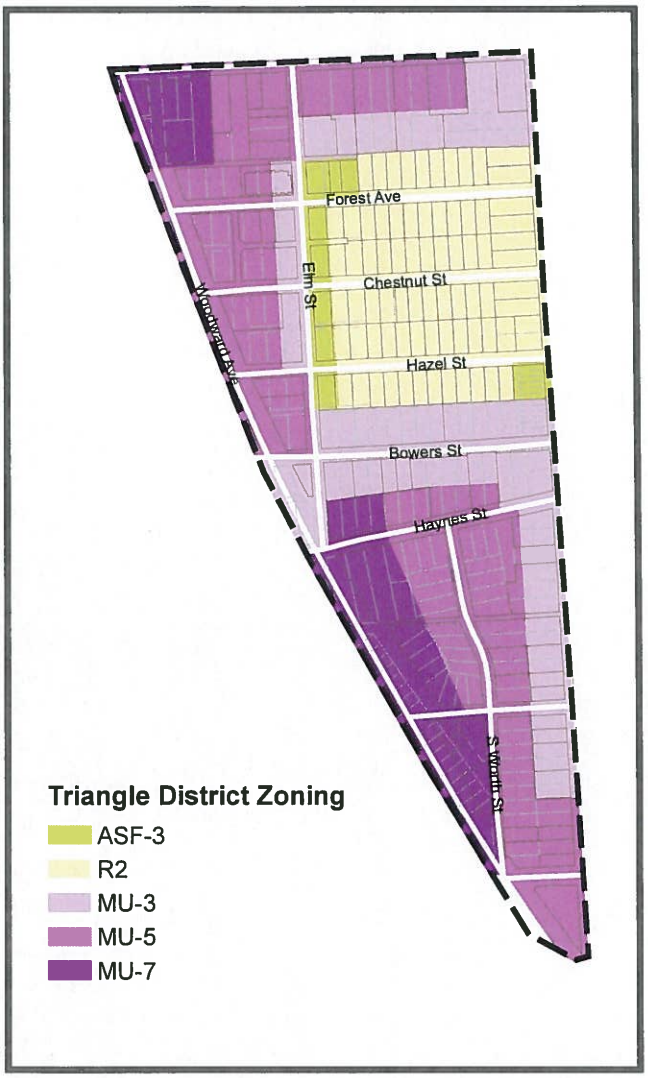
The preparer(s) of the CIS must indicate their professional qualifications, which must include registration in the state of Michigan in their profession where licensing is a state requirement for the practice of the profession (i.e. engineer, surveyor, architect etc.). Where the state does not require licensing (i.e. planner, urban designer, economist etc.), the preparer must demonstrate acceptable credentials including, but not limited to, membership in professional societies, university degrees, documentation illustrating professional experience in preparing CIS related materials for similar projects.

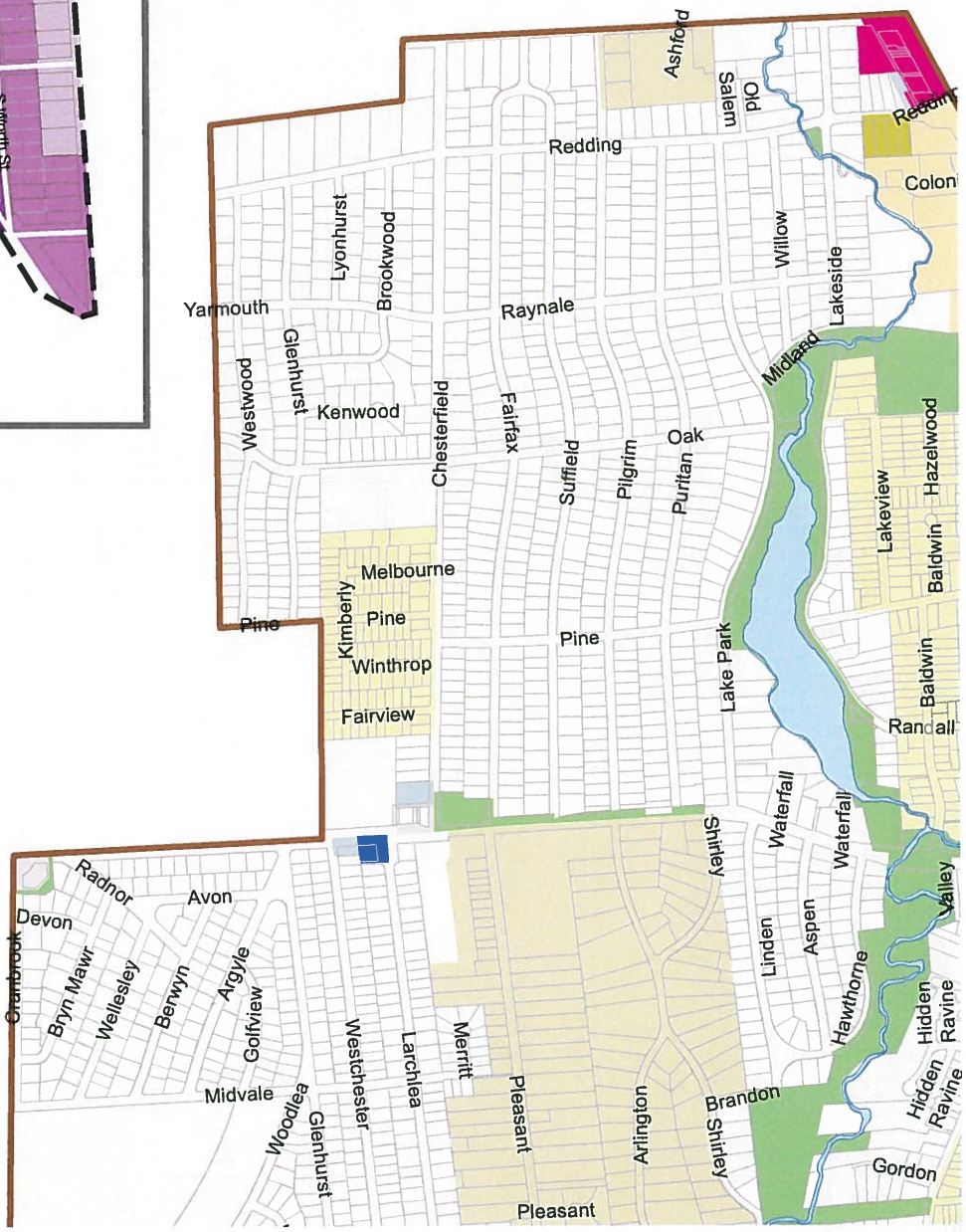
Section 2. Proof of Ownership

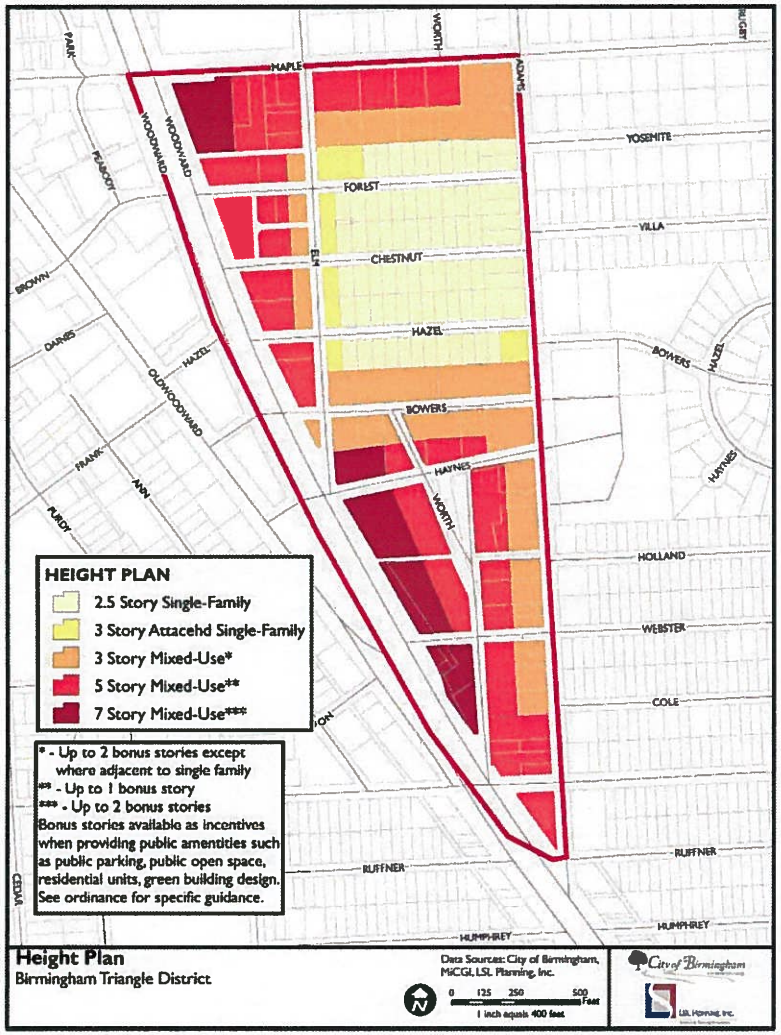
Section 3. Vicinity Map



Section 4. Birmingham Zoning Maps







Triangle District Height Plan

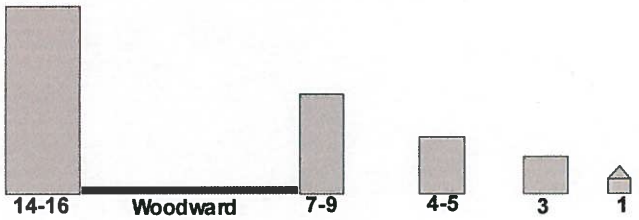
Building Heights

A hierarchy of heights is recommended between Woodward Avenue and the adjacent single-family residential neighborhoods. Taller buildings at least seven stories are needed to properly define the scale of Woodward Avenue's wide right-of-way and the taller buildings on the west side of the road. Building height should then step down to 4-5 stories in the interior of the Triangle District along the narrower streets. Buildings adjacent to single-family residential neighborhoods should be limited to three stories.

Height bonuses of up to an additional two stories will be allowed for developments that offer certain public amenities. These could include making public parking available in private parking structures, providing public open spaces, improvements to the public streetscape or incorporating energy-efficient green building design into structures. Payments to an escrow account designated for off-site amenities should be accepted in lieu of providing them.

New construction should create architectural variety by stepping back upper floors and varying the massing of buildings. Taller building should also be setback from nearby residential neighborhoods.

In order for the Triangle District to efficiently redevelop, parking will need to be provided with multi-level parking structures. The largest public parking structure will be required in the vicinity of Worth Plaza and should be located between the plaza and Woodward to take advantage of the highest allowable heights and best access.



Conceptual Height Cross-Section

Section 5. CIS Checklist - Supplemental Information

General Information

1. Name and Address of Applicant and Proof of Ownership

Paul C. Robertson P.E., Chairman

Robertson Brothers Homes, Suite 200, 6905 Telegraph Rd., Bloomfield Hills, MI 48301

Ownership: 750 Forest – 750 Forest LLC – Eric Larson and 748 Forest – Heath & Wells, LLC – Steve Templeton

2. Name of Development

750 Forest

3. Address of Site and Legal Description of the Real Estate

748 Forest – Sidwell – 19-36-228-003, 50' x 110' lot

750 Forest – Sidwell – 19-36-228-004, 70' x 110' lot

4. Name and Address of Land Surveyor

Nowak & Fraus Engineers, 46777 Woodward Ave., Pontiac, MI 48342-5032

5. Legend and Notes, including a graphic scale, north point, and date

See plans from Nowak and Fraus and Michael Poris & Associates

6. A separate Location Map

See Michael Poris and Associates plans

7. A map showing the boundary lines of adjacent land and the existing zoning of the area proposed to be developed as well as the adjacent land

See Michael Poris and Nowak drawings and zoning map attached

8. Details of all proposed site plan changes

Michael Poris and Nowak and Fraus drawings

Planning & Zoning Issues

9. Recommended land use of the subject property as designated on the future land use map of the City's Master Plan

The zoning of the property is split between 750 Forest as MU-3 and 748 Forest as MU-5. The proposed mixed use building has a limited amount of first floor retail/office which is permitted and the residential lobby. The rest of the first floor is needed to provide the parking required for the residential units. The building meets all the required setbacks and height restrictions per the ordinance

10. Goals and objectives of the City's Master Plan that demonstrate the City's support of the proposed development.

The proposed use is as specified per the master plan

11. Whether or not the project is located within an area of the City for which an Urban Design Plan has been adopted by the Planning Board in which special design criteria or other supplemental development requirements apply.

This project is a mixed use project with a strong residential focus in the Triangle District which has an Urban Design Plan. This project follows the Design Plan with many of the asked for design and planning details.

"Buildings should be designed in a contemporary style and oriented toward their primary street." Our project does this exactly as stated.

"Facades ad rooflines should vary to create relief from continuous surfaces." This project does this with different roof heights and facades, materials and colors and balconies.

"Varied building heights are recommended to properly frame the streets and provide the massing necessary to relate to the scale of the streetscapes." This building provides the "stepped up heights" towards Woodward that the plan asks for.

"Parking needs to be provided more efficiently that the current configuration of disjointed surface parking lots." The two existing buildings provided 17 spaces in exterior parking lots. The new building will provide 34 spaces completely inside the building. These spaces meet the requirement for the current zoning ordinance as written without the need for a municipal parking structure. No parking structure in this neighborhood hurts a developer's ability to provide more mixed use. However, in the next ten years as Uber and others start providing self-driving cars and peoples need for a first and/or second car disappear, the parking needs will decline dramatically.

"Buildings should incorporate a mixture of uses, including a variety of housing types designed to accommodate different types of households." This building has a mix of units between inside one bedroom units for a younger single crowd and lots of corner units of two bedroom units for older empty nesters. We were able to get all our parking on the first floor and not have to go underground and were able to build with wood construction over a concrete podium. These two design considerations were able to allow us to bring the rents and/or sales price into a more modest range than we have seen anywhere in downtown Birmingham in a long time. Hope to be in the range of $400K to $900K if they end up being sold.

12. The current zoning classification of the subject property.

750 Forest is MU-3 and 748 is MU-5

13. The zoning classification required for the proposed development.

The same MU-3 and MU-5. This mixed use building meets all the requirements of these two zoning classifications and is encouraged by the ordinances the Triangle District Urban Plan.

14. The existing land uses adjacent to the proposed project.

There is MU-3 and MU-5 to the north and south of the proposed project. There is MU-5 to the west and ASF-3 across Elm Street to the east.

15. Complete the attached "Zoning Requirements Analysis" chart.

See Section 6 for the "Zoning Requirements Analysis" chart.

16. A survey and site drainage plan.

See drawings from Nowak and Fraus

17. Identify any sensitive soils on the site that will require stabilization or alteration in order to support the proposed development.

Since almost the entire site is covered currently with impervious materials this will have to wait until we have moved the tenants out and start construction. However, since there are two substantial structures that have been there a long time it would suggest that soils are not a problem.

18. Whether or not the proposed development will occur on a steep slope.

There are not steep slopes on the site. In fact just the opposite

19. The volume of excavated soils to be removed from the site and/or delivered to the site, and a map of the proposed haul route.

The site will be very close to balancing. If the soils are compactable, the excavation for the basement will fill in the half a basement left after the existing office removal and re compacted in the office/retail sites.

20. Identify the potential hazards and nuisances that may be created by the proposed development and the suggested methods of mitigating such hazards.

Due to the infill nature of this development, with the building located directly adjacent to public sidewalks and alleys, there is a need to prohibit public access to the site during construction and protect pedestrians on the sidewalk. An 8'tall construction fence is proposed around the perimeter of the site throughout construction

Private Utilities

21. Indicate the source of all required private utilities.

Electric service is proposed to come from the existing overhead lines in the alley to the south of the project. The gas served is proposed to come from the existing 2" gas main in Elm Street where 750 Forest currently has 1 1/8" service already. Telephone and cable will come from the existing poles in the alley to the south and will be all internal inside the building. The exact location of the service lines will be determined by the individual utilities later in the site plan process.

22. Provide verification that all required utility easements have been secured for necessary private utilities.

Utility easements, if any are needed, have not been secured at this time. The location of all necessary easements will be identified and secured prior to construction.

Noise Levels

23. Provide a reading of existing ambient noise and estimate future noise levels on the site.

Kolano and Saha are in the middle of getting the current levels and will have final report shortly

24. Indicate whether the project will be exposed to or cause noise levels which exceed those levels prescribed in Chapter 50, Division 4, Section 50-71 through 50-77 of the Birmingham City Code, as amended.

The operation of this project will not exceed the noise levels prescribed in the Birmingham City Code. Please Kolano and Saha report for additional details.

25. Indicate whether the site is appropriate for the proposed activities and facilities given the existing ambient noise and the estimated future noise levels of the site.

See Kolano and Saha report for additional details

Air Quality

26. Indicate whether the project is located in the vicinity of a monitoring station where air quality violations have been registered and, if so, provide information as to whether the project will increase air quality problems in the area.

This site is located in Southeast Michigan Air Quality District, with monitoring stations in the Pontiac, Rochester, Oak Park and Allen Park, as well as others in the district. This district has attained and surpassed the National Ambient Air Quality Standards for Carbon Monoxide, Nitrogen Dioxide, Ozone, Sulfur Dioxide and particulate matter less than 10 microns and has attained the standard for Annual and 24-hour Fine Particulates, but is awaiting that designation by the EPA

27. Indicate if the nature of the project or its potential users would be particularly sensitive to existing air pollution levels and, if so, indicate how the project has been designed to mitigate possible adverse effects.

The building's HVAC units will be equipped with approved filer system to protect the potential users and individual unit owners will be allowed to put electronic air cleaners or other devices to handle people with high levels of sensitivity

28. Indicate whether the proposal will establish a trend which, if continued, may lead to violation of air quality.

This proposed development will not establish a trend which may lead to a violation of air quality standards.

Environmental Design & Historic Values

30. Indicate whether there will be a demonstrable destruction or physical alteration of the natural or human-made environment on site or in the right-of-way (i.e. Clearance of trees, substantial re-grading, etc.).

The existing office building and home converted to an office will be removed as will the associated parking lots for the two buildings. There are a few small shrubs that will be removed and the site is very flat and will require very little regrading.

31. Indicate whether there will be an intrusion of elements out of character or scale with the existing physical environment (i.e. Significant changes in size, scale of buildings, floor levels entrance patterns, height, materials, color or style form that of surrounding developments).

The proposed building is larger than the two existing structures and larger than the building to the west and is very compatible with the building across the street. The proposed building meets the zoning ordinance in all ways as to height and scale.

32. Indicate all elements of the project that are eligible for LEED points if the building were to be LEED certified (i.e. Extensive use of natural daylight, use of low voc paint, use of renewable/recycled resources, energy efficient mechanical systems, use of wind and solar power, geothermal heating, etc.).

At this point the building is not full designed but elements thus far that would be eligible for LEED points are:

- ***The glass walls for all the residential units will provide occupants a connection to the outdoors thru the introduction of daylight views into regularly occupied areas of the building***
- ***The site is in an urban area and within1/2 mile of 10 services and offers pedestrian access to the services***
- ***The project is located within ¼ of mile of two bus stops for another method of alternative transportation***
- ***Individual HVAC controls in each unit and separate controls for many of the public/service areas will provide a high level of thermal comfort system.***
- ***The building and site will designated "No Smoking" which will prevent or minimize exposure of building occupants, indoor surfaces and ventilation air distribution systems to environmental tobacco smoke,***
- ***Covered storage is provided for securing bicycles for 100% of building occupants, as another method of alternative transportation.***

33. Indicate whether the proposed structure will block or degrade views, change the skyline or create a new focal point.

The proposed building is taller than other buildings in the area and will change the skyline and change some of the view from the adjoining properties, but the proposed building height conforms to the zoning ordinance. The goal is for the building to be prominent but also blend into the urban fabric of the street.

34. Indicate whether there will be objectionable visual pollution introduced directly or indirectly due to loading docks, trash receptacles or parking, and indicate mitigation measures for same.

The proposed building encompasses the entire site and all trash, recycling receptacles, automobiles and electrical transformers will be inside the new structure and out of view.

35. Indicate whether there will be an interference with or impairment of ambient conditions necessary for the enjoyment of the physical environment (i.e. Vibration, dust, odor, heat, glare, etc.).

This development will not generate vibrations, dust, odor, heat, glare that would interfere with or impair the ambient conditions necessary for the enjoyment of the physical environment.

36. Indicate whether the project area and environs contain any properties listed on the National Register of Historic Places or the City's inventory of historic structures.

This property does not appear on the National Register of Historic Places and is not included in the City's inventory of historic structures.

37. Provide any information on the project area that the State Historic Preservation Office (SHPO) may have.

There is none that anyone is aware of.

38. Indicate whether there will be other properties within the boundaries or in the vicinity of the project that appear to be historic and thus require consultation with the SHPO as to eligibility for the National Register.

None of the properties adjacent to the site appears historic and none appear in a search of the state-registered historic properties listed in the State Historic Preservation Office database.

39. Indicate whether the Department of the Interior has been requested to make a determination of eligibility on properties the SHPO or HDC deems eligible and affected by the property.

The existing buildings are not on the National or State Historic Registry

40. Provide proof that the HDC has been given an opportunity to comment on properties that are listed on or have been found eligible for the National Register and which would be affected by the property.

This property is not listed as historic nor is it in a historic district, therefore the HDC will not be involved in this project.

Refuse

41. Indicate whether the existing or planned solid waste disposal system will adequately service the proposed development including space for separation of recyclable materials.

This project will use an enclosed trach chute with probably two 10 CY dumpsters and perhaps six 95 gallon recycling bins to serve this site.

42. Indicate whether the design capacity of the existing or planned solid waste disposal system will be exceeded as a result of this project.

Waste Management and SOCRRA have been contacted and have confirmed their availability to serve the planned solid waste disposal and recycling needs of this project

Sanitary Sewer

43. Indicate whether the existing or planned waste water systems will adequately service the proposed development.

See the attached civil drawings. Sanitary sewer service shall be provide by a connection in Elm Street to the existing 24" combined sewer.

44. Indicate whether the design capacity of these facilities will be exceeded as a result of the project.

The existing 24" combined sewer in Elm Street has adequate capacity to serve this development.

45. Indicate the elements of the project that have been incorporated to reduce the amount of water entering the sewer system (such as low flush toilets, energy star appliances, restricted flow faucets, grey-water recycling, etc).

The building design will include low flow toilets and faucets and energy star appliances.

Storm Sewer

46. Indicate whether the existing or planned storm water disposal and treatment system will adequately service the proposed development.

See attached civil plans. The planned storm water management system for this site will be designed to adequately serve the development.

47. Indicate whether the design capacity of these facilities will be exceeded as a result of the project.

The proposed development has almost exactly the same amount of impervious surface as the existing conditions. Therefore, we do not expect a change in the capacity of the existing services.

48. Indicate the elements of the project that have been incorporated to reduce the amount of storm water entering the sewer system (such as the use of pervious concrete, rain gardens, grey water recycling, green pavers, etc.).

Due to the size of the site, the layout of the proposed building, and the soil conditions, there are no feasible options to significantly reduce the quantity of the runoff from this site,

Water Service

49. Indicate whether the municipal water utility or on site water supply system adequate to service the proposed development.

See the attached civil plans. Water service for this project will be to tap the 12" public water main in Elm Street.

50. Indicate whether the water quality is safe from both a chemical and bacteriological standpoint.

Birmingham's Annual Water Quality Report indicates the City's public water supply surpasses the EPA and MDEQ water quality standards, and is safe from a chemical and biological standpoint.

51. Indicate whether the intended location of the service will be compatible with the location and elevation of the main.

The water service connection will be designed in accordance with City standards to be compatible with the location and elevation of the public water main.

Public Safety

52. Whether or not the project location provides adequate access to police, fire and emergency medical services.

The project is located on the corner of Forest and Elm Streets and that will provide adequate access for emergency vehicles and public safety access.

53. Whether or not the proposed project design provides easy access for emergency vehicles and individuals (i.e. Are there obstacles to access, such as one-way roads,narrow bridges, etc.).

The site has road access on two sides and alley access on a third side.

54. Whether or not there are plans for a security system which can be expanded, and whether approval for the same has been granted by the police department.

The building will be designed with security features and a third party monitoring and security system. The main lobby door will also be controlled via an intercom system connected to the apartments. The apartment units' entrance lobby door and all other building access doors will be locked, with access by a master key o=r by keypad code. The units' entrance lobby door will also be controlled via an intercom system connected to the units.

55. Detailed description of all fire access to the building, site, fire hydrants and water connections.

The building will conform to all applicable fire codes for layout, access, hydrant coverage and water connections. See the preliminary Site Plan and Architectural plans for site and building information.

56. Whether or not there are plans for adherence to all City and NFPA fire codes.

The proposed site and building will be designed to conform to applicable City and National Fire codes

57. Proof that one elevator has been designed to accommodate a medical cart

See our architectural plans. ***Our single elevator will be big enough to accommodate a medical cart***

58. Detailed specifications on all fire lanes/parking lot surfaces/alleys/streets to demonstrate the ability to accommodate the weight of emergency/fire vehicles.

All the access for fire and emergency vehicles will be on public streets and alleys already in place

59. Detailed description of all fire suppression systems.

The building fire suppression system has not been designed yet but will conform to all applicable fire codes

Transportation Issues

60. Provide completed FORM A – Transportation Study Questionnaire (Abbreviated).

See section 11 for the Traffic Impact Study

61. Provide completed FORM B – Transportation Study Questionnaire if required by the City's transportation consultant.

Is not required

62. Indicate whether transportation facilities and services will be adequate to meet the needs of all users (i.e. Access to public transportation, bicycle accommodations, pedestrian connections, disabled, elderly, etc.).

The transportation facilities available to the site (bus service, train service, shuttle bus service, pedestrian connections, bicycle facilities) will be adequate to serve the needs of the residents and staff of the site,

63. Indicate how the project will improve mobility of all groups by providing transportation choices.

Site walkways connect to the right of way walks for pedestrian travel, bike storage/parking is provided, there is a Smart bus stop near the site and an Amtrak station nearby, and on-site parking is provided for private vehicles.

64. Indicate how users of the building will be encouraged to use public transit and non-motorized forms of transportation.

There is a Smart bus stop a block away at Maple and Elm and Smart routes serve much of Metro Detroit area. For longer trips, the Amtrak Station is about ½ mile east near another Smart stop

65. Indicate the elements that have been incorporated into the site and surrounding right-of-way to encourage mode shift away from private vehicle trips.

The location of this site, within the downtown shopping and services plus a block form Krogers makes walking a very feasible alternative to driving.

66. Indicate the elements of the project that have been provided to improve the comfort and safety of cyclists (such as secured covered bicycle parking, lockers, bike lanes/paths, bicycle share programs, etc.).

Storage for bikes is provided for every unit owner.

67. Indicate the elements of the project that have been provided to improve the comfort and safety of pedestrians (such as wheel chair ramps, crosswalk markings, pedestrian activated signal lights, bulb outs, benches, landscape lighting, etc.).

Benches are provides in the right-of-way walks, street lighting in the right-of-way plus building lighting by the garage and entry doors. Primary and secondary access to the building entrances will meet federal accessibility standards.

68. Indicate the elements of the project that have been provided to encourage the use of sustainable transportation modes (such as receptacles for electric vehicle charging, parking for scooters/smart cars, etc.).

We will be able to provide individual electric for specific owner's vehicular spaces if they request it. Since there is no public parking provided there will not be a specific space for electric cars.

Natural Features

69. Indicate whether there are any visual indicators of pond and/or stream water quality problems on or near the site.

This is a completely urban setting with the building covering the entire site There are no streams or ponds anywhere near this site.

70. Indicate whether the project will involve any increase in impervious surface area and, if so, indicate the runoff control measures that will be taken.

There is minimal increase in impervious surface area so a negligible increase in runoff rate into the combine's sewer.

71. Indicate whether the project will affect surface water flows on water levels of ponds or other water bodies.

This project will not affect surface water flows or water levels in ponds or other bodies of water. There are no one nearby and or connected.

72. Indicate whether the project may affect or be affected by a wetland, floodplain or floodway.

There are no wetlands, floodplains or floodways adjacent to or nearby this site. We not affect any one

73. Indicate whether the project location or construction will adversely impact unique natural features on or near the site.

This project will not adversely impact any unique natural feature on this site or adjacent to it.

74. Indicate whether the project will either destroy or isolate a unique natural feature from public access.

This project will not destroy or isolate any unique natural feature on this site or adjacent to it.

75. Indicate whether any unique natural feature will pose safety hazards for the proposed development.

No unique natural feature poses a safety hazard for this proposed project.

76. Indicate whether the project will damage or destroy existing wildlife habitats.

This project will not damage or destroy existing wildlife habitats.

Other Information

77. Any other information as may reasonably be required by the City to assure an adequate analysis of all existing and proposed site features and conditions.

Professional Qualifications

The CIS checklist was prepared by Paul C Robertson, Jr. P.E. from Robertson Brothers Homes.

The civil plans by Brad Brickel, P.E. of Nowak and Fraus Engineers

The architectural plans by Michael Poris AIA of McIntosh/Poris Associates

Section 6. Zoning Requirements Analysis

City of Birmingham
A Walkable Community

ZONING REQUIREMENTS ANALYSIS

Development Standard	Required	Proposed	Variance Required
Zoning Classification	MU-5/MU-3	MU-5/MU-3	
Front Setback	0'-0" MIN./5'-0" MAX	0'-0"	
Rear Setback	10'-0" MIN.	N/A - no rear yard for corner lots	
Side Setback	0' for walls without windows 10' for walls with windows	0' at south side that faces public 20'-0" alley, 10' for east side with windows	
FAR - Percentage	N/A in residential and parking uses	321%	
FAR – Square Footage	N/A	42,399 SF	
Open Space – Percentage	N/A	5%	
Open Space – Square Footage	N/A	2,000 SF roof terrace	
Number of Residential Units	N/A	22	
Minimum Floor Area	1 bedroom units - 600 SF 2 bedroom units - 800 SF	1 bedroom units - 820 SF 2 bedroom units - 1,614 SF	
Maximum Height	MU-3 - 42'-0" MU-5 - 66'-0"	MU-3 - 37'-0" + 2 partial bonus stories MU-5 - 60'-0"	YES if additional height conditions not met
Parking	1.5 per residential units = 33 1 per 300 SF of office = 36 36 TOTAL	36	
Loading	none required for residential or for less than 5,000 SF of commericial	0	
Screening	a wall adjacent to the front or side of any parking facility	building facade will screen parking facility. Bottom of openings in wall to be 32" tall	

Section 7. Noise Impact Study

Section 8. Traffic Impact Study

TETRA TECH

May 9, 2016

Mr. Paul Robertson
Robertson Brothers Company
6905 Telegraph Road, Suite 200
Bloomfield Hills, Michigan 48301

Re: Traffic Impact Assessment
Proposed 750 Forest Mixed Use Development
City of Birmingham, Michigan
200-12848-16001

Dear Mr. Robertson:

Tetra Tech (Tt) has reviewed your proposed mixed-use site plan dated May 2, 2016 for 22 residential units with 850 sq. ft. of retail space. As we understand it, the property is located on the southwest quadrant of Forest Avenue and Elm Street. In the vicinity of the proposed development, both Forest Avenue and Elm Street are two-lane roads with parking on one side, and have unposted speed limits of 25 MPH. Currently the site has a 7,100 sq. ft. office building and a 1,035 sq. ft. former residence that was used for office space. This study has been prepared to compare the trip generation forecasts for the existing and proposed uses, amount of parking required for the proposed site per City Zoning Ordinance, and potential impacts (if any) to the City's Multi-Modal Transportation Plan, and has been prepared in accordance with City of Birmingham requirements.

The site is currently split zoned, with the eastern portion MU-3 Mixed Use and the western portion zoned MU-5 Mixed Use, which permits a wide variety of residential, retail and service business uses on the site. No rezoning of the property is being sought or required for the proposed office development.

The proposed development plan shows a five-story building with 22 residential units and 850 sq. ft. of retail space, for a total gross size of approximately 40,384 sq. ft. and 36 total parking spaces being provided on the site (32 parking stalls, 2 handicapped stalls and 2 on-street parking spaces). The site will have direct access to both Forest Avenue and Elm Street, as well as access to an alley off of Elm Street.

Trip Generation

Using the information and methodologies specified in the latest version of *Trip Generation (9th Edition)* published by the Institute of Transportation Engineers (ITE), Tt forecast the

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123 Brighton Lake Road, Suite 123, Brighton, MI 48116
Tel 810.220.2112 Fax 810.220.0094 www.tetratech.com

total weekday, weekday AM peak hour and weekday PM peak hour trips associated with the sites specified above for the previous office and proposed mixed-use developments for the site.

Given the relatively small size of the existing office developments (8,135 sq. ft.) compared to the average size of the office building developments studied in *Trip Generation (9th Edition)* (105,000 – 162,000 sq. ft.), the average rate was used over the fitted equation, even when the coefficient of determination for the equations were greater than 0.75, in order to provide a more realistic forecast for the existing office development.

Similarly, given the size of the proposed apartment and retail portions of the development, the average rate information was used. Additionally, since information is not provided for the AM peak hour of adjacent street traffic for Land Use 826: Specialty Retail Center, information for Land Use 820: Shopping Center was substituted for the AM peak hour, since LU 820 is considered a similar use to LU 826.

The following tables summarize our findings for the previous office developments and the proposed mixed-use development.

Table 1
ITE Trip Generation for Previous Office Development (Average Rate)

Land Use	Land Use Code	Size (sq. ft.)	AM Peak Hour			PM Peak Hour			Week Day
			In	Out	Total	In	Out	Total	
General Office Building	710	8,135	11	2	13	2	11	13	90
TOTAL NEW TRIPS			**11**	**2**	**13**	**2**	**11**	**13**	**90**

Table 2
ITE Trip Generation for Proposed Mixed-Use Development (Average Rate)

Land Use	Land Use Code	Size	AM Peak Hour			PM Peak Hour			Week Day
			In	Out	Total	In	Out	Total	
Apartment	220	22 units	2	10	12	9	5	14	147
Specialty Retail Center	826	850 sq. ft.	1*	0*	1*	1	2	3	38
TOTAL NEW TRIPS			**3**	**10**	**13**	**10**	**7**	**17**	**185**

* Since information was not available for Land Use 826: Specialty Retail Center during the AM peak hour of the adjacent street traffic, information for Land Use 820: Shopping Center was substituted, since it is considered a similar use.

Table 3
ITE Trip Generation Comparison Between
Previous Office and Proposed Mixed-Use Developments (Average Rate)

Land Use	Land Use Code	Size	AM Peak Hour			PM Peak Hour			Week Day
			In	Out	Total	In	Out	Total	
General Office Building	710	8,135 sq. ft.	11	2	13	2	11	13	90
Apartment	220	22 units	2	10	12	9	5	14	147
Specialty Retail Center	826	850 sq. ft.	1	0	1	1	2	3	38
TOTAL CHANGE IN TRIPS			**-8**	**+8**	**0**	**+8**	**-4**	**+4**	**+95**

For comparative and informational purposes, a table has been provided (attached) showing the trip generation forecasts for the previous retail and proposed office development utilizing information provided by *Trip Generation (9th Edition)*. It should be noted that the results from the fitted equations for the existing and proposed uses are more than double the results obtained from utilizing the average rate. When the size of a proposed site is closer to the typical sizes used by ITE to develop the equations, there is typically a much higher correlation between the results from the average rate and the fitted equations, unlike what is seen here.

As can be seen from Table 3 above, the proposed mixed-use development is forecast to generate the same number of total trips during the AM peak hour, 4 more total trips during the PM peal hour (8 greater inbound but 4 fewer outbound), and 95 more total trips throughout a typical weekday.

Trip Distribution

The forecast trips for the proposed mixed-use development were then distributed to the site driveways in accordance with local traffic patterns. Since historic traffic count information was not available for Forest Avenue and Elm Street, traffic counts for M-1 (Woodward Avenue) and Maple Road, major arterials closest to the proposed development that would likely attract most, if not all, the site traffic, were used. Since traffic is prohibited from going east on Forest Avenue past Elm Street, plus the limited access Elm Street provides, traffic was distributed to/from the north, south and west. The proposed trip distribution for the site is shown in the attached Figure 1. Given the low volumes forecasted, the proposed development is not anticipated to have a significant impact on the operation of the adjacent roadway system.

City of Birmingham Parking Requirements

The City of Birmingham's Zoning Ordinance was reviewed to determine the amount of parking required for the site. The City's Zoning Ordinance was downloaded from the City's website on May 5, 2016, and Article Four: Development Standards provides the off-street parking requirements for each commercial use and residential uses per zoning, specifically in Table A: Required Off-Street Parking Spaces on pages 4-34 and 4-35.

For the retail portion of the site, 1 space is required per 300 sq. ft. of floor area, and for residential uses in areas zoned MX, 1 space is required for each unit with two or fewer rooms, and 1.25 spaces per unit with three or more rooms. In order to provide a conservative analysis, it was assumed that all the residential units within the proposed development would have three or more rooms.

Based on the above information, 3 spaces would be required for the 850 sq. ft. retail portion of the site, and 28 spaces would be required for the 22 residential units in the site, for a total of 31 spaces required by ordinance. Since the site plan indicates that 36 parking spaces will be provided, the site provides adequate parking per the City's ordinance, and does not require a shared parking analysis to be performed.

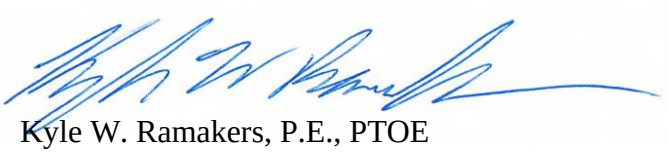
City of Birmingham Multi-Modal Transportation Plan

At the request of the City's traffic consultant, Fleis & VandenBrink Engineering, Inc., the City of Birmingham Multi-Modal Transportation Plan, prepared by The Greenway Collaborative, Inc. dated November 25, 2013 was reviewed to determine if there would be any impacts from the proposed development. Currently there are sidewalks along both Forest Avenue and Elm Street at the project location, and these are proposed to remain under the site plan. According to the Multi-Modal plan, proposed signed bike routes are proposed along both Forest Avenue and Elm Street. No other multi-modal enhancements are proposed adjacent to your proposed development.

Since the proposed development will remain within the existing building envelope along both Forest Avenue and Elm Street, no impacts are anticipated to the City's multi-modal plan (sidewalks will remain unchanged and the signed bike path would not be impacted). In fact, given the transition of the site from professional office use to a predominately residential use, the new residents would likely benefit from the plan, and would likely increase the use of the various features proposed throughout the City of Birmingham.

We trust that this letter fulfills your current transportation needs regarding your proposed development. If you have any questions, please feel free to call our office at (810)-220-2112.

Sincerely,



Kyle W. Ramakers, P.E., PTOE
Transportation Engineer

Attachment: Trip Distribution Figure

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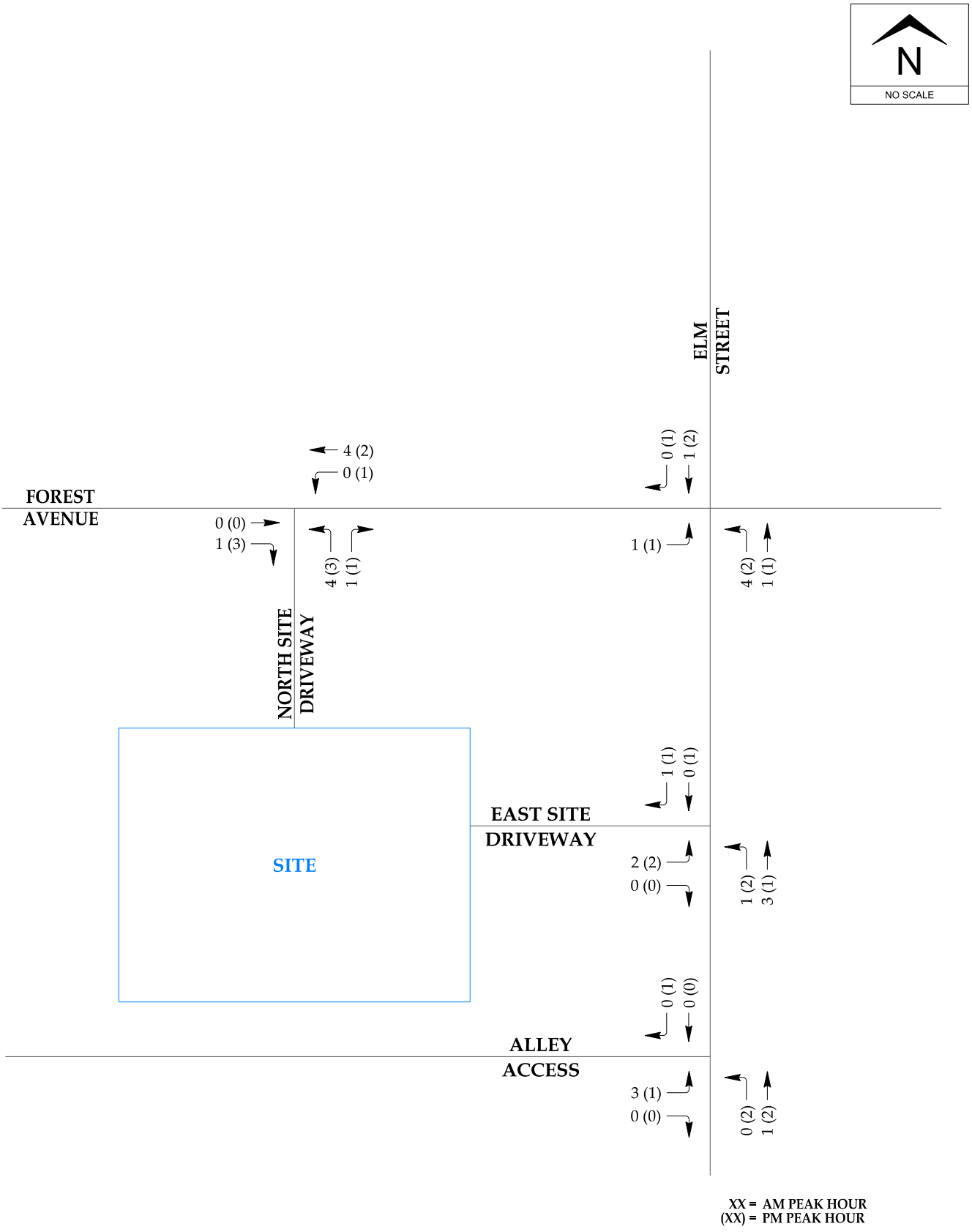

TETRA TECH

SITE GENERATED AM(PM) PEAK HOUR TRAFFIC VOLUMES

FIGURE 1

Section 9. Phase I Environmental Site Assessment

Section 10. Soils Investigation

Section 11. Air Quality Information