



GENOA CHARTER TOWNSHIP
Application for Site Plan Review

TO THE GENOA TOWNSHIP PLANNING COMMISSION AND TOWNSHIP BOARD:

APPLICANT NAME & ADDRESS: John Moretti, 4242 Bauer Road, Brighton, Michigan 48116
If applicant is not the owner, a letter of Authorization from Property Owner is needed.

OWNER'S NAME & ADDRESS: John Moretti, 4242 Bauer Road, Brighton, Michigan 48116

SITE ADDRESS: 4242 Bauer Road, Brighton, Michigan 48116 PARCEL #(s): 4711-26-200-002

APPLICANT PHONE: (810) 217-4581 OWNER PHONE: (810) 217-4581

OWNER EMAIL: mrmconstruction2244@yahoo.com

LOCATION AND BRIEF DESCRIPTION OF SITE: 1,500 feet south of the Challis Road and Bauer Road intersection. 40.042 Acres. Partially wooded.

On the south side of "Mudd Lake".

BRIEF STATEMENT OF PROPOSED USE: Site Condominium consisting of 19 lots and a Private Road.

THE FOLLOWING BUILDINGS ARE PROPOSED: 19 dwellings

I HEREBY CERTIFY THAT ALL INFORMATION AND DATA ATTACHED TO AND MADE PART OF THIS APPLICATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

BY: Monument Engineering Group Associates

ADDRESS: 298 Veterans Drive, Fowlerville, Michigan 48836

Contact Information - Review Letters and Correspondence shall be forwarded to the following:

1.) Philip A. Rasor, Jr. PE of Monument Engineering Group Associates, Inc. at prasor@monumentengineering.com
Name Business Affiliation E-mail Address

FEE EXCEEDANCE AGREEMENT

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

SIGNATURE: SEE HARDCOPY DATE: _____
PRINT NAME: John Moretti PHONE: (810) 217-4581
ADDRESS: 4242 Bauer Road, Brighton, Michigan 48116

A private road requiring approval of the Township shall be any road providing access to more than four dwelling units or two non-residential principal buildings. This does not include drives within a multiple family complex or parking lot aisles, but does include collector type roadways within such a development.

RECEIVED

APPLICANT: John Moretti

OWNER ADDRESS: 4242 Bauer Road, Brighton, Michigan 48116

SITE ADDRESS: 4242 Bauer Road, Brighton, Michigan 48116

APPLICABILITY OF PUBLIC VS. PRIVATE ROAD STANDARDS

All private roads in Genoa Township shall be constructed to the standards of the Livingston County Road Commission unless the Planning Commission and Township Board determine your road qualifies under the following ordinance criteria:

1. Explain how there will be no need for the roadway to be dedicated as a public road in the future.

The private road is intended to serve 19 residential lots and intersects Bauer Road. Building the road to the public road standards would result in the removal of more trees more disturbance to the natural topography.

2. Explain how dedication of the road as a public street would not result in continuity in the public street system at the present time or in the future.

There is no connection to Brighton Estates Subdivision. No continuity is available to this roadway system.

3. What uses (number of lots, number of residential units, number of buildings, etc) will have access from the private road. Will the expected traffic volumes along the roadway be below three hundred vehicles per average weekday, based on accepted trip generation figures?

There are 19 Lots to utilize this road, and they generate less than 50 trips per day.

4. Are there any significant natural features such as mature trees, natural slopes, wetlands or other water bodies would be preserved through construction and maintenance as a private road?

The site has natural sloping topography and is partially wooded. Design attempts to minimize impact to trees and natural topography.

5. What financial and administrative mechanisms will be provided to ensure maintenance of the private road?

A private road easement, maintenance agreement and funding requirement will be part of the Deed Documents for this PUD.

AFFIDAVIT

The undersigned says that they are the Owner (owner, lessee, or other specified interest) involved in this petition and that the foregoing answers and statements herein contained and the information herewith submitted are in all respects true and correct to the best of his/her knowledge and belief.

By: JOHN MORETTI

Address: 4242 Bauer Road

Phone: 810-217-4581

Contact Information - Review Letters and Correspondence shall be forwarded to the following:

1.) Philip A. Rasor, Jr. PE of Monument Engineering Group Associates, Inc. at ()
Name Business Affiliation Fax No.
prasor@monumentengineering.com

FEE EXCEEDANCE AGREEMENT

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PROJECT NAME: Moretti Estates

PROJECT LOCATON & DESCRIPTION: 4242 Bauer Road Genoa Township
Livingston County, MI 21 Lots being developed as a LRD/PUD on 40 acres

SIGNATURE: SEE HARDCOPY DATE: _____

PRINT NAME: John Moretti PHONE: 810-217-4581

COMPANY NAME & ADDRESS: John Moretti-4242 Bauer Road, Brighton, MI 48116

Commissioner McCreary would like to have Lot #25 contribute to the maintenance of the common areas, including the maintenance of the entrance to the development, etc. Commissioner Rickard agrees. Commissioners Mortensen and Dhaenens disagree. They would like to have Lot #25 pay for the road and storm sewer system maintenance, but not for any of the landscaping. Mr. Gronow does not believe it would be possible to charge Lot #25 for just the maintenance of the common areas, and not the landscaping, mowing, snow removal, etc.

After a brief discussion, Commissioners McCreary and Rickard believe that Lot #25 should pay for all common aspects of the association, such as the roads, the storm sewer system, common areas, site entrance maintenance, insurance, etc. and should only be exempt from the landscaping costs. Mr. Gronow and the Planning Commissioners agree.

The call to the public was made at 7:14 pm with no response.

Moved by Commissioner Mortensen, seconded by Commissioner Dhaenens, to recommend to the Township Board approval of final condominium site plan for Chestnut Springs, subject to the following:

- A revision to the master deed and by-laws reviewed this evening to the effect that Lot #25 will be excluded from homeowner association costs and/or assessments related only to the landscaping of the condominiums.
- Review by the Township attorney.

The motion carried unanimously.

OPEN PUBLIC HEARING # 2... Review of a site plan and impact assessment requesting preliminary site condominium approval for a proposed 19 unit site condominium. The property in question is located on approximately 30.8 acres at 4242 Bauer Road (Parcel #4711-26-200-002) on the west side of Bauer Road between White Pines Drive and Challis Road. The request is petitioned by John Moretti.

- A. Recommendation of Environmental Impact Assessment (1-25-19)
- B. Recommendation of Preliminary Site Plan (1-18-19)

Mr. John Moretti, the property owner, and Mr. Phillip Rasor, the civil engineer, were present.

Mr. Rasor showed the proposed site plan, which will consist of 19 units on approximately 30 acres. He reviewed the details of the lot sizes, the access roads,

common areas, the detention area, etc. They have designed the development to minimize the impact on trees and maintain the natural topography of the site.

Chairman Brown asked the applicant if they have received the review letter dated February 6, 2019 from the Township Planner, Brian Borden. Mr. Rasor stated they have.

The Planning Commissioners and the applicant discussed Item #3 in Mr. Borden's letter. There were concerns with the gates at each entrance of the development. Mr. Moretti wanted the development to be private and avoid people cutting through from the adjacent homes. Ms. VanMarter stated that these gates could cause vehicles to back up on Bauer Road on one side as well as back up and block residential driveways on Quaint Ridge on the other. She noted that Mr. Borden suggested that the Township and/or emergency response agencies may require the applicant to enter into an indemnification/hold harmless agreement to protect these entities in the event a delay is caused by the gate or damage occurs to an emergency vehicle or the gate structure itself.

Mr. Rasor stated they will revisit this issue. They will comply with all of the other concerns raised by Mr. Borden.

Mr. Rasor stated they have received Mr. Markstrom's letter dated February 5, 2019. They will address all of his concerns during final site plan approval.

There was a discussion regarding the Fire Authority's requirement to have a 12,000-gallon fire suppression water tank. Ms. VanMarter stated that this requirement is part of the International Fire Code, which has been adopted by the Township, so it is part of the ordinance, thus a requirement of the Township.

Commissioner Mortensen does not believe this is ready to go to the Township Board for approval. He would like to see the gate issue resolved, and the fire suppression water tank and the storm water concerns raised by the Township Engineer addressed.

The call to the public was made at 8:19 pm with no response.

Moved by Commissioner Dhaenens, seconded by Commissioner McCreary, to postpone Public Hearing #2 for preliminary site condominium approval for a proposed 19 unit site condominium to allow the applicant to address items discussed this evening. **The motion carried unanimously.**

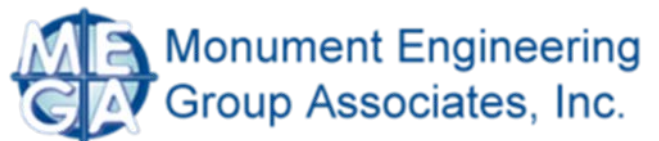


**IMPACT ASSESSMENT
FOR
MORETTI ESTATES
GENOA CHARTER TOWNSHIP
LIVINGSTON COUNTY, MICHIGAN**

PREPARED BY

MONUMENT ENGINEERING GROUP ASSOCIATES, INC.
298 VETERANS DRIVE
FOWLerville, MI 48836
517-223-3512

December 18, 2018
Revised January 25, 2019
Revised February 19, 2019



In accordance with Genoa Charter Township Ordinance Section 18.07, this Impact Assessment has been prepared to assist the Township in their review of the Site Plan for this Project. This report will detail the required information and give a project overview of the development demonstrating its compliance with current Township regulations.

1. PARTY RESPONSIBLE FOR PREPARATION OF IMPACT STATEMENT:

Prepared for John Moretti:

Moretti Construction Services
2244 Euler Road, Suite 102
Brighton, MI 48114
810-217-4581

Prepared by:

Monument Engineering Group Associates, Inc.
298 Veterans Drive
Fowlerville, MI 48836
517-223-3512

Monument Engineering Groups Associates, Inc. (MEGA), has prepared this impact assessment. MEGA is a professional consulting services corporation offering land surveying, civil engineering, and site planning services throughout the State of Michigan and the mid-west. We are licensed to provide engineering and surveying services in Michigan, as well as in Ohio, Indiana, Pennsylvania, Florida and Virginia. We have been providing these services for nearly 40 years to both public and private sector clients.

2. PROJECT SITE LOCATION:

The subject site contains approximately 30.842 acres for the Moretti Estates Development. The original single Parcel 4711-26-200-002 contains approximately 40.04 acres of land which will now be split into two parcels, the larger one for the Moretti Estates and the other retained by the current owner. The original parcel that contains the Moretti Estates site is in the S $\frac{1}{2}$ of the NE $\frac{1}{4}$ of Section 26, T2N-R5 of Genoa Chartered Township, Livingston County, Michigan. This parcel is located along the western side of Bauer Road between the intersections of Bauer Road with Brighton Road to the south, and Bauer Road and Challis Road to the north. To the north of this parcel, it is bordered by Mudd Lake and Parcel 4711-26-200-005, owned by the Livingston County Road Commission (LCRC) and Parcel 4711-26-200-012 a private residence. Along its eastern edge, it is predominantly bordered by Bauer Road and its right-of-way, again owned by LCRC and a private residence

Parcel 4711-26-200-003. To the south and west, the subject site is bounded by Brighton Estates Subdivision, a platted subdivision.

Currently, the site is zoned as LDR (low density residential) and is immediately surrounded by LDR on the north, south and western boundaries. Across Bauer Road, a PRF zoning for Mt. Brighton Skiing Facility is present (PRF is public and recreational facilities). No change in zoning is required for this development.

Included in Exhibit A is a location map, Exhibit B is an aerial photograph, and Exhibit C is the Genoa Charter Township's current Zoning Map for this area. Exhibit D is the Soil Map for the area and Exhibit E is the Existing Drainage Characteristics Map. The final exhibit, Exhibit F, is the delineated Wetland's map for the site's area.

3. PROJECT IMPACT on NATURAL FEATURES:

The proposed site is 30.846 acres of mostly wooded land with about 25% of the land open grasslands. Bounded on the north by Mudd Lake, the east by Bauer Road and to the south and west by the existing Brighton Estates Subdivision, the developer is endeavoring to maintain as much natural vegetation and trees as possible. The regulated wetland along the shoreline of Mudd Lake (identified as Wetland A) will be maintained and not encroached upon, and the larger unregulated wetland (Wetland B) is no longer part of the subject parcel for the Moretti Estates. Wetland C, upland, will be filled-in as part of this project and a permit is in process with MDEQ to allow for this construction. The developer is currently in process with obtaining the necessary permits and concurrence from both the Livingston County Drain Commissioner (LCDC) and MDEQ for these activities.

Soils on the site consist primarily of Fox Sandy Loam and Fox-Boyer Complex Loams. These are best described as very deep, well drained soils. A soil map is included as Exhibit D.

As illustrated in Exhibit E, the site tends to drain towards the north to Mudd Lake with only the southwestern corner of the parcel draining towards Brighton Estates Subdivision. Storm water from the roadway system and some areas will be collected and directed to on-site sedimentation forebays, with an outlet structure that conveys this water to Mudd Lake. As was noted earlier in this document, the proposed method for both water quality and detention will be to use a sedimentation forebay with the lake as the detention basin. To this end, the Developer is working with both MDEQ and LCDC to accomplish this proposed method of treatment.

Landscape treatments will be utilized along the entrance to the site from Bauer Road and canopy trees will be provided to the individual lots that are not currently wooded themselves. In general, the developer intends to preserve much of the existing woodlands and the natural wetland features on the site. These will be used to enhance the natural aesthetic component of the proposed development.

4. PROJECT STORM WATER MANAGEMENT IMPACTS:

To effectively manage the proposed change to the stormwater pattern currently encountered on the site, the Developer is working with the Livingston County Drain Commissioner's (LCDC) Office to maintain the natural look and feel for this site by utilizing smaller sedimentation forebays as the water quality structures for this site, with outlet connecting to Mudd Lake, for detention. The outlet from Mudd Lake is the Brighton Estates Drain.

The Developer is currently evaluating, with the LCDC's direction, the use of Mudd Lake for actual detention of the design storm event for the Moretti Estates Storm Water Management Plan. The proposed system is to convey the site's storm water to a collection site/system to outlet this stormwater run-off into the sedimentation forebays and then to establish an outlet system into Mudd Lake which will eventually discharge into the Brighton Estates Drain and onto Walnut Hills Drain finally emptying into Ore Lake. This will require, in addition to permits from LCDC and MDEQ, easements with all the property owners around Mudd Lake for such use.

There are 4 property owners to be negotiated with, and the easements will be part of the Condominium's Documents recorded for all lots. Brighton Estates already has easements with the Drain Commissioner's Office therefore no easement is required from this platted subdivision for their concurrence on this method of storm water management.

Preliminary meetings indicate there is adequate capacity at the outlet from Mudd Lake into the Brighton Estates Drain to accommodate the site's run-off.

While the site is under construction, soil erosion and dust control measures will be implemented, and Best Management Practices followed. For dust control, water tankers will maintain the optimum moisture content of the soil to prevent dust from occurring to the greatest extent possible. For erosion control, silt fencing, check dams and inlet filter mechanisms will be installed and utilized during this time. Permanent restoration including top soiling and seeding with mulching and watering will occur after all mass grading and earthmoving activities are substantially complete.

For the Final Site Plan Submission, the Developer will also be securing LCDC's Soil Erosion and Sedimentation Control Permit to be in place prior to the start of any construction activities.

5. PROJECT IMPACT ON SURROUNDING LAND USES:

The development is in conformance with the future land use map and current zoning established for this portion of the township. The area is currently zoned for LDR and the proposed development meets this criterion with all lots exceeding 1.0 acre in area and minimum of 150 feet in width of the lot.

Access to this site has been revised to allow use of the private roadway for residents and guests from Bauer Road on the eastern side of the property with no access off-site being proposed for the western side of the development. A shared driveway is being added just west of the entrance to the cul-de-sac for this development eliminating this portion of the previously shown private road.

Noise Levels are expected to be typical of a single-family residential community and within Genoa Township Standards. No site lighting is proposed for this development.

6. PROJECT IMPACT ON PUBLIC FACILITIES and SERVICES:

The development proposes 19 single family residential lots after approval of the site plan. The addition of 19 new single-family homes is likely to have a mix of buyers due to the Developer's more upscale approach to managing the existing site and retaining woodlands and other natural features. Consequently, the anticipated mix will include empty nesters and those with no children in addition to families with children. The overall impact to public facilities, schools, police and fire service is expected to be minimal.

7. PROJECT IMPACT ON PUBLIC UTILITIES:

The development proposes all lots will be serviced by well and septic field systems. Soil Investigations for suitability of septic systems were performed in August of 2018 under the supervision of the Livingston County Health Department personnel and 3 test wells as required by LCHD standards were also drilled and tested. Final approval from the LCHD is anticipated soon for the use of well and septic within this development. Electric, Telephone and Natural Gas Services will be extended underground to the site from Bauer Road and provided for all lots within the development.

8. STORAGE and HANDLING of HAZARDOUS MATERIALS:

The storage and handling of hazardous materials within the site is not anticipated and will be noted as not permitted in the condominium documents for the development.

9. PROJECT IMPACT ON TRAFFIC:

The development proposed for Moretti Estates is to accommodate 19 lots in place of the current 1 large parcel with 1 residence. Bauer Road is an existing two (2)

lane cross section with a north bound and a south bound lane. Using ITE Trip Generation Manual, 7th ed. for Single Family Detached Housing based on the number of proposed dwelling units, the calculated trip generation using the average rate for A.M. and P.M. peak hours of traffic is calculated herein:

A.M. Peak Hour:

$$0.70 \times (19 \text{ residences}) + 12.05 = 25.35 \text{ trips}$$

$$\text{Exiting is } 74\% \text{ so } (.74 \times 25.35) = 18.76 \text{ directional trips}$$

P.M. Peak Hour:

$$\ln(T) = 0.89 \times \ln(19 \text{ residences}) + 0.61 = 3.23$$

$$e^{(3.23)} = 25.27 \text{ trips} \times 64\% \text{ (entering)} = 16.17 \text{ directional trips}$$

As shown from the above calculations, under fully developed conditions, this site will generate less than 20 directional trips in both A.M. and P.M. Peak Hours of Traffic. Reviewing the Township Zoning requirements of 18.07.09 with less than 50 directional trips during peak hour, no Traffic Impact Study is required.

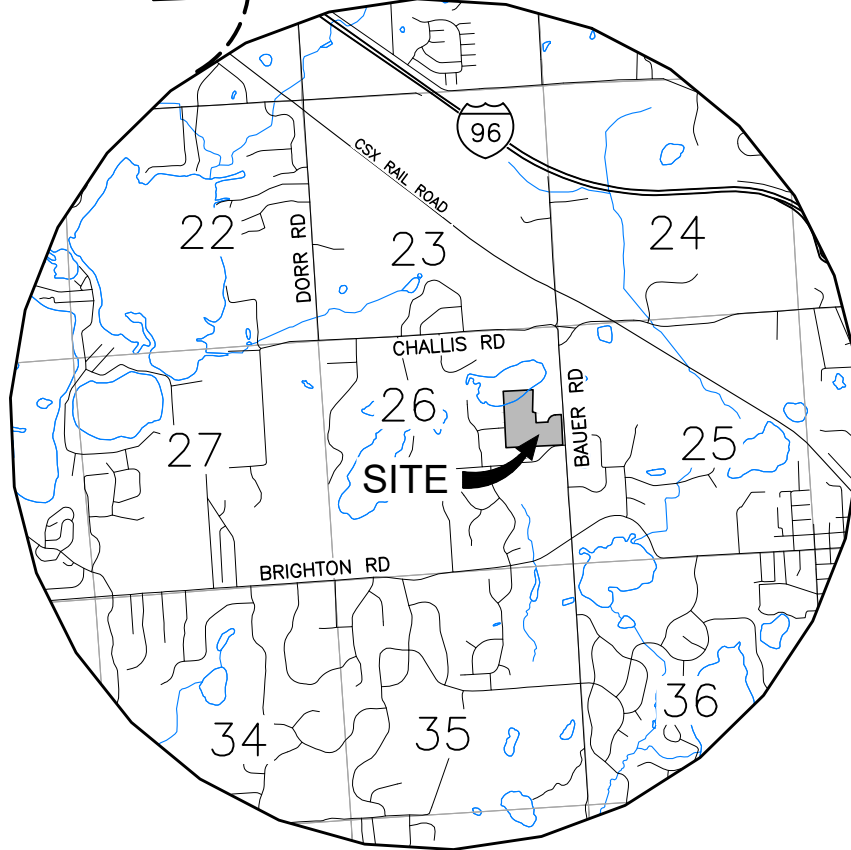
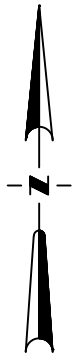
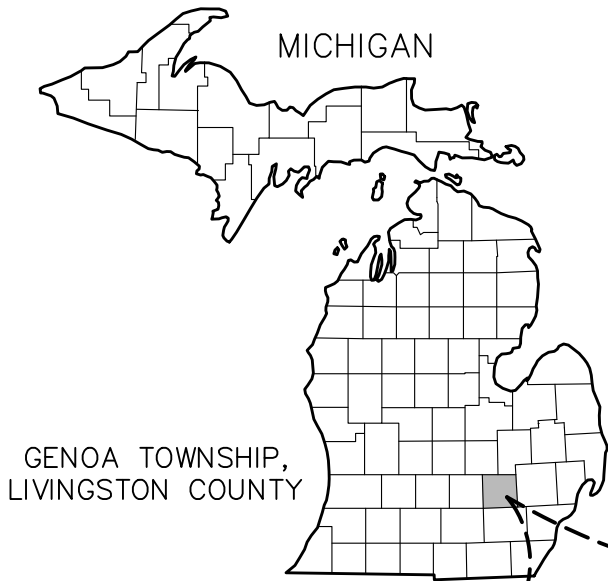
10. PROJECT IMPACT ON HISTORICAL and CULTURAL RESOURCES:

The development is not known to have any historic or cultural resources on this site, and it is not believed any historic or cultural resources will be affected by the proposed development. Mudd Lake is not a natural lake, so no anticipated cultural resources are expected around its shoreline.

11. SPECIAL PROVISIONS:

The development will need no special provisions as part of its development.

EXHIBIT A LOCATION MAP



ENGINEERS · SURVEYORS · CONSULTANTS · LANDSCAPE
ARCHITECTS · LAND PLANNERS

298 VETERANS DRIVE
FOWLerville,
MICHIGAN 48836
(OFFICE) 517-223-3512

PROJECT:

**MORETTI
ESTATES**

NE 1/4, SEC. 26, T2N-R5E GENOA TWP

SCALE: NTS		DATE: 1/25/2019	DR. BY: MLL	CHK: PR
SHEET: 1 of 7		FILE : 18-025_IMPACT EXH	JOB No. 18-025	

EXHIBIT B AERIAL



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ARCHITECTS · LAND PLANNERS

298 VETERANS DRIVE
FOWLERVILLE,
MICHIGAN 48836
(OFFICE) 517-223-3512

PROJECT:

**MORETTI
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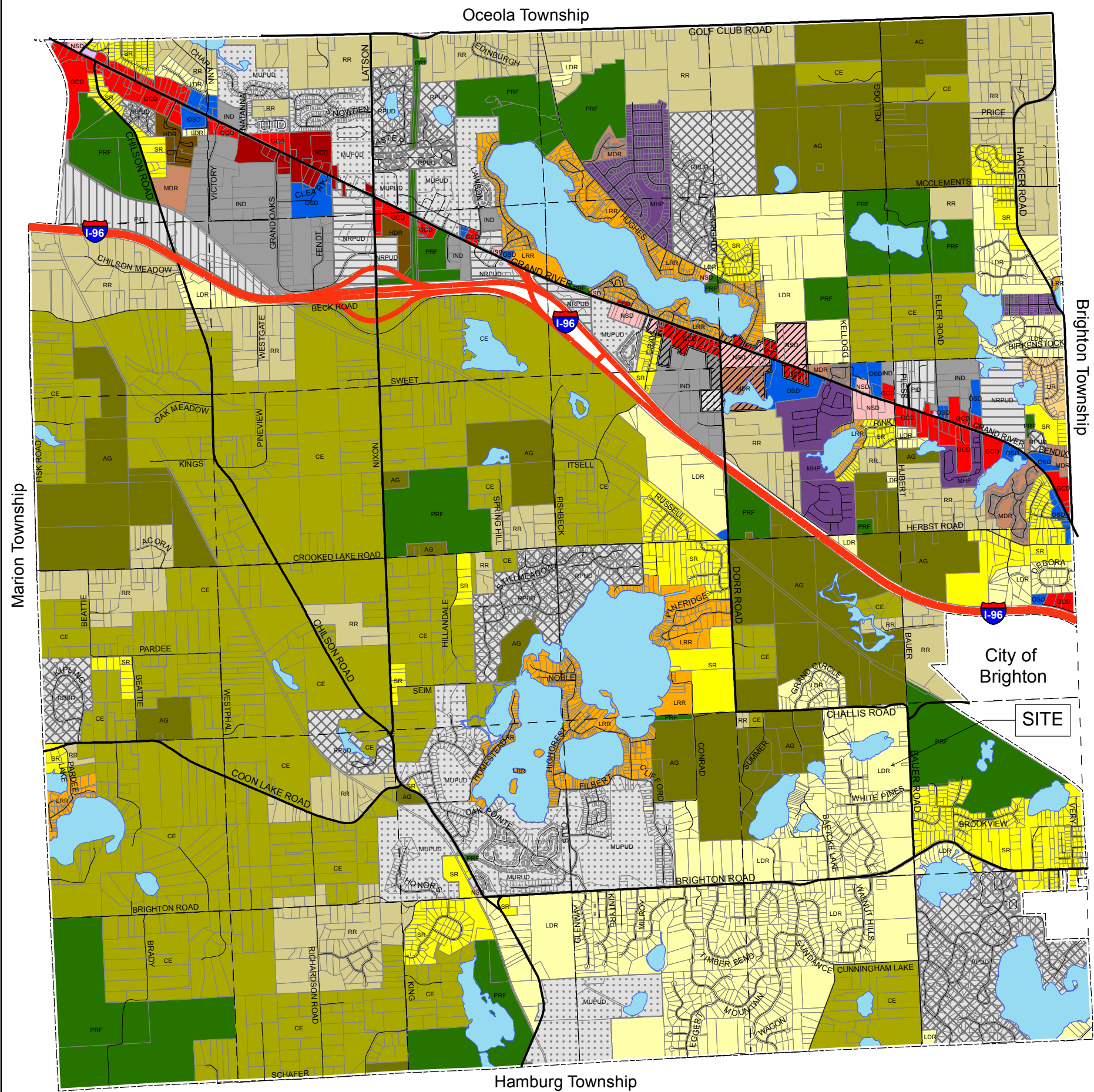
NE 1/4, SEC. 26, T2N-R5E GENOA TWP

	DATE: 1/25/2019	DR. BY: MLL	CHK: PR
SCALE: 1" = 1,000'	SHEET: 2 of 7	FILE : 18-025_IMPACT EXH	JOB No. 18-025

EXHIBIT C

Zoning Map

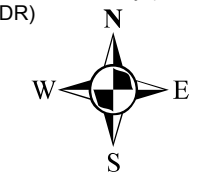
Genoa Charter Township Livingston County, Michigan



Legend

	AG		RC
	CE		GC
	RR		NS
	LDR		OS
	SR		NRPUD
	LRR		IND
	UR		PID
	MDR		PRF
	HDR		MUPUD
	RPUD		RDPUD
	MHP		Town Center

Updates:
 04/11/08 - Multiple Revisions (42 parcels)
 09/12/08 - 4489 & 4495 Oak Pointe Drive (LRR)
 02/25/11 - United Way Conditional Rezoning (OSD)
 10/2/12 - Corrected Map re. court stipulation for Pet Ritz from 05/18/2006 (AG)
 11/29/12 - Corrected Map re. Zeeb property approved 3/15/04 (MUPUD)
 01/07/13 - Dakota (14-100-014) Conditional Rezoning (OSD)
 10/10/13- Corrected Map re. (29-200-036) - was rezoned 8/18/2003 (RPUD)
 11/13/2014 - Removed Lucy Rd 425 Area, Rezone Latson Elementary (09-100-036;RR-NRPUD)
 Correct Brighton Lake Rd. Error (RPUD-LDR)



1 inch = 3,500 feet

Official Zoning Map
 Adopted May 2, 2005
 Created by: Kelly VanMarter
 Basemap layers provided by:
 Livingston County GIS

EXHIBIT D SOIL MAP



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MICHIGAN 48836
(OFFICE) 517-223-3512

PROJECT:

**MORETTI
ESTATES**

NE 1/4, SEC. 26, T2N-R5E GENOA TWP

SCALE: 1" = 250'		DATE: 1/25/2019	DR. BY: MLL	CHK: PR
SHEET: 3 of 7		FILE : 18-025_IMPACT EXH	JOB No. 18-025	

EXHIBIT D

SOIL MAP UNIT LEGEND

Livingston County, Michigan (MI093)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BtB	Boyer-Oshtemo loamy sands, 2 to 6 percent slopes	1.75	4.38%
FoA	Fox sandy loam, 0 to 2 percent slopes	0.17	0.42%
FoB	Fox sandy loam, 2 to 6 percent slopes	6.56	16.39%
FoC	Fox sandy loam, 6 to 12 percent slopes	4.12	10.30%
FrB	Fox-Boyer complex, 2 to 6 percent slopes	6.18	15.45%

FrD	Fox-Boyer complex, 12 to 18 percent slopes	7.22	18.03%
FrE	Fox-Boyer complex, 18 to 25 percent slopes	4.89	12.20%
FrF	Fox-Boyer complex, 25 to 40 percent slopes	2.79	6.96%
Ho	Houghton muck, 0 to 1 percent slopes	1.96	4.89%
Md	Made land	1.32	3.29%
MoD	Miami loam, 12 to 18 percent slopes	0.02	0.04%
W	Water	3.07	7.66%
Totals for Area of Interest		40.04	100.00%



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ARCHITECTS · LAND PLANNERS**

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PROJECT:

**MORETTI
ESTATES**

NE 1/4, SEC. 26, T2N-R5E GENOA TWP

	DATE: 1/25/2019	DR. BY: MLL	CHK: PR
SCALE: 1" = 250'	SHEET: 4 of 7	FILE : 18-025_IMPACT EXH	JOB No. 18-025

EXHIBIT E EXISTING DRAINAGE



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PROJECT:

**MORETTI
ESTATES**

NE 1/4, SEC. 26, T2N-R5E GENOA TWP

SCALE: 1" = 250'		DATE: 1/25/2019	DR. BY: MLL	CHK: PR
SHEET: 5 of 7		FILE : 18-025_JMPACT EXH	JOB No. 18-025	

EXHIBIT F WETLAND MAP



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ARCHITECTS · LAND PLANNERS

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MICHIGAN 48836
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PROJECT:

**MORETTI
ESTATES**

NE 1/4, SEC. 26, T2N-R5E GENOA TWP

		DATE: 1/25/2019	DR. BY: MLL	CHK: PR
SCALE: 1" = 250'	SHEET: 6 of 7	FILE : 18-025_IMPACT EXH	JOB No. 18-025	

REVISED PRELIMINARY SITE PLAN FOR MORETTI ESTATES 4242 BAUER ROAD

LEGAL DESCRIPTION (AS PROVIDED)

(Per survey by: Boss Engineering, Job No.: 16-398, Dated: 12-05-16)

Parcel Tax Number: 4711-26-200-002

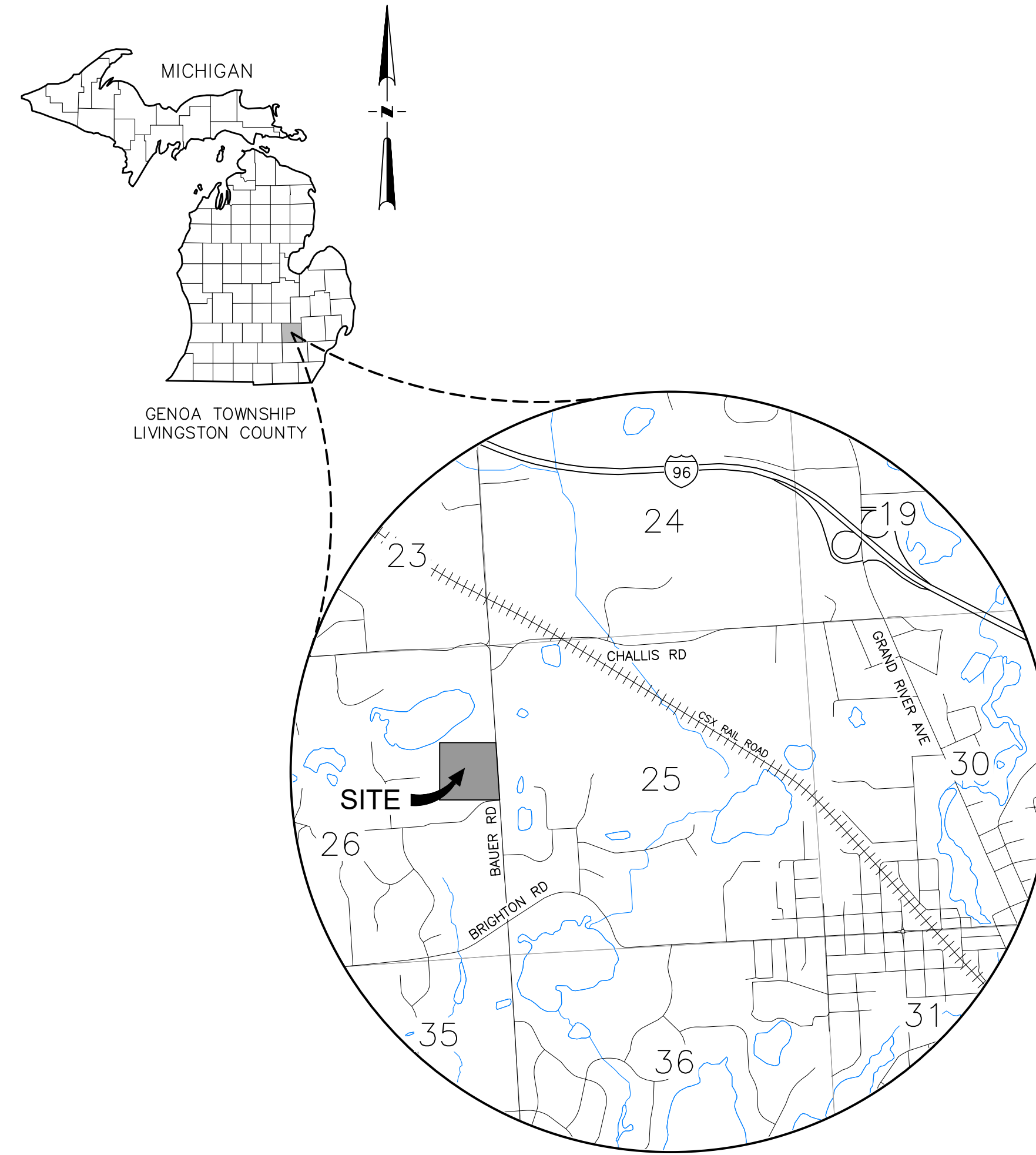
PARCEL 1:

A part of the S 1/2 of the NE 1/4 of Section 26, T2N-R5E, Genoa Township, Livingston County, Michigan, described as follows: Beginning at the East 1/4 corner of said Section 26; thence S89°24'43"W, 1332.50 feet; thence N00°33'49"W, 876.77 feet to the traverse point "B"; thence continuing N00°33'49"W, 444.16 feet; thence N89°02'01"E, 1039.53 feet to traverse point "A", said point bearing N63°57'38"E, 1133.31 feet from traverse point "B"; thence continuing N89°02'01"E, 293.00 feet to the East line of said Section and the centerline of Bauer Road; thence S00°33'49"E along said line 510.13 feet; thence S89°02'01"W, 250.00 feet; thence S00°33'49"E, 87.00 feet; thence N89°02'01"E, 250.00 feet to the East line of said Section and the centerline of Bauer Road; thence S00°33'49"E along said line 732.60 feet to the Point of Beginning, containing 40.04 acres more or less and subject to the rights of the public over the existing Bauer Road.

Also including the use of a 66 foot wide easement over part of White Pines Drive, as recorded in Liber 1115, Page 564, Livingston County Records

BEARING REFERENCE

Bearings are based on legal description as provided by: Boss Engineering, Job No.: 16-398, Dated: 12-05-16.



LOCATION MAP
N.T.S.

DESIGN ENGINEER/SURVEYOR



MONUMENT ENGINEERING GROUP ASSOCIATES, INC

ENGINEERS - SURVEYORS - CONSULTANTS
LANDSCAPE ARCHITECTS - LAND PLANNERS

298 VETERANS DR.,
FOWLERVILLE, MI 48836
PHONE: 517-223-3512

CLIENT

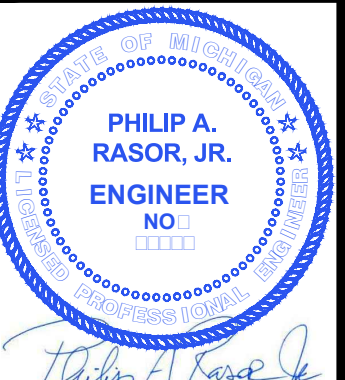
JOHN MORETTI
4242 BAUER RD
BRIGHTON, MI 48116

		PLAN SUBMITTALS			
		1/2/2019 PRELIMINARY SITE PLAN TO TOWNSHIP	1/25/2019 REVISED SITE PLAN TO TOWNSHIP	2/20/2019 REVISED SITE PLAN TO TOWNSHIP	
SHEET INDEX					
		INCLUDED SHEETS			
GENERAL					
SHEET	G-1.0	COVER	●	●	●
SURVEY					
SHEET	V-1.0	TOPOGRAPHIC SURVEY (EXISTING CONDITIONS)	●	●	●
SHEET	V-1.1	AERIAL PLAN	●	●	●
SHEET	V-1.2	SOILS EVALUATION	●	●	●
SHEET	V-1.3	SOIL BORING LOGS	●	●	●
LAYOUT PLAN					
SHEET	C-1.0	OVERALL LAYOUT PLAN	●	●	●
VEHICLE CIRCULATION					
SHEET	C-2.0	EMERGENCY VEHICLE CIRCULATION	●	●	●
GRADING, SOIL EROSION & SEDIMENTATION CONTROL PLAN					
SHEET	C-7.0	OVERALL GRADING PLAN	●	●	●
STORM WATER MANAGEMENT					
SHEET	C-9.0	STORM WATER MANAGEMENT PLAN	●	●	●
LANDSCAPE					
SHEET	L-1.0	LANDSCAPE PLAN AND DETAILS	●	●	●
GENOA TOWNSHIP, LIVINGSTON COUNTY STANDARD DETAILS					

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CLIENT :

JOHN MORETTI
4242 BAUER ROAD
BRIGHTON, MI 48116

COVER

MORETTI ESTATES
4242 BAUER ROAD
PART OF NE 1/4, SEC. 26, T2N-R5E
GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN

DATE	PLAN SUBMITTALS/REVISIONS
1/2/2019	PRELIMINARY SITE PLAN TO TOWNSHIP
1/25/2019	REVISED SITE PLAN TO TOWNSHIP
2/20/2019	REVISED SITE PLAN TO TOWNSHIP

ORIGINAL ISSUE DATE:
1/2/2019

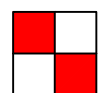
PROJECT NO: 18-025

SCALE: N/A

FIELD: SE
DRAWN BY: DC, ML
DESIGN BY: DD
CHECK BY: PR

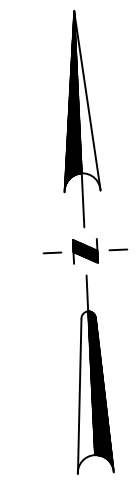
G-10

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MORETTI ESTATES
TOPOGRAPHIC SURVEY
EXISTING CONDITIONS

NE COR.
SEC. 26
T2N-R5E
K-09
(L.S.C. #361m)



REFERENCE INFO

WM: GENOA TOWNSHIP
Received: N/A

SAN: GENOA TOWNSHIP
Received: N/A

STORM: TOWNSHIP/COUNTY
Received: N/A

GAS: CONSUMERS GAS
Received: 4/9/18

ELEC: DTE ENERGY
Received: 4/25/18

PHONE/CABLE: AT&T ~ COMCAST
Received: 4/12/18 ~ 4/10/18

DRAIN: LIVINGSTON CO. DRAIN COMMISSIONER
Received: 4/9/18

AERIAL PHOTOGRAMMETRY

TOPOGRAPHIC DATA COLLECTED FOR THE ENTIRE SITE.

TOPOGRAPHIC CONTOURS BASED ON AERIAL
CONTOUR INTERVAL: 2 FOOT
VERTICAL DATUM: NAVD88
DATE OF PHOTOGRAPHY: 4/24/2018

EXISTING LEGEND

DECIDUOUS TREE, CONIFEROUS TREE, SHRUB
TREE LINE/ CANOPY
DITCH/ DRAINING COURSE
UG TELE, MH, TELE PED, CABLE PED
UG FIBER, PED, LINE MARKER, VAULT
UG ELEC, MH, TRANSFORMER, AC UNIT, METER
OH ELEC, UTIL POLE, GUY WIRE
GROUND LIGHT, POLE, POLE W/ ARM LT
LIGHT MH, LT CTRL BOX, PH. BOOTH, PARK, METER
ELEC HAND HOLE, OUTLET, SIGNAL MH, SIGNAL BOX
UG GAS, MH, VALVE, LINE MARKER
GAS WELL, METER, VENT
WATER MAIN, MH, VALVE IN BOX, HYDRANT, FDC
WATER WELL, METER, STOP BOX, POST INDICATOR VALVE
IRRIGATION CONTROL VALVE, SPRINKLER HEAD
STORM SEWER, MH, CB, INLET, YARD DRAIN
CULVERT/ END SECTION
SANITARY SEWER, MH, CLEAN OUT
COMBINED SEWER, MH
STEAM LINE, MH
MISC. MANHOLE, HAND HOLE, HAND BOX
SIGN, FLAG POLE, GUARD POST, ROCK
SECTION LINE, SECTION CORNER
SURVEY CONTROL POINT, BENCHMARK
FOUND IRON ROD (FIR), FD MON, FD PK
SET IRON ROD (SIR), SET PK, MAG NAIL
SPOT ELEVATION
CONTOUR
FENCE
GUARD RAIL
RAILROAD SIGNAL, SIGNAL BOX
ROW MARKER

EX. ASPHALT
EX. CONCRETE
EX. GRAVEL

SOIL BORING LEGEND

- SOIL BORINGS (SB#)
- TEST WELLS (TW#)
- PERCOLATION TEST SITE (#)

SOILS CLASSIFICATIONS

- BtB BOYER-OSHTEMO LOAM, 2-6% SLOPES
- FoA FOX SANDY LOAM, 0-2% SLOPES
- FoB FOX SANDY LOAM, 2-6% SLOPES
- FoC FOX SANDY LOAM, 6-12% SLOPES
- FrB FOX-BOYER COMPLEX, 2-6% SLOPES
- FrD FOX-BOYER COMPLEX, 12-18% SLOPES
- FrE FOX-BOYER COMPLEX, 18-25% SLOPES
- FrF FOX-BOYER COMPLEX, 25-40% SLOPES
- Ho HOUGHTON MUCK, 0-1% SLOPES
- Md MADE LAND
- MoD MIAMI LOAM, 12-18% SLOPES
- W WATER

BENCHMARKS

Datum: NAVD88

BM A:
RAIL ROAD SPIKE IN WEST FACE UTILITY POLE, 26± WEST OF CENTERLINE OF BAUER ROAD & 539± NORTH FROM SUBJECT'S SOUTH PROPERTY LINE.
Elev = 986.91

BM B:
RAIL ROAD SPIKE IN WEST FACE UTILITY POLE, 28± WEST OF CENTERLINE OF BAUER ROAD & 58± NORTH FROM SUBJECT'S SOUTH PROPERTY LINE.
Elev = 970.48

BM C:
RAIL ROAD SPIKE IN WEST FACE UTILITY POLE, 439± WEST OF CENTERLINE OF BAUER ROAD & 565± SOUTH FROM SUBJECT'S NORTH PROPERTY LINE.
Elev = 1013.57

FLOOD ZONE

FEMA map scales do not supply sufficient level of detail to plot accurately. Zones if plotted herein are approximate.

By scaled map location and graphic plotting only, the subject property appears to lie entirely in Zone (X) Area determined to be outside of the 0.2% annual chance flood plain according to the Flood Insurance Rate Map for the County of Livingston, Community Panel No. (26093C0340D), Effective Date 9/17/2008.

ENGINEERS - SURVEYORS
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PHILIP A. RASOR, JR.
ENGINEER
NO. 11111

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CLIENT :

JOHN MORETTI
4242 BAUER ROAD
BRIGHTON, MI 48116

TOPOGRAPHIC SURVEY (EX. COND.)

MORETTI ESTATES
4242 BAUER ROAD
PART OF NE 1/4, SEC. 26, T2N-R5E
GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN

DATE	PLAN SUBMITTALS/REVISIONS
1/2/2019	PRELIMINARY SITE PLAN TO TOWNSHIP
1/25/2019	REVISED SITE PLAN TO TOWNSHIP
2/20/2019	REVISED SITE PLAN TO TOWNSHIP

ORIGINAL ISSUE DATE:
1/2/2019

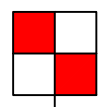
PROJECT NO: 18-025

SCALE: 1" = 100'

FIELD: SE
DRAWN BY: DC, ML
DESIGN BY: DD
CHECK BY: PR

V-10

NOT FOR CONSTRUCTION



**MORETTI ESTATES
AERIAL PLAN**

NE COR.
SEC. 26
T2N-R5E
K-09
(L.S.C. #361m)



NOTES

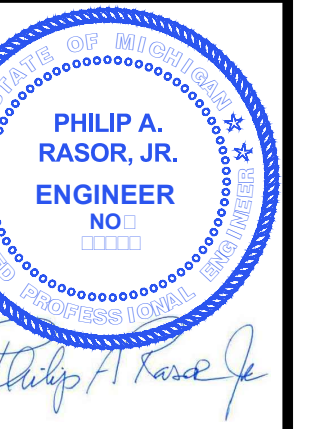
- MORETTI ESTATES DEVELOPMENT IS 30.846 ACRES
- REMAINING 9.196 ACRES OF SUBJECT PARCEL TO REMAIN AS IS.

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CLIENT :

JOHN MORETTI
4242 BAUER ROAD
BRIGHTON, MI 48116

AERIAL PLAN
MORETTI ESTATES
4242 BAUER ROAD
PART OF NE 1/4, SEC. 26, T2N-R5E
GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN

PLAN SUBMITTALS/REVISIONS	DATE
PRELIMINARY SITE PLAN TO TOWNSHIP	1/2/2019
REVISED SITE PLAN TO TOWNSHIP	1/25/2019
REVISED SITE PLAN TO TOWNSHIP	2/20/2019

ORIGINAL ISSUE DATE:
1/2/2019

PROJECT NO: 18-025

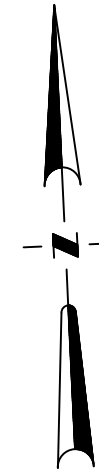
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0 1/2" 1"

FIELD: SE
DRAWN BY: DC, ML
DESIGN BY: DD
CHECK BY: PR

V-11

NOT FOR CONSTRUCTION

MORETTI ESTATES
SOILS EVALUATION



SOIL BORING LEGEND

- SOIL BORINGS (SB#)
- TEST WELLS (TW#)
- PERCOLATION TEST SITE (#)

Moretti Estates

Westside of Bauer Rd. Between Challis and White Pines Dr.
Genoa Township, Section 26

Soils Logged by: Aaron Aumock, LCHD
Miranda, Monument Engineering
David, Monument Engineering

Developer: John Moretti

Conducted on: August 22, 2018 & August 29, 2018

PERCOLATION TEST SITES

1) 0-.5' .5'-2.5' 2.5'-4.5' 4.5'-8.5'	Topsoil Sandy Loam Loamy Sand Sandy Loam	7) 0-.5' .5'-4' 4'-9'	Topsoil Sandy Loam Sandy Clay Loam
2) 0-.5' .5'-9'	Topsoil Loamy Sand	8) 0-.5' .5'-2' 2'-6' 6'-9'	Topsoil Sandy Clay Loam Sandy Loam Loam
3) 0-.5' .5'-8.5'	Topsoil Loamy Sand	9) 0-.5' .5'-3' 3'-8'	Topsoil Sandy Clay Loam Medium Sand
4) 0-.5' .5'-7' 7'-9.5'	Topsoil Loamy Sand Sandy Loam	10) 0-.5' .5'-8'	Topsoil Loamy Sand
5) 0-.5' .5'-3' 3'-9'	Topsoil Loam Sandy Loam	11) 0-.5' .5'-5.5' 5.5'-9.5'	Topsoil Clay Loam Loamy Sand
6) 0-.5' .5'-2' 2'-6' 6'-8' 8'-9.5'	Topsoil Loam Sandy Loam Sandy Clay Loam Clay Loam	12) 0-.5' .5'-6' 6'-10'	Topsoil Clay Loam Loamy Sand
13) 0-.5' .5'-6' 6'-10'	Topsoil Clay Loam Loamy Sand	24) 0-.5' .5'-7' 7'-10'	Topsoil Clay Loam Sandy Loam
14) 0-.5' .5'-3' 3'-9'	Topsoil Clay Loam Medium Sand	25) 0-.5' .5'-5.5' 5.5'-9'	Topsoil Sandy Clay Loam Loamy Sand
15) 0-.5' .5'-8'	Topsoil Clay Loam	26) 0-.5' .5'-3' 3'-4' 4'-8.5'	Topsoil Clay Loam (Fill) Peat Marl
16) 0-.5' .5'-9'	Topsoil Clay Loam	27) 0-.5' .5'-4' 4'-8'	Topsoil Clay Loam Loamy Sand
17) 0-.5' .5'-9'	Topsoil Clay Loam	28) 0-.5' .5'-4' 4'-9'	Topsoil Sandy Loam Loamy Sand
18) 0-.5' .5'-11'	Topsoil Clay Loam	29) 0-.5' .5'-4' 4'-9'	Topsoil Sandy Loam Loamy Sand
19) 0-.5' .5'-3' 3'-8'	Topsoil Sandy Clay Loam Coarse Sand	30) 0-.5' .5'-2' 2'-9'	Topsoil Sandy Loam Loamy Sand
20) 0-.5' .5'-4.5' 4.5'-9'	Topsoil Sandy Clay Loam Medium Sand	31) 0-.5' .5'-2' 2'-9'	Topsoil Sandy Loam Loamy Sand
21) 0-.5' .5'-2' 2'-5' 5'-7' 7'-9'	Topsoil Sandy Clay Loam Coarse Sand Sandy Loam Loamy Sand	32) 0-.5' .5'-2' 2'-8'	Topsoil Sandy Loam Coarse Sand
22) 0-.5' .5'-4' 4'-8.5'	Topsoil Clay Loam Loamy Sand	33) 0-.5' .5'-3.5' 3.5'-8.5'	Topsoil Sandy Clay Loam Loamy Sand
23) 0-.5' .5'-6' 6'-10'	Topsoil Clay Loam Sandy Loam	44) 0-.5' .5'-2' 2'-8'	Topsoil Sandy Clay Loam Medium Sand
34) 0-.5' .5'-3' 3'-9'	Topsoil Sandy Loam Loamy Sand	45) 0-.5' .5'-5' 5'-8'	Topsoil Sandy Clay Loam Medium Sand
35) 0-.5' .5'-4' 4'-7' 7'-10'	Topsoil Sandy Loam Sandy Clay Loam Coarse Sand		
36) 0-.5' .5'-3' 3'-5' 5'-9'	Topsoil Sandy Clay Loam Medium Sand Sandy Loam		
37) 0-.5' .5'-4' 4'-9'	Topsoil Sandy Clay Loam Loamy Sand		
38) 0-.5' .5'-4' 4'-8'	Topsoil Clay Loam Coarse Sand		
39) 0-.5' .5'-4' 4'-8'	Topsoil Clay Loam Coarse Sand		
40) 0-.5' .5'-6' 6'-9'	Topsoil Clay Loam Fine Sand		
41) 0-.5' .5'-4' 4'-8'	Topsoil Clay Loam Sandy Loam		
42) 0-.5' .5'-4' 4'-9'	Topsoil Sandy Loam Fine Sand		
43) 0-.5' .5'-3.5' 3.5'-8'	Topsoil Sandy Loam Loamy Sand		

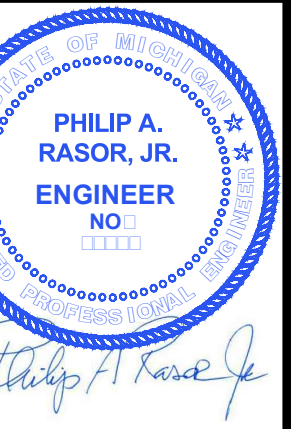
*No Seasonal or actual water table found at time of Soil Evaluation unless noted.

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CLIENT:

JOHN MORETTI
4242 BAUER ROAD
BRIGHTON, MI 48116

SOILS EVALUATION

MORETTI ESTATES
4242 BAUER ROAD
PART OF NE 1/4, SEC. 26, T2N-R5E
GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN

DATE	DESCRIPTION
1/2/2019	PRELIMINARY SITE PLAN TO TOWNSHIP
1/25/2019	REVISED SITE PLAN TO TOWNSHIP
2/20/2019	REVISED SITE PLAN TO TOWNSHIP

ORIGINAL ISSUE DATE:
1/2/2019

PROJECT NO: 18-025

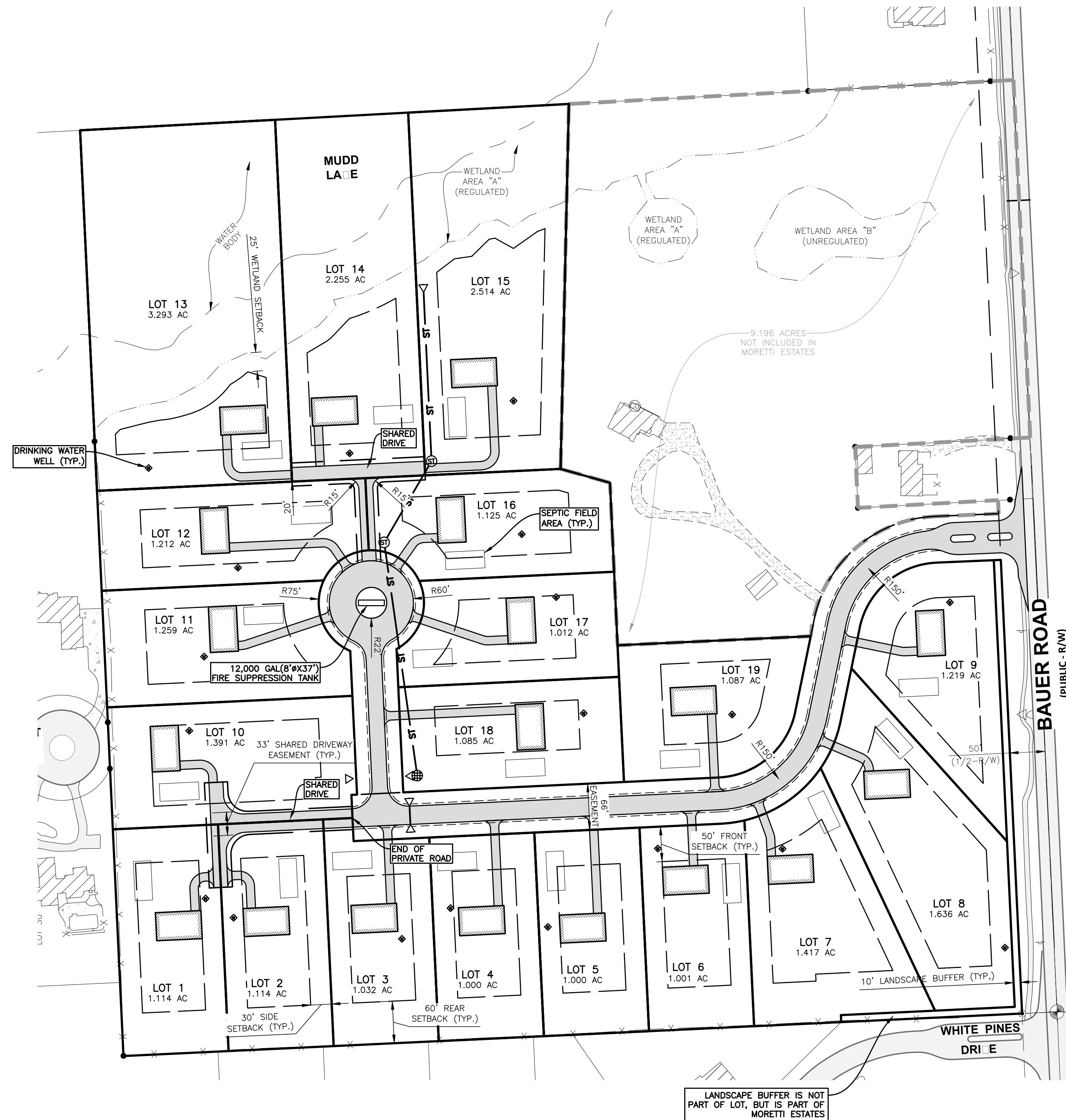
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DESIGN BY: DD
CHECK BY: PR

V-12

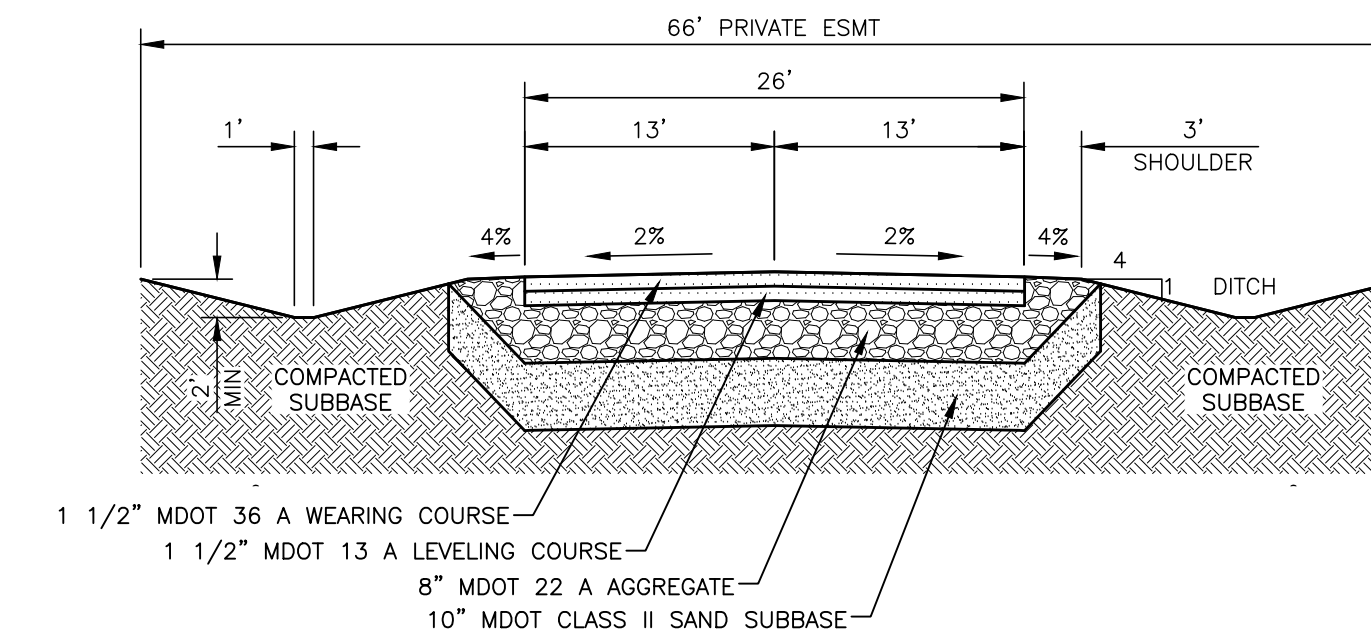
NOT FOR CONSTRUCTION

MORETTI ESTATES
OVERALL LAYOUT PLAN



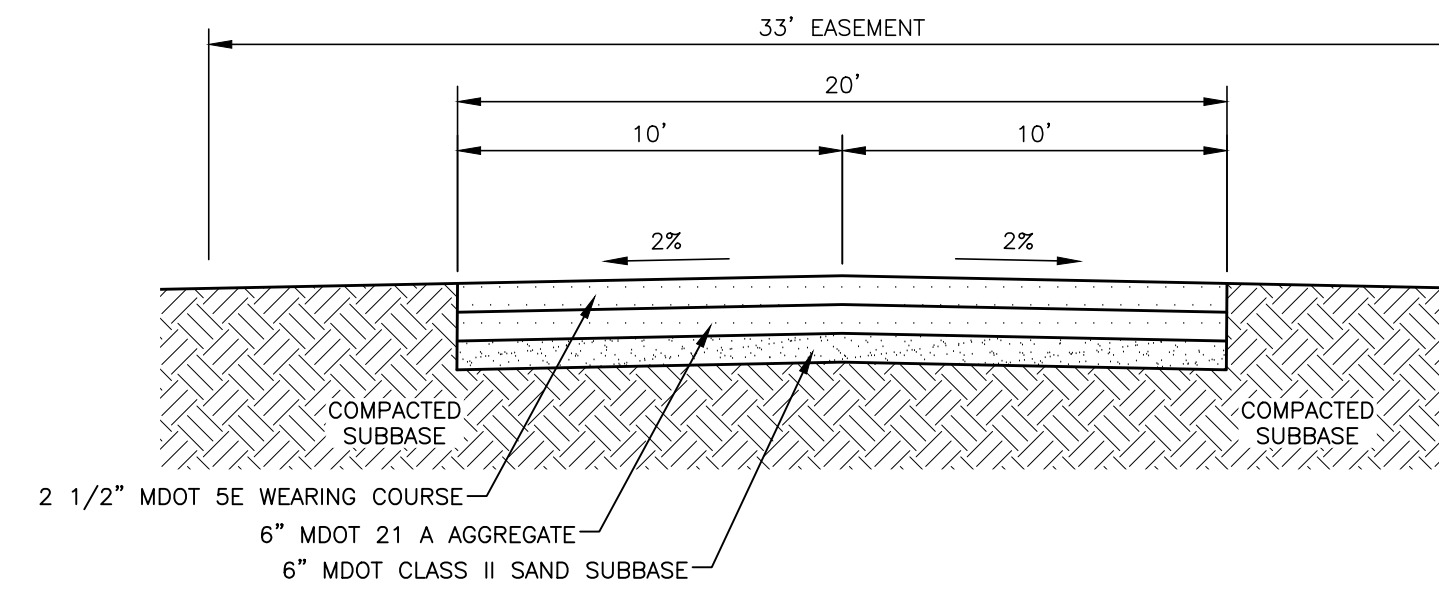
TYPICAL ROAD CROSS SECTION

NOT TO SCALE



TYPICAL SHARED DRIVEWAY SECTION

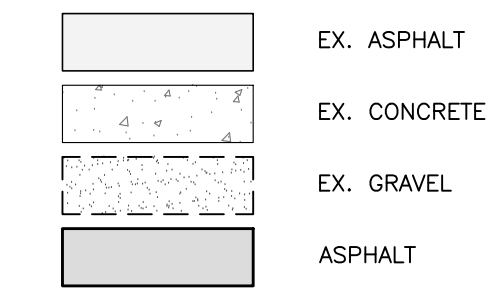
NOT TO SCALE



LOT DATA

Lot #	Total Area (SF)	Total Area (AC)	Lot Width (LF)	Open Water (SF)	Wetland (SF)	Upland (SF)	Upland+25% Wetland (SF)
1	48,526	1.114	150	0	0	48,526	48,526
2	48,526	1.114	150	0	0	48,526	48,526
3	44,962	1.032	150	0	0	44,962	44,962
4	43,575	1.000	150	0	0	43,575	43,575
5	43,575	1.000	150	0	0	43,575	43,575
6	43,611	1.001	150	0	0	43,611	43,611
7	61,731	1.417	150	0	0	61,731	61,731
8	71,266	1.636	159	0	0	71,266	71,266
9	53,099	1.219	222	0	0	53,099	53,099
10	60,613	1.391	174	0	0	60,613	60,613
11	54,829	1.259	170	0	0	54,829	54,829
12	52,803	1.212	159	0	0	52,803	52,803
13	143,457	3.293	278	77,784	25,552	40,121	46,509
14	98,209	2.255	190	31,794	18,551	47,864	52,502
15	109,511	2.514	197	11,512	26,850	71,149	77,861
16	49,021	1.125	166	0	0	49,021	49,021
17	44,080	1.012	155	0	0	44,080	44,080
18	47,250	1.085	150	0	2,125	45,125	45,657
19	47,328	1.087	267	0	0	47,328	47,328

PAVEMENT LEGEND



ZONING INFORMATION

THIS ZONING INFORMATION IS TAKEN FROM GENOA TOWNSHIP ZONING ORDINANCE

SUBJECT PARCEL ZONING CLASSIFICATION: (LDR - LOW DENSITY RESIDENTIAL)

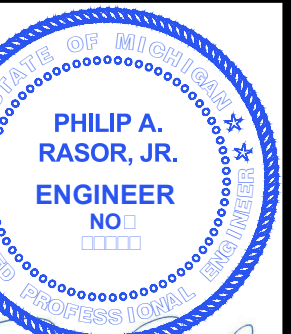
BUILDING SETBACKS:
FRONT: 50'
SIDE: 30'
REAR: 60'
WETLAND: 25'
WATER BODY: 100'

SITE CONDO AREA: 30.84 ACRES

LOT COVERAGE:
CALCULATION: 5,500/77,715 SF = 7.08%
MAXIMUM SF: 2x GROSS GROUND FLOOR AREA OF PRINCIPAL STRUCTURE = 11,000 SF
MAX LOT COVERAGE: 11,000/77,715 SF = 14.15%

ADJACENT ZONING:
SIDE: LDR
SOUTH: LDR
EAST: PRF (PUBLIC & RECREATIONAL FACILITIES)
WEST: LDR

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CONSULTANTS - LAND PLANNERS
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CLIENT :

JOHN MORETTI
4242 BAUER ROAD
BRIGHTON, MI 48116

OVERALL LAYOUT PLAN

MORETTI ESTATES
4242 BAUER ROAD
PART OF NE 1/4, SEC. 26, T2N-R5E
GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN

PLAN SUBMITTALS/REVISIONS	DATE
PRELIMINARY SITE PLAN TO TOWNSHIP	1/2/2019
REVISED SITE PLAN TO TOWNSHIP	1/25/2019
REVISED SITE PLAN TO TOWNSHIP	2/20/2019

ORIGINAL ISSUE DATE:
1/2/2019

PROJECT NO: 18-025

SCALE: 1" = 100'
0 1/2" 1"

FIELD: SE
DRAWN BY: DC, ML
DESIGN BY: DD
CHECK BY: PR

C-10

NOT FOR CONSTRUCTION

SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE OF CONSTRUCTION

1. THE CONTRACTOR SHALL INSTALL SILT FENCE AS SHOWN ON APPROVED PLANS.
2. REMOVE ALL TOPSOIL AND ORGANIC MATTER. TOPSOIL MAY BE STORED ON SITE IN DESIGNATED AREA TO BE USED FOR FUTURE PLANTING AND FILL AREAS. TRUCK REMAINING TOP SOIL OFFSITE AND PROPERLY DISPOSE.
3. ROUGH GRADE AND INSTALL NEW UNDERGROUND UTILITIES INCLUDING SEDIMENTATION FOREBAY. PLACE INLET FILTERS AT PROPOSED CATCH BASINS THROUGHOUT SITE.
4. SEDIMENTATION FOREBAY SHALL BE EXCAVATED, TOP SOILED, AND SEEDED IMMEDIATELY AFTER DEMOLITION WORK IS COMPLETED.
5. CONSTRUCT BUILDINGS.
6. FINISH GRADE AROUND BUILDINGS AND STABILIZE AS SOON AS POSSIBLE. STABILIZE ALL DISTURBED AREAS WITH CLASS A SEED AND MULCH. IN AREAS OF SLOPES OF 1:4 OR STEEPER, CONTRACTOR TO SEED AND INSTALL PEGGED IN PLACE EROSION CONTROL BLANKETS.
7. REPAIR/CLEAN INLET FILTERS AS REQUIRED.
8. INSTALL FINAL LANDSCAPING PER SEPARATE LANDSCAPE PLAN.
9. STONE AROUND OUTLET STANDPIPE STRUCTURE SHALL BE REFRESHED.
10. REMOVE TEMPORARY SOIL EROSION MEASURES ONCE SEEDED VEGETATION HAS ESTABLISHED. CLEAN ALL AFFECTED STORM STRUCTURES AS NECESSARY.

BENCHMARKS

- Datum: NAVD88
- BM A:
RAIL ROAD SPIKE IN WEST FACE UTILITY POLE, 26'± WEST OF CENTERLINE OF BAUER ROAD & 539'± NORTH FROM SUBJECT'S SOUTH PROPERTY LINE.
Elev = 986.91
- BM B:
RAIL ROAD SPIKE IN WEST FACE UTILITY POLE, 28'± WEST OF CENTERLINE OF BAUER ROAD & 58'± NORTH FROM SUBJECT'S SOUTH PROPERTY LINE.
Elev = 970.48
- BM C:
RAIL ROAD SPIKE IN WEST FACE UTILITY POLE, 439'± WEST OF CENTERLINE OF BAUER ROAD & 565'± SOUTH FROM SUBJECT'S NORTH PROPERTY LINE.
Elev = 1013.57

GRADING LEGEND

- X 940.00 TP PROPOSED TOP OF PAVEMENT GRADE
- X 940.00 SW PROPOSED SIDEWALK GRADE
- X 940.00 FG PROPOSED FINISH GRADE
- X 940.00 TC PROPOSED TOP CURB GRADE
- X 939.50 GP PROPOSED GUTTER PAN GRADE
- X 940.0 MA MATCH EXISTING
- X 940.0 RIM PROPOSED RIM GRADE
- X 940.00 ADJ-RIM ADJUSTED RIM GRADE
- - - 900 - - - EXISTING CONTOUR
- 900 — PROPOSED CONTOUR
- ▬▬▬▬▬ LIMITS OF DISTURBANCE

**MORETTI ESTATES
OVERALL
GRADING PLAN**

AERIAL PHOTOGRAMMETRY

TOPOGRAPHIC CONTOURS BASED ON AERIAL.
CONTOUR INTERVAL: 2 FOOT
VERTICAL DATUM: NAVD88
DATE OF PHOTOGRAPHY: 4/24/2018

SESC LEGEND

- SILT FENCE
- ▨ MUD MAT

EROSION CONTROL QUANTITIES

Disturbed Area: 7.876 Acres

QTY	UNIT	ITEM
4,423	LF	SILT FENCE
1	EA	INLET FILTER

MDMB SOIL EROSION & SEDIMENTATION CONTROL MEASURES

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET (MDMB)

EROSION CONTROLS			
KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
E6	MULCH		FOR USE IN AREAS SUBJECT TO EROSION SURFACE FLOWS OR SEVERE WIND OR ON NEWLY SEEDD AREAS.
E8	PERMANENT SEEDING		STABILIZATION METHOD UTILIZED ON SITES WHERE EARTH CHANGE HAS BEEN COMPLETED (FINAL GRADING ATTAINED).

SEDIMENT CONTROLS			
KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
S51	SILT FENCE		USE ADJACENT TO CRITICAL AREAS TO PREVENT SEDIMENT LADEN SHEET FLOW FROM ENTERING THESE AREAS.
S53	STABILIZED CONSTRUCTION ACCESS		USED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE.
S55	SEDIMENT BASIN		AT THE OUTLET OF DISTURBED AREAS AND AT THE LOCATION OF A PERMANENT DETENTION BASIN.
S58	INLET PROTECTION FABRIC DROP		USE AT STORMWATER INLETS, ESPECIALLY AT CONSTRUCTION SITES.

EROSION & SEDIMENT CONTROLS			
KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
ES31	CHECK DAM		USED TO REDUCE SURFACE FLOW VELOCITIES WITHIN CONSTRUCTED AND EXISTING FLOW CORRIDORS.

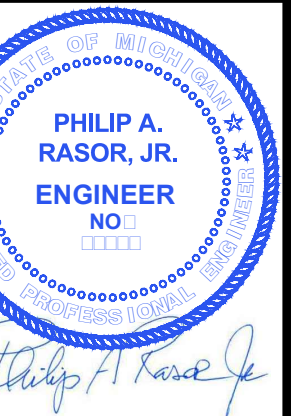
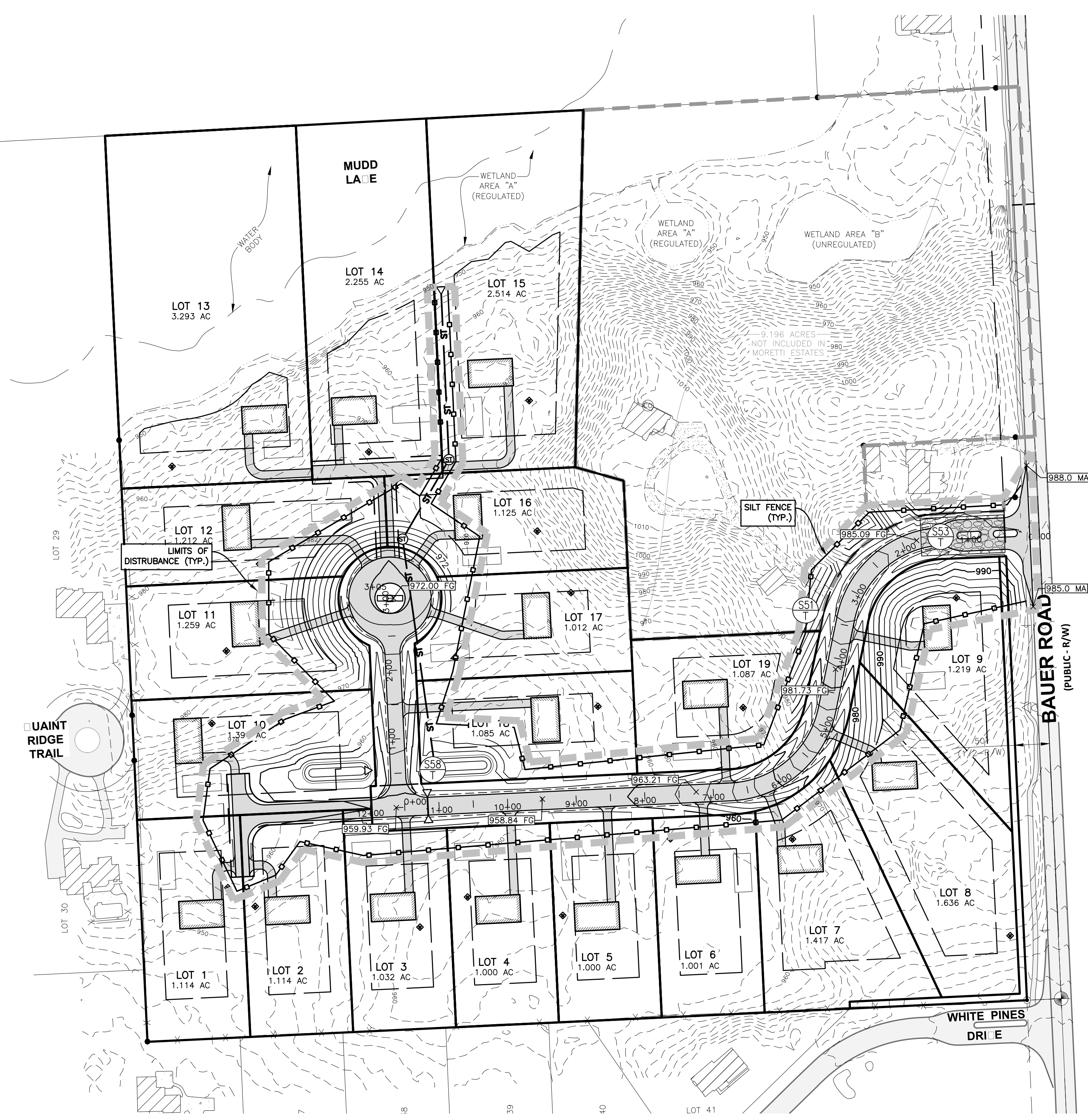
- XX T TEMPORARY
- XX P PERMANENT

EROSION CONTROL STANDARDS

1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE.
2. DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR FOR EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES, AND ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
3. EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
4. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WHEN REQUIRED AND AS DIRECTED ON THESE PLANS. CONTRACTOR SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES AND OTHER CHANGES HAS BEEN ACCOMPLISHED.
5. STAGING OF THE WORK WILL BE DONE BY THE CONTRACTOR AS DIRECTED IN THESE PLACES AND AS REQUIRED TO INSURE PROGRESSIVE STABILIZATION OF DISTURBED AREAS.
6. SOIL EROSION CONTROL PRACTICES WILL BE ESTABLISHED IN EARLY STAGES OF CONSTRUCTION BY THE CONTRACTOR. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
7. A CERTIFIED STORM WATER OPERATOR WILL BE NAMED ON THE MDEQ NOTICE OF COVERAGE FOR NPDES AS REQUIRED.

SOIL EROSION CONTROL MAINTENANCE SCHEDULE AND NOTES.

1. CONTRACTOR MUST OBTAIN A SOIL EROSION AND SEDIMENTATION CONTROL PERMIT FROM LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE PRIOR TO COMMENCING WORK.
2. EARTHWORK SHALL BE LIMITED TO THE PROPOSED SITE AS SHOWN ON THE PLAN.
3. CONTRACTOR SHALL INSPECT THE SOIL EROSION/SEDIMENTATION CONTROL DEVICES ONCE A WEEK AND/OR WITHIN 24 HOURS OF A RAINFALL EVENT WHICH RESULTS IN A STORM WATER DISCHARGE FROM THE SITE. ANY DAMAGE TO EROSION CONTROL MEASURES MUST BE REPAIRED IMMEDIATELY.
4. ALL MUD OR DEBRIS TRACKED ONTO EXISTING PUBLIC ROADS FROM THE SITE DUE TO CONSTRUCTION SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
5. SILT FENCE MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY BUILT-UP SEDIMENT WHEN THE SEDIMENT HEIGHT ACCUMULATES TO 1/3 TO 1/2 OF THE HEIGHT OF THE FENCE. THE CONTRACTOR IS RESPONSIBLE TO REMOVE, REPLACE, RETRENCH OR RE-BACKFILL THE SILTATION FENCE SHOULD IT FAIL OR BE DAMAGED DURING CONSTRUCTION.
6. PERMANENT STABILIZATION MUST BE COMPLETED WITHIN 30 DAYS OF FINAL GRADING.
7. ACCESS ROADS MUST BE MAINTAINED AS NECESSARY, TO KEEP THEM EFFECTIVE, NEW LAYERS OF STONE MAY BE ADDED AS OLD LAYERS BECOME COMPACTED. STEPS SHOULD ALSO BE TAKEN TO REPAIR THE ACCESS ROADS IF RUTS OR PONDING WATER APPEARS.
8. INLET FILTERS SHOULD BE INSPECTED FOR BUILDUP OF SILT AND OTHER DEBRIS. THIS IS EVIDENT IF GEOTEXTILE/SOD STRUCTURE IS CAUSING FLOODING. MAINTENANCE WOULD CONSIST OF REMOVING OF SEDIMENTS WITH A STIFF BRISTLE BROOM OR SQUARE POINT SHOVEL. IF INLET FILTER IS BEYOND THIS LEVEL OF REPAIR, IT MAY BE NECESSARY TO REPLACE BOTH THE SOD AND GEOTEXTILE FILTER.
9. IF SOIL EROSION/SEDIMENT CONTROL MEASURES ARE INADEQUATE FOR THE SITE. THE PROPER EROSION CONTROL AUTHORITY MUST BE NOTIFIED.



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One-Call

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Notification
Organization

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CLIENT :

JOHN MORETTI
4242 BAUER ROAD
BRIGHTON, MI 48116

OVERALL GRADING PLAN

MORETTI ESTATES
4242 BAUER ROAD
PART OF NE 1/4, SEC. 26, T2N-R5E
GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN

DATE	DESCRIPTION
1/2/2019	PRELIMINARY SITE PLAN TO TOWNSHIP
1/25/2019	REVISED SITE PLAN TO TOWNSHIP
2/20/2019	REVISED SITE PLAN TO TOWNSHIP

ORIGINAL ISSUE DATE:
1/2/2019

PROJECT NO: 18-025

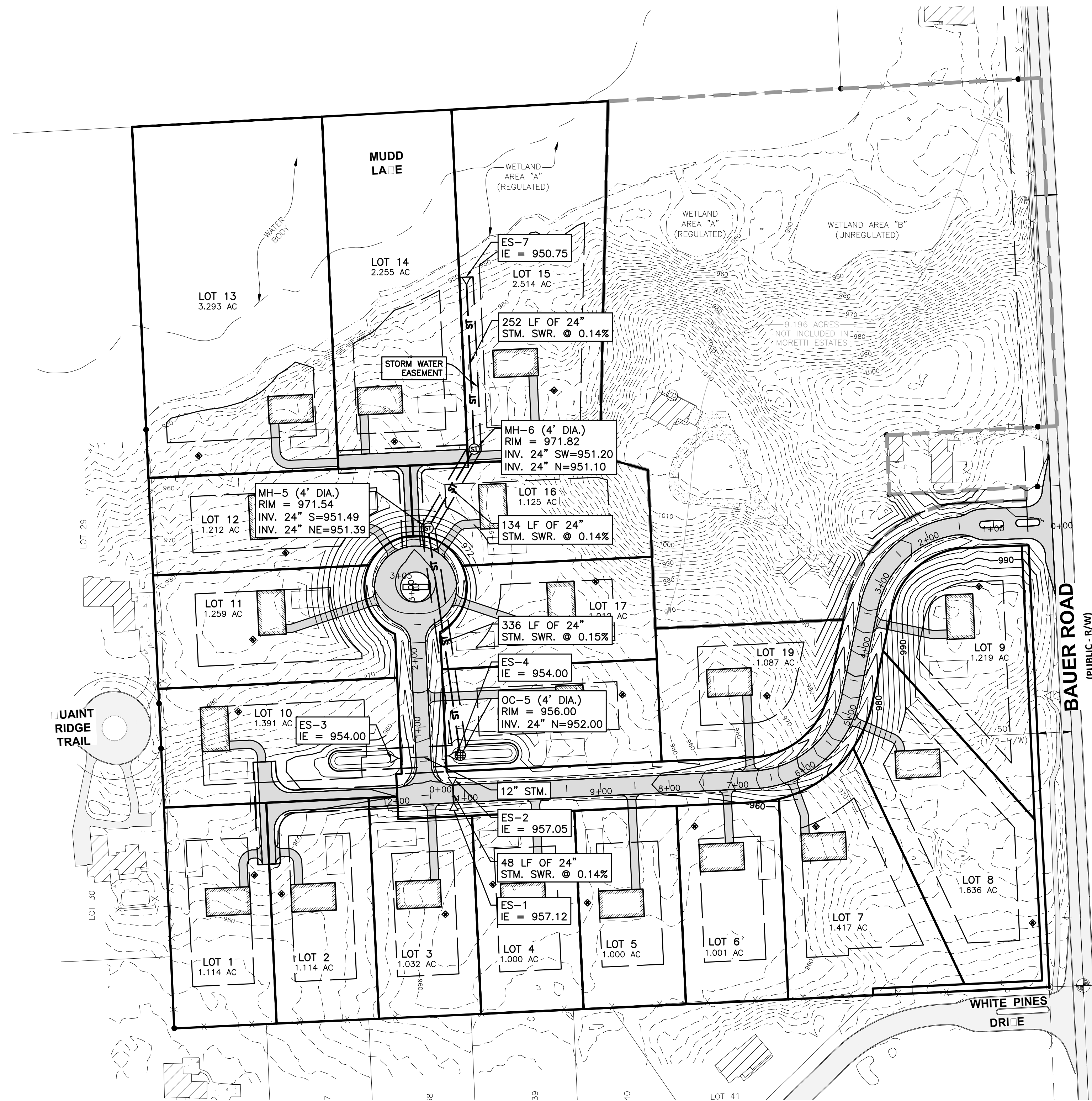
SCALE: 1" = 100'
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FIELD: SE
DRAWN BY: DC, ML
DESIGN BY: DD
CHECK BY: PR

C-7.0

NOT FOR CONSTRUCTION

**MORETTI ESTATES
STORM WATER
MANAGEMENT PLAN**



STORM WATER CALCULATIONS

SITE DATA

Tributary Area (A):	40.54 Acres
Compound Runoff Coefficient (C):	0.26
Design Constant (K _d):	10.70
Maximum Permission Unit Outflow Rate:	0.20 CFS/Acre
Allowable Outflow Rate (Q _a):	8.11 CFS

COMPOUND RUNOFF COEFFICIENT

Surface	Area (Square Feet)	Area (Acres)	Runoff Coef. (C)	A x C
Ex Building	3,188	0.07	0.90	2,869
Ex Pavement	9,586	0.22	0.85	8,148
Pr Building	52,664	1.21	0.90	47,398
Pr Pavement	96,783	2.22	0.90	87,105
Natural Area	1,603,701	36.82	0.20	320,740

Compound (C) = $\frac{\text{Total A} \times \text{C}}{\text{TRIBUTARY AREA}} = 0.26$

DETENTION VOLUME (LIVINGSTON COUNTY DESIGN METHOD)

1	2	3	4	5	6	7
Duration (Minutes)	Duration (Seconds)	Intensity (100-yr Storm) (Inch/Hour)	Col. #2 x Col. #3 (Inches)	Inflow Volume (Cubic Feet)	Outflow Volume (Cubic Feet)	Storage Volume (Cubic Feet)
5	300	9.167	2,750	29,436	2,432	27,003
10	600	7.857	4,714	50,461	4,865	45,596
15	900	6.875	6,188	66,230	7,297	58,933
20	1,200	6.111	7,333	78,495	9,730	68,765
30	1,800	5.000	9,000	96,335	14,594	81,740
60	3,600	3.235	11,647	124,668	29,189	95,480
90	5,400	2.391	12,913	138,219	43,783	94,436
120	7,200	1.897	13,655	146,163	58,378	87,785
180	10,800	1.341	14,488	155,075	87,566	67,509

Intensity (I) = $\frac{275}{t + 25}$

Sedimentation Volume
 $V_{sed} = 5\% \times V_{100} = 4,774$ Cubic Feet

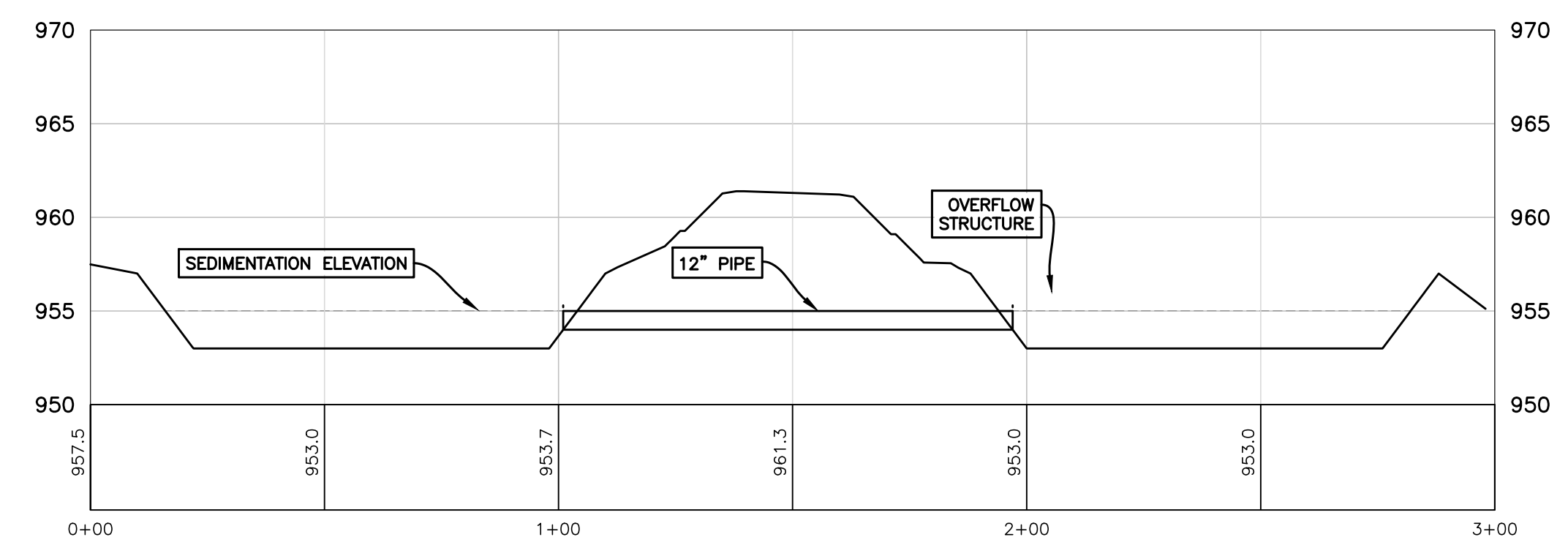
PROPOSED FOREBAY VOLUME

Elevation (Feet)	Area (Square Feet)	Average Area (Square Feet)	Increment Volume (Cubic Feet)	Total Volume (Cubic Feet)
953	897	1,401		
954	1,906	2,468	1,401	1,401
955	3,029	3,647	2,468	3,869
956	4,265	4,844	3,647	7,516
957	22,746	13,505	13,505	21,021

Sedimentation Storage Elevation

Elevation 1 =	955.00	Volume 1	3,869
Elevation 2 =	956.00	Volume 2	7,516
		V_{sed}	4,774
SED ELEVATION (Zsed) =	955.12		

SEDIMENTATION FOREBAY DETAIL



ENGINEERS - SURVEYORS
CONSULTANTS - LAND PLANNERS

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CLIENT :

JOHN MORETTI
4242 BAUER ROAD
BRIGHTON, MI 48116

STORM WATER MANAGEMENT PLAN

MORETTI ESTATES
4242 BAUER ROAD
PART OF NE 1/4, SEC. 26, T2N-R5E
GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN

DATE	DESCRIPTION
1/2/2019	PRELIMINARY SITE PLAN TO TOWNSHIP
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ORIGINAL ISSUE DATE:
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PROJECT NO: 18-025

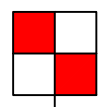
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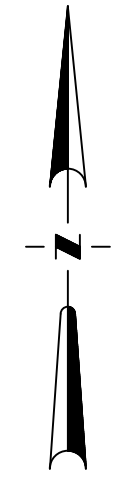
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DESIGN BY: DD
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MORETTI ESTATES
LANDSCAPE PLAN

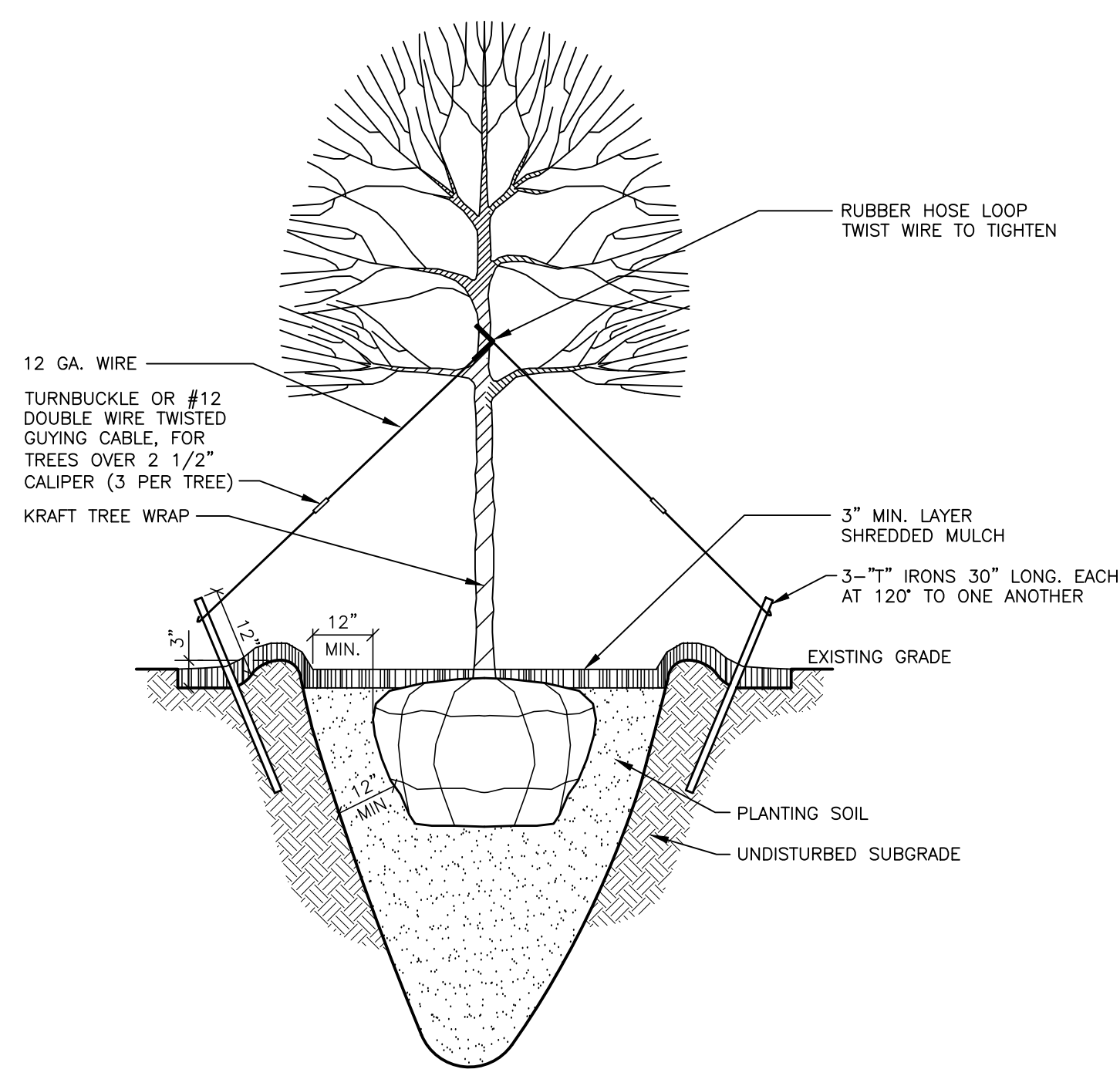


LANDSCAPE LEGEND

- DECIDUOUS TREE
- CONIFEROUS TREE
- ORNAMENTAL TREE
- SHRUB

GENERAL LANDSCAPE NOTES

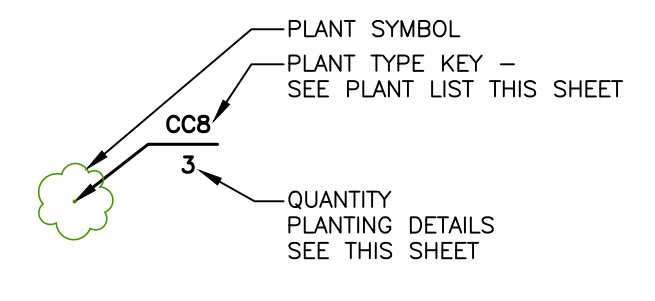
1. The contractor(s) shall verify the location of all underground utilities prior to construction.
2. All existing vegetation shown is to be saved and protected during the demolition and construction process.
3. All landscape areas to be grass common to region except where other plant material is called for.
4. All trees and shrubs are to be planted in mulch beds with spade edge separating mulch from turf grass areas.
5. Any landscape areas disturbed by construction shall be scarified to a depth of 2", graded smooth to allow for positive drainage. For any landscape area so designated to remain whether on or off site, remove weeds, rocks, construction items, etc., scarify area, hydro seed, and fertilize. All R.O.W curb and gutters are to be cleaned of debris.
6. Plants shall conform to the sizes as shown on the drawings shall be of sound health. All measurements such as spread, ball size, height, caliper, and quality designations shall be conformance to the latest edition of the American Standards for Nursery Stock. All plant material shall be hardy to the Genoa Township Area, be free of disease and insects, and conform to the American Standard for Nursery Stock of the American Nurserymen.
7. All evergreen trees species are to be full, dense plants branched fully to the ground
8. Prune all dead and broken branches from all plants immediately after installation
9. Planting soil mixture shall be prepared on-site by mixing 3 parts topsoil to 1-part existing site soils to 1-part peat, adding 5 lbs. of superphosphate to each cubic yard of the mixture.
10. Organic mulch requirements: shade trees, ornamental trees, and evergreen trees - 6" of shredded bark; shrubs and shrub beds - 4" of shredded bark; perennial flowers - 2" of shredded bark.
11. Slope Stabilization: Temporary erosion control mat shall be place over all areas with a slope of 1:4 or greater. Contractor to repair all areas of erosion to satisfaction of Owner/City to establish proper turf within one year.
12. All landscaping shall be maintained in a healthy, neat, and orderly state following installation. Any and all plant material that dies or becomes diseased, shall be replaced within six months.
13. Residents to have options for trees. Except those prohibited by Section 12.02.10 of Genoa Township Zoning Ordinance
14. Landscape buffer to be planted in accordance to Section 12.02.03 of Genoa Township Zoning Ordinance.



(2" AND SMALLER CALIPER)
TREE PLANTING DETAIL
NO SCALE
(DETAIL TYP. FOR DECIDUOUS OR CONIFEROUS SPECIES)



PLANT KEY



ENGINEERS - SURVEYORS
CONSULTANTS - LAND PLANNERS

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CLIENT :

JOHN MORETTI
4242 BAUER ROAD
BRIGHTON, MI 48116

LANDSCAPE PLAN

MORETTI ESTATES
4242 BAUER ROAD
PART OF NE 1/4, SEC. 26, T2N-R5E
GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN

PLAN SUBMITTALS/REVISIONS	DATE
PRELIMINARY SITE PLAN TO TOWNSHIP	1/2/2019
REVISED SITE PLAN TO TOWNSHIP	1/25/2019
REVISED SITE PLAN TO TOWNSHIP	2/20/2019

ORIGINAL ISSUE DATE:
1/2/2019

PROJECT NO: 18-025

SCALE: 1" = 100'

0 1/2" 1"

FIELD: SE
DRAWN BY: DC, ML
DESIGN BY: DD
CHECK BY: PR

L-10

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