Beacon Hill Park and Trailhead • Beacon Hill Meadows Single Family Neighborhood • The Shoppes at Beacon Hill

Beacon Hill Park



IVANHOE COMPANIES

Revised PRO Plan
February 22, 2016

© 2/10/16

BEACON HILL PARK

THE IVANHOE COMPANIES

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Cohesive Integration of uses to create a


Small/Quaint Neighborhood Commercial


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Natural Landscapes

February 22, 2016

Planning Commission
City of Novi
45175 Ten Mile Road
Novi, MI 48375

Re: Beacon Hill Park PRO at northeast corner of 12 Mile and Meadowbrook Roads

Planning Commissioners and City Staff/Consultants:

We are pleased to present the attached revised PRO (Planned Rezoning Overlay) for the site at the northeast corner of 12 Mile and Meadowbrook Roads. These plans include significant revisions and additional details since the concept was presented to Master Plan and Zoning Subcommittee on March 24, 2015 and later the Planning Commission at the Public Hearing in September of 2015. Our changes respond to the input provided at the Master Plan and Zoning subcommittee meeting, various city staff and consultant reports, discussion with the Planning Commission, public comments at the hearing, and meetings we held with our neighbors including two meetings with representatives of Tollgate Farms.

As you know, while much of the surrounding area has developed, this site has remained undeveloped. According to the land owner, while there has been interest in development of this parcel over the years, none of those interested considered development of the site under the current RA zoning to be marketable. Key changes that influence development for this parcel include proximity to the M-5 interchanges, the redesign of 12 Mile Road into a high capacity roadway, and the potential to build off the synergy of the medical and office uses being developed nearby along 12 Mile Road.

The property directly abutting the site's east border has been acquired by the Armenian Church for future construction of a religious institution campus with a community center. The owner of our site had originally planned development that would have included a tax-exempt private school and religious campus. After determining not to pursue development for its own institutional uses, the owners have contemplated various types of other uses including a church, synagogue, mosque, school, banquet, or worship facility, a 159,000 square foot commercial Life Style Center, and a variety of multiple family residential concepts (previous development concepts considered are included in this package).

While each of those development alternatives appeared reasonable and economically feasible, we ultimately informed the owner that we were not the right developer to attempt to rezone the entire 20-acre parcel for those types of uses. The Ivanhoe Companies have always specialized in well -designed residential and/or mixed residential developments that are considerate of natural features. We reached agreement with the land owner to pursue a development that is more consistent with the City's vision and respects the unique environmental features on this site, particularly the creek and wetlands.

Over the past two years, the Ivanhoe Companies have been deeply involved in evaluation of development options for this 20-acre property in consideration of the site's features, adjacent uses, visibility to traffic along 12 Mile Road, and the city's planning goals. We have gone through scenarios including different configurations of commercial frontage along 12 Mile Road, and different residential uses on the majority of the site including apartments, 88 or more townhomes, 54 and now 42 single family lots.

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The Ivanhoe Companies

After a long process of meetings with city staff, consultants, committees and the planning commission, we now present a high quality mixed use community that features a donated park and trailhead at the visible corner, extensive amounts of open space, restored habitat, single family lots tucked back from Meadowbrook Road ("Beacon Hill Meadows"), with a small neighborhood commercial component ("The Shoppes at Beacon Hill"). Our thoughtful layout and abundance of open space will serve as a land use transition from the more intense development along 12 Mile to the residential uses to the north and Tollgate Farms to the west.

This cover letter outlines, along with the following pages and drawings, describe some of the key factors behind our approach and describes key features of our project. Following this letter and the introductory materials are a series of tabs with information such as background on development options considered, a review of the park and open space, information on the residential design and concepts for the commercial development, a detailed landscape plan, natural features information and the traffic study.

SUMMARY OF REQUEST

We have looked at a multitude of higher density alternatives that could be warranted on a major intersection in an area of the city that has changed dramatically. The changes in the area we have noted support the Beacon Hill Park PRO Plan. In consideration of the adjacent properties, we enhanced our design to include deeper and well landscaped greenbelts, buffers, a park, open space and woodlands to provide an excellent land use transition.

In conclusion, we believe the overall plan is unprecedented with unique and valuable benefits to the City and its residents. As you can see, we have made many changes in response to input from the city, consultants, neighbors, and comments at the public hearing. We believe you will agree our PRO Plan offers substantial benefits in the public interest compared to the other realistic development options.

We look forward to presenting our refined proposal to you. If you have any questions or comments, please contact me.

Sincerely,

Gary Shapiro
Ivanhoe Meadowbrook LLC

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CHANGES WE HAVE MADE TO THE PREVIOUS PLANS

Some of the key changes to make this PRO even more compelling are listed below and illustrated on a map that follows this letter.

1) The residential density has been reduced several times to the current 42 homes. The density is now just 2.49 units per acre. This density is consistent with the R-4 Single Family classification. Therefore, we have changed the underlying zoning request from the previous RM-1 multiple family to R4 Single Family with the lot sizes and setbacks as shown in the plan;
2) Lot widths were previously increased from 45 feet to 50 feet;
3) Combined side yards were previously increased from 10 feet between homes to 15 feet;
4) We have improved the residential elevations to include both one and two story options;
5) The northerly open space is now deeper than we had initially proposed;
6) The open space has been increased and now 42% of the site will be open space;
7) The new layout preserves substantially more woodlands than previous layouts;
8) Internal sidewalks and pedestrian connections between the residential and commercial areas have been added and refined;
9) Additional trees will be planted along the south and west property lines and within the Park as part of our tree replacement;
10) In response to requests for more screening, the revised landscape plan includes uses "credits" for required tree replacement so we can provide larger trees in key locations that will create a more immediate screening than using the smaller trees the city typically requires;
11) We reconfigured the layout per suggestions from the city and Tollgate Farms so that homes no longer back onto Meadowbrook Road (previously six rear yards faced Meadowbrook Road;
12) The landscaped buffer along Meadowbrook Road has been increased in depth so that there is a minimum 50 foot wide well landscaped greenbelt to help retain a more natural appearance;
13) The greenbelt area will have approximately 146 trees planted along the Meadowbrook Road frontage;
14) In the center of the development now has a woodlands restoration area to give more natural ambiance to the homeowners in that area;
15) The donated park area has increased from the previous plan from **2.46** acres to **3.28** acres;
16) As requested, in addition to donation of land for the park, it will be contoured, and hydro-seeded, and we commit to construction of six parking spaces, bike racks, and a bench located in the park to help make the non-motorized trailhead more inviting to the public;
17) We have included conceptual elevations of the commercial building(s);
18) The size of the commercial is still capped at 22,000 square feet with one or no drive-through uses (and no "fast food" drive-through uses), and have clarified that the size of the commercial will not be more than 12,000 square feet if we include two drive-through uses;
19) We have provided a traffic study that concludes the traffic impacts can be absorbed along Meadow-brook Road and at the 12 Mile/Meadowbrook Road intersection with an acceptable level of service. An addendum to that traffic study notes that the a 22,000 sq. ft. commercial building with one or no drive through uses would have less traffic impact than the 12,000 sq. ft. with two drive through uses studied;
20) We have provided detailed landscaping plans for the entire PRO;
21) We have provided a woodland survey and comprehensive woodlands restoration plan;
22) We have provided a detailed wetland evaluation restoration and enhancement plan;
23) We have provided a phasing plan.

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The Ivanhoe Companies

FEATURES OF OUR PRO PLAN. Key features of our plan are listed below, illustrations follow.

1. **The Park**. A 3.28 acre park and trailhead that will be donated to the city. Details are now provided including an exhibit of the property that will be conveyed. We will also commit to constructing six parking spaces, installing a bench and bike racks (which supports the city's non-motorize system). This park is in a very visible location and will be a landmark entry to Novi. This park will help fill in a gap in the city's park system, per our review of the city's Park and Recreation Plan.

2. **Open Space and Wetlands Restoration**. The revised design has increased open space to 42% of the site. This open space includes buffers along the east, north and west property lines, with the deepest buffers adjacent to the lower density single family to the north. We also have an extensive greenway corridor between the commercial and residential, adjacent to the park. The area includes habitat restoration, retention and wetland mitigations with an environmentally sensitive and attractive meandering creek that connects to an open pond. We have provided a letter from the MDEQ that states *"the proposed wetland restoration would be an improvement over the dense Phragmites vegetation that currently surrounds the pond… ".* This area of more than 5 acres (inclusive of the Park) will be open to the general public, which will provide a public benefit that the city could not likely achieve without the PRO option.

3. **Residential Density and Layout**. We previously reduced the density to 42 home sites. As suggested by Clearzoning, we have modified our request to R-4 for zoning the residential area. Our requested lot sizes and setbacks, offset by the open space, allow us to fit within the R-4 density density (now only 2.49 units per acre). This is reasonable density for this site as a transition between more or less intense development, particularly related to the plan which includes wooded buffers along the north and east property lines. The residential provides a distinct type of smaller lot owner-occupied single family homes that meets a public need in the city. At the request of the city and Tollgate Farms, we reconfigured the lot layout so no rear lots face Meadowbrook Road.

4. **Greenbelt.** We have deepened the buffer along Meadowbrook Road so the developed areas are now 50 feet from the R.O.W. This buffer will be heavily landscaped including upsizing of some trees (larger than what the city requires at time of planting) so the screening impact will be more immediate. We also have a deep landscaped greenbelt along the commercial frontage.

5. **Walkable Community**. The Plan includes many walkable elements including sidewalks throughout, a non-motorized connection between the commercial and the neighborhood, and a trailhead park with amenities to benefit the city's non-motorized system.

6. **Commercial Phase**. We have proposed B-3 zoning classification on the commercial phase, subject to the following exclusions: fast food restaurants (but allowing fast casual such as Panera Bread, coffee shop, Qdoba, etc.), fueling stations, produce sales, day care centers, business schools and colleges, private clubs, motels, veterinary hospitals or clinics, auto washes, bus passenger stations, new and used car salesrooms, tattoo parlors, outdoor space for car sales, or automobile service centers. This phase will have up to 12,000 square feet if there are two drive-through uses, and a maximum of 22,000 square feet if there is one or no drive through. Our concept plans illustrate the commercial building envelope, with uses and site design details to be provided at time of final site plan approval.

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LIST OF PRO MODIFICATIONS AND COMMITMENTS

We respectfully request a motion for approval pursuant to the PRO plan submittal with the following conditions that will be placed into a PRO Agreement.

A. Conditions:

1. Park and Open Space

a. Developed in accordance with the PRO Plan including the donation of the park with six parking spaces, a bench, bike racks
b. 42% of the site to remain open space

2. Residential- R4

a. Up to 42 single family residences, density of 2.49 units per acre
b. Lot Dimension Minimums are modified:
    a. Min 50' width
    b. Min 7.5' side yard setback
    c. Min 20' front setback
    d. Min 30' rear setback

3. Commercial- B3

a. The size shall be limited to 12,000 square feet if there are two drive-through uses and 22,000 square feet if there is one or no drive thru, with details on the tenant mix, parking, drive-through operations to be described at time of final site plan review.
b. Rezoning to B3 with an agreement the developer will prohibit the following uses that would otherwise be permitted including: fast food restaurants (a change from previous plan), fueling stations, produce sales, day care centers, business schools and colleges, private clubs, motels, veterinary hospitals or clinics, auto washes, bus passenger stations, new and used car salesrooms, tattoo parlors, outdoor space for car sales, or automobile service centers.

4. Woodlands and landscaping

a. Substitution of a wide, well landscaped open space corridor instead of the typical berm between the commercial and residential areas. This wide open space complements the park and wetland habitat restoration area, and provides more benefit to the public.
b. Upsizing woodlands replacement to provide a more immediate screening benefit and to expedite the landscape aesthetics along Meadowbrook Road. Instead of planting the minimum size trees, tree "credits" will be provided for the larger trees as follows:
    - each of the 196 3-inch caliper new tree counts as 1.5 trees and each 4-inch caliper new tree counts as two trees (instead of the typical min 2-inch caliper tree)
    - each of the 114 9-10 foot tall new evergreen trees shall be counted as 1.5 evergreen trees and each of the 34 twelve foot tall new evergreen trees shall be counted as two evergreen trees (instead of planning the minimum seven foot tall evergreens)

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site plan for:

"Beacon Hill Park"

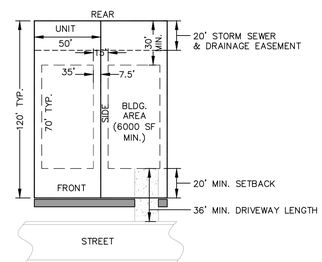
City of Novi, Michigan

north

scale: 0' 30' 60' 120' 180'

program

TOTAL ACRES OF SITE GROSS	21.13 ±
ACRES OF PROPOSED "THE SHOPPES AT BEACON HILL"	3.05
POTENTIAL BUILDING AREA	11,550 S.F.
RETAIL AREA	3,100 S.F.
BANK AREA	3,250 S.F.
RESTAURANT AREA	4,600 S.F.
TOTAL NO. of PARKING REQUIRED for "THE SHOPPES AT BEACON HILL"	103
RETAIL PARKING	16 SPACES
(1-SPACE / 200 SF. = 3,100 / 200= 18.5 SPACES)	
BANK PARKING	22 SPACES
(1-SPACE / 150 SF. = 3,250 / 150= 21.67 SPACES)	
RESTAURANT PARKING	68 SPACES
RESTAURANT "A-1" PARKING	32 SPACES
(48-SEATS / 2=24-SPACES + 10 EMPLOYEE/2=5-SPACES + 100 SFFT. WAITING AREA / 15=3.33-SPACES =32.33 SPACES TOTAL)	
RESTAURANT "A-3" PARKING	36 SPACES
(56-SEATS / 2=28-SPACES + 10 EMPLOYEE/2=5-SPACES + 100 SFFT. WAITING AREA / 15=3.33-SPACES =32.33 SPACES TOTAL)	
TOTAL NO. of PARKING PROVIDED for "THE SHOPPES AT BEACON HILL"	110
BEACON HILL PARK TRAILHEAD PARKING (INSTALLED DURING COMMERCIAL PHASE)	6 SPACES
ACRES OF "BEACON HILL MEADOWS" SITE AREA	13.6 ±
TOTAL No. OF LOTS	42
TYP. LOT SIZE	50'X 120'
MIN. LOTS WIDTH	50'
TYP CORNER LOT WIDTH	63'
FRONT YARD SETBACK	20'
SIDE YARD SETBACK	7.5'/7.5'
REAR YARD SETBACK	30'
DENSITY PER ACRE (MEADOWS)	3.09±
DENSITY PER ACRE (MEADOWS & PARK)	2.49±
TOTAL ACRES OF R.O.W. DEDICATED	1.24 ±
TOTAL ACRES of BEACON HILL PARK TRAILHEAD AREA	
ACRES of BEACON HILL PARK TRAILHEAD AREA	3.28± 8.8± (42%)
ACRES of OPEN SPACE IN BEACON HILL MEADOWS	4.54 ±
ACRES of OPEN SPACE IN THE SHOPPES AT BEACON HILL	.98 ±



typ. unit layout

NO SCALE

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:



client:
IVANHOE MEADOWBROOK LLC
6689 Orchard Lake Road, Suite 314
West Bloomfield, Michigan 48332
ph. (248) 626-6114

project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
site plan

job no./issue/revision date:

LS15.010.06	SPA	6-26-2015
LS15.008.01	SPA	1-11-2016

drawn by:
JP, KH

checked by:
FP

date:
1-4-2016

notice:

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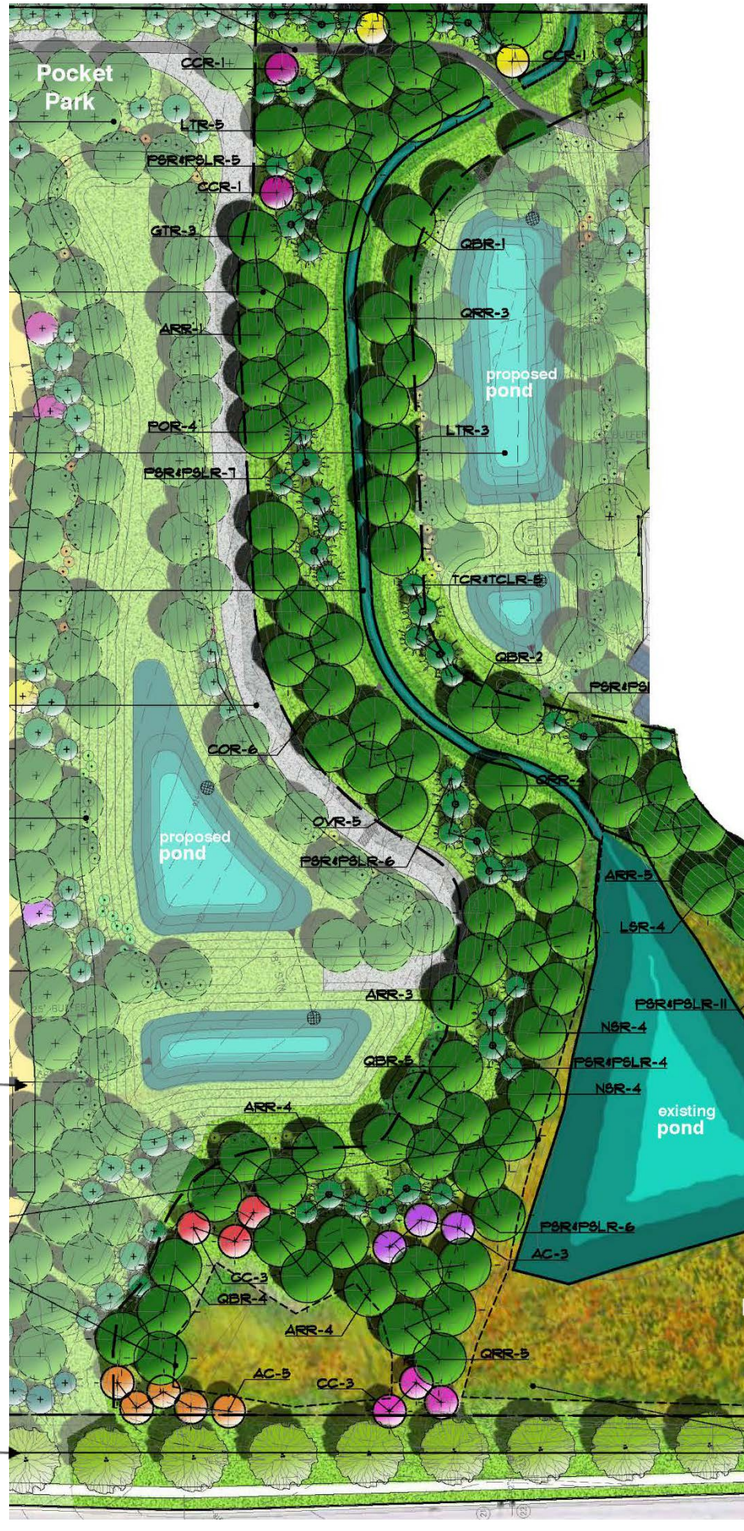
3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171
For free location of public utility lines

The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no:
LS16.008.01

sheet no:
SP-6

PRO Features in the “Public Interest”



The PRO requires that we demonstrate this project will provide a design and amenities that are “in the public interest” compared to a proposal that merely follows the minimum standards of the zoning ordinance. Those features and amenities being provided are listed below:

1. The development has been set back from Meadowbrook Road with a minimum 50-foot landscaped beauty corridor deeper than required and with larger landscaping for more immediate screening benefits.
2. Advances walkability of Novi through sidewalks, a non-motorized connection between the commercial and residential and the trailhead park that will increase connectivity and use of the Novi trails network.
3. **42**% or **8.8** acres of open space on the entire property.
4. Creation of **Beacon Hill Trail Park** (image shown), which will help achieve the City’s goals of additional parkland in this area as noted in the City’s Parks and Recreation Plan. The park will include:
   - Dedication and conveyance of 3.28 acres of developed parkland to City at a highly visible corner of two major roads.
   - A trailhead to help meet the City’s non-motorized transportation goals.
   - Development of the park, including mass and fine grading, contouring, trees, wetland enhancement and restoration plantings, and finish grade hydroseeding on the upland useable portion of the park concurrent with the residential development.
   - Augmenting the creek, removal of the clogged and damaged culverts and realignment of the creek under supervision of the MDEQ.
   - Commiserate with construction of the commercial, the developer will construct the six parking spaces and install a bench and bike racks as shown on the park plan.
   - The wetlands restoration and removal of Phragmites vegetation will improve the quality of the wetland (as noted in the letter from the MEDQ attached in this booklet)





5. Stormwater detention ponds located adjacent to the 3.28 acre park to create a contiguous 5.5 acre open space and habitat area.
6. Provision of a conservation easement, as requested by the MEDQ, for the open space areas.
7. Provides a type of smaller lot, owner occupied single family residential to help meet the public need for more diverse housing opportunities in the city.
8. A well-landscaped greenbelt in front of the commercial along 12 Mile Road.
9. Preservation of a wooded transition buffer along the north property line.
10. A 10 foot buffer along east boundary line.
11. A small amount of niche commercial that will be convenient to employees of the offices along 12 Mile as well as our residents and those in the area.

The costs of these environmentally friendly improvements (not including the base cost to create the retention pond) are in excess of $200,000. In addition, we estimate the value of the land dedicated to the City up to $500,000. These costs to us, in conjunction with the benefits described in this overall list, are substantial.

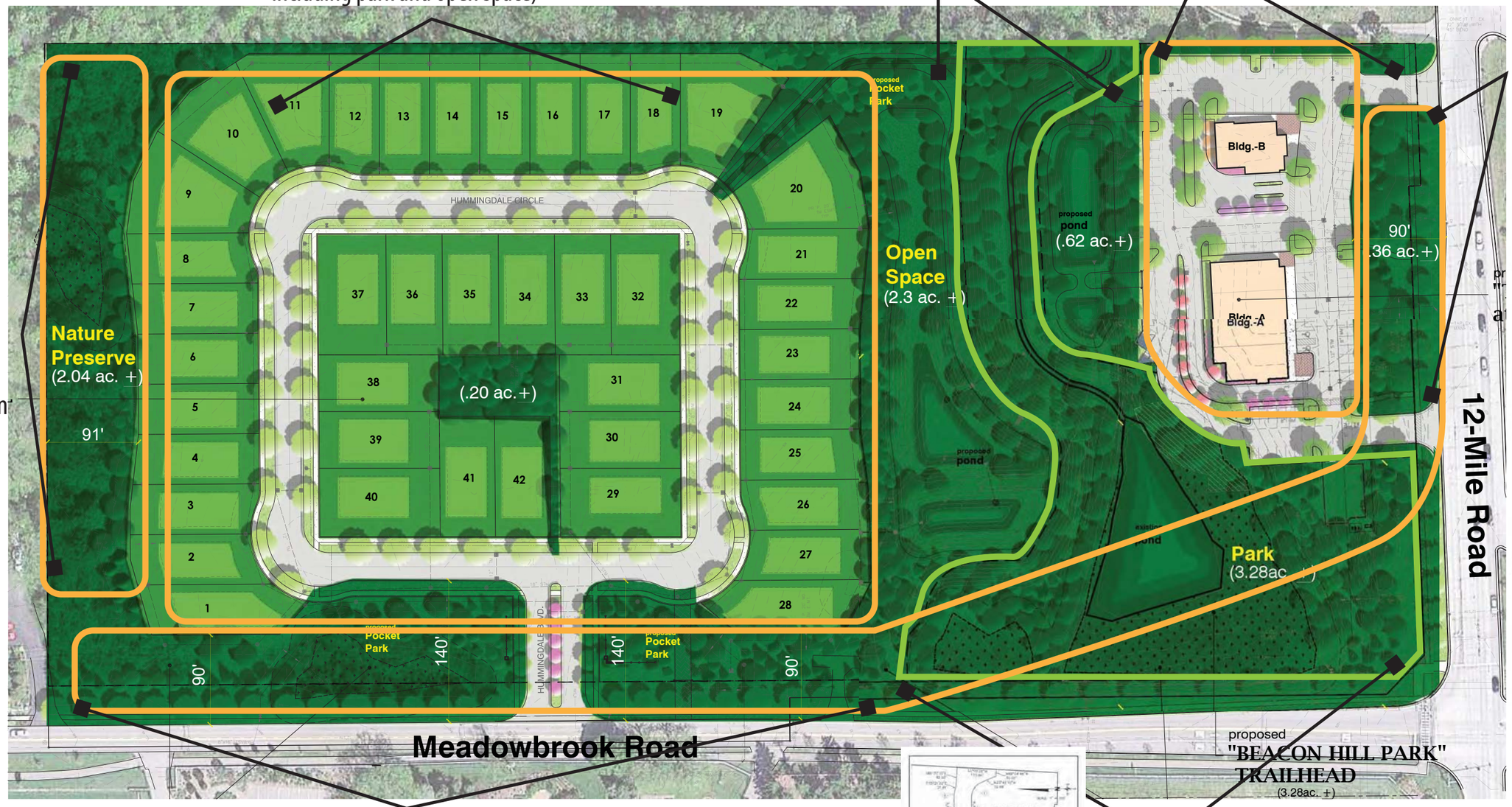
Key Features of the Plan

42 single-family lots with underlying R-4 zoning - density of 3.09 units/acre (2.49 including park and open space)

5+ acre park area and open space (42% open space overall)

11,550 sq. ft. of commercial as shown (up to 12,000 sq. ft. allowed) with two drive-through uses or up to 22,000 sq. ft. with one or no drive-throughs. Restrictions on more intense permitted B-3 uses

Nature preserve to provide transition to the north



Deep landscaped 12 Mile greenbelt/ park area











minimum 50 ft.-plus wide landscaped greenbelt to contribute to the beautification of Meadowbrook Rd.



3.28 acre park and trailhead conveyed to the City with improvements

KEY CHANGES TO THE PLAN

The graphic below highlights the key changes to the previous plan. These were the result of comments of the Planning Commission, city staff/consultants, our meeting with representatives of Tollgate, and our own continued evaluation.

Woodlands:

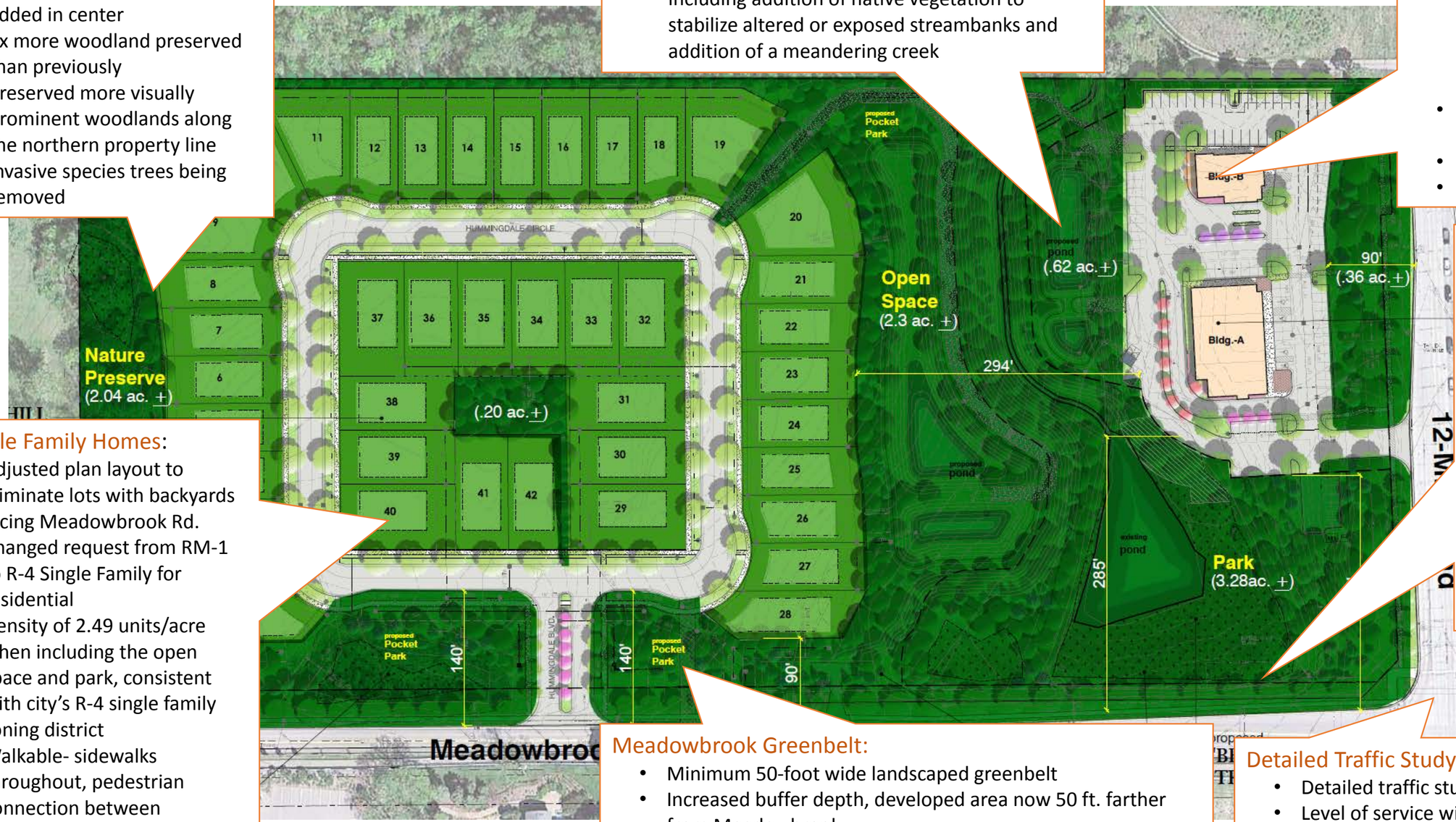
- More detailed woodland survey conducted
- Woodlands restoration area added in center
- 3x more woodland preserved than previously
- Preserved more visually prominent woodlands along the northern property line
- Invasive species trees being removed

Wetlands:

- King MacGregor prepared a detailed wetland evaluation
- Habitat restoration and wetland enhancements, including addition of native vegetation to stabilize altered or exposed streambanks and addition of a meandering creek

Shoppes at Beacon Hill:

- Commercial will be no more than 12,000 sq. ft. with two drive through uses as shown or no more than 22,000 sq. ft. with no drive through uses
- No fast food drive through
- New building elevations
- See Tab 7



42 Single Family Homes:

- Adjusted plan layout to eliminate lots with backyards facing Meadowbrook Rd.
- Changed request from RM-1 to R-4 Single Family for residential
- Density of 2.49 units/acre when including the open space and park, consistent with city's R-4 single family zoning district
- Walkable- sidewalks throughout, pedestrian connection between neighborhood and Shoppes at Beacon Hill
- See Tab 6

Meadowbrook Greenbelt:

- Minimum 50-foot wide landscaped greenbelt
- Increased buffer depth, developed area now 50 ft. farther from Meadowbrook
- Upsizing tree credits to provide larger trees (e.g. 10 and 12-foot high evergreens) for more immediate screening benefit

Park, Trailhead and Open Space:

- Increased size of park to 3.28 acres
- New park amenities including 6 parking spaces, bike racks, and a bench
- Woodlands/ Open Space increased from 38% to 42%
- Conservation easement
- See Tab 4

Detailed Traffic Study:

- Detailed traffic study submitted
- Level of service will remain acceptable along Meadowbrook at its intersection with 12 Mile Road.
- See Tab 11

PROPOSED PRO PLAN

THE IVANHOE COMPANIES

Proposed PRO Plan Overview

After analysis of the potential uses the market would support and given the specific characteristics of this site, we have identified a mix of uses and plan that we feel is most appropriate for this site. The plan has been revised based on input from city staff, consultants, the planning commission and representatives of Tollgate Farms. Our revised proposed plan is comprised of a mix of uses, including

1. A 5.23 acre park area that includes a 3.28 acre park/trailhead that will be conveyed to the city with six parking spaces, a bench, bike racks and landscaping. The overall open space includes an enhanced wetland, creek and habitat that has been endorsed by the MEDQ.

2. A neighborhood with 42 single-family lots at a density of 3.09 units per acre, consistent with R-4 zoning. This type of lot size and housing highly desirable and not readily available in the City of Novi.

3. A neighborhood commercial area that is now limited to no more than 12,000 square feet. This will provide services to the homeowners and employees of the nearby office uses and those passing by on 12 Mile Road.

The site is a transitional piece along a high traffic volume arterial with large scale uses on two sides, and low scale uses on the other two sites. The concept plan creates a land use transition within the site, with small scale commercial along the frontage, with most of the site developed with smaller lot single family homes. Two key amenities are the open space at the corner of Meadowbrook Road and 12 Mile Road and the deep landscaped buffer along Meadowbrook Drive. This mixture of uses to fit the location and character of the site can be best accomplished through the City's Planned Residential Overlay. A PRO will allow the uses and layout proposed through a development that could not be achieved under conventional zoning. The area to be donated for a park and trailhead along with the ample open space (42%) and other design features provide a significant public benefit. Some of the basis to approve the PRO are listed below.

- **Public Benefit.** The park/open space and trailhead donation to the City of Novi will be a significant benefit to the public. Please see the Park, Trailhead and Open Space tab for further details.
- **Consistency with Changing Character of the Area.** As noted in this package, construction of the M-5connector and reconstruction of 12 Mile Road into a high capacity arterial has changed the area. In response to those changes and the market, significant tracts of land to the south are planned for Commercial, Office, and Research and Development uses. Major land uses continue to change the character of the Twelve Mile Road corridor.
- **Presence of Regional Commercial Development.** Twelve Oaks Mall, a regional commercial destination, is less than a mile from the site. The Novi Town Center and West Oaks mall are also nearby.
- **Consistency with Master Plan Goals.** The proposed mixture of uses and the park meet many of the City's Master Plan objectives. Among these are to provide attractive, detached housing types for all, including the aging population looking to remain in the City but who desire smaller lots. The Master Plan also calls for residential developments with adequate provisions for neighborhood open space.
- **Transitional Site.** The neighboring site to the east contains a low-density residential subdivision that has now become an anomaly. Given the changing character of the area, allowing a moderate density residential would be compatible with the planned development in the area, while providing more gradual transition between this low density subdivision and nearby commercial, office and other, more intense development.
- **Uses Allowed.** We propose three uses – park/trailhead/open space, single family residential and commercial. The park would be a dominant visual feature at the key corner area. Our single family residential will be on smaller lots, in return for the vast amount of open space particularly along the site's edges. This is consistent with the recent demand for new, smaller, owner-occupied homes. The frontage along 12 Mile Road would include up to 12,000 square feet of B-3 Business District uses, but with restrictions of particular uses and a limit of one drive-through bank and a fast casual restaurant with a drive through. These uses would enhance the economic vitality of the 12 Mile Road and Meadowbrook Road intersection by serving residents and employees from the surrounding residential and commercial uses, and also users of the park and trail system.
- **Commercial Uses.** This site sits between the M-5 Connector and the 12 Oaks Mall area along a high volume thoroughfare. The commercial shops have been designed to complement the park users and meet the needs of the immediate area. Because we are proposing a PRO mixed use development, we have the ability to work with the City to determine the types of uses allowed in our commercial zones. We believe smaller scale drive-through uses are appropriate for this site. Therefore we seek a B-3 zoning but agree to limit some inappropriate uses that would normally be allowed. We have highlighted the commercial uses we propose to allow and restrict in the following table:

District	Allowed Uses	Restricted Uses
B-1 – Local Business Districts	Instructional centers Professional services	
B-2 – Community Business Districts	Restaurants Theaters	Fueling stations Produce sales/markets Day care centers Business schools and colleges Private clubs Hotels and motels Veterinary hospitals or clinics
B-3 – General Business Districts	One Drive-through "fast casual" restaurant Fast Food sit down Drive-through bank	Fast food drive-through Auto wash Bus passenger stations New and used car salesrooms Tattoo parlors Outdoor space for car sales Motels Automobile service centers

The drawings on the next few pages illustrative the revised plan, highlight key features of the plan and identify the major changes from the previous plan.



SCALE: 1" = 60'

0 30' 60' 120'

PRO

RESIDENTIAL
MEADOWS 42 UNITS

COMMERCIAL
SHOPPES 12,000–22,000 S.F (SUBJECT TO FINAL TENANT MIX)

PHASING

RESIDENTIAL
MEADOWS 13.60 ACRES
PARK TRAILHEAD 3.28 ACRES
16.88 ACRES

COMMERCIAL
SHOPPES 3.05 ACRES

PHASE 1

- MEADOWS – COMPLETE CONSTRUCTION INCLUDING MASS GRADING, UNDERGROUND UTILITY INSTALLATION, PAVING, LANDSCAPING AND TREE REPLACEMENT.
- PARK TRAILHEAD – CONSTRUCTION INCLUDING MASS GRADING, STREAM RELOCATION, WETLAND RESTORATION, LANDSCAPING AND TREE REPLACEMENT.
- SHOPPES – MASS GRADING, INCLUDING SEDIMENTATION AND DETENTION BASINS, STORM SEWER WITHIN THE BASINS AND SITE STABILIZATION.

PHASE 2

- SHOPPES – BALANCE OF CONSTRUCTION INCLUDING UNDERGROUND UTILITY INSTALLATION, PAVING, LANDSCAPING, TREE REPLACEMENT AND SITE LIGHTING.
- PARK TRAILHEAD – BALANCE OF CONSTRUCTION INCLUDING PAVING, BENCH AND BIKERACK INSTALLATION AND RESTORATION OF THE DISTURBED AREAS.

PRO AND PHASING PLAN

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PSP SUBMITTAL	1/11/16										

ZEIMET WOZNIAK & ASSOCIATES
Civil Engineers & Land Surveyors
55800 GRAND RIVER AVE., SUITE 100
NEW HUDSON, MICHIGAN 48165
P: (248) 437-5099 F: (248) 437-5222 www.zeimetwozniak.com

MISS DIG SYSTEM, INC. 1-800-482-7171
THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM

PROJECT SPONSOR:
IVANHOE MEADOWBROOK L.L.C.
6689 ORCHARD LAKE ROAD, STE. 314
BLOOMFIELD HILLS, MI 48322 (248) 626–6114

PRO AND PHASING PLAN
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

FIELD BOOK

DATE 1/11/16	SCALE	HOR: 1" = 60' VER: 1" = N/A	
DESIGNED BY SRB	JOB NO.	14151	
DRAWN BY SRB	SHEET	SP–5	

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Z:\Projects\14151\DWG\14151 prelim SP.dwg, SP-5 PRO AND PHASING PLAN, 2/18/2016 3:32:45 PM, abiaszczyk

LSL Planning
A SAFEbuilt. Company

February 5, 2016

Ms. Barbara McBeth
Deputy Director of Community Development
City of Novi
45175 W. Ten Mile Road
Novi, Michigan 48375

RE: Beacon Hill Revised PRO Plan
Response to Clearzoning Report

Dear Ms. McBeth:

This letter provides a response to the report prepared by Mr. Rodney L. Arroyo from Clearzoning on the previous PRO concept plan submittal. While the entire revised submittal packet can be viewed as a response, we wanted to highlight how the revised PRO package responds to some specific comments and suggestions Mr. Arroyo had made. In addition, some of the points below are in response to a meeting I understand that Mr. Shapiro had with you and Mr. Arroyo on September 17, 2015.

1. As suggested, our request for the underlying residential zoning has changed from RM-1 to R4. The residential density is 2.49 units per acre, within the R-4 density range that was noted by Mr. Arroyo. While the current Master Plan suggests a density of 0.8 units for our site, that was based in part on the density of the Tollgate Farms and more rural residential to the north and northeast. It did not acknowledge the change in character of the area. Also, keep in mind that north of the six large lots along Meadowbrook Road are a church, school and a wide variety of residential densities. We believe our proposed density and the site's design with deep buffers provides an appropriate transition from the more intensely developed 12 Mile corridor to the lower density residential to the north.

   The proposed lot sizes, lot widths and setbacks allow clustering of the homes so that more of the desired open space, buffers and woodlots can be preserved.

2. It was recommended that the plan be revised to change the layout so three lots did not have back yards facing Meadowbrook Road. The revised plan goes even further as we reconfigured all six lots with rear yards facing Meadowbrook Road so that none now do. In addition, the developed area has been set back further from Meadowbrook Road. The Meadowbrook Road greenbelt is now deeper (min. 50 feet) with extensive landscaping, including larger trees than the minimum required. Details are noted on the plans.

3. The revised plan increases the compatibility with the area as requested through an increase in the buffers along the north and west edges of the development. A traffic study was prepared that concluded that the traffic impact along Meadowbrook Road will be modest; the access point will operate at a high level of service.

4. Mr. Arroyo had commented that the proposed park and trailhead previously shown was "unfinished". Improvements and details have now been provided for the park and trailhead so the proposed public benefits of the PRO plan can be seen as more compelling. The specific boundary of the park has now been shown. The PRO includes: grading, contouring and hydroseeding of the park, planting of landscaping as shown, construction of six parking spaces, a bench and bike racks. Other changes have also been made including restoration of the creek and wetland enhancements, with support of the MDEQ. The overall open space was increased to 42% of the site area.

5. Details on the wetlands and woodlands have been provided as requested. The report from King and MacGregor indicates that most of the trees (54%) are non-native species, with little of the diversity associated with a quality woodland resource. Much of the woodlands is dominated by relatively young trees. The replacement trees will be species recommended in the city's Landscape Design Manual arranged in a well-designed pattern.

6. As requested, more information has been provided on the two drive-through uses proposed.

7. The amount of commercial has been clarified and reduced to not more than 12,000 square feet with two drive-through uses (11,550 sq. ft. shown on concept plans) and up to 22,000 sq. ft. with one or no drive through uses. The traffic study was done for the highest traffic scenario with two drive-through uses. The actual size and tenant types will be identified in the final site plan.

8. A traffic impact study was prepared by HRC. The study concludes that the resulting level of service at the Meadowbrook Road access and its intersection with 12 Mile Road will operate at acceptable levels of service in the a.m. and p.m. peak hours.

9. We note that this mixed use project will provide the city tax base benefits that would not be realized if the site were developed with tax exempt users as had been previously considered by the landowner.

10. As requested, a complete list of the benefits of the PRO and the conditions offer by Mr. Shapiro have been provided (see cover letter). These conditions will be included in the PRO Agreement.

11. As requested, Mr. Shapiro met with representatives of Tollgate Farms. A number of the changes to the plan were, in part, a result of discussions at that meeting.

Finally, the entire application package has been refreshed to ensure consistency and eliminate the "options" that were noted to be confusing.

We believe that the changes to the plan and the additional details requested respond to the comments from Mr. Arroyo's report and the subsequent meeting. Many of these changes also respond to input from the planning commission, other city reports, and at a meeting Mr. Shapiro had with representatives of Tollgate Farms. We are hopeful that with these changes we can obtain his endorsement that the PRO Plan is ready to move onto the next phase of the approval process.

Please let me know if you have any questions on this letter or other items in the submittal package.

Sincerely,

B. Strader

LSL Planning
A SAFEbuilt. Company

January 15, 2015

Mr. Gary Shapiro
6689 Orchard Lake Road, Suite 314
West Bloomfield, MI 48322

Dear Mr. Shapiro,

As requested, we have been assisting you with your due diligence regarding the site located on the north east corner of Twelve Mile and Meadowbrook Roads in the City of Novi. You have asked for our professional planning opinion regarding the potential uses for the site and ideas for site layout. Our professional community planner opinions expressed in this letter are based on the following:

- LSL Planning's experience as professional land planners. As you know, LSL Planning is a community planning firm that works on an ongoing basis for dozens of communities. We have prepared over 80 land use plans and zoning codes for municipalities in several states.
- We are frequent instructors at planning commission training programs for municipal and planning organizations. We have used the rezoning criteria promoted by the Michigan Association of Planning as part of our assessment (attached to this letter).
- Review of the City's Master Plan and zoning ordinance.
- Site reconnaissance to observe the conditions in terms of land uses in the area, views, the transportation system, and site features.
- Information you provided, particularly the variety of alternative land uses and development layouts that have been considered for this site.

We took the following approach to evaluate the site and provide guidance:

1. Site Evaluation: The site is just west of an M-5 interchange, which was constructed to improve access to this part of Oakland County. The site has frontage along 12 Mile Road, a regional arterial designed with a median for high volumes of traffic. The site is surrounded by a variety of land uses and zoning districts. Land to the west contains the MSU Tollgate conference center (an institutional use); to the north is single family residential, to the east is a vacant lot where you indicated church campus is going to be constructed. Land to the south of the site is currently vacant, but scheduled for a medical facility. Large scale professional office and OST uses exist and are planned at the southwest corner of the 12 Mile/Meadowbrook intersection. Thus this site is a transition piece between more and less intense land uses.

2. We reviewed the City's Master Plan, Non-Motorized Plans and prioritization report, and zoning ordinance. The City of Novi future land use map designates this site as Single Family Residential. While the site is currently zoned RA for low density single family residential, it has remained undeveloped while much of the surrounding area has changed into more intense uses. We do not believe single family is a reasonable use for the southern part of the site. Instead, we believe a mixture of uses including single family residential on most of the site with neighborhood type commercial along the 12 Mile Road frontage is reasonable. In addition, the provision of a public park at the corner will provide the city a public benefit that would not likely be provided by most other types of development that might be pursued for this site.

3. The City's PRO option provides the zoning mechanism to integrate an appropriate mix of uses into a coordinated design. This type of coordinated development offers an excellent land use transition from 12 Mile Road to the residential areas to the north. This type of development is also consistent with many of the city's goals in the Master Plan.
    - Provide for planned development areas that provide a transition between high intensity office, industrial and commercial uses and one-family residential uses.
    - Encourage development of alternative housing types to provide diversity and higher density in appropriate locations.
    - Attract new residents to the City by providing a full range of quality housing opportunities that meet the housing needs of all demographic groups including but not limited to singles, couples, first time home buyers, families and the elderly.
    - Create, preserve and enhance quality residential areas in the City.
    - Enhance Novi's reputation as an attractive community in which to live.
    - Create aesthetically pleasing developments, especially in residential areas.
    - Encourage residential developments that promote healthy lifestyles.

- The park at the corner is consistent with several Master Plan and Non-Motorized Plan goals concerning park space and walkability, the corresponding trail head connection and the commercial businesses fronting 12 Mile Road:
    - Provide parks to meet the needs of the city's current and future residents, and particularly in this part of the city.
    - Encourage recreation opportunities in the City in the face of diminished open space and funding.
    - Provide walkable residential developments with pedestrian amenities, open space and a park.
    - Interconnect the City's pedestrian and bicycle paths.

- The City's Planned Residential Overlay (PRO) in the zoning ordinance was crafted to allow unique projects with features to benefit the public. The City's PRO allows for a mixed use rezoning tied to a concept plan and development agreement to establish conditions that make the rezoning appropriate, such as uses allowed, lot size, setbacks, design standards and the amount of open space. The provision of public park space at the corner and other amenities being provided will be consistent with the PRO's requirement that you provide a project that is "in the public interest." Among the public benefits provided will be the donation of a key corner as a highly visible park and trailhead. In addition, the PRO option will allow you to include some of the commercial uses that are appropriate for the site, like a restaurant or drive through coffee or bank, but restrict uses that are not compatible with the character of the PRO and surrounding area that the zoning district would otherwise allow. The PRO also allows the smaller lot single family residential that is not addressed in any of the City's single family districts. This will provide a type of owner occupied housing that studies have shown are missing in the region but will still fit the character of Novi.

Based on the above, I believe a mixed use development with a city park/trailhead, single family neighborhood and small scale commercial developed under a PRO is an exciting use for the site and reflective of the changes in the area. This integrated mix of uses will provide an effective land use transition between institutional and professional offices to the south, west, and east and the single family neighborhoods to the north and northeast. Other uses previously considered, such as institutional uses would create more traffic and also more impervious surface. The cluster of shops fronting 12 Mile Road will provide an amenity (a "place") to complement the park and also serve as a buffer for the residential parcels from the noise and other impacts associated with the high traffic speeds and volumes along 12 Mile Road. The shops will also be convenient for the surrounding residents, employees and park visitors. But the key feature is the park/trailhead at this highly visible corner. Combined with the ample open space, this will provide an asset that benefits both the development and the city.

In summary, the proposed plan is a well-conceived concept for this site. We believe it is consistent with the City's Master Plan objectives and sound planning principles. Your attention to design details will meet the expectations for high quality development in the City of Novi. We hope your proposal will be well received. We look forward to working with you through the approval process with the City.

Respectfully submitted,
LSL PLANNING, INC.

Bradley K. Strader

ALTERNATIVES CONSIDERED

THE IVANHOE COMPANIES

Concepts and Alternatives

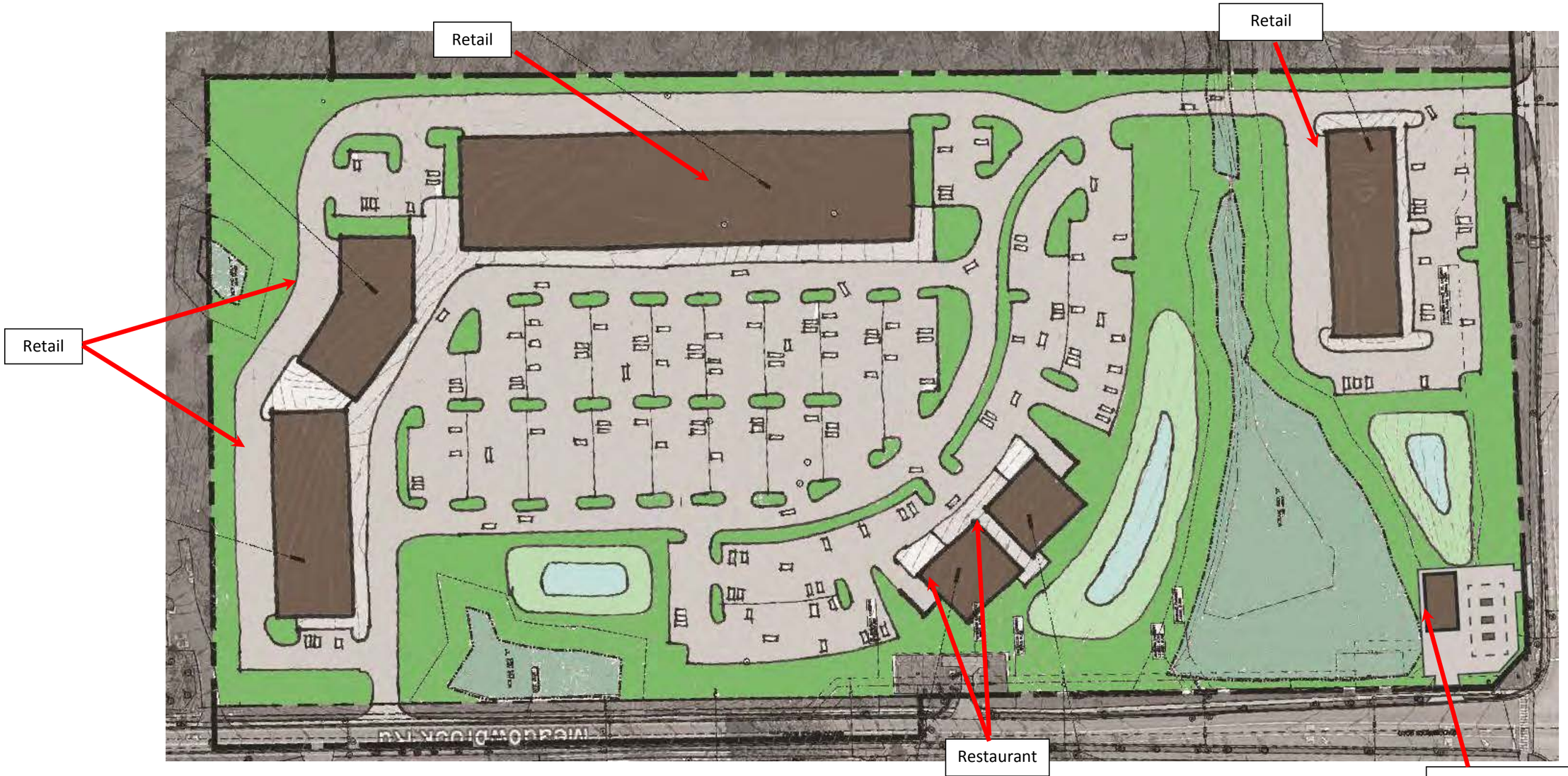
Based on all the changes in the area outlined in the Changing Characteristics Tab – a number of development alternatives were explored, including those shown here.

Alternative 1: A lifestyle commercial center with 159,000 square feet of retail was evaluated for the entire site. While marketable, this alternative would be less compatible with the land use to the north and west, and would have a more significant traffic impact.



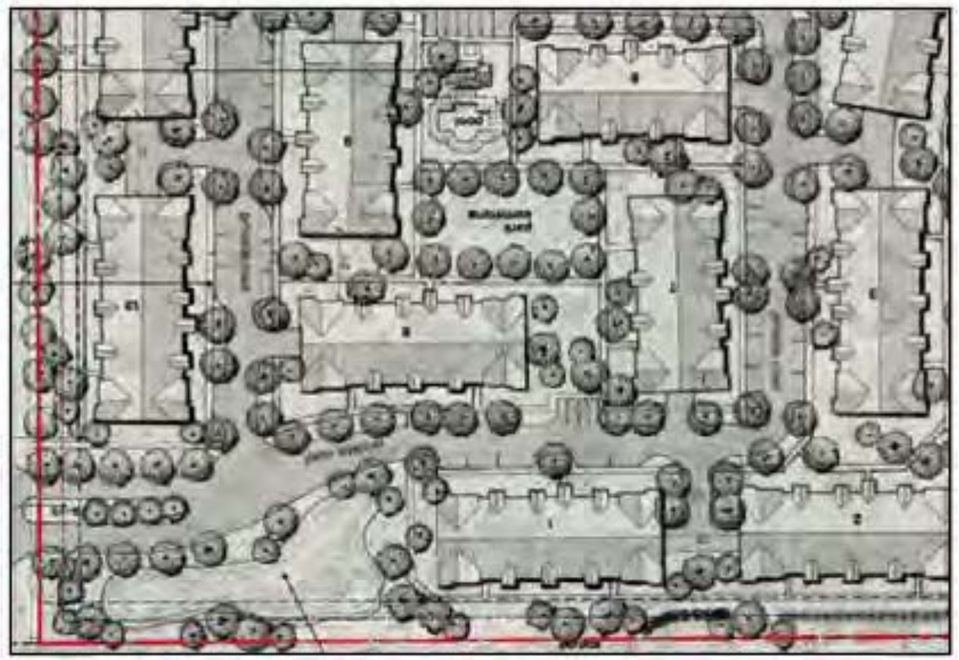
Alternative 1: Lifestyle Center

Alternative 2: This alternative featured a neighborhood shopping center with four different retail spaces (102,000 total S.F.) and two restaurants (12,600 total S.F.), which would have required a rezoning to B3. While others may feel that type of use is warranted at the corners of two major thoroughfares. The Ivanhoe Companies is not interested in being the developer for commercial development on the entire site.



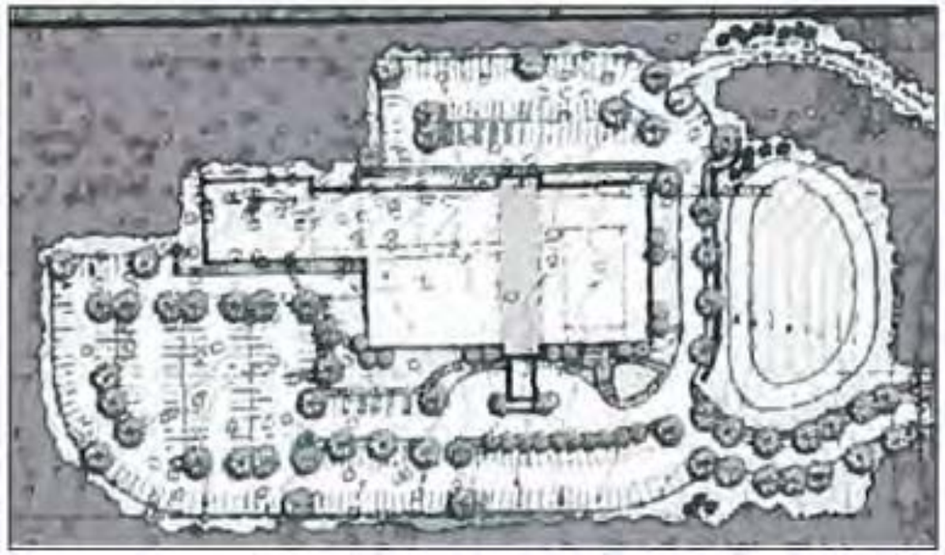
Alternative 2: Neighborhood Shopping Center

Alternative 3: One alternative considered was a 250 unit Multi-Family development.



Alternative 3: Multi-Family Concept Plan

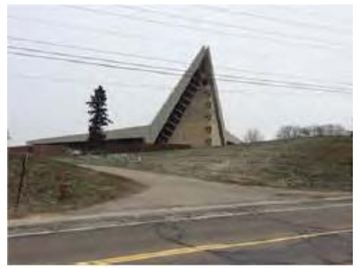
Alternative 4: Several alternatives were considered to sell the site for institutional use such as a church, synagogue, mosque, or institutional campus, similar to the proposed campus to the east of the property.



Alternative 4: Church Campus Concept Plan



Mosque



Synagogue



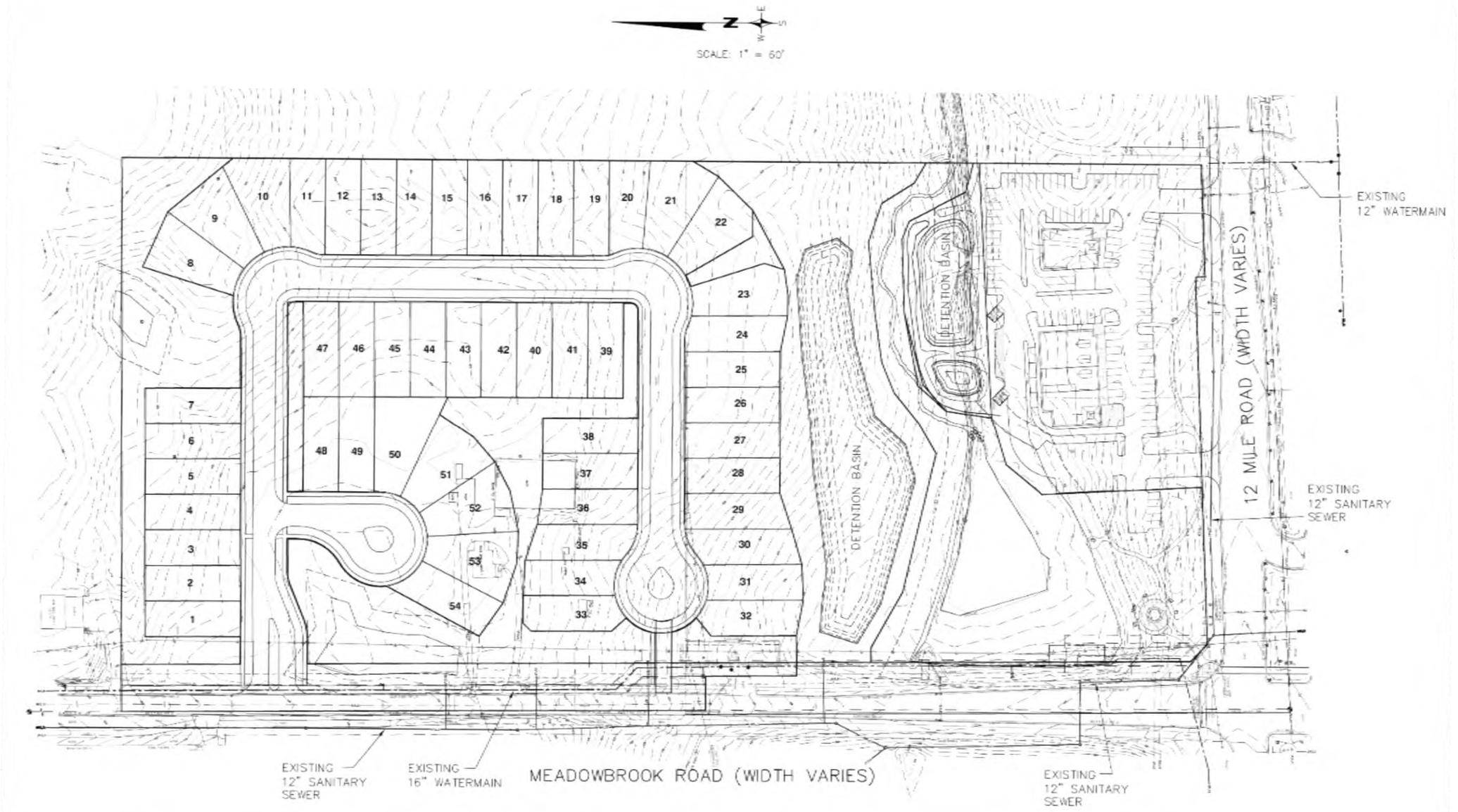
Church

Alternative 5: Another alternative (below), a mixed use development, consisted of retail space and a restaurant fronting 12 Mile Road, with 87 attached townhomes as the residential portion of the site.



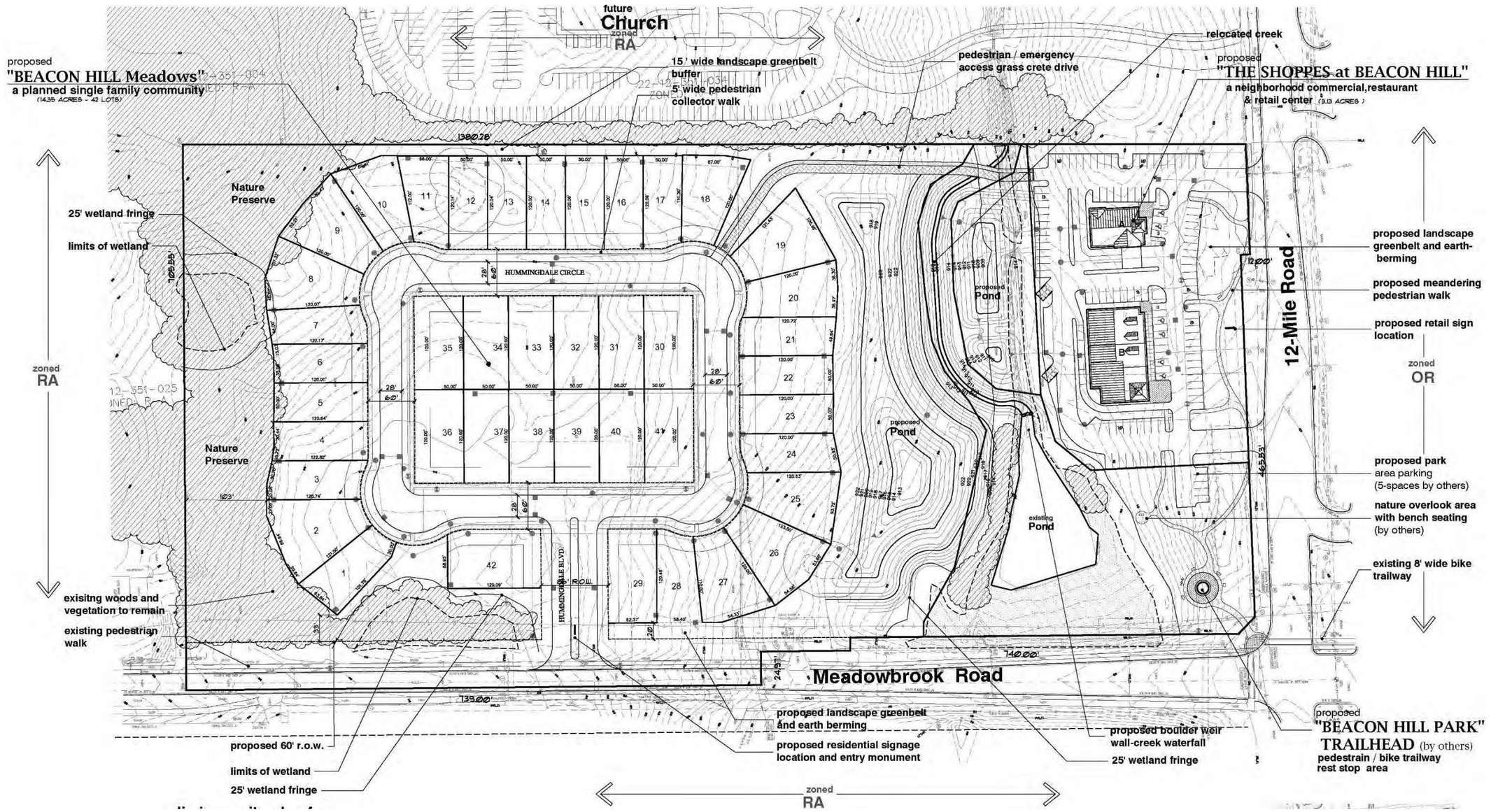
Alternative 5: Mixed Use Concept Plan

Alternative 6: Alternatively, an option including 54 single family homes plus up to 11,550 square feet of commercial was considered.



Alternative 6: Single Family Homes and Retail
Concept Plan

Alternative 7: PRO Plan presented at the Public Hearing.



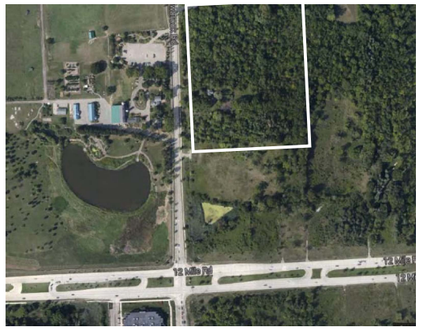
Alternative 7: PRO Plan

CHANGING CHARACTERISTICS IN THE AREA

THE IVANHOE COMPANIES

Changing Characteristics

Beacon Hill is proposed to be developed on a 21 acre site that contains a small amount of wetlands. The site is mostly flat with some concentrated woodlands towards the rear of the site. The front two thirds of the site contains intermittent trees. The site sits on the north side of 12 Mile Road, directly to the east of Meadowbrook Road, with approximately 1,000 feet of frontage. The Meadowbrook frontage is approximately 1,600 feet. The site is surrounded by a mixture of uses, including institutional, commercial and residential. One major factor in the design of our project was the major changes occurring to 12 Mile Road, which is now a major arterial.



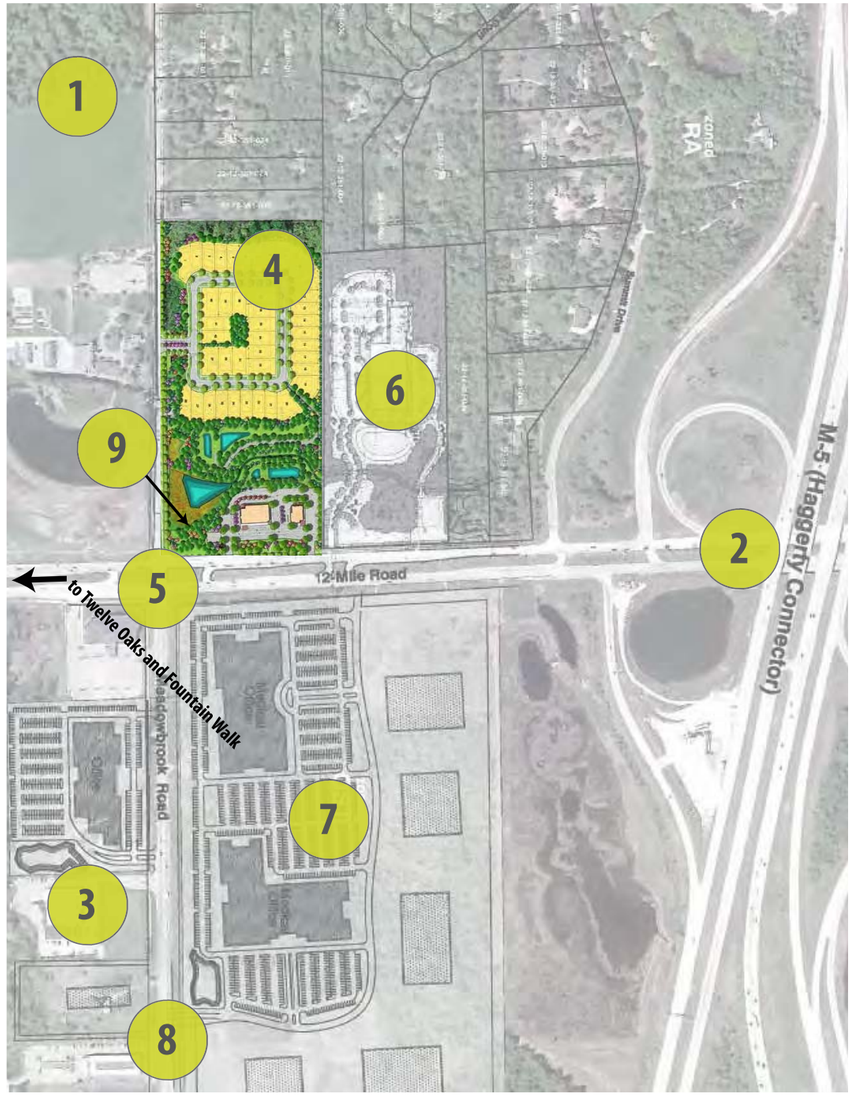
Since the area near to our site was developed over 50 years ago, it has gone through multiple different changes that make the original large lot single-family surrounding the site an incompatible use with the surrounding area. The following changes have drastically changed the area, making large lot single-family inharmonious with the surrounding uses:

- The M-5 (Haggerty Connector) expressway and interchange were developed to the east of our project site, dramatically changing the 12 Mile corridor
- 12 Mile Road was redeveloped as a high speed arterial
- Major professional offices were developed on the south side of 12 Mile Road
- A major medical office is proposed to the south of our project site
- A major church and banquet campus is currently being planned to the east of our project site
- Twelve Oaks Mall was developed to the west of our site along 12 Mile Road

SUMMARY OF SURROUNDING USES

	Zoned	Current Use	Master Planned
Subject Site	RA	Vacant	Single Family
N	RA	Single Family Residential	Single Family
S and W	OST	South University Campus/Office Building	Office Research and Technology
E	RA	Vacant – will be church campus	Single Family
W	RA	Institutional Uses	Single Family

Site Orientation



1 Development of smaller lot single family as part of planned development with open space

2 Construction of the M-5 Connector and the interchange at 12 Mile Road to connect area to region

3 Developed and zoned for corporate office

4 Proposed Beacon Hill Park mixed use development

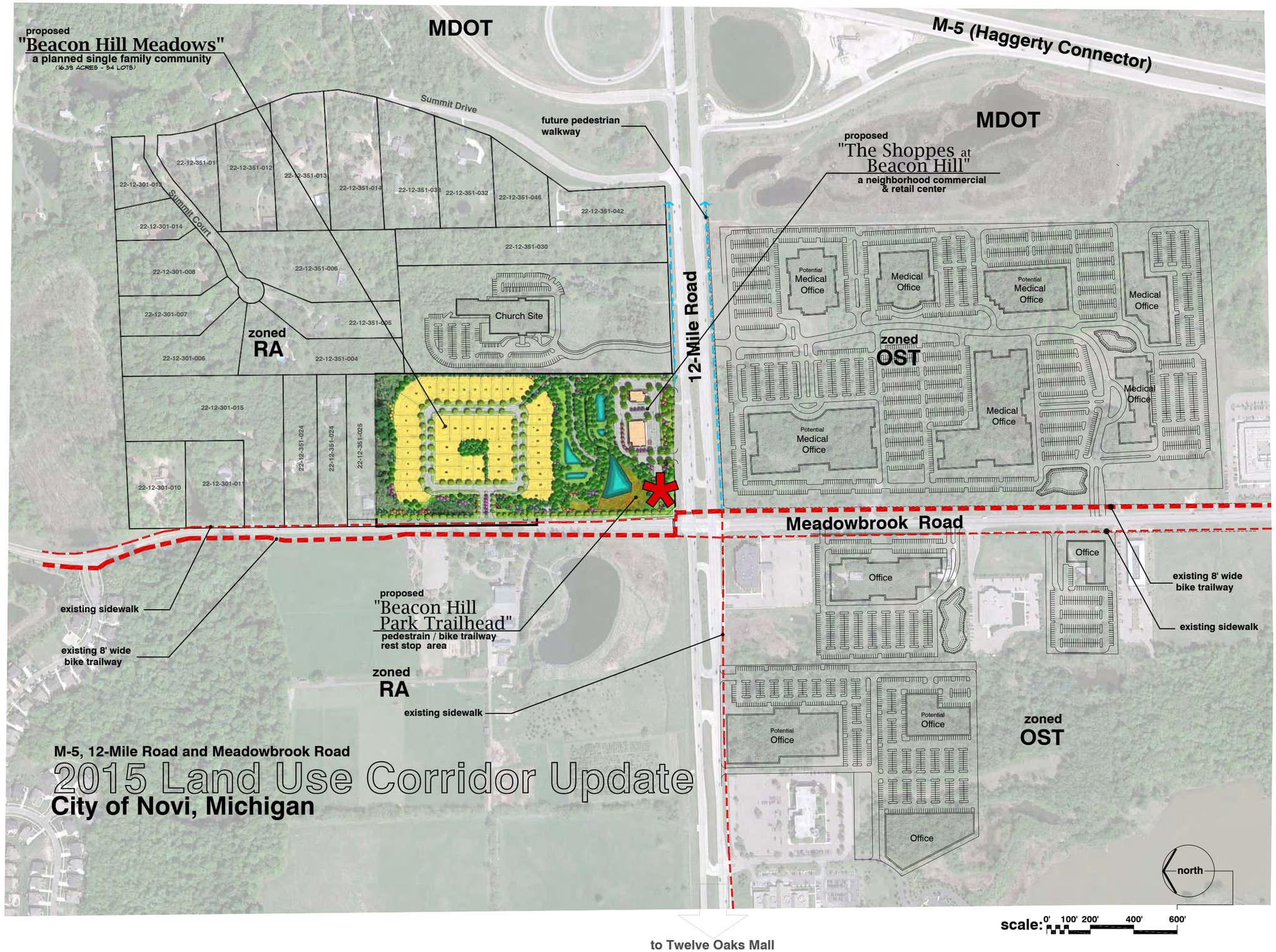
5 Reconstruction of 12 Mile Road into a high capacity divided regional arterial with traffic volumes of over 15,000

6 Planned church/school campus development

7 Planned major medical facility

8 Planned bike path and sidewalks

9 Park and Trailhead



FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-3588
fax. (248) 557-5416

seal:

client:
IVANHOE COMPANIES
6689 Orchard Lake Road,
Suite 314
West Bloomfield, Michigan
48322
ph. (248) 626-6114

project:
A Planned Residential Community

project location:
City of Novi, Michigan
12-Mile Road &
Meadowbrook Road

sheet title:
AERIAL VIEW

job no. / issue / revision date:

LS14.052.06	REVIEW	6-25-2014
LS14.052.09	REVIEW	9-30-2014
LS15.010.01	REVIEW	1-27-2015

drawn by:
JP, CZ, JT
checked by:
FP
date:
1-3-2014

notice:
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Do Not scale drawings. Use figured dimensions only

project no:
LP15.010.01
sheet no:
LP-4

PARK, TRAILHEAD AND OPEN SPACE PLAN

THE IVANHOE COMPANIES



3A Beacon Hill Park Trailhead landscape planting detail

SCALE: 1" = 40'-0"



Shown in Black
* Shown with S-2 option covers

3B bike rack

(1-CONDITIONS)

MANUFACTURER:
DUMOR SITE FURNISHINGS
P.O. BOX 142, MIFFLINTOWN, PA 17059
WEB: WWW.DUMOR.COM
PH. 800-598-4018

MODEL No. 130-20-61
FINISH: BLACK



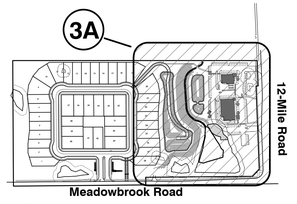
Shown in Black

3C park bench seating

(1-CONDITIONS)

6' WIDE BENCH SEAT BY DUMOR, INC. MODEL NO. 34-6060D (S-2) RECYCLED PLASTIC POLYESTER POWER-COATED FRAME OR EQUAL

MANUFACTURER:
DUMOR SITE FURNISHINGS
P.O. BOX 142, MIFFLINTOWN, PA 17059
WEB: WWW.DUMOR.COM
PH. 800-598-4018



key reference map

NO SCALE

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:

STATE OF MICHIGAN
FELINO A. PASCUAL
LANDSCAPE ARCHITECT
No. 1743
REGISTERED LANDSCAPE ARCHITECT

client:
IVANHOE MEADOWBROOK LLC
6689 Orchard Lake Road, Suite 314
West Bloomfield, Michigan 48332
ph. (248) 626-6114

project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
Beacon Hill Park Trailhead Landscape Planting Detail

job no./issue/revision date:

LS15.010.06	SPA	6-26-2015
LS16.006.01	PSP	1-11-2016

drawn by: JP, KH
checked by: FP
date: 1-4-2015

notice:
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3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171
For free location of public utility lines

The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no: LS16.008.01

sheet no: LS-3 of 6

"Walkable Novi"

"Where quality of life is the way of life"







"The city of Novi has had a long standing interest in providing pathways and sidewalks to connect neighborhoods with destinations throughout the City and Region including schools, retail centers and local shops, places of worship, and parks."

Source: City of Novi

"Encouraging healthy, active lifestyles through pathway and sidewalk connectivity has been a focus for the City of Novi. The City is a four-time Promoting Active Communities Gold Award winner from the Governor's Council on Physical Fitness due to the existing and planned public pedestrian and bicycle facilities."

Source: City of Novi



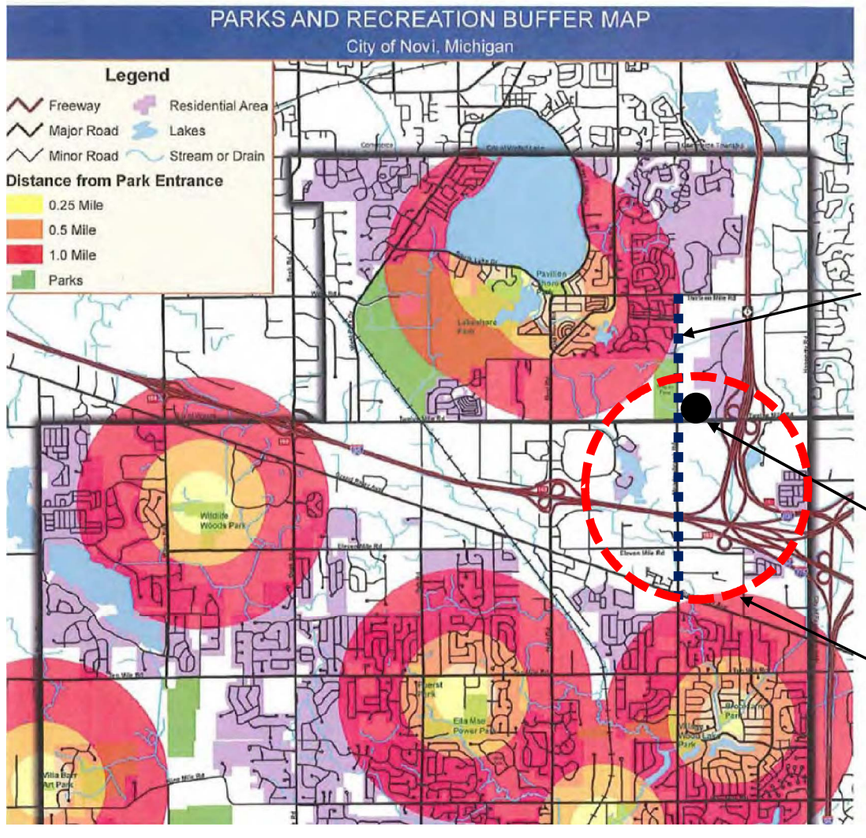


Images Source: City of Novi Annual Non-Motorized Prioritization: 2013-2014

Park and Open Space

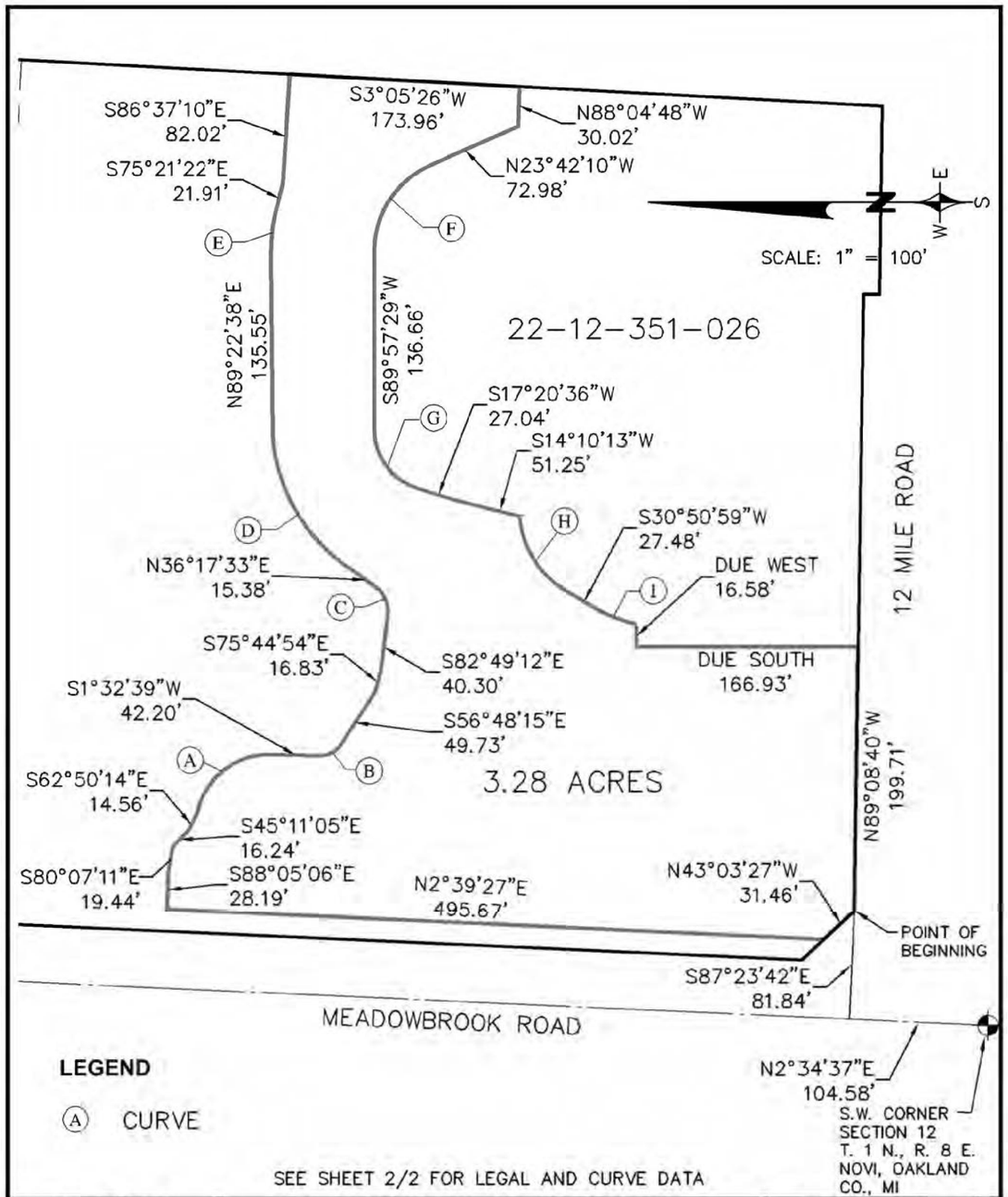
Public Benefit. The park and trail head features will provide additional park space where the city's analysis shows there are not any nearby parks within a mile. The park and trail head also create a higher level of connectedness to the City of Novi's trail system. Additionally, the park feature is consistent with a number of Master Plan goals, including protecting remaining wetlands, providing residential developments with adequate neighborhood open space, and interconnectedness for the City's pedestrian and bicycle paths. Additionally, the park will provide open and green space in a location that is not currently served, as shown on the map below.

The following map illustrates that our site is an advantageous location for the City to construct an additional park. The site is currently outside of the 1 mile radius from a park. Locating a new park at our site will help provide additional coverage for the city while connecting to the City's trail system. The proposed high priority bike lane along Meadowbrook Road will provide access for bicyclists to our park.



PARK SURVEY AND LEGAL DESCRIPTION

THE IVANHOE COMPANIES



SEE SHEET 2/2 FOR LEGAL AND CURVE DATA

REVISIONS		
ITEM	DATE	BY

ZEIMET WOZNIAK & ASSOCIATES

PARK TRAILHEAD SKETCH
BEACON HILL PARK
NOVI MICHIGAN

DATE 1/19/16	SCALE HOR: 1" = 100'
DESIGNED BY	FIELD BOOK NO.
	JOB NO. 14151
DRAWN BY PTG	SHEET NO. 1/2

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Z:\Projects\14151\DWG\14151 BDY.dwg, TRAILHEAD, 1/19/2016 9:35:04 AM, sblaszczyk

LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN THE S.W. 1/4 OF SECTION 12, T. 1 N., R. 8 E., CITY OF NOVI, OAKLAND COUNTY MICHIGAN, BEING MORE PARTICULARLY DESCRIBED AS:

COMMENCING AT THE S.W. CORNER OF SAID SECTION 12; THENCE N. 02°34'37" E. 104.58 FEET ALONG THE WEST LINE OF SAID SECTION; THENCE S. 87°23'42" E. 81.84 FEET TO THE POINT OF BEGINNING; THENCE N. 43°03'27" W. 31.46 FEET; THENCE N. 02°39'27" E. 495.67 FEET; THENCE S. 88°05'06" E. 28.19 FEET; THENCE S. 80°07'11" E. 19.44 FEET; THENCE S. 45°11'05" E. 16.24 FEET; THENCE S. 62°50'14" E. 14.56 FEET; THENCE 74.41 FEET ALONG THE ARC OF A CURVE TO THE RIGHT, RADIUS 56.27 FEET, CENTRAL ANGLE 75°45'42 AND A CHORD THAT BEARS S. 40°51'01" E. 69.11 FEET; THENCE S. 01°32'39" W. 42.20 FEET; THENCE 14.75 FEET ALONG THE ARC OF A CURVE TO THE LEFT, RADIUS 19.51 FEET, CENTRAL ANGLE 43°17'57" AND A CHORD THAT BEARS S. 27°08'04" E. 14.40 FEET; THENCE S. 56°48'15" E. 49.73 FEET; THENCE S. 75°44'54" E. 16.83 FEET; THENCE S. 82°49'12" E. 40.30 FEET; THENCE 26.92 FEET ALONG THE ARC OF A CURVE TO THE LEFT, RADIUS 22.44 FEET, CENTRAL ANGLE 68°44'18" AND A CHORD THAT BEARS N. 66°44'10" E. 25.33 FEET; THENCE N. 36°17'33" E. 15.38 FEET; THENCE 126.62 FEET ALONG THE ARC OF A CURVE TO THE RIGHT, RADIUS 133.92 FEET, CENTRAL ANGLE 54°10'14" AND A CHORD THAT BEARS N. 58°19'11" E. 121.95 FEET; THENCE N. 89°22'38" E. 135.55 FEET; THENCE 34.90 FEET ALONG THE ARC OF A CURVE TO THE RIGHT, RADIUS 140.58 FEET, CENTRAL ANGLE 14°13'20" AND A CHORD THAT BEARS S. 84°02'00" E. 34.81 FEET; THENCE S. 75°21'22" E. 21.91 FEET; THENCE S. 86°37'10" E. 82.02 FEET; THENCE S. 03°05'26" W. 173.96 FEET; THENCE N. 88°04'48" W. 30.02 FEET; THENCE N. 23°42'10" W. 72.98 FEET; THENCE 80.21 FEET ALONG THE ARC OF CURVE TO THE LEFT, RADIUS 70.11 FEET, CENTRAL ANGLE 65°32'47" AND A CHORD THAT BEARS N. 56°28'33" W. 75.90 FEET; THENCE S. 89°57'29" W. 136.66 FEET; THENCE 60.25 FEET ALONG THE ARC OF A CURVE TO THE LEFT, RADIUS 46.05 FEET, CENTRAL ANGLE 74°57'54" AND A CHORD THAT BEARS S. 52°28'31" W. 56.04 FEET; THENCE S. 17°20'36" W. 27.04 FEET; THENCE S. 14°10'13" W. 51.25 FEET; THENCE 68.22 FEET ALONG THE ARC OF A CURVE TO THE LEFT, RADIUS 71.58 FEET, CENTRAL ANGLE 54°36'15" AND A CHORD THAT BEARS S. 58°09'06" W. 65.67 FEET; THENCE S. 30°50'59" W. 27.48 FEET; THENCE 32.29 FEET ALONG THE ARC OF A CURVE TO THE LEFT, RADIUS 119.62 FEET, CENTRAL ANGLE 15°27'59" AND A CHORD THAT BEARS S. 20°43'16" W. 32.19 FEET; THENCE DUE WEST 16.58 FEET; THENCE DUE SOUTH 166.93 FEET; THENCE N. 89°08'40" W. 199.71 FEET TO THE POINT OF BEGINNING. CONTAINING 3.28 ACRES OF LAND MORE LESS AND BEING SUBJECT TO EASEMENTS AND RESTRICTION OF RECORD.

CURVE DATA

CURVE	ARC	RADIUS	CENTRAL ANGLE	CHORD BEARING	CHORD LENGTH
A	74.41'	56.27'	75°45'42"	S 40°51'01" E	69.11'
B	14.75'	19.51'	43°17'57"	S 27°08'04" E	14.40'
C	26.92'	22.44'	68°44'18"	N 66°44'10" E	25.33'
D	126.62'	133.92'	54°10'14"	N 58°19'11" E	121.95'
E	34.90'	140.58'	14°13'20"	S 84°02'00" E	34.81'
F	80.21'	70.11'	65°32'47"	N 56°28'33" W	75.90'
G	60.25'	46.05'	74°57'54"	S 52°28'31" W	56.04'
H	68.22'	71.58'	54°36'15"	S 58°09'06" W	65.67'
I	32.29'	119.62'	15°27'59"	S 20°43'16" W	32.19'

REVISIONS		
ITEM	DATE	BY

ZEIMET WOZNIAK & ASSOCIATES

PARK TRAILHEAD LEGAL
BEACON HILL PARK
NOVI MICHIGAN

DATE 1/19/16	SCALE HOR: 1" =
DESIGNED BY	FIELD BOOK NO.
	JOB NO. 14151
DRAWN BY PTG	SHEET NO. 2/2

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RESIDENTIAL PLAN (BEACON HILL MEADOWS)

THE IVANHOE COMPANIES



2B Beacon Hill Meadows- landscape planting detail

SCALE: 1" = 40'-0"

key reference map

NO SCALE

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:

STATE OF MICHIGAN — FELINO A. PASCUAL — LANDSCAPE ARCHITECT — 43001 — REGISTERED LANDSCAPE ARCHITECT

client:
IVANHOE MEADOWBROOK LLC
6689 Orchard Lake Road, Suite 314
West Bloomfield, Michigan 48332
ph. (248) 626-6114

project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
Beacon Hill Meadows Landscape Planting Detail

job no./issue/revision date:

LS15.010.06 SPA 6-26-2015
LS16.006.01 PSP 1-11-2016

drawn by: JP, KH
checked by: FP
date: 1-4-2015

notice:
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The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no: LS16.008.01

sheet no: LS-2 of 6

Beacon Hill Park

Ivanhoe Companies



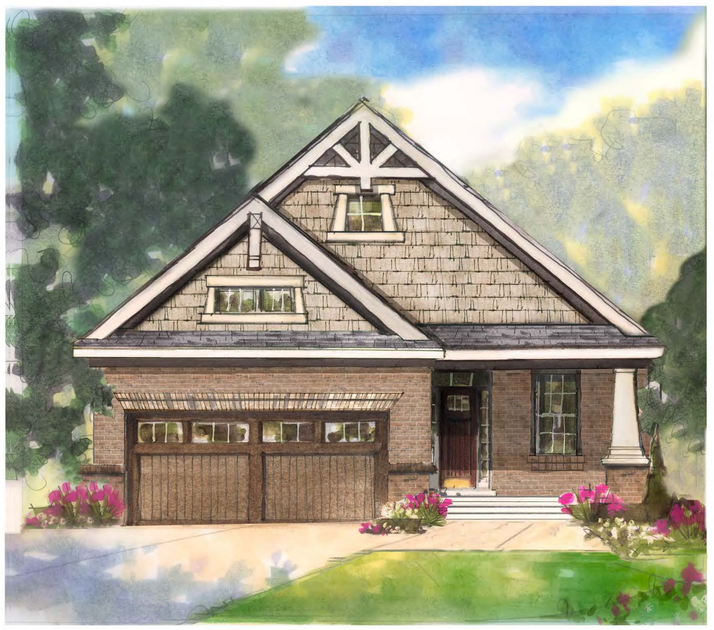




COLONIAL STREETSCAPE

SCALE ¼"= 1'-0"







RANCH STREETSCAPE

SCALE ¼"= 1'-0"

TR DESIGN GROUP

Beacon Hill Park 35 v.2 11/20/15

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COMMERCIAL PLAN (THE SHOPPES OF BEACON HILL)

THE IVANHOE COMPANIES



Artist's rendering of conceptual building elevation and site views of Shoppes at Beacon Hill.



4A The Shoppes at Beacon Hill landscape planting detail

SCALE: 1" = 40'-0"

commercial retail landscape requirements:

	REQUIRED	PROVIDED
greenbelt (12 Mile Road)		
TOTAL LIN. FT. OF 12 MILE ROAD FRONTAGE	407'±	
ONE (1) 3"DECIDUOUS OR EVERGREEN TREE PER 35 LIN. FT.	11	12
THREE (3) SUBCANOPY TREE PER 40 LIN. FT.	10	15
detention		
HIGH WATER PERIMETER	585'±	
70%-75% LARGE NATIVE SHRUBS ABOVE HIGH WATER BASIN RIM AREA	75%	75%
parking lot trees (OFFICE-CATEGORY-1)		
PARKING SPACE AREA	17,983 SQFT.	
PARKING AREA FORMULA	1,798 SQFT.	
(17,983 SQFT. X .10 (10 %) = 1,798 SQ.FT.)		
VEHICULAR ACCESS AREA	42,321 SQFT.	
VEHICULAR AREA FORMULA	423 SQFT.	
(42,321 SQFT. X .01 (.1%) = 423.21 SQ.FT.)		
	REQUIRED	PROVIDED
TOTAL AREA OF INTERIOR LANDSCAPE ISLANDS AREA	2,221 SQ.FT	3,085 SQ.FT
(1,798 SQFT. + 423 SQ.FT. = 2,221 SQ.FT.)		
TOTAL NO. OF PARKING LOT TREES	30 TREES	30 TREES
(2,221 SQ.FT. LANDSCAPE ISLANDS / 75 =29.6 TREES)		
perimeter parking lot trees		
TOTAL LIN. FT. OF PERIMETER PARKING	1,175'±	
ONE (1) 3"DECIDUOUS OR EVERGREEN TREE PER 35 LIN. FT.	33	5
building foundation		
BUILDING FOUNDATION LANDSCAPE AREA	3,299.79 SQFT.	3,300 + SQFT.
(412.47' (PERIMETER) X 8' = 3,299.79 SQFT.)		

residential landscape requirements:

	REQUIRED	PROVIDED
greenbelt (Meadowbrook Road)		
TOTAL LIN. FT. OF MEADOWBROOK ROAD FRONTAGE	857'±	
ONE (1) 3"DECIDUOUS OR EVERGREEN TREE PER 35 LIN. FT.	24	32 + 4 (*)
ONE (1) SUBCANOPY TREE PER 20 LIN. FT.	42.8	30 + 17 (*)
boulevard island		
TOTAL LIN. FT. OF BOULEVARD ISLAND	1	
COMBINATION OF CANOPY TREES, SUBCANOPY TREES AND SHRUBS	75%	75%
detention		
HIGH WATER PERIMETER	1142.41'±	
70%-75% LARGE NATIVE SHRUBS ABOVE HIGH WATER BASIN RIM AREA	75%	75%

(*) LANDSCAPE PLANTING LOCATED IN BEACON HILL PARK AREA

woodland tree replacement summary

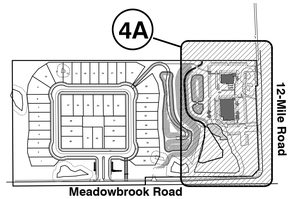
	MEADOWS	SHOPPES	TRAILHEAD	TOTALS
TOTAL NO OF EXISTING TREE (8" DBH OR GREATER) TO BE REMOVED	432	22	6	460
NO OF EXEMPT TREES (DEAD OR POOR CONDITION) REMOVED	55	3	-	58
NO OF REGULATED TREE REMOVED	377	19	6	402
NO OF TREES REMOVED BETWEEN 8"-11" DBH	183	3	1	187
NO OF TREES REMOVED BETWEEN 11"-20" DBH	144	9	4	157
NO OF TREES REMOVED BETWEEN 20"-24" DBH	17	3	-	20
NO OF TREES REMOVED 30" DBH OR GREATER	4	1	1	6
NO OF TREES REMOVED WITH MULTI-TRUNK	29	3	-	32

*SEE TREE SURVERY/TREE REMOVAL PLAN PREPARED BY ZEIMET WOZNIAK & ASSOCIATES FOR TREE SPECIES, SIZES, AND DETAILS

	MEADOWS	SHOPPES	TRAILHEAD	TOTALS
TOTAL NO OF TREE REPLACEMENT CREDITS REQUIRED	642	47	13	702
187 - (8"-11" DBH) X 1-TREE REPLACEMENT CREDIT	183	3	1	187
157 - (11"-20" DBH) X 2-TREE REPLACEMENT CREDIT	288	18	8	314
20 - (20"-24" DBH) X 3-TREE REPLACEMENT CREDIT	51	9	-	60
6 - (30" + DBH) X 4-TREE REPLACEMENT CREDIT	16	4	4	24
32 - (MULTI-TRUNK) 954.3" / 8"	104	13	-	117

(MIN. 2 1/2" CALIPER DECIDUOUS TREE= 1-CREDIT OR MIN. 7' HIGH EVERGREEN TREE @ .66 CREDIT)

	MEADOWS	SHOPPES	TRAILHEAD	TOTALS
TOTAL NO OF TREE REPLACEMENT CREDITS PROVIDED	426	31.5	244.5	702
93 - 2 1/2" DECIDUOUS TREE @ 1.0-CREDITS	51	3	39	93
196 - 3" DECIDUOUS TREE @ 1.5-CREDITS	139.5	28.5	126	294
76-7' EVERGREEN @ 1-CREDITS	50	-	26	76
114- 10' EVERGREEN @ 1.5-CREDITS	127.5	-	43.5	171
34- 12' EVERGREEN @ 2-CREDITS	58	-	10	68



key reference map

NO SCALE

FPA
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Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
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ph. (248) 557-5588
fax. (248) 557-5416

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client:
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6689 Orchard Lake Road, Suite 314
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The Shoppes of Beacon Hill Landscape Planting Detail

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LS15.010.06 SPA 6-26-2015
LS16.006.01 PSP 1-11-2016

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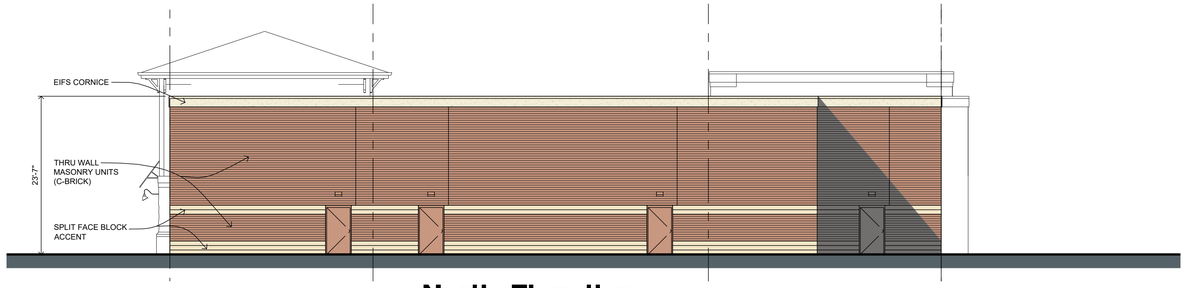
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project no: LS16.008.01

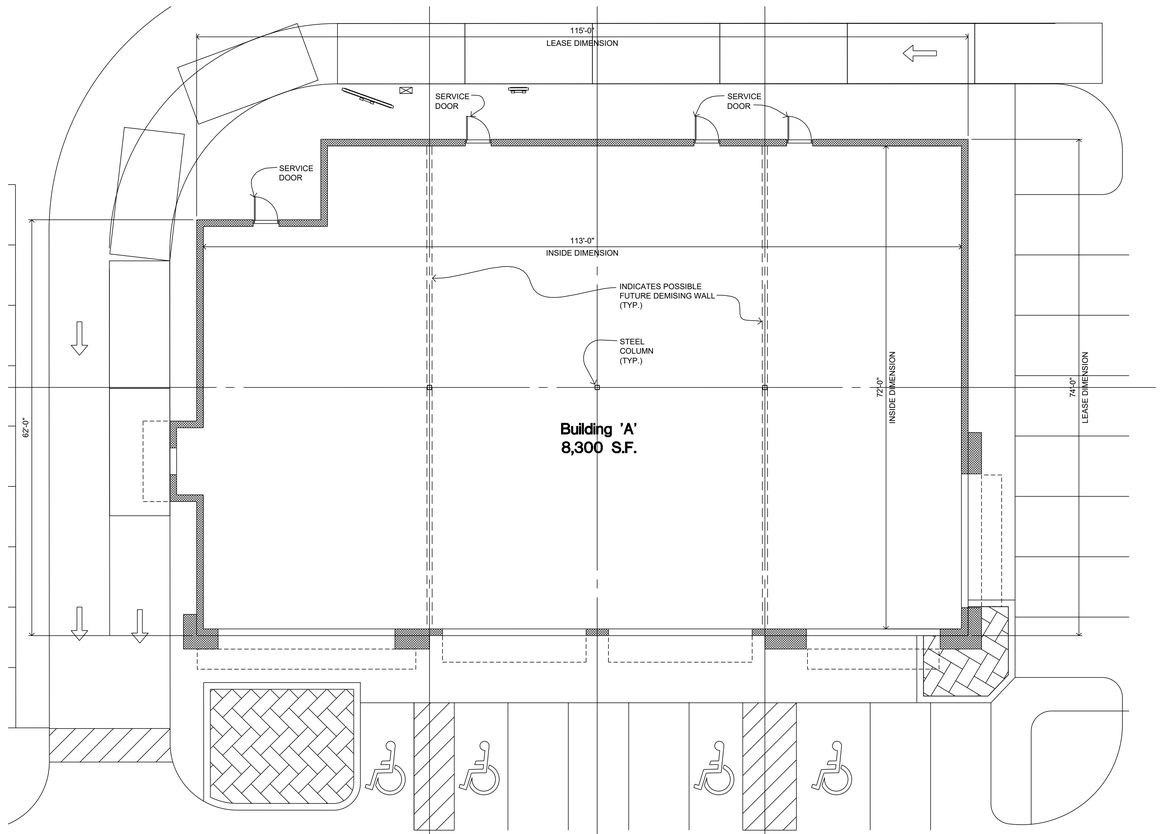
sheet no: LS-4 of 6

Conceptual- 11,550 sq. ft. with two drive through uses shown. Details on site plan building layout, and elevations, consistent with this design concept will be provided, along with tenant mix, at final site plan approval.



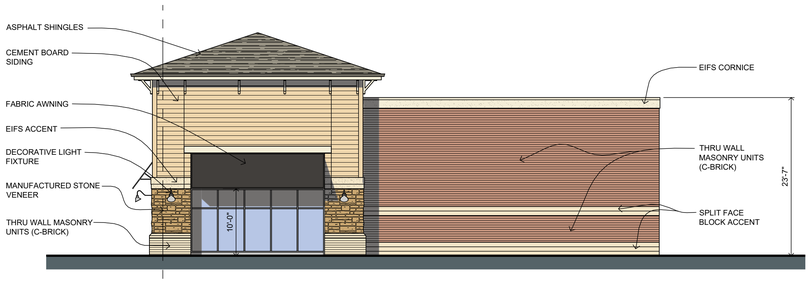
North Elevation

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



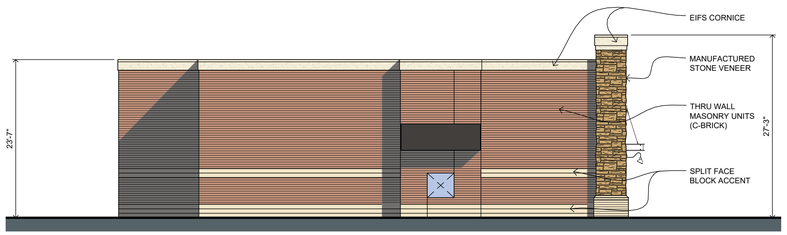
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Scale: 3/32"=1'-0"



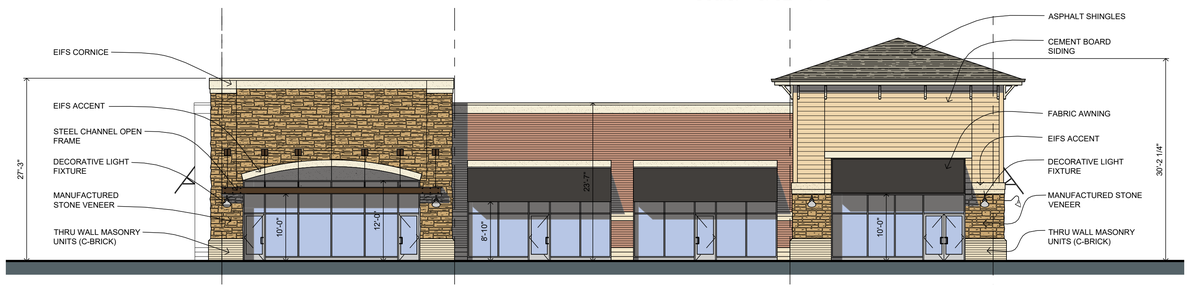
East Elevation

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



West Elevation

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



South Elevation

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

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issued for:

OWNER REVIEW 10 DEC. 15
PSP SUBMITTAL 11 JAN. 16

project:

Proposed Outparcel Building 'A' at
Beacon Hill Park
NEC 12 Mile & Meadowbrook Rd.
Novi, Michigan

ROGVOY
ARCHITECTS

32500 TELEGRAPH ROAD
SUITE 250
BINGHAM FARMS, MICHIGAN
48025-2404

PH 248.540.7700 FX 248.540.2710
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STATE OF MICHIGAN
MARK DRANE
ARCHITECT
No. 34180
LICENSED ARCHITECT

drawing:

Building 'A'
Building Elevations
& Floor Plan

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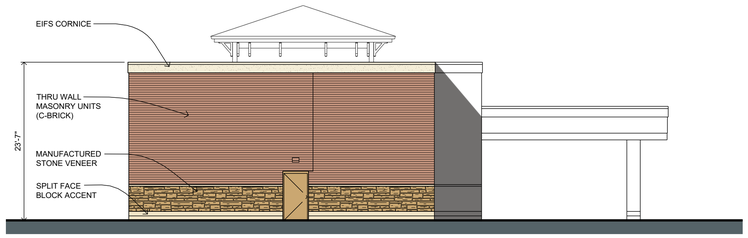
issue date:
drawn: KL
checked: MD
approved: MD

file number: 14051

sheet:

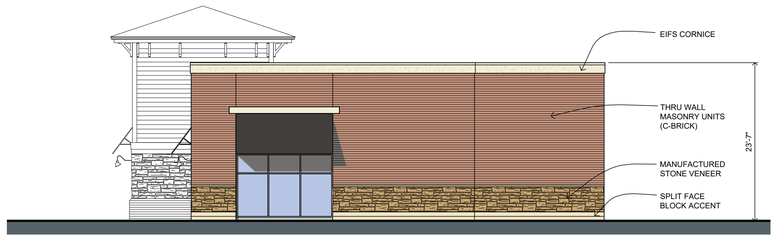
A-1

Conceptual- 11,550 sq. ft. with two drive through uses shown. Details on site plan building layout, and elevations, consistent with this design concept will be provided, along with tenant mix, at final site plan approval.



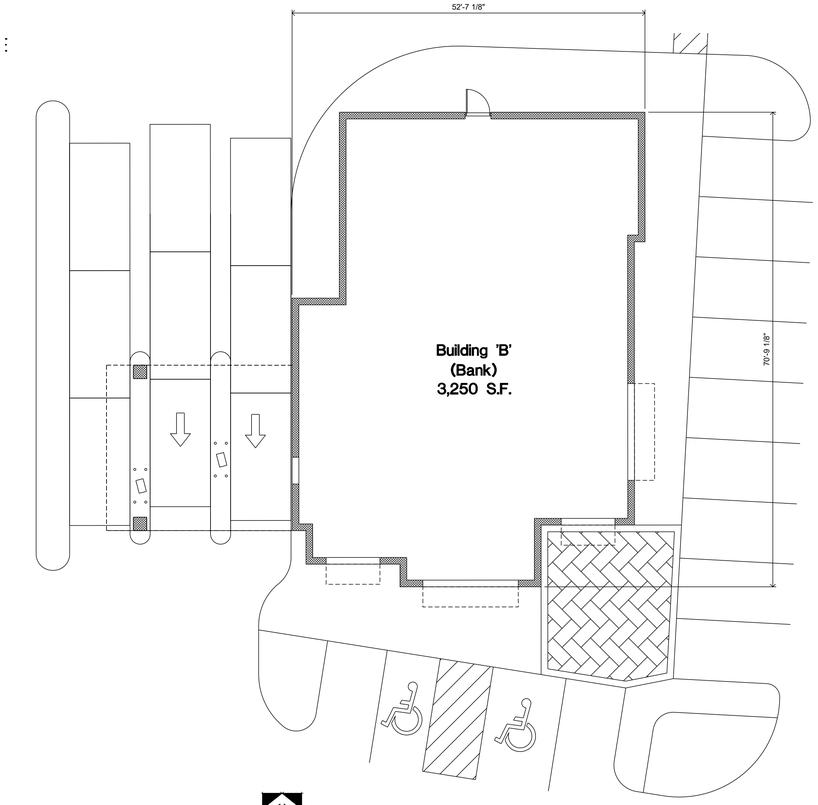
North Elevation

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



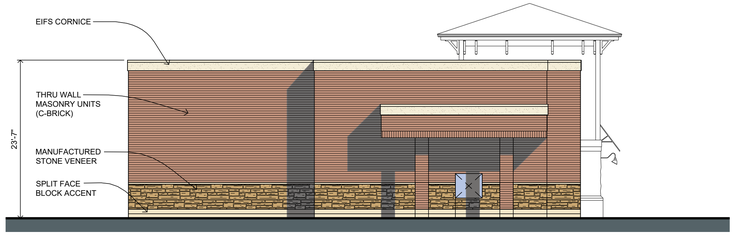
East Elevation

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



Floor Plan

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



West Elevation

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



South Elevation

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

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Building 'B'
Building Elevations
& Floor Plan

DO NOT SCALE DRAWING

issue date:
drawn: KL
checked: MD
approved: MD

file number: 14051

sheet:

A-2

LANDSCAPE PLANS

THE IVANHOE COMPANIES



street tree plan for:

"Beacon Hill Park

City of Novi, Michigan

note
preliminary residential concept plan for inspection purposes only and in no way official or approved for record purposes.

north

scale: 0' 30' 60' 120' 180'
1"= 60'-0"

general landscape notes:

1. LANDSCAPE CONTRACTOR SHALL VISIT THE SITE, INSPECT EXISITNG CONDITIONS, REVIEW PROPOSED PLANTINGS AND RELATED WORK, CONTACT THE OWNER AND/OR LANDSCAPE ARCHITECT WITH ANY CONCERNS OR DISCREPANCY BETWEEN THE PLAN, PLANT MATERIAL LIST, AND/OR SITE CONDITIONS.
2. PRIOR TO BEGINING OF CONSTRUCTION ON ANY WORK, CONTRACTORS SHALL VERIFY LOCATIONS OF ALL ON SITE UTILITIES. GAS, ELECTRIC, TELEPHONE, CABLE TO BE LOCATED BY CONTACTING MISS DIG 1-800-482-7171. ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COORDINATE ALL RELATED WORK ACTIVITIES WITH OTHER TRADES AND REPORT ANY UNACCEPTABLE JOB CONDITIONS TO OWNER PRIOR TO COMMENCING
3. NUMERICAL VALUE ON THE LANDSCAPE QUANTITIES SPECIFIED ON THE PLAN TAKE PRECEDENCE OVER GRAPHIC REPRESENTATION. VERIFY ANY CONCERN-DISCREPANCY WITH LANDSCAPE ARCHITECT.
4. ALL CONSTRUCTION AND PLANT MATERIAL LOCATION TO BE ADJUSTED ON SITE IF NECESSARY.
5. ALL SUBSTITUTIONS OR DEVIATIONS FROM THE LANDSCAPE PLAN MUST BE APPROVED BY THE CITY OF NOVI AND LANDSCAPE ARCHITECT
6. ALL LARGE TREES AND EVERGREENS TO BE STAKED, GUYED AND WRAPPED AS DETAIL SHOWN ON PLAN.
7. PLANT BEDS TO BE DRESSED WITH MIN. 3" OF FINELY DOUBLE SHREDDED HARDBARK MULCH.
8. DIG SHRUB PITS 1' LARGER THAN SHRUB ROOT BALLS AND TREE PITS 2' LARGER THAN ROOT BALL. BACK FILL WITH ONE PART TOP SOIL AND ONE PART SOIL FROM
9. REMOVE ALL TWINE, WIRE AND BURLAP FROM TREE AND SHRUB EARTH BALLS, AND FROM TREE TRUNKS.
10. NATURAL COLOR, FINELY SHREDDED HARDWOOD BARK MULCH REQUIRED FOR ALL PLANTINGS. 4" THICK BARK MULCH FOR TREES IN 4' DIA. CIRCLE WITH 3" PULLED AWAY FROM TRUNK. 3" THICK BARK MULCH FOR SHRUBS AND 2" THICK BARK MULCH FOR PERENNIALS.
11. PLANT MATERIAL QUALITY & INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN ASSOCIATION OF NURSERYMEN LANDSCAPE STANDARDS.
12. PROVIDE FEAT SOD FOR ALL NEW AND DISTURBED LAWN AREAS UNLESS NOTED OTHERWISE.
13. ALL PLANTING AREAS TO BE PREPARED WITH APPROPRIATE SOIL MIXTURES AND FERTILIZER BEFORE PLANT INSTALLATION.
14. PLANT TREES AND SHRUBS GENERALLY NO CLOSER THEN THE FOLLOWING DISTANCES FROM SIDEWALKS, CURBS AND PARKING STALLS:
    a.) SHADE TREES ____ 5 FT.
    b.) ORNAMENTAL AND EVERGREEN TREES (CRAB, PINE, SPRUCE, ETC.) ____ 10 FT.
    c.) SHRUBS THAT ARE LESS THAN 1 FOOT TALL AND WIDE AT MATURITY. ____ 2 FT.
15. NO TREES OR EVERGREENS TO BE INSTALLED OVER ANY PROPOSED OR EXISTING UTILITY LINES AS SHOWN ON THE OVERALL LANDSCAPE PLAN. SEE ENGINEERING PLANS FOR LOCATION AND DETAILS.
16. ALL LAWN AREAS AND LANDSCAPE BEDS TO BE FULLY IRRIGATED WITH A AUTOMATIC UNDERGROUND SYSTEMS. IRRIGATION SYSTEM TO HAVE SEPARTE ZONES FOR LAWN AREAS, PARKING ISLANDS, AND SHRUB BEDS WITH DIFFERENT CONTROL MOISTURE LEVEL ADJUSTMENT PER ZONE AS REQUIRED
17. UNLESS NOTED OTHERWISE, LANDSCAPE BEDS ADJACENT TO LAWN TO RECIEVE EDGING. EDGING SHALL BE 4" X 1/8" METAL (FINISH BLACK OR GREEN) OR APPROVED EQUAL AND TO BE INSTALLED WITH HORIZONTAL METAL STAKES AT 32" O.C. OR PER MANUFACTERER'S SPECIFICATION.
18. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL LANDSCAPE PLANT MATERIALS AND IRRIGATION INSTALLATION FOR A PERIOD OF TWO YEAR BEGINNING AFTER THE COMPLETION OF LANDSCAPE INSTALLTION DATE APPROVED BY THE CITY OR LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL REPLACE DURING AND AT THE END OF THE GUARANTEE PERIOD, ANY DEAD OR UNACCEPTABLE PLANTS, AS DETERMINED BY THE CITY OR LANDSCAPE ARCHITECT, WITHOUT COST TO THE OWNER.

misc. notes:

1. REFERENCE ENGINEERING PLANS FOR EXISTING AND PROPOSED FINAL UTILITIES, WALLS, AND FENCE LOCATIONS
2. REFERENCE ENGINEERING PLANS FOR GRADING WITH MIN. 2' INTERVALS
3. REFERENCE ENGINEERING PLANS FOR WOODLAND SURVEY OF EXISITNG TREES OVER 8" INCLUDING PROPOSED PROTECTION FENCE LOCATIONS
4. REFERENCE ENGINEERING PLANS FOR EXISTING SOILS PER USDA.

street tree notes:

STREET TREES SHALL BE PLANTED 10' FROM ANY DRIVEWAYS, 4' FROM ANY CURBS AND SIDEWALKS (2' FOR SUBCANOPY TREES), 15' FROM OVERHEAD UTILITY LINES, 10' FROM ANY MAN HOLE OR FIRE HYDRANTS, AND 35' FROM THE INTERSECTION OF CURB LINES ON CORNER LOTS.

STREET TREES SHALL HAVE THE FOLLOWING CHARACTERISTICS: 2 1/2" CALIPER, NO. 1 GRADE B&B, NORTHERN GROWN PER CURRENT AAN STANDARDS, AND INSTALLED ACCORDING TO ACCEPTED PLANTING PROCEDURES.

STREET TREES SHALL HAVE A CENTRAL LEADER AND RADIAL BRANCHING STRUCTURE. ANY BRANCHES THAT MAY DEVELOP INTO "V" CROTCHES SHALL BE PRUNED SO AS NOT TO BECOME DOMINANT BRANCHES.

THE BRANCHES ON CANOPY TREES SHALL BE LIMBED UP 14' ON THE SIDE OF THE STREET AND 10' ON THE NON-STREET SIDE.

street tree requirements:

PER LOT WIDTH, THE FOLLOWING STREET TREE PLANTINGS SHALL OCCUR:	LOT FRONTAGE	conditions	required	provided
≤70' AT LEAST 1 TREE	LOTS WITH FRONTAGE <70'	42	42	42
≥70' AT LEAST 2 TREES	LOTS WITH FRONTAGE ≥70'	-	-	-
≥105' AT LEAST 3 TREES	LOTS WITH FRONTAGE ≥105'	4	12	12
≥140' AT LEAST 4 TREES	LOTS WITH FRONTAGE ≥140'	-	-	-
≥175' AT LEAST 5 TREES	OPEN SPACE FRONTAGE, CUL-DE-SAC, AND BLVD. ISLAND		NA	8
MINIMUM STREET TREE SIZE REQUIRED 2 1/2" CALIPER AND MIN. 35' O.C. SPACING	ONE (1) DECIDUOUS TREE PER 35' BETWEEN CURB AND SIDEWALK (MEADOWBROOK AND 12-MILE R.O.W. FRONTAGE 1,872' / 35' = 53.48 TREES)		53	53
		TOTALS	107	114

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
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ph. (248) 557-5588
fax. (248) 557-5416

seal:

client:
IVANHOE MEADOWBROOK LLC
6689 Orchard Lake Road, Suite 314
West Bloomfield, Michigan 48332
ph. (248) 626-6114

project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
BEACON HILL STREET TREE PLANTING PLAN

job no./issue/revision date:
LS15.010.06 SPA 6-26-2015
LS16.006.01 PSP 1-11-2016

drawn by: JP, KH
checked by: FP
date: 1-4-2015

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For free location of public utility lines
The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no: LS16.008.01

sheet no: LS-1 of 6



2B Beacon Hill Meadows- landscape planting detail

SCALE: 1" = 40'-0"

key reference map

NO SCALE

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seal:

STATE OF MICHIGAN — FELINO A. PASCUAL — LANDSCAPE ARCHITECT — 43001 — REGISTERED LANDSCAPE ARCHITECT

client:
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West Bloomfield, Michigan 48332
ph. (248) 626-6114

project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
Beacon Hill Meadows Landscape Planting Detail

job no./issue/revision date:

LS15.010.06 SPA 6-26-2015
LS16.006.01 PSP 1-11-2016

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project no: LS16.008.01

sheet no: LS-2 of 6



3A Beacon Hill Park Trailhead landscape planting detail

SCALE: 1" = 40'-0"



Shown in Black
* Shown with S-2 option covers

3B bike rack

(1-CONDITIONS)

MANUFACTURER:
DUMOR SITE FURNISHINGS
P.O. BOX 142, MIFFLINTOWN, PA 17059
WEB: WWW.DUMOR.COM
PH. 800-598-4018

MODEL No. 130-20-61
FINISH: BLACK



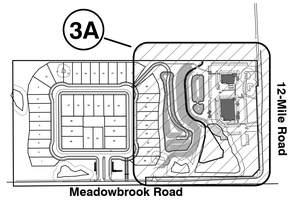
Shown in Black

3C park bench seating

(1-CONDITIONS)

6' WIDE BENCH SEAT BY DUMOR, INC. MODEL NO. 34-6060D (S-2) RECYCLED PLASTIC POLYESTER POWER-COATED FRAME OR EQUAL

MANUFACTURER:
DUMOR SITE FURNISHINGS
P.O. BOX 142, MIFFLINTOWN, PA 17059
WEB: WWW.DUMOR.COM
PH. 800-598-4018



key reference map

NO SCALE

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STATE OF MICHIGAN
FELINO A. PASCUAL
LANDSCAPE ARCHITECT
No. 1743
REGISTERED LANDSCAPE ARCHITECT

client:
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project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
Beacon Hill Park Trailhead Landscape Planting Detail

job no./issue/revision date:

LS15.010.06	SPA	6-26-2015
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project no: LS16.008.01

sheet no: LS-3 of 6



4A The Shoppes at Beacon Hill landscape planting detail

SCALE: 1" = 40'-0"

commercial retail landscape requirements:

	REQUIRED	PROVIDED
greenbelt (12 Mile Road)		
TOTAL LIN. FT. OF 12 MILE ROAD FRONTAGE	407'±	
ONE (1) 3"DECIDUOUS OR EVERGREEN TREE PER 35 LIN. FT.	11	12
THREE (3) SUBCANOPY TREE PER 40 LIN. FT.	10	15
detention		
HIGH WATER PERIMETER	585'±	
70%-75% LARGE NATIVE SHRUBS ABOVE HIGH WATER BASIN RIM AREA	75%	75%
parking lot trees (OFFICE-CATEGORY-1)		
PARKING SPACE AREA	17,983 SQFT.	
PARKING AREA FORMULA	1,798 SQFT.	
(17,983 SQFT. X .10 (10 %) = 1,798 SQ.FT.)		
VEHICULAR ACCESS AREA	42,321 SQFT.	
VEHICULAR AREA FORMULA	423 SQFT.	
(42,321 SQFT. X .01 (.1%) = 423.21 SQ.FT.)		
	REQUIRED	PROVIDED
TOTAL AREA OF INTERIOR LANDSCAPE ISLANDS AREA	2,221 SQ.FT	3,085 SQ.FT
(1,798 SQFT. + 423 SQ.FT. = 2,221 SQ.FT.)		
TOTAL NO. OF PARKING LOT TREES	30 TREES	30 TREES
(2,221 SQ.FT. LANDSCAPE ISLANDS / 75 =29.6 TREES)		
perimeter parking lot trees		
TOTAL LIN. FT. OF PERIMETER PARKING	1,175'±	
ONE (1) 3"DECIDUOUS OR EVERGREEN TREE PER 35 LIN. FT.	33	5
building foundation		
BUILDING FOUNDATION LANDSCAPE AREA	3,299.79 SQFT.	3,300 + SQFT.
(412.47' (PERIMETER) X 8' = 3,299.79 SQFT.)		

residential landscape requirements:

	REQUIRED	PROVIDED
greenbelt (Meadowbrook Road)		
TOTAL LIN. FT. OF MEADOWBROOK ROAD FRONTAGE	857'±	
ONE (1) 3"DECIDUOUS OR EVERGREEN TREE PER 35 LIN. FT.	24	32 + 4 (*)
ONE (1) SUBCANOPY TREE PER 20 LIN. FT.	42.8	30 + 17 (*)
boulevard island		
TOTAL LIN. FT. OF BOULEVARD ISLAND	1	
COMBINATION OF CANOPY TREES, SUBCANOPY TREES AND SHRUBS	75%	75%
detention		
HIGH WATER PERIMETER	1142.41'±	
70%-75% LARGE NATIVE SHRUBS ABOVE HIGH WATER BASIN RIM AREA	75%	75%

(*) LANDSCAPE PLANTING LOCATED IN BEACON HILL PARK AREA

woodland tree replacement summary

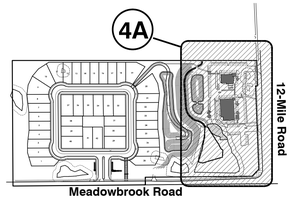
	MEADOWS	SHOPPES	TRAILHEAD	TOTALS
TOTAL NO OF EXISTING TREE (8" DBH OR GREATER) TO BE REMOVED	432	22	6	460
NO OF EXEMPT TREES (DEAD OR POOR CONDITION) REMOVED	55	3	-	58
NO OF REGULATED TREE REMOVED	377	19	6	402
NO OF TREES REMOVED BETWEEN 8"-11" DBH	183	3	1	187
NO OF TREES REMOVED BETWEEN 11"-20" DBH	144	9	4	157
NO OF TREES REMOVED BETWEEN 20"-24" DBH	17	3	-	20
NO OF TREES REMOVED 30" DBH OR GREATER	4	1	1	6
NO OF TREES REMOVED WITH MULTI-TRUNK	29	3	-	32

*SEE TREE SURVERY/TREE REMOVAL PLAN PREPARED BY ZEIMET WOZNIAK & ASSOCIATES FOR TREE SPECIES, SIZES, AND DETAILS

	MEADOWS	SHOPPES	TRAILHEAD	TOTALS
TOTAL NO OF TREE REPLACEMENT CREDITS REQUIRED	642	47	13	702
187 - (8"-11" DBH) X 1-TREE REPLACEMENT CREDIT	183	3	1	187
157 - (11"-20" DBH) X 2-TREE REPLACEMENT CREDIT	288	18	8	314
20 - (20"-24" DBH) X 3-TREE REPLACEMENT CREDIT	51	9	-	60
6 - (30" + DBH) X 4-TREE REPLACEMENT CREDIT	16	4	4	24
32 - (MULTI-TRUNK) 954.3" / 8"	104	13	-	117

(MIN. 2 1/2" CALIPER DECIDUOUS TREE= 1-CREDIT OR MIN. 7' HIGH EVERGREEN TREE @ .66 CREDIT)

	MEADOWS	SHOPPES	TRAILHEAD	TOTALS
TOTAL NO OF TREE REPLACEMENT CREDITS PROVIDED	426	31.5	244.5	702
93 - 2 1/2" DECIDUOUS TREE @ 1.0-CREDITS	51	3	39	93
196 - 3" DECIDUOUS TREE @ 1.5-CREDITS	139.5	28.5	126	294
76-7' EVERGREEN @ 1-CREDITS	50	-	26	76
114- 10' EVERGREEN @ 1.5-CREDITS	127.5	-	43.5	171
34- 12' EVERGREEN @ 2-CREDITS	58	-	10	68



key reference map

NO SCALE

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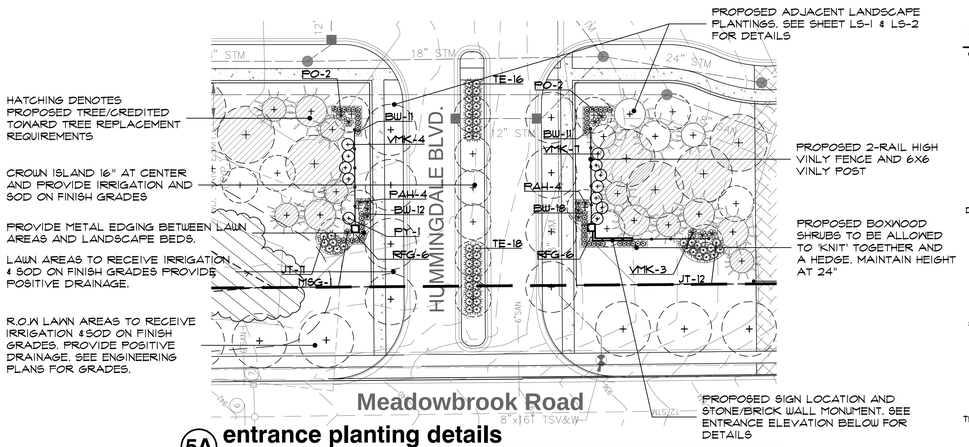
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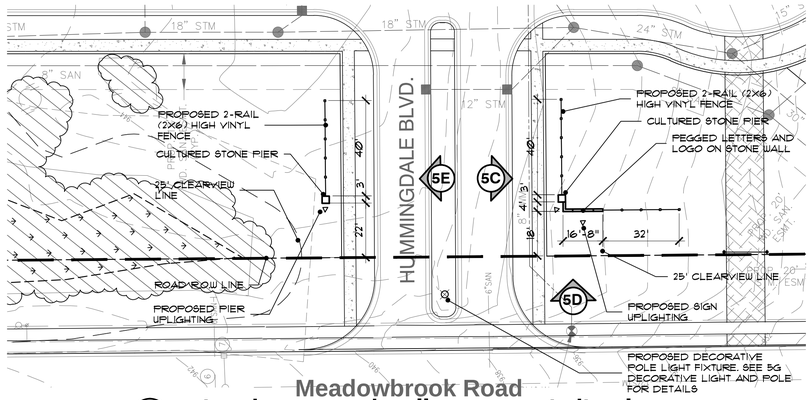


5A entrance planting details

SCALE: 30'=1'-0"

entrance plant material list

key	5A	botanical name	common name	size	cost	totals
		SHRUBS				
VMK	14	VIBURNUM X.B. 'MOHAWK'	MOHAWK VIBURNUM	3' BB	$50	$700
PO	4	PHYSOCARPUS O. 'MONLO'	DIABOLO NINEBARK	3' BB	$50	$200
JT	19	JUNIPERUS S. 'TAMARISAFOLIA'	TAMS JUNIPER	24" BB	$50	$950
BW	52	BUXUS M. 'WINTER GEM'	WINTER GEM BOXWOOD	18" BB	$50	$2600
PY	1	PYRACANTHA COCCINEA 'YUKON BELLE'	SCARLET FIRETHORN	36" BB	$50	$50
TE	34	TAXUS X.M. 'EVERLOW'	EVERLOW YEW	36" BB	$50	$1700
		PERENNIALS AND GRASSES				
RFG	12	RUDBECKIA F. 'GOLDSTURM'	BLACK EYED SUSAN	#3 CONT	$20	$240
PAH	8	PENNISETUM ALOPECUROIDES 'HAMELN'	HAMELN DWARF FOUNTAIN GRASS	#3 CONT	$20	$160
MSG	1	MISCANTHUS SINENSIS 'MORNING LIGHT'	'MORNING LIGHT' MAIDEN GRASS	#3 CONT	$20	$20
				TOTAL		$11,920



5B entry signage and wall monument site plan

SCALE: 30'=1'-0"

City of Novi landscape notes:

GENERAL NOTES:

1) PLANT MATERIALS TO BE INSTALLED ACCORDING TO THE CITY OF NOVI AND CURRENT AMERICAN ASSOCIATION OF NURSERYMEN'S STANDARDS.

2) PLANT MATERIALS TO BE OF GUARANTEED FOR 2 YEARS, REPLACE FALLING MATERIAL WITHIN 1 YEAR, OR THE NEXT APPROPRIATE PLANTING PERIOD.

3) PLANT MATERIALS TO BE OF PREMIUM QUALITY, NO. 1 GRADE NORTHERN NURSURY GROWN, IN HEALTHY CONDITION, FREE OF PESTS AND DISEASES.

4) MULCH IS TO BE NATURAL COLORED, FINELY SHREDDED HARDWOOD BARK OF 4" THICK BARK MULCH FOR TREES IN 4' DIA. CIRCLE W/3" PULLED AWAY FROM TRUNK, 3" THICK BARK MULCH FOR SHRUBS AND 2" THICK BARK MULCH FOR PERRENIALS.

5) CALL MISS DIG AT 1-800-482-7171 PRIOR TO ANY CONSTRUCTION.

6) DATE OF INTENDED LANDSCAPE INSTALLATION TO BE FALL 2005.

DECIDUOUS & EVERGREEN TREE:

1) TREE SHALL BE INSTALLED SAME RELATIONSHIP TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 6" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.

2) DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES.

3) REMOVE ALL TAGS, STRING, PLASTICS AND OTHER MATERIALS THAT ARE UNSLIGHTLY AND COULD CAUSE GIRDLING.

4) REMOVE TREE STAKES, GUY WIRES AND TREE WRAP AFTER ONE WINTER SEASON.

SHRUBS

1) SHRUB SHALL BE INSTALLED SAME RELATIONSHIP TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 4" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.

2) DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES.

3) REMOVE ALL TAGS, STRING, PLASTICS AND OTHER MATERIALS THAT ARE UNSLIGHTLY AND COULD CAUSE GIRDLING.

TREE PROTECTION:

1) EITHER PLASTIC OR WOOD ORANGE SNOW FENCING SHALL BE INSTALLED AT OR BEYOND THE DRIPLINE, UNLESS MORE SUBSTANTIAL FENCING IS REQUIRED.

2) STAKES SHALL BE METAL 'T' POLES SPACED NO FURTHER THAN 5' ON CENTER.

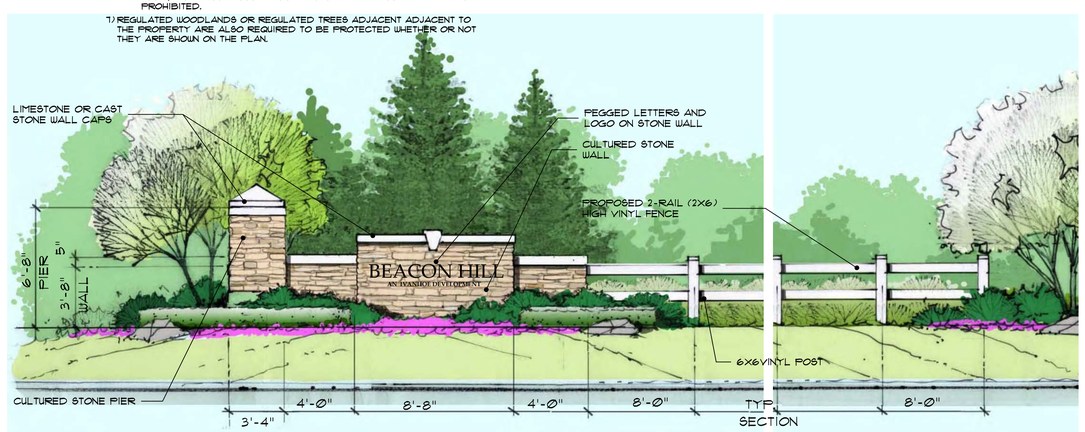
3) FENCING SHALL NOT BE INSTALLED CLOSER TO THE TREE THAN THE DRIPLINE OF THOSE TREES TO BE SAVED. SPECIAL CIRCUMSTANCES SHALL BE REVIEWED BY THE CITY.

4) FENCING SHALL BE ERECTED PRIOR TO CONSTRUCTION. THE CITY SHALL BE NOTIFIED ONCE THE FENCING IS INSTALLED FOR INSPECTION.

5) UNDER NO CIRCUMSTANCES SHALL THE PROTECTIVE FENCING BE REMOVED WITHOUT PROPER APPROVAL FROM THE CITY.

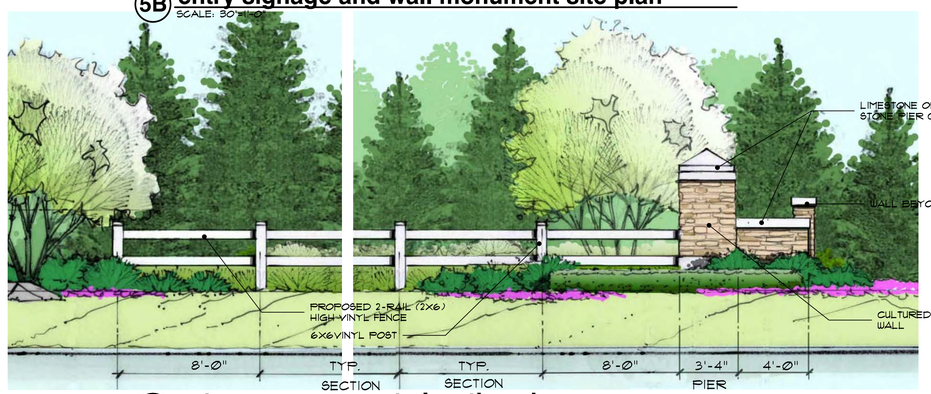
6) NO PERSON SHALL CONDUCT ANY ACTIVITY WITHIN THE AREAS PROPOSED TO REMAIN. THIS SHALL INCLUDE, BUT NOT LIMITED TO:
   a. NO SOLVENTS OR CHEMICALS WITHIN THE PROTECTED AREAS.
   b. NO BUILDING MATERIALS OR CONSTRUCTION EQUIPTMENT WITHIN THE PROTECTED AREAS.
   c. NO GRADE CHANGES, INCLUDING FILL, WITHIN THE PROTECTED AREAS.
   d. NO REMOVAL OF VEGETATION FROM THE GROUND UP WITHOUT PERMISSION FROM THE PROPER REVIEWING AUTHORITY, INCLUDING THE WOODLANDS REVIEW BOARD.
   e. ANY REQUIRED SWALE NEEDS TO BE DIRECTED AROUND THE PROTECTED AREAS. IN INSTANCES WHERE SWALES ARE APPROVED THRU A PROTECTED AREA, THE SWALES NEED TO BE HAND DUG. MACHINERY OF ANY KIND IS PROHIBITED.

7) REGULATED WOODLANDS OR REGULATED TREES ADJACENT ADJACENT TO THE PROPERTY ARE ALSO REQUIRED TO BE PROTECTED WHETHER OR NOT THEY ARE SHOWN ON THE PLAN.



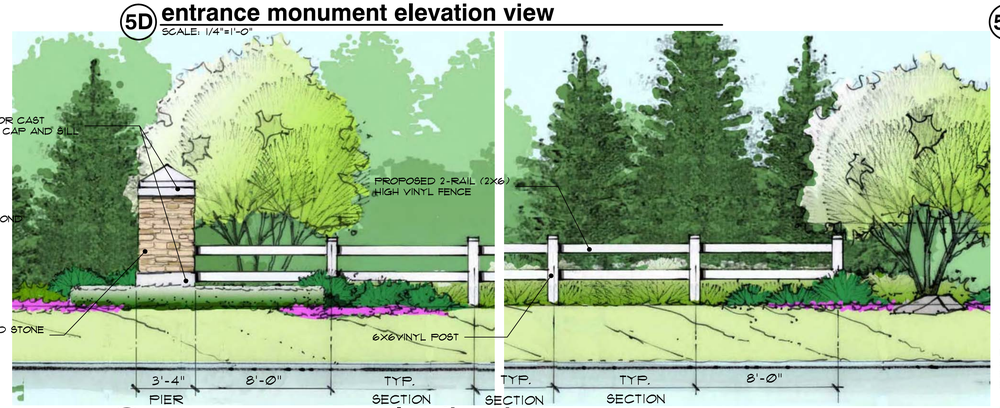
5D entrance monument elevation view

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



5C entrance monument elevation view

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



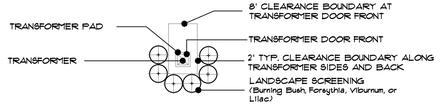
5E entrance monument elevation view

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

landscape maintenance notes:

THE OWNER OF THE PROPERTY SHALL BE RESPONSIBLE FOR ALL MAINTENANCE OF SITE LANDSCAPING, AS FOLLOWS:

1. LANDSCAPE MAINTENANCE PROCEDURES AND FREQUENCIES TO BE FOLLOWED SHALL BE SPECIFIED ON THE LANDSCAPE PLAN, ALONG WITH THE MANNER IN WHICH THE EFFECTIVENESS, HEALTH AND INTENDED FUNCTIONS OF THE VARIOUS LANDSCAPE AREAS ON THE SITE WILL BE ENSURED.
2. LANDSCAPING SHALL BE KEPT IN A NEAT, ORDERLY AND HEALTHY GROWING CONDITION, FREE FROM DEBRIS AND REFUSE.
3. PRUNING SHALL BE MINIMAL AT THE TIME OF INSTALLATION, ONLY TO REMOVE DEAD OR DISEASED BRANCHES. SUBSEQUENT PRUNING SHALL ASSURE PROPER MATURATION OF PLANTS TO ACHIEVE THEIR APPROVED PURPOSE.
4. ALL DEAD OR DISEASED PLANT MATERIAL SHALL BE REMOVED AND REPLACED WITHIN SIX (6) MONTHS AFTER IT DIES OR IN THE NEXT PLANTING SEASON, WHICHEVER OCCURS FIRST. THE PLANTING SEASON FOR DECIDUOUS PLANTS SHALL BE BETWEEN MARCH 1 AND JUNE 1 AND FROM OCTOBER 1 UNTIL THE PREPARED SOIL BECOMES FROZEN. THE PLANTING SEASON FOR EVERGREEN PLANTS SHALL BE BETWEEN MARCH 1 AND JUNE 1. PLANT MATERIAL INSTALLED TO REPLACE DEAD OR DISEASED MATERIAL SHALL BE AS CLOSE AS PRACTICAL TO THE SIZE OF THE MATERIAL IT IS INTENDED TO REPLACE.
5. THE APPROVED LANDSCAPE PLAN SHALL BE CONSIDERED A PERMANENT RECORD AND INTEGRAL PART OF THE SITE PLAN APPROVAL. UNLESS OTHERWISE APPROVED IN ACCORDANCE WITH THE AFOREMENTIONED PROCEDURES, ANY REVISIONS TO, OR REMOVAL OF, PLANT MATERIALS WILL PLACE THE PARCEL IN NON-CONFORMITY WITH THE APPROVED LANDSCAPE PLAN, AND SHALL BE VIEWED AS A VIOLATION OF THE ORDINANCE AND THE AGREED UPON TERMS OF THE FINAL SITE PLAN APPROVAL.



transformer pad planting detail

SCALE 1"=20'-0"

A MINIMUM OF 2' SEPARATION BETWEEN TRANSFORMER AND FULL GROWN SHRUBS AND TREES. GROUND COVERS ALLOWED UP TO TRANSFORMER PAD IF MAINTAINED BELOW 4" FULL GROWTH. IF TRANSFORMER FACES TOWARDS THE HOUSE, THEN THE SAME CONDITIONS EXIST. NO FULL GROWTH IN FRONT OF THE TRANSFORMER FOR AT LEAST A MINIMUM OF 8'. THERE ARE NO WAIVERS GRANTED TO THE ABOVE CONDITION. DETAIL PER THE DETROIT EDISON COMPANY-SERVICE PLANNING DEPARTMENT ('9-11-98)

SEE ENGINEERING PLANS FOR PROPOSED LOCATIONS, TOTAL NUMBER OF TRANSFORMERS AND FINAL LOCATION PER DETROIT EDISON REQUIREMENTS.

native wildflower seed mix:

Mesic Prairie Mix:

A widely adaptable mix recommended for areas of medium soil texture in full sun and partial shade conditions. The best mix to use to replace large lawn areas in commercial landscaping. This mix has a combination of plants that are adapted to moist conditions, but will tolerate drought once established.

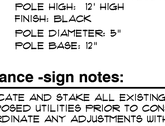
30% Native Grasses and Sedges: will contain at least four of the following species.
- Andropogon gerardi (Big Bluestem)
- Carex bicknellii (Copper Oval Sedge)
- Elymus canadensis (Canada Wild Rye)
- Panicum virgatum (Switchgrass)
- Schizachyrium scoparium (Little Bluestem)
- Sorghastrum nutans (Indian Grass)

20% Native Wildflowers: will contain at least fourteen of the following species.
- Aster novae-angliae (New England Aster)
- Aster pilosus (Heath Aster)
- Coreopsis tripteris (Tall Coreopsis)
- Baptisia leucantha (White False Indigo)
- Echinacea purpurea (Purple Cornflower)
- Eryngium yuccifolium (Rattlesnake Master)
- Heliopsis helianthoides (Ox Eye Sunflower)
- Liatris aspera (Rough Blazing Star)
- Liatris spicata (Dense Blazingstar)
- Monarda fistulosa (Bergamot)
- Physostegia virginiana (Obedient Plant)
- Pycnanthemum virginianum (Mountain Mint)
- Ratibida pinnata (Yellow Cornflower)
- Rudbeckia hirta (Black-Eyed Susan)
- Rudbeckia laciniata (Green-headed Coneflower)
- Silphium terebinthinaceum (Prairie Dock)
- Solidago altissima (Tall Goldenrod)
- Solidago graminifolia (Lance-leaved Goldenrod)
- Solidago rigida (Stiff Goldenrod)
- Tradescantia ohioensis (Spiderwort)
- Verbena urticifolia (White Vervain)

SOURCE:
NATIVESCAPE LLC
P.O. BOX 122
MANCHESTER, MI 48158
ph: 517.456.9696
www.nativescape.net

50% Temporary Grasses: will contain the following species.
- Avena sativa (Seed Oats)
- Lolium multiflorum (Annual Rye)

Recommended Seed Rate: 30lb/acre



5F sign & pier uplighting detail

(3-CONDITION)

MANUFACTURER:
COPPER LIGHTING OR EQUAL
GRANVILLE BUSINESS PARK, BLDG. A
1121 HIGHWAY 74 SOUTH
PEACHTREE, GA 30269
PH. 770-486-4800

MODEL: SF FALCON or EQUAL
(150W METAL HALIDE)



5G decorative light and pole

(1-CONDITIONS)

DECORACTIVE POLE AND STREEET LIGHTS MANUFACTURED BY HALOPANE

LIGHT FIXTURE: WASHINGTON
SERIES-ACRYLIC
MODEL NO: AW@@HP12B5DNB OR EQUAL
POLE: WADSWORTH SERIES
MODEL NO: AW@@HP12B5DNB OR EQUAL
POLE HIGH: 12' HIGH
FINISH: BLACK
POLE DIAMETER: 5"
POLE BASE: 12"

entrance -sign notes:

1. LOCATE AND STAKE ALL EXISTING AND PROPOSED UTILITIES PRIOR TO CONSTRUCTION. COORDINATE ANY ADJUSTMENTS WITH LANDSCAPE ARCHITECT.

2. ALL ENTRY WALL LIGHTING SHALL BE CONTROLLED WITH A 'PHOTO-EYE' SWITCH. ALL LIGHTING SHALL BE SHIELDED FROM PUBLIC R.O.W.'S AND ADJACENT PROPERTIES.

3. VERIFY SOIL BEARING CAPACITY PRIOR TO TO ENTRY SIGN MONUMENT & PIER CONSTRUCTION. IF SOIL BEARING CAPACITY FALLS BELOW STANDARD REQUIREMENTS, CONSULT STRUCTURAL ENGINEER FOR RECOMMENDATION OF FINAL ENTRY MONUMENT & PIER FOOTING DESIGN.

4. SIGNAGE TEXT AND LOGO TO BE METAL or PRISMATIC DIMENSIONAL LETTERS, PRIOR TO SIGN INSTALLATION, PERMITS TO BE OBTAINED PER CITY OF NOVI REQUIREMENTS, STANDARDS AND APPROVALS.

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48332
ph. (248) 626-6114

project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road &
Meadowbrook Road

sheet title:
ENTRANCE PLANTINGS, ENTRANCE SIGN & WALL MONUMENT

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drawn by:
JP, KH
checked by:
FP
date:
1-4-2015

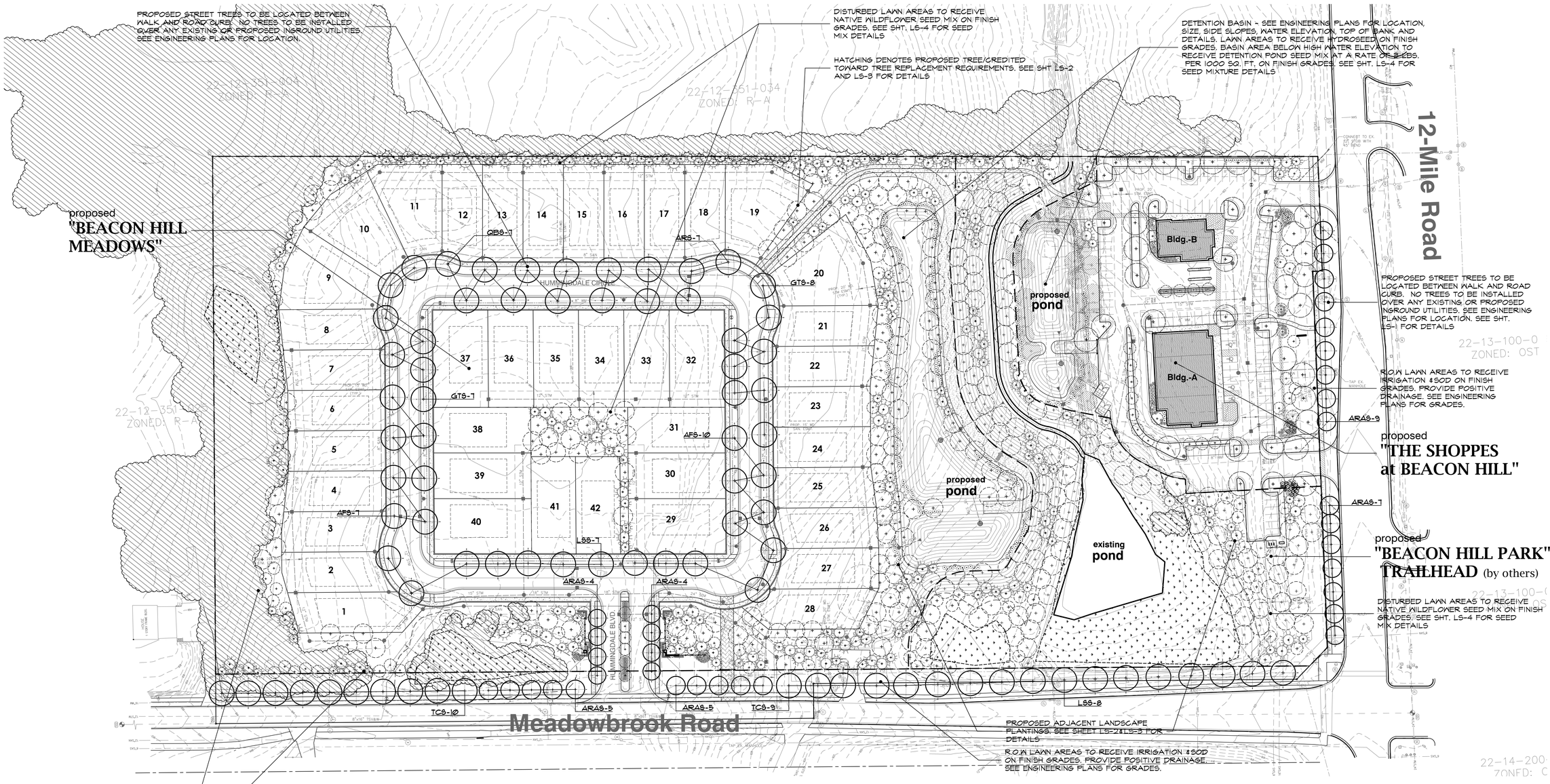
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project no:
LS16.008.01

sheet no:
LS-5 of 6



street tree plan for:

"Beacon Hill Park

City of Novi, Michigan

note
preliminary residential concept plan for inspection purposes only and in no way official or approved for record purposes.

north

scale: 0' 30' 60' 120' 180'
1"= 60'-0"

general landscape notes:

1. LANDSCAPE CONTRACTOR SHALL VISIT THE SITE, INSPECT EXISITING CONDITIONS, REVIEW PROPOSED PLANTINGS AND RELATED WORK, CONTACT THE OWNER AND/OR LANDSCAPE ARCHITECT WITH ANY CONCERNS OR DISCREPANCY BETWEEN THE PLAN, PLANT MATERIAL LIST, AND/OR SITE CONDITIONS.
2. PRIOR TO BEGINING OF CONSTRUCTION ON ANY WORK, CONTRACTORS SHALL VERIFY LOCATIONS OF ALL ON SITE UTILITIES. GAS, ELECTRIC, TELEPHONE, CABLE TO BE LOCATED BY CONTACTING MISS DIG 1-800-482-7171. ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COORDINATE ALL RELATED WORK ACTIVITIES WITH OTHER TRADES AND REPORT ANY UNACCEPTABLE JOB CONDITIONS TO OWNER PRIOR TO COMMENCING
3. NUMERICAL VALUE ON THE LANDSCAPE QUANTITIES SPECIFIED ON THE PLAN TAKE PRECEEDENCE OVER GRAPHIC REPRESENTATION. VERIFY ANY CONCERN-DISCREPANCY WITH LANDSCAPE ARCHITECT.
4. ALL CONSTRUCTION AND PLANT MATERIAL LOCATION TO BE ADJUSTED ON SITE IF NECESSARY.
5. ALL SUBSTITUTIONS OR DEVIATIONS FROM THE LANDSCAPE PLAN MUST BE APPROVED BY THE CITY OF NOVI AND LANDSCAPE ARCHITECT
6. ALL LARGE TREES AND EVERGREENS TO BE STAKED, GUYED AND WRAPPED AS DETAIL SHOWN ON PLAN.
7. PLANT BEDS TO BE DRESSED WITH MIN. 3" OF FINELY DOUBLE SHREDDED HARDBARK MULCH.
8. DIG SHRUB PITS 1' LARGER THAN SHRUB ROOT BALLS AND TREE PITS 2' LARGER THAN ROOT BALL. BACK FILL WITH ONE PART TOP SOIL AND ONE PART SOIL FROM
9. REMOVE ALL TWINE, WIRE AND BURLAP FROM TREE AND SHRUB EARTH BALLS, AND FROM TREE TRUNKS.
10. NATURAL COLOR FINELY SHREDDED HARDWOOD BARK MULCH REQUIRED FOR ALL PLANTINGS. 4" THICK BARK MULCH FOR TREES IN 4' DIA. CIRCLE WITH 3" PULLED AWAY FROM TRUNK. 3" THICK BARK MULCH FOR SHRUBS AND 2" THICK BARK MULCH FOR PERENNIALS.
11. PLANT MATERIAL QUALITY & INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN ASSOCIATION OF NURSERYMEN LANDSCAPE STANDARDS.
12. PROVIDE FEAT SOD FOR ALL NEW AND DISTURBED LAWN AREAS UNLESS NOTED OTHERWISE.
13. ALL PLANTING AREAS TO BE PREPARED WITH APPROPRIATE SOIL MIXTURES AND FERTILIZER BEFORE PLANT INSTALLATION.
14. PLANT TREES AND SHRUBS GENERALLY NO CLOSER THEN THE FOLLOWING DISTANCES FROM SIDEWALKS, CURBS AND PARKING STALLS:
    a.). SHADE TREES ____ 5 FT.
    b.). ORNAMENTAL AND EVERGREEN TREES (CRABS, PINE, SPRUCE, ETC.) ____ 10 FT.
    c.). SHRUBS THAT ARE LESS THAN 1 FOOT TALL AND WIDE AT MATURITY. ____ 2 FT.
15. NO TREES OR EVERGREENS TO BE INSTALLED OVER ANY PROPOSED OR EXISTING UTILITY LINES AS SHOWN ON THE OVERALL LANDSCAPE PLAN. SEE ENGINEERING PLANS FOR LOCATION AND DETAILS.
16. ALL LAWN AREAS AND LANDSCAPE BEDS TO BE FULLY IRRIGATED WITH A AUTOMATIC UNDERGROUND SYSTEMS. IRRIGATION SYSTEM TO HAVE SEPARTE ZONES FOR LAWN AREAS, PARKING ISLANDS, AND SHRUB BEDS WITH DIFFERENT CONTROL MOISTURE LEVEL ADJUSTMENT PER ZONE AS REQUIRED
17. UNLESS NOTED OTHERWISE, LANDSCAPE BEDS ADJACENT TO LAWN TO RECIEVE EDGING. EDGING SHALL BE 4" X 1/8" METAL (FINISH BLACK OR GREEN) OR APPROVED EQUAL AND TO BE INSTALLED WITH HORIZONTAL METAL STAKES AT 32" O.C. OR PER MANUFACTERER'S SPECIFICATION.
18. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL LANDSCAPE PLANT MATERIALS AND IRRIGATION INSTALLATION FOR A PERIOD OF TWO YEAR BEGINNING AFTER THE COMPLETION OF LANDSCAPE INSTALLTION DATE APPROVED BY THE CITY OR LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL REPLACE DURING AND AT THE END OF THE GUARANTEE PERIOD, ANY DEAD OR UNACCEPTABLE PLANTS, AS DETERMINED BY THE CITY OR LANDSCAPE ARCHITECT, WITHOUT COST TO THE OWNER.

misc. notes:

1. REFERENCE ENGINEERING PLANS FOR EXISTING AND PROPOSED FINAL UTILITIES, WALLS, AND FENCE LOCATIONS
2. REFERENCE ENGINEERING PLANS FOR GRADING WITH MIN. 2' INTERVALS
3. REFERENCE ENGINEERING PLANS FOR WOODLAND SURVEY OF EXISITNG TREES OVER 8" INCLUDING PROPOSED PROTECTION FENCE LOCATIONS
4. REFERENCE ENGINEERING PLANS FOR EXISTING SOILS PER USDA.

street tree notes:

STREET TREES SHALL BE PLANTED 10' FROM ANY DRIVEWAYS, 4' FROM ANY CURBS AND SIDEWALKS (2' FOR SUBCANOPY TREES), 15' FROM OVERHEAD UTILITY LINES, 10' FROM ANY MAN HOLE OR FIRE HYDRANTS, AND 35' FROM THE INTERSECTION OF CURB LINES ON CORNER LOTS.

STREET TREES SHALL HAVE THE FOLLOWING CHARACTERISTICS: 2 1/2" CALIPER, NO. 1 GRADE B&B, NORTHERN GROWN PER CURRENT AAN STANDARDS, AND INSTALLED ACCORDING TO ACCEPTED PLANTING PROCEDURES.

STREET TREES SHALL HAVE A CENTRAL LEADER AND RADIAL BRANCHING STRUCTURE. ANY BRANCHES THAT MAY DEVELOP INTO "V" CROTCHES SHALL BE PRUNED SO AS NOT TO BECOME DOMINANT BRANCHES.

THE BRANCHES ON CANOPY TREES SHALL BE LIMBED UP 14' ON THE SIDE OF THE STREET AND 10' ON THE NON-STREET SIDE.

street tree requirements:

PER LOT WIDTH, THE FOLLOWING STREET TREE PLANTINGS SHALL OCCUR:

- ≤70': AT LEAST 1 TREE
- ≥70': AT LEAST 2 TREES
- ≥105': AT LEAST 3 TREES
- ≥140': AT LEAST 4 TREES
- ≥175': AT LEAST 5 TREES

MINIMUM STREET TREE SIZE REQUIRED 2 1/2" CALIPER AND MIN. 35' O.C. SPACING

LOT FRONTAGE	conditions	required	provided
LOTS WITH FRONTAGE <70'	42	42	42
LOTS WITH FRONTAGE ≥70'	-	-	-
LOTS WITH FRONTAGE ≥105'	4	12	12
LOTS WITH FRONTAGE ≥140'	-	-	-
OPEN SPACE FRONTAGE, CUL-DE-SAC, AND BLVD. ISLAND		NA	8
ONE (1) DECIDUOUS TREE PER 35' BETWEEN CURB AND SIDEWALK (MEADOWBROOK AND 12-MILE R.O.W. FRONTAGE 1,872' / 35' = 53.48 TREES)		53	53
	TOTALS	107	114

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project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
BEACON HILL STREET TREE PLANTING PLAN

job no./issue/revision date:
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LS16.006.01 PSP 1-11-2016

drawn by: JP, KH
checked by: FP
date: 1-4-2015

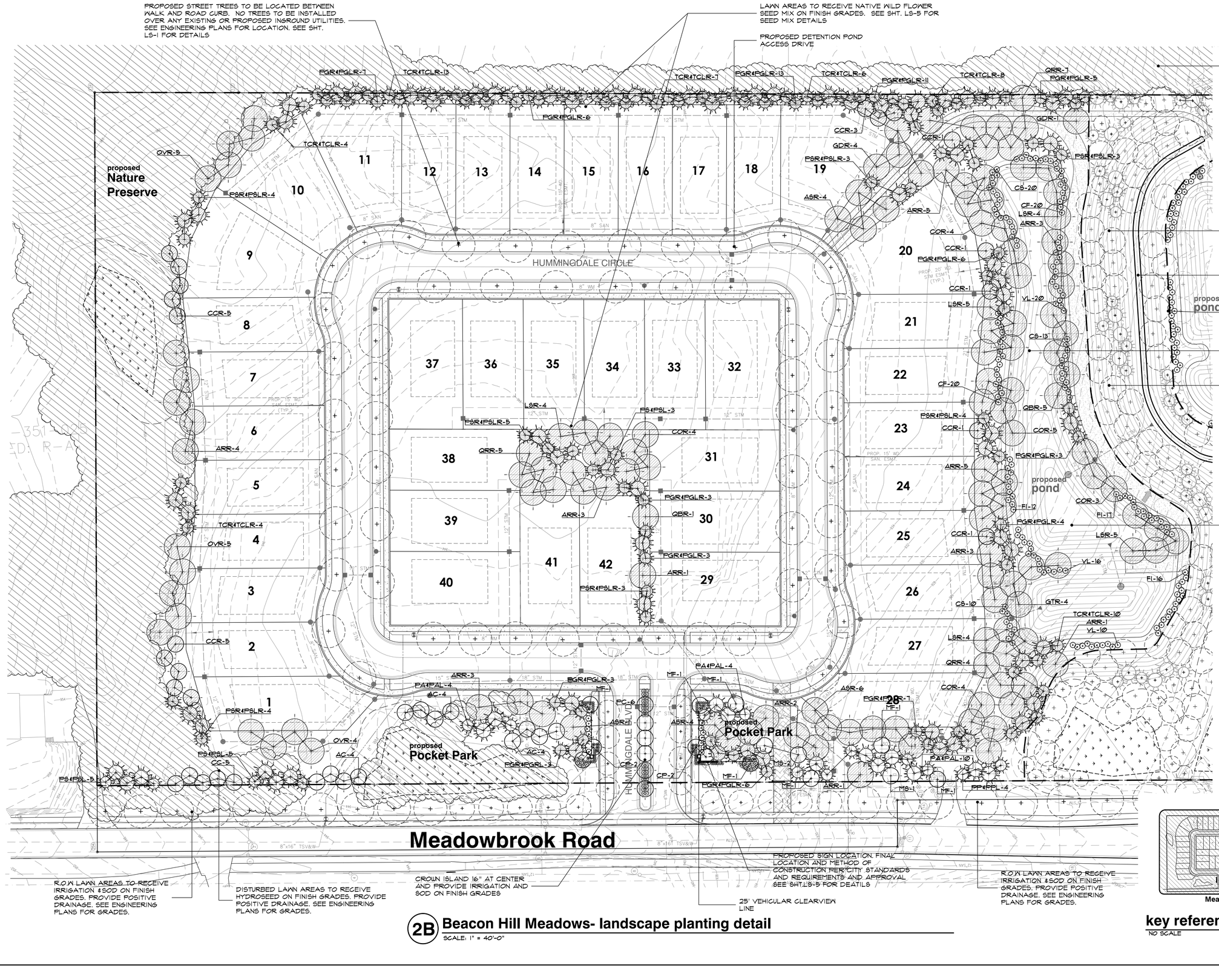
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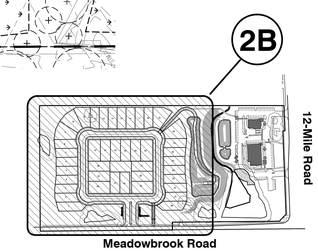
project no:
LS16.008.01

sheet no:
LS-1 of 6



2B Beacon Hill Meadows- landscape planting detail

SCALE: 1" = 40'-0"



key reference map

NO SCALE

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Community Land Planner and **registered Landscape Architect**
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Farmington Hills, MI 48336
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seal:

STATE OF MICHIGAN FELINO A. PASCUAL LANDSCAPE ARCHITECT No. 1043 REGISTERED LANDSCAPE ARCHITECT

client:
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West Bloomfield, Michigan 48332
ph. (248) 626-6114

project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
Beacon Hill Meadows Landscape Planting Detail

job no./issue/revision date:

LS15.010.06 SPA 6-26-2015
LS16.006.01 PSP 1-11-2016

drawn by: JP, KH
checked by: FP
date: 1-4-2015

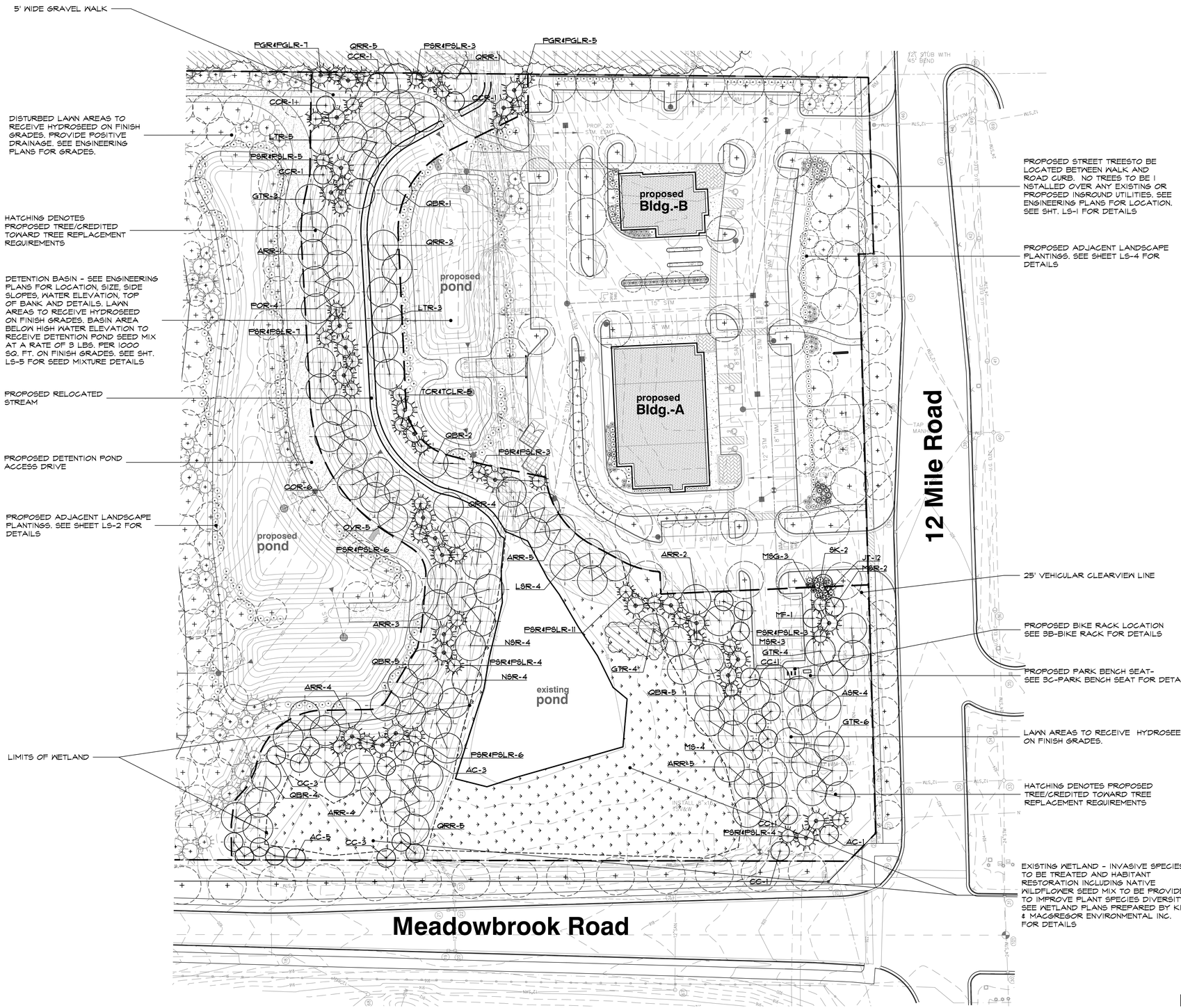
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project no: LS16.008.01

sheet no: **LS-2** of 6



3A Beacon Hill Park Trailhead landscape planting detail

SCALE: 1" = 40'-0"



Shown in Black
* Shown with S-2 option covers

3B bike rack

(1-CONDITIONS)

MANUFACTURER:
DUMOR SITE FURNISHINGS
P.O. BOX 142, MIFFLINTOWN, PA 17059
WEB: WWW.DUMOR.COM
PH. 800-598-4018

MODEL No. 130-20-S1
FINISH: BLACK



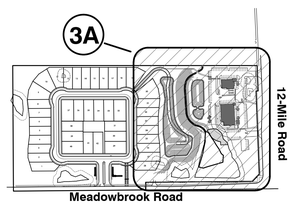
Shown in Black

3C park bench seating

(1-CONDITIONS)

6' WIDE BENCH SEAT BY DUMOR, INC. MODEL NO. 34-6060D (S-2) RECYCLED PLASTIC POLYESTER POWER-COATED FRAME OR EQUAL

MANUFACTURER:
DUMOR SITE FURNISHINGS
P.O. BOX 142, MIFFLINTOWN, PA 17059
WEB: WWW.DUMOR.COM
PH. 800-598-4018



key reference map

NO SCALE

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seal:



client:
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West Bloomfield, Michigan 48332
ph. (248) 626-6114

project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
Beacon Hill Park Trailhead Landscape Planting Detail

job no./issue/revision date:
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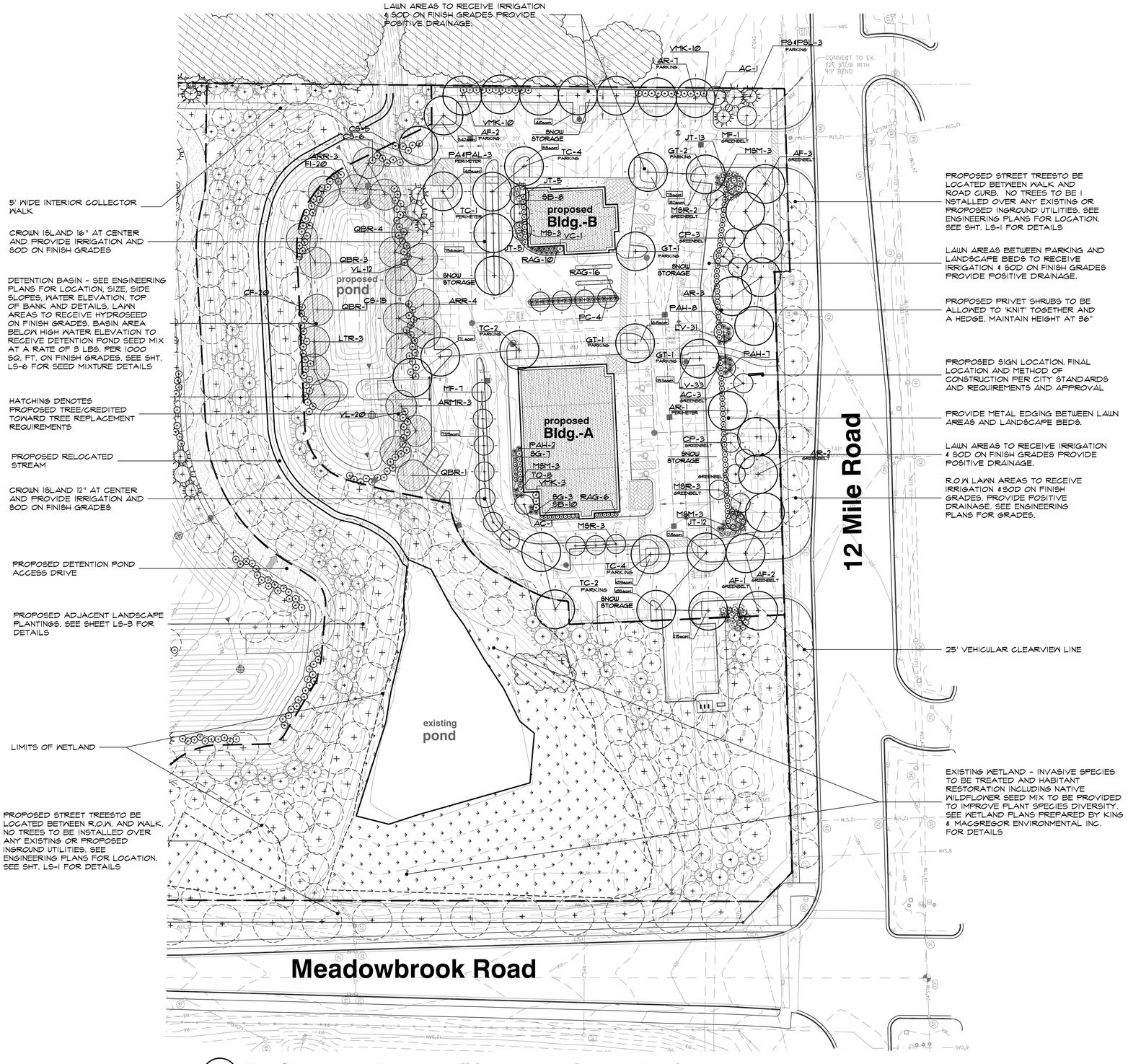
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project no:
LS16.008.01

sheet no:
LS-3 of 6



4A **The Shoppes at Beacon Hill landscape planting detail**
SCALE: 1" = 40'-0"

commercial retail landscape requirements:

greenbelt (12 Mile Road)	REQUIRED	PROVIDED
TOTAL LIN. FT. OF 12 MILE ROAD FRONTAGE	407'±	
ONE (1) 3"DECIDUOUS OR EVERGREEN TREE PER 35 LIN. FT.	11	12
THREE (3) SUBCANOPY TREE PER 40 LIN. FT.	10	15
detention		
HIGH WATER PERIMETER	585'±	
70%-75% LARGE NATIVE SHRUBS ABOVE HIGH WATER BASIN RIM AREA	75%	75%
parking lot trees (OFFICE-CATEGORY-1)		
PARKING SPACE AREA	17,983 SQFT.	
PARKING AREA FORMULA	1,798 SQFT.	
(17,983 SQFT. X .10 (10 %) = 1,798 SQ.FT.)		
VEHICULAR ACCESS AREA	42,821 SQFT.	
VEHICULAR AREA FORMULA	423 SQFT.	
(42,821 SQFT. X .01 (.1%) = 423.21 SQ.FT.)		

	REQUIRED	PROVIDED
TOTAL AREA OF INTERIOR LANDSCAPE ISLANDS AREA	2,221 SQ.FT	3,085 SQ.FT
(1,798 SQFT. + 423 SQ.FT. = 2,221 SQ.FT.)		
TOTAL NO. OF PARKING LOT TREES	30 TREES	30 TREES
(2,221 SQ.FT. LANDSCAPE ISLANDS / 75 =29.6 TREES)		
perimeter parking lot trees		
TOTAL LIN. FT. OF PERIMETER PARKING	1,175'±	
ONE (1) 3"DECIDUOUS OR EVERGREEN TREE PER 35 LIN. FT.	33	5
building foundation		
BUILDING FOUNDATION LANDSCAPE AREA	3,299.79 SQFT.	3,300 + SQFT.
(412.47' (PERIMETER) X 8' = 3,299.79 SQFT.)		

residential landscape requirements:

greenbelt (Meadowbrook Road)	REQUIRED	PROVIDED
TOTAL LIN. FT. OF MEADOWBROOK ROAD FRONTAGE	857'±	
ONE (1) 3"DECIDUOUS OR EVERGREEN TREE PER 35 LIN. FT.	24	32 + 4 (*)
ONE (1) SUBCANOPY TREE PER 20 LIN. FT.	42.8	30 + 17 (*)
boulevard island		
TOTAL LIN. FT. OF BOULEVARD ISLAND	1	
COMBINATION OF CANOPY TREES, SUBCANOPY TREES AND SHRUBS	75%	75%
detention		
HIGH WATER PERIMETER	1142.41'±	
70%-75% LARGE NATIVE SHRUBS ABOVE HIGH WATER BASIN RIM AREA	75%	75%

(*) LANDSCAPE PLANTING LOCATED IN BEACON HILL PARK AREA

woodland tree replacement summary

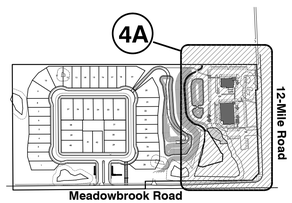
	MEADOWS	SHOPPES	TRAILHEAD	TOTALS
TOTAL NO OF EXISTING TREE (8" DBH OR GREATER) TO BE REMOVED	432	22	6	460
NO OF EXEMPT TREES (DEAD OR POOR CONDITION) REMOVED	55	3	-	58
NO OF REGULATED TREE REMOVED	377	19	6	402
NO OF TREES REMOVED BETWEEN 8"-11" DBH	183	3	1	187
NO OF TREES REMOVED BETWEEN 11"-20" DBH	144	9	4	157
NO OF TREES REMOVED BETWEEN 20"-29" DBH	17	3	-	20
NO OF TREES REMOVED 30" DBH OR GREATER	4	1	1	6
NO OF TREES REMOVED WITH MULTI-TRUNK	29	3	-	32

*SEE TREE SURVERY/TREE REMOVAL PLAN PREPARED BY ZEIMET WOZNIAK & ASSOCIATES FOR TREE SPECIES, SIZES, AND DETAILS

	MEADOWS	SHOPPES	TRAILHEAD	TOTALS
TOTAL NO OF TREE REPLACEMENT CREDITS REQUIRED	642	47	13	702
187 - (8"-11" DBH) X 1-TREE REPLACEMENT CREDIT	183	3	1	187
157 - (11"-20" DBH) X 2-TREE REPLACEMENT CREDIT	288	18	8	314
20 - (20"-29" DBH) X 3-TREE REPLACEMENT CREDIT	51	9	-	60
6 - (30" + DBH) X 4-TREE REPLACEMENT CREDIT	16	4	4	24
32 - (MULTI-TRUNK) 454.3" / 8"	104	13	-	117

(MIN. 2 1/2" CALIPER DECIDUOUS TREE= 1-CREDIT OR MIN. 7' HIGH EVERGREEN TREE @ .66 CREDIT)

	MEADOWS	SHOPPES	TRAILHEAD	TOTALS
TOTAL NO OF TREE REPLACEMENT CREDITS PROVIDED	426	31.5	244.5	702
93 - 2 1/2" DECIDUOUS TREE @ 1.0-CREDITS	51	3	39	93
196 - 3" DECIDUOUS TREE @ 1.5-CREDITS	139.5	28.5	126	294
76-7' EVERSREEN @ 1-CREDITS	50	-	26	76
114- 10' EVERGREEN @ 1.5-CREDITS	127.5	-	43.5	171
34- 12' EVERGREEN @ 2-CREDITS	58	-	10	68



key reference map
NO SCALE

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project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
The Shoppes of Beacon Hill Landscape Planting Detail

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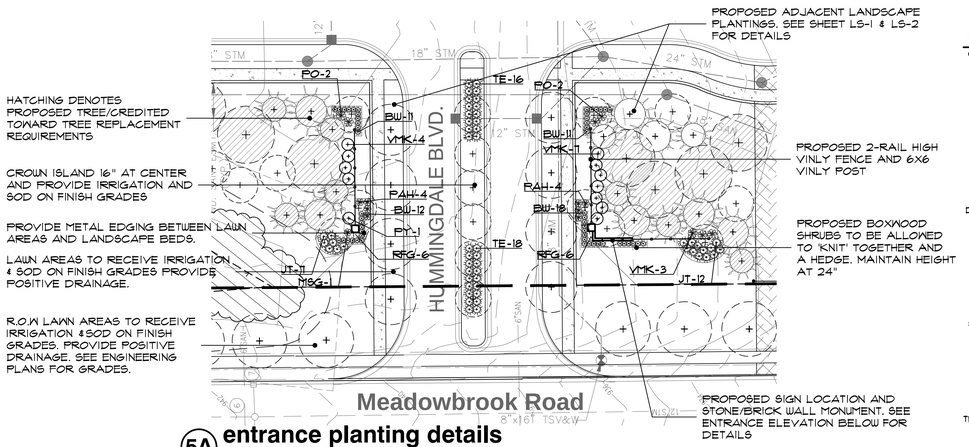
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sheet no:
LS-4 of 6

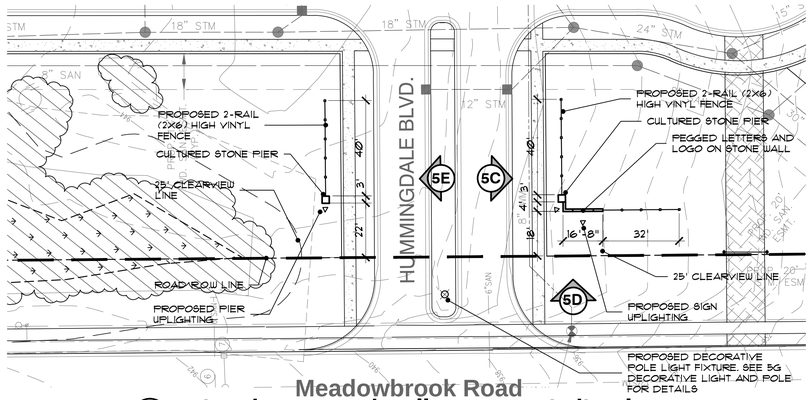


5A entrance planting details

SCALE: 30'=1'-0"

entrance plant material list

key	5A	botanical name	common name	size	cost	totals
		SHRUBS				
VMK	14	VIBURNUM X.B. 'MOHAWK'	MOHAWK VIBURNUM	3' BB	$50	$700
PO	4	PHYSOCARPUS O. 'MONLO'	DIABOLO NINEBARK	3' BB	$50	$200
JT	19	JUNIPERUS S. 'TAMARISAFOLIA'	TAMS JUNIPER	24" BB	$50	$950
BW	52	BUXUS M. 'WINTER GEM'	WINTER GEM BOXWOOD	18" BB	$50	$2600
PY	1	PYRACANTHA COCCINEA 'YUKON BELLE'	SCARLET FIRETHORN	36" BB	$50	$50
TE	34	TAXUS X.M. 'EVERLOW'	EVERLOW YEW	36" BB	$50	$1700
		PERENNIALS AND GRASSES				
RFG	12	RUDBECKIA F. 'GOLDSTURM'	BLACK EYED SUSAN	#3 CONT	$20	$240
PAH	8	PENNISETUM ALOPECUROIDES 'HAMELN'	HAMELN DWARF FOUNTAIN GRASS	#3 CONT	$20	$160
MBG	1	MISCANTHUS SINENSIS 'MORNING LIGHT'	'MORNING LIGHT' MAIDEN GRASS	#3 CONT	$20	$20
					TOTAL	$11,920



5B entry signage and wall monument site plan

SCALE: 30'=1'-0"

City of Novi landscape notes:

GENERAL NOTES:

1) PLANT MATERIALS TO BE INSTALLED ACCORDING TO THE CITY OF NOVI AND CURRENT AMERICAN ASSOCIATION OF NURSERYMEN'S STANDARDS.

2) PLANT MATERIALS TO BE OF GUARANTEED FOR 2 YEARS, REPLACE FALLING MATERIAL WITHIN 1 YEAR, OR THE NEXT APPROPRIATE PLANTING PERIOD.

3) PLANT MATERIALS TO BE OF PREMIUM QUALITY, NO. 1 GRADE NORTHERN NURSURY GROWN, IN HEALTHY CONDITION, FREE OF PESTS AND DISEASES.

4) MULCH IS TO BE NATURAL COLORED, FINELY SHREDDED HARDWOOD BARK OF 4" THICK BARK MULCH FOR TREES IN 4' DIA. CIRCLE W/3" PULLED AWAY FROM TRUNK, 3" THICK BARK MULCH FOR SHRUBS AND 2" THICK BARK MULCH FOR PERRENIALS.

5) CALL MISS DIG AT 1-800-482-7171 PRIOR TO ANY CONSTRUCTION.

6) DATE OF INTENDED LANDSCAPE INSTALLATION TO BE FALL 2005.

DECIDUOUS & EVERGREEN TREE:

1) TREE SHALL BE INSTALLED SAME RELATIONSHIP TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 6" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.

2) DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES.

3) REMOVE ALL TAGS, STRING, PLASTICS AND OTHER MATERIALS THAT ARE UNSLIGHTLY AND COULD CAUSE GIRDLING.

4) REMOVE TREE STAKES, GUY WIRES AND TREE WRAP AFTER ONE WINTER SEASON.

SHRUBS

1) SHRUB SHALL BE INSTALLED SAME RELATIONSHIP TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 4" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.

2) DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES.

3) REMOVE ALL TAGS, STRING, PLASTICS AND OTHER MATERIALS THAT ARE UNSLIGHTLY AND COULD CAUSE GIRDLING.

TREE PROTECTION:

1) EITHER PLASTIC OR WOOD ORANGE SNOW FENCING SHALL BE INSTALLED AT OR BEYOND THE DRIPLINE, UNLESS MORE SUBSTANTIAL FENCING IS REQUIRED.

2) STAKES SHALL BE METAL 'T' POLES SPACED NO FURTHER THAN 5' ON CENTER.

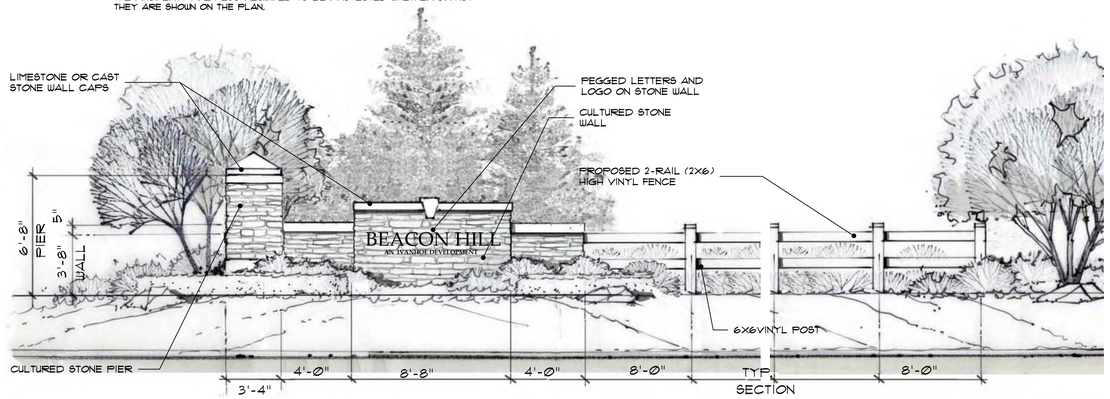
3) FENCING SHALL NOT BE INSTALLED CLOSER TO THE TREE THAN THE DRIPLINE OF THOSE TREES TO BE SAVED. SPECIAL CIRCUMSTANCES SHALL BE REVIEWED BY THE CITY.

4) FENCING SHALL BE ERECTED PRIOR TO CONSTRUCTION. THE CITY SHALL BE NOTIFIED ONCE THE FENCING IS INSTALLED FOR INSPECTION.

5) UNDER NO CIRCUMSTANCES SHALL THE PROTECTIVE FENCING BE REMOVED WITHOUT PROPER APPROVAL FROM THE CITY.

6) NO PERSON SHALL CONDUCT ANY ACTIVITY WITHIN THE AREAS PROPOSED TO REMAIN. THIS SHALL INCLUDE, BUT NOT LIMITED TO:
   a. NO SOLVENTS OR CHEMICALS WITHIN THE PROTECTED AREAS.
   b. NO BUILDING MATERIALS OR CONSTRUCTION EQUIPTMENT WITHIN THE PROTECTED AREAS.
   c. NO GRADE CHANGES, INCLUDING FILL, WITHIN THE PROTECTED AREAS.
   d. NO REMOVAL OF VEGETATION FROM THE GROUND UP WITHOUT PERMISSION FROM THE PROPER REVIEWING AUTHORITY, INCLUDING THE WOODLANDS REVIEW BOARD.
   e. ANY REQUIRED SWALE NEEDS TO BE DIRECTED AROUND THE PROTECTED AREAS. IN INSTANCES WHERE SWALES ARE APPROVED THRU A PROTECTED AREA, THE SWALES NEED TO BE HAND DUG. MACHINERY OF ANY KIND IS PROHIBITED.

7) REGULATED WOODLANDS OR REGULATED TREES ADJACENT ADJACENT TO THE PROPERTY ARE ALSO REQUIRED TO BE PROTECTED WHETHER OR NOT THEY ARE SHOWN ON THE PLAN.



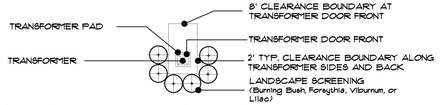
5D entrance monument elevation view

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

landscape maintenance notes:

THE OWNER OF THE PROPERTY SHALL BE RESPONSIBLE FOR ALL MAINTENANCE OF SITE LANDSCAPING, AS FOLLOWS:

1. LANDSCAPE MAINTENANCE PROCEDURES AND FREQUENCIES TO BE FOLLOWED SHALL BE SPECIFIED ON THE LANDSCAPE PLAN, ALONG WITH THE MANNER IN WHICH THE EFFECTIVENESS, HEALTH AND INTENDED FUNCTIONS OF THE VARIOUS LANDSCAPE AREAS ON THE SITE WILL BE ENSURED.
2. LANDSCAPING SHALL BE KEPT IN A NEAT, ORDERLY AND HEALTHY GROWING CONDITION, FREE FROM DEBRIS AND REFUSE.
3. PRUNING SHALL BE MINIMAL AT THE TIME OF INSTALLATION, ONLY TO REMOVE DEAD OR DISEASED BRANCHES. SUBSEQUENT PRUNING SHALL ASSURE PROPER MATURATION OF PLANTS TO ACHIEVE THEIR APPROVED PURPOSE.
4. ALL DEAD OR DISEASED PLANT MATERIAL SHALL BE REMOVED AND REPLACED WITHIN SIX (6) MONTHS AFTER IT DIES OR IN THE NEXT PLANTING SEASON, WHICHEVER OCCURS FIRST. THE PLANTING SEASON FOR DECIDUOUS PLANTS SHALL BE BETWEEN MARCH 1 AND JUNE 1 AND FROM OCTOBER 1 UNTIL THE PREPARED SOIL BECOMES FROZEN. THE PLANTING SEASON FOR EVERGREEN PLANTS SHALL BE BETWEEN MARCH 1 AND JUNE 1. PLANT MATERIAL INSTALLED TO REPLACE DEAD OR DISEASED MATERIAL SHALL BE AS CLOSE AS PRACTICAL TO THE SIZE OF THE MATERIAL IT IS INTENDED TO REPLACE.
5. THE APPROVED LANDSCAPE PLAN SHALL BE CONSIDERED A PERMANENT RECORD AND INTEGRAL PART OF THE SITE PLAN APPROVAL. UNLESS OTHERWISE APPROVED IN ACCORDANCE WITH THE AFOREMENTIONED PROCEDURES, ANY REVISIONS TO, OR REMOVAL OF, PLANT MATERIALS WILL PLACE THE PARCEL IN NON-CONFORMITY WITH THE APPROVED LANDSCAPE PLAN, AND SHALL BE VIEWED AS A VIOLATION OF THE ORDINANCE AND THE AGREED UPON TERMS OF THE FINAL SITE PLAN APPROVAL.



transformer pad planting detail

SCALE 1"=20'-0"

A MINIMUM OF 2' SEPARATION BETWEEN TRANSFORMER AND FULL GROWN SHRUBS AND TREES. GROUND COVERS ALLOWED UP TO TRANSFORMER PAD IF MAINTAINED BELOW 4" FULL GROWTH. IF TRANSFORMER FACES TOWARDS THE HOUSE, THEN THE SAME CONDITIONS EXIST. NO FULL GROWTH IN FRONT OF THE TRANSFORMER FOR AT LEAST A MINIMUM OF 8'. THERE ARE NO WAIVERS GRANTED TO THE ABOVE CONDITION. DETAIL PER THE DETROIT EDISON COMPANY-SERVICE PLANNING DEPARTMENT ('9-11-98)

SEE ENGINEERING PLANS FOR PROPOSED LOCATIONS, TOTAL NUMBER OF TRANSFORMERS AND FINAL LOCATION PER DETROIT EDISON REQUIREMENTS.

native wildflower seed mix:

Mesic Prairie Mix:

A widely adaptable mix recommended for areas of medium soil texture in full sun and partial shade conditions. The best mix to use to replace large lawn areas in commercial landscaping. This mix has a combination of plants that are adapted to moist conditions, but will tolerate drought once established.

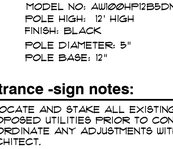
30% Native Grasses and Sedges: will contain at least four of the following species.
- Andropogon gerardi (Big Bluestem)
- Carex bicknellii (Copper Oval Sedge)
- Elymus canadensis (Canada Wild Rye)
- Panicum virgatum (Switchgrass)
- Schizachyrium scoparium (Little Bluestem)
- Sorghastrum nutans (Indian Grass)

20% Native Wildflowers: will contain at least fourteen of the following species.
- Aster novae-angliae (New England Aster)
- Aster pilosus (Heath Aster)
- Coreopsis tripteris (Tall Coreopsis)
- Baptisia leucantha (White False Indigo)
- Echinacea purpurea (Purple Cornflower)
- Eryngium yuccifolium (Rattlesnake Master)
- Heliopsis helianthoides (Ox Eye Sunflower)
- Liatris aspera (Rough Blazing Star)
- Liatris spicata (Dense Blazingstar)
- Monarda fistulosa (Bergamot)
- Physostegia virginiana (Obedient Plant)
- Pycnanthemum virginianum (Mountain Mint)
- Ratibida pinnata (Yellow Cornflower)
- Rudbeckia hirta (Black-Eyed Susan)
- Rudbeckia laciniata (Green-headed Coneflower)
- Silphium terebinthinaceum (Prairie Dock)
- Solidago altissima (Tall Goldenrod)
- Solidago graminifolia (Lance-leaved Goldenrod)
- Solidago rigida (Stiff Goldenrod)
- Tradescantia ohioensis (Spiderwort)
- Verbena urticifolia (White Vervain)

SOURCE:
NATIVESCAPE LLC
P.O. BOX 122
MANCHESTER, MI 48158
ph: 517.456.9696
www.nativescape.net

50% Temporary Grasses: will contain the following species.
- Avena sativa (Seed Oats)
- Lolium multiflorum (Annual Rye)

Recommended Seed Rate: 30lb/acre



5F sign & pier uplighting detail

(3-CONDITION)

MANUFACTURER:
COPPER LIGHTING OR EQUAL
GRANVILLE BUSINESS PARK, BLDG. A
1121 HIGHWAY 74 SOUTH
PEACHTREE, GA 30269
PH. 770-486-4800

MODEL: SF FALCON or EQUAL
(150W METAL HALIDE)



5G decorative light and pole

(1-CONDITIONS)

DECORACTIVE POLE AND STREEET LIGHTS MANUFACTURED BY HALOPANE

LIGHT FIXTURE: WASHINGTON
SERIES-ACRYLIC
MODEL NO: AW1@@HP12B5DNB OR EQUAL

POLE: WADSWORTH SERIES
MODEL NO: AW1@@HP12B5DNB OR EQUAL
POLE HIGH: 12' HIGH
FINISH: BLACK
POLE DIAMETER: 5"
POLE BASE: 12"

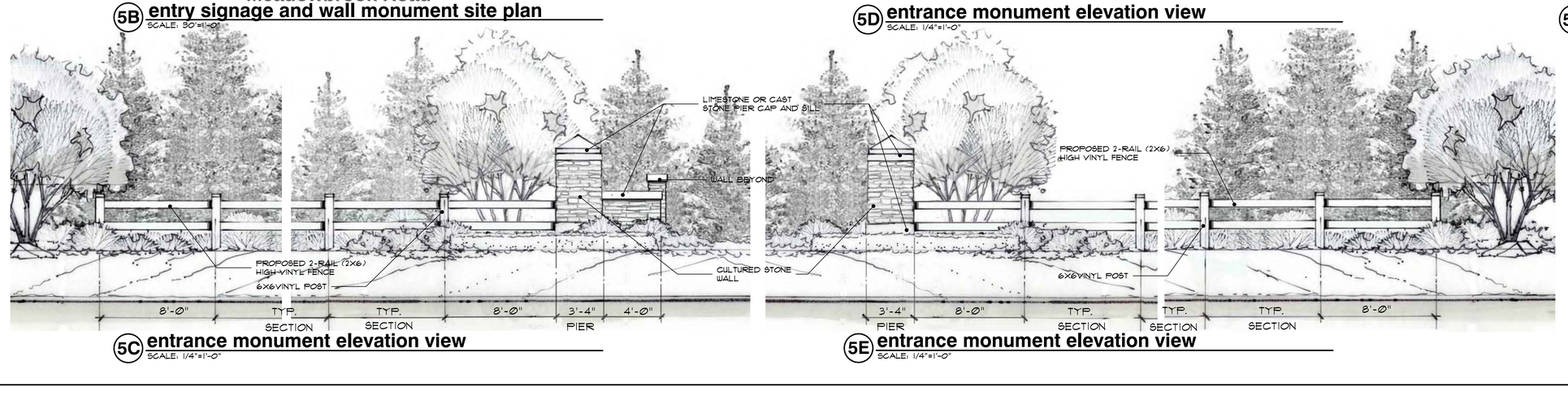
entrance -sign notes:

1. LOCATE AND STAKE ALL EXISTING AND PROPOSED UTILITIES PRIOR TO CONSTRUCTION. COORDINATE ANY ADJUSTMENTS WITH LANDSCAPE ARCHITECT.

2. ALL ENTRY WALL LIGHTING SHALL BE CONTROLLED WITH A 'PHOTO-EYE' SWITCH. ALL LIGHTING SHALL BE SHIELDED FROM PUBLIC R.O.W.'S AND ADJACENT PROPERTIES.

3. VERIFY SOIL BEARING CAPACITY PRIOR TO TO ENTRY SIGN MONUMENT & PIER CONSTRUCTION. IF SOIL BEARING CAPACITY FALLS BELOW STANDARD REQUIREMENTS, CONSULT STRUCTURAL ENGINEER FOR RECOMMENDATION OF FINAL ENTRY MONUMENT & PIER FOOTING DESIGN.

4. SIGNAGE TEXT AND LOGO TO BE METAL or PRISMATIC DIMENSIONAL LETTERS, PRIOR TO SIGN INSTALLATION, PERMITS TO BE OBTAINED PER CITY OF NOVI REQUIREMENTS, STANDARDS AND APPROVALS.



5C entrance monument elevation view

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

5E entrance monument elevation view

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

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:

client:
IVANHOE MEADOWBROOK LLC
6689 Orchard Lake Road, Suite 314
West Bloomfield, Michigan 48332
ph. (248) 626-6114

project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
ENTRANCE PLANTINGS, ENTRANCE SIGN & WALL MONUMENT

job no./issue/revision date:
LS15.010.06 SPA 6-26-2015
LS16.006.01 PSP 1-11-2016

drawn by: JP, KH
checked by: FP
date: 1-4-2015

notice:

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Do Not scale drawings. Use figured dimensions only

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171
For free location of public utility lines

The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no: LS16.008.01

sheet no: LS-5 of 6

plant material list

key	quantities SHT.L-1	SHT.L-2	SHT.L-3	SHT.L-4	totals	botanical name	common name	size	cost	totals
						STREET TREES				
AFS	17	-	-	-	17	ACER F. 'JEFFERRED'	AUTUMN BLAZE RED MAPLE	2 1/2" BB	$400	$6,800
ARAS	34	-	-	-	34	ACER R. 'ARMSTRONG'	ARMSTRONG RED MAPLE	4" BB	$400	$13,600
LSS	15	-	-	-	15	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	2 1/2" BB	$400	$6,000
TCS	19	-	-	-	19	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2 1/2" BB	$400	$7,600
GTS	15	-	-	-	15	GLEDITSIA TRI. INERMIS 'SKYCOLE'	SKYLINE LOCUST	2 1/2" BB	$400	$6,000
QBS	7	-	-	-	7	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	2 1/2" BB	$400	$2,800
ARS	7	-	-	-	7	ACER RUBRUM 'FRANKSRED'	RED SUNSET RED MAPLE	2 1/2" BB	$400	$2,800
						LARGE AND SMALL DECIDUOUS TREES			TOTAL	$45,600
AR	-	-	-	13	13	ACER R. 'FRANKSRED'	RED SUNSET RED MAPLE	3" BB	$400	$5,200
PC	-	6	-	4	10	PYRUS CALLERYANA 'CHANTICLEER'	CLEVELAND SELECT PEAR	4" BB	$250	$2,500
AF	-	-	-	7	7	ACER 'JEFFERED'	AUTUMN BLAZE RED MAPLE	3" BB	$400	$2,800
TC	-	-	-	14	14	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	3" BB	$400	$5,600
GT	-	-	-	4	4	GLEDITSIA TRI. INERMIS 'SKYCOLE'	SKYLINE LOCUST	3" BB	$400	$1,600
CC	-	5	9	-	14	CERCIS CANADENSIS	EASTERN REDBUD (MULTI-STEM)	10' BB	$250	$3,500
AC	-	12	9	5	26	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY (MULTI-STEM)	10' BB	$250	$6,500
MF	-	7	1	8	16	MALUS FLORIBUNDA	JAPANESE FLOWERING CRABAPPLE	2" BB	$250	$4,000
MS	-	3	4	3	10	MALUS 'SNOWDRIFT'	SNOWDRIFT CRABAPPLE	2" BB	$250	$2,500
MSR	-	-	6	8	14	MALUS 'SARGENTI'	SARGENT CRABAPPLE	2" BB	$250	$3,500
CP	-	4	6	6	10	CRATAEGUS PHAENOPYRUM	WASHINGTON HAWTHORN (MULTI-STEM)	10' BB	$250	$2,500
									TOTAL	$40,200

key	SHT.L-1	SHT.L-2	SHT.L-3	SHT.L-4	totals	botanical name	common name	size	cost	totals
						SHRUBS				
RAG	-	-	-	32	32	RHUS AROMATICA 'GRO-LOW'	GRO-LOW FRAGRANT SUMAC	#3 CONT.	$50	$1,600
SK	-	-	2	-	2	SYRINGA PATULA 'MISS KIM'	MISS KIM DWARF LILAC	3' BB	$50	$100
VC	-	-	-	1	1	VIBURNUM CARLESII	KOREAN SPICE VIBURNUM	3' BB	$50	$50
VHK	-	-	-	23	23	VIBURNUM X.B. 'MOHAWK'	MOHAWK VIBURNUM	3' BB	$50	$1,150
FI	-	35	-	20	55	FORSYTHIS X INTERMEDIA	BORDER FORSYTHIA	3' BB	$50	$3,250
CF	-	40	-	20	60	CORNUS FLAVIRAMEA	YELLOWTWIG DOGWOOD	3' BB	$50	3,000
SG	-	-	-	10	10	SPIREA X.B. 'GOLDMOUND'	GOLDMOUND SPIREA	#5 CONT.	$50	$500
LV	-	-	-	64	64	LIGUSTRUM X. VICARYI	GOLDEN VICARY PRIVET	3' BB	$50	$3,200
SB	-	-	-	18	18	SPIREA X.B. 'ANTHONY WATERER'	ANTHONY WATERER SPIREA	#5 CONT.	$50	$900
CS	-	43	-	26	69	CORNUS STOLONIFERA	REDTWIG DOGWOOD	3' BB	$50	$3,450
VL	-	46	-	32	78	VIBURNUM LENTAGO	NANNYBERRY VIBURNUM	3' BB	$50	$3,900
									TOTAL	$21,100

key	SHT.L-1	SHT.L-2	SHT.L-3	SHT.L-4	totals	botanical name	common name	size	cost	totals
						LARGE AND SMALL EVERGREENS				
JT	-	-	12	35	47	JUNIPERUS S. 'TAMARISAFOLIA'	TAMS JUNIPER	24" BB	$50	$2,350
PA	-	9	-	2	11	PICEA ABIES	NORWAY SPRUCE	8' BB	$400	$4,400
PAL	-	9	-	1	10	PICEA ABIES	NORWAY SPRUCE	10' BB	$400	$4,000
PP	-	2	-	-	2	PICEA PUNGENS	COLORADO SPRUCE	8' BB	$400	$800
PPL	-	2	-	-	2	PICEA PUNGENS	COLORADO SPRUCE	10' BB	$400	$800
PS	-	4	-	2	6	PINUS STROBUS	EASTERN WHITE PINE	8' BB	$400	$2,400
PSL	-	6	-	1	7	PINUS STROBUS	EASTERN WHITE PINE	10' BB	$400	$2,800
TO	-	-	-	8	8	THUJA OCCIDENTALIS 'SMARGD'	EMERALD GREEN ARBORVITEA	6' BB	$50	$400
									TOTAL	$18,000

key	SHT.L-1	SHT.L-2	SHT.L-3	SHT.L-4	totals	botanical name	common name	size	cost	totals
						PERENNIALS AND GRASSES				
MSM	-	-	3	9	12	MISCANTHUS SINENSIS 'MORNING LIGHT'	'MORNING LIGHT' MAIDEN GRASS	#3 CONT.	$20	$240
PAH	-	-	-	17	17	PENNISETUM ALOPECUROIDES 'HAMELN'	HAMELN DWARF FOUNTAIN GRASS	#3 CONT.	$20	$340
									TOTAL	$580

tree replacement plant material list

key	quantities SHT.L-2	SHT.L-3	SHT.L-4	totals	botanical name	common name	size	cost	totals
					DECIDUOUS TREES				
NSR	-	8	-	8	NYSSA SYLVATICA	BLACK GUM TUPELO	2 1/2" BB	$400	$3,200
ASR	15	4	-	19	ACER SACCHARUM	SUGAR MAPLE	3" BB	$400	$76,00
ARR	30	24	7	61	ACER R. 'FRANKSRED'	RED SUNSET RED MAPLE	3" BB	$400	$24,400
LSR	22	4	-	26	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	3" BB	$400	$10,400
LTR	-	8	3	11	LIRIODENDRON TULIPIFERA	TULIPTREE	2 1/2" BB	$400	$4,400
POR	-	4	-	4	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	2 1/2" BB	$400	$1,600
GTR	4	17	-	21	GLEDITSIA TRI. INERMIS 'SKYCOLE'	SKYLINE LOCUST	3" BB	$400	$8,400
GDR	1	4	-	5	GYMNOCLADUS DIOCUS	KENTUCKY COFFEETREE	2 1/2" BB	$400	$2,000
CCR	16	4	-	20	CERCIS CANADENSIS	EASTERN REDBUD	2 1/2" BB	$400	$8,000
OVR	14	5	-	19	OSTRYA VIGINIANA	AMERICAN HOPHORNBEAM	2 1/2" BB	$400	$7,600
COR	20	6	-	26	CELTIS OCCIDENTALIS	NORTHERN HACKBERRY	2 1/2" BB	$400	$10,400
ARMR	-	-	3	3	ACER R. 'FRANKSRED'	RED MAPLE (MULTI-STEM)	14' BB	$400	$1,200
QRR	16	18	-	34	QUERCUS RUBRA	RED OAK	3" BB	$400	$13,600
QBR	6	11	9	32	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	3" BB	$400	$12,800
					EVERGREEN TREES				
FGR	49	8	-	57	PICEA GLAUCA	WHITE SPRUCE	10' BB	$400	$22,800
FGRL	29	5	-	34	PICEA GLAUCA	WHITE SPRUCE	12' BB O	$400	$13,600
PSR	17	23	-	40	PINUS STROBUS	EASTERN WHITE PINE	7' BB	$400	$16,000
PSRL	15	19	-	34	PINUS STROBUS	EASTERN WHITE PINE	10' BB O	$400	$13,600
TCR	33	3	-	36	TSUGA CANADENSIS	CANADIAN HEMLOCK	7' BB	$400	$14,400
TCRL	21	2	-	23	TSUGA CANADENSIS	CANADIAN HEMLOCK	10' BB O	$400	$9,200
								TOTAL	$205,200

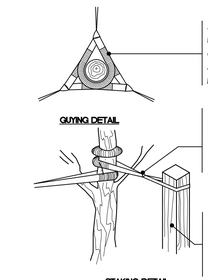
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2. LANDSCAPING SHALL BE KEPT IN A NEAT, ORDERLY AND HEALTHY GROWING CONDITION, FREE FROM DEBRIS AND REFUSE.
3. PRUNING SHALL BE MINIMAL AT THE TIME OF INSTALLATION, ONLY TO REMOVE DEAD OR DISEASED BRANCHES. SUBSEQUENT PRUNING SHALL ASSURE PROPER MATURATION OF PLANTS TO ACHIEVE THEIR APPROVED PURPOSE.
4. ALL DEAD OR DISEASED PLANT MATERIAL SHALL BE REMOVED AND REPLACED WITHIN SIX (6) MONTHS AFTER IT DIES OR IN THE NEXT PLANTING SEASON, WHICHEVER OCCURS FIRST. THE PLANTING SEASON FOR DECIDUOUS PLANTS SHALL BE BETWEEN MARCH 1 AND JUNE 1 AND FROM OCTOBER 1 UNTIL THE PREPARED SOIL BECOMES FROZEN. THE PLANTING SEASON FOR EVERGREEN PLANTS SHALL BE BETWEEN MARCH 1 AND JUNE 1. PLANT MATERIAL INSTALLED TO REPLACE DEAD OR DISEASED MATERIAL SHALL BE AS CLOSE AS PRACTICAL TO THE SIZE OF THE MATERIAL IT IS INTENDED TO REPLACE.
5. THE APPROVED LANDSCAPE PLAN SHALL BE CONSIDERED A PERMANENT RECORD AND INTEGRAL PART OF THE SITE PLAN APPROVAL. UNLESS OTHERWISE APPROVED IN ACCORDANCE WITH THE AFOREMENTIONED PROCEDURES, ANY REVISIONS TO, OR REMOVAL OF, PLANT MATERIALS WILL PLACE THE PARCEL IN NON-CONFORMITY WITH THE APPROVED LANDSCAPE PLAN, AND SHALL BE VIEW AS A VIOLATION OF THIS ORDINANCE AND THE AGREED UPON TERMS OF THE FINAL SITE PLAN APPROVAL.

cost estimate summary

TOTAL ESTIMATED PLANT MATERIALS COST	$137,400
TOTAL ESTIMATED IRRIGATION COST	$60,000
TOTAL ESTIMATED SOD COST	$45,000
TOTAL ESTIMATED SEEDING COST	$15,000
TOTAL MISC. ITEM COST (MULCH, EDGING, FABRIC, ETC.)	$10,000
TOTAL TRANSFORMER SCREEN PLANTING COST	$2,500
TOTAL TREE REPLACEMENT COST	$205,200
TOTAL ESTIMATED LANDSCAPE COST	$475,100



stake trees -just below first branch using 2 - 3" wide belt-like nylon. connect from tree to stake opposite. allow for some flexing of the tree. remove after one (1) year.

stake trees - just below first branch using 2 - 3" wide belt-like nylon. connect from tree to stake opposite. allow for some flexing of the tree. remove after one (1) year.

use 3 hardwood stakes per tree. 2" x 2" x 8' stakes. drive stakes into undisturbed soil 6"-8" outside of rootball to a depth of 18" below tree pit. remove after one (1) year. do not use wire or rope thru a hose.

NOTE:

Orient staking/guying to prevailing winds, except on slopes greater than 3:1 orient to slope.

Use same staking/guying orientation for all plants within each grouping or area.

tree staking detail

no scale

sedimentation basin and wetland plant mix

Wet Mesic Prairie Mix: *(Upland Zone)*

A mix of sedges, grasses and wildflowers that will tolerate seasonal saturation, but also drier conditions during summer and fall. Use above the sedge meadow mix in our Lake Edge Enhancement System.

Sedge Meadow Mix oz/acre

16	Andropogon gerardi (Big Bluestem)
2	Carex annectans xanthocarpa (Yellow Fox Sedge)
2	Carex frankii (Frank's Sedge)
6	Carex vulpinoidea (Fox Sedge)
32	Elymus canadensis (Canada Wild Rye)
32	Elymus virginicus (Virginia Wild Rye)
2	Glyceria striata (Fowl Manna Grass)
4	Panicum virgatum (Switchgrass)
16	Sorghastrum nutans (Indian Grass)
112	

Forbs oz/acre

	Aster ericoides (Heath Aster)
	Aster novae-angliae (New England Aster)
	Baptisia leucantha (White False Indigo)
	Cassia hebecarpa (Wild Senna)
	Coreopsis tripteris (Tall Coreopsis)
	Echinacea purpurea (Purple Cornflower)
	Eryngium yuccifolium (Rattlesnake Master)
	Helianthus grosseserratus (Sawtooth Sunflower)
	Heliopsis helianthoides (False Sunflower)
	Monarda fistulosa (Bergamot)
	Penstemon digitalis (Foxglove Beardtongue)
	Pycnanthemum virginianum (Mountain Mint)
	Ratibida pinnata (Yellow Cornflower)
	Rudbeckia fulgida speciosa (Showy Black-Eyed Susan)
	Rudbeckia hirta (Black-Eyed Susan)
	Rudbeckia subtomentosa (Sweet Black-Eyed Susan)
	Silphium integrifolium (Rosinweed)
	Silphium laciniatum (Compass Plant)
	Silphium terebinthinaceum (Prairie Dock)
	Solidago rigida (Stiff Goldenrod)
	Solidago riddellii (Riddell's Goldenrod)
	Solidago rigida (Stiff Goldenrod)
	Vernonia fasciculata (Smooth Ironweed)
	Veronicastrum virginicum (Culver's Root)
48	

Mesic Prairie Mix: *(Dry Upland Zone)*

A widely adaptable mix recommended for areas of medium soil texture. Use above the wet mesic mix in our Lake Edge Enhancement System. The best mix to use to replace large lawn areas in commercial landscaping.

Grasses oz/acre

16	Andropogon gerardi (Big Bluestem)
32	Elymus canadensis (Canada Wild Rye)
12	Elymus virginicus (Virginia Wild Rye)
4	Panicum virgatum (Switchgrass)
32	Schizachyrium scoparium (Little Bluestem)
16	Sorghastrum nutans (Indian Grass)
112	

Forbs oz/acre

1	Aster ericoides (Heath Aster)
2	Aster novae-angliae (New England Aster)
2	Baptisia leucantha (White False Indigo)
3	Cassia hebecarpa (Wild Senna)
2	Coreopsis tripteris (Tall Coreopsis)
4	Echinacea purpurea (Purple Cornflower)
4	Eryngium yuccifolium (Rattlesnake Master)
1	Helianthus grosseserratus (Sawtooth Sunflower)
3	Heliopsis helianthoides (False Sunflower)
1	Monarda fistulosa (Bergamot)
1	Penstemon digitalis (Foxglove Beardtongue)
1	Pycnanthemum virginianum (Mountain Mint)
4	Ratibida pinnata (Yellow Cornflower)
4	Rudbeckia hirta (Black-Eyed Susan)
3	Rudbeckia subtomentosa (Sweet Black-Eyed Susan)
2	Silphium integrifolium (Rosinwood)
2	Silphium laciniatum (Compass Plant)
2	Silphium terebinthinaceum (Prairie Dock)
2	Solidago rigida (Stiff Goldenrod)
1	Solidago riddellii (Riddell's Goldenrod)
2	Vernonia altissima (Tall Ironweed)
1	Veronicastrum virginicum (Culver's Root)
48	

Components per acre

Wet Mesic	8 lbs grasses and sedges, 3 lbs forbes
Mesic	8 lbs grasses, 3 lbs forbes

SOURCE:
SPENCE RESTORATION NURSERY
P.O. BOX 546
2220 E. FUSON ROAD
MUNCIE, INDIANA 47308
ph: 765.286.7154
www.spencenursery.com

detention basin seed mix:

Sedge Meadow Mix: *(Edge Zone)*

A mix of sedges, grasses and wildflowers recommended for soils that are saturated during most of the growing season. Use just above the normal waterline in the capillary zone in our Lake Edge Enhancement System.

Sedge Meadow Mix oz/acre

1	Carex comosa (Bristly Sedge)
1	Carex cristatella (Crested Sedge)
6	Carex frankii (Frank's Sedge)
2	Carex hystericina (Porcupine Sedge)
4	Carex lurida (Lurid Sedge)
2	Carex stipata (Awl-Fruited Sedge)
2	Carex tribuloides (Pointed Oval Sedge)
6	Carex vulpinoidea (Fox Sedge)
64	Elymus virginicus (Virginia Wild Rye)
6	Glyceria striata (Fowl Manna Grass)
8	Leersia oryzoides (Rice Cut Grass)
8	Panicum virgatum (Switchgrass)
2	Scirpus atrovirens (Dark Green Bulrush)
112	

Forbs oz/acre

	Alisma subcordatum (Water plantain)
	Angelica atropurpurea (Angelica)
	Aster novae-angliae (New England Aster)
1	Aster puniceus (Swamp Aster)
1	Aster umbellatus (Flat-topped Aster)
3	Cassia hebecarpa (Wild Senna)
2	Eupatorium maculatum (spotted Joe-Pye Weed)
2	Eupatorium perfoliatum (Boneset)
2	Helenium autumnale (Autumn Sneezeweed)
2	Liatris spicata (Dense Blazing Star)
1	Lobelia cardinalis (Cardinal Flower)
1	Lobelia siphilitica (Great Blue Lobelia)
2	Penstemon digitalis (Foxglove Beardtongue)
1	Pycnanthemum virginianum (Mountain Mint)
3	Rudbeckia fulgida speciosa (Showy Black-Eyed Susan)
4	Rudbeckia hirta (Black-Eyed Susan)
3	Rudbeckia subtomentosa (Sweet Black-Eyed Susan)
2	Silphium integrifolium (Rosinweed)
2	Silphium perfoliatum (Cupplant)
2	Silphium terebinthinaceum (Prairie Dock)
1	Solidago patula (Swamp Goldenrod)
2	Solidago riddellii (Riddell's Goldenrod)
2	Verbena hastata (Blue Vervain)
2	Vernonia fasciculata (Smooth Ironweed)
1	Veronicastrum virginicum (Culver's Root)
1	Zizia aurea (Golden Alexanders)
48	

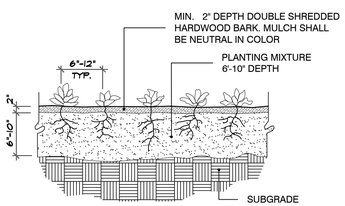
Components per acre

Sedge Meadow	8 lbs grasses and sedges, 3 lbs forbes

annual cover: *(Edge, Upland & Dry Upland Zones)*

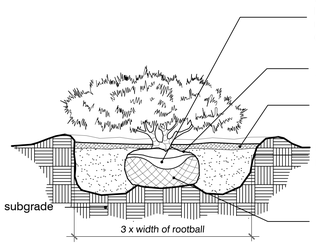
50% Temporary Grasses:	will contain two of the following species.
Seed Oats	*Avena sativa*
Annual Rye	*Lolium multiflorum*
Winter Wheat	*Triticum aestivum*
American Slough Grass	*Beckmannia syzigachne*

SOURCE:
NATIVESCAPE L.L.C
P.O. BOX 122
MANCHESTER, MICHIGAN 48158
ph: 517.456.9646
www.nativescape.net



perennial planting detail

no scale



fold down or pull back string, burlap or plastic exposing rootball. remove all non-degradable materials. do not remove soil from the rootball

set top of rootball level with grade or slightly above grade if in clay soil

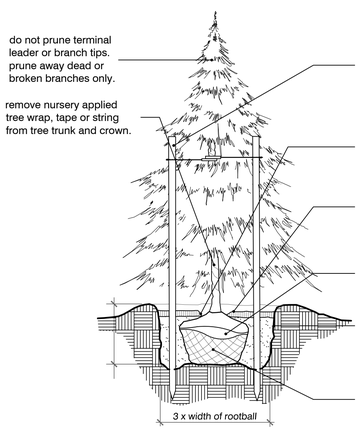
mulch 2"-3" depth with shredded hardwood bark.mulch shall be neutral in color.

break up (scarify) sides of planting hole.

center rootball in planting hole. leave bottom of planting hole firm. do not amend soil unless planting in poor or severely disturbed soil or building rubble. use water to settle soil and remove air pockets and firmly set shrub. gently tamp if needed.

shrub planting detail

no scale



do not prune terminal leader or branch tips. prune away dead or broken branches only.

remove nursery applied tree wrap, tape or string from tree trunk and crown.

stake with 2x2 hardwood stakes or approved equal driven 6"-8" outside of rootball.loosely stake tree trunk to allow for trunk flexing.stake trees just below first branch with 2"-3" wide belt-like, fabric straps (2 per tree on opposite sides of tree, connect from tree to stake horizontally. do not use rope wire thru a hose.). remove all staking materials after 1 year.

set top of rootball level with grade or slightly above grade if in clay soil.

mulch 2"-3" depth with shredded hardwood bark. mulch shall be neutral in color. leave 3" circle of bare soil at base of tree trunk.

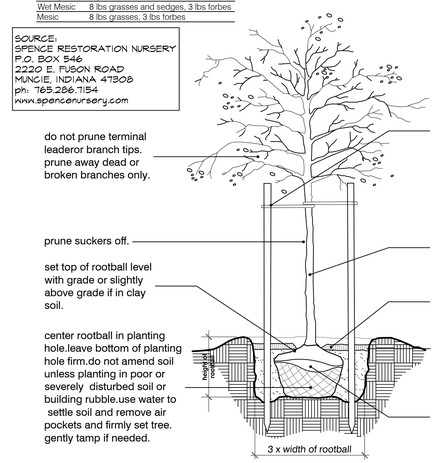
fold down or pull back string, burlap or plastic exposing rootball. remove all non-degradable materials. do not remove soil from the rootball.

break up (scarify) sides of planting hole.

center rootball in planting hole. leave bottom of planting hole firm. do not amend soil unless planting in poor or severely disturbed soil or building rubble.use water to settle soil and remove air pockets and firmly set tree. gently tamp if needed.

evergreen planting detail

no scale



do not stake trees unless in heavy clay soil, windy conditions, 3" or greater diameter tree trunk or large crown. if staking is needed due to these conditions:- stake with 2x2 hardwood stakes or approved equal driven 6"-8" outside of rootball.- loosely stake tree trunk to allow for trunk flexing. - stake trees just below first branch with 2"-3" wide belt-like, fabric straps (2 per tree on opposite sides of tree, connect from tree to stake horizontally. do not use rope wire thru a hose.). - remove all staking materials after 1 year.

do not prune terminal leaderor branch tips. prune away dead or broken branches only.

prune suckers off.

set top of rootball level with grade or slightly above grade if in clay soil.

center rootball in planting hole.leave bottom of planting hole firm.do not amend soil unless planting in poor or severely disturbed soil or building rubble.use water to settle soil and remove air pockets and firmly set tree. gently tamp if needed.

remove nursery applied tree wrap, tape or string from tree trunk and crown. remove any tags or labels.

mulch 2"-3" depth with shredded hardwood bark. mulch shall be neutral in color. leave 3" circle of bare soil at base of tree trunk.

break up (scarify) sides of planting hole.

fold down or pull back string, burlap or plastic exposing rootball. remove all non-degradable materials. do not remove soil from the rootball.

tree planting detail

no scale

Plant Material List, Planting Details **and** Notes

FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and **registered Landscape Architect**
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:



client:
IVANHOE MEADOWBROOK LLC
6689 Orchard Lake Road, Suite 314
West Bloomfield, Michigan 48332
ph. (248) 626-6114

project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
Details and Plant Material List

job no./issue/revision date:

LS15.010.06	SPA	6-26-2015
LS16.006.01	PSP	1-11-2016

drawn by:
JP, KH

checked by:
FP

date:
1-4-2015

notice:
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Do Not Scale drawings. Use figured dimensions only

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171
For free location of public utility lines

The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no:
LS16.008.01

sheet no:
LS-6 of 6

January 11, 2016

Ms. Barbara McBeth
City of Novi Community Development
45175 West Ten Mile Road
Novi, MI 48375

RE: Beacon Hill, Preliminary Site Plan, Job # JSP15-0008

Dear Ms. McBeth,

The landscape plan for the Beacon Hill Park located at Meadowbrook Road and 12 Mile Road was designed with intent to create a natural forested park-like setting. Both residents living within the development and the bordering communities will benefit from the use of up-sized plantings not typical of new developments which exceeds the city landscape size requirement standards. We have used a conservative calculation to upsize trees within the residential and park areas. The upsizing includes 196-3" caliper deciduous trees, 114- 10' high evergreen trees and 34' 12' high evergreen trees. We request that the city accept the proposed upsizing. The greenbelt, pocket park areas, detention basins and open space areas have been enhanced with extensive plantings. In particular the areas around the detention basins within the development, for both residential and commercial, have been enriched to create a forested woodland by use of large evergreens and canopy trees complimented with smaller ornamental flowering trees. The enhanced landscape plan extends over to the wetland areas where invasive species are treated and restored with a native wetland wildflower mix. The woodland preserved area located along the north property is supplemented and enhanced with additional plantings of small ornamental trees and evergreen trees. The development will certainly create a mixed used neighborhood unique to its location.

The following is in response to the city landscape review comments dated April 14, 2015. Please see our revised landscape plans, Job No. LS16.006.01, dated 01-11-2016, sheets LS-1 to LS-6 for details and offer the following comments below:

Existing Trees
1. See tree survey prepared by Zeimet Wozniak & Associates for details.
2. See landscape plan for tree replacement calculations, proposed locations and details. Many replacement trees within the park and residential have been upsized to enhance these areas. We request that the city accept the proposed upsizing.

Adjacent to Public Rights-of-way-Berm
1. Site plan has been revised to provide minimum 50 ' wide greenbelt.
2. Table has been updated to reflect the correct distance and the required plantings have been updated accordingly.
3. Landscape plantings have been provided to create adequate screening along Meadowbrook Road

Screening Between Residential and Non-residential Berm
The estimated distance of 300± feet between the two land uses creating a large park open space area with extensive enhance landscape plantings will provide adequate screenings. A waiver will be requested for the berm required.

Street Tree Requirements
No action is required

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd • Suite G • Farmington Hills, Michigan 48336 • phone (248) 557-5588 • fax (248) 557-5416

Parking Lot Landscape
1. No action required
2. Parking lot tree plantings will be installed on 10' width islands.

Parking Lot Perimeter Canopy Trees
Calculations have been provided. A waiver will be requested for the canopy tree deficiency.

Transformer/Utility Box Screening
Transformer screening has been provided per the city standard detail.

Building Foundation Landscape
1. Building foundation landscaping calculation has been updated and landscape area square footage has been added.

Planting Notations and Details
City of Novi standard details and notes have been provided.

Storm Basin Landscape
No action required.

Irrigation
Irrigation plan will be provided during final site plan.

Proposed topography, 2'
Topography will be provided during final site plan.

Snow Deposit
Snow deposit has been labeled on landscaping plan.

Proposed trees to be saved
See tree survey prepared by Zeimet Wozniak & Associates for trees scheduled to be removed.

Corner Clearance
Corner clearance has been illustrated on landscape plan.

Please do not hesitate to contact me should you have any questions or comments.

Sincerely,

Felino A Pascual, RLA

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd • Suite G • Farmington Hills, Michigan 48336 • phone (248) 557-5588 • fax (248) 557-5416

WETLANDS EVALUATION AND ENHANCEMENT WITH HABITAT RESTORATION PLAN

THE IVANHOE COMPANIES

King & MacGregor
Environmental
Inc.

January 11, 2016

Mr. Gary Shapiro
Ivanhoe Meadowbrook LLC
6689 Orchard Lake Road, Suite 314
West Bloomfield, MI 48322

Re: Wetland Restoration and Stream Habitat Enhancement
Beacon Hill Park Trailhead

Dear Mr. Shapiro:

The Beacon Hill Park Trailhead property includes an open water/emergent wetland and a headwater stream which is tributary to the Walled Lake Branch of the Rouge River. The emergent wetland area is dominated by non-native invasive species including common reed and reed canary grass with the adjoining upland also dominated by invasive species such as common buckthorn. The extent of the invasive species is likely to continue to spread, further diminishing habitat functions and, in the case of the common reed along Meadowbrook Road, inhibiting even visual access to the wetland.

The stream is confined to an approximately 10-foot wide man-made channel whose flow is significantly impeded by an existing culvert. Upstream of the culvert, the stream is dominated by backwater hydrology and the existing channel lacks established features typical of stable natural stream systems such as sinuosity and riffle-pool sequences. A qualitative assessment of the stream bed found more than six inches of accumulated silt. Downstream of the culvert, the stream has some indications of natural features attempting to form, such as bank full shelves and a more defined bank full channel. However, these features are underdeveloped and do not have a consistent form that is typical of established geomorphic features. Furthermore, it is unlikely these features would develop to a point of geomorphic stability as the upstream backwater traps most of the sediment that would otherwise become the building materials for stable geomorphic features.

The Beacon Hill Park Trailhead proposes to restore the degraded functions of both the wetland and stream. Invasive species in the wetland and the wetland buffer setback will be addressed through a multi-year program using a combination of physical removal and chemical treatment followed by the installation of native wildflowers, shrubs and trees. The design of the proposed relocated stream intends to remedy many of the deficiencies in the existing stream by utilizing a natural stream channel design methodology. Based on the size of the contributing watershed, we propose an approximately 7.5-foot wide bank full channel flowing through within a created 15 to 30-foot wide floodplain corridor. A boulder weir is proposed at the outlet of the open water wetland to stabilize the channel bottom during periods of high flow. Created stream banks would be enhanced with native vegetation consisting of grasses, wildflowers and shrubs as well as native tree plantings which will stabilize the banks and provide shade to cool stream water temperatures. This design will also bring both hydraulics and sediment transport into stable equilibrium.

The proposed Beacon Hill Park Trailhead will restore degraded natural functions, improve wildlife and fisheries habitat, increase vegetative diversity, provide passive recreational opportunities, and enhance the aesthetics of a Natural Beauty Road.

Please contact us if you have any questions or need any additional information.

Sincerely

Woody L. Held

King & MacGregor Environmental, Inc.
Woody L. Held

2520 Woodmeadow SE
Grand Rapids, MI 49546
Phone: 616/957-1321
Fax: 616/957-2198

43050 Ford Road, Suite 130
Canton, MI 48187
Phone: 734/354-0594
Fax: 734/354-0593

162 Kuivila Road
Crystal Falls, MI 49920
Phone: 906/367-0171

email: kme@king-macgregor.com

King & MacGregor
Environmental
Inc.

January 11, 2016

Ms. Barbara McBeth
Deputy Director of Community Development
City of Novi
45175 W. Ten Mile Road
Novi, Michigan 48375

Re: Beacon Hill Park Preliminary Site Plan

Dear Ms. McBeth:

This letter is provided to address the Wetland Review Comments provided by ECT in their August 3, 2015 Wetland Review of the Concept/Planned Rezoning Overlay Plan (PSP15-0108). Responses to the comments are provided below.

Comment 1. It appears as though a MDEQ Wetland Permit and a City of Novi Wetland Use Permit would be required for any proposed impacts to site wetlands. The wetlands associated with the existing stream are likely regulated by MDEQ due to their proximity to an inland stream. A City of Novi Authorization to Encroach the 25-Foot Natural Features Setback would be required for any proposed impacts to on-site 25-foot wetland buffers.

An on-site pre-application meeting was held with MDEQ staff members Sue Tepatti and Patrick Durack on December 3, 2015. Ms. Tepatti and Mr. Durack confirmed that MDEQ would have jurisdiction over the stream and wetlands within 500 feet of the stream and that an MDEQ permit will be required for the proposed development. As of this date, we have not received the MDEQ's pre-application meeting letter addressing regulatory issues. It is the Applicant's intent to apply for all necessary wetland related approvals from the City.

Comment 2. ECT encourages the Applicant to minimize impacts to on-site wetlands and wetland setbacks to the greatest extent practicable. The Applicant should consider modification of the proposed site design to preserve wetland and wetland buffer areas. The City regulates wetland buffers/setbacks. Article 24, Schedule of Regulations, of the Zoning Ordinance states that:

"There shall be maintained in all districts a wetland and watercourse setback, as provided herein, unless and to the extent, it is determined to be in the public interest not to maintain such a setback. The intent of this provision is to require a minimum setback from wetlands and watercourses".

The subject property contains 1.54 acres of wetland and 1.98 acres of wetland buffer setback. The Applicant is proposing impacts to 0.20 acres of wetland or approximately 13 percent of the wetland on the property. The wetlands proposed for impact are primarily emergent and wet meadow habitats largely dominated by non-native wetland plant species. Proposed wetland buffer setback impacts are primarily around small, isolated wetlands where the wetland buffer setback area is larger than the wetland. The establishment of open space adjoining the wetlands to remain will provide wetland buffer setbacks in excess of 25-feet. Current and previously site planning efforts have endeavored to minimize wetland impacts to the extent that is practicable.

2520 Woodmeadow SE
Grand Rapids, MI 49546
Phone: 616/957-1321
Fax: 616/957-2198

43050 Ford Road, Suite 130
Canton, MI 48187
Phone: 734/354-0594
Fax: 734/354-0593

162 Kuivila Road
Crystal Falls, MI 49920
Phone: 906/367-0171

email: kme@king-macgregor.com

Comment 3. While the Plan appears to involve proposed impacts to on-site wetlands and the associated 25-foot wetland setbacks, these impacts do not appear to be indicated, quantified and labeled on the Plan. In addition, the overall on-site acreage of wetlands and wetland setbacks should be included on the Plan. The Plan should be reviewed and revised as necessary.

Existing and impacted wetland and wetland buffer setback are shown and quantified on Sheet SP-14.

Comment 4. A plan to replace or mitigate for any permanent impacts to existing wetland buffers should be provided by the Applicant. In addition, the Plan should address how any temporary impacts to wetland buffers shall be restored, if applicable.

See landscape plans for wetland buffer restoration/mitigation.

Comment 5. The City's threshold for the requirement of wetland mitigation is 0.25-acre of proposed wetland impact. This should be taken into account on subsequent site Plan submittals, if necessary.

The Applicant is only proposing 0.20 acres of wetland impact, which is below the threshold for required wetland mitigation.

Comment 6. The Applicant should demonstrate that alternative site layouts that would reduce the overall impacts to wetlands and wetland setbacks have been reviewed and considered.

The Applicant is proposing to impact four small, isolated wetlands; Wetlands, B, D, G and H and a portion of the largest wetland; Wetland EE. Avoiding impacts to Wetland B would result in the loss of two residential lots and leave the wetland surrounded by development on three sides. Avoiding impacts Wetland D would also result in loss of at least one lot. Avoiding impacts to Wetlands G and H would place them in the setback between the proposed commercial development and 12 Mile Road, making them significantly functionally diminished. Given the size and quality of these wetlands, avoiding them was not considered practicable. The proposed impact to Wetland EE is required for vehicular circulation to service the proposed commercial buildings. The proposed area of impact is dominated by an invasive wetland plant species (Common Reed, *Phragmites australis*). Wetland impacts to this area are unavoidable but are reduced by grading with the steepest allowable slope.

Comment 7. The Applicant is encouraged to provide wetland conservation easements for any areas of remaining wetland or 25-foot wetland buffer.

The Applicant is willing to provide conservation easements for remaining areas of wetland, wetland buffer setback and woodland in areas which will not conflict with future use of the property by residents and visitors.

Comment 8. *It should be noted that it is the Applicant's responsibility to confirm the need for a Permit from the MDEQ for any proposed wetland impact. Final determination as to the regulatory status of each of the on -site wetlands shall be made by MDEQ.*

See response to Comment 1.

Thank you for your time and efforts associated with this project. Please call or contact me via email at wheld@king-macgregor.com if you have any questions or need any additional information.

Sincerely,

Woody L Held

King & MacGregor Environmental, Inc.
Woody L. Held

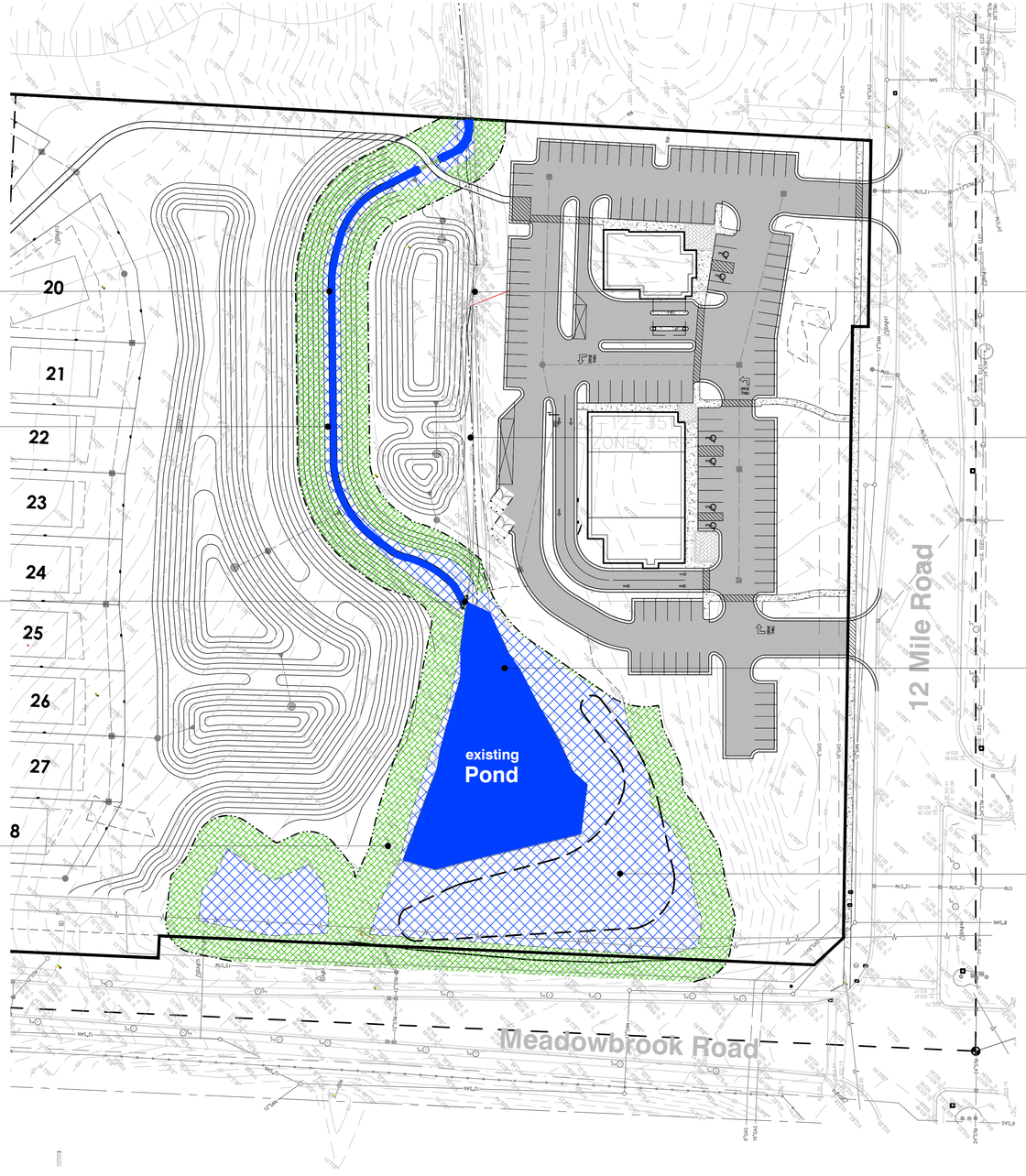
Cc: Mr. Gary Shapiro – Ivanhoe Meadowbrook, LLC

Relocated stream
Natural stream channel design
Bankfull width 7.5'±
485± LF

Created floodplain
Width 15-30'

Boulder weir for grade control

Natural Features Setback
Mechanical and chemical treatment of common buckthorn (0.2± acres). Seed with native wildflower species and plant native trees.



Existing failed culvert to be removed
32± LF 30" dia.

Existing stream channel to be abandoned
350± LF

Existing emergent/ open water wetland
0.75± acres
Habitat restoration to improve plant species diversity

Treat invasive species
0.5± acres
Mechanical and chemical treatment of common reed and reed canary grass. Replant with native wildflower species. Improve aesthetic character from Meadowbrook Road.

Conceptual Restoration Plan

0 25' 50' 100'

King & MacGregor Environmental Inc.
2520 Woodmeadow SE
Grand Rapids, MI 49546
Phone: (616) 957-1231
43050 Ford Road, Suite 130
Canton, MI 48187
Phone: (734) 354-0594

N
NORTH

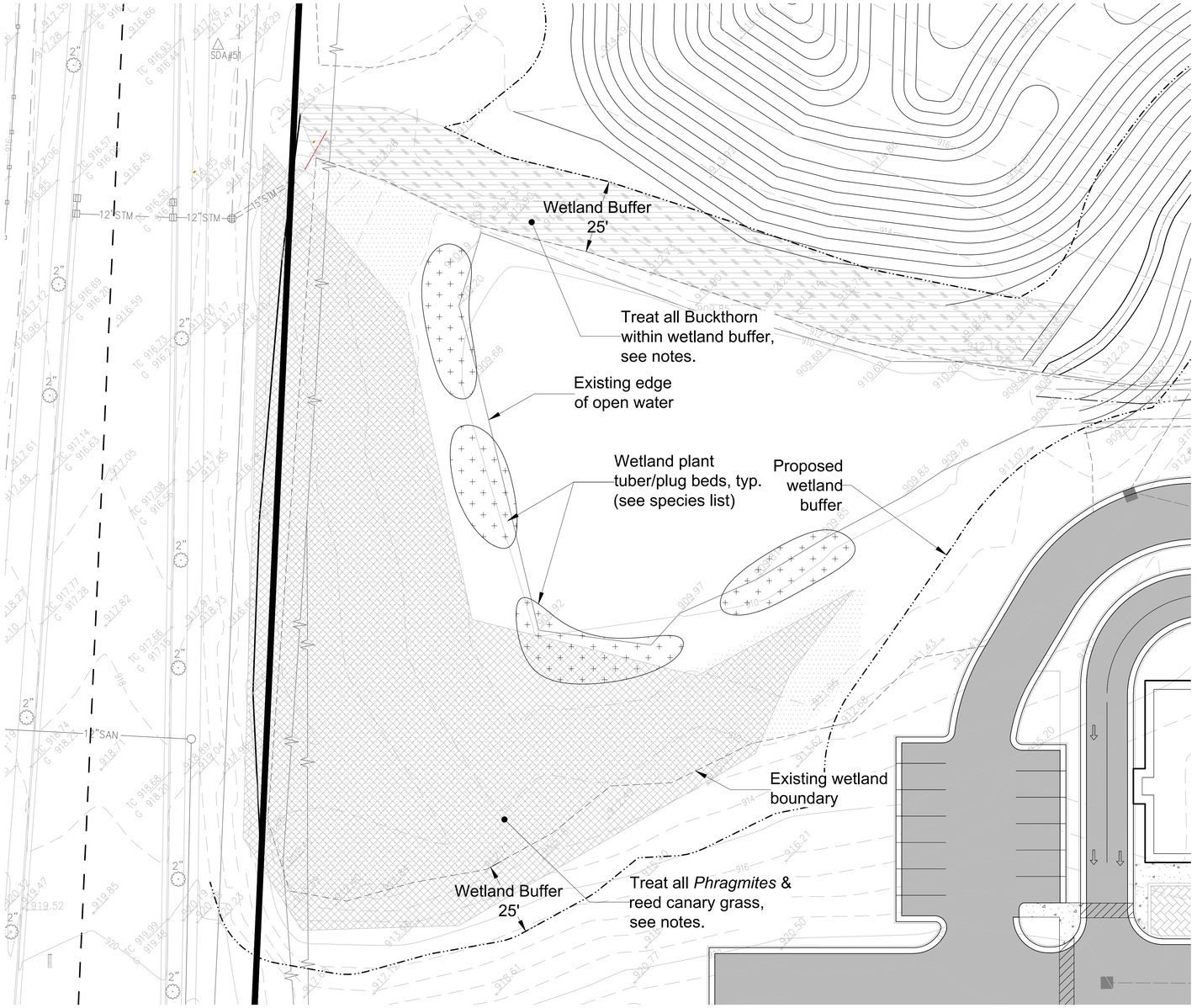
Conceptual Stream Relocation & Wetland Rest. For:
Beacon Hill Park
City of Novi, Oakland County, Michigan

DATE:	ISSUED FOR:
01/11/16	PSP Submittal
P.I.C.	WH
P.M.	WH
DESIGN	MSP
TECH.	MSP
CHECKED	

PROJECT NUMBER
13021-1

SHEET NAME
Conceptual Restoration Program

SHEET NUMBER
W-1



Wetland Restoration Plan

0 10' 20' 40'

1"=20'

Note: Refer to Zeimet Wozniak & Associates drawings for site engineering. Refer to Felino Pascual & Associates drawings for landscaping outside of the stream and wetlands.

Wetland Restoration Sequence & Specifications

Phragmites & Reed Canary Grass (0.5± acres)

Buckthorn (0.2± acres)

2016/Year 1

1. Apply herbicide to all reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites australis*), and buckthorn (*Frangula alnus, Rhamnus cathartica*) within the areas identified during treatment periods recommended by the herbicide manufacturer. Application shall include an initial large-scale treatment with follow-up treatments as required to bring live plants to less than 10% cover within the treatment areas.
2. When target plants are less than 10% cover within the treatment areas, install specified seed mixes and wetland planting beds in the locations indicated on the drawings.

2017-2020/Years 2-5

1. Apply herbicide as spot treatments as necessary to control the reestablishment of invasive plants.

WETLAND SEED MIX:

SPECIES	COMMON NAME	RATE (PLS OZ./AC.)
Acorus calamus	Sweet Flag	8.50
Agrostis alba	Redtop	8.00
Alisma plantago-aquatica	Water Plantain	8.00
Asclepia incarnata	Swamp Milkweed	1.50
Carex cristatella	Crested Oval Sedge	1.00
Carex lurida	Bottlebrush Sedge	6.00
Carex vulipinoidea	Brown Fox Sedge	6.00
Eleocharis obtusa	Blunt Spike Rush	3.00
Helenim autumnale	Sneezeweed	3.00
Iris virginica shrevei	Blue Flag Iris	4.00
Juncus effusus	Common Rush	3.00
Leersia oryzoides	Rice Cut Grass	4.00
Lobelia cardinalis	Cardinal Flower	0.75
Lobelia siphilitca	Great Blue Lobelia	1.00
Mimulus ringens	Monkey Flower	2.00
Peltandra virginica	Arrow-arum	16.00
Penthorum sedoides	Ditch Stonecrop	0.50
Polygonum pensylvanicum	Smartweed	6.00
Pontederia cordata	Pickerel Weed	8.00
Sagittaria latifolia	Common Arrowhead	8.00
Senna hebecarpa	Wild Senna	1.00
Scirpus atrovirens	Bulrush	6.00
Scirpus fluviatilis	River Bulrush	6.00
Scirpus validus	Great Bulrush	6.00
Sparganium eurycarpum	Common Burreed	10.00
	TOTAL	108.25
Cover Crop		
Avena sativa	Seed Oats	320.0
Lolium multiflorum	Annual Rye	80.0

Note: Proposed for 0.4± acres of wetland.

WETLAND PLANTS:

SPECIES	COMMON NAME	QUANTITY
Acorus calamus	Sweet Flag	
Iris virginica	Southern Blue Flag	
Nymphaea tuberosa	Sweet-Scented Waterlily	
Peltandra virginica	Arrow-Arum	
Pontederia cordata	Pickerel Weed	
Sagittaria latifolia	Commmon Arrowhead	
Sparganium americanum	American Bur-Reed	
Sparganium eurycarpum	Common Bur-Reed	
	Total	2,000

Notes: Final plant selection to be based on availability at the time of installation. Plants to be installed in groupings of 100± of a single species within the planting beds shown. Plants to be protected with Goose Grid following installation.

Preliminary
Not for
Construction

King & MacGregor Environmental Inc.
2520 Woodmeadow SE
Grand Rapids, MI 49546
Phone: (616) 957-1231

43050 Ford Road, Suite 130
Canton, MI 48187
Phone: (734) 354-0594

N

NORTH

Wetland Restoration For:

Beacon Hill Park

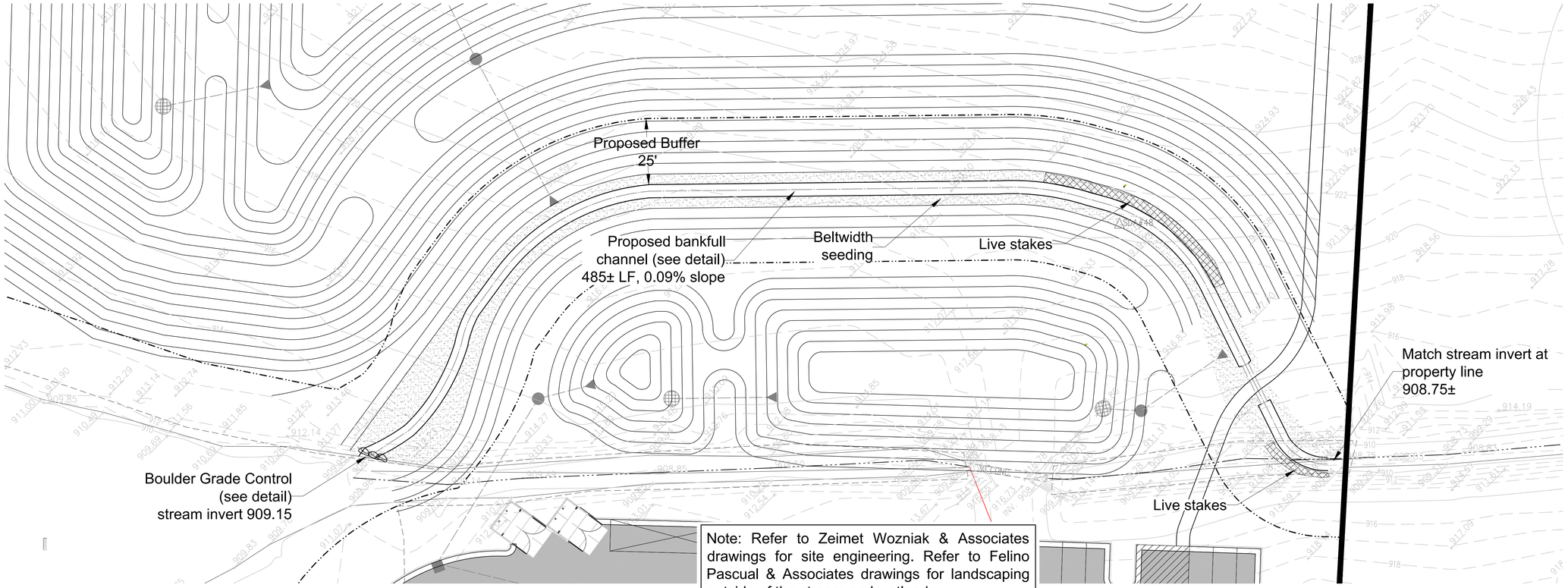
City of Novi, Oakland County, Michigan

DATE:	ISSUED FOR:
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P.I.C.	WH
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DESIGN	MSP
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CHECKED	

PROJECT NUMBER
13021-1

SHEET NAME
Detailed Concept

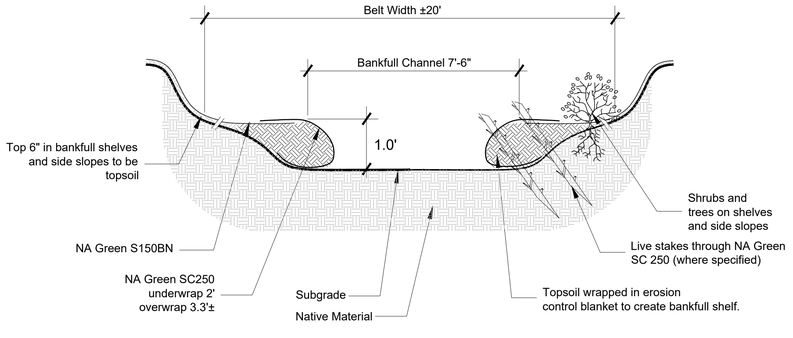
SHEET NUMBER
W-2



Stream Relocation Plan

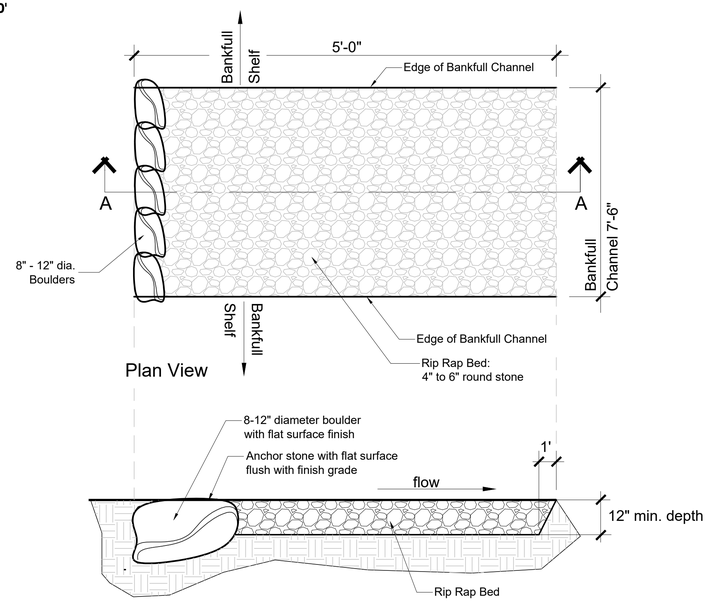
0 10' 20' 40'

1"=20'



Bankfull Channel Construction

Not to scale



Boulder Grade Control Structure

Not to scale

SEED MIX:

SPECIES	COMMON NAME	RATE (PLS LBS./AC.)
Alisma subcordatum	Water Plantain	0.3
Andropogon gerardii	Big Blue Stem	5.0
Andropogon scoparius	Little Blue Stem	5.0
Aster nova-angliae	New England Aster	0.2
Bouteloua curtipendula	Side Oats Gramma	5.0
Elymus canadensis	Canada Wild-Rye	8.0
Carex vulpinoidea	Fox Sedge	0.5
Eleocharis spp.	Spike Rush	0.2
Elymus virginicus	Virginia Wild-Rye	8.0
Glyceria striata	Fowl Manna Grass	1.0
Helenium autumnale	Sneezeweed	0.2
Juncus spp.	Rush species	0.2
Leersia oryzoides	Rice Cut Grass	1.0
Lolium multiflorum	Annual Rye	20.0
Panicum virgatum	Switch Grass	1.0
Scirpus validus	Great Bulrush	0.2
Sorghastrum nutans	Indian Grass	10.0
Spartina pectinata	Prairie Cord Grass	0.5

NOTE: Seed mix to be sown over all stream bank areas disturbed by construction.

LIVE STAKES:

SPECIES	COMMON NAME	QUANTITY
Cornus amomum	Silky Dogwood	
Cornus stolonifera	Red Osier Dogwood	
Salix discolor	Pussy Willow	
Salix exigua	Sandbar Willow	
	TOTAL	450

NOTE: Live stakes to be 36-42 inches long. Select a minimum of 3 species from list provided with no less than 100 individuals of a single species. Live stakes to be planted 12" on center in groups of 10 individuals of a single species in the locations described in Live Stake Planting detail.

Preliminary
Not for
Construction

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2520 Woodmeadow SE
Grand Rapids, MI 49546
Phone: (616) 957-1231
43050 Ford Road, Suite 130
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Phone: (734) 354-0594

N

NORTH

Stream Relocation Plan For:

Beacon Hill Park

City of Novi, Oakland County, Michigan

DATE:	ISSUED FOR:
01/11/16	PSP Submittal
P.I.C.	WH
P.M.	WH
DESIGN	MSP
TECH.	MSP
CHECKED	

PROJECT NUMBER
13021-1

SHEET NAME
Detailed Concept

SHEET NUMBER
W-3

RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
SOUTHEAST MICHIGAN DISTRICT OFFICE

KEITH CREAGH
DIRECTOR

January 20, 2016

Mr. Gary Shapiro
Ivanhoe Companies
6689 Orchard Lake Road, Suite 314
West Bloomfield, MI 48322

Dear Mr. Shapiro:

SUBJECT: Preapplication Meeting
Michigan Department of Environmental Quality (MDEQ)
File Number: 63-Meadowbrook & 12 Mile Roads NE-Novi
Project Address: NE corner Meadowbrook & 12 Mile Roads

This letter is a follow-up to our preapplication meeting of December 3, 2015, regarding the proposed single family housing development along with retail and commercial development project in the City of Novi, Oakland County. The purpose of a preapplication meeting is to provide you with information that will clarify the permit process, answer preliminary questions about your specific project in order to avoid delays at a later date, and to determine, if possible, the need for wetland or inland lakes and streams permits.

During the on-site meeting with Pat Durack, DEQ Floodplain Engineer, and King & MacGregor Environmental (KME) we discussed the regulatory status of the delineated wetlands, the potential to relocate the stream, proposed wetland impacts, proposed wetland restoration, and storm water management plans for the project.

The following flagged wetlands are regulated: Wetlands D, E, EE, F, G, and H. These wetland areas are either directly connected to the stream, or are contiguous to the stream (within 500 feet). Wetlands A, B, and C are not regulated as they are greater than 500 feet from the stream and otherwise isolated and are less than five acres in size.

Regarding the stream, DEQ and the King and McGregor agreed upon a representative cross section, bankfull bench and reach slope that can be used to measure morphological data for the relocated channel. Bankfull bench must be at least 3 bankfull widths wide to maintain a stable floodplain. Applying these dimensions and maintaining a slope greater than or equal to 0.2%, and the stream work will meet MDEQ permit requirements for the relocation. Altered or exposed streambanks shall be stabilized with native vegetation. Some type of post-construction monitoring may be required depending on review of proposed stream impacts and design.

A low-flow weir was initially discussed for the stream, however was then expected to be dropped from the plans as not feasible or necessary. Stormwater pretreatment and detention is proposed in upland basins, which will then discharge to the existing wetlands and stream.

The proposed wetland restoration would be an improvement over the dense Phragmites vegetation that currently surrounds the pond on site. Treatment of the Phragmites to the west, was also discussed and encouraged in order to help ensure the restoration will be successful on the project site.

A Conservation Easement may be required over the remaining wetlands and relocated stream.

Based on the information provided with the meeting application and reviewed in our office, including your delineation of wetlands on the proposed project site, the MDEQ's Water Resources Division (WRD) has determined that a permit is required under Part 303 and Part 301 of the NREPA. Please reference the file number at the top of this letter when submitting a permit application for this project.

This determination is based on the attached Existing Conditions Plan prepared by Zeimet Wozniak, dated June 26, 2015, which shows surveyed wetland boundaries flagged by King & MacGregor Environmental, and a preliminary project plan. Provided that the proposed project and location are not altered, this determination is binding on the MDEQ for a period of two years from the date of this meeting.

Please note that this is not a permit. The MDEQ file number assigned to this project is 63-Meadowbrook & 12 Mile Roads NE-Novi. Please keep a record of this file number, and use it when corresponding with our office on this project.

We appreciate the opportunity to review your project to address these concerns. If you should have follow up questions, please contact me at 586-256-7272, tepattis@michigan.gov or Michigan Department of Environmental Quality, Southeast Michigan District Office, 27700 Donald Court, Warren, Michigan 48092.

Sincerely,

Susan Tepatti
Water Resources Division

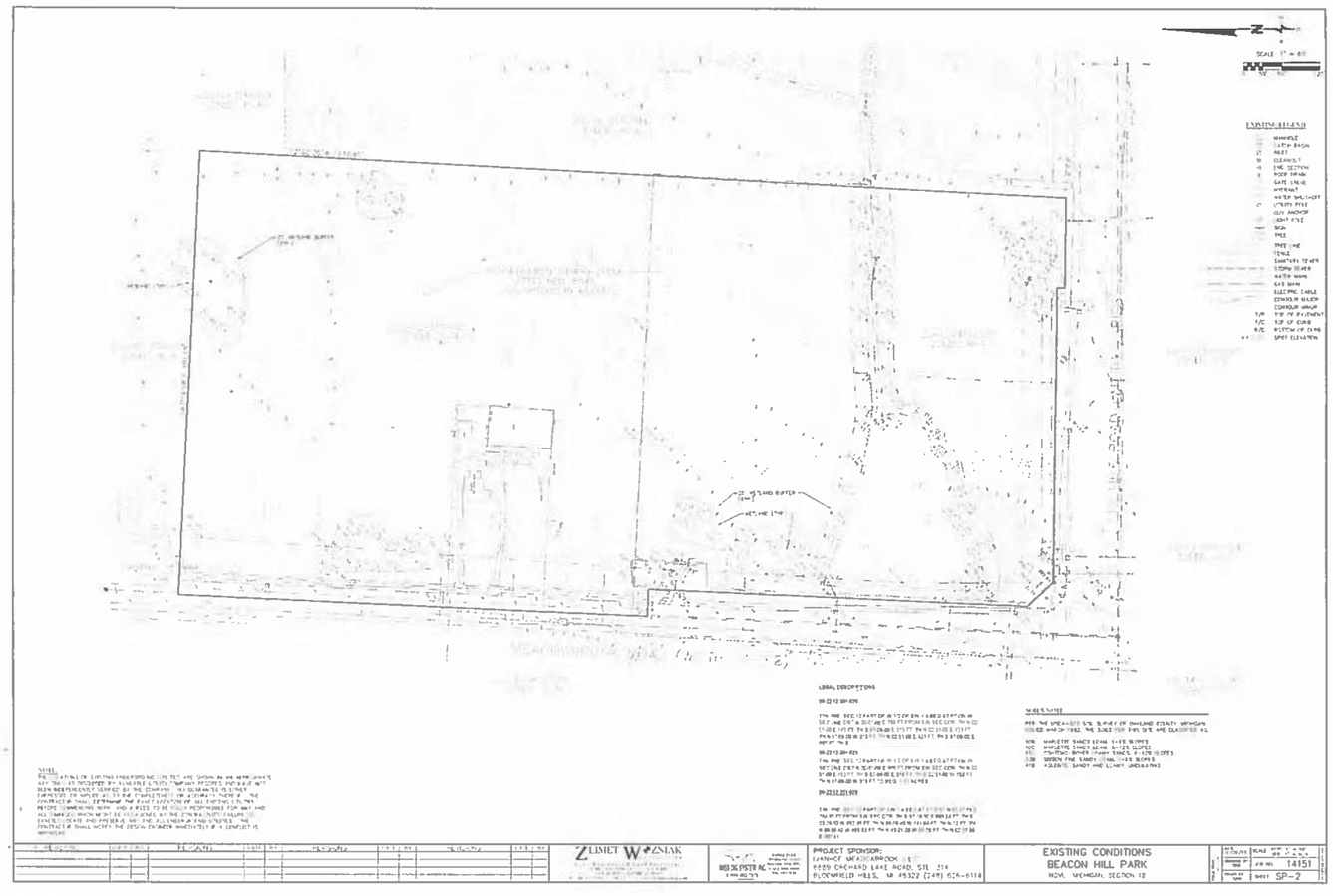
Attachments

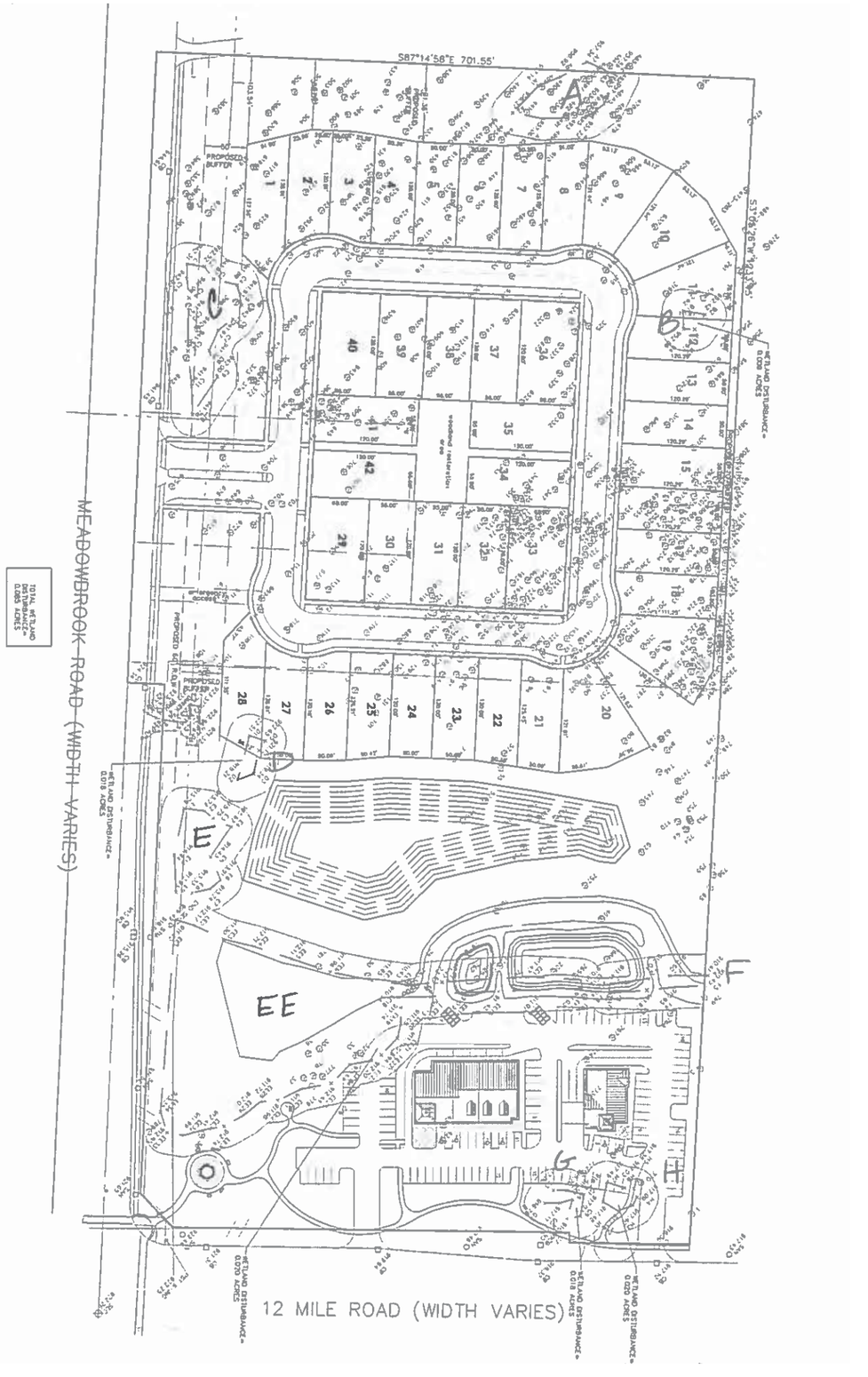
cc: Woody Held, King & MacGregor Environmental
City of Novi Clerk



Site Location Map
12 Mile and Meadbrook Roads NE

Existing Conditions Plan

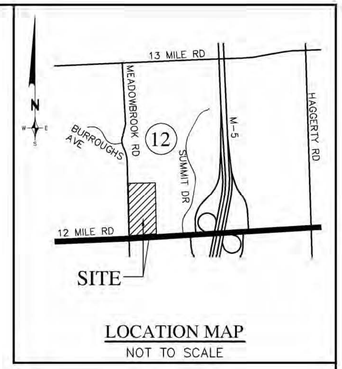




WOODLANDS EVALUATION

THE IVANHOE COMPANIES

PRELIMINARY SITE PLAN FOR
BEACON HILL PARK
BEACON HILL MEADOWS,
THE SHOPPES AT BEACON HILL,
BEACON HILL PARK TRAILHEAD
NOVI, MICHIGAN, SECTION 12



LOCATION MAP
NOT TO SCALE

APPLICANT:

IVANHOE MEADOWBROOK L.L.C
6689 ORCHARD LAKE ROAD, SUITE 314
FARMINGTON HILLS, MI 48322
(248) 626-6114
CONTACT: GARY SHAPIRO

CIVIL ENGINEER:

ZEIMET-WOZNIAK & ASSOCIATES, INC.
55800 GRAND RIVER, SUITE 100
NEW HUDSON, MI 48165
(248) 437-5099
CONTACT: ANDY WOZNIAK

LANDSCAPE ARCHITECT:

FELINO A. PASCUAL & ASSOCIATES
24333 ORCHARD LAKE ROAD, SUITE G
FARMINGTON HILLS, MI 48336
(248) 557-5588
CONTACT: FELINO PASCUAL

WOODLAND/WETLAND CONSULTANT:

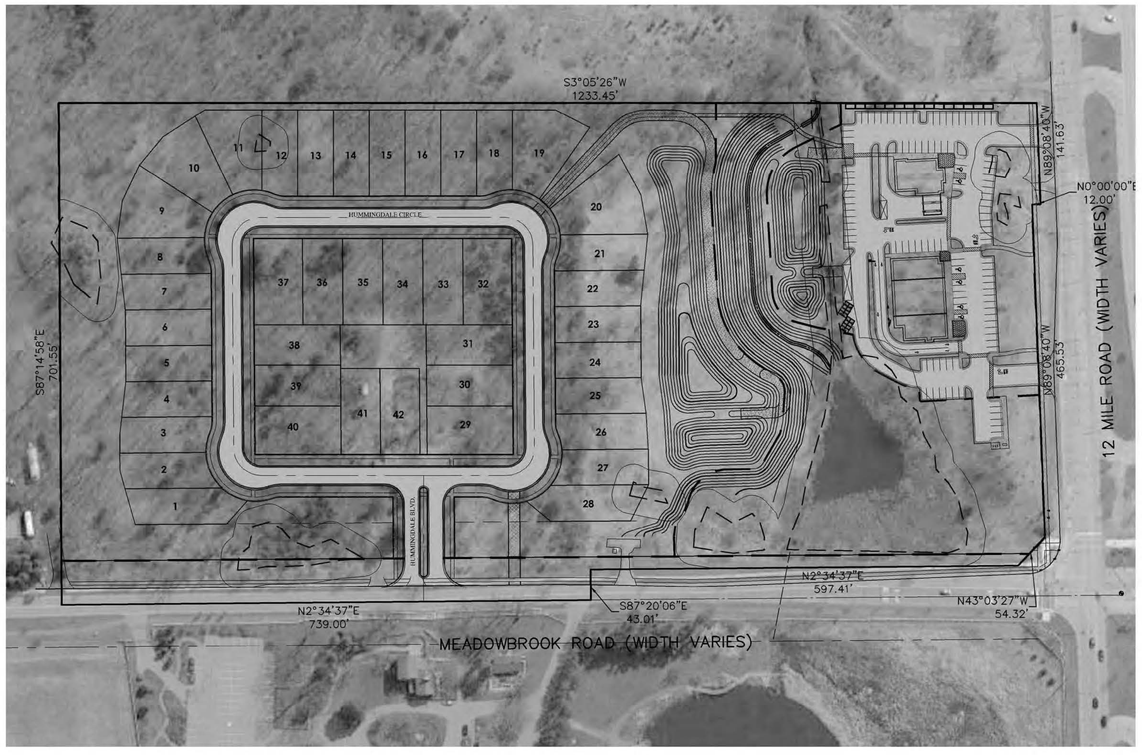
KING & McGREGOR ENVIRONMENTAL, INC.
43050 FORD ROAD, SUITE 130
CANTON, MI 48187
(734) 534-0594
CONTACT: WOODY HELD

MEADOWS ARCHITECT:

TR DESIGN GROUP, LLC
6001 N. ADAMS ROAD, SUITE 202
BLOOMFIELD HILLS, MI 48304
(248) 792-3256
CONTACT: J.R. RUTHIG

SHOPPES ARCHITECT:

ROGVOY ARCHITECTS
32500 TELEGRAPH ROAD, SUITE 250
BINGHAM FARMS, MI 48025
(248) 540-7700
CONTACT: MARK DRANE



SHEET INDEX:

CIVIL ENGINEERING PLANS:

SP-1 COVER SHEET
SP-2 EXISTING CONDITIONS
SP-3 TREE SURVEY-TREE REMOVAL PLAN
SP-4 TREE REMOVAL LIST
SP-5 LAND USE PLAN
SP-6 SITE PLAN
SP-7 PAVING PLAN
SP-8 ROAD PROFILES
SP-9 GRADING & DETENTION PLAN-MEADOWS
SP-10 UTILITY PLAN-MEADOWS
SP-11 GRADING & DETENTION PLAN-SHOPPES
SP-12 UTILITY PLAN-SHOPPES
SP-13 STORMWATER MANAGEMENT PLAN
SP-14 WETLAND & BUFFER IMPACT PLAN

WETLAND/STREAM RELOCATION PLANS:

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W-2 WETLAND RESTORATION-DETAILED CONCEPT
W-3 STREAM RELOCATION-DETAILED CONCEPT

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LS-1 STREET TREE PLANTING PLAN
LS-2 MEADOWS LANDSCAPE PLANTING DETAIL
LS-3 TRAILHEAD LANDSCAPE PLANTING DETAIL
LS-3 SHOPPES LANDSCAPE PLANTING DETAIL
LS-5 ENTRANCE PLANTINGS, SIGN AND WALL MONUNMENT
LS-6 DETAILS AND PLANT MATERIALS LIST

ARCHITECTURAL PLANS:

I/1 CONCEPTUAL RESIDENTIAL ARCHITECTURE
A-1 BUILDING "A" BUILDING ELEVATIONS & FLOOR PLAN
A-2 BUILDING "B" BUILDING ELEVATIONS & FLOOR PLAN

NOTE: ALL WORK SHALL CONFORM TO THE CURRENT CITY OF NOVI STANDARDS AND SPECIFICATIONS.

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PSP SUBMITTAL	1/11/16										

ZEIMET WOZNIAK & ASSOCIATES
Civil Engineers & Land Surveyors
55800 GRAND RIVER AVE., SUITE 100
NEW HUDSON, MICHIGAN 48165
P: (248) 437-5099 F: (248) 437-5222 www.zeimetwozniak.com

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BLOOMFIELD HILLS, MI 48322 (248) 626-6114

COVER SHEET
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

FIELD BOOK:

DATE 1/11/16	SCALE	HOR: 1" = N/A VER: 1" = N/A	
DESIGNED BY SRB	JOB NO.	14151	
DRAWN BY SRB	SHEET	SP-1	

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SCALE: 1" = 60'

0 30' 60' 120'

EXISTING LEGEND

- MANHOLE
- CATCH BASIN
- INLET
- CLEANOUT
- END SECTION
- ROOF DRAIN
- GATE VALVE
- HYDRANT
- WATER SHUT-OFF
- UTILITY POLE
- GUY ANCHOR
- LIGHT POLE
- SIGN
- TREE
- TREE LINE
- FENCE
- SANITARY SEWER
- STORM SEWER
- WATER MAIN
- GAS MAIN
- ELECTRIC CABLE
- CONTOUR MAJOR
- CONTOUR MINOR
- T/P TOP OF PAVEMENT
- T/C TOP OF CURB
- B/C BOTTOM OF CURB
- +100.00 SPOT ELEVATION

22-12-351-004
ZONED: R-A

22-12-351-034
ZONED: R-A

22-12-351-026
ZONED: R-A

22-13-100-026
ZONED: OST

22-12-351-020
ZONED: R-A

22-12-351-025
ZONED: R-A

22-12-351-021
ZONED: R-A

22-13-100-024
ZONED: OST

22-14-200-045
ZONED: OST

22-11-400-006
ZONED: R-A

CONGREGATION SHARRY ZEDEK
27375 BELL ROAD
SOUTHFIELD, MI 48073

MEADOWBROOK ROAD (WIDTH VARIES)

12 MILE ROAD (WIDTH VARIES)

S3°05'26"W 1233.45'

N89°08'40"W 1141.63'

N0°00'00"E 12.00'

N89°08'40"W 465.53'

S87°14'58"E 701.55'

N2°34'37"E 739.00'

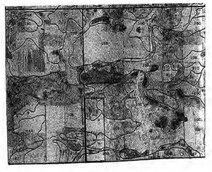
N2°34'37"E 597.41'

S87°20'06"E 43.01'

N43°03'27"W 54.32'

25' WETLAND BUFFER (TYP.)

WETLAND (TYP.)



SOILS NOTE:

PER THE USDA-SCS SOIL SURVEY OF OAKLAND COUNTY, MICHIGAN ISSUED MARCH 1982, THE SOILS FOR THIS SITE ARE CLASSIFIED AS:

10B: MARLETTE SANDY LOAM, 1-6% SLOPES
10C: MARLETTE SANDY LOAM, 6-12% SLOPES
13C: OSHTEMO-BOYER LOAMY SANDS, 6-12% SLOPES
15C: SPINKS LOAMY SAND, 6-12% SLOPES
23B: SISSON FINE SANDY LOAM, 1-6% SLOPES
41B: AQUENTS, SANDY AND LOAMY, UNDULATING

NOTE:
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AS DISCLOSED BY AVAILABLE UTILITY COMPANY RECORDS AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE COMPANY. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY IF A CONFLICT IS APPARENT.

LEGAL DESCRIPTIONS50-22-12-351-020 T1N, R8E, SEC 12 PART OF W 1/2 OF SW 1/4 BEG AT PT ON W SEC LINE DIST N 02-51-00 E 765 FT FROM SW SEC COR, TH N 02-51-00 E 140 FT, TH S 87-09-00 E 315 FT, TH N 02-51-00 E 153 FT, TH N 87-09-00 W 315 FT, TH N 02-51-00 E 421 FT, TH S 87-09-00 E 697 FT, TH S 03-08-50 W 714 FT, TH N 87-09-00 W 693.30 FT TO BEG, 10.29 ACRES.

50-22-12-351-021 T1N, R8E, SEC 12 PART OF W 1/2 OF SW 1/4 BEG AT PT ON W SEC LINE DIST N 02-51-00 E 905 FT FROM SW SEC COR, TH N 02-51-00 E 153 FT, TH S 87-09-00 E 315 FT, TH S 02-51-00 W 153 FT, TH N 87-09-00 W 315 FT TO BEG, 1.11 ACRES.

50-22-12-351-026 T1N, R8E, SEC 12 PART OF SW 1/4 BEG AT PT DIST N 02-37-55 E 764.97 FT FROM SW SEC COR, TH S 87-16-30 E 695.04 FT, TH S 03-08-30 W 652.45 FT, TH N 89-08-40 W 141.64 FT, TH N 12 FT, TH N 89-08-40 W 465.53 FT, TH N 43-01-20 W 54.28 FT, TH N 02-37-55 E 597.41 FT, TH N 87-16-30 W 43 FT, TH N 02-37-55 E 24.97 FT TO BEG, 9.73 ACRES.

NOTE: NO BOUNDARY SURVEY WAS PERFORMED. BOUNDARY INFORMATION SHOWN AND LEGAL DESCRIPTIONS PER TAX RECORDS.

BENCHMARKS:

CITY BM #1231 'X' ON NORTH RIM OF GATE VALVE LOCATED 8 FEET NORTH OF DRIVE INTO PRV, 45 FEET EAST OF CENTERLINE OF MEADOWBROOK ROAD, 700 FEET NORTH OF CENTERLINE OF 12 MILE ROAD
NORTHING: 365052.492
EASTING: 13368796.58
ELEV.: 922.9876

CITY BM #1312 'X' ON NORTH RIM OF GATE VALVE LOCATED 670 FEET EAST OF THE INTERSECTION OF MEADOWBROOK ROAD AND 12 MILE ROAD, SOUT OF WEST BOUND 12 MILE ROAD INTERSECTION, 4 FEET SOUTH OF BACK OF CURB
NORTHING: 364317.6108
EASTING: 13369467.09
ELEV.: 917.5438

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PSP SUBMITTAL	1/11/16										

ZEIMET WOZNIAK & ASSOCIATES
Civil Engineers & Land Surveyors
55800 GRAND RIVER AVE., SUITE 100
NEW HUDSON, MICHIGAN 48165
P: (248) 437-5099 F: (248) 437-5222 www.zeimetwozniak.com

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EXISTING CONDITIONS
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

FIELD BOOK

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DESIGNED BY SRB	JOB NO.	14151	
DRAWN BY SRB	SHEET	SP-2	

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PSP SUBMITTAL	1/11/16										

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TREE SURVEY–TREE REMOVAL PLAN
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

FIELD BOOK —

DATE 1/11/16	SCALE HOR: 1" = 60' VER: 1" = N/A
DESIGNED BY SRB	JOB NO. 14151
DRAWN BY SRB	SHEET SP–3

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Z:\Projects\14151\DWG\14151 prelim SP.dwg, SP-3 TREE SURVEY-TREE REMOVAL PLAN, 1/12/2016 8:48:40 AM, ablaszczyk

Beacon Hill Meadows

Tag	Scientific Name	Common Name	Diameter at Breast Height			Condition
			Trunk 1	Trunk 2	Trunk 3	Trunk 4
46	Acer saccharinum	Silver Maple	21.7			Good
52	Acer saccharinum	Silver Maple	23.9			Fair
54	Ulmus pumila	Siberian Elm	26.4			Poor
55	Ailanthus altissima	Tree-of-Heaven	15.0			Poor
56	Tilia americana	American Basswood	12.1	8.7		Good
57	Pinus strobus	Eastern White Pine	13.7			Good
60	Acer saccharinum	Silver Maple	24.0	11.0		Good
62	Pyrus communis	Common Pear	15.4			Fair
69	Ulmus pumila	Siberian Elm	8.4			Fair
70	Ulmus pumila	Siberian Elm	8.5			Fair
80	Acer saccharinum	Silver Maple	16.7	16.0	15.7	Fair
81	Acer saccharinum	Silver Maple	15.2			Fair
82	Acer saccharinum	Silver Maple	13.5			Fair
84	Tilia americana	American Basswood	17.7			Good
85	Pinus sylvestris	Scots Pine	10.2			Good
86	Tilia americana	American Basswood	11.2	11.0		Good
87	Pinus sylvestris	Scots Pine	9.8			Fair
89	Prunus serotina	Black Cherry	12.0			Good
90	Pinus sylvestris	Scots Pine	12.3			Fair
91	Prunus serotina	Black Cherry	9.6			Good
92	Pinus sylvestris	Scots Pine	22.0			Good
93	Pinus sylvestris	Scots Pine	14.0			Good
94	Pinus strobus	Eastern White Pine	12.0			Good
96	Pinus sylvestris	Scots Pine	13.7			Fair
97	Prunus serotina	Black Cherry	10.3			Poor
98	Malus pumila	Apple Tree	8.7			Fair
99	Pinus sylvestris	Scots Pine	12.0			Fair
101	Ulmus pumila	Siberian Elm	36.5			Very Poor
102	Pinus sylvestris	Scots Pine	12.0			Fair
103	Pinus sylvestris	Scots Pine	14.5			Fair
104	Pinus sylvestris	Scots Pine	15.6			Poor
105	Pinus sylvestris	Scots Pine	11.2			Fair
106	Pinus sylvestris	Scots Pine	12.6			Fair
107	Juglans nigra	Black Walnut	15.5			Fair
108	Pinus sylvestris	Scots Pine	13.8			Fair
110	Pinus sylvestris	Scots Pine	11.9			Fair
111	Pinus sylvestris	Scots Pine	11.5			Fair
112	Ulmus americana	American Elm	9.0			Fair
113	Juglans nigra	Black Walnut	10.9			Fair
114	Ulmus americana	American Elm	11.7			Fair
115	Acer negundo	Box-elder	10.4			Poor
116	Ulmus americana	American Elm	9.0			Fair
117	Acer negundo	Box-elder	8.7			Poor
118	Juglans nigra	Black Walnut	9.2			Fair
119	Ulmus americana	American Elm	10.0			Fair
120	Juniperus virginiana	Eastern Red-Cedar	8.4			Fair
121	Pinus sylvestris	Scots Pine	8.4			Fair
122	Pinus sylvestris	Scots Pine	12.3	10.1		Fair
123	Pinus sylvestris	Scots Pine	12.2			Fair
124	Pinus sylvestris	Scots Pine	9.1			Fair
125	Pinus sylvestris	Scots Pine	12.2			Fair
127	Pinus sylvestris	Scots Pine	12.1			Fair
128	Ulmus americana	American Elm	8.7			Fair
129	Pinus sylvestris	Scots Pine	21.9			Poor
130	Pinus sylvestris	Scots Pine	15.7			Poor
131	Ulmus pumila	Siberian Elm	27.8			Fair
132	Pinus sylvestris	Scots Pine	11.5			Fair
133	Pinus sylvestris	Scots Pine	12.8			Fair
134	Pinus sylvestris	Scots Pine	11.6			Good
135	Ulmus americana	American Elm	8.3			Fair
136	Pinus sylvestris	Scots Pine	10.3			Good
137	Pinus sylvestris	Scots Pine	11.8			Good
138	Pinus sylvestris	Scots Pine	12.4			Good
139	Pinus sylvestris	Scots Pine	8.6			Good
140	Pinus sylvestris	Scots Pine	9.4			Good
141	Pinus sylvestris	Scots Pine	11.3			Good
142	Acer saccharinum	Silver Maple	15.2			Good
143	Pinus sylvestris	Scots Pine	11.3			Good
144	Pinus sylvestris	Scots Pine	9.7			Fair
145	Pinus sylvestris	Scots Pine	9.9			Fair
146	Pinus sylvestris	Scots Pine	10.2			Fair
147	Pinus sylvestris	Scots Pine	9.6			Fair
148	Pinus sylvestris	Scots Pine	11.2			Fair
149	Pinus sylvestris	Scots Pine	12.3			Fair
150	Pinus sylvestris	Scots Pine	13.6			Poor
155	Pinus sylvestris	Scots Pine	11.2			Fair
157	Pinus sylvestris	Scots Pine	11.8			Fair
159	Pinus sylvestris	Scots Pine	9.6			Fair
160	Pinus sylvestris	Scots Pine	11.4			Fair
162	Pinus sylvestris	Scots Pine	9.4			Fair
163	Malus pumila	Apple Tree	8.5	8.2		Fair
165	Ulmus rubra	Red Elm	11.5			Fair
166	Juglans nigra	Black Walnut	15.3			Good
168	Juglans nigra	Black Walnut	29.8			Good
169	Juglans nigra	Black Walnut	25.4			Fair
170	Tilia americana	American Basswood	38.0			Good
171	Juglans nigra	Black Walnut	27.3			Good
172	Juglans nigra	Black Walnut	11.7			Good
173	Juglans nigra	Black Walnut	9.1			Good
174	Juglans nigra	Black Walnut	15.5			Good
175	Tilia americana	American Basswood	11.4			Good
176	Tilia americana	American Basswood	8.8			Fair
177	Juglans nigra	Black Walnut	14.2			Good
178	Tilia americana	American Basswood	15.0	8.2		Good
179	Tilia americana	American Basswood	14.8	8.1		Fair
180	Juglans nigra	Black Walnut	9.4			Good
181	Juglans nigra	Black Walnut	13.3			Good
182	Tilia americana	American Basswood	10.0			Good
183	Tilia americana	American Basswood	13.6			Good
185	Juglans nigra	Black Walnut	16.7			Good
186	Tilia americana	American Basswood	9.2			Fair
187	Tilia americana	American Basswood	22.5	14.5		Good
188	Tilia americana	American Basswood	12.0	9.4		Good
189	Tilia americana	American Basswood	16.7	14.2	12.7	Good
190	Juglans nigra	Black Walnut	14.0			Good
191	Tilia americana	American Basswood	8.7			Fair
192	Tilia americana	American Basswood	16.1	10.4		Good
193	Ulmus rubra	Red Elm	10.6			Fair
195	Pinus sylvestris	Scots Pine	10.1			Fair
198	Tilia americana	American Basswood	11.5			Good
199	Prunus serotina	Black Cherry	10.5			Fair
200	Pinus sylvestris	Scots Pine	12.5			Fair
201	Pinus sylvestris	Scots Pine	12.0			Fair
203	Prunus serotina	Black Cherry	10.5			Fair
204	Prunus serotina	Black Cherry	8.3			Poor
207	Pinus sylvestris	Scots Pine	11.2			Fair
209	Pinus sylvestris	Scots Pine	12.8			Fair
210	Pinus sylvestris	Scots Pine	9.1			Fair
211	Pinus sylvestris	Scots Pine	14.0			Fair
212	Pinus sylvestris	Scots Pine	11.8			Fair
213	Pinus sylvestris	Scots Pine	9.4			Fair
214	Tilia americana	American Basswood	14.0			Good
215	Tilia americana	American Basswood	9.5			Good
216	Tilia americana	American Basswood	12.0			Good
217	Tilia americana	American Basswood	8.6			Good
218	Tilia americana	American Basswood	13.1	9.9		Good
219	Tilia americana	American Basswood	14.7			Good
220	Tilia americana	American Basswood	8.2			Good
221	Prunus serotina	Black Cherry	9.4			Good
222	Prunus serotina	Black Cherry	8.5			Good
223	Tilia americana	American Basswood	9.5			Good
224	Tilia americana	American Basswood	18.5			Good
225	Ulmus americana	American Elm	8.7			Fair
226	Tilia americana	American Basswood	9.4			Good
227	Tilia americana	American Basswood	8.5			Good
228	Tilia americana	American Basswood	13.1			Good
229	Tilia americana	American Basswood	10.3			Good
230	Tilia americana	American Basswood	8.9			Good
231	Tilia americana	American Basswood	13.5			Good
232	Tilia americana	American Basswood	8.8			Good
233	Tilia americana	American Basswood	10.5	8.5		Good
234	Tilia americana	American Basswood	10.3			Good
235	Tilia americana	American Basswood	12.6			Good
236	Ulmus americana	American Elm	9.0			Good
238	Tilia americana	American Basswood	12.4	10.7		Good
240	Tilia americana	American Basswood	11.0			Good
241	Pinus sylvestris	Scots Pine	12.3			Fair
242	Tilia americana	American Basswood	16.7			Fair
243	Tilia americana	American Basswood	13.0			Fair
244	Tilia americana	American Basswood	11.4			Poor
245	Ulmus americana	American Elm	12.3			Good
250	Tilia americana	American Basswood	9.4			Fair
251	Juglans nigra	Black Walnut	25.3			Good
252	Tilia americana	American Basswood	28.8	20.4	16.3	Good
253	Tilia americana	American Basswood	13.7			Good
254	Tilia americana	American Basswood	14.0			Good
255	Tilia americana	American Basswood	17.2			Good
256	Tilia americana	American Basswood	13.2			Good
257	Tilia americana	American Basswood	11.0			Good
259	Tilia americana	American Basswood	14.4			Poor
260	Tilia americana	American Basswood	12.8			Good
261	Prunus virginiana	Choke Cherry	12.6			Fair
262	Tilia americana	American Basswood	11.3			Good
263	Tilia americana	American Basswood	9.6			Good
264	Tilia americana	American Basswood	12.3			Good
265	Tilia americana	American Basswood	11.0			Good
266	Tilia americana	American Basswood	15.0			Good
267	Juglans nigra	Black Walnut	11.9			Good
268	Juglans nigra	Black Walnut	28.2			Good
269	Tilia americana	American Basswood	11.7			Good
270	Tilia americana	American Basswood	8.9			Good
271	Tilia americana	American Basswood	10.0			Good
272	Tilia americana	American Basswood	10.6			Good
273	Tilia americana	American Basswood	13.2	12.0	10.1	Good
274	Tilia americana	American Basswood	14.7			Fair
275	Tilia americana	American Basswood	11.3			Fair
276	Tilia americana	American Basswood	18.0			Fair
277	Tilia americana	American Basswood	16.3			Fair
278	Tilia americana	American Basswood	17.2	16.9		Good
279	Tilia americana	American Basswood	14.7			Fair
280	Tilia americana	American Basswood	14.9			Fair
281	Tilia americana	American Basswood	12.3			Fair
282	Tilia americana	American Basswood	13.6			Good
283	Tilia americana	American Basswood	28.3			Good
284	Tilia americana	American Basswood	12.8			Good
285	Tilia americana	American Basswood	11.6			Fair
286	Tilia americana	American Basswood	8.6			Good
287	Tilia americana	American Basswood	11.3			Good
288	Acer saccharum	Suger Maple	13.3			Good
291	Tilia americana	American Basswood	15.1			Fair
292	Tilia americana	American Basswood	9.9			Good
293	Juniperus virginiana	Eastern Red-Cedar	9.6			Good
294	Ulmus rubra	Red Elm	13.4			Good
295	Tilia americana	American Basswood	8.7			Good
296	Ulmus pumila	Siberian Elm	15.5			Fair
297	Prunus serotina	Black Cherry	15.0			Good
298	Juniperus virginiana	Eastern Red-Cedar	8.2			Fair
299	Tilia americana	American Basswood	8.6			Good
300	Tilia americana	American Basswood	35.2	21.6	21.1	Fair
301	Juglans nigra	Black Walnut	12.9			Poor
303	Tilia americana	American Basswood	13.0			Good
304	Tilia americana	American Basswood	10.2			Good
305	Ulmus rubra	Red Elm	11.3			Fair
306	Tilia americana	American Basswood	12.2			Fair
307	Ulmus americana	American Elm	9.1			Fair
309	Acer saccharum	Suger Maple	16.9			Fair
310	Juniperus virginiana	Eastern Red-Cedar	10.7			Fair
311	Prunus serotina	Black Cherry	9.9			Poor
312	Acer saccharum	Suger Maple	20.5			Good
314	Pinus sylvestris	Scots Pine	13.9			Fair
316	Juniperus virginiana	Eastern Red-Cedar	8.8			Fair
317	Pinus sylvestris	Scots Pine	13.4			Fair
318	Prunus serotina	Scots Pine	11.4			Fair
319	Pinus sylvestris	Scots Pine	8.5			Fair
320	Prunus serotina	Black Cherry	11.0			Fair
321	Pinus sylvestris	Scots Pine	18.7			Fair
322	Pinus sylvestris	Scots Pine	11.2			Fair
323	Pinus strobus	Eastern White Pine	21.7			Fair
324	Acer saccharum	Suger Maple	13.9			Fair
325	Prunus serotina	Black Cherry	10.2			Fair
327	Pinus sylvestris	Scots Pine	13.5			Fair
328	Prunus serotina	Black Cherry	13.6			Fair
329	Ulmus americana	American Elm	8.2			Fair
330	Pinus sylvestris	Scots Pine	10.5			Fair
331	Pinus sylvestris	Scots Pine	18.0			Fair
332	Pinus sylvestris	Scots Pine	17.7			Fair
333	Tilia americana	American Basswood	13.1			Good
334	Tilia americana	American Basswood	10.3			Good
335	Tilia americana	American Basswood	13.3			Good
336	Tilia americana	American Basswood	10.8	10.0		Good
337	Tilia americana	American Basswood	10.0			Good
338	Tilia americana	American Basswood	9.0			Good
339	Tilia americana	American Basswood	11.5			Good
340	Tilia americana	American Basswood	10.0			Good
341	Tilia americana	American Basswood	10.7			Good
342	Ulmus americana	American Elm	9.5			Fair
343	Tilia americana	American Basswood	8.8			Good
344	Tilia americana	American Basswood	13.4			Fair
347	Tilia americana	American Basswood	9.5			Good
348	Tilia americana	American Basswood	10.0			Good
349	Tilia americana	American Basswood	17.8	14.3	12.4	Good
350	Tilia americana	American Basswood	9.8	8.7		Good
351	Tilia americana	American Basswood	10.2			Good
352	Juglans nigra	Black Walnut	9.5			Good
353	Fraxinus americana	White Ash	10.4			Fair
354	Ulmus americana	American Elm	8.6			Fair
355	Juniperus virginiana	Eastern Red-Cedar	10.4			Fair
356	Juglans nigra	Black Walnut	9.3			Fair
357	Ulmus americana	American Elm	9.5			Fair
358	Acer negundo	Box-elder	10.5	10.2		Poor
359	Juglans nigra	Black Walnut	17.6			Fair
360	Populus deltoides	Eastern Cottonwood	8.3			Fair
361	Populus deltoides	Eastern Cottonwood	9.5			Fair
362	Populus deltoides	Eastern Cottonwood	9.1			Very Poor
363	Populus deltoides	Eastern Cottonwood	10.6			Fair
364	Populus deltoides	Eastern Cottonwood	15.9			Fair
365	Populus deltoides	Eastern Cottonwood	12.1			Fair
366	Populus deltoides	Eastern Cottonwood	9.4			Fair
367	Juglans nigra	Black Walnut	9.8			Fair
368	Juglans nigra	Black Walnut	13.6			Fair
369	Pinus sylvestris	Scots Pine	19.2			Fair
370	Pinus strobus	Eastern White Pine	17.9			Fair
371	Pinus strobus	Eastern White Pine	12.0			Fair
372	Ulmus americana	American Elm	9.0			Fair
373	Pinus sylvestris	Scots Pine	9.1			Fair
374	Pinus sylvestris	Scots Pine	11.7			Fair
380	Juglans nigra	Black Walnut	13.8			Fair
381	Juglans nigra	Black Walnut	10.8			Fair
382	Juglans nigra	Black Walnut	14.8			Fair
383	Juglans nigra	Black Walnut	12.5			Fair
384	Juglans nigra	Black Walnut	10.3			Fair
385	Juglans nigra	Black Walnut	15.1			Fair
386	Juniperus virginiana	Eastern Red-Cedar	9.7			Fair
387	Fraxinus americana	White Ash	9.5			Poor
388	Fraxinus americana	White Ash	9.8			Very Poor
389	Ulmus rubra	Red Elm	15.4			Fair
390	Acer saccharum	Suger Maple	9.3	9.0		Fair
391	Acer saccharum	Suger Maple	15.1			Fair
392	Pinus sylvestris	Scots Pine	15.0			Fair
393	Acer saccharum	Suger Maple	11.0			Fair
394	Ulmus rubra	Red Elm	12.5			Fair
395	Acer rubrum	Red Maple	19.3	15.9		Fair
396	Pinus sylvestris	Scots Pine	13.5			Fair
397	Acer saccharinum	Silver Maple	11.1			Fair
398	Acer saccharinum	Silver Maple	16.4			Fair
399	Ulmus americana	American Elm	9.7			Fair
400	Acer saccharinum	Silver Maple	14.7			Fair
401	Pinus sylvestris	Scots Pine	15.1			Fair
402	Acer rubrum	Red Maple	9.2			Fair
403	Acer saccharinum	Silver Maple	12.7			Fair
405	Fraxinus pennsylvanica	Green Ash	10.7			Very Poor
406	Pinus sylvestris	Scots Pine	10.3			Fair
407	Pinus sylvestris	Scots Pine	16.5			Fair
408	Pinus sylvestris	Scots Pine	13.5			Fair
409	Pinus sylvestris	Scots Pine	8.8			Fair
410	Pinus sylvestris	Scots Pine	16.4			Fair
411	Acer saccharum	Suger Maple	11.3			Fair
412	Acer saccharum	Suger Maple	9.7			Fair
413	Fraxinus pennsylvanica	Green Ash	9.1			Very Poor
414	Ulmus americana	American Elm	12.5			Poor
416	Pinus sylvestris	Scots Pine	8.8			Fair
417	Pinus sylvestris	Scots Pine	13.7			Poor
418	Acer saccharum	Suger Maple	13.3	11.7		Fair
419	Acer negundo	Box-elder	8.7			Poor
420	Ulmus americana	American Elm	10.2	8.6		Fair
421	Ulmus americana	American Elm	9.2			Poor
422	Ulmus americana	American Elm	13.9			Fair
423	Acer negundo	Box-elder	16.0			Poor
424	Acer saccharinum	Silver Maple	10.8			Fair
425	Acer negundo	Box-elder	17.3	13.2		Poor
426	Acer rubrum	Red Maple	10.7			Fair
427	Prunus serotina	Black Cherry	10.6			Fair
428	Prunus serotina	Black Cherry	10.3			Fair
429	Fraxinus americana	White Ash	9.7			Very Poor
430	Acer saccharum	Suger Maple	9.4			Fair
431	Ulmus americana	American Elm	8.6			Fair
432	Prunus serotina	Black Cherry	14.4			Fair
433	Acer saccharum	Suger Maple	12.3			Fair
434	Acer saccharum	Suger Maple	16.1			Fair
435	Fraxinus americana	White Ash	8.9			Very Poor
436	Ulmus americana	American Elm	9.1			Poor
437	Fraxinus americana	White Ash	12.5			Very Poor
438	Juglans nigra	Black Walnut	11.3			Fair
439	Acer saccharum	Suger Maple	11.3			Fair
440	Ulmus americana	American Elm	13.8			Poor
441	Ulmus americana	American Elm	11.1			Poor
442	Ulmus americana	American Elm	12.5			Poor
444	Acer saccharinum	Silver Maple	12.3			Fair
445	Pinus sylvestris	Scots Pine	15.9			Fair
446	Ulmus americana	American Elm	9.0			Poor
447	Acer saccharum	Suger Maple	11.3			Fair
448	Acer saccharum	Suger Maple	18.2	12.6		Fair
449	Prunus serotina	Black Cherry	10.6			Fair
450	Acer saccharum	Suger Maple	12.2			Fair
451	Acer saccharum	Suger Maple	13.8	12.7		Fair
452	Pinus sylvestris	Scots Pine	12.3			Very Poor
453	Pinus sylvestris	Scots Pine	15.6			Poor
455	Ulmus americana	American Elm	10.0			Fair
456	Acer rubrum	Red Maple	12.8			Fair
457	Pinus sylvestris	Scots Pine	8.1			Fair
458	Ulmus americana	American Elm	9.7			Poor
459	Acer saccharum	Suger Maple	11.2			Fair
460	Prunus serotina	Black Cherry	14.3			Fair
461	Acer saccharum	Suger Maple	13.3			Fair
462	Juniperus virginiana	Eastern Red-Cedar	9.1			Fair
463	Prunus serotina	Black Cherry	12.5			Fair
464	Pinus sylvestris	Scots Pine	10.9			Fair
465	Fraxinus americana	White Ash	9.6			Very Poor
466	Acer saccharum	Suger Maple	14.6			Fair
467	Acer saccharum	Suger Maple	12.3			Fair
468	Pinus sylvestris	Scots Pine	13.7			Fair
471	Ulmus americana	American Elm	9.1			Fair
473	Prunus serotina	Black Cherry	13.2	10.3		Fair
474	Tilia americana	American Basswood	11.4	11.0	8.9	Fair
476	Robinia pseudoacacia	Black Locust	18.2			Fair
478	Acer saccharum	Suger Maple	11.1			Fair
479	Acer negundo	Box-elder	10.1			Poor
480	Ulmus americana	American Elm	10.5			Poor
481	Ulmus americana	American Elm	12.7			Very Poor
482	Acer rubrum	Red Maple	10.1			Fair
483	Acer rubrum	Red Maple	10.0			Fair
486	Acer saccharinum	Silver Maple	18.0	11.9		Fair
487	Populus deltoides	Eastern Cottonwood	33.7			Fair
488	Populus deltoides	Eastern Cottonwood	23.6			Fair
489	Acer saccharinum	Silver Maple	11.6			Fair
490	Acer saccharinum	Silver Maple	8.8	8.3	8.2	Fair
491	Populus deltoides	Eastern Cottonwood	28.5			Fair
492	Populus deltoides	Eastern Cottonwood	31.2	23.1		Fair
493	Populus deltoides	Eastern Cottonwood	17.8			Fair
494	Populus deltoides	Eastern Cottonwood	17.1			Fair
495	Populus deltoides	Eastern Cottonwood	18.3			Fair
496	Populus deltoides	Eastern Cottonwood	29.9			Poor
497	Populus deltoides	Eastern Cottonwood	25.5			Fair
499	Acer saccharum	Suger Maple	9.9			Fair
501	Acer saccharum	Suger Maple	20.5			Fair
502	Ulmus rubra	Red Elm	9.2			Fair
503	Acer saccharum	Suger Maple	13.2			Fair
504	Ulmus americana	American Elm	9.9			Poor
505	Ulmus americana	American Elm	15.8			Dead
506	Juglans nigra	Black Walnut	19.4			Fair
600	Ulmus rubra	Red Elm	8.4			Fair
601	Acer saccharum	Suger Maple	8.2			Fair
602	Acer saccharum	Silver Maple	10.1			Fair
603	Populus deltoides	Eastern Cottonwood	12.8			Fair
604	Ulmus rubra	Red Elm	8.4			Fair
605	Fraxinus americana	White Ash	8.5			Poor
606	Acer saccharum	Suger Maple	9.4			Fair
607	Acer saccharum	Suger Maple	8.0			Fair
608	Acer saccharum	Suger Maple	8.5			Fair
609	Prunus serotina	Black Cherry	9.0			Fair
610	Prunus serotina	Black Cherry	8.1			Fair
611	Salix alba	White Willow	8.0			Fair
612	Acer saccharum	Suger Maple	8.0			Fair
613	Fraxinus pennsylvanica	Green Ash	8.2			Very Poor
614	Ulmus americana	American Elm	8.3			Fair
615	Acer saccharum	Suger Maple	8.0			Fair
616	Ulmus americana	American Elm	8.0			Very Poor
617	Ulmus americana	American Elm	8.1			Fair
618	Acer rubrum	Red Maple	14.4			Fair
619	Juniperus virginiana	Eastern Red-Cedar	10.5			Fair
620	Acer saccharum	Suger Maple	9.2			Fair
621	Juniperus virginiana	Eastern Red-Cedar	8.1			Fair
622	Juglans nigra	Black Walnut	9.5			Fair
623	Ulmus americana	American Elm	8.4			Poor
624	Acer saccharum	Suger Maple	11.3			Fair
625	Juniperus virginiana	Eastern Red-Cedar	8.7			Fair
626	Acer negundo	Box-elder	8.2			Poor
627	Ulmus americana	American Elm	8.4			Fair
628	Fraxinus americana	White Ash	8.7			Poor
629	Ulmus americana	American Elm	8.3			Fair
630	Acer rubrum	Red Maple	8.2			Fair
631	Juglans nigra	Black Walnut	12.8			Fair
632	Ulmus americana	American Elm	8.4			Fair
633	Ulmus americana	American Elm	12.8			Poor
634	Acer rubrum	Red Maple	8.3	8.2		Fair
635	Acer rubrum	Red Maple	8.1			Fair
636	Juniperus virginiana	Eastern Red-Cedar	8.3			Fair
637	Malus pumila	Apple Tree	8.5			Fair
638	Ulmus americana	American Elm	10.0			Poor
639	Populus deltoides	Eastern Cottonwood	9.8			Fair
640	Ulmus americana	American Elm	9.2			Fair
641	Populus deltoides	Eastern Cottonwood	12.9			Fair
642	Populus deltoides	Eastern Cottonwood	10.7			Fair
643	Ulmus americana	American Elm	8.7			Fair
644	Ulmus americana	American Elm	8.8			Fair
645	Pinus resinosa	Red Pine	10.0			Fair
646	Populus deltoides	Eastern Cottonwood	8.8			Fair
647	Pinus resinosa	Red Pine	9.4			Fair
648	Populus deltoides	Eastern Cottonwood	8.0			Fair
649	Populus deltoides	Eastern Cottonwood	8.1			Fair
650	Acer saccharinum	Silver Maple	10.6			Fair
651	Acer saccharinum	Silver Maple	8.3	8.1		Fair
652	Juniperus virginiana	Eastern Red-Cedar	11.0			Fair
653	Ulmus americana	American Elm	8.5			Fair
654	Acer saccharum	Suger Maple	8.2			Fair
656	Acer saccharum	Suger Maple	9.2			Fair
668	Juglans nigra	Black Walnut	8.4			Fair
669	Ulmus americana	American Elm	8.3			Fair
670	Ulmus americana	American Elm	9.1			Fair
671	Ulmus americana	American Elm	8.2			Fair
672	Pinus sylvestris	Scots Pine	10.3			Fair
673	Pinus sylvestris	Scots Pine	11.7			Fair
674	Juglans nigra	Black Walnut	13.4			Very Poor
675	Juglans nigra	Black Walnut	21.9			Fair
676	Juglans nigra	Black Walnut	34.2			Fair
677	Juglans nigra	Black Walnut	8.4			Fair
678	Juglans nigra	Black Walnut	13.4			Fair
679	Prunus serotina	Black Cherry	10.5			Poor
680	Pinus sylvestris	Scots Pine	16.4			Fair
681	Robinia pseudoacacia	Black Locust	17.9			Fair
682	Prunus serotina	Black Cherry	12.4			Very Poor
683	Acer saccharum	Suger Maple	8.3			Poor
684	Acer saccharum	Suger Maple	9.0	8.6		Good
685	Prunus avium	Sweet Cherry	11.6			Fair
686	Prunus serotina	Black Cherry	8.7			Fair
688	Tilia americana	American Basswood	13.9			Good
689	Tilia americana	American Basswood	11.4			Good
690	Tilia americana	American Basswood	10.5			Good
691	Tilia americana	American Basswood	8.5			Good
692	Tilia americana	American Basswood	8.2			Good
693	Tilia americana	American Basswood	8.8			Good
694	Juniperus virginiana	Eastern Red-Cedar	8.8			Fair
695	Tilia americana	American Basswood	8.3			Fair
696	Tilia americana	American Basswood	8.2			Fair
697	Juglans nigra	Black Walnut	8.5			Good
698	Picea abies	Norway Spruce	22.6			Fair
699	Juglans nigra	Black Walnut	19.3			Good
700	Juglans nigra	Black Walnut	27.4			Good
701	Juniperus virginiana	Eastern Red-Cedar	14.0			Good
702	Juglans nigra	Black Walnut	28.4			Good
703	Juglans nigra	Black Walnut	24.3			Good
704	Juniperus virginiana	Eastern Red-Cedar	12.6			Good
705	Picea pungens	Blue Spruce	12.0			Fair
706	Salix alba	White Willow	63.4			Fair
707	Juglans nigra	Black Walnut	24.8			Fair
708	Ulmus r

King & MacGregor Environmental Inc.

December 29, 2015

Sent Via Email

Ms. Barbara McBeth
Deputy Director of Community Development
City of Novi
45175 W. Ten Mile Road
Novi, Michigan 48375

Re: Beacon Hill Park Preliminary Site Plan
Woodland Evaluation

Dear Ms. McBeth:

This letter is provided to provide additional information regarding the Novi-designated Woodland on the subject site.

In October, 2015, we performed a tree survey in accordance with our understanding of the requirements described in the Novi Woodlands Protection ordinance. These identified trees were subsequently located by surveyors from Zeimet Wozniak & Associates and the results of that combined effort are provided as part of this Preliminary Site Plan submittal. In total, 577 8-inch DBH or larger trees were identified on the property.

In addition to the tree survey, we performed an evaluation of the character and quality of the woodland for the purpose of providing an opinion as the contribution of this woodland to the natural resources of Novi and the potential for the trees within the woodland to become an asset to the proposed site plan. To that end, we offer the following observations:

The Novi Woodlands Map depicts an approximately 11-acre regulated woodland in the northern half of the site (Figure 1), and this corresponds with the majority of the regulated trees encountered on the property. Of the 577 8-inch or larger trees documented, 507 (88%) occur within the mapped woodland. Historical aerial photography obtained from Oakland County suggests that the subject property was maintained predominantly as either pasture or lawn at least as recently as 1980 (Figures 2 & 3), with the exception of trees within hedgerows and scattered around home sites. After 1980, and prior to 1990 (Figure 4), property maintenance appears to have changed and trees began to colonize the previously open portions on the northern half of the property. As such, it appears that the woodland at present (Figure 5) is comprised mostly of trees that are between 25 and 35 years old.

An analysis of the tree survey data suggests that the woodland has a high concentration of early successional and non-native species. Although 77% of the trees that are 8-inch or larger represent native species, only 46% of the trees represent native species that the Novi Landscape Design Manual does not expressly prohibit planting. Our interpretation of the Landscape Design Manual is that it allows planting of high quality tree species that are suitable for residential and commercial settings such as are proposed for this site. For

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Grand Rapids, MI 49546
Phone: 616/957-1321
Fax: 616/957-2198

43050 Ford Road, Suite 130
Canton, MI 48187
Phone: 734/354-0594
Fax: 734/354-0593

email: kme@king-macgregor.com

purposes of this discussion, we consider native trees that are allowed by the Landscape Design Manual to be planted to be the “suitable” trees on the site and all others to be “unsuitable” trees.

When 8-inch and larger woodland trees are subdivided into the two groupings (suitable trees and unsuitable trees) and the locations of those tree groups mapped, concentrations of suitable trees are readily apparent. From this mapping, we observe two general trends within the woodland: a diffuse scattering of suitable species throughout the majority of the woodland and a concentration of suitable species in an approximately 1.5-acre area in the southeast corner of the woodland (Figure 7). When we examine these two general regions in the field, we find it appropriate to further subdivide the majority of the woodland into three subregions: 1) the former homestead along Meadowbrook Road, 2) a plantation of Scots pine; and 3) the remaining young woods. In total, this results in four regions as depicted in Figure 8 and which we describe as follows:

Homestead
The homestead region (Photo 1) is characterized by a discontinuous canopy comprised of occasional mature black walnut trees and young, early successional trees developing in the understory. This area also contains an existing, vacant house, out buildings, and tennis court.



Photo 1: Eastern Edge of Homestead Region Facing West.

Plantation
This area is a near monoculture of the non-native Scots pine with average DBH of approximately 12 inches. There is little understory vegetation, most likely because of the dense shade cast from the close growth habit of these trees.

Young Woods
This is the northern approximately half of the woodland and is a mix of scrub areas with very little canopy and treed areas (Photos 2 and 3). On average, this area has approximately 20 regulated trees per acre with the five most abundant tree species being American elm (*Ulmus americana*), sugar maple (*Acer saccharum*), black cherry (*Prunus serotina*), cottonwood (*Populus deltoides*), and red cedar (*Juniperus virginiana*). Dominant shrub species include honeysuckles (*Lonicera sp*.), prickly ash

(*Zanthoxylum americanum*), gray dogwood (*Cornus amomum*), and common buckthorn (*Rhamnus cathartica*).



Photo 2: Southeast Portion of Young Woods.



Photo 3: Northwestern Portion of Young Woods.

<u>Basswood Grove</u>
This area has a higher concentration of suitable tree species with continuous canopy resulting in a sparse shrub and herbaceous layer. However when the trees within that area are examined, we found 108 of the 136 suitable trees (79%) are basswood. Therefore, we observe that this area is a near monoculture of one species, which significantly reduces its value as a natural area.



Photo 4: Eastern Edge of Basswood Grove Facing West.

The City of Novi Woodland Ordinance (Section 37-29) states the following as part of the use permit review standards:

> "*No application shall be denied solely on the basis that some trees are growing on the property under consideration. However, the protection and conservation of irreplaceable natural resources from pollution, impairment, or destruction is of paramount concern*."

To that end, we note that this woodland is dominated by relatively young trees and with a significant concentration of trees that are either non-native or that the Novi Landscape Design manual prohibits the planting of. Furthermore, where concentrations of trees of suitable species do exist, they do not occur in diverse woodland habitats but in monotypic stands. Based on these observations, it is our opinion that this woodland represents a very common habitat type in southeast Michigan, is not something we would consider notable or unique, and does not meet the threshold as an "irreplaceable natural resource."

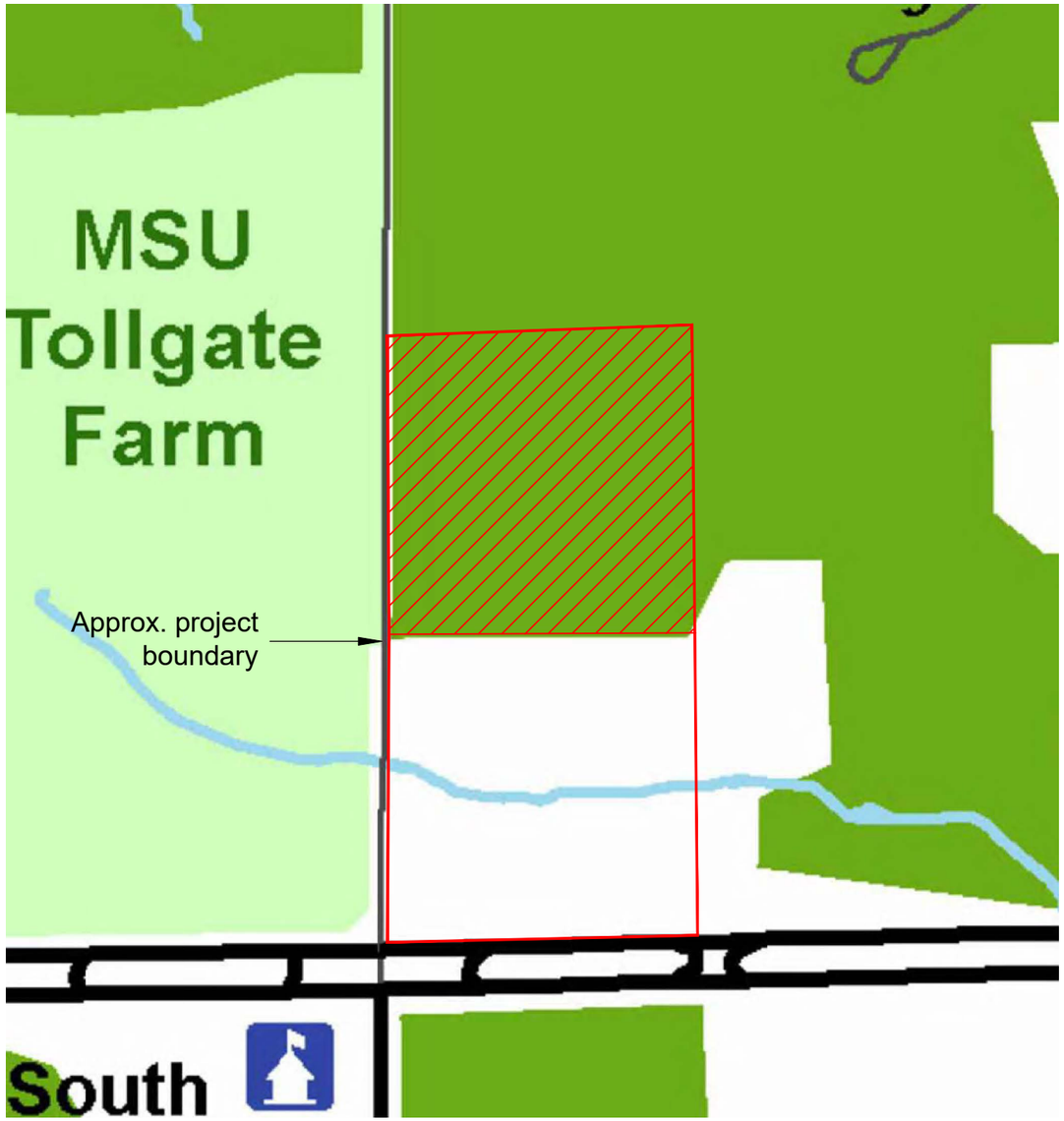
Sincerely,

Matt Stone-Palmquist

King & MacGregor Environmental, Inc.
Matt Stone-Palmquist, LLA, Certified Arborist

Enclosures

cc: Mr. Gary Shapiro (Ivanhoe Meadowbrook, LLC)
Mr. Andy Wozniak (Zeimet Wozniak & Associates, Inc.)



Background Data Source: City of Novi Woodland Map

Novi-Designated
Woodland Area

0 150' 300'

| | | |



Background Data Source: Oakland County GIS

1980

Novi-Designated Woodland Area

0 100' 200'

| | | |



Background Data Source: Oakland County GIS

2014

Novi-Designated Woodland Area

0 100' 200'

FIGURE NUMBER	PROJECT NUMBER
5	13021-1

FIGURE NAME: 2014 Aerial Photo

CHECKED	DATE
TBDN	12/8/15
MDP	Clerk Review

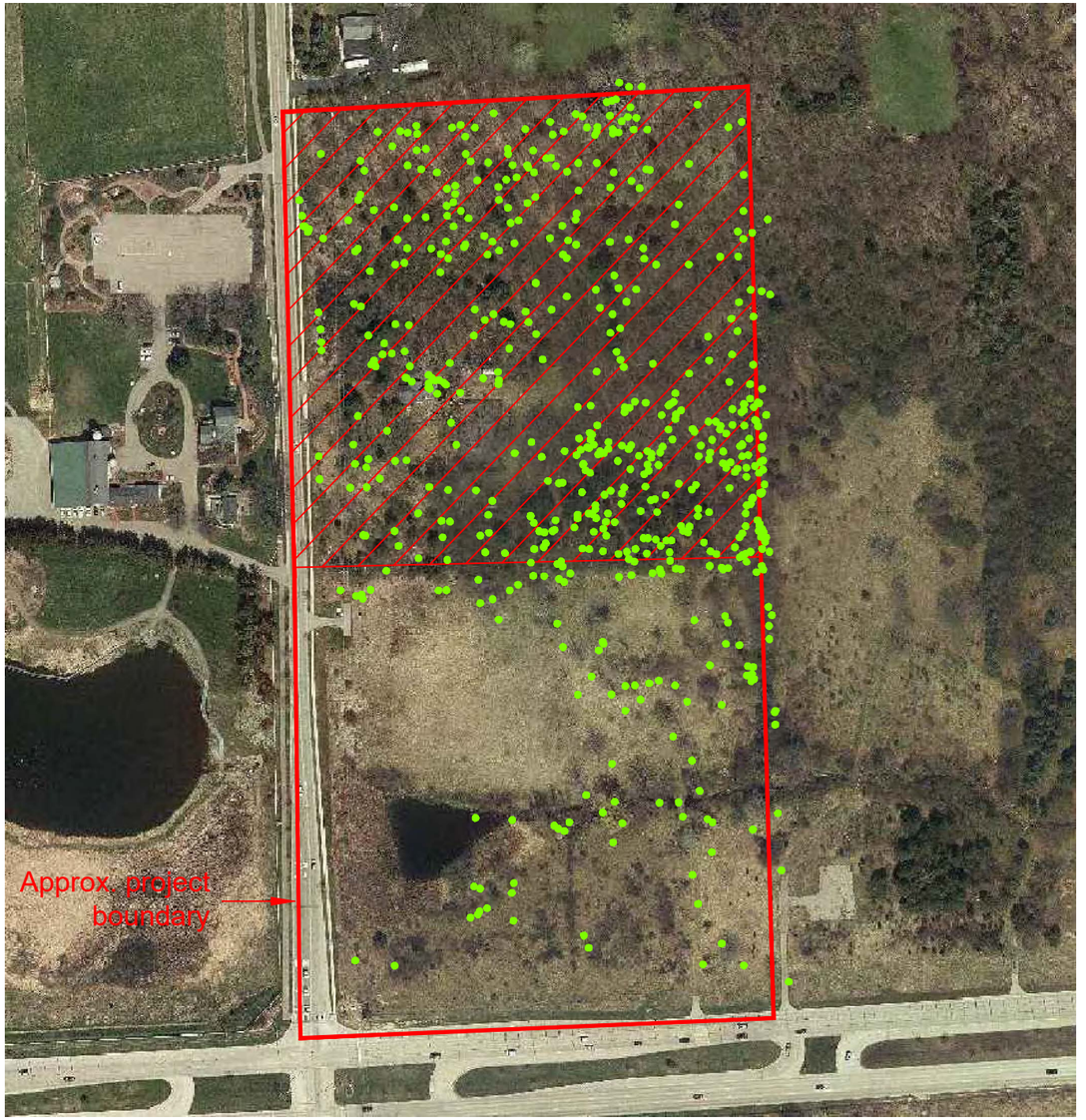
Woodland Evaluation For:

Beacon Hill

City of Novi, Oakland County, Michigan

NORTH

King & MacGregor Environmental Inc.
2520 Woodmeadow SE
Grand Rapids, MI 49546
Phone: (616) 957-1231
43066 Ford Road, Suite 130
Canton, MI 48187
Phone: (734) 354-0594



Background Data Source: Oakland County GIS

Tree 8" d.b.h. or larger

Novi-Designated Woodland Area

0 100' 200'

Note: Tree location is approximate based on KME GPS recording and may vary somewhat from the position as depicted by the Zeimet Wozniak location survey.

FIGURE NUMBER	PROJECT NUMBER
6	13021-1

FIGURE NAME: All Trees 8" d.b.h. or larger

CHECKED	DATE
TBDN	12/8/15
MDP	Clerk Review

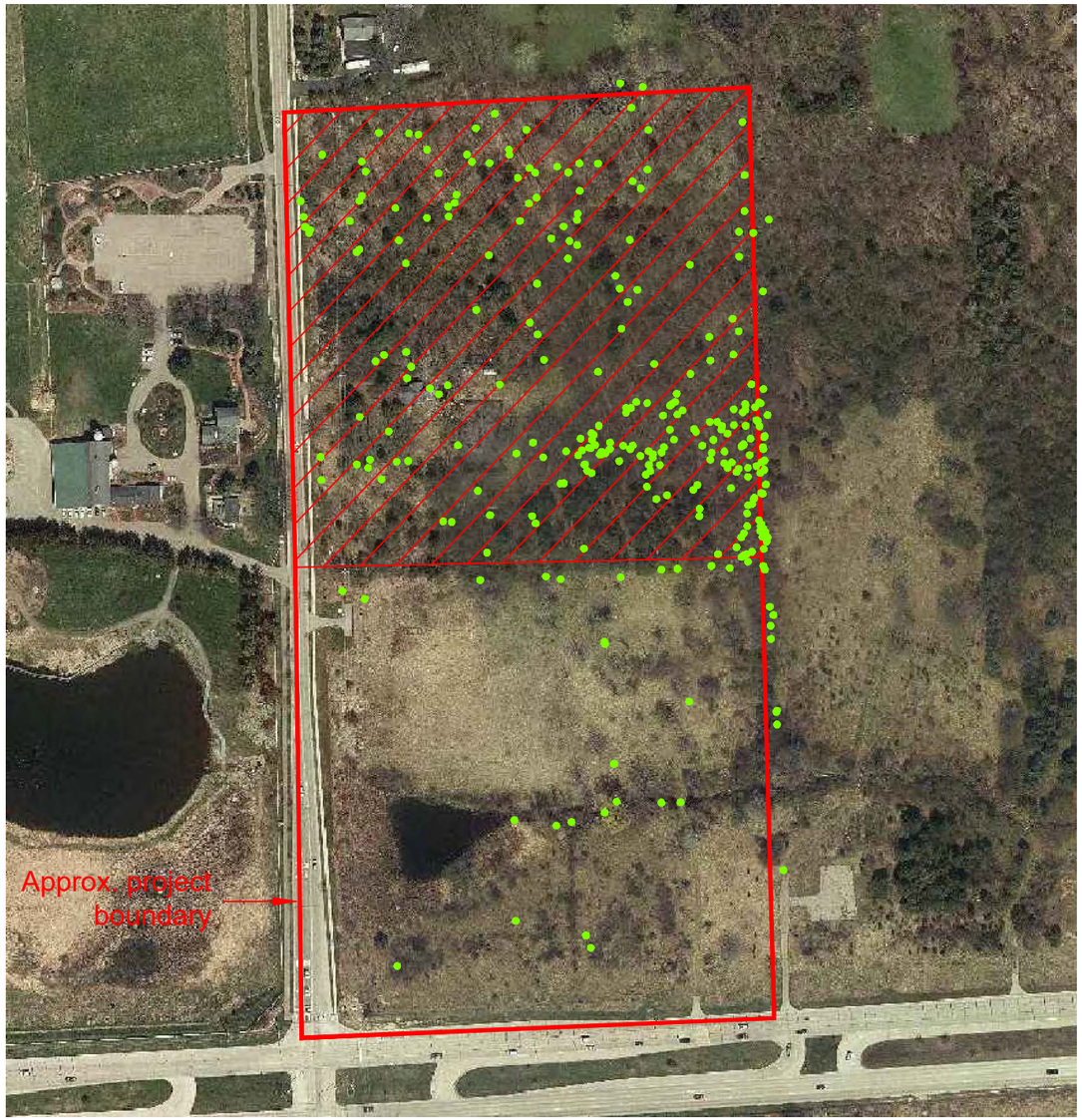
Woodland Evaluation For:

Beacon Hill

City of Novi, Oakland County, Michigan

NORTH

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Canton, MI 48187
Phone: (734) 354-0594



Background Data Source: Oakland County GIS

Tree 8" d.b.h. or larger of desirable species

Novi-Designated Woodland Area

0 100' 200'

Note: Tree location is approximate based on KME GPS recording and may vary somewhat from the position as depicted by the Zeimet Wozniak location survey.

FIGURE NUMBER	FIGURE NAME	PROJECT NUMBER
7	Desirable Trees 8" d.b.h. or larger	13021-1

DESIGNED	DRAWN	CHECKED
MSP	WH	WH

DATE 12/10/15 ISSUED FOR: Client Review

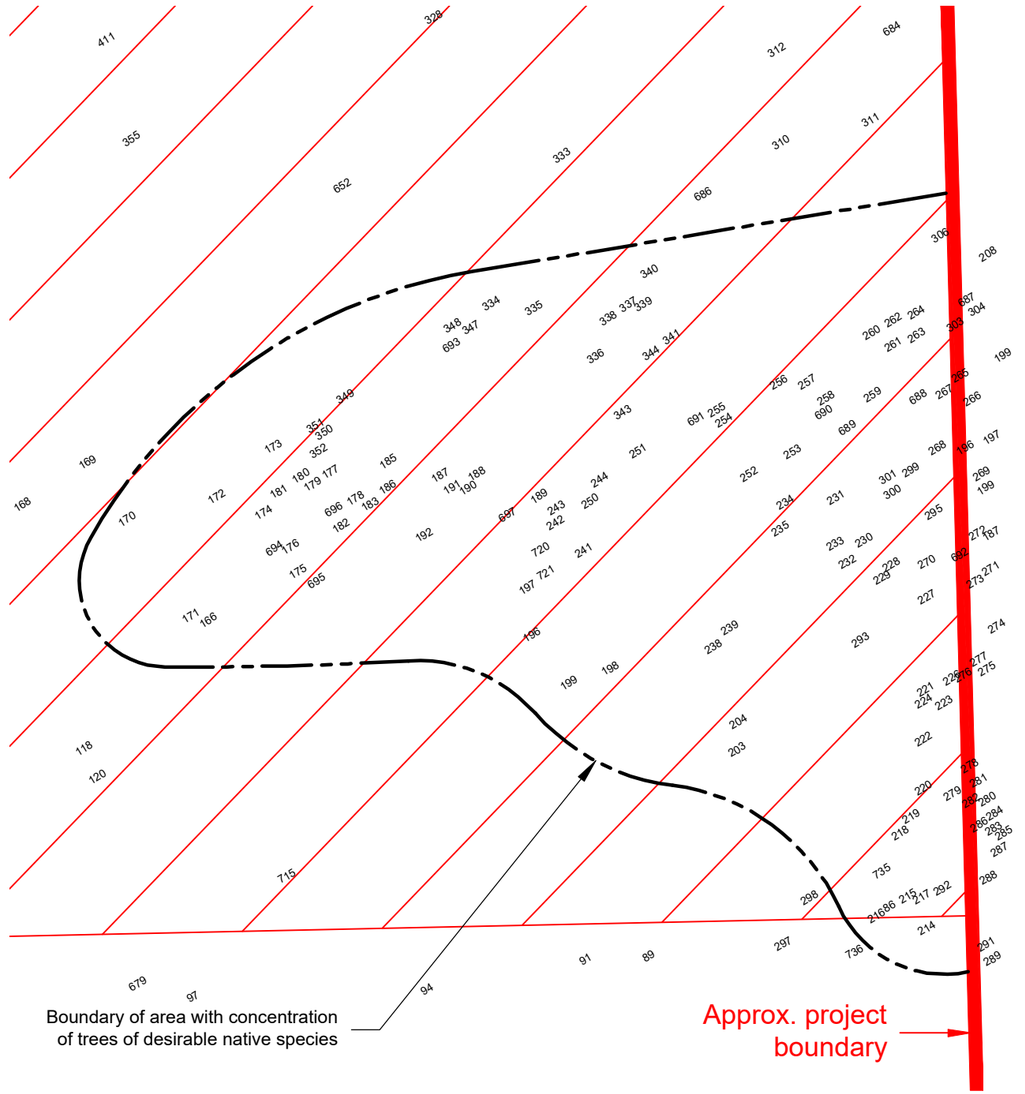
Woodland Evaluation For:

Beacon Hill

City of Novi, Oakland County, Michigan

NORTH

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Phone: (734) 354-6564



270 Tag number of 8" d.b.h. or larger of desirable species

Novi-Designated Woodland Area

0 25' 50'

Note: Tree tag location is approximate based on KME GPS recording and may vary somewhat from the position as depicted by the Zeimet Wozniak location survey.

FIGURE NUMBER	FIGURE NAME	PROJECT NUMBER
7	Desirable Trees 8" d.b.h. or larger	13021-1

DESIGNED	DRAWN	CHECKED
MSP	WH	WH

DATE 12/10/15 ISSUED FOR: Client Review

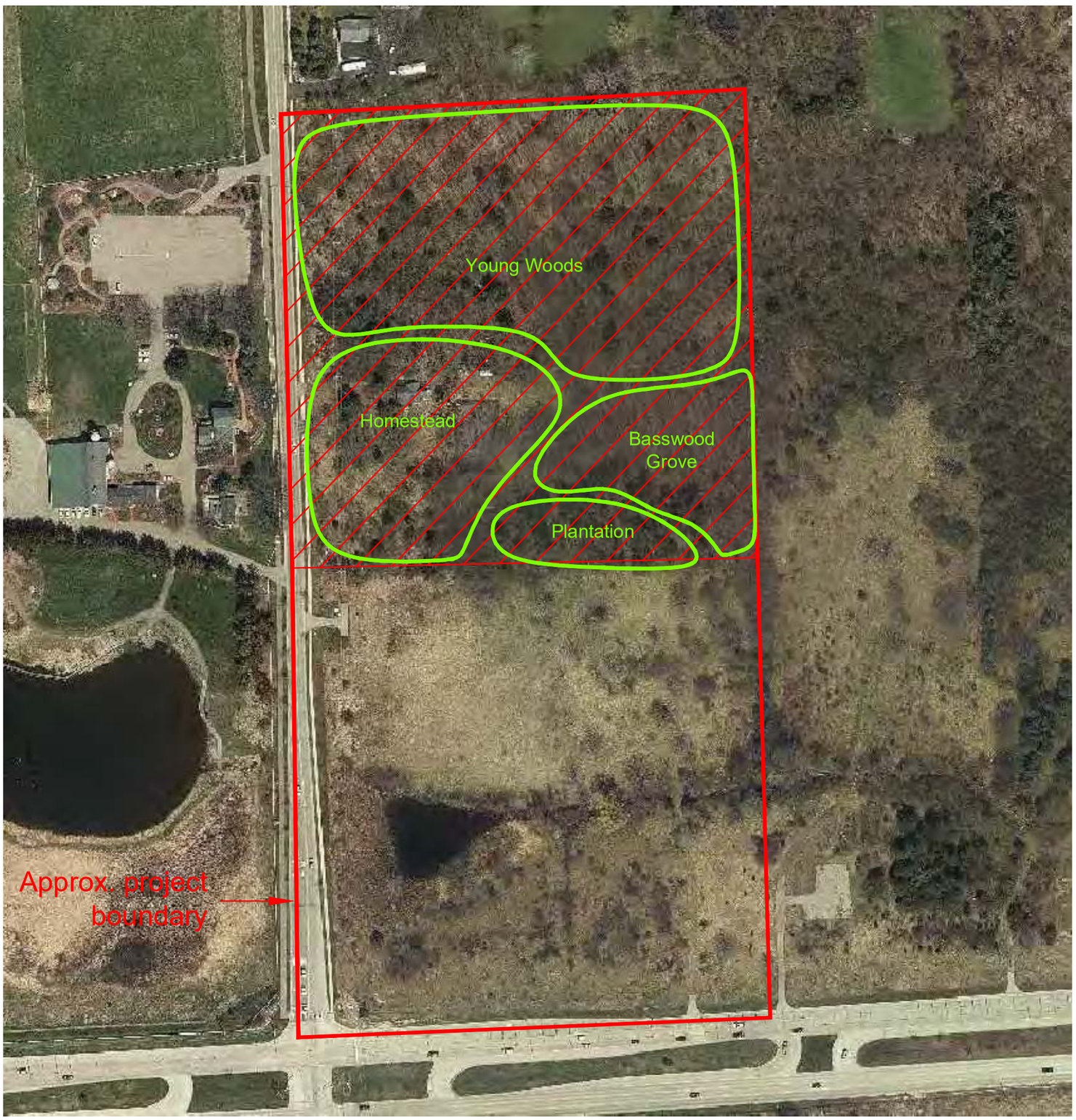
Woodland Evaluation For:

Beacon Hill

City of Novi, Oakland County, Michigan

NORTH

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Background Data Source: Oakland County GIS

Novi-Designated Woodland Area

0 100' 200'

FIGURE NUMBER	8
FIGURE NAME	Woodland Regions
PROJECT NUMBER	13021-1

| | | |

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162 Kuivila Road
Crystal Falls, MI 49920
Phone: 906/367-0171

email: kme@king-macgregor.com

January 11, 2016

Ms. Barbara McBeth
Deputy Director of Community Development
City of Novi
45175 West Ten Mile Road
Novi, MI 48375

Re: Beacon Hill Park Preliminary Site Plan

Dear Ms. McBeth:

This letter is provided on behalf of Ivanhoe Meadowbrook, LLC to address the Woodland Review Comments provided by ECT in their August 3, 2015 Woodland Review of the Concept/Planned Rezoning Overlay Plan (PSP15-0108). Responses to the comments are provided below.

Comment 1. ECT encourages the Applicant to minimize impacts to on-site Woodlands to the greatest extent practicable; especially those trees that may meet the minimum size qualifications to be considered a Specimen Tree. It is unclear how many, if any, on-site trees are proposed to be preserved. In general, the applicant should demonstrate why trees cannot be preserved within the proposed lots (for example, in areas that fall outside of the proposed building envelopes).

The applicant notes this comment and has incorporated these suggestions into the proposed site plan to the extent practicable.

Comment 2. The Applicant should demonstrate that alternative site layouts that would reduce the overall impacts to woodlands have been reviewed and considered. The Applicant should consider modification of the proposed lot boundaries in order to preserve existing woodland areas.

The proposed site plan represents an effort to preserve visually prominent woodlands and wetlands along the western and northern property boundaries while also allowing for the prudent development of the property.

Comment 3. The Applicant is encouraged to provide preservation/conservation easements for any areas of remaining woodland.

The applicant notes this comment.

Comment 4. The Applicant is encouraged to provide woodland conservation easements for any areas containing woodland replacement trees, if applicable.

The applicant notes this comment.

Comment 5. It is currently not clear if the Applicant is proposing on-site Woodland Replacement credits or if the intent is to pay into the City of Novi Tree Fund for the removal of any regulated trees. Please clarify on the Plan.

Proposed tree removals are calculated on drawings produced by Zeimet Wozniak & Associates and submitted as part of this Preliminary Site Plan package. Proposed

replacement credits are calculated on landscape plans produced by Felino Pascual & Associates and submitted as part of this Preliminary Site Plan package.

Comment 6. A Woodland Permit from the City of Novi would be required for proposed impacts to any trees 8-inch d.b.h. or greater. Such trees shall be relocated or replaced by the permit grantee.

The applicant notes this comment and anticipates applying for a Woodland Permit.

Comment 7. A Woodland Replacement financial guarantee for the planting of replacement trees will be required, if applicable. This financial guarantee will be based on the number of on-site woodland replacement trees (credits) being provided at a per tree value of $400.

The applicant notes this comment.

Comment 8. The Applicant will be required to pay the City of Novi Tree Fund at a value of $400/credit for any Woodland Replacement tree credits that cannot be placed on-site.

The applicant notes this comment.

Comment 9. Replacement material should not be located 1) within 10' of built structures or the edges of utility easements and 2) over underground structures/utilities or within their associated easements. In addition, replacement tree spacing should follow the Plant Material Spacing Relationship Chart for Landscape Purposes found in the City of Novi Landscape Design Manual.

The applicant notes this comment.

We trust that this additional information addresses these comments at this point in the Novi review process and we anticipate continuing to work with the City and ECT to more-fully address some of the tree issues highlighted as the project advances through the site plan approvals process.

Sincerely,

Matt Stone-Palmquist

King & MacGregor Environmental, Inc.
Matt Stone-Palmquist, Landscape Architect, Certified Arborist

cc: Gary Shapiro, Ivanhoe Meadowbrook, LLC
Andy Wozniak, Zeimet Wozniak & Associates

TRAFFIC ANALYSIS STUDY

THE IVANHOE COMPANIES

HRC 100 YEARS
CONSULTING ENGINEERS SINCE 1915

PRINCIPALS
George E. Hubbell
Thomas E. Biehl
Walter H. Alix
Keith D. McCormack
Nancy M.D. Faught
Daniel W. Mitchell
Jesse B. VanDeCreek
Roland N. Alix

SENIOR ASSOCIATES
Gary J. Tressel
Kenneth A. Melchior
Randal L. Ford
William R. Davis
Dennis J. Benoit
Robert F. DeFrain
Thomas D. LaCross
Albert P. Mickalich
Timothy H. Sullivan

ASSOCIATES
Jonathan E. Booth
Michael C. MacDonald
Marvin A. Olane
Marshall J. Grazioli
James F. Burton
Donna M. Martin
Charles E. Hart
Colleen L. Hill-Stramsak
Bradley W. Shepler
Karyn M. Stickel

HUBBELL, ROTH & CLARK, INC.
OFFICE: 555 Hulet Drive
Bloomfield Hills, MI 48302-0360
MAILING: PO Box 824
Bloomfield Hills, MI 48303-0824
PHONE: 248.454.6300
FAX: 248.454.6312
WEBSITE: www.hrc-engr.com
EMAIL: info@hrc-engr.com

January 8, 2015

Ivanhoe Meadowbrook LLC
c/o Ivanhoe Companies
6689 Orchard Lake Road #314
West Bloomfield, MI 48322

Attn: Mr. Gary Shapiro

Re: Beacon Hill Park — HRC Job No. 20150819.02
Traffic Impact Study

Dear Mr. Shapiro:

At your request, Hubbell, Roth & Clark, Inc. (HRC) prepared a traffic impact study for the proposed Beacon Hill Park in the City of Novi, Michigan. The site plan is shown in **Attachment A**. To meet the requirements of the City of Novi, HRC completed the following tasks:

- Reviewed the AECOM traffic review letter, dated 8/3/15, to confirm our scope of services.
- Provided a description of the adjacent roadway system.
- Utilized turning movement counts taken at the intersection of 12 Mile and Meadowbrook on 6/10/14.
- Utilized 24 hour counts taken from the RCOC Traffic database.
- Forecast background growth based on build out date.
- Estimated the trips to be generated by the proposed land use using the techniques in the Institute of Transportation Engineer's Trip Generation Manual. Estimated trips generated for two future concepts before selecting one concept to analyze further.
- Distributed and assigned the site generated trips to the adjacent roadway system. Take into account the pass-by trip effect.
- Conducted a capacity analyses for existing, background, and future conditions for the AM and PM peak hours using Synchro 9 software on the adjacent roadway network using the techniques outlined in the Transportation Research Board Highway Capacity Manual.
- Determined if site plan meets access management policies adopted by the City of Novi.
- Determined any road improvements necessary to mitigate the impact of additional traffic on the adjacent roadway system.
- Conducted a turning lane warrant study to determine a taper and/or turning lane are required at the site driveways.
- Prepared a letter report with our findings and recommendations.

Existing Roadway System

The site for Beacon Hill Park is located on the northeast corner of 12 Mile Road and Meadowbrook Road. Access to the site will be from both streets. The site location is shown in **Figure 1.**



Figure 1. Location Map

Twelve Mile Road is a 6-lane boulevard with a posted speed of 45 mph. Twelve Mile Road is classified an Other Principal Arterial and is under the jurisdiction of the Road Commission for Oakland County (RCOC). Approximately 0.4 mile to the east is an interchange with M-5. There is a dedicated right turn lane (250 feet in length) on westbound 12 Mile Road at Meadowbrook. The traffic signals are on mast arms and the traffic signal is operated through RCOC's FAST-TRAC program (Faster And Safer Travel Through Routing and Advanced Controls) operating with Sydney Coordinated Adaptive Traffic Control System (SCATS). Meadowbrook Road is a 2-lane road with a posted speed of 30 mph. Meadowbrook is classified an Urban Minor Arterial and is under the jurisdiction of the City of Novi. There is a dedicated right turn lane (250 feet in length) on southbound Meadowbrook. Because 12 Mile Road is a boulevard, no direct left turns are permitted; all left turning vehicles must use crossovers. Both roads have curb and gutters.

Existing Traffic Volumes

HRC utilized the Average Annualized Daily Traffic (AADT) from the RCOC website. The 2014 AADT on Meadowbrook is 4,969 northbound and 1,894 southbound. The 2014 AADT on 12 Mile Road is 13,125 eastbound and 15,143 westbound. The summary data is provided in **Attachment B**.

Turning movement counts were taken by HRC at the intersection of 12 Mile Road and Meadowbrook Road on June 10, 2014. Counts were collected for four hours from 7:00 – 9:00 AM and from 4:00 – 6:00 PM. The AM peak hour is 7:45-8:45 AM and the PM peak hour is 4:45-5:45 PM. **Table 1** summarizes the peak hour turning movement counts. The complete turning movement counts are provided in **Attachment C**.

Table 1. Turning Movement Counts at Meadowbrook & 12 Mile

Peak Hour	SB Meadowbrook		WB 12 Mile		NB Meadowbrook		EB 12 Mile		Intersection Total
	TH	RT	TH	RT	TH	RT	TH	RT	
AM	211	56	636	43	103	362	1284	387	3082
PM	156	44	2183	111	235	545	239	87	4562

Background Traffic Growth

HRC proposed to use a growth rate of 1% per year for this study. This assumption was based on historic AADT data and annual growth trends provided by RCOC. **Table 2** shows that the annual rates vary. Most recently, the traffic volumes on 12 Mile Road are increasing slowly while the reverse is true on Meadowbrook Road. An average is difficult to estimate so a small growth rate was used. The development has a full build out date of late 2017, so a background growth was used for three years as the volume data is from 2014.

Table 2. Annual Growth Trend in Study Area

Approach	2005-2008	2008-2009	2009-2011	2011-2014
WB 12 Mile	14%	-7%	7%	1%
EB 12 Mile	3%	-10%	0%	1%
SB Meadowbrook	-2%	-	12%	-4%
NB Meadowbrook	-4%	-	12%	-6%

Trip Generation

One of the most critical elements of a traffic study is estimating the amount of traffic to be generated by a proposed development. This is usually done by using trip generation rates or equations to provide an estimate of all future trips generated by a proposed development.

Rates are commonly expressed in trips per unit of development. For example, trips per dwelling unit are commonly used for residential developments, while trips per 1,000 square feet of gross floor area are used

for offices and retail. Equations provide a direct estimate of trips based upon development units being multiplied in a mathematical relationship.

Trips are defined as a single or one directional movement with either the origin or destination of the trip inside the study site. Thus, a car entering and leaving a site would be recorded as generating two trips. Trip generation estimates are often the most critical factors in assessing impacts and needs of a proposed development.

There are several sources for trip generation rates and equations, which are based on data collected from locations in the United States and Canada. These are compilations of data that have been gathered over many years for various land uses. National data sources are starting points in estimating the amount of traffic that may be generated by a specific building or land use. Whenever possible, the National rates should be adjusted to reflect local or forecasted conditions. These National sources are not intended to be used without question, deviation or sound judgment. They often reflect what are supposed to be the average or typical conditions. Data collected from local sites may be more representative than National averages of other developments within the area.

The most widely used source of national trip generation data is the Trip Generation Manual, published by the Institute of Transportation Engineers (ITE). The information in this report is almost solely derived from suburban and urban sites. Data included in trip generation was obtained from actual driveway counts of vehicular traffic entering and exiting the site. The eighth edition contains more than 4,800 data sets from individual trip generation studies. The report also includes discussions on the application and use of trip generation rates and equations; descriptions of the characteristics of each land use; maximum/minimum average rates for weekdays, weekends and peak hours of the generator and adjacent street traffic; and additional statistical data regarding data variability.

HRC was asked to provide trip generation for two concepts for the 21.15 acre site. The concepts included:

1. Proposed 42 single family homes, a fast casual restaurant with a drive-thru window, a bank with a drive-thru window, a high-turnover restaurant, and retail
2. Proposed 42 single family homes, a fast casual restaurant with a drive-thru window, and a small shopping plaza

HRC selected the most appropriate ITE Land Use Codes for the comparison. An ITE Land Use Code does not exist for a fast casual type restaurant with a drive thru window, i.e. Tim Horton's or Panera, so the Fast Food land use was used to be conservative.

Table 3 provides the trip generation for the two concepts.

Table 3. Trip Generation By Concept for Beacon Hill Park Site

Concept	ITE Code	ITE Land Use Description	Variable	Units	Daily Trips	AM Peak Hour Trips		PM Peak Hour Trips	
						IB	OB	IB	OB
1.	210	Single Family	DU	42	473	10	29	30	18
	826	Specialty Retail	1000 SF GFA	3.7	164	0	0	4	6
	912	Drive-in Bank	1000 SF GFA	3.25	481	22	17	40	39
	932	Hi-Turnover Restaurant	1000 SF GFA	2.4	305	14	12	14	10
	934	Fast Casual w/drive thru*	1000 SF GFA	2.2	1091	51	49	37	35
	TOTAL				**2,413**	**97**	**107**	**125**	**108**
2.	210	Single Family	DU	42	473	10	29	30	18
	826	Specialty Retail	1000 SF GFA	16.5	731	-	-	20	25
	934	Fast Casual w/drive thru*	1000 SF GFA	2.5	1240	58	56	43	39
	TOTAL				**2,444**	**68**	**85**	**93**	**82**

*Fast Food with Drive Thru was used because no land use was available for Fast Casual with Drive Thru

To compare the proposed site plan with the worst case scenario if the entire property were developed as commercial, a concept was developed showing only commercial land uses. Trip generation was calculated for the 21.15 acre site if it was developed into a shopping center with several stores, outlets, and a gasoline station with a convenience store (see **Table 4**).

Table 4. Trip Generation for Full Retail Alternative

ITE Code	ITE Land Use Description	Variable	Units	Daily Trips	AM Peak Hour Trips		PM Peak Hour Trips	
					IB	OB	IB	OB
820	Shopping Center	1000 SF GLA	156.5	9086	93	57	388	421
945	Gasoline Station	Fueling Position	8	1302	41	40	54	54
TOTAL				**10,388**	**134**	**97**	**442**	**475**

The commercial only alternative would generate more than 4 times the number of daily trips as the proposed development.

Pass-By and Diverted Linked Trips

The trip generation rates and equations contained in the ITE manuals were derived from actual measurements of traffic on the driveways of land uses or buildings. However, in some cases, the driveway volume at a generator is different from the amount of traffic added to the street system. Buildings such as retail establishments, restaurants, banks and drug stores attract a portion of their trips from traffic passing the site on the way from one location to another. Trip making where this phenomenon occurs can be broken down into two categories of trips: 1) Primary Trips and 2) Pass-by and Diverted Linked Trips. These trips are defined as follows:

Primary Trips are trips made for the specific purpose of visiting the generator. The stop at that generator is the primary reason for the trip. For example, going from home to church is a primary trip set.

Pass-by and Diverted Link Trips are trips with more than one purpose. Pass-by trips are trips made as intermediate stops on the way from an origin to a primary trip destination. Pass-by trips are attracted from traffic passing the site on an adjacent street that contains direct access to the generator. These trips do not require a diversion from any other roadway. Diverted link trips are trips attracted from the traffic volume on roadways within the vicinity of the generator but which require a diversion from that roadway to another roadway to gain access to the site. These roadways could include streets or freeways adjacent to the generator, but without access to the generator.

It is essential that this phenomenon be considered when examining the traffic impact of a development on the street system. The pass-by and diverted link trip estimation is calculated as a percentage of the total number of trips entering the generator. The results of the pass-by trip percentages analyzed can be enhanced further with a methodology that also accounts for the effects of the magnitude of the passing traffic stream volume on the adjacent road system.

All the options have proposed land uses that are affected by the pass-by and diverted link trip phenomenon. HRC followed guidelines for Pass-By Trips provided by the Third Edition of the ITE Trip Generation Handbook. The effect of the pass-by link trip reduction will be seen in the future at the intersection of Meadowbrook and 12 Mile Roads. **Table 5** provides the percentages of pass-by trips for the proposed land use and the new trips.

Table 5. AM & PM Peak Hour Pass-by Trips

Concept	ITE Land Use Code	Factor	AM Peak Hour Trips		PM Peak Hour Trips	
			In	Out	In	Out
1.	912-Drive-in Bank	Percent Reduction	*-29%*		*-35%*	
		New Trips	16	12	26	25
	932-Hi-turnover Restaurant	Percent Reduction	*n/a*		*-43%*	
		New Trips	14	12	8	6
	934-Fast food with drive thru	Percent Reduction	*-49%*		*-50%*	
		New Trips	26	25	18	17
2.	934-Fast food with drive thru	Percent Reduction	*-49%*		*-50%*	
		New Trips	30	29	21	19

Because Concept 1 will generate slightly higher peak hour trips, the rest of the analysis was completed for Concept 1 only.

Tables 6 & 7 summarize the total new trips expected to be generated by Concept 1 during peak hours.

Table 6. AM Peak Hour Total Pass-by and New Trips

ITE Code	Land Use	Total Trips	Pass-by Trip Ratio	Pass-by Trips	New Trips	Distribution	
						In	Out
210	Single Family	39	N/A	0	39	10	29
826	Specialty Retail	0	N/A	0	0	0	0
912	Drive-in Bank	39	29%	11	28	16	12
932	Hi-Turnover Restaurant	26	N/A	0	26	14	12
934	Fast Casual w/drive thru*	100	49%	49	51	26	25
TOTAL		**204**		**60**	**144**	**66**	**78**

*Fast Food with Drive Thru was used because no land use was available for Fast Casual with Drive Thru

Table 7. PM Peak Hour Total Pass-by and New Trips

ITE Code	Land Use	Total Trips	Pass-by Trip Ratio	Pass-by Trips	New Trips	Distribution	
						In	Out
210	Single Family	48	N/A	0	48	30	18
826	Specialty Retail	10	N/A	0	10	4	6
912	Drive-in Bank	79	35%	28	51	26	25
932	Hi-Turnover Restaurant	24	43%	10	14	8	6
934	Fast Casual w/drive thru*	72	50%	36	36	18	18
TOTAL		**233**		**74**	**159**	**86**	**73**

*Fast Food with Drive Thru was used because no land use was available for Fast Casual with Drive Thru

To be conservative, all traffic generated by the development has been assumed to be automobile traffic, while it is anticipated that there will be pedestrian traffic between the residential and commercial portions of the development and between the commercial portion of the development and South University (southwest corner of 12 Mile/Meadowbrook).

Trip Distribution and Assignment

Traffic expected to be generated by a project must be distributed and assigned to the roadway system so that the impacts of the proposed project on roadway links and intersections within the study area can be analyzed. After an estimate of the total traffic into and out of the site has been made, that traffic must be

distributed and assigned to the roadway system. The trip distribution step produces estimates of trip origins and destinations. The assignment step produces estimates of the amount of site traffic that will use certain access routes between their origin and destination.

The trips expected to be generated by Concept 1 were assigned to the road. Trips were distributed based on the directional split of traffic at the intersection of Meadowbrook & 12 Mile Roads for the peak hours studied. The split varied by inbound and outbound during the AM and PM peak hours. **Table 8** shows the how the trips were assigned to road network.

Table 8. Traffic Split Based on Volumes at Meadowbrook & 12 Mile

Direction	AM Peak Hour	PM Peak Hour
North	15%	17%
South	9%	5%
East	54%	28%
West	22%	50%
Total	100%	100%

Overall trip assignment to the roadway for the AM and PM peak hours are shown in the two figures provided in **Attachment D**.

Capacity Analysis at Intersection

At signalized intersections, the Highway Capacity Manual (HCM) defines level of service in terms of control delay. Delay may be measured in the field, or it may be estimated. Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the volume to capacity ratio for the lane group or approach in question. **Table 9** indicates the control delay criteria used for determining level of service (LOS) for signalized intersections.

Table 9. Level of Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (Seconds)
A	<10
B	>10 to ≤ 20
C	>20 to ≤ 35
D	>35 to ≤ 55
E	>55 to ≤ 80
F	>80

Level of Service A describes operations with very low control delay up to 10.0 sec per vehicle. This occurs when progression is exceptionally favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of Service B describes operations with control delay in the range of 10.1 to 20.0 sec per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for Level of Service A, causing higher levels of average delay.

Level of Service C describes operations with control delay in the range of 20.1 to 35.0 sec per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level of Service D describes operations with control delay in the range of 35.1 to 55.0 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level of Service E describes operations with control delay in the range of 55.1 to 80.0 sec per vehicle. This is considered to be above the limit of acceptable delay for an urban roadway in the study area. These high delay values generally indicate poor progression, long cycle lengths, and high volume to capacity ratios. Individual cycle failures are frequent occurrences.

Level of Service F describes operations with control delay in excess of 80.1 sec per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over saturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume to capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

A capacity analysis was conducted at the intersection of Meadowbrook and 12 Mile Road using Synchro 9 software during the AM and PM peak hours for existing, background, and future traffic volumes. **Table 10** shows the background growth and development traffic assigned that were used in the traffic model.

Table 10. Turning Movement Counts at Meadowbrook & 12 Mile

Peak Hour	Scenarios	SB Meadowbrook		WB 12 Mile		NB Meadowbrook		EB 12 Mile		Total
		TH	RT	TH	RT	TH	RT	TH	RT	
AM	Existing	211	56	636	43	103	362	1284	387	3082
	Background	6	2	19	1	3	11	39	12	93
	Future	3	31	15	15	1	5	39	4	113
	Total	**220**	**89**	**670**	**59**	**107**	**378**	**1362**	**403**	**3288**
PM	Existing	156	44	2183	111	235	545	239	87	3600
	Background	5	1	65	3	7	16	7	3	107
	Future	2	23	35	31	3	3	61	3	161
	Total	**163**	**68**	**2283**	**145**	**245**	**564**	**307**	**93**	**3881**

Results of the capacity analysis of existing, background, and future traffic volumes for Concept 1 at the intersection of Meadowbrook and 12 Mile Road during the AM and PM peak hours are provided in **Table 11**. The Synchro reports are provided in **Attachment E**.

Table 11. Level of Service Results by Scenario and Peak Hour

Peak Hour	Approach & Movement		Existing		Background		Future	
			LOS	Delay sec/veh	LOS	Delay sec/veh	LOS	Delay sec/veh
AM	WB	TH	A	9.8	B	12.5	B	13.9
		RT	A	6.0	B	10.9	B	12.0
	SB	TH	C	31.9	C	32.1	C	32.1
		RT	C	27.5	C	27.5	C	27.8
	Overall		**B**	**14.5**	**B**	**16.3**	**B**	**17.4**
	EB	TH	B	16.5	B	16.7	B	17.0
		RT	B	14.4	B	14.5	B	14.6
	NB	TH	C	29.0	C	29.1	C	29.1
		RT	D	41.2	D	43.0	D	44.2
	Overall		**B**	**19.1**	**B**	**19.5**	**B**	**19.8**
PM	WB	TH	B	18.4	B	19.0	B	19.4
		RT	A	9.7	A	9.8	A	9.9
	SB	TH	C	34.8	C	34.9	C	35.0
		RT	C	32.1	C	32.1	C	32.7
	Overall		**B**	**17.8**	**B**	**18.0**	**B**	**18.3**
	EB	TH	A	9.7	A	9.7	A	9.9
		RT	A	9.6	A	9.6	A	9.7
	NB	TH	D	36.9	D	38.8	D	39.0
		RT	D	35.4	D	38.2	D	42.9
	Overall		**C**	**24.7**	**C**	**27.2**	**C**	**28.6**

Because the 12 Mile/Meadowbrook intersection is controlled by an adaptive traffic signal, the signal timing is continually optimized based on the flow of traffic. Background and Future traffic scenarios have optimized signal timing.

Capacity Analysis at Driveways

HRC conducted a capacity analysis at the three site driveways using Synchro 9 software. The intersections were analyzed following the procedures for unsignalized intersections as outlined in the

2000 Highway Capacity Manual. **Table 12** indicates the control delay criteria used for determining level of service (LOS) for un-signalized intersections.

Table 12. Level of Service Criteria for Un-Signalized Intersections

Level of Service	Control Delay per Vehicle (Seconds)
A	<10
B	>10 to ≤ 15
C	>15 to ≤ 25
D	>25 to ≤ 35
E	>35 to ≤ 50
F	>50

The capacity analysis at the proposed driveways during the AM and PM peak hours is provided in **Table 13**. The Synchro reports are provided in **Attachment E**. Given the high volume of westbound traffic in the PM peak hour, the vehicles leaving both commercial driveways will experience delays.

Table 13. Level of Service by Driveway and Movement in AM and PM Peak Hours

Driveway & Movement		AM Peak		PM Peak	
		LOS	Delay sec/veh	LOS	Delay sec/veh
Residential on Meadowbrook	SB	A	0.1	A	0.2
	WB	B	11.6	B	13.1
Fast Food/Retail/Restaurant on 12 Mile	SB	B	10.3	C	19.1
Bank on 12 Mile	SB	B	10.5	C	21.5

Right Lane Warrant

HRC conducted an analysis of the need for a right lane or taper at the development driveways using Figure 6-3 from the RCOC *Permit Rules, Specifications And Guidelines, adopted March 14, 2013.* There is no need for a right turn lane or taper for northbound Meadowbrook Road at the proposed residential driveway. The two commercial driveways on westbound 12 Mile do meet the warrants for a right turn taper. See **Figure 3**.

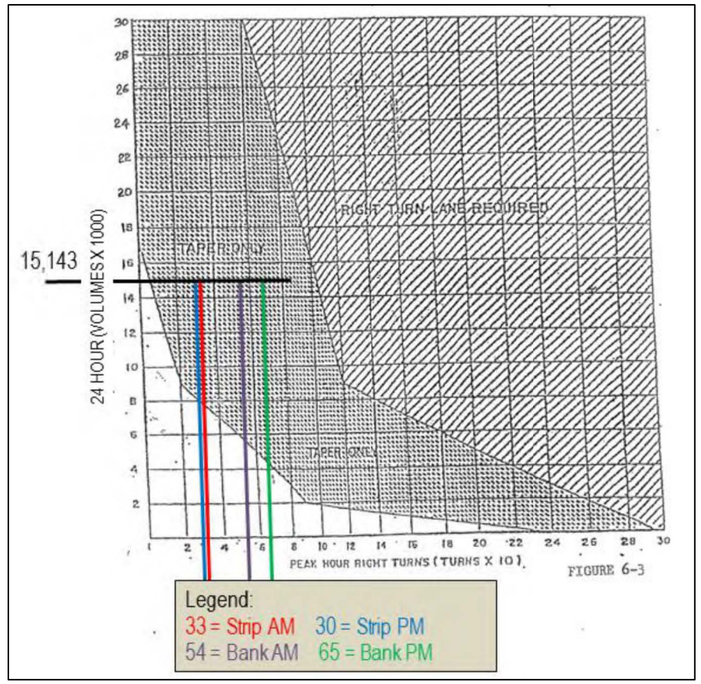


Figure 3. RCOC Figure 6-3, Warrants for Right Turn Lane or Taper

The figure is typically used for four or five lane roads and provides a conservative analysis based on the six lane boulevard on 12 Mile Road. The 12 Mile Road west driveway already has a taper and the east driveway will be too close to the property line to add a right turn taper.

Summary and Recommendations

The traffic study results are as follows:

1. Trip generation projections show that the trips from the Concept 1site plan are less than 5% of the total volume of the adjacent intersection during the peak hours.
2. To be conservative, background traffic was projected to grow at 1% annually.
3. The 12 Mile/Meadowbrook intersection operates at an acceptable level of service during both AM and PM peak hours.
4. All development driveways (Meadowbrook and 12 Mile) operate at acceptable levels of service during both AM and PM peak hours. Most development traffic will come from 12 Mile Road and further south.
5. Both driveways onto 12 Mile Road meet warrants for a right turn taper according to RCOC Permit Guidelines. The 12 Mile Road west driveway already has a taper and the east driveway will be too close to the property line to add a right turn taper.

If you have any questions or require any additional information, please contact the undersigned.

Very truly yours,

HUBBELL, ROTH & CLARK, INC.

Colleen Hill-Stramsak, P.E., PTOE
Transportation Department Head

CH-S/bjl/kk
Attachments A-Site Plan
B-AADT
C-Turning Movement Counts
D-Trip Assignment Figures
E-Synchro Reports
F-Resume of Preparer
pc: HRC; File

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February 18, 2016

Ivanhoe Meadowbrook LLC
c/o Ivanhoe Companies
6689 Orchard Lake Road #314
West Bloomfield, MI 48322

Attn: Mr. Gary Shapiro

Re: Beacon Hill Park HRC Job No. 20150819.23
Trip Generation Comparison

Dear Mr. Shapiro:

At your request, Hubbell, Roth & Clark, Inc. (HRC) prepared a trip generation comparison for the proposed Beacon Hill Park in the City of Novi, Michigan.

HRC was asked to compare trip generation for three alternative site plans for the south section of the Beacon Hill Park development that corresponds to the commercial portion of the development. The residential portion of the development is the same for all three site plans. The three site plans show a mix of commercial uses that range in size from 11,500 to 22,000 square feet. The three site plans compared are:

1. Mixed commercial ï drive-in bank, restaurants, and retail (as evalu ated in the Beacon Hill Park Traffic Impact Study dated 1/8/16)
   a. fast casual restaurant with drive thruï 2,200 square feet
   b. specialty retail centerï 3,700 square feet
   c. drive-in bank ï 3,250 square feet
   d. hi-turnover (sit down) restaurantï 2,400 square feet
2. Mixed commercial ï drive-in bank, restaurants, and retail (as evaluated in the Beacon Hill Park Traffic Impact Study dated 1/8/16)
   a. fast casual restaurant with drive thruï 2,200 square feet
   b. specialty retail centerï 16,100 square feet
3. Single commercial - specialty retail centerï 22,000 square feet

The attached table shows the total number of trips generated by all three scenarios compared. Scenario 1, as studied in the TIS, generated the highest number of peak hour trips of the three scenarios and found no impact to operations of the adjacent roadways. In my professional opinion, any of the three alternatives could be constructed and the trips generated accommodated by the adjacent roadways and the signalized intersection of 12 Mile and Meadowbrook Roads.

If you have any questions or require any additional information, please contact me.

Very truly yours,

HUBBELL, ROTH & CLARK, INC.

Colleen Hill-Stramsak, P.E., PTOE
Associate ï Transportation Department

CHS/chs
Attachment
pc: HRC; File

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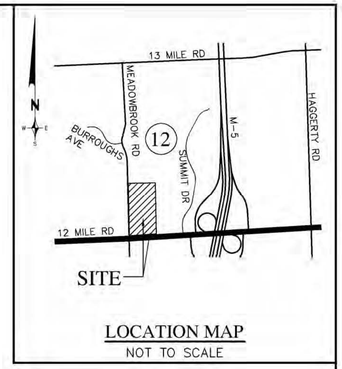
Trip Generation Comparison for the Beacon Hill Park Development
Novi, MI
2/18/2016
9th Edition

Scenario	ITE Code	Land Use	Unit	Daily Trip Rate	AM Peak Hour Trip Rate In	AM Peak Hour Trip Rate Out	PM Peak Hour Trip Rate In	PM Peak Hour Trip Rate Out	Daily Trips	AM Peak Hour Trips In	AM Peak Hour Trips Out	PM Peak Hour Trips In	PM Peak Hour Trips Out
1	934	Fast-Food with Drive Thru	1000 SF GFA	Rate	51%	49%	52%	48%	*2.2*	*1091*	*100*	*72*	*37*	*35*
		Adjacent Street Traffic												
	210	Single-Family Detached Housing	Dwelling Units	Equation	25%	75%	63%	37%	*42*	*473*	*39*	*48*	*10*	*18*
		Adjacent Street Traffic												
	826	Specialty Retail Center	1000 SF GFA	Rate	25%	75%	63%	37%	*3.7*	*164*	*10*	*30*	*4*	*6*
		Adjacent Street Traffic												
	912	Drive-in Bank	1000 SF GFA	Rate	57%	43%	50%	50%	*3.25*	*481*	*39*	*40*	*0*	*79*
		Adjacent Street Traffic												
	932	Hi-Turnover (sit down) restaurant	1000 SF GFA	Rate	55%	45%	60%	40%	*2.4*	*305*	*26*	*24*	*14*	*10*
		Adjacent Street Traffic												
									Total	**2,209**	**100**	**72**	**14**	**12**
											107	**125**	**108**	
2	934	Fast-Food with Drive Thru	1000 SF GFA	Rate	51%	49%	52%	48%	*2.2*	*1091*	*100*	*72*	*37*	*35*
		Adjacent Street Traffic												
	210	Single-Family Detached Housing	Dwelling Units	Equation	25%	75%	63%	37%	*42*	*473*	*39*	*48*	*10*	*18*
		Adjacent Street Traffic												
	826	Specialty Retail Center	1000 SF GFA	Rate	N/A		44%	56%	*16.1*	*714*	*0*	*0*	*19*	*25*
		Adjacent Street Traffic												
									Total	**2,278**	**61**	**78**	**86**	**78**
											39	*48*		
3	210	Single-Family Detached Housing	Dwelling Units	Equation	25%	75%	63%	37%	*42*	*473*	*39*	*48*	*10*	*18*
		Adjacent Street Traffic												
	826	Specialty Retail Center	1000 SF GFA	Rate	N/A		44%	56%	*22.0*	*975*	*0*	*0*	*26*	*34*
		Adjacent Street Traffic												
									Total	**1,448**	**10**	**29**	**56**	**52**
													30	*60*

SITE ENGINEERING

THE IVANHOE COMPANIES

PRELIMINARY SITE PLAN FOR
BEACON HILL PARK
BEACON HILL MEADOWS,
THE SHOPPES AT BEACON HILL,
BEACON HILL PARK TRAILHEAD
NOVI, MICHIGAN, SECTION 12



LOCATION MAP
NOT TO SCALE

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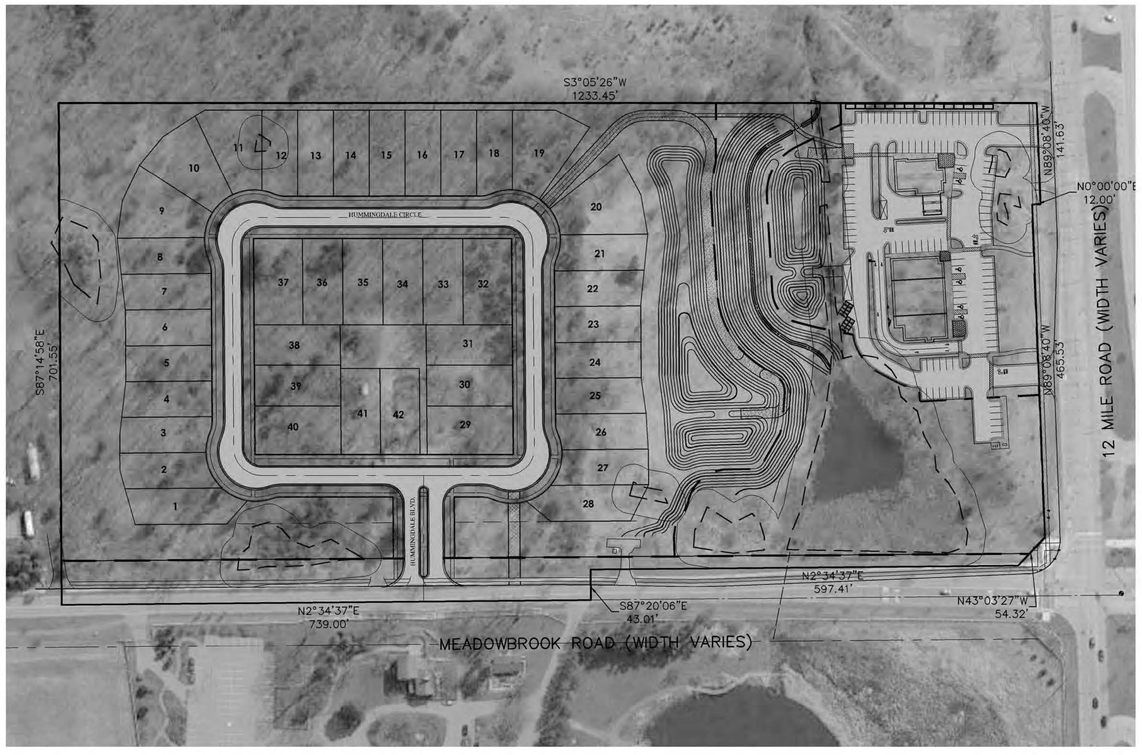
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SHEET INDEX:

CIVIL ENGINEERING PLANS:

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SP-3 TREE SURVEY-TREE REMOVAL PLAN
SP-4 TREE REMOVAL LIST
SP-5 LAND USE PLAN
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SP-11 GRADING & DETENTION PLAN-SHOPPES
SP-12 UTILITY PLAN-SHOPPES
SP-13 STORMWATER MANAGEMENT PLAN
SP-14 WETLAND & BUFFER IMPACT PLAN

WETLAND/STREAM RELOCATION PLANS:

W-1 STREAM RELOCATION & WETLAND RESTORATION-CONCEPTUAL RESTORATION PROGRAM
W-2 WETLAND RESTORATION-DETAILED CONCEPT
W-3 STREAM RELOCATION-DETAILED CONCEPT

LANDSCAPE PLANS:

LS-1 STREET TREE PLANTING PLAN
LS-2 MEADOWS LANDSCAPE PLANTING DETAIL
LS-3 TRAILHEAD LANDSCAPE PLANTING DETAIL
LS-3 SHOPPES LANDSCAPE PLANTING DETAIL
LS-5 ENTRANCE PLANTINGS, SIGN AND WALL MONUNMENT
LS-6 DETAILS AND PLANT MATERIALS LIST

ARCHITECTURAL PLANS:

I/1 CONCEPTUAL RESIDENTIAL ARCHITECTURE
A-1 BUILDING "A" BUILDING ELEVATIONS & FLOOR PLAN
A-2 BUILDING "B" BUILDING ELEVATIONS & FLOOR PLAN

NOTE: ALL WORK SHALL CONFORM TO THE CURRENT CITY OF NOVI STANDARDS AND SPECIFICATIONS.

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PSP SUBMITTAL	1/11/16										

ZEIMET WOZNIAK & ASSOCIATES
Civil Engineers & Land Surveyors
55800 GRAND RIVER AVE., SUITE 100
NEW HUDSON, MICHIGAN 48165
P: (248) 437-5099 F: (248) 437-5222 www.zeimetwozniak.com

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PROJECT SPONSOR:
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COVER SHEET
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

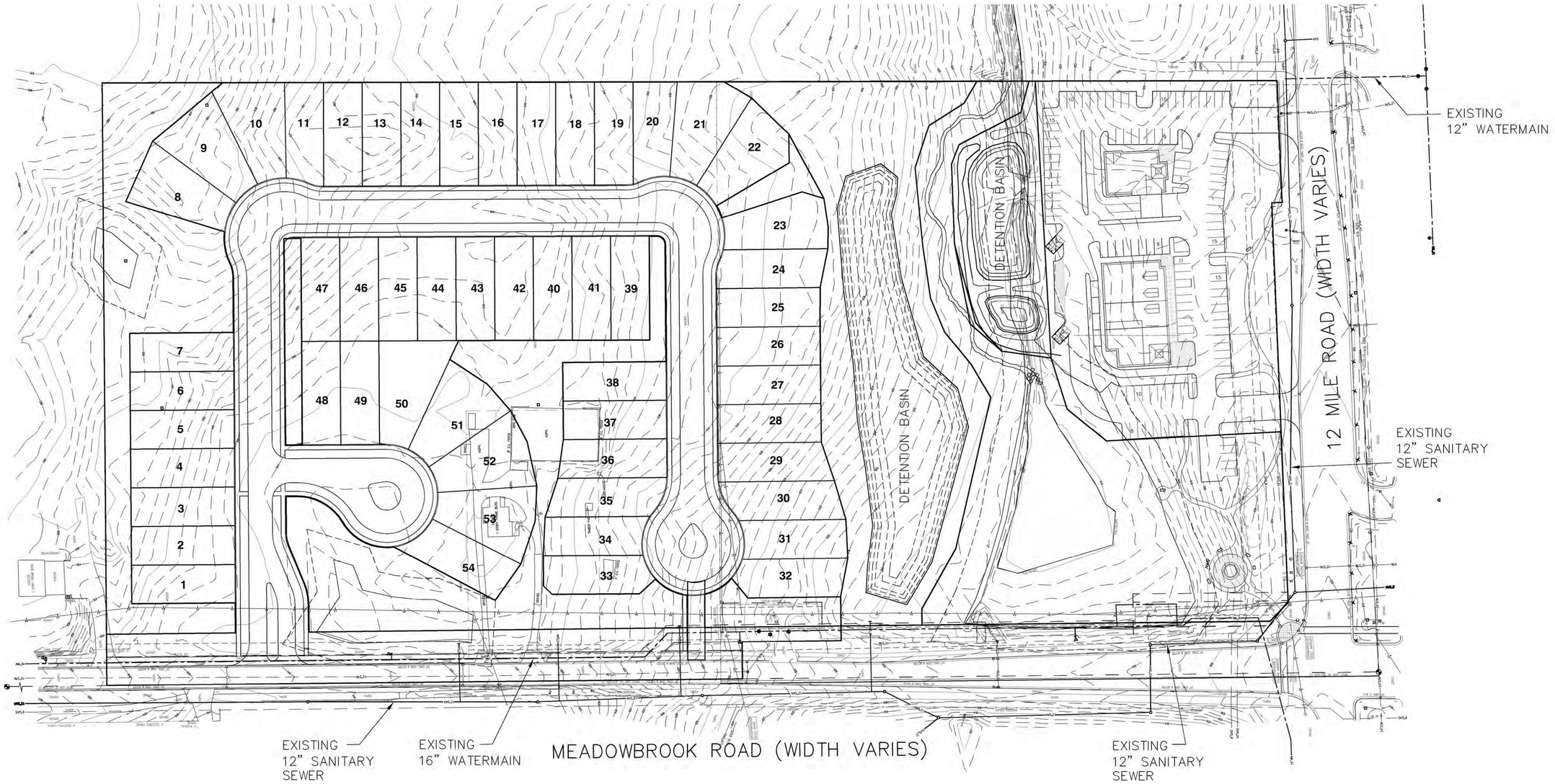
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SCALE: 1" = 60'



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SITE PLAN
BEACON HILL PARK

CITY OF NOVI MICHIGAN

FIELD BOOK

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SCALE: 1" = 60'

0 30' 60' 120'

PRO

RESIDENTIAL
MEADOWS 42 UNITS

COMMERCIAL
SHOPPES 12,000–22,000 S.F (SUBJECT TO FINAL TENANT MIX)

PHASING

RESIDENTIAL
MEADOWS 13.60 ACRES
PARK TRAILHEAD 3.28 ACRES
16.88 ACRES

COMMERCIAL
SHOPPES 3.05 ACRES

PHASE 1

- MEADOWS – COMPLETE CONSTRUCTION INCLUDING MASS GRADING, UNDERGROUND UTILITY INSTALLATION, PAVING, LANDSCAPING AND TREE REPLACEMENT.
- PARK TRAILHEAD – CONSTRUCTION INCLUDING MASS GRADING, STREAM RELOCATION, WETLAND RESTORATION, LANDSCAPING AND TREE REPLACEMENT.
- SHOPPES – MASS GRADING, INCLUDING SEDIMENTATION AND DETENTION BASINS, STORM SEWER WITHIN THE BASINS AND SITE STABILIZATION.

PHASE 2

- SHOPPES – BALANCE OF CONSTRUCTION INCLUDING UNDERGROUND UTILITY INSTALLATION, PAVING, LANDSCAPING, TREE REPLACEMENT AND SITE LIGHTING.
- PARK TRAILHEAD – BALANCE OF CONSTRUCTION INCLUDING PAVING, BENCH AND BIKERACK INSTALLATION AND RESTORATION OF THE DISTURBED AREAS.

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
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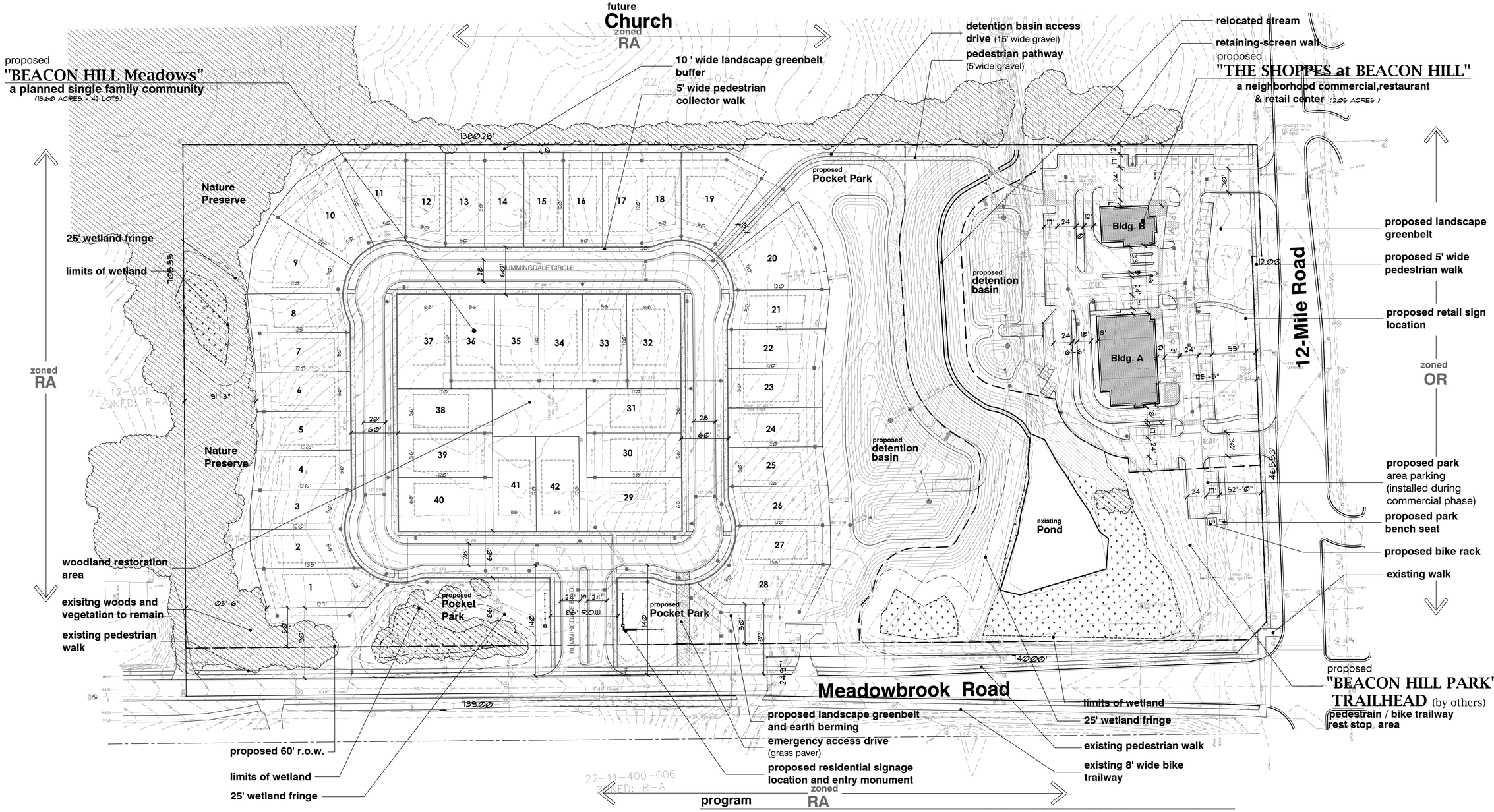
PRO AND PHASING PLAN
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

FIELD BOOK

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site plan for:

"Beacon Hill Park"

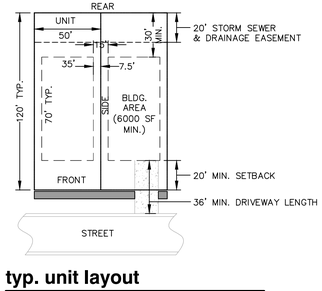
City of Novi, Michigan

north

scale: 0' 30' 60' 120' 180'

program

TOTAL ACRES OF SITE GROSS	21.13 ±
ACRES OF PROPOSED "THE SHOPPES AT BEACON HILL"	3.05
POTENTIAL BUILDING AREA	11,550 S.F.
RETAIL AREA	3,100 S.F.
BANK AREA	3,250 S.F.
RESTAURANT AREA	4,600 S.F.
TOTAL NO. of PARKING REQUIRED for "THE SHOPPES AT BEACON HILL	109
RETAIL PARKING	19 SPACES
(1-SPACE / 200 SF. = 3,100 / 200= 18.5 SPACES)	
BANK PARKING	22 SPACES
(1-SPACE / 150 SF. = 3,250 / 150= 21.61 SPACES)	
RESTAURANT PARKING	68 SPACES
RESTAURANT "A-1" PARKING	32 SPACES
(48-SEATS / 2=24-SPACES + 10 EMPLOYEE/2=5-SPACES + 100 SFFT. WAITING AREA / 15=3.33-SPACES =32.33 SPACES TOTAL)	
RESTAURANT "A-3" PARKING	36 SPACES
(56-SEATS / 2=28-SPACES + 10 EMPLOYEE/2=5-SPACES + 100 SFFT. WAITING AREA / 15=3.33-SPACES =32.33 SPACES TOTAL)	
TOTAL NO. of PARKING PROVIDED for "THE SHOPPES AT BEACON HILL	110
BEACON HILL PARK TRAILHEAD PARKING (INSTALLED DURING COMMERCIAL PHASE)	6 SPACES
ACRES OF "BEACON HILL MEADOWS" SITE AREA	13.6 ±
TOTAL No. OF LOTS	42
TYP. LOT SIZE	50'X 120'
MIN. LOTS WIDTH	50'
TYP CORNER LOT WIDTH	63'
FRONT YARD SETBACK	20'
SIDE YARD SETBACK	15'/15'
REAR YARD SETBACK	30'
DENSITY PER ACRE (MEADOWS)	3.09±
DENSITY PER ACRE (MEADOWS & PARK)	2.49±
TOTAL ACRES OF R.O.W. DEDICATED	1.24 ±
TOTAL ACRES of BEACON HILL PARK TRAILHEAD AREA	
ACRES of BEACON HILL PARK TRAILHEAD AREA	3.28± 8.8± (42%)
ACRES of OPEN SPACE IN BEACON HILL MEADOWS	4.54 ±
ACRES of OPEN SPACE IN THE SHOPPES AT BEACON HILL	.98 ±



typ. unit layout

NO SCALE

FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:



client:
IVANHOE MEADOWBROOK LLC
6689 Orchard Lake Road, Suite 314
West Bloomfield, Michigan 48332
ph. (248) 626-6114

project:
Beacon Hill Park
A planned Single Family and Neighborhood Commercial Retail

project location:
City of Novi, MI

12-Mile Road & Meadowbrook Road

sheet title:
site plan

job no./issue/revision date:

LS15.010.06	SPA	6-26-2015
LS15.008.01	SPA	1-11-2016

drawn by:
JP, KH

checked by:
FP

date:
1-4-2016

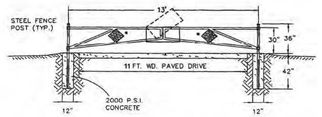
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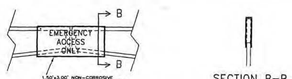
3 WORKING DAYS
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For free location of public utility lines

The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no:
LS16.008.01

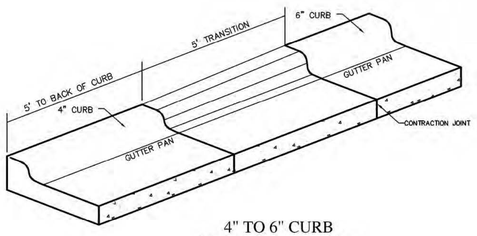
sheet no:
SP-6





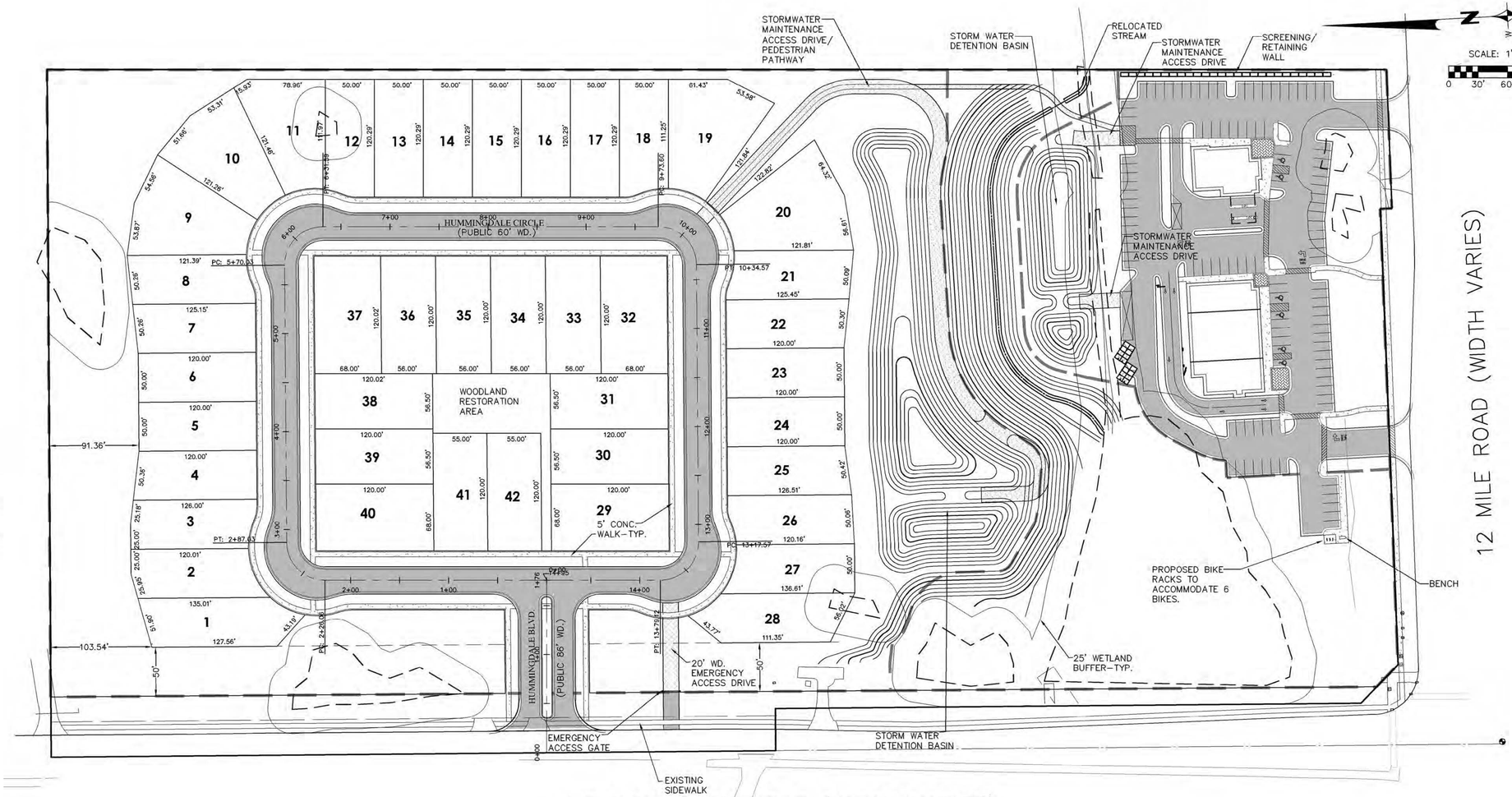
EMERGENCY ACCESS GATE DETAIL

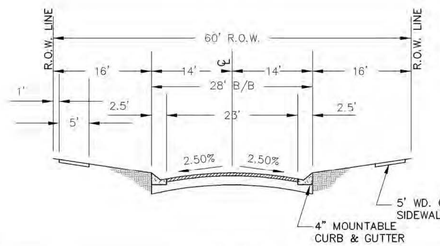
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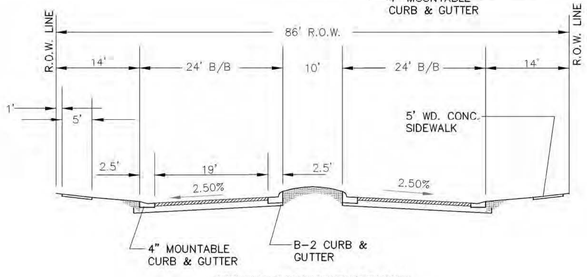


4" TO 6" CURB TRANSITION DETAIL

NOT TO SCALE

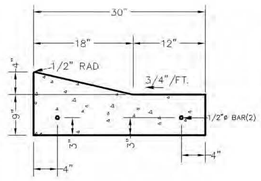






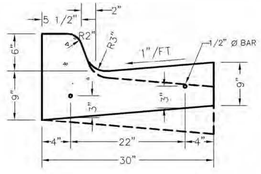
TYPICAL PAVEMENT SECTIONS

NOT TO SCALE



4" MOUNTABLE CURB & GUTTER DETAIL

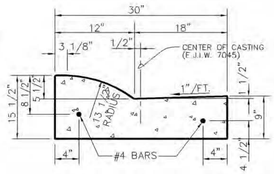
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6" CURB & GUTTER DETAIL

NOT TO SCALE

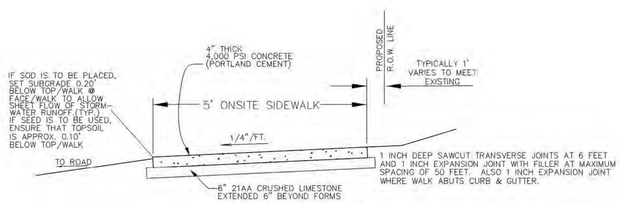
(FOR USE IN MEADOWBROOK RD. ROW)



B-2 MODIFIED CURB & GUTTER

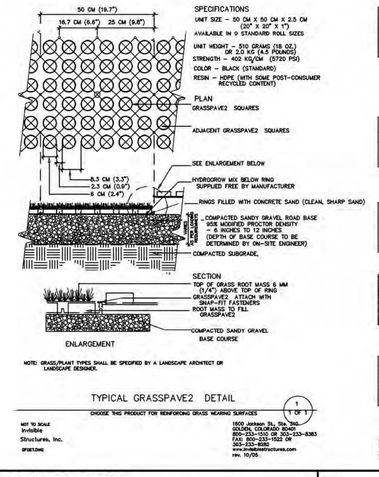
NOT TO SCALE

(FOR USE ON ISLANDS & 12 MILE RD.)



CONCRETE SIDEWALK

NOT TO SCALE



PAVEMENT LEGEND:

ASPHALT PAVEMENT
2" BITUMINOUS MIX HMA 4C ON
2" BITUMINOUS MIX HMA 3C ON
8" 21AA AGGREGATE COMPACTED TO
95% MAX. UNIT DENSITY ON
TRIAX TX140 GEOGRID. USE SS-1h
BOND COAT BETWEEN LIFTS AT 0.10
S.Y./GAL.

CONCRETE SIDEWALK/SAFETY PATH
4" UNIFORM CONCRETE W/ PORTLAND
CEMENT (4000 PSI) ON
6" 21AA CRUSHED LIMESTONE
COMPACTED TO 95% MAX. UNIT DENSITY

STORMWATER MAINTENANCE DRIVE/PEDESTRIAN PATHWAY
3" MDOT 23A AGGREGATE ON
10" MDOT 21AA AGGREGATE BASE
COMPACTED TO 95% MAX. UNIT DENSITY
ON PREPARED SUBGRADE

DUMPSTER PAD
8" REINFORCED CONCRETE W/PORTLAND
CEMENT (4000 PSI) ON
PREPARED SUBGRADE
COMPACTED TO 95% MAX. UNIT DENSITY

GRASS PAVER (SEE DETAIL THIS SHEET)
GRASSPAVE2 UNITS (OR APPROVED EQUAL) ON
8" MDOT 21AA AGGREGATE BASE
COMPACTED TO 95% MAX. UNIT DENSITY ON
PREPARED SUBGRADE

PAVEMENT SECTIONS SUBJECT TO RECOMMENDATION BY A QUALIFIED GEOTECHNICAL ENGINEER.

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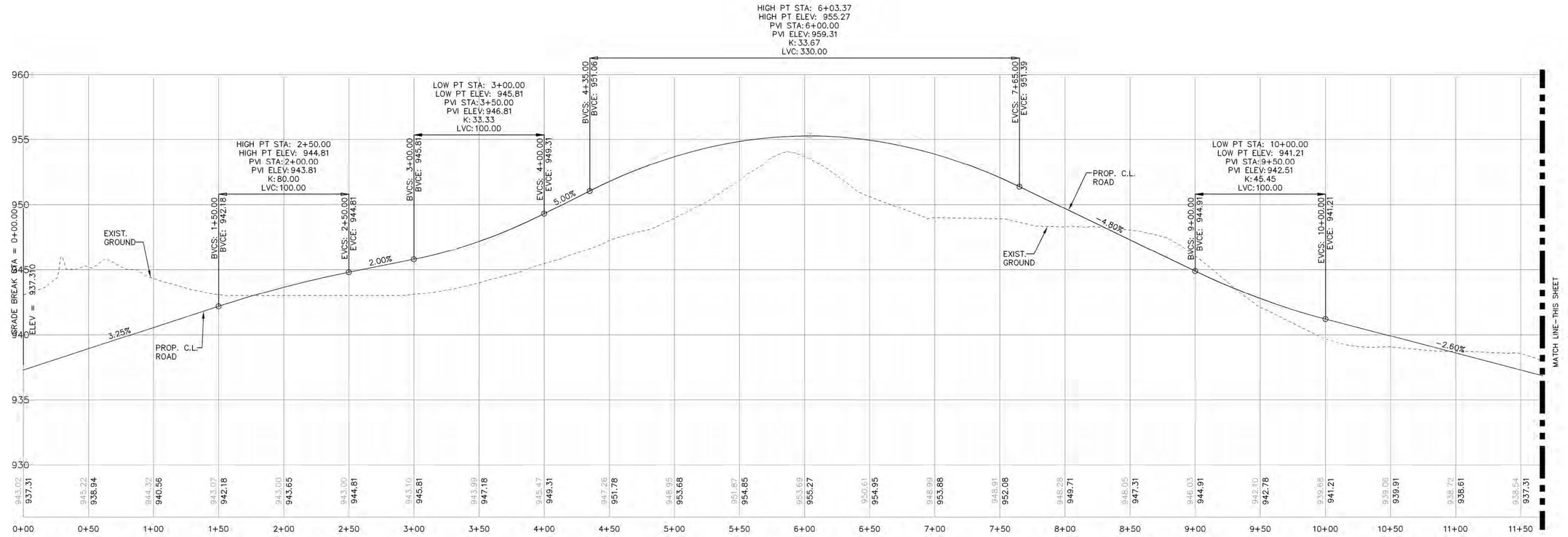
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PAVING PLAN
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

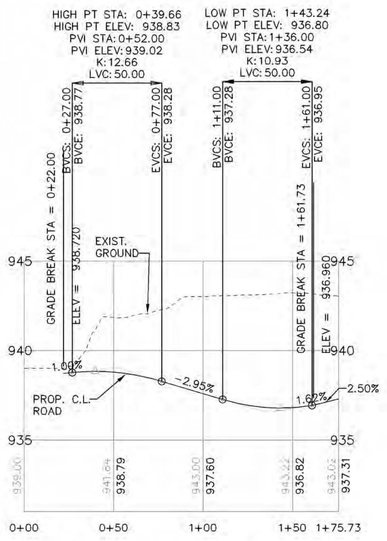
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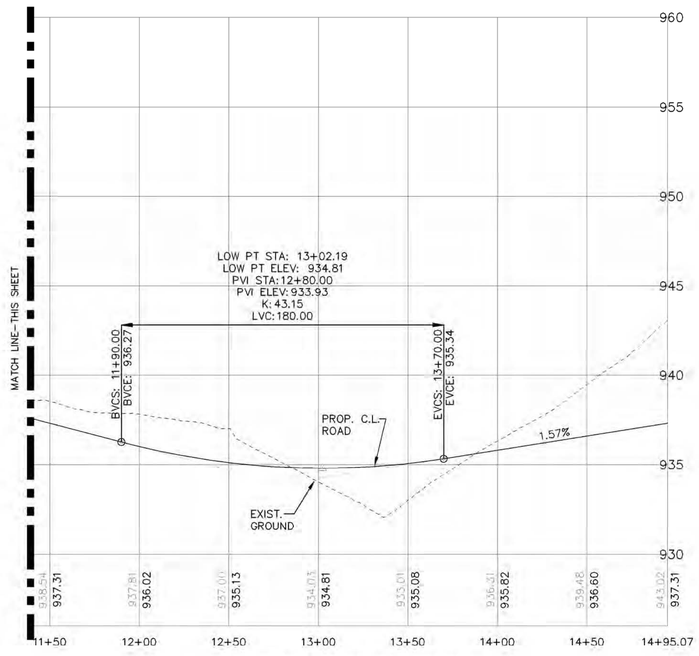
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HUMMINGBIRD CIRCLE



HUMMINGBIRD BLVD.



HUMMINGBIRD CIRCLE

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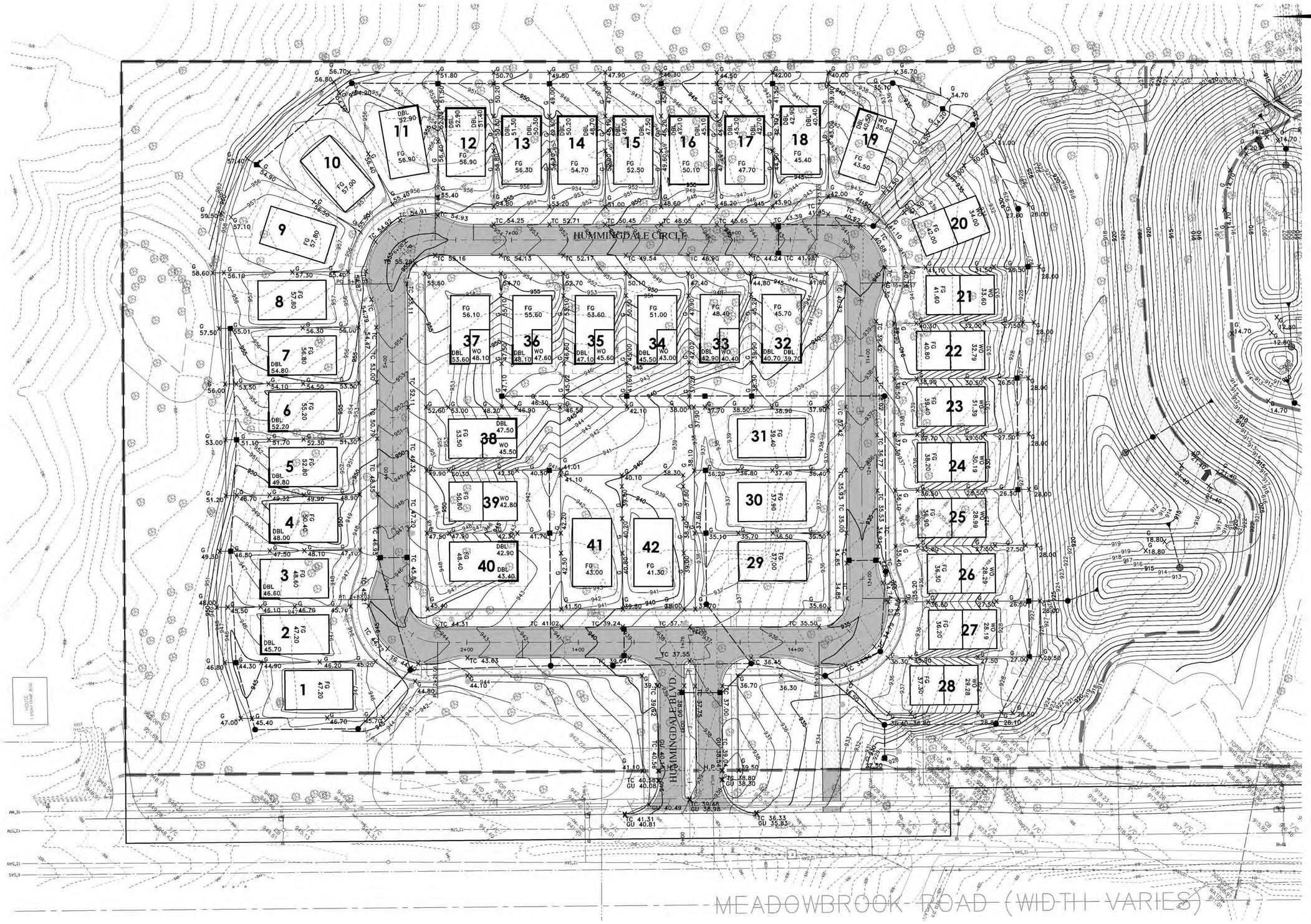
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ROAD PROFILES
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

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SCALE: 1" = 40'

0 20' 40' 80'

LEGEND

EXISTING

- MANHOLE
- CATCH BASIN
- INLET
- CLEANOUT
- END SECTION
- ROOF DRAIN
- GATE VALVE
- HYDRANT
- WATER SHUT-OFF
- UTILITY POLE
- GUY ANCHOR
- LIGHT POLE
- SIGN
- TREE
- TREE LINE
- SANITARY SEWER
- STORM SEWER
- WATER MAIN
- GAS MAIN
- ELECTRIC CABLE
- CONTOUR MAJOR
- CONTOUR MINOR
- +100.00 SPOT ELEVATION

PROPOSED

- MANHOLE
- CATCH BASIN
- INLET
- CLEANOUT
- END SECTION
- ROOF DRAIN
- GATE VALVE
- HYDRANT
- WATER SHUT-OFF
- SANITARY SEWER
- STORM SEWER
- WATER MAIN
- ℄ DITCH
- CONTOUR MAJOR
- CONTOUR MINOR
- x99.0 PROPOSED GRADE

TC = TOP OF CURB
TW = TOP OF WALK
TP = TOP OF PAVEMENT
TB = TOP OF BANK
G = GROUND
D = DITCH
GU = GUTTER
FG = FINISH GRADE
FF = FINISH FLOOR
DBL = BRICK LEDGE

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PSP SUBMITTAL	1/11/16										

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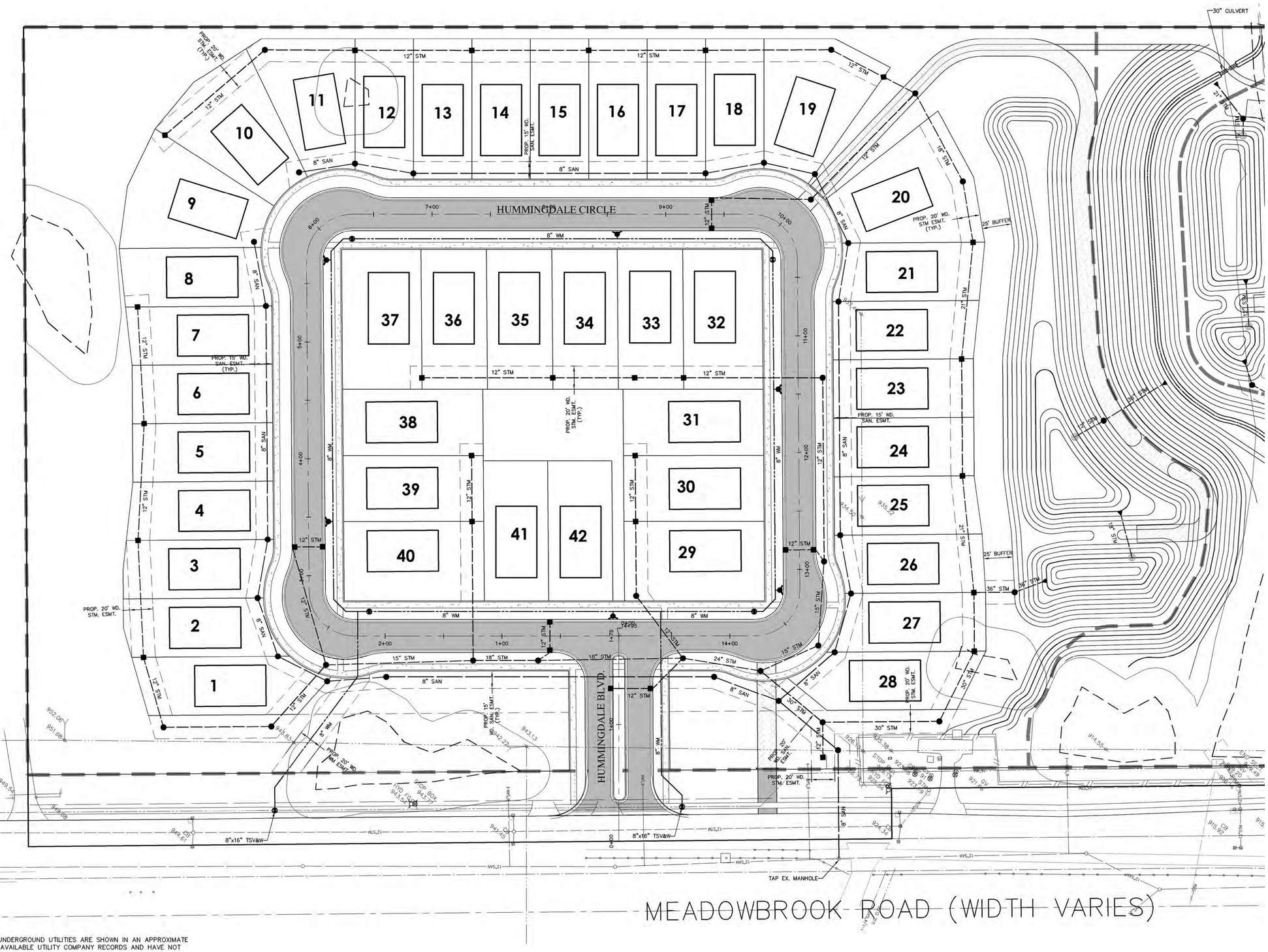
GRADING & DETENTION PLAN-MEADOWS
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

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UTILITY LEGEND

EXISTING

- MANHOLE
- CATCH BASIN
- INLET
- CLEANOUT
- END SECTION
- ROOF DRAIN
- GATE VALVE
- HYDRANT
- WATER SHUT-OFF
- UTILITY POLE
- GUY ANCHOR
- LIGHT POLE
- SIGN
- TREE
- TREE LINE
- SANITARY SEWER
- STORM SEWER
- WATER MAIN
- GAS MAIN
- ELECTRIC CABLE

PROPOSED

- MANHOLE
- CATCH BASIN
- INLET
- CLEANOUT
- END SECTION
- ROOF DRAIN
- GATE VALVE
- HYDRANT
- WATER SHUT-OFF
- TREE REMOVAL
- SANITARY SEWER
- STORM SEWER
- WATER MAIN
- ℄ DITCH

NOTE:
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AS DISCLOSED BY AVAILABLE UTILITY COMPANY RECORDS AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE COMPANY. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY IF A CONFLICT IS APPARENT.

REVISIONS	DATE	BY
PSP SUBMITTAL	1/11/16	

ZEIMET WOZNIAK & ASSOCIATES
Civil Engineers & Land Surveyors
55800 GRAND RIVER AVE., SUITE 100
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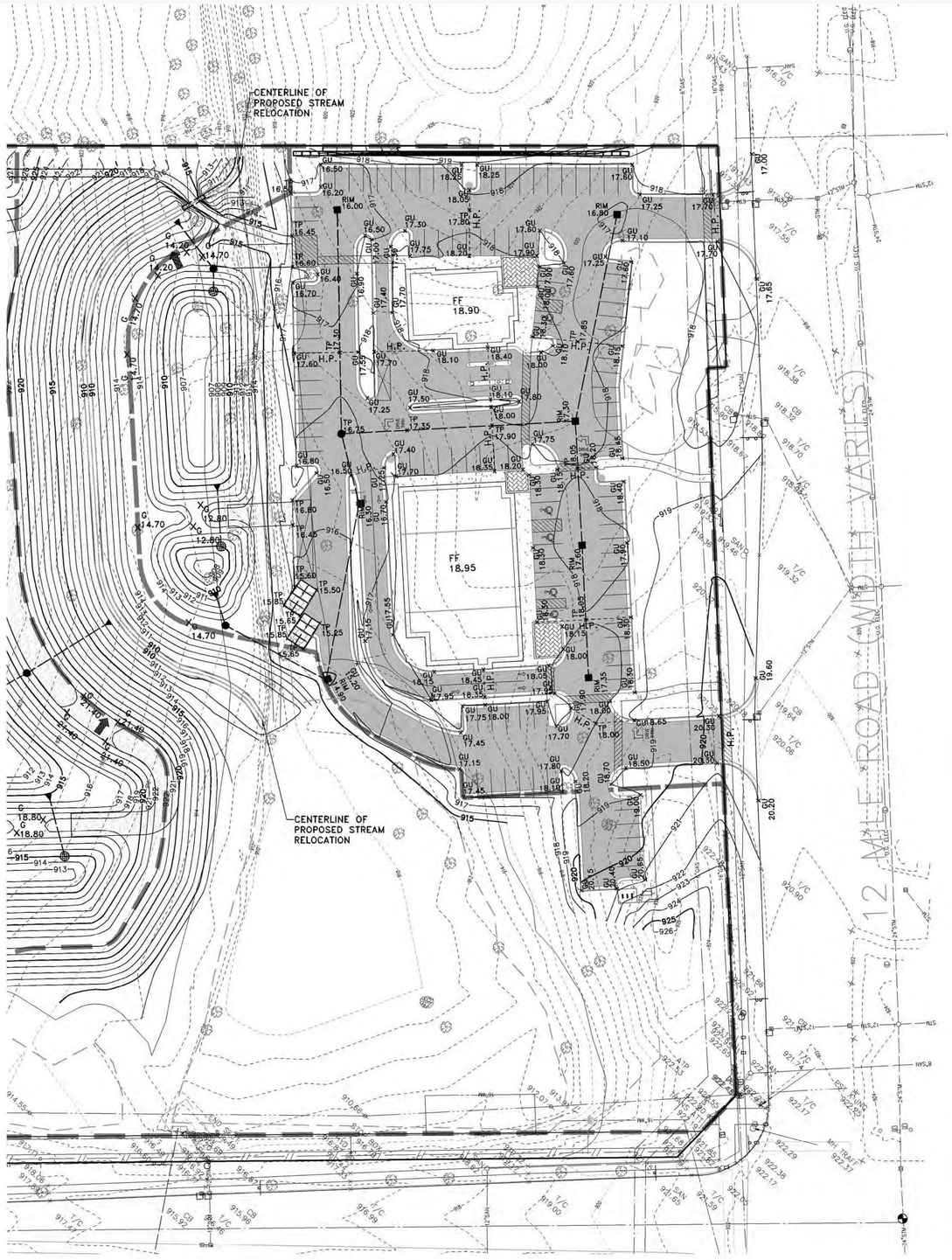
UTILITY PLAN-MEADOWS
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

FIELD BOOK —

DATE 1/11/16	SCALE HOR: 1" = 40' VER: 1" = N/A
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SCALE: 1" = 40'

0 20' 40' 80'

LEGEND

EXISTING

- MANHOLE
- CATCH BASIN
- INLET
- CLEANOUT
- END SECTION
- ROOF DRAIN
- GATE VALVE
- HYDRANT
- WATER SHUT-OFF
- UTILITY POLE
- GUY ANCHOR
- LIGHT POLE
- SIGN
- TREE
- TREE LINE
- SANITARY SEWER
- STORM SEWER
- WATER MAIN
- GAS MAIN
- ELECTRIC CABLE
- CONTOUR MAJOR
- CONTOUR MINOR
- +100.00 SPOT ELEVATION

PROPOSED

- MANHOLE
- CATCH BASIN
- INLET
- CLEANOUT
- END SECTION
- ROOF DRAIN
- GATE VALVE
- HYDRANT
- WATER SHUT-OFF
- SANITARY SEWER
- STORM SEWER
- WATER MAIN
- ℄ DITCH
- CONTOUR MAJOR
- CONTOUR MINOR
- x99.0 PROPOSED GRADE

TC = TOP OF CURB
TW = TOP OF WALK
TP = TOP OF PAVEMENT
TB = TOP OF BANK
G = GROUND
D = DITCH
GU = GUTTER
FG = FINISH GRADE
FF = FINISH FLOOR
DBL = BRICK LEDGE

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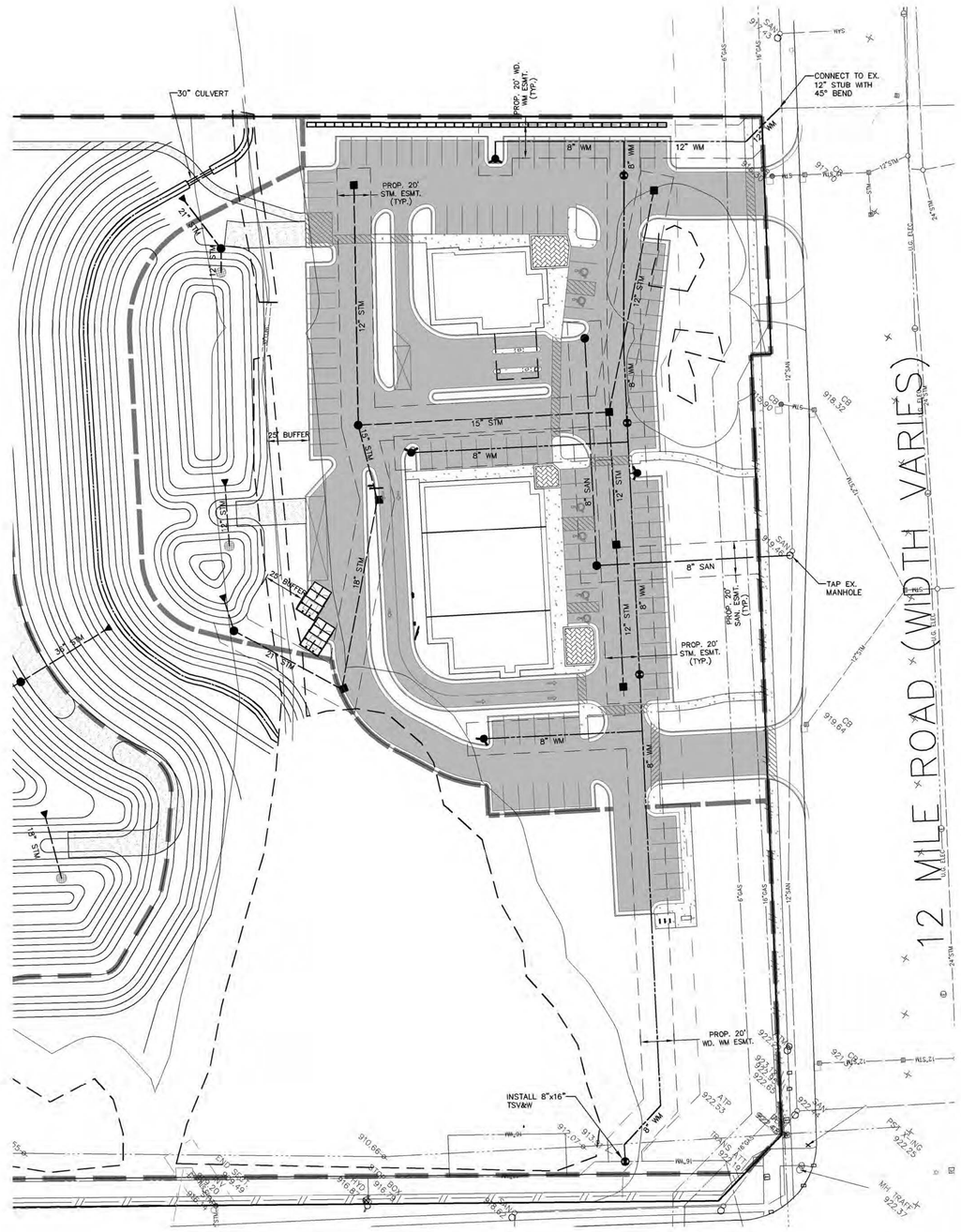
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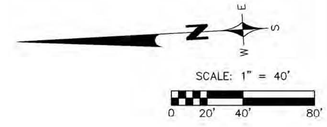
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UTILITY LEGEND

EXISTING

- MANHOLE
- CATCH BASIN
- INLET
- CLEANOUT
- END SECTION
- ROOF DRAIN
- GATE VALVE
- HYDRANT
- WATER SHUT-OFF
- UTILITY POLE
- GUY ANCHOR
- LIGHT POLE
- SIGN
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- STORM SEWER
- WATER MAIN
- GAS MAIN
- ELECTRIC CABLE

PROPOSED

- MANHOLE
- CATCH BASIN
- INLET
- CLEANOUT
- END SECTION
- ROOF DRAIN
- GATE VALVE
- HYDRANT
- WATER SHUT-OFF
- TREE REMOVAL
- SANITARY SEWER
- STORM SEWER
- WATER MAIN
- ℄ DITCH

NOTE:
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AS DISCLOSED BY AVAILABLE UTILITY COMPANY RECORDS AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE COMPANY. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY IF A CONFLICT IS APPARENT.

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UTILITY PLAN-SHOPPES
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

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STORM WATER MANAGEMENT CALCULATIONS

RUNOFF FROM THE CONTRIBUTING AREA OF THE SITE SHALL BE COLLECTED, TREATED IN FOREBAYS AND STORED FOR THE 100-YEAR STORM EVENT WITHIN DETENTION BASINS PER THE CITY OF NOVI STORM WATER MANAGEMENT ORDINANCE.

1. EXISTING DRAINAGE TO WETLAND AND STREAM FROM OFFSITE

APPROXIMATELY 124 AC (0.19 SQ. MILES) OF LAND ON THE WEST SIDE OF MEADOWBROOK ROAD DISCHARGES THROUGH A 30" CULVERT UNDER MEADOWBROOK ROAD INTO THE EXISTING WETLAND ON THE BEACON HILL SITE. USING THE MDEQ MANUAL FOR "COMPUTING FLOOD DISCHARGES FOR SMALL UNGAGED WATERSHEDS" PUBLISHED 2001, THE FOLLOWING FLOWS WERE CALCULATED FOR THE BACKFULL AND 100-YEAR STORM EVENTS.

BANKFULL FLOOD EVENT:

AREA = 124 ACRES = 0.19 MI²

FLOW TYPE	LENGTH (FT)	Δ ELEV. (FT)	SLOPE (%)	V EL. (FPS)	T_c (HR)
WATERWAY	200	980-960=20	10.00	3.79	0.01
WATERWAY	1000	960-940=20	2.00	1.70	0.16
WATERWAY	250	940-930=10	4.00	2.40	0.03
WATERWAY	650	930-920=10	1.54	1.49	0.12
WATERWAY	400	920-911=9	2.25	1.80	0.06
SMALL TRIB	500	912-911=1	0.20	0.94	0.15
				T_c TOTAL =	0.88 HR

SOILS:

GROUP	% OF TOTAL AREA	AREA (MI²)	LAND USE: TYPE	%	AREA	RCN	RAINFALL* SRO	MI²-IN
B	100.0	0.19	WOODS (FAIR)	22	0.04	60	0.15	0.006
			MEADOW	67	0.13	58	0.11	0.014
			FARM	11	0.02	74	0.55	0.011
								0.031

* RAINFALL = 2.4" (NO ADJUSTMENT NEEDED FOR 2-YR., 24 HR STORM (BANKFULL)

TOTAL MI²-IN. = 0.031
AVG. SRO = 0.16"
COMP. RCN = 59
Q_P = 330 CFS/ MI²-IN.
Q_P = 330 x 0.19 x 0.16 = 10.0 CFS
ADJUSTMENT FACTOR = 0.86 (2% PONDING AT THE DESIGN POINT)
$Q_{P\ ADJUSTED}$ = 10.0 x 0.86 = 8.6 CFS

100-YEAR STORM/D EVENT:

AREA = 124 ACRES = 0.19 MI²

FLOW TYPE	LENGTH (FT)	Δ ELEV. (FT)	SLOPE (%)	V EL. (FPS)	T_c (HR)
WATERWAY	200	980-960=20	10.00	3.79	0.01
WATERWAY	1000	960-940=20	2.00	1.70	0.16
WATERWAY	250	940-930=10	4.00	2.40	0.03
WATERWAY	650	930-920=10	1.54	1.49	0.12
WATERWAY	400	920-911=9	2.25	1.80	0.06
SMALL TRIB	500	912-911=1	0.20	0.94	0.15
				T_c TOTAL =	0.88 HR

SOILS:

GROUP	% OF TOTAL AREA	AREA (MI²)	LAND USE: TYPE	%	AREA	RCN	RAINFALL* SRO	MI²-IN
B	100.0	0.19	WOODS (FAIR)	22	0.04	60	1.07	0.04
			MEADOW	67	0.13	58	0.96	0.12
			FARM	11	0.02	74	2.05	0.04
								0.20

* RAINFALL = 4.6" (NO ADJUSTMENT NEEDED) FOR 100-YR., 24 HR STORM

TOTAL MI²-IN. = 0.20
AVG. SRO = 1.05"
COMP. RCN = 59
Q_P = 330 CFS/ MI²-IN.
Q_P = 330 x 0.19 x 1.05 = 65.8 CFS
ADJUSTMENT FACTOR = 0.86 (2% PONDING AT THE DESIGN POINT)
$Q_{P\ ADJUSTED}$ = 65.8 x 0.86 = 56.6 CFS

2. RESIDENTIAL BASIN

RUNOFF COEFFICIENT, 'C'

OVERALL AREA = 13.60 AC.
CONTRIBUTING AREA = 13.39 AC. (THE REMAINING 0.21 AC. CONSIST OF EXISTING WETLAND AREAS)

ROOF	2.06 AC. @ 0.95 =	1.96
PAVEMENT	1.34 AC. @ 0.95 =	1.27
OPEN WATER	0.17 AC. @ 1.00 =	0.17
OPEN SPACE	9.82 AC. @ 0.35 =	3.44
	13.39 AC.	6.84

'C' = 6.84/13.39 = 0.51 USE 'C' = **0.60**

100-YEAR DETENTION
Q_A = 0.15 CFS/AC. x 13.39 AC. = 2.01 CFS
Q_B = 2.01 CFS/(13.39 AC. x 0.60) = 0.25 CFS/AC.-IMP.
T_{100} = -25 + √(10312.5/0.25) = 178.1 MINUTES
V_{100} = [(16500 x 178.1)/(25 + 178.1)] - (40 x 0.25 x 178.1) = 12,688 CF/AC.-IMP.
V_{100} = 12,688 x 13.39 x 0.60 = **101,935 CF**
ADD 10% FOR CONSTRUCTION TOLERANCES = 1.10 x 101,935 = **112,129 CF**

FOREBAY (FIRST FLUSH)
V_R = 1815 x 13.39 x 0.60 = **14,582 CF**
ADD 10% FOR CONSTRUCTION TOLERANCES = 1.10 x 14,582 = **16,040 CF**

BANKFULL
V_{BF} = 5160 x 13.39 x 0.60 = **41,455 CF**
ADD 10% FOR CONSTRUCTION TOLERANCES = 1.10 x 41,455 = **45,600 CF**

VOLUME PROVIDED (100-YEAR)

ELEV.	AREA (SF)	AVG AREA (SF)	DEPTH (FT)	VOL. (CF)
915	5336			
		6576	1	6576
916	7816			
		10522	1	10522
917	13228			
		15022	1	15022
918	16816			
		18664	1	18664
919	20512			
	(DETENTION ONLY) 27399			
919	(OVERALL) 30131		1	30131
920	32863			
		35040	1	35040
921	37216			
				115,955 CF

100-YEAR DETENTION BY INTERPOLATION:
T/STORAGE = 920.9, V = 112,431 CF

BANKFULL VOLUME, BY INTERPOLATION:
T/STORAGE = 918.7, V = 45,185 cf

VOLUME PROVIDED (FOREBAY)

ELEV.	AREA (SF)	AVG AREA (SF)	DEPTH (FT)	VOL. (CF)
915	2054			
		2539	1	2539
916	3204			
		3590	1	3590
917	4155			
		4763	1	4763
918	5372			
		6040	1	6040
919	6709			
				16,932 CF

FOREBAY STORAGE, BY INTERPOLATION:
T/STORAGE = 918.8, V = 15,724 CF

OUTLET SIZING
A = 0.3988(Am)√H/86400
H = 918.8 – 915.0 = 3.8'
Ar: [0.3988(1447.2/3.8)√3.8]/86400 = 0.03427 SF
NUMBER OF 1" DIA. HOLES = 0.03427/0.0055 = 6.2
USE (6) 1" DIA. HOLES AT ELEVATION 915.0

DETENTION BASIN RESTRICTOR PIPE:
Q = 1.98 CFS
H = 920.9 – 915.0 = 5.9'
A = 1.98/(0.62√64.4 x 5.9) = 0.1638 SF

THIS EQUATES TO A 5.48" ORIFICE. USE A 12" DIA. OUTLET PIPE WITH A CAPPED TEE. DRILL A 5.5" DIA. HOLE IN THE BOTTOM CAP OF THE VERTICAL EXTENSION TO ACT AS THE RESTRICTOR.

DETENTION BASIN STANDPIPE ORIFICE (BANKFULL DISCHARGE):
H = 918.7 – 915.0 = 3.7'
A = 0.3988(Am)√H/172800
= [0.3988(41145/3.7)√3.7]/172800 = 0.04937 SF
NUMBER OF 1" DIA. HOLES = 0.049.37/0.0055 = 8.9
USE (8) 1" DIA. HOLES AT ELEVATION 915.0.

ACTUAL BANKFULL RELEASE RATE:
Q = (0.62 x 0.0055 x 8 √ (64.4x3.7) = 0.42 CFS

3. COMMERCIAL BASIN

RUNOFF COEFFICIENT, 'C'

OVERALL AREA = 3.05
CONTRIBUTING AREA = 3.05 AC.

ROOF	0.26 AC. @ 0.95 =	0.25
PAVEMENT	1.43 AC. @ 0.95 =	1.35
OPEN WATER	0.13 AC. @ 1.00 =	0.13
OPEN SPACE	1.23 AC. @ 0.35 =	0.43
	3.05 AC.	2.16

'C' = 2.16/3.05 = 0.70 USE 'C' = **0.70**

100-YEAR DETENTION
Q_A = 0.15 CFS/AC. x 3.05 AC. = 0.46 CFS
Q_B = 0.46 CFS/(3.05 AC. x 0.70) = 0.22 CFS/AC.-IMP.
T_{100} = -25 + √(10312.5/0.22) = 191.5 MINUTES
V_{100} = [(16500 x 191.5)/(25 + 191.5)] - (40 x 0.22 x 191.5) = 12,909.5 CF/AC.-IMP.
V_{100} = 12,909.5 x 3.05 x 0.70 = **27,562 CF**
ADD 10% FOR CONSTRUCTION TOLERANCES = 1.10 x 27,562 = **30,318 CF**

FOREBAY (FIRST FLUSH)
V_R = 1815 x 3.05 x 0.70 = **3,875 CF**
ADD 10% FOR CONSTRUCTION TOLERANCES = 1.10 x 3,875 = **4,263 CF**

BANKFULL
V_{BF} = 5160 x 3.05 x 0.70 = **11,017 CF**
ADD 10% FOR CONSTRUCTION TOLERANCES = 1.10 x 11,017 = **12,118 CF**

VOLUME PROVIDED (100-YEAR)

ELEV.	AREA (SF)	AVG AREA (SF)	DEPTH (FT)	VOL. (CF)
910	4926			
		5588	1	5588
911	6250			
		6971	1	6971
912	7692			
		8144	0.8	6515
912.8	8596			
	(DETENTION ONLY) 11008			
912.8	(OVERALL) 11938	11473	0.2	2295
913		12770	0.7	8939
913.7	13602			
				30,308 CF

100-YEAR DETENTION, BY INTERPOLATION:
T/STORAGE = 913.7, V = 30,308 CF

BANKFULL VOLUME, BY INTERPOLATION:
T/STORAGE = 912.0, V = 12,559 CF

VOLUME PROVIDED (FOREBAY)

ELEV.	AREA (SF)	AVG AREA (SF)	DEPTH (FT)	VOL. (CF)
910	758			
		1002	1	1002
911	1247			
		1545	1	1545
912	1844			
		2198	1	2198
913	2552			
				4,745 CF

FOREBAY STORAGE, BY INTERPOLATION:
T/STORAGE = 912.8, V = 4,305 CF

OUTLET SIZING
FOREBAY STANDPIPE ORIFICE:
A = 0.3988(Am)√H/86400
H = 912.8 – 910 = 2.8'
A = [0.3988(3926/2.8)√2.8]/86400 = 0.0108 SF
NUMBER OF 1" DIA. HOLES = 0.0108/0.0055 = 1.97
USE (2) 1" DIA. HOLES AT ELEVATION 910.0

DETENTION BASIN RESTRICTOR PIPE:
A = Q/(0.62√2GH)
Q = 0.46 CFS
H = 913.7 – 910 = 3.7'
A = 0.46/(0.62√64.4 x 3.7) = 0.04806 SF
THIS EQUATES TO A 2.97" DIA. ORIFICE. USE A 12" DIA. OUTLET PIPE WITH A CAPPED TEE. DRILL A 4.0" DIA. HOLE IN THE BOTTOM CAP OF THE VERTICAL EXTENSION TO ACT AS THE RESTRICTOR SINCE 4.0" IS THE MINIMUM ALLOWABLE RESTRICTOR.

DETENTION BASIN STANDPIPE ORIFICE (BANKFULL DISCHARGE:
H = 912.0 – 910.0 = 2.0'
A = 0.3988(Am)√H/172800
= [0.3988(11161/2.0)√2.0]/172800 = 0.0182 SF
NUMBER OF 1" DIA. HOLES = 0.0182/0.0055 = 3.3
USE (3) 1" DIA. HOLES, SET AT ELEVATION 910.0.

ACTUAL BANKFULL RELEASE RATE:
Q = 0.62 x 0.0055 x 3 √ (64.4x2.0) = 0.12 CFS

4. SIZE NEW CULVERT AT PROPOSED STREAM CROSSING

THE NEW CULVERT SHALL BE SIZED TO ACCOMMODATE THE BANKFULL FLOOD FLOW IN THE RELOCATED STREAM.

OFF-SITE FLOW	=	8.6 CFS
RESIDENTIAL DISCHARGE	=	0.42 CFS
COMMERCIAL DISCHARGE	=	0.11 CFS
TOTAL FLOW	=	9.13 CFS

USING MANNING'S TABLE, A 30" DIAMETER CULVERT AT 0.09% (MIN.) SLOPE HAS A CAPACITY OF 12.5 CFS AND V = 2.5 FPS.



N

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0 20' 40' 80'

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STORMWATER MANAGEMENT PLAN
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

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SCALE: 1" = 60'

0 30' 60' 120'

WETLAND AND BUFFER IMPACT LEGEND

WETLAND IMPACT AREA

BUFFER IMPACT AREA

BUFFER RESTORATION AREA
28,636 SF (0.66 AC)

EXISTING WETLAND AND BUFFER TABLE:

DEVELOPMENT		WETLAND	BUFFER
MEADOWS:			
	A	4,572 SF (0.10 AC)	6,753 SF (0.16 AC)
	B	382 SF (0.009 AC)	3,985 SF (0.09 AC)
	C	5,903 SF (0.14 AC)	12,456 SF (0.29 AC)
	D	770 SF (0.02 AC)	5,347 SF (0.12 AC)
SHOPPES:			
	G	783 SF (0.02 AC)	*
	H	876 SF (0.02 AC)	8,950 SF (0.21 AC)
PARK TRAILHEAD			
	E	4,477 SF (0.10 AC)	**
	EE	48,121 SF (1.10 AC)	48,516 SF (1.11 AC)
	F	1,411 SF (0.03 AC)	**
TOTAL		67,295 SF (1.54 AC)	86,007 SF (1.98 AC)

* INCLUDED IN BUFFER AREA FOR WETLAND 'H'
** INCLUDED IN BUFFER AREA FOR WETLAND 'EE'

WETLAND AND BUFFER IMPACT TABLE:

DEVELOPMENT		WETLAND IMPACT	BUFFER IMPACT
MEADOWS:			
	A	0	0
	B	382 SF (0.009 AC)	3,985 SF (0.09 AC)
	C	0	1,775 SF (0.04 AC)
	D	770 SF (0.02 AC)	5,347 SF (0.12 AC)
SHOPPES:			
	G	783 SF (0.02 AC)	*
	H	876 SF (0.02 AC)	8,950 SF (0.21 AC)
PARK TRAILHEAD:			
	E	3,092 SF (0.07 AC)	**
	EE	3,223 SF (0.07 AC)	23,285 SF (0.53 AC)
	F	1,410 SF (0.03 AC)	**
TOTAL		10,537 SF (0.24 AC)	43,342 SF (0.99 AC)

* BUFFER IMPACT INLCUDED WITH WETLAND 'H' IMPACT
** BUFFER IMPACT INCLUIDED WITH WETLAND 'EE' IMPACT

NOTE; WETLAND 'EE' CONSTRUCTION TO BE COMPLETED WITH PARK TRAILHEAD DEVELOPMENT.

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WETLAND & BUFFER IMPACT PLAN
BEACON HILL PARK
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January 11, 2016

Mr. Jeremy Miller
City of Novi
Community Development
45175 West Ten Mile Road
Novi, Michigan 48375

RE: Beacon Hill Park, Rezoning with a PRO
Response to Engineering Concept Review

Dear Mr. Miller:

We have reviewed the Plan Review Center Report Engineering Review dated August 6, 2015 and updated the site plan, dated January 11, 2016, to address their comments. We offer the following responses:

Comments

1. The Planning Consultant indicates in their review letter that a stub street does not appear to be warranted. A stub street to the north would destroy the woodland buffer that the proposed layout is trying to preserve. A church complex is being proposed to the east. A stub street from the church complex would provide access to Meadowbrook Road through a residential neighborhood.
2. Beacon Hill Park Meadows (residential) connects to both water main and sanitary sewer located in the Meadowbrook Road right-of-way. We propose that the adjacent property to the north connect to the same utilities located in the Meadowbrook Road right-of way, in order to preserve the proposed woodland buffer between the two parcels. A church complex is proposed for the property to the east, which can connect to the utilities located in the 12 Mile Road right-of way.
3. The requested calculations have been provided.
4. A pathway connection to the north and east has been provided along the Meadowbrook Road and 12 Mile Road rights-of-way.
5. A secondary emergency access for the Meadows has been provided to Meadowbrook Road.

General

6. A note has been added to the plans.
7. Additional information for an engineering planning review has been provided in accordance with the requirements of the Preliminary Site Plan Checklist.
8. The site plan is designed in accordance with the Design and Construction Standards and Engineering Design Manual.
9. Noted.
10. Size and Material for all utilities has been provided.
11. This will be provided in subsequent submittals.
12. Reference to a City benchmark has been included.
13. This will be provided in subsequent submittals.
14. Noted.
15. Noted.

Water Main

16. Water main stubs are not proposed.
17. Noted.

Sanitary Sewer

18. Noted.

Storm Water Management Plan

19. The proposed Storm Water Management Plan has been designed in accordance with the Storm Water Ordinance and Chapter 5 of the new Engineering Design Manual.
20. The SWMP detail has been provided as required.
21. Maintenance access routes have been shown on the plans.
22. A 25-foot vegetated buffer has been provided around the perimeter of each storm water basin.

Paving & Grading

23. Cross sections for proposed pavement have been provided.
24. Islands within the proposed eyebrows have been removed. We request that the proposed eyebrows remain as proposed.
25. An existing 5' wide side walk sidewalk is located along the east side of Meadowbrook and an 8' wide path along the west side of Meadowbrook Road.

Should you need any additional information please don't hesitate to contact us.

Very truly yours,

Andrew J. Wozniak

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January 11, 2016

Ms. Barbara McBeth
City of Novi Community Development
45175 West Ten Mile Road
Novi, MI 48375

RE: Beacon Hill Park, Rezoning with a PRO
Response to Fire Department Concept Review

Dear Ms. McBeth,

We have reviewed the Fire Department letter dated July 17, 2015 and updated the site plan, dated January 11, 2016, to address their comments. We offer the following responses:

1. The emergency drive and access gate will be designed to meet City Standards.
2. The location of the emergency access roadway has moved to outlet to Meadowbrook Road.

If you have any further questions or comments, please contact us.

Thank you.

Sincerely,

Andrew Wozniak