City of Chelsea Planning Commission

AGENDA

Tuesday, April 18, 2023 at 7:00 PM
Chelsea City Council Chambers
311 S. Main Street
Remote option available for members of the public, commissioners must attend in person.

1. Call to Order
2. Approval of the Agenda
3. Approval of the Meeting Minutes
    a. Approval of the meeting minutes for March 21, 2023
    b. Approval of the work session minutes for April 4, 2023
4. Public Comment (non-agenda items only)
    - 5 minutes per speaker
    - Speakers are not permitted to grant their reserved time to an alternate speaker
    - Accommodations can be made for persons needing assistance while addressing council
5. Public Hearing
6. Old Business
    a. Heritage Farms - APN 06-07-06-360-006 – Phase I Revised Final Site Plans
7. New Business
8. Discussion
    a. Staff Report
        i. Upcoming Agenda Items
        ii. Local Updates
    b. Commissioner Reports
9. Public Comment (agenda items)
10. Adjournment

Zoom Information:

Topic: Planning Commission Meeting – April 18, 2023
When: Apr 18, 2023 07:00 PM Eastern Time (US and Canada)

Please click the link below to join the webinar:
https://us02web.zoom.us/j/89178211037?pwd=TytTMldHa1UzVFlaN1d1WXRINlpkdz09
Passcode: 950325
Or One tap mobile :
US: +13052241968,,89178211037#,,,,*950325# or +13092053325,,89178211037#,,,,*950325#
Or Telephone:
Dial(for higher quality, dial a number based on your current location):
US: +1 305 224 1968 or +1 309 205 3325 or +1 312 626 6799 or +1 646 558 8656 or +1 646 931 3860 or +1 301 715 8592 or +1 669 900 9128 or +1 689 278 1000 or +1 719 359 4580 or +1 253 205 0468 or +1 253 215 8782 or +1 346 248 7799 or +1 360 209 5623 or +1 386 347 5053 or +1 507 473 4847 or +1 564 217 2000 or +1 669 444 9171
Webinar ID: 891 7821 1037
Passcode: 950325
International numbers available: https://us02web.zoom.us/u/klJFNnvuW

Item 3a

March 21, 2023

Meeting Minutes

PLANNING COMMISION MINUTES

MARCH 21, 2023

CHELSEA MUNICIPAL BUILDING COUNCIL CHAMBERS

311 S. MAIN STREET, CHELSEA, MI

CALL TO ORDER

Chair Robinson called the meeting to order at 7:00 pm.

Present: Claire Robinson (Chair), Vincent Elie (Vice Chair), Sarah Haselschwardt (Secretary), Julianne Chard, Heather Hunnell, Marcia White, Jamie Lane, Wade Lehmann

Absent: Laura Baker

Others Present: Jose Luis Martin Esteban (Gestamp), David Straub (M/I Homes), Jerry Sosnowski, Adrianna Jordan, and Rachel Kapolka (Assistant Clerk).

APPROVAL OF THE AGENDA

MOVED by Elie, SECONDED by Haselschwardt to approve the agenda for March 21, 2023. All Ayes. Motion Carried.

APPROVAL OF THE MEETING MINUTES

MOVED by Elie, SECONDED by White to approve the meeting minutes for January 24, 2023. All Ayes. Motion Carried.

MOVED by Haselschwardt, SECONDED by Elie to approve the work session minutes for February 7, 2023. All Ayes. Motion Carried.

PUBLIC COMMENT (non-agenda items only)

None

PUBLIC HEARING

1. Gestamp Expansion – 5800 Sibley Road (APN 06-06-12-200-024) – Preliminary and Final Site Plans
    a. Chair Robinson opened the public hearing. There were no comments. Chair Robinson closed the public hearing.
2. Heritage Farms – APN 06-07-06-360-006 – Phase I Revised Final Site Plans
    a. Chair Robinson opened the public hearing. There were no comments. Chair Robinson closed the public hearing.

3. Zoning Text Amendment for Article 7 - Landscaping
    a. Chair Robinson opened the public hearing. There were no comments. Chair Robinson closed the public hearing.

OLD BUSINESS

None

NEW BUSINESS

1. Gestamp Expansion – 5800 Sibley (APN 06-06-12-200-024) – Preliminary and Final Site Plans
    a. Staff Report – Adrianna Jordon
        i. 35,393 square foot addition on the south side of existing facility.
        ii. Reviewed items to consider in the staff report including the storage of materials and waste receptacle enclosures/screening.
    b. Jose Luis Martin Esteban - Gestamp
        i. New expansion does not affect wetlands. A permit from Egle is not needed.
        ii. Discussed details such as safety, noise level, and accessibility of the trash compactor with commissioners.
    c. Commissioners discussed safety/placement of the trash compactor and accessing from the inside vs the outside. There was also discussion on the placement/relocation of trees.

MOVED by Lane, SECONDED by Elie to move to waive the materials storage screening requirements for SPR23-01, the Gestamp combined preliminary and final site plans, due to the building orientation and the presence of existing natural vegetation and wetlands that provides screening in accordance with Section 6.14 of the Zoning Ordinance Section. All Ayes. Motion Carried.

MOVED by Elie, SECONDED by Hunnell to move to waive the refuse screening requirements for SPR23-01, the Gestamp combined preliminary and final site plans, due to the building orientation and the presence of existing natural vegetation that provides screening in accordance with Section 6.14 of the Zoning Ordinance Section. All Ayes. Motion Carried.

MOVED by Haselschwardt, SECONDED by Elie to move to approve the Preliminary and Final Site Plans for SPR23-01 for the expansion of the Gestamp facility located at 5800 Sibley Road with the conditions detailed in the staff report and the movement of 10-15 trees to the north side of the property along Sibley Road. All Ayes. Motion Carried.

2. Heritage Farms – APN 06-07-06-360-006 – Phase 1 Revised Final Site Plans
    a. Staff Report – Adrianna Jordan
        i. Phase 1 = 48 units ranging from 7,200 square feet to 12,709 square feet located on the north side of Dexter-Chelsea Road.
        ii. Water and sewer will connect from Heritage Pointe at Elm Street.
        iii. Proposed revisions = reducing lot widths from 80 ft to 60 ft wide; reducing street trees to one tree per lot frontage; and various engineering modifications.
        iv. The draft traffic study showed no recommendations for improvement. A right turn lane was suggested at the proposed entrance of Heritage Farms.
        v. Density – the proposed base plan exceeds the 35% min floor area ratio – noted on plan.

vi. Landscape requirements – The applicant submitted a revised landscape plan today. The plan is not included in the current package. Ms. Jordan reviewed frontage and site landscaping requirements with commissioners. She also noted that buffering and plant material details are needed. Staff to confirm the tree and shrub requirements have been met once revised plans are reviewed.
vii. Preservation & Mitigation – tree calculation tables and preservation credits to be revised.
viii. Reviewed recommended conditions with commissioners

b. David Straub – MI Homes
i. Traffic study for the first phase was expedited
ii. Underground utilities
iii. Addition of tree and shrub plantings
iv. Jerry Sosnowski (landscape architect for Heritage Farms) spoke on the tree species in revised plan.

MOVED by Elie, SECONDED by Chard to table the Revised Final Site Plans for SP23-02 for Phase 1 of the Heritage Farms development located on APN 06-07-06-360-006. 6 Ayes, 2 Nays. Motion Carried.

3. Zoning Text Amendment for Article 7 - Landscaping
a. Staff Report – Adrianna Jordan
i. Reviewed major changes being proposed in packet.

MOVED by Hunnell, SECONDED by Elie to recommend to City Council for the proposed landscaping text amendments to Article 7 of the City of Chelsea Zoning Ordinance. All Ayes. Motion Carried.

DISCUSSION

1. Staff Report – Adrianna Jordan

a. Upcoming Agenda items

i. April meeting– Heritage Farms

ii. April work session – Public Noticing requirements

b. Local Updates

i. Rockwell Development next step – administrative site plan review

ii. City received the Trail Town Designation

2. Committee Reports

a. Transportation Working Group – Chard

i. Working on RFP's for traffic study

ii. Discussion on redeploying speed humps for Chelsea Pop

b. ZBA – none

PUBLIC COMMENT (agenda items)

None

ADJOURNMENT

MOVED by Elie, SECONDED by White to adjourn the meeting. All Ayes. Motion Carried.

Meeting adjourned at 9:09 p.m.

Respectfully Submitted,

Rachel Kapolka (Assistant Clerk)

Item 3b

April 4, 2023

Work Session Minutes

PLANNING COMMISSION WORK SESSION MINUTES

APRIL 4, 2023

CHELSEA MUNICIPAL BUILDING COUNCIL CHAMBERS

311 S. MAIN STREET, CHELSEA, MI

Names of those Present: Claire Robinson (Chair), Marcia White, Julianne Chard, Laura Baker, Wade Lehmann, Heather Hunnell, Jamie Lane

Members Absent: Vincent Elie, Sarah Haselschwardt

Vacancy: None

Others Present: David Straub (M/I Homes), Adrianna Jordan (Community Development Director), Kate Mehuron (City Council Liaison), Charles Wiseley, Rachel Kapolka (Assistant Clerk).

Chair Robinson called the work session to order at 7:00 pm

1. Public Comment

   None

2. Heritage Farms Revised Final Site Plans
   a. Commissioners reviewed the revised landscape plan – staff to verify tree and shrub counts. Ms. Jordan noted that the spruce and pine buffer trees should be 8 ft. tall.
   b. Mr. Straub reviewed some of the landscape revisions which included applying the proper amount of trees and shrubs to satisfy the 2021 ordinance.
   c. Commissioner Lehmann noted that there was potential to also plant around the detention base if overcrowding or spacing was an issue for the landscape architect.
3. Proposed Zoning Ordinance Amendments
   a. Section 14.05: Public Notice Requirements
      i. Reviewed table comparing the Michigan Zoning Enabling Act requirements, City of Chelsea requirements, and proposed requirements. The proposed plan follows the MZEA for final site plan requirements and public hearing requirements for Cluster Developments.
      ii. Current requirements include noticing for final site plans, which adds an additional month to the process for developers. There is also additional time and cost associated with current noticing requirements.

b. Food Trucks
    i. Ordinance would apply to both food trucks and food courts.
    ii. Reviewed food truck ordinance for neighboring communities.
    iii. Discussed performance standards.
    iv. Would be in conjunction with the peddler license with land use considerations such as signs, lighting, water/electric hook up, and seating.
    v. Commissioners discussed some questions to consider:
        1. Which zoning districts would food trucks be allowed in?
        2. What would be the hours of operation?
        3. What would the seating for a food court look like?

Work Session adjourned at 8:50 pm.

Respectfully Submitted,

Rachel Kapolka (Assistant Clerk)

Item 6a

Heritage Farms Phase 1

Revised Final Site Plans

April 14, 2023

Planning Commission
City of Chelsea
305 S. Main St. Suite 100, Chelsea, MI 48118

Subject: Heritage Farms
APN 06-07-06-360-006, Part of the SW ¼ of Section 6 & 7, T2S, R4E
SP23-02: Phase I Revised Final Site Plans (Review #2)

Dear Commissioners,

The proposed development project consists of a six-phase 231-unit site condo Planned Unit Development (PUD), with 48 units proposed in Phase 1. The 48 lots in Phase 1 range from 7,200 square feet to 12,709 square feet and are located on an approximately 105-acre site along the north side of Dexter-Chelsea Road. The development will be served by public roadways, sidewalks, street lights, and associated infrastructure. Water and sewer will connect from Heritage Pointe at Elm Street.

On April 8, 2003, the City of Chelsea first entered into a Planned Unit Development (PUD) agreement with FFH Enterprises, Inc for a proposed development called "Heritage Pointe" located on APN 06-07-06-360-006. At that time, the City of Chelsea approved a zoning map amendment to rezone the subject parcel as a PUD. Along with the PUD rezoning, the City approved a PUD Area Plan including six phases of development within the subject parcel. The Final Site Plans for Phase I and 2 were approved on December 21, 2004 (split into "2A" and "2B" in 2006); construction was completed on Phase 1 and Phase 2A. On February 22, 2005 the Heritage pointe Phase 2 Development Agreement was signed. The PUD Area Plan was later amended on June 28, 2006.

As of December 14, 2020 the City had not received Final Site Plans for Phases 3-6, and the PUD Area Plan effectively expired; however, the City received a letter from Daniel Johnson, In-Site, Inc. requesting the renewal of the PUD Area Plan for Phases 3-6. In this letter, he states "as a result of the Great Recession, the property owners have been annually renewing the [Final] Site Plan approval for Phase 2B since June of 2008 in order to keep the [Final] Site Plan approval current, and correspondingly, the Planning Commission has annually granted the extension request including most recently in May of 2020." A public hearing was then held on January 4, 2021 whereupon the City Council approved the renewal of the PUD Area Plan. Around this time the previously named Heritage Pointe Phase 2B of the development became Phase 1 of the Heritage Farms PUD Area Plan. Following a public hearing and recommendation of approval at the June 15, 2021 Planning Commission, on June 21, 2021 the City Council approved an amendment to the Heritage Farms PUD Area Plan to increase the allowable lot coverage from 20% to 35% contingent on the execution of a Development Agreement between the City and the developer on July 19, 2021.

As needed, the applicant has requested extensions on the current Phase 1 Final Site Plans with the City of Chelsea Planning Commission; these extensions requests have been approved. The current Final Site

Plan approval for the Phase 1 plans is due to expire on July 19, 2023. Following commencement of Phase 1 construction anticipated this year, the developer intends to build-out an additional five phases numbering 36-48 home sites every year until development build-out (anticipated for 2028). On January 24, 2023 the Planning Commission recommended approval of a Major Amendment to the PUD Area Plan. This Major Amendment was then approved by City Council on February 21, 2023.

The development's current applicant, David Straub (M/I Homes of Michigan), is now proposing revisions to the previously approved Phase 1 Final Site Plans based on the Major Amendments made to the PUD Area Plan. The revised Phase 1 Final Site Plans are being reviewed under the Zoning Ordinance in effect at the time of its initial approval in 2003. Chelsea was still a village in 2003; therefore, any zoning ordinance reference to the Village of Chelsea has been updated in this staff report to reflect its current incorporated status as a city.

The proposed revisions to the Phase I Final Site Plans include: reducing lot widths from an average of 80 feet to 60 feet wide; reducing street trees to one tree per lot frontage; and various engineering modifications as detailed in Washtenaw Engineering's December 22, 2022 Memorandum of Changes related to the smaller lot widths. This review letter is based on the latest version of the revised Phase I Final Site Plans dated April 14, 2023.

STANDARDS FOR FINAL SITE PLAN REVIEW (SECTION 9.04.C)

1. **That the final site plan conforms to the Major Amendment to the PUD Area Plan as approved by the Planning Commission.** The Phase I revised Final Site Plan conforms to the Major Amendment to the PUD Area Plan.
2. **That all required information is provided.** The applicant has provided all required information.
3. **That the plan complies with all zoning ordinance regulations.** The proposed development conforms to the intent, regulations, and standards of the zoning ordinance that was in effect at the time of its original approval. The average lot area is 7,200 square feet with a front yard setback of 20 feet, a side setback of 10 feet (each side), and a rear yard setback of 20 feet. The maximum building height is 35 feet.
4. **That the plan, including all engineering drawings, meet specifications for fire and police protection, water supply, sewage disposal or treatment, storm drainage, and other public facilities and services.** The development will be served by public trash collection, roadways, sidewalks, street lights, and associated infrastructure. Water and sewer will connect from Heritage Pointe at Elm Street. The City of Chelsea will provide police protection, and the Chelsea Area Fire Authority (CAFA) will provide fire protection. All mail boxes shall be grouped near open spaces unless otherwise dictated by the United States Postal Service (USPS).
5. **That the plan meets all specifications of this Section.** The plan meets the specifications of this section.
6. **That any grading or filling will not destroy the character of the property or the surrounding area, and will not adversely affect the adjacent or neighboring property.** Staff defers to the City Engineer for recommendations and requirements on grading.
7. **The erosion will be controlled during and after construction and will not adversely affect adjacent or neighboring property or public facilities and services.** Staff defers to the City Engineer for recommendations and requirements on soil erosion and sedimentation control.

8. **The proposed site plan and building(s) comply with the design standards of Section 5.14.** Section 5.14 is for commercial developments and is not applicable to this project.

STANDARDS FOR PETITION REVIEW – TRAFFIC STUDY (SECTION 15.02.D.6)

1. **The location of proposed uses, layout of the site, and its relation to streets giving access to it, shall be such that traffic to, from, and within the site will not be hazardous or inconvenient to the project or the neighborhood.** On February 21, 2023, the City Council approved the Major Amendment to the PUD Area Plan with the condition that an independent third-party traffic study would need to be completed prior to Phase 2 on the condition that associated language regarding impact mitigation is included in the Development Agreement; however, following the meeting, the applicant requested to have the study completed prior to approval of the Phase I Final Site Plans per the original recommendation language in the January 18, 2023 Staff Report. The draft Traffic Impact Study was completed by TetraTech on March 9, 2023 and provided for review to both the applicant's engineer and the city's engineer. The study was then finalized on April 6, 2023.

   Tetra Tech concluded that at full build-out of all phases, Heritage Farms is forecast to generate 160 total trips during the AM peak hour, and 218 trips during the PM peak hour. Due to continued acceptable Levels of Service (LOS), no recommendations were suggested for the Dexter-Chelsea/Freer intersection. Assuming implementation of background improvements associated with other developments that include converting the eastbound/westbound leading protected-only left-turn phase to permitted/protected operation, constructing a westbound right-turn lane with 250 feet of storage, and optimizing the traffic signal timing, no additional improvements are necessary for acceptable LOS at the Old US-12/Freer intersection either. The only improvement recommended by Tetra Tech that is directly due to the impact of the Heritage Farms development is a recommendation to add a right-turn lane into the proposed entrance of Heritage Farms Boulevard. The revised Final Site Plans show the addition of a short flared right-turn lane. City Engineer must confirm if it complies with City's road design standards.

UTILITIES (SECTION 15.08)

2. **Each principal building shall be connected to public water and sanitary sewer services.** The 231 units will be served by City of Chelsea water and sewer that will connect from Heritage Pointe at Elm Street. Staff defers to Public Works and the City Engineer for additional comments on water and sanitary sewer services.

3. **Each site shall be provided with storm water drainage. Open drainage courses may be permitted if outside street ROWs. Storm water retention shall be required in accordance with City standards.** Proposed stormwater management will utilize an infiltration bed constructed in Phase 1 and located near the front center of the site. One proposed stormwater detention area will be constructed in Phase 2, and another in Phase 3. Staff defers to the City Engineer for additional comments on stormwater management.

4. **Electrical, telephone, and cable television lines shall be underground, provided that electrical distribution lines may be placed overhead if approved by the City Council, upon recommendation by the Planning Commission. The location of surface transformers and similar equipment for underground lines shall be shown on the final site plan or preliminary plat for final approval for each phase of development. The equipment shall be**

landscaped and screened from view. Staff defers to the City Public Works Department for comments on electrical, telephone, and cable television lines.

DENSITY CALCULATIONS (SECTION 15.11)

5. **GFC and FAR calculations for residential structures shall be based on the acreage designated for calculating gross residential density. GFC and FAR calculations for nonresidential structures shall be based on land areas that include the structures, drives, parking and loading areas, open spaces around the structures, landscape areas, and similar areas, but not including acreage in existing public street rights of way.** The Site Data table states that the maximum Floor Area Ratio (FAR) and lot coverage will be limited to 35% in Phase 1. Four sample architectural floorplans provided by the applicant range in square footage from 1,858 square feet to 2,733 square feet and are all two-story single-family home designs. The proposed base plan Juliette home design would exceed the 35% minimum FAR unless sited on lot units that are a minimum of 7,500 square feet or greater, or a minimum of 7,808 square feet if structural additions are chosen. A note has been added to the Phase I final site plans and Development Agreement stating this.

6. **Land areas that are used to provide acreage to meet density regulations in one part of the district shall not be used to compute density in another part of the development.** The applicant has corrected the density data in the Site Data table on page 5 of the March 16, 2023 Phase 1 revised Final Site Plans.

LANDSCAPING REQUIREMENTS (SECTION 5.12)

Section 5.12 of the 2003 Zoning Ordinance states that "landscape standards shall be adopted by the Planning Commission and shall be designed to achieve the [objectives of Section 5.12]". On February 21, 2023 the City Council approved the Planning Commission's recommendation to use Article 7 of the current Zoning Ordinance adopted on May 17, 2021 for the Heritage Farms landscaping requirements. The Phase 1 revised Final Site Plans have been reviewed accordingly:

7. **Frontage Landscaping (Sec. 7.04).** One street tree per 50 lineal feet (lf) of frontage is required. Applicant has shown one street tree per lot frontage (averaging one tree per 60-70 feet). In Phase 1 there is a total of 6,301 lf of streets. Excluding the 16 foot wide driveways openings for the 48 lots and road intersection openings (800 lf), this results in 5,501 lf of street frontage (both sides of the street). Therefore, a total of 110 street trees is required, and the applicant is proposing 110 street trees. This requirement is met.

8. **Site Landscaping (Sec. 7.05).** Interior site landscaping is required and provided per the following table:

Type of Landscaping	Minimum Requirements	Provided for Phase 1
Deciduous Canopy/ Evergreen Trees	1 per 500 sf open space = 250 trees	250 trees
Shrubs	1 per 300 sf open space = 417 shrubs	417 shrubs

The revised Phase 1 Final Site Plan meets the site landscaping requirements.

9. **Buffering from Residential Uses (Sec. 7.08).** The existing City of Chelsea Wastewater Treatment Plant (WWTP) backs up to Open Space Area E and Lots 19-21. The applicant is

proposing a greenbelt in Open Space Area "E" to screen these lots from the WWTP. Open Space Area "E" is 42 feet wide with 11 Norway Spruce and nine White Pines. The revised plant list notes that the trees will be eight feet tall at planting.

10. **Stormwater Basin Landscaping (Sec. 7.10).** Site plans comply with stormwater basin perimeter greenbelt requirements of Section 7.10.B. Applicant shall submit a landscape performance guarantee to be held by the City for two years that includes the stormwater basin-related plantings. Article II, Section 6 of the Development Agreement states that "The storm water facilities located within the Development, or which are appurtenant to the Development and required to be maintained as part of the Development, per this Agreement of an approved final site plan, shall be maintained in accordance with the best practices recommended by the Washtenaw County Water Resources Commission 2014 Design Guidelines and Standards, as the same may be amended."

11. **Installation and Maintenance (Sec. 7.12).** The applicant is proposing to ensure adequate hydration of evergreens in Open Space Area "E" using gator bags until the trees are established. Staff supports this alternate form of irrigation. All required plantings shall be planted prior to the issuance of the Certificate of Occupancy. If the weather does not permit the planting, the required planting shall take place within six months from the date of issuance of the Certificate of Occupancy and the owner shall post a performance guarantee.

12. **Preservation and Mitigation (Sec. 7.13)**

Landscape Standard	Required Landscaping	Proposed Landscaping
Tree Removal Standards (7.13): Regulated trees are replaced	78 units of regulated trees removed - 125 preservation credits (up to 50% of the 78 required trees) = **39 additional trees required**	39 additional trees are required and 39 are provided.

The property has been maintained as farmland with a small and random assortment of native trees. To the greatest extent possible trees within the site shall be preserved; however, due to grading, utilities, and other aspects of implementation, various trees throughout the site shall be removed prior to construction. All trees to be preserved shall have tree protection measures in place prior to any construction and/or clean-up activities. On Monday, March 13, 2023 a new tree survey was conducted and is found on Sheets 3 and 4 of the April 13, 2023 Phase 1 revised Final Site Plans. The total mitigation requirement is 79 trees. Using the preservation credits to cover 50% of these requirements brings down the total tree replacement requirements to 39 trees. This requirement is met.

If trees or plant materials to be preserved are found to be unhealthy, damaged, or removed within three years after completion of construction, the property owner shall replace them or provide a performance guarantee in an equivalent amount plus a ten percent (10%) administrative fee for later replacement. The performance guarantee may be used by the City of Chelsea to replace such materials.

SITE LIGHTING (SECTION 5.16)

1. The applicant has provided a photometric plan in compliance with Section 5.16 of the Zoning Ordinance.

SIGNS (SECTION 6)

2. There are plans for a monument entrance sign in a center island of Heritage Farms Boulevard. Public Works has provided written approval of the location. The applicant must submit a sign permit application in compliance with Article 6 of the 2003 Zoning Ordinance for proposed signage.

RECOMMENDATION

Staff recommends Planning Commission approval of the revised Phase 1 Final Site Plan subject to the following conditions to be handled administratively unless otherwise noted:

1. **Grading, SESC, Utilities, and Stormwater.** Staff defers to the City Engineer and DPW regarding grading, soil erosion, sedimentation control, proposed utilities, and stormwater management.

2. **Traffic Impact Mitigation.** The revised Final Site Plans show the addition of a short flared right-turn lane. City Engineer must confirm if it complies with City's road design standards.

3. **Irrigation.** The applicant is proposing to ensure adequate hydration of evergreens in Open Space Area "E" using gator bags until the trees are established. Staff supports this alternate form of irrigation.

4. **Installation and Maintenance.** All required plantings shall be planted prior to the issuance of the Certificate of Occupancy. If the weather does not permit the planting, the required planting shall take place within six months from the date of issuance of the Certificate of Occupancy and the owner shall post a performance guarantee.

5. **Performance Guarantee.** If trees or plant materials to be preserved are found to be unhealthy, damaged, or removed within three years after completion of construction, the property owner shall replace them or provide a performance guarantee in an equivalent amount plus a ten percent (10%) administrative fee for later replacement. The performance guarantee may be used by the City of Chelsea to replace such materials. Guarantee shall include the stormwater basin-related plantings.

6. **Signs.** The applicant must submit a sign permit application in compliance with Article 6 of the 2003 Zoning Ordinance for any proposed signage.

RECOMMENDED FORM OF MOTION

***Revised Final Site Plans:* Move to (approve/approve with the conditions detailed in the staff review letter/deny/table) the Revised Final Site Plans for SP23-02 for Phase 1 of the Heritage Farms development located on APN 06-07-06-360-006.**

If you have any questions, please do not hesitate to contact me.

Respectfully,

Adrianna Jordan, AICP
Community Development Director

March 15, 2023

Adrianna Jordan
City of Chelsea
305 South Main Street
Suite 100
Chelsea, Michigan 48118

Re: Heritage Farms Phase 1
Final Site Plan Review

Dear Ms. Jordan:

We have received plans for the reference project via email on January 18, 2023, plans are dated December 12, 2022, as prepared by Washtenaw Engineering. We offer the following comments for your consideration:

1. The plans reflect engineering and utility changes related to the PUD amendment. We note that the current plans do not appear to reflect the March 1, 2021 review letter (specifically 6,7,8, and 10 from the attached) that had been previously addressed in the March 21, 2021 plan set.

2. Callouts and stationing do not match between water main, sanitary sewer and roadway. This should be addressed on all utility sheets. Stations referred to below are based on the road centerline stationing.

3. Stormwater management review was completed by the Washtenaw County Water Resources Commissioner (WCWRC) and we defer to their comments. All storm sewer is proposed to be owned by the WCWRC and located within easements.

4. The road cross section should match the City of Chelsea's standard cross section for private roads. The pavement section should include 3" of 3C base and 2" of 4A topping. In general, the curb should be MDOT F4 vs the proposed mountable curb.

5. We note a tree is proposed near the northwest corner of Lot 13 that may be impact the visibility of the proposed stop sign. This tree should be relocated.

Water Main and Sewer

6. An Act 399 permit (water main) and Part 41 permit (sanitary sewer) have been received based on the drawings from May 2021. These permits should be amended or reapplied for as determined by the EGLE.

7. The City's Standard Sewer Specification (attached) should be added to the plans.

8. Sheet 17-
    a. Call out proposed live tap with appropriate tapping sleeve and appurtenances to the existing 6-inch watermain along Dexter-Chelsea Road, provide valve box on live tap gate valve.
    b. Label all utility crossings with bottom of utility elevation and top of pipe elevation to verify minimum vertical clearance (typ.).
    c. Revise location of 1-inch water service tap for Lot 9 at the 5.5' depth.
    d. Call out 8-inch external drop on sanitary structure S-36.
    e. Maintain 5.5-feet of cover in all areas where possible.

9. Sheet 18-
    a. Label sanitary structure S-36.
    b. On Countryside Road at approximately station 20, the proposed watermain is shown dipping under a storm sewer. This crossing should be modified so that the watermain goes over the storm sewer to eliminate future maintenance issues.
    c. At approximately Sta 18+75, the water main should be only 18" under the proposed storm sewer crossing.
    d. Show N. Invert of sanitary structure S38.
    e. Call out proposed hydrants in profile by station and label finish grades ie, H21, H22, H23 (typ.).
    f. Water service for lot 29 cannot be installed on hydrant tee.

10. Sheet 19-
    a. Complete proposed watermain profile indicating proper valves and appurtenances for 2-inch blow-off, profile does not appear correct, the 2-inch blowoff connection and valve is after service connection to lots, revise profile to accurately reflect plan (typ.).
    b. Call out all utility crossings with station, type, invert and top of watermain (typ.).
    c. Keep same line type for proposed watermain throughout plans.

11. Sheet 20-
    a. Correct proposed watermain profile in area Cumberland Drive, does not appear correct.
    b. Call out all utility crossings with station, type, invert and top of watermain (typ.).
    c. Show gate valve & box for proposed 2-inch blow-off along Cumberland Trail
    d. The proposed watermain profile appears incorrect at Sta 16+00

12. Sheet 21-
    a. The Outlot 1 water main crossing of the storm sewer should be routed above the storm sewer. The water main should be 5.5' below the proposed grade.

In summary, we recommend approval of the site plan contingent upon satisfactory resolution of these comments.

If you have any questions, please contact me at (734) 657-4925.

Sincerely,
IMEG CORP.

Ted L. Erickson, P.E.
Principal

Chelsea Police Department KEVIN KAZYAK
CHIEF OF POLICE

311 SOUTH MAIN STREET ◆ Chelsea, Michigan 48118 ◆ **OFFICE** (734) 475-1771 ◆ **FAX** (734) 475-1996 ◆ **EMAIL** kkazyak@chelseapd.org

March 14, 2023

RE: Revised Phase 1 Final Site Plans: Heritage Farms
APN#06-07-06-360-006

Adrianna Jordan,

I have reviewed the site plans that you provided for the Heritage Farms Development, Revised Phase 1 Final Site Plans, the Tetra Tech traffic impact study and conducted an on-site visit of the proposed development. With phase 1 only adding 48 units I do not see any traffic issues with the plans that have been submitted. However, with 183 additional units proposed in phases 2-5, I have some concern about the increased traffic at the entrance to the development (Heritage Farms Boulevard at Dexter-Chelsea Rd.).

I agree with Tetra Tech's assessment that a right-turn lane for west bound Dexter-Chelsea Rd. traffic is warranted.

Respectfully submitted,

Kevin Kazyak
Chief of Police
Chelsea Police Department

Chelsea Area Fire Authority
200 W. Middle Street
Chelsea, MI 48118
O (734) 475-8755
F (734) 475-1967
https://www.chelseafire.org
Fire Chief – Robert A. Arbini
Proudly serving the City of Chelsea and Lima, Lyndon, and Sylvan Townships

March 16, 2023

City of Chelsea
305 S. Main St. Suite 100
Chelsea, MI 48118

Attn: MS. Jordan

Re: Heritage Point Final Site Plan

Dear MS. Jordan

The Chelsea Area Fire Authority (CAFA) has reviewed plans given to this department. We have reviewed these plans with fire safety and emergency services as our main goal. CAFA refers to the adopted National Fire Protection Agency (NFPA) code and standards. Below are our comments and recommendations.

- **Pre-Construction Meetings**: The Chelsea Area Fire Authority would prefer to be present at each meeting of this type. Please notify this department at least forty-eight (48) hours before any meeting.
- **Before Construction Begins of any Structures:** All roadways and water systems must be in place and useable for emergency services. Roadway surfaces must be all weather and able to handle a live load of at least seventy-five thousand (75,000) pounds.
- **Site Plan:** This site plan complies with the adopted Fire Code.

The Chelsea Area Fire Authority stands ready to serve. Should you or any member of your team have questions or comments, please feel free to contact the Fire Chief or the Fire Inspector

Sincerely

Eric J Stanley

Eric J Stanley
Lieutenant/Fire Inspector

EVAN N. PRATT, P.E.

Water Resources Commissioner
705 N Zeeb Road
Ann Arbor, MI 48103
734-222-6860

Drains@washtenaw.org

Harry Sheehan
Chief Deputy Water Resources Commissioner

Scott Miller P.E.
Deputy Water Resources Commissioner

Theo Eggermont
Public Works Director

January 19, 2023

Mr. Joe Maynard, P.E.
Washtenaw Engineering Company
P.O. Box 1128
Ann Arbor, Michigan 48106

RE: Heritage Farms – Phase 1
City of Chelsea, Michigan
WCWRC Project No. 4243

Dear Mr. Maynard:

This office has reviewed the final site plans for the above-referenced project to be located in the city of Chelsea. These plans have a job number of 32971, a date of December 28, 2022, and were received on January 3, 2022. As a result of our review, we would like to offer the following comments:

1. The minimum pipe size of 12 inches in diameter has not been met throughout the stormwater pipe network.
2. The stormwater conveyance calculations presented on plan sheet 39 do not indicate the downstream structure for the pipe runs. In addition, the conveyance calculations do not include all proposed pipe runs.
3. On plan sheet 28, the total site area is indicated at the top of the runoff calculations. This area does not correspond to the sum of the pervious and impervious areas listed on Worksheet W1.
4. The sum of the drainage areas listed on plan sheet 27 do not total the area used on the runoff calculations.
5. The grading plans do not present all of the proposed grading within the proposed basin and lots.
6. The proposed easements for all utilities that run parallel to the storm sewer must be shown on the utility plans, so that we can verify that they do not overlap with the proposed drainage easements.
7. Please see the attached invoice for the current fees and remit these fees upon receipt. As requested, the invoice is being submitted directly to M/I Homes of Michigan, LLC.

At your convenience, please send us a complete set of revised plans and the additional information requested above so that we may continue our review. If you have any questions, please contact our office.

Sincerely,

Theresa M. Marsik, P.E.
Stormwater Engineer
(drainage district\Heritage Farms Phase 1 rev6)

cc: David Straub, M/I Homes of Michigan, LLC
Laura Kaiser, City of Chelsea Deputy Clerk
Adrianna Jordan, City of Chelsea Community Development Coordinator
Ted Erickson, P.E., City of Chelsea Engineer (IMEG Corp.)

PRINCIPALS
J.K. MAYNARD, P.E.
D.J. HOUCK
D.L. MOORE

ASSOCIATE
T.L. SUTHERLAND, P.S.

WASHTENAW ENGINEERING COMPANY

CIVIL ENGINEERS * PLANNERS * SURVEYORS
TRANSPORTATION ENGINEERS
LANDSCAPE ARCHITECTS

Heritage Farms Phase 1 Construction Plans
December 22, 2022

Memorandum of Changes

The project has submitted request to adjust plans and lot sizes to all minimum 60' wide lots. This adjustment resulted in some plan modifications as noted below:

1. Grading plan was adjusted to account for smaller width lots and related drainage.

2. Utility plans were adjusted to reduce extra storm sewer structures by shifting storm main under the curbing. This also allows sanitary to shift. This change also allows for required Washtenaw County Water Resources Commissioner easements to be placed over the storm system that no longer overlap with other utilities with the exception of the crossings.

3. With the shift of lots each home sewer leads were adjusted to fit the new homes and lot sizes.

4. Road construction plans were maintained in the same location with only minor changes to elevations as needed for proper drainage.

5. Storm water management system was changed to enlarge the main infiltration pond to account for all storm water on Phase 1. This allows the rear yard infiltration systems that were previously designed to be eliminated and create a much simpler system for maintenance of the site.

6. Project landscaping has been adjusted to only provide 1 tree per lot frontage. Due to buried utility services and driveway locations it is better served to only have a single tree within each lot front. The remainder of the required trees are provided on the site where best fit within the right-of-way or just outside of right-of-way. This modification gives each tree the best opportunity to grow and not be impacted by future utility repairs if needed.

7. Site irrigation has been updated to include more of the open space areas for continued maintenance of the site.

8. Photometric plans and details of the proposed light fixtures are included on the plans.

PRINCIPALS
J.K. MAYNARD, P.E.
D.J. HOUCK
D.L. MOORE
ASSOCIATE
T.L. SUTHERLAND, P.S.

WASHTENAW ENGINEERING COMPANY

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LANDSCAPE ARCHITECTS

March 7, 2023

Washtenaw County Water Resources Commissioner
705 N. Zeeb Road
Ann Arbor, MI 48103

Attn: Theresa Marsik, P.E.

RE: Heritage Farms – Phase 1
City of Chelsea
WCWRC Project No. 4243

Ms. Marsik:

We offer the following comments in response to your review letter dated January 19, 2023:

1. The minimum pipe size of 12 inches in diameter has not been met throughout the storm water pipe network.
   Revised. The only exceptions are the 8" diameter perforated pipe in the Basin A and the 6" diameter building sump connections.

2. The storm water conveyance calculations presented on plan sheet 39 do not indicate the downstream structure for the pipe runs. In addition, the conveyance calculations do not include all proposed pipe runs.
   Conveyance calculations for all proposed pipes 12" or larger are now included.

3. On plan sheet 28, the total site area is indicated at the top of the runoff calculations. This area does not correspond to the sum of the pervious and impervious areas listed on Worksheet W1.
   Total site area revised to include the 19.47 acres of Phase 1 plans plus the 1.502 acres tributary to Basin "A" from Phase 2. For a total of 20.972 acres.

4. The sum of the drainage areas listed on plan sheet 27 do not total the area used on the runoff calculations.
   Total site area revised to include the 19.47 acres of Phase 1 plans plus the 1.502 acres tributary to Basin "A" from Phase 2. For a total of 20.972 acres.

5. The grading plans do not present all of the proposed grading within the proposed basin and lots.
   Printing error. Revised.

6. The proposed easements for all utilities that run parallel to the storm sewer must be shown on the utility plans, so that we can verify that they do not overlap with the proposed drainage easements.
   Revised. Rear yard storm sewer along the southeast property moved outside of the landscaping easement.

7. Please see the attached invoice for the current fees and remit these fees upon receipt. As requested, the invoice is being submitted directly to M/I Homes of Michigan, LLC.
Acknowledged.

If you have any questions please contact the undersigned.

Sincerely,

Joseph K. Maynard, P.E.

PRINCIPALS
J.K. MAYNARD, P.E.
D.J. HOUCK
D.L. MOORE

ASSOCIATE
T.L. SUTHERLAND, P.S.

WASHTENAW ENGINEERING COMPANY

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TRANSPORTATION ENGINEERS
LANDSCAPE ARCHITECTS

March 17, 2023

City of Chelsea
305 S. Main St, Suite 100
Chelsea, MI 48118

Attn: Adrianna Jordan

RE: Heritage Farms – Phase 1
Final Site Plan Review

Ms. Jordan:

We offer the following comments in response to IMEG review letter dated March 15, 2023::

1. The plans reflect engineering and utility changes related to the PUD amendment. We note that the current plans do not appear to reflect eh March 1, 2021 review letter (specifically 6, 7, 8, and 10 from the attached) that had been previously addressed in the March 21, 2021 plan set.
We have reviewed this letter and believe all items are now resolved.

2. Callouts and stationing do not match between water main, sanitary sewer and roadway. This should be addressed on all utility sheets. Stations referred to below are based on the road centerline stationing.
Due to the unique nature of placing water main profiles on road plans stationing was used where possible.

3. Storm water management review was completed by the Washtenaw County Water Resources Commissioner (WCWRC) and we defer to their comments. All storm sewer is proposed to be owned by the WCWRC and located within easements.
Acknowledged.

4. The road cross section should match the City of Chelsea's standard cross section for private roads. The pavement section should include 3" of 3C base and 2" of 4A topping. In general, the curb should be MDOT F4 vs the proposed mountable curb.
Road section has been revised as requested.

5. We note a tree is proposed near the northwest corner of Lot 13 that may impact the visibility of the proposed stop sign. This tree should be relocated.
Tree relocated as requested.

Water Main and Sewer

6. An Act 399 permit (water main) and Part 41 permit (sanitary sewer) have been received based on the drawings from May 2021. These permits should be amended or reapplied for as determined by EGLE.
Data for amended plans have been provided for updates to the permits.

7. The City's Standard Sewer Specification (attached) should be added to the plans.
Sewer specifications added to plans as a new sheet.

8. Sheet 17 –
   a. Call out proposed live tap with appropriate tapping sleeve and appurtenances to the existing 6-inch water main along Dexter-Chelsea Road, provide valve box on live tap gate valve.
   Detail for connection has been corrected on the plans.

   b. Label all utility crossings with bottom of utility elevation and top of pipe elevation to verify minimum vertical clearance (typ.).
   Due to limited time, this can be submitted separately.

   c. Revise location of 1-inch water service tap for Lot 9 at the 5.5' depth.
   Location for water service line has been adjusted.

   d. Call out 8-inch external drop on sanitary structure S-36.
   Added to structure table.

   e. Maintain 5.5-feeet of cover in all areas where possible.
   Note water main finish grade reflects road centerline, in lawn extension grade is .5' higher.

9. Sheet 18-
   a. Label sanitary structure S-36.
   Label added to structure as requested.

   b. On Countryside Road at approximately station 20, the proposed water main is shown dipping under a storm sewer. This crossing should be modified so that the water main goes over the storm sewer to eliminate future maintenance issues.
   Water main adjusted to go over the main.

   c. At approximately Sta 18+75, the water main should be only 18" under the proposed storm sewer crossing.
   Depth on dip has been revised.

   d. Show N. Invert of sanitary structure S38.
   Invert added to structure as requested.

   e. Call out proposed hydrants in profile by station and label finish grades ie, H21, H22, H23 (typ.).
   Labels added to hydrants as requested.

   f. Water service for lot 29 cannot be installed on hydrant tee.
   Water service line relocated 3' away from hydrant lead.

10. Sheet 19-
   a. Complete proposed water main profile indicating proper valves and appurtenances for 2-inch blow-off, profile does not appear correct, the 2-inch blow-off connection and valve is after service connection to lots, revise profile to accurately reflect plan (typ.).
   Detail on profile has been corrected to better reflect the detail.

   b. Call out all utility crossings with station, type, invert and top of water main (typ.).
   Due to limited time, this can be submitted separately.

c. Keep same line type for proposed water main throughout the plans.
Line types have been corrected.

11. Sheet 20-

a. Correct proposed water main profile in area Cumberland Drive, does not appear correct.
Water main profile has been corrected.

b. Call out all utility crossings with station, type, invert and top of water main (typ.).
Due to limited time, this can be submitted separately.

c. Show gate valve & box for proposed 2-inch blow-off along Cumberland Trail.
Detail on profile has been corrected to better reflect the detail.

d. The proposed water main profile appears incorrect at Sta 16+00.
Water main profile has been corrected.

12. Sheet 21-

a. The Outlot 1 water main crossing of the storm sewer should be routed above the storm sewer. The water main should be 5.5' below the proposed grade.
Water line has been raised as it goes under required 5.5' depth 2" foam is required.

If you have any questions please contact the undersigned.

Sincerely,

Joseph K. Maynard, P.E.

TETRA TECH

April 6, 2023

Ms. Adrianna Jordan, AICP
Community Development Director
The City of Chelsea
305 S. Main Street, Suite 100
Chelsea, Michigan 48118

Re: Proposed Heritage Farms Residential Development
Traffic Impact Study
City of Chelsea, Michigan
200-12791-23001

Dear Ms. Jordan:

Tetra Tech (Tt) has completed our traffic impact study related to the proposed Heritage Farms residential development to be located on the north side of Dexter-Chelsea Road east of Savannah Lane in the City of Chelsea, Washtenaw County. The proposed residential development consists of 231 total single-family detached houses to be built over 6 phases, with approximately 48 homes built during the first phase, and a similar number of units to be built during each subsequent phase. Access to the residential development will be provided via a proposed connection to Dexter-Chelsea Road (future Heritage Farms Boulevard) and a connection to Elm Street at Vicksburg Drive (the proposed development will provide the east leg of the intersection). This traffic impact study has been completed in accordance with the requirements specified by the City of Chelsea and accepted practice.

Existing Roadway Conditions

Within the vicinity of the proposed development, Dexter-Chelsea Road is a two-lane roadway under the jurisdiction of the City of Chelsea with a posted speed limit of 40 MPH. Freer Road, in the vicinity of the proposed development, is also a two-lane City of Chelsea Road with a posted speed limit of 25 MPH. At the intersection of Dexter-Chelsea Road and Freer Road, Freer Road is stop controlled and Dexter-Chelsea Road is uncontrolled (approaches do not stop). There is a gated railroad crossing just to the south of the intersection (Norfolk-Southern Railway).

At the signalized intersection of Old US Highway 12 and Freer Road, three of the four approaches are under the jurisdiction of the Washtenaw County Road Commission (WCRC), with the north leg of Freer Road under the jurisdiction of the City of Chelsea. In the vicinity of the intersection, Old US Highway 12 has a posted speed limit of 45 MPH, the north leg of Freer Road has a posted speed limit of 40 MPH, and the south leg of Freer Road has an unposted 55 MPH speed limit. The traffic signal runs in isolated free mode (actuated uncoordinated), with detection on all approaches to the

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intersection. There is a marked, controlled crosswalk (via countdown pedestrian indications, part of the overall traffic signal) on the west side of the intersection (crossing Old US Highway 12).

According to the Southeast Michigan Council of Governments (SEMCOG) website, within the vicinity of the proposed development, the Average Daily Traffic (ADT) volume on Dexter-Chelsea Road is approximately 2,900 vehicles per day (vpd), and the ADT volume on Freer Road is approximately 6,300 vpd. To the east of Freer Road, the ADT volume on Old US Highway 12 is approximately 8,900 vpd, and to the west of Freer Road the ADT volume on Old US Highway 12 is approximately 10,700 vpd.

Traffic Counts

Peak hour intersection turning movement counts were collected at the following intersections on Tuesday, February 28, 2023, from 7:00 a.m. – 9:00 a.m. and from 3:00 p.m. – 6:00 p.m. while schools were in session:

- Dexter-Chelsea Road and Freer Road, and
- Old US Highway 12 and Freer Road.

The existing traffic counts are shown in Figure 2 attached to the end of this letter, along with the collected intersection count reports and traffic count calculation worksheets.

Background Traffic Scenario

The Washtenaw Area Transportation Study (WATS) was contacted for a background growth rate for the study area. Background growth rates are used to forecast background increases in traffic which are unrelated to the proposed development. WATS was able to provide a 2.02% annual background growth rate for the area around the intersection of Dexter-Chelsea Road and Freer Road, and a 0.89% background growth rate for the area around the intersection of Old US Highway 12 and Freer Road.

In addition, forecasted traffic from the proposed Wolf Farm Development was included in the background traffic scenario. Forecasted traffic volumes and distributions provided in Fleis & VandenBrink's traffic study dated November 19, 2019, were included in the background traffic scenario. The Wolf Farm Development is forecast to generate 260 total trips during the AM peak hour and 364 total trips during the PM peak hour.

Based on discussions with your office, a build-out year of 2028 was assumed for this analysis. The background traffic volumes are shown in Figure 3 attached to the end of this letter.

Trip Generation

Using the information and methodologies specified in the latest version of *Trip Generation (11th Edition)* published by the Institute of Transportation Engineers (ITE), Tt forecast the weekday AM

and PM peak hour trips associated with the proposed Heritage Farms residential development. The results of the trip generation forecast for the proposed development is provided below in Table 1.

Table 1
ITE Trip Generation for Proposed Heritage Farm Residential Development

Land Use	Land Use Code	Size	AM Peak Hour			PM Peak Hour			Week Day
			In	Out	Total	In	Out	Total	
Single-Family Detached Housing	210	231 units	40	120	160	138	80	218	2,180
TOTAL TRIPS			**40**	**120**	**160**	**138**	**80**	**218**	**2,180**

Trip Distribution

The existing traffic volumes were used to develop a trip distribution model for the AM and PM peak hours for traffic generated by the proposed development. The existing traffic patterns indicate the following probable distribution for the proposed development:

AM Peak Hour
8% from and 4% to the south
23% from and 53% to the east
69% from and 43% to the west

PM Peak Hour
3% from and 5% to the south
50% from and 36% to the east
47% from and 59% to the west

The proposed trip distribution for the site is shown in Figure 4 attached to this letter. The background traffic volumes were combined with the site generated traffic volumes to obtain the total future traffic volumes, which are shown in Figure 5 attached to this letter.

Level of Service Analysis

A level of service (LOS) analyses was performed under existing, background and total future traffic conditions for the AM and PM peak hours for the intersections of:

- Dexter-Chelsea Road and Freer Road, and
- Old US Highway 12 and Freer Road.

The proposed site access to Dexter-Chelsea Road was evaluated under total future conditions for both the AM and PM peak hours. Based on discussions with your office, an evaluation of the site access at Elm Street and Vicksburg Drive was not required.

According to the most recent edition (7th Edition) of the Highway Capacity Manual, level of service is a qualitative measure describing operational conditions of a traffic stream or intersection. Level of service ranges from A to F, with LOS A being the best. LOS D is generally considered to be

acceptable. Tables 2 and 3 present the criteria for defining the various levels of service for unsignalized and signalized intersections, respectively.

Table 2
Level of Service Criteria (Unsignalized Intersection)

Level of Service	Average Stopped Delay/Vehicle (seconds)
A	≤10
B	>10 and ≤ 15
C	>15 and ≤ 25
D	>25 and ≤ 35
E	>35 and ≤ 50
F	> 50

Note: LOS "D" is considered acceptable in urban/suburban areas.

Table 3
Level of Service Criteria (Signalized Intersection)

Level of Service	Average Stopped Delay/Vehicle (seconds)
A	≤10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Note: LOS "D" is considered acceptable in urban/suburban areas.

The results of the level of service analyses are summarized in Tables 4 through 8 for the intersections listed above.

Unsignalized Intersection of Dexter-Chelsea Road and Freer Road

The results of the level of service analysis for this intersection indicate that under existing traffic conditions, all approaches to the intersection operate at a LOS B or better during both the AM and PM peak hours.

With the addition of background traffic, all approaches to the intersection would continue to operate at a LOS B or better during the AM peak hour, and at a LOS C or better during the PM peak hour.

With the addition of site generated traffic, all approaches to the intersection would operate at a LOS C or better during both the AM and PM peak hours.

Table 4
AM Peak Hour
Level of Service Analysis for Dexter-Chelsea Road and Freer Road

Approach	2023 Existing	2028 No Build	2028 Build
Eastbound Dexter-Chelsea Road	A (-)	A (-)	A (-)
Westbound Dexter-Chelsea Road	A (4.1)	A (4.5)	A (4.5)
Northbound Freer Road	B (12.2)	B (14.2)	C (16.9)

(XX.X) Average seconds of delay per vehicle.
(-) Movement is unopposed and experiences no delay.

Table 5
PM Peak Hour
Level of Service Analysis for Dexter-Chelsea Road and Freer Road

Approach	2023 Existing	2028 No Build	2028 Build
Eastbound Dexter-Chelsea Road	A (-)	A (-)	A (-)
Westbound Dexter-Chelsea Road	A (1.9)	A (2.4)	A (2.0)
Northbound Freer Road	B (12.5)	C (15.4)	C (22.7)

(XX.X) Average seconds of delay per vehicle.

Signalized Intersection of Old US Highway 12 and Freer Road

The results of the level of service analysis for this intersection indicate that under existing traffic conditions, all approaches to the intersection operate at a LOS C during the AM peak hour, and at a LOS D or better during the PM peak hour, except for the southbound approach during the PM peak hour, which operates at a LOS F. The overall intersection operates at a LOS C during the AM peak hour and at a LOS E during the PM peak hour.

With the addition of background traffic, including traffic from the proposed adjacent Wolf Farms development, all approaches to the intersection would operate at a LOS C during the AM peak hour and at a LOS D or better during the PM peak hour, except for the southbound approach, which would operate at a LOS F during both the AM and PM peak hours. The overall intersection would operate at a LOS D during the AM peak hour and at a LOS F during the PM peak hour.

With the inclusion of the recommended background improvements of converting the leading protected-only eastbound/westbound left-turns to leading permitted/lagging protected left-turn operation, construction of westbound right-turn lane with 250 feet of storage, and optimizing the traffic signal timing during the PM peak period, all approaches to the intersection would operate at a LOS C or better during the AM peak hour and at a LOS D or better during the PM peak period. The overall intersection would operate at a LOS C during the AM peak period and at a LOS D during the PM peak period.

With the addition of site generated traffic and the recommended background improvements, all approaches to the intersection would continue to operate at a LOS D or better during both the AM and PM peak hours, except for the southbound approach during the PM peak hour, which would operate at a LOS E. The overall intersection would continue to operate at a LOS C during the AM peak period and at a LOS D during the PM peak period.

With the recommended build condition improvement of optimizing the traffic signal timing during the PM peak period, all approaches to the intersection would operate at a LOS D or better during the PM peak hour. The overall intersection would operate at a LOS D during the PM peak period.

Table 6
AM Peak Hour
Level of Service Analysis for Freer Road and Old US Highway 12

Approach	2023 Existing	2028 No Build	2028 No Build Imp.[1]	2028 Build[2]
Eastbound Old US Highway 12	C (23.1)	C (28.7)	C (25.9)	C (26.2)
Westbound Old US Highway 12	C (30.3)	C (34.0)	C (24.0)	C (24.3)
Northbound Freer Road	C (20.9)	C (27.3)	B (16.8)	B (17.5)
Southbound Freer Road	C (29.6)	**F (80.5)**	C (27.0)	D (38.1)
Overall Intersection	**C (26.6)**	**D (47.0)**	**C (25.2)**	**C (29.5)**

(XX.X) Average seconds of delay per vehicle.
1. Includes construction of a westbound right-turn only lane with 250 feet of storage and conversion of the eastbound\westbound leading protected-only left-turn operation to leading permitted\lagging protected operation.
2. Build condition assumes no build improvements.

Table 7
PM Peak Hour
Level of Service Analysis for Freer Road and Old US Highway 12

Approach	2023 Existing	2028 No Build	2028 No Build Imp.[1]	2028 Build[2]	2028 Build Imp.[3]
Eastbound Old US Highway 12	C (23.6)	C (26.5)	C (31.6)	C (33.2)	D (37.3)
Westbound Old US Highway 12	C (26.9)	D (39.1)	C (30.4)	C (30.5)	C (34.9)
Northbound Freer Road	D (45.6)	D (49.0)	D (45.2)	D (44.0)	D (44.2)
Southbound Freer Road	**F (104.5)**	**F (257.8)**	D (54.9)	**E (69.1)**	D (51.5)
Overall Intersection	**E (56.0)**	**F (123.7)**	**D (41.1)**	**D (47.3)**	**D (42.6)**

(XX.X) Average seconds of delay per vehicle.
1. Includes construction of a westbound right-turn only lane with 250 feet of storage, conversion of the eastbound\westbound leading protected-only left-turn operation to leading permitted\lagging protected operation, and optimization of the PM peak period traffic signal timing.
2. Build condition assumes no build improvements.
3. Includes additional optimization of the traffic signal timing during the PM peak period.

Unsignalized Intersection of Dexter-Chelsea Road and Heritage Farms Boulevard (Site Access)

The Heritage Farms Boulevard (site access) is proposed to be located on the north side of Dexter-Chelsea Road approximately 825 feet west of Freer Road.

The results of the level of service analysis for this intersection indicate that under total future traffic conditions, all approaches to the intersection would operate at a LOS B or better during both peak hours.

The Washtenaw County Road Commission (WCRC) requirements for left-turn lanes and right-turn deceleration lanes at driveways were evaluated for the Heritage Farm Boulevard access on Dexter-Chelsea Road. According to Section 3.12.9 of the WCRC Procedures and Regulations for Permit Activities, the WCRC utilizes Sections 1.1.4 and 1.1.5 of MDOT's Geometric Design Guide for determining the need for left-turn lanes and right-turn treatments. The peak period westbound approach volume on Dexter-Chelsea Road would be approximately 403 vehicles, the peak period eastbound approach volume on Dexter-Chelsea Road would be approximately 400 vehicles, the peak hour left turn volume would be 28, and the peak hour right turn volume would be 103. Based on WCRC standards, a right turn lane would be warranted, but a left-turn treatment would not be warranted. The WCRC requirements can be found in the appendix materials attached to this letter.

Table 8
Level of Service Analysis for Dexter-Chelsea Road and the Heritage Farms Boulevard Access

Approach	2028 Future AM Peak Hour	2028 Future PM Peak Hour
Eastbound Dexter-Chelsea Road	A (0.3)	A (1.1)
Westbound Dexter-Chelsea Road	A (-)	A (-)
Southbound Heritage Farms Boulevard	B (14.9)	B (13.5)

(XX.X) Average seconds of delay per vehicle. (-) Movement is unopposed and experiences no delay.

Conclusions and Recommendations

The proposed Heritage Farms residential development consists of 231 total single-family detached housing units to be built over 6 phases. Access to the development will be provided via Heritage Farms Boulevard on Dexter-Chelsea Road and an eastern leg for Elm Street at Vicksburg Drive. Please refer to the attached plan showing the layout and site access points.

The proposed residential development is forecast to generate 160 total trips during the AM peak hour (40 inbound and 120 outbound from the site) and 218 trips during the PM peak hour (138 inbound and 80 outbound from the site).

An operational analysis of the following intersections was performed for Existing, No Build, and Build conditions.

- Dexter-Chelsea Road and Freer Road, and
- Old US Highway 12 and Freer Road.

The proposed site access (Heritage Farms Boulevard) to Dexter-Chelsea Road evaluated under total future conditions for both the AM and PM peak hours. According to discussions with your office,

an evaluation of the site access at the intersection of Elm Street and Vicksburg Drive was not required.

The operational review of the intersection of Dexter-Chelsea Road and Freer Road indicated that the intersection currently and would continue to operate at acceptable levels under all potential traffic conditions. The proposed access of Heritage Farms Boulevard with Dexter-Chelsea Road would operate at acceptable levels under total future traffic conditions.

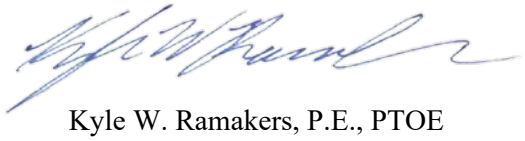
The operational review of the intersection of Old US Highway 12 and Freer Road indicated that under current conditions, the southbound approach operates unacceptably during the PM peak hour, and that the overall intersection operates unacceptably during the PM peak period. Under background (no build) conditions, the southbound approach would operate unacceptably during both peak periods, and the overall intersection would continue to operate unacceptably during the PM peak period.

With the recommended background improvements of converting the eastbound\westbound leading protected-only left-turn phase to permitted\protected operation, constructing a westbound right-turn lane with 250 feet of storage, and optimizing the traffic signal timing, all approaches to the intersection, as well as the overall intersection, would operate at acceptable levels under both background and total future conditions during both the AM and PM peak periods.

A review of WCRC warrants for left turn lanes and right turn treatments at the site access (Heritage Farms Boulevard) on Dexter- Chelsea Road was performed. Based on forecasted traffic volumes, a right-turn lane would be warranted, but a left-turn treatment would not be warranted at the Heritage Farms Boulevard intersection with Dexter-Chelsea Road.

We trust that this letter fulfills your current transportation needs regarding your site. If you have any questions, please feel free to call our office at (810)-220-2112.

Sincerely,



Kyle W. Ramakers, P.E., PTOE
Transportation Engineer

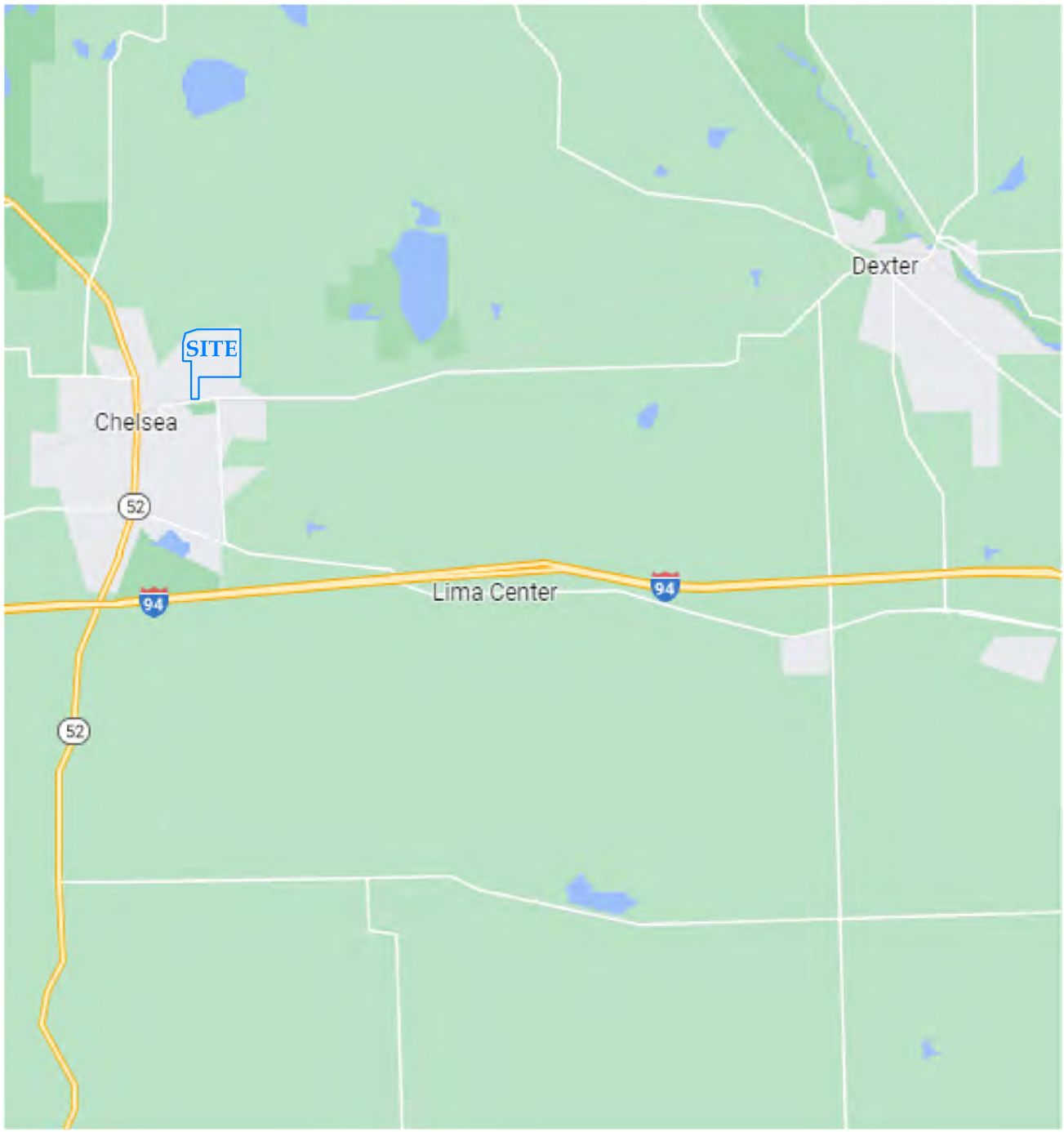
Attachments

O:\Projects\Brighton\IER\12791\200-12791-23001\Docs\Reports\Chelsea_Heritage-Farms_TIS_Letter.docx

REPORT FIGURES

N

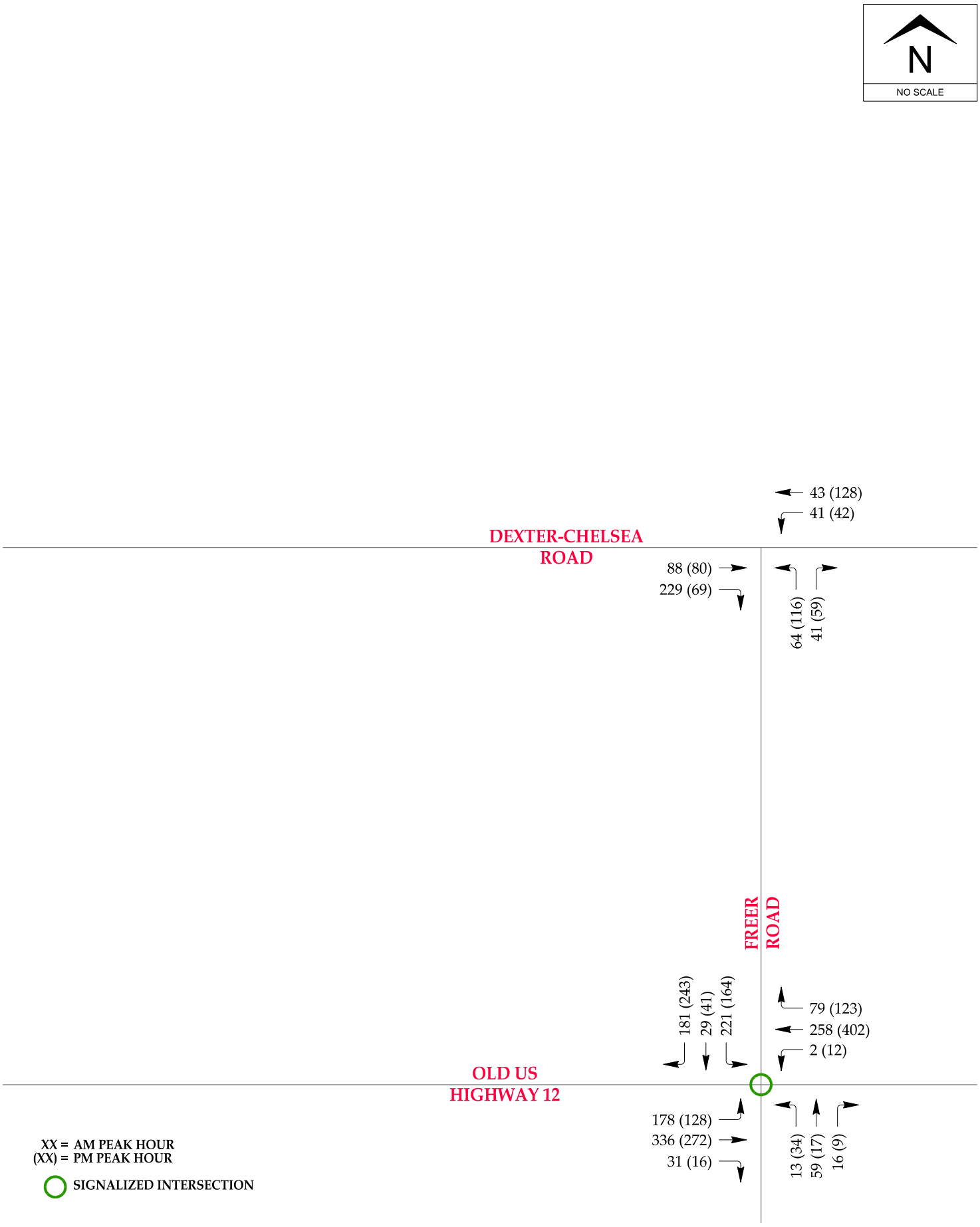
NO SCALE



TETRA TECH

SITE LOCATION MAP

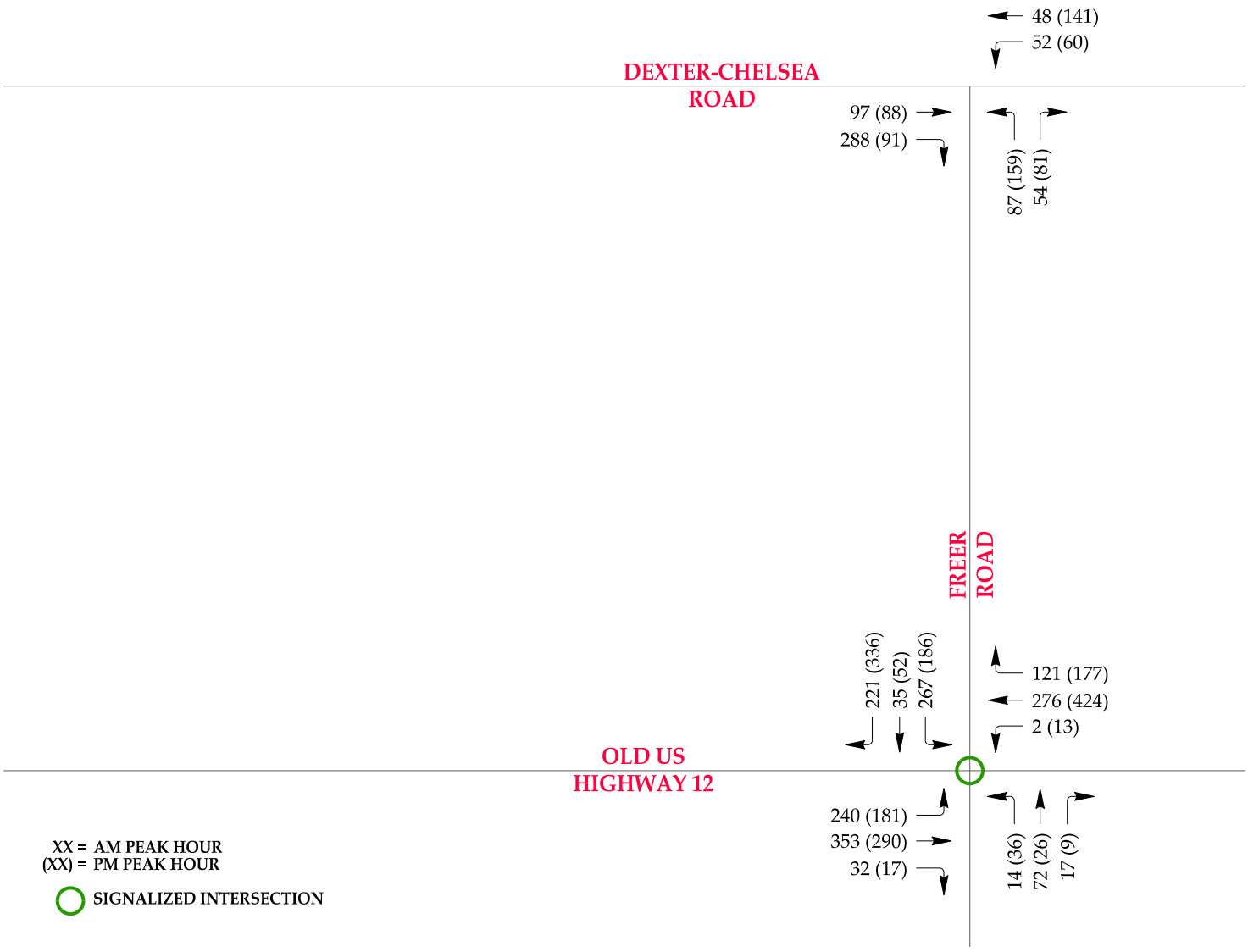
FIGURE 1



TETRA TECH

2023 EXISTING AM (PM) PEAK HOUR TRAFFIC VOLUMES

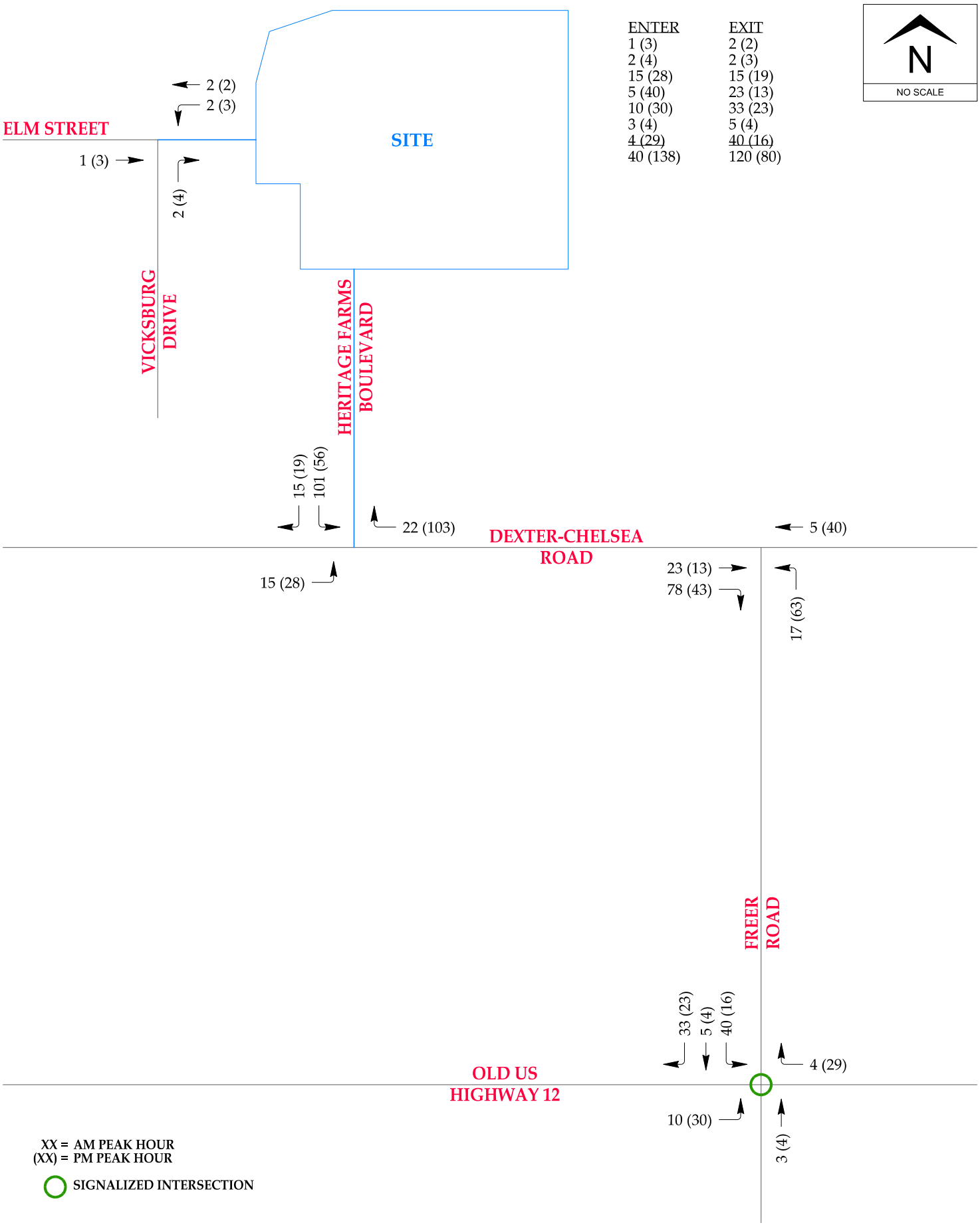
FIGURE 2



TETRA TECH

2028 NO BUILD AM (PM) PEAK HOUR TRAFFIC VOLUMES

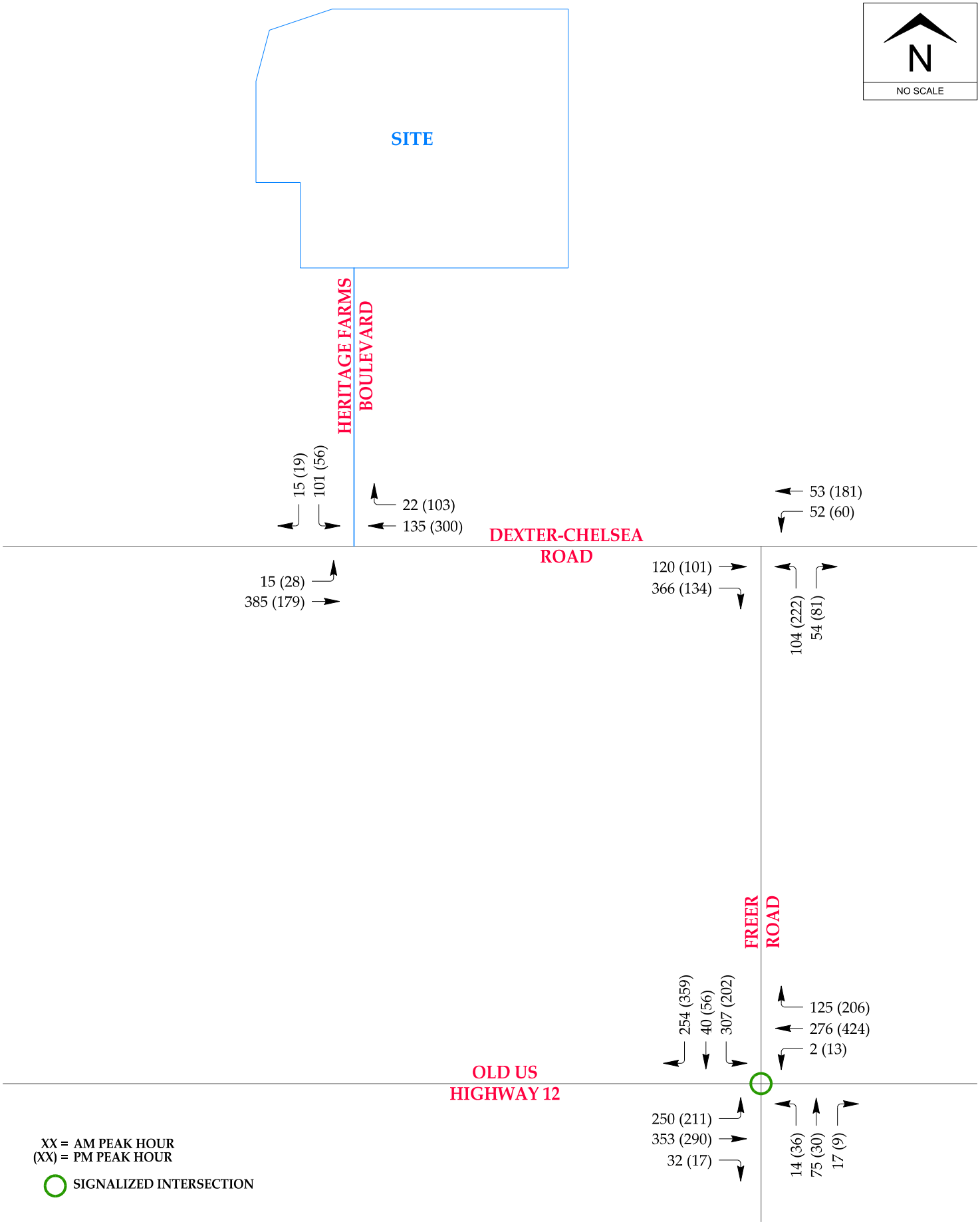
FIGURE 3



TETRA TECH

SITE GENERATED AM (PM) PEAK HOUR TRAFFIC VOLUMES

FIGURE 4



TETRA TECH

2028 BUILD AM (PM) PEAK HOUR TRAFFIC VOLUMES

FIGURE 5

TRAFFIC COUNTS,

BACKGROUND DEVELOPMENT
TRIP FORECAST \ DISTRIBUTION

TRIP GENERATION FORECASTS,

AND FUTURE TRAFFIC PROJECTIONS

Intersection	Time period	Year	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Dexter-Chelsea & Freer Roads	A.M. Peak 03/01/23		PHF		0.75			0.84			0.82					
		2023	Existing		**88**	**229**	**41**	**43**		**64**		**41**				506
		2028	Background	0	97	253	45	48	0	71	0	45	0	0	0	
A.M.			Wolf Assumed			35	7			16		9				
			Bckgrd. Dev. B													
			Total Background	**0**	**97**	**288**	**52**	**48**	**0**	**87**	**0**	**54**	**0**	**0**	**0**	
			Site Generated		23	78		5		17						
			Total Future	**0**	**120**	**366**	**52**	**53**	**0**	**104**	**0**	**54**	**0**	**0**	**0**	

Growth Rate: 0.89% 2.02%

Buildout Year: 2028

Count Year: 2023

Intersection	Time period	Year	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Freer Road & Old US Hwy 12	A.M. Peak 03/01/23		PHF		0.79			0.87			0.69			0.75		
		2023	Existing	**178**	**336**	**31**	**2**	**258**	**79**	**13**	**59**	**16**	**221**	**29**	**181**	1403
		2028	Background	186	351	32	2	270	83	14	62	17	231	30	189	
A.M.			Wolf Farms Adj.	54	2			6	38		10		36	5	32	
			Bckgrd. Dev. B													
			Total Background	**240**	**353**	**32**	**2**	**276**	**121**	**14**	**72**	**17**	**267**	**35**	**221**	
			Site Generated	10					4		3		40	5	33	
			Total Future	**250**	**353**	**32**	**2**	**276**	**125**	**14**	**75**	**17**	**307**	**40**	**254**	

Intersection	Time period	Year	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Dexter-Chelsea & Freer Roads	A.M. Peak 03/01/23		PHF		0.79			0.87			0.93					
		2023	Existing		**80**	**69**	**42**	**128**		**116**		**59**				494
		2028	Background	0	88	76	46	141	0	128	0	65	0	0	0	
P.M.			Wolf Assumed			15	14			31		16				
			Bckgrd. Dev. B													
			Total Background	**0**	**88**	**91**	**60**	**141**	**0**	**159**	**0**	**81**	**0**	**0**	**0**	
			Site Generated		13	43		40		63						
			Total Future	**0**	**101**	**134**	**60**	**181**	**0**	**222**	**0**	**81**	**0**	**0**	**0**	

Intersection	Time period	Year	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Freer Road & Old US Hwy 12	A.M. Peak 03/01/23		PHF		0.95			0.88			0.71			0.66		
		2023	Existing	**128**	**272**	**16**	**12**	**402**	**123**	**34**	**17**	**9**	**164**	**41**	**243**	1461
		2028	Background	134	284	17	13	420	129	36	18	9	171	43	254	
P.M.			Wolf Farms Adj.	47	6			4	48		8		15	9	82	
			Bckgrd. Dev. B													
			Total Background	**181**	**290**	**17**	**13**	**424**	**177**	**36**	**26**	**9**	**186**	**52**	**336**	
			Site Generated	30					29		4		16	4	23	
			Total Future	**211**	**290**	**17**	**13**	**424**	**206**	**36**	**30**	**9**	**202**	**56**	**359**	

Trip Generation - Heritage Farms Residential Development

Land Use	Land Use Code	Size		AM Peak Hour Enter	AM Peak Hour Exit	AM Peak Hour Total	PM Peak Hour Enter	PM Peak Hour Exit	PM Peak Hour Total	Week Day	Notes
Single-Family Detached Housing	210	231	units	40	120	160	138	80	218	2180	Equation
				40	122	162	137	80	217	2178	Average Rate
		TOTAL TRIPS:		**40**	**120**	**160**	**138**	**80**	**218**	**2180**	

Trip Distribution - Day Care and Total Developments

Enter \ In

Direction / Time Period	AM		Distributed Trips			PM		Distributed Trips		
From South - Freer	59	8.23%	3.29	**3**		17	2.90%	4.00	**4**	
From East - Dexter-Chelsea	84	11.72%	4.69	**5**		170	28.96%	39.97	**40**	
From East - Old US 12	79	11.02%	4.41	**4**		123	20.95%	28.92	**29**	
From West - Dexter-Chelsea	317	44.21%	17.68	**18**		149	25.38%	35.03	**35**	
From West - Old US 12	178	24.83%	9.93	**10**		128	21.81%	30.09	**30**	
		0.00%	0.00				0.00%	0.00		
TOTALS:	**717**		**40**	**40**		**587**		**138**	**138**	

Exit \ Out

Direction / Time Period	AM		Distributed Trips			PM		Distributed Trips		
To South - Freer	29	4.35%	5.22	**5**		41	4.93%	3.95	**4**	
To East - Dexter-Chelsea	129	19.34%	23.21	**23**		139	16.73%	13.38	**13**	
To East - Old US 12	221	33.13%	39.76	**40**		164	19.74%	15.79	**16**	
To West - Dexter-Chelsea	107	16.04%	19.25	**19**		244	29.36%	23.49	**24**	
To West - Old US 12	181	27.14%	32.56	**33**		243	29.24%	23.39	**23**	
		0.00%	0.00				0.00%	0.00		
TOTALS:	**667**		**120**	**120**	**0**	**831**		**80**	**80**	**0**

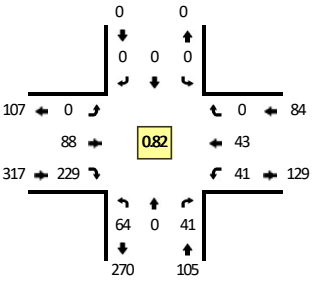
Type of peak hour being reported: Intersection Peak

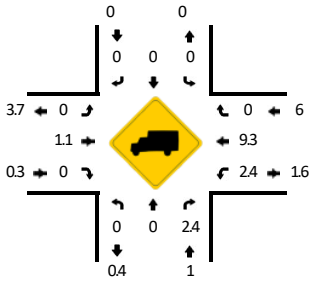
Method for determining peak hour: Total Entering Volume

LOCATION: Freer Rd -- Dexter-Chelsea Rd
CITY/STATE: Chelsea, MI

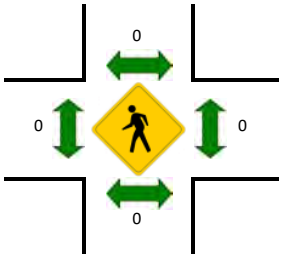
QC JOB #: 16104101
DATE: Tue, Feb 28 2023

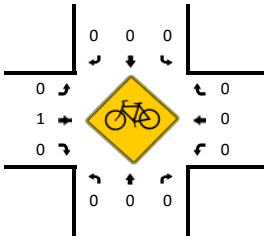
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

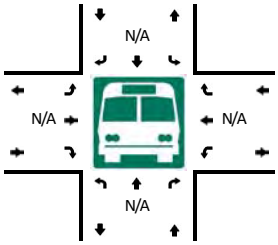


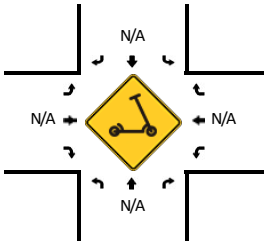


Quality Counts
DATA THAT DRIVES COMMUNITIES









15-Min Count Period Beginning At	Freer Rd (Northbound)				Freer Rd (Southbound)				Dexter-Chelsea Rd (Eastbound)				Dexter-Chelsea Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	12	0	4	0	0	0	0	0	0	15	33	0	5	7	0	0	76	
7:15 AM	9	0	7	0	0	0	0	0	0	21	49	0	14	11	0	0	111	
7:30 AM	19	0	13	0	0	0	0	0	0	22	69	0	12	10	0	0	145	
7:45 AM	18	0	10	0	0	0	0	0	0	25	80	0	11	11	0	0	155	487
8:00 AM	18	0	11	0	0	0	0	0	0	20	31	0	4	11	0	0	95	506
8:15 AM	9	0	6	0	0	0	0	0	0	19	22	0	13	14	0	0	83	478
8:30 AM	3	0	3	0	0	0	0	0	0	12	19	0	8	11	0	0	56	389
8:45 AM	7	0	6	0	0	0	0	0	0	10	11	0	9	11	0	0	54	288

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	72	0	40	0	0	0	0	0	0	100	320	0	44	44	0	0	620
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	4	0		4
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/6/2023 11:27 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

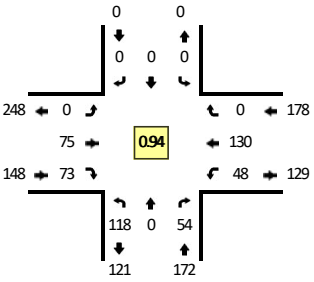
Type of peak hour being reported: Intersection Peak

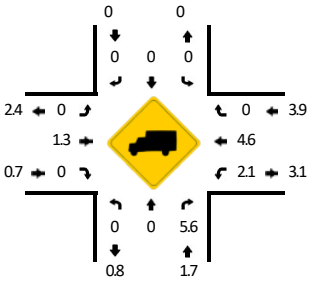
Method for determining peak hour: Total Entering Volume

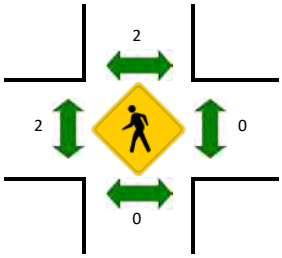
LOCATION: Freer Rd -- Dexter-Chelsea Rd
CITY/STATE: Chelsea, MI

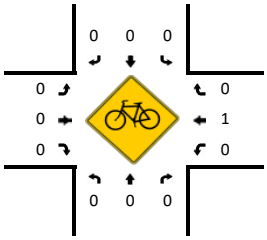
QC JOB #: 16104102
DATE: Tue, Feb 28 2023

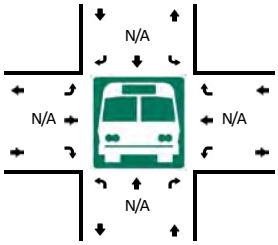
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

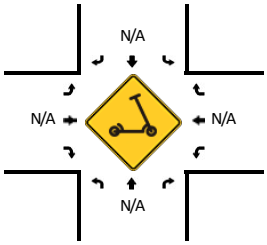












15-Min Count Period Beginning At	Freer Rd (Northbound)				Freer Rd (Southbound)				Dexter-Chelsea Rd (Eastbound)				Dexter-Chelsea Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	28	0	24	0	0	0	0	0	0	17	33	0	7	19	0	0	128	
3:15 PM	35	0	25	0	0	0	0	0	0	10	19	0	10	33	0	0	132	
3:30 PM	24	0	12	0	0	0	0	0	0	10	18	0	10	41	0	0	115	
3:45 PM	24	0	11	0	0	0	0	0	0	16	20	0	13	21	0	0	105	480
4:00 PM	28	0	16	0	0	0	0	0	0	16	17	0	8	31	0	0	116	468
4:15 PM	33	0	14	0	0	0	0	0	0	18	19	0	13	36	0	0	133	469
4:30 PM	24	0	15	0	0	0	0	0	0	21	11	0	11	34	0	0	116	470
4:45 PM	31	0	14	0	0	0	0	0	0	25	22	0	10	27	0	0	129	494
5:00 PM	30	0	11	0	0	0	0	0	0	11	21	0	14	33	0	0	120	498
5:15 PM	25	0	8	0	0	0	0	0	0	25	22	0	17	26	0	0	123	488
5:30 PM	37	0	12	0	0	0	0	0	0	23	20	0	6	18	0	0	116	488
5:45 PM	37	0	9	0	0	0	0	0	0	7	12	0	10	19	0	0	94	453

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	132	0	56	0	0	0	0	0	0	72	76	0	52	144	0	0	532
Heavy Trucks	0	0	4		0	0	0		0	4	0		0	16	0		24
Buses																	
Pedestrians		0				0				8				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/6/2023 11:27 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

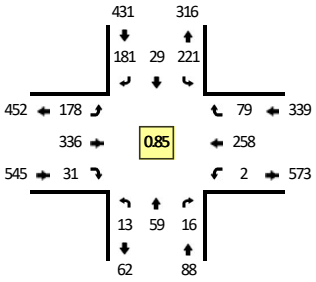
Type of peak hour being reported: Intersection Peak

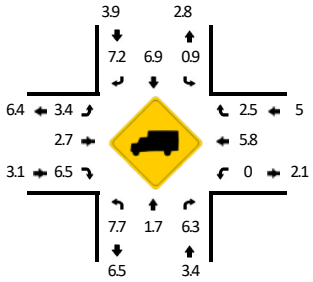
Method for determining peak hour: Total Entering Volume

LOCATION: Freer Rd -- Old US 12
CITY/STATE: Chelsea, MI

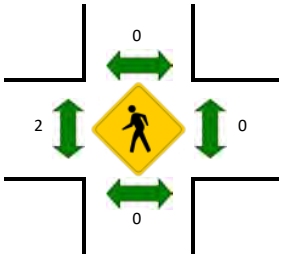
QC JOB #: 16104103
DATE: Tue, Feb 28 2023

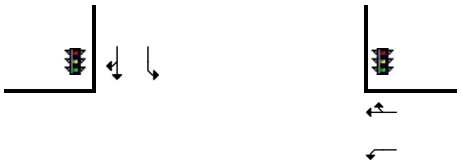
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

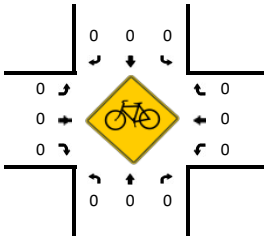


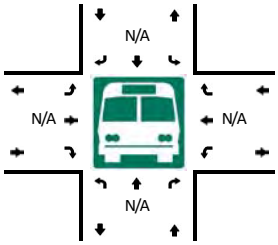


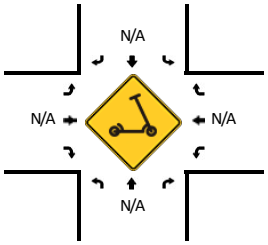
Quality Counts
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	Freer Rd (Northbound)				Freer Rd (Southbound)				Old US 12 (Eastbound)				Old US 12 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	10	3	6	0	24	3	11	0	12	71	9	0	0	47	18	0	214	
7:15 AM	3	13	2	0	37	2	23	0	41	78	6	0	1	63	24	0	293	
7:30 AM	6	20	6	0	55	6	51	0	64	98	10	0	0	69	28	0	413	
7:45 AM	3	20	3	0	63	14	67	0	60	85	10	0	1	65	12	0	403	1323
8:00 AM	1	6	5	0	66	7	40	0	13	75	5	0	0	61	15	0	294	1403
8:15 AM	3	0	4	0	33	1	23	0	9	78	0	0	1	66	8	0	226	1336
8:30 AM	3	0	3	0	32	2	13	0	6	66	1	0	1	79	11	0	217	1140
8:45 AM	1	3	2	0	13	1	18	0	13	57	6	0	2	54	16	0	186	923

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	80	24	0	220	24	204	0	256	392	40	0	0	276	112	0	1652
Heavy Trucks	0	4	0		0	0	4		12	8	0		0	8	4		40
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/6/2023 11:27 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

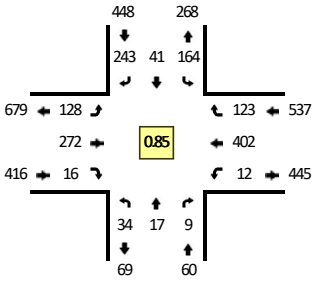
Type of peak hour being reported: Intersection Peak

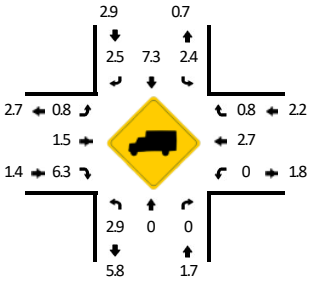
Method for determining peak hour: Total Entering Volume

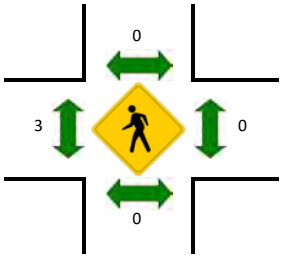
LOCATION: Freer Rd -- Old US 12
CITY/STATE: Chelsea, MI

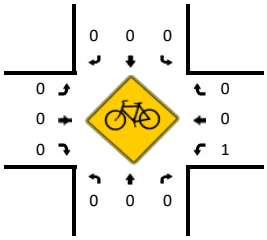
QC JOB #: 16104104
DATE: Tue, Feb 28 2023

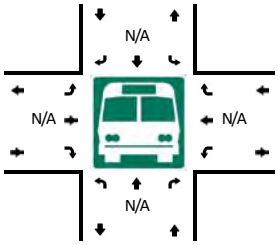
Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:00 PM -- 3:15 PM

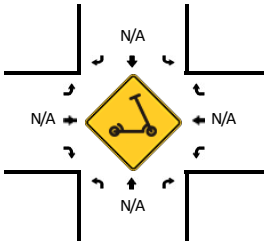


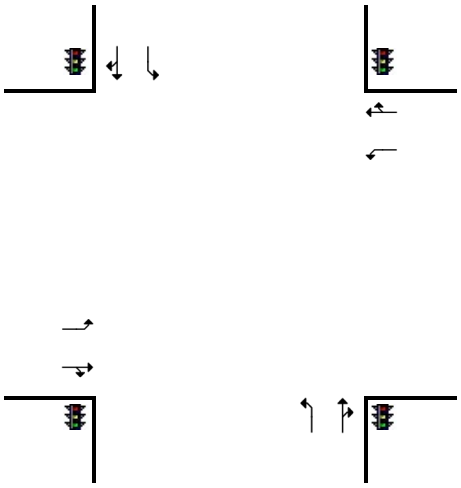












15-Min Count Period Beginning At	Freer Rd (Northbound)				Freer Rd (Southbound)				Old US 12 (Eastbound)				Old US 12 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	14	5	2	0	53	17	99	0	37	68	2	0	3	92	37	0	429	
3:15 PM	12	3	2	0	54	16	82	0	29	67	6	0	3	111	27	0	412	
3:30 PM	5	2	1	0	34	5	34	0	26	79	5	0	2	91	18	0	302	
3:45 PM	3	7	4	0	23	3	28	0	36	58	3	0	4	108	41	0	318	1461
4:00 PM	8	4	1	0	21	4	32	0	26	94	4	0	0	124	30	0	348	1380
4:15 PM	6	4	3	0	28	2	38	0	28	85	1	0	1	117	43	0	356	1324
4:30 PM	7	8	0	0	21	5	36	0	26	86	6	0	0	111	39	0	345	1367
4:45 PM	4	2	3	0	17	2	24	0	24	77	3	0	0	120	47	0	323	1372
5:00 PM	10	3	2	0	16	7	29	0	26	78	5	0	0	116	44	0	336	1360
5:15 PM	15	9	2	0	30	8	34	0	19	75	5	0	1	112	56	0	366	1370
5:30 PM	5	5	0	0	23	4	36	0	13	70	6	0	1	120	46	0	329	1354
5:45 PM	4	4	1	0	11	6	31	0	26	48	3	0	2	95	42	0	273	1304

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	56	20	8	0	212	68	396	0	148	272	8	0	12	368	148	0	1716
Heavy Trucks	0	0	0		4	0	8		4	0	0		0	8	0		24
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/6/2023 11:27 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

LEVEL OF SERVICE

OUTPUT REPORTS

Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	88	229	41	43	64	41
Future Vol, veh/h	88	229	41	43	64	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	84	84	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	117	305	49	51	78	50

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	422	0	419	270
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	149	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1137	-	591	769
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	879	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1137	-	565	769
Mov Cap-2 Maneuver	-	-	-	-	565	-
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	840	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.1	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	630	-	-	1137	-
HCM Lane V/C Ratio	0.203	-	-	0.043	-
HCM Control Delay (s)	12.2	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	97	288	52	48	87	54
Future Vol, veh/h	97	288	52	48	87	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	84	84	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	129	384	62	57	106	66

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	513	0	502	321
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	181	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1052	-	529	720
Stage 1	-	-	-	-	735	-
Stage 2	-	-	-	-	850	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1052	-	497	720
Mov Cap-2 Maneuver	-	-	-	-	497	-
Stage 1	-	-	-	-	735	-
Stage 2	-	-	-	-	798	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.5	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	564	-	-	1052	-
HCM Lane V/C Ratio	0.305	-	-	0.059	-
HCM Control Delay (s)	14.2	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.2	-

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	120	366	52	53	104	54
Future Vol, veh/h	120	366	52	53	104	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	84	84	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	160	488	62	63	127	66

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	648	0	591	404
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	187	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	938	-	470	647
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	845	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	938	-	438	647
Mov Cap-2 Maneuver	-	-	-	-	438	-
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	788	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.5	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	492	-	-	938	-
HCM Lane V/C Ratio	0.392	-	-	0.066	-
HCM Control Delay (s)	16.9	-	-	9.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0.2	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	80	69	42	128	116	59
Future Vol, veh/h	80	69	42	128	116	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	87	87	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	87	48	147	125	63

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	188	0	388	145
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	243	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1386	-	616	902
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	797	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1386	-	593	902
Mov Cap-2 Maneuver	-	-	-	-	593	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	767	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	670	-	-	1386	-
HCM Lane V/C Ratio	0.281	-	-	0.035	-
HCM Control Delay (s)	12.5	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	6.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	88	91	60	141	159	81
Future Vol, veh/h	88	91	60	141	159	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	87	87	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	115	69	162	171	87

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	226	0	469	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	300	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1342	-	553	875
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	752	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1342	-	521	875
Mov Cap-2 Maneuver	-	-	-	-	521	-
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	709	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	15.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	603	-	-	1342	-
HCM Lane V/C Ratio	0.428	-	-	0.051	-
HCM Control Delay (s)	15.4	-	-	7.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.1	-	-	0.2	-

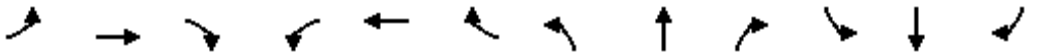
Intersection	
Int Delay, s/veh	8.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	101	134	60	181	222	81
Future Vol, veh/h	101	134	60	181	222	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	87	87	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	128	170	69	208	239	87

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	298	0	559	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	346	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1263	-	490	827
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1263	-	460	827
Mov Cap-2 Maneuver	-	-	-	-	460	-
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	672	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	22.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	522	-	-	1263	-
HCM Lane V/C Ratio	0.624	-	-	0.055	-
HCM Control Delay (s)	22.7	-	-	8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	4.2	-	-	0.2	-



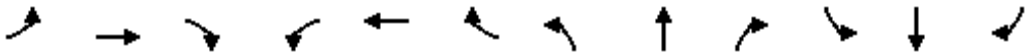
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	336	31	2	258	79	13	59	16	221	29	181
Future Volume (veh/h)	178	336	31	2	258	79	13	59	16	221	29	181
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	225	425	39	2	297	91	19	86	23	295	39	241
Peak Hour Factor	0.79	0.79	0.79	0.87	0.87	0.87	0.69	0.69	0.69	0.75	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	274	713	65	6	373	114	247	401	107	405	64	393
Arrive On Green	0.15	0.42	0.42	0.00	0.27	0.27	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1781	1688	155	1781	1374	421	1099	1422	380	1284	226	1394
Grp Volume(v), veh/h	225	0	464	2	0	388	19	0	109	295	0	280
Grp Sat Flow(s),veh/h/ln	1781	0	1842	1781	0	1795	1099	0	1802	1284	0	1619
Q Serve(g_s), s	8.7	0.0	13.8	0.1	0.0	14.2	1.1	0.0	3.3	16.1	0.0	10.6
Cycle Q Clear(g_c), s	8.7	0.0	13.8	0.1	0.0	14.2	11.7	0.0	3.3	19.4	0.0	10.6
Prop In Lane	1.00		0.08	1.00		0.23	1.00		0.21	1.00		0.86
Lane Grp Cap(c), veh/h	274	0	779	6	0	488	247	0	508	405	0	457
V/C Ratio(X)	0.82	0.00	0.60	0.34	0.00	0.80	0.08	0.00	0.21	0.73	0.00	0.61
Avail Cap(c_a), veh/h	452	0	1040	452	0	1013	247	0	508	405	0	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.0	0.0	15.8	35.3	0.0	24.0	27.2	0.0	19.4	26.9	0.0	22.1
Incr Delay (d2), s/veh	6.0	0.0	1.6	12.4	0.0	6.2	0.2	0.0	0.4	7.1	0.0	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	5.2	0.1	0.0	6.2	0.3	0.0	1.3	5.3	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	0.0	17.4	47.7	0.0	30.2	27.4	0.0	19.8	33.9	0.0	24.9
LnGrp LOS	D	A	B	D	A	C	C	A	B	C	A	C
Approach Vol, veh/h		689			390			128			575	
Approach Delay, s/veh		23.1			30.3			20.9			29.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.7	26.1		27.1	7.0	36.8		27.1				
Change Period (Y+Rc), s	6.8	6.8		7.1	6.8	6.8		7.1				
Max Green Setting (Gmax), s	18.0	40.0		20.0	18.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	10.7	16.2		13.7	2.1	15.8		21.4				
Green Ext Time (p_c), s	0.4	3.0		0.3	0.0	3.7		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		26.6	
HCM 6th LOS		C	

Notes

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



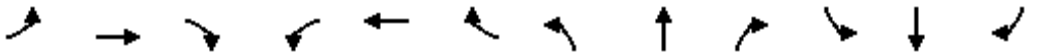
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	353	32	2	276	121	14	72	17	267	35	221
Future Volume (veh/h)	240	353	32	2	276	121	14	72	17	267	35	221
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	304	447	41	2	317	139	20	104	25	356	47	295
Peak Hour Factor	0.79	0.79	0.79	0.87	0.87	0.87	0.69	0.69	0.69	0.75	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	345	838	77	6	378	166	134	358	86	325	55	343
Arrive On Green	0.19	0.50	0.50	0.00	0.31	0.31	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1781	1688	155	1781	1233	540	1039	1457	350	1261	222	1396
Grp Volume(v), veh/h	304	0	488	2	0	456	20	0	129	356	0	342
Grp Sat Flow(s),veh/h/ln	1781	0	1842	1781	0	1773	1039	0	1807	1261	0	1619
Q Serve(g_s), s	13.5	0.0	14.8	0.1	0.0	19.5	1.5	0.0	4.7	15.3	0.0	16.4
Cycle Q Clear(g_c), s	13.5	0.0	14.8	0.1	0.0	19.5	18.0	0.0	4.7	20.0	0.0	16.4
Prop In Lane	1.00		0.08	1.00		0.30	1.00		0.19	1.00		0.86
Lane Grp Cap(c), veh/h	345	0	915	6	0	543	134	0	444	325	0	398
V/C Ratio(X)	0.88	0.00	0.53	0.34	0.00	0.84	0.15	0.00	0.29	1.09	0.00	0.86
Avail Cap(c_a), veh/h	394	0	915	394	0	871	134	0	444	325	0	398
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.9	0.0	14.0	40.5	0.0	26.3	37.9	0.0	24.9	35.1	0.0	29.4
Incr Delay (d2), s/veh	18.6	0.0	1.1	12.5	0.0	7.6	0.9	0.0	0.6	77.6	0.0	17.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	0.0	5.5	0.1	0.0	8.6	0.4	0.0	2.0	13.3	0.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.5	0.0	15.1	53.0	0.0	34.0	38.8	0.0	25.5	112.7	0.0	46.8
LnGrp LOS	D	A	B	D	A	C	D	A	C	F	A	D
Approach Vol, veh/h		792			458			149			698	
Approach Delay, s/veh		28.7			34.0			27.3			80.5	
Approach LOS		C			C			C			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.5	31.7		27.1	7.1	47.2		27.1				
Change Period (Y+Rc), s	6.8	6.8		7.1	6.8	6.8		7.1				
Max Green Setting (Gmax), s	18.0	40.0		20.0	18.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	15.5	21.5		20.0	2.1	16.8		22.0				
Green Ext Time (p_c), s	0.2	3.4		0.0	0.0	3.9		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		47.0	
HCM 6th LOS		D	

Notes

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



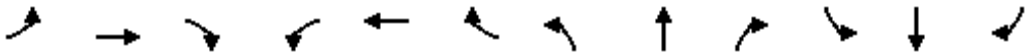
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	353	32	2	276	121	14	72	17	267	35	221
Future Volume (veh/h)	240	353	32	2	276	121	14	72	17	267	35	221
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	304	447	41	2	317	139	20	104	25	356	47	295
Peak Hour Factor	0.79	0.79	0.79	0.87	0.87	0.87	0.69	0.69	0.69	0.75	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	565	52	140	457	387	261	468	113	455	71	449
Arrive On Green	0.10	0.33	0.33	0.01	0.24	0.24	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	1688	155	1781	1870	1585	1039	1457	350	1261	222	1396
Grp Volume(v), veh/h	304	0	488	2	317	139	20	0	129	356	0	342
Grp Sat Flow(s),veh/h/ln	1781	0	1842	1781	1870	1585	1039	0	1807	1261	0	1619
Q Serve(g_s), s	3.6	0.0	14.9	0.0	9.6	4.5	1.1	0.0	3.2	16.8	0.0	11.3
Cycle Q Clear(g_c), s	3.6	0.0	14.9	0.0	9.6	4.5	12.4	0.0	3.2	20.0	0.0	11.3
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.19	1.00		0.86
Lane Grp Cap(c), veh/h	369	0	617	140	457	387	261	0	581	455	0	520
V/C Ratio(X)	0.82	0.00	0.79	0.01	0.69	0.36	0.08	0.00	0.22	0.78	0.00	0.66
Avail Cap(c_a), veh/h	702	0	1184	635	1202	1019	261	0	581	455	0	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.1	0.0	18.7	30.2	21.4	19.5	23.5	0.0	15.4	23.1	0.0	18.2
Incr Delay (d2), s/veh	4.7	0.0	4.9	0.0	4.0	1.2	0.2	0.0	0.3	9.1	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	6.1	0.0	4.1	1.6	0.3	0.0	1.2	5.7	0.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	0.0	23.6	30.2	25.4	20.7	23.7	0.0	15.8	32.2	0.0	21.6
LnGrp LOS	C	A	C	C	C	C	C	A	B	C	A	C
Approach Vol, veh/h		792			458			149			698	
Approach Delay, s/veh		25.9			24.0			16.8			27.0	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.1	22.0		27.1	7.5	27.6		27.1				
Change Period (Y+Rc), s	6.8	6.8		7.1	6.8	6.8		7.1				
Max Green Setting (Gmax), s	18.0	40.0		20.0	18.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	5.6	11.6		14.4	2.0	16.9		22.0				
Green Ext Time (p_c), s	0.8	3.6		0.3	0.0	3.9		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		25.2	
HCM 6th LOS		C	

Notes

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



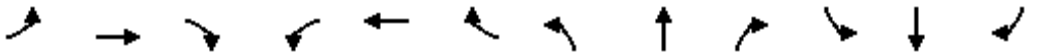
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	353	32	2	276	125	14	75	17	307	40	254
Future Volume (veh/h)	250	353	32	2	276	125	14	75	17	307	40	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	316	447	41	2	317	144	20	109	25	409	53	339
Peak Hour Factor	0.79	0.79	0.79	0.87	0.87	0.87	0.69	0.69	0.69	0.75	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	380	564	52	153	456	386	213	468	107	445	70	445
Arrive On Green	0.11	0.33	0.33	0.02	0.24	0.24	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	1688	155	1781	1870	1585	992	1472	338	1256	219	1400
Grp Volume(v), veh/h	316	0	488	2	317	144	20	0	134	409	0	392
Grp Sat Flow(s),veh/h/ln	1781	0	1842	1781	1870	1585	992	0	1810	1256	0	1618
Q Serve(g_s), s	4.2	0.0	15.1	0.0	9.7	4.8	1.2	0.0	3.4	16.6	0.0	13.7
Cycle Q Clear(g_c), s	4.2	0.0	15.1	0.0	9.7	4.8	14.9	0.0	3.4	20.0	0.0	13.7
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.19	1.00		0.86
Lane Grp Cap(c), veh/h	380	0	615	153	456	386	213	0	575	445	0	514
V/C Ratio(X)	0.83	0.00	0.79	0.01	0.70	0.37	0.09	0.00	0.23	0.92	0.00	0.76
Avail Cap(c_a), veh/h	694	0	1171	627	1188	1007	213	0	575	445	0	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.1	0.0	19.0	30.1	21.7	19.8	26.0	0.0	15.8	24.8	0.0	19.3
Incr Delay (d2), s/veh	4.8	0.0	4.9	0.0	4.0	1.3	0.3	0.0	0.4	24.5	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	6.2	0.0	4.2	1.7	0.3	0.0	1.3	8.8	0.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.8	0.0	23.9	30.1	25.7	21.1	26.4	0.0	16.2	49.3	0.0	26.4
LnGrp LOS	C	A	C	C	C	C	C	A	B	D	A	C
Approach Vol, veh/h		804			463			154			801	
Approach Delay, s/veh		26.2			24.3			17.5			38.1	
Approach LOS		C			C			B			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.7	22.1		27.1	8.0	27.8		27.1				
Change Period (Y+Rc), s	6.8	6.8		7.1	6.8	6.8		7.1				
Max Green Setting (Gmax), s	18.0	40.0		20.0	18.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	6.2	11.7		16.9	2.0	17.1		22.0				
Green Ext Time (p_c), s	0.8	3.6		0.2	0.0	3.9		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		29.5	
HCM 6th LOS		C	

Notes

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



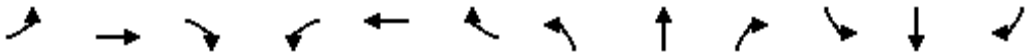
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	272	16	12	402	123	34	17	9	164	41	243
Future Volume (veh/h)	128	272	16	12	402	123	34	17	9	164	41	243
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	135	286	17	14	457	140	48	24	13	248	62	368
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.71	0.71	0.71	0.66	0.66	0.66
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	170	916	54	35	616	189	81	256	139	365	52	311
Arrive On Green	0.10	0.52	0.52	0.02	0.45	0.45	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	1748	104	1781	1374	421	958	1141	618	1371	234	1387
Grp Volume(v), veh/h	135	0	303	14	0	597	48	0	37	248	0	430
Grp Sat Flow(s),veh/h/ln	1781	0	1852	1781	0	1795	958	0	1759	1371	0	1621
Q Serve(g_s), s	6.6	0.0	8.3	0.7	0.0	24.5	0.0	0.0	1.5	15.6	0.0	20.0
Cycle Q Clear(g_c), s	6.6	0.0	8.3	0.7	0.0	24.5	20.0	0.0	1.5	17.1	0.0	20.0
Prop In Lane	1.00		0.06	1.00		0.23	1.00		0.35	1.00		0.86
Lane Grp Cap(c), veh/h	170	0	971	35	0	805	81	0	394	365	0	363
V/C Ratio(X)	0.79	0.00	0.31	0.40	0.00	0.74	0.59	0.00	0.09	0.68	0.00	1.18
Avail Cap(c_a), veh/h	359	0	971	359	0	805	81	0	394	365	0	363
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.5	0.0	12.1	43.2	0.0	20.3	44.6	0.0	27.4	34.2	0.0	34.6
Incr Delay (d2), s/veh	8.1	0.0	0.8	2.7	0.0	6.1	14.8	0.0	0.2	5.6	0.0	107.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	3.2	0.3	0.0	10.4	1.4	0.0	0.6	5.5	0.0	18.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.6	0.0	12.9	45.9	0.0	26.5	59.5	0.0	27.6	39.8	0.0	141.9
LnGrp LOS	D	A	B	D	A	C	E	A	C	D	A	F
Approach Vol, veh/h		438			611			85			678	
Approach Delay, s/veh		23.6			26.9			45.6			104.5	
Approach LOS		C			C			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.3	46.8		27.1	8.6	53.6		27.1				
Change Period (Y+Rc), s	6.8	6.8		7.1	6.8	6.8		7.1				
Max Green Setting (Gmax), s	18.0	40.0		20.0	18.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	8.6	26.5		22.0	2.7	10.3		22.0				
Green Ext Time (p_c), s	0.2	4.1		0.0	0.0	2.3		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		56.0	
HCM 6th LOS		E	

Notes

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



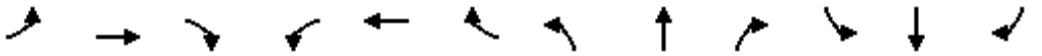
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	181	290	17	13	424	177	36	26	9	186	52	336
Future Volume (veh/h)	181	290	17	13	424	177	36	26	9	186	52	336
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	191	305	18	15	482	201	51	37	13	282	79	509
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.71	0.71	0.71	0.66	0.66	0.66
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	229	944	56	37	542	226	78	286	100	340	47	303
Arrive On Green	0.13	0.54	0.54	0.02	0.43	0.43	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	1749	103	1781	1254	523	828	1322	465	1355	217	1401
Grp Volume(v), veh/h	191	0	323	15	0	683	51	0	50	282	0	588
Grp Sat Flow(s),veh/h/ln	1781	0	1852	1781	0	1776	828	0	1787	1355	0	1618
Q Serve(g_s), s	9.7	0.0	9.0	0.8	0.0	32.8	0.0	0.0	2.1	17.9	0.0	20.0
Cycle Q Clear(g_c), s	9.7	0.0	9.0	0.8	0.0	32.8	20.0	0.0	2.1	20.0	0.0	20.0
Prop In Lane	1.00		0.06	1.00		0.29	1.00		0.26	1.00		0.87
Lane Grp Cap(c), veh/h	229	0	999	37	0	767	78	0	386	340	0	350
V/C Ratio(X)	0.84	0.00	0.32	0.41	0.00	0.89	0.66	0.00	0.13	0.83	0.00	1.68
Avail Cap(c_a), veh/h	346	0	999	346	0	767	78	0	386	340	0	350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.4	0.0	11.9	44.8	0.0	24.3	46.3	0.0	29.3	38.0	0.0	36.3
Incr Delay (d2), s/veh	10.4	0.0	0.9	2.6	0.0	14.6	21.9	0.0	0.3	16.3	0.0	319.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.0	3.5	0.4	0.0	15.4	1.6	0.0	0.9	7.7	0.0	38.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.8	0.0	12.7	47.4	0.0	38.9	68.2	0.0	29.5	54.2	0.0	355.4
LnGrp LOS	D	A	B	D	A	D	E	A	C	D	A	F
Approach Vol, veh/h		514			698			101			870	
Approach Delay, s/veh		26.5			39.1			49.0			257.8	
Approach LOS		C			D			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.7	46.8		27.1	8.7	56.8		27.1				
Change Period (Y+Rc), s	6.8	6.8		7.1	6.8	6.8		7.1				
Max Green Setting (Gmax), s	18.0	40.0		20.0	18.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	11.7	34.8		22.0	2.8	11.0		22.0				
Green Ext Time (p_c), s	0.3	2.4		0.0	0.0	2.5		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		123.7
HCM 6th LOS		F

Notes

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



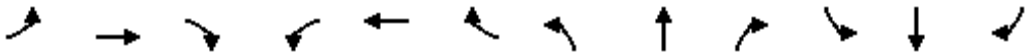
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	181	290	17	13	424	177	36	26	9	186	52	336
Future Volume (veh/h)	181	290	17	13	424	177	36	26	9	186	52	336
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	191	305	18	15	482	201	51	37	13	282	79	509
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.71	0.71	0.71	0.66	0.66	0.66
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	619	37	420	662	561	77	478	168	542	79	506
Arrive On Green	0.06	0.35	0.35	0.06	0.35	0.35	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1781	1749	103	1781	1870	1585	828	1322	465	1355	217	1401
Grp Volume(v), veh/h	191	0	323	15	482	201	51	0	50	282	0	588
Grp Sat Flow(s),veh/h/ln	1781	0	1852	1781	1870	1585	828	0	1787	1355	0	1618
Q Serve(g_s), s	0.2	0.0	12.8	0.0	21.0	8.8	0.0	0.0	1.7	16.2	0.0	33.9
Cycle Q Clear(g_c), s	0.2	0.0	12.8	0.0	21.0	8.8	33.9	0.0	1.7	17.9	0.0	33.9
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.26	1.00		0.87
Lane Grp Cap(c), veh/h	288	0	656	420	662	561	77	0	646	542	0	585
V/C Ratio(X)	0.66	0.00	0.49	0.04	0.73	0.36	0.66	0.00	0.08	0.52	0.00	1.00
Avail Cap(c_a), veh/h	517	0	656	649	662	561	77	0	646	542	0	585
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.0	0.0	23.7	24.6	26.3	22.4	46.9	0.0	19.7	25.5	0.0	29.9
Incr Delay (d2), s/veh	2.6	0.0	2.6	0.0	6.9	1.8	23.2	0.0	0.1	1.2	0.0	38.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	5.7	0.2	9.9	3.3	1.7	0.0	0.7	5.1	0.0	18.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.6	0.0	26.3	24.6	33.2	24.2	70.1	0.0	19.7	26.7	0.0	68.4
LnGrp LOS	D	A	C	C	C	C	E	A	B	C	A	F
Approach Vol, veh/h		514			698			101			870	
Approach Delay, s/veh		31.6			30.4			45.2			54.9	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.8	40.0		41.0	12.8	40.0		41.0				
Change Period (Y+Rc), s	6.8	6.8		7.1	6.8	6.8		7.1				
Max Green Setting (Gmax), s	18.0	33.2		33.9	18.0	33.2		33.9				
Max Q Clear Time (g_c+I1), s	2.2	23.0		35.9	2.0	14.8		35.9				
Green Ext Time (p_c), s	0.5	3.7		0.0	0.0	2.2		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		41.1	
HCM 6th LOS		D	

Notes

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



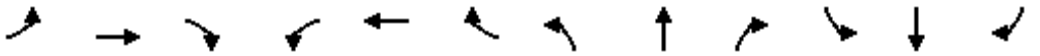
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	290	17	13	424	206	36	30	9	202	56	359
Future Volume (veh/h)	211	290	17	13	424	206	36	30	9	202	56	359
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	222	305	18	15	482	234	51	42	13	306	85	544
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.71	0.71	0.71	0.66	0.66	0.66
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	619	37	420	662	561	77	495	153	537	79	506
Arrive On Green	0.06	0.35	0.35	0.06	0.35	0.35	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1781	1749	103	1781	1870	1585	797	1370	424	1349	219	1400
Grp Volume(v), veh/h	222	0	323	15	482	234	51	0	55	306	0	629
Grp Sat Flow(s),veh/h/ln	1781	0	1852	1781	1870	1585	797	0	1794	1349	0	1618
Q Serve(g_s), s	2.1	0.0	12.8	0.0	21.0	10.5	0.0	0.0	1.9	18.1	0.0	33.9
Cycle Q Clear(g_c), s	2.1	0.0	12.8	0.0	21.0	10.5	33.9	0.0	1.9	20.0	0.0	33.9
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.24	1.00		0.86
Lane Grp Cap(c), veh/h	286	0	656	420	662	561	77	0	649	537	0	585
V/C Ratio(X)	0.78	0.00	0.49	0.04	0.73	0.42	0.66	0.00	0.08	0.57	0.00	1.08
Avail Cap(c_a), veh/h	514	0	656	649	662	561	77	0	649	537	0	585
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.7	0.0	23.7	24.6	26.4	23.0	46.9	0.0	19.7	26.3	0.0	29.9
Incr Delay (d2), s/veh	4.5	0.0	2.6	0.0	6.9	2.3	23.2	0.0	0.1	1.8	0.0	59.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	5.7	0.2	9.9	4.0	1.7	0.0	0.8	5.7	0.0	21.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.2	0.0	26.3	24.6	33.2	25.2	70.1	0.0	19.8	28.1	0.0	89.0
LnGrp LOS	D	A	C	C	C	C	E	A	B	C	A	F
Approach Vol, veh/h		545			731			106			935	
Approach Delay, s/veh		33.2			30.5			44.0			69.1	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.8	40.0		41.0	12.8	40.0		41.0				
Change Period (Y+Rc), s	6.8	6.8		7.1	6.8	6.8		7.1				
Max Green Setting (Gmax), s	18.0	33.2		33.9	18.0	33.2		33.9				
Max Q Clear Time (g_c+I1), s	4.1	23.0		35.9	2.0	14.8		35.9				
Green Ext Time (p_c), s	0.5	3.8		0.0	0.0	2.2		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		47.3	
HCM 6th LOS		D	

Notes

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	290	17	13	424	206	36	30	9	202	56	359
Future Volume (veh/h)	211	290	17	13	424	206	36	30	9	202	56	359
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	222	305	18	15	482	234	51	42	13	306	85	544
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.71	0.71	0.71	0.66	0.66	0.66
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	262	580	34	390	621	526	77	535	166	575	85	547
Arrive On Green	0.06	0.33	0.33	0.06	0.33	0.33	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1781	1749	103	1781	1870	1585	797	1370	424	1349	219	1400
Grp Volume(v), veh/h	222	0	323	15	482	234	51	0	55	306	0	629
Grp Sat Flow(s),veh/h/ln	1781	0	1852	1781	1870	1585	797	0	1794	1349	0	1618
Q Serve(g_s), s	3.7	0.0	13.7	0.0	22.5	11.2	0.3	0.0	1.9	17.9	0.0	37.6
Cycle Q Clear(g_c), s	3.7	0.0	13.7	0.0	22.5	11.2	37.9	0.0	1.9	19.8	0.0	37.6
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.24	1.00		0.86
Lane Grp Cap(c), veh/h	262	0	615	390	621	526	77	0	701	575	0	632
V/C Ratio(X)	0.85	0.00	0.53	0.04	0.78	0.44	0.66	0.00	0.08	0.53	0.00	0.99
Avail Cap(c_a), veh/h	478	0	615	606	621	526	77	0	701	575	0	632
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.4	0.0	26.2	27.3	29.2	25.4	48.5	0.0	18.6	24.8	0.0	29.5
Incr Delay (d2), s/veh	7.4	0.0	3.2	0.0	9.2	2.7	23.2	0.0	0.1	1.2	0.0	34.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	6.2	0.3	11.0	4.4	1.7	0.0	0.8	5.6	0.0	19.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.8	0.0	29.4	27.3	38.4	28.1	71.7	0.0	18.7	26.0	0.0	63.9
LnGrp LOS	D	A	C	C	D	C	E	A	B	C	A	E
Approach Vol, veh/h		545			731			106			935	
Approach Delay, s/veh		37.3			34.9			44.2			51.5	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	39.0		45.0	13.0	39.0		45.0				
Change Period (Y+Rc), s	6.8	6.8		7.1	6.8	6.8		7.1				
Max Green Setting (Gmax), s	18.0	32.2		37.9	18.0	32.2		37.9				
Max Q Clear Time (g_c+I1), s	5.7	24.5		39.9	2.0	15.7		39.6				
Green Ext Time (p_c), s	0.5	3.2		0.0	0.0	2.1		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		42.6	
HCM 6th LOS		D	

Notes

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

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	385	135	22	101	15
Future Vol, veh/h	15	385	135	22	101	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	418	147	24	110	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	171	0	-	0	597	147
Stage 1	-	-	-	-	147	-
Stage 2	-	-	-	-	450	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1406	-	-	-	466	900
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	642	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1406	-	-	-	459	900
Mov Cap-2 Maneuver	-	-	-	-	459	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	642	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1406	-	-	-	490
HCM Lane V/C Ratio	0.012	-	-	-	0.257
HCM Control Delay (s)	7.6	0	-	-	14.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	1

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	179	300	103	56	19
Future Vol, veh/h	28	179	300	103	56	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	195	326	112	61	21

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	438	0	-	0	581	326
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	255	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1122	-	-	-	476	715
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	788	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1122	-	-	-	462	715
Mov Cap-2 Maneuver	-	-	-	-	462	-
Stage 1	-	-	-	-	709	-
Stage 2	-	-	-	-	788	-

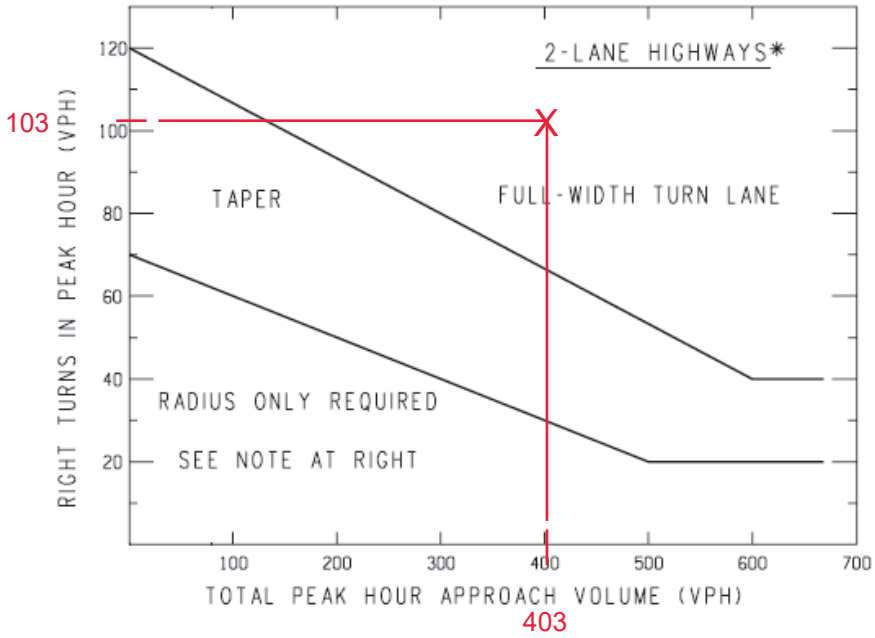
Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	13.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1122	-	-	-	507
HCM Lane V/C Ratio	0.027	-	-	-	0.161
HCM Control Delay (s)	8.3	0	-	-	13.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

WASHTENAW COUNTY
ROAD COMMISSION

TURN LANE TREATMENT

WARRANTS



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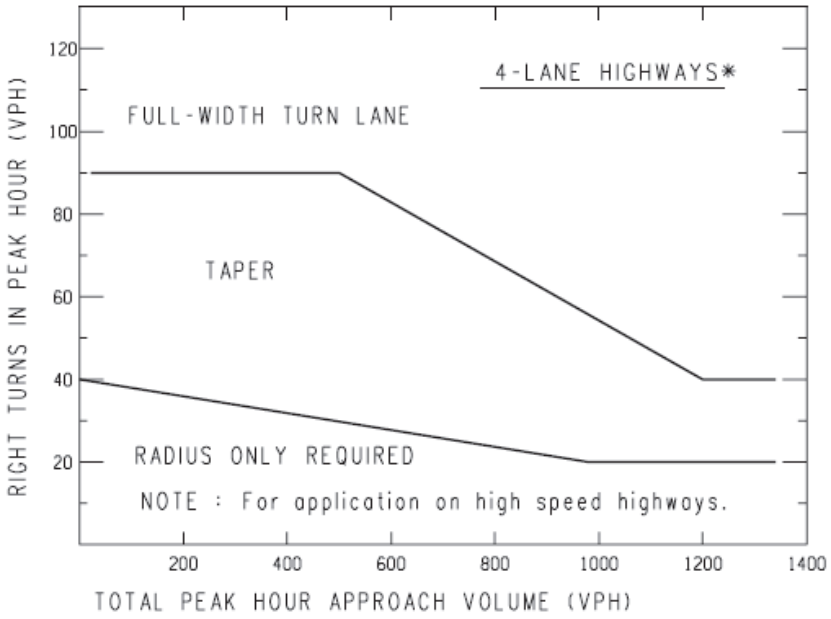


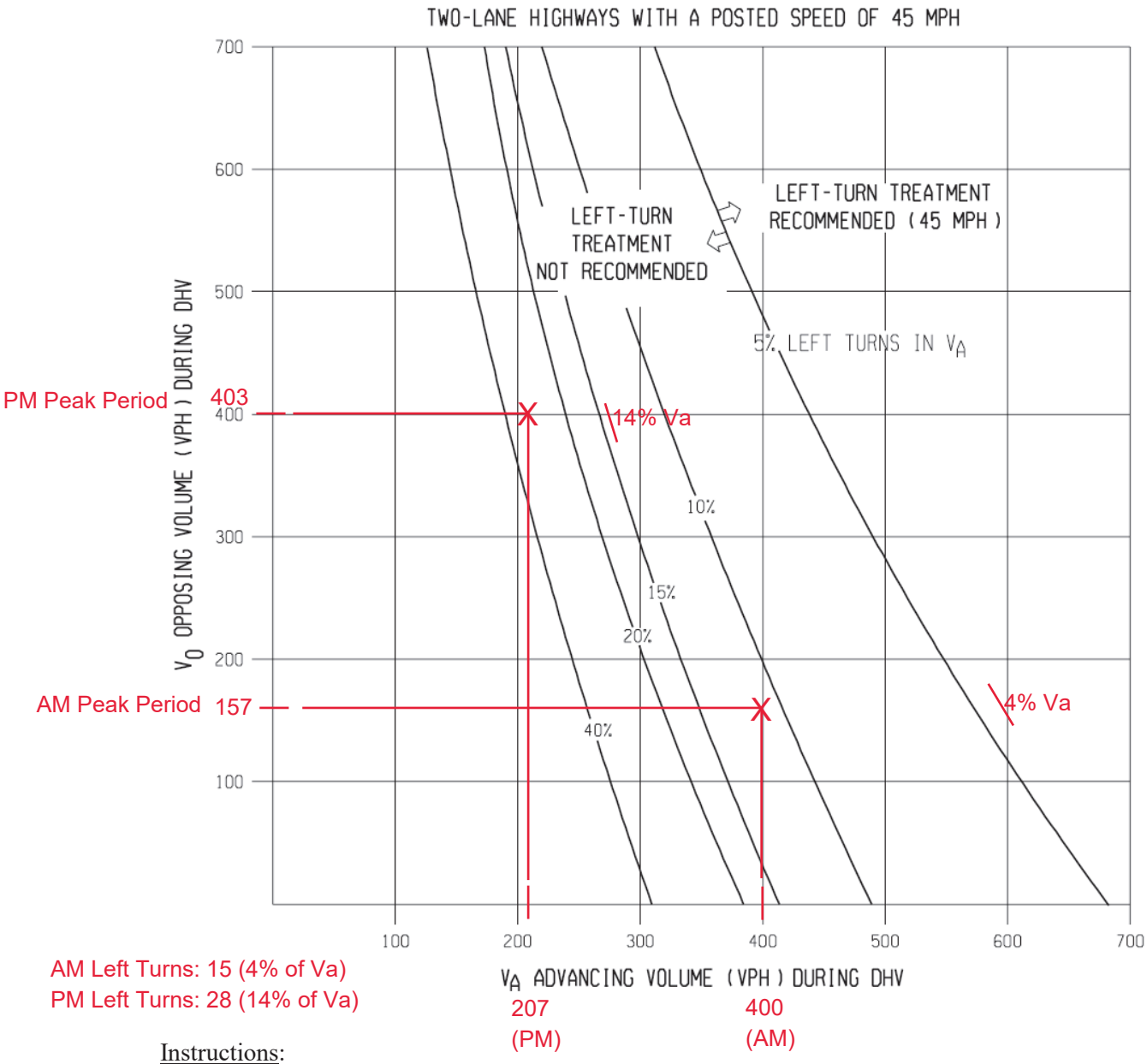
NOTE: For posted speeds at or under 45 mph, peak hour right turns greater than 40 vph, and total peak hour approach less than 300 vph, adjust right turn volumes.

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

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

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

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



Instructions:

1. The family of curves represent the percentage of left turns in advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.
2. Read V_A and V_O into the chart and locate the intersection of the two volumes.
3. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is recommended. If the point is to the left of the line, then a left-turn is not recommended based on traffic volumes.

SITE PLAN

HERITAGE FARMS

PART OF THE SW 1/4 OF SECTION 6 & NW 1/4 OF SECTION 7, T2S, R4E, CITY OF CHELSEA, WASHTENAW COUNTY, MICHIGAN

PHASING EXHIBIT

SCALE: 1"=100

HERITAGE FARMS
FINAL SITE PLAN
PHASE I

PART OF THE SW 1/4 OF SECTION 6 & NW 1/4 OF SECTION 7, T2S, R4E, CITY OF CHELSEA, WASHTENAW COUNTY, MICHIGAN

FOR:

M/I HOMES OF MICHIGAN
40950 WOODWARD AVE,
BLOOMFIELD HILLS, MI. 48304
PH: (248)-221-5011

GENERAL CONSTRUCTION NOTES:

1. IT IS ESSENTIAL THAT THE CONTRACTOR FAMILIARIZE HIMSELF WITH THE SITE PRIOR TO SUBMITTING PROPOSAL.
2. ALL ROAD CONSTRUCTION SHALL IN GENERAL BE PERFORMED PER THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATION FOR CONSTRUCTION AND AS DIRECTED IN THE STANDARDS AND SPECIFICATIONS OF THE CITY OF CHELSEA.
3. THE AREA WITHIN THE CONSTRUCTION LIMITS SHALL BE STRIPPED OF ORGANIC SOILS PRIOR TO COMMENCING GENERAL EXCAVATION. THIS MATERIAL SHALL BE STOCKPILED ON THE PROPERTY OR AS DIRECTED BY THE ENGINEER OR THE OWNER.
4. THE CONTRACTOR WILL BE REQUIRED TO PROOF ROLL (WITH A HEAVY RUBBER TIRED VEHICLE) ALL FILL AREAS PRIOR TO PLACING ADDITIONAL FILL AND ALL CUT AREAS UPON COMPLETION OF THE CUT AND PRIOR TO PLACING BASE MATERIAL. IF THE PROOF ROLLING INDICATES UNSTABLE AREAS, THE UNSTABLE MATERIAL MUST BE REMOVED AND REPLACED WITH MATERIAL MATCHING THE ADJACENT SOILS TO THE ELEVATION OF THE SUBGRADE.
5. ALL FILL MATERIAL MUST BE PLACED IN LIFTS NOT EXCEEDING 9 INCHES AND COMPACTED TO 95% OF THE MAXIMUM UNIT WEIGHT.
6. THE FINISHED SUBGRADE MUST BE GRADED WITHIN A TOLERANCE OF +/– 0.1 FEET OF DESIGN GRADE COMPACTED TO NOT LESS THAN 95% OF THE MAXIMUM UNIT WEIGHT TO A DEPTH OF 9 INCHES AND APPROVED BY THE OWNER'S REPRESENTATIVE/ENGINEER PRIOR TO PLACEMENT OF THE AGGREGATE BASE. FINE GRADING PRIOR TO THE PLACEMENT OF THE BASE MATERIAL SHALL BE INCIDENTAL TO THE COST OF PREPARING THE SUBGRADE.
7. ALL DISTURBED AREAS, DITCH BOTTOMS AND SLOPES UNLESS NOTED OTHERWISE, SHALL BE SEEDED AND MULCHED PER M.D.O.T. SPECIFICATION 6.53 INCLUDING PLACEMENT OF 4 INCH TOPSOIL BED. DITCH BOTTOMS SHALL BE SODDED AND PEGGED WHERE DITCH GRADE EXCEEDS 3.00%.
8. THE CONTRACTOR MUST CONTACT MISS DIG PRIOR TO BEGINNING CONSTRUCTION.
9. ALL CONSTRUCTION ACTIVITIES SHALL BE SIGNED PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. CONTRACTOR SHALL MAINTAIN ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION, MAINTENANCE AND REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURES PER THIS APPROVED PLAN.
11. CONTRACTOR MUST OBTAIN AN EROSION CONTROL PERMIT FROM THE CHELSEA AREA CONSTRUCTION AGENCY PRIOR TO BEGINNING EARTH MOVING. CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO BEGINNING CONSTRUCTION.
12. SAFETY GRATES ARE REQUIRED FOR ALL END SECTIONS.
13. HOME OWNERS ASSOCIATION SHALL MAINTAIN ALL OPEN SPACES AREA.
14. SANITARY SEWER EASEMENT AND ALL ACCESS LOCATIONS SHALL HAVE COMPACT GRAVEL COVERED WITH TOP SOIL.
15. THERE SHALL BE NO PARKING AT ALL INTERSECTIONS AND WITHIN THE CULL–DE–SAC. SIGN LOCATIONS ARE PROVIDED ON SITE PLAN. AS CITY STREETS ARE PROPOSED ON SITE PARKING WILL BE PERMITTED ON ONE SIDE OF STREET. THERE IS NO STREET PARKING IN THE CITY OF CHELSEA LIMITS BETWEEN 2AM AND 5AM. CITY PARKING ORDINANCE WILL BE BE ENFORCED AS SPACES MAY NOT BE USED FOR 24 HOUR PARKING.
16. ALL TREES TO BE PRESERVED SHALL HAVE TREE PROTECTION MEASURES IN PLACE PRIOR TO ANY CONSTRUCTION.
17. SEE ENGINEERING SHEETS FOR ALL STREET RADIUS INFORMATION. NO STRUCTURES INCLUDING DECKS OR PORCHES SHALL BE LOCATED WITHIN THE 100FT SETBACK OF TREATMENT PLANT.
18. SEE ENGINEERING SHEETS FOR UTILITY AND GRADING FOR EACH PHASE OF LOT AND ROAD CONSTRUCTION.
19. TO THE GREATEST EXTENT POSSIBLE TREES WITHIN THE SITE SHALL BE PRESERVED. HOWEVER, DUE TO GRADING, UTILITIES, AND OTHER ASPECTS OF IMPLEMENTATION VARIOUS TREES THROUGHOUT THE SITE SHALL BE REMOVED PRIOR TO CONSTRUCTION. ALL TREE IMPACT SHALL BE RE–EVALUATED AT FINAL SITE PLAN.
20. THE LANDSCAPE BUFFER SHALL BE INSTALLED IN A SEQUENCE WHERE BY THE CURRENT PHASE OF CONSTRUCTION.
21. ALL STREETS SHALL BE DEDICATED PUBLIC STREETS TO CITY, UPON INSPECTION AND ACCEPTANCE CONSISTENT WITH PROCESS ESTABLISHED IN PROJECT DEVELOPMENT AGREEMENT.
22. ALL MAIL BOXES SHALL BE GROUPED NEAR OPEN SPACES UNLESS OTHERWISE DICTATED BY THE POST OFFICE.

DESCRIPTION

Land situated in the City of Chelsea, County of Washtenaw, State of Michigan described as follows:

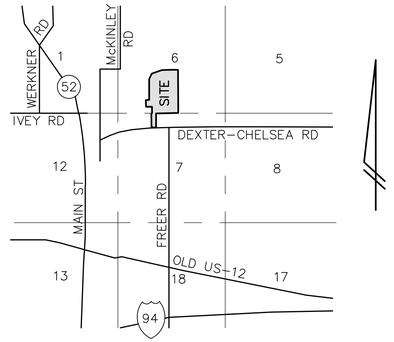
Commencing at the Southwest corner of Section 6, Town 2 South, Range 4 East, City of Chelsea, Washtenaw County, Michigan; thence North 01 degrees 10 minutes 30 seconds West 48.25 feet along the West line of said Section to the Southeast corner of Section 1, Town 2 South, Range 3 East, City of Chelsea, Washtenaw County, Michigan; thence North 00 degrees 20 minutes 05 seconds West 754.06 feet continuing along said West line; thence North 88 degrees 47 minutes 05 seconds East 1051.35 feet to the POINT OF BEGINNING; thence continuing North 88 degrees 47 minutes 05 seconds East 193.79 feet; thence North 00 degrees 20 minutes 35 seconds West 1240.56 feet; thence North 25 degrees 28 minutes 38 seconds East 371.29 feet; thence North 71 degrees 11 minutes 10 seconds East 651.91 feet; thence North 89 degrees 02 minutes 35 seconds East 508.93 feet; thence North 88 degrees 36 minutes 55 seconds East 435.13 feet; thence South 00 degrees 20 minutes 35 seconds East 2581.30 feet to a point on the South line of said Section 6; thence along said South line South 88 degrees 59 minutes 10 seconds West 656.57 feet to the South 1/4 corner of said Section 6; thence continuing along said South line South 88 degrees 59 minutes 25 seconds West 661.36 feet; thence South 00 degrees 02 minutes 15 seconds West 837.50 feet; thence South 89 degrees 52 minutes 55 seconds West 199.71 feet; thence Westerly 71.83 feet along the arc of a 4688.00 foot radius circular curve to the left through a central angle of 00 degrees 52 minutes 40 seconds having a chord that bears South 89 degrees 27 minutes 55 seconds West 71.83 feet; thence North 00 degrees 52 minutes 15 seconds West 834.96 feet; thence North 78 degrees 59 minutes 20 seconds East 42.15 feet; thence North 00 degrees 12 minutes 55 seconds East 391.27 feet; thence South 88 degrees 59 minutes 25 seconds West 356.31 feet; thence North 00 degrees 02 minutes 15 seconds West 406.20 feet to the Point of Beginning. Being a part of the South 1/2 of Section 6 and a part of the Northwest 1/4 of Section 7, Town 2 South, Range 4 East, City of Chelsea, Washtenaw County, Michigan.

HERITAGE FARMS PHASE 1 FUTURE DEVELOPMENT

Commencing at the Southwest corner of Section 6, T2S, R4E, City of Chelsea, Washtenaw County, Michigan; thence N01°10'30"W 48.25 feet along the West line of said Section to the Southeast corner of Section 1, T2S, R3E, City of Chelsea, Washtenaw County, Michigan; thence N00°20'05"W 754.06 feet continuing along said West line; thence N88°47'05"E 1245.14 feet to the POINT OF BEGINNING; thence N00°20'35"W 1240.56 feet; thence N25°28'38"E 371.29 feet; thence N71°11'10"E 651.91 feet; thence N89°02'35"E 508.93 feet; thence N88°36'55"E 435.13 feet; thence S00°20'35"E 2581.30 feet to a point on the South line of said Section 6; thence along said South line S88°59'10"W 447.70 feet; thence N01°00'35"W 124.99 feet; thence N88°59'25"E 8.12 feet; thence N00°20'35"W 190.25 feet; thence S89°39'25"W 812.00 feet; thence N00°20'35"W 273.00 feet; thence S89°39'25"W 120.00 feet; thence N00°20'35"W 180.00 feet; thence S89°39'25"W 186.00 feet; thence S00°20'35"E 15.94 feet; thence S88°47'05"W 130.01 feet; thence N00°20'35"W 42.00 feet; thence S88°47'05"W 35.01 feet to the Point of Beginning. Being a part of the North 1/2 of Section 6, T2S, R4E, City of Chelsea, Washtenaw County, Michigan and containing 88.45 acres of land, more or less. Being subject to easements and restrictions of record, if any.

HERITAGE FARMS PHASE I

Commencing at the Southwest corner of Section 6, T2S, R4E, City of Chelsea, Washtenaw County, Michigan; thence N01°10'30"W 48.25 feet along the West line of said Section to the Southeast corner of Section 1, T2S, R3E, City of Chelsea, Washtenaw County, Michigan; thence N00°20'05"W 754.06 feet continuing along said West line; thence N88°47'05"E 1051.35 feet to the POINT OF BEGINNING; thence continuing N88°47'05"E 228.80 feet; thence S00°20'35"E 42.00 feet; thence N88°47'05"E 130.01 feet; thence N00°20'35"W 15.94 feet; thence N89°39'25"E 186.00 feet; thence S00°20'35"E 180.00 feet; thence N89°39'25"E 120.00 feet; thence S00°20'35"E 273.00 feet; thence N89°39'25"E 812.00 feet; thence S00°20'35"E 190.25 feet; thence S88°59'25"W 8.12 feet; thence S01°00'35"E 124.99 feet to a point on the South line of said Section 6; thence along said South line S88°59'10"W 208.87 feet to the South 1/4 corner of said Section 6; thence continuing along said South line S88°59'25" W 661.36 feet; thence S00°02'15"W 837.50 feet; thence S89°52'55"W 199.71 feet along the Northerly right-of-way line of Dexter-Chelsea Road; thence continuing along said right-of-way line Westerly 71.83 feet along the arc of a 4688.00 foot radius circular curve to the left, through a central angle of 00°52'40", having a chord that bears S89°27'55"W 71.83 feet; thence N00°52'15"W 834.96 feet; thence N78°59'20"E 42.15 feet; thence N00°12'55"E 391.27 feet; thence S88°59'25"W 356.31 feet; thence N00°55'10"W 406.20 feet to the Point of Beginning. Being a part of the South 1/2 of Section 6 and a part of the Northwest 1/4 of Section 7, T2S, R4E, City of Chelsea, Washtenaw County, Michigan and containing 19.47 acres of land, more or less. Being subject to easements and restrictions of record, if any.



VICINITY MAP
(NO SCALE)

WASHTENAW ENGINEERING
CIVIL ENGINEERS * PLANNERS
SURVEYORS * LANDSCAPE ARCHITECTS
P.O. BOX 1128
3526 WEST LIBERTY RD., SUITE 400, ANN ARBOR, MICHIGAN 48106
TEL. 734–761–8800 FAX. 734–761–9530
E–MAIL: weco@wengco.com
washtenawengineering.com

OWNER
JBRMC, LLC.
1765 CYPRESS POINT CT.
ANN ARBOR, MI. 48108
&
DJK ANN ARBOR, LLC.
6589 JACKSON RD.
ANN ARBOR, MI. 48103
&
ANN MERKEL TRUST

APPLICANT
M/I HOMES OF MICHIGAN
40950 WOODWARD AVE,
BLOOMFIELD HILLS, MI. 48304
PH: (248)–221–5011

ENGINEER
WASHTENAW ENGINEERING COMPANY
JOSEPH K. MAYNARD, P.E.
P.O. BOX 1128
3526 W. LIBERTY RD, SUITE 400
ANN ARBOR, MI. 48106
PH: (734) 761–8800
jkm@wengco.com

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

SITE DATA

	REQUIRED	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	TOTAL
Area (acres)	-	19.47	13.91	44.93	11.86	8.22	6.53	104.92
Residential area (acres)	-	9.31	8.30	8.07	6.30	5.85	4.69	42.51
Open space area (acres)	-	5.00	2.45	33.05	3.44	0.00	0.19	44.12
R.O.W. area (acres)	-	5.17	3.16	3.82	2.12	2.37	1.65	18.29
Number of Units	-	48	47	42	36	33	25	231
Max. Lot Coverage	35%	35%	35%	35%	35%	35%	35%	35%
Max. Floor Area Ratio	35%	35%	35%	35%	35%	35%	35%	35%
Max. Building Height	35 ft.	35 ft.	35 ft.	35 ft.	35 ft.	35 ft.	35 ft.	35 ft.
Density Units/Acre	N/A	2.47	3.38	0.93	3.04	4.01	3.83	2.20

PROJECT DESCRIPTION:

PROJECT IS A CONTINUATION OF THE ORIGINAL PUD APPROVED BY THE CITY IN 2004. UPDATED HERITAGE FARMS WILL BE A SEPARATE HOME OWNERS ASSOCIATION THAT WILL COMPLETE THE REMAINING 231 HOMES.

STREET ACCESS:
THE PROJECT WILL HAVE ACCESS FROM ELM STREET AND DEXTER–CHELSEA ROAD

REFUSE:
EACH HOME WILL HAVE INDIVIDUAL LOT PICK UP. NO COMMUNITY DUMPSTER ARE PROPOSED.

PARKING:
EACH HOME WILL HAVE INDIVIDUAL GARAGES AND DRIVEWAYS FOR PARKING.

STREETS:
AS CITY STREETS ARE PROPOSED ON SITE PARKING WILL BE ALLOWED ON ONE SIDE OF STREET. THERE IS NO STREET PARKING IN THE CITY OF CHELSEA CITY LIMITS BETWEEN 2AM AND 5AM. CITY PARKING ORDINANCE WILL BE ENFORCED AS SPACES MAY NOT BE USED FOR 24 HOUR PARKING.

LANDSCAPING:
EACH SUBMITTAL OF FINAL SITE PLANS WILL MEET CURRENT CITY OF CHELSEA STANDARDS AND TREE SURVEY REQUIREMENTS OF THE 2021 ZONING ORDINANCE.

LIGHTING:
PHOTOMETRIC PLANS WILL BE PROVIDED AS PART OF EACH PHASE, FINAL SITE PLAN SUBMITTAL.

SITE PLAN:
HOMES SHALL NOT EXCEED A MAXIMUM FLOOR AREA RATION ("FAR") OF 35%. THE PROPOSED JULIETTE FLOORPLAN SHALL BE LIMITED TO A MAXIMUM 35% FAR AND BE LOCATED ON LOTS 7,500SF OR LARGER IN IT'S BASE PLAN CONFIGURATION, OR 7,808SF OR LARGER IF STRUCTURAL ADDITIONS ARE CHOSEN.

SITE IRRIGATION;
SITE TO HAVE IRRIGATION IN OPEN SPACES PER THE PLANS. OPEN SPACE E WILL HAVE GATOR BAGS PLACED ON THE TREES FOR WATERING WHILE TREES GET ESTABLISHED.

SHEET INDEX

STATE OF MICHIGAN
JOSEPH K. MAYNARD
ENGINEER
No. 52559
LICENSED PROFESSIONAL ENGINEER

PREPARED BY _____
JOSEPH K. MAYNARD P.E., MICH No. 52559

REVISED: 03–31–2023
EGLE Permit Set: 03–16–2023
ORIGINAL: 12–28–2022

FINAL SITE PLAN - HERITAGE FARMS - PH1

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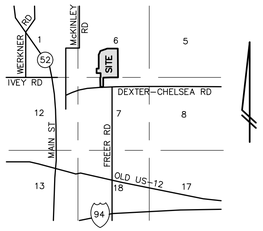
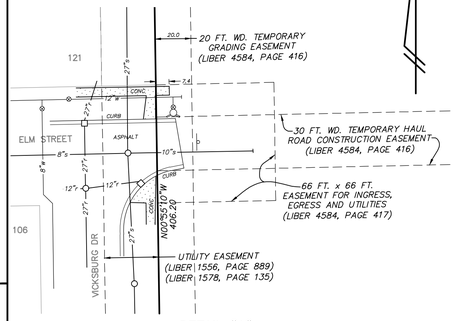
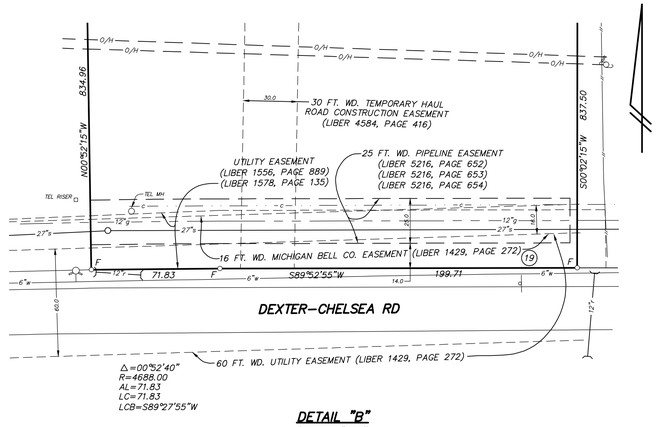


VICINITY MAP
(NO SCALE)



DETAIL "A"
(SCALE: 1"=40')



DETAIL "B"
(SCALE: 1"=40')

OWNERSHIP TABLE

NO.	TAX ID	NAME	STREET ADDRESS	CITY, STATE, ZIP CODE	CITY / TOWNSHIP	ZONING
1	06-07-07-225-018	SCOTT CHAPMAN	P.O. BOX 338	CHELSEA, MI 48118	CITY OF CHELSEA	RS-1 SINGLE FAMILY
2	06-07-06-360-002	CITY OF CHELSEA	305 S. MAIN ST, STE. 100	CHELSEA, MI 48118	CITY OF CHELSEA	MU-1 MUNICIPAL USE
3	G-07-06-400-003	GARY & JANET ADAMS	13742 DEXTER-CHELSEA RD	CHELSEA, MI 48118	LIMA TOWNSHIP	AG-2 AGRICULTURE
4	G-07-07-100-002	GARY HILBURN & KRYSTAL THOMPSON	13880 DEXTER-CHELSEA RD	CHELSEA, MI 48118	LIMA TOWNSHIP	AG-2 AGRICULTURE
5	G-07-07-100-003	DOUGLAS & PATRICE BRINK	13910 DEXTER-CHELSEA RD	CHELSEA, MI 48118	LIMA TOWNSHIP	AG-2 AGRICULTURE
6	06-07-07-125-007	CORKY ORYAN	13966 DEXTER-CHELSEA RD	CHELSEA, MI 48118	CITY OF CHELSEA	AG-1 AGRICULTURAL
7	06-07-07-225-017	RICHARD & VIRGINIA HAUGEN	14080 DEXTER-CHELSEA RD	CHELSEA, MI 48118	CITY OF CHELSEA	AG-1 AGRICULTURAL

7 = ADJACENT OWNER NUMBER

TOPOGRAPHY
THE LAND IS GENTLY SLOPED 1%-6% WITH SURFACE DRAINAGE TO THE ROADWAY DITCH WITHIN THE R.O.W. OF DEXTER-CHELSEA ROAD OR TO THE NORTH TOWARDS LETTS CREEK.

WETLANDS
THERE ARE NO WETLANDS WITHIN PHASE 1 AS CONFIRMED BY GJS LAND PLANNING, LLC DATED: NOVEMBER 2020.

THREATENED AND/OR ENDANGERED SPECIES
THERE ARE NO THREATENED AND/OR ENDANGERED SPECIES OF PLANT OR ANIMAL ON THE PROPERTY.

100 YEAR FLOODPLAIN
A PORTION OF THE PROPERTY LIES WITHIN THE FLOODPLAIN OF LETTS CREEK, BUT PHASE 1 IS NOT WITHIN THIS FLOODPLAIN AREA.

STEEP SLOPES
THERE ARE NO STEEP SLOPES ON SITE.

WATER COURSES
THERE ARE NO WATER COURSES ON THE PROPERTY, BUT LETTS CREEK IS DIRECTLY NORTH OF THE PROPERTY.

NATURAL FEATURES
THE PROPERTY HAS BEEN MAINTAINED AS FARM LAND WITH A SMALL AND RANDOM ASSORTMENT OF DOMESTIC SPECIES TREES. THE REMAINDER OF THE PROPERTY IS MAINTAINED AS FARM LAND. THERE ARE NATIVE TREES, WETLANDS AND/OR NATURAL ENVIRONMENTS OUTSIDE OF PHASE 1 TO BE FOUND AT THIS SITE. PUBLIC UTILITIES WITH THEIR ASSOCIATED EASEMENTS SERVE THE EXISTING LOT.

BUILT FEATURES
NONE

LAND USE
THE SITE CURRENTLY HAS NO EXISTING STRUCTURES ON-SITE.

ACCESS POINT
VEHICULAR ACCESS IS DIRECTLY FROM DEXTER-CHELSEA ROAD OR BY CONNECTION TO ELM STREET. THERE ARE CURRENTLY NO PEDESTRIAN SIDEWALKS ON THE PROPERTY. A NEW SIDEWALK WILL BE INSTALLED ALONG DEXTER-CHELSEA ROAD AND A CONNECTOR TO ELM STREET.

PROPOSED LAND USE
THE PROPERTY IS CURRENTLY ZONED P.U.D.

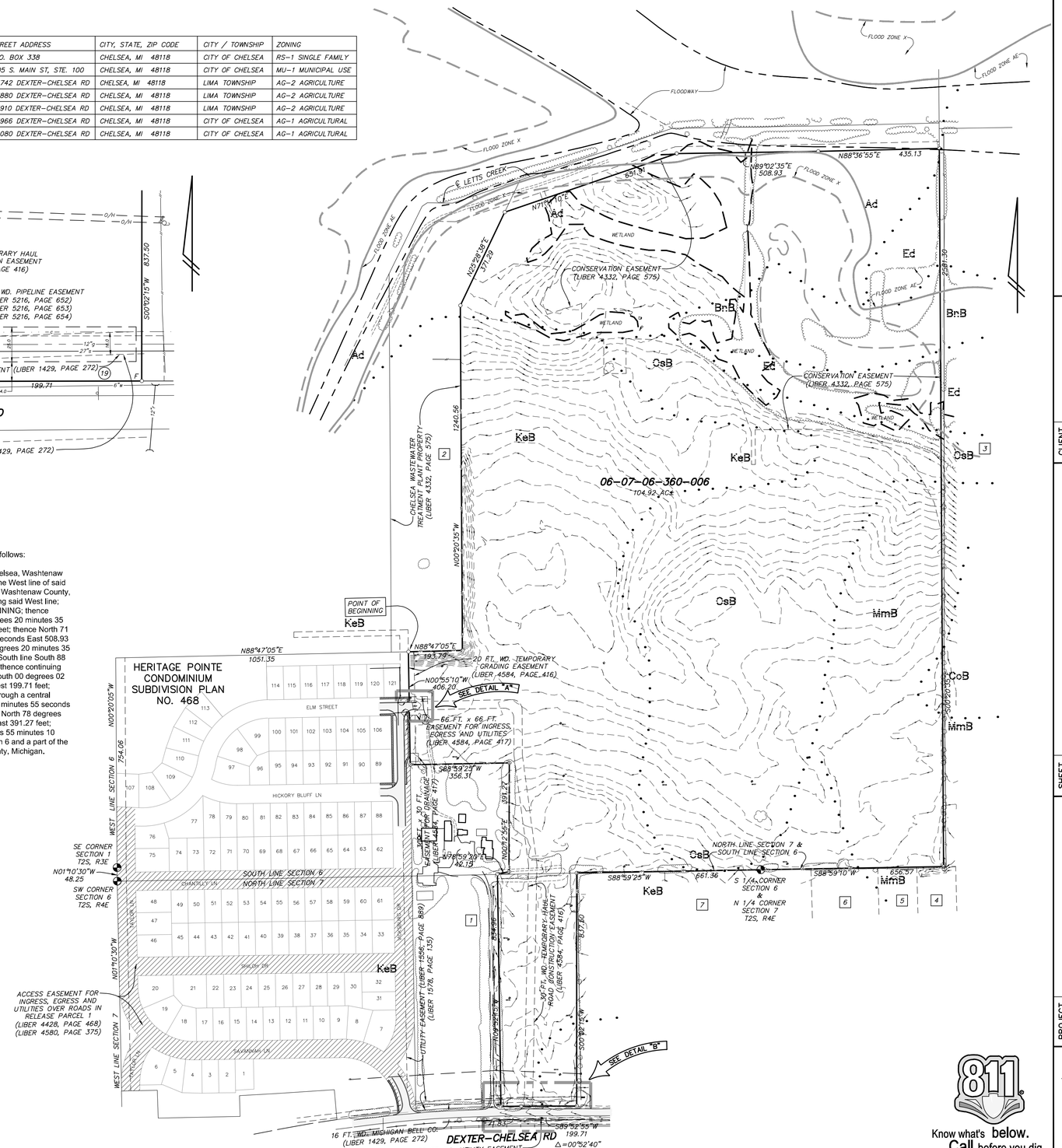
NATURAL FEATURES PROTECTION PLAN
THE TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND CLEAN-UP EFFORTS. THE CONTRACTOR WILL OPTIMIZE WAYS TO PRESERVE AS MANY HIGH-QUALITY TREES ON-SITE AS POSSIBLE. PROPOSED STORM WATER MANAGEMENT WILL UTILIZE AN INFILTRATION BED LOCATED NEAR THE FRONT CENTER OF THE SITE.

PARKING:
EACH HOME WILL HAVE INDIVIDUAL GARAGES AND DRIVEWAYS FOR PARKING.

STREETS:
AS CITY STREETS ARE PROPOSED ON SITE PARKING WILL BE ALLOWED ON ONE SIDE OF STREET. THERE IS NO STREET PARKING IN THE CITY OF CHELSEA CITY LIMITS BETWEEN 2AM AND 5AM. CITY PARKING ORDINANCE WILL BE ENFORCED AS SPACES MAY NOT BE USED FOR 24 HOUR PARKING.

LEGEND
- ACCESS EASEMENT
- WETLAND BOUNDARY DELINEATED BY: GJS LAND PLANNING, LLC (NOV. 2020)
- FLOODWAY
- FLOOD ZONE AE (1% HAZARD) (100 YEAR)
- FLOOD ZONE X (0.2% HAZARD) (500 YEAR)

PER FEMA PANEL 26161C0184E
EFFECTIVE DATE: APRIL 3, 2012



WETLANDS DELINEATED BY: GJS LAND PLANNING, LLC NOVEMBER OF 2020

Know what's below. Call before you dig.

LEGEND
- LIGHT POLE
- UTILITY POLE
- GUY ANCHOR
- HYDRANT
- SPOT ELEV.
- POST
- GATE VALVE
- SIGN
- TC = TOP OF CURB
- TW = TOP OF WALL
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- END SECTION
- GRAVEL
- FENCE
- CONCRETE
- ASPHALT
- EXISTING STORM
- EXISTING SANITARY
- EXISTING WATER
- EXISTING GAS
- EXISTING ELECTRIC
- EXISTING TELEPHONE

WASHTENAW COUNTY SOIL SURVEY CLASSIFICATION
- Ad – ADRIAN MUCK, 0 TO 2 PERCENT SLOPES
- BnB – BOYER LOAMY SAND, 0 TO 6 PERCENT SLOPES
- CsB – CONOVER LOAM, 0 TO 4 PERCENT SLOPES
- Ed – EDWARDS MUCK
- KeB – KENDALLVILLE LOAM, 2 TO 6 PERCENT SLOPES
- MmB – MIAMI LOAM, 2 TO 6 PERCENT SLOPES
- OsB – OSHTEMO LOAMY SAND, 0 TO 6 PERCENT SLOPES
- – – – – – – SOILS BOUNDARY

SOILS ARE BASED ON USDA SOIL SURVEY OF WASHTENAW COUNTY.

BENCHMARK BM1=TOP NUT ON HYDRANT, NORTH OF DEXTER-CHELSEA RD AND 9'± WEST OF THE SOUTHWEST PROPERTY CORNER, ELEV=920.28 (NAVD 88).

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REVISIONS 2023-03-16 EGLE Permit Set, 2023-03-31 REVISED

SCALE 1" = 200'

PREPARED BY
THOMAS L. SUTHERLAND P.S., MICH No. 24620

THOMAS L. SUTHERLAND PROFESSIONAL SURVEYOR NO. 24620 — STATE OF MICHIGAN — LICENSED PROFESSIONAL SURVEYOR

CIVIL ENGINEERS
PLANNERS • SURVEYORS
LANDSCAPE ARCHITECTS
3526 W. LIBERTY RD
SUITE 400
ANN ARBOR, MI 48103
TEL: 734-761-8800
FAX: 734-761-9530
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WASHTENAW ENGINEERING

CLIENT
M/I HOMES OF MICHIGAN
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BLOOMFIELD HILLS, MI. 48304
PH: (248)-221-5011

SHEET
OVERALL BOUNDARY AND TOPOGRAPHICAL SURVEY

PROJECT
HERITAGE FARMS PHASE 1

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY • MICHIGAN
DATE 12-28-22
JOB NO. 32971
DWG NO. 971-01 logo-200
FIELD BOOK 446
FILE NO. 10668
SHEET 2

H:\Work\wwg\32971\dwg\Base 1\971-01 logo-200.dwg, 3/30/2023 1:07:47 PM, 1:1

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TREE TABLE

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8509	Black Locust	12		Good			2
8510	Black Locust	8		Good			1
8511	Black Locust	7		Good			1
8512	Black Locust	8		Good			1
8513	Black Locust	12		Good			2
8514	Black Locust	18		Good			3
8515	Black Locust	10		Good			2
8516	Black Locust	12		Good			2
8517	Black Locust	8		Good			1
8518	Black Locust	8		Good			1
8519	Black Locust	14		Good			2
8520	Maple	18		Fair	X	6	
8521	Box Elder	10		Poor	X	3	
8522	Box Elder	8		Poor	X	2	
8523	Box Elder	12		Poor	X	2	
8524	Box Elder	6		Poor	X	2	
8525	Box Elder	9		Poor	X	3	
8526	Box Elder	10		Poor	X	3	
8527	Oak	24		Good	X	6	
8528	Box Elder	12		Poor	X	3	
8529	Box Elder	14		Poor	X	3	
8530	Box Elder	8		Poor	X	2	
8531	Box Elder	12		Poor	X	3	
8532	Maple	15		Fair			2
8533	Walnut	19		Fair			3
8534	Maple	6		Poor			1
8535	Maple	19		Fair			3
8536	Box Elder	14		Poor			2
8537	Elm	12		Fair			2
8538	Maple	18		Fair			3
8539	Box Elder	19		Poor	X	6	
8540	Cedar		20	Fair			1
8541	Cedar		28	Fair			1
8542	Cedar		26	Fair			1
8543	Cedar		28	Fair			1
8544	Cedar		25	Fair			1
8545	Cedar		28	Fair			1
8546	Cedar		26	Fair			1
8551	Black Locust	12		Good			2
8552	Black Locust	12		Good			2
8553	Black Locust	10		Good			2
8554	Black Locust	12		Good			2
8555	Black Walnut	12		Good			2
8556	Black Walnut	12		Good			2
8557	Black Locust	10		Good			2
8558	Black Locust	8		Good			1
8559	Black Locust	12		Good			2
8560	Black Locust	14		Good			2
8561	Black Locust	15		Good			2
8562	Black Locust	12		Good			2
8563A	Black Locust	12		Good			2
8563B	Black Locust	12		Good			2
8564	Black Locust	16		Good			3
8565	Black Locust	22		Good			3
8566	Black Locust	14		Good			2
8567	Black Locust	14		Good			2
8568	Black Locust	10		Good			2
8569	Black Locust	12		Good			2
8570	Black Locust	12		Good			2
8571	Oak	36		Good			3
8572	Oak	20		Fair	X	6	
8647	Maple	6		Fair			1
8648	Sycamore	35		Poor			3
8649	Elm	6		Fair			1
8650	Norway Spruce		45	Good			1
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8653	Norway Spruce		45	Good			1
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8655	Norway Spruce		45	Good			1
8656	Norway Spruce		45	Good			1
8657	Norway Spruce		45	Good			1
8658	Norway Spruce		45	Good			1
8659	Norway Spruce		45	Good			1
8660	Norway Spruce		45	Good			1
8661	Norway Spruce		45	Good			1
8662	Norway Spruce		45	Good			1
8663	Norway Spruce		45	Good			1
8664	Norway Spruce		45	Good			1
8665	Norway Spruce		45	Good			1
8666	Norway Spruce		45	Good			1
8667	Norway Spruce		45	Good			1
8668	Norway Spruce		45	Good			1
8669	Norway Spruce		45	Good			1
8670	Norway Spruce		45	Good			1
8671	Norway Spruce		45	Good			1
8672	Norway Spruce		45	Good			1
8673	Norway Spruce		45	Good			1
8674	Norway Spruce		45	Good			1
8675	Norway Spruce		45	Good			1
8676	Norway Spruce		45	Good			1
8677	Norway Spruce		45	Good			1
8678	Norway Spruce		45	Good			1
8679	Norway Spruce		45	Good			1
8680	Norway Spruce		46	Good			1
					79		125

TOPOGRAPHY
THE LAND IS GENTLY SLOPED 1%-6% WITH SURFACE DRAINAGE TO THE ROADWAY DITCH WITHIN THE R.O.W. OF DEXTER-CHELSEA ROAD OR TO THE NORTH TOWARDS LETTS CREEK.

WETLANDS
THERE ARE NO WETLANDS WITHIN PHASE 1 AS CONFIRMED BY GJS LAND PLANNING, LLC DATED: NOVEMBER 2020.

THREATENED AND/OR ENDANGERED SPECIES
THERE ARE NO THREATENED AND/OR ENDANGERED SPECIES OF PLANT OR ANIMAL ON THE PROPERTY.

100 YEAR FLOODPLAIN
A PORTION OF THE PROPERTY LIES WITHIN THE FLOODPLAIN OF LETTS CREEK, BUT PHASE 1 IS NOT WITHIN THIS FLOODPLAIN AREA.

STEEP SLOPES
THERE ARE NO STEEP SLOPES ON SITE.

WATER COURSES
THERE ARE NO WATER COURSES ON THE PROPERTY, BUT LETTS CREEK IS DIRECTLY NORTH OF THE PROPERTY.

NATURAL FEATURES
THE PROPERTY HAS BEEN MAINTAINED AS FARM LAND WITH A SMALL AND RANDOM ASSORTMENT OF DOMESTIC SPECIES TREES. THE REMAINDER OF THE PROPERTY IS MAINTAINED AS FARM LAND. THERE ARE NATIVE TREES, WETLANDS AND/OR NATURAL ENVIRONMENTS OUTSIDE OF PHASE 1 TO BE FOUND AT THIS SITE. PUBLIC UTILITIES WITH THEIR ASSOCIATED EASEMENTS SERVE THE EXISTING LOT.

BUILT FEATURES
NONE

LAND USE
THE SITE CURRENTLY HAS NO EXISTING STRUCTURES ON-SITE.

ACCESS POINT
VEHICULAR ACCESS IS DIRECTLY FROM DEXTER-CHELSEA ROAD OR BY CONNECTION TO ELM STREET. THERE ARE CURRENTLY NO PEDESTRIAN SIDEWALKS ON THE PROPERTY. A NEW SIDEWALK WILL BE INSTALLED ALONG DEXTER-CHELSEA ROAD AND A CONNECTOR TO ELM STREET.

PROPOSED LAND USE
THE PROPERTY IS CURRENTLY ZONED P.U.D.

NATURAL FEATURES PROTECTION PLAN
THE TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND CLEAN-UP EFFORTS. THE CONTRACTOR WILL OPTIMIZE WAYS TO PRESERVE AS MANY HIGH-QUALITY TREES ON-SITE AS POSSIBLE. PROPOSED STORM WATER MANAGEMENT WILL UTILIZE AN INFILTRATION BED LOCATED NEAR THE FRONT CENTER OF THE SITE.

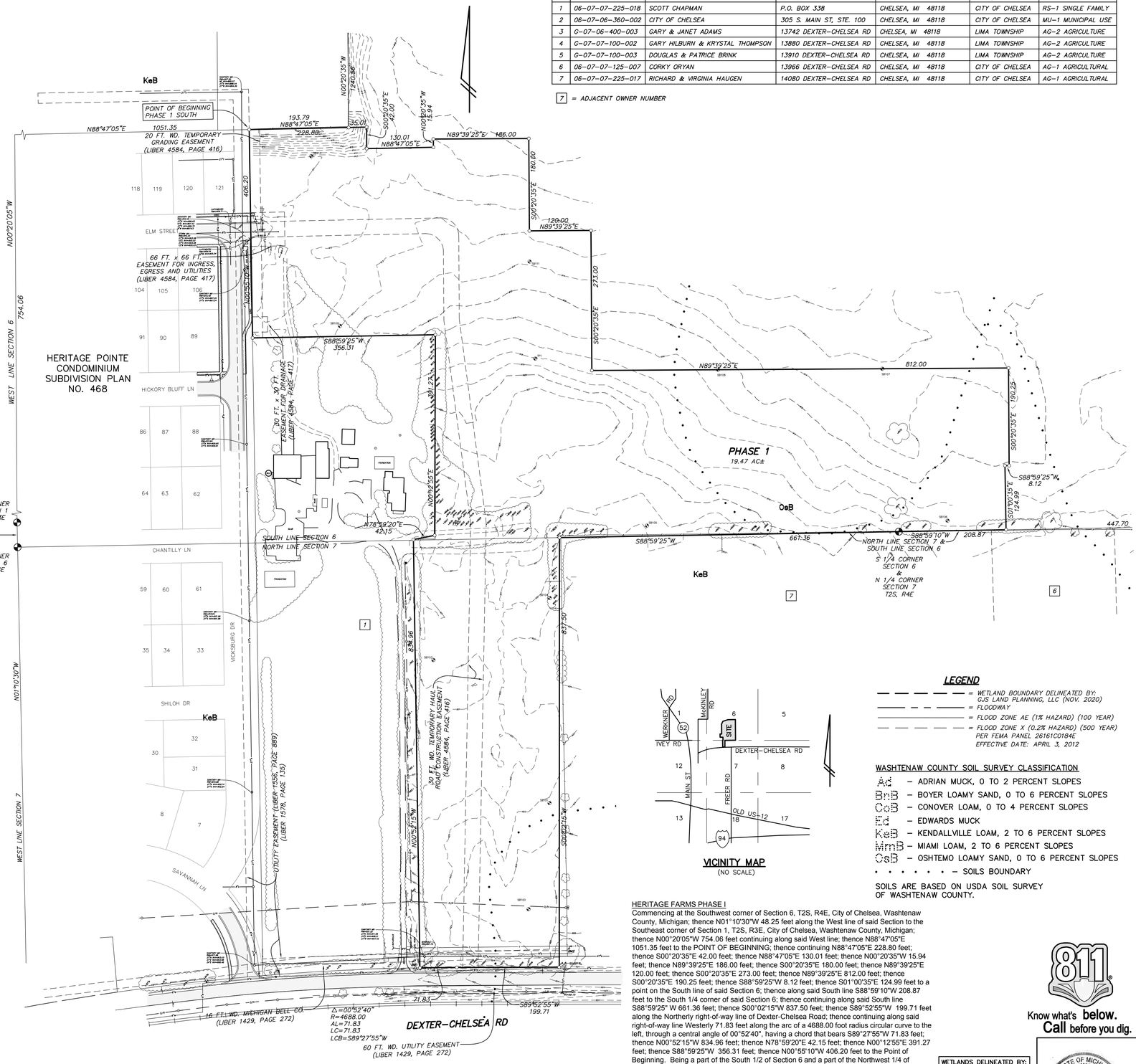
PARKING
EACH HOME WILL HAVE INDIVIDUAL GARAGES AND DRIVEWAYS FOR PARKING.

STREETS
AS CITY STREETS ARE PROPOSED ON SITE PARKING WILL BE ALLOWED ON ONE SIDE OF STREET. THERE IS NO STREET PARKING IN THE CITY OF CHELSEA CITY LIMITS BETWEEN 2AM AND 5AM. CITY PARKING ORDINANCE WILL BE ENFORCED AS SPACES MAY NOT BE USED FOR 24 HOUR PARKING.

OWNERSHIP TABLE

NO.	TAX ID	NAME	STREET ADDRESS	CITY, STATE, ZIP CODE	CITY / TOWNSHIP	ZONING
1	06-07-07-225-018	SCOTT CHAPMAN	P.O. BOX 338	CHELSEA, MI 48118	CITY OF CHELSEA	RS-1 SINGLE FAMILY
2	06-07-06-360-002	CITY OF CHELSEA	305 S. MAIN ST, STE. 100	CHELSEA, MI 48118	CITY OF CHELSEA	MU-1 MUNICIPAL USE
3	G-07-06-400-003	GARY & JANET ADAMS	13742 DEXTER-CHELSEA RD	CHELSEA, MI 48118	LIMA TOWNSHIP	AG-2 AGRICULTURE
4	G-07-07-100-002	GARY HILBURN & KRYSTAL THOMPSON	13880 DEXTER-CHELSEA RD	CHELSEA, MI 48118	LIMA TOWNSHIP	AG-2 AGRICULTURE
5	G-07-07-100-003	DOUGLAS & PATRICE BRINK	13910 DEXTER-CHELSEA RD	CHELSEA, MI 48118	LIMA TOWNSHIP	AG-2 AGRICULTURE
6	06-07-07-125-007	CORKY ORYAN	13966 DEXTER-CHELSEA RD	CHELSEA, MI 48118	CITY OF CHELSEA	AG-1 AGRICULTURAL
7	06-07-07-225-017	RICHARD & VIRGINIA HAUGEN	14080 DEXTER-CHELSEA RD	CHELSEA, MI 48118	CITY OF CHELSEA	AG-1 AGRICULTURAL

7 = ADJACENT OWNER NUMBER



VICINITY MAP
(NO SCALE)

LEGEND

- WETLAND BOUNDARY DELINEATED BY: GJS LAND PLANNING, LLC (NOV. 2020)
- FLOODWAY
- FLOOD ZONE AE (1% HAZARD) (100 YEAR)
- FLOOD ZONE X (0.2% HAZARD) (500 YEAR) PER FEMA PANEL 26161C0184E EFFECTIVE DATE: APRIL 3, 2012

WASHTENAW COUNTY SOIL SURVEY CLASSIFICATION

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- • • • • • • – SOILS BOUNDARY

SOILS ARE BASED ON USDA SOIL SURVEY OF WASHTENAW COUNTY.

HERITAGE FARMS PHASE I
Commencing at the Southwest corner of Section 6, T2S, R4E, City of Chelsea, Washtenaw County, Michigan; thence N01°10'30"W 48.25 feet along the West line of said Section to the Southeast corner of Section 1, T2S, R3E, City of Chelsea, Washtenaw County, Michigan; thence N00°20'05"W 754.06 feet continuing along said West line; thence N88°47'05"E 1051.35 feet to the POINT OF BEGINNING; thence continuing N88°47'05"E 228.80 feet; thence S00°20'35"E 42.00 feet; thence N88°47'05"E 130.01 feet; thence N00°20'35"W 15.94 feet; thence N89°39'25"E 186.00 feet; thence S00°20'35"E 180.00 feet; thence N89°39'25"E 120.00 feet; thence S00°20'35"E 273.00 feet; thence N89°39'25"E 812.00 feet; thence S00°20'35"E 190.25 feet; thence S88°59'25"W 8.12 feet; thence S01°00'35"E 124.99 feet to a point on the South line of said Section 6; thence along said South line S88°59'10"W 208.87 feet to the South 1/4 corner of said Section 6; thence continuing along said South line S88°59'25" W 661.36 feet; thence S00°02'15"W 837.50 feet; thence S89°52'55"W 199.71 feet along the Northerly right-of-way line of Dexter-Chelsea Road; thence continuing along said right-of-way line Westerly 71.83 feet along the arc of a 4688.00 foot radius circular curve to the left, through a central angle of 00°52'40", having a chord that bears S89°27'55"W 71.83 feet; thence N00°52'15"W 834.96 feet; thence N78°59'20"E 42.15 feet; thence N00°12'55"E 391.27 feet; thence S88°59'25"W 356.31 feet; thence N00°55'10"W 406.20 feet to the Point of Beginning. Being a part of the South 1/2 of Section 6 and a part of the Northwest 1/4 of Section 7, T2S, R4E, City of Chelsea, Washtenaw County, Michigan and containing 19.47 acres of land, more or less. Being subject to easements and restrictions of record, if any.

WETLANDS DELINEATED BY: GJS LAND PLANNING, LLC NOVEMBER OF 2020

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REVISIONS *2023-03-16 EGLE Permit Set. 2023-03-31 REVISED. 2023-04-12 COMMENTS.*

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

PREPARED BY THOMAS L. SUTHERLAND P.S., MICH No. 24620

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SHEET 3

H:\jobs\proj\32971\dwg\phase 1\971-PH1-topo-100.dwg, 4/14/2023 8:53:31 AM, 1:1

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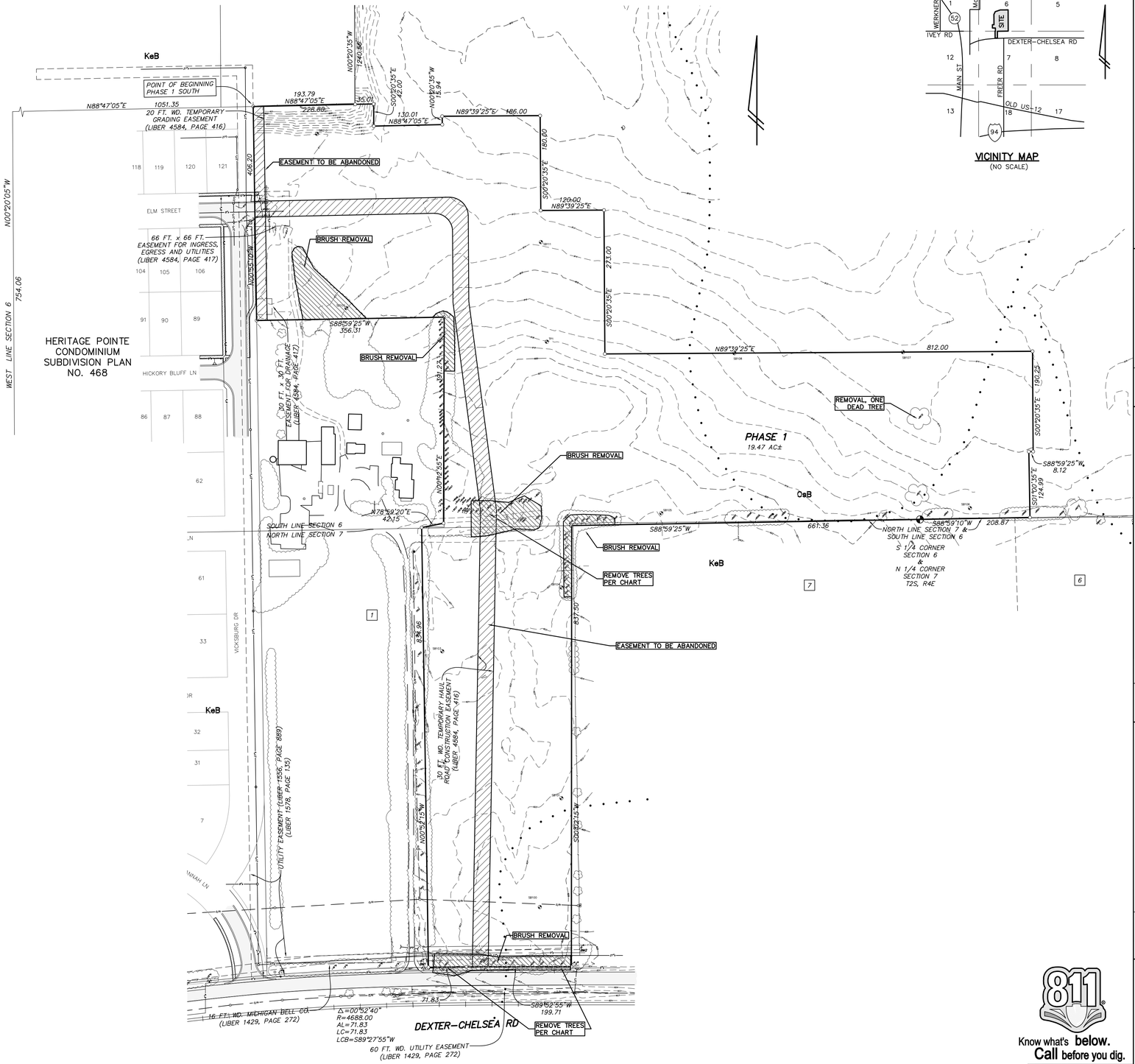
8680	Norway Spruce		46	Good			1
						79	125



THE OWNER SHALL NOT USE OR AUTHORIZE ANY OTHER PERSON TO USE THE DRAWINGS, SPECIFICATIONS, ELECTRONIC DATA AND OTHER INSTRUMENTS OF SERVICE PREPARED BY WASHTENAW ENGINEERING COMPANY, INC. (WECO) FOR THIS PROJECT FOR EXTENSIONS OF THE PROJECT OR FOR ANY OTHER PROJECT BY WASHTENAW ENGINEERING COMPANY, INC. (WECO) DO NOT INTEND OR AUTHORIZE REUSE BY THE OWNER OR ANY OTHER PERSON OR ENTITY WITHOUT THE PRIOR WRITTEN CONSENT OF WECO. ANY REUSE WITHOUT WECO'S PROFESSIONAL INVOLVEMENT WILL BE AT THE OWNER'S SOLE RISK AND WITHOUT LIABILITY TO WECO. THE OWNER SHALL INDEMNIFY AND HOLD HARMLESS WECO, WECO'S CONSULTANTS AND ANY PERSONS OR ENTITIES THAT WECO HAS RETAINED FROM AND AGAINST ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES, INCLUDING ATTORNEYS' FEES, ARISING OUT OF OR RESULTING FROM UNAUTHORIZED REUSE OF DRAWINGS, SPECIFICATIONS, ELECTRONIC DATA, OR OTHER INSTRUMENTS OF SERVICE.

LEGEND

- ☼ = LIGHT POLE
- ▽ = UTILITY POLE
- ⊗ = GUY ANCHOR
- ⊲ = HYDRANT
- 250.0 = SPOT ELEV.
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BENCHMARK *BM1=TOP NUT ON HYDRANT, NORTH OF DEXTER-CHELSEA RD AND 9'± WEST OF THE SOUTHWEST PROPERTY CORNER, ELEV=920.28 (NAVD 88).*

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REVISIONS *2023-03-16 EGLE Permit Set. 2023-03-31 REVISED. 2023-04-12 COMMENTS.*

SCALE 0 50 100 200

SCALE: 1"=100'

PREPARED BY JOSEPH K. MAYNARD P.E., MICH No. 52559

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

WETLANDS DELINEATED BY: GJS LAND PLANNING, LLC NOVEMBER OF 2020

STATE OF MICHIGAN JOSEPH K. MAYNARD ENGINEER No. 52559 REGISTERED PROFESSIONAL ENGINEER

CIVIL ENGINEERS
PLANNERS • SURVEYORS
LANDSCAPE ARCHITECTS
3526 W. LIBERTY RD
SUITE 100
ANN ARBOR, MI 48103
TEL 734-761-8800
FAX 734-761-8530
WASHTENAWENGINEERING.COM

WASHTENAW ENGINEERING

CLIENT

M/I HOMES OF MICHIGAN
40950 WOODWARD AVE.
BLOOMFIELD HILLS, MI. 48304
PH: (248)-221-5011

SHEET

REMOVAL PLAN

PROJECT

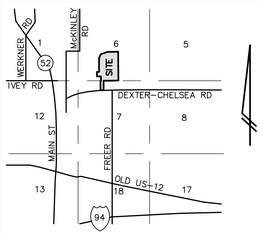
HERITAGE FARMS PHASE 1

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY • MICHIGAN

DATE 12-28-22
JOB NO. 32971
DWG NO. 971-PH1-rem
FIELD BOOK 446
FILE NO. 10668

SHEET 4

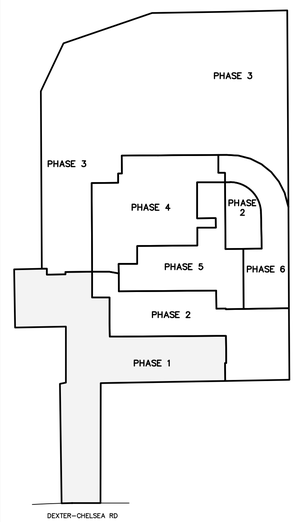
H:\WECBwrg\32971\dwg\those 1971-PH1-rem.dwg, 4/14/2023 8:53:47 AM, 1:1



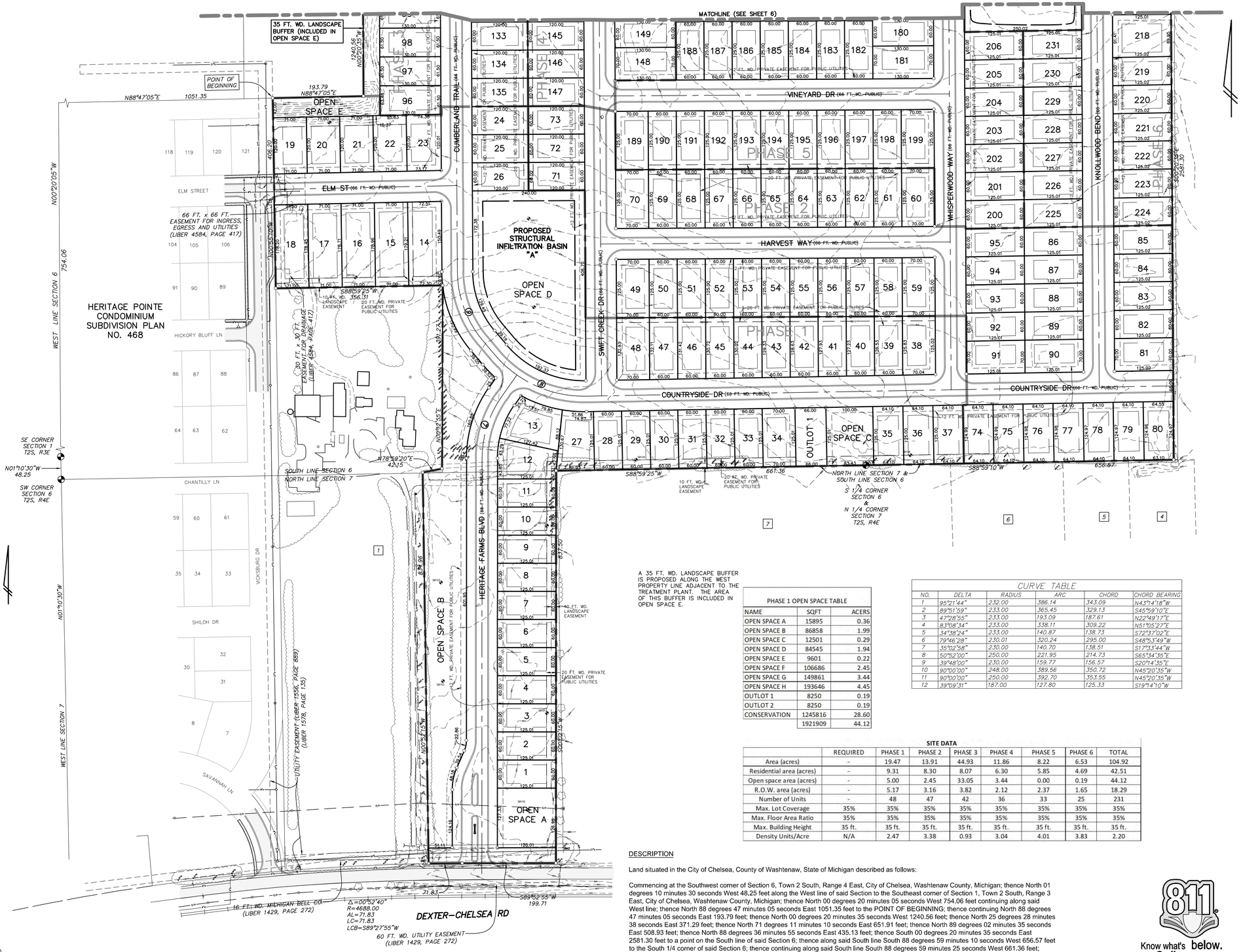
VICINITY MAP
(NO SCALE)

NOTES:

- HOMEOWNERS ASSOCIATION SHALL MAINTAIN ALL OPEN SPACE AREAS.
- SANITARY SEWER EASEMENT AND ALL ACCESS LOCATIONS SHALL HAVE COMPACTED GRAVEL COVERED WITH TOPSOIL.
- THERE SHALL BE NO PARKING AT ALL INTERSECTIONS AND WITHIN THE CUL-DE-SAC. SIGN LOCATIONS TO BE PROVIDED AT FINAL SITE PLAN. OTHERWISE, PARKING SHALL BE PERMITTED ON ONE SIDE OF ALL STREETS. SIGN LOCATIONS TO BE PROVIDED AT FINAL SITE PLAN.
- ALL TREES TO BE PRESERVED SHALL HAVE TREE PROTECTION MEASURES IN PLACE PRIOR TO CONSTRUCTION. A TREE SURVEY IS NOT REQUIRED BY THE CITY ZONING ORDINANCE.
- NO STRUCTURES INCLUDING DECKS OR PORCHES SHALL BE LOCATED WITHIN THE 20 FT. SETBACK OF THE TREATMENT PLANT.
- SEE ENGINEERING SHEETS FOR UTILITY AND GRADING FOR EACH PHASE OF LOT AND ROAD CONSTRUCTION.
- TO THE GREATEST EXTENT POSSIBLE, TREES WITHIN THE SITE SHALL BE PRESERVED. HOWEVER, DUE TO GRADING, UTILITIES AND OTHER ASPECTS OF IMPLEMENTATION VARIOUS TREES THROUGHOUT THE SITE SHALL BE REMOVED PRIOR TO CONSTRUCTION. ALL TREE IMPACTS SHALL BE RE-EVALUATED AT FINAL SITE PLAN.
- THE LANDSCAPE BUFFER SHALL BE INSTALLED IN A SEQUENCE WHERE BY THE CURRENT PHASE OF CONSTRUCTION SHALL INCLUDE THE BUFFER IN THE NEXT PHASE OF THE PROJECT UNTIL THE BUFFER IS COMPLETED.
- LANDSCAPING SHALL BE PROVIDED AS REQUIRED BY THE ORDINANCE AND SHOWN AT THE TIME OF FINAL SITE PLAN APPROVALS.
- ALL STREETS SHALL BE DEDICATED PUBLIC STREETS TO CITY STANDARDS.
- ALL MAILBOXES SHALL BE GROUPED NEAR OPEN SPACES UNLESS OTHERWISE DICTATED BY THE POST OFFICE.
- PARKING: EACH HOME WILL HAVE INDIVIDUAL GARAGES AND DRIVEWAYS FOR PARKING.
- STREETS: AS CITY STREETS ARE PROPOSED ON SITE PARKING WILL BE ALLOWED ON ONE SIDE OF STREET. THERE IS NO STREET PARKING IN THE CITY OF CHELSEA CITY LIMITS BETWEEN 2AM AND 5AM. CITY PARKING ORDINANCE WILL BE ENFORCED AS SPACES MAY NOT BE USED FOR 24 HOUR PARKING.



HERITAGE FARMS PHASE KEY
(NOT TO SCALE)



A 35 FT. WD. LANDSCAPE BUFFER IS PROPOSED ALONG THE WEST PROPERTY LINE ADJACENT TO THE TREATMENT PLANT. THE AREA OF THIS BUFFER IS INCLUDED IN OPEN SPACE E.

PHASE 1 OPEN SPACE TABLE

NAME	SQFT	ACERS
OPEN SPACE A	15895	0.36
OPEN SPACE B	86858	1.99
OPEN SPACE C	12501	0.29
OPEN SPACE D	84545	1.94
OPEN SPACE E	9601	0.22
OPEN SPACE F	106686	2.45
OPEN SPACE G	149861	3.44
OPEN SPACE H	193646	4.45
OUTLOT 1	8250	0.19
OUTLOT 2	8250	0.19
CONSERVATION	1245816	28.60
	1921909	44.12

CURVE TABLE

NO.	DELTA	RADIUS	ARC	CHORD	CHORD BEARING
1	95°21'44"	232.00	386.14	343.09	N43°41'18"W
2	89°51'59"	233.00	365.45	329.13	S45°59'10"E
3	47°28'55"	233.00	193.09	187.61	N22°49'17"E
4	83°08'34"	233.00	338.11	309.22	N51°05'27"E
5	34°58'24"	233.00	140.87	138.73	S72°37'09"E
6	79°46'28"	230.01	320.24	295.00	S48°53'49"W
7	35°52'58"	230.00	140.70	138.51	S17°33'44"W
8	50°56'00"	250.00	221.95	214.73	S65°34'35"E
9	39°48'00"	230.00	159.77	156.57	S20°14'35"E
10	90°00'00"	248.00	389.56	350.72	N45°20'35"W
11	90°00'00"	250.00	392.70	353.55	N45°20'35"W
12	39°09'31"	187.00	127.80	125.33	S19°41'10"W

SITE DATA

	REQUIRED	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	TOTAL
Area (acres)	-	19.47	13.91	44.93	11.86	8.22	6.53	104.92
Residential area (acres)	-	9.31	8.30	8.07	6.30	5.85	4.69	42.51
Open space area (acres)	-	5.00	2.45	33.05	3.44	0.00	0.19	44.12
R.O.W. area (acres)	-	5.17	3.16	3.82	2.12	2.37	1.65	18.29
Number of Units	-	48	47	42	36	33	25	231
Max. Lot Coverage	35%	35%	35%	35%	35%	35%	35%	35%
Max. Floor Area Ratio	35%	35%	35%	35%	35%	35%	35%	35%
Max. Building Height	35 ft.	35 ft.	35 ft.	35 ft.	35 ft.	35 ft.	35 ft.	35 ft.
Density Units/Acre	N/A	2.47	3.38	0.93	3.04	4.01	3.83	2.20

DESCRIPTION

Land situated in the City of Chelsea, County of Washtenaw, State of Michigan described as follows:

Commencing at the Southwest corner of Section 6, Town 2 South, Range 4 East, City of Chelsea, Washtenaw County, Michigan; thence North 01 degrees 10 minutes 30 seconds West 48.25 feet along the West line of said Section to the Southeast corner of Section 1, Town 2 South, Range 3 East, City of Chelsea, Washtenaw County, Michigan; thence North 00 degrees 20 minutes 05 seconds West 754.06 feet continuing along said West line; thence North 88 degrees 47 minutes 05 seconds East 1051.35 feet to the POINT OF BEGINNING; thence continuing North 88 degrees 47 minutes 05 seconds East 193.79 feet; thence North 00 degrees 20 minutes 35 seconds West 1240.56 feet; thence North 25 degrees 28 minutes 38 seconds East 371.29 feet; thence North 71 degrees 11 minutes 10 seconds East 651.91 feet; thence North 89 degrees 02 minutes 35 seconds East 508.93 feet; thence North 88 degrees 36 minutes 55 seconds East 435.13 feet; thence South 00 degrees 20 minutes 35 seconds East 2581.30 feet to a point on the South line of said Section 6; thence along said South line South 88 degrees 59 minutes 10 seconds West 656.57 feet to the South 1/4 corner of said Section 6; thence continuing along said South line South 88 degrees 59 minutes 25 seconds West 661.36 feet; thence South 00 degrees 02 minutes 15 seconds West 837.50 feet; thence South 89 degrees 52 minutes 55 seconds West 199.71 feet; thence Westerly 71.83 feet along the arc of a 4688.00 foot radius circular curve to the left through a central angle of 00 degrees 52 minutes 40 seconds having a chord that bears South 89 degrees 27 minutes 55 seconds West 71.83 feet; thence North 00 degrees 52 minutes 15 seconds West 834.96 feet; thence North 78 degrees 59 minutes 20 seconds East 42.15 feet; thence North 00 degrees 12 minutes 55 seconds East 391.27 feet; thence South 88 degrees 59 minutes 25 seconds West 356.31 feet; thence North 00 degrees 55 minutes 10 seconds West 406.20 feet to the Point of Beginning. Being a part of the South 1/2 of Section 6 and a part of the Northwest 1/4 of Section 7, Town 2 South, Range 4 East, City of Chelsea, Washtenaw County, Michigan.

WETLANDS DELINEATED BY: GJS LAND PLANNING, LLC NOVEMBER OF 2020

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- SPOT ELEV. 953.23
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- = WETLAND BOUNDARY DELINEATED BY: GJS LAND PLANNING, LLC (NOV. 2020)
- = FLOODWAY
- = FLOOD ZONE AE (1% HAZARD) (100 YEAR)
- = FLOOD ZONE X (0.2% HAZARD) (500 YEAR) PER FEMA PANEL 26161C0184E EFFECTIVE DATE: APRIL 3, 2012

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REVISIONS 2023-03-16 EGLE Permit Set, 2023-03-31 REVISED

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

PREPARED BY
JOSEPH K. MAYNARD P.E., MICH No. 52559

STATE OF MICHIGAN JOSEPH K. MAYNARD ENGINEER No. 52559 LICENSED PROFESSIONAL ENGINEER

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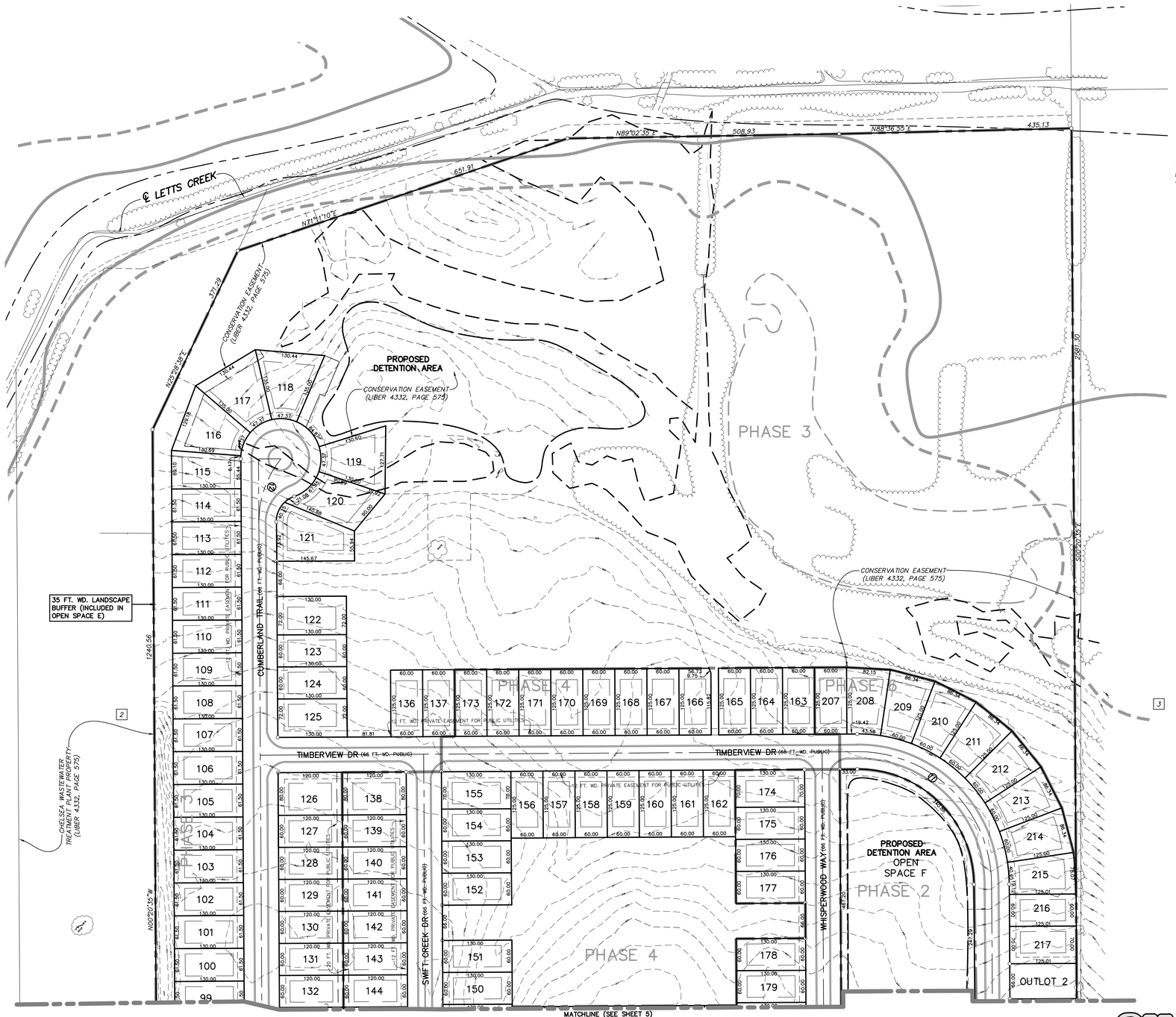
SHEET
OVERALL PUD SITE PLAN
SOUTH

PROJECT
HERITAGE FARMS
PHASE 1

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY • MICHIGAN
DATE 12-28-22
JOB NO. 32971
DWG NO. 971-OV-PUD
FIELD BOOK 446
FILE NO. 10668
SHEET 5

UNIT AREAS		UNIT AREAS		UNIT AREAS		UNIT AREAS	
Unit No.	Area (sf)	Unit No.	Area (sf)	Unit No.	Area (sf)	Unit No.	Area (sf)
1	7,500	76	8,011	151	7,800	226	7,501
2	7,500	77	8,011	152	7,800	227	7,501
3	7,500	78	8,011	153	7,800	228	7,501
4	7,500	79	8,011	154	7,800	229	7,501
5	7,500	80	7,976	155	9,100	230	7,501
6	7,500	81	8,751	156	7,500	231	7,501
7	7,500	82	7,500	157	7,500		
8	7,500	83	7,500	158	7,500		
9	7,500	84	7,500	159	7,500		
10	7,500	85	7,500	160	7,500		
11	7,500	86	7,500	161	7,500		
12	9,310	87	7,500	162	7,500		
13	10,400	88	7,500	163	7,500		
14	12,986	89	7,500	164	7,500		
15	12,715	90	8,750	165	7,500		
16	12,697	91	8,750	166	7,486		
17	12,679	92	7,500	167	7,500		
18	12,661	93	7,500	168	7,500		
19	8,520	94	7,500	169	7,500		
20	8,520	95	7,500	170	7,500		
21	8,520	96	8,123	171	7,500		
22	8,520	97	7,995	172	7,500		
23	8,853	98	7,995	173	7,500		
24	7,200	99	7,995	174	9,100		
25	7,200	100	7,995	175	7,800		
26	7,200	101	7,995	176	7,800		
27	9,430	102	7,995	177	7,800		
28	7,500	103	7,995	178	7,800		
29	7,500	104	7,995	179	7,800		
30	7,500	105	7,995	180	7,800		
31	7,500	106	7,995	181	9,100		
32	7,500	107	7,995	182	7,500		
33	7,500	108	7,995	183	7,500		
34	8,750	109	7,995	184	7,500		
35	8,013	110	7,995	185	7,500		
36	8,013	111	7,995	186	7,500		
37	8,013	112	7,995	187	7,500		
38	8,782	113	7,995	188	7,500		
39	7,571	114	7,995	189	8,750		
40	7,613	115	8,708	190	7,500		
41	7,655	116	10,977	191	7,500		
42	7,697	117	11,242	192	7,500		
43	7,738	118	11,242	193	7,500		
44	7,780	119	10,703	194	7,500		
45	7,822	120	10,476	195	7,500		
46	7,864	121	12,358	196	7,500		
47	7,906	122	9,344	197	7,500		
48	9,277	123	7,800	198	7,500		
49	8,750	124	7,800	199	8,750		
50	7,500	125	9,344	200	7,500		
51	7,500	126	9,600	201	7,500		
52	7,500	127	7,200	202	7,500		
53	7,500	128	7,200	203	7,500		
54	7,500	129	7,200	204	7,500		
55	7,500	130	7,200	205	7,500		
56	7,500	131	7,200	206	7,500		
57	7,500	132	7,200	207	7,500		
58	7,500	133	7,200	208	8,981		
59	7,500	134	7,200	209	9,024		
60	7,500	135	7,200	210	9,024		
61	7,500	136	7,500	211	9,024		
62	7,500	137	7,500	212	9,024		
63	7,500	138	9,600	213	9,024		
64	7,500	139	7,200	214	9,024		
65	7,500	140	7,200	215	8,557		
66	7,500	141	7,200	216	7,500		
67	7,500	142	7,200	217	8,750		
68	7,500	143	7,200	218	11,335		
69	7,500	144	7,200	219	7,501		
70	8,750	145	7,200	220	7,501		
71	7,200	146	7,200	221	7,501		
72	7,200	147	7,200	222	7,501		
73	7,200	148	9,100	223	7,501		
74	8,012	149	7,800	224	7,501		
75	8,011	150	7,800	225	7,501		



WASHTENAW COUNTY SOIL SURVEY CLASSIFICATION

- AdA – ADRIAN MUCK, 0 TO 2 PERCENT SLOPES
- BnB – BOYER LOAMY SAND, 0 TO 6 PERCENT SLOPES
- CsB – CONOVER LOAM, 0 TO 4 PERCENT SLOPES
- EdA – EDWARDS MUCK
- KeB – KENDALLVILLE LOAM, 2 TO 6 PERCENT SLOPES
- MmB – MIAMI LOAM, 2 TO 6 PERCENT SLOPES
- OsB – OSHTEMO LOAMY SAND, 0 TO 6 PERCENT SLOPES
- • • • • • • – SOILS BOUNDARY

SOILS ARE BASED ON USDA SOIL SURVEY OF WASHTENAW COUNTY.

OWNERSHIP TABLE

NO.	TAX ID	NAME	STREET ADDRESS	CITY, STATE, ZIP CODE	CITY / TOWNSHIP	ZONING
1	06-07-07-225-018	SCOTT CHAPMAN	P.O. BOX 338	CHELSEA, MI 48118	CITY OF CHELSEA	RS-1 SINGLE FAMILY
2	06-07-06-360-002	CITY OF CHELSEA	305 S. MAIN ST, STE. 100	CHELSEA, MI 48118	CITY OF CHELSEA	MU-1 MUNICIPAL USE
3	G-07-06-400-003	GARY & JANET ADAMS	13742 DEXTER-CHELSEA RD	CHELSEA, MI 48118	LIMA TOWNSHIP	AG-2 AGRICULTURE
4	G-07-07-100-002	GARY HILBURN & KRYSTAL THOMPSON	13880 DEXTER-CHELSEA RD	CHELSEA, MI 48118	LIMA TOWNSHIP	AG-2 AGRICULTURE
5	G-07-07-100-003	DOUGLAS & PATRICE BRINK	13910 DEXTER-CHELSEA RD	CHELSEA, MI 48118	LIMA TOWNSHIP	AG-2 AGRICULTURE
6	06-07-07-125-007	CORKY ORYAN	13966 DEXTER-CHELSEA RD	CHELSEA, MI 48118	CITY OF CHELSEA	AG-1 AGRICULTURAL
7	06-07-07-225-017	RICHARD & VIRGINIA HAUGEN	14080 DEXTER-CHELSEA RD	CHELSEA, MI 48118	CITY OF CHELSEA	AG-1 AGRICULTURAL

7 = ADJACENT OWNER NUMBER

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SCALE 200 — 0 50 100 — SCALE: 1"=100'

PREPARED BY JOSEPH K. MAYNARD P.E., MICH No. 52559

JOSEPH K. MAYNARD ENGINEER No. 52559 PROFESSIONAL ENGINEER STATE OF MICHIGAN

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SHEET
OVERALL PUD SITE PLAN
NORTH

PROJECT
HERITAGE FARMS
PHASE 1

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY • MICHIGAN

DATE	12-28-22
JOB NO.	32971
DWG NO.	971-OV-PUD
FIELD BOOK	446
FILE NO.	10668

6 SHEET

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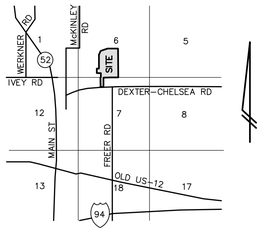
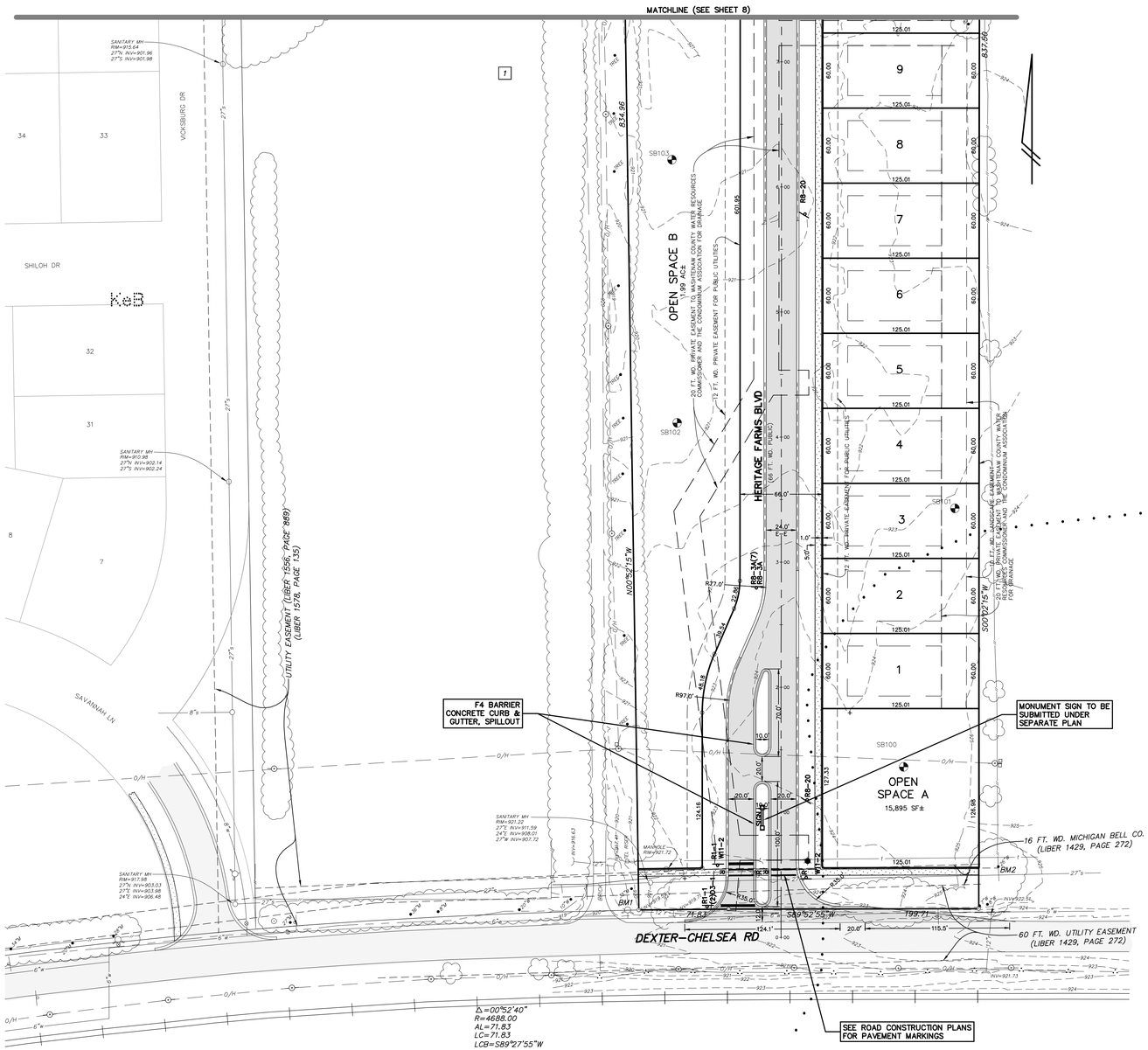
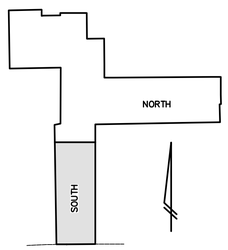


VICINITY MAP
(NO SCALE)





HERITAGE FARMS PHASE 1 KEY
(NOT TO SCALE)

WASHTENAW COUNTY SOIL SURVEY CLASSIFICATION

- AdA – ADRIAN MUCK, 0 TO 2 PERCENT SLOPES
- BrB – BOYER LOAMY SAND, 0 TO 6 PERCENT SLOPES
- CoB – CONOVER LOAM, 0 TO 4 PERCENT SLOPES
- EdA – EDWARDS MUCK
- KeB – KENDALLVILLE LOAM, 2 TO 6 PERCENT SLOPES
- MmB – MIAMI LOAM, 2 TO 6 PERCENT SLOPES
- OsB – OSHTEMO LOAMY SAND, 0 TO 6 PERCENT SLOPES
- – – – – – – SOILS BOUNDARY

SOILS ARE BASED ON USDA SOIL SURVEY OF WASHTENAW COUNTY.

LEGEND

- = WETLAND BOUNDARY DELINEATED BY: GJS LAND PLANNING, LLC (NOV. 2020)
- = FLOODWAY
- = FLOOD ZONE AE (1% HAZARD) (100 YEAR)
- = FLOOD ZONE X (0.2% HAZARD) (500 YEAR) PER FEMA PANEL 26161C0184E EFFECTIVE DATE: APRIL 3, 2012

HERITAGE FARMS PHASE I

Commencing at the Southwest corner of Section 6, T2S, R4E, City of Chelsea, Washtenaw County, Michigan; thence N01°10'30"W 48.25 feet along the West line of said Section to the Southeast corner of Section 1, T2S, R3E, City of Chelsea, Washtenaw County, Michigan; thence N00°20'05"W 754.06 feet continuing along said West line; thence N88°47'05"E 1051.35 feet to the POINT OF BEGINNING; thence continuing N88°47'05"E 228.80 feet; thence S00°20'35"E 42.00 feet; thence N88°47'05"E 130.01 feet; thence N00°20'35"W 15.94 feet; thence N89°39'25"E 186.00 feet; thence S00°20'35"E 180.00 feet; thence N89°39'25"E 120.00 feet; thence S00°20'35"E 273.00 feet; thence N89°39'25"E 812.00 feet; thence S00°20'35"E 190.25 feet; thence S88°59'25"W 8.12 feet; thence S01°00'35"E 124.99 feet to a point on the South line of said Section 6; thence along said South line S88°59'10"W 208.87 feet to the South 1/4 corner of said Section 6; thence continuing along said South line S88°59'25" W 661.36 feet; thence S00°02'15"W 837.50 feet; thence S89°52'55"W 199.71 feet along the Northerly right-of-way line of Dexter-Chelsea Road; thence continuing along said right-of-way line Westerly 71.83 feet along the arc of a 4688.00 foot radius circular curve to the left, through a central angle of 00°52'40", having a chord that bears S89°27'55"W 71.83 feet; thence N00°52'15"W 834.96 feet; thence N78°59'20"E 42.15 feet; thence N00°12'55"E 391.27 feet; thence S88°59'25"W 356.31 feet; thence N00°55'10"W 406.20 feet to the Point of Beginning. Being a part of the South 1/2 of Section 6 and a part of the Northwest 1/4 of Section 7, T2S, R4E, City of Chelsea, Washtenaw County, Michigan and containing 19.47 acres of land, more or less. Being subject to easements and restrictions of record, if any.

PROPOSED LEGEND

- = ASPHALT SURFACE
- = CONCRETE SURFACE
- = 6" UNDER DRAIN PIPE WITH SOCK
- = SPILL IN (F4) BARRIER CONCRETE CURB & GUTTER
- = SPILL OUT (F4) BARRIER CONCRETE CURB & GUTTER
- = SIGN
- = LIGHTPOLE
- R = RAMP WITH TACTILE WARNING STRIPS
- WCWRC = WASHTENAW COUNTY WATER RESOURCES COMMISSIONER
- CA = CONDOMINIUM ASSOCIATION

Know what's below. Call before you dig.

ALL PROPOSED STREET TREES MUST BE A MINIMUM OF 4 FT FROM UTILITIES

WETLANDS DELINEATED BY: GJS LAND PLANNING, LLC NOVEMBER OF 2020

LEGEND

- ☼ = LIGHT POLE
- ▽ = UTILITY POLE
- ▽ = GUY ANCHOR
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- ⊙ = SPOT ELEV.
- ⊙ = POST
- ⊗ = GATE VALVE
- —o— = SIGN
- TC = TOP OF CURB
- TW = TOP OF WALL
- ○ = MANHOLE
- □ = CATCHBASIN
- ◡ = END SECTION
- = GRAVEL
- = FENCE
- = CONCRETE
- = ASPHALT
- r = EXISTING STORM
- s = EXISTING SANITARY
- w = EXISTING WATER
- g = EXISTING GAS
- e = EXISTING ELECTRIC
- t = EXISTING TELEPHONE

BENCHMARK *BM1=TOP NUT ON HYDRANT, NORTH OF DEXTER-CHELSEA RD AND 9'± WEST OF THE SOUTHWEST PROPERTY CORNER, ELEV=920.28 (NAVD 88).*

BM2= NAIL IN W'LY FACE OF 26" WALNUT, 43'± NORTH OF DEXTER-CHELSEA RD AND 37'± NE'LY OF THE SOUTHEAST PROPERTY CORNER, ELEV=927.38 (NAVD 88).

REVISIONS *2023-03-16 EGLE Permit Set, 2023-03-31 REVISED*

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

PREPARED BY
JOSEPH K. MAYNARD P.E., MICH No. 52559

STATE OF MICHIGAN · JOSEPH K. MAYNARD ENGINEER No. 52559 · LICENSED PROFESSIONAL ENGINEER

CIVIL ENGINEERS
PLANNERS • SURVEYORS
LANDSCAPE ARCHITECTS
3526 W. LIBERTY RD
SUITE 400
ANN ARBOR, MI 48103
TEL: 734-761-8530
FAX: 734-761-8536
WASHTENAWENGINEERING.COM

WASHTENAW ENGINEERING

CLIENT
M/I HOMES OF MICHIGAN
40950 WOODWARD AVE.
BLOOMFIELD HILLS, MI. 48304
PH: (248)-221-5011

SHEET
PHASE 1 PUD SITE PLAN SOUTH

PROJECT
HERITAGE FARMS PHASE 1

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY • MICHIGAN
DATE 12-28-22
JOB NO. 32971
DWG NO. 971-PH1-pud
FIELD BOOK 446
FILE NO. 10668
SHEET 7

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PROJECT
HERITAGE FARMS PHASE 1

SHEET
PHASE 1 PUD SITE PLAN NORTH

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WASHTENAW COUNTY • MICHIGAN
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ELM STREET

(2) (3) D3-1 6"x 24"
2 OR 3 INDICATED NUMBER OF SIGNS NEEDED

STOP R1-1 30" X 30"

SPEED LIMIT 25 R2-1-25 24" X 30"

R8-3a 24" X 24"

PED XING W11A-2 30"x 30" 24"x 18" (2C-32)

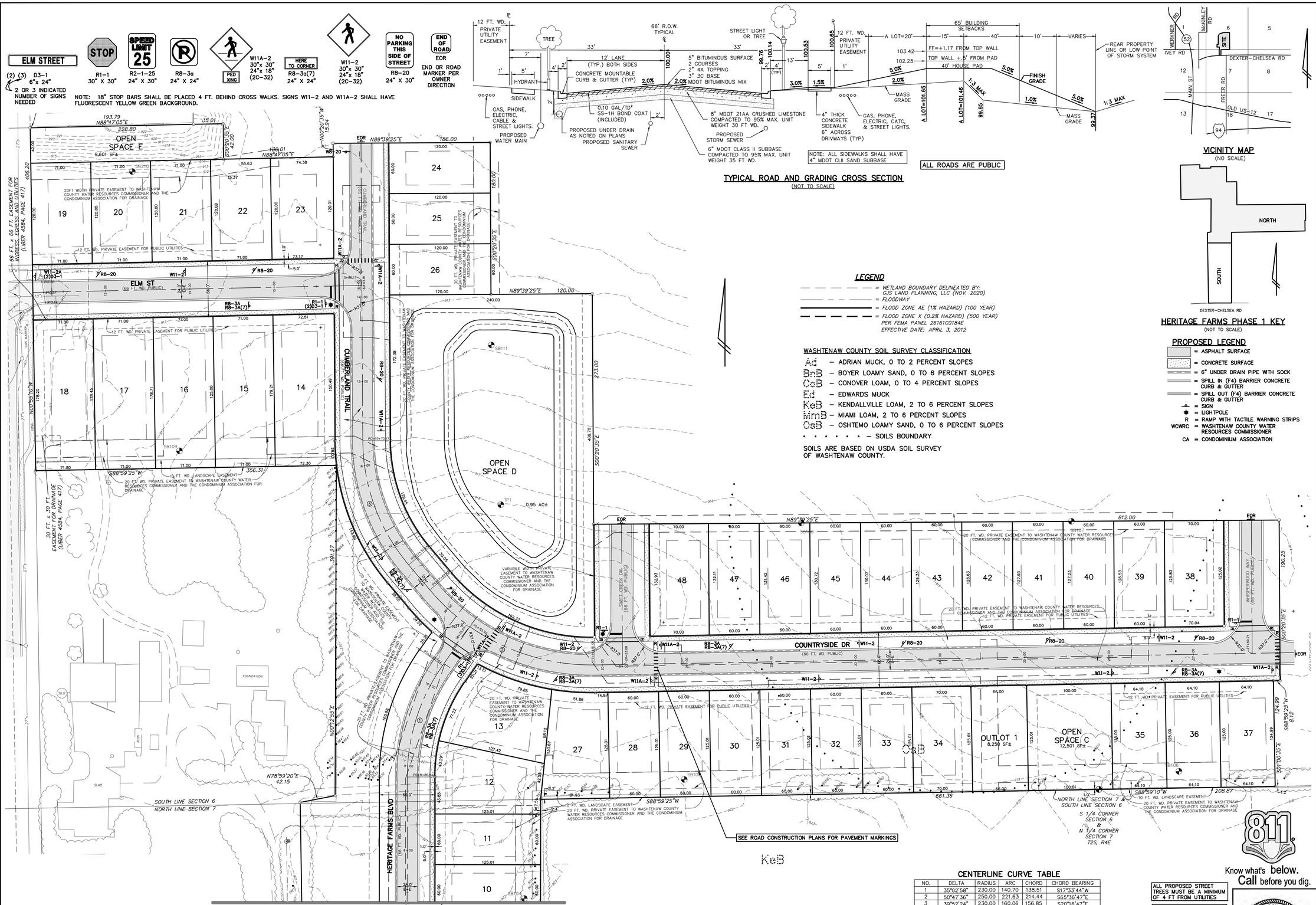
HERE TO CORNER R8-3a(7) 24" X 24"

W11-2 30"x 30" 24"x 18" (2C-32)

NO PARKING THIS SIDE OF STREET R8-20 24" X 30"

END OF ROAD EOR
END OR ROAD MARKER PER OWNER DIRECTION

NOTE: 18" STOP BARS SHALL BE PLACED 4 FT. BEHIND CROSS WALKS. SIGNS W11-2 AND W11A-2 SHALL HAVE FLUORESCENT YELLOW GREEN BACKGROUND.



TYPICAL ROAD AND GRADING CROSS SECTION
(NOT TO SCALE)

NOTE: ALL SIDEWALKS SHALL HAVE 4" MDOT CLII SAND SUBBASE

ALL ROADS ARE PUBLIC

VICINITY MAP
(NO SCALE)

HERITAGE FARMS PHASE 1 KEY
(NOT TO SCALE)

LEGEND

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KeB

CENTERLINE CURVE TABLE

NO.	DELTA	RADIUS	ARC	CHORD	CHORD BEARING
1	35°02'58"	230.00	140.70	138.51	S17°33'44"W
2	50°47'36"	250.00	221.63	214.44	S65°36'47"E
3	39°52'24"	230.00	160.06	156.85	S20°16'47"E

① = CENTERLINE CURVE LABEL

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STRUCTURAL INFILTRATION BASIN "A" CALCULATIONS

Standard Method Runoff Volume Work Sheets

Project: HERITAGE FARMS PHASE 1
Basin: STRUCTURAL INFILTRATION BASIN "A"
By: Seth Gerner, P.E.
Date: 3/6/2023

W1 Determining Post-Development Cover types, Areas, Curve Numbers and Runoff

Total Site area = 20.972 Ac (19.47 Ph1 + 1.502 Ph2)
Disturbed Site Area = 15.08 Ac
% Disturbed = 72 %
Total Tributary area Excluding "Self-Crediting" BMPS = 20.9720 Ac

Rational Method Variables

Cover Type	Soil Type	Proposed Soil Slope	Area (ft2)	Area(acre)	Runoff Coefficient C	(C)(Area)
Impervious	B		227,990	5.2339	0.95	4.9722
Pervious	B	<4%	463,254	10.6348	0.25	2.6587
Pervious	B	4%-8%	99,799	2.2911	0.3	0.6873
Pervious	B	8%>	122,498	2.8122	0.35	0.9843
					Σ(C)(Area) =	9.3025
					Σ(Area) =	20.9720
					Weighted C = Σ(C)(Area)/Σ(Area) =	0.4436

NRCS Variables - Pervious Cover

Cover Type	Soil Type	Area (ft2)	Area(acre)	Curve Number	(CN)(Area)
Open Space-Good	B	685,551	15.7381	61	960.02
Open Space-Good	D	0	0.0000	80	0.00
				Σ(CN)(Area) =	960.02
				Σ(Area) =	15.7381
				Weighted CN = Σ(C)(Area)/Σ(Area) =	61

NRCS Variables - Impervious Cover

Cover Type	Soil Type	Area (ft2)	Area(acre)	Curve Number	(CN)(Area)
Paved	B	227,990	5.2339	98	512.93
				Σ(CN)(Area) =	512.93
				Σ(Area) =	5.2339
				Weighted CN = Σ(C)(Area)/Σ(Area) =	98

W2 First Flush

Vff = (1")(1/12")(43560ft3/1ac)AC
Total Area A = 20.97 Ac
Weighted C C = 0.4436
Vff = 33,771 cft

W3 Pre-development Bankfull Runoff Calculation (Vbf-pre)

NRCS Variables - Pervious Cover

Cover Type	Soil Type	Area (ft2)	Area(acre)	Curve Number	(CN)(Area)
Meadow	B	913,541	20.9720	58	1216.38
Meadow	D	0	0.0000	78	0.00
				Σ(CN)(Area) =	1216.38
				Σ(Area) =	20.9720
				Weighted CN = Σ(C)(Area)/Σ(Area) =	58

Existing Cover Type = Meadow
2year/24 hour storm event P = 2.35 inches
Curve Number for Good Cover Woods or Meadow CN = 58
S = (1000/CN) - 10 = 7.241379 inches
Q = (P-0.2S)²/(P+0.8S) = 0.099852 inches
Total Site Area (SF) excluding "Self-Crediting" BMPs Area = 913,541 square feet
Vbf-pre = Q(1/12)Area = 7,602 ft³

W4 Pervious Cover Post-development Bankfull Runoff Calculation (Vbf-per-post)
2year/24 hour storm event P = 2.35 inches
Pervious Curve Number from W1 = 61
S = (1000/CN) - 10 = 6.393443 inches
Q = (P-0.2S)²/(P+0.8S) = 0.15375 inches
Pervious Cover Area from W1 = 685,551 square feet
Vbf-per-post = Q(1/12)Area = 8,784 ft³

W5 Impervious Cover Post-development Bankfull Runoff Calculation (Vbf-imp-post)
2year/24 hour storm event P = 2.35 inches
Impervious Curve Number from W1 = 98
S = (1000/CN) - 10 = 0.204082 inches
Q = (P-0.2S)²/(P+0.8S) = 2.121674 inches
Impervious Cover Area from W1 = 227,990 square feet
Vbf-imp-post = Q(1/12)Area = 40,310 ft³

W6 Pervious Cover Post-development 100-Year Storm Runoff Calculation ($V_{100\text{-per-post}}$)
100year/24 hour storm event P = 5.11 inches
Pervious Curve Number from W1 = 61
S = (1000/CN) - 10 = 6.393443 inches
Q = (P-0.2S)²/(P+0.8S) = 1.435628 inches
Pervious Cover Area from W1 = 685,551 square feet
$V_{W100\text{-per-post}}$ = Q(1/12)Area = 82,016 ft³

W7 Impervious Cover Post-development 100-Year Storm Runoff Calculation ($V_{100\text{-imp-post}}$)
100year/24 hour storm event P = 5.11 inches
Impervious Curve Number from W1 = 98
S = (1000/CN) - 10 = 0.204082 inches
Q = (P-0.2S)²/(P+0.8S) = 4.873 inches
Impervious Cover Area from W1 = 227,990 square feet
$V_{100\text{-imp-post}}$ = Q(1/12)Area = 92,583 ft³

W8 Determine Time of Concentration for Applicable Flow Types (Tc-hrs)

Flow Type	K	Change in Elevation	Length (L)	Slope % (S*100)	$S^{0.5}$	V=K*$S^{0.5}$	Tc = L/(V*3600)
Sheet Flow*	0.48	0.5	50	1	1	0.48	0.03
Waterway	1.2	4.6	1100	0.42	0.65	0.78	0.39
Small Trib.	2.1						
					Total Tc =		0.42

*Sheet flow cannot exceed 300 feet. Anything beyond this is considered waterway.

W9 Runoff Summary & Onsite Infiltration Requirement

First Flush Volume Vff =	33,771	ft³
Pervious-Post Development Bankfull Runoff Volume Vbf-per-post =	8,784	ft³
Impervious Cover Post-Development Bankfull Runoff Volume Vbf-imp-post =	40,310	ft³
Total BF Volume Vbf-post =	49,094	ft³
Pervious - Post Development 100-year Runoff Volume $V_{100\text{-per-post}}$ =	82,016	ft³
Impervious Cover Post-Development 100-year Runoff Volume $V_{100\text{-imp-post}}$ =	92,583	ft³
Total 100-year Volume V_{100} =	**174,599**	ft³

Determine Onsite Infiltration Requirement
Subtract the Pre-Development Bankfull from the Post Development Bankfull Volume

Total Post-development Bankfull Volume Vbf-post =	49,094	ft³
Pre-Development Bankfull Runoff Volume Vbf-pre =	7,602	ft³
Bankfull Volume Difference =	41,492	ft³

Compare the Bankfull Volume Difference with the First Flush Volume.
The greater of the two is the Onsite Infiltration Requirement.

Onsite Infiltration Requirement V_{inf} =	**41,492**	ft³

W10 Detention/Retention Requirement
Detention

Peak of Unit Hydrograph Qp=238.6Tc^-0.82 =	486	cfs/in-m²
Total Site Area (ac) excluding "Self Crediting" BMPs Area =	20.972	ac
Q_{100} = $Q_{100\text{-per}}$ + $Q_{100\text{-imp}}$ =	6.3086287	in
Peak Flow PF =Qp*Q100*Area/640 =	100.46878	cfs
Δ = PF - 0.15 Area =	97.322976	cfs
Vdet = (Δ/PF)*$V_{100\text{-post}}$ =	**169,132**	ft³

STRUCTURAL INFILTRATION BASIN "A" CALCULATIONS –CONTINUED

W11 Determine Applicable BMPs and Associated Volume Credits

Proposed BMP	Infiltration Area (ft2)	Storage Volume Surface (ft3)	Storage Volume Soil (ft3)	Avg Design Infiltration Rate	Infiltration Volume During Storm (ft3)	Total Volume Reduction (ft3)
Structural Infiltration Basin	27,102	195,239	8,131	8.2	111,118	**314,488**

Total Volume Reduction Credit by Proposed Structural BMPs = 314,488 ft³
MAXIMUM allowed Volume Reduction Credit (Vdet) = 169,132 ft³
Runoff Volume Infiltration Requirement (Vinf) from W9 = 41,492 ft³
Runoff Volume Credit = 127,640 ft³

Structural Infiltration Basin
Surface Storage Volume Chart

Elevation	Area	Volume	Cumulative Volume	
913	58802	56411	195239	Maximum ponding elevation
912	54020	51708	138828	
911	49396	46217	87120	
910	43038	35414	40903	
909	27790	5489	5489	
908.8	27102	0	0	

Surface Storage Volume= 195239 cft
First Flush storage elevation = 909.85 cft (for no infiltration or soil storage)
100-yr storage elevation = 910.19 cft (including all BMP soil and infiltration)
Soil Storage Depth= 1 ft
Bottom area = 27,102 sf
Soil Storage Volume = Average Bed Area (sf) * Maximun Design Water Depth * Porosity
= 27102 sf * 1 ft * 0.30
= 8131 cft
Design Infiltration Rate = 8.2 in/hr
Bottom Elevation = 907.8
Total Time to Infiltrate - should be less than 48 hours
Tinf = V_{100} (cft) / (Area (sf) * Design Infiltration Rate (in/hr) * (1'/12"))
= 169132 (cft) / (27102 (sf) * 8.2 (in/hr) x 1ft/12inches)
= 9.13 hr

W12 Natural Features Inventory

Existing Natural Resources	Mapped (yes,no, n/a)	Total Area (ac)	Protected/ Undisturbed Area (ac)
Waterbodies	N/A		
Floodplains	N/A		
Riparian Areas	N/A		
Wetlands	N/A		
Woodlands	N/A		
Natural Drainage Area	N/A		
Steep Slopes, 15%-25%	N/A		
Steep Slopes, over 25%	N/A		
Special Habitat Areas	N/A		
Other	N/A		
Total Existing (ac)		0	

W13 Summary
A. Storm Water Management Summary

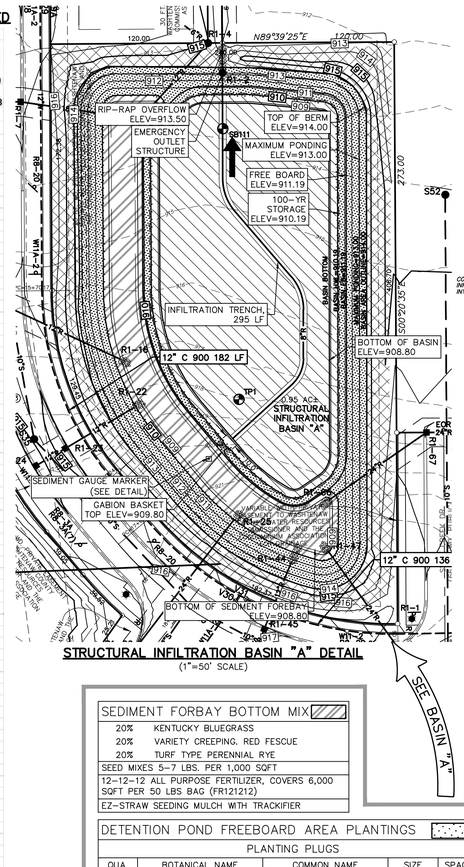
Minimum Onsite Infiltration Requirement, Vinf =	41,492	cft
Designed/Provided BMP Volume =	169,132	cft
% Minimum Required Infiltration Provided =	408	%
Total Calculated Detention Volume, Vdet =	169,132	cft
Net Required Detention Volume (Vdet - Designed/Provided Infiltration Volume) =	0	cft

B. Detention Volume Increase for sites where the required infiltration cannot be achieved.

% Required Infiltration NOT provided (100%-%Minimum Required Infiltration Provided) =	N/A	%
Net % Penalty (20% x %Required Infiltration NOT Provided) =	N/A	%
Total Required Detention Volume, including penalty [(100% + Net % Penalty) x Net Required Detention Volume)] =	N/A	cft

Additional Design Requirements
New Impervious Area = 227,990 sf
Maximum Impervious Loading Ratio of .8 to 1 Impervious area/BMP area
= 227990sft / 27102sft
= 8 to 1
Sediment Forebay Required Volume = 100yr storage volume*0.05
8,457 cft
Sediment Forebay Proposed Volume =

Elevation	Area (sft)	Vol.(cft)
909.8	10750	7270
909	7425	1403
908.8	6609	0
Total		8673 cft



STRUCTURAL INFILTRATION BASIN "A" DETAIL
(1"=50' SCALE)

SEDIMENT FORBAY BOTTOM MIX

20%	KENTUCKY BLUEGRASS
20%	VARIETY CREEPING. RED FESCUE
20%	TURF TYPE PERENNIAL RYE

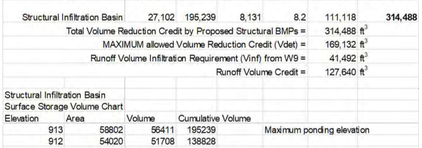
SEED MIXES 5–7 LBS. PER 1,000 SQFT
12–12–12 ALL PURPOSE FERTILIZER, COVERS 6,000 SQFT PER 50 LBS BAG (FR121212)
EZ–STRAW SEEDING MULCH WITH TRACKIFIER

DETENTION POND FREEBOARD AREA PLANTINGS

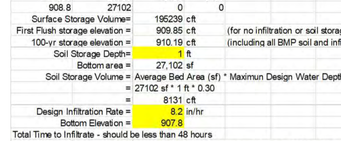
PLANTING PLUGS

QUA.	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
558	Andropogon geroarddii	BIG BLUE STEM	2" PLUG	2' O.C.
558	Calamagrostis Canadensis	BLUEJOINT GRASS	2" PLUG	2' O.C.
558	Panicum virgatum	SWITCH GRASS	2" PLUG	2' O.C.
558	Scirpuss atrovirens	DARK GREEN BULRUSH	2" PLUG	2' O.C.
558	Sorghastrum nutans	INDIAN GRASS	2" PLUG	2' O.C.
558	Spartina pectin Prairie	CORD GRASS	2" PLUG	2' O.C.

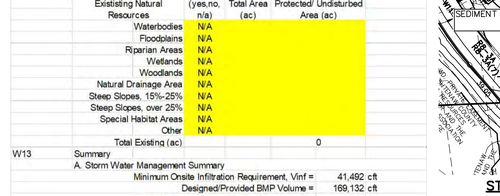
FOR USE ONLY IN DETENTION POND (SEE SHEET 34 FOR PLANTING DETAIL)



STRUCTURAL INFILTRATION BASIN "A" SECTION DETAIL
NOT TO SCALE



INFILTRATION TRENCH "A" SECTION DETAIL
NOT TO SCALE



GABION TRAP AND DEPTH MARKER DETAIL
NOT TO SCALE

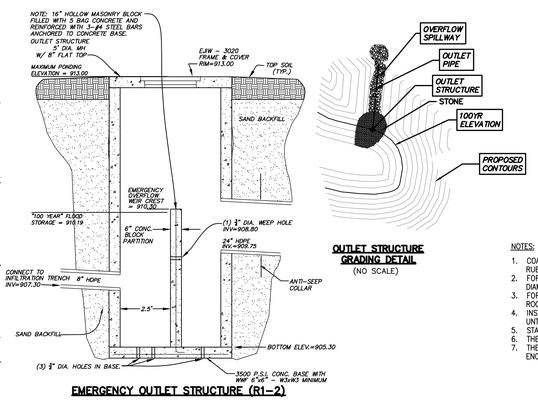
NATIVE PLUG PLANTING DETAIL
NOT TO SCALE

Nativescape
Native Landscapes a Ecological Solutions
517-456-9696
info@nativescapellc.com

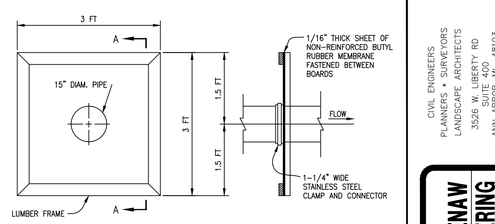
Detention Basin Mix

This mix contains at least (10) of the Flowers, (4) of the Grasses & Sedges.

Common Name	Scientific Name	#/acre
Temporary Grasses	**50%**	**20**
Seed Oats	*Avena sattiva*	
Annual Rye	*Lolium multiflorum*	
Native Grasses	**30%**	**12**
Big Bluestem Grass	*Andropogon gerardii*	
Fringed Sedge	*Carex crinita*	
Fox Sedge	*Carex vulpinoidea*	
Canada Wild Rye	*Elymus canadensis*	
Dark Green Bulrush	*Scirpus atrovirens*	
Indian Grass	*Sorghastrun nutans*	
Prairie Cord Grass	*Spartina pectinata*	
Native Wildflowers	**20%**	**8**
Calico Aster	*Aster lateriflolius*	
New England Aster	*Aster novae-angliae*	
Pale Indian Plantain	*Cacalia atriplicifolia*	
Turtlehead	*Chelone glabra*	
Joepye Weed	*Eupatorium maculatum*	
Boneset	*Eupatorium perfoliatum*	
Ox Eye Sunflower	*Heliopsis helianthoides*	
Dense Blazingstar	*Liatris spicata*	
Cardinal Flower	*Lobelia cardinalis*	
Great Blue Lobelia	*Lobelia siphilitica*	
Yellow Coneflower	*Ratibita pinnata*	
Black-eyed Susan	*Rudbeckia hirta*	
Green-headed Coneflower	*Rudbeckia laciniata*	
Cupplant	*Silphium perfoliatum*	
Ohio Goldenrod	*Solidago ohioensis*	
Riddell's Goldenrod	*Solidago riddellii*	
Blue Vervain	*Verbena hastata*	
Culver's Root	*Veronicastrum virginicum*	
Ironweed	*Vernonia gigantea*	
Total Pounds Per Acre		**40 lbs**



EMERGENCY OUTLET STRUCTURE (R1–2)
NOT TO SCALE



OUTLET STRUCTURE GRADING DETAIL
(NO SCALE)

ELEVATION SECTION A–A

NOTES:
1. COAT THE PIPE AT THE COLLAR LOCATION WITH BUTYL RUBBER ROOF PATCH CEMENT SEALER OR OTHER BUTYL RUBBER SEALER. (DO NOT USE ASPHALT ROOF PATCH)
2. FOR PIPE DIAMETERS OF 1" TO 4", CUT A HOLE (CENTERED) IN THE BUTYL RUBBER APPROXIMATELY 1/2" IN DIAMETER. FOR PIPE DIAMETERS 6" TO 16", CUT A HOLE 3" SMALLER THAN THE DIAMETER OF THE PIPE.
3. FORCE THE BUTYL RUBBER OVER THE UPSTREAM END OF THE PIPE AND OVER THE BUTYL RUBBER ROOF SEALER.
4. INSTALL A 1–1/4" WIDE STAINLESS STEEL CLAMP AROUND THE PIPE, OVER THE BUTYL RUBBER, AND TIGHTEN UNTIL SEALER IS FORCED OUT.
5. STAPLE THE BUTYL RUBBER TO THE LUMBER FRAME.
6. THE COMPLETED INSTALLATION MUST BE WATERTIGHT.
7. THE WOOD FRAME SHALL BE CONSTRUCTED FROM EITHER 1" x 4" OR 2" x 2" LUMBER AND SHALL BE RIGID ENOUGH TO WITHSTAND BACKFILL OPERATIONS.

TABLE OF QUANTITIES (PER COLLAR)

"N" FEET	BUTYL RUBBER SQ. FT.	STAINLESS STEEL CLAMP	LUMBER LIN. FT.
2	4	1	8
3	9	1	12
4	16	1	16
5	25	1	20
6	36	1	24

ANTI–SEEP COLLAR
(NO SCALE)

STRUCTURAL INFILTRATION BASIN NOTES:

1. CONSTRUCTION
THE FOLLOWING IS A TYPICAL CONSTRUCTION SEQUENCE; HOWEVER, ALTERATIONS WILL BE NECESSARY DEPENDING ON DESIGN VARIATIONS.

a. THE INFILTRATION AREA MUST BE PROTECTED FROM COMPACTION PRIOR TO INSTALLATION.
b. INFILTRATION BASINS MUST NOT BE PLACED ON AREAS OF RECENT FILL OR COMPACTED FILL. ANY GRADE ADJUSTMENTS REQUIRING FILL MUST BE DONE USING THE STONE SUB–BASE MATERIAL. AREAS OF HISTORICAL FILL (>5 YEARS) MAY BE CONSIDERED FOR INFILTRATION BASINS.
c. INSTALLATION AND MAINTENANCE OF PROPER EROSION AND SEDIMENT CONTROL MEASURES MUST BE FOLLOWED DURING CONSTRUCTION.
d. EXCAVATE INFILTRATION BASIN BOTTOM TO A UNIFORM, LEVEL UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE. EXCAVATION SHOULD BE PERFORMED WITH THE LIGHTEST PRACTICAL EQUIPMENT. EXCAVATION EQUIPMENT SHOULD BE PLACED OUTSIDE THE LIMITS OF THE INFILTRATION BASIN.
e. TOPSOIL STABILIZATION AND SEED MUST BE APPLIED TO THE DISTURBED AREA.
f. DO NOT REMOVE EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.
g. PERMEABILITY SHALL BE REVERIFIED BY INFILTRATION PRIOR TO ACCEPTANCE.

2. MAINTENANCE
AS WITH ALL INFILTRATION PRACTICES INFILTRATION BASINS REQUIRE REGULAR AND EFFECTIVE MAINTENANCE TO ENSURE PROLONGED FUNCTIONING. THE FOLLOWING REPRESENT MINIMUM MAINTENANCE REQUIREMENTS FOR INFILTRATION BASINS:

a. INSPECT INFILTRATION BASINS AFTER EVERY STORM EXCEEDING ONE INCH.
b. INSPECT FOR SEDIMENT ACCUMULATION, OUTLET CONTROL STRUCTURE DAMAGE, EROSION CONTROL MEASURES, SIGNS OF WATER CONTAMINATION/SPILLS AND SLOPE/BERM STABILITY.
c. MOWING SHOULD OCCUR ONLY AS REQUIRED FOR VEGETATIVE COVER.
d. DISPOSE OF SEDIMENT, DEBRIS/TRASH, AND ANY OTHER WASTE MATERIAL REMOVED FROM THE INFILTRATION BASINS AT A SUITABLE DISPOSAL/RECYCLING SITE AND IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL WASTE REGULATIONS.
e. EVALUATE THE DRAIN–DOWN TIME OF THE INFILTRATION BASIN TO ENSURE THE MAXIMUM TIME OF 48 HOURS IS NOT BEING EXCEEDED. IF SLOW DRAINAGE PERSISTS, THE SYSTEM MAY NEED REHABILITATION.

3. BASIN PLANTING

a. WITHIN AREAS ABOVE THE MAXIMUM PONDING ELEVATION OF THE PROPOSED INFILTRATION BASIN, SEEDING AND/OR LIVE PLANTINGS ARE ALLOWED. ONLY NATIVE SEEDS (AS DEFINED BY MICHIGAN FLORA, MICHIGANFLORA.NET) ARE ALLOWED FOR PERMANENT SOIL STABILIZATION. ANNUAL SEEDS ARE ALLOWED IN AN AMOUNT NECESSARY TO TEMPORARILY STABILIZE THE LIMITS OF DISTURBANCE.
b. BELOW THE MAXIMUM PONDING ELEVATION WITHIN THE INFILTRATION BASIN, LIVE PLANTINGS MUST COVER THE ENTIRE AREA. INCLUDE THE QUANTITY OF LIVE PLUGS PROPOSED. THE FIRST FLUSH ELEVATION SHOULD BE NOTED ON THE DETAILS.
c. PLANTINGS SHOULD BE LOCALLY ADAPTED AND APPROPRIATE TO THE HYDRIC CONDITIONS PROPOSED. FOR MORE INFORMATION ON INDIVIDUAL SPECIES, SEE "PLANTS FOR STORMWATER DESIGN: SPECIES SELECTION FOR THE UPPER MIDWEST" BY DANIEL SHAW & RUSTY SCHMIDT.

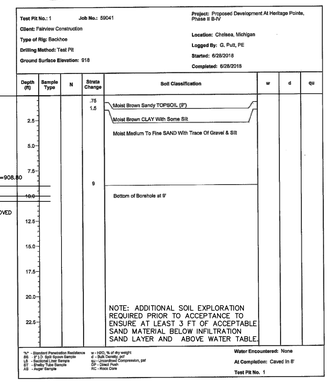
LONGITUDINAL SECTION OF SPILLWAY

Emergency Spillway Design

Basin:	A	
Design Requirements:		
Tc for 100 Year Flood Volume Storage Calculation		
Calculate Qp		
A =	20.972	Acres
C =	0.44	
Qa =	0.15	cfs/acre * Acres
Qa =	3.1458	cfs
Qp =	Qa/(A*C)	
Qp =	0.33514	cfs/(Tac-imp)
Calculate Storage Time for 100 year storm event.		
Tc =	-25 + (1033.2.5*Qp)^.5	
Tc =	149.64	min
Maximum Flow Rate		
Qmax=	C*I*A	
Tc =	149.64	
I_{100yr}=	175/(Tc+25)	
Qmax=	9.32	cfs
Minimum Velocity =	2	fps
Maximum Velocity =	6	fps
Minimum Slope =	1.5	%
Side Slope No Steeper Than =	1V :3H	
Calculations:		
Channel Bottom Width (B) =	4.000	feet
Channel Depth(d) =	0.5	feet
Channel Side Slope 1V : H =	3	
Flow Area = B*d + 2*(1/2)*(d*H*d)	3.250	square feet
Wetted Perimeter = B+2*(d^2+(d*H)^2)^.5	9.099	feet
Hydraulic radius =	Area/Wetted Perimeter	
	0.357	
Mannings Formula:		
n =	0.035	
slope, s =	2	percent
Full Flow, Q = 1.486/n*A*(A/P)^2/3*(s/100)^1/2)	9.824	cfs
Is Full Flow greater than Qmax?	YES	
Velocity, V =	Q/A	
	3.02	fps
Is Velocity less than 10 fps?	YES	

CROSS SECTION OF SPILLWAY

EMERGENCY OVERFLOW DETAIL
NOT TO SCALE



Test Pit No.: 1 Job No.: S0041
Client: Fairview Construction
Type of Rig: Backhoe
Drilling Method: Test Pit
Ground Surface Elevation: 918
Project: Proposed Development At Heritage Pointe, Phase II &IV
Location: Chelsea, Michigan
Logged By: G. Pull, PE
Completed: 6/26/2018

Testing Engineers & Consultants, Inc.
1343 Rochester Road - PO Box 249 - Troy, Michigan - 48099-0249
(248) 588-6200 or (313) TES-T-ING
Fax (248) 588-6232

LEGEND

☼ = LIGHT POLE	⊕23 = SPOT ELEV.	TC = TOP OF CURB	–·–·–·– = GRAVEL	r = EXISTING STORM
◁▷ = UTILITY POLE	⊘ = POST	TW = TOP OF WALL	– / – / – = FENCE	s = EXISTING SANITARY
◁ = GUY ANCHOR	⊗ = GATE VALVE	○ = MANHOLE	= CONCRETE	w = EXISTING WATER
♂ = HYDRANT	= SIGN	□ = CATCHBASIN	= ASPHALT	g = EXISTING GAS
		◡ = END SECTION		e = EXISTING ELECTRIC
				t = EXISTING TELEPHONE

BENCHMARK *BM1=TOP NUT ON HYDRANT, NORTH OF DEXTER–CHELSEA RD AND 9'± WEST OF THE SOUTHWEST PROPERTY CORNER, ELEV=920.28 (NAVD 88).*

BM2= NAIL IN W'LY FACE OF 26" WALNUT, 43'± NORTH OF DEXTER–CHELSEA RD AND 37'± N'LY OF THE SOUTHEAST PROPERTY CORNER, ELEV=927.38 (NAVD 88).

REVISIONS *2023–03–16 EGLE Permit Set, 2023–03–31 REVISED*

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

PREPARED BY
JOSEPH K. MAYNARD P.E., MICH No. 52559

STATE OF MICHIGAN JOSEPH K. MAYNARD ENGINEER No. 52559 LICENSED PROFESSIONAL ENGINEER

CIVIL ENGINEERS
PLANNERS + SURVEYORS
LANDSCAPE ARCHITECTS
3526 W. LIBERTY RD
SUITE 400
ANN ARBOR, MI 48103
TEL: 734-761-8800
FAX: 734-761-9530
WASHTENAWENGINEERING.COM

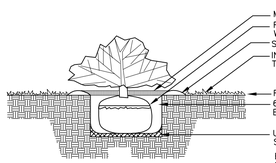
WASHTENAW ENGINEERING

CLIENT
M/I HOMES OF MICHIGAN
40950 WOODWARD AVE.
BLOOMFIELD HILLS, MI. 48304
PH: (248)-221-5011

PROJECT
HERITAGE FARMS PHASE 1

SHEET
STORMWATER MANAGEMENT CALCULATIONS STRUCTURAL INFILTRATION BASIN "A"

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY + MICHIGAN
DATE 12-28-22
JOB NO. 32971
DWG NO. 971-PH1-strm-calc
FIELD BOOK 446
FILE NO. 10668
SHEET 28



SHRUB PLANTING DETAIL

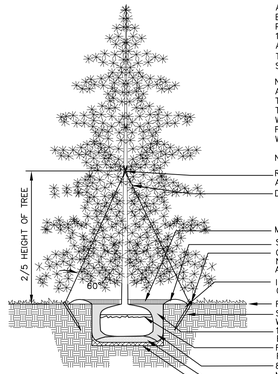
NOT TO SCALE

SHRUB PLANTING SCHEDULE:
MAY 15, THRU AUGUST 1
SEPTEMBER 5, THRU NOVEMBER 1
NO FALL PLANTING FOR EVERGREEN SHRUBS

BEFORE BACKFILLING AROUND PLANT REMOVE ALL PLASTIC BALLING MATERIAL AND METAL CONTAINERS. PUNCH HOLES IN FIBER POTS TO PROVIDE DRAINAGE

ADD 'MYCORRHIZAE' ROOT GROWTH ENHANCER TO PLANTING SOIL MIX. PRODUCT MANUFACTURER, PREMIER TECH 1-800-606-6926
APPLICATION RATE:
TREES 10 CUPS PER 2.5" CALIPER
SHRUBS 1 CUP PER 2 GALLON POT

NOTE:
ALL EVERGREEN TREES AND SHRUBS TO BE TREATED WITH AN ANTI-DESICCANT PRIOR TO THE FALL AND WINTER SEASONS. BURLAP WIND SCREENS MAY BE NEEDED AS EXTRA FOLIAGE PROTECTION THROUGHOUT THE WINTER SEASON.



EVERGREEN TREE PLANTING DETAIL

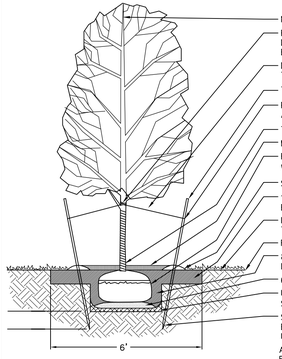
NOT TO SCALE

TREE PLANTING SCHEDULE:
MAY 15, THRU AUGUST 1.
NO FALL PLANTING ALLOWED.

ADD 'MYCORRHIZAE' ROOT GROWTH ENHANCER TO PLANTING SOIL MIX. PRODUCT MANUFACTURER, PREMIER TECH 1-800-606-6926
APPLICATION RATE:
TREES 10 CUPS PER 2.5" CALIPER
SHRUBS 1 CUP PER 2 GALLON POT

NOTE:
ALL EVERGREEN TREES AND SHRUBS TO BE TREATED WITH AN ANTI-DESICCANT PRIOR TO THE FALL AND WINTER SEASONS. BURLAP WIND SCREENS MAY BE NEEDED AS EXTRA FOLIAGE PROTECTION THROUGHOUT THE WINTER SEASON.

NEVER PRUNE EVERGREENS



DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

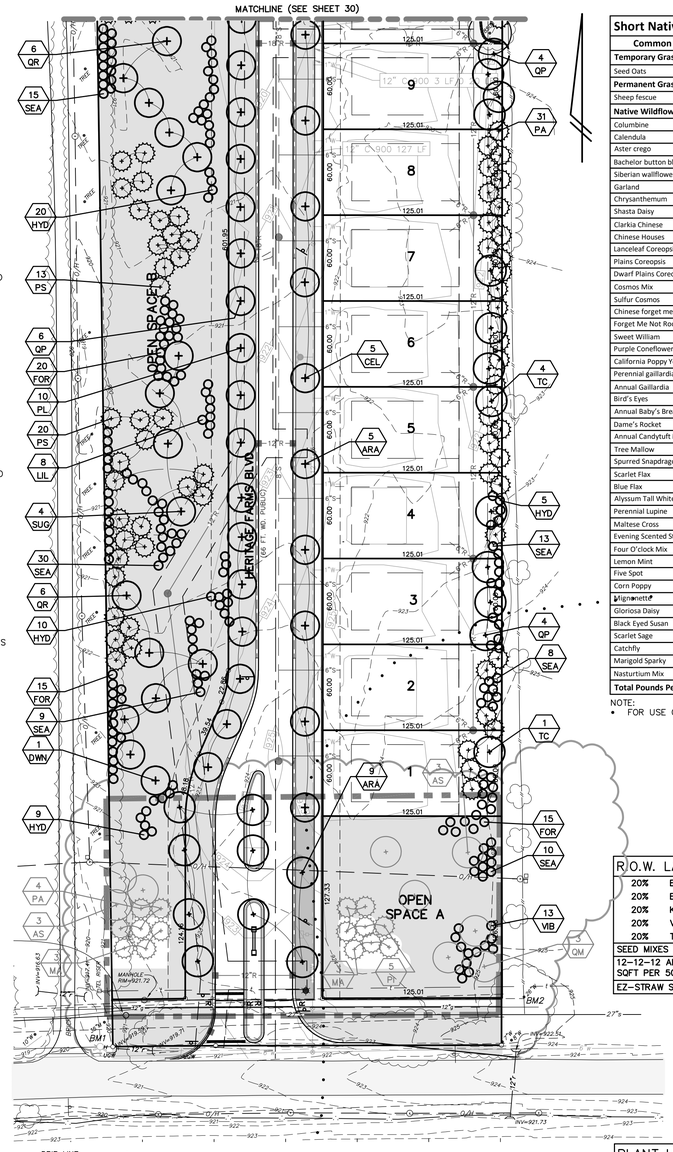
TREE PLANTING SCHEDULE:
MARCH 15, THRU AUGUST 1.
SEPTEMBER 5, THRU NOVEMBER 1.

WASHTENAW COUNTY SOIL SURVEY CLASSIFICATION

- AdA – ADRIAN MUCK, 0 TO 2 PERCENT SLOPES
- BoB – BOYER LOAMY SAND, 0 TO 6 PERCENT SLOPES
- CnB – CONOVER LOAM, 0 TO 4 PERCENT SLOPES
- EdA – EDWARDS MUCK
- KeB – KENDALLVILLE LOAM, 2 TO 6 PERCENT SLOPES
- MmB – MIAMI LOAM, 2 TO 6 PERCENT SLOPES
- OsB – OSHTEMO LOAMY SAND, 0 TO 6 PERCENT SLOPES
- • • • • • • – SOILS BOUNDARY

SOILS ARE BASED ON USDA SOIL SURVEY OF WASHTENAW COUNTY.

MATCHLINE (SEE SHEET 30)



Short Native Flower Mix

Common Name	Scientific Name	#/acre
Temporary Grasses		25% 32
Seed Oats	Avena sattiva	
Permanent Grasses		66% 84
Sheep fescue	Festuca ovina	
Native Wildflowers		9% 12
Columbine	Aquilegia canadensis	
Calendula	Calendula officinalis	
Aster crepo	Callistephus chinensis	
Bachelor button blue	Centaurea cyanus	
Siberian wallflower	Erysimum marshallii	
Garland	Clarkia unguiculata	
Chrysanthemum	Chrysanthemum morifolium	
Shasta Daisy	Leucanthemum superbum	
Clarkia Chinese	Clarkia unguiculata	
Chinese Houses	Collinsia heterophylla	
Lanceleaf Coreopsis	Coreopsis lanceolata	
Plains Coreopsis	Plains coreopsis	
Dwarf Plains Coreopsis	Coreopsis tinctoria	
Cosmos Mix	Cosmos bipinnatus	
Sulfur Cosmos	Cosmos sulphureus	
Chinese forget me not	Cynoglossum amabile	
Forget Me Not Rocket Larkspur	Delphinium ajacis	
Sweet William	Dianthus barbatus	
Purple Coneflower	Echinacea	
California Poppy Yellow	Eschscholzia californica	
Perennial gaillardia	Gaillardia aristata	
Annual Gaillardia	Gaillardia pulchella	
Bird's Eyes	Gilia tricolor	
Annual Baby's Breath	Gypsophila elegans	
Dame's Rocket	Hesperis matronalis	
Annual Candytuft Mix	Iberis umbellata	
Tree Mallow	Lavatera	
Spurred Snapdragon	Antirrhinum cornutum	
Scarlet Flax	Linum grandiflorum	
Blue Flax	Linum lewisii	
Alyssum Tall White	Lobularia maritima	
Perennial Lupine	Lupinus perennis	
Maltese Cross	Silene chalcedonica	
Evening Scented Stock	Matthiola longipetala	
Four O'clock Mix	Mirabilis jalapa	
Lemon Mint	Monarda citriodora	
Five Spot	Nemophila maculata	
Corn Poppy	Papaver rhoeas	
Alignment	Reseda	
Glorioso Daisy	Rudbeckia hirta	
Black Eyed Susan	Rudbeckia hirta	
Scarlet Sage	Salvia splendens	
Catchfly	Silene	
Marigold Sparky	Tagetes patula	
Nasturtium Mix	Tropaeolum majus	
Total Pounds Per Acre		128 lbs

NOTE:
- FOR USE ON UPLAND OPEN SPACE AREAS

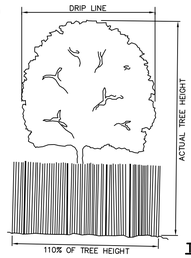
R.O.W. LAWN MIX

20%	ELITE KENTUCKY BLUE
20%	ELITE KENTUCKY BLUE
20%	KENTUCKY BLUEGRASS
20%	VARIETY CREEPING. RED FESCUE
20%	TURF TYPE PERENNIAL RYE

SEED MIXES 3-4 LBS. PER 1,000 SQFT

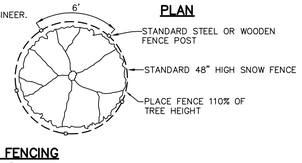
12-12-12 ALL PURPOSE FERTILIZER, COVERS 6,000 SQFT PER 50 LBS BAG (FR121212)

EZ-STRAW SEEDING MULCH WITH TRACKIFIER



ELEVATION

SNOW FENCE SHALL BE LOCATED AT THE OUTER PERIMETER OF THE SPREAD OF THE BRANCHES, OR CLOSER ONLY AT THE DIRECTION OF THE ENGINEER.



PLAN

TREE PROTECTION FENCING

NOT TO SCALE

EXISTING TREE REMOVALS

DUE TO OAK WILT A FUNGUS DISEASE THE PETITIONER WISHES TO REMOVE THE TREES DURING COLD WEATHER MONTHS OF THE YEAR TO AVOID TRANSMISSION OF THE DISEASE TO OTHER HEALTHY TREES ON-SITE AND/OR IN THE AREA.

NOTE: ACTIVITIES THAT WOUND TREES, SUCH AS PRUNING, CLIMBING SPIKES, NAILING SIGNS ON TREES, HANGING LANTERNS ON TREES OR STORM DAMAGE DURING THE WARMER MONTHS OF THE YEAR CAN RESULT IN MORE NEW TREE INFECTIONS.

LIVE OAK TREES INFECTED WITH OAK WILT USUALLY DIE WITHIN TWO TO FOUR MONTHS. ADJACENT TREES BEGIN TO DROP THEIR LEAVES AND DIE A FEW MONTHS LATER AS THE DISEASE PROGRESSES FROM TREE TO TREE THROUGH THE INTERCONNECTED ROOT SYSTEM.

NO PRUNE DATES OF APRIL 15 – JULY 15 TO REDUCE THE CHANCE OF OAK WILT INFECTION AND SPREAD.

MORTALITY OF RED OAKS IN LANDSCAPES CAN LEAD TO SUBSTANTIAL COSTS FOR REMOVAL AND HIGH MORTALITY IN FORESTED AREAS CAN AFFECT ENTIRE ECOSYSTEMS.

LEGEND

- ☼ = LIGHT POLE
- ⊕ = UTILITY POLE
- ▽ = GUY ANCHOR
- ⊲ = HYDRANT
- 901.23 = SPOT ELEV.
- ⊙ = POST
- ⊗ = MANHOLE
- ⊞ = GATE VALVE
- ⊸ = SIGN
- TC = TOP OF CURB
- TW = TOP OF WALL
- ○ = CATCHBASIN
- ◡ = END SECTION
- = GRAVEL
- = FENCE
- = CONCRETE
- = ASPHALT
- r = EXISTING STORM
- s = EXISTING SANITARY
- w = EXISTING WATER
- g = EXISTING GAS
- e = EXISTING ELECTRIC
- t = EXISTING TELEPHONE

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REVISIONS *2023-03-16 EGLE Permit Set. 2023-03-31 REVISED. 2023-04-12 COMMENTS.*

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

PREPARED BY *Gerald J. Sosnowski*
GERALD J. SOSNOWSKI RLA, MICH No. 982

CITY OF CHELSEA
LANDSCAPE REQUIREMENTS (2021)

Section 7.04 – Frontage Landscaping – Street Trees

A: Where the site abuts a public or private street, the following frontage landscaping shall be provided in the front yard area adjacent to the street right-of-way: Requirement is 1 Deciduous/Canopy Tree per 50 linear Feet of road frontage

Symbol	Location	Requirement Basis	Removals	Requirement	Provided	Compliance/ Waiver	
FL	Dexter – Chelsea Road	176.12'	0 drive ways	3.52 or 4 Trees	0		
FL	Heritage Farms Blvd	1999.68'	12 drive ways at 16' each (192')	36.15 or 36 trees	43		
FL	Elm Street	713.68'	10 drive ways at 16' each (160')	11.07 or 11 trees	9		
FL	Cumberl and Trail	1065.91'	3 drive ways at 16' each (48')	20.35 or 20 trees	22		
FL	County side	1828.92'	23 drive ways at 16' each (368')	29.22 or 29 trees	27		
FL	Whisper wood	249.27'	2 drive ways at 16' each (32')	4.35 or 4 trees	4		
FL	Swift Oak	266.63'	0 drive ways	5.33 or 5 trees	5		
TOTAL					110		110

Note 1: See Section 7.13 C(1) for existing tree credit matrix

Section 7.05 – Site Landscaping

B. Required open or green space on site. In lieu of Deciduous or Evergreen Trees 2 Ornamental (Flowering) Tree permitted

Symbol	Location	Requirement Basis	Area	Requirement	Existing Credits	Provided	Compliance/ Waiver	
SL	Open Space A, B, C, E	1 tree per 500 sq ft	124,855	250		250		250
SL		2 ornamental per 500 sq ft						
SL	Open Space A, B, C, E	1 shrub per 300 sq ft	124,855	417		417	SHRUBS 359 WECO 58 ALLEN DESIGN	417

Section 7.13 – Mitigation

D. Tree Replacement SITE

Symbol	No Trees	Requirement Basis	Requirement	Existing Credits	Provided	Compliance Waiver
MB	5	6-8 inches 2 trees	10			
MB	9	8-16 inches 3 trees	27			
MB	7	Greater than 16 inches 6 trees	42	40		

79 – 40 = 39 REQ. MITIGATION

TOTAL 21 79 79 x 50% = 40
(SAVED DECIDUOUS & (7) CEDAR = 50% OR 40 CREDITS)

399 TOTAL TREES PROPOSED

NOTES

1. BUFFER TREES FOR DETENTION AREA TO BE PLACED ON PROPERTY LINE, SO AS NOT TON CONFLICT WITH WCWRC PLANTING REQUIREMENTS.
2. SYMBOLS FOR PROPOSED DECIDUOUS AND EVERGREEN TREES ARE SIZED ON PLAN TO REPRESENT CANOPY AT THE TIME OF INSTALLATION AND DO NOT REPRESENT THE CANOPY AT MATURITY.
3. SEE SHEET 3 FOR EXISTING TREE IDENTIFICATION TABLE.

LEGEND

- = EX. EVERGREEN TREE TO REMAIN
- = EX. DEC. TREE TO REMAIN
- = PROPOSED DECIDUOUS TREE
- = PROPOSED EVERGREEN TREE
- = PROPOSED DECIDUOUS SHRUBS (LANDSCAPE)
- = PROPOSED EVERGREEN SHRUBS (LANDSCAPE)
- = INFILTRATION AREA
- 1 WO = PLANTING KEY
- = RYERSON STEEL EDGING
- = R.O.W. SEED MIX
- = R.O.W. SOD MIX
- = SHORT NATIVE FLOWER MIX (SEE TABLE)
- = PERENNIAL FLOWERS
- = PLANT PLUGS
- = TREE PROTECTION FENCE
- 3 AS = DECIDUOUS TREE PER ALLEN DESIGN PLAN (SHOWN HERE, ACCOUNTED FOR ON SHT L-1)
- 3 MA = EVERGREEN TREE PER ALLEN DESIGN PLAN (SHOWN HERE, ACCOUNTED FOR ON SHT L-1)

GRADING LEGEND

- 902 = PROPOSED 1FT CONTOUR
- 900 = PROPOSED 5FT CONTOUR

PROPOSED UTILITY LEGEND

- 12"R = STORM SEWER
- 8"S = SANITARY SEWER
- 8"W = WATER MAIN
- 10"S = EXISTING SANITARY SEWER
- HYDRANT
- GATE VALVE IN WELL
- GATE VALVE IN BOX
- CURB BOX
- FLARED END SECTION
- MANHOLE

PROPOSED LEGEND

- = ASPHALT SURFACE
- = CONCRETE SURFACE
- = 6" UNDER DRAIN PIPE WITH SOCK
- = SPILL IN (F4) BARRIER CONCRETE CURB & GUTTER
- = SPILL OUT (F4) BARRIER CONCRETE CURB & GUTTER
- = SIGN
- = LIGHTPOLE
- R = RAMP WITH TACTILE WARNING STRIPS
- WCWRC = WASHTENAW COUNTY WATER RESOURCES COMMISSIONER
- CA = CONDOMINIUM ASSOCIATION

	KEY	QUA.	SCIENTIFIC NAME	COMMON NAME	SIZE	SPACING	COMMENT
TREES	ARA	36	Acer p. 'Armstrong'	ARMSTRONG RED MAPLE	2.5" CAL.	AS SHOWN	B&B
	CEL	16	Celtis occidentalis	HACK BERRY	2.5" CAL.	AS SHOWN	B&B
	GS	10	Gleditsia t.i. 'Skyline'	HONEYLOCUST	2.5" CAL.	AS SHOWN	B&B
	GUM	9	Liquidambar styraciflua	SWEET GUM	2.5" CAL.	AS SHOWN	B&B
*	HRN	10	Carpinus caroliniana	AMERICAN HORNBEAM	2.5" CAL.	AS SHOWN	B&B
	PL	15	Platanus x acerifolia 'Liberty'	LIBERTY LONDON PLANETREE	2.5" CAL.	AS SHOWN	B&B
	TC	27	Tilia cordata	LITTLE LEAF LINDEN	2.5" CAL.	AS SHOWN	B&B
	QP	34	Quercus palustris	PIN OAK	2.5" CAL.	AS SHOWN	B&B
	QR	22	Quercus rubra	RED OAK	2.5" CAL.	AS SHOWN	B&B
	PA	74	Picea abies	NORWAY SPRUCE	8' HT	AS SHOWN	B&B
	PS	125	Pinus strobus	WHITE PINE	8' HT	AS SHOWN	B&B
	SUG	4	Acer saccharum	SUGAR MAPLE	2.5" CAL.	AS SHOWN	B&B
*	GNK	10	Ginkgo biloba	GINKGO	2.5" CAL.	AS SHOWN	B&B
	DWN	1	Metasequoia glyptostroboides	DAWN REDWOOD	2.5" CAL.	AS SHOWN	B&B
*	BLK	18	Picea glauca var. densata	BLACKHILL SPRUCE	8' HT.	AS SHOWN	B&B
SHRUBS	VIB	81	Viburnum opulus	SNOWBALL BUSH	3' HT	AS SHOWN	CONT.
	FOR	68	Forsythia suspense	WEEPING FORSYTHIA	3' HT	AS SHOWN	CONT.
	SEA	95	Juniperus chinensis 'Sea Green'	SEA GREEN JUNIPER	36" SPRD	AS SHOWN	CONT.
	LIL	64	Syringa vulgaris 'Wedgwood Blue'	WEDGEWOOD BLUE LILAC	3' HT	AS SHOWN	CONT.
	HYD	53	Hydrangea arborescens 'Annabelle'	ANNABELLE HYDRANGEA	3' HT	AS SHOWN	CONT.
•	BX	30	Buxus m. 'Winter gem'	WINTER GEM BOXWOOD	36" HT	AS SHOWN	CONT.
•	HA	12	Hydrangea 'Annabelle'	ANNABELLE HYDRANGEA	36" HT	AS SHOWN	CONT.
•	PO	16	Physocarpus opulifolius 'Donna May'	LITTLE DEVIL NINEBARK	36" HT	AS SHOWN	CONT.

PLANT LIST REPRESENTS THE TOTAL SITE. APPEARS ON SHEETS 29 AND 30 FOR REVIEWER CONVENIENCE.

* PREVIOUSLY COUNTED TOWARDS MITIGATION. REMOVED PER EMAIL RECEIVED FROM CITY OF CHELSEA DATED: 4-12-23.
• SHRUBS FROM ALLEN DESIGN ENTRY PLAN (SHEET L-1)

LEGEND

- = WETLAND BOUNDARY DELINEATED BY: GJS LAND PLANNING, LLC (NOV. 2020)
- = FLOODWAY
- = FLOOD ZONE AE (1% HAZARD) (100 YEAR)
- = FLOOD ZONE X (0.2% HAZARD) (500 YEAR) PER FEMA PANEL 26161C0184E
EFFECTIVE DATE: APRIL 3, 2012

WETLANDS DELINEATED BY: GJS LAND PLANNING, LLC NOVEMBER OF 2020

Know what's below. Call before you dig.

STATE OF MICHIGAN GERALD J. SOSNOWSKI LANDSCAPE ARCHITECT NO. 982 REGISTERED LANDSCAPE ARCHITECT

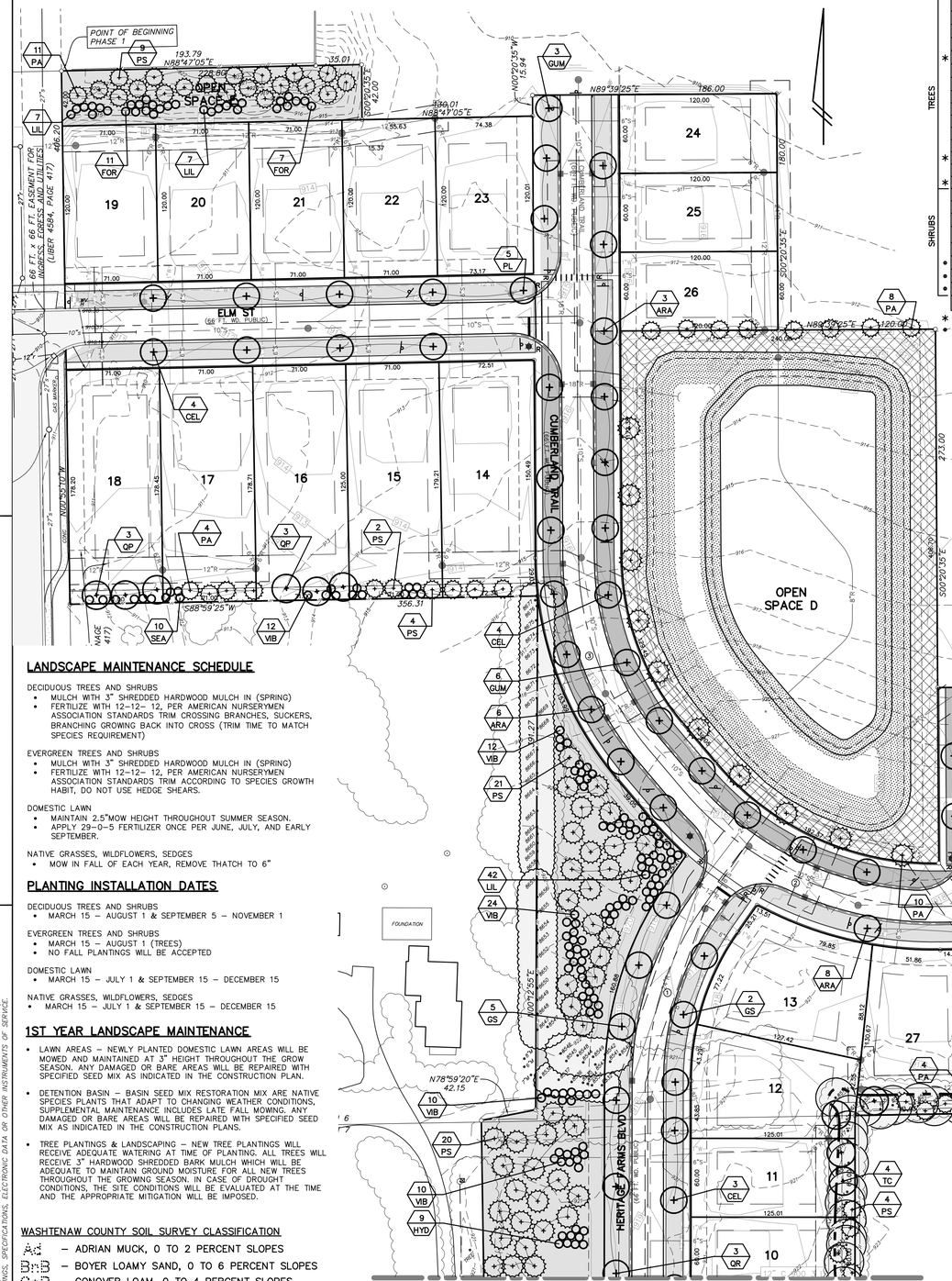
WASHTENAW ENGINEERING
CIVIL ENGINEERS
PLANNERS • SURVEYORS
LANDSCAPE • ARCHITECTS
3526 W. LIBERTY RD
SUITE 200
ANN ARBOR, MI 48103
TEL 734-761-8800
FAX 734-761-8810
WASHTENAWENGINEERING.COM

CLIENT
M/I HOMES OF MICHIGAN
40950 WOODWARD AVE.
BLOOMFIELD HILLS, MI. 48304
PH: (248)-221-5011

SHEET
LANDSCAPE PLAN SOUTH

PROJECT
HERITAGE FARMS PHASE 1

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY • MICHIGAN
DATE 12-28-20
JOB NO. 32971
DWG NO. 774-lpnd
FIELD BOOK 446
FILE NO. 10668
SHEET 29



LANDSCAPE MAINTENANCE SCHEDULE

DECIDUOUS TREES AND SHRUBS
- MULCH WITH 3" SHREDDED HARDWOOD MULCH IN (SPRING)
- FERTILIZE WITH 12–12– 12, PER AMERICAN NURSERYMEN ASSOCIATION STANDARDS TRIM CROSSING BRANCHES, SUCKERS, BRANCHING GROWING BACK INTO CROSS (TRIM TIME TO MATCH SPECIES REQUIREMENT)

EVERGREEN TREES AND SHRUBS
- MULCH WITH 3" SHREDDED HARDWOOD MULCH IN (SPRING)
- FERTILIZE WITH 12–12– 12, PER AMERICAN NURSERYMEN ASSOCIATION STANDARDS TRIM ACCORDING TO SPECIES GROWTH HABIT, DO NOT USE HEDGE SHEARS.

DOMESTIC LAWN
- MAINTAIN 2.5"MOW HEIGHT THROUGHOUT SUMMER SEASON.
- APPLY 29–0–5 FERTILIZER ONCE PER JUNE, JULY, AND EARLY SEPTEMBER.

NATIVE GRASSES, WILDFLOWERS, SEDGES
- MOW IN FALL OF EACH YEAR, REMOVE THATCH TO 6"

PLANTING INSTALLATION DATES

DECIDUOUS TREES AND SHRUBS
- MARCH 15 – AUGUST 1 & SEPTEMBER 5 – NOVEMBER 1

EVERGREEN TREES AND SHRUBS
- MARCH 15 – AUGUST 1 (TREES)
- NO FALL PLANTINGS WILL BE ACCEPTED

DOMESTIC LAWN
- MARCH 15 – JULY 1 & SEPTEMBER 15 – DECEMBER 15

NATIVE GRASSES, WILDFLOWERS, SEDGES
- MARCH 15 – JULY 1 & SEPTEMBER 15 – DECEMBER 15

1ST YEAR LANDSCAPE MAINTENANCE

- LAWN AREAS – NEWLY PLANTED DOMESTIC LAWN AREAS WILL BE MOWED AND MAINTAINED AT 3" HEIGHT THROUGHOUT THE GROW SEASON. ANY DAMAGED OR BARE AREAS WILL BE REPAIRED WITH SPECIFIED SEED MIX AS INDICATED IN THE CONSTRUCTION PLAN.
- DETENTION BASIN – BASIN SEED MIX RESTORATION MIX ARE NATIVE SPECIES PLANTS THAT ADAPT TO CHANGING WEATHER CONDITIONS, SUPPLEMENTAL MAINTENANCE INCLUDES LATE FALL MOWING. ANY DAMAGED OR BARE AREAS WILL BE REPAIRED WITH SPECIFIED SEED MIX AS INDICATED IN THE CONSTRUCTION PLANS.
- TREE PLANTINGS & LANDSCAPING – NEW TREE PLANTINGS WILL RECEIVE ADEQUATE WATERING AT TIME OF PLANTING. ALL TREES WILL RECEIVE 3" HARDWOOD SHREDDED BARK MULCH WHICH WILL BE ADEQUATE TO MAINTAIN GROUND MOISTURE FOR ALL NEW TREES THROUGHOUT THE GROWING SEASON. IN CASE OF DROUGHT CONDITIONS, THE SITE CONDITIONS WILL BE EVALUATED AT THE TIME AND THE APPROPRIATE MITIGATION WILL BE IMPOSED.

WASHTENAW COUNTY SOIL SURVEY CLASSIFICATION

- AaA – ADRIAN MUCK, 0 TO 2 PERCENT SLOPES
- BoB – BOYER LOAMY SAND, 0 TO 6 PERCENT SLOPES
- CoB – CONOVER LOAM, 0 TO 4 PERCENT SLOPES
- EdA – EDWARDS MUCK
- KeB – KENDALLVILLE LOAM, 2 TO 6 PERCENT SLOPES
- MmB – MIAMI LOAM, 2 TO 6 PERCENT SLOPES
- OsB – OSHTEMO LOAMY SAND, 0 TO 6 PERCENT SLOPES
- • • • • • • – SOILS BOUNDARY

SOILS ARE BASED ON USDA SOIL SURVEY OF WASHTENAW COUNTY.

LEGEND
- WETLAND BOUNDARY DELINEATED BY: GJS LAND PLANNING, LLC (NOV. 2020)
- FLOODWAY
- FLOOD ZONE AE (1% HAZARD) (100 YEAR)
- FLOOD ZONE X (0.2% HAZARD) (500 YEAR) PER FEMA PANEL 26161C0184E EFFECTIVE DATE: APRIL 3, 2012

LEGEND
- ☼ = LIGHT POLE
- ▽ = UTILITY POLE
- ⊳ = GUY ANCHOR
- ♂ = HYDRANT
- 880.0 = SPOT ELEV.
- ⊗ = POST
- ⊗ = GATE VALVE
- ⊢⊣ = SIGN
- TC = TOP OF CURB
- TW = TOP OF WALL
- ○ = MANHOLE
- □ = CATCHBASIN
- ◡ = END SECTION
- = GRAVEL
- = FENCE
- = CONCRETE
- = ASPHALT
- r = EXISTING STORM
- s = EXISTING SANITARY
- w = EXISTING WATER
- g = EXISTING GAS
- e = EXISTING ELECTRIC
- t = EXISTING TELEPHONE

PLANT LIST

	KEY	QUA.	SCIENTIFIC NAME	COMMON NAME	SIZE	SPACING	COMMENT
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• SHRUBS FROM ALLEN DESIGN ENTRY PLAN (SHEET L–1)

NOTES

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2. SYMBOLS FOR PROPOSED DECIDUOUS AND EVERGREEN TREES ARE SIZED ON PLAN TO REPRESENT CANOPY AT THE TIME OF INSTALLATION AND DO NOT REPRESENT THE CANOPY AT MATURITY.
3. SEE SHEET 3 FOR EXISTING TREE IDENTIFICATION TABLE.

GENERAL LANDSCAPE NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO CITY OF CHELSEA STANDARDS AND SPECIFICATIONS. ALL PLANT MATERIAL SHALL BE SIZES AND MEASUREMENTS CONFORMING TO THE USA STANDARD FOR NURSERY STOCK. ALL PLANT MATERIAL SHALL BE OF SELECTED SPECIMEN QUALITY AND HAVE A NORMAL HABIT OF GROWTH. ALL PLANT MATERIAL IS SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT.
2. ALL PLANT MATERIAL SHALL BE BALLED AND BURLAPPED STOCK MOVED BY TREE SPADE OR CONTAINER STOCK. NO BARE WOODY PLANT ROOT STOCK IS PERMITTED. ALL PLANT BALLS SHALL BE FIRM, INTACT AND SECURELY WRAPPED AND BOUND OUT ROOT BOUND ROOTS PRIOR TO INSTALLATION.
3. ALL PLANT BEDS SHALL BE EXCAVATED OF ALL BUILDING MATERIALS AND OTHER EXTRANEOUS OBJECTS AND POOR SOILS TO A MINIMUM DEPTH OF TWELVE INCHES (12") AND ALL BACKFILLED TO GRADE WITH PLANTING MIX (SEE BELOW).
4. PLANTING MIXTURE SHALL BE 50% COMPOSTED LEAF MOLD & 50% FRIABLE LOAM SOIL IN ALL PLANTING PITS.
5. ALL PLANT BEDS AND INDIVDUAL PLANTS SHALL BE MULCHED WITH A THREE INCH (3") LAYER OF SHREDDED BARK MULCH.
6. ALL PLANTS AND PLANT BEDS SHALL BE THOROUGHLY WATERED AT TIME OF PLANTING AND SUBSEQUENT WATERING THROUGH 1ST GROWING SEASON AS THE PLANTS REQUIRE.
7. THE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR A PERIOD OF THREE (3) YEARS FROM THE DATE THE WORK IS ACCEPTED, IN WRITING, BY THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL REPLACE, WITHOUT COST TO THE OWNER, WITHIN A SPECIFIED PERIOD OF TIME, ALL DEAD PLANTS, AND ALL PLANTS NOT IN A VIGOROUS, THRIVING CONDITION, AS DETERMINED BY THE LANDSCAPE ARCHITECT DURING AND AT THE END OF THE GUARANTEE PERIOD. REPLACEMENT STOCK SHALL CONFORM TO THE ORIGINAL REQUIREMENTS.
8. ALL AREAS OF THE SITE THAT BECOME DISTURBED DURING CONSTRUCTION AND ARE NOT TO BE PAVED, STONED OR LANDSCAPED SHALL BE SEEDED AND MULCHED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH A DENSE LAWN OF PERMANENT GRASSES, FREE OF LUMPS AND DEPRESSIONS. ANY PART OF THE AREA THAT FAILS TO SHOW A UNIFORM GERMINATION SHALL BE RE–SEEDED AND SUCH RE–SEEDING SHALL CONTINUE UNTIL A DENSE LAWN IS ESTABLISHED. DAMAGE TO SEEDED AREAS RESULTING FROM EROSION SHALL BE REPAIRED BY THE CONTRACTOR.
9. ALL AREAS OF THE SITE SCHEDULED FOR SEEDING SHALL BE DISCED AND GRADED IN CONFORMANCE WITH THE GRADING PLAN.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE THE UTILITIES, BOTH ABOVE AND UNDERGROUND PRIOR TO LANDSCAPING. ANY CONFLICTS BETWEEN UTILITIES AND PLANT MATERIAL SHALL BE REPORTED TO THE LANDSCAPE ARCHITECT.
11. PROPOSED TREE LOCATIONS ARE ADJUSTED FOR UTILITIES LOCATIONS.
12. NO LATE SUMMER OR FALL PLANTING OF PROPOSED EVERGREENS WILL BE ACCEPTED.
13. MISCELLANEOUS REMOVALS INCLUDE, SCRUBS BRUSH ALL DEAD TREES, AND INVASIVE SPECIES
14. ALL TREE WRAP, STAKES AND GUY WIRES SHALL BE REMOVED AFTER ONE (1) WINTER SEASON.
15. NO PLANTING GREATER THAN 6" HEIGHT SHALL BE PLANTED WITHIN FIFTEEN (15) FEET OF FIRE HYDRANT. PLANT MATERIAL SHALL NOT BLOCK VISIBILITY OF HYDRANTS.
16. USE OF FERTILIZER ALONG SIDE SLOPES OR WITHIN THE STORM BASIN IS PROHIBITED.

LEGEND
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- = EX. DEC. TREE TO REMAIN
- = PROPOSED DECIDUOUS TREE
- = PROPOSED EVERGREEN TREE
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- = R.O.W. SEED MIX
- = R.O.W. SOD MIX
- = SHORT NATIVE FLOWER MIX (SEE TABLE)
- = PERENNIAL FLOWERS
- = PLANT PLUGS
- = TREE PROTECTION FENCE
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- 900 = PROPOSED 5FT CONTOUR

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- = CONCRETE SURFACE
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- = SPILL OUT (F4) BARRIER CONCRETE CURB & GUTTER
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- 8"S = SANITARY SEWER
- 8"W = WATER MAIN
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- = HYDRANT
- = GATE VALVE IN WELL
- = GATE VALVE IN BOX
- = CURB BOX
- = FLARED END SECTION
- = MANHOLE

Know what's below. Call before you dig.

WETLANDS DELINEATED BY: GJS LAND PLANNING, LLC NOVEMBER OF 2020

BENCHMARK *BM1=TOP NUT ON HYDRANT, NORTH OF DEXTER–CHELSEA RD AND 9'± WEST OF THE SOUTHWEST PROPERTY CORNER, ELEV=920.28 (NAVD 88).*

BM2= NAIL IN W'LY FACE OF 26" WALNUT, 43'± NORTH OF DEXTER–CHELSEA RD AND 37'± NE'LY OF THE SOUTHEAST PROPERTY CORNER, ELEV=927.38 (NAVD 88).

REVISIONS *2023–03–16 EGLE Permit Set. 2023–03–31 REVISED. 2023–04–12 COMMENTS.*

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

PREPARED BY
GERALD J. SOSNOWSKI RLA, MICH No. 982

GERALD J. SOSNOWSKI LANDSCAPE ARCHITECT NO. 982 REGISTERED LANDSCAPE ARCHITECT — STATE OF MICHIGAN

CIVIL ENGINEERS
PLANNERS • SURVEYORS
LANDSCAPE • ARCHITECTS
3526 W. LIBERTY RD
SUITE 350
ANN ARBOR, MI 48103
TEL 734–761–8800
FAX 734–761–8990
WASHTENAWENGINEERING.COM

WASHTENAW ENGINEERING

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40950 WOODWARD AVE.
BLOOMFIELD HILLS, MI. 48304
PH: (248)–221–5011

SHEET
LANDSCAPE PLAN NORTH

PROJECT
HERITAGE FARMS PHASE 1

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY • MICHIGAN
JOB NO. 32971
DWG NO. 774–land
FIELD BOOK 446
FILE NO. 10668
DATE 12–28–20
SHEET 30

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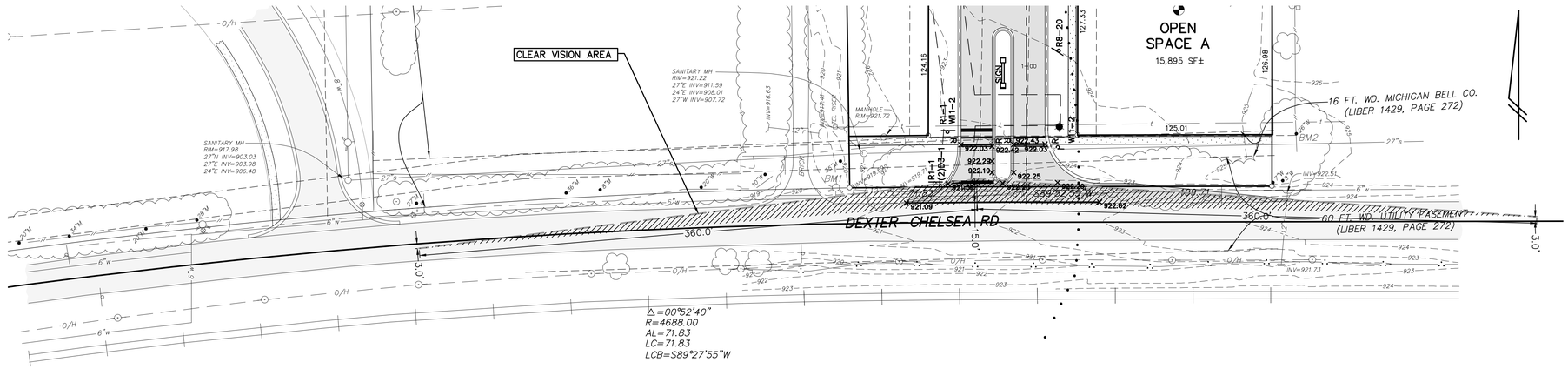
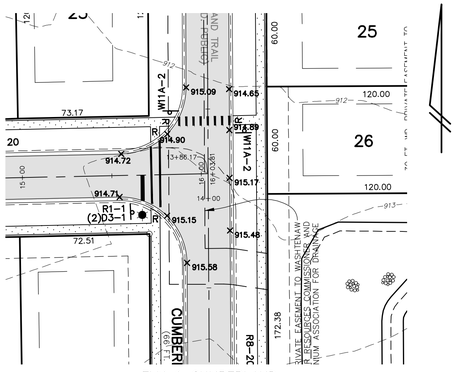


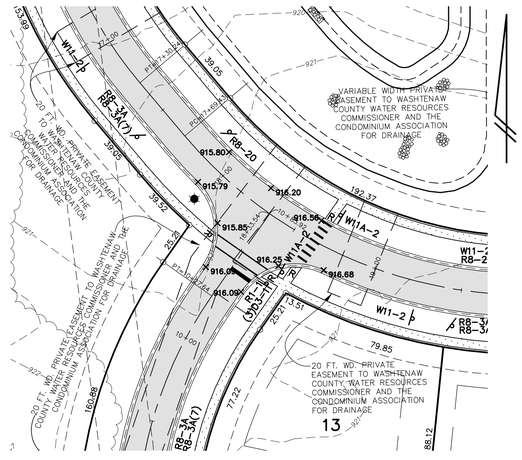
ENTRANCE DETAIL
SCALE: 1"=40'

CLEAR VISION NOTES:
1. All trees, stumps, roots and brush shall be removed from the AASHTO clear zone within the road right-of-way unless otherwise permitted by WCRC.
2. Any overhanging branches into the clear zone are to be trimmed if within 14 feet of the finished grade.

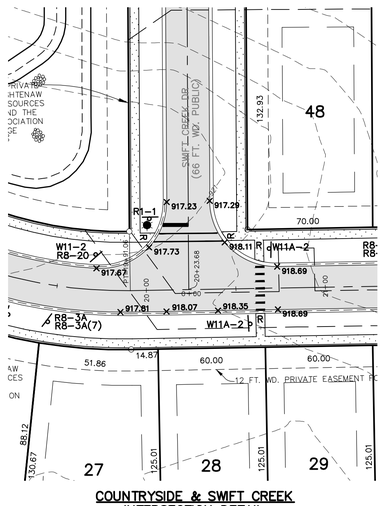
PROPOSED LEGEND
- = ASPHALT SURFACE
- = CONCRETE SURFACE
- = 6" UNDER DRAIN PIPE WITH SOCK
- = SPILL IN (F4) BARRIER CONCRETE CURB & GUTTER
- = SPILL OUT (F4) BARRIER CONCRETE CURB & GUTTER



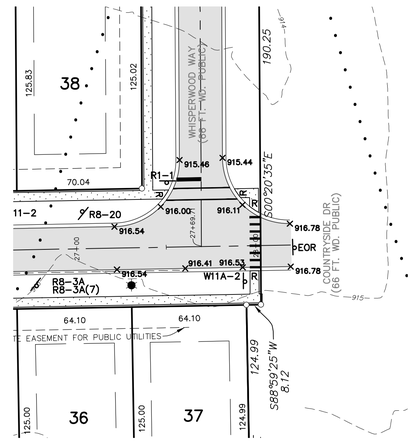
ELM & CUMBERLAND INTERSECTION DETAIL
SCALE: 1"=40'



CUMBERLAND & HERITAGE FARMS INTERSECTION DETAIL
SCALE: 1"=40'



COUNTRYSIDE & SWIFT CREEK INTERSECTION DETAIL
SCALE: 1"=40'



COUNTRYSIDE & WHISPERWOOD INTERSECTION DETAIL
SCALE: 1"=40'

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

WETLANDS DELINEATED BY:
CJS LAND PLANNING, LLC
NOVEMBER OF 2020

LEGEND
- ☼ = LIGHT POLE
- ⊽ = UTILITY POLE
- ⊽ = GUY ANCHOR
- ⊽ = HYDRANT
- #80/23 = SPOT ELEV.
- ⊗ = POST
- ⊗ = GATE VALVE
- —o— = SIGN
- TC = TOP OF CURB
- TW = TOP OF WALL
- ○ = MANHOLE
- □ = CATCHBASIN
- ◡ = END SECTION
- = GRAVEL
- = FENCE
- = CONCRETE
- = ASPHALT
- r = EXISTING STORM
- s = EXISTING SANITARY
- w = EXISTING WATER
- g = EXISTING GAS
- e = EXISTING ELECTRIC
- t = EXISTING TELEPHONE

BENCHMARK *BM1=TOP NUT ON HYDRANT, NORTH OF DEXTER-CHELSEA RD AND 9'± WEST OF THE SOUTHWEST PROPERTY CORNER, ELEV=920.28 (NAVD 88).*
BM2= NAIL IN W'LY FACE OF 26" WALNUT, 43'± NORTH OF DEXTER-CHELSEA RD AND 37'± NE'LY OF THE SOUTHEAST PROPERTY CORNER, ELEV=927.38 (NAVD 88).

REVISIONS *2023-03-16 EGLE Permit Set, 2023-03-31 REVISED*

SCALE 80
0 20 40
SCALE: 1"=40'

PREPARED BY
JOSEPH K. MAYNARD P.E., MICH No. 52559

STATE OF MICHIGAN
JOSEPH K. MAYNARD
ENGINEER
No. 52559
LICENSED PROFESSIONAL ENGINEER

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BLOOMFIELD HILLS, MI. 48304
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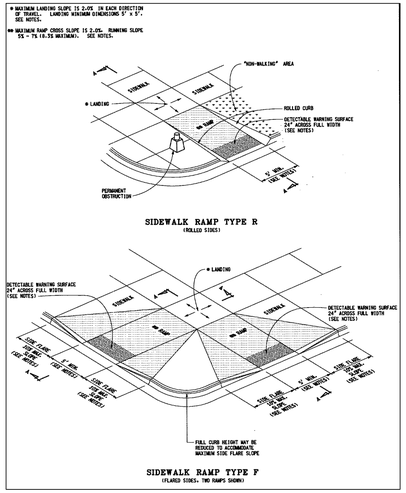
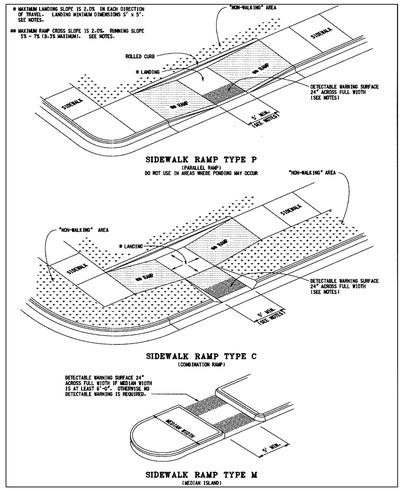
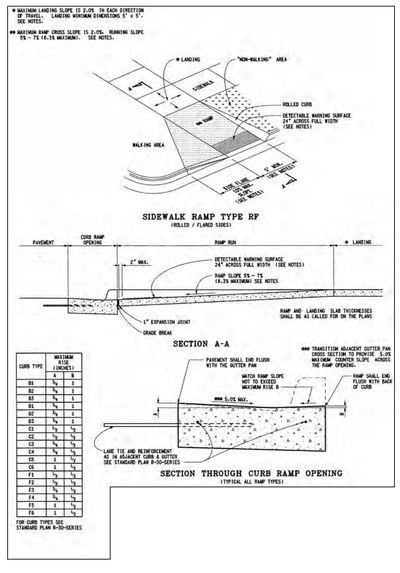
SHEET
ROAD INTERSECTION AND ENTRANCE DETAIL

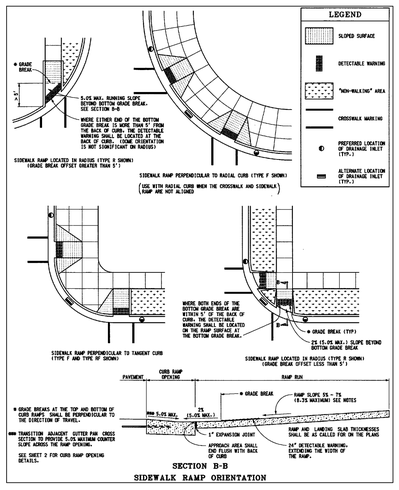
PROJECT
HERITAGE FARMS PHASE 1

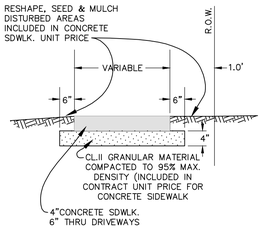
SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY • MICHIGAN
DATE 12-28-22
JOB NO. 32971
DWG NO. 971-PH1-intersections
FIELD BOOK 446
FILE NO. 10668
SHEET 31



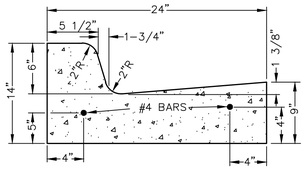




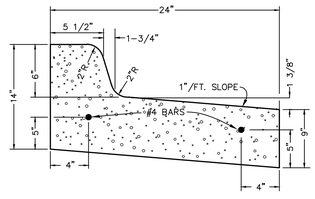




CONCRETE SIDEWALK
(NO SCALE)



BARRIER (MDOT DETAIL F4)
NOT TO SCALE



SPILL-OUT (MODIFIED MDOT DETAIL F-4)
NOT TO SCALE

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION OR RECONSTRUCTION OF STREETS, CURBS OR SIDEWALKS BY ALL PUBLIC AGENCIES AND BY ALL PRIVATE ORGANIZATIONS CONSTRUCTING FACILITIES FOR PUBLIC USE.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT WALK LOCATIONS IN MID-BLOCK IN THE VICINITIES OF HOSPITALS, MEDICAL CENTERS AND LARGE ATHLETIC FACILITIES.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE GROOMING, TRAVERSE TO THE SLOPE OF RAMP.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP FREE OF SAGS AND SHORT GRADE CHANGES. WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ON DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

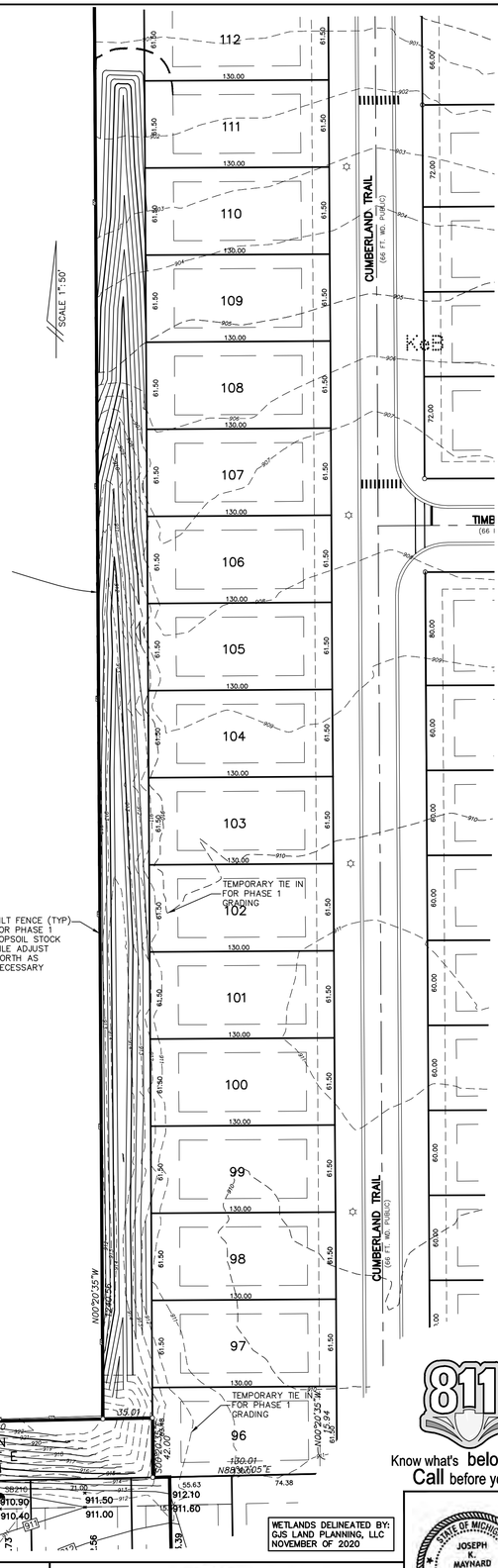
IF POSSIBLE, DRAINAGE STRUCTURES SHOULD NO BE PLACED IN LINE WITH RAMPS. EXCEPT WHERE EXISTING DRAINAGE STRUCTURES ARE BEING UTILIZED. IN THE NEW CONSTRUCTION, LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER LOCATION OF DRAINAGE STRUCTURE.

THE NORMAL GUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".

DETECTABLE WARNINGS SHALL EXTEND THE FULL WITH OF THE CURB RAMP, THEY SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6" TO 8" FROM THE CURB LINE.



Know what's below. Call before you dig.

STATE OF MICHIGAN
JOSEPH K. MAYNARD ENGINEER No. 52559
LICENSED PROFESSIONAL ENGINEER

CIVIL ENGINEERS
PLANNERS + SURVEYORS
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SHEET

PROJECT
HERITAGE FARMS PHASE 1

SITE DETAILS

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY + MICHIGAN
DATE 12-28-22
JOB NO. 32971
DWG NO. 971-site-detail
FIELD BOOK 446
FILE NO. 10668
SHEET 32

LEGEND
☼ = LIGHT POLE
UP = UTILITY POLE
GA = GUY ANCHOR
HY = HYDRANT
SE = SPOT ELEV.
P = POST
GV = GATE VALVE
SN = SIGN
TC = TOP OF CURB
TW = TOP OF WALL
MH = MANHOLE
CB = CATCHBASIN
EW = END SECTION
GRAVEL
FENCE
CONCRETE
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REVISIONS 2023-03-16 EGLE Permit Set, 2023-03-31 REVISED

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

PREPARED BY JOSEPH K. MAYNARD P.E., MICH No. 52559

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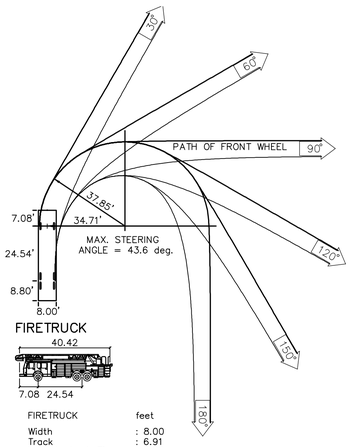
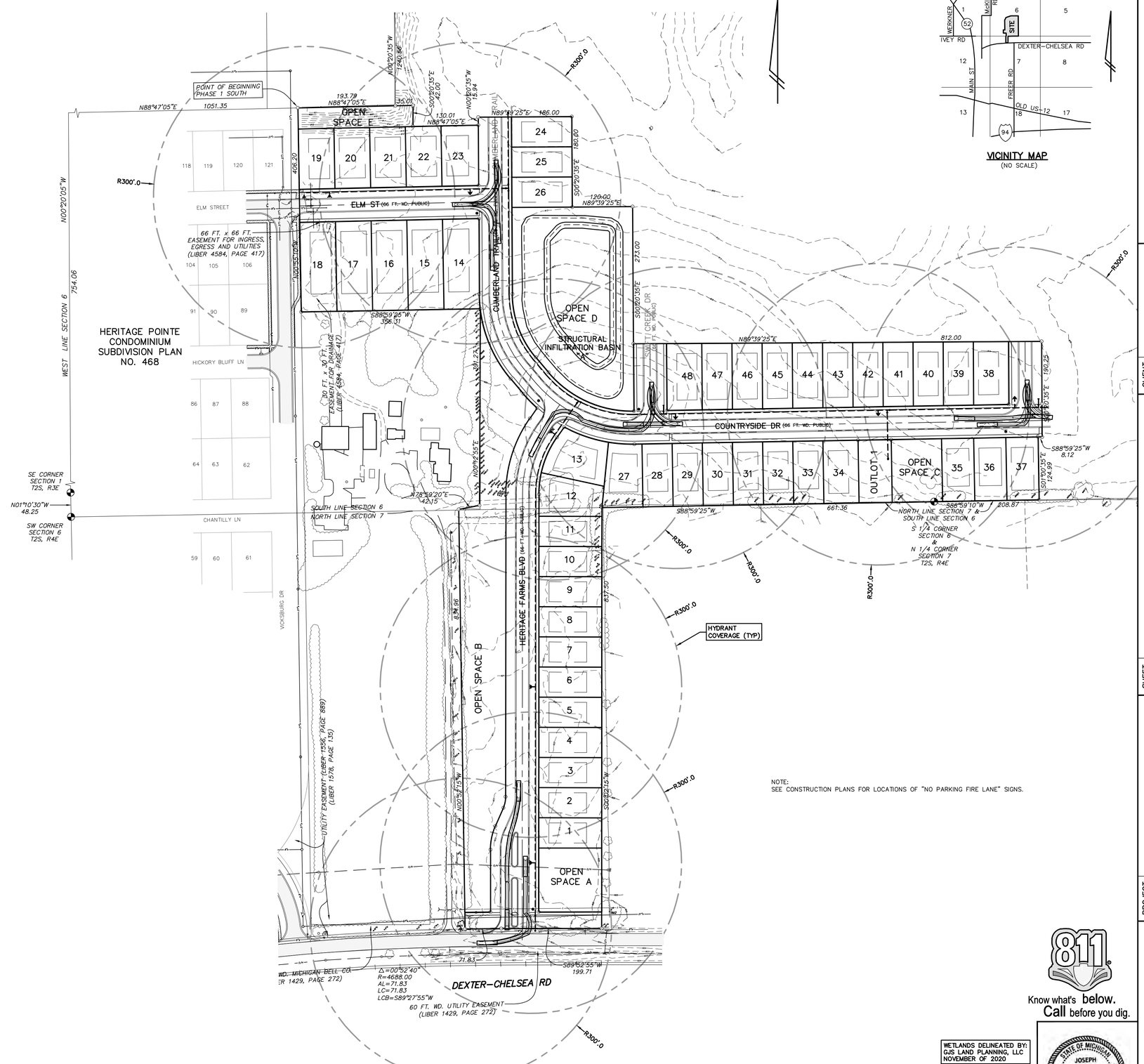


THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING RECORDS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER AB-SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THE SURVEYOR DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.



VICINITY MAP
(NO SCALE)

NOTE:
SEE CONSTRUCTION PLANS FOR LOCATIONS OF "NO PARKING FIRE LANE" SIGNS.

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

WETLANDS DELINEATED BY:
GJS LAND PLANNING, LLC
NOVEMBER OF 2020

LEGEND

- ☼ = LIGHT POLE
- ⊽ = UTILITY POLE
- ⊽ = GUY ANCHOR
- ⊽ = HYDRANT
- SP 723 = SPOT ELEV.
- ⊙ = POST
- ⊗ = GATE VALVE
- ⊸ = SIGN
- TC = TOP OF CURB
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REVISIONS 2023-03-16 EGLE Permit Set, 2023-03-31 REVISED

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

PREPARED BY
JOSEPH K. MAYNARD P.E., MICH No. 52559

STATE OF MICHIGAN JOSEPH K. MAYNARD ENGINEER No. 52559 LICENSED PROFESSIONAL ENGINEER

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BLOOMFIELD HILLS, MI. 48304
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SHEET
FIRE PROTECTION PLAN

PROJECT
HERITAGE FARMS PHASE 1

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY • MICHIGAN
DATE 12-28-22
JOB NO. 32971
DWG NO. 971-PH1-fire
FIELD BOOK 446
FILE NO. 10668
SHEET 33

INDOOR/OUTDOOR IRRIGATION TIMER

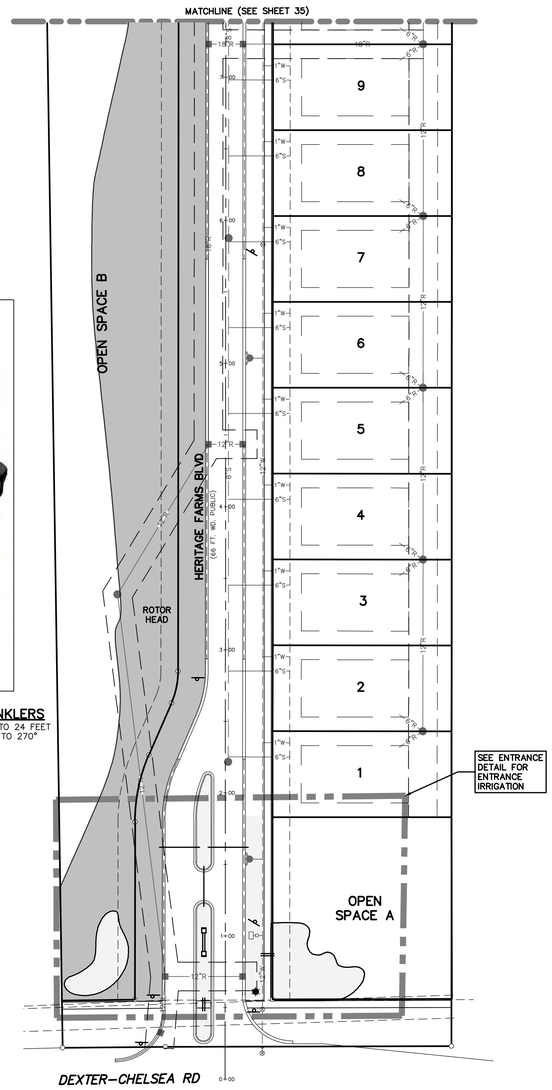
MAXI-PAW ROTOR SPRINKLERS
SPRAY DISTANCE FROM 25 TO 40 FEET
ADJUSTABLE SPRAY 45° TO 270°

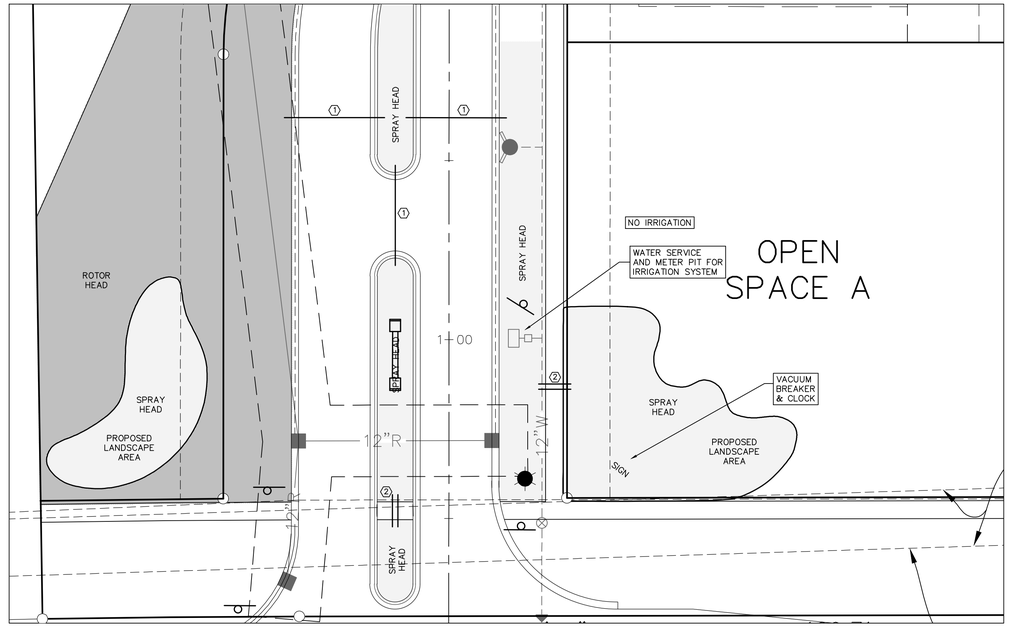
SURE-POP SPRAY HEAD
FULL CIRCLE PATTERN NOZZLE
(360 DEGREE)

MINI ROTOR SPRINKLERS
SPRAY DISTANCE FROM 17 TO 24 FEET
ADJUSTABLE SPRAY 45° TO 270°

HV & HVF SERIES VALVES

QUICK COUPLER VALVE





ENTRANCE IRRIGATION DETAIL
SCALE: 1"=20'

IRRIGATION LEGEND

= CONTROLLER
= PROPOSED SPRAY HEAD SPRINKLER
= PROPOSED ROTOR HEAD SPRINKLER
① = (1) 4" PVC SLEEVE
② = (2) 2" PVC SLEEVES
✸ = LIGHTPOLE

SPRINKLER EQUIPMENT

SITE CONTROLLERS
RAINBIRD 12 STATION OUTDOOR CONTROLLERS
RAINBIRD 24V ELECTRIC VALVES

SPRAY HEADS
RAINBIRD 1800 SERIES POP-UP (ADJUSTABLE) SPRAY HEADS
MAXI-PAW AG5 OR 2045A SERIES ROTOR SPRINKLER HEADS

OTHER ITEMS
WILKINS FREEZE RESISTANT, PRESSURE VACUUM BREAKER
WILKINS BACKFLOW PREVENTER
4" DIA. SCH40 PVC SLEEVE FOR LAWN SPRINKLER LINES UNDER VEHICULAR PAVEMENTS
(2) 2" SCH40 PVC SLEEVES UNDER ALL PEDESTRIAN WALKWAYS

NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR THE FIRST WINTERIZATION AND FIRST SPRING START UP OF THE IRRIGATION SYSTEM.
2. WATER SOURCE IS PUBLIC SYSTEM.
3. IRRIGATION CONTRACTOR TO COORDINATE ALL SLEEVE LOCATIONS WITH THE FLATWORK CONTRACTOR (SEE SHEETS 6 & CY1).
4. ALL LAWN AREAS WITHIN PERIMETER SIDEWALK TO BE CLASS A SOD.
5. ALL SPRINKLERS HEADS TO BE HEAD TO HEAD COVERAGE.
6. PLANS ARE GENERALIZED PERFORMANCE OF SPRINKLE AREAS.
7. CONTRACTOR RESPONSIBLE FOR NUMBER OF HEAD, VALVE AND PIPE NEEDS FOR THE PROJECT.
8. ALL SOD TO BE PLACED ON 4" TOPSOIL.
9. ALL SODDED LAWN AREAS AND SHRUB BED AREAS ON SITE TO BE IRRIGATED WITH AUTOMATIC SPRINKLERS.
10. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR PROVIDING IRRIGATION SYSTEM AS-BUILT DRAWINGS. AS-BUILT DRAWINGS TO INCLUDE: RAIN SENSORS, CONTROL CLOCKS, IRRIGATION ZONES, VALVE LOCATIONS, SLEEVE LOCATIONS, SPRAY HEADS, ROTOR HEADS, MAIN LINES, LATERAL LINES AND VACUUM BREAKERS.
11. QUICK COUPLER VALVES TO BE PLACED AT FRONT ENTRY SIGN.
12. ORIENT SPRAY HEADS TO AVOID OVERSPRAY ONTO ARCHITECTURAL DETAILS (FENCES, SIGN ETC.).
13. OPEN SPACE E WILL HAVE GATOR BAGS PLACED ON THE TREES FOR WATERING WHILE TREES GET ESTABLISHED.

Know what's below. Call before you dig.

WETLANDS DELINEATED BY:
GJS LAND PLANNING, LLC
NOVEMBER OF 2020

STATE OF MICHIGAN
JOSEPH K. MAYNARD
ENGINEER
No. 52559
REGISTERED PROFESSIONAL ENGINEER

LEGEND

☆ = LIGHT POLE
▽ = UTILITY POLE
◁ = GUY ANCHOR
⊕ = HYDRANT
SPOT ELEV. = POST
⊗ = GATE VALVE
—⊣— = SIGN
TC = TOP OF CURB
TW = TOP OF WALL
○ = MANHOLE
□ = CATCHBASIN
◡ = END SECTION
= GRAVEL
= FENCE
= CONCRETE
= ASPHALT
—— f —— = EXISTING STORM
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REVISIONS *2023-03-16 EGLE Permit Set, 2023-03-31 REVISED*

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

PREPARED BY
GERALD J. SOSNOWSKI RLA, MICH No. 982

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BLOOMFIELD HILLS, MI. 48304
PH: (248)-221-5011

SHEET
IRRIGATION PLAN SOUTH

PROJECT
HERITAGE FARMS PHASE 1

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY • MICHIGAN
DATE 12-28-20
JOB NO. 32971
DWG NO. 774-irrigation
FIELD BOOK 446
FILE NO. 10668
SHEET 34

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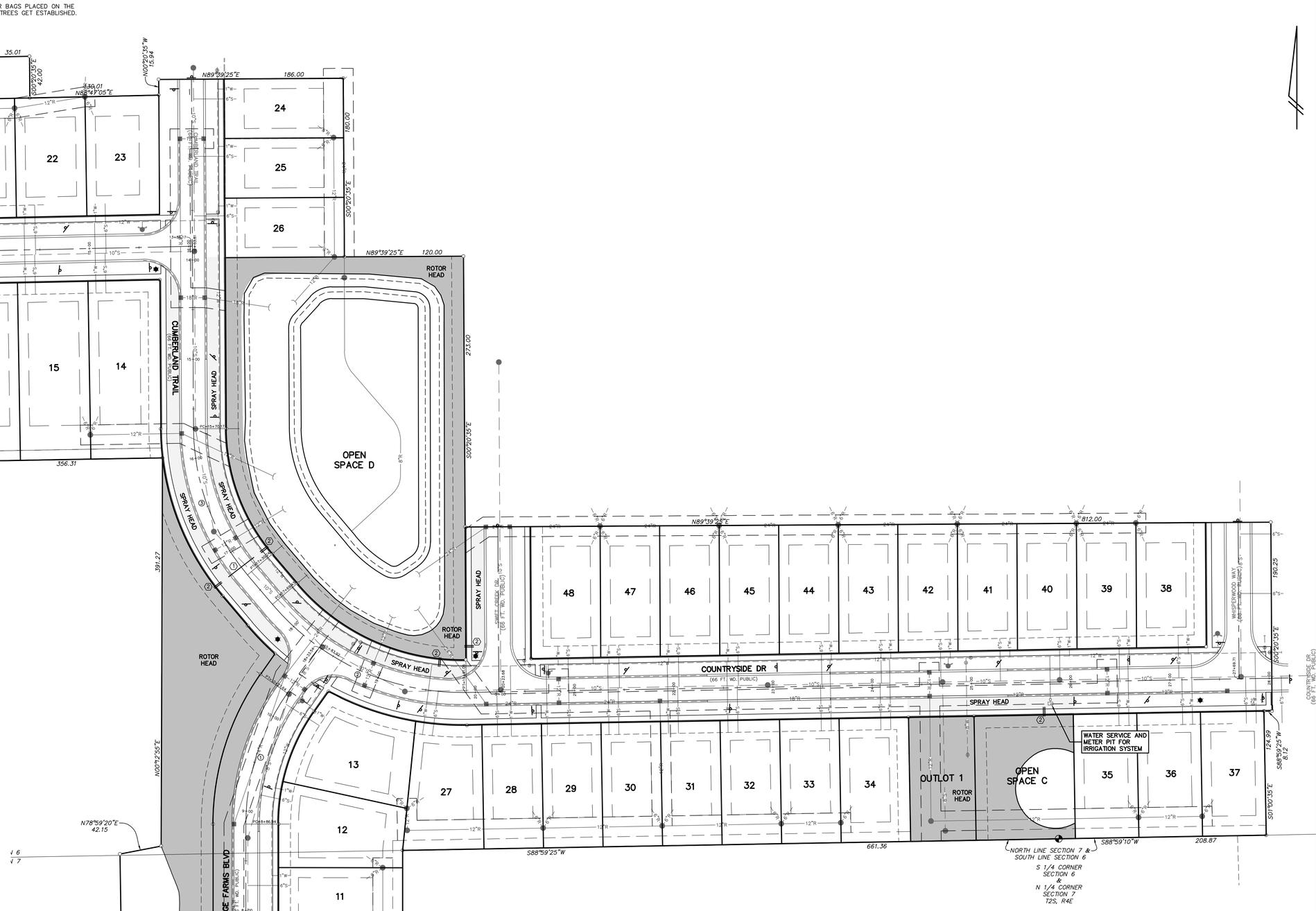

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IRRIGATION LEGEND

- ⊡ = CONTROLLER
- = PROPOSED SPRAY HEAD SPRINKLER
- = PROPOSED ROTOR HEAD SPRINKLER
- ① = (1) 4" PVC SLEEVE
- ② = (2) 2" PVC SLEEVES
- ✸ = LIGHTPOLE

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

WETLANDS DELINEATED BY: GJS LAND PLANNING, LLC NOVEMBER OF 2020

LEGEND

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- ∇ = UTILITY POLE
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REVISIONS 2023-03-16 EGLE Permit Set, 2023-03-31 REVISED

SCALE 100 — 0 25 50 — SCALE: 1"=50'

PREPARED BY GERALD J. SOSNOWSKI RLA, MICH No. 982

STATE OF MICHIGAN — JOSEPH K. MAYNARD — ENGINEER — No. 53559 — LICENSED PROFESSIONAL ENGINEER

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IRRIGATION PLAN NORTH

SHEET

PROJECT
HERITAGE FARMS PHASE 1

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY • MICHIGAN
DATE 12-28-20
JOB NO. 32971
DWG NO. 774-irrigation
FIELD BOOK 446
FILE NO. 10668
SHEET 35

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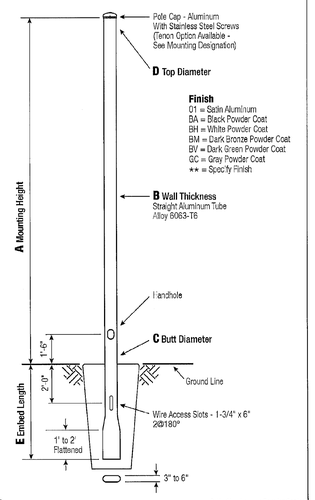
RSA — Round Straight Aluminum Pole, No Arm — Direct Buried



WARNING: *Do not install light pole without luminaire.*

Satin Aluminum or Powder Coated Finish per Customer Specification.

A Mtng. Hgt.	B Wall Thickness	C Butt Diameter	Total Lbs. Weight	Maximum EPA 90	100	110	120	130	Catalog Number
14	0.125"	4	40	4.4	3.1	2.7	1.9	1.3	RSA14B4-E-**

C Butt Dia.	D Top Dia.	E Embed
4	4	3

C and D Dimensions in Inches

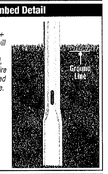
Customer Name:		
Project:	Location:	
Notes:		Quantity:

H-RSA14B4-E - [ ]
CATALOG NUMBER — FINISH

Pole
The pole shaft will be constructed of seamless extruded tube of 6063 Aluminum Alloy per the requirements of ASTM B221. The shaft assembly shall be full-length heat treated to produce a T6 temper.

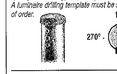
Handhole
2-1/2" x 5" Handhole with curved Lap Style Aluminum Door and two (2) SS Self-Tapping Attaching Screws. A Grounding Provision is provided as part of the handhole.

Embed Detail
Direct Buried Pole
Bottom section on 6"+ butt diameter poles will be partially flattened into an anti-rotational, oval cross section. Wire access will be provided 24" below ground line. Soil conditions vary by site. Foundation requirements should be determined by a qualified Structural Engineer with knowledge of jobsite soil conditions.



Vibration Damper
When determined necessary, a Vibration Damper will be factory-installed inside the pole shaft. Customer specification of the damper is available.

Mounting Designation
Side Drill Mount - For Side Drill Mount applications specify luminaire type, quantity and orientation. A luminaire drilling template must be supplied at time of order:



Tenon Mount
For Tenon Mount applications specify tenon diameter (2.375", 2.875", 3.5", etc.) and length (5", 4", etc.).

EPA Notes: *Effective Projected Area (EPA) in square feet. EPA's calculated using wind velocity (mph) indicated in accordance with 2009 AASHTO LTS-5 using a 25 year design life. Maximum EPA is based on the luminaire weight shown. Increased luminaire weight may reduce the maximum EPA. If weight is exceeded, or if other design life or code is required, please consult the factory.*

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Note: Specifications and photometric data are subject to change at any time without notice.
Please see www.lumecon.com for current specifications and documentation.

Sheet:LROF-NF_113020/22

LROF-NF — LED Decorative

Catalog Number:	
Project:	
Comments:	
Prepared By:	Date:

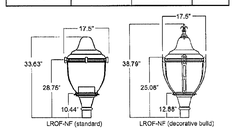
Description
The LROF-NF post-top fixture utilizes our patented thermal integrated trim ring for maximize heat dissipation. Available in multiple wattage and distribution versions, this fixture is able to replace existing 175W-250W HID's one-for-one. Each model delivers superior lumen output to illuminate your next downtown lighting project.

Performance Data

Model	Watts	Equiv	Delivered Lumens	Efficacy
LROF-NF-1 (Type III)	27W	175W HID	2,370 Lm	87 LPW
LROF-NF-2 (Type V)	54W	175W HID	4,692 Lm	86 LPW
LROF-NF-3 (Type III)	58W	250W HID	4,574 Lm	79 LPW
LROF-NF-4 (Type V)	85W	250W HID	6,809 Lm	81 LPW
LROF-NF-5 (Type III)	86W	250W HID	6,240 Lm	71 LPW
LROF-NF-6 (Type V)	114W	250W HID	8,426 Lm	74 LPW

Dimensions & Weights

Model	Ring Diameter	Globe Height	Weight
LROF-NF	17.5"	33.63"	22 lbs.



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Sheet:LROF-NF_113020/22

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LROF-NF — LED Decorative

Technical Specifications
Input Voltage: 120-277V or 347-480V

Light Distribution: LEDs are mounted to the inside of the fixture trim ring which serves as a heat sink to ensure optimal heat dissipation. This type of mounting allows for both Type 5 (standard) and Type 3 light distribution patterns to be offered.

Globe: Our two-piece acrylic lens post top features precise prisms achievable only through injection molding. The prisms provide pleasing daytime "prismatic sparkle" and provide excellent uniformity, light distribution and efficiency for nighttime performance. The globe carries a 20 year warranty which includes resistance to yellowing as we define as having a yellowness index of less than 7.

There are also two options for limiting uplight that is emitted from the fixture. The perforated light lid is a polished reflector above the LEDs that limits uplight to approximately 30% in the upper globe. The cutoff light lid is a solid polished reflector that virtually eliminates light to the upper globe.

Fitter/ Base: Fitter options are compatible with 8" or 9" globe neck sizes and are designed to slip fit 3" or 4" OD poles. *Fitter capabilities differ depending on the model selected.

Decorative Struts: Decorative struts require the use of a fitter/ base option.

Effective Projected Area (EPA): 1.43 ft²

Color Temperature: 2200K RW, 2700K WW, 3000K OW, 4000K NW (standard), 5000K CW.

LED Lifetime: All LED's are rated for a minimum of 100,000 hours of continuous operation at ambient temperatures from -40°F/-40°C to 95°F/35°C.

Color Rendering Index (CRI): *Minimum of 80 or higher.*

Dimming: 0-10V standard dimming capability.

Surge Protection: Thermally protected 20kA/ 40kV varistor type surge suppressor is included and meets ANSI C136.2-2015: Extreme Level. Also meets IEC61643-11 Class II / EN61643-11 Type 2, and US Dept of Energy MSSLC Model Spec for surge protection. The device is wired in series with the luminaire input power in order to interrupt power to the luminaire when consumed, protecting the LED power supply and circuit boards from additional electrical surges.

Lumecon ETD™ System: The enhanced thermal dissipation system engines are thermally bonded to provide maximum thermal dissipation to the exterior of the fixture to ensure long life. To protect the light engine panel from moisture and corrosion, the LED light engine panel is uniformly coated with a UV stabilized acrylic polymer resin that meets MIL and ASTM dielectric standards, UL, and IPC standards for flammability, moisture resistance and thermal shock.

Certification Data: ETL Listed to UL 1598, UL 8750 and CSA 22.2 No. 250 for Wet Locations. *Full compliance and test documentation is available for TM-21, LM-79, LM-80, ETL Listing to UL1598 and UL 8750 and Lighting Facts.

Manufacturing Origin: US Manufactured and Assembled.

Buy American: Meets Buy American requirements within the ARRA.

Warranty: 10 Year L70 performance based warranty. For full warranty terms, please visit our website: www.lumecon.com

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Sheet:LROF-NF_113020/22

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LROF-NF — LED Decorative

Ordering Information
LROF-NF Options / Ordering Example: LROF-NF-1-1-NW-A-CL-B-N-X-X-B-X

Model Number	Wattage / Distribution Type	Voltage	Color Temperature	Globe Material	Top Globe Guard	Globe Neck Size
LROF-NF - Finless Heat Sink	1 - 27W / Type III 2 - 54W / Type V 3 - 58W / Type III 4 - 85W / Type V 5 - 68W / Type III 6 - 115W / Type V	1 - 120v-277v 2 - 347v-480v	22 - 2200K WW - 2700K OW - 3000K NW - 4000K CW - 5000K	A - Acrylic	CL - Clear B - Black* CC - Custom Color** *includes cutoff LiteLid **Will need RAL number	8 - 8" Neck 9 - 9" Neck

Decorative Struts	Fitter / Base	Finial	Paint Color	Photocell
X - None DS - Decorative Struts*	X - None 1 - 8" Fitter for 3" OD Pole 2 - 8" Fitter for 4" OD Pole 3 - 9" Fitter for 3" OD Pole 4 - 8" Fitter for 3" OD Pole (8 ½" Tall)	X - None S - Spike L - Fleur-De-Lis	B - Black CC - Custom Color* *Will need RAL number	X - None PC1 - 120v-277v Button Eye Style† PC3 - 347v Button Eye Style† PC4 - 480v Button Eye Style† 7P - Seven-pin Twist Lock Photocell Receptacle Only‡

*Requires a fitter/base

Shield	Uplight
X - None H - House Shield	X - None P - Perforated C - Cutoff* *Included on custom color top globe color orders

Notes:
1. Requires a Fitter / Base
2. 7-Pin receptacle for Control Module only

Options & Accessories Images


Fitter / Base
Part Number 27 - 09101
8" Neck with 3" OD Pole
12 3/4" Tall


Fitter / Base
Part Number 27-00103
9" Neck with 3" OD Pole
14 1/4" Tall


Fitter / Base
Part Number 27-00145
8" Neck with 4" OD Pole
13 1/2" Tall


Fitter / Base
Part Number 27-00137
8" Neck with 3" OD Pole
8 1/2" Tall

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Sheet:NCF-NF_113020/22

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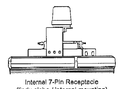
LROF-NF — LED Decorative

Options & Accessories Images


Internal 7-Pin Receptacle
(Indy globe / Internal mounting)


Spike Finial

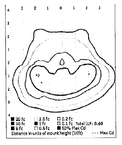

Fleur-De-Lis


Perforated LiteId


Cutoff Reflective LiteId:
A thin, MIRO(r) reflective-full cut off lite list that is strong, ultra-lightweight and dark sky compliant.

Photometric Data
For .ies files of this product, please visit the downloads tabs on the LROF-NF product page

LROF-NF - 1 Distribution



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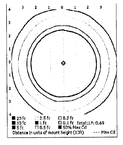
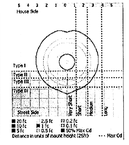


LROF-NF - 3 Distribution

LROF-NF - 4 Distribution



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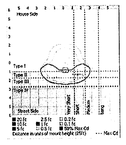
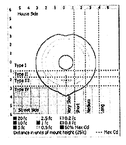


LROF-NF - 6 Distribution



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Sheet:LROF-NF_113020/22

Performance Data

Electrical Load Data

Fixture Model	Drive Current (mA)	System Watts (W)	AC Current Load (A) 120V	208V	240V	277V
LROF-NF-1	700	32	0.30	0.17	0.15	0.13
LROF-NF-2	775	57	0.53	0.30	0.26	0.23
LROF-NF-3	1250	57	0.53	0.30	0.26	0.23
LROF-NF-4	1100	84	0.78	0.45	0.39	0.34
LROF-NF-5	1900	84	0.78	0.45	0.39	0.34
LROF-NF-6	1550	111	0.59	0.59	0.51	0.45

Performance Data continued

Lumen Maintenance

Data in the table below references projected performance in a 25°C ambient and is based on 10,000 hours of LED testing. Performance data has been tested per IESNA LM-80-08 and projected per IESNA TM-21-11.

Use the lumen maintenance factor that corresponds to the desired number of operating hours below to calculate LLF.

Fixture Model	Lumen Maintenance Factors @ 25°C, by hours: 0	25,000	50,000	70,000
LROF-NF-1	1.0	0.98	0.95	0.93
LROF-NF-2	1.0	0.96	0.92	0.90	0.86
LROF-NF-3	1.0	0.96	0.93	0.90	0.86
LROF-NF-4	1.0	0.95	0.91	0.88	0.84
LROF-NF-5	1.0	0.96	0.93	0.90	0.86
LROF-NF-6	1.0	0.95	0.91	0.88	0.84

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Sheet:LROF-NF_113020/22

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PLANNERS ✦ SURVEYORS
LANDSCAPE ARCHITECTS
3526 W. LIBERTY RD
SUITE 400
ANN ARBOR, MI 48103
TEL: 734-761-8520
FAX: 734-761-9530
WASHTENAWENGINEERING.COM

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CLIENT
M/I HOMES OF MICHIGAN
40950 WOODWARD AVE.
BLOOMFIELD HILLS, MI. 48304
PH: (248)-221-5011

SHEET
PHOTOMETRIC DETAILS

PROJECT
HERITAGE FARMS PHASE 1

SECTION 6 & 7 TOWN 2 SOUTH RANGE 4 EAST
CITY OF CHELSEA
WASHTENAW COUNTY ✦ MICHIGAN
DATE 12-28-22 | JOB NO. 32971 | DWG NO. 971-photo-detail | FIELD BOOK 446 | FILE NO. 10668
SHEET 36

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

WETLANDS DELINEATED BY:
GJS LAND PLANNING, LLC
NOVEMBER OF 2020

STATE OF MICHIGAN
JOSEPH K. MAYNARD
ENGINEER
No. 52559
LICENSED PROFESSIONAL ENGINEER

PREPARED BY _____
JOSEPH K. MAYNARD P.E., MICH No. 52559

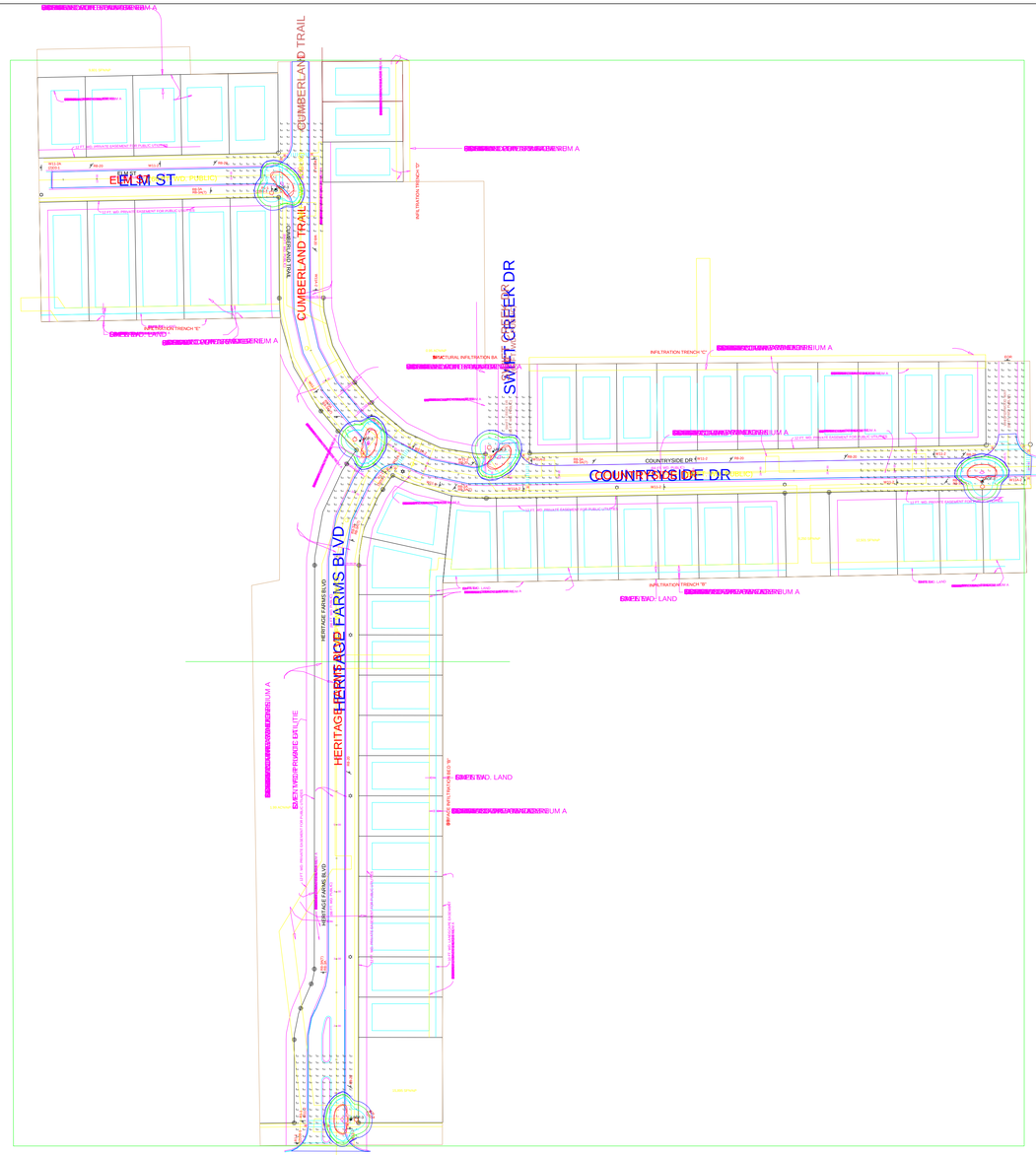
SCALE
NO SCALE

REVISIONS *2023-03-16 EGLE Permit Set, 2023-03-31 REVISED*

BENCHMARK *BM1=TOP NUT ON HYDRANT, NORTH OF DEXTER-CHELSEA RD AND 9'± WEST OF THE SOUTHWEST PROPERTY CORNER, ELEV=920.28 (NAVD 88).*
BM2= NAIL IN W'LY FACE OF 26" WALNUT, 43'± NORTH OF DEXTER-CHELSEA RD AND 37'± NE'LY OF THE SOUTHEAST PROPERTY CORNER, ELEV=927.38 (NAVD 88).

LEGEND

☼ = LIGHT POLE	⊕ = SPOT ELEV.	TC = TOP OF CURB	= GRAVEL	r = EXISTING STORM
☼ = UTILITY POLE	⊕ = POST	TW = TOP OF WALL	= FENCE	s = EXISTING SANITARY
☼ = GUY ANCHOR	⊗ = GATE VALVE	○ = MANHOLE	= CONCRETE	w = EXISTING WATER
☼ = HYDRANT	—▭— = SIGN	□ = CATCHBASIN	= ASPHALT	g = EXISTING GAS
		◡ = END SECTION		e = EXISTING ELECTRIC
				t = EXISTING TELEPHONE



Luminaire Schedule							
Symbol	Qty	Label	LLF	Description	Mounting Height	Luminaire Lumens	Luminaire Watts
	5	LROF-3	0.890	1503061315-008, MODEL_ LROF-3-1-NW-A-CL-8-X-X-X-B-X-X-C	14	4572	57.8

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Countryside&SwiftCreek	Illuminance	Fc	0.14	2.2	0.0	N.A.	N.A.
ElmStreet	Illuminance	Fc	0.17	2.0	0.0	N.A.	N.A.
HeritageFarmsBlvd	Illuminance	Fc	0.20	1.8	0.0	N.A.	N.A.
Whisperwood Way	Illuminance	Fc	0.11	1.8	0.0	N.A.	N.A.

Illuminance Values

- 0.2 - 0.29 fc
- 0.3 - 0.49 fc
- 0.5 - 0.99 fc
- 1.0 - 1.99 fc
- 2.0 - 5.0 fc

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Revisions

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Checked By:
Date:12/20/2022
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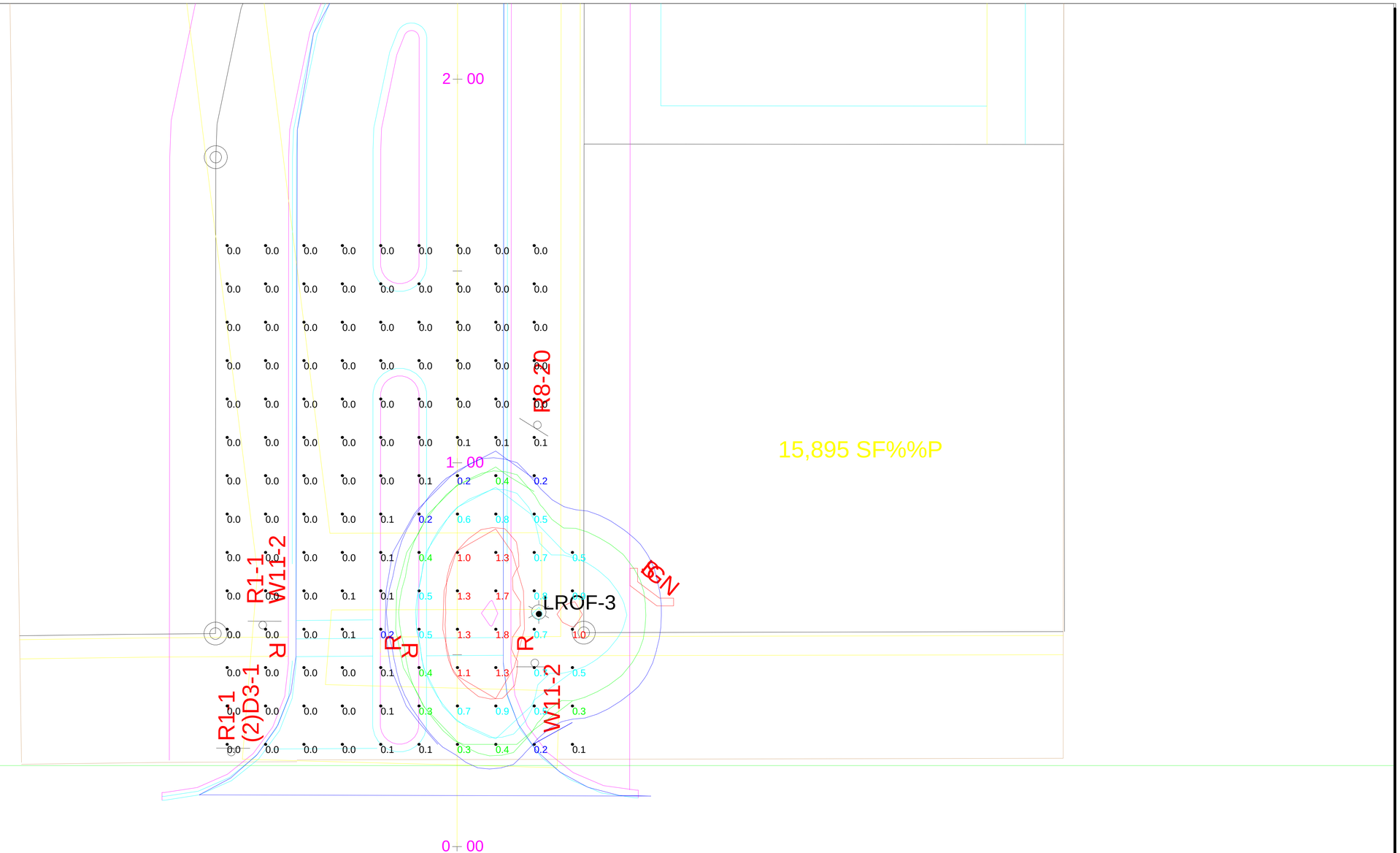

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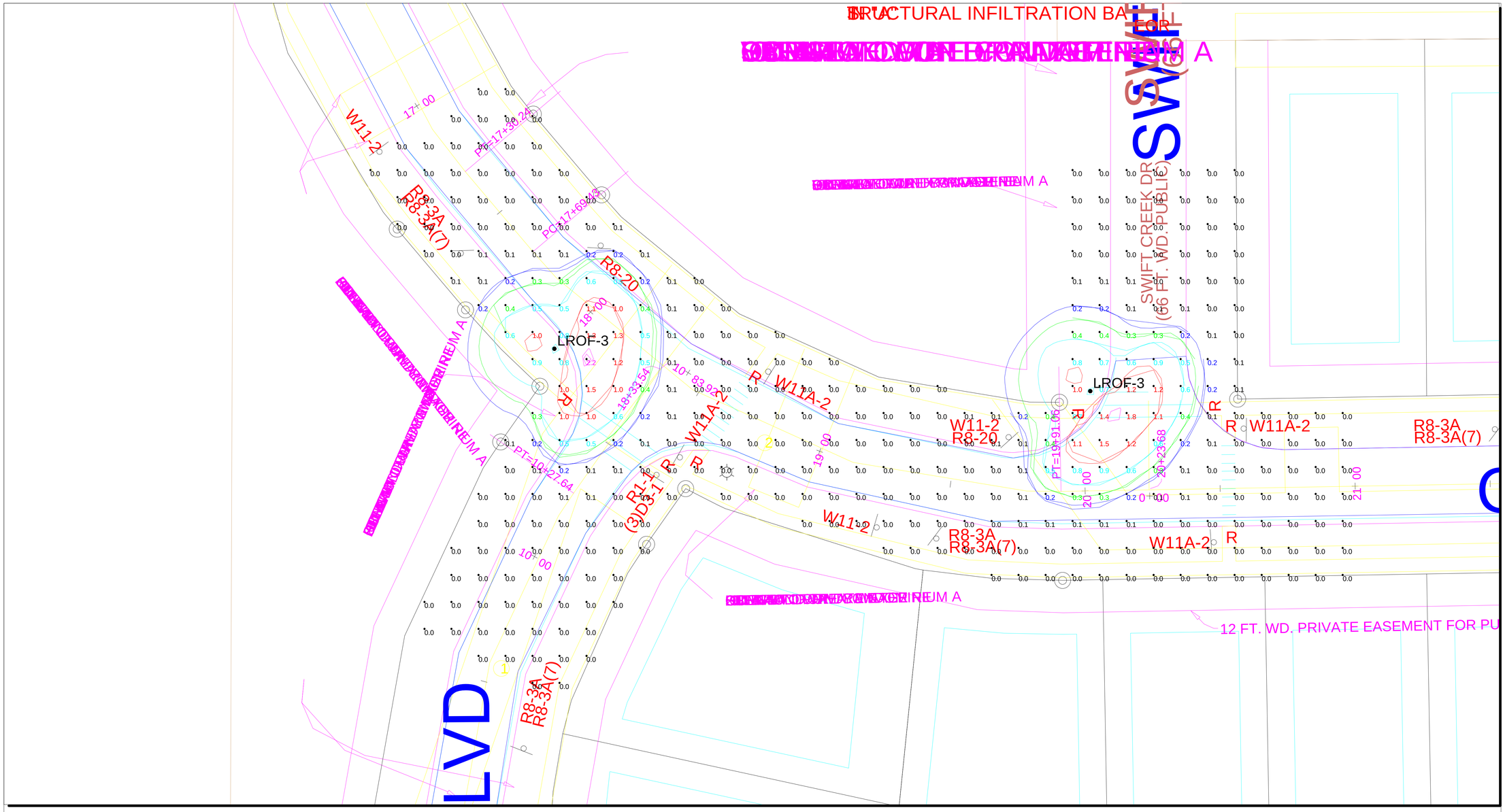

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THE ENGINEER AND/OR ARCHITECT MUST DETERMINE THE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP. THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

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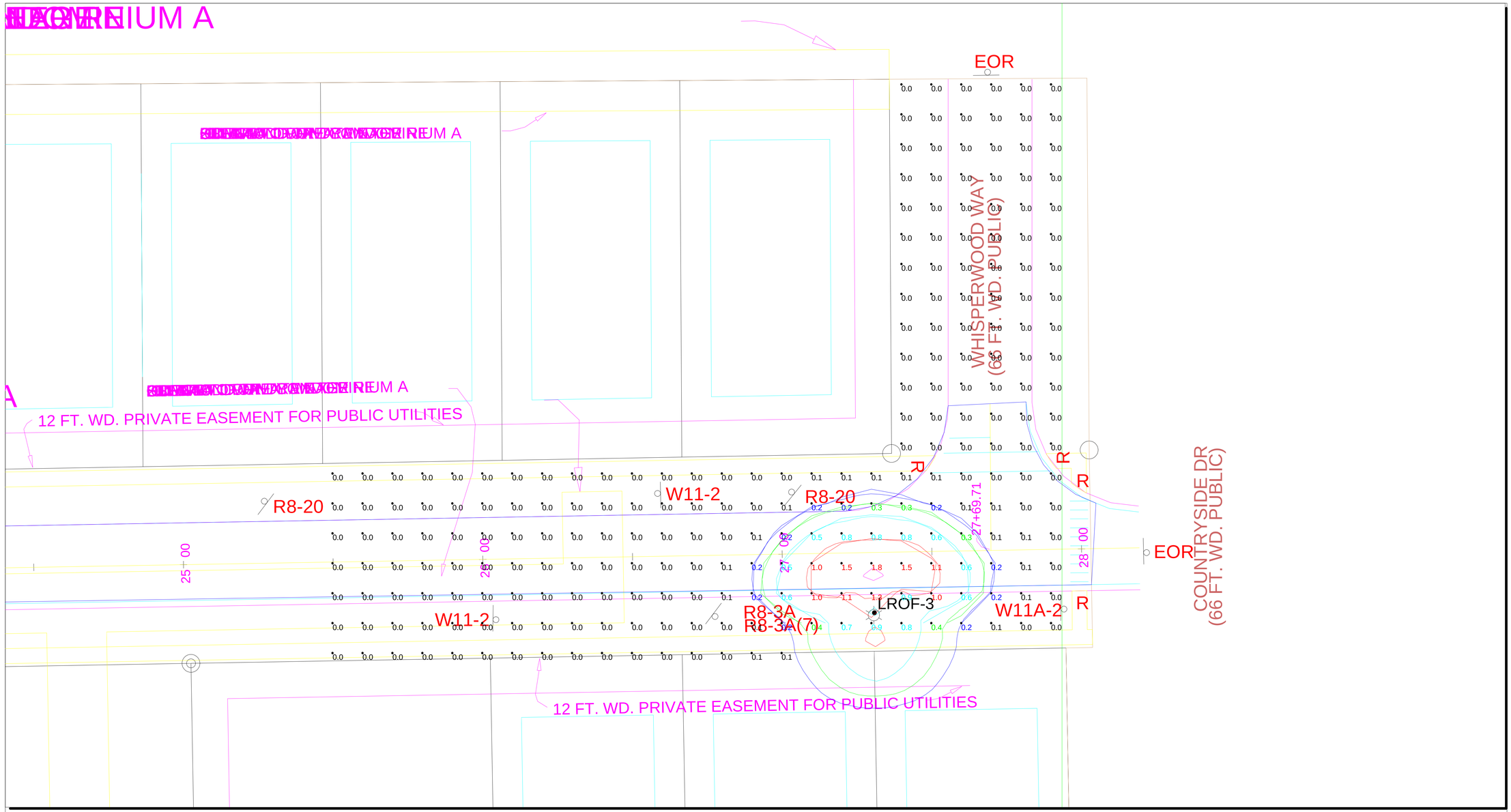

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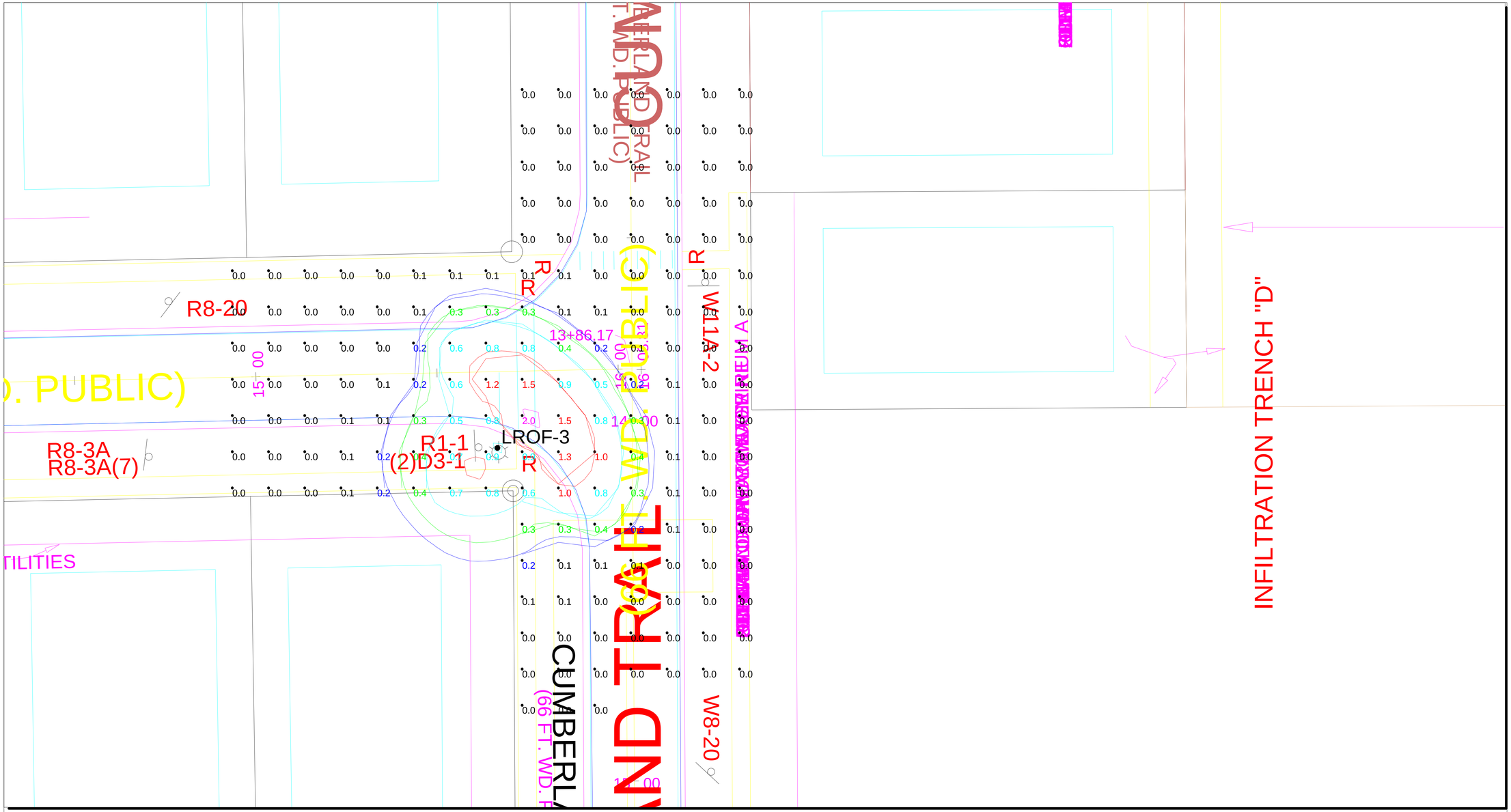

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#	Date	Comments

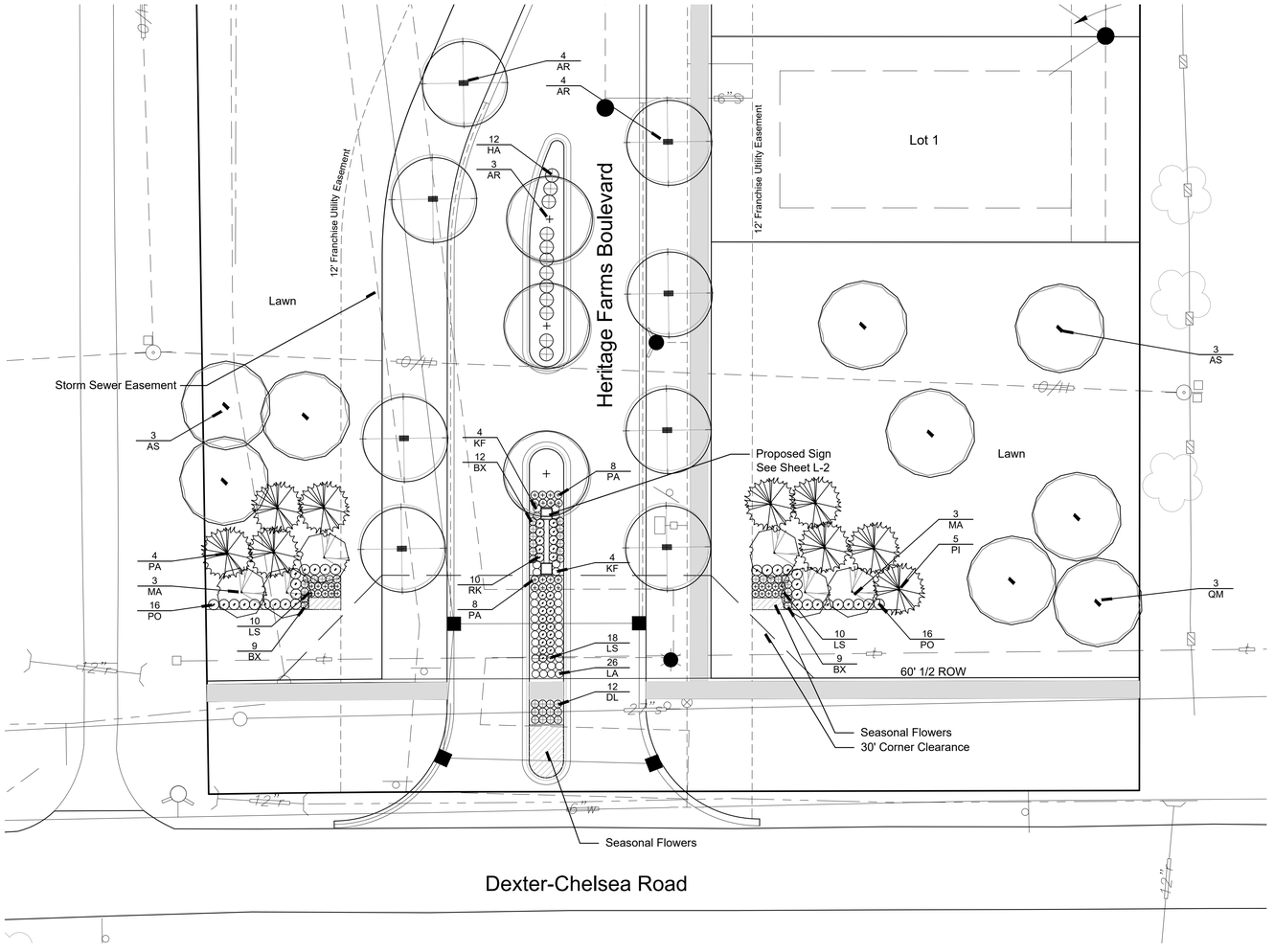
Revisions

Drawn By: M. Woznicki, LC
Checked By:
Date:12/20/2022
Scale:

City of Chelsea Heritage

3

ALLENDESIGN
LAND PLANNING / LANDSCAPE ARCHITECTURE
557 Carpenter
Northville, Michigan 48167
e. jca@wideopenwest.com
t. 248.467.4668



Plant List

sym.	qty.	botanical name	common name	caliper	spacing	root	height
AR	11	Acer rubrum 'Red Pointe'	Red Pointe Maple	2.5"	as shown	B&B	
AS	6	Acer scaccharum 'Green Mountain'	Green Mountain Sugar Maple	2.5"	as shown	B&B	
BX	30	Buxus m. 'Winter Gem'	Winter Gem Boxwood		as shown	cont	36"
DL	12	Hemerocallis 'Happy Returns'	Happy Returns Daylily		as shown	cont	#2
HA	12	Hygrangea 'Annabelle'	Annabelle Hydrangea		as shown	cont	36"
KF	8	Calamagrostis x. a. 'Karl Forester'	Karl Forester Grass		as shown	cont	#2
LA	26	Lavandula X phenomenal	Lavender		as shown	cont	#2
LS	38	Leucanthemum x s. 'Snowcap'	Snowcap Shasta Daisy		as shown	cont	#2
MA	6	Malus 'Adirondack'	Adirondack Crab Apple	2.0"	as shown	B&B	
PA	16	Pennisetum a. 'Little Bunnies'	Little Bunnies Fountain Grass		as shown	cont	#2
PI	9	Picea abies	Norway Spruce		as shown	B&B	6'
PO	16	Physocarpus opulifolius 'Donna May'	Little Devil Ninebark		as shown	cont	36"
QM	3	Quercus macrocarpa	Bur Oak	2.5"	as shown	B&B	
RK	10	Rosa x 'Double Red'	Osa Easy Double Red Rose		as shown	cont	#3

Seal:

Title:

Entry Plan

Project:

Heritage Farms
Chelsea, Michigan

Prepared for:

M/I Homes of Michigan, LLC
40950 Woodward Avenue, Suite 203
Bloomfield Hills, Michigan 48304

Revision:	Issued:
Review	February 6, 2023
Review	February 20, 2023
Revised	April 14, 2023

Job Number:

23-003

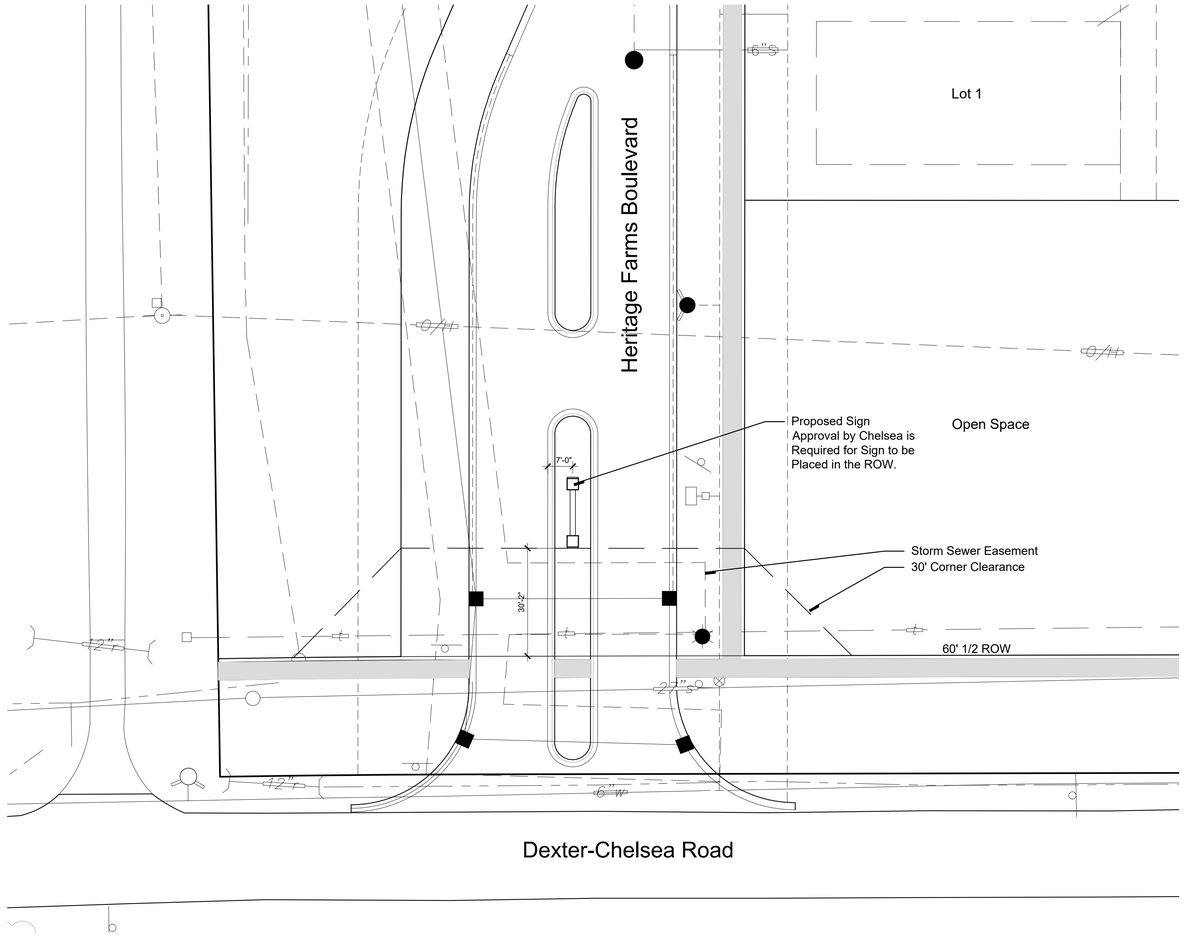
Drawn By:	Checked By:
jca	jca

0' 5' 10' 20'

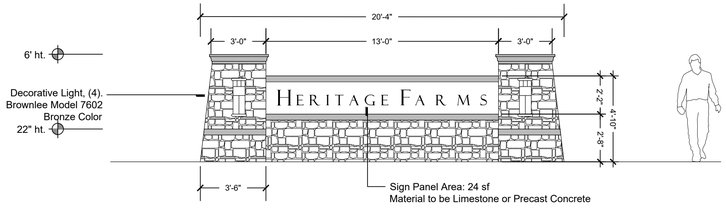
NORTH
1"=20'

Sheet No.

L-1

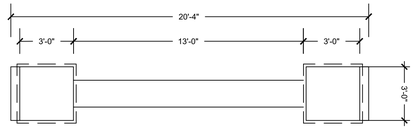


Dimension Plan



Sign Elevation

1/4" = 1'-0"



Sign Plan View

1/4" = 1'-0"

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Sign Plan

Project:

Heritage Farms
Chelsea, Michigan

Prepared for:

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Bloomfield Hills, Michigan 48304

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Revised	April 13, 2023

Job Number:

23-003

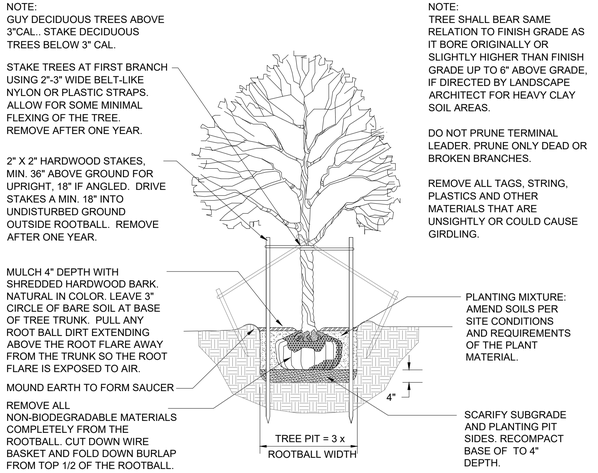
Drawn By:	Checked By:
jca	jca

0' 5' 10' 20'

NORTH
1"=20'

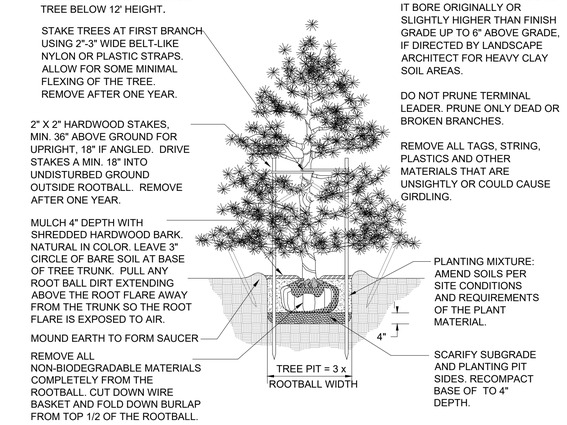
Sheet No.

L-2



DECIDUOUS TREE PLANTING DETAIL

Not to scale



EVERGREEN TREE PLANTING DETAIL

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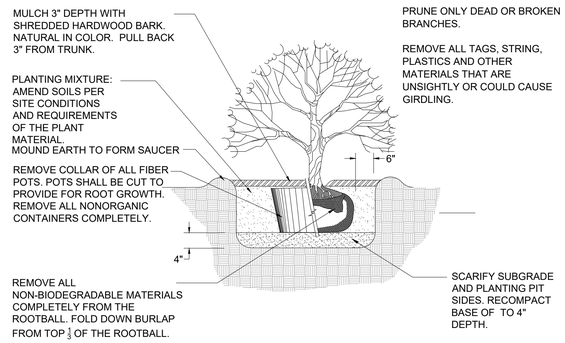
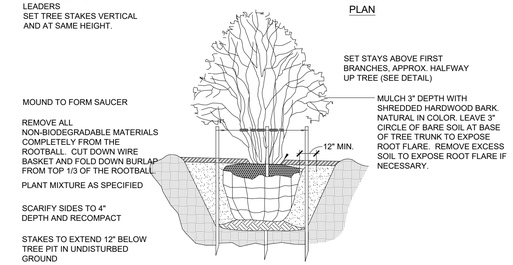


SHRUB PLANTING DETAIL

NOT TO SCALE

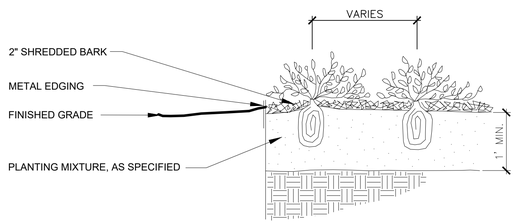
LANDSCAPE NOTES

1. All plants shall be north Midwest American region grown, No. 1 grade plant materials, and shall be true to name, free from physical damage and wind burn.
2. Plants shall be full, well-branched, and in healthy vigorous growing condition.
3. Plants shall be watered before and after planting is complete.
4. All trees must be staked, fertilized and mulched and shall be guaranteed to exhibit a normal growth cycle for at least two (2) full years following City approval.
5. All material shall conform to the guidelines established in the most recent edition of the American Standard for Nursery Stock.
6. Provide clean backfill soil, using material stockpiled on site. Soil shall be screened and free of any debris, foreign material, and stone.
7. "Agriform" tabs or similar slow-release fertilizer shall be added to the planting pits before being backfilled.
8. Amended planting mix shall consist of 1/3 screened topsoil, 1/3 sand and 1/3 compost, mixed well and spread to the depth as indicated in planting details.
9. All plantings shall be mulched per planting details located on this sheet.
10. The Landscape Contractor shall be responsible for all work shown on the landscape drawings and specifications.
11. No substitutions or changes of location, or plant types shall be made without the approval of the Landscape Architect.
12. The Landscape Architect shall be notified in writing of any discrepancies between the plans and field conditions prior to installation.
13. The Landscape Contractor shall be responsible for maintaining all plant material in a vertical condition throughout the guaranteed period.
14. The Landscape Architect shall have the right, at any stage of the installation, to reject any work or material that does not meet the requirements of the plans and specifications, if requested by owner.
15. Contractor shall be responsible for checking plant quantities to ensure quantities on drawings and plant list are the same. In the event of a discrepancy, the quantities on the plans shall prevail.
16. The Landscape Contractor shall seed and mulch or sod (as indicated on plans) all areas disturbed during construction, throughout the contract limits.
17. A pre-emergent weed control agent, "Preen" or equal, shall be applied uniformly on top of all mulching in all planting beds.
18. Sod shall be two year old "Baron/Cheriadelphi" Kentucky Blue Grass grown in a sod nursery on loam soil.



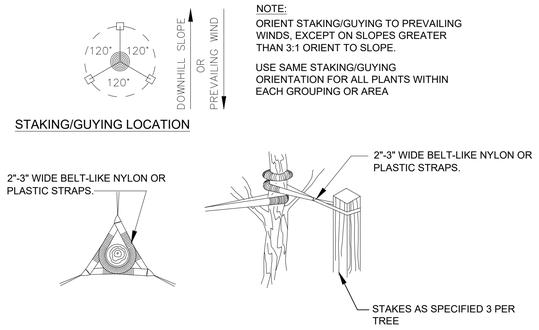
MULTI-STEM TREE PLANTING DETAIL

NOT TO SCALE



PERENNIAL PLANTING DETAIL

Not to scale



TREE STAKING DETAIL

Not to scale

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Seal:

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Landscape Details

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Heritage Farms
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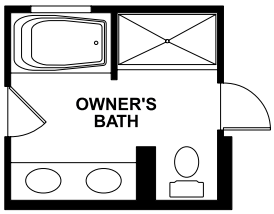
jca	jca

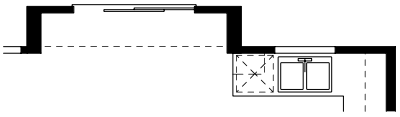
Sheet No.

L-3

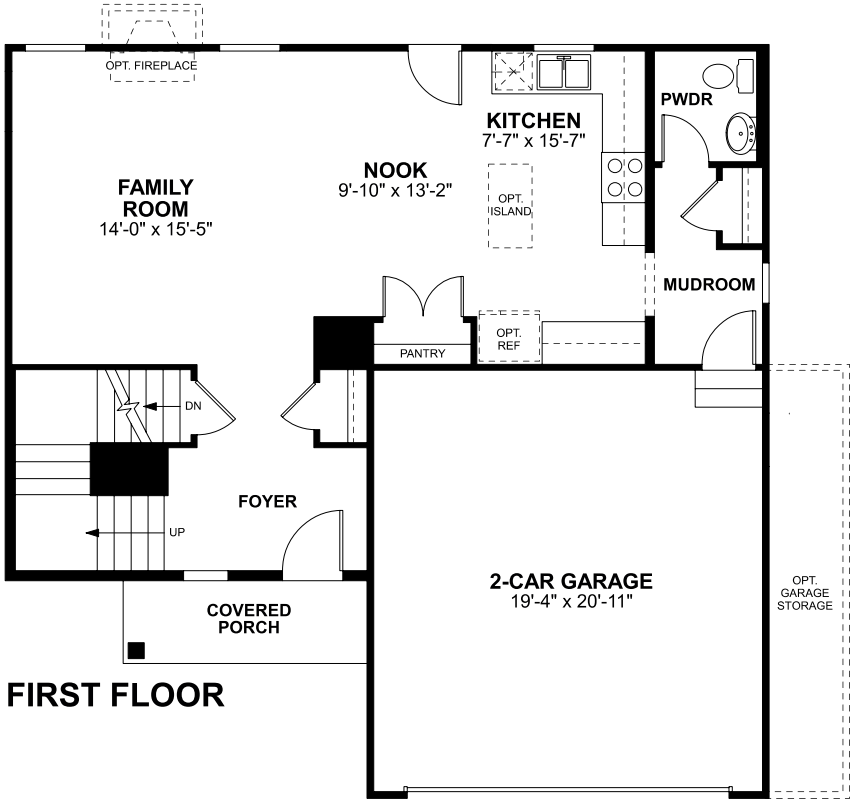
SECOND FLOOR



OPTIONAL DELUXE OWNER'S BATH



OPTIONAL NOOK BAY



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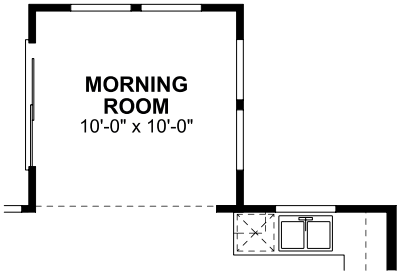

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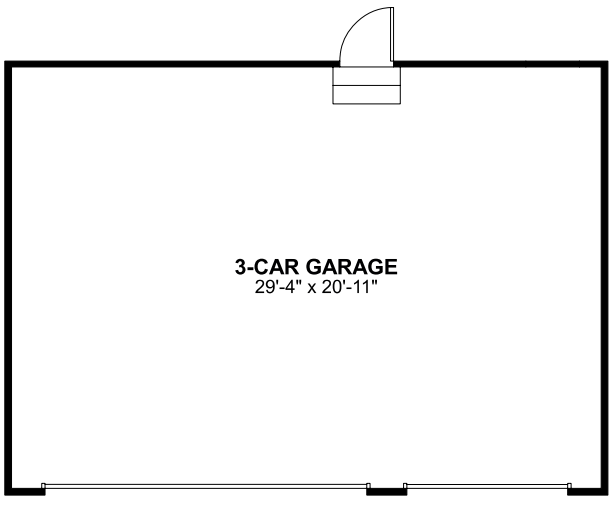
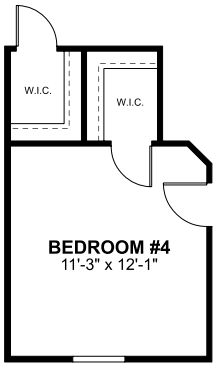


OPTIONAL 3-CAR GARAGE

DET-BROOKLYN-FL-VARIOUS PLANS



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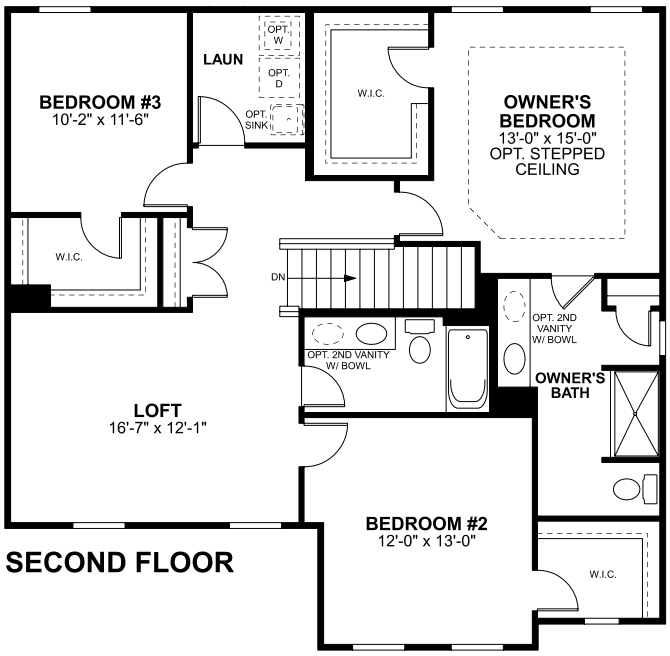

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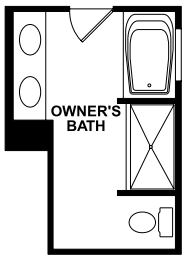
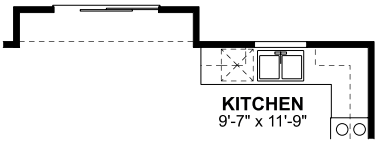


OPTIONAL DELUXE OWNER'S BATH



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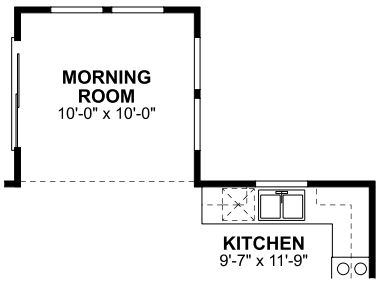

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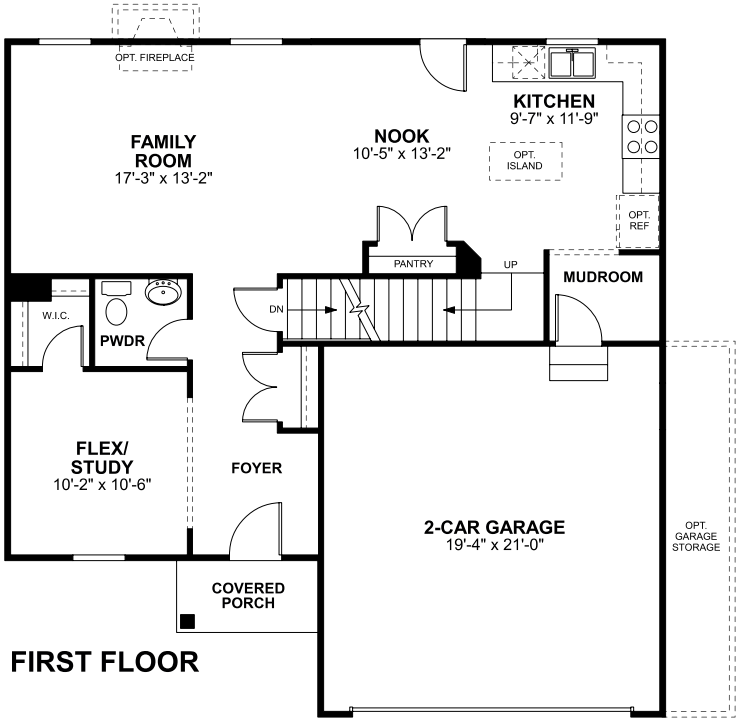

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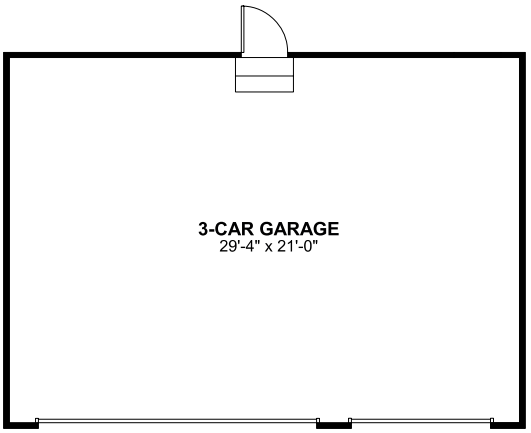

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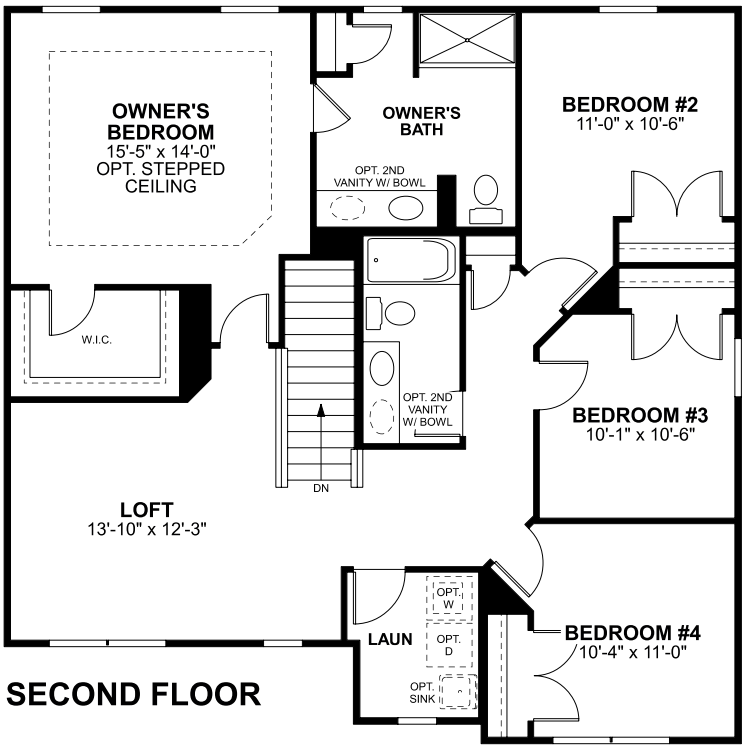

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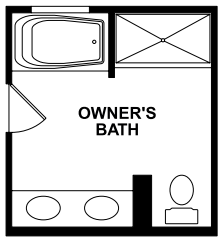
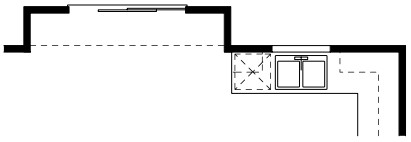


OPTIONAL DELUXE OWNER'S BATH



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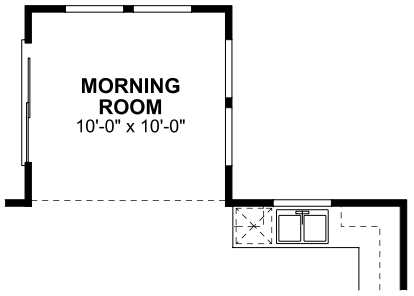

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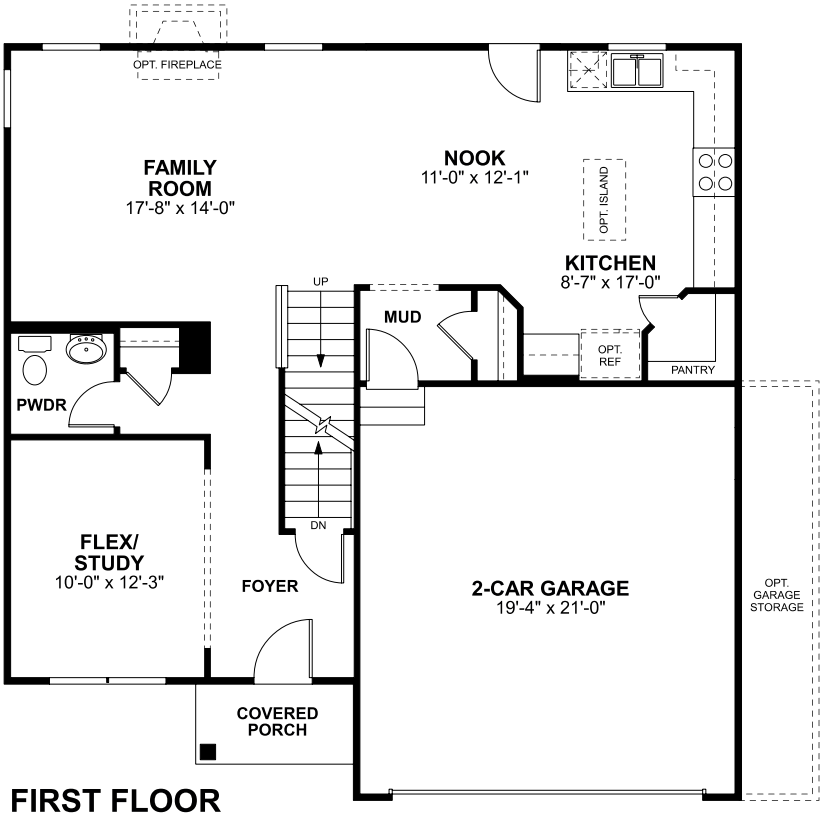

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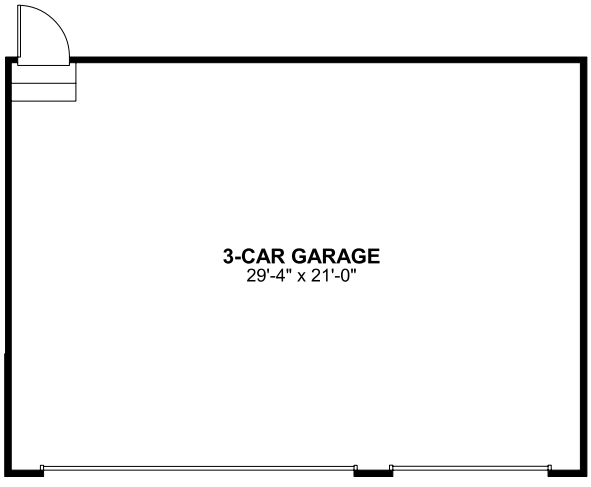
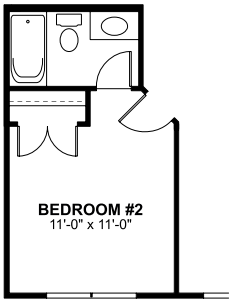
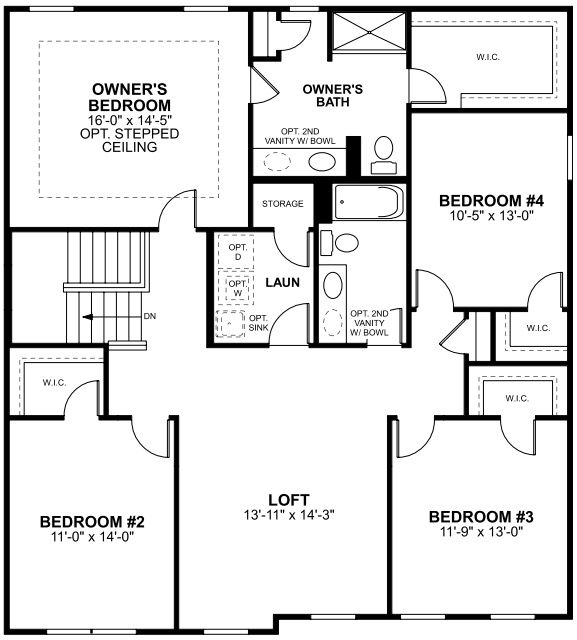


OPTIONAL 3-CAR GARAGE

DET-JULIET-FL-VARIOUS PLANS



OPTIONAL BATH 3



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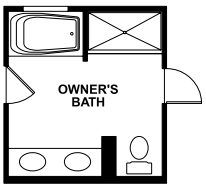
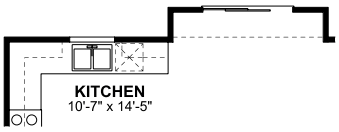


OPTIONAL DELUXE OWNER'S BATH

OPTIONAL BEDROOM #5



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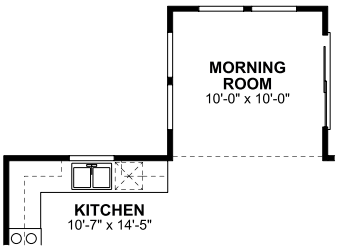
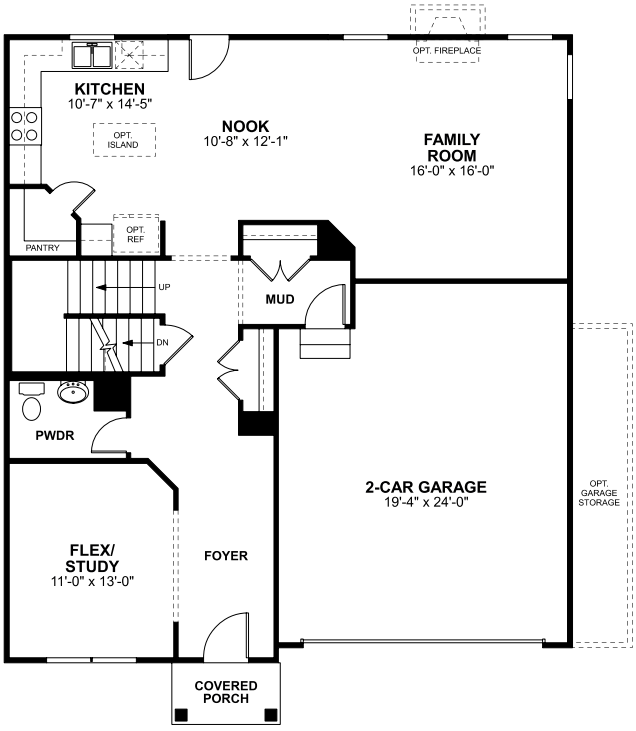


OPTIONAL MORNING ROOM



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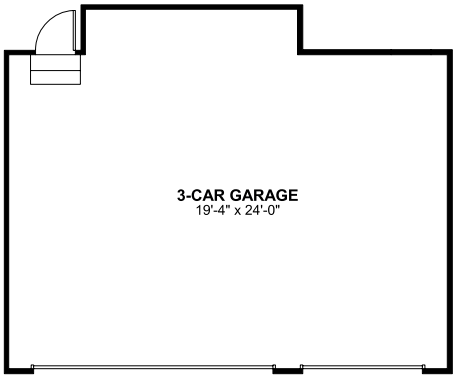

OPTIONAL 3-CAR GARAGE

2/28/2023

To Whom It May Concern,

This letter is regarding the proposed Heritage Farms development.

As a homeowner on N. Freer and father of 2 I am extremely concerned with the traffic impact of new development in that specific area.

The only way those residents could go any direction but East is to go through residential areas, specifically N. Freer, McKinley, and Dewey.

These 3 streets are already being treated as a bypass or access point to M 52. The 25 MPH speed limit on N. Freer is a joke. More cars are going 40 than 25, and speed enforcement is virtually nonexistent.

The additional volume will require changes to protect the kids walking to, from, and between the multiple schools on N. Freer and McKinley.

The B2B trail is also on N. Freer and generates considerable bike traffic. I have seen close calls between bikers and cars and worry that additional volume will increase these incidents.

I would prefer to see future development located in areas that can access M 52 and US-12 without cutting through residential areas.

Regards,

Tim Flutur

1306 N. Freer Rd, Chelsea MI 48118