



CITY of NOVI CITY COUNCIL

Agenda Item 2
August 8, 2016

SUBJECT: Approval of the request of The Ivanhoe Companies for Beacon Hill, JSP 15-08, with Zoning Map Amendment 18.710, to rezone property in Section 12, located on the northeast corner of Twelve Mile Road and Meadowbrook Road from RA (Residential Acreage) to R-4 (One-Family Residential) and B-3 (General Business), subject to the related Planned Rezoning Overlay (PRO) Agreement, and corresponding PRO Plan. The property is approximately 21.13 acres. The applicant is proposing a 42-unit single-family residential development with frontage on and access to Meadowbrook Road, up to 22,000 square feet of commercial space with frontage on Twelve Mile Road, and an open space/park area at the corner of the intersection.

SUBMITTING DEPARTMENT: Community Development Department - Planning *Burd*

CITY MANAGER APPROVAL: 

BACKGROUND INFORMATION:

The petitioner is requesting a Zoning Map amendment for a 21.13-acre property at the northeast corner of Twelve Mile Road and Meadowbrook Road (Section 12) from RA (Residential Acreage) to R-4 (One-Family Residential) and B-3 (General Business) utilizing the City's Planned Rezoning Overlay (PRO) option.

The applicant has proposed a 42-unit single-family development with one boulevard entrance drive on Meadowbrook Road, and a maximum of 22,000 square foot commercial space in two buildings fronting on Twelve Mile Road. The plan also shows the applicant's offer to dedicate to the City a 3.28 acre park with a trailhead that extends from the southwest corner of the site, easterly across the property along the stream.

The plan proposes to restore the degraded function of both the wetland and the stream located on the south end of the site. Restoration activities include abandonment of the existing 350 foot stream channel, and construction of a relocated stream channel of approximately 480 feet, using a natural channel design. The applicant proposes to improve plant species diversity within the existing open water and emergent wetland by removing the invasive plants, and replanting with native species, including wildflowers and trees. The natural features setback areas will also be restored. Both an MDEQ wetland Permit and a City of Novi Wetland Use Permit will be required for the proposed impacts.

The site contains regulated woodlands: the submitted woodland plan shows a total of 402 regulated trees are proposed to be removed from the site, and all of the required 718 replacement credits are proposed to be planted on the site. Both the City's Landscape Architect and Environmental Consultant support the alternative streetscape landscaping along Meadowbrook Road that the applicant has developed through coordinated work with the Tollgate Education Center. ECT supports the use of Woodland Replacement Trees and shrubs, as currently proposed, in order to supplement the required trees along

Meadowbrook Road, but does not support the replacement of the required street trees with Woodland Replacement trees.

Additionally, the City's Landscape Design Manual does not allow the upsizing of Woodland Replacement Trees for additional woodland replacement credits. The applicant may request a deviation as a part of the PRO Agreement. Novi's Landscape Architect and Environmental Consultant support some upsizing of trees with credit to provide additional landscape interest and screening along Meadowbrook Road and along the south edge of the proposed residential portion. The plan shows forty percent of the proposed evergreen trees to be upsized from seven feet to ten feet in height. (i.e. 102 of the 253 total evergreens are proposed as ten foot tall trees). Staff recommends limiting the total percentage of upsized trees to 33 percent of the total provided; this standards is now included in the PRO Agreement.

Ordinance Deviations Requested

Section 7.13.2.D.i.c(2) permits deviations from the strict interpretation of the Zoning Ordinance within a PRO agreement. These deviations must be accompanied by a finding by City Council that "each Zoning Ordinance provision sought to be deviated would, if the deviation were not granted, prohibit an enhancement of the development that would be in the public interest, and that approving the deviation would be consistent with the Master Plan and compatible with the surrounding areas." Such deviations must be considered by City Council, who will make a finding of whether to include those deviations in a proposed PRO agreement. The proposed PRO agreement would be considered by City Council after tentative approval of the proposed concept plan and rezoning. Staff supports or conditionally supports the deviations as noted below:

- a. Lot size: Reduction in the required minimum lot size and minimum lot width for one-family detached dwellings reviewed against R-4 Zoning standards to allow for smaller lots (10,000 square feet and 80 feet required, 6,000 square feet and 50 feet provided).
- b. Front yard setback: Reduction in minimum front yard setback for one-family detached dwellings reviewed against R-4 Zoning standards (30 feet required, 20 feet provided).
- c. Side yard setback: Reduction in minimum side yard setback and aggregate side yard setback for one-family detached dwellings reviewed against R-4 Zoning standards (10 feet with 25 feet aggregate required, 7.5 feet with 15 feet aggregate provided).
- d. Rear yard setback: Reduction in minimum rear yard setback for one-family detached dwellings reviewed against R-4 Zoning standards (35 feet required, 30 feet provided).
- e. Credit for upsizing Woodland Replacement Trees: Deviation of ordinance standards to allow proposed upsizing of Woodland Replacement Trees (evergreens) throughout the site in an amount not to exceed 33 percent of the evergreen trees provided (102 on the concept plan), as recommended in the Landscape Review letter, and based on the standards of the Landscape Design Manual, which does not allow additional credit for upsizing of Woodland Replacement Trees. (The staff-recommended deviation was included in City Council's motion for tentative approval and is included in the PRO Agreement.)

- f. Landscape standards: Deviation from landscaping ordinance standards for the following areas due to the proposed heavily landscaped design, and the proposed improvements to the pond and wetlands:
 - i. Deviation for the required landscape berm, and the required trees and sub-canopy trees to be planted on the berm, along the residential frontage of Meadowbrook Road due to the existing wetlands and heavy vegetation in this area;
 - ii. Deviation for the required greenbelt landscaping south of the residential area (approximately 540 feet) due to the existing wetlands, and other heavy plantings proposed for this location; and
 - iii. Deviation from the required greenbelt landscaping along the western 235 feet of the Twelve Mile Road frontage due to the existing wetlands and other heavy plantings proposed for this location.
- g. Design and Construction Standards (DCS) Waiver: DCS waiver is required for the lack of paved eyebrows within the residential development.
- h. Design and Construction Standards (DCS) Waiver: DCS waiver for lack of a stub street to the subdivision boundary at intervals not to exceed 1,300 feet along the subdivision perimeter.

Public Benefit under PRO Ordinance

Section 7.13.2.D.ii states that the City Council must determine that the proposed PRO rezoning would be in the public interest and the public benefits of the proposed PRO rezoning would clearly outweigh the detriments. These proposed benefits below will be weighed against the proposal to determine if they clearly outweigh any detriments of the proposed rezoning, and are included as requirements in the PRO Agreement:

- a. Dedication of the Park Trailhead and Right of Way to the City.
- b. The following improvements shall be made by the Developer to the Park Trailhead:
 - i. Mass and fine grading of 5.63 acres, including topography enhancement, wetland and woodland replacement plantings, and seeding on upland park.
 - ii. Augmenting the creek, removal of damaged culverts, and realignment of creek.
 - iii. Creation of a weir system to effectuate a waterfall/spillway to be viewed from the bank of the park.
 - iv. Enhanced design for landscaped retention ponds.
 - v. Habitat restoration including, but not limited to removal of invasive species.
 - vi. Installation of wetland enhancement plantings.
 - vii. Installation of six parking spaces, a bench, and bike racks in accordance with the PRO Plan and final approved site plans.
- c. A minimum of 42 percent of the land (or 8.8 acres) shall be open space, with a Conservation Easement to be provided over certain portions of open space as shown on the PRO Plan.
- d. Non-motorized access shall be provided between the two phases;
- e. The following uses, while permitted in the B-3 classification, shall not be permitted in the Commercial Phase; fast food restaurants (but allowing fast

casual restaurants such as Panera Bread, Qdoba, a coffee shop, 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, vape or vapor sales, outdoor space for car sales, or automobile service centers.

- f. Preservation of a minimum 10 foot wide wooded buffer along the east property line, and of a minimum 50 foot wide buffer along Meadowbrook Road.

PRO Conditions

The applicant is required to submit a conceptual plan and a list of terms that they are willing to include with the PRO agreement. The applicant has submitted a conceptual plan showing the general layout of the residential and commercial developments, the location of the proposed park and detention pond, the location of the proposed detention pond, and location of the proposed pathways and the preservation of area of natural features. The only "terms" or "conditions" within the submittal are the design elements illustrated on the conceptual plan and the PRO Features offered in the "Public Interest".

Public Hearings and Planning Commission Recommendation

The rezoning and concept plan first appeared for public hearing with the Planning Commission on September 9, 2015. The Planning Commission voted to postpone consideration to allow the applicant time to address certain concerns that had been identified. The Planning Commission reviewed the Concept Plan and Rezoning request at the January 13, 2016 meeting and, following a public hearing, recommended approval of the plan as submitted at that time subject to a number of conditions. The Planning Commission again reviewed a Concept Plan and Rezoning at a public hearing on April 27, 2016 and recommended approval to the City Council.

City Council Action

Because the attached draft PRO Agreement is consistent with the rezoning with PRO tentatively approved by the City Council at the May 23, 2016 meeting, the City Council is now asked to consider the actual text of the Planned Rezoning Overlay Agreement and give final approval of the Agreement, the PRO Plan and the rezoning. Following Council's final approval, the applicant will submit for Preliminary and Final Site Plan approval under standard site plan review procedures.

RECOMMENDED ACTION:

Final approval of the request of The Ivanhoe Companies for Beacon Hill, JSP 15-08, with Zoning Map Amendment 18.710, to rezone property in Section 12, located on the northeast corner of Twelve Mile Road and Meadowbrook Road from RA (Residential Acreage) to R-4 (One-Family Residential) and B-3 (General Business), subject to the related Planned Rezoning Overlay (PRO) agreement and corresponding PRO Plan, subject to the conditions listed in the staff and consultant review letters, and with any changes and/or conditions as discussed at the City Council meeting, and any final minor alterations required in the determination of the City Manager and City Attorney to be incorporated by the City Attorney's office prior to the execution of the final agreement. This motion is made for the following reasons:

- a. The proposed density shown on the PRO Concept Plan is generally compatible with the existing uses on the adjacent and surrounding parcels,

as indicated by the proposed density recommendation in the draft revised Master Plan for Land Use applicable to this property.

- b. The proposed development is consistent with several objectives of the Master Plan for Land Use, as detailed in the Planning Review Letter.
- c. While the proposal calls for a significant departure from the vision of the 2010 Master Plan, which is to provide for a maximum of 0.8 dwelling units to the acre north of Twelve Mile Road, both east and west of Meadowbrook road, the submitted PRO Concept Plan displays sensitivity to the adjacent large lot RA properties in the area through the use of buffering along the edges of the site, including preservation of existing vegetation and represents a reasonable alternative to the existing Master Plan as indicated by the draft revised Master Plan.
- d. The proposed Concept Plan shows the preservation and enhancement of wetlands on the site.
- e. The applicant has worked cooperatively with the Tollgate Education Center to create landscaping along Meadowbrook Road that presents a more natural look that blends well with the Tollgate frontage.
- f. The site will be adequately served by public utilities.
- g. The Traffic Impact Statement that was submitted with the rezoning request was found to be acceptable and the Level of Service (LOS) at study intersections is expected to remain at acceptable levels.
- h. Submittal of a Concept Plan, and any resulting PRO Agreement, provides assurances to the Planning Commission and to the City Council of the manner in which the property will be developed.

	1	2	Y	N
Mayor Gatt				
Mayor Pro Tem Staudt				
Council Member Burke				
Council Member Casey				

	1	2	Y	N
Council Member Markham				
Council Member Mutch				
Council Member Wrobel				

DRAFT
PLANNED REZONING OVERLAY (PRO) AGREEMENT

PLANNED REZONING OVERLAY AGREEMENT
(Beacon Hill)

AGREEMENT, by and among Ivanhoe Meadowbrook, LLC, a Michigan limited liability company (“**Developer**”), whose address is _____, _____ a Michigan and the City of Novi, a Michigan _____ (“**City**”), 45175 West Ten Mile Road, Novi, MI 48375-3024.

RECITATIONS:

I. Developer is the developer of the approximate 21.13 acres real Property of “**Land**” described on **Exhibit A**, attached and incorporated herein; Developer is the contract purchaser of the Land from _____, a Michigan _____, whose address is _____ (the “**Owner**”); and together, Developer and Owner own all of the interests in and to the Land.

II. Prior to this Agreement, the Land was classified as R-A, Residential Acreage, under the City’s Zoning Ordinance (the “**Existing Classification**”).

III. For purposes of improving and using the Land for a mixed use development consisting single family residential units and commercial retail space, Developer petitioned the City for an amendment of the Zoning Ordinance, as amended, so as to reclassify the northern 18.12 acres of the Land from R-A, Residential Acreage to R-4, Low-Rise Multiple-Family Residential and the southeasterly 3.05 acres of the Land to B-3 General Commercial. The R-4 and B-3 classifications under the Zoning Ordinance shall collectively be referred to in this Agreement as the “**Proposed Classifications.**”

IV. The Proposed Classifications would provide the Developer and Owner with certain material development options not available under the Existing Classification, and would be a distinct and material benefit and advantage to the Developer and Owner.

V. The City has reviewed and approved the Developer’s proposed petition to amend the zoning district classification of the Land from the Existing Classification to the Proposed Classifications under the terms of the Planned Rezoning Overlay (PRO) provisions of the City’s Zoning Ordinance, and has reviewed the Developer’s proposed PRO Plan, attached hereto and incorporated herein as **Exhibit B** (the “**PRO Plan**”), which is a conceptual or illustrative plan for the potential development of the Land under the Proposed Classifications, and not an approval to

construct the proposed improvements as shown. The City has further reviewed the proposed PRO conditions offered or accepted by Developer and incorporated in this Agreement.

VI. The PRO Plan (see “PRO and Phasing Plan” identified as sheet SP-5 of the PRO Plan) identifies four distinct uses of the Land, which are as follows:

A. The “**Residential Phase**”, intended to be known as “Beacon Hill Meadows”, shall consist of approximately 13.60 acres located on the northerly portion of the Land and, except as provided herein, shall be used in accordance with the R-4 zoning classification as of the date hereof.

B. The “**Commercial Phase**”, intended to be known as “The Shoppes at Beacon Hill”, shall consist of approximately 3.05 acres located at the southeastern portion of the Land and, except as provided herein, shall be used in accordance with B-3 zoning classification as of the date hereof.

C. The “**Park Trailhead**” shall consist of approximately 3.28 acres that is located in the southwestern portion of the Land and that separates the Residential Phase from the Commercial Phase by extending to the eastern boundary line of the Land. Except as provided herein, the Park Trailhead shall be used in accordance with the R-4 zoning classification as of the date hereof.

D. The “**ROW**” shall consist of approximately 1.24 acres of the Land located along the northwesterly boundary line of the Land and, except as provided herein, shall be used in accordance with the R-4 zoning classification as of the date hereof.

VII. In proposing the Proposed Classifications to the City, Developer and Owner expressed the unalterable intent to develop and use the Land in conformance with the following undertakings, as well as the following forbearances (each and every one of such undertakings and forbearances shall together be referred to as the “**Undertakings**”):

A. Developer and Owner shall be permitted to develop and use the land for development of (1) a Residential Phase for no more than 42 single family residences and related residential improvements; (2) a Commercial Phase for up to 22,000 square feet of commercial space, including up to two drive-through operations (a maximum of 12,000 square feet of commercial space will be permitted only if two drive-through operations are proposed), excluding many more intense uses including but not limited to: fast food restaurants, fueling stations, produce sales, daycare centers, business schools and colleges, private clubs, motels, veterinary hospitals and clinics, auto washes, bus passenger stations, new and used car salesrooms, tattoo parlors, vape or vapor sales, outdoor space for automobile sales, and automotive service centers, including two driveways onto Twelve Mile Road; and (3) dedication of a 3.28 acre park with a trailhead, including restoration of the wetland area and stream located at the south end of the development site, only in accordance with the PRO Plan and other applicable approvals. Developer and Owner shall forbear from developing and/or using the Land in any manner other than as authorized and/or limited by this Agreement and/or the terms of any other subsequent approvals, or any

amendments thereto, including site plan approval, that may be obtained by Applicant from the City.

B. Developer and Owner shall develop the Land in accordance with all applicable laws and regulations, and with all applicable ordinances, including all applicable, setback, height, area, and bulk requirements of the Zoning Ordinance as relates to the Proposed Classifications except as expressly authorized herein or as shown on the PRO Plan, or as authorized by other subsequent approvals, or any amendments thereto, including site plan approval, by the City. The PRO Plan is acknowledged by both the City and Developer and Owner to be a conceptual plan for the purpose of depicting the general area contemplated for development, and that preliminary and final site plan approvals, which will require the submission and review of additional information, are still required.. Deviations (as defined below) from the provisions of the City's ordinances, rules, or regulations depicted in the PRO Plan are approved by virtue of this Agreement. The PRO Plan and the Developer's and Owner's right to develop a mixed used community under the requirements of the Proposed Classifications shall be subject to and in accordance with all applications, reviews, approvals, permits and authorizations required under applicable laws, ordinances, and regulations, including, but not limited to, site plan approval, storm water management plan approval, woodlands and wetlands permits, and engineering plan approval, and public street acceptance requirements, except as expressly provided in this Agreement or as part of any other approval or permit granted by the City or its agencies. Developer and Owner acknowledge that the Planning Commission and Engineering Division may impose additional conditions other than those contained in this Agreement during detailed site plan reviews and approvals as authorized by law; provided, however, that such conditions shall not be inconsistent with the PRO Plan or this Agreement and shall not change or eliminate any development right authorized thereby.

C. In addition to any other ordinance requirements, in its development of the Land, Applicant shall comply with all applicable ordinances for storm water and soil erosion requirements and measures throughout the site during the design and construction phases, and subsequent use, of the development contemplated in the Proposed Classification.

D. In its development of the Land under the PRO Plan, Applicant shall provide the following Public Benefits/Public Improvements:

- i. Dedication of the Park Trailhead and ROW to the City.
- ii. The following improvements shall be made by the Developer to the Park Trailhead:
 - a. Mass and fine grading, including topography enhancement, wetland and woodland replacement plantings, and seeding and planting of new additional landscaping;
 - b. Augmenting the creek, removal of damaged culverts and realignment of creek;

- c. Creation of a weir system to effectuate a waterfall/spillway to be viewed from a bank within the Park Trailhead;
 - d. Enhanced design for landscaped retention ponds;
 - e. Habitat restoration including, but not limited to removal of invasive species;
 - f. Installation of wetland enhancement plantings; and
 - g. Installation of six parking spaces, a bench and a bike rack, in accordance with the PRO Plan and final approved site plans.
- iii. 42% of the Land shall be open space with a Conservation Easement to be provided over certain portions of the open space, as shown in the PRO Plan
 - iv. Non-motorized access shall be provided between the two phases;
 - iv. The following uses, while permitted in the B-3 classification, shall not be permitted in the Commercial Phase: fast food restaurants (but allowing fast casual restaurants such as Panera Bread, Qdoba, a coffee shop, 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, vape or vapor sales, outdoor space for car sales, or automobile service centers.
 - v. Preservation of a minimum 10 foot wide wooded buffer along the east property line and of a minimum 50 foot wide buffer along Meadowbrook Road.

VIII. The PRO Plan includes the following deviations (which are reproduced below verbatim from City Council’s motion approving the PRO Plan on May 23, 2016) from the City’s Zoning Ordinance (the “**Deviations**”):

- a. Reduction in the required minimum lot size and minimum lot width for one-family detached dwellings reviewed against R-4 Zoning standards to allow for smaller lots (10,000 square feet and 80 feet required, 6,000 square feet and 50 feet provided);
- b. Reduction in minimum front yard setback for one-family detached dwellings reviewed against R-4 Zoning standards (30 feet required, 20 feet provided);
- c. Reduction in minimum side yard setback and aggregate side yard setback for one-family detached dwellings reviewed against R-4 Zoning standards (10

feet with 25 feet aggregate required, 7.5 feet with 15 feet aggregate provided);

- d. Reduction in minimum rear yard setback for one-family detached dwellings reviewed against R-4 Zoning standards (35 feet required, 30 feet provided)
- e. Deviation of ordinance standards to allow proposed upsizing of Woodland Replacement Trees (evergreens) throughout the site in an amount not to exceed 33 percent of the evergreen trees provided (102 on the concept plan), as recommended in the Landscape Review letter, and based on the standards of the Landscape Design Manual, which does not allow additional credit for upsizing of Woodland Replacement Trees;
- f. Deviation from landscaping ordinance standards for the following areas due to the proposed heavily landscaped design, and the proposed improvements to the pond and wetlands:
 - i. Deviation for the required landscape berm, and the required trees and subcanopy trees to be planted on the berm, along the residential frontage of Meadowbrook Road due to the existing wetlands and heavy vegetation in this area;
 - ii. Deviation for the required greenbelt landscaping south of the residential area (approximately 540 feet) due to the existing wetlands, and other heavy plantings proposed for this location; and
 - iii. Deviation from the required greenbelt landscaping along the western 235 feet of the Twelve Mile Road frontage due to the existing wetlands and other heavy plantings proposed for this location; and
- g. Design and Construction Standards (DCS) Waiver for the lack of paved eyebrows within the residential development.
- h. Design and Construction Standards (DCS) Waiver for lack of a stub street to the subdivision boundary at intervals not to exceed 1,300 feet along the subdivision perimeter.

AGREEMENT:

NOW, THEREFORE, IT IS AGREED AS FOLLOWS:

1. The Recitations are made a part of and incorporated into this Agreement.
2. The Proposed Classifications are approved and shall be applied to those areas of the Land as described in the Recitations III and VI above. Upon the Proposed Classification becoming final upon execution of this Agreement:

- a. The Undertakings and PRO Conditions shall be binding on the Land, and on Applicant in any development of the Land by Applicant;
 - b. Applicant shall act in conformance with the Undertakings in any development of the Land by Applicant; and
 - c. Applicant shall forbear from acting in a manner inconsistent with the Undertakings in any development of the Land by Applicant;
3. The City authorizes and permits the Deviations as set forth in Recitation VIII, above pursuant to §7.13.D.i.c (2) of the City's Zoning Ordinance.
 4. The Land may be developed in one or more phases as set forth and described on the "PRO and Phasing Plan" being sheet SP-5 of the PRO Plan ("**Phasing Plan**"). In the event the Land is developed in more than one phase, a building permit for the Shoppes (as described on the Phasing Plan) shall not be issued until there has been a pre-construction meeting for Phase 2 (as described on the Phasing Plan).
 5. In the event Developer or Owner takes actions to complete improvement of the Land in any manner other than as contemplated by this Agreement and as shown on the PRO Plan, the City shall be authorized to revoke all outstanding building permits and certificates of occupancy issued for or on the Land following written notice to Applicant and a reasonable opportunity to cure.
 6. Developer and Owner acknowledge and agree that the City has not required the Undertakings. The Undertakings have been voluntarily offered by Developer and Owner in order to provide an enhanced use and value of the Land, to protect the public safety and welfare, and to induce the City to rezone the Land to the Proposed Classifications so as to provide material advantages and development options for the Developer and Owner.
 7. All of the Undertakings represent actions, improvements and/or forbearances that are directly beneficial to the Land and/or to the development of and/or marketing of residential units and commercial uses on the Land. The burden of the Undertakings on the Developer and Owner is roughly proportionate to the burdens being created by the development, and to the benefit which will accrue to the Land as a result of the requirements represented in the Undertakings.
 8. In addition to the provision in paragraph 5 , above, in the event the Developer or Owner, or their respective successors, assigns and/or transferees, takes actions to develop the Land in a manner which is in material violation of the Undertakings, the City shall, following notice and a reasonable opportunity to cure, have the right and option to take action using the procedure prescribed by law for the amendment of the Master Plan and Zoning Ordinance applicable to the Land to amend the Master Plan and/or zoning classifications of the Land to a reasonable classification determined appropriate by the City, and neither the Developer or Owner nor their respective

successors, assigns and/or transferees, shall have any vested rights in the Proposed Classification and/or use of the Land as permitted under the Proposed Classification, and Developer and Owner shall be estopped from objecting to the rezoning and reclassification to such reasonable classifications based upon the argument that such action represents a “downzoning” or based upon any other argument relating to the approval of the Proposed Classification and use of the Land; provided, this provision shall not preclude Developer or Owner from otherwise challenging the reasonableness of such rezoning as applied to the Land.

9. By execution of this Agreement, Developer and Owner acknowledge that they have acted in consideration of the City approving the Proposed Classification on the Land, and Developer and Owner agree to be bound by the provisions of this Agreement.
10. After consulting with an attorney, the Developer and Owner understands and agrees that this Agreement is authorized by and consistent with all applicable state and federal laws and Constitutions, that the terms of this Agreement are reasonable, that they shall be estopped from taking a contrary position in the future, and, that the City shall be entitled to injunctive relief to prohibit any actions by the Developer or Owner inconsistent with the terms of this Agreement.
11. This Agreement runs with and binds the Land and shall be binding upon and inure to the benefit of the parties to this Agreement and their respective heirs, successors, assigns and transferees, and an affidavit or memorandum providing notice of this Agreement may be recorded by any party to the Agreement with the Oakland County Register of Deeds.
12. The Zoning Board of Appeals (ZBA) shall have no jurisdiction over the Land or the application of this Agreement until after site plan approval and construction of the development as approved therein. .
13. No waiver of any breach of this Agreement shall be held to be a waiver of any other or subsequent breach. All remedies afforded in this Agreement shall be taken and construed as cumulative, that is, in addition to every other remedy provided by law.
14. This Agreement shall be governed by the laws of the State of Michigan, both as to interpretation and performance. Any and all suits for any and every breach of this Agreement may be instituted and maintained in any court of competent jurisdiction in the County of Oakland, State of Michigan.
15. This Agreement may be signed in counterparts.

[signatures on following pages]

“DEVELOPER”

IVANHOE MEADOWBROOK, LLC,
Michigan limited liability company

By: _____
Gary Shapiro
Its: Manager

STATE OF MICHIGAN)
) ss.
COUNTY OF OAKLAND)

On this ____ day of _____, 2016, before me appeared Gary Shapiro, Manager of Ivanhoe Meadowbrook, LLC, a Michigan limited liability company, who states that he has signed this document of his own free will on behalf of the limited liability company.

Notary Public: _____
Notary County: _____, Michigan
Commission Expires: _____
Acting In: _____

[Signatures of Owner on Next Page]

The undersigned execute this Agreement as the fee owners of the Land to acknowledge and consent to this Agreement.

“OWNER”

_____,
a Michigan _____

By: _____

Print Name: _____

Its: _____

STATE OF MICHIGAN)
) ss.
COUNTY OF OAKLAND)

On this ____ day of _____, 2016, before me appeared _____, the _____ of _____, a Michigan _____, who states that he has signed this document of his own free will on behalf of the corporation.

Notary Public: _____
Notary County: _____, Michigan
Commission Expires: _____
Acting In: _____

[signatures on behalf of the City of Novi on the following page]

CITY OF NOVI

By: _____
ROBERT GATT, MAYOR

By: _____
CORTNEY HANSON,
CLERK

STATE OF MICHIGAN)
) ss.
COUNTY OF OAKLAND)

On this ____ day of _____, 2016, before me appeared Robert Gatt and Cortney Hanson, who stated that they had signed this document of her own free will on behalf of the City of Novi in their respective official capacities, as stated above.

Notary Public: _____
Notary County: _____, Michigan
Commission Expires: _____
Acting In: _____

Drafted By and
When Recorded Return to:

Gregory T. Obloy, Esq.
Carson Fischer, P.L.C.
4111 Andover Rd.
West – 2nd Fl
Bloomfield Hills, MI 48302

EXHIBIT A

PROPERTY DESCRIPTION

Tax Id Number(s): 22-12-351-020 (Parcel 1), 22-12-351-021 (Parcel 2), 22-12-351-026 (Parcel 3)

Land Situated in the City of Novi in the County of Oakland in the State of MI:

PARCEL 1:

A parcel of land located in the West 1/2 of the Southwest 1/4 of Section 12, Town 1 North, Range 8 East, City of Novi, Oakland County, Michigan, further described as: Beginning on the West Section line distance North 02 degrees 51 minutes 00 seconds East, 765 feet from the Southwest Section corner; thence North 02 degrees 51 minutes 00 seconds East, 140 feet; thence South 87 degrees 09 minutes 00 seconds East, 315 feet; thence North 02 degrees 51 minutes 00 seconds East, 153 feet; thence North 87 degrees 09 minutes 00 seconds West, 315.0 feet; thence North 02 degrees 51 minutes 00 seconds East, 421.0 feet; thence South 87 degrees 09 minutes 00 seconds East, 697.0 feet; thence South 03 degrees 08 minutes 50 seconds West, 714.0 feet; thence North 87 degrees 09 minutes 00 seconds West, 693.30 feet to the point of beginning.

PARCEL 2:

Part of the West 1/2 of the Southwest 1/4 of Section 12, Town 1 North, Range 8 East; Beginning at a point on the West line North 02 degrees 51 minutes 00 seconds East 905 feet from the Southwest Section corner; thence North 02 degrees 51 minutes 00 seconds East 153 feet; thence South 87 degrees 09 minutes 00 seconds East 315 feet; thence South 02 degrees 51 minutes 00 seconds West 153 feet; thence North 87 degrees 09 minutes 00 seconds West 315 feet to beginning.

PARCEL 3:

A parcel of land in the West 1/2 of the Southwest 1/4 of Section 12, Town 1 North, Range 8 East, City of Novi, Oakland County, Michigan, more particularly described as: Beginning at point distant North 02 degrees 37 minutes 55 seconds East 764.97 feet from the Southwest Section corner; thence South 87 degrees 16 minutes 30 seconds East 695.04 feet; thence South 03 degrees 08 minutes 30 seconds West 652.45 feet; thence North 89 degrees 08 minutes 40 seconds West 141.64 feet; thence North 12 feet; thence North 89 degrees 08 minutes 40 seconds West 465.53 feet; thence North 43 degrees 01 minutes 20 seconds West 54.28 feet; thence North 02 degrees 37 minutes 55 seconds East 597.41 feet; thence North 87 degrees 16 minutes 30 seconds West 43 feet; thence North 02 degrees 37 minutes 55 seconds East 24.97 feet to the point of beginning. EXCEPT that part deeded to the City of Novi for road purposes described as: Part of the Southwest 1/4 of Section 12, Town 1 North, Range 8 East, City of Novi, Oakland County, Michigan, described as: Beginning at the Southwest corner of said Section 12; thence North 02 degrees 37 minutes 55 seconds East, 740.00 feet along the West Section line of said Section 12; thence South 87 degrees 16 minutes 30 seconds East, 43.00 feet; thence South 02 degrees 37 minutes 56 seconds West, 597.41 feet; thence South 43 degrees 01 minutes 20 seconds East, 54.28 feet; thence South 89 degrees 08 minutes 40 seconds East, 465.53 feet; thence due South 12.00 feet; thence South 89 degrees 08 minutes 40 seconds East, 141.64 feet; thence South 03 degrees 08 minutes 30 seconds West 79.77 feet to a point on the South line of said Section 12; thence due West, 689.25 feet along said line to point of beginning as set forth in Deed recorded in Liber 11987, Page 59 and rerecorded in Liber 12021, Page 26, Oakland County Records.

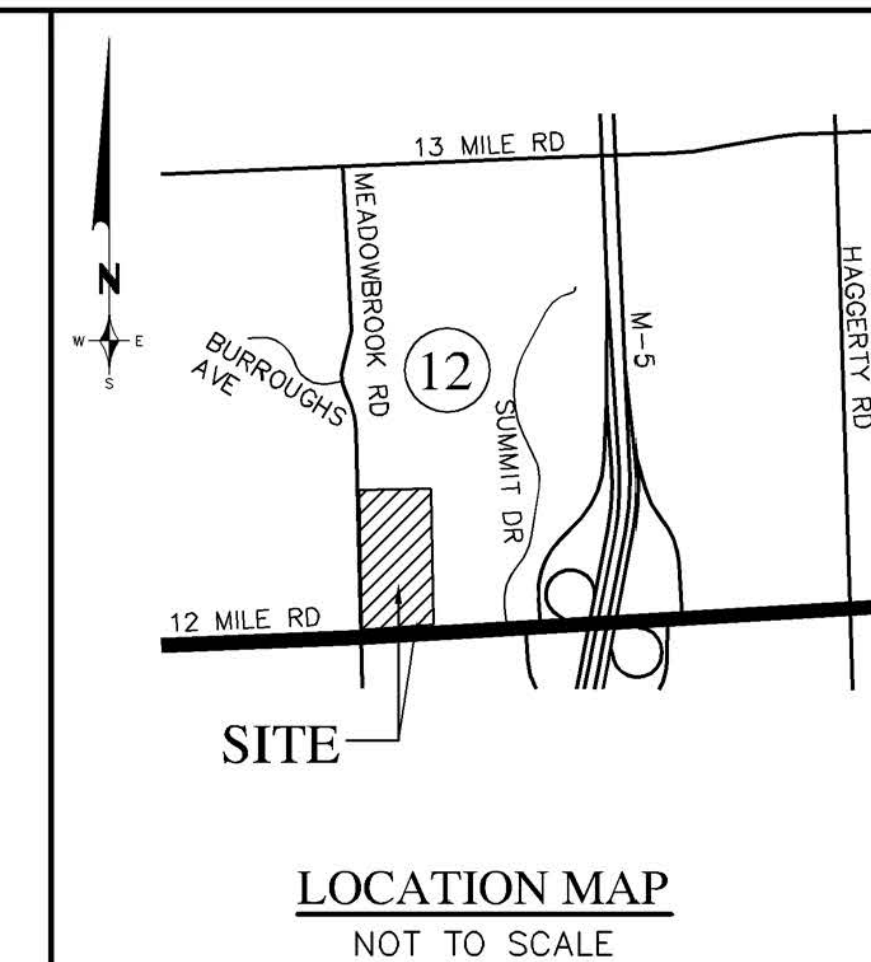
EXHIBIT B

PRO PLAN

[attached]

DRAFT

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



APPLICANT:
IVANHOE MEADOWBROOK L.L.C.
6689 ORCHARD LAKE ROAD, STE. 314
WEST BLOOMFIELD, MI 48322
(248) 626-6114
CONTACT: GARY SHAPIRO

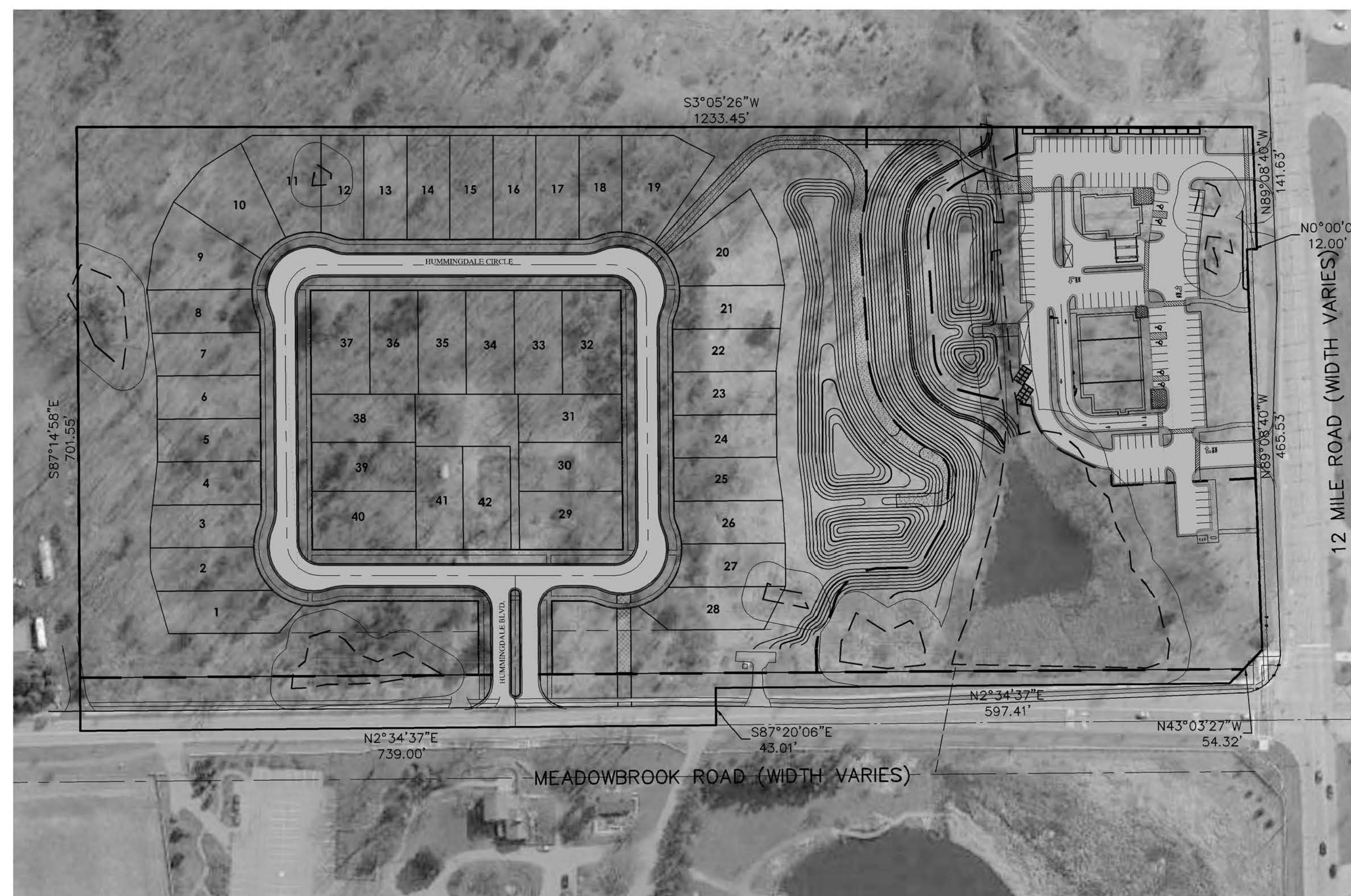
CIVIL ENGINEER:
ZEIMET-WOZNIAK & ASSOCIATES, INC.
55800 GRAND RIVER, SUITE 100
NEW HUDSON, MI 48165
(248) 437-5099
CONTACT: ANDY WOZNIAK

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 PRO AND PHASING 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:**
- 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 OVERALL PLANTING PLAN VIEW
 - LS-2 MEADOWS LANDSCAPE PLANTING DETAIL
 - LS-3 SHOPPES LANDSCAPE PLANTING DETAIL
 - LS-4 ENTRANCE PLANTINGS, SIGN AND WALL MONUMENT
 - LS-5 DETAILS AND PLANT MATERIALS LIST
 - LS-6 MEADOWS TREE REPLACEMENT PLANNING DETAIL
 - LS-7 TREE REPLACEMENT PLANTING DETAIL
- 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.

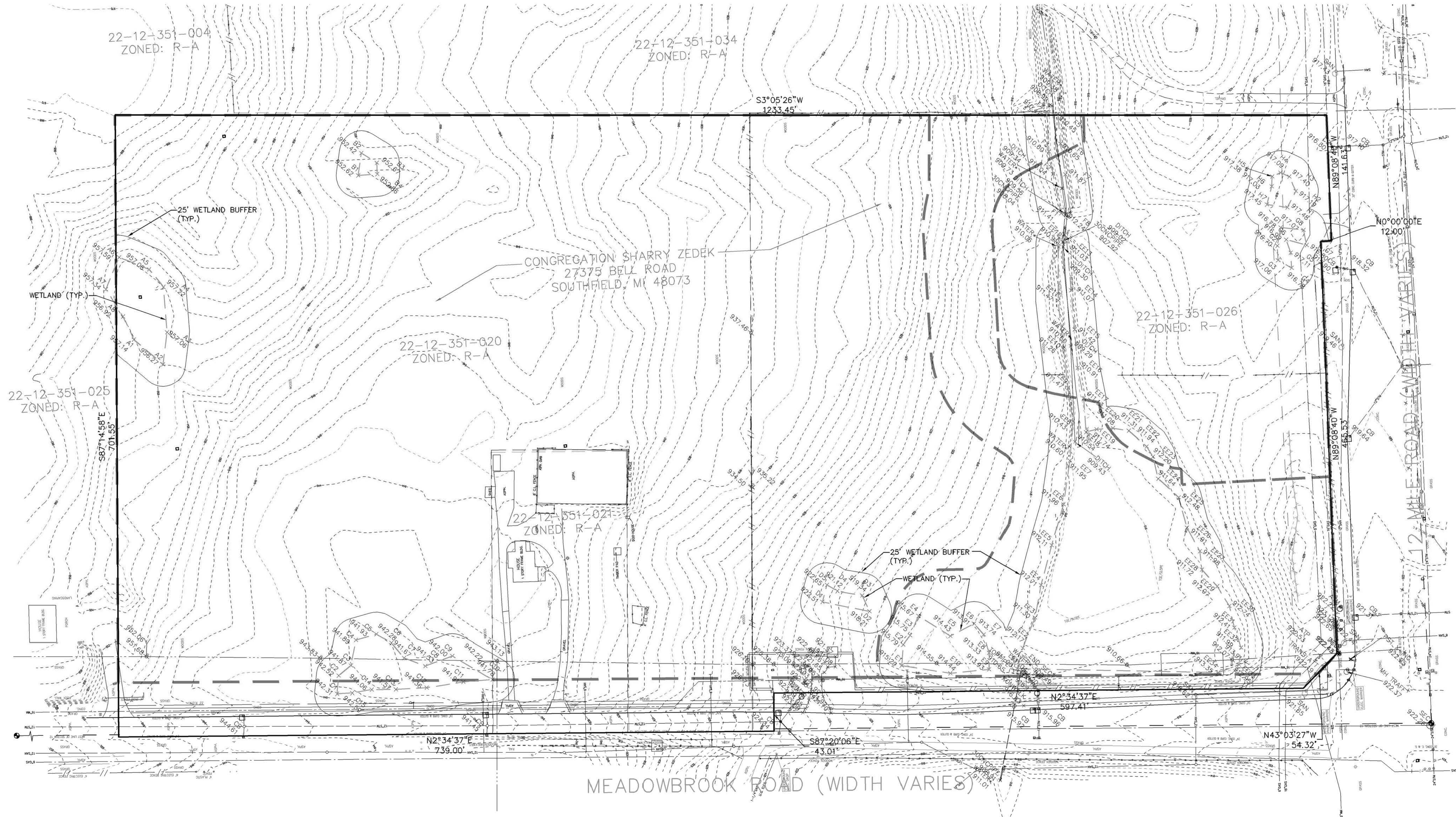
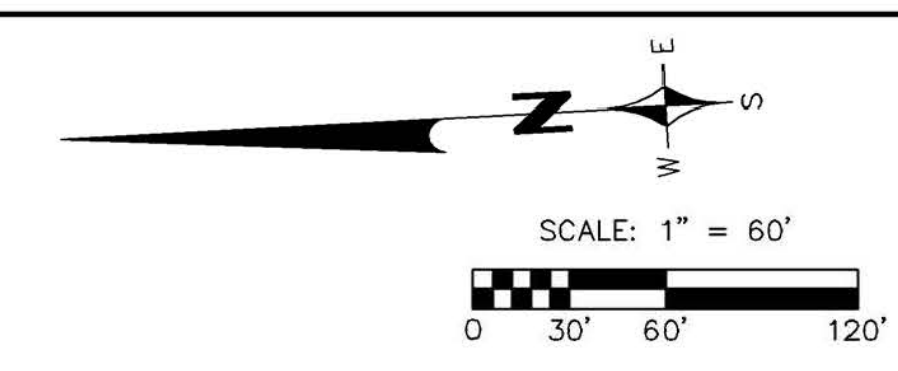
REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PSP SUBMITTAL	1/11/16										
PSP	4/13/16										

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



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

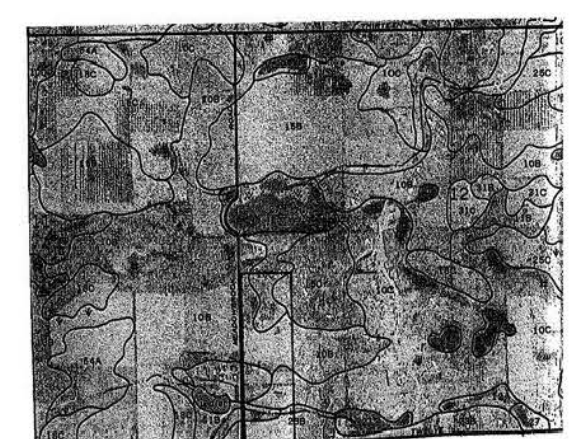
COVER SHEET		DATE	SCALE	HOR:	VER:
BEACON HILL PARK		1/11/16	1" = N/A	1" = N/A	
NOVI, MICHIGAN, SECTION 12		DESIGNED BY	JOB NO.		
		SRB	14151		
		DRAWN BY	SHEET		
		SRB	SP-1		



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

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.



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: SPRINKS LOAMY SAND, 6-12% SLOPES
- 23B: SISSON FINE SANDY LOAM, 1-6% SLOPES
- 41B: AQUEUNTS, SANDY AND LOAMY, UNDULATING

LEGAL DESCRIPTIONS
50-22-12-351-020 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, SOUTH 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										
PSP	4/13/16										

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

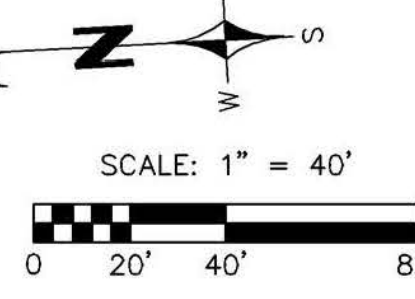
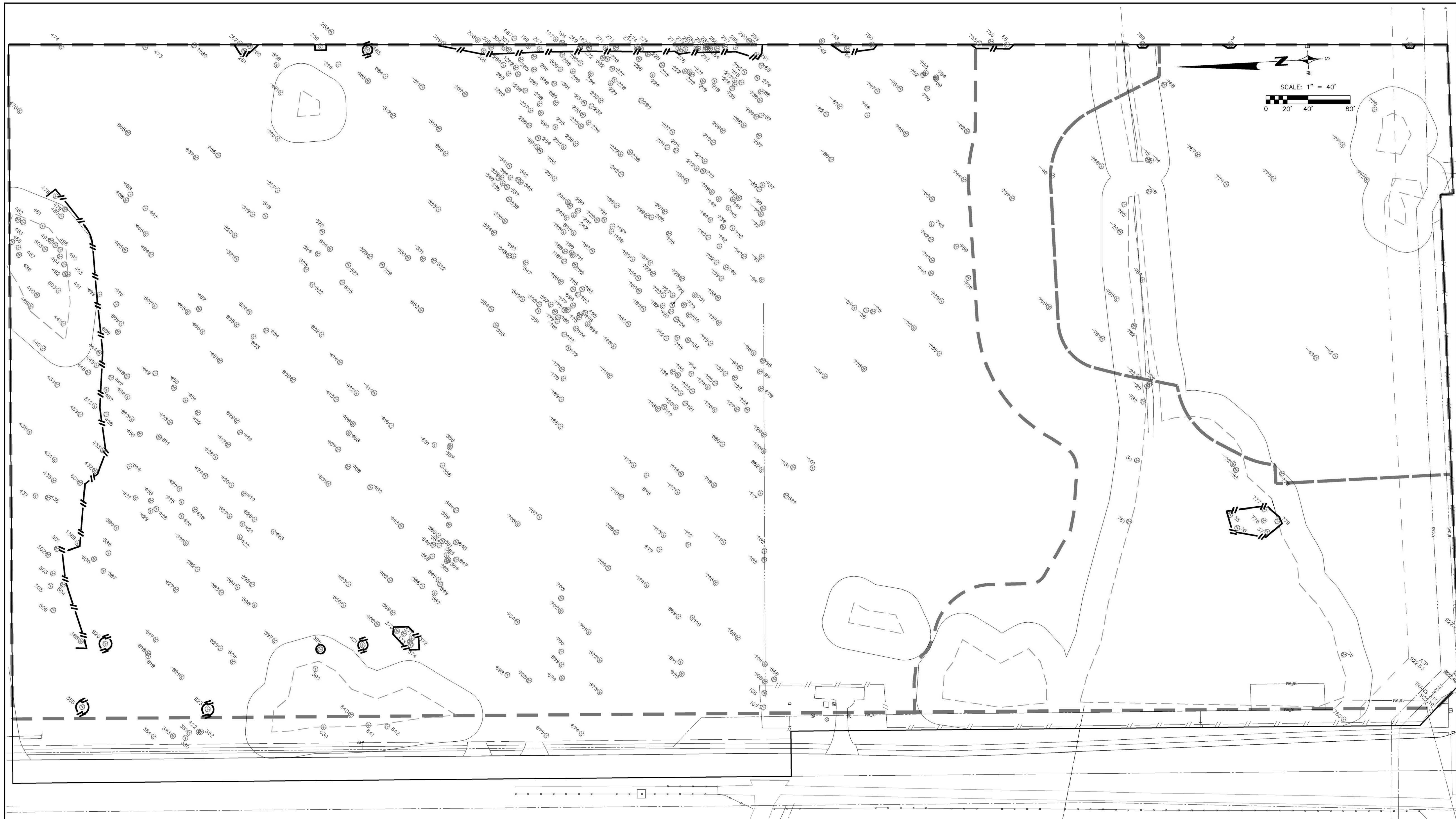
MISS DIG SYSTEM, INC.
 THREE FULL WORKING DAYS BEFORE YOU DIG. CALL THE MISS DIG SYSTEM 1-800-482-7171

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

EXISTING CONDITIONS
BEACON HILL PARK
 NOVI, MICHIGAN, SECTION 12

DATE	SCALE	HOR: 1" = 60'	VER: 1" = N/A
1/11/16			
DESIGNED BY SRB	JOB NO.	14151	
DRAWN BY SRB	SHEET	SP-2	

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MEADOWBROOK ROAD (WIDTH VARIES)

- TREE SURVEY LEGEND:**
- TREE TO REMAIN
 - TREE TO BE REMOVED
 - TREE PROTECTION FENCE
- SEE SHEET SP-4 FOR TREE LIST.

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PSP SUBMITTAL	1/11/16										
PSP	4/13/16										

ZEIMET Wozniak & ASSOCIATES
 Civil Engineers & Land Surveyors
 5580 GRAND RIVER AVE., SUITE 100
 NEW HUDSON, MICHIGAN 48165
 P: (248) 437-5099 F: (248) 437-5222 www.zeimetwozniak.com

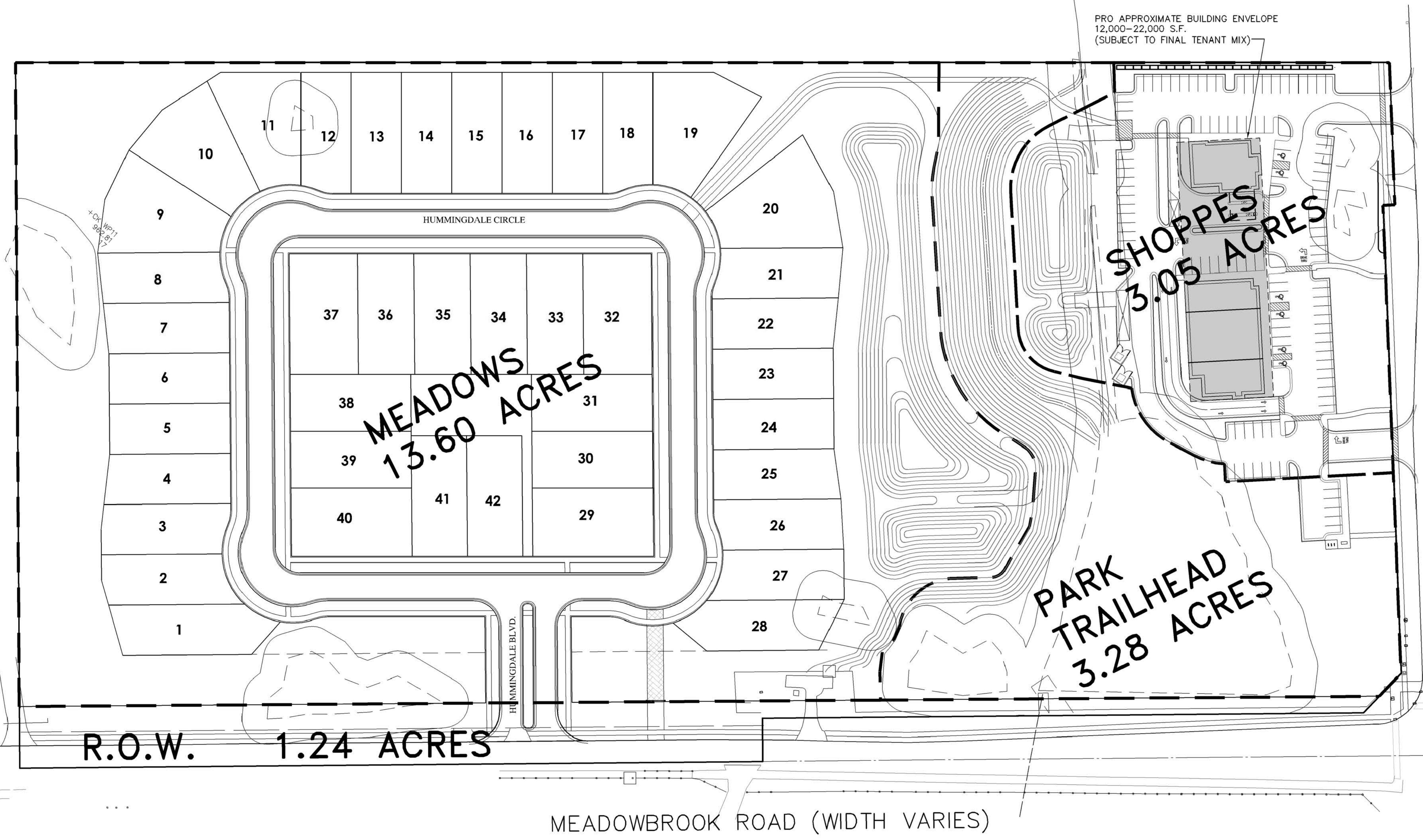
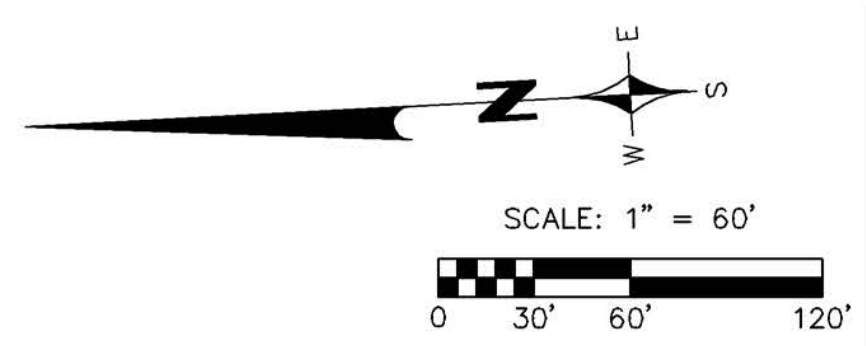
MISS DIG SYSTEM, INC.
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 IVANHOE MEADOWBROOK L.L.C.
 6689 ORCHARD LAKE ROAD, STE. 314
 WEST BLOOMFIELD, MI 48322 (248) 626-6114

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

DATE	1/11/16	SCALE	HOR: 1" = 40'
DESIGNED BY	SRB	VER:	1" = N/A
DRAWN BY	SRB	JOB NO.	14151
		SHEET	SP-3

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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
COMMERCIAL SHOPPES	18.88 ACRES
COMMERCIAL SHOPPES	3.05 ACRES

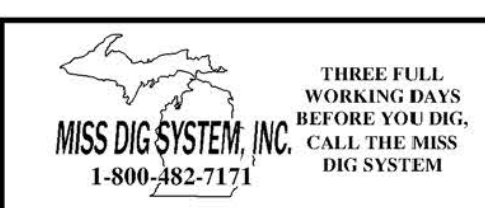
- PHASE 1**
- MEADOWS - COMPLETE CONSTRUCTION INCLUDING MASS GRADING, UNDERGROUND UTILITY INSTALLATION, PAVING, LANDSCAPING AND TREE REPLACEMENT.
 - PARK TRAILHEAD - CONSTRUCTION INCLUDING MASS GRADING, STREAM RELOCATION, WETLAND RESTORATION, LANDSCAPING AND TREE REPLACEMENT.
 - SHOPPES - MASS GRADING, 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										
PSP	4/13/16										

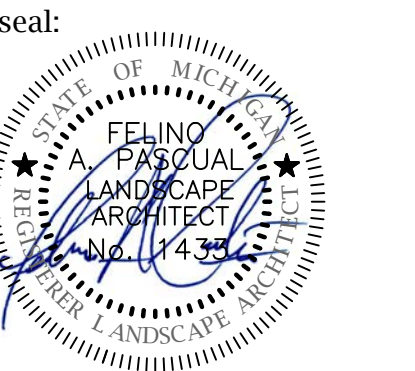
ZEIMET WOZNAK & ASSOCIATES
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 55800 GRAND RIVER AVE., SUITE 100
 NEW HUDSON, MICHIGAN 48165
 P: (248) 437-5099 F: (248) 437-5222 www.zeimetwozniak.com



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

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

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



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
 LS16.008.01 PSP 1-11-2016
 LS16.008.04 PSP 4-13-2016

drawn by:
 JP, KH
 checked by:
 FP
 date:
 1-4-2016

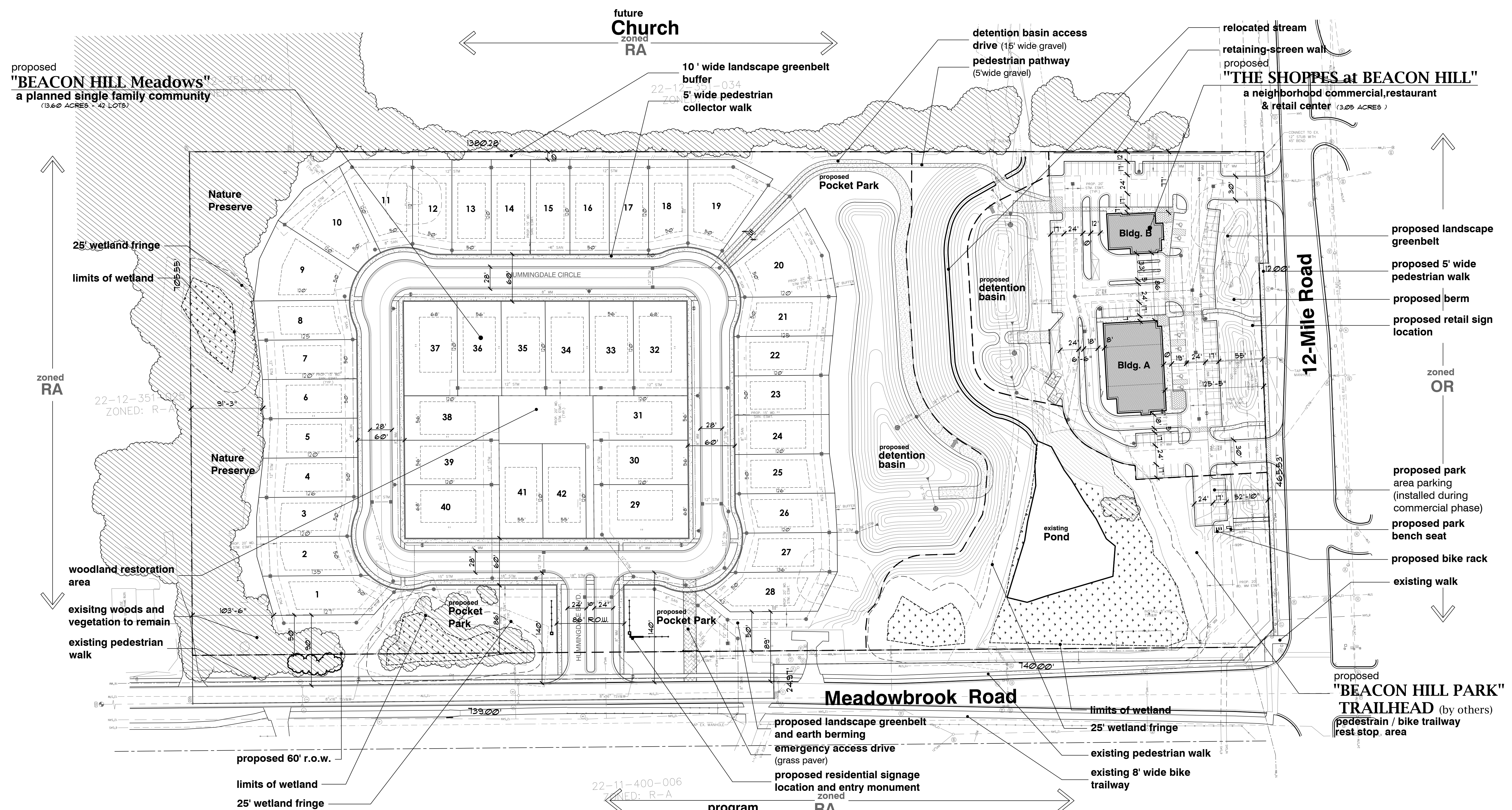
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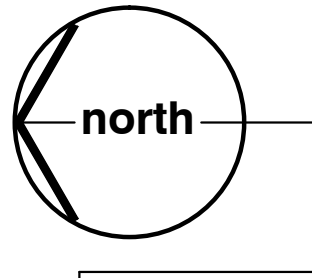
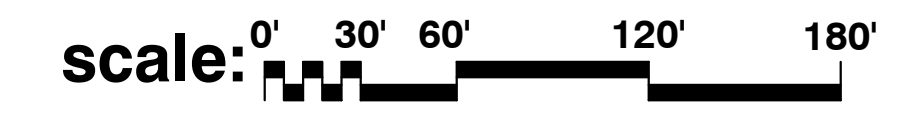
The location and elevations of existing
 underground utilities as shown on this
 drawing are only approximate. no guarantee
 is either expressed or implied as to the
 completeness of accuracy; contractor shall be
 exclusively responsible for determining the
 exact location and elevation prior to the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

project no:
LS16.008.01

sheet no:
SP-6

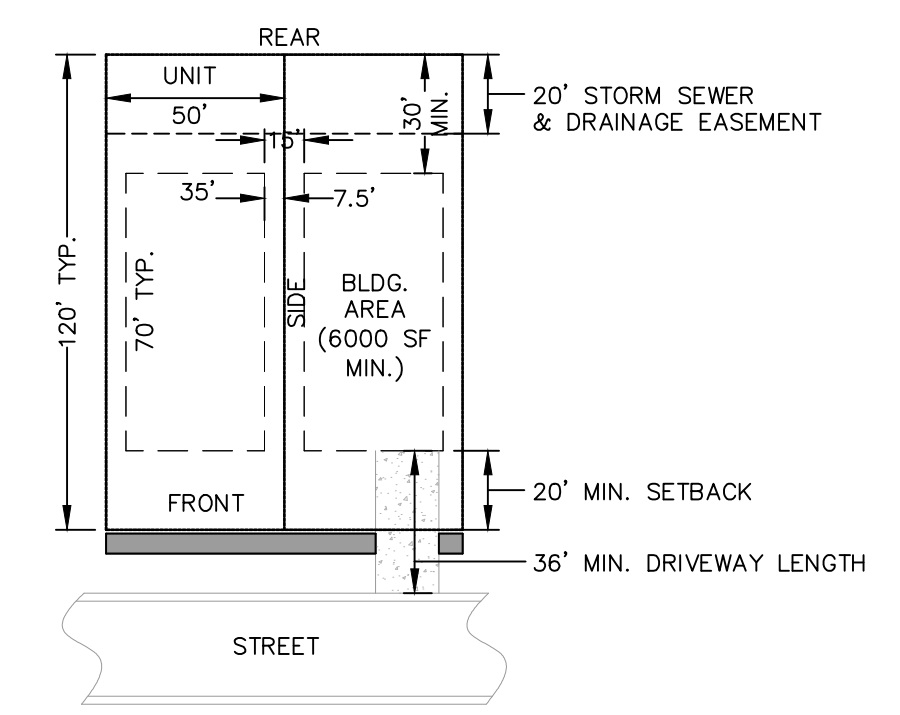


site plan for:
"Beacon Hill Park"
 City of Novi, Michigan

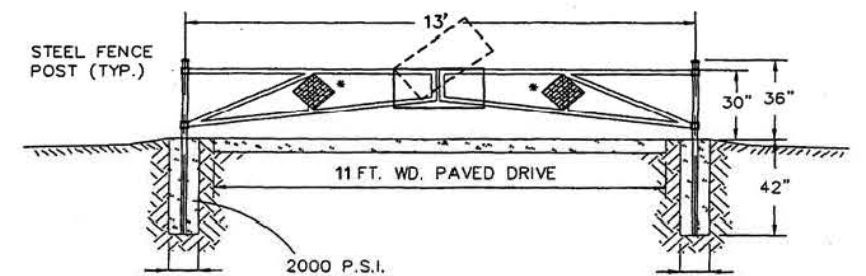
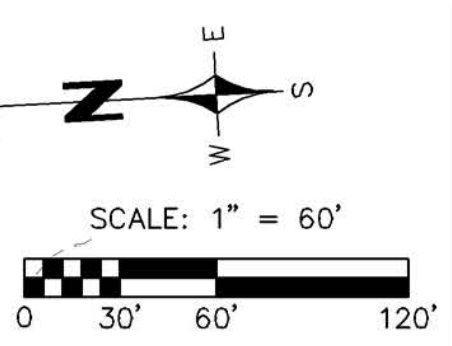


program RA	
TOTAL ACRES OF SITE GROSS	2113 ±
ACRES OF PROPOSED "THE SHOPPES AT BEACON HILL"	3.05
POTENTIAL BUILDING AREA	11,550 S.F.
RETAIL AREA	3,100 S.F.
BANK AREA	3,250 S.F.
RESTAURANT AREA	4,600 S.F.
TOTAL NO. OF PARKING REQUIRED FOR "THE SHOPPES AT BEACON HILL"	109
RETAIL PARKING	19 SPACES
(1-SPACE / 700 SF. = 3,100 / 700 = 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/24-SPACES = 100 S.F. WAITING AREA / 19-3.33-SPACES = 32.33 SPACES TOTAL)	
RESTAURANT "A-3" PARKING	36 SPACES
(86-SEATS / 2-28-SPACES = 10 EMPLOYEE/28-SPACES = 100 S.F. WAITING AREA / 19-3.33-SPACES = 32.33 SPACES TOTAL)	
TOTAL NO. OF PARKING PROVIDED FOR "THE SHOPPES AT BEACON HILL"	110

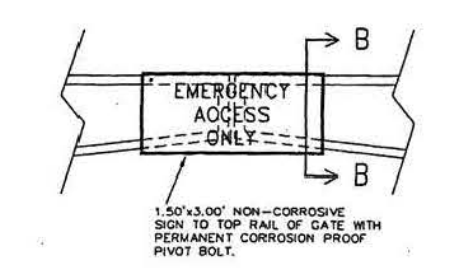
BEACON HILL PARK TRAILHEAD PARKING (INSTALLED DURING COMMERCIAL PHASE)	6 SPACES
ACRES OF "BEACON HILL MEADOWS" SITE AREA	13.6 ±
TOTAL NO. OF LOTS	42
TYP. LOT SIZE	50' X 120'
MIN. LOTS WIDTH	50'
TYP. CORNER LOT WIDTH	63'
FRONT YARD SETBACK	20'
SIDE YARD SETBACK	1.5/1.5'
REAR YARD SETBACK	30'
DENSITY PER ACRE (MEADOWS)	3.09 ±
DENSITY PER ACRE (MEADOWS & PARK)	2.49 ±
TOTAL ACRES OF ROW, DEDICATED	124 ±
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

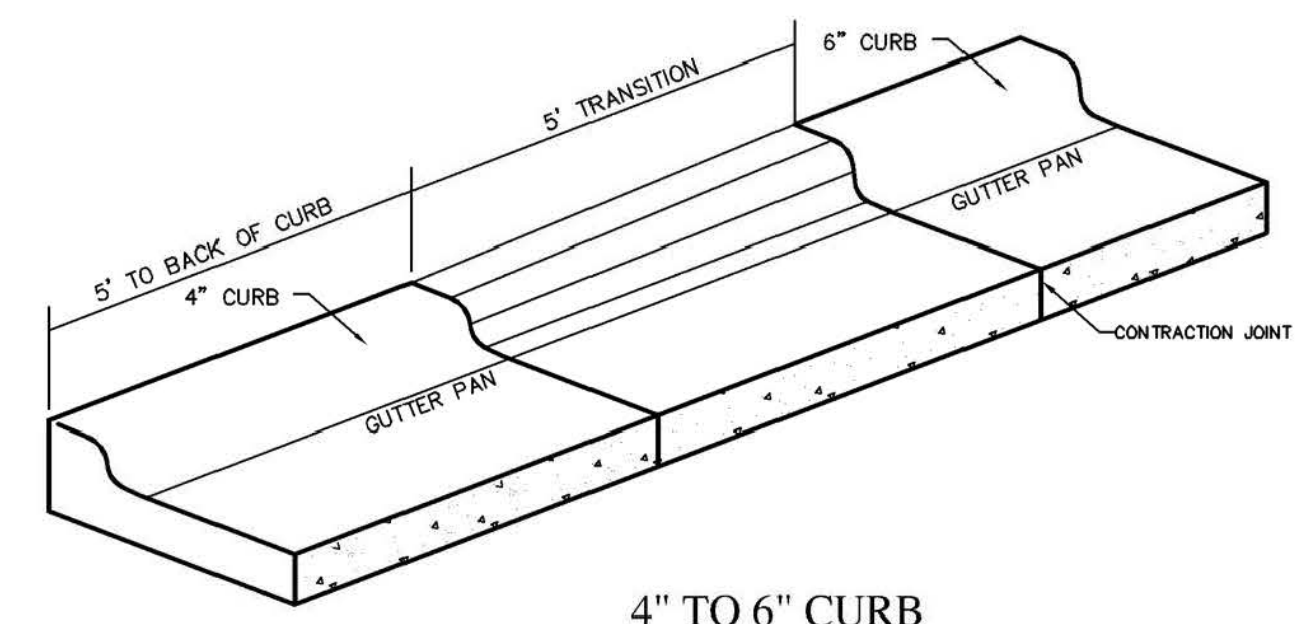


* AT EACH LOCATION, 2-12\"/>

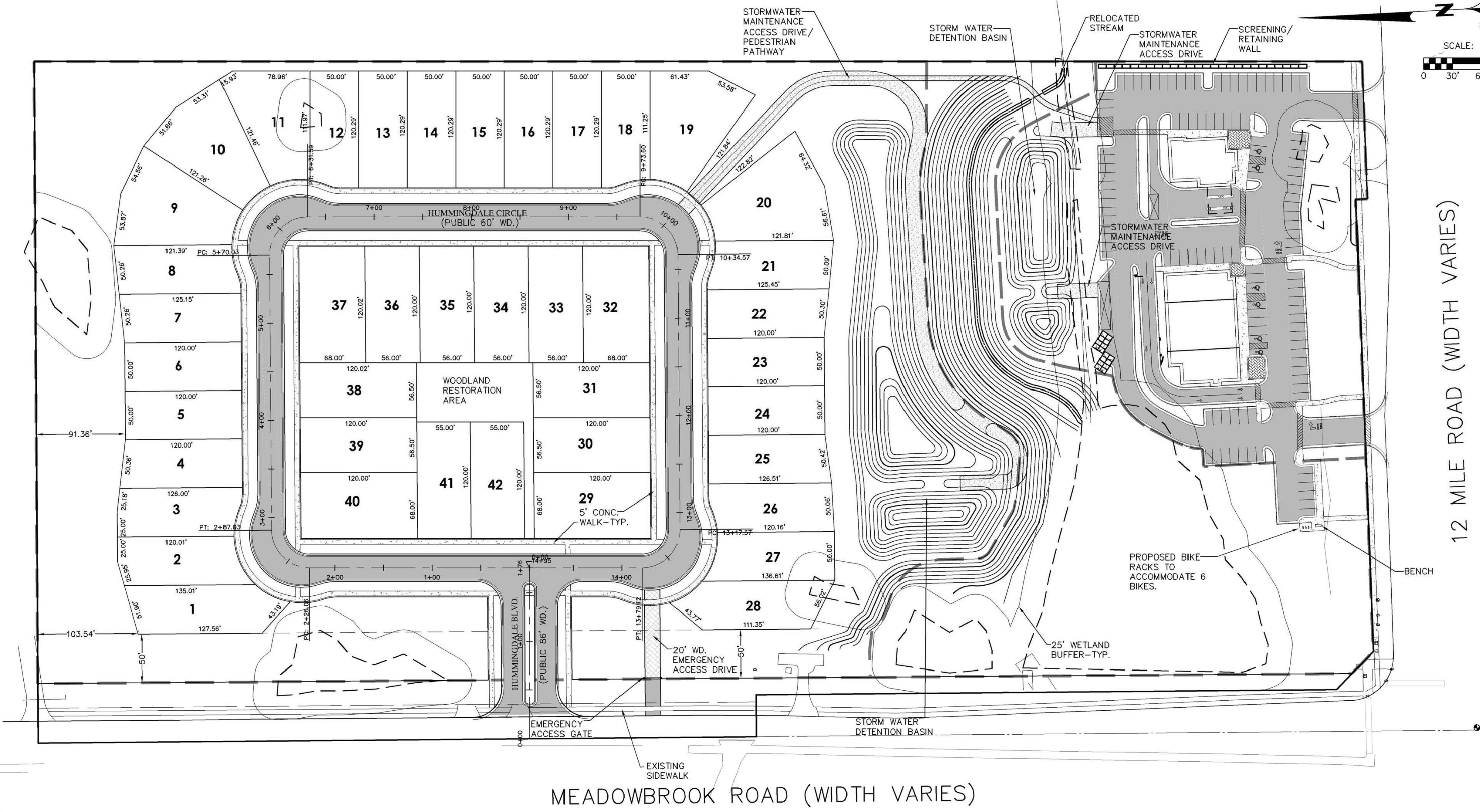


NOTE: IF LOCKING GATE IS REQUIRED, CONTACT THE DEPARTMENT FOR KNOX BOX INFORMATION.

EMERGENCY ACCESS GATE DETAIL
NOT TO SCALE

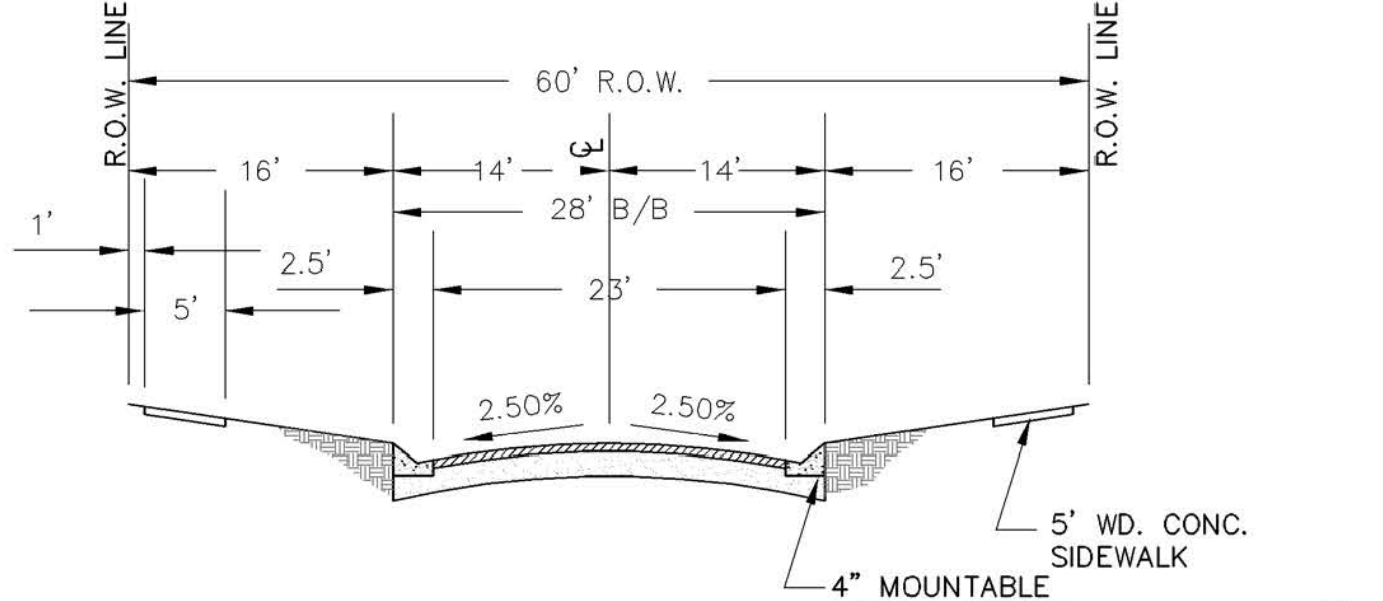


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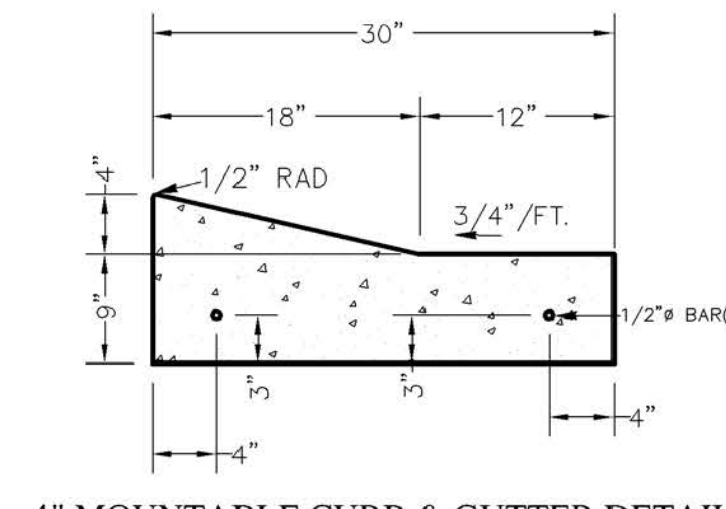


12 MILE ROAD (WIDTH VARIES)

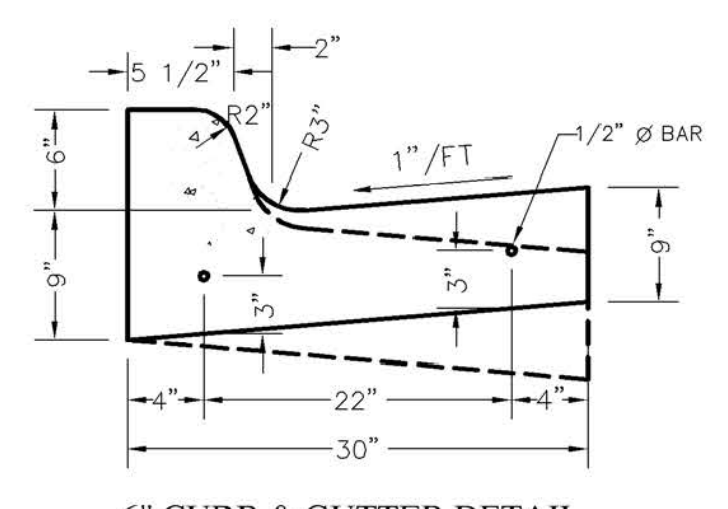
MEADOWBROOK ROAD (WIDTH VARIES)



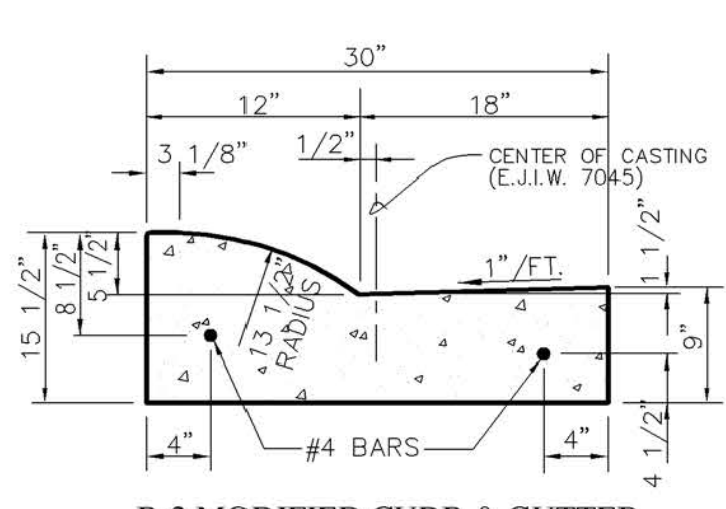
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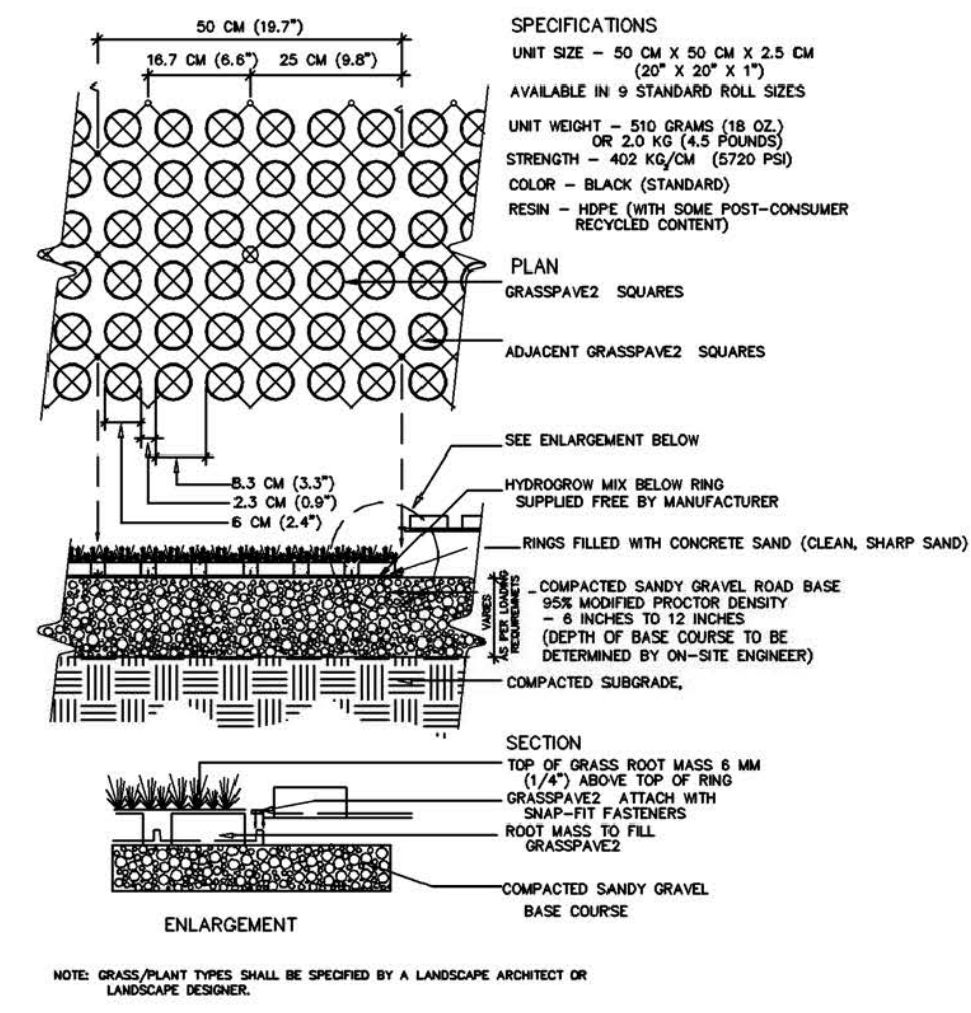
4\"/>



6\"/>



B-2 MODIFIED CURB & GUTTER
NOT TO SCALE
(FOR USE ON ISLANDS & 12 MILE RD.)

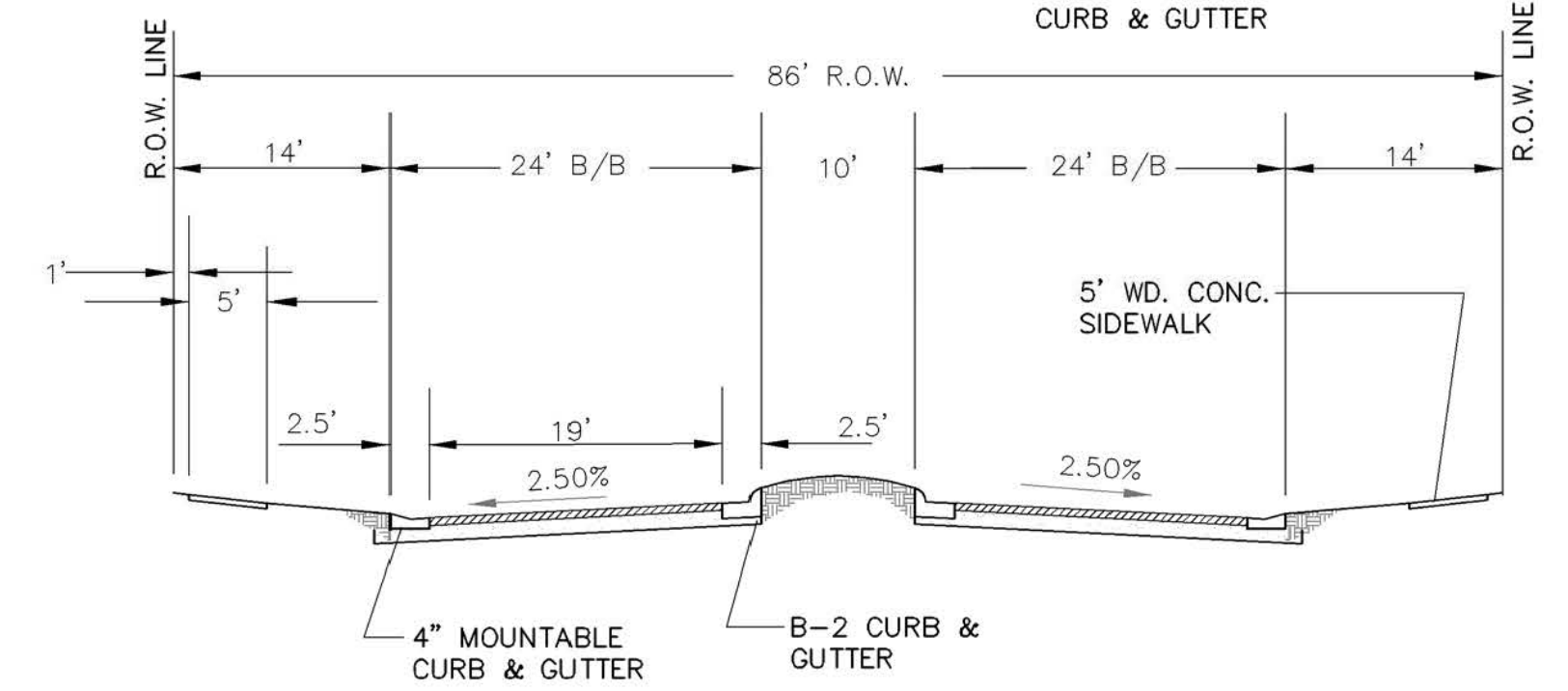


TYPICAL GRASSPAVE2 DETAIL
NOT TO SCALE

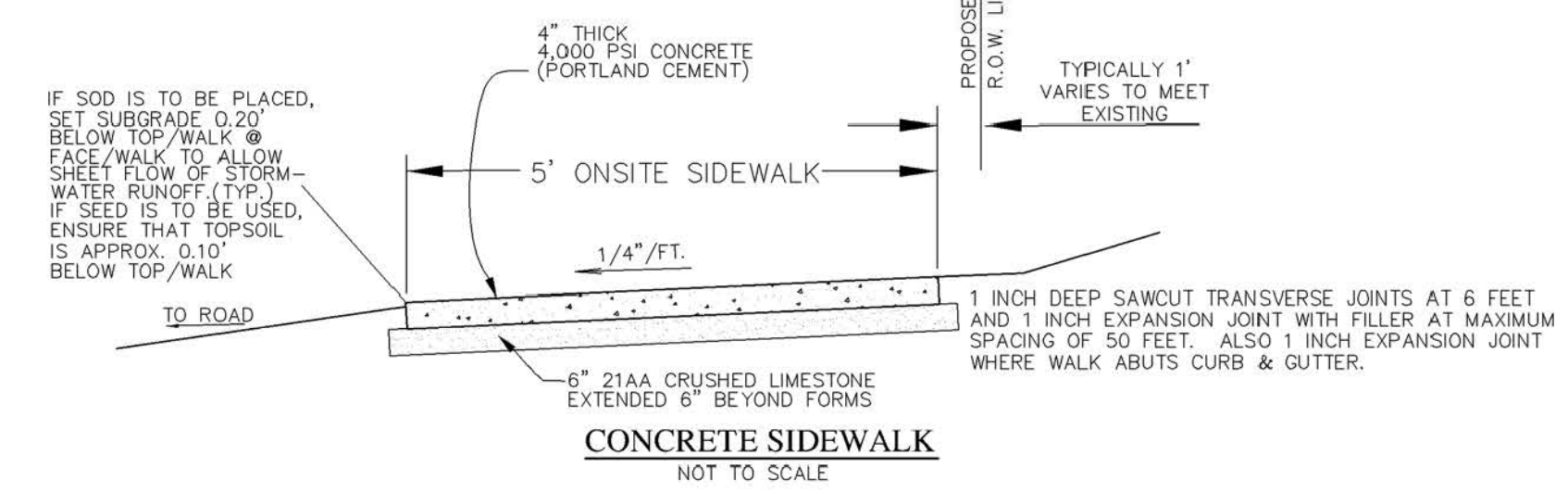
PAVEMENT LEGEND:

- ASPHALT PAVEMENT**
2\"/>
- CONCRETE SIDEWALK/SAFETY PATH**
4\"/>
- STORMWATER MAINTENANCE DRIVE/PEDESTRIAN PATHWAY**
3\"/>
- DUMPSTER PAD**
8\"/>
- GRASS PAVER (SEE DETAIL THIS SHEET)**
GRASSPAVE2 UNITS (OR APPROVED EQUAL) ON 8\"/>

PAVEMENT SECTIONS SUBJECT TO RECOMMENDATION BY A QUALIFIED GEOTECHNICAL ENGINEER.



TYPICAL PAVEMENT SECTIONS
NOT TO SCALE



CONCRETE SIDEWALK
NOT TO SCALE

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PSP SUBMITTAL	1/11/16										
PSP	4/13/16										

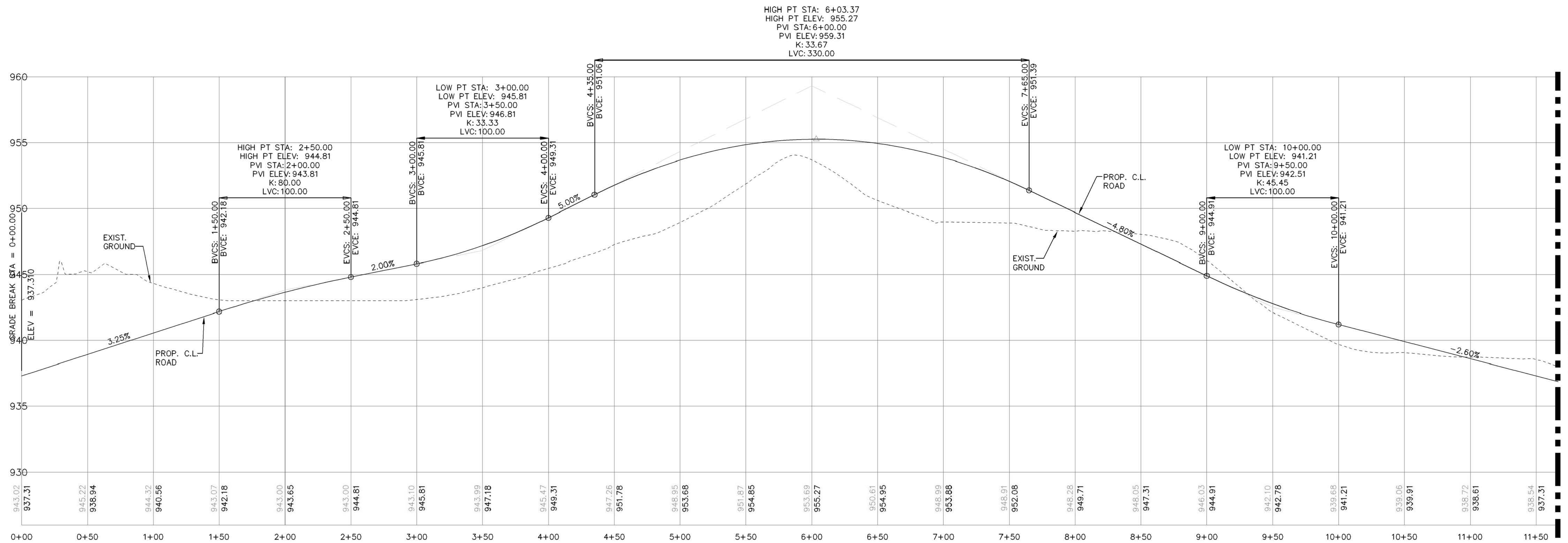
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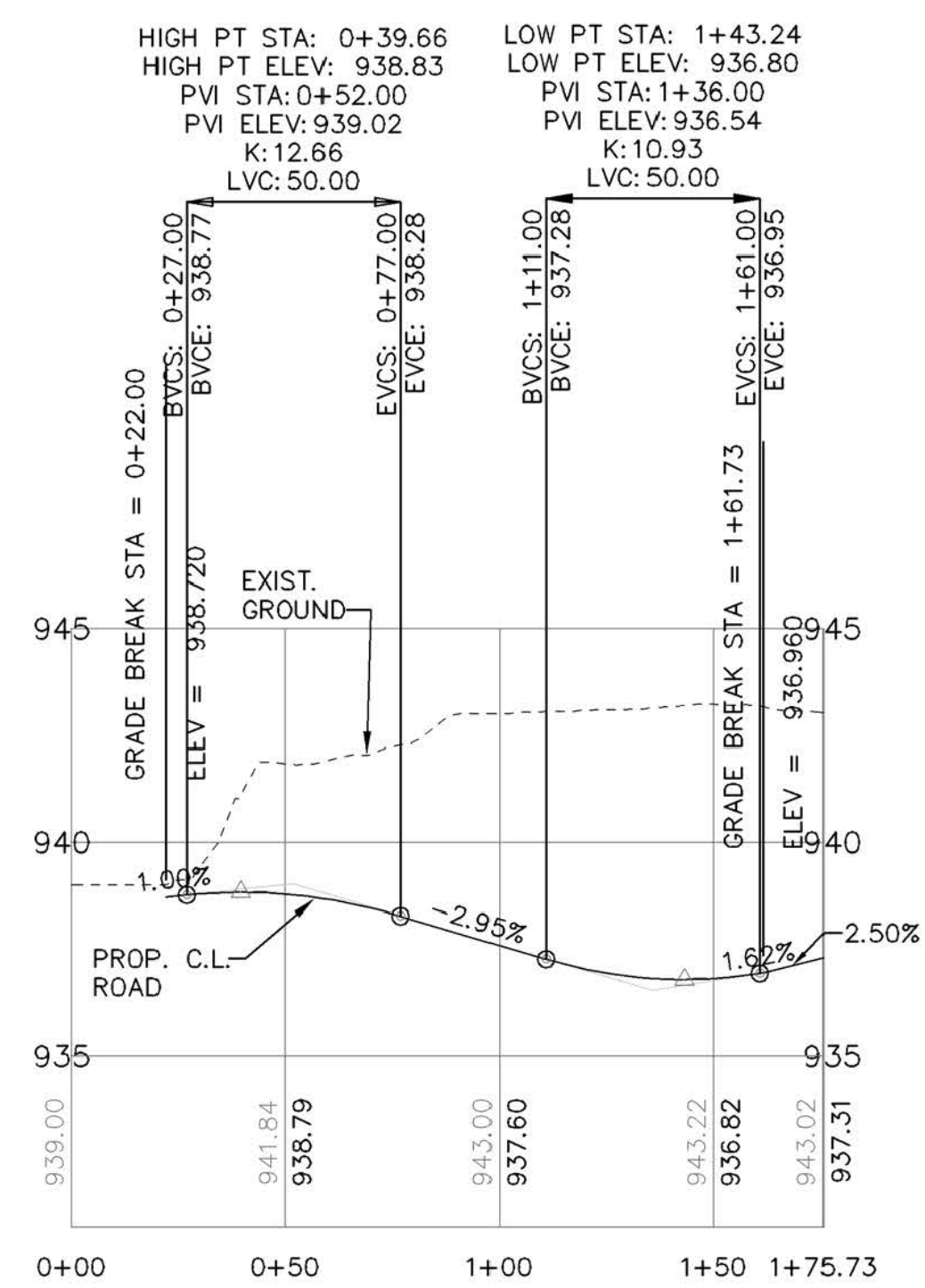
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PAVING PLAN
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

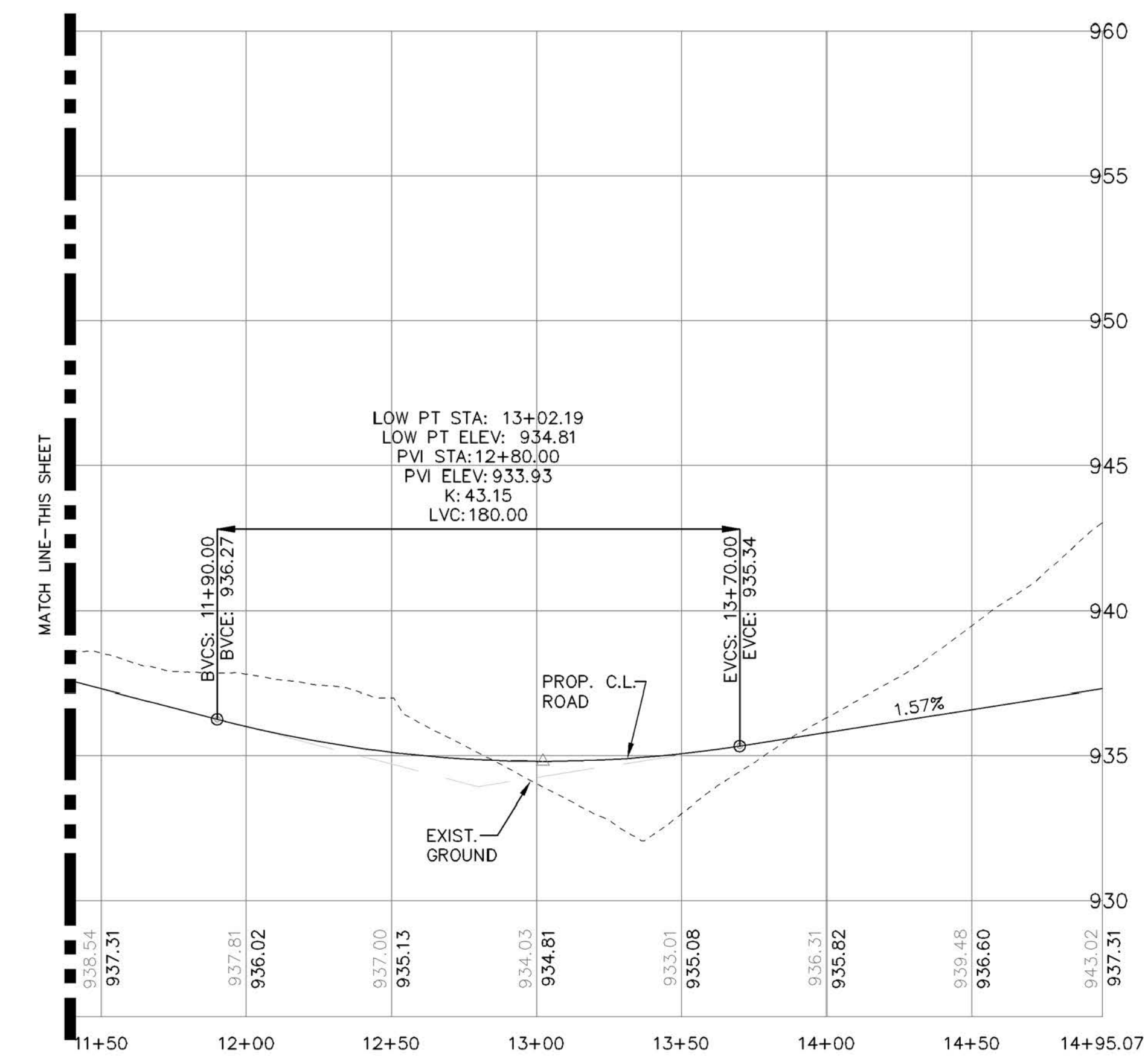
DATE	1/11/16	SCALE	HOR: 1" = 60'
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HUMMINGBIRD CIRCLE



HUMMINGBIRD BLVD.



HUMMINGBIRD CIRCLE

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
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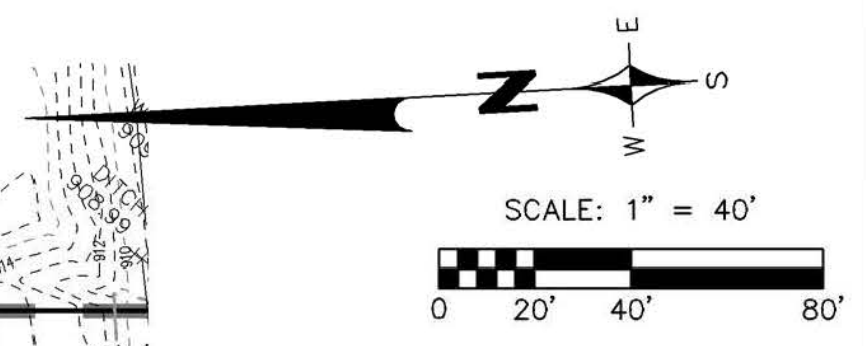
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ROAD PROFILES
 BEACON HILL PARK
 NOVI, MICHIGAN, SECTION 12

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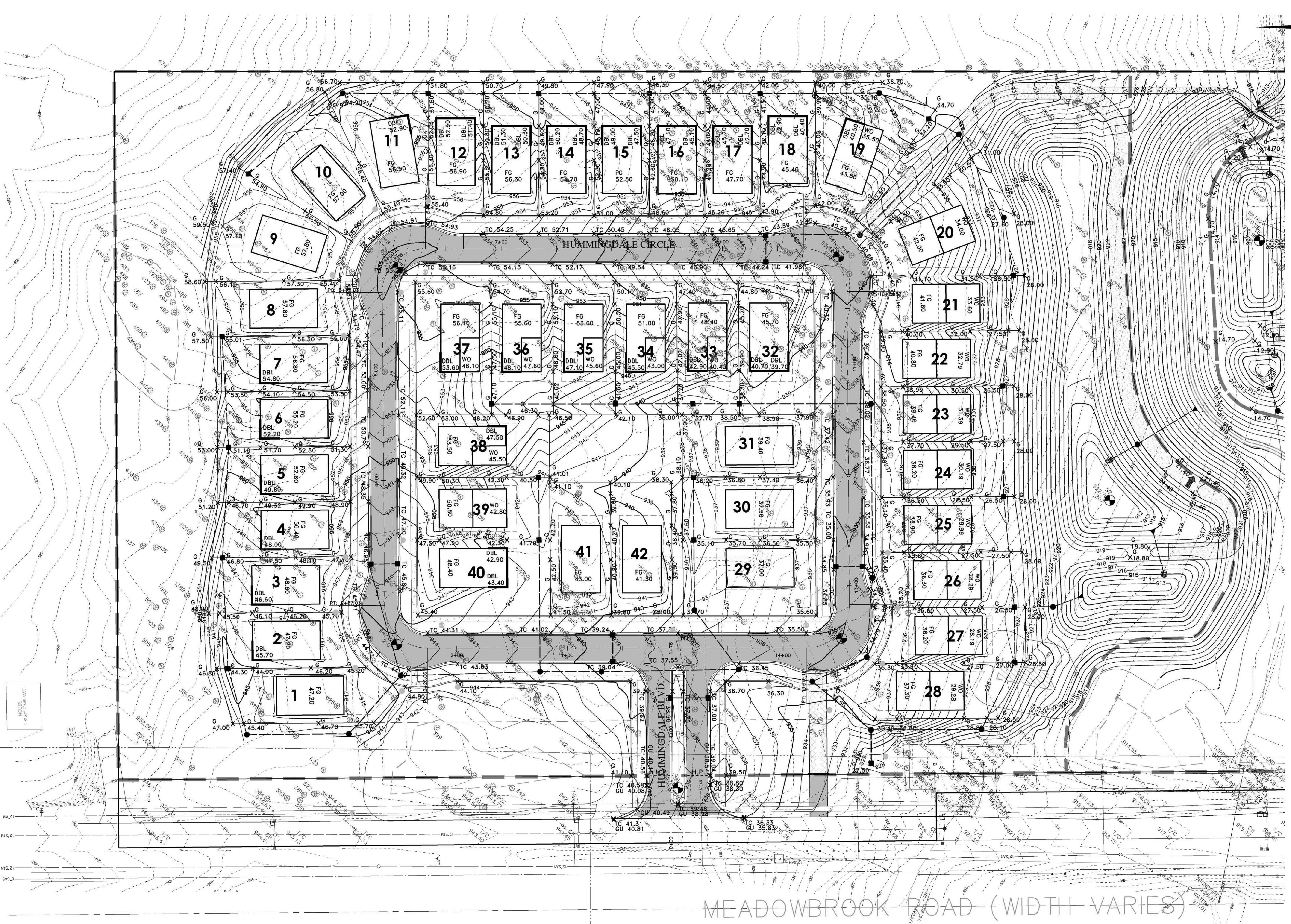


LEGEND
EXISTING

- 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
- 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
 - PROPOSED GRADE
- TC = TOP OF CURB
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 GU = GUTTER
 FG = FINISH GRADE
 FF = FINISH FLOOR
 DBL = BRICK LEDGE



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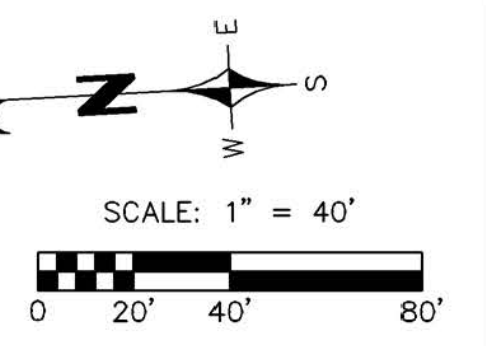
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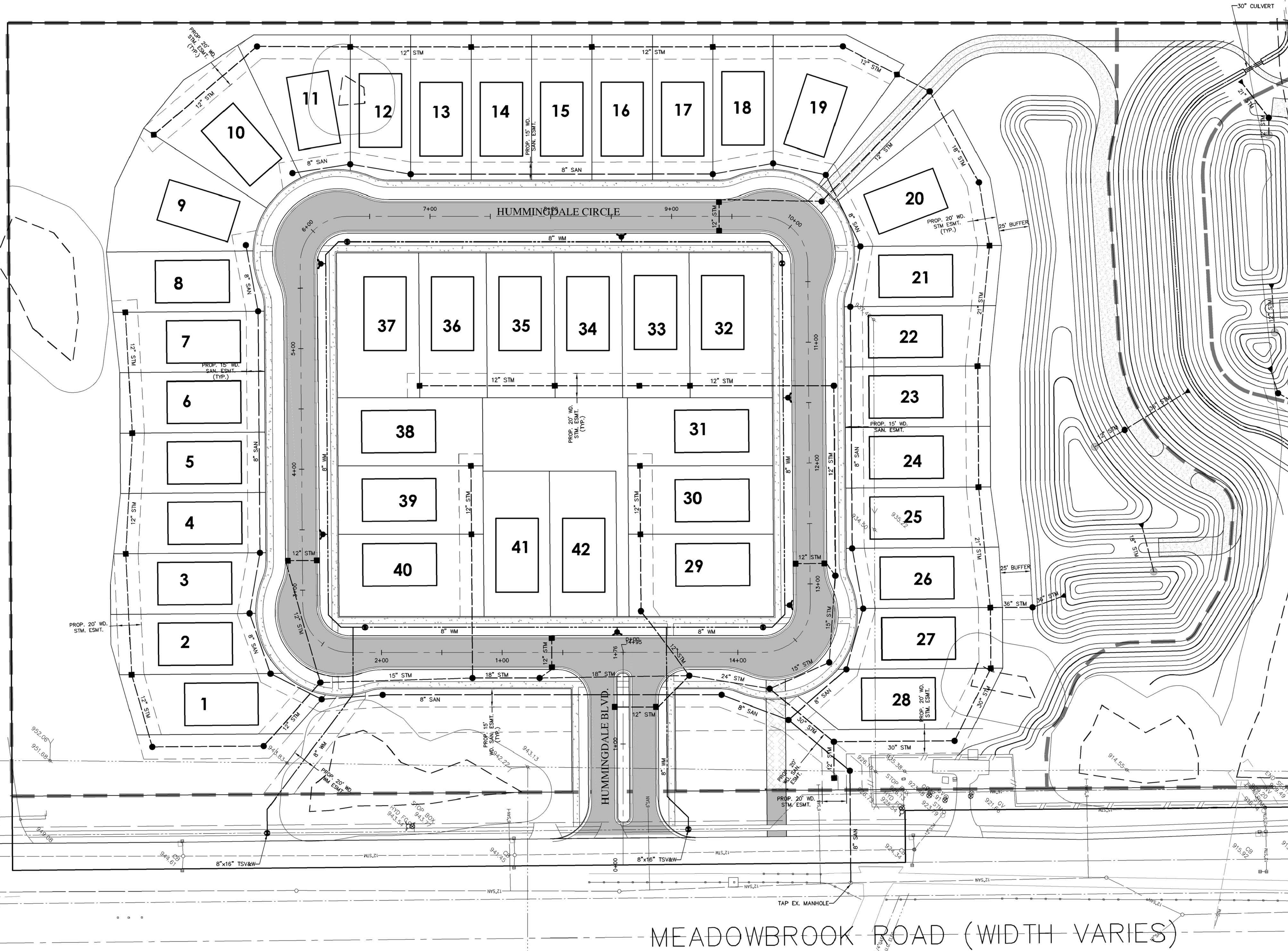
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GRADING & DETENTION PLAN—MEADOWS
BEACON HILL PARK
 NOVI, MICHIGAN, SECTION 12

DATE 1/11/16 SCALE HOR: 1" = 40' VER: 1" = N/A
 DESIGNED BY SRB JOB NO. 14151
 DRAWN BY SRB SHEET SP-9



- UTILITY LEGEND**
- EXISTING**
- MANHOLE
 - CATCH BASIN
 - ◇ INLET
 - △ CLEANOUT
 - ▽ END SECTION
 - ◇ ROOF DRAIN
 - ⊗ GATE VALVE
 - ⊕ HYDRANT
 - ⊖ WATER SHUT-OFF
 - ⊕ UTILITY POLE
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 - ⊕ LIGHT POLE
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 - TREE LINE
 - SANITARY SEWER
 - STORM SEWER
 - WATER MAIN
 - GAS MAIN
 - ELECTRIC CABLE
- PROPOSED**
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 - ◆ INLET
 - ▲ CLEANOUT
 - ▼ END SECTION
 - ◇ ROOF DRAIN
 - ⊗ GATE VALVE
 - ⊕ HYDRANT
 - ⊖ WATER SHUT-OFF
 - ⊗ TREE REMOVAL
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 - STORM SEWER
 - WATER MAIN
 - ⊕ DITCH



NOTE:
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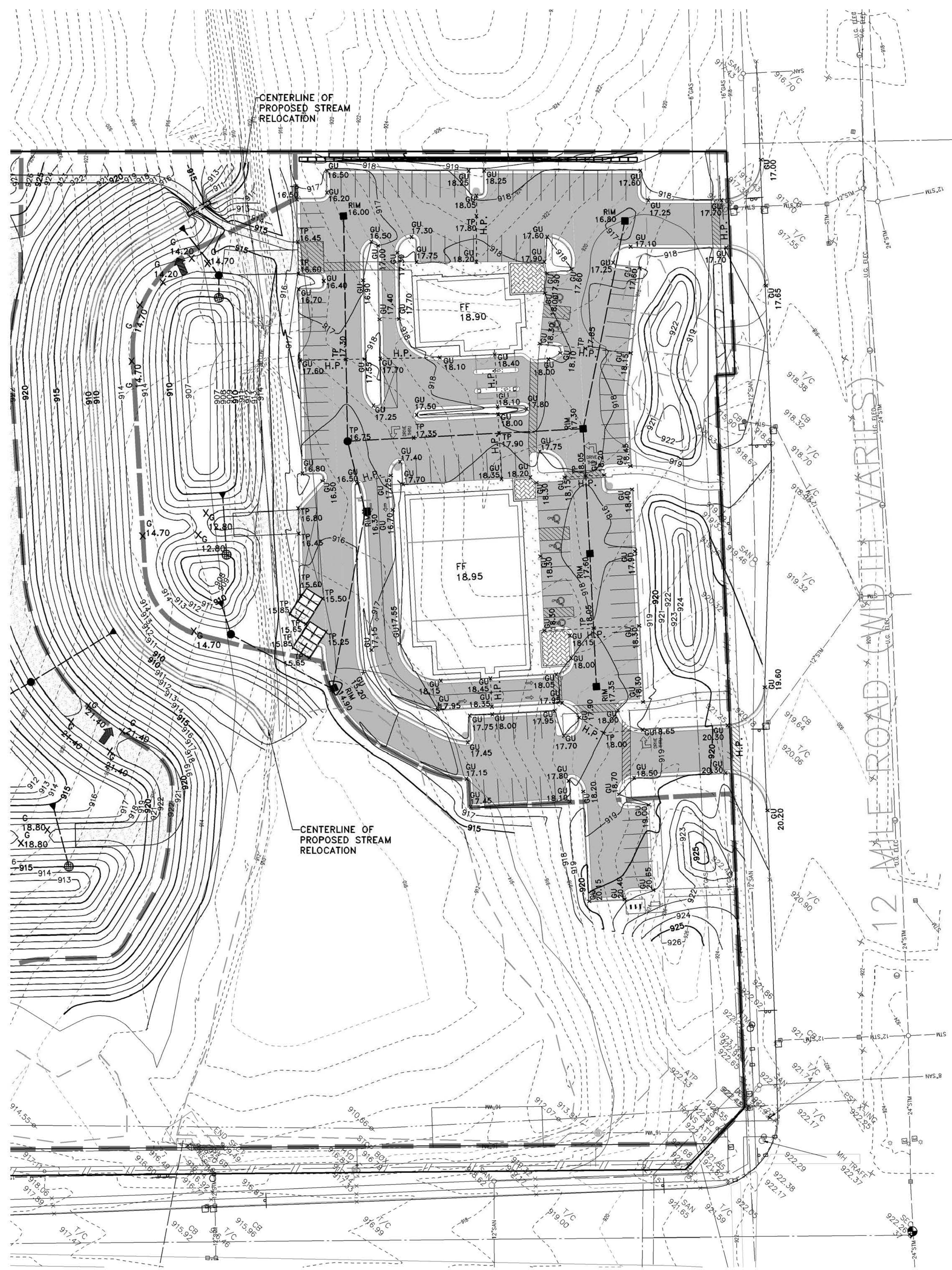
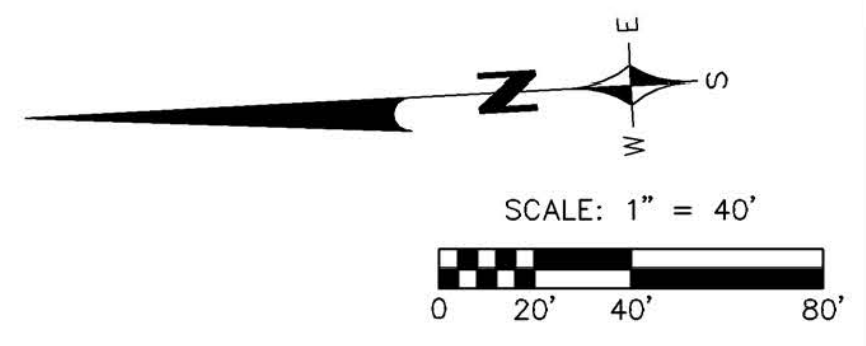
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**UTILITY PLAN—MEADOWS
 BEACON HILL PARK**
 NOVI, MICHIGAN, SECTION 12

DATE	1/11/16	SCALE	HOR: 1" = 40' VER: 1" = N/A
DESIGNED BY	SRB	JOB NO.	14151
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- LEGEND**
- EXISTING**
- MANHOLE
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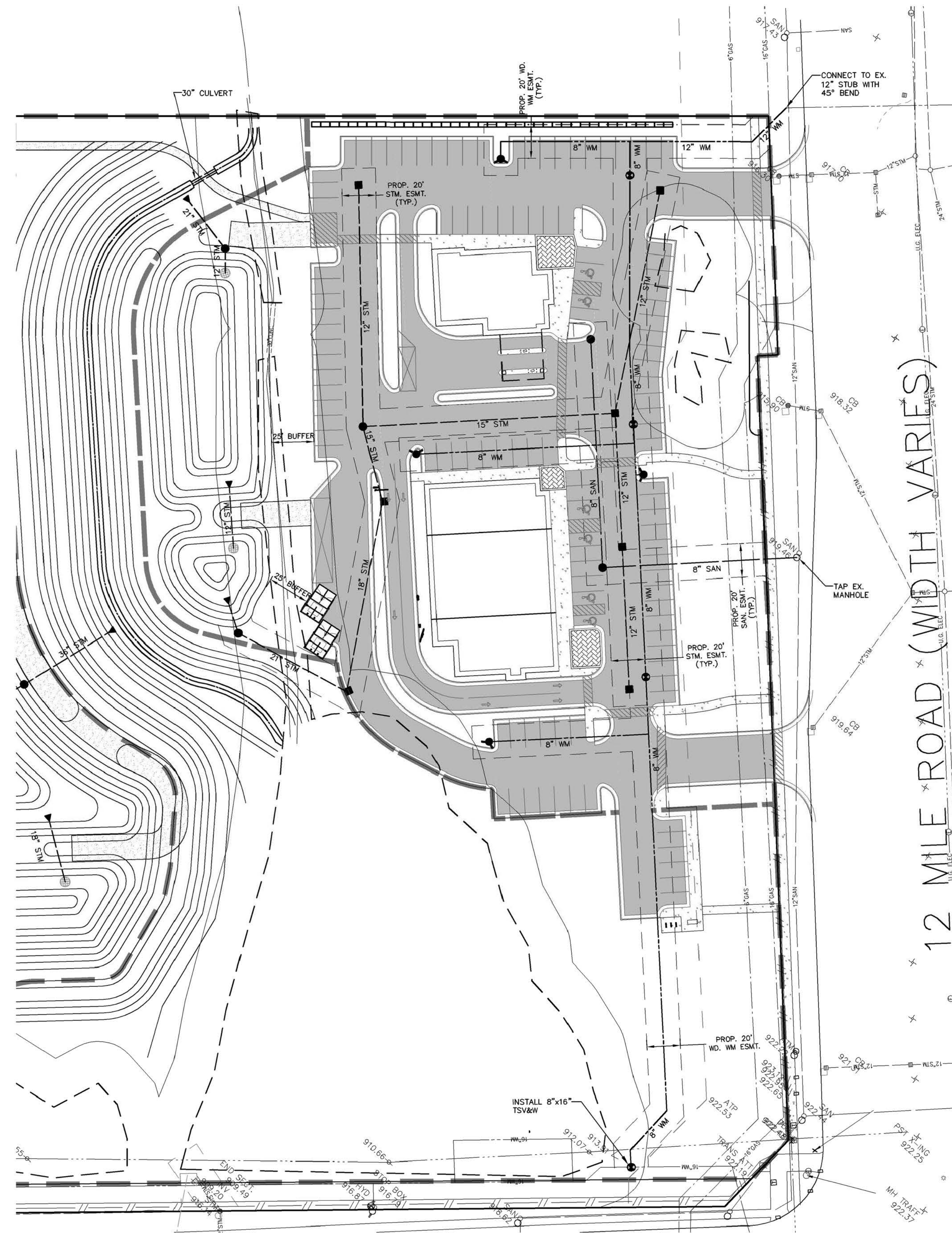
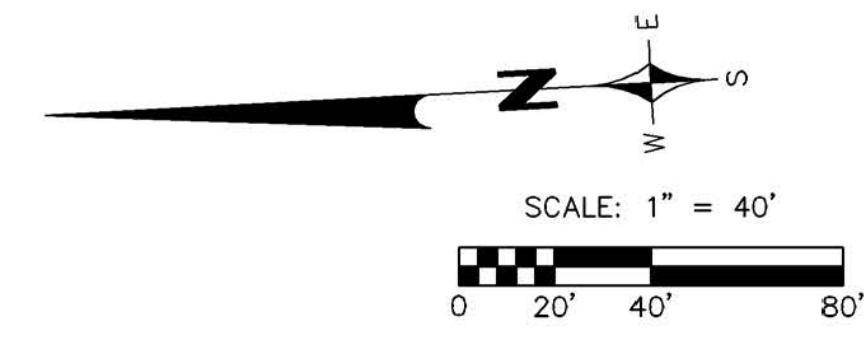
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GRADING & DETENTION PLAN—SHOPPES
BEACON HILL PARK
 NOVI, MICHIGAN, SECTION 12

DATE: 1/11/16 SCALE: HOR: 1" = 40' VER: 1" = N/A
 DESIGNED BY: SRB JOB NO.: 14151
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- UTILITY LEGEND**
- EXISTING**
- MANHOLE
 - CATCH BASIN
 - ◇ INLET
 - △ CLEANOUT
 - ▽ END SECTION
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UTILITY PLAN—SHOPPES
BEACON HILL PARK
 NOVI, MICHIGAN, SECTION 12

DATE	1/11/16	SCALE	HOR: 1" = 40'
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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 ADEQ MANUAL FOR "COMPUTING FLOOD DISCHARGES FOR SMALL UNGAGED WATERSHEDS" PUBLISHED 2001, THE FOLLOWING FLOWS WERE CALCULATED FOR THE BACKFILL AND 100-YEAR STORM EVENTS.

BANKFULL FLOOD EVENT:

AREA = 124 ACRES = 0.19 MI²

FLOW TYPE	LENGTH (FT)	Δ ELEV (FT)	SLOPE (%)	VEL (FPS)	Tc (HR)
WATERWAY	200	960-940=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 TRBB	500	912-911=1	0.20	0.94	0.15
					Tc TOTAL = 0.88 HR

SOILS	% OF TOTAL	LAND USE	RAINFALL*					
GROUP	AREA	AREA (MI ²)	TYPE	% AREA	RCN	SRC	MI-IN	
B	100.0	0.19	WOODS (FAIR)	22	0.04	60	0.15	0.006
			MEADOW	47	0.13	38	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 MI-IN = 0.031
 AVG. SRC = 0.16"
 COM.P RCN = 59
 Q_s = 330 CFS/MI-IN
 Q_s = 330 x 0.19 x 1.16 = 100.0 CFS
 ADJUSTMENT FACTOR = 0.86 (2% PONDING AT THE DESIGN POINT)
 Q_{design} = 100.0 x 0.86 = 86.0 CFS

100-YEAR STORM EVENT:

AREA = 124 ACRES = 0.19 MI²

FLOW TYPE	LENGTH (FT)	Δ ELEV (FT)	SLOPE (%)	VEL (FPS)	Tc (HR)
WATERWAY	200	960-940=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 TRBB	500	912-911=1	0.20	0.94	0.15
					Tc TOTAL = 0.88 HR

SOILS	% OF TOTAL	LAND USE	RAINFALL*					
GROUP	AREA	AREA (MI ²)	TYPE	% AREA	RCN	SRC	MI-IN	
B	100.0	0.19	WOODS (FAIR)	22	0.04	60	0.15	0.04
			MEADOW	47	0.13	38	0.11	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 MI-IN = 0.20
 AVG. SRC = 1.05"
 COM.P RCN = 59
 Q_s = 330 CFS/MI-IN
 Q_s = 330 x 0.19 x 1.05 = 65.8 CFS
 ADJUSTMENT FACTOR = 0.86 (2% PONDING AT THE DESIGN POINT)
 Q_{design} = 65.8 x 0.86 = 56.6 CFS

2. RESIDENTIAL BASIN

RUNOFF COEFFICIENT, 'C'

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

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: 5.82 AC. @ 0.35 = 2.04
 13.39 AC. @ 0.64 = 8.57

"C" = 8.57 / 13.39 = 0.51 USE "C" = 0.40
 100-YEAR DETENTION
 Q_s = 0.15 CFS/AC x 13.39 AC = 2.01 CFS
 Q_s = 2.01 CFS / (13.39 AC. x 0.40) = 0.25 CFS/AC-IMP.
 T_{det} = 25 - (10312.5 / 0.25) = 1781 MINUTES
 V_{det} = [(16500 x 1781) / (25 x 1781)] - (40 x 0.25 x 1781) = 12,688 CF/AC-IMP.
 V_{det} = 12,688 x 13.39 x 0.40 = 101,935 CF
 ADD 10% FOR CONSTRUCTION TOLERANCES = 1.10 x 101,935 = 112,129 CF
 FOREBAY (FIRST FLUSH)
 V_f = 1815 x 13.39 x 0.40 = 14,582 CF
 ADD 10% FOR CONSTRUCTION TOLERANCES = 1.10 x 14,582 = 16,040 CF
 BANKFULL
 V_b = 5160 x 13.39 x 0.40 = 41,455 CF
 ADD 10% FOR CONSTRUCTION TOLERANCES = 1.10 x 41,455 = 45,600 CF

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			
919	27399	30131	1	30131
920	32863	35040	1	35040
921	37216			
				115,955 CF

100-YEAR DETENTION BY INTERPOLATION:
 T/STORAGE = 920.9, V = 112,451 CF
 BANKFULL VOLUME BY INTERPOLATION:
 T/STORAGE = 918.7, V = 45,185 CF
 VOLUME PROVIDED (FORBAY)

ELEV.	AREA (SF)	AVG AREA (SF)	DEPTH (FT)	VOL. (CF)
915	2034			
916	3204	2539	1	2539
917	4155	3590	1	3590
918	5372	4763	1	4763
919	6709	6040	1	6040
				16,932 CF

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

OUTLET SIZING
 A = 0.3988(A_m)^{1/4} / H^{1/4} / 84400
 H = 918.8 - 915.0 = 3.8'
 A = (0.3988(14472.8) / (3.8) / 84400) = 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 / (0.42 / 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(A_m)^{1/4} / H^{1/4} / 172800
 A = (0.3988(4145.3) / (3.7) / 172800) = 0.04937 SF
 NUMBER OF 1" DIA. HOLES = 0.04937 / 0.0055 = 8.9
 USE (9) 1" DIA. HOLES AT ELEVATION 915.0
 ACTUAL BANKFULL RELEASE RATE:
 Q = 0.42 x 0.0055 x 8 x (64.4 x 3.7) = 0.42 CFS

3. COMMERCIAL BASIN

RUNOFF COEFFICIENT, 'C'

OVERALL AREA	CONTRIBUTING AREA
3.05	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. @ 0.70 = 2.14

"C" = 2.14 / 3.05 = 0.70 USE "C" = 0.70

100-YEAR DETENTION
 Q_s = 0.15 CFS/AC x 3.05 AC = 0.46 CFS
 Q_s = 0.46 CFS / (3.05 AC. x 0.70) = 0.22 CFS/AC-IMP.
 T_{det} = 25 - (10312.5 / 0.22) = 191.5 MINUTES
 V_{det} = [(16500 x 191.5) / (25 x 191.5)] - (40 x 0.22 x 191.5) = 12,909.5 CF/AC-IMP.
 V_{det} = 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_f = 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_b = 5160 x 3.05 x 0.70 = 11,017 CF
 ADD 10% FOR CONSTRUCTION TOLERANCES = 1.10 x 11,017 = 12,118 CF

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	8594			
912.8	11008			
913	11938	11473	0.2	2295
913	12770			
913.7	13402	12770	0.7	8939
				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 = 12,599 CF
 VOLUME PROVIDED (FORBAY)

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(A_m)^{1/4} / H^{1/4} / 84400
 H = 912.8 - 910 = 2.8'
 A = (0.3988(9726.2) / (2.8) / 84400) = 0.0108 SF
 NUMBER OF 1" DIA. HOLES = 0.0108 / 0.0055 = 1.97
 USE (2) 1" DIA. HOLES AT ELEVATION 910.0

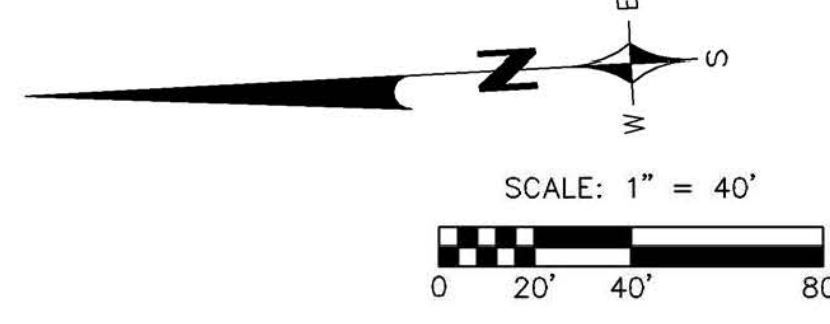
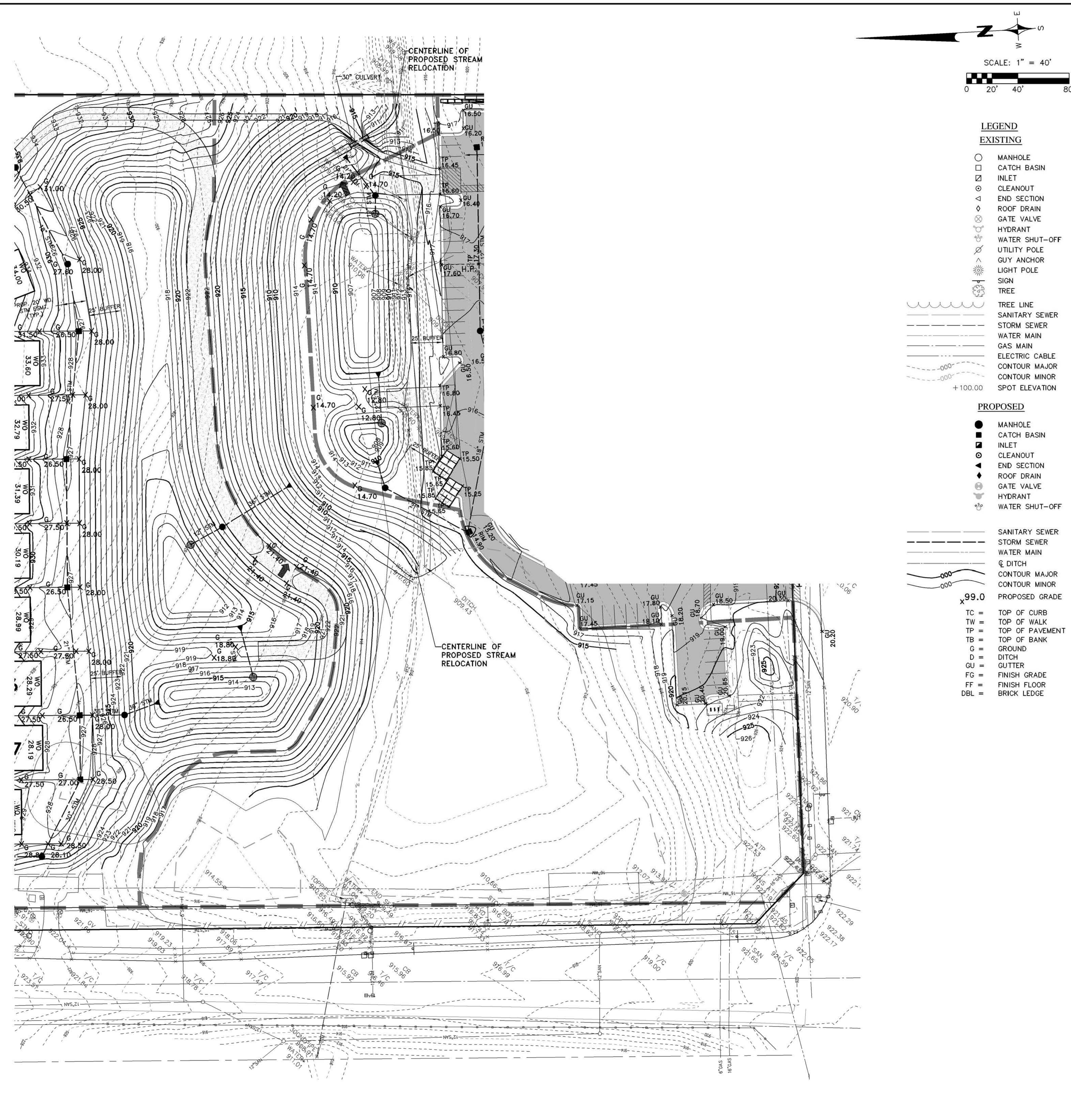
DETENTION BASIN RESTRICTOR PIPE:
 Q = 1.98 CFS
 H = 912.7 - 910 = 2.7'
 A = 1.98 / (0.42 / 64.4 x 2.7) = 0.04806 SF
 THIS EQUATES TO A 2.97" DIA. ORIFICE. USE A 12" DIA. OUTLET PIPE WITH A CAPPED TEE. DRILL A 4.0" DIA. HOLE IN THE BOTTOM CAP OF THE VERTICAL EXTENSION TO ACT AS THE RESTRICTOR. SPACE 4.0" IS THE MINIMUM ALLOWABLE RESTRICTOR.

DETENTION BASIN STANDPIPE ORIFICE (BANKFULL DISCHARGE):
 H = 912.0 - 910.0 = 2.0'
 A = 0.3988(A_m)^{1/4} / H^{1/4} / 172800
 A = (0.3988(11617.2) / (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 = 0.42 x 0.0055 x 3 x (64.4 x 2.0) = 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 = 0.40 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.



- 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
 - 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
 - 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

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PSP SUBMITTAL	1/11/16										
PSP	4/13/16										

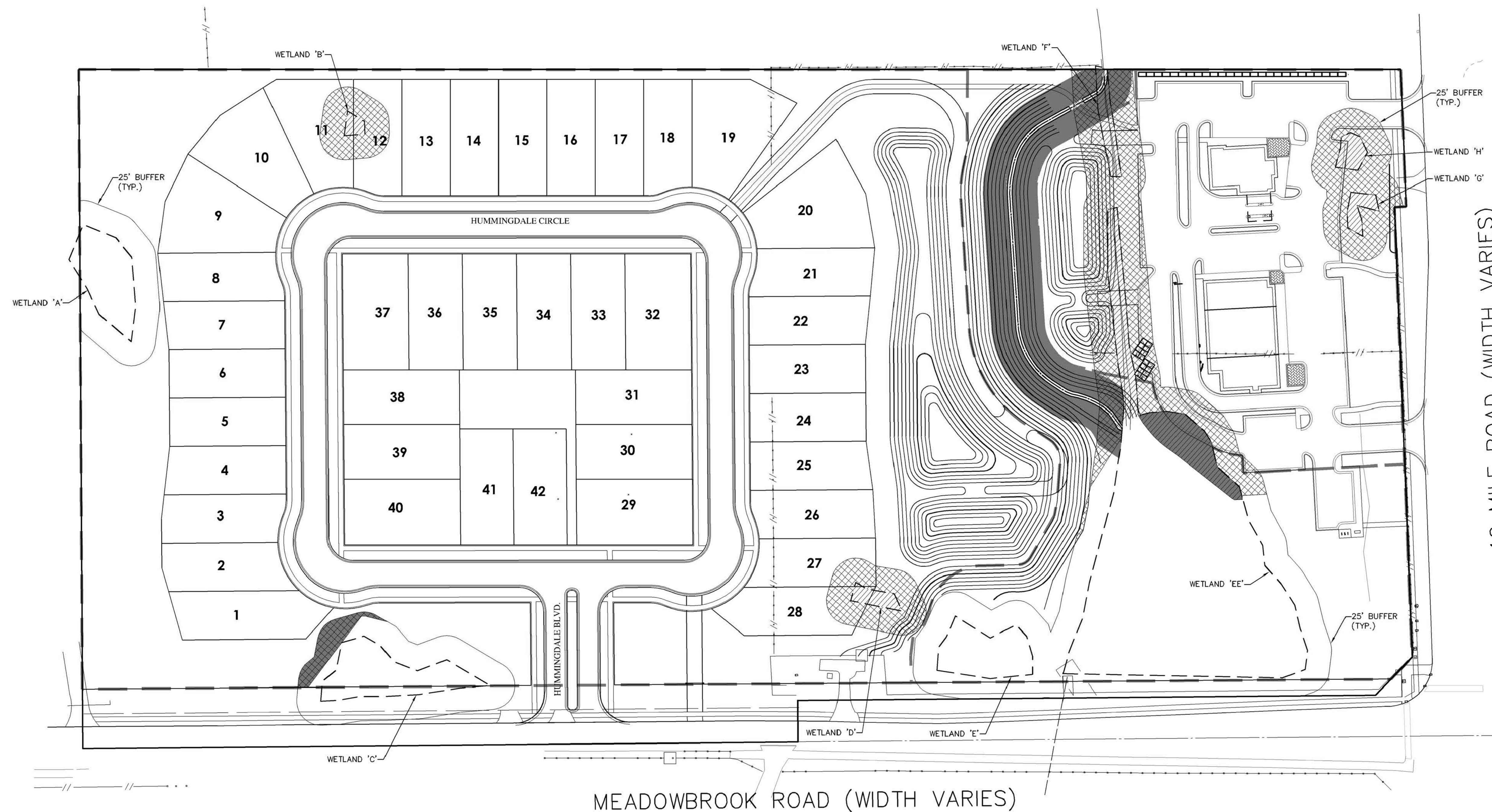
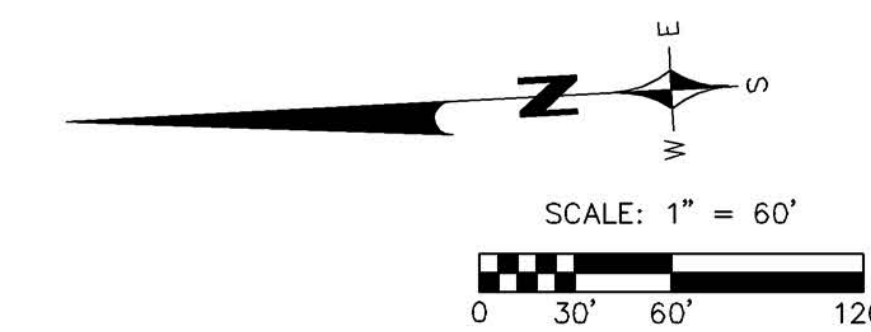
ZEMET Wozniak & Associates
 Civil Engineers & Land Surveyors
 5580 GRAND RIVER AVE., SUITE 100
 NEW HUDSON, MICHIGAN 48165
 P: (248) 437-5099 F: (248) 437-5222 www.zemetwozniak.com

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

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

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

DATE 1/11/16 SCALE HOR: 1" = 40' VER: 1" = N/A
 DESIGNED BY SRB JOB NO. 14151
 DRAWN BY SRB SHEET SP-13



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 INCLUDED WITH WETLAND 'H' IMPACT
** BUFFER IMPACT INCLUDED WITH WETLAND 'EE' IMPACT

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

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PSP SUBMITTAL	1/11/16										
PSP	4/13/16										

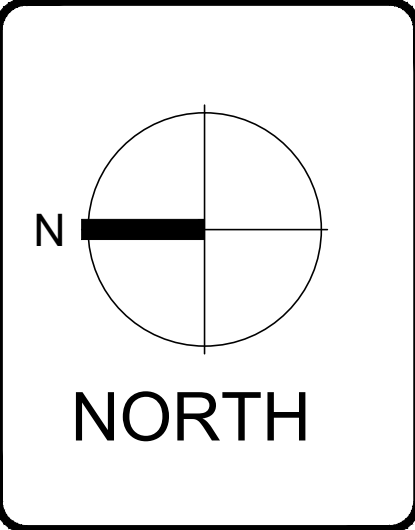
ZEIMET WOZNAK & ASSOCIATES
Civil Engineers & Land Surveyors
55800 GRAND RIVER AVE., SUITE 100
NEW HUDSON, MICHIGAN 48165
P: (248) 437-5099 F: (248) 437-5222 www.zeimetwozniak.com

MISS DIG SYSTEM, INC.
1-800-482-7171
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IVANHOE MEADOWBROOK L.L.C.
6689 ORCHARD LAKE ROAD, STE. 314
WEST BLOOMFIELD, MI 48322 (248) 626-6114

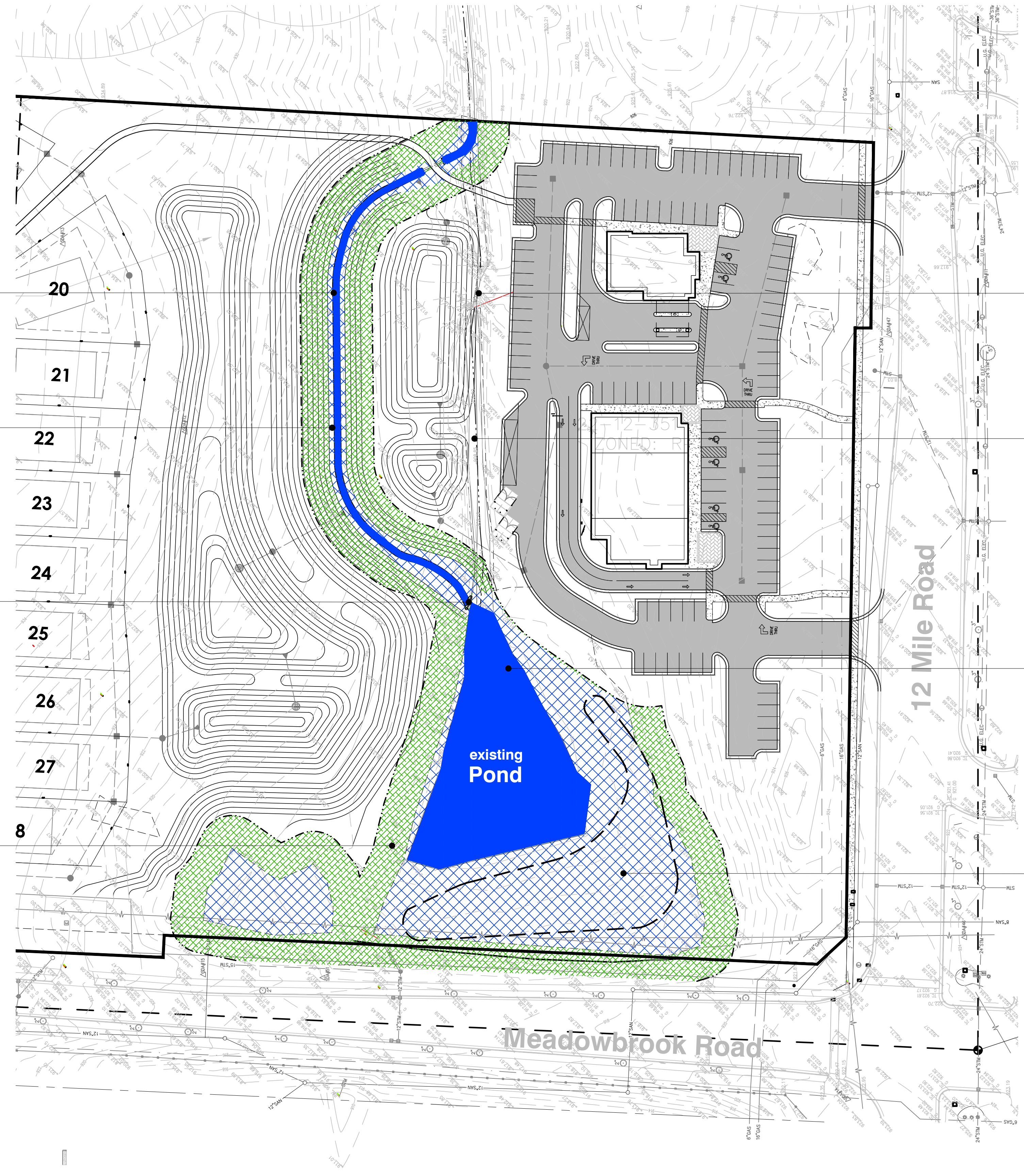
WETLAND & BUFFER IMPACT PLAN
BEACON HILL PARK
NOVI, MICHIGAN, SECTION 12

DATE	1/11/16	SCALE	HOR: 1" = 60'
DESIGNED BY	SRB	VER:	1" = N/A
JOB NO.	14151		
DRAWN BY	SRB	SHEET	SP-14



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



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.

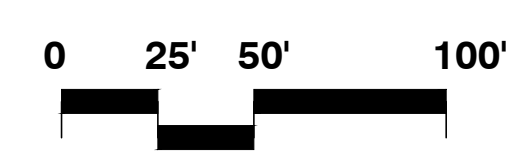
Existing failed culvert to be removed
 32± LF 30" dia.

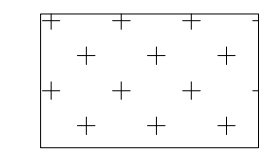
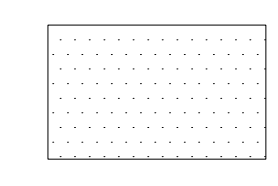
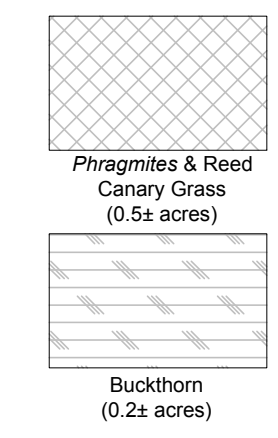
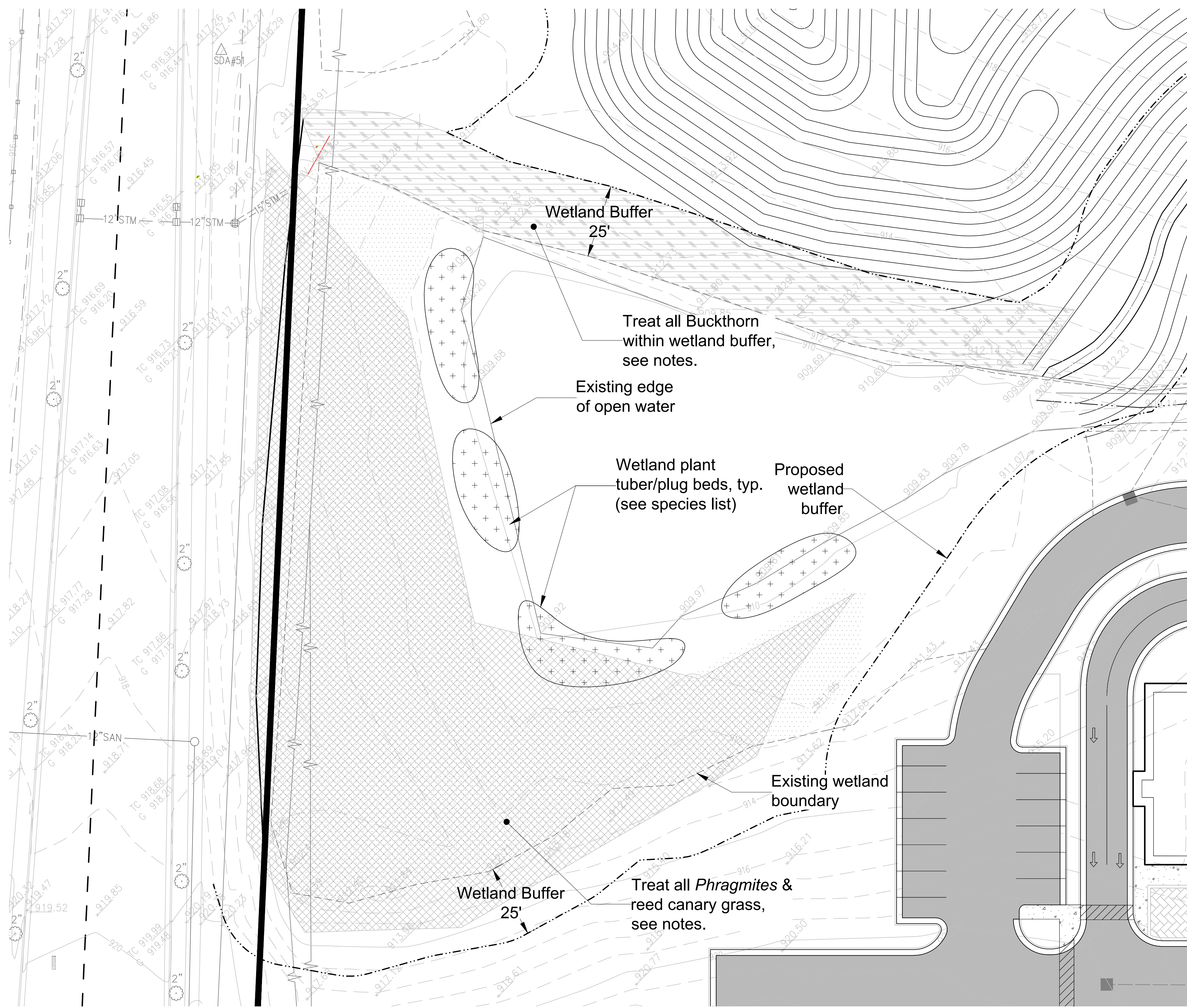
Existing stream channel to be abandoned
 350± LF

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





Wetland Restoration Sequence & Specifications

- 2016/Year 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.
 - 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**
- 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
Asclepias incarnata	Swamp Milkweed	1.50
Carex cristatella	Crested Oval Sedge	1.00
Carex lurida	Bottlebrush Sedge	6.00
Carex vulpinoidea	Brown Fox Sedge	6.00
Eleocharis obtusa	Blunt Spike Rush	3.00
Helenium 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 siphilitica	Great Blue Lobelia	1.00
Mimulus ringens	Monkey Flower	2.00
Peltandra virginica	Arrow-arum	16.00
Penthorum sedoides	Ditch Stonecrop	0.50
Polygonum pennsylvanicum	Smartweed	6.00
Pontederia cordata	Pickeral 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	108.25
	TOTAL	108.25

Cover Crop

Avena sativa	Seed Oats	320.0
Lolium multiflorum	Annual Rye	80.0

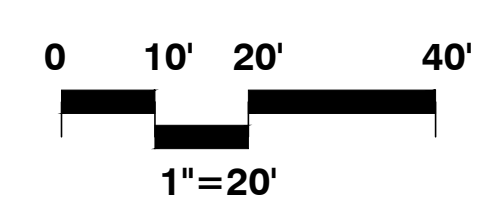
Note: Proposed for 0.4x acres of wetland.

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	Pickeral Weed	
Sagittaria latifolia	Common 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 100s of a single species within the planting beds shown. Plants to be protected with Goose Grid following installation.

Wetland Restoration Plan



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

Preliminary
Not for
Construction

King & MacGregor Environmental Inc.
2520 Woodmeadow SE
Grand Rapids, MI 49546
Phone: (616) 957-1231
43950 Ford Road, Suite 130
Canton, MI 48187
Phone: (734) 354-0594

N
NORTH

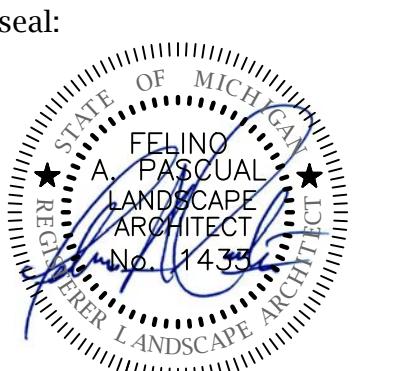
Wetland Restoration For:
Beacon Hill Park
City of Novi, Oakland County, Michigan

DATE:	ISSUED FOR:
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-2



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:
OVERALL PLANTING
PLAN VIEW

job no./issue/revision date:
 LS15.010.06 SPA 6-26-2015
 LS16.006.01 PSP 1-11-2016
 LS16.006.04 PSP 4-13-2016

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

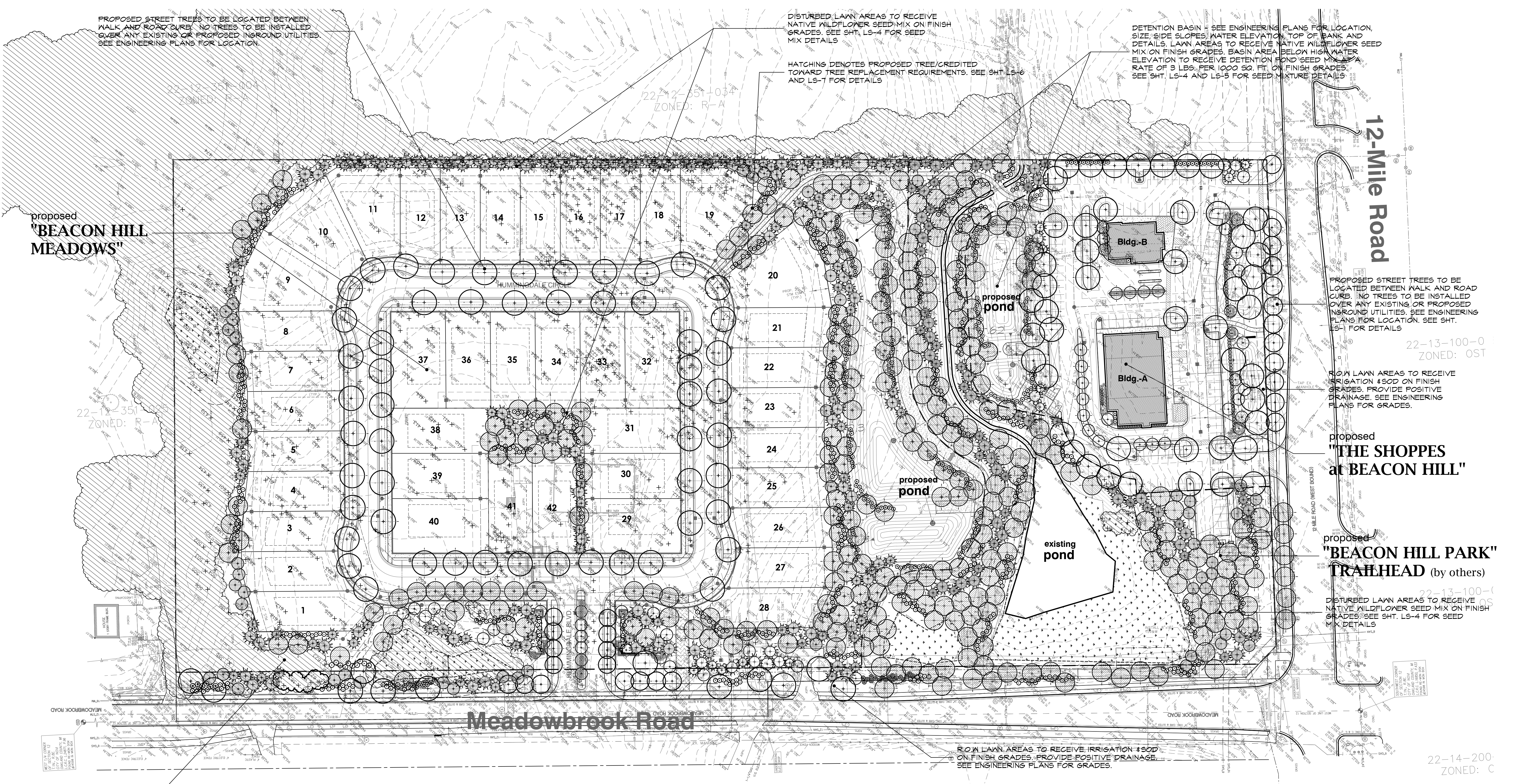
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The location and elevations of existing
 underground utilities as shown on this
 drawing are only approximate. no guarantee
 is either expressed or implied as to the
 completeness of accuracy; contractor shall be
 exclusively responsible for determining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

project no:
LS16.008.01

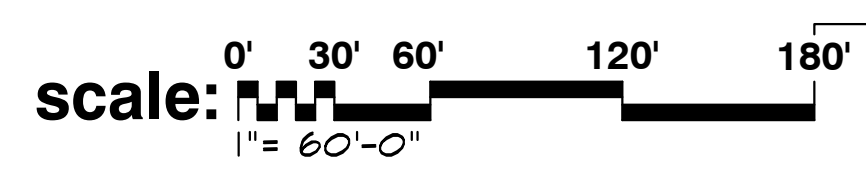
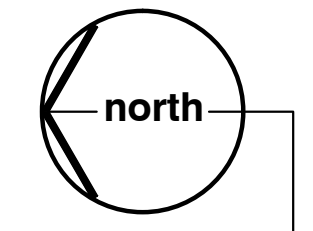
sheet no:
LS-1 of 7



CROSS HATCHING DENOTES WOODS
 AND VEGETATION TO REMAIN

overall landscape plan view 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.



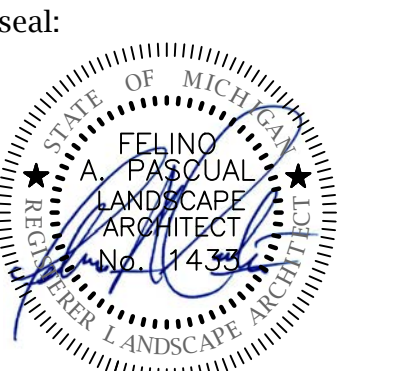
general landscape notes:

- LANDSCAPE CONTRACTOR SHALL VISIT THE SITE, INSPECT EXISTING 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.
- PRIOR TO BEGINNING 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.
- NUMERICAL VALUE ON THE LANDSCAPE QUANTITIES SPECIFIED ON THE PLAN TAKE PRECEDENCE OVER GRAPHIC REPRESENTATION. VERIFY ANY CONCERN/DISCREPANCY WITH LANDSCAPE ARCHITECT.
- ALL CONSTRUCTION AND PLANT MATERIAL LOCATION TO BE ADJUSTED ON SITE IF NECESSARY.
- ALL SUBSTITUTIONS OR DEVIATIONS FROM THE LANDSCAPE PLAN MUST BE APPROVED BY THE CITY OF NOVI AND LANDSCAPE ARCHITECT.
- ALL LARGE TREES AND EVERGREENS TO BE STAKED, GUYED AND WRAPPED AS DETAIL SHOWN ON PLAN.
- PLANT BEDS TO BE DRESSED WITH MIN. 3" OF FINELY DOUBLE SHREDDED HARBARK MULCH.
- 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
- REMOVE ALL TWINE, WIRE AND BURLAP FROM TREE AND SHRUB EARTH BALLS, AND FROM TREE TRUNKS.

- 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.
- PLANT MATERIAL QUALITY & INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN ASSOCIATION OF NURSERYMEN LANDSCAPE STANDARDS.
- PROVIDE PEAT SOD FOR ALL NEW AND DISTURBED LAWN AREAS UNLESS NOTED OTHERWISE.
- ALL PLANTING AREAS TO BE PREPARED WITH APPROPRIATE SOIL MIXTURES AND FERTILIZER BEFORE PLANT INSTALLATION.
- PLANT TREES AND SHRUBS GENERALLY NO CLOSER THEN THE FOLLOWING DISTANCES FROM SIDEWALKS, CURBS AND PARKING STALLS:
 - SHADE TREES _____ 5 FT.
 - ORNAMENTAL AND EVERGREEN TREES _____ 10 FT.
 - GRASS, PINE, SPRUCE, ETC., _____ 10 FT.
 - SHRUBS THAT ARE LESS THAN 1 FOOT TALL AND WIDE AT MATURITY _____ 2 FT.
- 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.
- ALL LAWN AREAS AND LANDSCAPE BEDS TO BE FULLY IRRIGATED WITH A AUTOMATIC UNDERGROUND SYSTEMS. IRRIGATION SYSTEM TO HAVE SEPARATE ZONES FOR LAWN AREAS, PARKING ISLANDS, AND SHRUB BEDS WITH DIFFERENT CONTROL MOISTURE LEVEL ADJUSTMENT PER ZONE AS REQUIRED.

misc. notes:

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



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
LS16.006.04 PSP	4-13-2016

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

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 drawing are only approximate. No guarantee
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 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 7

PROPOSED STREET TREES TO BE LOCATED BETWEEN
 WALK AND ROAD CURB. NO TREES TO BE INSTALLED
 OVER ANY EXISTING OR PROPOSED INGROUND UTILITIES.
 SEE ENGINEERING PLANS FOR LOCATION.

LAWN AREAS TO RECEIVE NATIVE WILD FLOWER
 SEED MIX ON FINISH GRADES. SEE SHT. LS-4 FOR
 SEED MIX DETAILS

HATCHING DENOTES WOODS
 AND VEGETATION TO REMAIN

DISTURBED LAWN AREAS TO
 RECEIVE WETLAND SEED MIX ON
 FINISH GRADES. SEE SHT. LS-6
 FOR SEED MIX DETAILS

PROPOSED RELOCATED STREAM

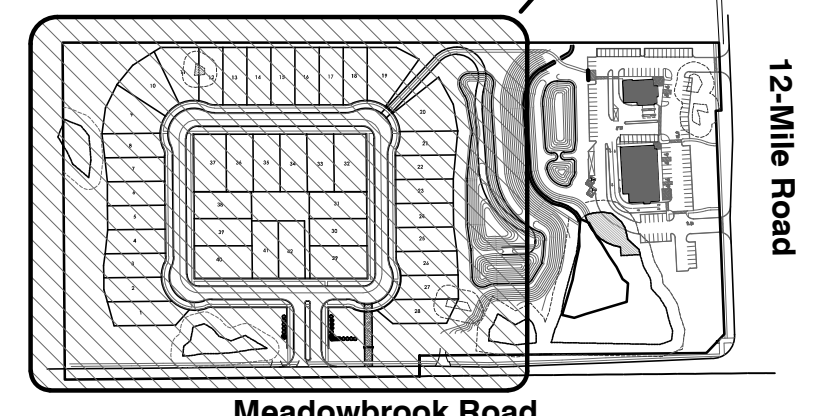
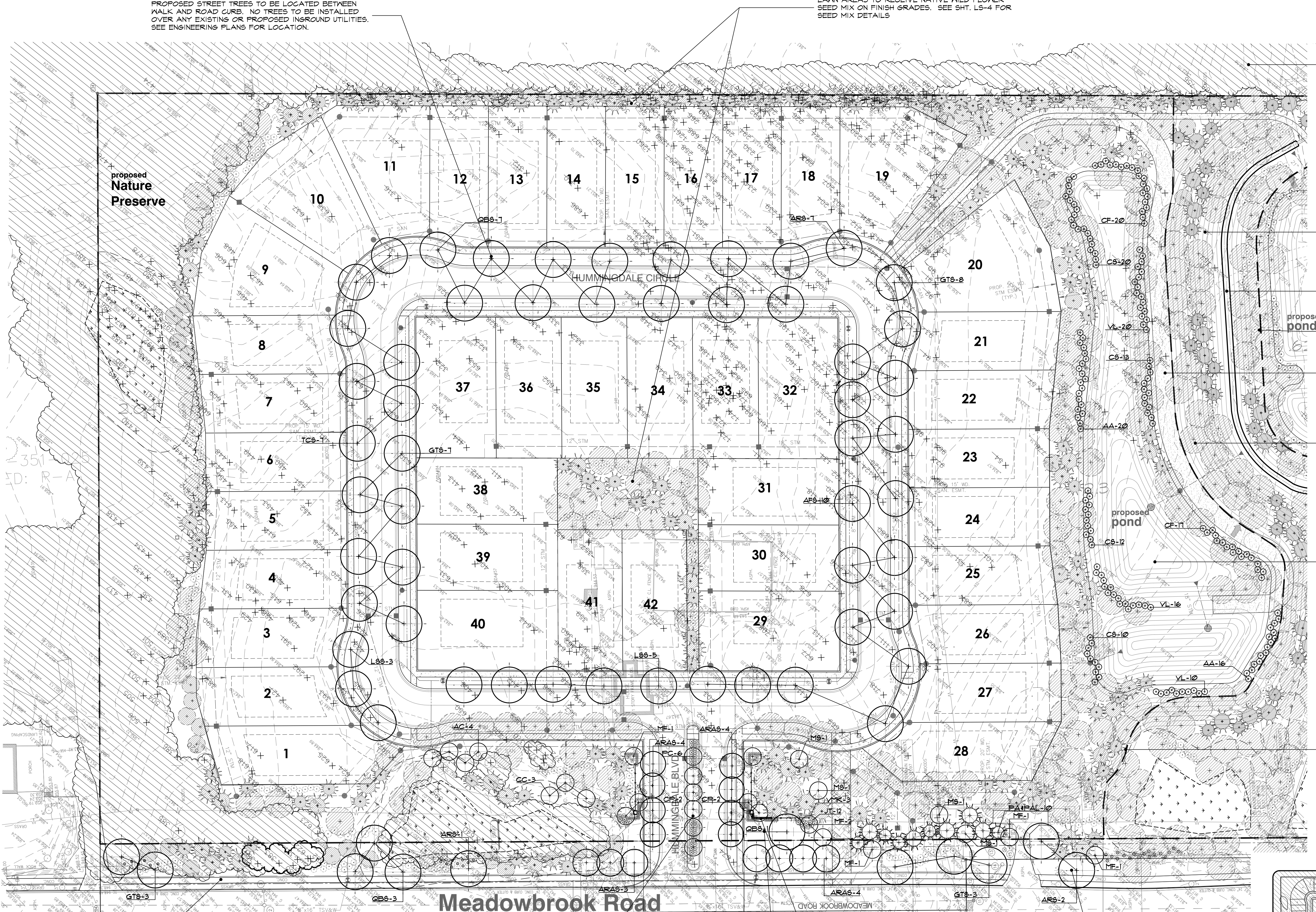
PROPOSED ADJACENT LANDSCAPE
 PLANTINGS. SEE SHEET LS-3 FOR
 DETAILS

PROPOSED DETENTION POND
 ACCESS DRIVE

HATCHING DENOTES
 PROPOSED TREE/CREDITED
 TOWARD TREE REPLACEMENT
 REQUIREMENTS-SEE SHT. LS-6
 AND LS-7 FOR DETAILS

DETENTION BASIN - SEE ENGINEERING
 PLANS FOR LOCATION, SIZE, SIDE
 SLOPES, WATER ELEVATION, TOP
 OF BANK AND DETAILS. LAWN
 AREAS TO RECEIVE NATIVE WILD
 FLOWER SEED MIX ON FINISH GRADES.
 BASIN AREA BELOW HIGH WATER
 ELEVATION TO RECEIVE DETENTION
 POND SEED MIX AT A RATE OF 3 LBS.
 PER 1000 SQ. FT. ON FINISH GRADES.
 SEE SHT. LS-5 FOR SEED MIXTURE
 DETAILS

LIMITS OF SINGLE FAMILY AND
 TRAILHEAD LINE



key reference map
 NO SCALE

R.O.W LAWN AREAS TO RECEIVE
 IRRIGATION & SOD ON FINISH
 GRADES. PROVIDE POSITIVE
 DRAINAGE. SEE ENGINEERING
 PLANS FOR GRADES.

WAIVER FRONTAGE WITH EXISTING WOODS AND VEGETATION TO REMAIN

CROWN ISLAND 16" AT CENTER
 AND PROVIDE IRRIGATION AND
 SOD ON FINISH GRADES

60' GREENBELT FRONTAGE

26' R.O.W

25' VEHICULAR CLEARVIEW
 LINE

30' GREENBELT FRONTAGE

R.O.W LAWN AREAS TO RECEIVE
 IRRIGATION & SOD ON FINISH
 GRADES. PROVIDE POSITIVE
 DRAINAGE. SEE ENGINEERING
 PLANS FOR GRADES.

2B Beacon Hill Meadows- landscape planting detail
 SCALE: 1" = 40'-0"

PROPOSED SIGN LOCATION FINAL
 LOCATION AND METHOD OF
 CONSTRUCTION CITY STANDARDS
 AND REQUIREMENTS AND APPROVAL
 SEE SHT. LS-4 FOR DETAILS

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:
**The Shoppes at
 Beacon Hill Landscape
 Planting Detail**

job no./issue/revision date:

LS15.010.06 SPA	6-26-2015
LS16.006.01 PSP	1-11-2016
LS16.006.04 PSP	4-13-2016

drawn by:
JP, KH

checked by:
FP

date:
1-4-2015

notice:
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 and Associates

Do Not scale drawings. Use
 figured dimensions only



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 7

commercial retail landscape requirements:

	REQUIRED	PROVIDED
greenbelt (12 Mile Road)		
TOTAL LIN. FT. OF 12 MILE ROAD FRONTAGE	408'±	
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'±	75%
70%-75% LARGE NATIVE SHRUBS ABOVE HIGH WATER BASIN RIM AREA		75%
parking lot trees (OFFICE-CATEGORY-1)		
PARKING SPACE AREA	17,483 SQ.FT.	
PARKING AREA FORMULA (17,483 SQ.FT. X .10 (10%) = 1,748 SQ.FT.)		1,748 SQ.FT.
VEHICULAR ACCESS AREA	42,321 SQ.FT.	
VEHICULAR AREA FORMULA (42,321 SQ.FT. X .05 (5%) = 2,116 SQ.FT.)		2,116 SQ.FT.
	REQUIRED	PROVIDED
TOTAL AREA OF INTERIOR LANDSCAPE ISLANDS AREA (1,748 SQ.FT. + 2,116 SQ.FT. = 3,864 SQ.FT.)	3,914 SQ.FT.	3,950 SQ.FT.
TOTAL NO. OF PARKING LOT TREES (3,914 SQ.FT. LANDSCAPE ISLANDS / 75 = 52-TREES)	52	30 (A)
perimeter parking lot trees		
TOTAL LIN. FT. OF PERIMETER PARKING	1,175'±	
ONE (1) 3" DECIDUOUS OR EVERGREEN TREE PER 35 LIN. FT.	33	16 (A)
building foundation		
BUILDING FOUNDATION LANDSCAPE AREA (412.41' (PERIMETER) X 8' = 3,299.19 SQ.FT.)	3,299.19 SQ.FT.	3,300 + SQ.FT.
12-Mile Road Street Tree		
TOTAL LIN. FT. OF COMMERCIAL 12 MILE ROAD FRONTAGE	408'	
ONE (1) 3" DECIDUOUS OR EVERGREEN TREE PER 35 LIN. FT. (408' / 35' = 11.6 TREES)	12	12
(A) LANDSCAPE WAIVER TO BE REQUESTED FOR THE REQUIRED TREE PLANTINGS		

residential landscape requirements:

	REQUIRED	PROVIDED
greenbelt (Meadowbrook Road)		
TOTAL LIN. FT. OF MEADOWBROOK ROAD FRONTAGE	366'± (*)	
ONE (1) 3" DECIDUOUS OR EVERGREEN TREE PER 35 LIN. FT.	10	10
ONE (1) SUBCANOPY TREE PER 20 LIN. FT.	18	22
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%
* 856' TOTAL LIN. FT. SINGLE FAMILY FRONTAGE - 86' R.O.W AND 404' (WAIVER FOR EXISTING WOODLAND/VEGETATION TO BE SAVED) = 366'		

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" CALIF. NO. 1 GRADE 84B NORTHERN GROUN PIER
 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
4'10" AT LEAST 1 TREE	LOTS WITH FRONTAGE <10'		42	42
2'10" AT LEAST 2 TREES	LOTS WITH FRONTAGE >10'		-	-
2'10" AT LEAST 3 TREES	LOTS WITH FRONTAGE >105'		4	12
MINIMUM STREET TREE SIZE REQUIRED 2 1/2" CALIF. AND MIN. 35' O.C. SPACING	OPEN SPACE FRONTAGE, CUL-DE-SAC, AND BLVD. ISLAND			0
	ONE (1) DECIDUOUS TREE PER 35' BETWEEN CURB AND SIDEWALK (SINGLE FAMILY MEADOWBROOK R.O.W. FRONTAGE = 110' / 35' = 22 TREES)		770'	22
				18 + 5 EXISTING TREE
	TOTALS		76	80

PROPOSED STREET TREES TO BE LOCATED BETWEEN WALK AND ROAD CURB. NO TREES TO BE INSTALLED OVER ANY EXISTING OR PROPOSED INGROUND UTILITIES. SEE ENGINEERING PLANS FOR LOCATION.

LAWN AREAS BETWEEN PARKING AND LANDSCAPE BEDS TO RECEIVE IRRIGATION & SOD ON FINISH GRADES PROVIDE POSITIVE DRAINAGE.

PROPOSED PRIVET SHRUBS TO BE ALLOWED TO "KNIT" TOGETHER AND A HEDGE. MAINTAIN HEIGHT AT 36"

PROVIDE METAL EDGING BETWEEN LAWN AREAS AND LANDSCAPE BEDS.

PROPOSED SIGN LOCATION, FINAL LOCATION AND METHOD OF CONSTRUCTION PER CITY STANDARDS AND REQUIREMENTS AND APPROVAL

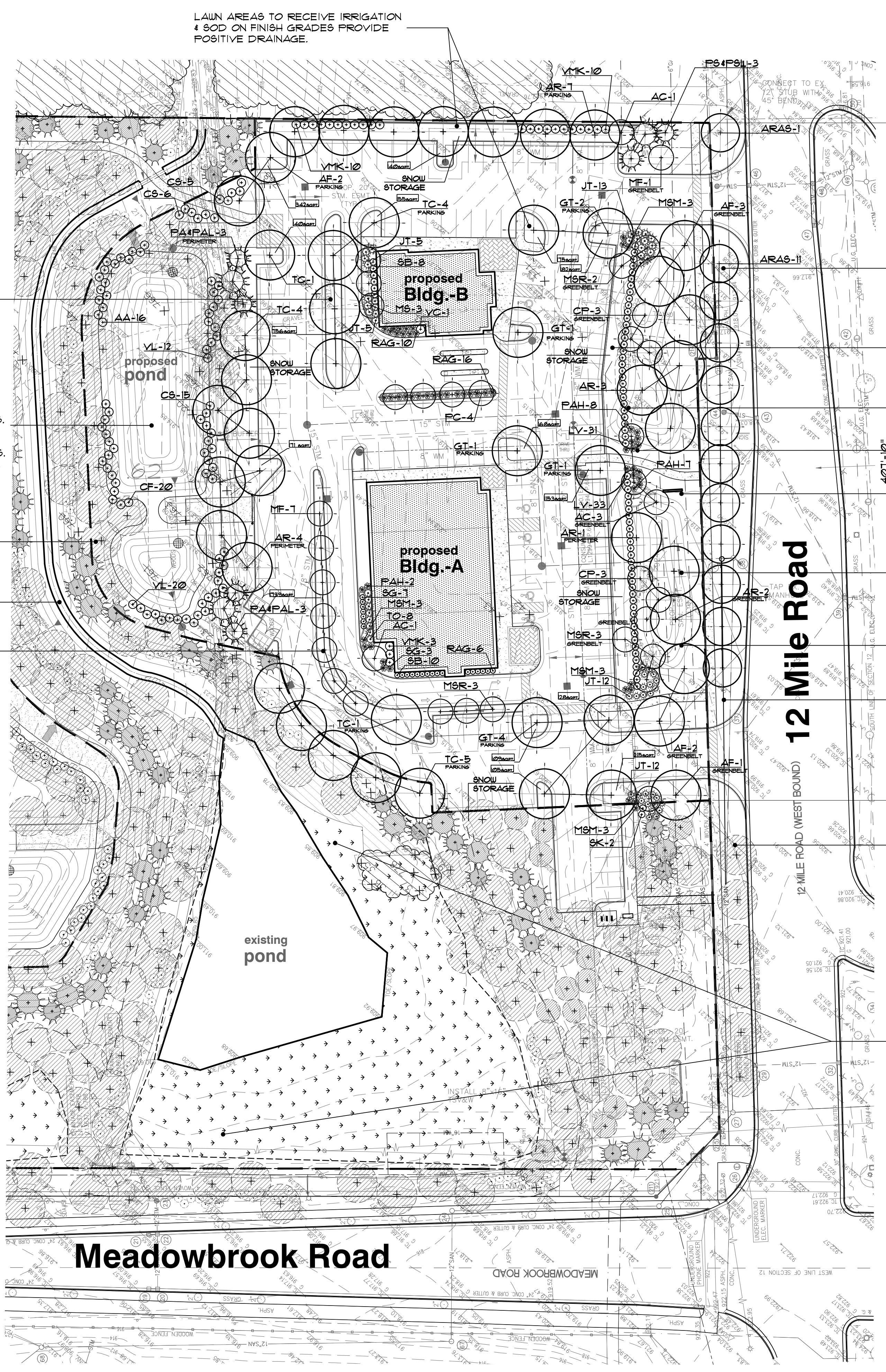
2 1/2' TO 3 1/2' HIGH EARTHBERM, MAXIMUM 1 ON 3 SLOPE. LAWN AREAS TO RECEIVE IRRIGATION & SOD ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE.

LAWN AREAS TO RECEIVE IRRIGATION & SOD ON FINISH GRADES PROVIDE POSITIVE DRAINAGE.

R.O.W LAWN AREAS TO RECEIVE IRRIGATION & SOD ON FINISH GRADES. PROVIDE POSITIVE DRAINAGE. SEE ENGINEERING PLANS FOR GRADES.

25' VEHICULAR CLEARVIEW LINE

EXISTING WETLAND - INVASIVE SPECIES TO BE TREATED AND HABITANT RESTORATION INCLUDING NATIVE WILDFLOWER SEED MIX TO BE PROVIDED TO IMPROVE PLANT SPECIES DIVERSITY. SEE WETLAND PLANS PREPARED BY KING & MACGREGOR ENVIRONMENTAL INC. FOR DETAILS



CROWN ISLAND 16" AT CENTER AND PROVIDE IRRIGATION AND SOD ON FINISH GRADES

DETENTION BASIN - SEE ENGINEERING PLANS FOR LOCATION, SIZE, SIDE SLOPES, WATER ELEVATION, TOP OF BANK AND DETAILS. LAWN AREAS TO RECEIVE NATIVE WILD FLOWER SEED MIX ON FINISH GRADES. BASIN AREA BELOW HIGH WATER ELEVATION TO RECEIVE DETENTION POND SEED MIX AT A RATE OF 3 LBS. PER 1000 SQ. FT. ON FINISH GRADES. SEE SHT. LS-5 FOR SEED MIXTURE DETAILS

HATCHING DENOTES PROPOSED TREE/CREDITED TOWARD TREE REPLACEMENT REQUIREMENTS. SEE SHT. LS-6 AND LS-7 FOR DETAILS

PROPOSED RELOCATED STREAM

CROWN ISLAND 12" AT CENTER AND PROVIDE IRRIGATION AND SOD ON FINISH GRADES

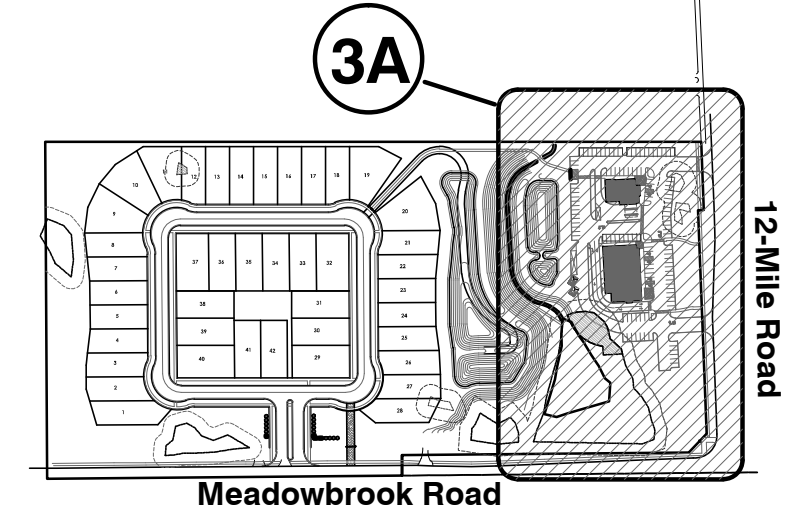
3A The Shoppes at Beacon Hill landscape planting detail
 SCALE: 1" = 40'-0"



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. 130-20-51
 FINISH: BLACK



3C park bench seating
 (1-CONDITIONS)
 6' WIDE BENCH SEAT BY DUMOR, INC. MODEL NO. 34-6060D (S-2) RECYCLED PLASTIC POLYESTER POWDER-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

entrance plant material list

key	5A	botanical name	common name	size	cost	totals
		SHRUBS				
PO	4	PHYSOCARPUS O. MONLO	DIABOLO NINEBARK	3' BB	15.00	12.00
JT	19	JUNIPERUS S. TAMARISIFOLIA	TAM'S JUNIPER	24" BB	15.00	135.00
BW	52	BUXUS M. WINTER GEM	WINTER GEM BOXWOOD	18" BB	15.00	126.00
TE	34	TAXUS XM. EVERLOW	EVERLOW YEW	24" BB	15.00	117.00
		PERENNIALS AND GRASSES				
RFG	12	RUDBECKIA F. GOLDSTURN	BLACK EYED SUSAN	*3 CONT	*15	*180
PAH	8	FENISETUM ALOPECUROIDES 'HAMELN'	HAMELN DWARF FOUNTAIN GRASS	*3 CONT	*15	*120
M9G	1	MISCANTHUS SINENSIS 'MORNING LIGHT'	MORNING LIGHT MAIDEN GRASS	*3 CONT	*15	*45
					TOTAL	15,165

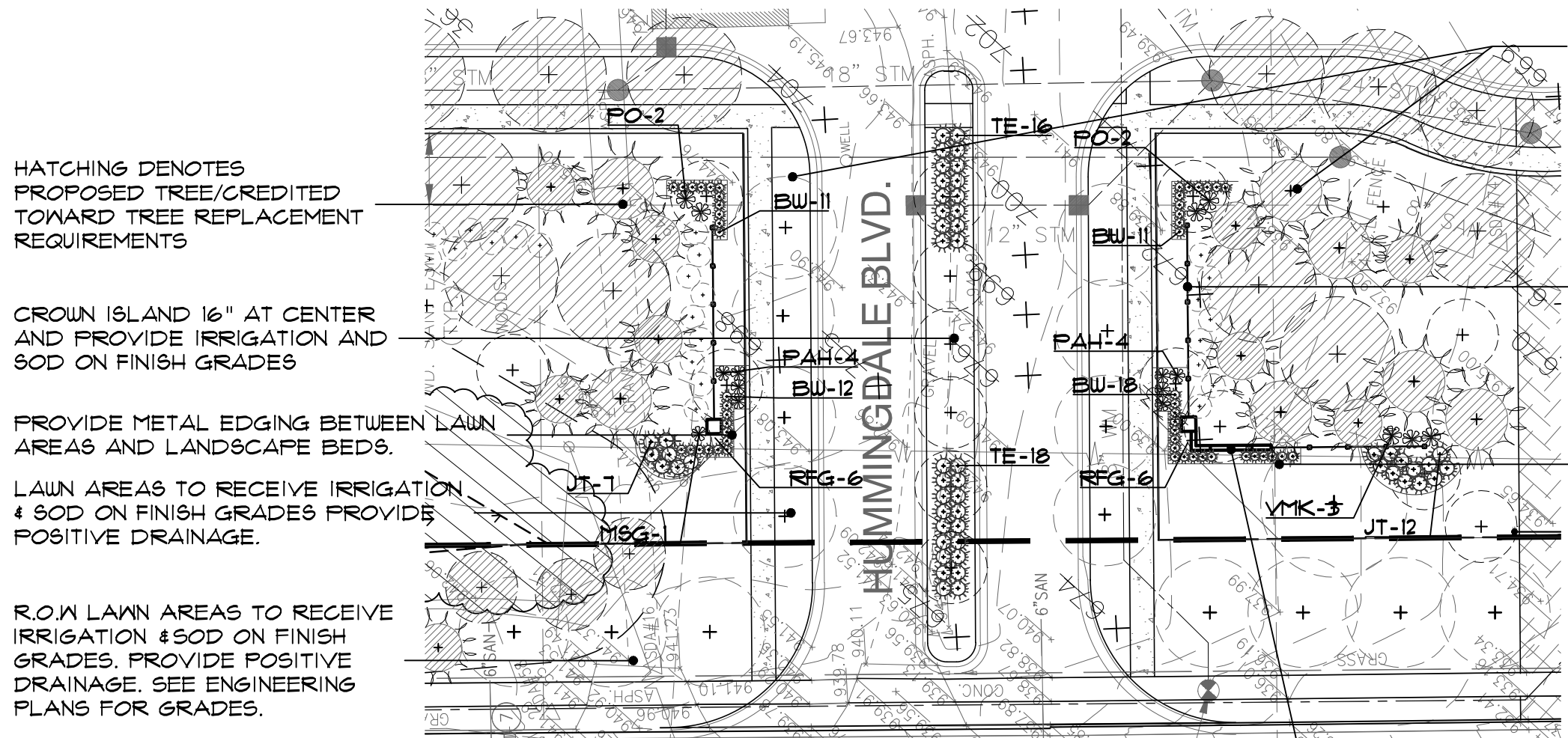
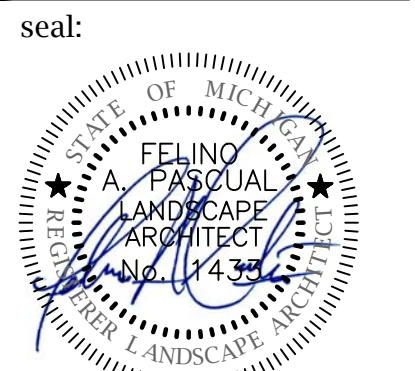
City of Novi landscape notes:

- 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 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 NURSERY 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 PERENNIALS.
 5) CALL MISS DIG AT 1-800-482-1111 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 UNSIGHTLY AND COULD CAUSE GIRDLING.
 4) REMOVE TREE STAKES, GUY WIRES AND TREE WRAP AFTER ONE WINTER SEASON.
- SHRUB:
 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 UNSIGHTLY AND COULD CAUSE GIRDLING.
- TREE PROTECTION:
 1) EITHER PLASTIC OR WOOD ORANGE SNOW FENCING SHALL BE INSTALLED AT OR BEYOND THE DRIFLINE, 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 DRIFLINE OF THOSE TREES TO BE SAVED. SPECIAL CIRCUMSTANCES SHALL BE REVIEWED BY THE CITY.
 4) FENCING SHALL BE ERRECTED 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 EQUIPMENT 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 TO THE PROPERTY ARE ALSO REQUIRED TO BE PROTECTED WHETHER OR NOT THEY ARE SHOWN ON THE PLAN.

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 gerardii (Big Bluestem)
 Carex bicknelli (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 Coneflower)
 Eryngium yuccifolium (Rattlesnake Master)
 Helopsis helianthoides (Ox Eye Sunflower)
 Liatris aspera (Peach Blazing Star)
 Liatris spicata (Dense Blazing Star)
 Monarda fistulosa (Bergamot)
 Physostegia virginiana (Obedient Plant)
 Pycnanthemum virginianum (Mountain Mint)
 Rattisia prnata (Yellow Coneflower)
 Rudbeckia hirta (Black-Eyed Susan)
 Rudbeckia laciniata (Green-headed Coneflower)
 Silphium terebinthaceum (Prairie Dock)
 Solidago altissima (Tall Goldenrod)
 Solidago graminifolia (Lance-leaved Goldenrod)
 Solidago rigida (Stiff Goldenrod)
 Tradescantia ohioensis (Spiderwort)
 Verbena urticulata (White Vervain)
- 50% Temporal Grasses:** will contain the following species:
 Avena sativa (Seed Oats)
 Lolium multiflorum (Annual Rye)
- Recommended Seed Rate: 30lb/acre**

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



PROPOSED ADJACENT LANDSCAPE PLANTINGS. SEE SHEET LS-1 & LS-2 FOR DETAILS

PROPOSED 2-RAIL HIGH VINYL FENCE AND 6X6 VINYL POST

PROPOSED BOXWOOD SHRUBS TO BE ALLOWED TO 'KNIT' TOGETHER AND A HEDGE. MAINTAIN HEIGHT AT 24"

HATCHING DENOTES PROPOSED TREE/CREDITED TOWARD TREE REPLACEMENT REQUIREMENTS

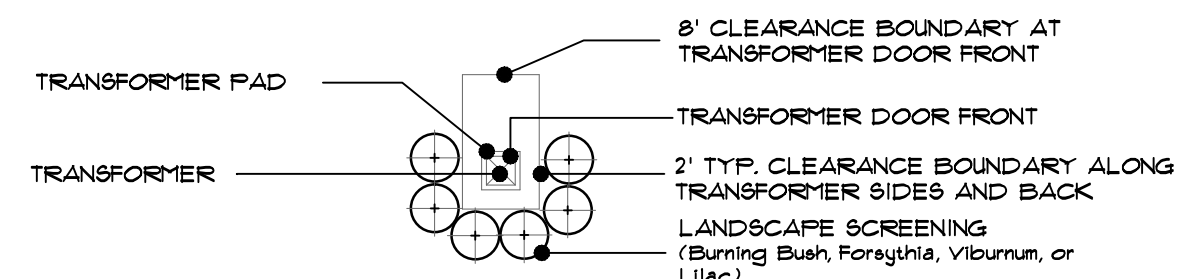
CROWN ISLAND 16" AT CENTER AND PROVIDE IRRIGATION AND SOD ON FINISH GRADES

PROVIDE METAL EDGING BETWEEN LAWN AREAS AND LANDSCAPE BEDS.

LAWN AREAS TO RECEIVE IRRIGATION. 4 SOD ON FINISH GRADES PROVIDE POSITIVE DRAINAGE.

ROW LAWN AREAS TO RECEIVE IRRIGATION. 4 SOD ON FINISH GRADES. PROVIDE POSITIVE DRAINAGE. SEE ENGINEERING PLANS FOR GRADES.

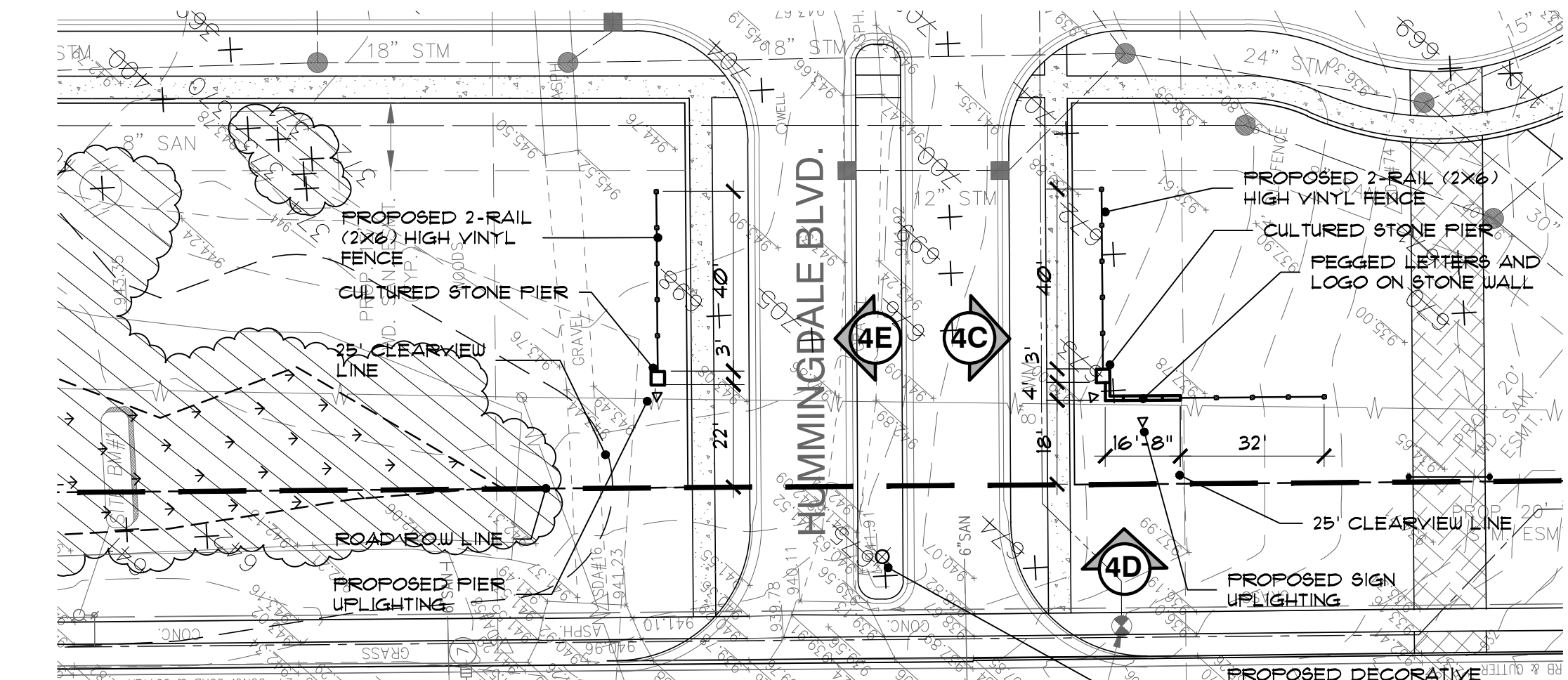
4A entrance planting details
 SCALE: 3/8"=1'-0"



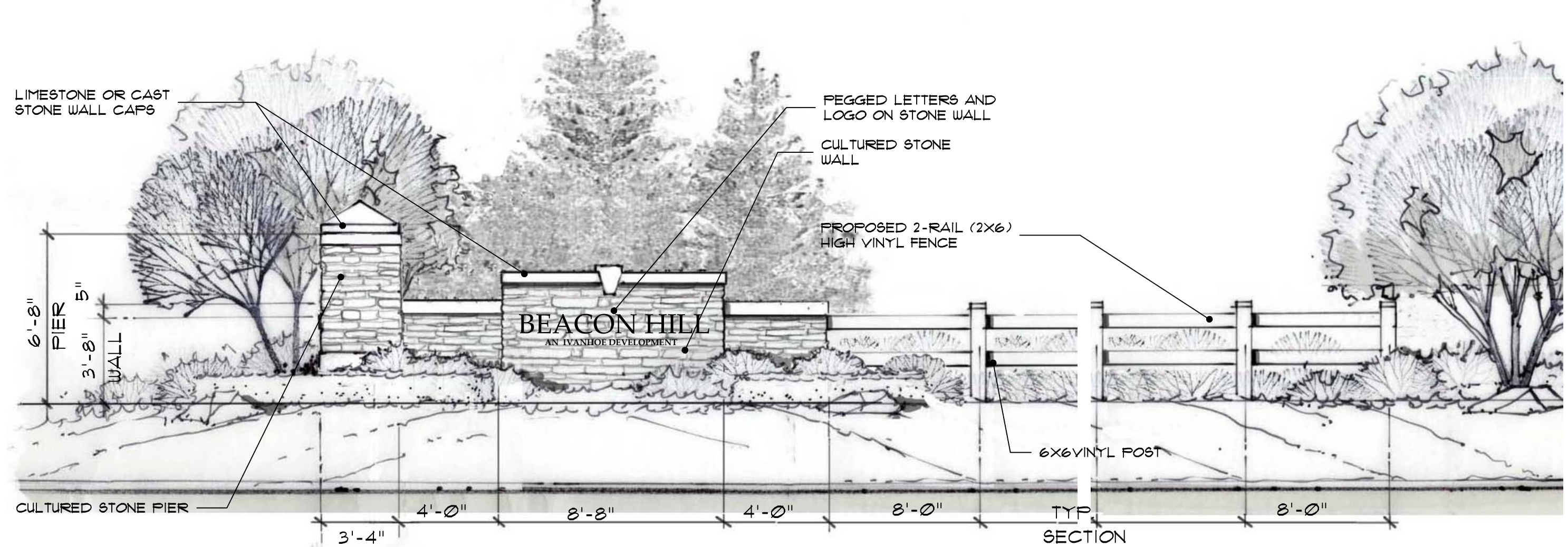
transformer pad planting detail
 SCALE 1/2"=0'-0"

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)

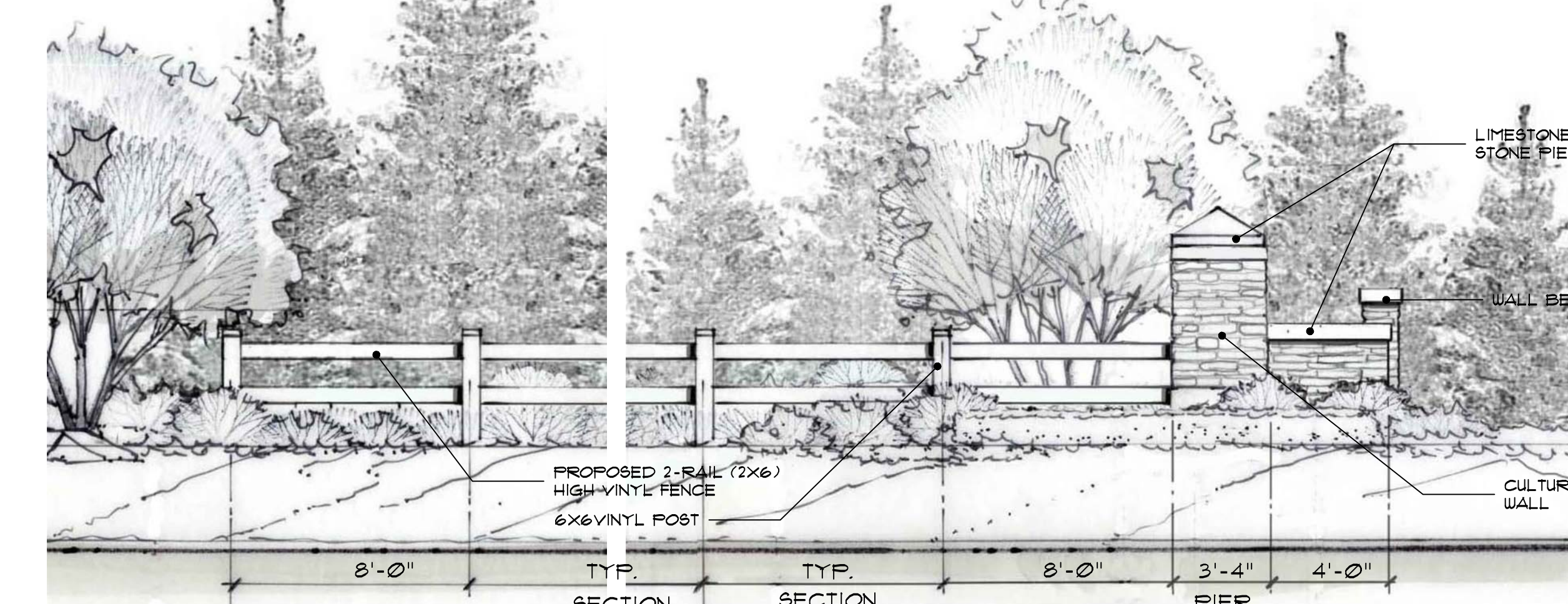
SEE ENGINEERING PLANS FOR PROPOSED LOCATIONS. TOTAL NUMBER OF TRANSFORMERS AND FINAL LOCATION PER DETROIT EDISON REQUIREMENTS.



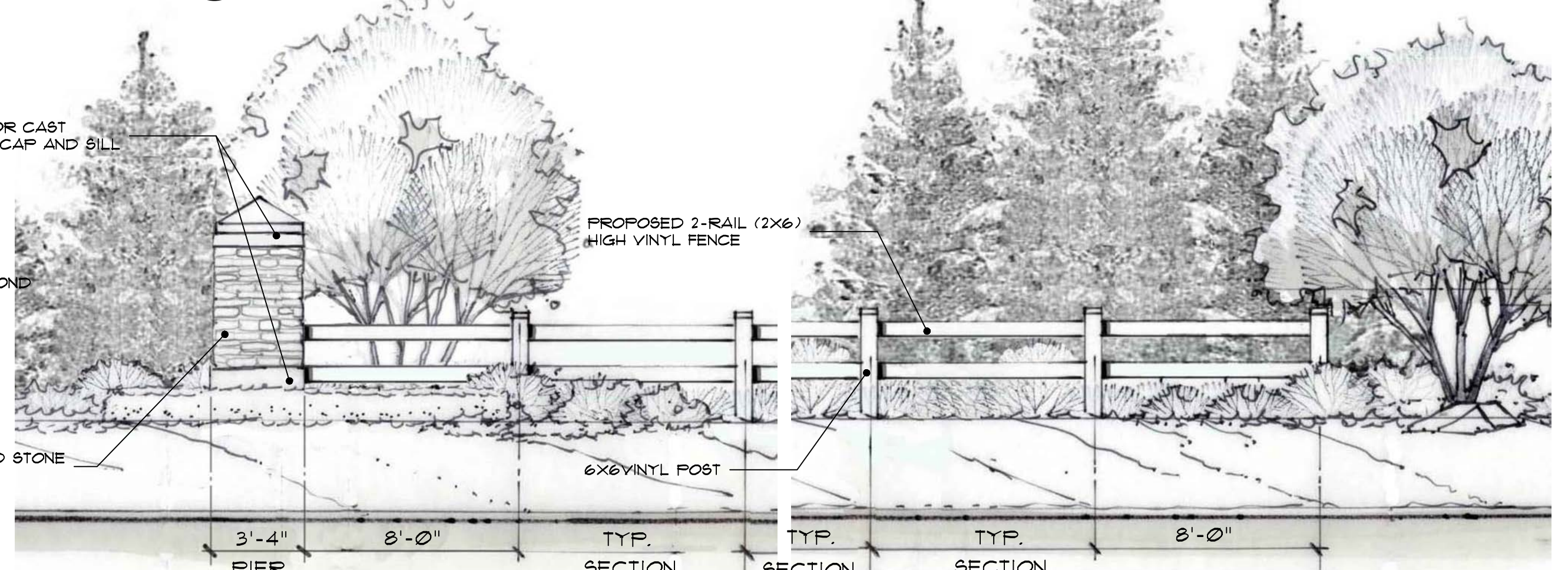
4B entry signage and wall monument site plan
 SCALE: 3/8"=1'-0"



4D entrance monument elevation view
 SCALE: 1/4"=1'-0"



4C entrance monument elevation view
 SCALE: 1/4"=1'-0"



4E entrance monument elevation view
 SCALE: 1/4"=1'-0"



4F sign & pier uplighting detail
 (3-CONDITION)

MANUFACTURER:
 COPPER LIGHTING OR EQUAL
 GRANVILLE BUSINESS PARK, BLDG. A
 1121 HIGHWAY 14 SOUTH
 PEACHTREE, GA 30269
 PH. 770-486-4800

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



4G decorative light and pole
 (1-CONDITIONS)

DECORATIVE POLE AND STREET LIGHTS MANUFACTURED BY HALOPANE

LIGHT FIXTURE: WASHINGTON SERIES-ACRYLIC
 MODEL NO. AW100HF12B5DNB OR EQUAL

POLE: WADSWORTH SERIES
 MODEL NO. AW100HF12B5DNB OR EQUAL
 POLE HIGH: 12' HIGH
 FINISH: BLACK
 POLE DIAMETER: 5"
 POLE BASE: 12"

entrance -sign notes:

- LOCATE AND STAKE ALL EXISTING AND PROPOSED UTILITIES PRIOR TO CONSTRUCTION. COORDINATE ANY ADJUSTMENTS WITH LANDSCAPE ARCHITECT.
- ALL ENTRY WALL LIGHTING SHALL BE CONTROLLED WITH A "PHOTO-EYE" SWITCH. ALL LIGHTING SHALL BE SHIELDED FROM PUBLIC ROW'S AND ADJACENT PROPERTIES.
- VERIFY SOIL BEARING CAPACITY PRIOR 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.
- SIGNAGE TEXT AND LOGO TO BE METAL OR FRISMATIC DIMENSIONAL LETTERS. PRIOR TO INSTALLATION, PERMITS TO BE OBTAINED PER CITY OF NOVI REQUIREMENTS, STANDARDS AND APPROVALS.

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
 LS16.006.04 PSP 4-13-2016

drawn by:
 JP, KH
 checked by:
 FP
 date:
 1-4-2015
 notice:
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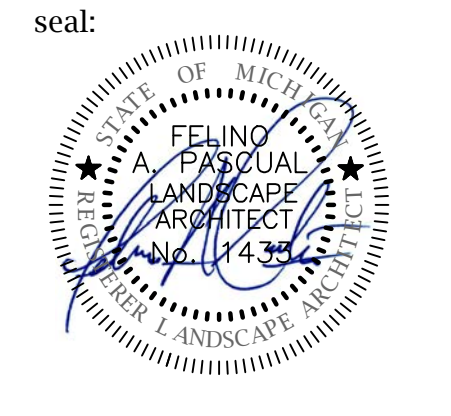
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The location and elevations of existing underground utilities as shown on this drawing are only approximate. No guarantee is either expressed or implied as to the completeness of accuracy. Contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction.

project no:
 LS16.008.01



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

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

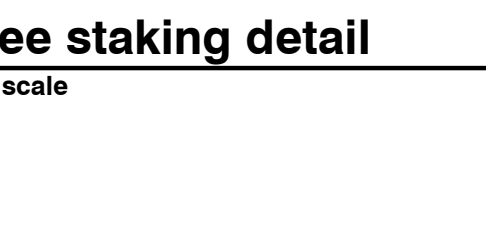
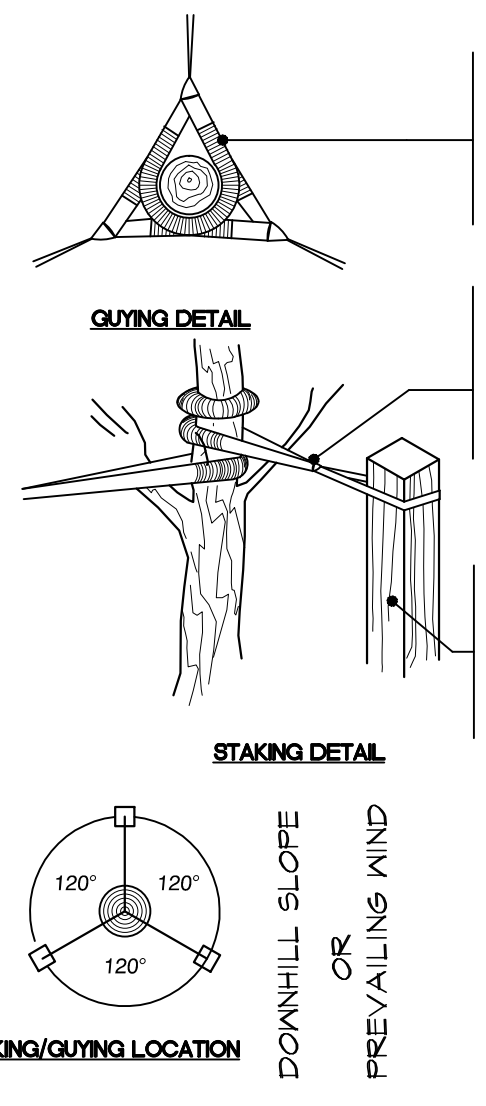
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project no:
LS16.008.01

sheet no:
LS-5 of 7

plant material list

quantities			botanical name	common name	size	unit cost	cost SHT.L-2	cost SHT.L-3	totals	
key	SHT.L-2	SHT.L-3								
STREET TREES										
AFS	11	-	ACER F. 'JEFFERED'	AUTUMN BLAZE RED MAPLE	2 1/2" BB	1325	15,575	-	15,575	
ARA6	15	12	ACER R. 'ARMSTRONG'	ARMSTRONG RED MAPLE	4" BB	1325	14,875	13,320	18,175	
LS6	8	-	LIQUIDAMBAR STYRACIFLUA	AMERICAN BUEETGUM	2 1/2" BB	1325	12,600	-	12,600	
TCS	1	-	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2 1/2" BB	1325	12,275	-	12,275	
GTS	19	-	GLEDTISIA TRI. 'NERMIS 'SKYCOLE'	SKYLINE LOCUST	2 1/2" BB	1325	16,175	-	16,175	
QBS	11	-	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	2 1/2" BB	1325	13,575	-	13,575	
ARS	10	-	ACER RUBRUM 'FRANKSRED'	RED SUNSET RED MAPLE	2 1/2" BB	1325	13,250	-	13,250	
LARGE AND SMALL DECIDUOUS TREES										
AR	-	11	ACER R. 'FRANKSRED'	RED SUNSET RED MAPLE	3" BB	1400	-	16,800	16,800	
PC	6	4	PYRUS CALLERYANA 'CHANTICLEER'	CLEVELAND SELECT PEAR	4" BB	1250	11,500	11,000	12,500	
AF	-	8	ACER 'JEFFERED'	AUTUMN BLAZE RED MAPLE	3" BB	1400	-	13,200	13,200	
TC	-	15	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	3" BB	1400	-	16,000	16,000	
GT	-	9	GLEDTISIA TRI. 'NERMIS 'SKYCOLE'	SKYLINE LOCUST	3" BB	1400	-	13,600	13,600	
CC	3	-	CERCIS CANADENSIS	EASTERN REDBUD (MULTI-STEM)	10" BB	1250	11,500	-	11,500	
AC	4	5	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY (MULTI-STEM)	10" BB	1250	11,000	11,250	12,250	
MF	1	8	MALUS FLORIBUNDA	JAPANESE FLOWERING CRABAPPLE	2" BB	1250	11,750	12,000	13,750	
MS	4	3	MALUS 'SNOWDRIFT'	SNOWDRIFT CRABAPPLE	2" BB	1250	11,000	11,500	11,750	
MSR	-	8	MALUS 'SARGENT'	SARGENT CRABAPPLE	2" BB	1250	-	12,000	12,000	
CP	4	6	CRATAEGUS PHAENOPYRUM	WASHINGTON HAWTHORN (MULTI-STEM)	10" BB	1250	11,000	11,500	12,500	
SHRUBS										
RAG	-	42	RHUS AROMATICA 'GRO-LOW'	GRO-LOW FRAGRANT SUMAC	4" CONT.	150	-	12,100	12,100	
SK	-	2	SYRINGA PATULA 'MISS KIM'	MISS KIM DWARF LILAC	3" BB	150	-	1100	1100	
VC	-	1	VIBURNUM CARLESII	KOREAN SPICE VIBURNUM	3" BB	150	-	150	150	
VHK	-	23	VIBURNUM X.B. 'MOHAUK'	MOHAUK VIBURNUM	3" BB	150	-	11,500	11,500	
AA	36	-	ARONIA ARBUTIFOLIA	EASTERN CHOKEBERRY	3" BB	150	11,800	-	11,800	
CF	31	20	CORNUS FLAVIRAMEA	YELLOWTAWG DOGWOOD	3" BB	150	11,850	11,000	2,850	
SG	-	10	SPIREIA X.B. 'GOLDMOUND'	GOLDMOUND SPIREA	4" CONT.	150	-	1,500	1,500	
LV	-	64	LIGUSTRUM X. VICARYI	GOLDEN VICARY PRIVET	3" BB	150	-	13,200	13,200	
SB	-	18	SPIREIA X.B. 'ANTHONY WATERER'	ANTHONY WATERER SPIREA	4" CONT.	150	-	1,300	1,300	
CS	55	26	CORNUS STOLONIFERA	REDTIG DOGWOOD	3" BB	150	12,750	11,300	13,050	
VL	46	32	VIBURNUM LENTAGO	NANNYBERRY VIBURNUM	3" BB	150	12,300	11,600	13,300	
PERENNIALS AND GRASSES										
MSM	-	12	MISCANTHUS SINENSIS 'MORNING LIGHT'	'MORNING LIGHT' MAIDEN GRASS	4" CONT.	115	-	1,380	1,380	
PAH	-	11	PENNISETUM ALOPECUROIDES 'HAMELN'	HAMELN DWARF FOUNTAIN GRASS	4" CONT.	115	-	1,265	1,265	
196,235 TOTAL										



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)
 32 Elymus virginicus (Little Bluestem)
 2 Glycyrrhiza 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 Coneflower)
 Helianthus scaberrimus (Sawtooth Sunflower)
 Helianthus maximiliani (False Sunflower)
 Helianthus scaberrimus (Sawtooth Sunflower)
 Monarda fistulosa (Bergamot)
 Penstemon digitalis (Foxglove Beardtongue)
 Pycnanthemum virginianum (Mountain Mint)
 Ratibida pinnata (Yellow Coneflower)
 Rudbeckia hirta (Black-Eyed Susan)
 Rudbeckia fulgida speciosa (Showy Black-Eyed Susan)
 Rudbeckia subtomentosa (Sweet Black-Eyed Susan)
 Rudbeckia hirta (Black-Eyed Susan)
 Silphium integrifolium (Rosinweed)
 Silphium laciniatum (Compass Plant)
 Silphium terebinthaceum (Prairie Dock)
 Solidago rigida (Stiff Goldenrod)
 Solidago rigida (Stiff Goldenrod)
 Veronica fasciculata (Smooth Ironweed)
 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.

landscape maintenance notes:

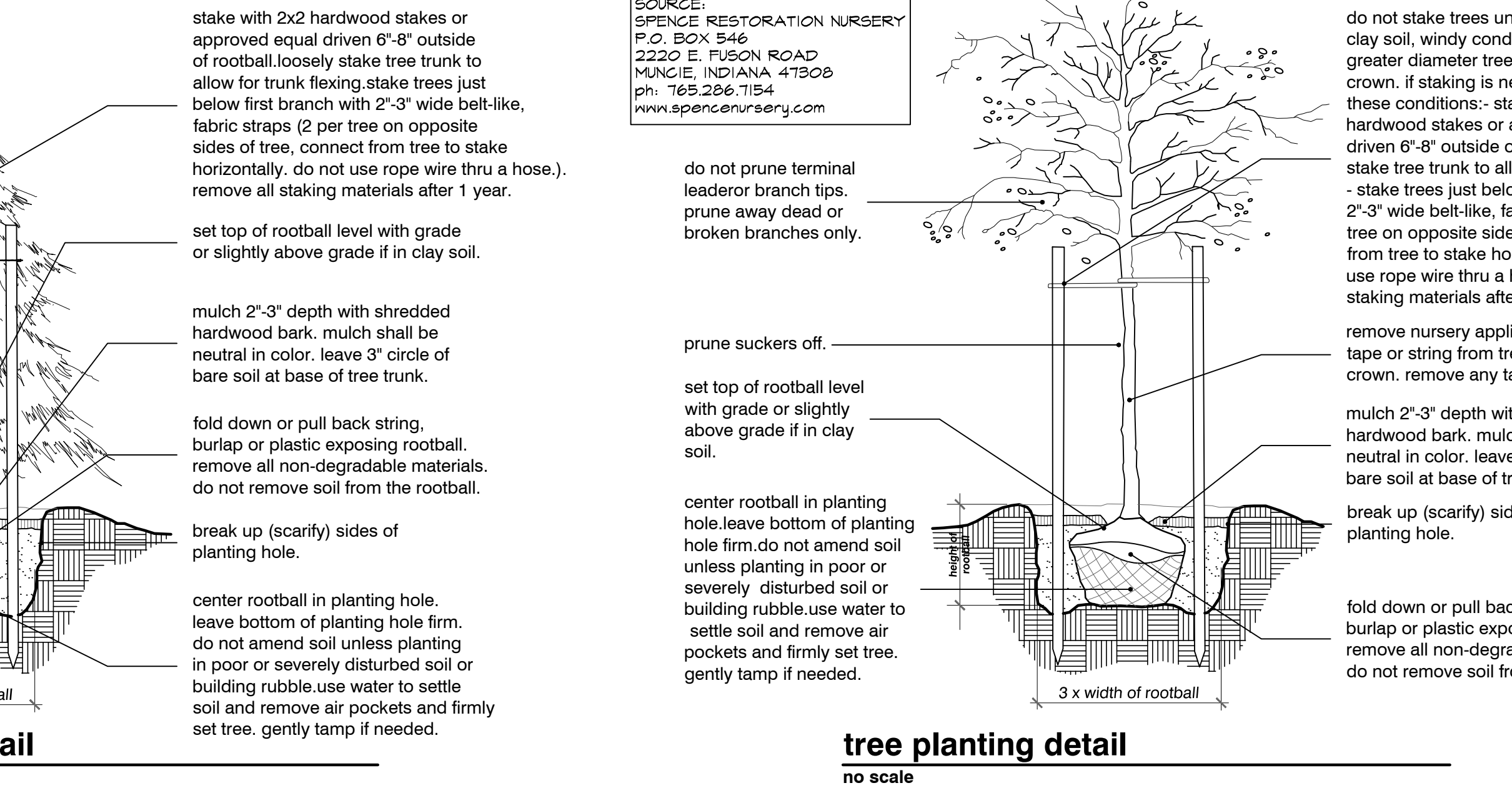
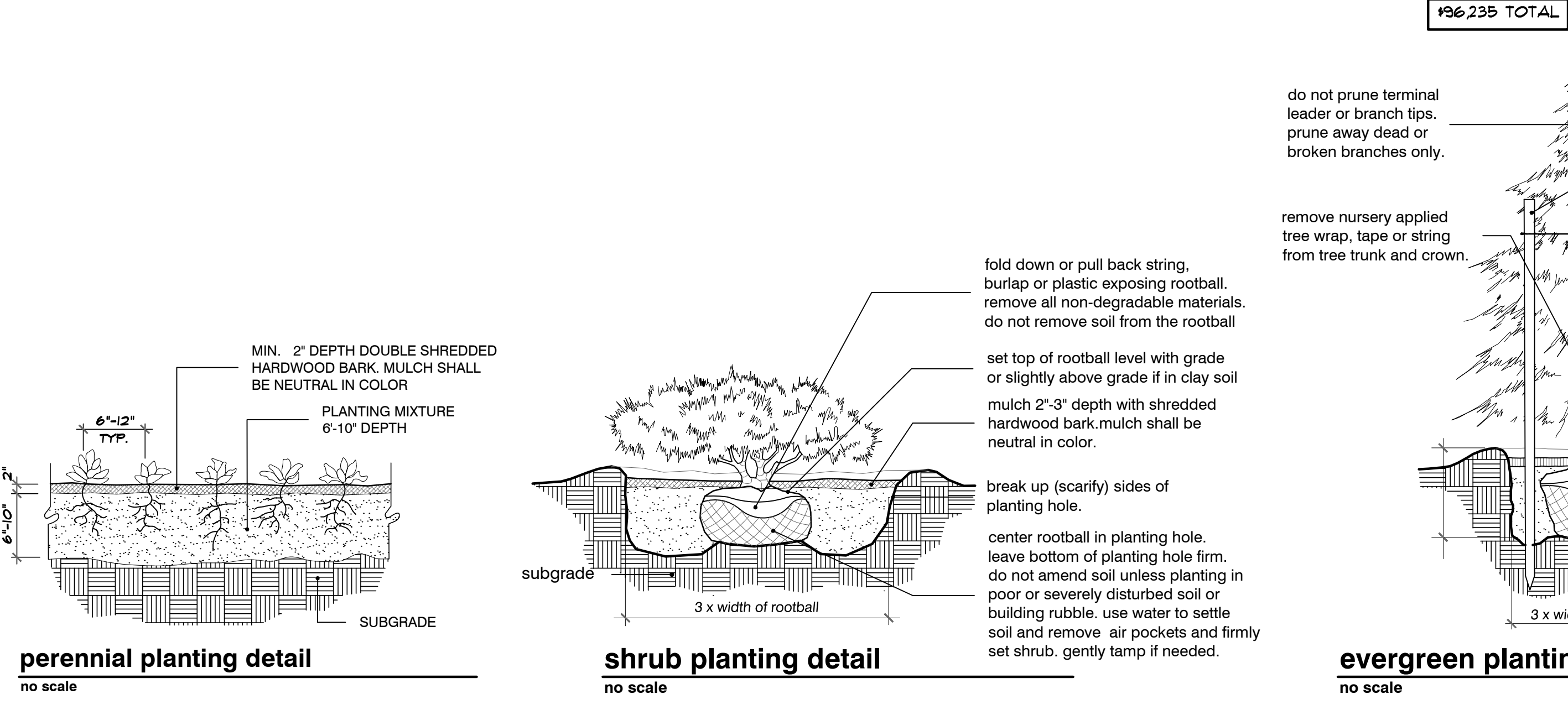
- THE OWNER OF THE PROPERTY SHALL BE RESPONSIBLE FOR ALL MAINTENANCE OF SITE LANDSCAPING, AS FOLLOWS:
- LANDSCAPE MAINTENANCE PROCEDURES AND FREQUENCIES TO BE FOLLOWED SHALL BE SPECIFIED ON THE LANDSCAPE PLAN, ALONG WITH THE MANNER IN WHICH THE EFFECTIVENESS, HEALTH AND INTENDED FUNCTIONS OF THE VARIOUS LANDSCAPE AREAS ON THE SITE WILL BE ENSURED.
 - LANDSCAPING SHALL BE KEPT IN A NEAT, ORDERLY AND HEALTHY GROWING CONDITION, FREE FROM DEBRIS AND REFUSE.
 - 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.
 - 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.
 - 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 AFORESAID PROCEDURES, ANY REVISIONS TO, OR REMOVAL OF PLANT MATERIALS WILL PLACE THE PARCEL IN NON-COMFORMITY WITH THE APPROVED LANDSCAPE PLAN, AND SHALL BE VIEWED AS A VIOLATION OF THIS ORDINANCE AND THE AGREED UPON TERMS OF THE FINAL SITE PLAN APPROVAL.

cost estimate summary

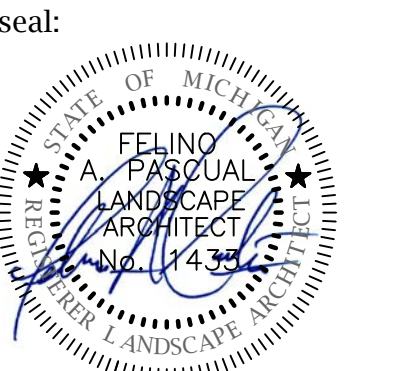
TOTAL ESTIMATED PLANT MATERIALS COST	101,000
TOTAL ESTIMATED IRRIGATION COST	16,000
TOTAL ESTIMATED SOIL COST	145,000
TOTAL ESTIMATED SEEDING COST	115,000
TOTAL MISC. ITEM COST (MULCH, EDGING, FABRIC, ETC.)	10,000
TOTAL TRANSFORMER SCREEN PLANTING COST	12,500
TOTAL TREE REPLACEMENT COST	126,675
TOTAL ESTIMATED LANDSCAPE COST	449,175

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 stipitata (Awl-Fruited Sedge)
 2 Carex tribuloides (Pointed Oval Sedge)
 6 Carex vulpinoidea (Fox Sedge)
 2 Elymus virginicus (Virginia Wild Rye)
 2 Silphium perfoliatum (Cupplant)
 2 Silphium terebinthaceum (Prairie Dock)
 2 Solidago patula (Swamp Goldenrod)
 2 Veronica fasciculata (Smooth Ironweed)
 2 Veronicastrum virginicum (Culver's Root)
 1 Zizia aurea (Golden Alexander)
 [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.
 Avena sativa
 Annual Ryegrass
 Winter Wheat
 American Slough Grass
 Lolium multiflorum
 Triticum aestivum
 Beckmannia syzigachne
- SOURCE:**
 SPENCE RESTORATION NURSERY
 P.O. BOX 546
 2220 E. FUSON ROAD
 MUNCIE, INDIANA 47308
 ph: 765.286.7154
 www.spencenursery.com



Plant Material List, Planting Details and Notes



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
tree replacement
planning detail

job no./issue/revision date:
 LS15.010.06 SPA 6-26-2015
 LS16.006.01 PSP 1-11-2016
 LS16.006.04 PSP 4-13-2016

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

notice:
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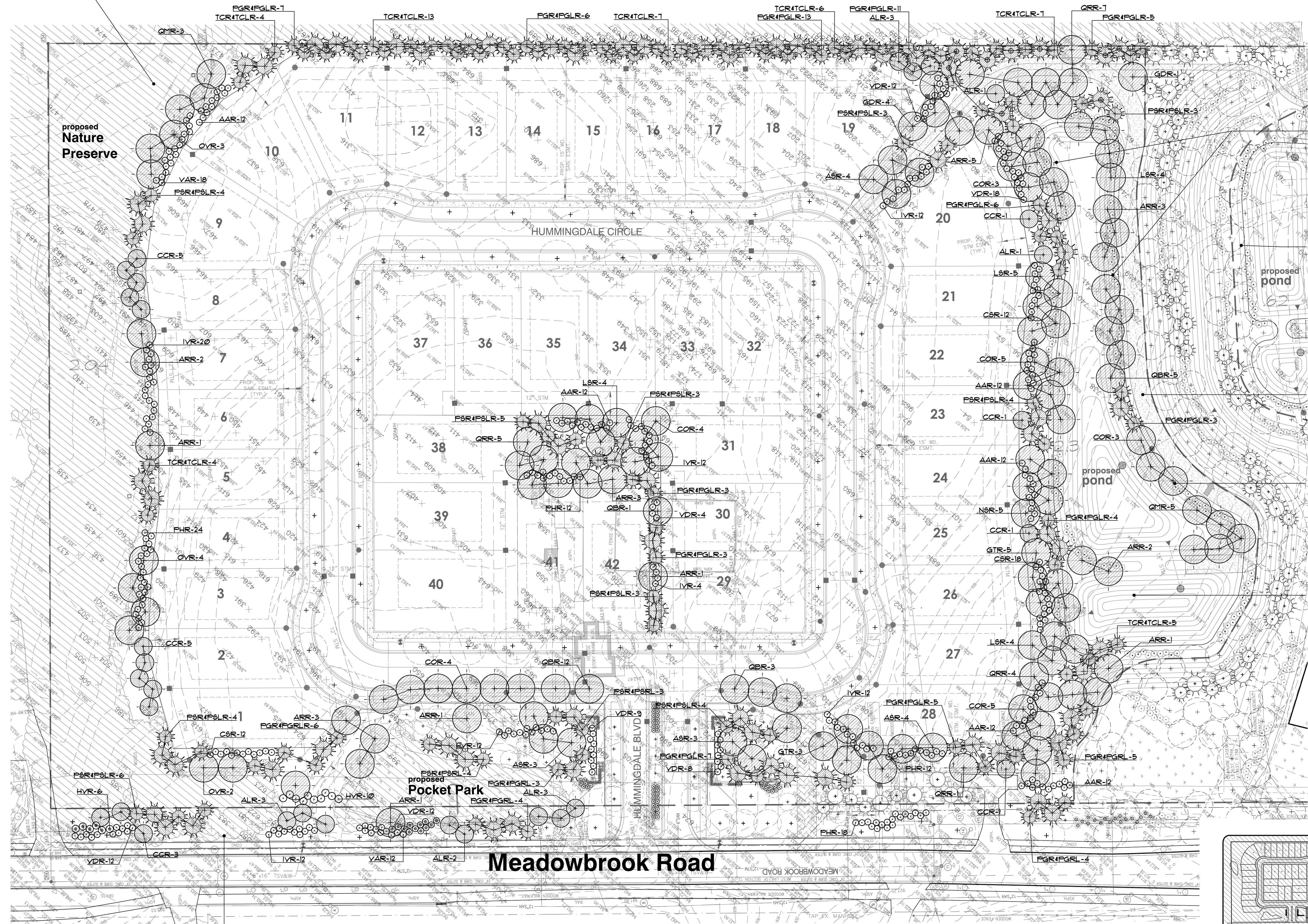
Do Not scale drawings. Use
 figured dimensions only

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 7

HATCHING DENOTES WOODS
 AND VEGETATION TO REMAIN



LAWN AREAS TO RECEIVE
 NATIVE WILD FLOWER SEED
 MIX ON FINISH GRADES. SEE
 SHT. LS-4 FOR SEED MIX DETAILS

PROPOSED ADJACENT LANDSCAPE
 PLANTINGS. SEE SHEET LS-7 FOR
 DETAILS

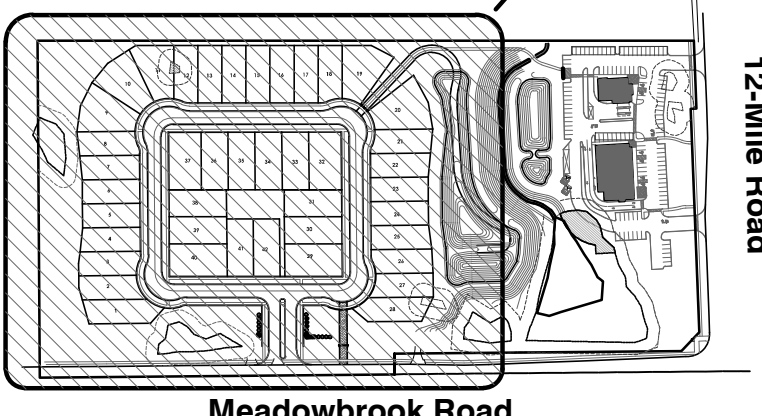
PROPOSED DETENTION POND
 ACCESS DRIVE

HATCHING DENOTES
 PROPOSED TREE/CREDITED
 TOWARD TREE REPLACEMENT
 REQUIREMENTS

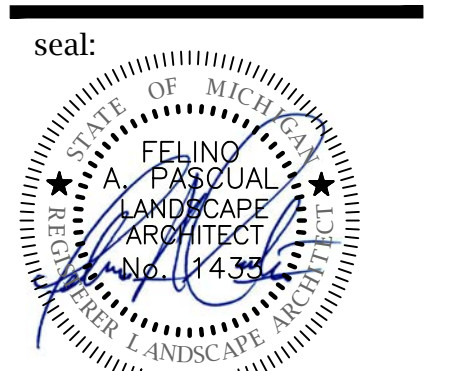
DETENTION BASIN - SEE ENGINEERING
 PLANS FOR LOCATION, SIZE, SIDE
 SLOPES, WATER ELEVATION, TOP
 OF BANK AND DETAILS. LAWN
 AREAS TO RECEIVE HYDROSEED
 ON FINISH GRADES. BASIN AREA
 BELOW HIGH WATER ELEVATION TO
 RECEIVE DETENTION POND SEED MIX
 AT A RATE OF 3 LBS. PER 1000
 SQ. FT. ON FINISH GRADES. SEE SHT.
 LS-5 FOR SEED MIXTURE DETAILS

R.O.W. LAWN AREAS TO RECEIVE IRRIGATION
 #50D ON FINISH GRADES. PROVIDE POSITIVE
 DRAINAGE. SEE ENGINEERING PLANS FOR GRADES.

6A Beacon Hill Meadows- tree replacement planting detail
 SCALE: 1" = 40'-0"



key reference map
 NO SCALE



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

project:
Beacon Hill
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 A planned Single Family
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 Commercial Retail

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LS15.010.06 SPA 6-26-2015
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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-7 of 7

tree replacement plant material list

quantities				cost								
key	SHT.L-6 (large shrub)	SHT.L-7 (medium shrub)	SHT.L-7 (small shrub)	totals	botanical name	common name	size	unit cost	SHT.L-6 (large shrub)	SHT.L-7 (medium shrub)	SHT.L-7 (small shrub)	totals
DECIDUOUS TREES												
N8R	5	20	4	29	NYSSA SYLVATICA	BLACK GUM TUPELO	2 1/2" BB	1400	7,000	28,000	1,600	36,600
A8R	14	5	-	19	ACER SACCCHARUM	SUGAR MAPLE	2 1/2" BB	1400	19,600	7,000	-	26,600
ARR	23	25	4	52	ACER RUBRUM	RED MAPLE	2 1/2" BB	1400	32,200	35,000	1,600	68,800
L8R	11	5	-	16	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	2 1/2" BB	1400	15,400	7,000	-	22,400
LTR	-	16	-	16	LIRIODENDRON TULIPIFERA	TULIP TREE	2 1/2" BB	1400	-	22,400	-	22,400
FOR	-	4	-	4	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	2 1/2" BB	1400	-	5,600	-	5,600
GTR	8	11	-	19	GLEDITSIA TRI-INERMIS 'SKYCOLE'	SKYLINE LOCUST	2 1/2" BB	1400	11,200	15,400	-	26,600
GDR	5	5	-	10	GYMNOCALADUS DIODES	KENTUCKY COFFEETREE	2 1/2" BB	1400	7,000	7,000	-	14,000
CCR	11	7	-	18	CERCIS CANADENSIS	EASTERN REDBUD	2 1/2" BB	1400	15,400	9,800	-	25,200
OVR	9	5	-	14	OSTRYA VIRGINIANA	AMERICAN HOPHORNBEAM	2 1/2" BB	1400	12,600	7,000	-	19,600
COR	24	9	1	34	CELTIS OCCIDENTALIS	NORTHERN HACKBERRY	2 1/2" BB	1400	33,600	12,600	1,400	47,600
QMR	8	11	3	22	QUERCUS MACROCARPA	BUR OAK	2 1/2" BB	1400	11,200	15,400	4,200	30,800
QRR	11	10	-	21	QUERCUS RUBRA	RED OAK	2 1/2" BB	1400	15,400	14,000	-	29,400
QBR	13	6	3	22	QUERCUS BICOLOR	SWAMP WHITE OAK	2 1/2" BB	1400	18,200	8,400	1,200	27,800
ALR	14	11	-	25	AMELANCHIER LAEVIS	SERVICE BERRY	8" BB	1400	19,600	15,400	-	35,000
TOTALS	114	162	15	391	TOTALS							440,400
EVERGREEN TREES												
FGR	58	10	-	68	PICEA GLAUCA	WHITE SPRUCE	1" BB	1325	76,950	13,250	-	90,200
FGRL	36	7	-	43	PICEA GLAUCA	WHITE SPRUCE	10" BB O	1325	47,700	9,275	-	56,975
FSR	26	29	-	55	PINUS STROBUS	EASTERN WHITE PINE	1" BB	1325	36,450	38,425	-	74,875
PSRL	20	22	-	42	PINUS STROBUS	EASTERN WHITE PINE	10" BB O	1325	26,500	29,125	-	55,625
TCR	28	-	-	28	TSUGA CANADENSIS	CANADIAN HEMLOCK	1" BB	1325	37,100	-	-	37,100
TCRL	11	-	-	11	TSUGA CANADENSIS	CANADIAN HEMLOCK	10" BB O	1325	14,575	-	-	14,575
TOTALS	169	68	-	237	TOTALS							202,225
SHRUBS												
IVR	12	12	-	24	ILEX VERTICILLATA	MICHIGAN HOLLY	30" BB	450	5,400	5,400	-	10,800
FHR	66	48	-	114	PHYSCARPUS OPLIFOLIUS	NINEBARK	30" BB	450	29,700	21,600	-	51,300
AAR	12	42	-	54	ARONIA ARBUTIFOLIA	RED CHOKEBERRY	30" BB	450	5,400	18,900	-	24,300
VDR	75	18	-	93	VIBURNUM DENTATUM	ARROWOOD VIBURNUM	30" BB	450	33,750	8,100	-	41,850
HVR	28	-	-	28	HAMAMELIS VIRGINIANA	AMERICAN WITCH HAZEL	30" BB	450	12,600	-	-	12,600
CSR	42	36	-	78	CORNUS SERICEA	RED-TWIG DOGWOOD	30" BB	450	18,900	16,200	-	35,100
VAR	30	20	-	50	VIBURNUM ACERIFOLIUM	ARROWOOD VIBURNUM	30" BB	450	13,500	9,000	-	22,500
TOTALS	305	236	-	541	TOTALS							234,050

TOTAL \$256,675

woodland tree replacement summary

TOTAL NO OF EXISTING TREE (8" DBH OR GREATER) TO BE REMOVED
 NO OF EXEMPT TREES (DEAD OR POOR CONDITION) REMOVED
 NO OF REGULATED TREE REMOVED
 NO OF TREES REMOVED BETWEEN 8"-11" DBH
 NO OF TREES REMOVED BETWEEN 11"-20" DBH
 NO OF TREES REMOVED BETWEEN 20"-24" DBH
 NO OF TREES REMOVED 30" DBH OR GREATER
 NO OF TREES REMOVED WITH MULTI-TRUNK

MEADOWS	TRAILHEAD	SHOPPES	TOTALS
432	22	6	460
55	3	-	58
377	19	6	402
183	3	1	187
144	4	4	152
17	3	-	20
4	1	1	6
24	3	-	32

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

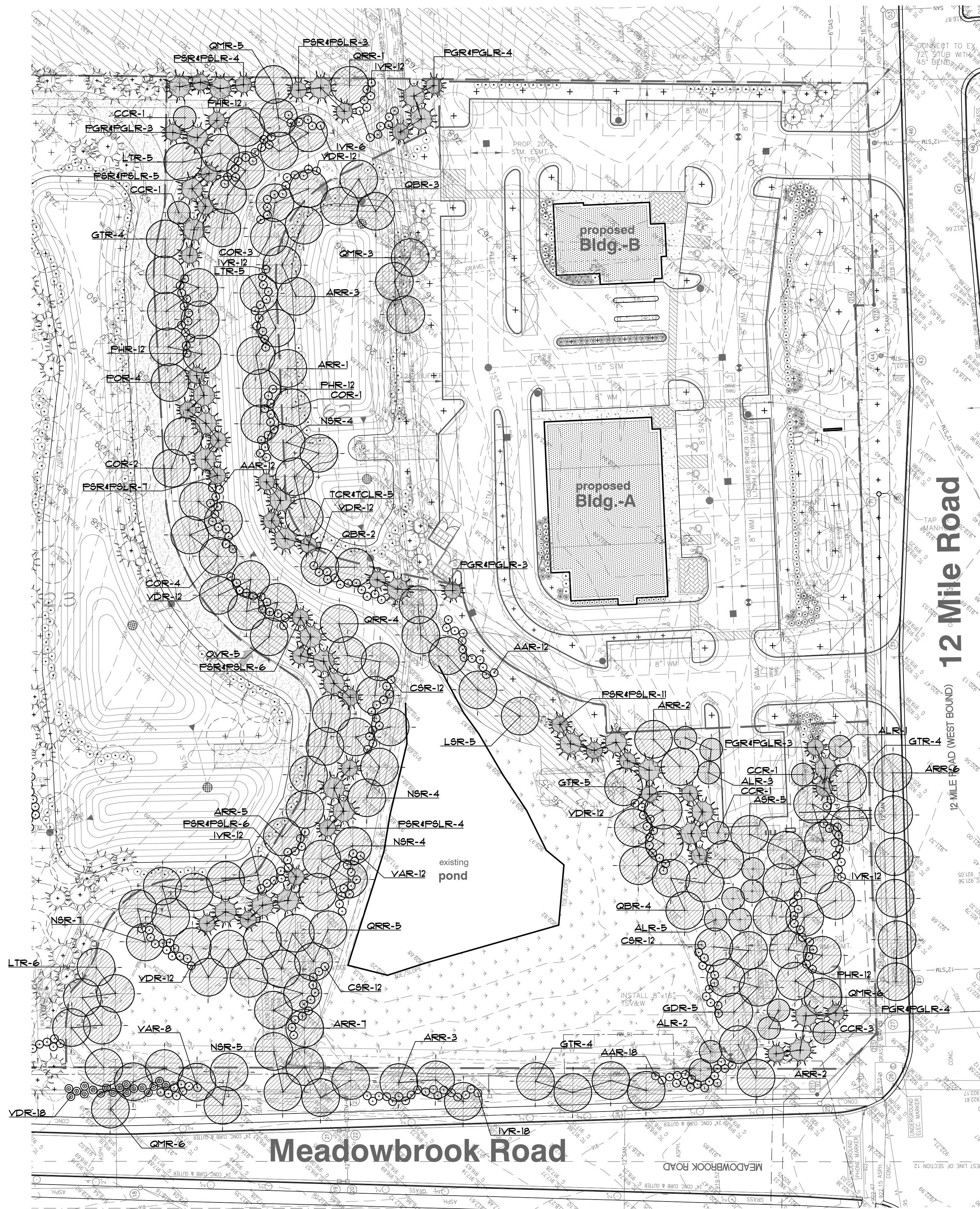
TOTAL NO OF TREE REPLACEMENT CREDITS REQUIRED
 187 - (8"-11" DBH) X 1-TREE REPLACEMENT CREDIT
 157 - (11"-20" DBH) X 2-TREE REPLACEMENT CREDIT
 20 - (20"-24" DBH) X 3-TREE REPLACEMENT CREDIT
 6 - (30" + DBH) X 4-TREE REPLACEMENT CREDIT
 32 - (MULTI-TRUNK) 454.3" / 8"

MEADOWS	TRAILHEAD	SHOPPES	TOTALS
657	48	13	718
183	3	1	187
288	18	8	314
51	4	-	60
16	4	4	24
114	14	-	133

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

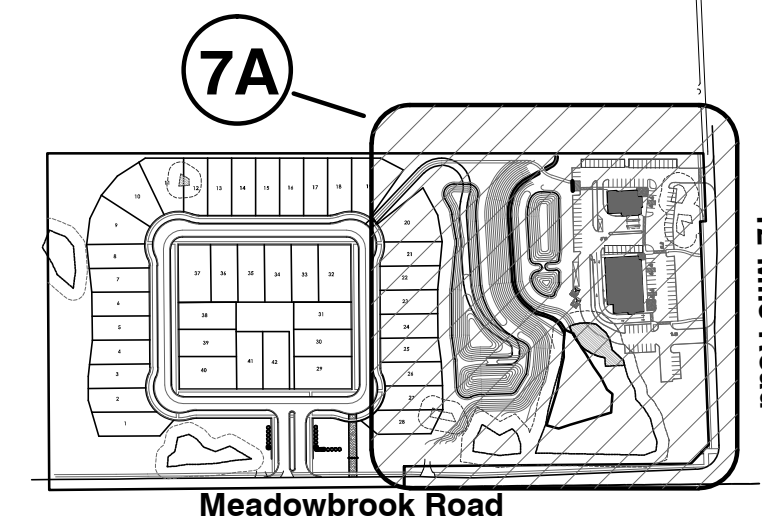
TOTAL NO OF TREE REPLACEMENT CREDITS PROVIDED
 351 - 2 1/2" DECIDUOUS TREE @ 1.0-CREDITS
 151 - 7' EVERGREEN @ .67-CREDITS
 102 - 10' EVERGREEN @ 1.5-CREDITS
 66 - 6-30" SHRUBS @ 1-CREDITS

MEADOWS	TRAILHEAD	SHOPPES	TOTALS
422.5	280.5	15	718
174	162	15	351
75	26	-	101 (14%)
104.5	49.5	-	153
64	44	-	113 (16%)



7A Beacon Hill Park Trailhead -tree replacement planting detail

SCALE: 1" = 40'-0"



key reference map

NO SCALE

Beacon Hill Park Ivanhoe Companies



COLONIAL STREETSCAPE
SCALE 1/4" = 1'-0"



RANCH STREETSCAPE
SCALE 1/4" = 1'-0"



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



32600 TELEGRAPH ROAD
 SUITE 250
 BINGHAM FARMS, MICHIGAN
 48025-2404
 PH 248.540.7700 FX 248.540.2710
 www.rogvooy.com



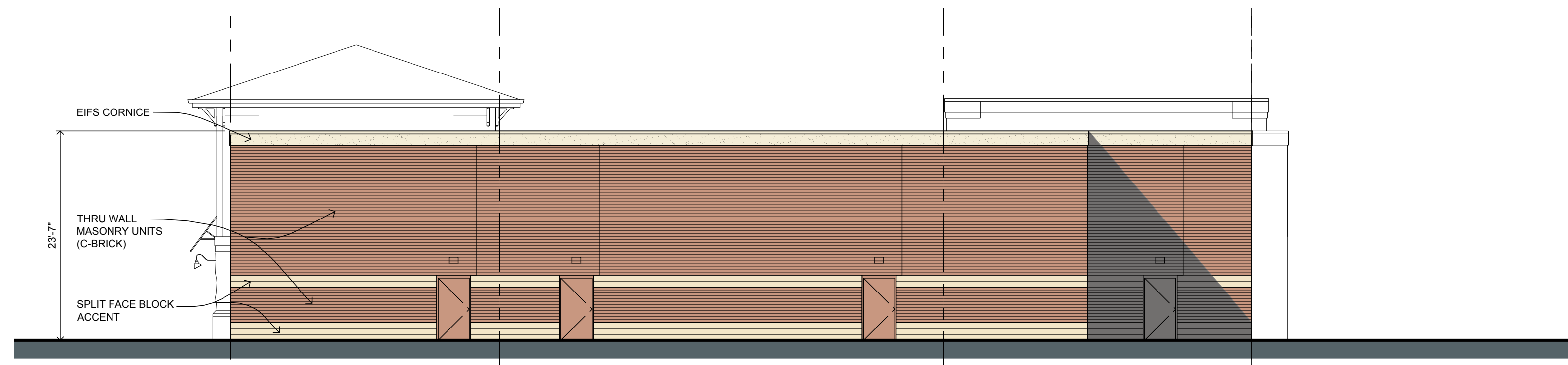
drawing:
Building 'A'
Building Elevations & Floor Plan
 DO NOT SCALE DRAWING

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

file number: 14051

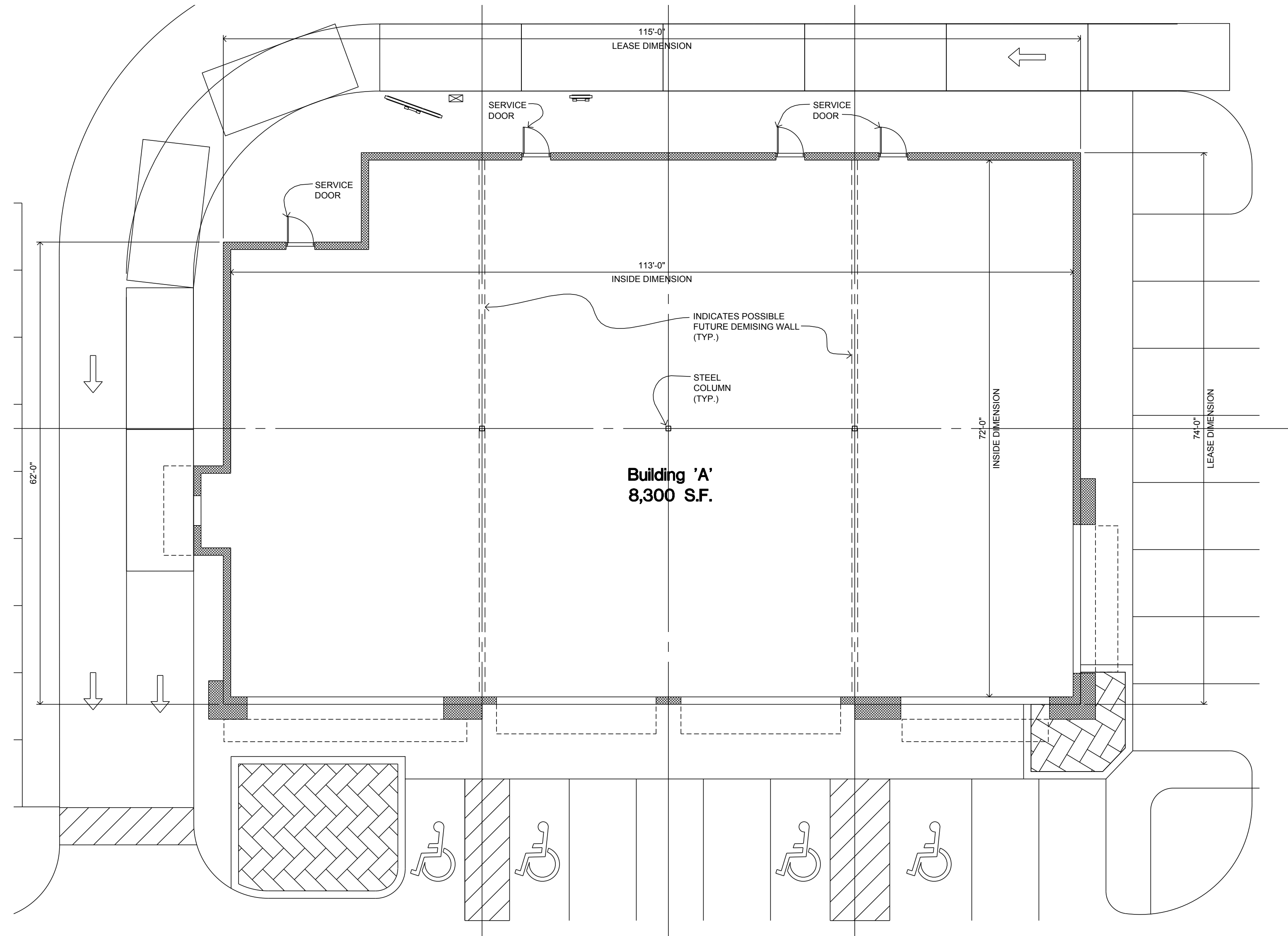
sheet:

A-1



North Elevation

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



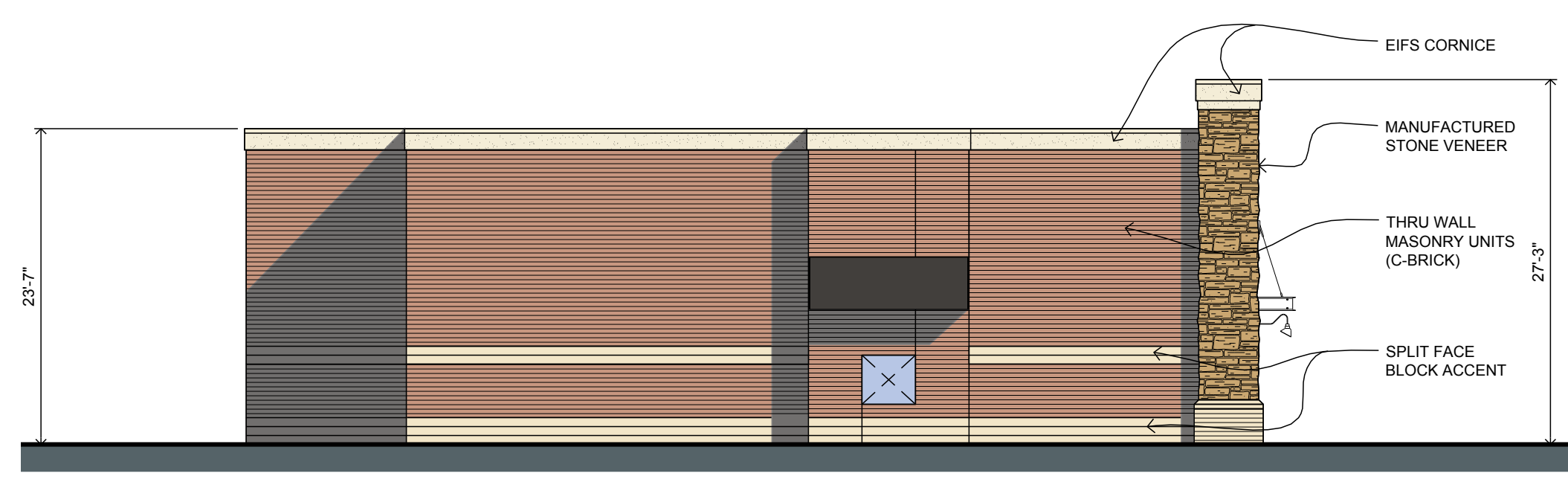
Floor Plan

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"

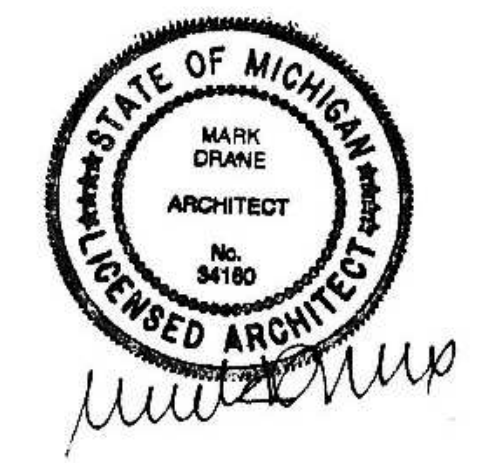
ISSUED FOR:
 OWNER REVIEW 10 DEC. 15
 PSP SUBMITTAL 11 JAN. 16

project:

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



32600 TELEGRAPH ROAD
 SUITE 250
 BINGHAM FARMS, MICHIGAN
 48026-2404
 PH 248.540.7700 FX 248.540.2710
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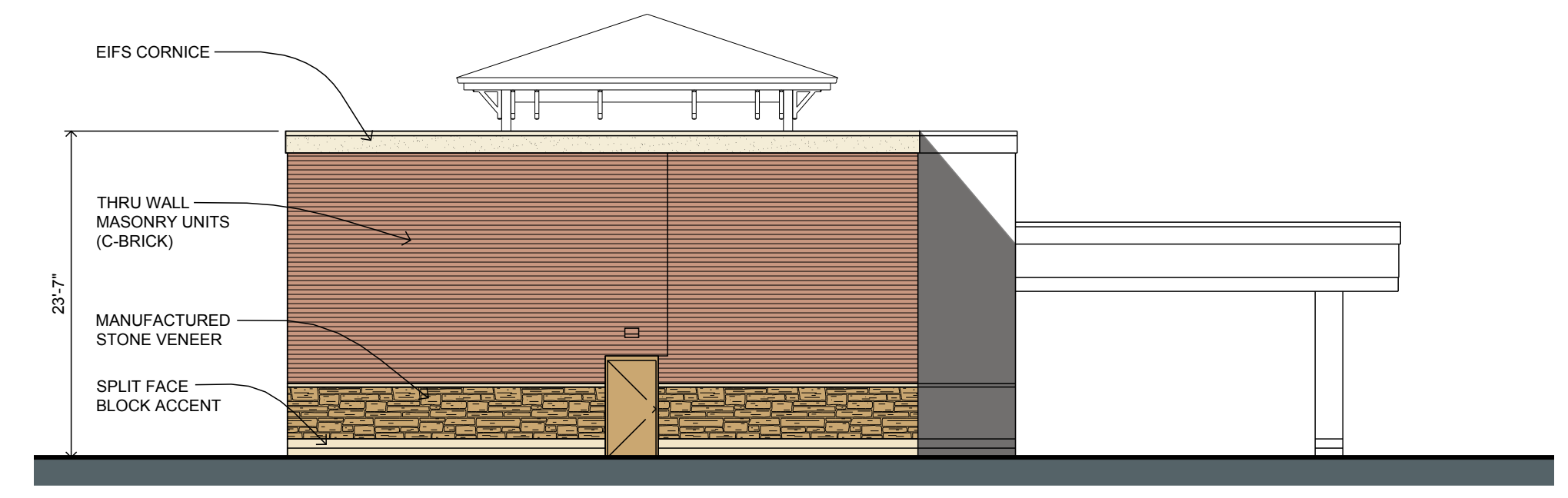
drawing:
Building 'B'
Building Elevations & Floor Plan
 DO NOT SCALE DRAWING

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

file number: 14051

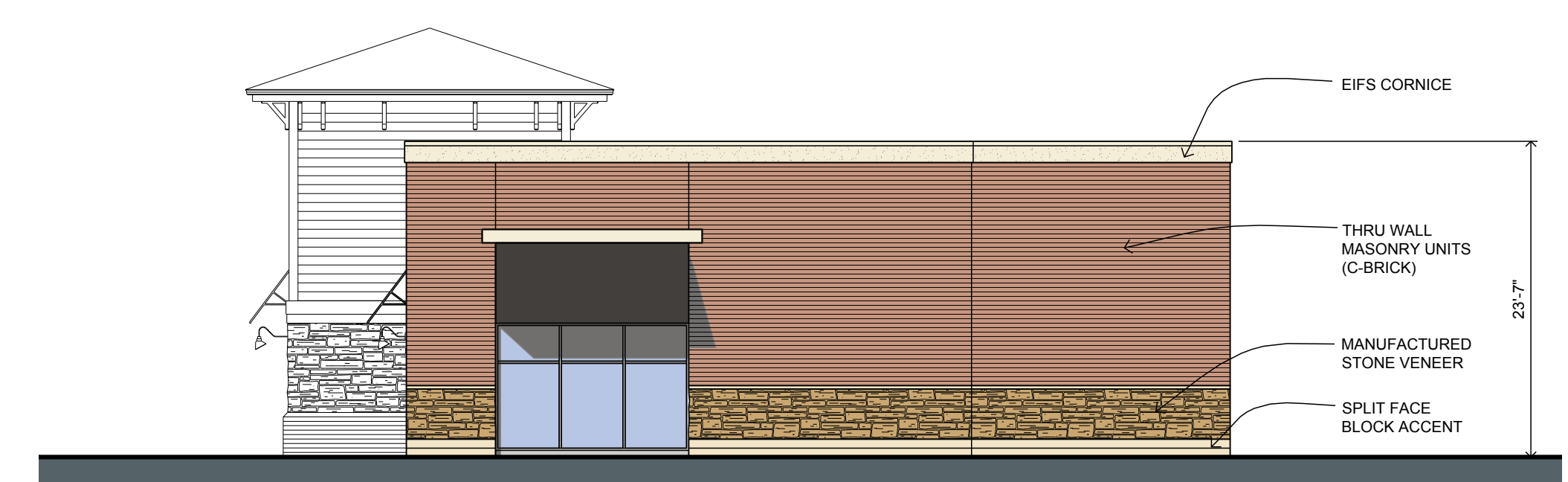
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A-2



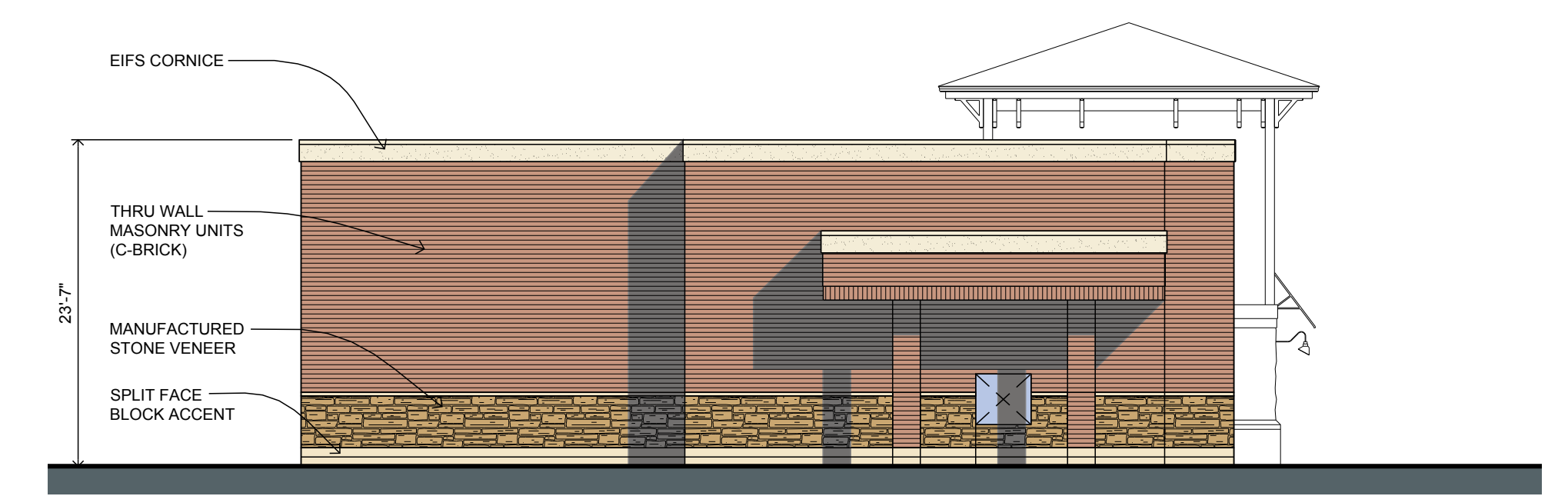
North Elevation

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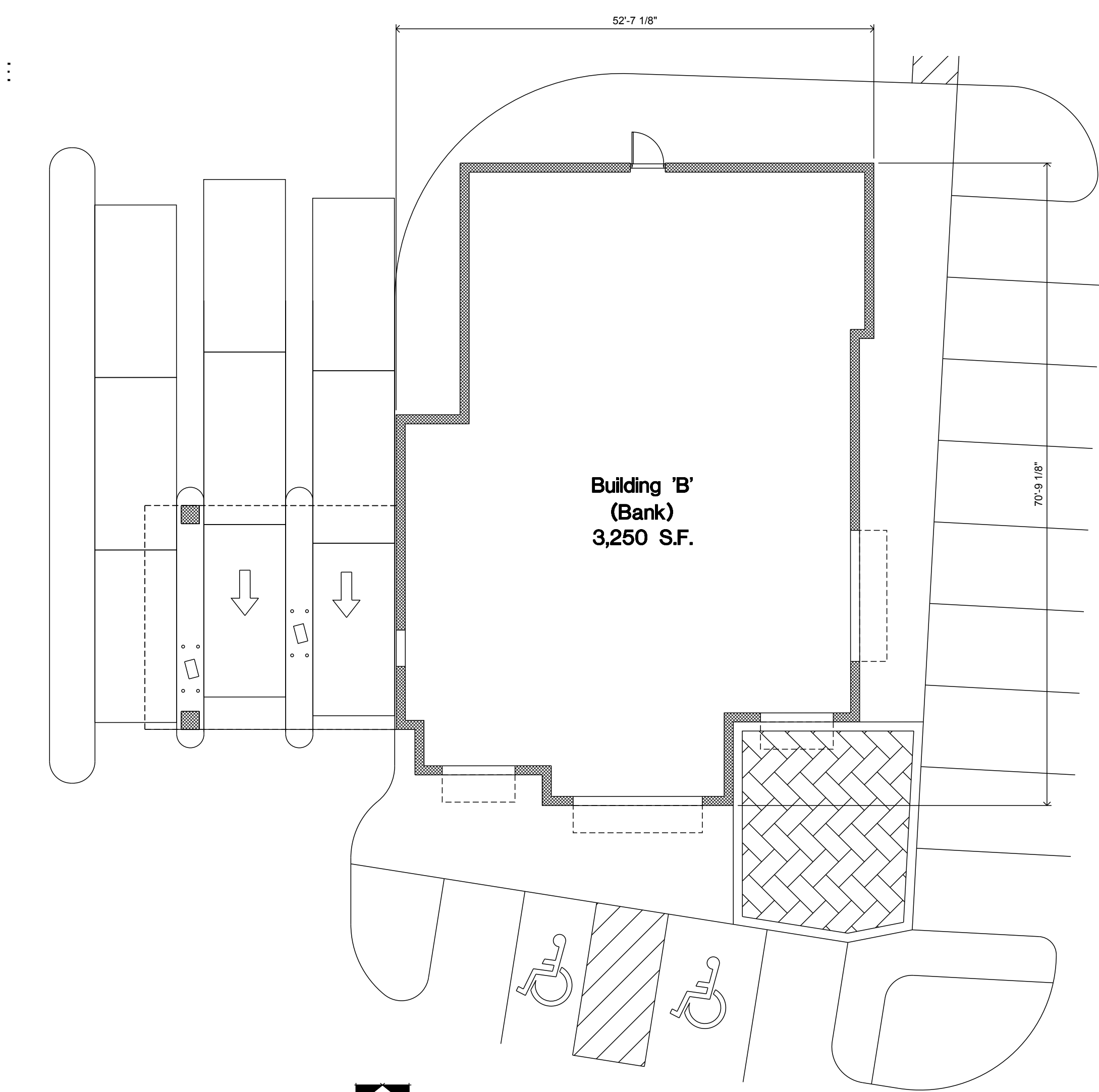
East Elevation

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



West Elevation

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



Floor Plan

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



South Elevation

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

**COUNCIL MINUTES
MAY 23, 2016**

Pete Auger if the recommendation from staff was to deny the request. City Engineer, Rob Hayes said that was correct, according to the ordinance, the City Staff doesn't have the discretionary power to make this decision, only City Council can do that. Member Mutch asked City Attorney, Tom Schultz in terms of if Council wanted to consider approving the request, would he feel that the request meets the standards outlined in the ordinance to allow us to do that. City Attorney, Tom Schultz said they helped draft the motion to approve or there is an alternative.

Member Mutch asked if he felt we were out of the realm and he said it was up to the City Council. Member Mutch said he will listen to what other Members on City Council say about this and said he did not have a strong opinion on this. He said he can also see from the applicant's viewpoint that leaving the curb as it is currently planned to be constructed would make it difficult to utilize the property in the way they intend to use it.

Mayor Pro Tem Staudt thanked the Mayor said that we should never let a good ordinance stop progress.

CM 16-05-059 Moved by Staudt, seconded by Burke; UNANIMOUSLY CARRIED:

To approve a request from Neptune Center for a variance from Section 11-239(b) of the Design and Construction Standards of the City Code, which requires parking areas and maneuvering lanes to be hard-surfaced and curbed, to allow the applicant to construct a parking area that has no curb on parcel number 22-15-451-009 because the applicant has demonstrated : 1) the application of the ordinance standard on this site is infeasible or otherwise presents an exceptional difficulty, nor has it demonstrated that enforcement of the ordinance on this site would be any more difficult or impractical than it would be on any other site where the ordinance has been applied, 2) the alternative proposed by the applicant is adequate for the intended use and does not substantially deviate from the performance that would be obtained by strict enforcement of the standards, 3) the granting of the variance would not be detrimental to the public health and welfare.

Roll call vote on CM 16-05-059

**Yeas: Wrobel, Gatt Staudt, Burke,
Casey, Markham, Mutch,
Nays: None**

5. Consideration of the request of The Ivanhoe Companies for Beacon Hill, JSP 15-08, with Zoning Map Amendment 18.710, to rezone property in Section 12, located on the northeast corner of Twelve Mile Road and Meadowbrook Road from RA (Residential Acreage) to R-4 (One-Family Residential) and B-3 (General

Business), with a Planned Rezoning Overlay (PRO), and to approve corresponding Concept Plan. The subject property is approximately 21.13 acres. The applicant is proposing a 42-unit single-family residential development with frontage on and access to Meadowbrook Road, up to 22,000 square feet of commercial space with frontage and two access drives on Twelve Mile Road, and an open space/park area at the corner of the intersection.

- 5.-A. Preliminary Site Plan
- 5.-B. Marketing Booklet/Revised Concept Plan

City Manager, Pete Auger said this project has gone through quite a few reviews; at least 6 or 7 different iterations going from 110 attached units to the 42 units. He also said in the attached book you will find more detail than you'll usually find at this stage of a project.

Mayor Gatt asked the representative if they would like to address Council .

Gary Shapiro, Ivanhoe Companies said he has been developing property for over 30 years and proud to say he has been developing in Novi for over 20 years. He said this project has been a long process, since we first earmarked this project, this site was one of the last corners and the Master Plan had not been changed since the Twelve Oaks Mall was built and M-5. He said they came a long way, at first they looked at this as a lifestyle center with retail on the corner. He said the results we have today is a collaborative effort and he thanked the Planning Staff, Master Plan Committee. They worked endlessly with Tollgate Farms in particular to put in a 50 foot corridor for 1400 feet along Meadowbrook Road and a 50 foot buffer all along Twelve Mile Road. He said from going from where they started to where we are now, he said he is quite proud. Forty-two percent of the site is open and almost a third of it is going to be parkland. He said they are donating it and he said he is pleased to do it. On the corner of one of our last intersections coming on an easterly direction to Novi, we are going to have a passive park, we have worked extensively with the Parks and Recreation Department, Planning Department and Clear Zoning. He said they are very excited about what they have here and if there were any questions, they have a power point with illustrations.

Brad Strader, from MKSD Studios said he has worked with Mr. Shapiro on different projects for 18 years, although he said he is primarily a community planner. He said Mr. Shapiro has done a lot of work and award winning projects. He displayed some of the illustrations that we have used with the Planning Commission, the Sub-Committee and with Tollgate Farms. He said we have a City Park and trail and 42 percent of the property has open space and we have worked hard at having a 50 foot landscape greenbelt from Meadowbrook and also on the north property line and also along Twelve Mile. He said it is a single-family neighborhood. He said they have really listened to the community and have looked at our plans, listened to the Planning Commission and also looked at Walkable Novi Plans, so we have a very walkable development with

sidewalks and pathways, also adding to the Trailhead Connection. He said they looked at this project and the changing characteristics that we are all familiar with. He said that the Master Plan is being amended after M-5 went in and the reconstruction of Twelve Mile and the Boulevard a lot of more intense development to the south of us, we have low density residential to the north of us. We are that transitional piece; we have the beautiful Tollgate Farms to the west. He said they really looked at a lot of different alternatives, there was a real market as there is always in Novi for more commercial or a lifestyle center, something that is more intense development that Mr. Shapiro had mentioned which would have added a lot more traffic which would be compatible to the south, but not compatible with what is to the north. He said they changed directions and looked at different types of residential, different types of attached residential, townhouses and apartments and so forth. He said they came up with an alternative with 54-single family homes with some commercial on the Twelve Mile frontage. He said what they heard from staff reviews and meetings with our consultants was that they had to reduce the density, bigger lots were needed and do more open space to preserve the woodlands and wetlands and reconsider. They said the layout was ok, but they had to reconsider so they made changes to it and came back, had a Public Hearing with the Planning Commission and we heard it was much better, but the density was still too high and we needed a deeper buffer to the north, deeper buffer to the west at Tollgate Farms. He said on those plans there were 6 lots that had a rear end facing Tollgate Farms. He said Tollgate Farms did not want to see the rear of homes, they wanted us to have tuck it back in the development and have more open space adjacent to the lots in the development and have more amenities for the parkland that we were providing. He said the plan they came up with has a deep 50 foot buffer along Meadowbrook, deep buffer along the north, with a buffer along the east, we have 5 1/2 acres of parkland or open space including 3.2 acres at the prime corner that would be donated to the City and have amenities such as seed it, grade it, put in parking, put in a bench and so forth. He said we also have greenbelt along the commercial frontage. He said they made a lot of changes and progress to the plan based on comments from the Planning Commission Staff, the Planning Commission encouraged us to meet with Tollgate Farms and we met with them three times. He said this is a list of the key changes to the plan that we presented to the Planning Commission and he could cover that in more detail if needed. He said they have 42-single family homes, we have neighborhood and commercial, with up to 22,000 square feet. He said this was a concept of what the design would be, but they would come back with a final site plan to work out the details of the elevations once they have their tenants committed. He said they have done a traffic impact evaluation that shows us the Level Service at Twelve Mile and Meadowbrook would remain Level Service C, we are only adding about 1 1/2 seconds of delay at that intersection, so while a lot of the development traffic the traffic is a big issue, are scaled back, development has a very modest impacts in terms of traffic. He said this is a concept where it really pops off the open space, you can see it is scattered throughout and we also added on a center open space in the middle of the subdivision this is how 39 of the 42 homes adjoin the open space. He said they have a beautiful corridor between the commercial and the residential that includes a wetland restoration, changing the culvert and making it more of a natural stream. He said they have been

working with the DEQ and they said this is an exemplary project and will be much in terms as far as the habitat and eco system when we are done. He said one of the things they had met with Tollgate Farms, and in the visual information they supplied Council showed the landscape plan along Meadowbrook to meet the City's standards with regimented street trees and so forth with formal plantings. They wanted us to compliment the natural appearance across the street and the visual plans they supplied to Council showed a revised more natural landscape plan. In that plan which involves the deviation we are seeking, is to have a more immediate impact visually and to make it look more natural we are going to bury the tree sizes, rather than 7 foot high evergreens we will have some that are 10 foot high, so we are varying the heights of plant materials so it would be more natural more quickly. He said they also tucked their entrance back and this is a feature of the design we think that does a nice job of complimenting Tollgate Farms to the west. He mentioned the park, the 3.2 acres at the corner with amenities there and it ties into the wetland restoration and habitat restoration with the creek and wetland area. He said they are only impacting about 13 percent of the wetland and the wetland area will be a much better quality of wetland when they are through with it. He referred to a visual plan of the wetland enhancement materials they were providing Council in the packet they were provided working with the DEQ. He said in conclusion this is their phasing plan, the Planning Commission with a lot of work of our staff and consultants, the Planning Commission unanimously recommended approval including their request for deviations. He said they did ask for one additional deviation that we restricted the commercial uses that could go into the commercial center so we are requesting B-3 Zoning, by restricting some of the more intense uses. He said they also asked that they add to that, no Vapor Shops so we agreed to add that at the Planning Commission to add that to the list of restricted uses. He said this would all be wrapped up in terms of illustrations and words to work with City Attorney, Tom Schultz to be put into our PRO Agreement.

Mayor Gatt thanked them for their outstanding presentation and opened it up to Council for a discussion and/or a motion.

Member Mutch thanked the Mayor and asked Mr. Shapiro who owns the property under consideration. Mr. Shapiro said he has it under option which he said he plans on acquiring from Shaarey Zedek. He said they have a beautiful three-story Synagogue on I-96 and they planned on doing a replica of that, but now they want to put it on the market and he acquired it. Mr. Shapiro said it is under contract from them. Member Mutch said they originally had the property and intended to build a Temple and they decided to not move forward. Mr. Shapiro said they had reached out to developers primarily they wanted to do a commercial center there. Mr. Shapiro said that wasn't for him and he wanted to work with the community and bring this to fruition. He said they are trying to monetize like everyone else, the best of their ability because the religious facility is shrinking, not expanding. Member Mutch said obviously with this conversion of this property if this is approved, the value of the property will go up significantly. Mr. Shapiro said he wasn't sure about that, they had inquiries from Churches, Mosques, and everything else. Member Mutch noted that Mr. Shapiro had an option on this and wondered if he intended to be the developer of this property.

Mr. Shapiro said he is the developer and we did the PRO, his company over a period of 30 years has built and developed over 10,000 units and all over the communities in Metro Detroit. He said either way they will develop it and build it or we will develop it under strict watch under the PRO Agreement. He said for instance if they promised it will be in writing what the tree replacement will be, what the entrance will look like, or what the elevations will look like, we don't always build them, but we are different, we are pure developers. Mr. Shapiro said if he puts a name on it, he puts his name on it and put it on a contract and bring it to fruition. He said they do not always do the actual construction. Member Mutch brought this up was because the last time Mr. Shapiro was in was because of Berkshire Pointe development on Wixom Road south of Grand River. Member Mutch said he sold that project on the fact that his reputation in the community is long standing and obviously well learned and ended up flipping that over to Pulte and they ended up developing it and he said he had concerns about that project. Member Mutch said one of the elements of that project he did like was the renderings for the housing facades and what ended up being built by Pulte he said this may sound harsh, but frankly he felt they were some of the ugliest home designs he has seen. Member Mutch added that Pulte come in on another project in the City and tell us that not only were they going to do a similar product, but they were going to use the exact same home designs that they used in Berkshire Pointe, so now they are going to have the exact same house designs in two different subdivisions. He said he was not happy about hearing that. He agreed that Mr. Shapiro had some very nice renderings in the packet, but if this goes over to Pulte and we get Phase III of "cookie cutter" house designs, he didn't think that would reflect well on the process and he was just putting that out there. Mr. Shapiro said it was very important for him that it was the first time and he has sold to Pulte for 30 years and he sometimes builds a portion and sells the others, he has sold to Toll and also sold to different people. He said he is different than other developers when we do show the scheme of the elevations. He said the elevations were mirrored from what was approved in the PRO Agreement. He also mentioned he respects Member Mutch's opinion, it is what it is. He said right now we are at a threshold in the community; we just got out of the "Great Tsunami", a residential depression unprecedented since the Great Depression. Mr Shapiro said we needed smaller lots. He said he does not love smaller lots, he likes bigger lots, but everyone can't afford a million dollar house. He said every tree, every entranceway and the elevation mirrored it. The elevation mirrored it, it may not have looked exactly like we envisioned, but it was close. Member Mutch said whatever his issue is with the size of the lots, the point he made was that what he presented to Council and what Council approved, the renderings and the houses that were built were not the same. Member Mutch said he put this on the table because it is a concern of his and now that Pulte is going to recycle that product in the community he would like to see a commitment that if we approve this, we will not see Phase III of Pulte's product being recycled. Mr. Shapiro said it would be something different, but he could not promise Member Mutch today what it will be. Mr. Shapiro said he is trying to build a house in Novi in the \$400,000 dollar range and he is having a hard time doing it. Those elevations were mirrored but they were not exact, there is not much you can do when you have a small house. Mr. Shapiro said someone liked them, they sold 60 homes. Member Mutch agreed they are buying them, they are not that concerned about how

they appear. He said he is complimenting Mr. Shapiro and what he is presenting in this package in terms of the renderings, and thought they were attractive they fit well for a house that size. Member Mutch said that there was a request from Clear Zoning to do some Master Plan review of this corner and he said at that time, about this particular project, was that he did not want commercial development on Twelve Mile Road. He said one of the things reviewing this with the development process is, they are recommending commercial development. Member Mutch asked City Planner, Barb McBeth if the Master Plan has any recommendations for commercial at this location. City Planner, Barb McBeth said currently the Master Plan does not have any recommendations for commercial, the current Master Plan recommends large lot residential. She said we do have an update that is currently underway which there are some modifications to the current version. Member Mutch asked if the draft plan shows commercial at this location and she responded that it did not. Member Mutch said looking at this piece of property, it is obvious there is a half mile stretch between Meadowbrook Road and M-5 where we have these large, mostly vacant, large lots zoned residential. Member Mutch wondered what makes these lots different than those properties. City Planner, Barb McBeth said they took a look at the entire area and partly with the exhibits shown from the developer, we have seen a plan to the east a couple of times, but nothing officially submitted for a Community Center and Church. For several of those large lots, and also one or two of those lots to the east that remain. Member Mutch said he has some concern that if we allow commercial on this piece and let's say the Church property next door, they also want to sell it as this is being proposed here and then we get this march to M-5 with everyone wanting to do commercial development. He wondered what the position of the City would be to say no to those requests where we said yes to the other. City Planner, Barb McBeth said we need to take a look at these on an individual basis so as the plan comes in; we need to take a look at it and see if we can do what's proposed. Member Mutch asked if the Master Plan is not allowing it but we are allowing it here, what is the legal justification for saying no to anyone else? City Planner, Barb McBeth said this is coming in as a unique project, a Planned Rezoning Overlay and coming in at the same time we are looking at the Master Plan review and update. She said with those things done together, the next round, we can take a look at an individual basis. Member Mutch said the problem he has was there was nothing that differentiates this property from any other property along this stretch and he felt we would get into a situation with a domino effect once we go from the door of one, we have the potential for requests of commercial development along this corridor. He wondered if Planning Staff has looked at any other uses for this corner, such as office, which may be more appropriate than commercial. City Planner, Bard McBeth said they have looked at other residential, but not office for that corner. Member Mutch said he thought we allowed for office on Twelve Mile and those are compatible and appropriate. He mentioned he did think we need commercial in terms of development. He wondered what were the terms of the woodlands on site and if they would be removed. She said they have the Environmental Consultants on site and they would be able to answer that question. Pete Hill, ETC answered the question saying 460 of 577 trees or approximately 80 percent of the regulated woodlands will be removed and the applicants propose to replace all that on site. Pete Hill, ETC said the number was actually 402 out of 460 or

approximately 87 percent of regulated trees will be affected. Member Mutch said that tells the story on environmental issues. Member Mutch asked City Planner, Barb McBeth if this is a walkable development and she responded saying that it did have a number of walkable elements. She said they have the number of sidewalks we would expect on the proposed streets and the residential component and it does have a connection from the residential component across the creek and over to the commercial development. She said it also has the form of a trailhead at the corner of Meadowbrook and Twelve Mile Road with a proposal to add six parking spaces and a bike rack and bench and whatever else the City would like to install at that location. Member Mutch wondered what percentage of users of the commercial development would we expect to arrive there by foot or by bike. City Planner, Barb McBeth said that was hard to say and partly why they requested that the additional parking spaces be installed by the developer when the second phase, the commercial development comes in. She said they thought some of the people who visit the commercial component might come on a bike or by foot, but there would be other people who would want to use the facilities that the City has provided along Meadowbrook and Twelve Mile Road. Member Mutch asked why the people would come to the commercial center. City Planner, Barb McBeth said it would be convenience commercial primarily, mostly drive by. Member Mutch confirmed with City Planner, Barb McBeth that the trail was a gravel trail in between the commercial and the residential. Mr. Shapiro said the gravel trails go to the retention basin. Mr. Shapiro used a visual display for Council to show them that there was a concrete sidewalk going to the commercial center. He asked City Planner, Bard McBeth about City Council requesting active park areas in residential and he did see this in this development. She said primarily the intent was to try to preserve some buffers around the edge and try to keep the development somewhat self-contained within these natural buffers, the active recreation portion might be considered the part near the corner that has the trailhead. Member Mutch said that Mr. Shapiro said the justification for the smaller lot development in the City meets a housing need in Novi. He wondered what the housing type was that he was meeting. City Planner, Barb McBeth said it is for the smaller lots, people are not as interested in maintaining a large lot, they are looking for new housing, we can tell that Mr. Shapiro said they are selling quickly in Berkshire Pointe. Member Mutch wondered how we quantified that need, how many more of these size lot developments do we see going forward. She said the Master Plan for Land Use is missing the middle housing that Novi may not have at this point. This kind of development may fit into that category of some new housing, smaller lots. It will be interesting to see that some of the areas near Walled Lake, the older part of property near Walled Lake might be appropriate for some mixed use kind of housing. She said some other areas that might be smaller lots might be smaller lot housing. Member Mutch wondered if the staff knew what the need would be for this type of housing. He was looking at the Master Plan Update and he didn't see anything that identifies other than the Grand River Corridor appropriate locations for this kind of development. She said we can continue to look for that in the Master Plan Update, it wasn't something we specifically said that we picked out specific spots. She said the Grand River Corridor didn't undergo a lot of study during the review and we are expecting some mixed use housing there and maybe smaller units, not exactly like this, but some more of that

missing middle type housing. Member Mutch said the frustration he has is that we keep getting these projects coming in and noted a few such as Andelina Ridge, Berkshire Pointe, Dixon Meadows, Oberlin and these were all smaller than R-4 sized lots, that was over 400 units. He said in the last 10 years we have had Tollgate Woods, Knightsbridge, Liberty Park and these are another 700 units, so over 1000 units that are this size are for smaller lots and yet, what is the expected demand and where are the appropriate locations for these. He said we go through this process where developers say we want to build homes on 5000 square foot lots and wherever they show up and decide that is a good location, we have planning staff saying we really need more of this. He said he is frustrated that planning staff cannot tell him what the demand is for this type of housing or where it should go on the Master Plan. He also said we had a discussion about putting in commercial at Thirteen Mile and Novi Road. Planning Department had a market analysis done that said we can only support 20 or 25 thousand square feet of community commercial in that area, that has literally has thousands of households within walking distance to that location. He noted that here we are talking about an equal amount of community commercial at a location that is really not within walking distance of anything other than these homes that are going to be built. He said it didn't make sense to him and thinks we disregard the Master Plan when it is suitable. He said that the parkland donation appreciates this is a key component of this development, but the City is getting all of the undevelopable property, that will be the responsibility of the City to maintain, and we get a small little upland area for a trailhead that doesn't connect to a trail. He said he doesn't know why we as a City are taking on responsibility other than the corner piece of the property. He said if it were usable he could understand it.

Mayor Pro Tem Staudt wondered why we are taking on this park. He wondered why we don't let the developer continue through his commons association take on that responsibility and said he didn't see any value in this. City Manager, Pete Auger said through our Park Master Plan, when we looked at the City in our planning documents, it did say this area in the City is without a public park and an area to be looked at for a small public park. He said it also does connect to trails and we spent some money and grant money and won an award for the connector trail that goes over Meadowbrook Road to connect non-motorized routes and trail ways and it will be a passive park where there will be little or no maintenance on it. The only spot that will not be planned is passive right now in the parking area that will be built by the developer and the bike racks; it will be a turn-key operation. He also said it will be improved wetlands with several pipe drainage systems that just pour into this area now that the developer will turn into a more eco system than what currently exists. Mayor Pro Tem Staudt said his consideration is that this is waste parkland and this is the only part he doesn't like, he said he liked the development, but taking on this responsibility of this park and providing at any level of maintenance is an issue to him. Mr. Shapiro said he is open to anything in a collaborative fashion and he wanted to clarify that 2 ½ acres are upland, it could have commercial on it, the balance of it is wetlands and they have worked with Park and Recreation and this fill the criteria of a trailhead. Take the upland and plant wildflowers, put up a bike rack and put the parking spaces and that the City wanted it. He said if we don't want it, that would be fine. Mayor Pro Tem Staudt asked if it was

going to be a 10 foot pathway, that we are expecting for a trailhead. Mr. Shapiro said the trailhead we looked at the Walkable Novi had a hole where they wanted a park, and the word trailhead is a loose word. The idea is that with all of the paths along the frontage, this is a passive place for the residents to pass through and sit on the bench or for people to park to go to the niche commercial, like a coffee shop. Mr. Shapiro said he thinks this is a tremendous asset. Mayor Pro Tem Staudt spoke with Director of Parks and Recreation, Jeff Muck and he said the idea was to make a place where people could stop and go to the niche commercial. Mayor Pro Tem Staudt said he was one of the founders of the Walkable Committee and his understanding was that they were looking at 10 foot pathways, and wondered what is coming with this development. Parks and Recreation Director, Jeff Muck said it was planned to be a connector so people can jump on a bike and hit the M-5 pathway, as Mr. Shapiro said that trailhead might be a bit of a misnomer. He said he felt they encapsulated more of a low maintenance plan, more passive area with some potential for the water down the lines. Mayor Pro Tem Staudt asked what happened with the 10 foot pathways that we developed through the Walkable Novi Committee and wondered if that was being disregarded at this point. City Planner, Barb McBeth said the 8 foot pathway is on the opposite side of Meadowbrook and this would be the 6 foot wide sidewalk on this side of Meadowbrook. Mayor Pro Tem Staudt said if he went back and looked at the Walkable Novi plan, there was never a discussion at the time when we developed the Walkable Novi plan that this was going to be a more robust pathway on this side of the street. City Planner, Barb McBeth said he may be correct and they would certainly go back and check that and if it is something you would like us to talk to the developer about and include a wider path on this side; that could be something we could discuss.

CM 16-05-060 Moved by Staudt, seconded by Burke; UNANIMOUSLY CARRIED:

To approve tentative indication that City Council may approve the request of The Ivanhoe Companies for Beacon Hill, JSP 15-08, with Zoning Map Amendment 18.710, to rezone property in Section 12, located on the northeast corner of Twelve Mile Road and Meadowbrook Road from RA [Residential Acreage] to R-4 (One-Family Residential) and B-3 (General Business), with a Planned Rezoning Overlay (PRO), and to approve corresponding Concept Plan, and direction to the City Attorney to prepare a proposed PRO Agreement with the following ordinance deviations:

- a. Reduction in the required minimum lot size and minimum lot width for one family detached dwellings reviewed against R-4 Zoning standards to allow for smaller lots (1 0,000 square feet and 80 feet required, 6,000 square feet and 50 feet provided);**
- b. Reduction in minimum front yard setback for one-family detached dwellings reviewed against R-4 Zoning standards (30 feet required, 20 feet provided);**
- c. Reduction in minimum side yard setback and aggregate side yard setback for one-family detached dwellings reviewed**

- against R-4 Zoning standards(10 feet with 25 feet aggregate required, 7.5 feet with 15 feet aggregate provided);
- d. Reduction in minimum rear yard setback for one-family detached dwellings reviewed against R-4 Zoning standards (35 feet required, 30 feet provided);
 - e. Deviation of ordinance standards to allow proposed upsizing of Woodland Replacement Trees (evergreens) throughout the site in an amount not to exceed 33 percent of the evergreen trees provided (102 on the concept plan), as recommended in the Landscape Review letter, and based on the standards of the Landscape Design Manual, which does not allow additional credit for upsizing of Woodland Replacement Trees;
 - f. Deviation from landscaping ordinance standards for the following areas due to the proposed heavily landscaped design, and the proposed improvements to the pond and wetlands:
 - i. Deviation for the required landscape berm, and the required trees and sub canopy trees to be planted on the berm, along the residential frontage of Meadowbrook Road due to the existing wetlands and heavy vegetation in this area;
 - ii. Deviation for the required greenbelt landscaping south of the residential area (approximately 540 feet) due to the existing wetlands, and other heavy plantings proposed for this location; and
 - iii. Deviation from the required greenbelt landscaping along the western 235 feet of the Twelve Mile Road frontage due to the existing wetlands and other heavy plantings proposed for this location; and
 - g. Design and Construction Standards (DCS) Waiver for the lack of paved eyebrows within the residential development.

The following conditions shall be requirements of the Planned Rezoning Overlay Agreement:

- a. Applicant's offer to dedicate 3.28 acres to the City for the establishment of a public park with the following improvements made by the developer:
 - i. Mass and fine grading of 5.63 acres, including topography enhancement, wetland and woodland replacement plantings, and seeding on upland park.
 - ii. Augmenting the creek, removal of damaged culverts, and realignment of creek.
 - iii. Creation of a weir system to effectuate a waterfall/spillway to be viewed from the bank of the park.
 - iv. Enhanced design for landscaped retention ponds.
 - v. Habitat restoration.
 - vi. Installation of wetland enhancement plantings.

- vii. Applicant to construct six parking spaces, a bench, and bike racks.**
- b. A minimum of 42% or 8.8 acres of open space as shown on the Concept Plan.**
- c. Limiting the number of dwelling units to 42, in accordance with the Concept Plan.**
- d. Limiting the commercial square footage to 22,000 square feet or less.**
- e. A maximum of two drive-through establishments in the commercial area. The applicant offers to exclude many of the more intense uses permitted in the B-3 District including fast food restaurants, fueling stations, produce sales, day care centers, business schools and colleges, private clubs, motels, veterinary hospitals and clinics, auto washes, bus passenger stations, new and used car salesrooms, tattoo parlors, outdoor space for automobile sales, and automobile service centers.**
- f. Preservation of a 10 foot wide wooded buffer along the east property line, and a minimum of a 50 foot wide buffer along Meadowbrook Road, as shown on the proposed Concept Plan.**
- g. At the time of Preliminary Site Plan Review, the Landscaping and Facade plans for the commercial phase shall meet minimum Zoning Ordinance standards.**
- h. Woodland Replacement Trees shall not be used in place of the required Street trees along Meadowbrook and Twelve Mile Roads, per the recommendations of the Landscape Review Letter, with modifications to be shown on subsequent submittals.**
- i. Applicant complying with the conditions listed in the staff and consultant review letters.**

This motion is made for the following reasons:

- a. The proposed density shown on the PRO Concept Plan is generally compatible with the existing uses on the adjacent and surrounding parcels, as indicated by the proposed density recommendation in the draft revised Master Plan for Land Use applicable to this property.**
- b. The proposed development is consistent with several objectives of the Master Plan for Land Use, as detailed in the Planning Review Letter.**
- c. While the proposal calls for a significant departure from the vision of the 2010 Master Plan, which is to provide for a maximum of 0.8 dwelling units to the acre north of Twelve Mile Road, both east and west of Meadowbrook road, the submitted PRO Concept Plan displays sensitivity to the adjacent large lot RA properties in the area through the use of buffering along the edges of the site, including preservation of existing vegetation and represents a reasonable alternative to the existing Master Plan as indicated by the draft revised Master Plan.**

- d. The proposed Concept Plan shows the preservation and enhancement of wetlands on the site.
- e. The applicant has worked cooperatively with the Tollgate Education Center to create landscaping along Meadowbrook Road that presents a more natural look that blends well with the Tollgate frontage.
- f. The site will be adequately served by public utilities.
- g. The Traffic Impact Statement that was submitted with the rezoning request was found to be acceptable and the Level of Service (LOS) at study intersections is expected to remain at acceptable levels.
- h. Submittal of a Concept Plan, and any resulting PRO Agreement, provides assurances to the Planning Commission and to the City Council of the manner in which the property will be developed.

With the amendment that staff discuss the additional size sidewalk or pathway consistent with the Walkable Novi Plan.

Member Mutch said he would support the motion out of respect for Mayor Pro Tem Staudt because he had addressed an issue that needed to be addressed. He said when the City received the Grant for the extension of the pathway along Meadowbrook Road, north to Twelve Mile Road; we made representations to MDOT that we would continue that pathway, north to Thirteen Mile to create a true trail between the two MDOT pathways along M-5 and I-275.

**Roll call vote on CM 16-05-060 Yeas: Gaff, Staudt, Burke, Casey, Markham, Mutch, Wrobel
Nays: None**

- 6. Approval for Material Recovery Facility Services Agreement between the City of Novi and the Resource Recovery and Recycling Authority of Southwest Oakland County (RRRASOC), for the delivery of all recyclable materials collected by the City to RRRASOC's facility of which the City will receive a portion of the revenue based upon its contribution in exchange for a small membership fee.

CM 16-05-061 Moved by Staudt, seconded by Wrobel; UNANIMOUSLY CARRIED:

To approve the Material Recovery Facility Services Agreement between the City of Novi and the Resource Recovery and Recycling Authority of Southwest Oakland County (RRRASOC), for the delivery of all recyclable materials collected by the City to RRRASOC's facility of which the City will receive a portion of the revenue based upon its contribution in exchange for a small membership fee.

LETTER OF SUPPORT
JEFF MUCK
PARKS, RECREATION, AND CULTURAL SERVICES DIRECTOR



May 9, 2016

Barb McBeth
City Planner

The Parks, Recreation and Cultural Services Department has reviewed the proposed development plan for the NE corner of Meadowbrook and 12 Mile and the Planned Rezoning Overlay Agreement.

CITY COUNCIL

Mayor
Bob Gatt

Mayor Pro Tem
Dave Staudt

Andrew Mutch

Wayne Wrobel

Laura Marie Casey

Gwen Markham

Brian Burke

City Manager
Peter E. Auger

**Director of Parks, Recreation &
Cultural Services**
Jeffrey A. Muck

As part of the proposal, the offer has been made to dedicate 3.28 acres to the City for the establishment of a public park. The applicant's offer includes the following improvements made by the developer:

- i. Mass and fine grading of 5.63 acres, including topography enhancement, wetland and woodland replacement plantings, and seeding.
- ii. Augmenting the creek, removal of damaged culverts, and realignment of creek.
- iii. Creation of a weir system to effectuate a waterfall/spillway to be viewed from the bank of the park.
- iv. Enhanced design for landscaped retention ponds.
- v. Habitat restoration.
- vi. Installation of wetland enhancement plantings.
- vii. Applicant to construct six parking spaces, a bench, and bike racks.

PRCS has met with Community Development and Facilities/Parks Maintenance staff on this matter and sees this potential parkland as a benefit to the City for several reasons:

1. Provides access point and parking for the M5 Connector Trail.
2. Establishes park land in an area that will serve the proposed residential development and continue efforts to provide a neighborhood park to all citizens within one mile of their residence (see attached map).
3. The park is being developed to ensure low maintenance costs.
4. PRCS sees the potential to add future phases to development of the park such as a water feature or fountain in the pond and paths or viewing areas for visitors to enjoy the creek/pond and natural plantings.

PRCS supports the project and acceptance of the 3.28 acres as recommended for approval by the Planning Commission and pending City Council approval of the rezoning request.

Sincerely,

Jeffrey A. Muck, CPRP
Director of Parks, Recreation & Cultural Services

City of Novi
45175 Ten Mile Road
Novi, Michigan 48375
248.347.0400
248.347.3286 fax

cityofnovi.org

Parks & Recreation Facilities

City of Novi, Michigan

LEGEND

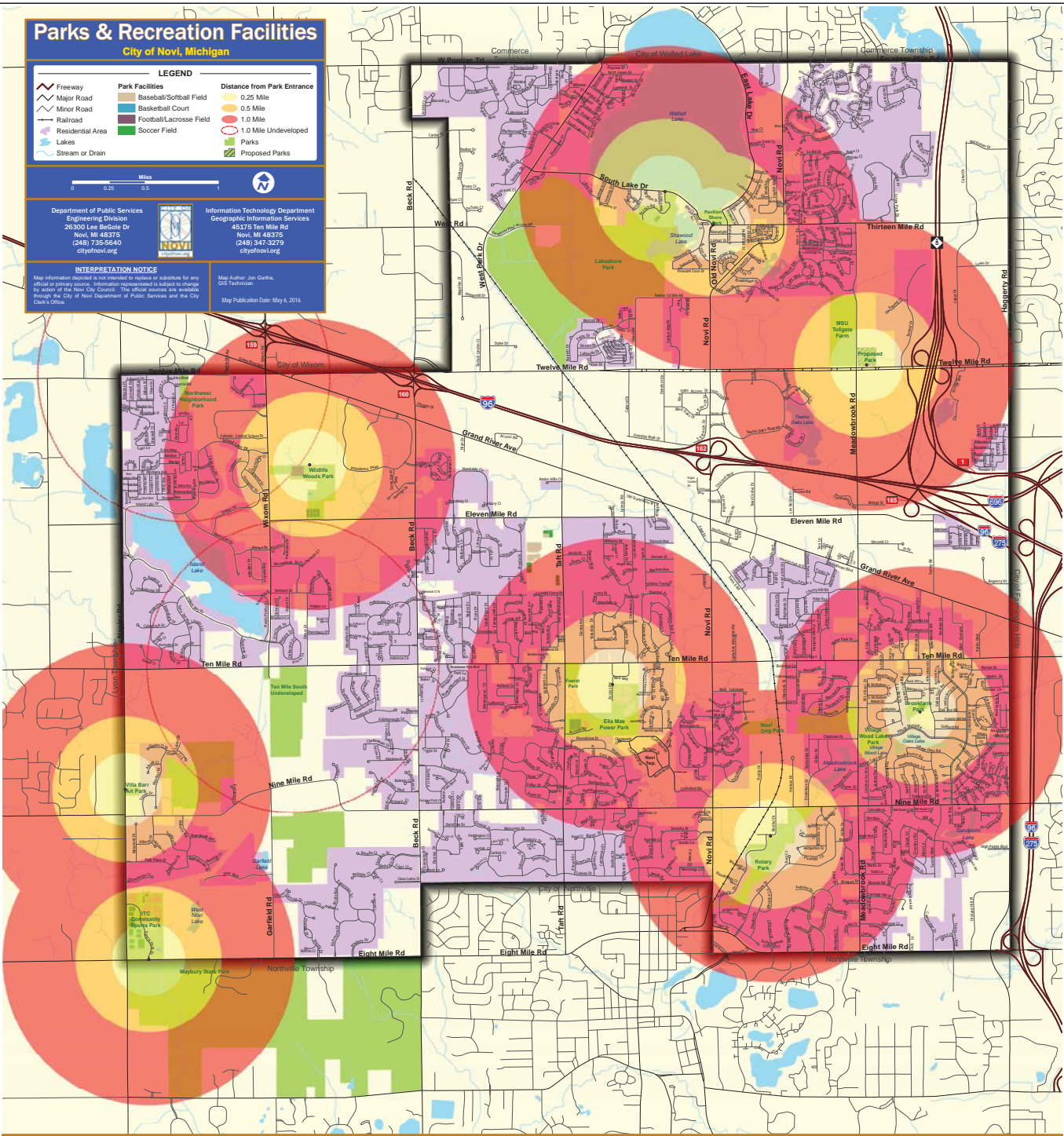
Freeway	Park Facilities	Distance from Park Entrance
Major Road	Baseball/Softball Field	0.25 Mile
Minor Road	Basketball Court	0.5 Mile
Railroad	Football/Lacrosse Field	1.0 Mile
Residential Area	Soccer Field	1.0 Mile Undeveloped
Lakes	Parks	Proposed Parks
Stream or Drain		

Department of Public Services
Engineering Division
26300 Lee BeGole Dr
Novi, MI 48375
(248) 735-5640
cityofnovi.org

Information Technology Department
Geographic Information Services
45375 Ten Mile Rd
Novi, MI 48375
(248) 347-3279
cityofnovi.org

INTERPRETATION NOTICE
Map information depicted is not intended to replace or substitute for any official or primary source. Information represented is subject to change by action of the Novi City Council. The official sources are available through the City of Novi Department of Public Services and the City Clerk's Office.

Map Author: Jon Garha, GIS Technician
Map Publication Date: May 6, 2016



City of Novi Park Amenities

This section provides detailed views of specific parks and their amenities. Each park is shown with a map of its layout and a list of available amenities. The amenities are color-coded according to the legend: Amphitheater (blue), Beach/Swimming Area (light blue), Mountain Bike Trailhead (orange), Day Camp Center (yellow), Entry Booth (green), Fishing Pier (light blue), Horsehoe Pit (dark blue), Parking Area (yellow), Picnic Shelter & Grill Area (green), Playground (blue), Road Box (blue), Restrooms (blue), Tents (blue), Tunnel (blue), Volleyball Sand Courts (blue), Paved Path (blue), Hiking Trail (blue), Multi-Use Trail (orange), Mountain Bike Trail (orange), Garden (green), Baseball/Softball Field (light blue), Basketball Court (yellow), Football/Lacrosse Field (dark blue), Soccer Field (green), and Tennis Court (red).

Lakeshore Park
601 South Lake Dr
Amenities: Picnic Shelter, Playground, Swimming, Soccer, Nature/Bike Trails, Restrooms

Fuent Park
45325 10 Mile Rd
Amenities: Amphitheater, Paved Trail, Gardens, Art

Ella Mae Power Park
45315 10 Mile Rd
Amenities: Ball Fields, Soccer, Playground, Nature Trails, Restrooms

Rotary Park
22201 Roswell Dr
Amenities: Picnic Shelter, Playground, Tennis, Nature Trails, Restrooms

ITC Community Sports Park
51000 6 Mile Rd
Amenities: Picnic Shelter, Restrooms, Playground, Ball Fields, Soccer, Tennis

Brookfarm Park
Amenities: Soccer

Pavilion Shores Park
43390 13 Mile Rd
Amenities: Fishing Pier, Paved Trail

Wildlife Woods Park
26442 Wixom Rd
Amenities: Picnic Shelter, Restrooms, Ball Fields, Tennis, Soccer

LETTER OF SUPPORT
ARMENIAN COMMUNITY CENTER

Armenian Community Center of Greater Detroit

19300 Ford Rd, Dearborn, MI 48128

Phone: 313-336-6840, Fax: 313-336-6886, e-mail: accdetroit@yahoo.com

May 9, 2016

City of Novi-Community Development
Ms. Barbara McBeth
City Planner
45175 10 Mile Road
Novi, Michigan 48375

Re: Rezoning Beacon Hill JSP 15-08

Dear Ms. McBeth,

I hope this letter finds you well. We wanted to reach out to you regarding the adjacent property being developed by Gary Shapiro (Beacon Hill). It was good to see Novi Planning Commission grant the preliminary approval for this development.

We wanted to reiterate that, we believe, there should be more Evergreen Trees at the southeastern border between his property and the Armenian Community Center property. Due to the fact that there will be some commercial element to the development, we feel that it would be better to have increased trees separating the properties. We're agreeable and would not mind these trees to be planted on our property near the boundary if the situation so requires.

Please call Raffi Ourlian with any questions at 248/790-5964.

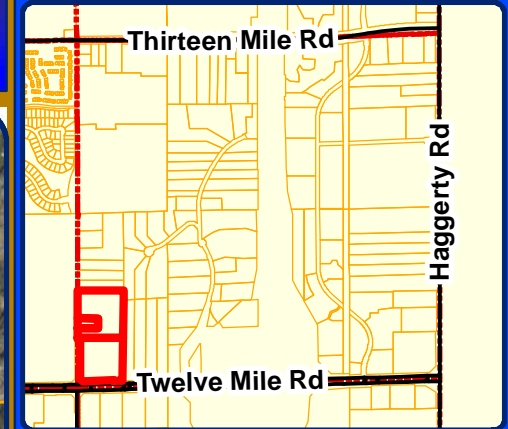
Kindest Regards,

Armenian Community Center
Board of Directors

Maps
Location
Zoning
Future Land Use
Natural Features

JSP 15-08 Beacon Hill

Location



Legend

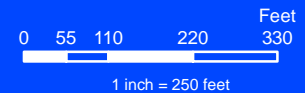
 Sections



City of Novi

Dept. of Community Development
City Hall / Civic Center
45175 W Ten Mile Rd
Novi, MI 48375
cityofnovi.org

Map Author: Sri Komaragiri
Date: 08/31/15
Project: JSP15-08 Beacon Hill
Version #: 1

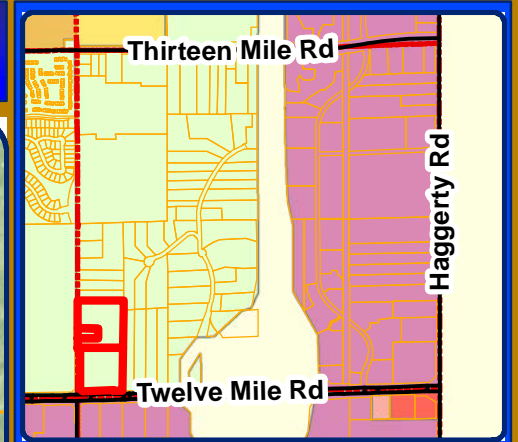
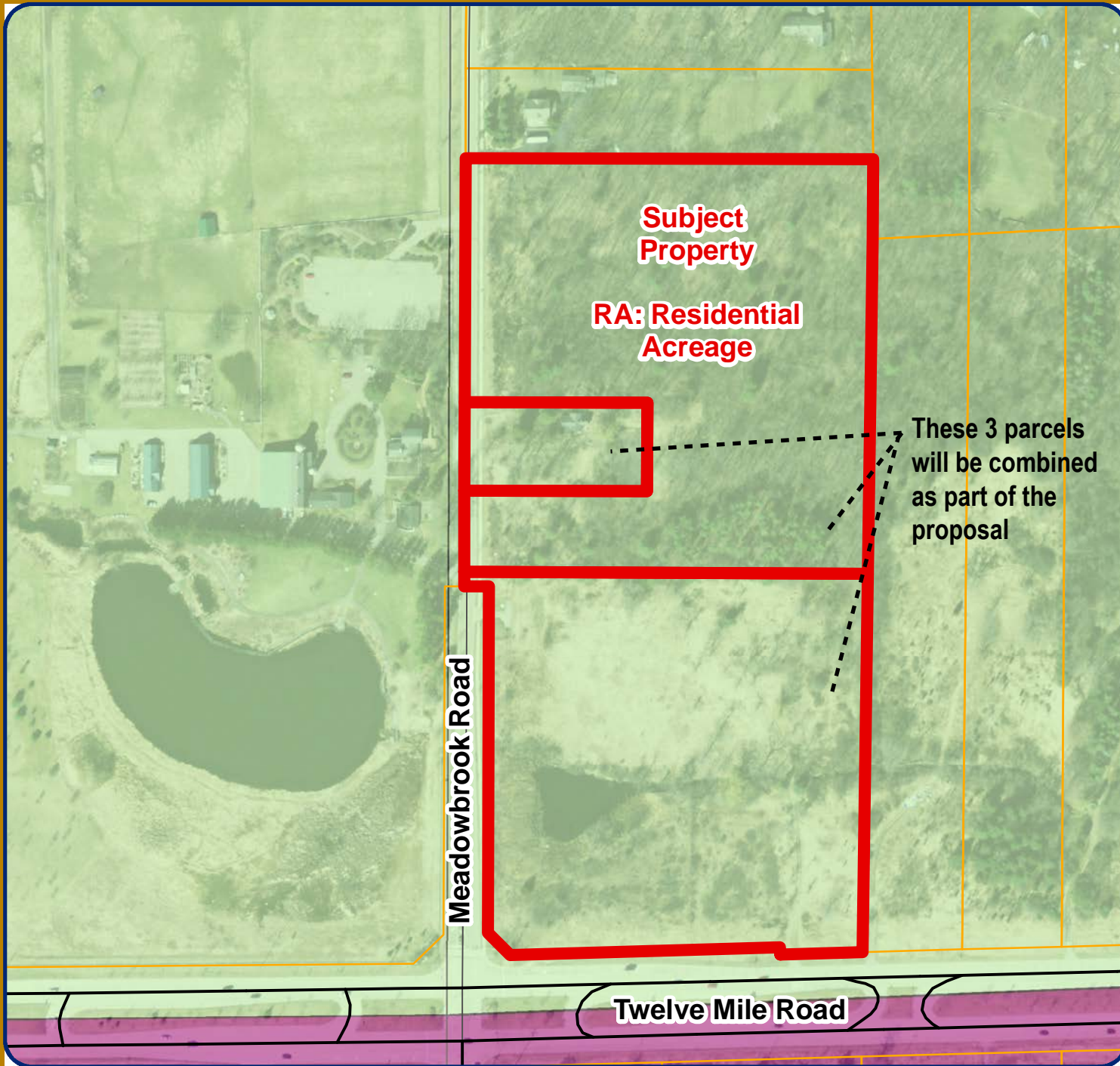


MAP INTERPRETATION NOTICE

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JSP 15-08 Beacon Hill

Zoning



Legend


- Sections
- R-A: Residential Acreage
- RM-1: Low-Density Multiple Family
- MH: Mobile Home District
- B-2: Community Business District
- B-3: General Business District
- OST: Office Service Technology



City of Novi
Dept. of Community Development
City Hall / Civic Center
45175 W Ten Mile Rd
Novi, MI 48375
cityofnovi.org

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Date: 08/31/15
Project: JSP15-08 Beacon Hill
Version #: 1

0 55 110 220 330 Feet
1 inch = 250 feet

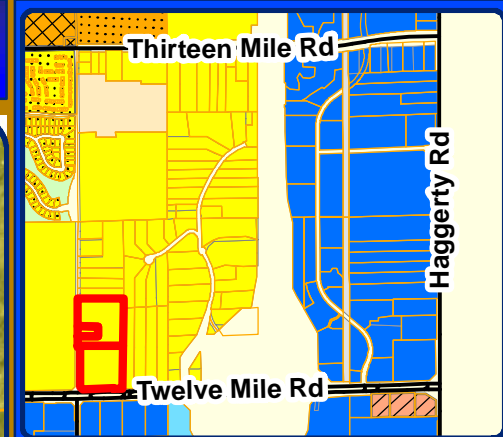
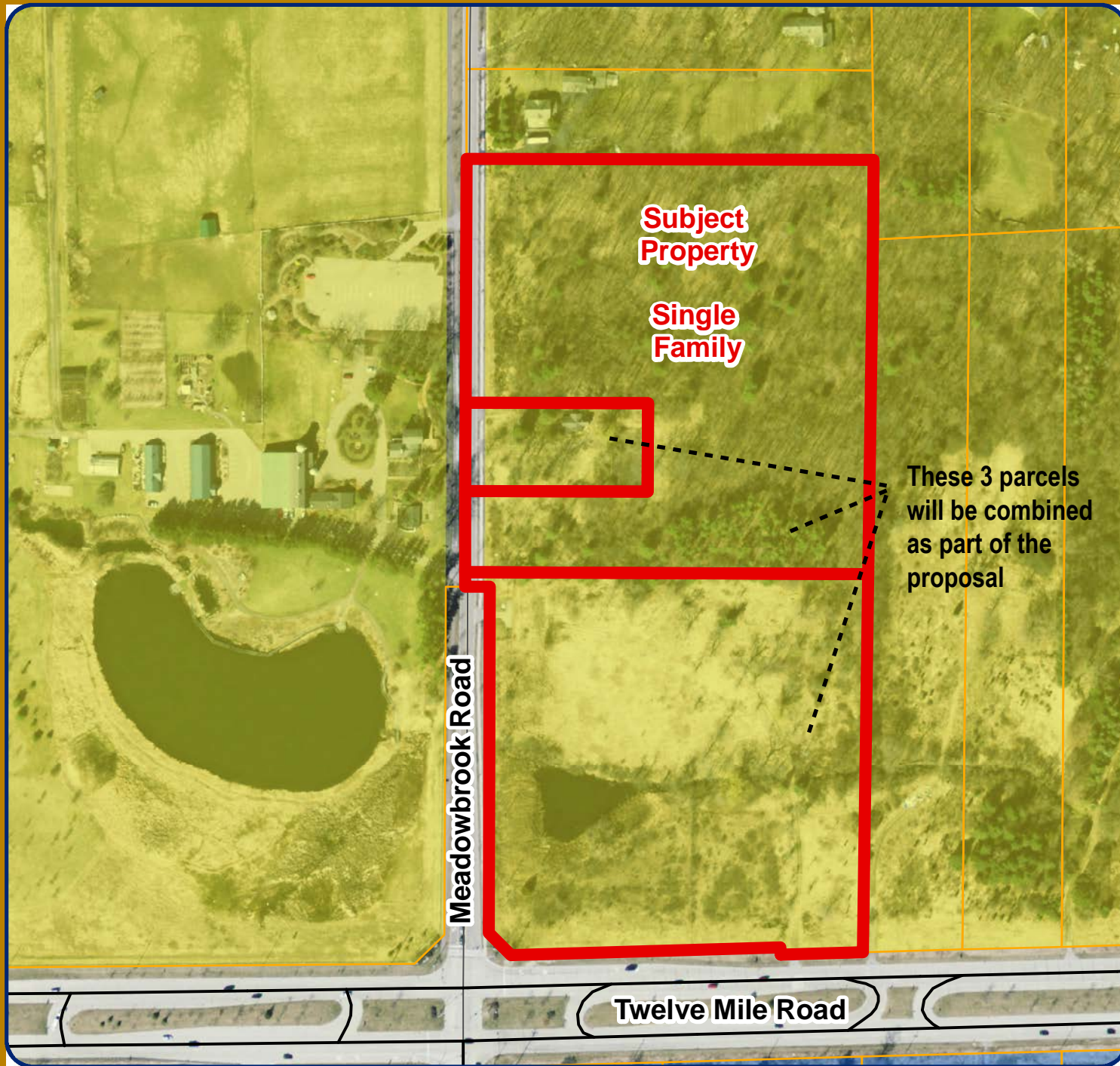


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JSP 15-08 Beacon Hill

Future Landuse



Legend

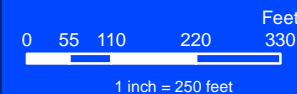
- SINGLE FAMILY
- PUD
- PD1
- MOBILE HOME PARK
- OFFICE RES DEV TECH
- COMMUNITY COMMERCIAL
- EDUCATIONAL FACILITY
- PUBLIC
- PRIVATE PARK
- UTILITY



City of Novi

Dept. of Community Development
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Novi, MI 48375
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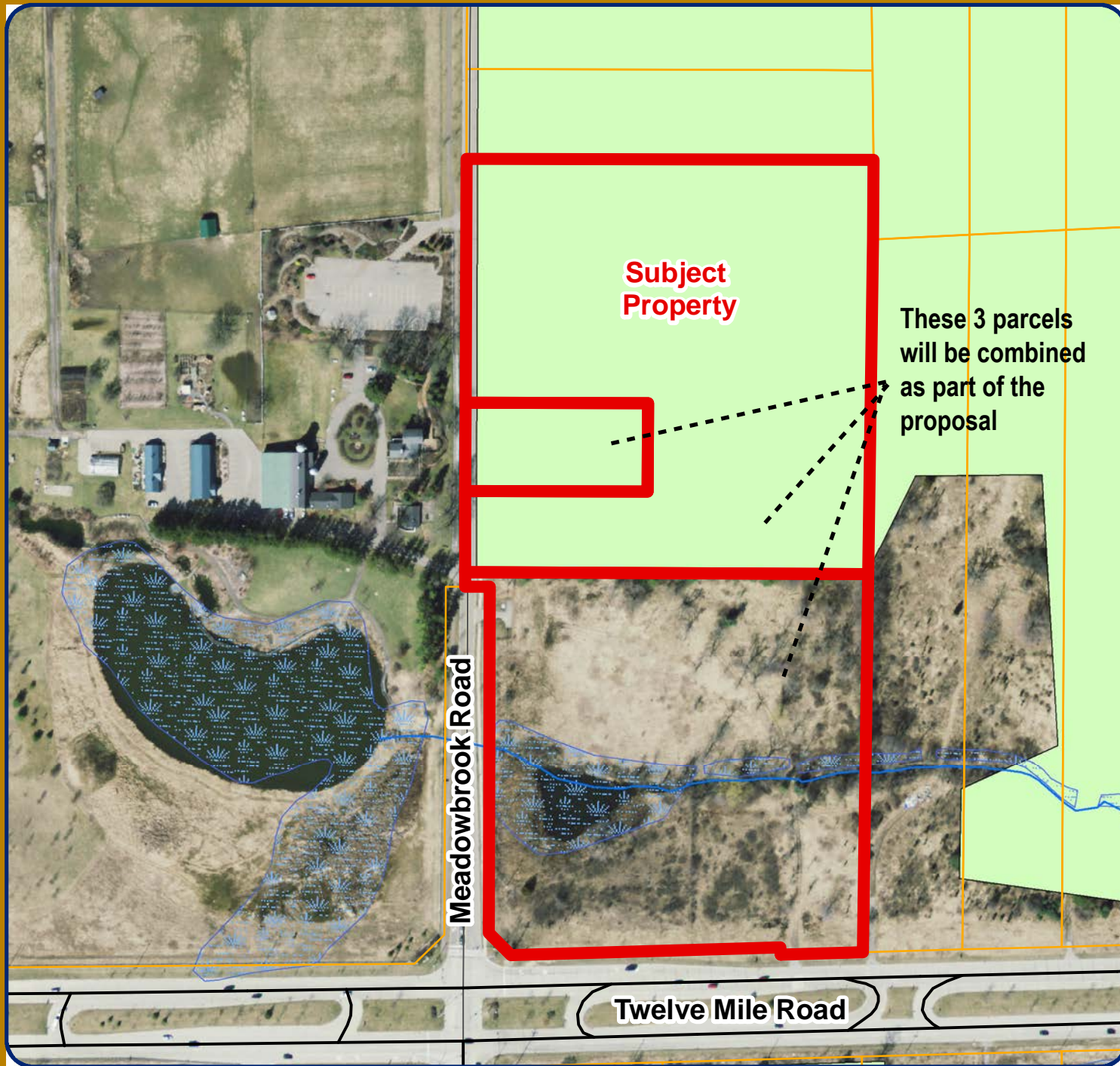


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JSP 15-08 Beacon Hill

Natural Features

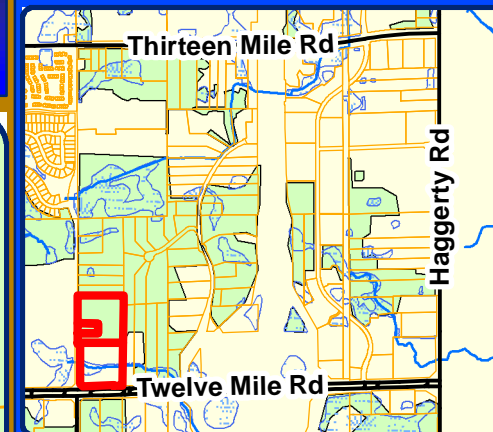


Subject Property

These 3 parcels will be combined as part of the proposal

Meadowbrook Road

Twelve Mile Road



Legend

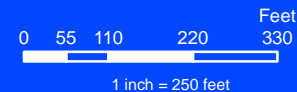
-  Wetlands
-  Woodlands



City of Novi

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cityofnovi.org

Map Author: Sri Komaragiri
Date: 08/31/15
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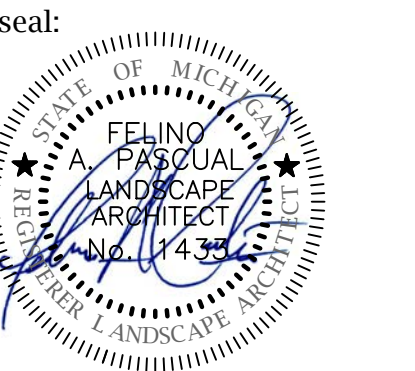


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CONCEPT PLAN

(Full plan set available for viewing at the Community Development Department)



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
 LS16.008.01 PSP 1-11-2016
 LS16.008.04 PSP 4-13-2016

drawn by:
 JP, KH
 checked by:
 FP
 date:
 1-4-2016

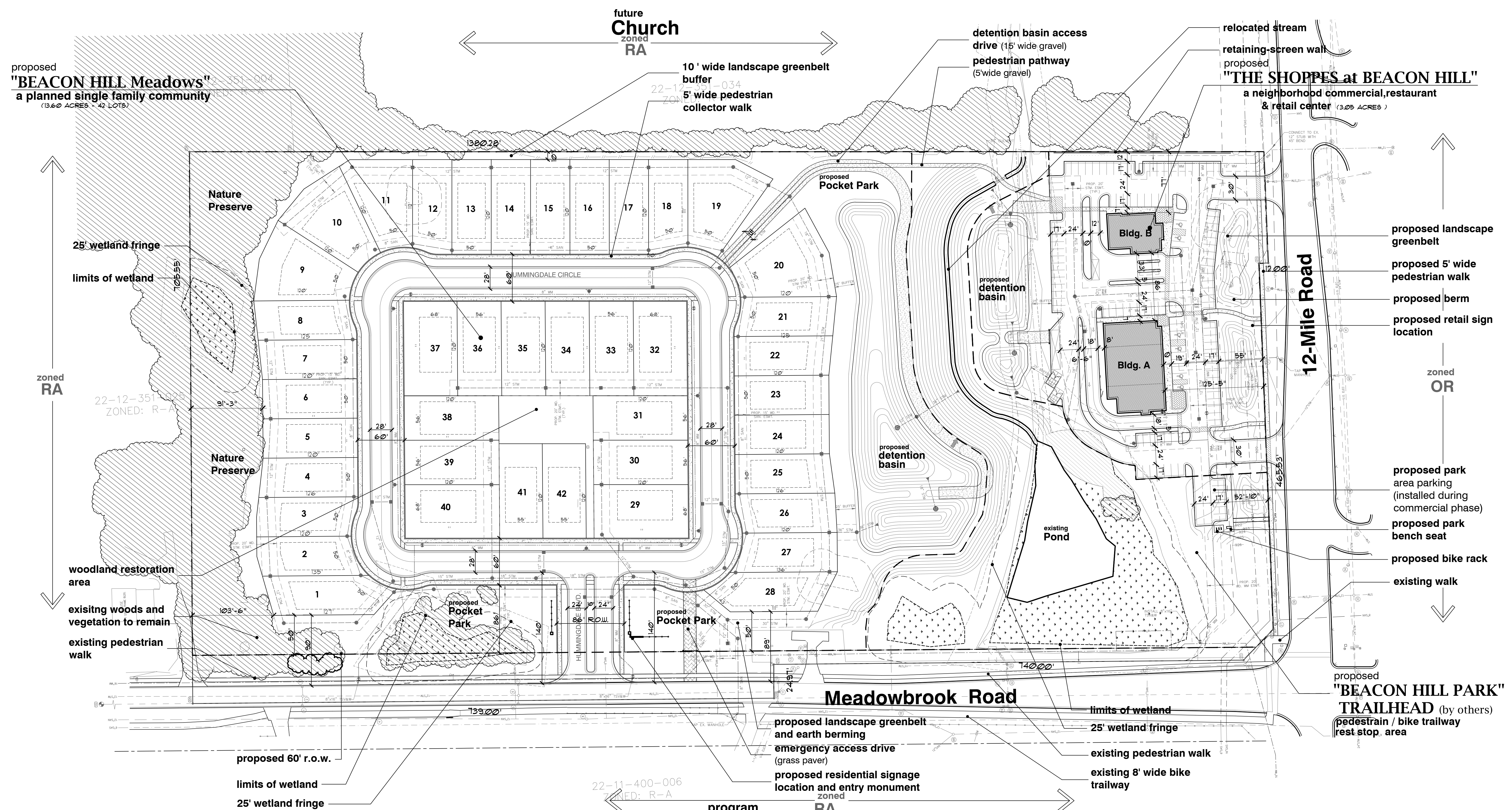
notice:
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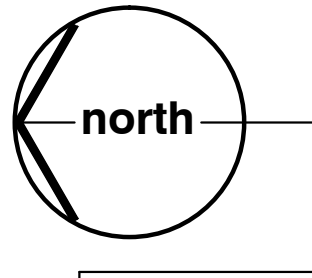
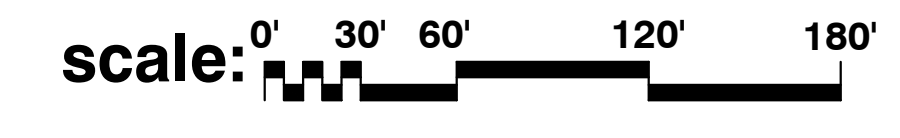
The location and elevations of existing
 underground utilities as shown on this
 drawing are only approximate. no guarantee
 is either expressed or implied as to the
 completeness of accuracy; contractor shall be
 exclusively responsible for determining the
 exact location and elevation prior to the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

project no:
LS16.008.01

sheet no:
SP-6

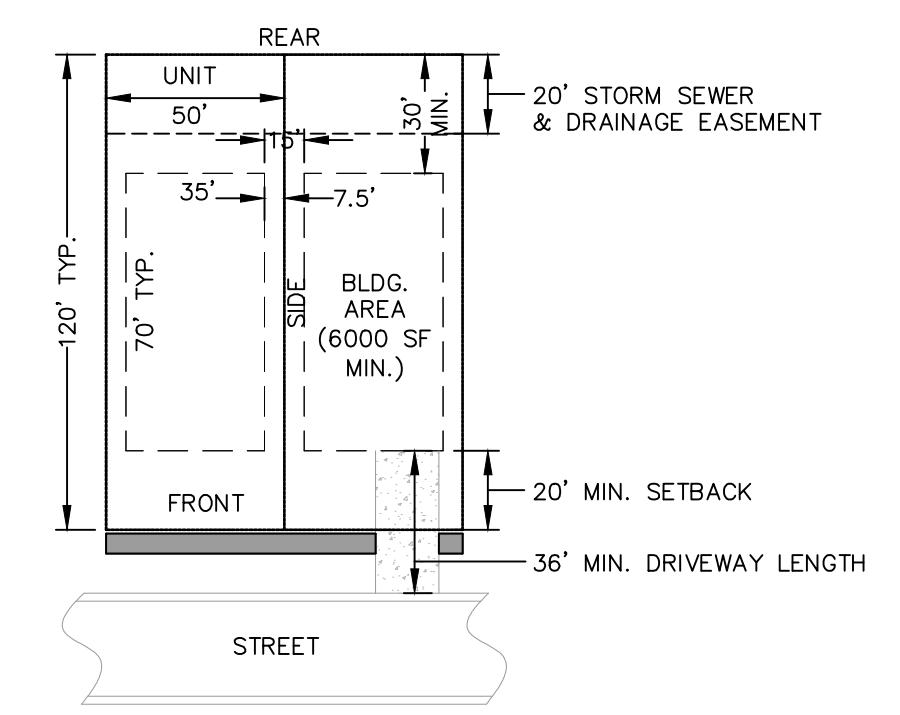


site plan for:
"Beacon Hill Park"
 City of Novi, Michigan



program RA	
TOTAL ACRES OF SITE GROSS	2113 ±
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 (1-SPACE / 700 S.F. = 3,100 / 700 = 185 SPACES)	19 SPACES
BANK PARKING (1-SPACE / 150 S.F. = 3,250 / 150 = 21.67 SPACES)	22 SPACES
RESTAURANT PARKING (1-SPACE / 150 S.F. = 4,600 / 150 = 30.67 SPACES)	32 SPACES
RESTAURANT "A-1" PARKING (48-SEATS / 2-24-SPACES = 10 EMPLOYEE/24-SPACES = 100 S.F.T. WAITING AREA / 19-3.33-SPACES = 32.33 SPACES TOTAL)	36 SPACES
RESTAURANT "A-3" PARKING (86-SEATS / 2-28-SPACES = 10 EMPLOYEE/28-SPACES = 100 S.F.T. WAITING AREA / 19-3.33-SPACES = 32.33 SPACES TOTAL)	36 SPACES
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	1.5'/1.5'
REAR YARD SETBACK	30'
DENSITY PER ACRE (MEADOWS)	3.09 ±
DENSITY PER ACRE (MEADOWS + PARK)	2.49 ±
TOTAL ACRES OF ROW, DEDICATED	124 ±
TOTAL 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

PREVIOUS PLANNING COMMISSION MEETING MINUTES
September 9, 2015



PLANNING COMMISSION MINUTES

CITY OF NOVI

Regular Meeting

September 9, 2015 7:00 PM

Council Chambers | Novi Civic Center | 45175 W. Ten Mile
(248) 347-0475

CALL TO ORDER

The meeting was called to order at 7:00 PM.

ROLL CALL

Present: Member Anthony, Member Greco, Member Giacobetti, Member Zuchlewski

Absent: Member Baratta (excused), Member Lynch (excused), Chair Pehrson (excused)

Also Present: Barbara McBeth, Community Development Deputy Director; Sri Komaragiri, Planner; Rick Meader, Landscape Architect; Jeremy Miller, Engineer; Pete Hill, Environmental Consultant; Matt Klawon, Traffic Engineering Consultant; Rod Arroyo, Planning Consultant; Gary Dovre, City Attorney

APPROVAL OF AGENDA

Moved by Member Zuchlewski and seconded by Member Anthony

PUBLIC HEARING

1. BEACON HILL JSP15-08 with Rezoning 18.710

Public hearing at the request of The Ivanhoe Companies for Planning Commission's recommendation to the City Council for rezoning of property in Section 12, located on the northeast corner of Twelve Mile Road and Meadowbrook Road from RA (Residential Acreage) to RM-1 (Low Density, Low-Rise Multiple-Family Residential) and B-3 (General Business), or any appropriate zoning district, with a Planned Rezoning Overlay (PRO). The subject property is approximately 21.13 acres and the applicant is proposing a 42 unit single family residential development with frontage on and access to Meadowbrook Road, up to 22,000 square feet of commercial space with frontage and two access drives on Twelve Mile Road, and an open space/park area at the corner of the intersection.

Deputy Director McBeth presented a brief overview of the project. Staff has been meeting with the applicant on this property for about 18 months or so. The property is current zoned RA – Residential Acreage and the planned residential density is 0.8 units per acre. The applicant stated that he will be seeking an alternative to the Master Plan. Over the 18 months multiple plans were discussed. A multiple family development with approximately 200 units was shown initially. Later plans showed detached single family homes and various iterations with commercial uses along the Twelve Mile Road frontage. Each time the staff met with Mr. Shapiro we received additional detail from the applicant and then provided additional responses to the applicant.

Deputy Director McBeth said there is a creek that runs through the property and the natural features that exist on the property. Our environmental consultant has walked the site with the applicant's consultants and taken a look at the habitat features that are there. Staff recommended that the plan be presented to the Master Plan and Zoning Committee. The Committee reviewed the plan that was submitted at that time and provided comments. Staff also recommended earlier this year that a Land Use study be prepared for this property as well as two other properties in the city, for review of rezoning requests that are not consent with the Master Plan. We presented this request to the City Council for assistance from an outside consultant, but the request was declined at that point. We have been proceeding with reviews that we would typically

provide for the Planning Commission's consideration. Due to the workload and amount of projects coming in, we asked Rod Arroyo from Clearzoning to prepare a Planning review on this project. Since this plan is a Concept Plan associated with the rezoning request we do not see all the details that we would typically see with a Preliminary Site Plan. A lot of this information was highlighted in the review letters that are included in the Planning Commission packet. As you hear the presentations from Mr. Arroyo and Planner Komaragiri you will hear that there is some additional information that staff and consultants suggest could be provided before the project moves forward with the Planning Commission's recommendation to the City Council.

Rod Arroyo provided highlights from his review letter regarding the PRO Overlay and Concept Plan request. The zoning to the north, east and west as well as the subject property is Residential Acreage. The area on the north side of Twelve Mile Road on both sides of Meadowbrook is Master Planned for 0.8 dwelling units per acre in terms of residential density. Property on the south side of Twelve Mile Road is Master Planned and zoned for Office Service Technology. To the east, the property is zoned RA, Residential Acreage to M-5.

The gross size of this site is just over 21 acres. The applicant is asking to rezone the property to two zoning classifications with the Twelve Mile Road frontage being rezoned to B-3 and the remainder of the parcel being rezoned to RM-1, low density multiple family. The intent on the residential portion is to build single family detached units in a cluster format. This is seen in the concept plan. The proposal is for commercial development along Twelve Mile Road. At the northeast corner of the intersection, the applicant is proposing to dedicate land and also partially construct improvements for a trail head as well as an expanded park area. The balance of the property is residential with 42 units that are proposed as part of this development.

Mr. Arroyo explained the PRO process. Essentially a Concept Plan is submitted with an application for rezoning. The applicant is requesting a change in zoning but at the same time there is a Concept Plan that would be approved along with the rezoning. With that there is a specific Development Agreement where the applicant will offer certain community benefits and if ultimately the City Council finds that it is consistent with the ordinance standards, and that the proposal is meeting the objectives of the PRO, and Zoning Ordinance as a whole the City Council can potentially approve the rezoning. What is attached to it is the concept plan and the limitations that go along with it. In this particular instance if they are asking for RM-1 which is multiple family development they can't build traditional multiple family units, because the concept plan shows detached single family homes, showing the maximum number of units in the general layout. The process is that it comes here first for a Public Hearing, the Planning Commission makes a recommendation, and the City Council makes the ultimate decision on the concept plan and the rezoning. The PRO Agreement would go through final Approval. The Planning Commission would then have site plans submitted for approval.

This property is currently zoned RA-Residential Acreage, allowing 0.8 units per acre. The net site area for residential is just over 16 acres, allowing for 13 single family homes on this property. The portion that the applicant is looking at for residential zoning is about 14.5 acres. This would result in about 11 homes under the current zoning. The applicant is looking for 2.9 dwelling units per acre vs 0.8 units per acre currently allowed. This is a significant departure from the Master Plan. This type of process is important to get public input and evaluate in terms of neighborhood compatibility. There are lots in the area that are 1 acre or larger in size. There is another development that is located to the north in to a much more dense area. The proposed density is closely tied with the R-4 zoning district. They are asking for RM-1. The R-4 zoning district allows for 3.3 dwelling units per acre. The density as proposed is 2.9 dwellings per acre. The point is that if the R-4 was granted with the PRO plan, the same density could be achieved as long as the relief was granted for the lot size, lot width and setbacks.

Mr. Arroyo said, the applicant is requesting B-3, General Business zoning, but this is not an area planned for commercial. On the Concept Plan, there is a potential for two drive-through facilities. There are some ordinance deviations that are being requested as part of the PRO process which allows the applicant to request deviations. The applicants are looking to reduce the lot size and lot width. The ordinance reads that if you have RM-1 zoning and you want single family you have to use the R-4 standards. With R-4 you would have to have 10,000 square feet as a minimum lot size and 80 feet for the minimum lot width. The proposed calls for 6000 square foot lot size and a 50 foot lot width. R-4 setbacks are 30 feet for the front yard setback. Side yards are 10 feet setback with 20 feet aggregate. The applicant's proposal calls for a 20 front yard setback and a 15 side yard setback.

Mr. Arroyo recommended that the Planning Commission's action should be postponed at this time allowing time for more information to be submitted.

Planner Komaragiri stated that this property includes a total of seven individual wetland areas, including an open water/emergent wetland and a headwater stream which is tributary to the Walled Lake Branch of the Rouge River. The site contains City-regulated Woodland mapped across approximately the northern half of the project site. As mentioned, the applicant is using the PRO option to develop the subject property with both residential and commercial components.

Engineering was unable to recommend approval due to key information missing from the submittal. The applicant is requested to provide additional information on stormwater runoff calculations, provide one stub street every 1300 feet. The current plan does not propose one and would require a DCS variance. The reasons provided by the applicant in his response letter do not meet the requirements to support a DCS variance at this time. The current plan proposes pathways along Twelve Mile and Meadowbrook Road ROW. Engineering also requested internal pathways connections between subject property and surrounding properties.

Landscape identified a City Council waiver for the lack of the required separation between residential and non-residential uses. Landscaping is willing to support a waiver if the applicant establishes a proper alternative screening for the required berm or separation. Proposed landscaping should provide significant opacity between the uses. The applicant can demonstrate that using some illustrative renderings. Landscape recommends approval with additional comments to be addressed during the next submittal.

Planner Komaragiri said, of the seven individual wetland areas located on the site, only two of these wetland areas will be preserved as part of this proposed Plan. The other wetlands will be filled for the purpose of construction, or impacted as part of the stream channel relocation/abandonment, etc. The Plan appears to propose encroachment into several of these setback areas. This would require a City of Novi Non-Minor Wetland Use Permit and a City of Novi Authorization to encroach the 25-Foot Natural Features Setback. A plan to replace or mitigate for any permanent impacts to existing wetland buffers should be provided by the Applicant. Due to deficiencies in the Plan with regard to proposed wetland impacts, the Wetlands consultant currently does not recommend approval of the Concept Plan.

It appears as if the proposed site development will involve a significant amount of impact to the regulated woodlands and will include a significant number of tree removals. The applicant intends to provide a tree survey with the next submittal. ECT was unable to determine how many trees are being preserved, removed and replaced. Wetlands and Woodlands currently do not recommend approval of the Concept/PRO Plan.

Planner Komaragiri said the applicant requested a waiver for the required Traffic Impact Study prior to the Concept Plan approval and provided preliminary traffic information, but there was insufficient information to complete the review. The City's Traffic Engineering consultant did not support the waiver and requested additional information along with the Traffic Impact Study to be provided during the next submittal.

Façade drawings were not provided with this submittal. Fire recommends approval noting that the secondary emergency access shall meet the Fire code requirements. The Planning Commission is asked tonight to hold a public hearing and postpone making a recommendation on the proposed PRO and Concept Plan to allow the applicant time to address concerns and consider making further modifications to the Concept Plan. The applicant Gary Shapiro from The Ivanhoe Companies is here with his design team.

Gary Shapiro from The Ivanhoe Companies along with Brad Strader, Andy Wozniak and Greg Obloy. Mr. Shapiro shared his history regarding the property and the history of the zoning. He states that this project is perfect for the future master plan of the area. Mr. Shapiro referenced the Commercial part of the project. He stated that it is needed in this area. There is a mile stretch between M-5 connector and Novi Road. This location can intercept people that are already on the road traveling to their destination. The current plan is for 22,000 square feet of boutique commercial. This would include two drive-through facilities which would yield only 12,500 square feet. For this location there is a tremendous amount of demand. The options would be either a bank or 1 or 2 restaurants.

Mr. Shapiro reviewed the changes in the marketplace since 2008. There is a certain amount demand for locations for boutique restaurants that look for drive throughs and outside seating. An example is Panera Bread. The template now is a drive through with outside seating. Andiamos and Noodles are opening up those types of facilities. Their vision for this corner is to donate 2.46 acres to the city. The balance of the two ponds and redoing all the wetland and the creek. So from the corner to Novi you would look at a pond, a creek a waterfall. It will be a five acre park and it is right at the apex where your bike paths intersect.

Mr. Strader recapped the project overview. There are 4 major components to this project. The city park and trailhead which has 5.46 acres overall. The park was selected because there is a natural barrier that separates what we are proposing as commercial and residential. The current plan is for 41% open space along with single family homes and neighborhood commercial. For this site they feel that the Master Plan does not fit with the development trends in the area.

For the residential plan, it has 50 foot wide lots, looking to appeal to millennials, young professionals and also independent seniors. Separating the commercial and residential is a connecting pathway. The buffer that is along Meadowbrook and to the east and especially the 100 foot buffer to the north. A park and trailhead has 5.46 acres total with some public and some private land. It would be 2.46 acres of high value land that would be dedicated to the city and it would be seeded and ready to develop. It would provide the trailhead connection that the city has been looking for. As identified in the Parks and Recreation Plan there is need for some additional trailhead amenities and parkland in this area. The developer feels that with this plan they will meet all the requirements in the PRO as regards to the benefits to the residents and to the public within the city.

Chairperson Greco opened the Public Hearing for this project.

Marie Jackson, 41528 Thoreau stated that she is opposed to the rezoning. She said that traffic is already congested. She disagrees that there is need for more commercial development.

Greg Bartanian a member of the St. Sarkis Board of Trustees and owner of the property to the east. They have no objection and feel that it will be great development for their community.

David Sass 28680 Summit Court said that his property directly abuts the proposal. He is not in favor of the rezoning. He stated that there is enough commercial.

Walter Everett, Tollgate Ravines stated that there is enough commercial development and does not see the need for this proposal.

Tom O'Neil, 28350 Meadowbrook said that his property is one property to the north of this proposed development. For 25 years he has watched the changes that have occurred on Meadowbrook. He is concerned about the traffic on Meadowbrook Road.

Dennis Fitzgerald, resident in the Tollgate Ravines stated that he would like to see the developer and the City make this proposal work. It will be good for the area.

Roy Prentiss 28115 Meadowbrook, Farm Manager of the Tollgate Education Center stated that is present as a resident of Novi. He has lived on the property since 1993. Mr. Prentiss stated that he feels that the area should be developed with the current zoning that is already in place. The character of the neighborhood is outlined in the Master Plan. He mentioned that with the additional home sites, the amount of traffic would increase on Meadowbrook Road.

David Shahrigan, a member of the St. Sarkis Church that owns the property next door and also a Novi resident for over 20 years. He has been involved with building various homes in the area as well as the Tollgate Woods Development. He stated that of what he has seen of Gary Shapiro's work in other communities it has always been top notch. He stated that this is a tough site to develop and is impressed that Mr. Shapiro has found a way to develop the site. Mr. Shahrigan feels that this is the best use of this site.

Gary Rentrop attorney representing American Foundation and MSU stated that he has been involved with this 160 acre property on the northwest corner of Twelve Mile and Novi Road since the 1970s. The goal has

been to keep this as an agricultural farm and open space or everyone. It is an educational facility that is important to this community. Mr. Rentropp's first concern is with the wording of the public hearing notice. The ordinance is not permitted with the term "or any appropriate zoning district with a planned rezoning overlay (PRO)". The applicant is supposed to select the zoning classification and then work from there to identify what the benefits are. There seems to be some procedural defects.

Mr. Rentrop referenced the items that have already been discussed in regards to density, traffic, woodlands and wetlands. He would like to see Novi make the decision on whether this zoning is out of date rather than Mr. Shapiro makes that decision. The process is: first comes planning then comes zoning, not allowing zoning to drive planning. He requested that the Planning Commission move slow and research what they have before making the final decision.

Seeing no one else wishing to speak, Chair Greco asked if there was any correspondence

Member Anthony read the correspondence from Tom O'Neill, 23850 Meadowbrook, which stated that the traffic on Meadowbrook has increased significantly. Meadowbrook, as a "natural beauty road" will be degraded and Tollgate Farms deserves a better neighboring development to maintain its distinct character.

Chair Greco closed Public Hearing and referred the item to the Planning Commission.

Member Anthony questioned Mr. Shapiro regarding the targeting the young professional families to get that price point. In Novi we already have those areas to support that market. Some examples are in the Eight Mile and Meadowbrook area; Village Oaks, Turtle Creek, and Orchard Hills. The reasons those work is because they are integrated with parks, schools and the non-motorized master plan. The parks are integrated where you can really live as a family and take your kids to the parks, and to the elementary schools. This is vitally important to professional families with kids. The Novi schools attract families. He is concerned about the type of resident that this proposal will attract. It does not have all of the same features that the Meadowbrook and Eight Mile areas have.

Member Anthony asked why the applicant would want to waive the required traffic study.

Mr. Strader responded to the question that they were deferring the traffic study until later in the approval process. Twelve Mile Road is what they believe to be Level Service B. They will do the traffic study but they would like to wait until they get further in the process.

Member Anthony was not certain if they had done wetlands study or was that left to the city and their consultants to take a look at? How would overlay with the timing of the development?

Mr. Shapiro responded that they did a wetlands study, and are proposing a very, very comprehensive enhancement and cleaning up problems found with the creek. The water goes in an easterly direction. Mr. Shapiro said that he is an environmentally-sensitive developer.

Member Anthony talked about the wetlands and woodlands all being interconnected through the city. He asked Mr. Shapiro if he would be willing to work with staff when it is time to finalize the plan so that it would be consistent with the goals of our community.

Mr. Shapiro responded that they would absolutely work with the staff to meet the goals of the community. He further mentioned that what they have planned is well beyond the enhancement that is required by your ordinance and your consultants.

Member Zuchlewski asked the price range of the homes.

Mr. Shapiro responded that the price range will be in the high \$390,000 to the mid \$400,000 range.

Member Zuchlewski questioned the amount of traffic coming off of Meadowbrook and the widening of Meadowbrook. Member Zuchlewski also asked about the type of tenants expected for the commercial center.

Mr. Shapiro responded that the tenants he is looking for are high quality restaurants that would have a drive through and a patio with outdoor seating. He reminded the citizens and the Commission that whatever comes in as commercial would go through the plan review process and the Commission would see the full architectural plans then. There will be over 130 feet of park in front of the boutique commercial center. There will be 1000 feet of frontage that will be a mass of landscaping. You will see through the landscaping to the boutique commercial wrapping around on Meadowbrook Road.

Member Giacometti questioned the City Attorney regarding whether the procedure of the Public Hearing Notice notification was adequate and whether the PRO wording is vague.

City Attorney Dove responded that the PRO by itself allows the applicant to change their proposal during the process. If this wasn't a concern regarding the PRO but rather just the rezoning. As long as the zoning ends up being approved as advertised then there is no problem. There was no mention about changing the zoning other than what was advertised. Attorney Dove doesn't see a problem with the procedure regarding the public hearing.

Member Giacometti asked Mr. Shapiro if his market analysis is contrary with some of the studies that other developers have shared recently. Other developers are telling the Commission that there is no place for commercial development. Member Giacometti wondered if Mr. Shapiro's study showed favorable for commercial because it is so close to M-5.

Mr. Shapiro responded that this area is different than the 13 Mile and Novi Road corridor. This area is much different. The proximity to M-5 with people traveling to Twelve Oaks or other destinations nearby indicates there is a demand for commercial here.

Member Giacometti asked Mr. Shapiro about his statement that this property has been zoned incorrectly for 75 years. Given the wetland migration concerns it is also not a very marketable site. That might be part of the reason it hasn't been developed.

Mr. Shapiro stated that it has been zoned for big lots. That is not something that someone wants now that you have two major roads and M-5 nearby. Large lots no longer make sense in that location. Mr. Shapiro understands the PRO in Novi is like a contract that holds him accountable to do what it says he will do. Bottom line here is he wants to zone it to put 2.9 units per acre for a total of 42 units. If the Planning Commission wants R-4 zoning, we will request R-4 zoning, and we will do what we say we will do under the PRO Agreement.

Member Giacometti stated in terms of the PRO, limits can be structured on the use of the B-3 development. We could strike some of the special uses. The drive-through concept is contrary to the recommended land use. Member Giacometti asked the applicant, if the drive-through were off the table would you still be interested in this concept?

Mr. Shapiro stated that they can better define the use, although he thinks that it would be a mistake to preclude the high-end restaurants that would augment their success, as an exceptional drive-through.

Member Giacometti questioned that, should the City not want to maintain the donated land had Mr. Shapiro considered donating the land to MSU as opposed to the City.

Mr. Shapiro said that had not been a consideration thus far.

Member Anthony asked Planner Komaragiri if she felt comfortable with the information that has been provided.

Planner Sri Komaragiri stated that she believes that the applicant has provided comprehensive information with regard to planning and density. As approving a concept plan, additional information in regard to landscape and traffic is being requested so that any deviation can be identified and included in the PRO agreement. We would rather identify the deviations before the Concept plan has been recommended and/or approved and before proceeding with further reviews.

Chair Greco commented on why the process has taken 18 months is because the concept that has been requested is a drastic change. He stated that while he feels that the plan is unbelievably attractive it is too drastic of a change.

Member Anthony made the motion, seconded by Member Zuchlewski:

ROLL CALL VOTE TO POSTPONE MAKING A RECOMMENDATION ON THE PROPOSED PRO AND CONCEPT PLAN, BEACON HILL JSP15-08 WITH REZONING 18.710 BY MEMBER ANTHONY AND SECONDED BYMEMBER ZUCHLEWSKI

In the matter of the request of The Ivanhoe Companies for Beacon Hill JSP 15-08 with Zoning Map Amendment 18.710 motion to postpone making a recommendation on the proposed PRO and Concept Plan to allow the applicant time to address concerns and consider making further modifications to the Concept Plan and that if that process results in the applicant changing the requested rezoning to a district other than RM-1 or B-3, that the recommendation be after a Public Hearing with notice of the requested districts as changed. This recommendation is made for the following reasons:

- a. Additional discussion is needed regarding the proposed development density, offered public benefits and conditions of approval, and the neighborhood compatibility issues raised in the staff and consultant review letters.
- b. Applicant should address the following concerns highlighted in the Engineering Review letter on a subsequent submittal:
Provide stub streets to the subdivision boundary at intervals not to exceed 1300 feet, or seek a DCS variance/deviation from the ordinance standards for this requirement;
 - Provide a pathway connection to the parcel to the east and the parcel to the north outside of the public right of way; and
 - Provide additional information regarding water main and sanitary sewer stubs, storm water runoff and detention volume calculations, and additional details regarding secondary emergency access.
- c. Applicant has requested a waiver of the required Traffic Impact Study, but the City's Traffic Engineering Consultant is not in favor of the requested waiver at this time. Additional information is needed for review before the next submittal.
- d. Further information is needed to quantify and gauge potential woodland and wetland impacts, and presentation of alternative plans to reduce impacts.

Motion carried 3-1(Greco)

PLANNING REVIEW

March 20, 2016

Barbara McBeth, AICP
Deputy Director of Community Development
City of Novi
45175 W. Ten Mile Rd.
Novi, MI 48375

**SUBJECT: Review of Beacon Hill Park
JSP15-0008 Rezoning 18.710 with a PRO Concept Plan**

Dear Ms. McBeth:

At your request, we have reviewed the request for rezoning with a Planned Rezoning Overlay referenced above and offer the following analysis:

Applicant

Ivanhoe Meadowbrook, LLC

Review Type

Rezoning from RA Residential Acreage to R-4 One-Family Residential with a Planned Rezoning Overlay (PRO)

Property Characteristics

- Site Location: Northeast corner of 12 Mile and Meadowbrook
- Site Zoning: RA Residential Acreage
- Adjoining Zoning: North, east and west: RA Residential Acreage; south and southwest: OST Office Service Technology District
- Current Site Use: One single family home on one small lot; otherwise vacant
- Adjoining Uses: North, northeast: single family homes; east, vacant (proposed church); south: vacant; west: MSU Tollgate Center; southwest: South University Novi
- School District: Walled Lake Community School District
- Site Size: 21.13 gross acres

Project Summary

The applicant is requesting a Zoning Map amendment for a 21.13-acre property currently comprised of three existing parcels at the northeast corner of 12 Mile Road and Meadowbrook Road (Section 12). The rezoning sought is from RA Residential Acreage to R4 Single Family and B-3 General Business, utilizing the City's Planned Rezoning Overlay (PRO) option. The applicant requests the rezoning in order to develop a 42-unit single-family residential development with frontage on and access to Meadowbrook Road, up to 22,000 square feet of commercial space with frontage and two access drives on 12 Mile Road, and an open space/park area at the corner of the intersection. The applicant proposes to dedicate the open space/park area at the corner of the intersection, and commits to building vehicle and bicycle parking for a trailhead.

The residential portion of the concept plan is arranged as a cluster, with open space dedicated to parks, buffers, wetlands, and detention; homes are arranged along a ring road with a single access point on Meadowbrook Road. Secondary access for emergency vehicles and pedestrians is provided at the rear of the development by a semi-paved access path. The proposed commercial area includes two driveways onto 12 Mile Road, as well as a small parking lot adjacent to the park and trailhead.

The letter and site plan indicate that this is a preliminary site plan. However, we note that this is a conceptual PRO plan.

Summary of PRO Agreements

The PRO option creates a “floating district” with a conceptual plan attached to the rezoning of a parcel. As part of the PRO, the underlying zoning is proposed to be changed (in this case from RA to R4 and B-3) and the applicant enters into a PRO agreement with the City, whereby the City and the applicant agree to tentative approval of a conceptual plan for development of the site. Following final approval of the PRO concept plan and PRO agreement, the applicant will submit for Preliminary and Final Site Plan approval under standard site plan review procedures. The PRO runs with the land, so future owners, successors, or assignees are bound by the terms of the agreement, absent modification by the City of Novi. If the development has not begun within two (2) years, the rezoning and PRO concept plan expires and the agreement becomes void.

Amendments to Initial Proposal

This is an amended version of an earlier concept plan. Generally, this version of the proposal reduced overall residential density and increases the amount of land dedicated as open space, including an increase in the amount of land donated for a park.

Potential Development with Existing Zoning

The existing zoning, RA, permits 0.8 dwelling units per acre. Under current zoning, the full 21.13 acres of the site could be developed with 16 single family homes, while the 16.88 net acres devoted to residential development on the concept plan could be developed with 13 single family homes. Homes are proposed to be clustered; the open space preservation option, however, does not offer a density bonus for clustered homes. The sole existing use of the site is a single family home fronting on Meadowbrook Road. Single family development of these 16.88 acres to the maximum density permitted in the R4 district would result in approximately 55 units on the site.¹

Master Plan for Land Use

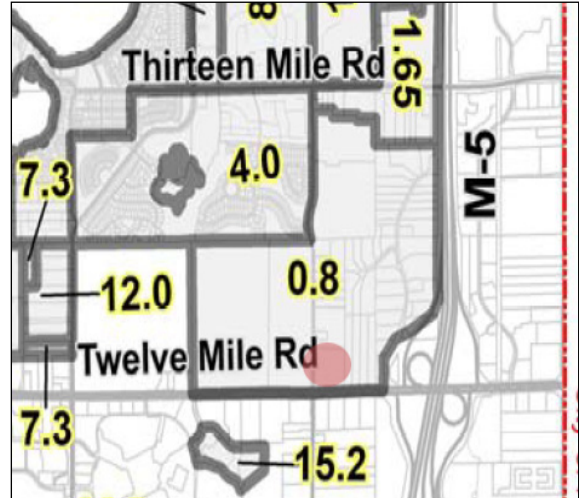
The Future Land Use Map of the 2010 City of Novi Master Plan for Land Use identifies this property and all adjacent land north of 12 Mile as Single Family, with a density of 0.8 dwelling units per acre. This designation matches the existing zoning of the site. The Master Plan designates land to the south across 12 Mile as Office Research Development and Technology, matching existing zoning (see planned density map next page).

The Master Plan establishes numerous goals and supporting objectives for the City. This concept plan supports several objectives and conflicts with others:

¹ Based on a density of 3.3 dus/acre.

Objective: Encourage the use of functional open space in new residential developments. *The concept plan includes functional open space in the form of a park and non-motorized, off-street pathways.*

Objective: 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. *The development would provide small-lot single family dwelling units, which is a generally desirable type of unit based on general observations of the existing market.*



City of Novi Master Plan for Land Use
Planned Residential Densities (dus/acre)

Subject site shown with pink oval

Objective: Encourage residential developments that promote healthy lifestyles. *The concept plan’s integration of the park and potential trailhead (if developed by the City), as well as a direct pedestrian connection between the residential and commercial developments, provides opportunities for residents to access non-motorized infrastructure and run certain errands without driving.*

Objective: Protect and maintain open space throughout the community. *It could be argued that the concept plan both supports and conflicts with this objective. The provision of 42 percent of the site as open space, some functional, and some not, supports the goal of preserving open space. However, development of the site to a much higher intensity than existing zoning permits preserves less open space (considering both public and private open space) than developing it to the currently permitted density. Large open lots, which are a characteristic of the RA district, would not be provided under the proposed development. Under RA zoning, it is likely that far less public open space would be provided.*

Objective: Continue to strive toward making the City of Novi a more bikeable and more walkable community. *The provision of the property that could be utilized as a trailhead, combined with the proposed connections to existing non-motorized paths, as well as the extension of sidewalks along 12 Mile Road, support this objective.*

The proposal notes that the development would create a transitional district between more intense land uses along Twelve Mile Road and less dense single family development to the north. While this is consistent with the broadly stated goal to “Provide for planned development areas that provide a transition between high intensity office, industrial and commercial uses and one-family residential uses,” we note that the objective supporting this goal was the impetus for the City’s creation of its PSLR Planned Suburban Low-Rise Overlay District, which is not the designation sought here.

The proposal calls for a significant departure from the vision of the Master Plan, which is to provide for 0.8 dus/acre north of Twelve Mile, both east and west of Meadowbrook Road (see below for addition density discussion). *Neighborhood compatibility with existing large lot RA properties in the area should be considered. The PRO concept plan displays sensitivity to this adjacency through the use of buffering along the edges of the site, including preservation of existing vegetation.*

Proposed Residential Density

The applicant is proposing 42 units on 16.88 net acres for a net density of 2.49 units per acre. As mentioned above, the Master Plan calls for a density of 0.8 dwelling units per acre on this land and surrounding sites. The proposed density exceeds the Master Plan recommendation for the site.

Proposed density is most consistent with the R-3 One-Family Residential District (maximum density of 2.7 units per acre). The applicant is seeking a relaxation of the required minimum lot size under the PRO to an average of approximately 6,000 square feet.

Compatibility with Surrounding Land Use

Summary of Land Use and Zoning of Subject and Adjacent Properties			
	Existing Zoning	Existing Land Use	Master Plan Designation
Subject Property	RA Residential Acreage	Mostly Vacant; 1 Single Family Home	Single Family, 0.8/acre
To the North	RA Residential Acreage	Single Family Home	Single Family, 0.8/acre
To the East	RA Residential Acreage	Vacant	Single Family, 0.8/acre
To the South	OST Office Service Technology	Vacant	Office Research
To the West	RA Residential Acreage	MSU Tollgate Farms	Single Family, 0.8/acre

The surrounding land uses are detailed in the table above. In making its recommendation to City Council, the Planning Commission should consider the compatibility of the PRO concept plan with existing adjacent land uses and zoning.

In general, standard construction noise during development and increased traffic after development are the most likely negative effects of this development on surrounding properties. The availability of some local commercial and a new park could provide some convenience shopping and a new space for recreation for nearby residents and office workers. The primary step taken on the plan to minimize negative externalities from the property is the preservation of the woodland strip at the northern end of the site to provide screening of adjacent single family homes.

Comparison of Zoning Districts

	RA Zoning (Existing)	R4 Zoning (Proposed)	B-3 Zoning (Proposed)
Principal Permitted Uses	<ol style="list-style-type: none"> 1. One-family dwellings 2. Farms and greenhouses 3. Publicly owned and operated parks 4. Cemeteries 5. Schools 6. Home occupations 7. Accessory buildings and uses 8. Family day care homes 	<ol style="list-style-type: none"> 1. One-family detached dwellings 2. Farms and greenhouses 3. Publicly owned and operated parks, parkways and outdoor recreational facilities 4. Home occupations 5. Keeping of horses and ponies 6. Family day care homes 7. Accessory buildings and uses customarily incident to any of the above uses 	<ol style="list-style-type: none"> 1. Retail business uses 2. Retail business service uses 3. Dry cleaning establishments 4. Business establishments which perform services on the premises 5. Professional services 6. Professional and medical offices 7. Fueling station 8. Auto wash 9. Bus passenger station 10. New and used car salesroom, showroom or office 11. Similar uses 12. Tattoo parlors

			<ul style="list-style-type: none"> 13. Publicly owned and operated parks, parkways and outdoor recreational facilities 14. Accessory structures and uses 15. Public or private health and fitness facilities and clubs 16. Microbreweries 17. Brewpubs
Special Land Uses	<ul style="list-style-type: none"> 1. Raising of nursery plant materials 2. Dairies 3. Keeping and raising of livestock 4. All special land uses in Section 402 5. Nonresidential uses of historical buildings 6. Bed and breakfasts 	<ul style="list-style-type: none"> 1. Places of worship 2. Public, parochial and private elementary, intermediate or secondary schools 3. Utility and public service buildings and uses (without storage yards) 4. Group day care homes, day care centers, and adult day care 5. Private noncommercial recreational areas, institutional or community recreation centers, nonprofit swimming pool clubs 6. Golf courses 7. Colleges, universities and other such institutions of higher learning 8. Private pools 9. Cemeteries 10. Railroad right-of-way, but not including terminal freight facilities, transfer and storage tracks 11. Mortuary establishments 12. Bed and breakfasts 13. Accessory buildings and uses customarily incident to any of the above permitted uses 	<ul style="list-style-type: none"> 1. Outdoor space for exclusive sale or rental of new or used automobiles, etc. 2. Motel 3. Drive-in or open front store 4. Veterinary hospital or clinic 5. Plant materials nursery 6. Public or private indoor and private outdoor recreational facilities 7. Mini-lube or oil change establishment 8. Sale of produce and seasonal plant materials outdoors 9. Restaurant in the character of a fast food carryout, drive-in, fast food drive-through or fast food sit-down

	RA Zoning (Existing)	R4 Zoning (Proposed)	B-3 Zoning (Proposed)
Minimum Lot Size	43,560 sq ft (1 acre)	10,000 sq. ft.	Determined by off-street parking, loading, greenbelt screening, yard setback or usable open space requirements
Minimum Lot Width	150 ft	80 feet for single-family dwellings	Determined by off-street parking, loading, greenbelt screening, yard setback or usable open space requirements
Building Height	2.5 stories or 35 ft	35 feet or 2.5 stories, whichever is less	30 ft
Building Setbacks	Front: 45 ft Side: 20 ft (aggregate 50 ft) Rear: 50 ft	Front: 30 ft Side: 10 ft (aggregate 25 ft) Rear: 35 ft	Front: 30 ft Side: 15 ft Rear: 20 ft

Infrastructure

Water and sanitary sewer are available at the site. The Subdivision Ordinance requires a stub street at intervals of 1,300 feet unless either 1) the extension is impractical because of topography, the dimensions of the property subdivided, or other natural features, including but not limited to, regulated woodlands and wetlands; or 2) The extension will result in the creation of undesirable traffic patterns not customarily found in residential areas. With a place of worship proposed to the east and a large natural buffer proposed to the north, it does not appear that a stub street is warranted. This determination should be addressed by the Planning Commission in its recommendation.

Natural Features

The northern portion of the site contains significant regulated woodlands. A swath of this woodland is proposed to be preserved as an open space buffer between the development and the adjacent homes to the north and northeast. Mitigation is required for any regulated woodlands impacted by the proposed development.

A regulated wetland consisting of a creek and pond exists on the site near 12 Mile Road. The applicant proposes to enhance these features as a public benefit of the development; this would include a relocation of a portion of the creek and the construction of a weir over which water would fall into the existing pond.

Major Conditions of Planned Rezoning Overlay Agreement

The Planned Rezoning Overlay process involves a PRO concept plan and specific PRO conditions in conjunction with a rezoning request. The submittal requirements and the process are codified under the PRO ordinance (Section 7.13.2). Within the process, which is completely voluntary by the applicant, the applicant and City Council can agree on a series of conditions to be included as part of the approval.

The applicant's submittal includes conditions for the rezoning, summarized as such in the applicant's letter accompanying the plans (quoted from the letter):

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 and 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:
 - i. Minimum 50 foot width
 - ii. Minimum 7.5 foot side yard setback
 - iii. Minimum 20 foot front yard setback
 - iv. Minimum 30 foot rear yard 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-through, with details on the tenant mix, parking, drive-through operations to be described at the time of final site plan review.
 - b. Rezoning to B3 with an agreement that the developer will prohibit the following uses that would otherwise be permitted, including: fast food restaurants (a change from the previous plan), fueling stations, produce sales, day care centers, business schools and colleges, private clubs, motels, veterinary hospitals and clinics, auto washes, bus passenger stations, new and used car salesrooms, tattoo parlors, outdoor space for car sales, and 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:
 - i. Each of the 196 3-inch caliper new trees counts as 1.5 trees and 4-inch caliper new tree counts as two trees (instead of the typical minimum 2-inch caliper tree)
 - ii. Each of the 114 9 to 10-foot-tall 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 planting the minimum seven-foot-tall evergreens)

Ordinance Deviations

Section 7.13.2.D.i.c(2) permits deviations from the strict interpretation of the Zoning Ordinance within a PRO agreement. These deviations must be accompanied by a finding by City Council that *“each Zoning Ordinance provision sought to be deviated would, if the deviation were not granted, prohibit an enhancement of the development that would be in the public interest, and that approving the deviation would be consistent with the Master Plan and compatible with the surrounding areas.”* Such deviations must be considered by City Council, who will make a finding of whether to include those deviations in a proposed PRO agreement. The proposed PRO agreement would be considered by City Council after tentative approval of the proposed concept plan and rezoning.

Deviations from the Zoning Ordinance on the concept plan are listed below:

1. Minimum lot size and width: 10,000 square feet and 80 feet required, 6,000 square feet and 50 feet proposed.
2. Building setbacks: 30 foot front yard, 35 foot rear yard and 10 foot side yard (25 feet aggregate) required; 20 foot front yard, 30 foot rear yard and 15 foot aggregate side yard proposed.

Applicant Burden under PRO Ordinance

The Planned Rezoning Overlay ordinance requires the applicant to demonstrate that certain requirements and standards are met. The applicant should be prepared to discuss these items. Section 7.13.2.D.ii states the following:

1. *(Sec. 7.13.2.D.ii.a) Approval of the application shall accomplish, among other things, and as determined in the discretion of the City Council, the integration of the proposed land development project with the characteristics of the project area, and result in an enhancement of the project area as compared to the existing zoning, and such enhancement would be unlikely to be achieved or would not be assured in the absence of the use of a Planned Rezoning Overlay.*
2. *(Sec. 7.13.2.D.ii.b) Sufficient conditions shall be included on and in the PRO Plan and PRO Agreement on the basis of which the City Council concludes, in its discretion, that, as compared to the existing zoning and considering the site specific land use proposed by the applicant, it would be in the public interest to grant the Rezoning with Planned Rezoning Overlay; provided, in determining whether approval of a proposed application would be in the public interest, the benefits which would reasonably be expected to accrue from the proposal shall be balanced against, and be found to clearly outweigh the reasonably foreseeable detriments thereof, taking into consideration reasonably accepted planning, engineering, environmental and other principles, as presented to the City Council, following recommendation by the Planning Commission, and also taking into consideration the special knowledge and understanding of the City by the City Council and Planning Commission.*

Public Benefit under PRO Ordinance

Section 7.13.2.D.ii states that the City Council must determine that the proposed PRO rezoning would be in the public interest and the public benefits of the proposed PRO rezoning would clearly outweigh the detriments. The applicant has identified the public benefits listed below at this time. These proposed benefits will be weighed against the proposal to determine if they clearly outweigh any detriments of the proposed rezoning.

1. Donation of 3.28 acres to the City for the establishment of a public park with the following improvements made by the developer:
 - a. Enhanced wetland and creek
 - b. Preparation of trailhead and parking lot, including bike parking and a bench
 - c. Entire park area graded and seeded
2. 42 percent of gross site preserved as open space. This includes 3.28 acres of park, 4.54 acres residential open space, and 0.98 acres of commercial open space area (8.8 total acres).
3. The applicant notes that the provision of commercial services in this location will complement changing development in the area, and that the overall site will function as a transition between non-residential uses to the south and single family uses to the north.
4. Development is consistent with several Master Plan objectives.
5. Trailhead serves City's non-motorized transportation goals.

Submittal Requirements

- Rezoning signs must be erected along the property's frontage in accordance with submittal requirements and in accordance with the public hearing requirements for the rezoning request. The signs should be erected no later than 15 days prior to the scheduled public hearing. The concept plan does not show the proposed locations of the two required rezoning signs.
- A traffic study has been submitted and reviewed by the City's Traffic Consultant.

Other Notes on the Concept Plan

- The commercial layout is speculative and it is implied in the submittal materials that it will change on the basis of the needs of tenants.

Planning Commission Options

The Planning Commission has the following options for its recommendation to City Council:

1. Recommend City Council conditionally approve the request to rezone the parcel to B-3 General Business and R4 One-Family Residential with a Planned Rezoning Overlay (APPLICANT REQUEST); OR
2. Recommend City Council deny the request to rezone the parcel to B-3 and R4 with a PRO, with the zoning of the property to remain RA; OR
3. Recommend City Council rezone the parcel to a zoning district other than RA, B-3 or R4 (an additional public hearing may be required); OR
4. Recommend City Council conditionally approve only a portion of the request for rezoning (such as the B-3 portion) while recommending denial of the rezoning request for the rest of the site; OR
5. Postpone consideration of the request for further study or consideration of another alternative.

Recommendation

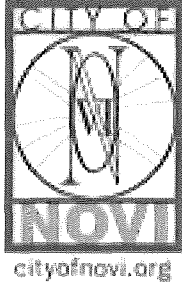
The applicant has made significant improvements to the PRO plan and is presenting a concept that is sensitive to the unique character and location of this area. It also provides for public benefits and buffering that would not be provided through conventional development. The City's Master Plan is currently undergoing a review and amendment. The proposed density in the PRO concept plan is generally consistent with what we will be recommending to the Planning Commission for this site. We recommend that the Planning Commission consider making a positive recommendation to the City Council.

Sincerely,
CLEARZONING, INC.



Rodney L. Arroyo, AICP
President

ENGINEERING REVIEW



PLAN REVIEW CENTER REPORT

04/15/2016

Engineering Review

BEACON HILL PARK PRO

JSP15-0008

Applicant

CONGREGATION SHAAREY ZEDEK

Review Type

Revised Concept Plan

Property Characteristics

- Site Location: N. of 12 Mile Rd. and E. of Meadowbrook Rd.
- Site Size: 21.19 acres
- Plan Date: 04/13/16

Project Summary

- Construction of a 42 lot residential development, and approximately 22,000 square-foot of retail buildings and associated parking. Site access would be provided by 2 curb cuts on 12 Mile Rd. for the retail buildings and a new roadway from Meadowbrook Rd. for the residential area.
- Water service would be provided by 2 extensions from the existing 16-inch water main along the east side of Meadowbrook Rd. Along with 9 additional hydrants.
- Sanitary sewer service would be provided an extension for the existing 12-inch sanitary sewer on the west side of Meadowbrook Rd. for the residential development. And an extension from the existing 12-inch sanitary sewer along the north side of 12 Mile Rd.
- Storm water would be collected by a single storm sewer collection system for the residential development and a single storm sewer collection system for the retail development. Each will be detained in separate basins for a 100-year storm event.

Recommendation

Approval of the Revised Concept Plan and Concept Storm Water Management Plan is recommended.

Comments:

The Concept Plan meets the general requirements of Chapter 11, the Storm Water Management Ordinance and the Engineering Design Manual with the following items to be addressed at the time of Final Site Plan submittal (further engineering detail will be required at the time of the final site plan submittal):

Additional Comments (to be addressed prior to the Final Site Plan submittal):

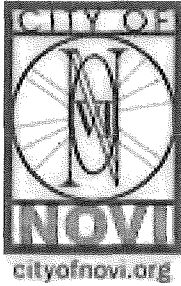
General

1. The applicant responses letter from Zeimet Wozniak & Associates dated 04/14/16 adequately address the three major concerns detailed in the Engineering review letter dated 03/21/16.
2. For additional comments see the Engineering review letter dated 03/21/16.

Please contact Jeremy Miller at (248) 735-5694 with any questions.

A handwritten signature in cursive script, reading "Jeremy Miller", is written over a horizontal line.

cc: Adam Wayne, Engineering
Brian Coburn, Engineering
Kirsten Mellem, Community Development
Sabrina Lilla, Water & Sewer



PLAN REVIEW CENTER REPORT

03/21/2016

Engineering Review

BEACON HILL PARK PRO

JSP15-0008

Applicant

CONGREGATION SHAAREY ZEDEK

Review Type

Revised Concept Plan

Property Characteristics

- Site Location: N. of 12 Mile Rd. and E. of Meadowbrook Rd.
- Site Size: 21.19 acres
- Plan Date: 06/25/15

Project Summary

- Construction of a 42 lot residential development, and approximately 22,000 square-foot of retail buildings and associated parking. Site access would be provided by 2 curb cuts on 12 Mile Rd. for the retail buildings and a new roadway from Meadowbrook Rd. for the residential area.
- Water service would be provided by 2 extensions from the existing 16-inch water main along the east side of Meadowbrook Rd. Along with 9 additional hydrants.
- Sanitary sewer service would be provided an extension for the existing 12-inch sanitary sewer on the west side of Meadowbrook Rd. for the residential development. And an extension from the existing 12-inch sanitary sewer along the north side of 12 Mile Rd.
- Storm water would be collected by a single storm sewer collection system for the residential development and a single storm sewer collection system for the retail development. Each will be detained in separate basins for a 100-year storm event.

Recommendation

Approval of the Concept Plan and the Concept Storm Water Management Plan is NOT recommended.

Comments:

The Concept Plan does not meet the general requirements of Chapter 11 of the Code of Ordinances, the Storm Water Management Ordinance and/or the Engineering Design Manual. The following items must be addressed prior to resubmittal:

1. Provide a stub street to the subdivision boundary at intervals not to exceed 1,300 feet along the subdivision perimeter.
2. Provide water main and sanitary sewer stubs to the north and the east.
3. Provide a pathway connection to the parcel to the east and the parcel to the north.

Additional Comments (to be addressed prior to the Final Site Plan submittal):

General

4. A full engineering review was not performed due to the limited information provided in this submittal. Further information related to the utilities, easements, etc. will be required to provide a more detailed review.
5. The site plan shall be designed in accordance with the Design and Construction Standards (Chapter 11) and the Engineering Design Manual (www.cityofnovi.org/DesignManual).
6. A right-of-way permit will be required from the City of Novi and Oakland County.
7. Provide material type for all proposed utilities.
8. Provide a minimum of two ties to established section or quarter section corners.
9. Show and label the master planned 60-foot half right-of-way width for Meadowbrook Rd.
10. If it is the intent to dedicate the additional right-of-way to the master planned width along Meadowbrook Rd., label the new delineation as "proposed" right-of-way.
11. Soil borings shall be provided for a preliminary review of the constructability of the proposed development (roads, basin, etc.). Borings identifying soil types, and groundwater elevation should be provided at the time of Preliminary Site plan.
12. A letter from either the applicant or the applicant's engineer must be submitted with the Preliminary Site Plan submittal highlighting the changes made to the plans addressing each of the comments in this review.
13. The City standard detail sheets are not required for the Final Site Plan submittal. They will be required with the Stamping Set submittal. They can be found on the City website (www.cityofnovi.org/DesignManual).

Water Main

14. The water main stubs shall terminate with a hydrant followed by a valve in well. If the hydrant is not a requirement of the development for another

- reason the hydrant can be labeled as temporary allowing it to be relocated in the future.
15. Three (3) sealed sets of revised utility plans along with the MDEQ permit application (1/07 rev.) for water main construction and the Streamlined Water Main Permit Checklist should be submitted to the Engineering Department for review, assuming no further design changes are anticipated. Utility plan sets shall include only the cover sheet, any applicable utility sheets and the standard detail sheets.

Sanitary Sewer

16. Because Wayne County has expressed capacity concerns, a temporary moratorium has been placed on approval of sanitary sewer permits from the City. We are working with the County to resolve this as quickly as possible. Until then all sanitary sewer permit applications will be on hold.
17. Seven (7) sealed sets of revised utility plans along with the MDEQ permit application (04/14 rev.) for sanitary sewer construction and the Streamlined Sanitary Sewer Permit Certification Checklist should be submitted to the Engineering Department for review, assuming no further design changes are anticipated. Utility plan sets shall include only the cover sheet, any applicable utility sheets and the standard detail sheets. Also, the MDEQ can be contacted for an expedited review by their office.

Storm Water Management Plan

18. The Storm Water Management Plan for this development shall be designed in accordance with the Storm Water Ordinance and Chapter 5 of the new Engineering Design Manual.
19. The SWMP must detail the storm water system design, calculations, details, and maintenance as stated in the ordinance. The SWMP must address the discharge of storm water off-site, and evidence of its adequacy must be provided. This should be done by comparing pre- and post-development discharge rates and volumes. The area being used for this off-site discharge should be delineated and the ultimate location of discharge shown.
20. An adequate maintenance access route to the basin outlet structure and any other pretreatment structures shall be provided (15 feet wide, maximum slope of 1V:5H, and able to withstand the passage of heavy equipment). Verify the access route does not conflict with proposed landscaping.
21. A 25-foot vegetated buffer shall be provided around the perimeter of the residential storm water basin. This buffer cannot encroach onto adjacent lots.

Paving & Grading

22. Staff would support a variance to remove the paved eyebrows at the 90-degree bends. The right-of-way would remain as currently shown.

23. Relocate the proposed sidewalk to 5-feet from the back of curb, not along the lot lines as shown.
24. Provide a 10-foot wide regional pathway along the east side of Meadowbrook Road in accordance with the City's Non-motorized Master Plan.
25. Revise the sidewalk detail to show a maximum 2-percent cross-slope.

The following must be provided at the time of Concept Plan resubmittal:

26. A letter from either the applicant or the applicant's engineer must be submitted with the concept plan highlighting the changes made to the plans addressing each of the comments listed above and indicating the revised sheets involved.

Please contact Jeremy Miller at (248) 735-5694 with any questions.



Jeremy Miller

cc: Adam Wayne, Engineering
Brian Coburn, Engineering
Barb McBeth, Community Development

LANDSCAPE REVIEW



PLAN REVIEW CENTER REPORT

April 15, 2016

Revised Conceptual Site Plan #3

Beacon Hill

Review Type

Revised Conceptual/PRO Landscape Review

Job

JSP15-0008

Property Characteristics

- Site Location: Northeast corner of 12 Mile Road and Meadowbrook Road
- Site Zoning: RA – Residential Acreage – seeking PRO
- Site Size: 19.93 acres
- Adjacent Zoning: RA – Residential Acreage N&E, OST across 12 Mile, RA across Meadowbrook
- Plan Date: 4/13/2016

Ordinance Considerations

This project was reviewed for general conformance with Chapter 37: Woodland Protection, Zoning Article 5.5 Landscape Standards, the Landscape Design Manual and any other applicable provisions of the Zoning Ordinance. Items in **bold** below must be addressed and incorporated as part of the Preliminary Site Plan submittal. Underlined items will need to be addressed in Final Site Plans. Please follow guidelines of the Zoning Ordinance and Landscape Design Guidelines. This review is a summary and not intended to substitute for any Ordinance.

Recommendation:

This conceptual plan is **recommended for approval, with reservations**. The overall plan as proposed meets most of the requirements and provides very attractive landscaping throughout the development. The residential area appears to meet all landscape requirements except some minor count differences. The area between the commercial and residential appears to provide sufficient screening despite the lack of the required berm. The applicant has worked with representatives from the Tollgate Education Center to create a more natural look along the Meadowbrook frontage which will provide a more pleasant experience along that stretch of road.

There are two main areas of concern with the plan. The first is that the commercial area is very deficient in terms of meeting the landscape requirements. The applicant has indicated that the tenants for the commercial buildings have not been determined, and as such the layout may change significantly. It is impossible to approve that portion of the project as proposed given that and/or the current layout and landscaping.

The other main area of concern relates to woodland replacement trees on the plan - specifically, the use of replacement trees in place of required street trees along Meadowbrook and Twelve Mile, and the use of upsized evergreen trees for additional woodland replacement credits. We understand that the applicant has worked with the Tollgate Education Center to develop a very attractive alternate streetscape along Meadowbrook, and support that streetscape concept, as well as the use of woodland replacement trees and shrubs to supplement the required trees along Meadowbrook, but do not support the replacement of required street trees with replacement trees. A more detailed discussion of this situation follows below.

The other concern is the large benefit the applicant is seeking with regard to upsized evergreen trees. 40% of the proposed evergreen trees are upsized from 7 feet to 10 feet. For planting trees 3 feet taller, they are requesting 1.5 credits per tree instead of 0.67 credits which are normally allowed per the Woodland Protection ordinance. This works out to an additional 85 credits on 102 trees planted. This seems unreasonable. As this is a PRO, there could be some flexibility in terms of allowing extra credits for the use of upsized trees which is normally not allowed by the Landscape Design Manual. In light of this, I support the use of some upsized evergreens to provide more interest along Meadowbrook, and more screening between the residential lots "fronting" the commercial, but I don't believe that the total benefit in credits for this should be more than 33% of the trees planted (in other words 33, not 85). As ECT is officially responsible for reviewing plans for the Woodlands, I defer to their review on this matter.

General Note:

If at all possible, the reconfigured stream should be re-graded to allow more floodplain room. As designed, it appears to be a narrow streambed with little to no room for the stream to develop a more natural meandering course, or to allow for flooding over the banks in times of heavier flow. Also, some sort of protection for the streambank where the Meadows detention pond outlets to the stream should be provided.

Existing Trees (Sec 37 Woodland Protection, Preliminary Site Plan checklist #17 and LDM 2.3 (2))

1. A full tree survey has been provided on the site plans and a woodland analysis has been provided in the accompanying project manual.
2. Calculations for the trees removed and required woodland replacements have been provided.
3. **While ECT will provide the woodland review, it should be noted that the Landscape Design Manual specifically forbids the use of upsizing credits for Woodland Replacement Trees (Section 3.c.(2)). The applicant can request a deviation as part of the PRO agreement, and staff supports the use of some upsizing with credit within the PRO to provide additional interest and screening along Meadowbrook, and along the south edge of the residential part of the development to provide additional screening from the commercial part of the development. That being said, the number of credits sought seems excessive, as noted in the discussion above.**

Adjacent to Public Rights-of-Way – Berm (Wall) & Buffer (Zoning Sec. 5.5.3.B.ii and iii)

MEADOWBROOK

A 50' wide greenbelt (minimum) is proposed along the Meadowbrook frontage adjacent to the residential units. This exceeds the requirement for a 40' non-access easement.

BERM

- a. The frontage along Meadowbrook (1336 less 86' ROW for Hummingdale) is required to have an undulating berm with a minimum height of 4' and a 4' wide crest.
- b. **A landscape waiver for the berm could be sought for the wetland just north of the residential entry (approximately 170 lf) and the wet areas south of the residential area (approximately 420 lf). This waiver would be supported by staff.**
- c. **If the developer wishes to not build berms along the remaining frontage, this would require a deviation as part of the PRO. Given the heavy vegetation proposed within the greenbelt and right-of-way, this would also be supported by staff.**

PLANTINGS

- a. The frontage along Meadowbrook (1336 less 86' ROW for Hummingdale) is required to have 1 large evergreen tree or deciduous canopy tree per 35' lf of frontage and 1 subcanopy tree per 20 lf of frontage.
- b. **A landscape waiver could be sought for the required trees and subcanopy trees in the wetland areas described above for the berms. This waiver would be supported**

- by staff.
- c. No required greenbelt landscaping is proposed for the 540 lf of frontage south of the residential section. Some of this deviation is due to the existing wetland areas, and some is due to the heavy plantings of woodland replacement trees. Normally, required trees cannot be replaced with woodland trees. However, in this case, the Planning Commission is allowed leeway in allowing a waiver for the greenbelt plantings if it finds that “the site would be enhanced by an alternate design solution” As the park area will be heavily landscaped and protected with a conservation easement, and much of the existing natural area will be enhanced through restoration, a waiver for the required greenbelt trees in this section can be requested and will be supported by staff.
 - d. The required plantings for the remaining 540lf of frontage (1336lf – 540lf – 86lf – 170lf) should be provided. Existing trees may be able to meet some or all of the requirements for that section of frontage, but their size and identity need to be shown with size and identity on the plan. They need to be acceptable size and acceptable species to count.

TWELVE MILE ROAD

1. A 42' wide greenbelt (minimum) is proposed along the Twelve Mile Road frontage adjacent to the commercial units. This exceeds the requirement for a 20' greenbelt adjacent to parking.
2. An undulating berm at least 3' tall with a 2' crest is required between the road and the parking lot. No berm is proposed. A privet hedge is proposed, but this does not provide the same screening of automobile headlights as a berm would. **A landscape waiver may be requested from the Planning Commission, but would not be supported by staff as there is no topographical reason for not providing this berm. Also, while allowed by ordinance, privet is known to be an invasive plant that invades area woodlands and should be substituted with another non-invasive species if the applicant elects to pursue the hedge as screening.**
3. In addition to the berm, one large evergreen or deciduous canopy tree per 35 lf frontage and 1 subcanopy tree per 20 lf frontage is required along the parking lot. The calculations and trees provided need to be revised.
4. The total frontage for Twelve Mile Road should be included in the calculations. **A landscaping waiver for the western 160' can be sought and will be supported for the same reason described in 3.c. above.**

Screening Between Residential and Non-residential – Berm (Wall) & Buffer (Zoning Sec. 5.5.3.A)

1. A landscaped berm 6-8' high is required between residential and commercial uses. As the commercial area is below the residential area, and the detention ponds are between the two uses, a berm of that height is not feasible.
2. The applicant has proposed an attractive mix of dense landscaping between the residential and commercial parts of the development and in the proposed park area, most of which are woodland replacement trees.
3. **It appears that the proposed landscaping will provide the required screening, despite the difference in height, but a section view from Meadowbrook should be added to show the proposed buffering capability of that landscaping, showing the buildings at proposed elevations and the landscaping at a height that can be expected after 2 years of growth.**
4. **If that section reveals that the screening is insufficient, additional screening in the form of dense evergreens, a landscaped berm high enough to provide the required buffering, or other screening will be required.**
5. The seed mixes are identified through callouts, and a diverse upland seed mix is proposed for the upland areas to be densely planted.

Street Tree Requirements (Zoning Sec. 5.5.3.E.i.c and LDM 1.d.)

RESIDENTIAL INTERIOR:

1. Street tree requirements appear to have been calculated correctly, and the trees placed correctly.
2. An additional street tree needs to be added to the plan to match the numbers shown as provided in the calculations.

MEADOWBROOK AND TWELVE MILE ROADS:

1. Please break out the frontage by road in the calculations (1336lf less 86lf for Meadowbrook and 607 lf for Twelve Mile Road).
2. 1 deciduous canopy tree per 35 lf is required along areas facing parking, and 1 tree per 45 lf is required along other right-of-way frontage for commercial, and 1 tree per 35 lf is required for residential. 1 tree per 45 lf can be used for the Meadowbrook frontage south of the residential areas.
3. Woodland replacement trees can't replace required street trees. Excess trees can be counted toward replacements. Please revise the woodland replacement trees accordingly.

COMMERCIAL – Please see discussion at start of this review.

Parking Lot Landscape (Zoning Sec. 5.5.3.C.) – Commercial only

1. Parking lot interior landscaping was not calculated correctly. The non-parking space vehicular use area landscape area should have been calculated at 5% of the area, not 1%. Please revise the calculations and provide the correct number of trees.
2. Islands and/or planting areas need to be at least 10' wide in parking areas and 300sf in area. There are numerous trees in planting areas that are much less than 300sf and/or 10 feet wide. These trees can't be counted toward the total. Please enlarge the islands that are to have trees in them.
3. Parking lot trees must be deciduous canopy trees, not evergreen trees or subcanopy trees. Please replace the above with deciduous canopy trees. Per the ordinance definition, deciduous canopy trees must have a mature canopy width of at least 20' to provide shading effect for adjacent spaces.
4. The replacement trees shown along the parking lots' perimeters must be changed to be interior or perimeter parking lot trees to provide the greatest number of trees possible toward meeting those requirements. Replacement trees can only be used along the perimeter if the other requirements are met.

Parking Lot Perimeter Canopy Trees (Zoning Sec. 5.5.3.C.(3) Chart footnote)

1. Perimeter calculations have been provided as requested. Please check to see that the perimeter length is correctly measured. **Once the replacement trees along the perimeter are converted to perimeter or interior trees as noted above and the parking lot is reconfigured to provide a greater number of interior trees in acceptable islands, the shortage of trees may be considered acceptable.**
2. Parking lot perimeter trees are required to be deciduous canopy trees. Please replace any evergreen perimeter trees with deciduous canopy species.

Transformer/Utility Box Screening (Zoning Sec 5.5.3.D.)

1. When transformers/utility boxes are added to the plans, be sure to screen them per the city standard detail.
2. Please include the utility box screening detail on the plans if actual plantings are not proposed.

Building Foundation Landscape (Zoning Sec 5.5.3.D.)

1. Building foundation landscaping is calculated as the entire building perimeter * 8 feet. I calculated the total perimeters of the two buildings as approximately 584 feet. This would result in a requirement for a total of 4672 square feet of foundation landscape area. The basis of calculation does not appear to be correct. Please correct that and the required area.
2. 60% of the frontage visible from Twelve Mile Road should be landscaped. As proposed, there is no foundation landscaping proposed along the Twelve Mile frontage of either building. Landscaping needs to be added along the south elevation of the two buildings and needs to be adjacent to outdoor patios.
3. If, because of the nature of the operations, all of the required foundation landscaping cannot be located immediately adjacent to the building, a landscape waiver can be requested, but the balance of the required space must be provided elsewhere on the commercial area of the site.
4. Please label all landscape areas in SF on site plans.

GENERAL/OTHER

Planting Notations and Details (LDM)

Provided.

Storm Basin Landscape (Zoning Sec 5.5.3.E.iv and LDM 1.d.(3))

1. Storm basin shrubs are provided per the ordinance in terms of coverage.
2. The proposed seed mixes have a good diversity.

Irrigation (LDM 1.a.(1)(e) and 2.s)

Irrigation plans for landscaped areas are required for Final Site Plan.

Proposed topography. 2' contour minimum (LDM 2.e.(1))

Proposed topography has been provided for the site.

Snow Deposit (LDM.2.q.)

Snow deposit areas have been proposed. The areas may need to be adjusted to provide more areas for trees (for example, the island along the eastern edge of the commercial parking lot that only has a fire hydrant in it).

Proposed trees to be saved (Sec 37 Woodland Protection 37-9, LDM 2.e.(1))

1. Trees scheduled to be removed are shown on both the plan and tree chart.
2. **Please leave the labels for trees to remain on the landscape plan.**

Corner Clearance (Zoning Sec 5.9)

Corner clearance is provided for both the residential and commercial sections of the property.

If the applicant has any questions concerning the above review or the process in general, do not hesitate to contact me at 248.735.5621 or rmeader@cityofnovi.org.



WETLANDS REVIEW



March 21, 2016

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

Re: Beacon Hill (JSP15-0008)
Wetland Review of the Revised Concept Plan (PSP16-0018)

Dear Ms. McBeth:

Environmental Consulting & Technology, Inc. (ECT) has reviewed the Revised Concept/Planned Rezoning Overlay Plan for the proposed Beacon Hill Park project prepared by Zeimet-Wozniak & Associates, Inc. dated January 11, 2016 (Plan). The Plan was reviewed for conformance with the City of Novi Wetland and Watercourse Protection Ordinance and the natural features setback provisions in the Zoning Ordinance. ECT has previously visited the site for the purpose of a woodland verification as well as a wetland boundary verification with the applicant's wetland consultant King and MacGregor Environmental, Inc. (KME).

ECT currently recommends approval of the Revised Concept Pan for Wetlands. ECT recommends that the Applicant address the items noted in the *Wetland and Watercourse Comments* section of this letter prior to approval of the Final Site Plan.

The proposed development is located at the northeast corner of Twelve Mile Road and Meadowbrook Road, in Section 12. The Plan continues to propose both single-family residential lots (42 lots on 13.60 acres) as well as a commercial, restaurant and retail center (3.05 acres). An area of park trailhead is also proposed on the Plan totaling 3.28 acres. In addition the Plan proposes two (2) storm water detention basins as well as associated roads, parking and utilities. The total site acreage is approximately 20 acres. The proposed development has been divided in the following three (3) development areas:

- Beacon Hill Meadows (Residential);
- The Shoppes at Beacon Hill (Commercial);
- Beacon Hill Park Trailhead.

Based on our review of the application, Novi aerial photos, Novi GIS, the City of Novi Official Wetlands and Woodlands Maps (see Figure 1, attached), and a previously-completed on-site wetland boundary verification, it appears as if this proposed project site contains both Regulated Wetlands and Regulated Woodlands. This property includes a total of seven (7) individual wetland areas, including an open water/emergent wetland and a stream/drain which is tributary to the Walled Lake Branch of the Rouge River.

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769-3164

On-Site Wetland Evaluation & Proposed Wetland Impacts

ECT has previously completed a wetland boundary verification for this property. At that time, ECT verified the on-site wetland boundaries with the applicant’s wetland consultant, King & MacGregor Environmental, Inc. (KME). The nine (9) existing wetland areas that were flagged on-site (Wetlands A, B, C, D, E, EE, F, G, and H) are indicated on the current Plan along with the wetland flag number information. The wetlands appear to be accurately portrayed on the Plan. Wetland A is a forested wetland. Wetland B is a scrub-shrub wetland. Wetland C is an emergent/scrub-shrub wetland located along Meadowbrook Road. Wetlands D, E, G and H are emergent/wet meadow wetlands. Wetland EE is a larger emergent/open water wetland located in the southwest corner of the proposed development site, and Wetland F is an emergent/open water wetland associated with the drain that runs from west to east within the southern portion of the site. It should be noted that emergent Wetlands D, G, and H are of marginal quality and offer little in terms of environmental benefit (i.e., habitat and storm water storage capacity appear to be minimal/limited).

The emergent wetland area associated with the existing drain (Wetlands EE and F) is currently dominated by invasive species including common reed and reed canary grass. The adjoining upland is also dominated by invasive species such as common buckthorn. The Plan proposes a plan to treat some of these areas for invasive species and restore with native wildflower and plant species.

Currently, the Plan appears to indicate impacts to seven (7) of the nine (9) on-site wetlands. Based on the *Wetland and Wetland Buffer Impact Table*, Wetlands A and C will not be impacted. The other wetlands will be filled for the purpose of construction, or otherwise impacted as part of the stream channel relocation/abandonment, etc.

The Plan also proposes to abandon approximately 350 lineal feet of the existing stream channel (Wetland F). The stream will be relocated via approximately 485 lineal feet of constructed stream channel design. The following table summarizes the existing wetlands and the proposed wetland impacts as listed on the *Wetland & Buffer Impact Plan* (Sheet SP-14):

Table 1. Existing Wetlands and Proposed Wetland Impacts

Development Area	Wetland ID	Wetland Area	Impact Area	Estimated Impact Volume	City Regulated?	MDEQ Regulated?
		Sq. Ft. (Acres)	Sq. Ft. (Acres)	(cubic yards)		
Meadows						
	A	4,572 (0.10)	N/A	N/A	YES	No
	B	382 (0.009)	382 (0.009)	Not Indicated	YES	No
	C	5,903 (0.14)	N/A	N/A	YES	No
	D	770 (0.02)	770 (0.02)	Not Indicated	YES	YES

<i>Development Area</i>	<i>Wetland ID</i>	<i>Wetland Area</i>	<i>Impact Area</i>	<i>Estimated Impact Volume</i>	<i>City Regulated?</i>	<i>MDEQ Regulated?</i>
Shoppes						
	G	783 (0.02)	783 (0.02)	Not Indicated	YES	YES
	H	876 (0.02)	876 (0.02)	Not Indicated	YES	YES
Park Trailhead						
	E	4,477 (0.10)	3,092 (0.07)	Not Indicated	YES	YES
	EE	48,121 (1.10)	3,223 (0.07)	Not Indicated	YES	YES
	F	1,411 (0.03)	1,411 (0.03)	Not Indicated	YES	YES
TOTAL	--	67,295 (1.54)	10,537 (0.24)	Not Indicated	--	--

It should be noted that the Plan indicates an impact to Wetland E, however no wetland impact hatch is shown on the *Wetland & Buffer Impact Plan* (Sheet SP-14). The applicant should review and revise as necessary on the Plan. Currently, the Plan proposes impacts to 0.24-acre of the total 1.54 acres of on-site wetland (i.e., approximately **16%** of the existing wetlands).

The following table summarizes the existing wetland/watercourse setbacks and the proposed wetland/watercourse setback impacts as listed on the Plan:

Table 2. Proposed 25-Foot Wetland/Watercourse Buffer Impacts

<i>Development Area</i>	<i>Wetland Buffer ID</i>	<i>Wetland Buffer Area</i>	<i>Buffer Impact Area</i>	<i>Estimated Impact Volume (cubic yards)</i>	<i>City Regulated?</i>	<i>MDEQ Regulated?</i>
		<i>Sq. Ft. (Acres)</i>	<i>Sq. Ft. (Acres)</i>			
Meadows						
	A	6,753 (0.16)	N/A	N/A	YES	No
	B	3,985 (0.09)	3,985 (0.09)	Not Indicated	YES	No
	C	12,456 (0.29)	1,775 (0.04)	N/A	YES	No
	D	5,347 (0.12)	5,347 (0.12)	Not Indicated	YES	No
Shoppes						
	G	*	*	Not Indicated	YES	No

Development Area	Wetland Buffer ID	Wetland Buffer Area	Buffer Impact Area	Estimated Impact Volume	City Regulated?	MDEQ Regulated?
	H	8,950 (0.21)	8,950 (0.21)	Not Indicated	YES	No
Park Trailhead						
	E	**	**	Not Indicated	YES	No
	EE	48,516 (1.11)	23,285 (0.53)	Not Indicated	YES	No
	F	**	**	Not Indicated	YES	No
TOTAL	0.02	86,007 (1.98)	43,342 (0.99)	Not Indicated	--	--

**Included in buffer area for Wetland H.*
***Included in buffer area for Wetland EE.*

Currently, the Plan proposes impacts to 0.99-acre of the total 1.98 acres of on-site wetland buffer (i.e., approximately **50%** of the existing wetland buffer). It should be noted however that the applicant proposes a total of 28,636 square feet (0.66-acre) of restoration within these areas. Therefore 0.66-acre of the 0.99-acre of wetland buffer disturbance is essentially temporary in nature. The Plan proposes:

- 28,636 square feet (0.66-acre) of temporary buffer impacts (67% of all buffer impacts);
- 0.33-acre of permanent buffer impacts (33% of all buffer impacts).

As noted above, the Plan proposes to restore the degraded functions of both the wetland and the stream located on the southern end of the site. The following restoration activities are proposed:

- Approximately 350-feet of the existing stream channel will be abandoned;
- A relocated stream channel (approximately 480-feet) will be constructed using natural channel design;
- The applicant proposes to improve plant species diversity within the existing open water/emergent wetland through mechanical and chemical treatment of common reed and reed canary grass. These areas will be replanted with native species, including wildflowers and trees.
- The applicant proposes to restore the 25-foot natural features setback in all areas of temporary impact. A 25-foot watercourse setback is also proposed along the drain that is to be relocated. It should be noted that the area of proposed seed mix does not appear to be graphically indicated on the *Stream Relocation Plan* (Sheet W-3). The hatching associated

with the proposed seed mix does not appear to be indicated on the Plan. The applicant should review and clarify this information on the Plan.

The current Plan does include the construction of two (2) storm water management basins located adjacent to the existing stream/proposed relocated stream channel. As indicated on the Preliminary Utility Plan, there will be proposed storm water outlets to the relocated stream/wetland.

Wetland Permit Requirements

It appears as though a MDEQ Wetland Permit, a City of Novi *Non-Minor Wetland Use Permit* and a City *Authorization to Encroach the 25-Foot Wetland Setback* would be required for any proposed impacts to site wetlands. In a letter from the Michigan Department of Environmental Quality (MDEQ) dated January 20, 2016, it is stated that Wetlands D, E, EE, F, G, and H are regulated by the MDEQ as they are either directly connected or contiguous (i.e., within 500 feet) to the stream. Wetlands A, B, and C are not regulated by the MDEQ as they are greater than 500 feet from the stream/drain and otherwise isolated and less than five acres in size.

Regarding the stream, DEQ and the applicant's wetland consultant (KME) agreed upon a representative cross section, bankfull bench and stream reach slope that can be used to measure morphological data for the relocated channel. The bankfull bench must be at least three (3) bankfull widths wide to maintain a stable floodplain. The MDEQ notes that by applying these dimensions and maintaining a slope greater than or equal to 0.2% the stream work will meet MDEQ permit requirements for the stream relocation.

In addition, the MDEQ states that the proposed wetland restoration would be an improvement over the dense common reed (*Phragmites australis*) 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.

As noted above, 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.

Wetland and Watercourse Comments

The following are repeat comments from our Wetland Review of the Concept/Planned Rezoning Overlay Plan (PSP15-0108) letter dated August 3, 2015. The current status of each follows in ***bold italics***:

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.

This comment still applies. As noted in the applicant's wetland consultant's (KME) plan review comments response letter dated January 11, 2016, an on-site pre-application meeting was held with MDEQ staff members Sue Tepatti and Patrick Durack on December 3, 2015. The MDEQ confirmed that the Agency would have jurisdiction over the stream and wetlands within 500 feet of the stream and that a MDEQ permit will be required for the proposed development. KME states that the applicant intends to apply for all necessary wetland related approvals from the City of Novi.

The Applicant should provide a copy of the MDEQ Wetland Use Permit application to the City (and our office) for review and a copy of the approved permit upon issuance. A City Wetland and Watercourse Permit cannot be issued until this information has been provided.

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".

This comment has been addressed. The applicant's wetland consultant (KME) has noted that the wetlands and wetland buffers proposed for impact are primarily emergent/wet meadow wetland habitats that are largely dominated by non-native wetland plant species. The Plan proposes the establishment of open space adjoin the wetlands to remain. The Plan appears to propose wetland and watercourse buffers/setbacks equal to or greater than 25 feet.

It should be noted that the area of proposed seed mix associated with the wetland buffers does not appear to be graphically indicated on the Stream Relocation Plan (Sheet W-3). The hatching associated with the proposed seed mix does not appear to be indicated on the Plan. The applicant should review and clarify this information on the Plan.

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.

This comment has been addressed. As noted in Comment #2, the area of proposed seed mix associated with the wetland buffers does not appear to be graphically indicated on the Stream Relocation Plan (Sheet W-3). The hatching associated with the proposed seed mix does not

appear to be indicated on the Plan. The applicant should review and clarify this information on the Plan.

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.

This comment has been addressed. See Comments #2 and #3 above.

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.

This comment still applies. The Plan currently proposes impacts to 0.24-acre of the total 1.54 acres of on-site wetland (i.e., approximately 16% of the existing wetlands). The MDEQ states that the proposed wetland restoration would be an improvement over the dense common reed (Phragmites australis) vegetation that currently surrounds the pond on site. ECT agrees with the MDEQ's comments and believes that the proposed Plan and the associated wetland and wetland buffer restoration aspects will provide an improvement to the natural features to remain on-site.

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.

This comment has been addressed. The Plan proposes impacts to four small, isolated wetlands (B, D, G, and H) and a small portion of the largest wetland on-site; Wetland EE. Many of the areas of impact are dominated by invasive wetland plant species. The applicant has provided an acceptable wetland and wetland buffer restoration plan.

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

The applicant's wetland consultant (KME) notes that that the applicant is willing to provide conservation easements for remaining areas of wetland, wetland buffer setback and woodland areas which will not conflict with future use of the property by residents and visitors. All proposed conservation easements shall be graphically indicated on the Plan. Please review and revise the Plan as necessary.

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.

The Applicant should provide a copy of the MDEQ Wetland Use Permit application to the City (and our office) for review and a copy of the approved permit upon issuance. A City of Novi Wetland Permit cannot be issued prior to receiving this information. Based on a search of the MDEQ's Coastal and Inland Waters Permit Information System (CIWPIS), there does not appear to be an active file associated with this project location. This information is required before the City of Novi can issue a Wetland Permit.

This comment still applies. As noted in Comment #1, the Applicant should provide a copy of the MDEQ Wetland Use Permit application to the City (and our office) for review and a copy of the approved permit upon issuance. A City Wetland and Watercourse Permit cannot be issued until this information has been provided.

Please also consider the following additional comment:

9. The MDEQ has noted that the treatment of the Phragmites to the west of the property (i.e., at Tollgate Farms) was also discussed and encouraged in order to help ensure the restoration will be successful on the project site. The applicant should address this request from MDEQ and provide any associated restoration details on the Plan as necessary. Applicable notes should be added to the Wetland Restoration Plan as necessary.

Conclusion

In general, the small, isolated wetlands that are proposed to be impacted provide minimal environmental benefit in terms of wildlife habitat and/or stormwater storage capacity, etc. These wetlands and wetland buffers are primarily emergent/wet meadow wetland habitats that are largely dominated by non-native wetland plant species. The Plan does propose the establishment of open space adjoining the wetlands to remain. The Plan appears to propose wetland and watercourse buffers/setbacks equal to or greater than 25 feet. ECT agrees with the MDEQ's comment stating that the proposed wetland restoration would be an improvement over the dense common reed (*Phragmites australis*) vegetation that currently surrounds the pond on site.

Recommendation

ECT currently recommends approval of the Revised Concept Pan for Wetlands. ECT recommends that the Applicant address the items noted in the *Wetland and Watercourse Comments* section of this letter prior to approval of the Final Site Plan.

Beacon Hill (JSP15-0008)
Wetland Review of the Revised Concept Plan (PSP16-0018)
March 21, 2016
Page 9 of 12

If you have any questions regarding the contents of this letter, please contact us.

Respectfully submitted,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.



Peter Hill, P.E.
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cc: Sri Komaragiri, AICP, City of Novi Planner
Richelle Leskun, City of Novi Planning Assistant
Rick Meader, City of Novi, Landscape Architect
Kirsten Mellem, City of Novi Planner

Attachments: Figure 1 & Site Photos

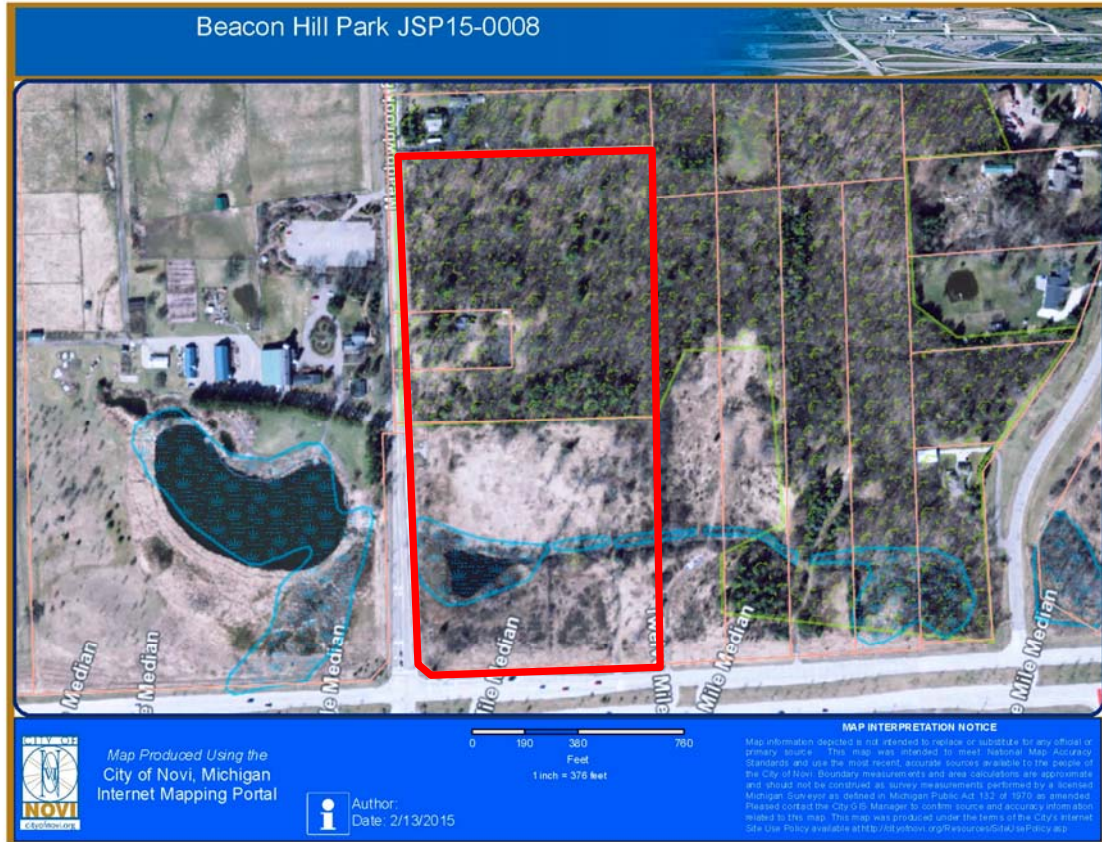


Figure 1. City of Novi Regulated Wetland & Woodland Map (approximate property boundary shown in red). Regulated Woodland areas are shown in green and regulated Wetland areas are shown in blue).

Site Photos



Photo 1. Looking southeast at open water wetland (Wetland EE) on Southside of the subject property (July 24, 2015).



Photo 2. Looking north at forested wetland (Wetland A) along northern edge of the subject property (July 24, 2015).



Photo 3. Looking east at emergent wetland (Wetland C) on the west side of the subject property (July 24, 2015).



Photo 4. Looking south towards Wetland E on the west side of the subject property (July 24, 2015).

WOODLANDS REVIEW

April 19, 2016

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

Re: Beacon Hill (JSP15-0008)
Woodland Review of the Revised Conceptual Site Plan #3 (PSP16-0036)

Dear Ms. McBeth:

Environmental Consulting & Technology, Inc. (ECT) has reviewed the Preliminary Site Plan for Beacon Hill Park, Beacon Hill Meadows, The Shoppes at Beacon Hill, and Beacon Hill Park Trailhead prepared by Zeimet-Wozniak & Associates, Inc. dated April 13, 2016 (Plan). The Plan was reviewed for conformance with the City of Novi Woodland Protection Ordinance Chapter 37. ECT has previously visited the site for the purpose of a woodland and wetland verification. The purpose of the Woodlands Protection Ordinance is to:

- 1) *Provide for the protection, preservation, replacement, proper maintenance and use of trees and woodlands located in the city in order to minimize disturbance to them and to prevent damage from erosion and siltation, a loss of wildlife and vegetation, and/or from the destruction of the natural habitat. In this regard, it is the intent of this chapter to protect the integrity of woodland areas as a whole, in recognition that woodlands serve as part of an ecosystem, and to place priority on the preservation of woodlands, trees, similar woody vegetation, and related natural resources over development when there are no location alternatives;*
- 2) *Protect the woodlands, including trees and other forms of vegetation, of the city for their economic support of local property values when allowed to remain uncleared and/or unharvested and for their natural beauty, wilderness character of geological, ecological, or historical significance; and*
- 3) *Provide for the paramount public concern for these natural resources in the interest of health, safety and general welfare of the residents of the city.*

ECT currently recommends approval of the Revised Conceptual Site Plan #3 for Woodlands. ECT recommends that the Applicant address the items noted in the *Woodland Comments* section of this letter prior to approval of the Final Stamping Set Plan.

The proposed development is located at the northeast corner of Twelve Mile Road and Meadowbrook Road, in Section 12. The Plan continues to propose both single-family residential lots (42 lots on 13.60 acres) as well as a commercial, restaurant and retail center (3.05 acres). An area of park trailhead is also proposed on the Plan totaling 3.28 acres. In addition the Plan proposes two (2) storm water

detention basins as well as associated roads, parking and utilities. The total site acreage is approximately 20 acres. The proposed development has been divided in the following three (3) development areas:

- Beacon Hill Meadows (Residential);
- The Shoppes at Beacon Hill (Commercial);
- Beacon Hill Park Trailhead.

The applicant has noted that the total number of trees being removed for the site development is unchanged from the last submittal. The number of Woodland Replacement trees required did increase as the applicant was not correctly calculating the Woodland Replacement credits required for trees containing multiple stems. This oversight has been corrected on the current Plan.

In addition, to working with City Staff and Consultants the applicant has been working to have a proposed development that will be complimentary to the Tollgate Education Center property directly to the west. The applicant notes that this collaboration has resulted in an open space running north and south the entire length of Meadowbrook Road, adjacent to the 5-acre park within the development and the deeper open space park area in front of the commercial section of the property. The community is now designed to have 42% open space. The applicant has specifically revised the Plan to include an additional 50-foot landscaped natural corridor along Meadowbrook Road. The Tollgate Education Center has strongly recommended that the applicant propose landscaping on the east side of Meadowbrook Road that presents a natural progression of plantings from low shrubs to medium understory plantings to canopy trees, in order to provide a natural appearance. In order to accomplish this, the applicant will require flexibility in the proposed landscaping along Meadowbrook Road. The Plan proposes to move some of the required landscaping into the Meadowbrook Road right-of-way in order to preserve the existing vegetation and provide a natural buffer while maintaining site distance visibility.

Onsite Woodland Evaluation

ECT has reviewed the City of Novi Official Woodlands Map and completed an onsite Woodland Evaluation on July 24, 2015. Previously, the applicant's engineer, Zeimet Wozniak & Associates (ZWA), noted in a supplemental letter dated June 22, 2015 that the locations of the regulated trees shown on previously-submitted plans are depicted with a tree symbol and that this information was obtained from an old tree survey. They stated that a new tree survey, meeting the requirements of the City of Novi Woodland Ordinance/Code of Ordinances, would be addressed on subsequent site plan submittals. The tree identification and sizing list was updated by King & MacGregor Environmental, Inc. (KME) in October of 2015.

It should be noted that the surveyed trees were marked with white spray paint in the field (see Site Photos). The current Plan now includes a *Tree Removal List* (Sheet SP-4). Based on field notes recorded in July 2015, ECT was able to verify the specific information with regard to tree location, species and diameters of trees observed in the field. In general, the tree survey and *Tree Removal List* appear to accurately represent the on-site trees.

The entire site is approximately 20 acres, with City-regulated Woodland mapped across approximately the northern half of the project site (see Figure 1). A portion of the southern half of the site contains previously-disturbed/cleared land located along Twelve Mile Road. The highest quality woodlands on site are found in the northern section of the site. Some of these areas also contain regulated wetlands (i.e. forested wetland area located along the northern project boundary). It appears as if the proposed site development will involve a significant amount of impact to regulated woodlands and will include a significant number of tree removals.

On-site woodland within the project area consists of species including box elder (*Acer negundo*), Norway maple (*Acer platanoides*), silver maple (*Acer saccharinum*), bitternut hickory (*Carya ovata*), white ash (*Fraxinus americana*), black walnut (*Juglans nigra*), eastern red cedar (*Juniperus virginiana*), apple (*Malus pumila*), eastern white pine (*Pinus strobus*), common pear (*Pyrus communis*), American basswood (*Tilia americana*), Scotch pine (*Pinus sylvestris*), eastern cottonwood (*Populus deltoides*), black cherry (*Prunus serotina*), choke cherry (*Prunus virginiana*), American elm (*Ulmus americana*), Siberian elm (*Ulmus pumila*), and red elm (*Ulmus rubra*). Based on the existing tree data provided by KME, about 50% of the on-site tree species consist of American basswood, Scotch pine and black walnut.

Based on the information provided on the Plan, the maximum size tree diameters on the site are a 63-inch diameter-at-breast-height (DBH) white willow (Tree No. 603) and a 51-inch dbh white willow (Tree No. 764). Both of these trees will be removed for the proposed site development. The average diameter of the surveyed trees is 13 inches. In terms of habitat quality and diversity of tree species, the on-site areas of mapped City regulated woodlands are of fair quality. Although many areas of the site have been previously disturbed, the wooded areas (i.e., approximately the north ½ of the development site) provide a fair level of environmental benefit. As the on-site woodlands are connected to a larger wooded system that extends both east and north of the subject property. In terms of a scenic asset, wind block, noise buffer or other environmental asset, the woodland areas proposed for impact are considered to be of good quality.

After our woodland evaluation and review of the tree survey information provided by KME the applicant's woodland consultant, there are nineteen (19) trees on-site that meet the minimum caliper size for designation as a specimen tree. These trees include:

- Tree #60, 24" silver maple (measures ≥24", the minimum caliper size for specimen trees);
- Tree #743, 24" silver maple (measures ≥24", the minimum caliper size for specimen trees);
- Tree #703, 24.3" black walnut (measures ≥24", the minimum caliper size for specimen trees);
- Tree #707, 24.8" black walnut (measures ≥24", the minimum caliper size for specimen trees);
- Tree #251, 25.3" black walnut (measures ≥24", the minimum caliper size for specimen trees);
- Tree #169, 25.4" black walnut (measures ≥24", the minimum caliper size for specimen trees);
- Tree #23, 26"/17" black cherry (measures ≥24", the minimum caliper size for specimen trees);
- Tree #737, 26" Norway maple (measures ≥24", the minimum caliper size for specimen trees);
- Tree #171, 27.3" black walnut (measures ≥24", the minimum caliper size for specimen trees);
- Tree #700, 27.4" black walnut (measures ≥24", the minimum caliper size for specimen trees);

- Tree #268, 28.2" black walnut (measures $\geq 24"$, the minimum caliper size for specimen trees);
- Tree #283, 28.3" American basswood (measures $\geq 24"$, the minimum caliper size for specimen trees);
- Tree #702, 28.4" black walnut (measures $\geq 24"$, the minimum caliper size for specimen trees);
- Tree #252, 28.8" American basswood (measures $\geq 24"$, the minimum caliper size for specimen trees);
- Tree #168, 29.8" black walnut (measures $\geq 24"$, the minimum caliper size for specimen trees);
- Tree #20, 30.5" black walnut (measures $\geq 24"$, the minimum caliper size for specimen trees);
- Tree #676, 34.2" black walnut (measures $\geq 24"$, the minimum caliper size for specimen trees);
- Tree #300, 35.2" American basswood (measures $\geq 24"$, the minimum caliper size for specimen trees);
- Tree #170, 38.0" American basswood (measures $\geq 24"$, the minimum caliper size for specimen trees);

Of these nineteen (19) potential specimen trees, two (2) of these trees (11% of the potential specimen trees) will be saved (Tree No. 268 and No. 283) and seventeen (17) are proposed for removal (89% removal of the potential specimen trees). The Applicant should be aware of the City's Specimen Tree Designation as outlined in Section 37-6.5 of the Woodland Ordinance. This section states that:

"A person may nominate a tree within the city for designation as a historic or specimen tree based upon documented historical or cultural associations. Such a nomination shall be made upon that form provided by the community development department. A person may nominate a tree within the city as a specimen tree based upon its size and good health. Any species may be nominated as a specimen tree for consideration by the planning commission.

Any tree designated by the planning commission as an historical or specimen tree shall be so depicted on an historic and specimen tree map to be maintained by the community development department. The removal of any designated specimen or historic tree will require prior approval by the planning commission. Replacement of the removed tree on an inch for inch basis may be required as part of the approval".

Proposed Woodland Impacts and Replacements

It appears as if the proposed development will cover a large portion of the site and will involve a considerable number of tree removals. The current Plan, however has incorporated some revisions to the site design that have resulted in the removal of fewer total regulated trees. The current Plan now includes several areas of woodland preservation. This includes areas along the northern section, the northwest section and a section in the center of the Beacon Hill Meadows section of the development.

It should be noted that the tree survey information provided by KME appears to include a total of **577** total trees surveyed on the development site. Of these existing trees, some are non-woodland trees (i.e., not located within City of Novi Regulated Woodland per the City's Regulated Woodland Map). It should be noted that the City of Novi replacement requirements pertain to regulated trees with DBH greater than or equal to 8 inches located within areas mapped as regulated woodland on the City of

Novi Regulated Woodland Map. The woodland replacement requirements also pertain to any tree 36" inches or greater DBH.

The following table (Table 1) summarizes the proposed Woodland Impacts. This information is from Sheet LS-7 of 7:

Table 1. Proposed Woodland Impacts and Required Replacements

	Meadows	Shoppes	Trailhead	Total
Total No. of existing trees to be removed	432	22	6	460
No. of exempt trees (dead or poor condition) to be removed	55	3	-	58
No. of regulated trees removed	377	19	6	402
Trees 8"-11" DBH removed	183	3	1	187
Trees 11"-20" DBH removed	144	9	4	157
Trees 20"-29" DBH removed	17	3	-	20
Trees 30" or greater DBH removed	4	1	1	6
No. of trees with multi-trunk	29	3	-	32
Total No. of tree replacement credits required	657	48	13	718
187 – (8"-11" DBH) x 1-Tree Credit	183	3	1	187
157 – (11"-20" DBH) x 2-Tree Credit	288	18	8	314
20 – (20"-29" DBH) x 3-Tree Credit	51	9	-	60
6 – (30" DBH or greater) x 4-Tree Credit	16	4	4	24
32 – (Multi-trunk) 954.3"/8"	1191	14	-	133
Total No. of tree replacement credits provided	422.5	15	280.5	718
351 – 2 ½" deciduous tree @ 1.0 credits	174	15	162	351 (49%)
151 – 7' evergreen @ .67 credits	75	-	26	101 (14%)
102 – 10' evergreen @ 1.5 credits	109.5	-	43.5	153 (21%)
681 – 30" shrubs @ 6:1 credits	64	-	49	113 (16%)

For multi-stemmed trees, Woodland Replacements required are calculated by summing the d.b.h. of each stem greater than or equal to 8 inches and dividing the total by 8. All fractional Woodland Replacements required are rounded up to the nearest whole tree replacement. This calculation was not calculated properly on the previous plan submittal but has been corrected on the current Plan.

The current plan also includes a *Tree Replacement Plan Material List* on Sheet LS-7 of 7. This applicant has provided a list of proposed deciduous and coniferous trees as well as shrubs that are intended to meet the Woodland Replacement credit requirements. The proposed species all appear to be acceptable.

The current Plan does appear to quantify the proposed number, location and species of the trees that are intended to satisfy the total required Woodland Replacement Tree credits. As noted in the City's Landscape Review of the Revised Conceptual Site Plan #3 letter dated April 15, 2016, the applicant has proposed the use (in some areas of the site) of Woodland Replacement Trees in place of the required Street Trees along Meadowbrook Road and Twelve Mile, and the use of upsized evergreen trees (i.e., 10-foot height) for additional Woodland Replacement credits. Like the City's Landscape architect, ECT supports the alternate streetscape landscaping that the applicant has developed through coordinated work with the Tollgate Education Center. ECT supports the use of Woodland Replacement Trees and shrubs as currently proposed in order to supplement the required trees along Meadowbrook Road but we do not support the replacement of Street Tree requirements with Woodland Replacement Trees. Please see the specific comments in the Landscape Review letter dated April 15, 2016.

It should be noted that the City's Landscape Design Manual specifically forbids the upsizing of Woodland Replacement Trees for additional Credits (Section 3.c.(2)). The applicant can, however, request a deviation as part of the PRO agreement. ECT and the City Landscape Architect support the use of some upsizing with credit within the PRO in order to provide additional landscape interest and screening along Meadowbrook Road and along the south edge of the residential portion of the development to provide additional screening from the commercial part of the development. That being said, the number of additional credits through the use of upsized Woodland Replacement trees (i.e., 10-foot evergreen trees) seems excessive.

As noted in the Landscape Review, 40% of the proposed evergreen trees are upsized from 7' to 10' height (i.e., 102 of 253 total evergreens are proposed as 10' tall trees). Consistent with the Landscape Design Manual, the applicant is requesting 1.5 credits per 10' tree instead of the 0.67-credit per tree that is normally allowed for a 7' tall evergreen per the Woodland Ordinance. The result is an additional 85 Woodland Replacement Credits on 102 replacement trees provided. As this is a PRO, there can be some flexibility in terms of allowing extra Woodland Replacement credits for the use of upsized trees which are normally not allowed by the Landscape Design Manual. ECT does support the use of some upsized evergreens in this development in order to provide more interest along Meadowbrook Road and more screening between the residential and commercial portions of the site. ECT concurs with the Landscape Review in that the amount of credits for the providing upsized evergreen trees as Woodland Replacement trees should be limited. The total benefit in credits derived from the "upsized" Woodland Replacement material should not be more than 33% of the total number of "upsized" trees planted.

With regard to the location of woodland replacement trees, the Woodland Ordinance states:

- *The location of replacement trees shall be subject to the approval of the planning commission and shall be such as to provide the optimum enhancement, preservation and protection of woodland areas. Where woodland densities permit, tree relocation or replacement shall be within the same woodland areas as the removed trees. Such woodland replanting shall not be used for the landscaping requirements of the subdivision ordinance or the zoning landscaping;*
- *Where the tree relocation or replacement is not feasible within the woodland area, the relocation or replacement plantings may be placed elsewhere on the project property;*

- *Where tree relocation or replacement is not feasible within the woodland area, or on the project property, the permit grantee shall pay into the city tree fund monies for tree replacement in a per tree amount representing the market value for the tree replacement as approved by the planning commission. The city tree fund shall be utilized for the purpose of woodland creation and enhancement, installation of aesthetic landscape vegetation, provision of care and maintenance for public trees and provision and maintenance of specialized tree care equipment. Tree fund plantings shall take place on public property or within right-of-ways with approval of the agency of jurisdiction. Relocation or replacement plantings may be considered on private property provided that the owner grants a permanent conservation easement and the location is approved by the planning commission;*
- *Where replacements are installed in a currently non-regulated woodland area on the project property, appropriate provision shall be made to guarantee that the replacement trees shall be preserved as planted, such as through a conservation or landscape easement to be granted to the city. Such easement or other provision shall be in a form acceptable to the city attorney and provide for the perpetual preservation of the replacement trees and related vegetation.*

The applicant shall demonstrate that the all proposed Woodland Replacement Trees will be guaranteed to be preserved as planted with a conservation easement or landscape easement to be granted to the city.

City of Novi Woodland Review Standards and Woodland Permit Requirements

Based on Section 37-29 (*Application Review Standards*) of the City of Novi Woodland Ordinance, the following standards shall govern the granting or denial of an application for a use permit required by this article:

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. Therefore, the preservation of woodlands, trees, similar woody vegetation, and related natural resources shall have priority over development when there are location alternatives.

In addition, *“The removal or relocation of trees shall be limited to those instances when necessary for the location of a structure or site improvements and when no feasible and prudent alternative location for the structure or improvements can be had without causing undue hardship”.*

There are a significant number of replacement trees required for the construction of the proposed development. Some degree of impact to on-site woodlands is deemed unavoidable if this property is to be developed for the proposed use, however, the current Plan appears to clear all proposed lots of existing trees. The current site development plan appears to propose the removal of 460 of the 577 total on-site trees. Of these removals, 402 are regulated trees.

Woodland Comments

ECT recommends that the Applicant address the items noted below prior to submitting the Final Stamping Set Plan:

1. ECT supports the use of Woodland Replacement Trees and shrubs as currently proposed in order to supplement the required trees along Meadowbrook Road but we do not support the replacement of Street Tree requirements with Woodland Replacement Trees. Please see the specific comments in the Landscape Review letter dated April 15, 2016.
2. The City's Landscape Design Manual specifically forbids the upsizing of Woodland Replacement Trees for additional Credits (Section 3.c.(2)). The applicant can, however, request a deviation as part of the PRO agreement. ECT and the City Landscape Architect support the use of some upsizing with credit within the PRO in order to provide additional landscape interest and screening along Meadowbrook Road and along the south edge of the residential portion of the development to provide additional screening from the commercial part of the development. That being said, the number of additional credits through the use of upsized Woodland Replacement trees (i.e., 10-foot evergreen trees) seems excessive.

As noted in the Landscape Review, 40% of the proposed evergreen trees are upsized from 7' to 10' height (i.e., 102 of 253 total evergreens are proposed as 10' tall trees). Consistent with the Landscape Design Manual, the applicant is requesting 1.5 credits per 10' tree instead of the 0.67-credit per tree that is normally allowed for a 7' tall evergreen per the Woodland Ordinance. The result is an additional 85 Woodland Replacement Credits on 102 replacement trees provided. ECT concurs with the Landscape Review in that the amount of credits for the providing upsized evergreen trees as Woodland Replacement trees should be limited. The total benefit in credits derived from the "upsized" Woodland Replacement material should not be more than 33% of the total number of "upsized" trees planted.

3. The Applicant is encouraged to provide preservation/conservation easements for any areas of remaining woodland.
4. The Applicant is encouraged to provide woodland conservation easements for any areas containing woodland replacement trees, if applicable. It is not clear how all of the proposed replacement trees will be guaranteed in perpetuity. As stated in the woodland ordinance:

Where replacements are installed in a currently non-regulated woodland area on the project property, appropriate provision shall be made to guarantee that the replacement trees shall be preserved as planted, such as through a conservation or landscape easement to be granted to the city. Such easement or other provision shall be in a form acceptable to the city attorney and provide for the perpetual preservation of the replacement trees and related vegetation.

5. 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. All replacement trees shall be two and one-half (2 ½) inches caliper or greater deciduous trees or 6-foot tall (minimum) coniferous trees. Deciduous replacement trees shall be provided at a

1:1 replacement ratio and coniferous replacement trees shall be provided at a 1.5:1 replacement ratio. See the Woodland Tree Replacement Chart (attached) for acceptable replacement tree species.

6. 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.

Based on a successful inspection of the installed on-site Woodland Replacement trees, seventy-five percent (75%) of the original Woodland Financial Guarantee shall be returned to the Applicant. Twenty-five percent (25%) of the original Woodland Replacement financial guarantee will be kept for a period of 2-years after the successful inspection of the tree replacement installation as a *Woodland Maintenance and Guarantee Bond*.

7. 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.
8. 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*.

Recommendation

ECT currently recommends approval of the Revised Conceptual Site Plan #3 for Woodlands. ECT recommends that the Applicant address the items noted in the *Woodland Comments* section of this letter prior to approval of the Final Stamping Set Plan.

If you have any questions regarding the contents of this letter, please contact us.

Respectfully submitted,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.



Peter Hill, P.E.
Senior Associate Engineer



Matthew Carmer
Senior Scientist
Professional Wetland Scientist #1746

cc: Sri Komaragiri, AICP, City of Novi Planner
Richelle Leskun, City of Novi Planning Assistant
Rick Meader, City of Novi, Landscape Architect

Kirsten Mellem, City of Novi Planner

Attachments: Figure 1 and Site Photos



Figure 1. City of Novi Regulated Wetland & Woodland Map (approximate property boundary shown in red). Regulated Woodland areas are shown in green and regulated Wetland areas are shown in blue).

Site Photos



Photo 1. Looking southwest towards southwest corner of site. Site is relatively open and previously disturbed (ECT, July 24, 2015).



Photo 2. Looking west along north side of existing drain area. (ECT, July 24, 2015).



Photo 3. Tree No. 251 (25.3" black walnut) located in the north-central section of the site. This potential specimen tree is proposed for removal (ECT, July 24, 2015).



Photo 4. Higher quality trees located in the northern section of the site; near existing forested wetland area (ECT, July 24, 2015).

Site Photos



Photo 1. Looking southwest towards southwest corner of site. Site is relatively open and previously disturbed (ECT, July 24, 2015).



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Photo 4. Higher quality trees located in the northern section of the site; near existing forested wetland area (ECT, July 24, 2015).

Woodland Tree Replacement Chart

(from Chapter 37 Woodlands Protection)

(All canopy trees to be 2.5" cal or larger, evergreens as listed)

Common Name	Botanical Name
Black Maple	Acer nigrum
Striped Maple	Acer pennsylvanicum
Red Maple	Acer rubrum
Sugar Maple	Acer saccharum
Mountain Maple	Acer spicatum
Ohio Buckeye	Aesculus glabra
Downy Serviceberry	Amelanchier arborea
Yellow Birch	Betula alleghaniensis
Paper Birch	Betula papyrifera
American Hornbeam	Carpinus caroliniana
Bitternut Hickory	Carya cordiformis
Pignut Hickory	Carya glabra
Shagbark Hickory	Carya ovata
Northern Hackberry	Celtis occidentalis
Eastern Redbud	Cercis canadensis
Yellowwood	Cladrastis lutea
Beech	Fagus sp.
Thornless Honeylocust	Gleditsia triacanthos inermis
Kentucky Coffeetree	Gymnocladus dioica
Walnut	Juglans sp.
Eastern Larch	Larix laricina
Sweetgum	Liquidambar styraciflua
Tuliptree	Liriodendron tulipifera
Tupelo	Nyssa sylvatica
American Hophornbeam	Ostrya virginiana
White Spruce_(1.5:1 ratio) (6' ht.)	Picea glauca
Black Spruce_(1.5:1 ratio) (6' ht.)	Picea mariana
Red Pine	Pinus resinosa
White Pine_(1.5:1 ratio) (6' ht.)	Pinus strobus
American Sycamore	Platanus occidentalis
Black Cherry	Prunus serotina
White Oak	Quercus alba
Swamp White Oak	Quercus bicolor
Scarlet Oak	Quercus coccinea
Shingle Oak	Quercus imbricaria
Burr Oak	Quercus macrocarpa
Chinkapin Oak	Quercus muehlenbergii
Red Oak	Quercus rubra
Black Oak	Quercus velutina
American Bladdernut	Staphylea trifolia
Bald Cypress	Taxodium distichum
American Basswood	Tilia americana
Hemlock (1.5:1 ratio) (6' ht.)	Tsuga canadensis

TRAFFIC REVIEW

Memorandum

To	Barbara McBeth, AICP	Page	1
CC	Sri Komaragiri, Kirsten Mellem, Brian Coburn, Jeremy Miller, Richelle Leskun		
Subject	JSP 15-0008 – Beacon Hill – Revised Concept – Traffic Review		
From	Matt Klawon, PE		
Date	March 18, 2016		

The revised concept site plan was reviewed to the level of detail provided and AECOM **recommends approval** for the applicant to move forward with the condition that the comments provided below are adequately addressed to the satisfaction of the City.

GENERAL COMMENTS

1. The applicant, Ivanhoe Companies, is proposing to develop a 21 acre parcel in the northeast quadrant of 12 Mile Road and Meadowbrook Road. The proposed development would be mixed-use and could include 42 residential lots, retail/restaurant and recreation/park elements.
2. The parcel is currently zoned RA (Residential Acreage) and the applicant is requesting a PRO approval to accommodate the proposed mixed-use development (B-3, General Business, and RM-1, Multiple Family Residential).

TRAFFIC IMPACTS

1. A full-scale Traffic Impact Statement (TIS) was included with the most recent submittal. Comments regarding the TIS can be found in a separate letter intended to specifically summarize and address the TIS.

EXTERNAL SITE ACCESS AND OPERATIONS

The following comments relate to the external interface between the proposed development and the surrounding roadway(s).

1. Provide dimensions for the nose offset, boulevard length, and entering and exiting radii of the divided entrance at Hummingdale Blvd.
2. Provide dimensions for the entering and exiting radii of the two driveways of the commercial development along 12 Mile Road.
3. Tapers are required at both driveways to the commercial development on 12 Mile Road, based on the volumes indicated in the TIS.
 - a. The west driveway already has a taper.
 - b. The east driveway is close to the property line and may require additional right-of-way to install a properly designed taper.

4. Provide sight distance measurements at the driveway entrances along Meadowbrook Road and 12 Mile Road.
5. Driveway spacing meets the requirements provided by the City's Code of Ordinances.
6. The number of site access drives is adequate.
7. The emergency access gate does not meet the required widths shown in Figure VIII-K of Chapter 11 of the City's Code of Ordinances.

INTERNAL SITE OPERATIONS

The following comments relate to the on-site design and traffic flow operations.

1. General traffic flow
 - a. Provide turning radii in order to confirm that large trucks and emergency vehicles are able to access and maneuver throughout the site.
 - b. Please provide details describing the location and dimensions of the proposed loading zones for the commercial portion of the development.
 - c. Provide additional dimensions for drive-thru lanes including turning radii and the amount of stacking spaces provided.
2. Parking facilities
 - a. The amount of parking spaces provided is generally in compliance with the City of Novi standards. Additional review will be required once the tenant is determined and the number of spaces is finalized.
 - b. Please provide:
 - i. Additional parking space dimensions, such as width.
 - ii. Additional details and dimensions to the handicap accessible parking area.
 - iii. Width, length, and radii of parking end islands.
 - iv. Clarification on the proposed locations of the various curb & gutter designs.
 - c. Consider providing bicycle parking for the commercial area in addition to the bicycle parking provided for the proposed park.
3. Road and aisle widths meet City requirements; however, turning radii dimensions are needed for most curves (including the eyebrow designs) through the development.
4. Sidewalk Requirements
 - a. Provide details such as width, ADA compliant ramp design, and connections and stubs for the proposed sidewalks in both the residential and commercial development.
5. Proposed signing and pavement markings were not included in this submittal and will be reviewed in detail when provided.

Should the City or applicant have questions regarding this review, they should contact AECOM for further clarification.

Sincerely,

AECOM

A handwritten signature in blue ink, appearing to read "Sterling Frazier".

Sterling J. Frazier, E.I.T.
Reviewer, Traffic/ITS Engineer

A handwritten signature in blue ink, appearing to read "Matthew G. Klawon".

Matthew G. Klawon, PE
Manager, Traffic Engineering and ITS Engineering Services

TRAFFIC IMPACT STUDY REVIEW

March 18, 2016

Barbara McBeth, AICP
 Deputy Director of Community Development
 City of Novi
 45175 W. 10 Mile Road
 Novi, MI 48375

**SUBJECT: Beacon Hill Park Traffic Impact Statement (TIS) Review
 JSP15-0008**

Dear Ms. McBeth,

The traffic impact statement (TIS) was reviewed to the level of detail provided and AECOM **recommends approval** for the applicant to move forward with the condition that the comments provided below are adequately addressed to the satisfaction of the City.

General TIS Comments:

1. Analysis was performed for three separate scenarios. The three different scenarios accounted for different land uses of the commercial section of the development. Scenario one was used for analysis based upon the highest number of trips.

Table 1: Trip Generation Scenarios

Scenario	ITE Code	Land Use	Unit	Units	Daily Trips	AM Peak Hour Trips	PM Peak Hour Trips
1	934	Fast-Food with Drive Thru	1000 SF GFA	2.2	1091	100	72
	210	Single-Family Detached Housing	Dwelling Units	42	473	39	48
	826	Specialty Retail Center	1000 SF GFA	3.7	164	N/A	10
	912	Drive-in Bank	1000 SF GFA	3.25	481	39	79
	932	High Turnover (sit down) Restaurant	1000 SF GFA	2.4	305	26	24
	TOTAL					2,514	204
2	934	Fast-Food with Drive Thru	1000 SF GFA	2.5	1091	100	72
	210	Single-Family Detached Housing	Dwelling Units	42	473	39	48
	826	Specialty Retail Center	1000 SF GFA	16.5	714	N/A	44
	TOTAL					2,444	153
3	210	Single-Family Detached Housing	Dwelling Units	42	473	39	48
	826	Specialty Retail Center	1000 SF GFA	22	975	N/A	60
	TOTAL					1,448	39

2. For estimating the number of PM peak hour trips for a specialty retail center the average rate was used over the fitted curve equation. However, the fitted curve equation would be valid and also more conservative in each given scenario yielding roughly a 30% increase in the amount of estimated trips.
3. There are inconsistencies between the trip generation values from letters dated February 18, 2016 and January 8, 2015. The values for Table 3 Concept 1 in the older letter, do not align with Scenario 1 from the newest letter. Callouts and comments can be found in a mark-up version of the letters attached to this letter.
4. The PM peak hour EB volumes are incorrect in Table 1. The correct volumes can be found in Attachment C of the TIS. Analyses were performed using the correct volumes and ratios.
5. For the largest scenario (Concept C), the site is expected to generate 2,209 daily trips with 204 trips during the AM peak hour and 233 trips during the PM peak hour.
6. Traffic counts over the past 10 years were used to determine background growth. Traffic volumes in the vicinity of the development fluctuated from year to year. Ultimately a growth rate of 1% was used for three years as the full buildout date is late 2017. The growth rate was applied over three years because the most recent volume data was from 2014.
7. Peak hour turning movement counts were collected on June 10, 2014. The peak hours from the turning movement counts were determined to be 7:45-8:45 AM and 4:45-5:45 PM.
8. Trips were distributed onto 12 Mile Road and Meadowbrook Road by the ratio of approach volumes to total intersection volume per each peak hour.
9. Synchro was used to produce the Level of Service (LOS) for each approach of every impacted intersection for existing, background, and future traffic. Analysis was only performed on the largest trip generator of the three scenarios, which was scenario number one in Table 1 above.
 - a. Typically, the lowest acceptable LOS rating for an intersection is a LOS of D.
 - i. All existing, background, and future LOS conditions were acceptable.
 - ii. The northbound right turn movement is LOS D for both existing and future conditions during the AM peak hour.
 - iii. Both the northbound right turn and through movements are LOS D for existing and future conditions during the PM peak hour.
 - iv. Generally, intersection approaches operated at LOS C or above for existing and future conditions.
10. A right turn taper at both of the site driveways on 12 Mile Road are required.

In conclusion, the TIS was found to be acceptable and the LOS at study intersections is expected to remain at acceptable levels under proposed conditions. Should the City or applicant have questions regarding this review, they should contact AECOM for further clarification.

Sincerely,

AECOM



Sterling J. Frazier, E.I.T.
Reviewer, Traffic/ITS Engineer



Matthew G. Klawon, PE
Manager, Traffic Engineering and ITS
Engineering Services

TRAFFIC IMPACT STUDY FROM APPLICANT



HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

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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
Trip Generation Comparison

HRC Job No. 20150819.23

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 – 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 thru – 2,200 square feet
 - b. specialty retail center – 3,700 square feet
 - c. drive-in bank – 3,250 square feet
 - d. hi-turnover (sit down) restaurant – 2,400 square feet
2. Mixed commercial – 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 thru – 2,200 square feet
 - b. specialty retail center – 16,100 square feet
3. Single commercial - specialty retail center – 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 – Transportation Department

CHS/chs

Attachment

pc: HRC; File



**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		PM Peak Hour Trip Rate		Unit	Daily Trips	AM Peak Hour Trips		PM Peak Hour Trips	
					In	Out	In	Out			In	Out	In	Out
					Rate		Rate				Equation		Equation	
1	934	Fast-Food with Drive Thru	1000 SF	Rate	Rate		Rate		2.2	1091	100		72	
		Adjacent Street Traffic	GFA		51%	49%	52%	48%			51	49	37	35
	210	Single-Family Detached Housing	Dwelling Units	Equation	Equation		Equation		42	473	39		48	
		Adjacent Street Traffic			25%	75%	63%	37%			10	29	30	18
	826	Specialty Retail Center	1000 SF	Rate	N/A		Rate		3.7	164			10	
		Adjacent Street Traffic	GFA				44%	56%			0	0	4	6
	912	Drive-in Bank	1000 SF	Rate	Rate		Rate		3.25	481	39		79	
		Adjacent Street Traffic	GFA		57%	43%	50%	50%			22	17	40	39
	932	Hi-Turnover (sit down) restaurant	1000 SF	Rate	Rate		Rate		2.4	305	26		24	
		Adjacent Street Traffic	GFA		55%	45%	60%	40%			14	12	14	10
Total									2,209	97	107	125	108	
2	934	Fast-Food with Drive Thru	1000 SF	Rate	Rate		Rate		2.2	1091	100		72	
		Adjacent Street Traffic	GFA		51%	49%	52%	48%			51	49	37	35
	210	Single-Family Detached Housing	Dwelling Units	Equation	Equation		Equation		42	473	39		48	
		Adjacent Street Traffic			25%	75%	63%	37%			10	29	30	18
	826	Specialty Retail Center	1000 SF	Rate	N/A		Rate		16.1	714			44	
		Adjacent Street Traffic	GFA				44%	56%			0	0	19	25
	Total									2,278	61	78	86	78
3	210	Single-Family Detached Housing	Dwelling Units	Equation	Equation		Equation		42	473	39		48	
		Adjacent Street Traffic			25%	75%	63%	37%			10	29	30	18
	826	Specialty Retail Center	1000 SF	Rate	N/A		Rate		22.0	975			60	
		Adjacent Street Traffic			GFA			44%			56%	0	0	26
	Total									1,448	10	29	56	52



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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
Traffic Impact Study

HRC Job No. 20150819.02

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
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

*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		WB		NB		EB		Total
		Meadowbrook		12 Mile		Meadowbrook		12 Mile		
		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.

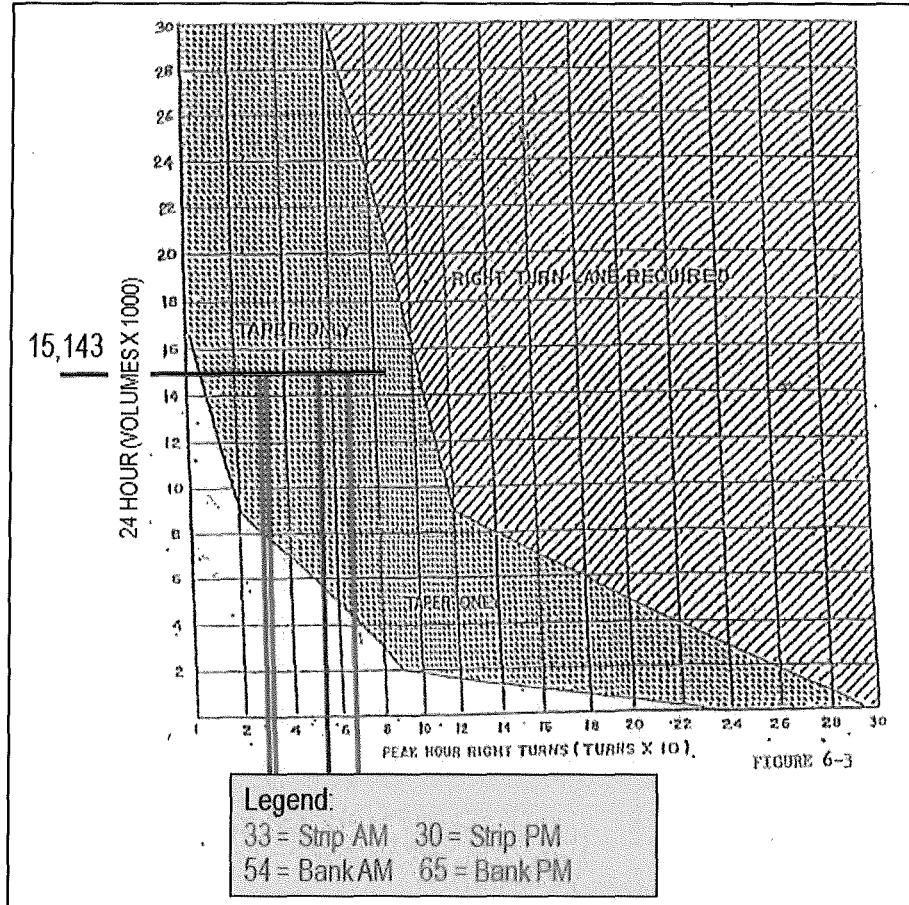


Figure 3. RCOC Figure 6-3, Warrants for Right Turn Lane or Taper

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 1 site 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

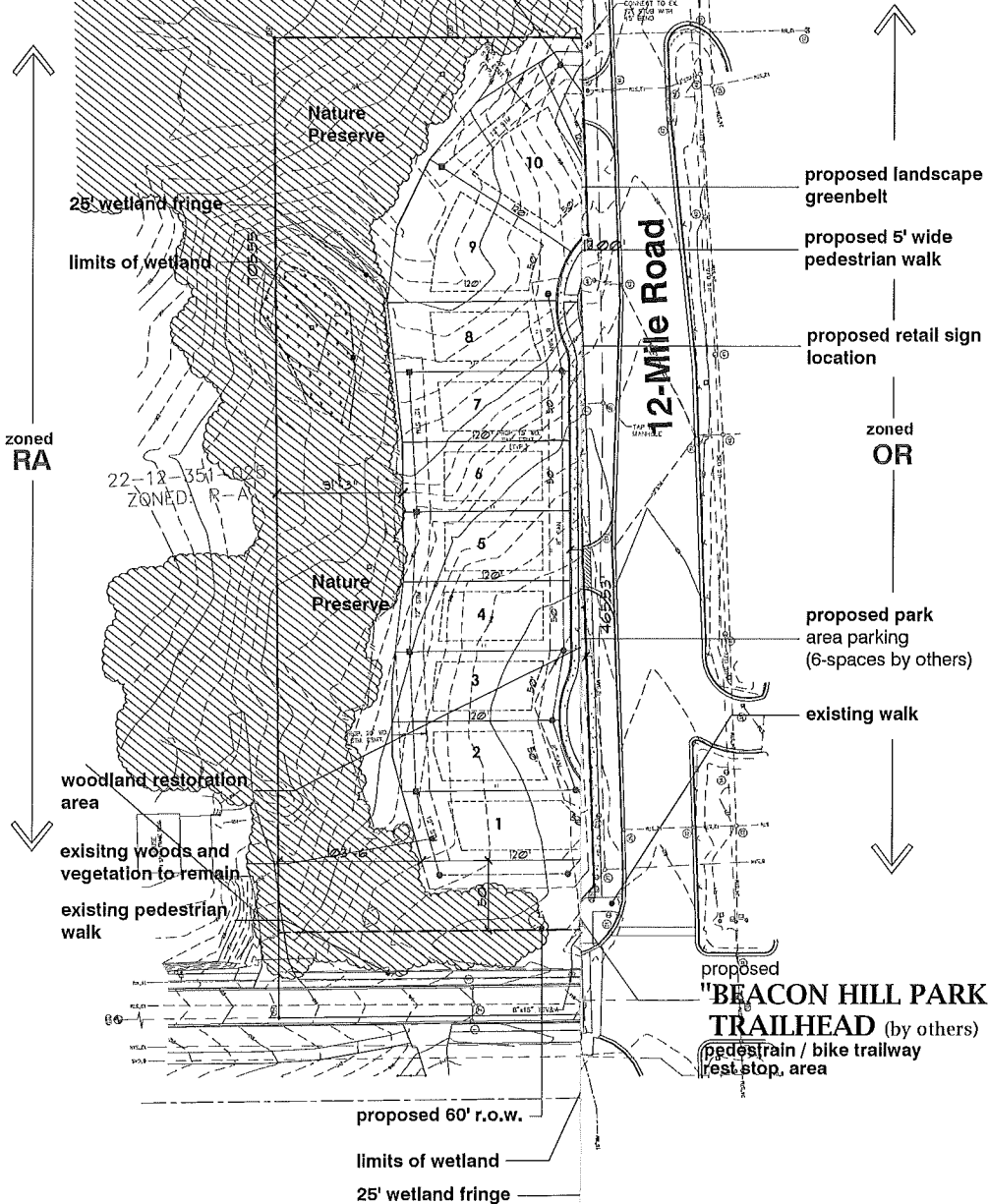
pc: HRC; File



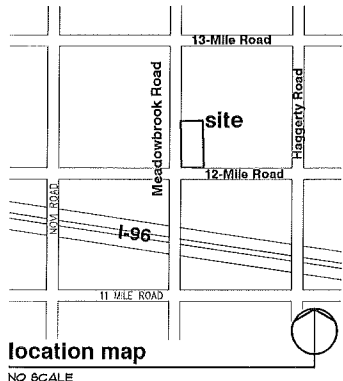
Attachment A: Site Plan

proposed
"BEACON HILL Meadows"
 a planned single family community
 (13.60 ACRES - 42 LOTS)

"SHOPPES at BEACON HILL"
 neighborhood commercial, restaurant
 & retail center (3.25 ACRES)



site plan for:
"Beacon Hill"
 City of Novi, Michigan



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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:

site plan

job no./issue/revision date:

LS15.010.06	SPA	6-26-2015
LS15.010.12	SPA	12-28-2015

drawn by:

JP, KH

checked by:

FP

date:

6-10-2015

notice:

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Do Not scale drawings. Use figured dimensions only



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:

LS15.010.06

sheet no:

SP-6



Attachment B: AADT



Transportation Data Management System

List View All DIRs All Approaches

Record 1 of 1 Goto Record go

Location ID	7322	MPO ID	15112
Type	SPOT	HPMS ID	
On NHS		On HPMS	
LRS ID		LRS Loc Pt.	
SF Group	01	Route Type	
AF Group		Route	
GF Group			
Funct'l Class	-	Milepost	
Located On	MEADOWBROOK		
Loc On Alias			
AT	TWELVE MILE		
	PR	MP	PT
656706	4.005	63059963	

More Detail

STATION DATA

Directions: NB

AA DT

Year	AA DT	DHV-30	K %	D %	PA	BC	Src
2014	4,969						
2011	6,057						
2009	4,850						
2005	5,670						

Travel Demand Model										
Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV	

VOLUME COUNT			
Date	Int	Total	
Mon 7/14/2014	60	5,476	
Tue 7/12/2011	60	6,744	
Mon 3/23/2009	60	4,944	
Wed 6/15/2005	60	6,535	

VOLUME TREND	
Year	Annual Growth
2014	-6%
2011	12%
2009	-4%

SPEED				
Date	Int	Pace	85th	Total
No Data				

CLASSIFICATION			
Date	Int	Total	
No Data			

WEIGH-IN-MOTION			
Date	Axles	Avg GWV	Total
No Data			

PER VEHICLE			
Date	Axles	85th	Total
Could not load data			

GAP			
Date	Int	Total	



Transportation Data Management System

List View All DIRs All Approaches

Record 1 of 1 Goto Record go

Location ID	7324	MPO ID	313
Type	SPOT	HPMS ID	
On NHS		On HPMS	
LRS ID		LRS Loc Pt.	
SF Group	01	Route Type	
AF Group		Route	
GF Group			
Funct'l Class	-	Milepost	
Located On	TWELVE MILE		
Loc On Allas			
AT	MEADOWBROOK		
	PR	MP	PT
662106	3.018	63060041	

More Detail

STATION DATA

Directions:

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2014	13,125						
2011	12,686						
2009	12,570						
2008	13,990						
2005	12,910						

Travel Demand Model										
Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV	

VOLUME COUNT			
	Date	Int	Total
	Mon 7/14/2014	60	14,481
	Tue 7/12/2011	60	14,131
	Mon 3/23/2009	60	12,837
	Tue 6/24/2008	60	15,468
	Tue 6/14/2005	60	14,553

VOLUME TREND	
Year	Annual Growth
2014	1%
2011	0%
2009	-10%
2008	3%

SPEED				
Date	Int	Pace	85th	Total
No Data				

CLASSIFICATION			
Date	Int	Total	
No Data			

WEIGH-IN-MOTION			
Date	Axles	Avg GVW	Total
No Data			

PER VEHICLE				
Date	Axles	85th	Total	
Could not load data				



Attachment C: Turning Movement Counts

Hubbell, Roth & Clark, Inc.

801 Broadway NW, Suite 215
Grand Rapids, MI 49504
(616) 454-4286

Job Number: 20150819
Counted By:
Weather: Clear
Location: Meadowbrook/ 12 Mile

File Name : 12_Mile_Combined
Site Code : 00000000
Start Date : 6/10/2014
Page No : 1

Groups Printed- Unshifted

Start Time	MEADOWBROOK Southbound					12 MILE Westbound					MEADOWBROOK Northbound					12 MILE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	0	23	5	0	28	0	69	2	0	71	0	13	61	0	74	0	296	48	0	344	517
07:15 AM	0	25	16	1	42	0	92	3	0	95	0	15	61	0	76	0	307	62	0	369	582
07:30 AM	0	43	18	0	61	0	121	9	0	130	0	15	75	0	90	0	365	62	0	427	708
07:45 AM	0	65	16	1	82	0	160	5	0	165	0	29	91	0	120	0	324	100	0	424	791
Total	0	156	55	2	213	0	442	19	0	461	0	72	288	0	360	0	1292	272	0	1564	2598
08:00 AM	0	44	9	0	53	0	154	6	0	160	0	22	86	0	108	0	348	99	0	447	768
08:15 AM	0	62	17	0	79	0	150	18	0	168	0	28	104	0	132	0	310	98	0	408	787
08:30 AM	0	40	14	1	55	0	172	14	0	186	0	24	81	0	105	0	302	90	0	392	738
08:45 AM	0	41	11	0	52	0	183	11	0	194	0	20	56	0	76	0	214	82	0	296	618
Total	0	187	51	1	239	0	659	49	0	708	0	94	327	0	421	0	1174	369	0	1543	2911

*** BREAK ***

04:00 PM	0	26	15	0	41	0	390	17	0	407	0	54	139	0	193	0	244	72	0	316	957
04:15 PM	0	27	14	0	41	0	375	12	0	387	0	26	84	0	110	0	219	65	0	284	822
04:30 PM	0	19	22	0	41	0	462	22	0	484	0	61	161	0	222	0	237	74	0	311	1058
04:45 PM	0	35	9	0	44	0	554	22	0	576	0	56	108	0	164	0	216	86	0	302	1086
Total	0	107	60	0	167	0	1781	73	0	1854	0	197	492	0	689	0	916	297	0	1213	3923
05:00 PM	0	39	14	0	53	0	513	32	0	545	0	61	180	0	241	0	261	82	0	343	1182
05:15 PM	0	38	10	0	48	0	585	26	0	611	0	65	134	0	199	0	229	88	0	317	1175
05:30 PM	0	44	11	0	55	0	531	31	0	562	0	53	123	0	176	0	239	87	0	326	1119
05:45 PM	0	25	9	0	34	0	563	38	0	601	0	39	78	0	117	0	210	95	0	305	1057
Total	0	146	44	0	190	0	2192	127	0	2319	0	218	515	0	733	0	939	352	0	1291	4533
Grand Total	0	596	210	3	809	0	5074	268	0	5342	0	581	1622	0	2203	0	4321	1290	0	5611	13965
Apprch %	0	73.7	26	0.4		0	95	5	0		0	26.4	73.6	0		0	77	23	0		
Total %	0	4.3	1.5	0	5.8	0	36.3	1.9	0	38.3	0	4.2	11.6	0	15.8	0	30.9	9.2	0	40.2	

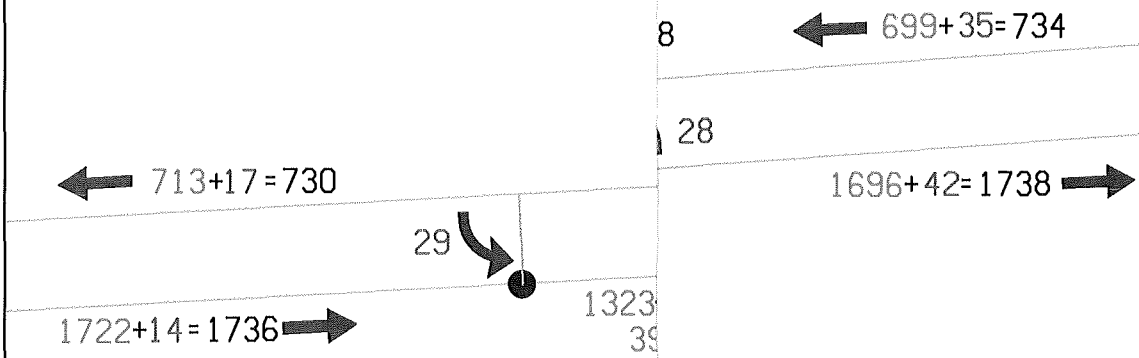
Start Time	MEADOWBROOK Southbound					12 MILE Westbound					MEADOWBROOK Northbound					12 MILE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:45 AM	0	65	16	1	82	0	160	5	0	165	0	29	91	0	120	0	324	100	0	424	791
08:00 AM	0	44	9	0	53	0	154	6	0	160	0	22	86	0	108	0	348	99	0	447	768
08:15 AM	0	62	17	0	79	0	150	18	0	168	0	28	104	0	132	0	310	98	0	408	787
08:30 AM	0	40	14	1	55	0	172	14	0	186	0	24	81	0	105	0	302	90	0	392	738
Total Volume	0	211	56	2	269	0	636	43	0	679	0	103	362	0	465	0	1284	387	0	1671	3084
% App. Total	0	78.4	20.8	0.7		0	93.7	6.3	0		0	22.2	77.8	0		0	76.8	23.2	0		
PHF	.000	.812	.824	.500	.820	.000	.924	.597	.000	.913	.000	.888	.870	.000	.881	.000	.922	.968	.000	.935	.975

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:45 AM

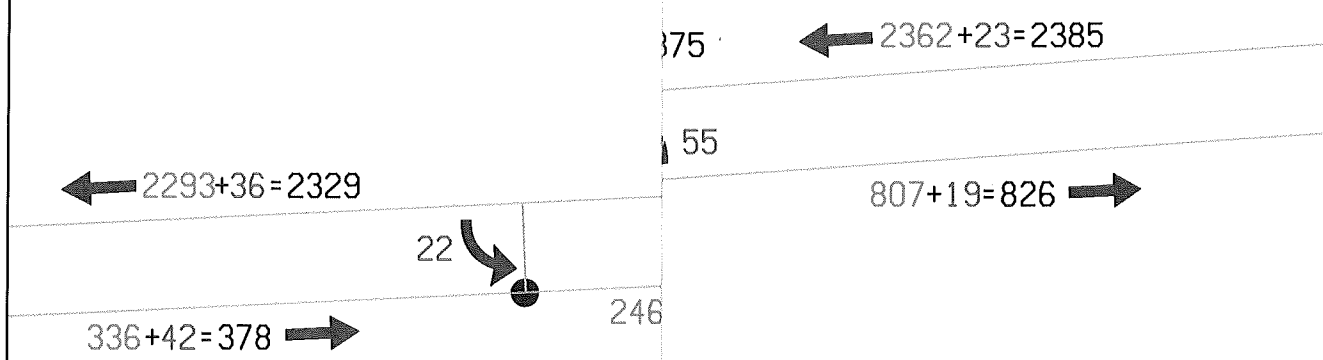


Attachment D: Trip Assignment Figures



HUBBELL, ROTH & CLARK, INC.
CONSULTING ENGINEERS
AM TRAFFIC VOLUMES

SHEET NO.
1
OF 2



HUBBELL, ROTH & CLARK, INC.
CONSULTING ENGINEERS
PM TRAFFIC VOLUMES

SHEET NO.
2
OF 2



Attachment E: Synchro Reports

HCM Signalized Intersection Capacity Analysis
1001: Meadowbrook & 12 Mile WB

AM Existing
12/15/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑		↑↑			↑	↑
Traffic Volume (vph)	0	0	0	0	636	43	0	103	0	0	211	56
Future Volume (vph)	0	0	0	0	636	43	0	103	0	0	211	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.9	4.9		5.6			8.6	8.6
Lane Util. Factor					0.91	1.00		0.95			1.00	1.00
Frt					1.00	0.85		1.00			1.00	0.85
Flt Protected					1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)					5085	1583		3539			1863	1583
Flt Permitted					1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)					5085	1583		3539			1863	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.91	0.91	0.91	0.88	0.88	0.88	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	0	699	47	0	117	0	0	257	68
RTOR Reduction (vph)	0	0	0	0	0	21	0	0	0	0	0	46
Lane Group Flow (vph)	0	0	0	0	699	26	0	117	0	0	257	22
Turn Type					NA	Perm		NA			NA	Perm
Protected Phases					6			4			8	
Permitted Phases						6						8
Actuated Green, G (s)					67.1	67.1		42.4			39.4	39.4
Effective Green, g (s)					67.1	67.1		42.4			39.4	39.4
Actuated g/C Ratio					0.56	0.56		0.35			0.33	0.33
Clearance Time (s)					4.9	4.9		5.6			8.6	8.6
Vehicle Extension (s)					3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)					2843	885		1250			611	519
v/s Ratio Prot					c0.14			0.03			c0.14	
v/s Ratio Perm						0.02						0.01
v/c Ratio					0.25	0.03		0.09			0.42	0.04
Uniform Delay, d1					13.5	11.9		25.9			31.4	27.5
Progression Factor					0.71	0.50		0.00			1.00	1.00
Incremental Delay, d2					0.2	0.1		0.1			0.5	0.0
Delay (s)					9.8	6.0		0.1			31.9	27.5
Level of Service					A	A		A			C	C
Approach Delay (s)		0.0			9.6			0.1			31.0	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1001: Meadowbrook & 12 Mile WB

AM Background
12/15/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↑		↑↑			↑	↑
Traffic Volume (vph)	0	0	0	0	655	44	0	106	0	0	217	58
Future Volume (vph)	0	0	0	0	655	44	0	106	0	0	217	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.9	4.9		5.6			8.6	8.6
Lane Util. Factor					0.91	1.00		0.95			1.00	1.00
Frt					1.00	0.85		1.00			1.00	0.85
Flt Protected					1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)					5085	1583		3539			1863	1583
Flt Permitted					1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)					5085	1583		3539			1863	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.91	0.91	0.91	0.88	0.88	0.88	0.82	0.82	0.82
Adj. Flow (vph)	0	0	0	0	720	48	0	120	0	0	265	71
RTOR Reduction (vph)	0	0	0	0	0	21	0	0	0	0	0	48
Lane Group Flow (vph)	0	0	0	0	720	27	0	120	0	0	265	23
Turn Type					NA	Perm		NA			NA	Perm
Protected Phases					6			4			8	
Permitted Phases						6						8
Actuated Green, G (s)					67.1	67.1		42.4			39.4	39.4
Effective Green, g (s)					67.1	67.1		42.4			39.4	39.4
Actuated g/C Ratio					0.56	0.56		0.35			0.33	0.33
Clearance Time (s)					4.9	4.9		5.6			8.6	8.6
Vehicle Extension (s)					3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)					2843	885		1250			611	519
v/s Ratio Prot					c0.14			0.03			c0.14	
v/s Ratio Perm						0.02						0.01
v/c Ratio					0.25	0.03		0.10			0.43	0.04
Uniform Delay, d1					13.6	11.9		26.0			31.6	27.5
Progression Factor					0.91	0.91		0.00			1.00	1.00
Incremental Delay, d2					0.2	0.1		0.2			0.5	0.0
Delay (s)					12.5	10.9		0.2			32.1	27.5
Level of Service					B	B		A			C	C
Approach Delay (s)		0.0			12.4			0.2			31.1	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1001: Meadowbrook & 12 Mile WB

AM Future
12/23/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑	↑		↑↑			↑	↑	
Traffic Volume (vph)	0	0	0	0	670	59	0	107	0	0	220	89	
Future Volume (vph)	0	0	0	0	670	59	0	107	0	0	220	89	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					4.9	4.9		5.6			8.6	8.6	
Lane Util. Factor					0.91	1.00		0.95			1.00	1.00	
Frt					1.00	0.85		1.00			1.00	0.85	
Flt Protected					1.00	1.00		1.00			1.00	1.00	
Satd. Flow (prot)					5085	1583		3539			1863	1583	
Flt Permitted					1.00	1.00		1.00			1.00	1.00	
Satd. Flow (perm)					5085	1583		3539			1863	1583	
Peak-hour factor, PHF	0.94	0.94	0.94	0.91	0.91	0.91	0.88	0.88	0.88	0.82	0.82	0.82	
Adj. Flow (vph)	0	0	0	0	736	65	0	122	0	0	268	109	
RTOR Reduction (vph)	0	0	0	0	0	29	0	0	0	0	0	73	
Lane Group Flow (vph)	0	0	0	0	736	36	0	122	0	0	268	36	
Turn Type					NA	Perm		NA			NA	Perm	
Protected Phases					6			4			8		
Permitted Phases						6						8	
Actuated Green, G (s)					67.1	67.1		42.4			39.4	39.4	
Effective Green, g (s)					67.1	67.1		42.4			39.4	39.4	
Actuated g/C Ratio					0.56	0.56		0.35			0.33	0.33	
Clearance Time (s)					4.9	4.9		5.6			8.6	8.6	
Vehicle Extension (s)					3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)					2843	885		1250			611	519	
v/s Ratio Prot					c0.14			0.03			c0.14		
v/s Ratio Perm						0.02						0.02	
v/c Ratio					0.26	0.04		0.10			0.44	0.07	
Uniform Delay, d1					13.6	11.9		26.0			31.6	27.7	
Progression Factor					1.00	1.00		0.00			1.00	1.00	
Incremental Delay, d2					0.2	0.1		0.2			0.5	0.1	
Delay (s)					13.9	12.0		0.2			32.1	27.8	
Level of Service					B	B		A			C	C	
Approach Delay (s)		0.0			13.7			0.2			30.9		
Approach LOS		A			B			A			C		
Intersection Summary													
HCM 2000 Control Delay			17.4		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.33										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						13.5		
Intersection Capacity Utilization			61.0%		ICU Level of Service						B		
Analysis Period (min)			15										

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 9001: Meadowbrook & Single Family Driveway

AM Future
 12/23/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	4	158	8	2	284
Future Volume (Veh/h)	25	4	158	8	2	284
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	4	172	9	2	309
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)			625			
pX, platoon unblocked	0.97	0.97			0.97	
vC, conflicting volume	490	176			181	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	455	131			136	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	100			100	
cM capacity (veh/h)	544	888			1400	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	31	181	311			
Volume Left	27	0	2			
Volume Right	4	9	0			
cSH	572	1700	1400			
Volume to Capacity	0.05	0.11	0.00			
Queue Length 95th (ft)	4	0	0			
Control Delay (s)	11.6	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	11.6	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			26.5%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 9003: 12 Mile WB & Bank Driveway

AM Future
 12/23/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑↑			↗
Traffic Volume (veh/h)	0	0	708	54	0	47
Future Volume (Veh/h)	0	0	708	54	0	47
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	770	59	0	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		637				
pX, platoon unblocked						
vC, conflicting volume	829				800	286
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	829				800	286
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	93
cM capacity (veh/h)	798				323	711
Direction, Lane #	WB 1	WB 2	WB 3	SB 1		
Volume Total	308	308	213	51		
Volume Left	0	0	0	0		
Volume Right	0	0	59	51		
cSH	1700	1700	1700	711		
Volume to Capacity	0.18	0.18	0.13	0.07		
Queue Length 95th (ft)	0	0	0	6		
Control Delay (s)	0.0	0.0	0.0	10.5		
Lane LOS					B	
Approach Delay (s)	0.0			10.5		
Approach LOS					B	
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			24.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
1002: Meadowbrook & 12 Mile EB

PM Existing
12/15/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑					↑	↑		↑↑	
Traffic Volume (vph)	0	239	87	0	0	0	0	235	545	0	156	0
Future Volume (vph)	0	239	87	0	0	0	0	235	545	0	156	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9					8.6	8.6		5.6	
Lane Util. Factor		0.91	1.00					1.00	1.00		0.95	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		1.00	
Satd. Flow (prot)		5085	1583					1863	1583		3539	
Flt Permitted		1.00	1.00					1.00	1.00		1.00	
Satd. Flow (perm)		5085	1583					1863	1583		3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	260	95	0	0	0	0	255	592	0	170	0
RTOR Reduction (vph)	0	0	37	0	0	0	0	0	427	0	0	0
Lane Group Flow (vph)	0	260	58	0	0	0	0	255	165	0	170	0
Turn Type		NA	Perm					NA	Perm		NA	
Protected Phases		2						8			4	
Permitted Phases			2						8			
Actuated Green, G (s)		73.1	73.1					33.4	33.4		36.4	
Effective Green, g (s)		73.1	73.1					33.4	33.4		36.4	
Actuated g/C Ratio		0.61	0.61					0.28	0.28		0.30	
Clearance Time (s)		4.9	4.9					8.6	8.6		5.6	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		3097	964					518	440		1073	
v/s Ratio Prot		c0.05						c0.14			0.05	
v/s Ratio Perm			0.04						0.10			
v/c Ratio		0.08	0.06					0.49	0.37		0.16	
Uniform Delay, d1		9.7	9.5					36.2	34.9		30.6	
Progression Factor		1.00	1.00					1.00	1.00		0.00	
Incremental Delay, d2		0.1	0.1					0.7	0.5		0.3	
Delay (s)		9.7	9.6					36.9	35.4		0.3	
Level of Service		A	A					D	D		A	
Approach Delay (s)		9.7			0.0			35.9			0.3	
Approach LOS		A			A			D			A	

Intersection Summary		
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.21	C
Actuated Cycle Length (s)	120.0	Sum of lost time (s)
Intersection Capacity Utilization	61.6%	13.5
Analysis Period (min)	15	ICU Level of Service
		B

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1002: Meadowbrook & 12 Mile EB

PM Background
12/15/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑					↑	↑		↑↑	
Traffic Volume (vph)	0	246	90	0	0	0	0	242	561	0	161	0
Future Volume (vph)	0	246	90	0	0	0	0	242	561	0	161	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9					8.6	8.6		5.6	
Lane Util. Factor		0.91	1.00					1.00	1.00		0.95	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		1.00	
Satd. Flow (prot)		5085	1583					1863	1583		3539	
Flt Permitted		1.00	1.00					1.00	1.00		1.00	
Satd. Flow (perm)		5085	1583					1863	1583		3539	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.81	0.81	0.81	0.91	0.91	0.91
Adj. Flow (vph)	0	262	96	0	0	0	0	299	693	0	177	0
RTOR Reduction (vph)	0	0	38	0	0	0	0	0	454	0	0	0
Lane Group Flow (vph)	0	262	58	0	0	0	0	299	239	0	177	0
Turn Type		NA	Perm					NA	Perm		NA	
Protected Phases		2						8			4	
Permitted Phases			2						8			
Actuated Green, G (s)		73.1	73.1					33.4	33.4		36.4	
Effective Green, g (s)		73.1	73.1					33.4	33.4		36.4	
Actuated g/C Ratio		0.61	0.61					0.28	0.28		0.30	
Clearance Time (s)		4.9	4.9					8.6	8.6		5.6	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		3097	964					518	440		1073	
v/s Ratio Prot		c0.05						c0.16			0.05	
v/s Ratio Perm			0.04						0.15			
v/c Ratio		0.08	0.06					0.58	0.54		0.16	
Uniform Delay, d1		9.7	9.5					37.2	36.8		30.7	
Progression Factor		1.00	1.00					1.00	1.00		0.00	
Incremental Delay, d2		0.1	0.1					1.6	1.4		0.3	
Delay (s)		9.7	9.6					38.8	38.2		0.3	
Level of Service		A	A					D	D		A	
Approach Delay (s)		9.7			0.0			38.4			0.3	
Approach LOS		A			A			D			A	

Intersection Summary		
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.24	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 13.5
Intersection Capacity Utilization	63.2%	ICU Level of Service B
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 1002: Meadowbrook & 12 Mile EB

PM Future
 1/8/2016



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑					↑	↑		↑↑	
Traffic Volume (vph)	0	307	93	0	0	0	0	245	564	0	163	0
Future Volume (vph)	0	307	93	0	0	0	0	245	564	0	163	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9					8.6	8.6		5.6	
Lane Util. Factor		0.91	1.00					1.00	1.00		0.95	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		1.00	
Satd. Flow (prot)		5085	1583					1863	1583		3539	
Flt Permitted		1.00	1.00					1.00	1.00		1.00	
Satd. Flow (perm)		5085	1583					1863	1583		3539	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.81	0.81	0.81	0.91	0.91	0.91
Adj. Flow (vph)	0	327	99	0	0	0	0	302	696	0	179	0
RTOR Reduction (vph)	0	0	39	0	0	0	0	0	395	0	0	0
Lane Group Flow (vph)	0	327	60	0	0	0	0	302	301	0	179	0
Turn Type		NA	Perm					NA	Perm		NA	
Protected Phases		2						8			4	
Permitted Phases			2						8			
Actuated Green, G (s)		73.1	73.1					33.4	33.4		36.4	
Effective Green, g (s)		73.1	73.1					33.4	33.4		36.4	
Actuated g/C Ratio		0.61	0.61					0.28	0.28		0.30	
Clearance Time (s)		4.9	4.9					8.6	8.6		5.6	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		3097	964					518	440		1073	
v/s Ratio Prot		c0.06						0.16			0.05	
v/s Ratio Perm			0.04						c0.19			
v/c Ratio		0.11	0.06					0.58	0.68		0.17	
Uniform Delay, d1		9.8	9.5					37.3	38.6		30.7	
Progression Factor		1.00	1.00					1.00	1.00		0.00	
Incremental Delay, d2		0.1	0.1					1.7	4.3		0.3	
Delay (s)		9.9	9.7					39.0	42.9		0.3	
Level of Service		A	A					D	D		A	
Approach Delay (s)		9.8			0.0			41.7			0.3	
Approach LOS		A			A			D			A	

Intersection Summary		
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.29	C
Actuated Cycle Length (s)	120.0	Sum of lost time (s)
Intersection Capacity Utilization	63.9%	13.5
Analysis Period (min)	15	ICU Level of Service
		B

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 9002: 12 Mile WB & Fast Food/Retail/Restaurant Driveway

PM Future
 1/8/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑↑			↗
Traffic Volume (veh/h)	0	0	2407	30	0	29
Future Volume (Veh/h)	0	0	2407	30	0	29
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	2616	33	0	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)		361				
pX, platoon unblocked						
vC, conflicting volume	2649				2632	888
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2649				2632	888
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	89
cM capacity (veh/h)	156				19	287
Direction, Lane #	WB 1	WB 2	WB 3	SB 1		
Volume Total	1046	1046	556	32		
Volume Left	0	0	0	0		
Volume Right	0	0	33	32		
cSH	1700	1700	1700	287		
Volume to Capacity	0.62	0.62	0.33	0.11		
Queue Length 95th (ft)	0	0	0	9		
Control Delay (s)	0.0	0.0	0.0	19.1		
Lane LOS				C		
Approach Delay (s)	0.0			19.1		
Approach LOS				C		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			57.2%		ICU Level of Service	B
Analysis Period (min)			15			



Attachment F: Resume of Preparer



Education

B.S., Civil Engineering,
Transportation
Wayne State University 2000

M.S., C.E., Transportation
Wayne State University 2002

**Professional Registration/
Certification**

Professional Engineer, Michigan
No. 51514

Professional Traffic Operations
Engineer
No. 1427

Affiliations

American Society of Civil Engineers

Institute of Transportation Engineers

Tau Beta Pi, The Engineering Honor
Society

Women's Transportation Seminar

Intelligent Transportation Society of
Michigan

Colleen Hill-Stramsak, P.E., PTOE

Associate

Ms. Hill-Stramsak has been with HRC since 2002. She manages the Traffic Engineering Department and provides municipal traffic engineering services to several communities in Michigan. She prepares transportation studies, impact studies for land developments, traffic crash analysis, traffic operations, safety studies and traffic maintenance plans. She is responsible for modeling and simulating transportation networks to optimize, also evaluating safety and operational improvements. Software proficiency in Highway Capacity Software, Synchro/SimTraffic, CORSIM, ACCUSIM II, MicroStation, Autodesk Map 3D, RODEL and VISSIM. Ms. Hill-Stramsak is also responsible for preparing traffic control and detours plans, traffic signal design and layout plans. She conducted the Older Driver Highway Design Workshop while at Wayne State University. She is a past member of the International Board of Direction and the Great Lakes District President (2012-2014) of the Institute of Transportation Engineers and a member of the Michigan Section.

Professional Experience

***I-75 & Sashabaw Road Interchange Improvements
Independence Township & RCOG***

Independence Township received authorization from the FHWA and MDOT to modify Exit 89 of I-75 and the intersection of Sashabaw and Waldon Roads, immediately south of the interchange. Project manager responsible for preliminary engineering, utility coordination, traffic and safety engineering (including traffic signal design for four locations), preparation of cost estimate and bid documents.

***Improvements to Belleville Road and Costco Truck Depot Driveway
V3 Companies***

Project manager responsible for the off-site improvements for a private development in Van Buren Township. The project was designed to Wayne County Department of Public Services standards. Plans included the design of pavement and grading, traffic signal, pavement markings and signs to be included in the permit and bid packages submitted to Van Buren Township and Wayne County.

***Tienken Road Rehabilitation, Adams to Livernois
Road Commission for Oakland County***

Rehabilitation of Tienken Road from Adams Road to the roundabout at Livernois Road. HRC was responsible for preliminary engineering, utility coordination, traffic and safety engineering, preparation of cost estimate and bid documents. QA/QC engineer for the traffic signals, maintenance of traffic, signing and pavement marking plans.

***Evergreen Road Reconstruction, 10 Mile to 11 Mile
City of Southfield***

Designed the reconstruction of 1.02 miles Evergreen Road to a four-lane boulevard, with two modern roundabouts, drainage, storm sewer, concrete pavement, curb, gutter, sidewalk and ramps, water main, landscaping, lighting, traffic signals, storm water retention and streetscaping. QA/QC engineer for traffic signals and construction assistance.

***Farmington Road Reconstruction, 10 Mile to 11 Mile
City of Farmington Hills***

Designed 1.0 mile reconstruction of 2-lane Farmington Road including bike lanes and pedestrian facilities in a rolling terrain. Project included new water main and was located adjacent to protected historical and



Colleen Hill-Stramsak, P.E., PTOE

Associate

utilizing Synchro software for the AM and PM peak hours of existing configuration and two conceptual designs, and analyzing vehicle queues on the crossovers in order to recommend storage length. Based on analyses, made recommendation for reconfiguring median to City of Berkley and MDOT. Assisted city staff with securing funding to make the geometric improvements.

West Avenue and Fourth Street Traffic Study

City of Jackson

Project manager to conduct a corridor analysis to investigate the appropriate corridor design in preparation for the reconstruction and rehabilitation of portions of West Avenue and Fourth Street. Project included studying laneage and width to maximize green space while maintaining acceptable traffic flow based on desires by area residents and businesses. Tasks included data collection, analysis of various options for the intersection of Fourth Street/Greenwood Avenue/Griswold Street to mitigate the existing congestion and safety issues and preparation of optimized signal timing plans for the entire network.

Site Circulation and Traffic Impact Assessment

Yeshiva Beth Yehudah Schools

A traffic study was performed for the proposed school expansion of Yeshiva Beth Yehudah at the 10 Mile Road campus in the City of Oak Park, Michigan. Extensive data collection was conducted to analyze the site access, circulation and parking needs at the existing girls' school and the preschool center. Recommendations were provided for future traffic operations, site access and student drop off and pick areas for the proposed school building.

University of Michigan Central Campus Transit Center

University of Michigan Architecture, Engineering and Construction Department

Engineering services to design and develop complete construction documents to reconstruct North University Avenue between Fletcher Street and Church Street and to provide shelters for major transit transfer point. Stakeholders include the City of Ann Arbor, Ann Arbor Transportation Authority (AATA) and the University of Michigan's Parking and Transportation Services.

Mixed Use Development in Northville Township

Real Estate interests Group, Inc.

Project manager for comprehensive traffic data collection for a proposed mixed use development in Northville Township. Work included two traffic signal warrant studies.

Traffic Impact and Parking Analysis for Heritage Park North

Grand Sakwa of Grand Blanc, LLC

Traffic Engineer for traffic impact analysis of 600,000 SF mixed commercial development in Grand Blanc Township to accompany rezoning request and subsequent site plan review. Study included data collection, trip generation and comparisons, trip assignment, capacity analysis of existing and future traffic conditions, parking analysis, signal optimization and recommendations. Conducted signal warrant analysis and access management review. Retained to develop alternatives for access issues, design the new traffic signal on Saginaw Road and modify traffic signal on Dort Highway.



Colleen Hill-Stramsak, P.E., PTOE

Associate

Owen Road Signal Optimization

City of Fenton

Project manager on a signal optimization study to coordinate and provide progression at eight signalized intersections along the Owen/Shiawassee Road corridor as part of a signal modernization project funded by CMAQ. Work included data collection, development and calibration of Synchro model, optimizing signal timing plans by time of day and red-lining existing permits. Two of the intersections are controlled by MDOT as they are ramps to/from US-23. All work was done in accordance with current MDOT

Oakland County Signal Systems Optimization Project (Phase 2)

Road Commission for Oakland County

Performed QA/QC for transportation networks modeled and optimized through this project. Calculated clearance intervals as per RCOC accepted practice. Performed safety analysis for over 160 study intersections, performed traffic crash pattern analysis and prepared recommendations for safety improvements. Prepared red-lined traffic signal timing plans. Also assisted with field checks of installed signal timing plans and prepared recommendations for revised signal timing.

Mack Traffic Signal Design

Wayne County Department of Public Services

Project manager for a project to prepare plans, specifications and an estimate to upgrade the traffic signals at two intersections on Mack Avenue on the boarder of Detroit and Grosse Pointe. This is a CMAQ funded project. HRC was responsible for road survey, utility coordination, preparing plan sheets, special provisions, cost estimate and a bid proposal.

Traffic Signal Improvements-Silver Lake/Leroy and South Long Lake/Torrey

City of Fenton

Traffic engineer coordinating the preparation of traffic signal plans for the construction and installation of 2 traffic signals, one of which was incorporated into the adjacent rail-highway grade crossing. Prepared permanent pavement markings and signing plan; maintenance of traffic plans in accordance with MDOT standards and the Michigan MUTCD. Coordination of permits and scheduling with Canadian National Railroad.

Bloomfield Traffic Signals

Bloomfield Township and City of Bloomfield Hills

Traffic engineer responsible for preparing plans and special provisions per RCOC standards for the construction and installation of 2 traffic signals, one of which was incorporated into the adjacent rail-highway grade crossing. Plans were prepared in accordance with the Michigan MUTCD. Coordinated construction activities between Canadian National Railroad and Contractor. Prepared permanent pavement markings and signing plan; maintenance of traffic plans in accordance with MDOT standards and the Michigan MUTCD.

2006 Troy CMAQ Intersection Improvements

City of Troy

Traffic engineer responsible for preparing PS&E per RCOC standards for the redesign of three adaptive-controlled traffic signals affected by the addition of right turn lanes. Box span configuration with flashing yellow arrow used for permissive protected left turns.

Colleen Hill-Stramsak, P.E., PTOE

Associate

Road Safety Audit for the Proposed Brandon Elementary School

Charter Township of Brandon

Project Engineer for the road safety audit of a driveway onto Oakwood Road from the proposed Brandon Elementary School. The road safety audit included: 24 hour traffic volumes and speeds; sight distance evaluation; a detailed crash analysis; projected traffic volumes and patterns for the proposed elementary school. Performed a sight distance evaluation and a detailed crash analysis for the road segment to be accessed by the proposed driveway, and recommended road improvements for safe access to and from the site.

Dixie Highway Safety Study

Charter Township of Springfield

Project manager for safety study of Dixie Highway corridor from Big Lake Road north to Davisburg Road. The study included crash analysis, review and evaluation of safety countermeasures, access management techniques, signal warrant study, left-turn phasing study and possible realignment of Big Lake Road/Dixie Highway intersection with Deerhill Drive/Dixie Highway intersection. A comprehensive report was prepared and the results presented to the Township Board of Trustees.

Intersection Safety Studies

City of Wixom

Conducted safety studies at for two adjacent intersections on Beck Road in Wixom. Performed peak hour turning movement counts, collected 24-hour traffic volume and speed data, reviewed crash history, reviewed geometrics, and suggested countermeasures with cost estimates.

State Farm Intersection Safety Studies

Road Commission for Oakland County

Reviewed geometrics, traffic volume, traffic crash and traffic conflict characteristics for three high crash intersections. Evaluated existing safety issues, recommended potential traffic safety engineering countermeasures, and developed an implementation plan of action.

Upgrade and Rehabilitation of Non-Freeway Signing

Michigan Department of Transportation

Project Manager to upgrade 129 miles of non-freeway signing in Berrien County in the Southwest Region. The project required verification of the existing inventory, collecting new sign data, updating the MTSIS inventory and making recommendations to MDOT Lansing and MDOT Coloma TSC. HRC conducted a review of crashes and TCOs to see if there are possible safety improvements. HRC prepared sign plan sheets, created SignCAD details, and assembled the e-proposal for the bid package.

Non-Freeway Signing Upgrade on M-150 in Oakland County

Michigan Department of Transportation

Project manager for log job to upgrade all non-freeway signs on M-150 from M-59 to Tienken Road in Oakland County. The project required verification of the existing inventory, collecting new sign data, updating the MTSIS inventory and making recommendations to MDOT Lansing and MDOT Oakland TSC. A contract was prepared containing all upgrades needed to the existing signs.

Colleen Hill-Stramsak, P.E., PTOE

Associate

concept report. Conducted noise analysis in accordance with provisions of 23 CFR Section 772 of Federal Code of Regulations. Type I project did not trigger noise abatement measures.

26 Mile Road Environmental Assessment

Road Commission of Macomb County

Collected turning movement counts and geometric information for 27 intersections along 26 Mile Road in Macomb County. Performed traffic crash analysis for intersections and segments in the study area. Modeled the 19 mile long corridor using Synchro software for Build and No Build scenarios.

Williams Lake Road Environmental Assessment

Road Commission for Oakland County

Conducted a traffic and safety analysis to better determine appropriate termini of the project and provide the necessary justification for the preferred alternative for a realigned Williams Lake Road. Conducted traffic crash analysis and license plate survey to determine the safety and traffic flow impacts of the proposed realignment. Conducted air quality analysis for microscale carbon monoxide pollution using CAL3QHC, Version 2.0. CO concentrations were all below NAAQS for 1-hour and 8-hour exposures.

Presentations/Publications

"Road Safety Audits," ACEC/MDOT (American Council of Engineering Companies of Michigan/Michigan Department of Transportation) Partnering Workshop January 2014 (with Jeffrey Bagdade, P.E., PTOE, and Steven Loveland, P.E., PTOE).

"Intersection Safety within a Signal Optimization Project," Institute of Transportation Engineers 2004 Technical Conference and Exhibit Compendium of Technical Papers, March 2004 (with Stephen B. Dearing, P.E.).

"Intersection Safety within a Signal Optimization Project," Presented Institute of Transportation Engineers 2004 Technical Conference and Exhibit, March 31, 2004.

"Intersection Safety within a Signal Optimization Project," Presented Institute of Transportation Engineers Michigan Section Technical Session, February 12, 2004.

"Michigan ITE Website Update," Presented Institute of Transportation Engineers Michigan Section Technical Session, February 12, 2004.

"Change and Clearance Interval Design on Red-Light Running and Late Exits," Transportation Research Record, No. 1856 (p. 193-201), Washington D.C., 2003 (with Kerrie L. Schattler and Tapan K. Datta).

FIRE REVIEW



April 15, 2016

TO: Barbara McBeth- Deputy Director of Community Development
Sri Komaragiri- Plan Review Center

CITY COUNCIL

Mayor
Bob Gatt

Mayor Pro Tem
Dave Staudt

Gwen Markham

Andrew Mutch

Wayne Wrobel

Laura Marie Casey

Brian Burke

City Manager
Pete Auger

**Director of Public Safety
Chief of Police**
David E. Molloy

Director of EMS/Fire Operations
Jeffery R. Johnson

Assistant Chief of Police
Erick W. Zinser

Assistant Chief of Police
Jerrod S. Hart

RE: Beacon Hill

PSP# 16-0036

Project Description: A 42 single family and commercial development at Meadowbrook and Twelve Mile

Comments:

Emergency drive must meet city standards.

Recommendation:

- 1) A secondary access driveway shall be a minimum of twenty (20 feet in width and paved to provide all-weather access and shall be designed to support a vehicle of thirty-five (35) tons. Minimum easement width for secondary access driveways shall be twenty-five (25) feet. A permanent "break-away" gate shall be provided at the secondary access driveway's intersection with the public roadway in accordance with Figure VIII-K of the Design and Construction Standards. To discourage non-emergency vehicles, emergency access roads shall be designated by signage as for emergency access only, shall be separated from the other roadways by mountable curbs, and shall utilize entrance radii designed to permit emergency vehicles while discouraging non-emergency traffic. **(D.C.S. Sec 11-194 (a)(19))**

Recommendation

Approved

Sincerely,

Kevin S. Pierce-Acting Fire Marshal
City of Novi – Fire Dept.

Novi Public Safety Administration
45125 W. Ten Mile Road
Novi, Michigan 48375
248.348.7100
248.347.0590 fax

cityofnovi.org

cc: file

APPLICANT RESPONSE LETTER

Z EIMET W OZNIAK
& ASSOCIATES

Civil Engineers & Land Surveyors

55800 Grand River Avenue, Suite 100
New Hudson, Michigan 48165-9318
248.437.5099 · 248.437.5222 fax
www.zeimetwozniak.com

April 8, 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, JSP15-0008
Response to Planning Review

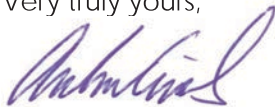
Dear Ms. McBeth:

We would like to thank Community Development and Clearzoning for the recommendation to the Planning Commission to consider a positive recommendation to the City Council.

We have reviewed the Clearzoning report dated March 18, 2016 and are prepared to address any comments on subsequent submittals.

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

Very truly yours,



Andrew J. Wozniak

Z EIMET W OZNIAK
& ASSOCIATES

Civil Engineers & Land Surveyors

55800 Grand River Avenue, Suite 100
New Hudson, Michigan 48165-9318
248.437.5099 · 248.437.5222 fax
www.zeimetwozniak.com

April 20, 2016

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

RE: Beacon Hill Park PRO
Response to Engineering Review

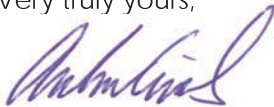
Dear Ms. McBeth:

We would like to thank Engineering for their recommendation for approval of the Revised Concept Plan and Concept Storm Water Management Plan.

We have reviewed their letter dated April 15, 2016 and will address additional comments detailed in their review letter dated March 21, 2016 during Final Site Plan submittal.

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

Very truly yours,



Andrew J. Wozniak

ZEIMET WOZNIAK & ASSOCIATES

Civil Engineers & Land Surveyors

55800 Grand River Avenue, Suite 100
New Hudson, Michigan 48165-9318
248.437.5099 · 248.437.5222 fax
www.zeimetwozniak.com

April 21, 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, JSP15-0008
Response to Landscape Review

Dear Ms. McBeth:

We would like to thank City staff for their landscape review the recommendation for approval with reservations of the revised site plan.

We have reviewed the landscape report dated April 15, 2016 and will address the comments during Final Site Plan submittal. **We are requesting five deviations/waivers pertaining to this review, all of which are supported by City staff.**

We offer the following response to the review comments.

Existing Trees

“As this is a PRO, there could be some flexibility in terms of allowing extra credits for the use of upsized trees which is normally not allowed by the Landscape Design Manual. In light of this, I support the use of some upsized evergreens to provide more interest along Meadowbrook, and more screening between the residential lots “fronting” the commercial, but I don’t believe that the total benefit in credits for this should be more than 33% of the trees planted (in other words 33, not 85). As ECT is officially responsible for reviewing plans for the Woodlands, I defer to their review on this matter”.

- 3. While ECT will provide the woodland review, it should be noted that the Landscape Design Manual specifically forbids the use of upsizing credits for Woodland Replacement Trees (Section 3.c.(2)). The applicant can request a deviation as part of the PRO agreement, and staff supports the use of some upsizing with credit within the PRO to provide additional interest and screening along Meadowbrook, and along the south edge of the residential part of the development to provide additional screening from the commercial part of the development. That being said, the number of credits sought seems excessive, as noted in the discussion above.***

With the support of City Staff, Tollgate Education Community and MSU Horticulture staff, we are proposing larger trees along the Meadowbrook Road Frontage and between the commercial and residential developments. As City staff suggests and everyone agrees, larger trees will "provide additional landscape interest and screening along Meadowbrook Road and along the south edge of the residential portion of the development to provide additional screening from the commercial part of the development".

We are proposing to upsize only evergreen trees as suggested by Toll Gate Educational Community and MSU Horticulture Department staff to maximize the impact of the upsizing and to create a more natural landscape. Upsizing only evergreen trees was discussed and supported by City staff at our meeting on April 13, 2016.

A total of 604 replacement trees and 681 replacement shrubs are proposed to satisfy 100% of the required replacement credits. It's important to note that only 102 trees will be upsized. We believe that the proper way to analyze the requested upsizing is to look at the total amount of Woodland Replacement Trees, not just the evergreen trees. We are proposing to upsize 153 of the total 718 required woodland replacement tree credits which is only 21% of the total.

Larger trees cost more money and we are requesting credit for upsizing these trees. We will plant Woodland Replacement Trees and shrubs that are not upsized to satisfy the requirements, but feel that this will not achieve the effect that everyone desires.

Thank you for your support to "use of some upsized evergreen trees to provide more interest along Meadowbrook, and more screening between the residential lots "fronting" the commercial" We are requesting a deviation from the PRO to receive credit for upsizing 102 Woodland Replacement Trees as part of the Woodland review.

Meadowbrook

b. A landscape waiver for the berm could be sought for the wetland just north of the residential entry (approximately 170 lf) and the wet areas south of the residential area (approximately 420 lf). This waiver would be supported by staff.

A berm cannot be provided due to topography, existing vegetation and topography.

Thank you for your support of our request for a waiver to not provide a berm just north of the residential entry (approximately 107 lf)

c. If the developer wishes to not build berms along the remaining frontage, this would require a deviation as part of the PRO. Given the heavy vegetation proposed within the greenbelt and right-of-way, this would also be supported by staff.

A berm cannot be provided due to existing vegetation.

Thank you for your support of our request for a deviation as part of the PRO to not build a berm along the remaining residential frontage of Meadowbrook Road.

Plantings

b. A landscape waiver could be sought for the required trees and subcanopy trees in the wetland areas described above for the berms. This waiver would be supported by staff.

A berm and the required trees cannot be installed due to existing vegetation and topography.

Thank you for your support of our request for a waiver for the required for the required trees and subcanopy trees required to be installed on the berms.

c. No required greenbelt landscaping is proposed for the 540 lf of frontage south of the residential section. Some of this deviation is due to the existing wetland areas, and some is due to the heavy plantings of woodland replacement trees. Normally, required trees cannot be replaced with woodland trees. However, in this case, the Planning Commission is allowed leeway in allowing a waiver for the greenbelt plantings if it finds that "the site would be enhanced by an alternate design solution" As the park area will be heavily landscaped and protected with a conservation easement, and much of the existing natural area will be enhanced through restoration, a waiver for the required greenbelt trees in this section can be requested and will be supported by staff.

We are proposing to heavily landscape the Meadowbrook Road frontage. Additional landscaping should not be required since this parcel is not being developed and is being donated to the City.

Thank you for your support of our request for a waiver for installation of the greenbelt landscaping along the Meadowbrook Road frontage south of the residential development (approximately 540 feet).

d. The required plantings for the remaining 540lf of frontage (1336lf – 540lf – 86lf – 170lf) should be provided. Existing trees may be able to meet some or all of the requirements for that section of frontage, but their size and identity need to be shown with size and identity on the plan. They need to be acceptable size and acceptable species to count.

We are proposing to heavily landscape the Meadowbrook road frontage which will be supplemented by existing trees and vegetation. The size and identity of the existing trees is show on sheet SP-4 but will be clarified on the landscape plans during Final Site Plan submittal.

Twelve Mile Road

- 2 An undulating berm at least 3' tall with a 2' crest is required between the road and the parking lot. No berm is proposed. A privet hedge is proposed, but this does not provide the same screening of automobile headlights as a berm would. A landscape waiver may be requested from the Planning Commission, but would not be supported by staff as there is no topographical reason for not providing this berm. Also, while allowed by ordinance, privet is known to be an invasive plant that invades area woodlands and***

should be substituted with another non-invasive species if the applicant elects to pursue the hedge as screening.

A berm has been provided along Twelve Mile Road on the revised plans.

- 3 In addition to the berm, one large evergreen or deciduous canopy tree per 35 lf frontage and 1 subcanopy tree per 20 lf frontage is required along the parking lot. The calculations and trees provided need to be revised.***

The required trees will be provided during Final Site Plan submittal.

- 4 The total frontage for Twelve Mile Road should be included in the calculations. A landscaping waiver for the western 160' can be sought and will be supported for the same reason described in 3.c. above.***

We are providing extensive landscaping along the entire Twelve Mile Road frontage. We suggest that the western 160 feet of the Twelve Mile Road frontage should not require additional landscaping and should not be included in the calculation for the commercial development since this parcel is not being developed and is being donated to the City.

Thank you for your support of our request for a deviation for landscaping along the western 160 feet of the Twelve Mile Road frontage.

Screening Between Residential and Non-residential – Berm (Wall) & Buffer

- 3 It appears that the proposed landscaping will provide the required screening, despite the difference in height, but a section view from Meadowbrook should be added to show the proposed buffering capability of that landscaping, showing the buildings at proposed elevations and the landscaping at a height that can be expected after 2 years of growth.***

A section view will be provided during Final Site Plan submittal.

- 4 If that section reveals that the screening is insufficient, additional screening in the form of dense evergreens, a landscaped berm high enough to provide the required buffering, or other screening will be required.***

Noted

Street Tree Requirements

Residential Interior:

- 2 An additional street tree needs to be added to the plan to match the numbers shown as provided in the calculations.***

An additional street tree will be provided during Final Site Plan submittal.

Meadowbrook Road:

- 1 Please break out the frontage by road in the calculations (1336lf less 86lf for Meadowbrook and 607 lf for Twelve Mile Road).**

The frontage calculations will be broken down by road during Final Site Plan submittal. As previously stated, the Twelve Mile Road and Meadowbrook Road frontage should not be included since this parcel is not being developed and is being donated to the City

- 2 1 deciduous canopy tree per 35 lf is required along areas facing parking, and 1 tree per 45 lf is required along other right-of-way frontage for commercial, and 1 tree per 35 lf is required for residential. 1 tree per 45 lf can be used for the Meadowbrook frontage south of the residential areas.**

Noted and will be addressed during Final Site Plan submittal.

- 3 Parking lot trees must be deciduous canopy trees, not evergreen trees or subcanopy trees. Please replace the above with deciduous canopy trees. Per the ordinance definition, deciduous canopy trees must have a mature canopy width of at least 20' to provide shading effect for adjacent spaces.**

Noted and will be addressed during Final Site Plan submittal.

- 4 The replacement trees shown along the parking lots' perimeters must be changed to be interior or perimeter parking lot trees to provide the greatest number of trees possible toward meeting those requirements. Replacement trees can only be used along the perimeter if the other requirements are met.**

Noted and will be addressed during Final Site Plan submittal.

Parking Lot Perimeter Canopy Trees

- 1 Perimeter calculations have been provided as requested. Please check to see that the perimeter length is correctly measured. Once the replacement trees along the perimeter are converted to perimeter or interior trees as noted above and the parking lot is reconfigured to provide a greater number of interior trees in acceptable islands, the shortage of trees may be considered acceptable.**

Noted and will be addressed during Final Site Plan submittal.

- 2 Parking lot perimeter trees are required to be deciduous canopy trees. Please replace any evergreen perimeter trees with deciduous canopy species.**

Noted and will be addressed during Final Site Plan submittal.

Transformer/Utility Box Screening

- 1 When transformers/utility boxes are added to the plans, be sure to screen them per the city standard detail.**

Noted and will be addressed during Final Site Plan submittal.

Building Foundation Landscape

- 1 Building foundation landscaping is calculated as the entire building perimeter * 8 feet. I calculated the total perimeters of the two buildings as approximately 584 feet. This would result in a requirement for a total of 4672 square feet of foundation landscape area. The basis of calculation does not appear to be correct. Please correct that and the required area.**

Noted and will be addressed during Final Site Plan submittal.

- 2 60% of the frontage visible from Twelve Mile Road should be landscaped. As proposed, there is no foundation landscaping proposed along the Twelve Mile frontage of either building. Landscaping needs to be added along the south elevation of the two buildings and needs to be adjacent to outdoor patios.**

Noted and will be addressed during Final Site Plan submittal.

- 3 If, because of the nature of the operations, all of the required foundation landscaping cannot be located immediately adjacent to the building, a landscape waiver can be requested, but the balance of the required space must be provided elsewhere on the commercial area of the site.**

Noted and will be addressed during Final Site Plan submittal.

- 4 Please label all landscape areas in SF on site plans.**

Noted and will be addressed during Final Site Plan submittal.

General/Other

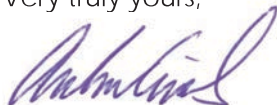
Proposed Trees to be saved

- 3 Please leave the labels for trees to remain on the landscape plan.**

Noted and will be addressed during Final Site Plan submittal.

Again, we would like to thank you for this review and we look forward to working with you on this project.

Very truly yours,



Andrew J. Wozniak

Z EIMET W OZNIAK
& ASSOCIATES

Civil Engineers & Land Surveyors

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April 21, 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, JSP15-0008
Response to Woodland Review

Dear Ms. McBeth:

We would like to thank ECT for their woodland review the recommendation for approval of the revised site plan.

We have reviewed the ECT report dated April 19, 2016 and will address the comments on the Final Stamping Set as requested. **We are requesting two deviations pertaining to this review.**

We offer the following response to the review comments.

- 1. ECT supports the use of Woodland Replacement Trees and shrubs as currently proposed in order to supplement the required trees along Meadowbrook Road but we do not support the replacement of Street Tree requirements with Woodland Replacement Trees. Please see the specific comments in the Landscape Review letter dated April 15, 2016.***

The required number of Street Trees along the residential (Meadows) and commercial (Shoppes) have been provided and are shown on sheets LS-2 and LS-3 of the landscape plans. In addition to the required Street Trees, we are proposing to install Woodland Replacement Trees within the right-of-way to enhance the design as suggested by Toll Gate Education Community. The Woodland Replacement Trees are shown on sheets LS-6 and LS-7.

We are proposing to heavily landscape the frontage of the Park Trailhead along the Meadowbrook Road and Twelve Mile Road rights-of-way. These plantings would be Woodland Replacement Trees and are shown on sheet LS-6 and LS-7. We are proposing that Street Trees along the proposed frontage of the Park Trailhead should not be required since this parcel is not being developed and is being donated to the City.

We request a deviation from this requirement if necessary.

2. ***The City's Landscape Design Manual specifically forbids the upsizing of Woodland Replacement Trees for additional Credits (Section 3.c.(2)). The applicant can, however, request a deviation as part of the PRO agreement. ECT and the City Landscape Architect support the use of some upsizing with credit within the PRO in order to provide additional landscape interest and screening along Meadowbrook Road and along the south edge of the residential portion of the development to provide additional screening from the commercial part of the development. That being said, the number of additional credits through the use of upsized Woodland Replacement trees (i.e., 10-foot evergreen trees) seems excessive.***

As noted in the Landscape Review, 40% of the proposed evergreen trees are upsized from 7' to 10' height (i.e., 102 of 253 total evergreens are proposed as 10' tall trees). Consistent with the Landscape Design Manual, the applicant is requesting 1.5 credits per 10' tree instead of the 0.67-credit per tree that is normally allowed for a 7' tall evergreen per the Woodland Ordinance. The result is an additional 85 Woodland Replacement Credits on 102 replacement trees provided. ECT concurs with the Landscape Review in that the amount of credits for the providing upsized evergreen trees as Woodland Replacement trees should be limited. The total benefit in credits derived from the "upsized" Woodland Replacement material should not be more than 33% of the total number of "upsized" trees planted.

With the support of City Staff, Tollgate Education Community and MSU Horticulture staff, we are proposing larger trees along the Meadowbrook Road Frontage and between the commercial and residential developments. As City staff suggests and everyone agrees, larger trees will "provide additional landscape interest and screening along Meadowbrook Road and along the south edge of the residential portion of the development to provide additional screening from the commercial part of the development".

We are proposing to upsize only evergreen trees as suggested by Toll Gate Educational Community and MSU Horticulture Department staff to maximize the impact of the upsizing and to create a more natural landscape. Upsizing only evergreen trees was discussed and supported by City staff at our meeting on April 13, 2016.

A total of 604 replacement trees and 681 replacement shrubs are proposed to satisfy 100% of the required replacement credits. It's important to note that only 102 trees will be upsized. We believe that the proper way to analyze the requested upsizing is to look at the total amount of Woodland Replacement Trees, not just the evergreen trees. We are proposing to upsize 153 of the total 718 required woodland replacement tree credits which is only 21% of the total.

Larger trees cost more money and we are requesting credit for upsizing these trees. We will plant Woodland Replacement Trees and shrubs that are not upsized to satisfy the requirements, but feel that this will not achieve the effect that everyone desires.

Thank you for your support to "use some upsizing with credit within the PRO". We are requesting a deviation from the PRO to receive credit for upsizing 102 Woodland Replacement Trees.

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

Preservation/ conservation easements will be provided.

- 4. The Applicant is encouraged to provide woodland conservation easements for any areas containing woodland replacement trees, if applicable. It is not clear how all of the proposed replacement trees will be guaranteed in perpetuity. As stated in the woodland ordinance.***

Where replacements are installed in a currently non-regulated woodland area on the project property, appropriate provision shall be made to guarantee that the replacement trees shall be preserved as planted, such as through a conservation or landscape easement to be granted to the city. Such easement or other provision shall be in a form acceptable to the city attorney and provide for the perpetual preservation of the replacement trees and related vegetation.

Woodland conservation easements will be provided. Provisions to guarantee that the replacement trees shall be preserved as planted will be provided.

- 5. 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. All replacement trees shall be two and one-half (2 ½) inches caliper or greater deciduous trees or 6-foot tall (minimum) coniferous trees. Deciduous replacement trees shall be provided at a 1:1 replacement ratio and coniferous replacement trees shall be provided at a 1.5:1 replacement ratio. See the Woodland Tree Replacement Chart (attached) for acceptable replacement tree species.***

Noted

- 6. 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. Based on a successful inspection of the installed on-site Woodland Replacement trees, seventy-five percent (75%) of the original Woodland Financial Guarantee shall be returned to the Applicant. Twenty-five percent (25%) of the original Woodland Replacement financial guarantee will be kept for a period of 2-years after the successful inspection of the tree replacement installation as a Woodland Maintenance and Guarantee Bond.***

Noted

- 7. 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.***

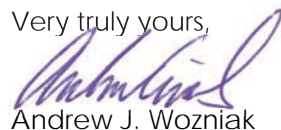
Noted

- 8. 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.***

Noted

Again, we would like to thank you for this review and we look forward to working with you on this project.

Very truly yours,



Andrew J. Wozniak

The Ivanhoe Companies

April 14, 2016

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

RE: **Beacon Hill Park**
Landscape and Woodlands: Ivanhoe; Americana Foundation; Tollgate Education Center; and the
City of Novi Site Plan Collaboration

Dear Ms. McBeth:

Since the Planning Commission meeting on September 9, 2015, we have had multiple collaborative meetings with you, Clear Zoning, ECT and City staff to achieve our mutual goal. As you are aware, there have been numerous revisions accommodating the requests from the consultants' letters.

For well over a year, we have been working and adjusting the plan to have a complementary development to the Tollgate Education Center property directly to the west. The key accommodation and collaboration resulted in an extraordinary open space running north and south the entire length of Meadowbrook Road, adjacent to the 5 acre park and the deeper open space park area in front of the commercial, effectuating a continuous buffer on the main roads whereby the community will have 42% open space.

We redesigned the community, specifically as recommended by Tollgate Education Center, whereby the Beacon Hill Meadows road is located approximately 140 feet from Meadowbrook Road which will provide a visual extension of the farm. We revised the plan and added an additional 50 foot landscaped nature corridor. Tollgate Education Center strongly recommended and we have agreed, that the proposed landscaping on the east side of Meadowbrook Road should present a natural progression of plantings from low shrubs to medium understory plantings to canopy trees, to provide a natural appearance.

Under the direction of the Americana Foundation and their consultants, in collaboration with our consultants; Felino Pascual & Associates, Zeimet Wozniak & Associates and King & MacGregor, we have been working with Toll Gate Education Center staff and Michigan State University staff to revise the proposed landscaping plans for Beacon Hill Park along Meadowbrook Road. We have met, and revised the plans multiple times, with the direction of Mr. Roy Prentice, Farm Manager of the Tollgate Education Center and Dr. Robert Schutzki, Associate Professor with the Department of Horticulture at MSU in a collaborative effort to achieve our goal. It is essential to all that the proposed landscaping not only provide a buffer between the farm and the proposed homes, but blends seamlessly with the existing features of Tollgate Education Center and the west side of Meadowbrook Road.

In order to accomplish this we will require flexibility in the proposed landscaping, unique to our sites on Meadowbrook Road. Rather than a single row of trees located along the proposed Meadowbrook Road right-of-way, north of the proposed entrance to Beacon Hill Meadows, we are proposing clusters of bushes be located nearest the sidewalk then a variation of sub-canopy ornamental trees which finally give way to larger canopy trees. Beyond the canopy trees we propose to preserve the natural

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The Ivanhoe Companies

vegetation within the green belt area. We are proposing to move some of the required landscaping into the Meadowbrook Road right-of-way in order to preserve the existing vegetation and provide a natural buffer while maintaining site distance visibility. This will offer a natural feel for Meadowbrook Road that we, along with Tollgate Education Center, are hoping to achieve. I have attached correspondence from Mr. Roy Prentice, Dr. Schutzki, and representatives from Americana Foundation and Tollgate Education Center outlining their desires that include achieving the set-back and natural design of the project including tree and shrubs species.

The park area located adjacent to the proposed community residential entrance has been revised to incorporate a natural progression from low plantings to large canopy trees. South of the entrance park we are proposing that the street trees be clustered both in and adjacent to the Meadowbrook Road right-of-way to introduce the natural feel of the corridor as you proceed north from 12 Mile Road.

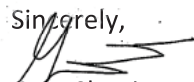
As you are aware, we have met with Novi's woodland consultant and responded to his comments, and updated him on the restoration plan as well as clarifying that over the course of two years there have been multiple alternative uses and revised site plans that have transpired throughout the process. The Meadowbrook Road landscaped corridor was further improved by a large woodland buffer preservation area on the north property line. We have also added a creative woodland restoration area in the center of the residential component. We have located the placement of the trees to create a contiguous wooded corridor the entire length of Meadowbrook with extensive planting of trees in the trailhead park on the corner of 12 Mile Road that we are donating to the City.

Tollgate and MSU suggested that some of the proposed trees be larger particularly along Meadowbrook Road. It was also suggested that larger evergreen trees will provide a more varied and natural looking buffer between the proposed residential (Meadows) and the commercial (Shoppes). A total of 604 replacement trees and 681 replacement shrubs are proposed to satisfy 100% of the required replacement credits. It's important to note that only 102 trees (approximately 21%) will be upsized. As proposed by Tollgate and endorsed by City staff, all of the upsized trees will be evergreens, which will provide maximum impact.

In order to achieve the desired contiguous, natural landscape, the following deviations are requested:

- 1) Credit for upsizing 102 Woodland Replacement Trees.
- 2) Locate street trees in clusters both in and adjacent to the Meadowbrook Road right-of-way.
- 3) Locate replacement trees and shrubs, Meadow Brook Road street trees and greenbelt plantings within the Meadowbrook Road right-of-way.

I would like to thank you, your staff, and consultants for working with us collaboratively to achieve what is an exemplary design that will flow seamlessly into the 5 acre open space park and the Beacon Hill Trailhead on the corner.

Sincerely,

Gary Shapiro

Attachments: Beacon Hill Landscape overview from Roy Prentice, Tollgate Education Center
Letter of Collaboration from Gary Rentrop, Americana Foundation/Tollgate Farms
Copy of email regarding Native Plants

March 18, 2016

Beacon Hill Landscape

Objective: Create a more naturalistic look with enhanced and strategic plant density and more integrated plantings. In general, planting heights should mimic a woods edge: low shrubs toward the road blending to intermediate sized deciduous and evergreens blending to taller tree species near the development.

Procedure:

Buffer along Meadowbrook Road of 90' to 140' gives a great opportunity to create a visual break for residents of the development between Meadowbrook and their homes. This buffer also will promote the "Natural Beauty" aspects of Meadowbrook. Below are ways to take full advantage of the opportunities offered by this buffer.

- Street trees along Meadowbrook: Make more naturalistic by placing at a random distance from Meadowbrook (either side of the sidewalk) and mixing species.

Shapiro and Pascual indicated that the planting of the trees along Meadowbrook as pictured on the landscape plan was performed by the City with funds provided by the developer. Shapiro and Pascual said that it may be possible to work with the City to alter the plan if the City understands that the intent of the new landscape plan is to create a more naturalistic appearance.

- Use evergreens near the homes in the development as a screen from the road. This practice will also give homeowners a greater sense of seclusion. Smaller hardwoods like serviceberry, redbud, alternate leaf dogwood and Ostrya can be mixed into and toward the road from the evergreens. Shrubs and other low plants (viburnums, witch hazel- Arnold Promise and Jelena, physocarpus – green varieties if planting in natural area) can be placed

closer to the road. Each group of plants of similar height blended into the next plant height group. Avoid obvious lines of similar species.

The landscaper, Pascual, indicated that he understood the concept of what we would like to achieve and that he would work on this.

- What happens in Pocket Park on Meadowbrook Road (located on the north end of the development)? Does this area remain an unmanaged wetland, or are shrubs and other plantings added? Will there be efforts to control Phragmites?

Activities in controlled wetlands (as designated by the City of Novi) may not be possible. Will attempt to control Phragmites and other invasive species in this area.

- It looks like new plantings are to be placed in an existing woodlot at north end of development. If this is true, these new plantings will have a low chance of outcompeting existing vegetation.

Indicated that they would be willing to make use of current woodlot by only selectively removing trees where necessary to promote the growth of new plantings. Willing to relocate plantings on the plan to take advantage of cover provided by existing woodlot. Indicated that he would still keep the same number of trees along the road even if their location was changed.

- Will there be any grading/excavation work done along Meadowbrook Road in the planting zone? There should be a fairly decent top soil layer in this area unless disturbed and reduced during construction.

Civil Engineer, Andrew Wozniak indicated that there would be a significant amount of soil grading and redistribution south of the wetland "Pocket Park." Wozniak indicated that after grading a minimum of 4" of top soil would be returned to all areas. After I indicated that 4" was marginal depth of top soil for trees and shrubs, Shapiro indicated that there was always a lot of top soil on job sites and they would make sure that depth was adequate.

- Review tree and shrub planting guidelines. Soil surface should overlap planted root ball. If planting material established as indicated in guidelines, moisture will naturally flow to the area around root ball. Water may not enter root ball readily due to difference in texture between the newly planted stock and the soil on the planting site. This could easily lead to insufficient moisture entering the root ball death of planting stock.

This was a point that Bob Schutzki brought up after looking at the planting specifications on the landscape plan. Pascual indicated that he would alter the planting specifications to accommodate the new planting guidelines outlined by Dr. Schutzki.

I appreciate the responsiveness of Ivanhoe Developments on this project. I am happy to provide further assistance on the landscape design along Meadowbrook Road. I am sure that one of the attractions for potential residents of the Beacon Hill property is the unique “rural feel” of Meadowbrook road and the proximity of the 160 acre Tollgate Farm and Education Center. With a few strategic changes to the landscape plan, I believe that the Beacon Hill Development can successfully blend with the existing look of Meadowbrook Road.

Roy Prentice
MSU Tollgate Farm Manager

ATTORNEYS AND COUNSELORS AT LAW
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GARY R. RENTROP
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TELEPHONE (248) 644-6970
FACSIMILE (248) 644-7141

February 22, 2016

Gary Shapiro
Ivanhoe Meadowbrook, LLC
6689 Orchard Lake Road, Suite 314
Farmington Hills, MI 48322

Re: Proposed Beacon Hill Park Development NE Comer - Twelve Mile and Meadowbrook Roads.

Dear Gary:

I am writing to outline conditions which, if satisfied, would result in Americana Foundation (AF) and Michigan State University (MSU) not opposing a PRO approval for Beacon Hill Park development as outlined for us in your February 11, 2016 letter to me and your site plan drawings dated January 4, 2016 provided to the AF and MSU representatives by you at our meeting with you on February 18, 2016.

1. Meadowbrook Landscape: We appreciate your revisions to provide a deeper greenbelt buffer with an average depth in excess of 100 feet as illustrated and referenced in your site plan drawing and letter. The landscaping plan, however, is too "parklike" with trees neatly in a row. We would like to see a landscape plan in the buffer area which is more rural in character using native plant and tree species. We would like to have the opportunity to have input directly with your landscape architect for the purpose of developing a revised landscape plan for this area. Insofar as possible the plan should include trees of height and density to screen the view of homes to be built in your development from Meadowbrook Road and from the farm. MSU will make available land on its property across from the area proposed for homes to be constructed for plantings which will contribute to this screening. We would like you to consider the planting of evergreen trees instead of all deciduous trees to provide screening in the winter months. We recognize much of the plantings proposed in your plans are required to meet the requirements of the city's ordinance. We will work with you and the city to obtain a variance from the city's requirements in order to achieve an approved rural landscaping plan.

2. Construction: If it is possible, access to the property for construction should be off of 12 Mile Road. If it is not possible due to the requirement of wetlands crossing, best efforts shall be made by you, your contractors and employees to minimize construction traffic and adverse conditions due to construction traffic on Meadowbrook Road. Specific details of what best effort steps will entail needs to be provided by you.

3. The Beacon Hill Park property must obtain Planned Rezoning Overlay (PRO) from the City of Novi.

I look forward to continue to work with you toward resolution.

Sincerely,
Gary



Gary Shapiro

From: Felino Pascual <felino@fpa.design>
Sent: Tuesday, April 12, 2016 8:59 AM
To: Gary Shapiro; Andy Wozniak
Subject: Fwd: native plants

----- Forwarded message -----

From: **Prentice, Roy** <prentic1@anr.msu.edu>
Date: Tue, Apr 12, 2016 at 8:02 AM
Subject: native plants
To: "felino@fpa.design" <felino@fpa.design>

Hi Joel,

At our last meeting you asked for recommendations for native plants that would do well in our area. Sorry to be so tardy getting these to you. Below are some good selections. Although I love the look of the native viburnums, I would not feel good about recommending them to you at this time. There is a viburnum leaf beetle that has started to show up in SE Michigan plantings. It can be pretty devastating to the foliage of viburnums. A good site to see an overview of native plants is maintained by the City of Ann Arbor: <http://www.a2gov.org/departments/Parks-Recreation/NAP/Native-Plants/Pages/NativeShrubs.aspx>

Amelanchier laevis

Serviceberry

Cephalanthus occidentalis

Common buttonbush

Cornus alternifolia

Alternate-leafed Dogwood

Cornus sericea

Red osier dogwood, Red-twig dogwood

Corylus americana

American hazelnut

Dasiphora fruticosa

Shrubby cinquefoil

Hamamelis virginiana

American witch hazel

The witch hazels are great for fall flowering. Arnold Promise and Jelena are good varieties.

Ilex verticillata

Winterberry, Michigan holly

Photinia melanocarpa

Black chokeberry

<i>Physocarpus opulifolius</i>	Common Ninebark
<i>Sambucus racemosa</i> var. <i>racemose</i>	Red elderberry
<i>Sambucus nigra</i>	Common elderberry
<i>Staphylea trifolia</i>	American bladdernut

Roy Prentice

MSU Tollgate Farm Manager

28115 Meadowbrook Rd.

Novi, MI 48377

[248 330 3623](tel:2483303623)

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Felino A. Pascual (Joel), RLA, CLARB
Principal

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Land Planners & Landscape Architects

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web: fpa.design

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Z EIMET W OZNIAK
& ASSOCIATES

Civil Engineers & Land Surveyors

55800 Grand River Avenue, Suite 100
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www.zeimetwozniak.com

April 8, 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, JSP15-0008
Response to Wetland Review

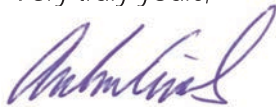
Dear Ms. McBeth:

We would like to thank ECT for the recommendation to approve the revised plan for wetlands.

We have reviewed the ECT report dated March 21, 2016 and will address the comments on the Final Site Plan submittal as requested.

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

Very truly yours,



Andrew J. Wozniak

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April 8, 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, JSP15-0008
Response to Traffic Review

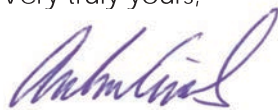
Dear Ms. McBeth:

We would like to thank AECOM for the recommendation to approve the revised plan for traffic.

We have reviewed the AECOM report dated March 18, 2016 and will address the comments to the satisfaction of the City on subsequent submittals, as requested.

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

Very truly yours,



Andrew J. Wozniak

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& ASSOCIATES

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April 20, 2016

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

RE: Beacon Hill Park PRO
Response to Fire Department Review

Dear Ms. McBeth,

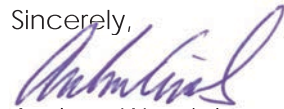
We would like to thank the Fire Department for their recommendation for approval of the revised site plan.

We have reviewed their letter dated April 15, 2016 and will meet the specifications for the required secondary access and break away gate.

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

Thank you.

Sincerely,



Andrew Wozniak