



GENOA CHARTER TOWNSHIP
Application for Re-Zoning

APPLICANT NAME: Chestnut Development LLC ADDRESS: 6253 Grand River Ave. Suite 700, Brighton, MI 48114

OWNER NAME: Applicant is the property owner ADDRESS: _____

PARCEL #(s): 4711-33-400-003 & 4711-34-300-005 PRIMARY PHONE: (810) 599-3984

EMAIL 1: steve@chestnutdev.com EMAIL 2: office@chestnutdev.com

We, the undersigned, do hereby respectfully make application to and petition the Township Board to amend the Township Zoning Ordinance and change the zoning map of the township of Genoa as hereinafter requested, and in support of this application, the following facts are shown:

A. REQUIRED SUBMITTAL INFORMATION

1. A legal description and street address of the subject property, together with a map identifying the subject property in relation to surrounding properties;
2. The name, signature and address of the owner of the subject property, a statement of the applicant's interest in the subject property if not the owner in fee simple title, and proof of consent from the property owner;
3. It is desired and requested that the foregoing property be rezoned from:

AG to LDR

4. A site plan illustrating existing conditions on the site and adjacent properties; such as woodlands, wetlands, soil conditions, steep slope, drainage patterns, views, existing buildings, sight distance limitations, relationship to other developed sites, and access points in the vicinity;
5. A conceptual plan demonstrating that the site could be developed with representative uses permitted in the requested zoning district meeting requirements for setbacks, wetland buffers access spacing, any requested service drives and other site design factors;
6. A written environmental assessment, a map of existing site features as described in Article 18 describing site features and anticipated impacts created by the host of uses permitted in the requested zoning district;
7. A written description of how the requested rezoning meets Sec. 22.04 "Criteria for Amendment of the Official Zoning Map."
8. The property in question shall be staked prior to the Planning Commission Public Hearing.

B. DESCRIBE HOW YOUR REQUESTED RE-ZONING MEETS THE ZONING ORDINANCE CRITERIA FOR AMENDING THE OFFICIAL ZONING MAP:

1. How is the rezoning consistent with the goals, policies and future land use map of the Genoa Township Master Plan, including any subareas or corridor studies. If not consistent, describe how conditions have changed since the Master Plan was adopted?

The re-zoning request is consistent with the current master plan.

2. Are the site's physical, geological, hydrological and other environmental features suitable for the host of uses permitted in the proposed zoning district?

Yes

3. Do you have any evidence that a reasonable return on investment cannot be received by developing the property with one (1) of the uses permitted under the current zoning?

The current AG zoning would not allow for a reasonable return with the required infrastructure.

4. How would all the potential uses allowed in the proposed zoning district be compatible with surrounding uses and zoning in terms of views, noise, air quality, the environment, density, traffic impacts, drainage and potential influence on property values?

The LDR zoning is compatible with the surrounding and is significantly less intensive than a previous PUD for the property.

5. Are infrastructure capacity (streets, sanitary sewer, water, and drainage) and services (police and fire protection, etc.) sufficient to accommodate the uses permitted in the requested district?

Yes, the 25 lots will not adversely affect such services.

6. Is there a demonstrated demand in Genoa Township or the surrounding area for the types of uses permitted in the requested zoning district? If yes, explain how this site is better suited for the zoning than others which may be planned or zoned to accommodate the demand.

Yes, single family home sites are in demand and this site has suitable soils, access and availability to utilities to service such.

7. If you have a particular use in mind, is another zoning district more appropriate? Why should the Township re-zone the land rather than amend the list of uses allowed in another zoning district to accommodate your intended use?

No

8. Describe any deed restrictions which could potentially affect the use of the property.
There are no current deed restrictions on the property.

C. 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: Steve Gronow

ADDRESS: 6253 Grand River Brighton 48114

[Signature]
SIGNATURE

The following contact should also receive review letters and correspondence:

Name: Jami Fyke Email: office@chestnutdev.com

Business Affiliation: Office Manager

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.

PROJECT NAME: Chestnut Park Chestnut Springs

PROJECT LOCATON & DESCRIPTION: East side of Chilson Rd between Brighton Rd and Bishop Lake Rd. 25 Unit residential development.

SIGNATURE: _____ DATE: _____

PRINT NAME: Steve Gronow PHONE: 810 599-3984

COMPANY NAME & ADDRESS: Chestnut Development
6253 Grand River Brighton 48114



GENOA CHARTER TOWNSHIP
Application for Site Plan Review

TO THE GENOA TOWNSHIP PLANNING COMMISSION AND TOWNSHIP BOARD:

APPLICANT NAME & ADDRESS: Chestnut Development LLC, 6253 Grand River Ave. Suite 700, Brighton, MI 48114
If applicant is not the owner, a letter of Authorization from Property Owner is needed.

OWNER'S NAME & ADDRESS: Applicant is the property owner

SITE ADDRESS: _____ PARCEL #(s): 4711-33-400-003 & 4711-34-300-005

APPLICANT PHONE: (810) 599-3984 OWNER PHONE: (____) _____

OWNER EMAIL: office@chestnutdev.com

LOCATION AND BRIEF DESCRIPTION OF SITE: 61 acres of undeveloped land,
located on the East side of Chilson Rd between Brighton Rd and
Bishop Lake Rd. Site is generally described as open grassland
with very few trees. Several wetlands exist on site.

BRIEF STATEMENT OF PROPOSED USE: 25 unit residential development to be re-zoned
LDR and designed to meet LDR standards. Minimum 1 acre lot sizes with additional
common open space provided. Site access by construction of a paved,
open ditch, private road. All lots to be serviced by well and septic.

THE FOLLOWING BUILDINGS ARE PROPOSED: 25 single family residential homes.

**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: _____

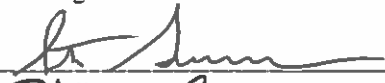
ADDRESS: 6253 Grand River Brighton 48114

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

(.) Michael Bearman of Livingston Engineering at mike@livingstoneng.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  DATE 5.2.18
PRINT NAME Steve Gronow PHONE 8105995147
ADDRESS 6253 Grand River Brighton 48114

**Impact Assessment
for
Chestnut Springs
Genoa Charter Township
Livingston County, Michigan**

Prepared By

**Livingston Engineering
3300 S. Old US-23
Brighton, MI 48114
(810) 225-7100
May 2, 2018**

This impact assessment has been prepared in accordance with section 18.07 of the Genoa Township, Livingston County, Michigan Zoning Ordinance. This section states that developments of this nature shall include such a report for review as part of the site plan/re-zoning review and approval process. As such, this report has been prepared to provide the required information and project overview of the development, in accordance with current township requirements.

I. Party Responsible for preparation of Impact Statement

This impact assessment has been prepared by Livingston Engineering, a professional services company offering civil engineering, land surveying, and site planning services throughout southeast Michigan. Livingston Engineering is licensed to provide engineering and surveying services in Michigan, as well as engineering licenses in the states of Arizona, Colorado, New Mexico, Tennessee and Utah.

II. Site Location

The subject site contains approximately 67.12 acres located in the Southwest $\frac{1}{4}$ of section 33 and the Southwest $\frac{1}{4}$ of section 34 of Genoa Township, Livingston County, Michigan. This parcel is located on the east side of Chilson Rd between Brighton Rd and Bishop Lake Rd. It is bordered on all sides by vacant parcels, with similar land use to the North and Southeast. State land owned by the DNR borders the property on the East, West, and South. The only developed residential area adjacent to the site is the Pine Lake Subdivision located on the very Southeast corner of the site. A location map and aerial photograph of the subject site is included in this report as Exhibit “A” and Exhibit “B” respectively.

Currently, the site is zoned AG (Agricultural) and is to be re-zoned LDR (Low Density Residential). The site is bordered on the East LDR, to the West by PRF (Public and Recreational Facilities), and to the North by MUPUD (Mixed Use PUD) A copy of the Genoa Township Zoning Map is included in this report as Exhibit “C”.

The South property line of the subject parcel is the Geno/Hamburg Township border, and parcels to the south are DNR state land zoned PPRF (Public and Private Recreational Facilities) and RAA (Single Family Low Density Residential).

III. Impact on Natural Features

Currently, the site is vacant and consists of an open field with a small pond and several scattered trees, and several regulated wetlands. A wetland delineation map has been included as Exhibit “G”. The developer is currently in the process of acquiring a permit for the activities that impact the MDEQ regulated wetlands, including detention and grading activities.

Soils on the site consist primarily of Boyer-Oshtemo loamy sands. Miami loam is described as very deep, well drained soils. A soils map of the subject site is included as Exhibit “D”.

As depicted in Exhibit “E”, the site drains from North to South, and half of the site drains toward a draw through the Eastern wetland which ultimately outlets into the Huron river and the other half drains into onsite wetlands along the West and South side of the property. Storm water runoff will be collected and directed into an existing on-site wetland, with an outlet structure that outlets to the draw on the East side of the site. All regulated wetland impact activities are currently in the permitting process with the MDEQ.

Landscape treatments will be placed along the entrance, and canopy trees will be provided for individual lots. In general, the natural wetland features on site will be undisturbed and utilized as part of the natural aesthetic of the development.

IV. Impact on Storm Water Management

The proposed development will provide storm water quality and flood control treatment using an on-site existing wetland, located on the northwest corner of the site. The wetland detention is

designed to meet the current standards of the Livingston County Drain Commissioner's Office and those of Genoa Township. The wetland detention pond is designed to capture storm water runoff from the subject site. Water quality will be provided to storm runoff prior to release into the wetland detention area by utilizing a combination of sediment traps/pools, check dams, and vegetative buffers.

An outlet structure designed in accordance with the Livingston County Drain Commissioner's Office will be provided in the proposed wetland/detention area to control the release rate and provide an emergency overflow route for volume in exceedance of the 100-year storm volume.

Storm water runoff from the adjacent property located to the North of the subject site that currently drains to the existing wetland draw on the East side of the site will continue.

During construction, soil erosion and dust control measures will be implemented. Best management practices including silt fence, check dams, and inlet filter mechanisms will be utilized during this time. For dust control, soil watering to keep the site in a moisture optimum condition will be performed with a water truck on an as needed basis. Upon completion of mass grading and earthmoving operations, permanent restoration including topsoil, seed and mulch along with landscape installation will be performed.

A soil erosion and sedimentation control permit will be required prior to the start of any site grading or construction.

V. Impact on Surrounding Land Uses

As proposed, this development will be in conformance with the future land use map as part of the current township master plan. Re-zoning of the site to LDR will be similar to the adjacent properties.

Access to this site will be from Chilson Rd.

Noise levels are expected to be that of a typical single family residential neighborhood, within township standards.

No Site lighting is proposed for this development.

VI. Impact on Public Facilities and Services.

The development proposes 25 single family residential lots. The developers target demographic for buyers will be retirement aged individuals looking to downsize their home and reduce yard maintenance. As such, the project is not expected to have undesirable effects on local schools or recreation facilities.

As this project is consistent with the township's master plans future land use for this area along Chilson Rd, it is not anticipated that this facility will adversely affect emergency services such as fire and police.

VII Impact on Public Utilities

Each lot will be serviced by an individual well and septic system.

Electric and gas service will be extended on-site via underground installation.

VIII. Storage and Handling of Any Hazardous Materials

There is no plan for storage or handling of any hazardous materials on this site.

IX. Impact on Traffic

The location of the site is well suited for a development of this nature. It is located along Chilson Rd that has an existing two(2) lane cross section one eastbound lane, and one westbound lane. Using the ITE Trip Generation Manual, 7th ed., for Single-Family

Detached Housing based on number of dwelling units (see Exhibit F & G), we calculated the following trips using the average rate for the A.M. and P.M. peak hours of traffic:

A.M. peak hour:

$$0.70 \times (25 \text{ units}) + 12.05 = 29.55 \text{ trips} \times 74\% \text{ (exiting)} \\ = 21.87 \text{ directional trips}$$

P.M. peak hour:

$$\ln(T) = 0.89 \times \ln(25 \text{ units}) + 0.61 = 3.47 \\ e^{(3.47)} = 32.29 \text{ trips} \times 64\% \text{ (entering)} \\ = 20.67 \text{ directional trips}$$

As calculated above, the development, under the fully developed conditions shown in this site plan, will generate less than 22 directional trips in both the A.M. and P.M. peak hours of traffic. Therefore, a traffic impact assessment or traffic impact study is not required by the Township per the Township Zoning Ordinance for the subject development.

The Livingston County Road Commission Sight Distance Review has been applied for and is in process.

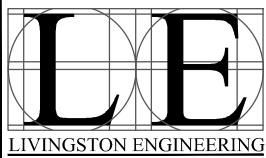
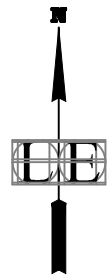
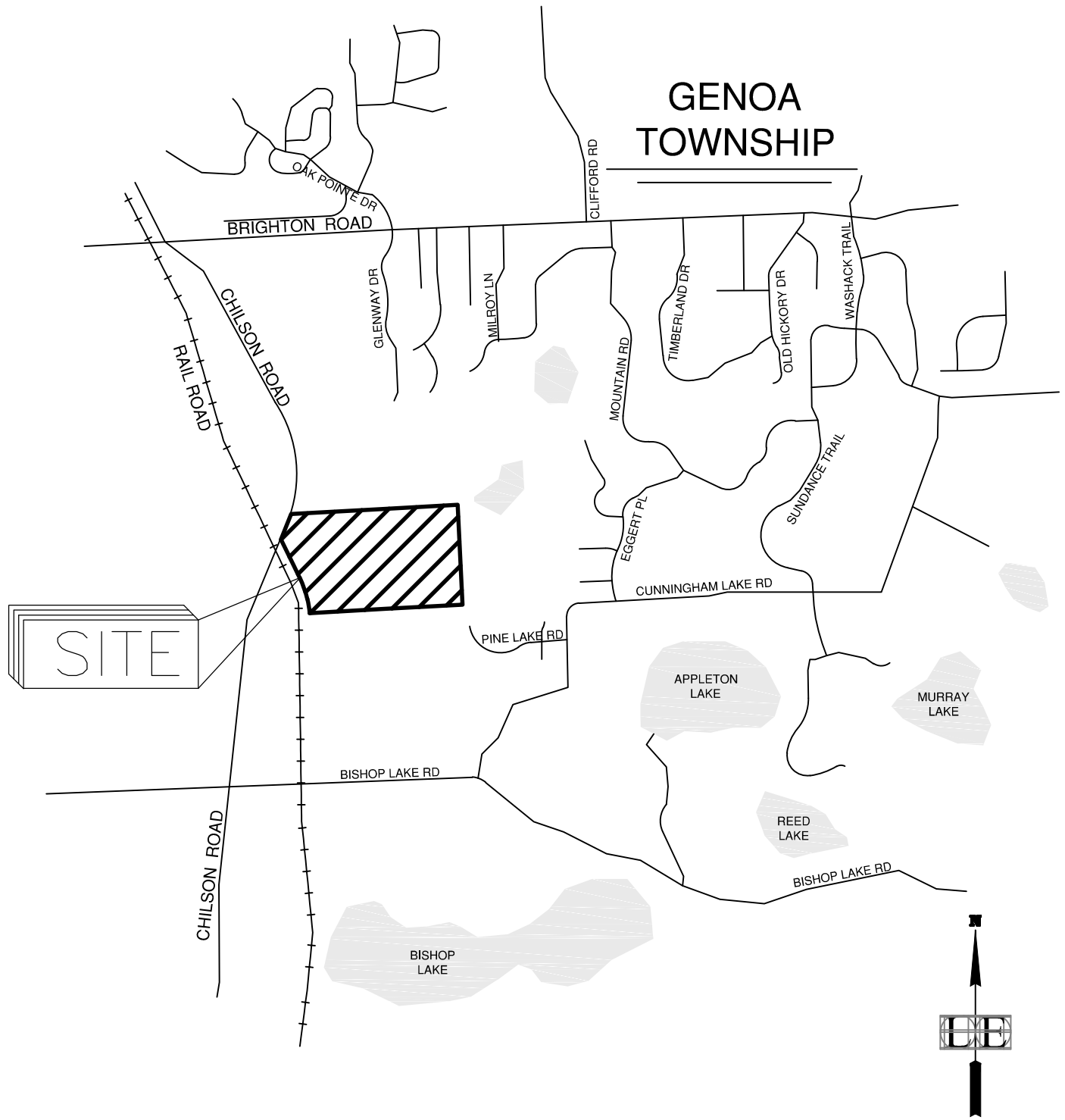
X. Historic and Cultural Resources

It is not believed that this development will have any impact on any historic and/or cultural resources pertaining to the subject parcel and no known historic and/or cultural resources exist on this site that will be affected by this development.

XI. Special Provisions

No special provisions are part of this project.

EXHIBIT A LOCATION MAP



SCALE NOT TO SCALE	
DRAWN MJB	DATE 5/2/2018
SHEET No. 1 of 6	JOB No. 11216-2

DESCRIPTION
CHESTNUT SPRINGS
Impact Assessment
Village of Fowlerville, Livingston County, MI

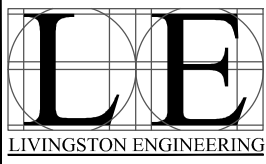
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EXHIBIT B

AERIAL



FILE: C:\Users\User\Dropbox (Living)\Projects\2011\11216-2 Chestnut Genoa Chilson Rd\admin\DATA\Impact Assessment\11216-2_Impact Assessment_Exhibits.dwg

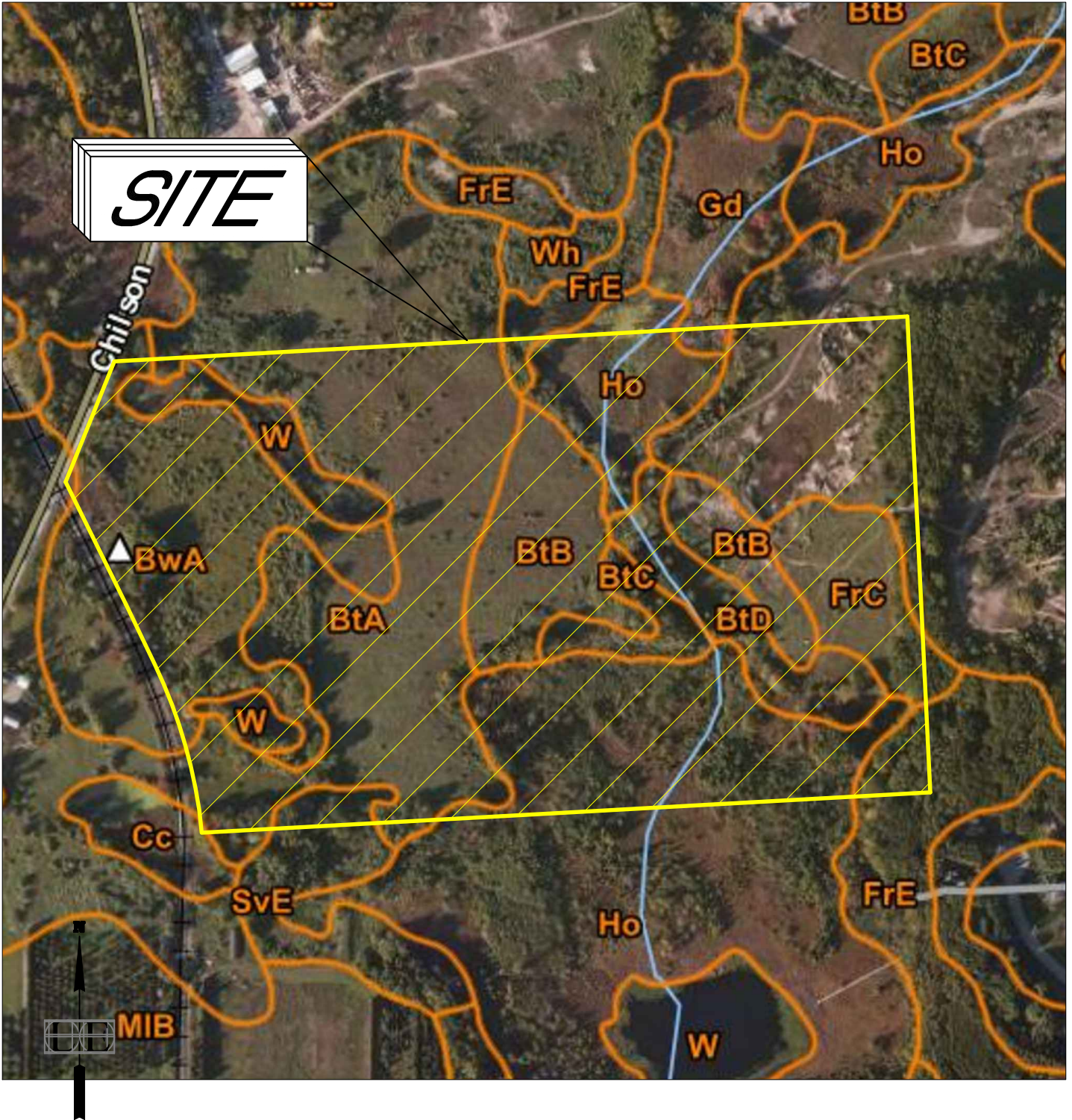


SCALE	0' 2,000' 4,000'		
			
	SCALE: 1"=2,000'		
DRAWN MJB	DATE 5/2/2018	SHEET No. 2 of 6	JOB No. 11216-2

DESCRIPTION
CHESTNUT SPRINGS
Impact Assessment
Village of Fowlerville, Livingston County, MI

EXHIBIT C

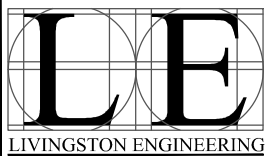
SOIL MAP



SITE

Chilson

MIB

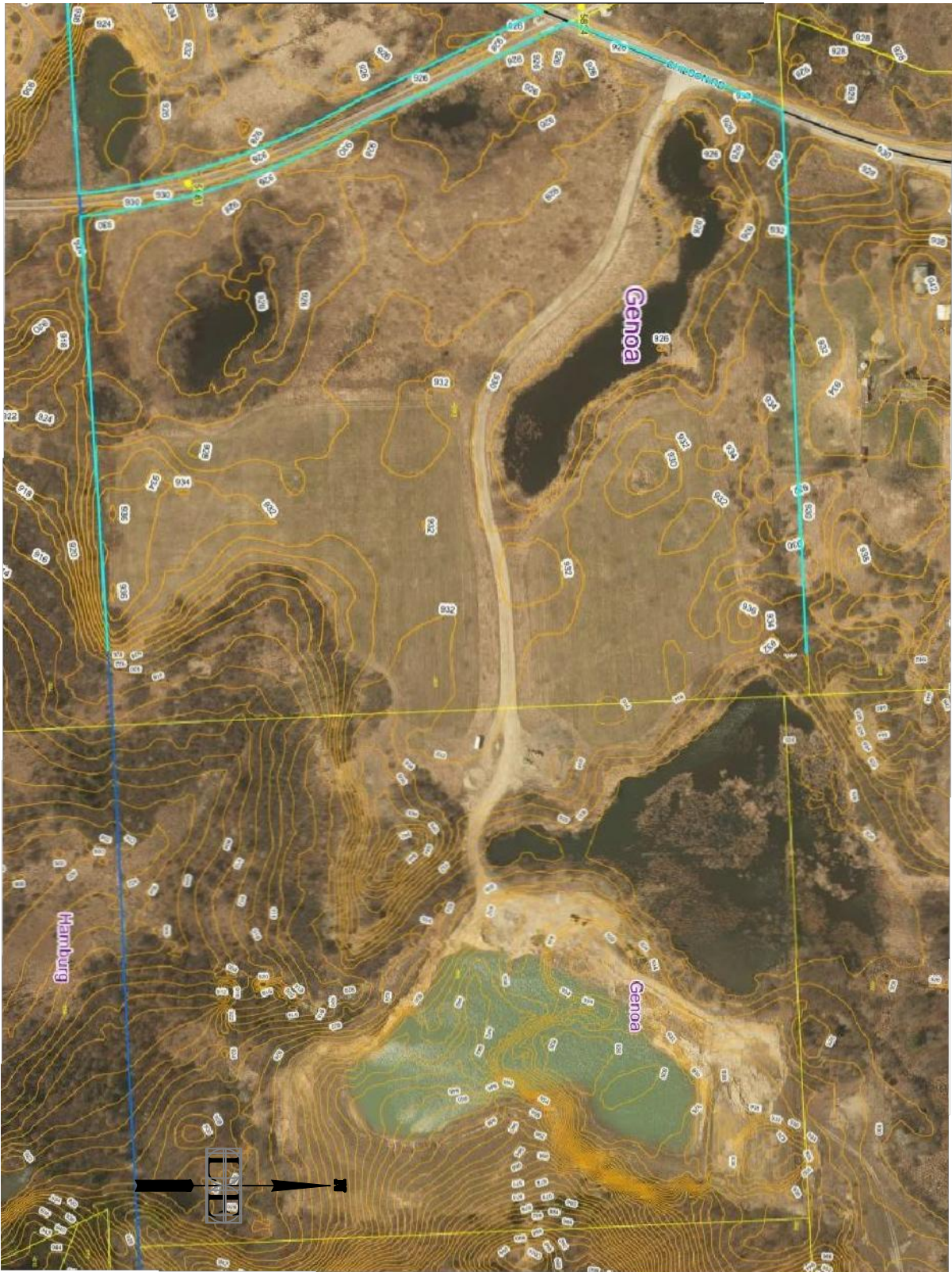


SCALE	0'	400'	800'
	SCALE: 1"=400'		
DRAWN	MJB	DATE	5/2/2018
SHEET No.	3 of 6	JOB No.	11216-2

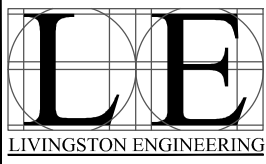
DESCRIPTION
 CHESTNUT SPRINGS
 Impact Assessment
 Village of Fowlerville, Livingston County, MI

EXHIBIT D

EXISTING DRAINAGE



FILE: C:\Users\User\Dropbox (Liveng)\Projects\2011\11216-2 Chestnut Genoa Chilson Rd\admin\DATA\Impact Assessment\11216-2_Impact Assessment_Exhibits.dwg



SCALE	0'	300'	600'
	SCALE: 1"=300'		
DRAWN	MJB	DATE	5/2/2018
SHEET No.	4 of 6	JOB No.	11216-2

DESCRIPTION
CHESTNUT SPRINGS
Impact Assessment
Village of Fowlerville, Livingston County, MI

EXHIBIT E

TRAFFIC AM

Single-Family Detached Housing (210)

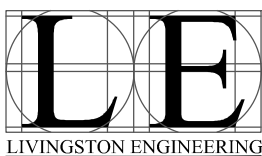
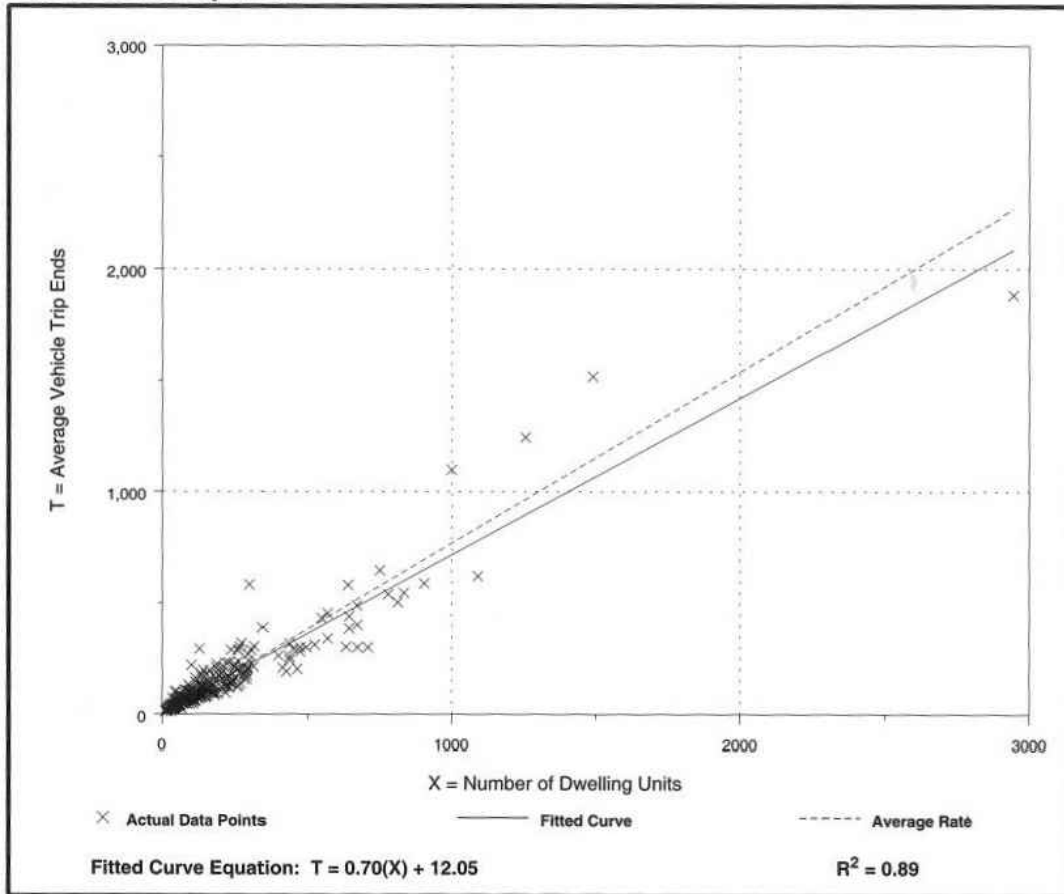
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
A.M. Peak Hour of Generator

Number of Studies: 335
Avg. Number of Dwelling Units: 183
Directional Distribution: 26% entering, 74% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.77	0.33 - 2.27	0.91

Data Plot and Equation



SCALE
NOT TO SCALE

DESCRIPTION
CHESTNUT SPRINGS
Impact Assessment
Village of Fowlerville, Livingston County, MI

EXHIBIT F

TRAFFIC PM

Single-Family Detached Housing (210)

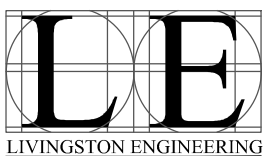
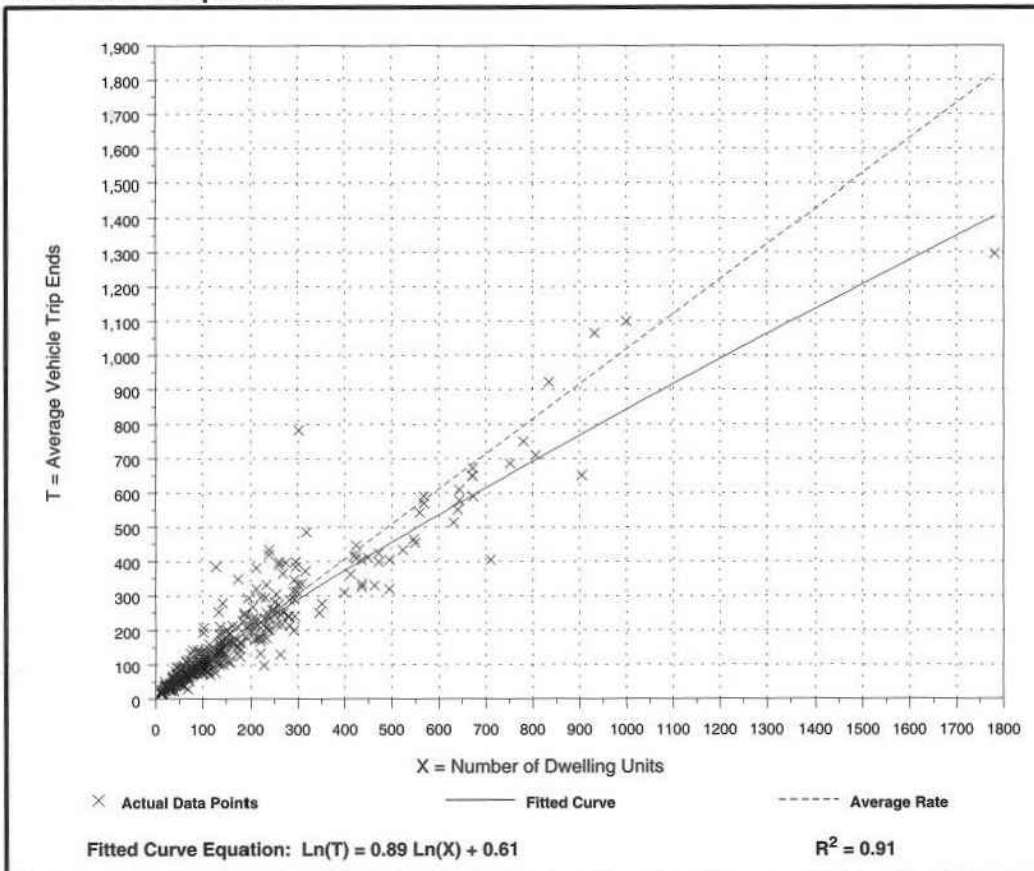
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
P.M. Peak Hour of Generator

Number of Studies: 354
Avg. Number of Dwelling Units: 176
Directional Distribution: 64% entering, 36% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.02	0.42 - 2.98	1.05

Data Plot and Equation



SCALE
NOT TO SCALE

DESCRIPTION
CHESTNUT SPRINGS
Impact Assessment
Village of Fowlerville, Livingston County, MI

EXHIBIT G

This figure depicts the approximate location of the Property and the on-site wetlands, as delineated by Niswander Environmental on September 7, 2017. The wetland boundaries as depicted are approximate; a topographical survey by a registered surveyor will be necessary to determine the exact size, shape, and location of the wetlands present on the Property.



Figure 1. Overall Wetland Location Map

NE 1505 Chestnut Hill Delineation
 Client: Chestnut Development
 Sections 33 & 34 of Genoa Township
 Livingston Co., MI (T02N,R05E)
 Delineation Date: September 7, 2017
 Map Created: September 8, 2017



NISWANDER ENVIRONMENTAL

9436 Malby Road, Brighton, MI 48116
 810.225.0539 office | 810.225.0653 fax

SITE PLAN FOR

CHESTNUT SPRINGS

CHILSON RD

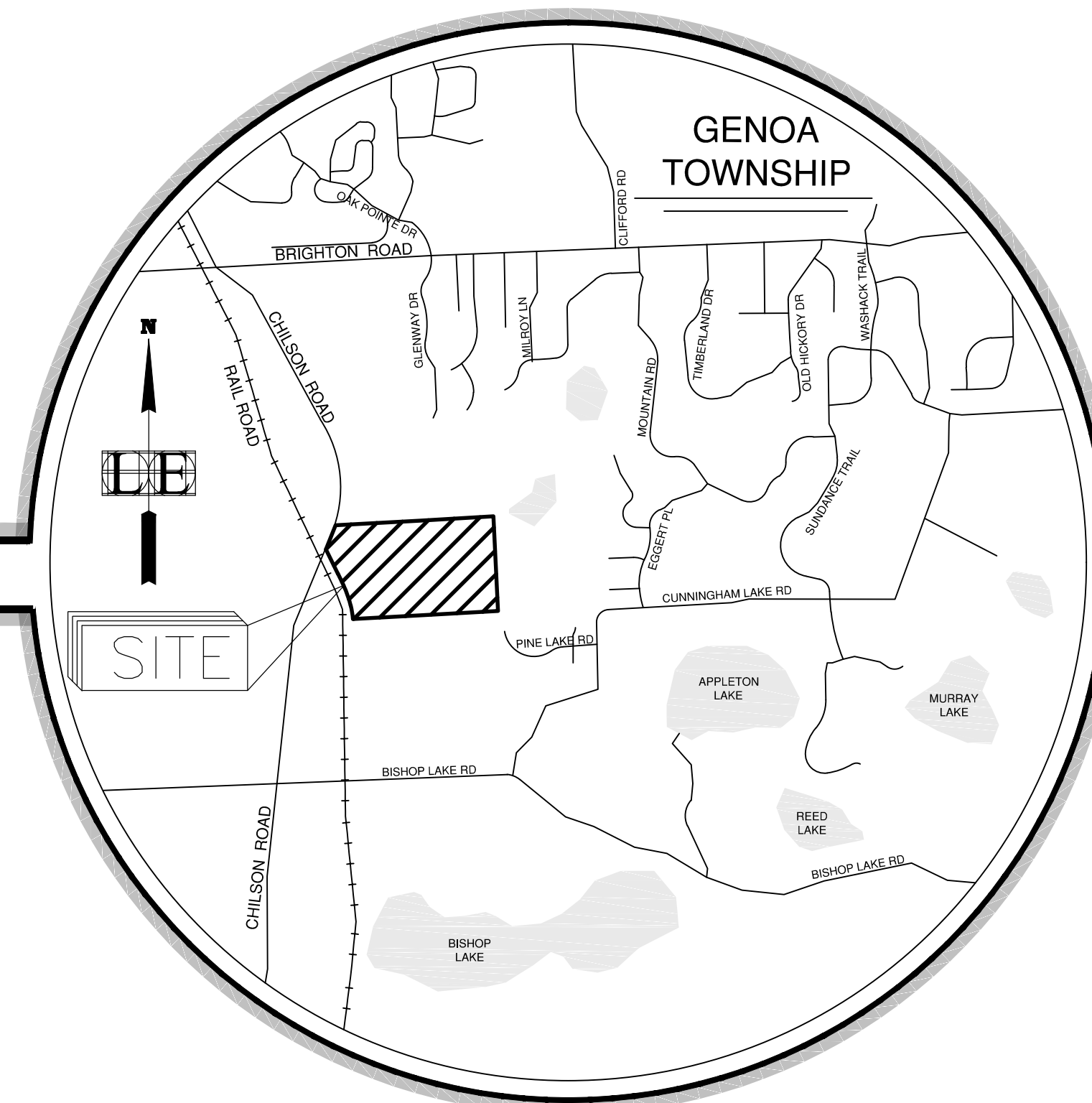
GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN

SHEET INDEX

- 01 COVER SHEET
- 02 EXISTING CONDITIONS
- 03 OVERALL LAYOUT
- 04 PRELIMINARY GRADING PLAN
- 05 STORMWATER MANAGEMENT PLAN
- L1 LANDSCAPE PLAN & DETAILS

GENERAL NOTES

1. Property is zoned: AG (Agricultural). Property is to be rezoned to LDR (Low Density Residential) concurrently with Site Plan Approval process.
2. Contractor is responsible for protecting all existing and proposed utilities from damage during all stages of construction.
3. The engineer and applicable agency must approve, prior to construction, any alteration, or variance from these plans.
4. All signs shall meet the requirements of the Genoa Township Zoning Ordinance.
5. Underground dry utilities shall be extended from existing locations to service this site as required by utility companies.
6. Soils are majority Boyer-Oshtemaw loamy sands (U.S.D.A. "Soil Survey of Livingston Co.").
7. All construction shall be performed in accordance with the current standards and specifications of Genoa Township and Livingston County.
8. The contractor shall telephone Genoa Township 72 hours before beginning any construction.
9. Three working days prior to any excavation, the Contractor shall telephone MISS DIG (800-482-7171) for the location of underground utilities and shall also notify representatives of other utilities located in the vicinity of the work. It shall be the Contractor's responsibility to verify and/or obtain any information necessary regarding the presence of underground utilities which might affect this job.
10. On-site wetlands have been flagged as determined by Niswander Environmental on September 7, 2017.
11. Site plan use: Residential
12. Site storm drainage will be detained on site prior to being released to wetland.
13. Property to be serviced by individual well and septic.
14. Roadway within this development shall be private.



LOCATION MAP

NOT TO SCALE

LEGAL DESCRIPTION

Part of the Southeast ¼ of Section 33 and the Southwest ¼ of Section 34, T2N-R5E, Genoa Township, Livingston County, Michigan, more particularly described as follows: BEGINNING at the Southeast Corner of said Section 33, also being the Southwest Corner of said Section 34; thence along the South line of said Section 33, being the Hamburg-Genoa Township line, S 86°51'02" W, 1005.29 feet (previously surveyed as S 87°12'20" W);

Thence along the Easterly line of the Ann Arbor Railroad (66 foot wide), the following 4 courses on the arc of a curve left, 188.78 feet, said curve has a radius of 1233.00 feet, a central angle of 08°46'20" and a long chord which bears N 09°20'42" W, 188.59 feet (previously recorded as N 08°59'24" W);

Thence along the arc of a curve left, 300.68 feet, said curve has a radius of 1504.99 feet, a central angle of 11°26'49" and a long chord which bears N 19°27'17" W, 300.18 feet (previously surveyed as N 19°05'59" W);

Thence along the arc of a curve left, 184.66 feet, said curve has a radius of 9470.15 feet, a central angle of 01°07'02" and a long chord which bears N 25°44'13" W, 184.66 feet (previously surveyed as N 25°22'55" W);

thence N 26°17'44" W 382.92 feet, (previously surveyed as N 25°56'26" W);

thence along the centerline of centerline of Chilson Road (66 foot wide Right of Way), N 22°02'33" E, 363.80 feet (previously surveyed as N 22°23'51" E); thence along the North line of the South 1/2 of the Southeast ¼ of said Section 33, S 86°50'49" E, 1189.30 feet (previously surveyed as N 87°12'07" E); thence along the North line of the South 1/2 of the Southwest ¼ of said Section 34, N 86°41'47" E, 1028.59 feet (previously surveyed as N 87°03'05" E); thence along the East line of the West 30 acres of the Southwest ¼ of the Southwest ¼ of said Section 34, S 02°44'41" E, 1329.93 feet (previously surveyed as S 02°23'23" E); thence along the South line of said Section 34 and the Hamburg-Genoa Township line S 86°49'56" W, 1031.98 feet (previously surveyed as S 87°11'14" W to the Point of Beginning. Containing 67.12 acres, more or less and subject to the rights of the public over Chilson Road. Also subject to any other easements or restrictions of record.

Bearing are related to Grid North from RTK GPS observations using Brighton CORS station.

SITE DATA TABLE

	REQUIRED
LOT AREA	1 AC. (min)
LOT WIDTH	150 FT (min)
LOT COVERAGE	NA
FLOOR AREA (PER UNIT)	980 SF (min)
BUILDING SETBACKS:	REQUIRED
FRONT	50 FT (min)
SIDE	30 FT (min)
REAR	60 FT (min)
WETLAND	25 FT (min)

PERMITS & APPROVALS

AGENCY	REQUIRED	STATUS
GENOA TOWNSHIP	APPROVAL	
GENOA TOWNSHIP FIRE DEPARTMENT	APPROVAL	
LIVINGSTON COUNTY DRAIN COMMISSIONER	S.E.S.C. PERMIT	IN PROCESS
LIVINGSTON COUNTY ROAD COMMISSION	APPROACH PERMIT	IN PROCESS
LIVINGSTON COUNTY ROAD COMMISSION	SITE DISTANCE APPROVAL	
LIVINGSTON COUNTY HEALTH DEPARTMENT	WELL & SEPTIC PERMITS	IN PROCESS
MDEQ	WETLAND IMPACT PERMITS	IN PROCESS

UTILITY DISCLAIMER



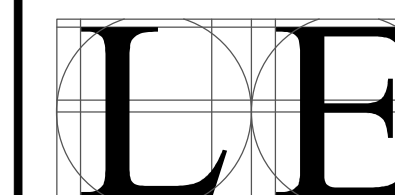
Utilities as shown indicate approximate location of facilities only, as described by the various companies and no guarantee is given either as to the completeness or accuracy thereof. Contractor shall call MISS DIG at 811 or 1-800-482-7171 prior to the start of construction. Electric, gas, phone and television companies should be contacted prior to the commencement of field activities.

OWNER / DEVELOPER



CHESTNUT DEVELOPMENT, LLC
 6253 GRAND RIVER AVE. SUITE 700
 BRIGHTON, MI 48114
 PHONE: 810.599.3984

ENGINEER



LIVINGSTON ENGINEERING
 CIVIL ENGINEERING SURVEYING PLANNING
 3300 S. OLD U.S.23, BRIGHTON, MI 48114
 http://www.livingstoneng.com PHONE: (810) 225-7100 FAX: (810) 225-7699

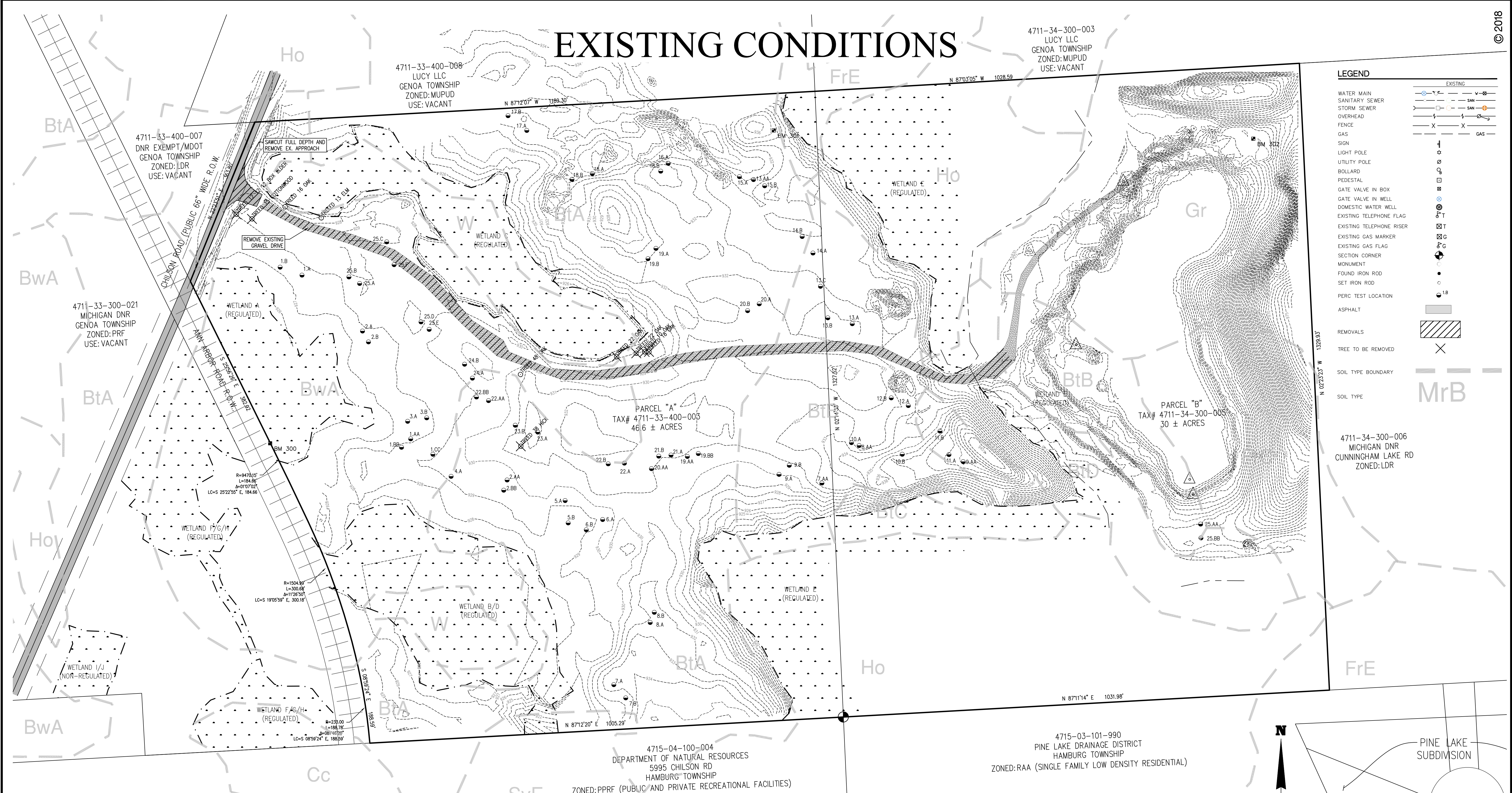
CHESTNUT SPRINGS
GENOA TOWNSHIP
LIVINGSTON COUNTY, MICHIGAN
SITE PLAN

ENGINEER'S SEAL

REVISIONS	DATE
PER TRIP CONSULTANT REVIEW COMMENTS	5/23/18

PROJECT No. 11216-2
 SHEET 1 OF 6
 DATE: May 2, 2018

EXISTING CONDITIONS



© 2018
LIVINGSTON ENGINEERING
 CIVIL ENGINEERING SURVEYING PLANNING
 3300 S. OLD U.S. BRIGHTON, MI 48114
 PHONE: (810) 225-7000
 FAX: (810) 225-7699
 www.livingstoneng.com

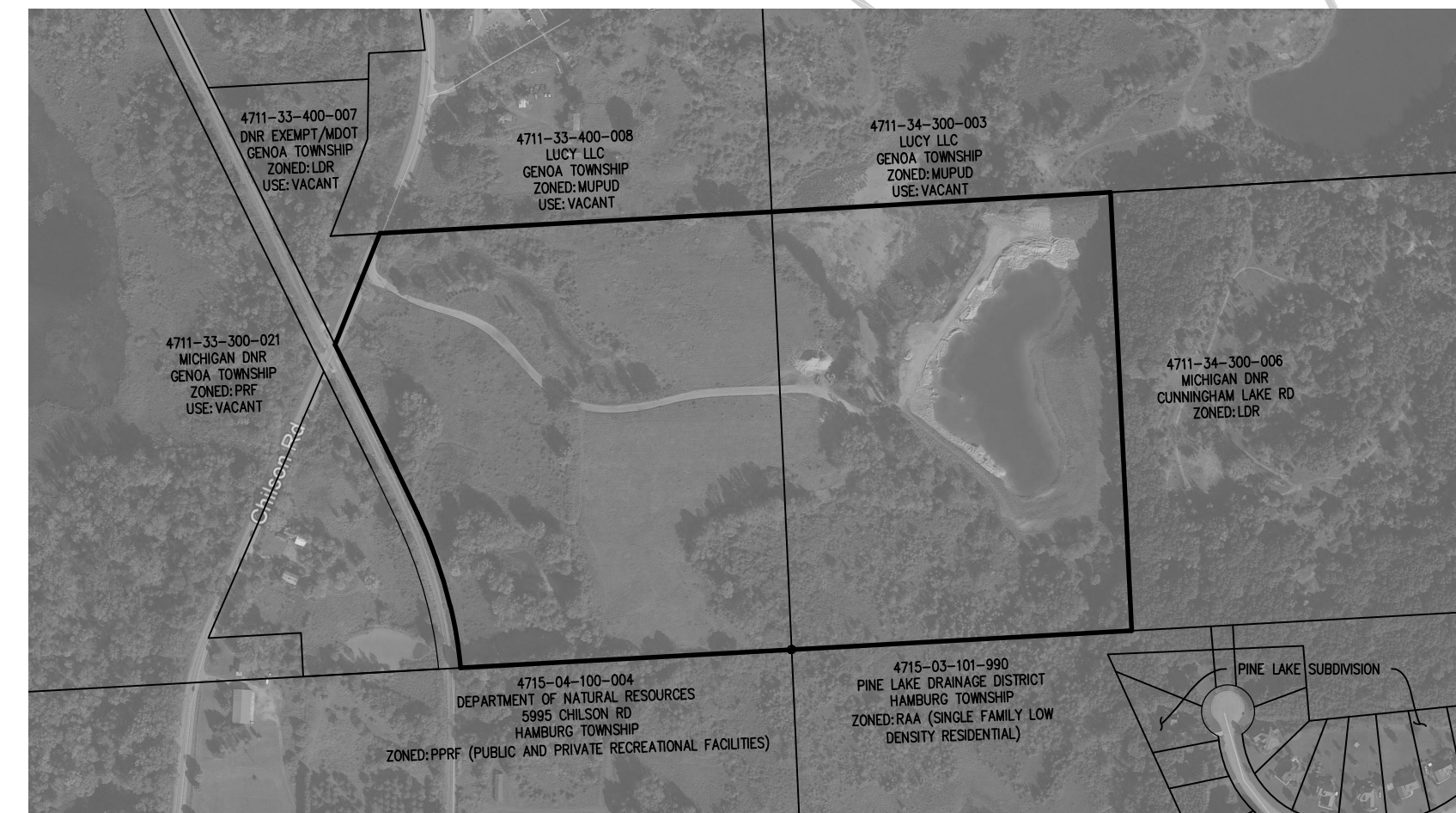
Client
CHESTNUT DEVELOPMENT, LLC
 620 GRAND RIVER AVE SUITE 700
 BRIGHTON, MI 48114
 810.598.3884
 Chestnut Development

CHESTNUT SPRINGS
 CHILSON RD, GENOA TWP, LIVINGSTON COUNTY, MICHIGAN
 SITE PLAN
 EXISTING CONDITIONS

REVISIONS	DATE
PER TWP CONSULTANT REVIEW COMMENTS	5/23/2018

Drawn: MJB
 Checked: [Signature]
 Approved: [Signature]
 Date: 5/23/2018

Job No. 11216-2
 Scale: [Symbol]
 Vertical: T = 100'
 Horizontal: [Symbol]



SITE AERIAL
 SCALE: 1" = 500'

N.R.C.S. SOIL SURVEY - CLASSIFICATIONS

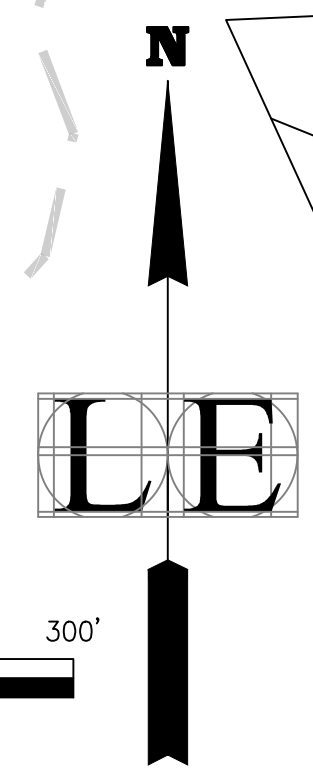
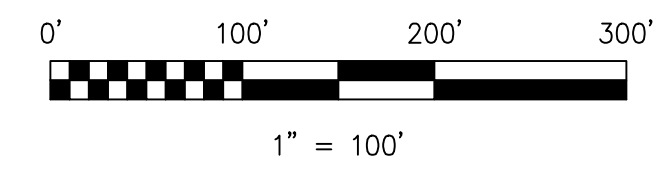
BIA	Boyer-Oshstemo loamy sands, 0 to 2 percent slopes
BIB	Boyer-Oshstemo loamy sands, 2 to 6 percent slopes
BIC	Boyer-Oshstemo loamy sands, 6 to 12 percent slopes
BID	Boyer-Oshstemo loamy sands, 12 to 18 percent slopes
BWA	Bronson loamy sand, 0 to 2 percent slopes
Cc	Carlisle muck, 0 to 2 percent slopes
FrE	Fox-Boyer complex, 6 to 12 percent slopes
FrE	Fox-Boyer complex, 18 to 25 percent slopes
Gr	Gravel pits
Ho	Houghton muck, 0 to 1 percent slopes
SvE	Spinks-Oakville loamy sands, 18 to 25 percent slopes
W	Water

GENERAL NOTES:

- ALL UTILITY COMPANIES SHALL BE CONTACTED PRIOR TO CONSTRUCTION AND ALL UTILITIES LOCATED. ANY DISCREPANCIES OR CONFLICTS SHALL BE REPORTED TO ENGINEER FOR RESOLUTION PRIOR TO COMMENCING CONSTRUCTION.
- ALL REMOVAL MATERIALS, INCLUDING TREES AND STUMPS, SHALL BE PROPERLY DISPOSED OF AT AN OFF-SITE LOCATION.

BENCHMARKS

BENCHMARK #300 FOUND IRON: ±368 FT SE OF CHILSON RD ALONG THE RAILROAD ROW N:370142.95' E:13261141.39' ELEVATION= 924.70 NAVD88 DATUM	BENCHMARK #301 SET IRON: ±78' SOUTH OF NORTH PROPERTY LINE & ±91' WEST OF THE EAST LINE OF SECTION 33 N:370805.98' E:13262209.08' ELEVATION= 931.33 NAVD88 DATUM	BENCHMARK #302 SET IRON: ±154' SOUTH OF NORTH PROPERTY LINE & ±105' WEST OF THE EAST PROPERTY LINE N:370788.47' E:13263225.57' ELEVATION= 930.43 NAVD88 DATUM
--	---	--



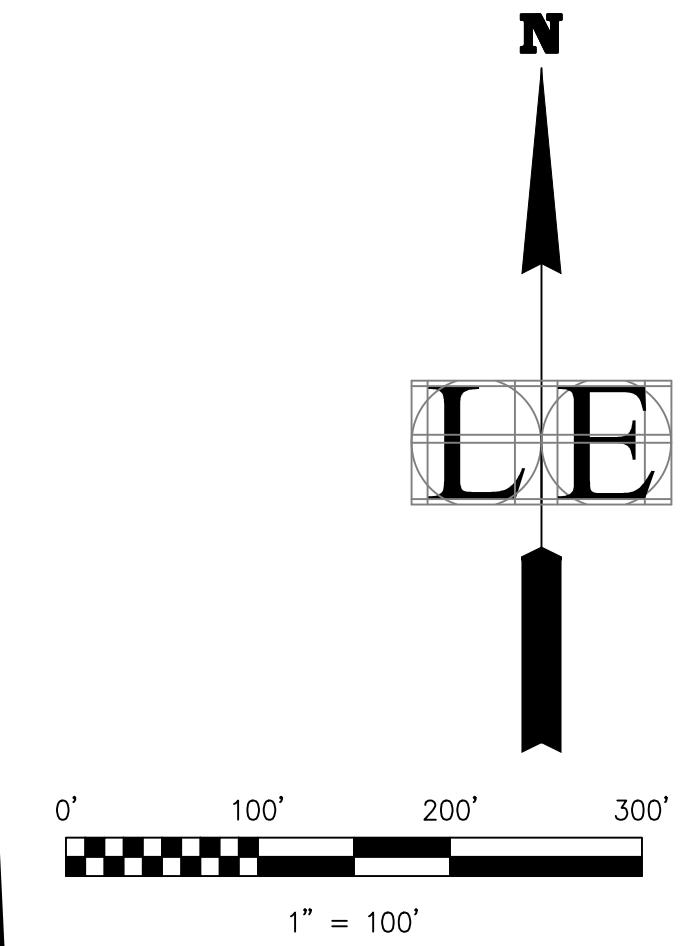
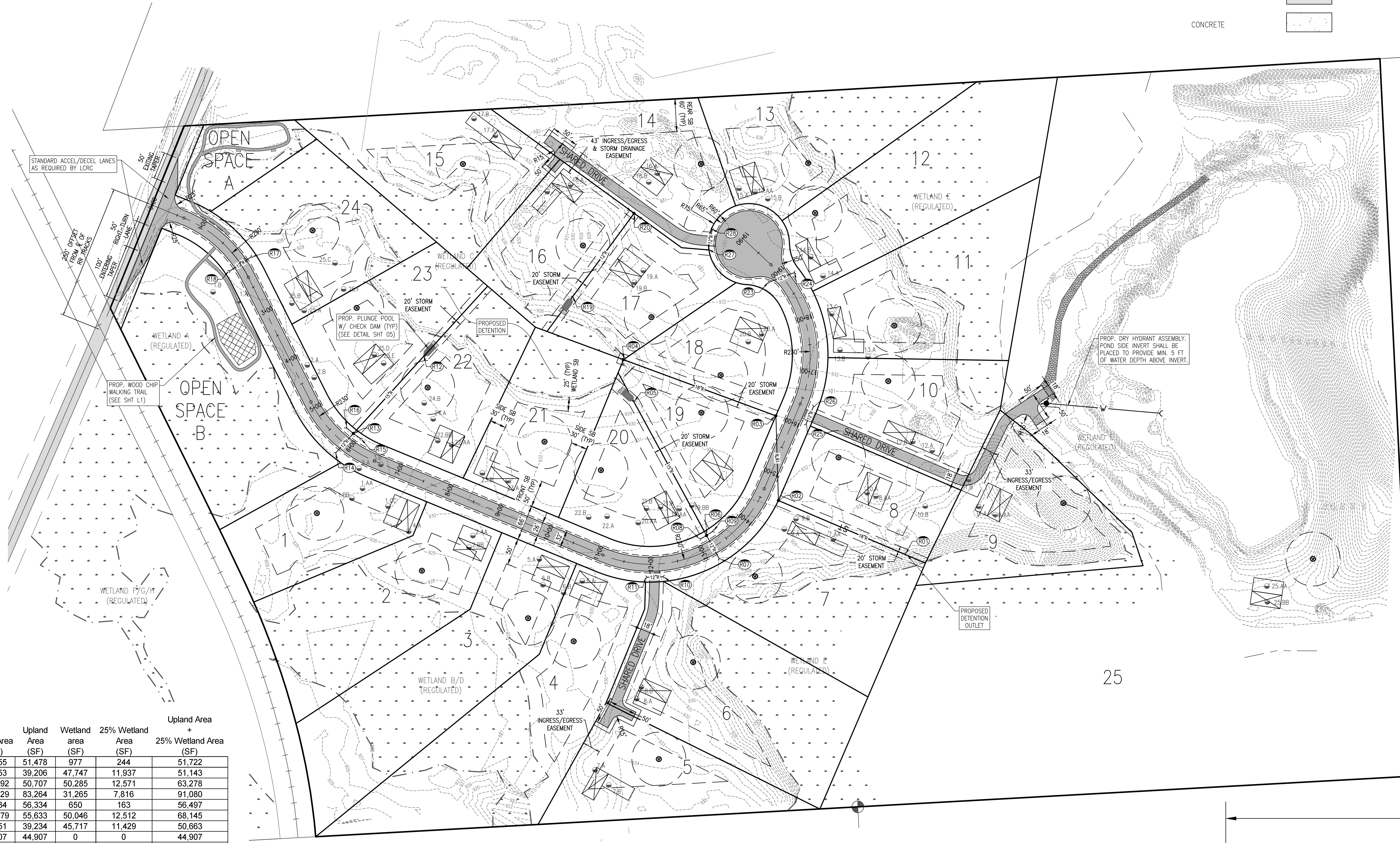


Know what's below.
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OVERALL LAYOUT

LEGEND

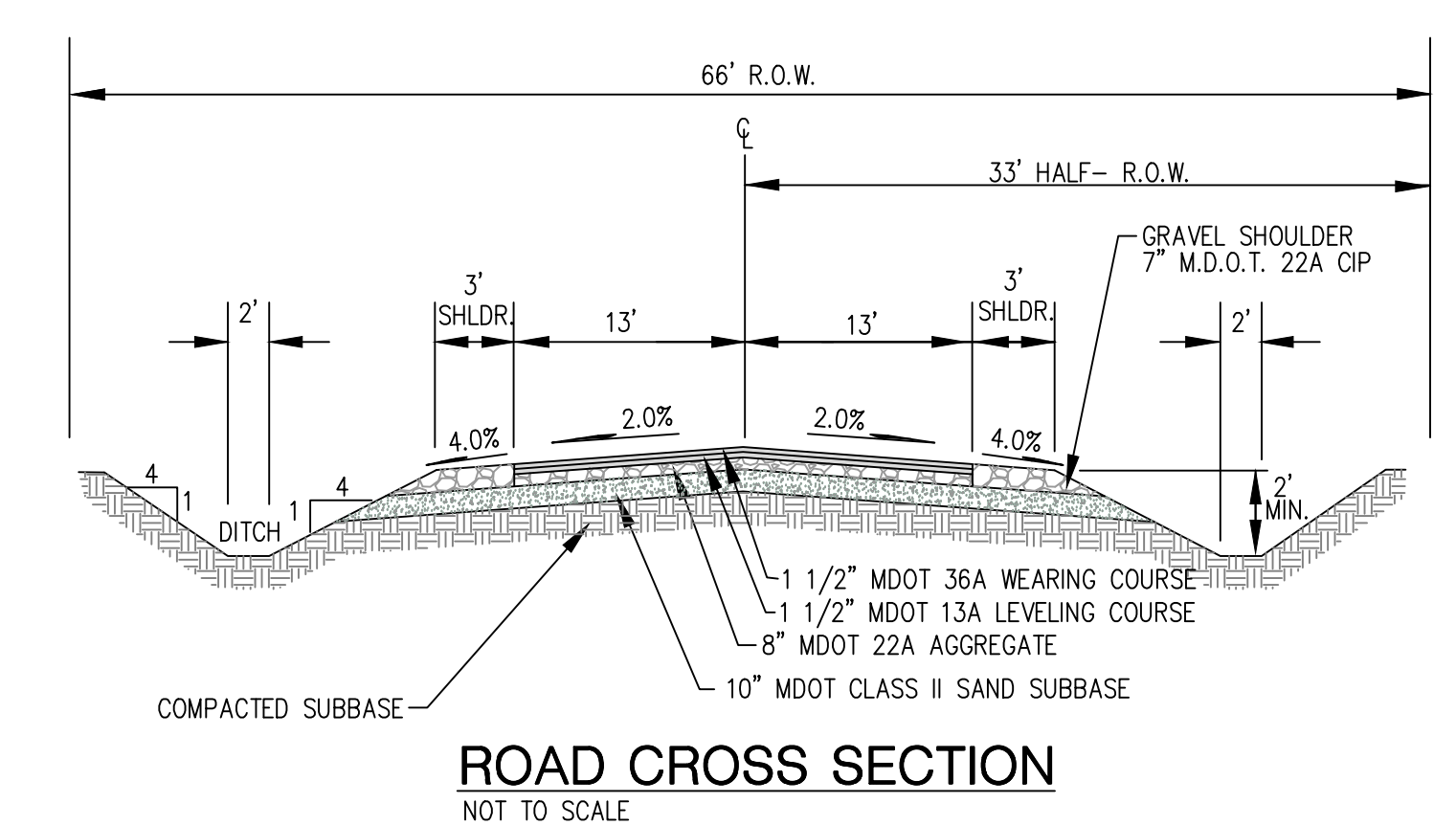
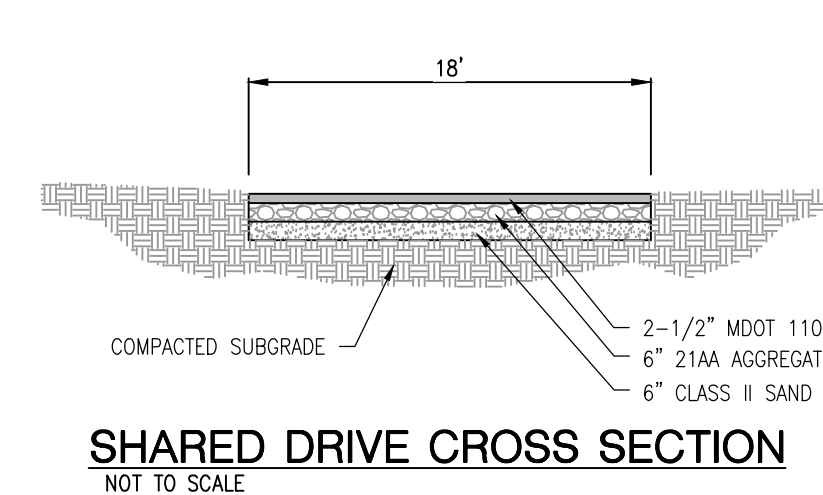
EXISTING		PROPOSED	
CONTOUR		CONTOUR	
WATER MAIN		WATER MAIN	
SANITARY SEWER		SANITARY SEWER	
STORM SEWER		STORM SEWER	
SIGN			
TREE			
ASPHALT			
CONCRETE			



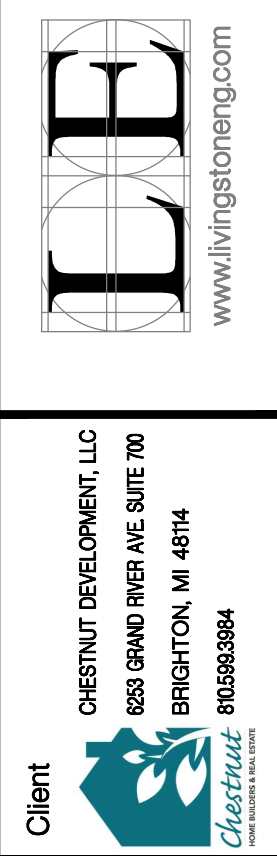
Lot #	Total Area (SF)	Upland Area			Upland Area + 25% Wetland Area (SF)
		Area (SF)	Wetland area (SF)	25% Wetland Area (SF)	
1	52,455	51,478	977	244	51,722
2	86,953	39,206	47,747	11,937	51,143
3	100,992	50,707	50,285	12,571	63,278
4	114,529	83,264	31,265	7,816	91,080
5	56,984	56,334	650	163	56,497
6	105,679	55,633	50,046	12,512	68,145
7	84,951	39,234	45,717	11,429	50,663
8	44,907	44,907	0	0	44,907
9	72,041	53,247	18,794	4,699	57,946
10	61,499	53,657	7,842	1,961	55,618
11	85,428	39,051	46,377	11,594	50,645
12	94,327	27,038	67,289	16,822	43,860
13	67,830	37,418	30,412	7,603	45,021
14	66,762	66,762	0	0	66,762
15	66,221	49,006	17,215	4,304	53,310
16	48,845	43,491	5,354	1,339	44,830
17	47,051	42,891	4,160	1,040	43,931
18	43,688	43,679	9	2	43,681
19	43,807	43,258	549	137	43,395
20	44,133	44,030	103	26	44,056
21	57,040	39,466	17,574	4,394	43,860
22	55,191	40,651	14,540	3,635	44,286
23	59,515	38,529	20,986	5,247	43,776
24	69,657	35,377	34,280	8,570	43,947
25	24.57 ac.				

SITE DATA TABLE

LOT AREA	REQUIRED
LOT WIDTH	1 AC. (min)
LOT COVERAGE	150 FT (min)
FLOOR AREA (PER UNIT)	NA
	980 SF (min)
BUILDING SETBACKS:	REQUIRED
FRONT	50 FT (min)
SIDE	30 FT (min)
REAR	60 FT (min)
WETLAND	25 FT (min)



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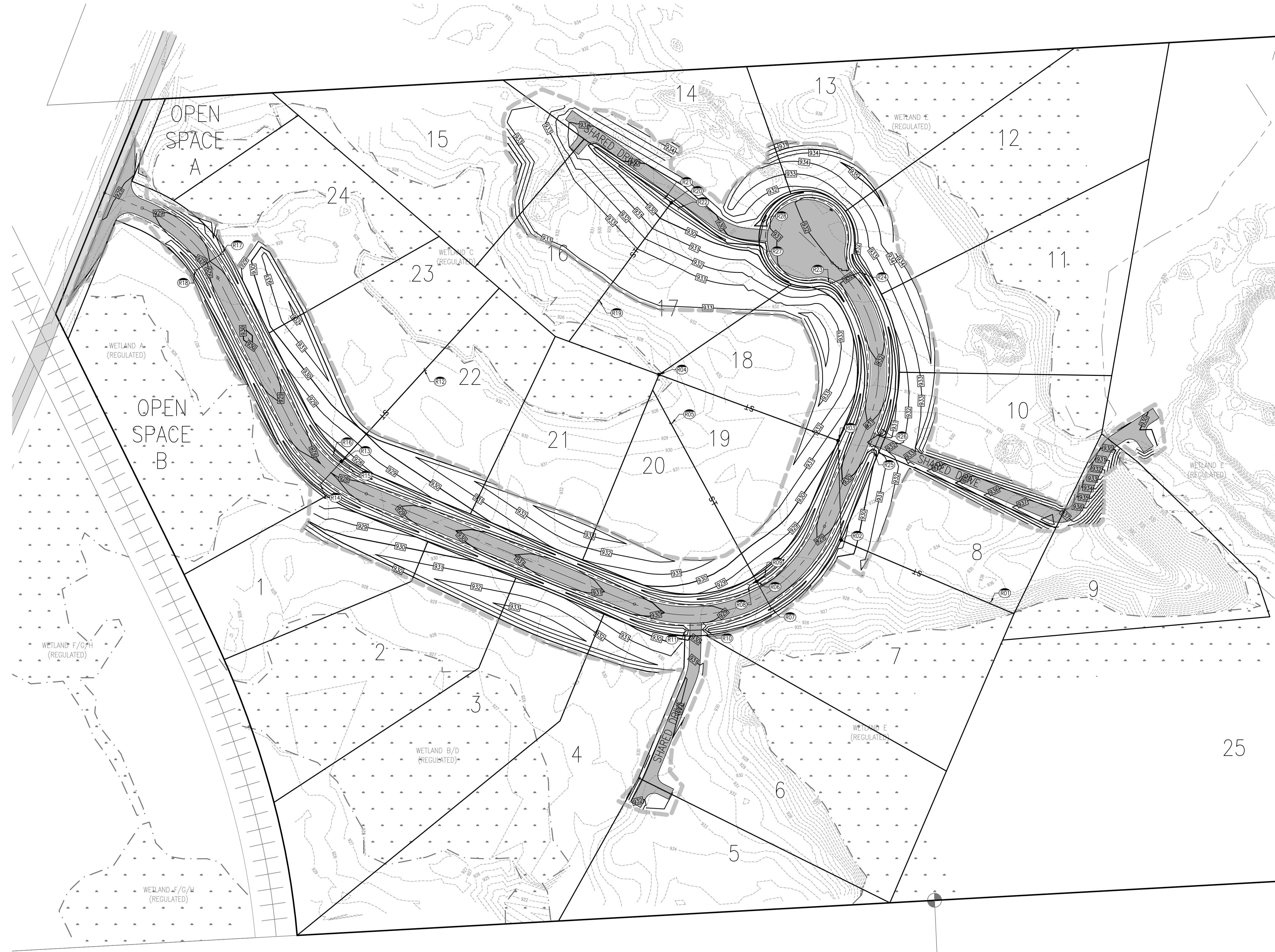


Client
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6805 GRAND RIVER AVE SUITE 100
BRIGHTON, MI 48114
810.598.3884
CHESTNUT SPRINGS
CHILSON RD. GENOA TWP. LIVINGSTON COUNTY, MICHIGAN
SITE PLAN
OVERALL LAYOUT

REV. NO.	DATE	DESCRIPTION
1	5/23/2018	PER TWP CONSULTANT REVIEW COMMENTS

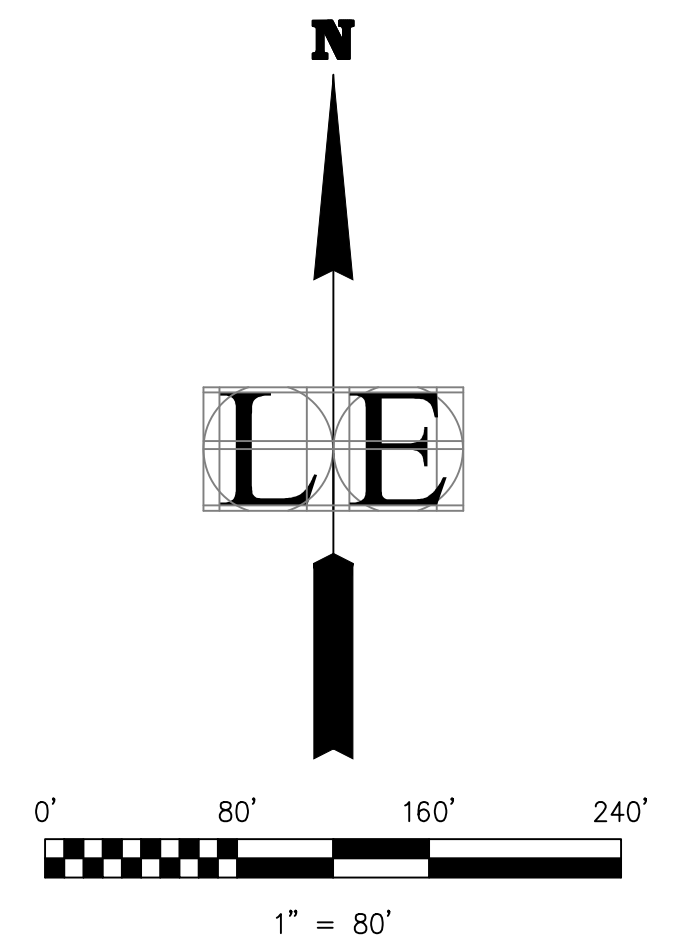
Drawn: MJB
Checked:
Approved:
Date: 5/23/2018
Scale: Vertical: Horizontal: T = 100'

PRELIMINARY GRADING PLAN



LEGEND

PR. SPOT GRADE	
PR. CONTOUR	
DRAINAGE ARROW	
PR. SILT FENCE	
LIMITS OF GRADING	
DANDY BAG LOW POINT INLET FILTER	



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Client
CHESTNUT DEVELOPMENT, LLC
2603 GRAND RIVER AVE SUITE 700
BRIGHTON, MI 48114
810.598.3884
Chestnut

Project
CHESTNUT SPRINGS
CHILSON RD., GENOA TWP., LIVINGSTON COUNTY, MICHIGAN
SITE PLAN
PRELIMINARY GRADING PLAN

REVISONS	DATE
Drawn: MJB Checked: Approved: Date: 5/2/2018	PER TWP CONSULTANT REVIEW COMMENTS 5/23/2018

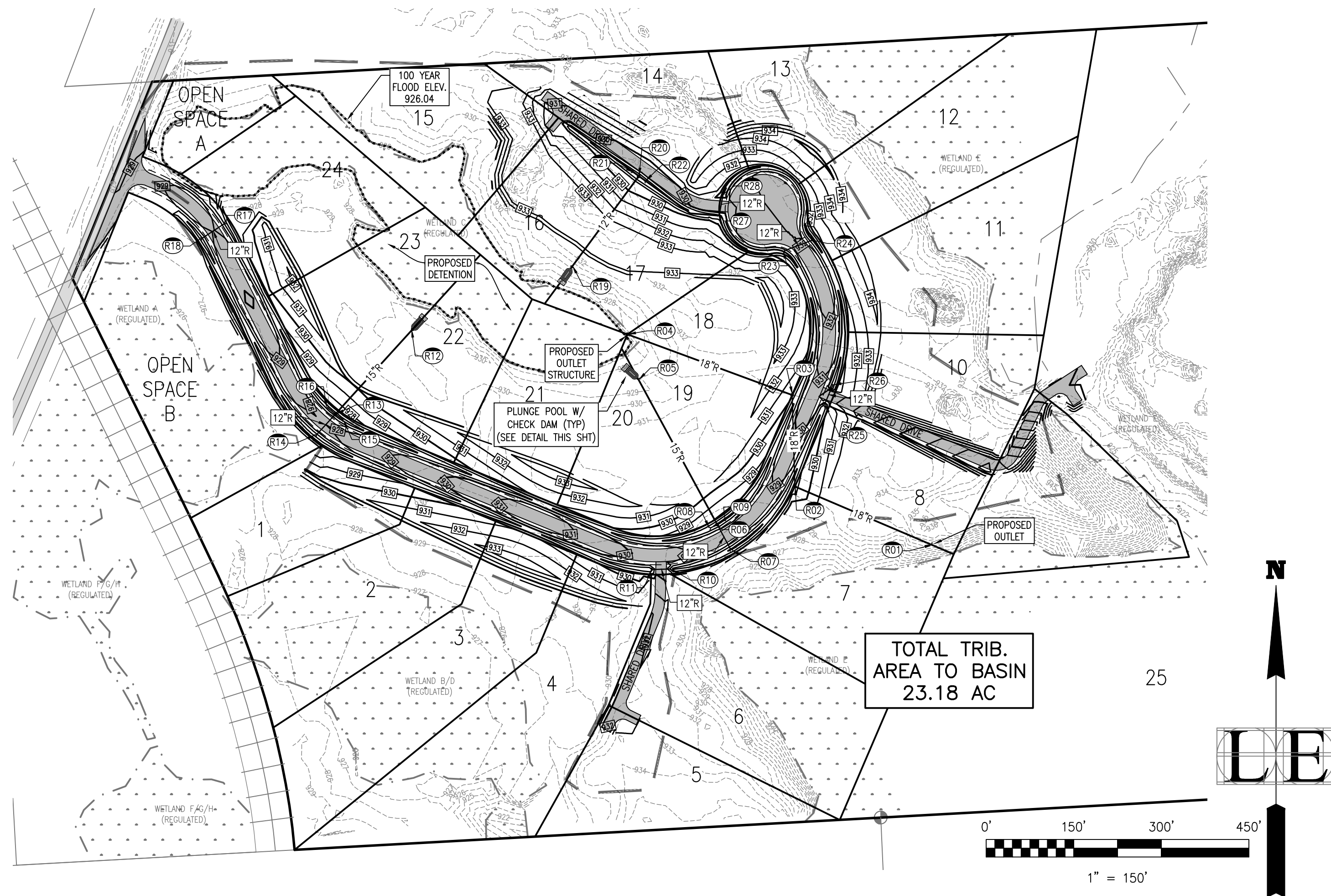
Job No. **11216-2**
Scale:
Vertical: **T = 80'**
Horizontal:

04

STORMWATER MANAGEMENT PLAN

LEGEND

- OVERALL DETENTION TRIBUTARY AREA
- STORM SEWER DRAINAGE DIVIDE LINE
- STORM STRUCTURE
- STORM SEWER DRAINAGE AREA



STORMWATER MANAGEMENT NARRATIVE

STORM CONVEYANCE CONSISTS OF A COMBINATION OF OPEN ROAD-SIDE DITCHES AND STORM SEWER TO CONVEY THE DETENTION AREA. THE DETENTION AREA MAKES USE OF AN ONSITE REGULATED WETLAND (WETLAND C) FOR DETENTION. PRIOR TO EMPTYING INTO THE WETLAND/DETENTION AREA, A COMBINATION OF PLUNGE POOLS WITH CHECK DAMS AND VEGETATIVE FILTERS WILL PROVIDE THE WATER QUALITY AND SEDIMENT DEPOSITION COMPONENTS OF THE SYSTEM.

AN IDEO PERMIT IS CURRENTLY BEING PROCESSED FOR ALL WETLAND IMPACT ACTIVITIES INCLUDING THE DETENTION AREA.

DETENTION VOLUME WAS CALCULATED USING THE LIVINGSTON COUNTY DRAIN COMMISSIONERS METHOD FOR A 100 YEAR STORM. OUR CALCULATIONS SHOW THAT THE STATIC HIGH WATER ELEVATION IN THE POND WILL INCREASE APPROXIMATELY 6 INCHES WITH A 100-YEAR STORM VOLUME ADDED TO THE EXISTING WETLAND/DETENTION POND.

AN OUTLET STRUCTURE IS BEING PROVIDED TO OUTLET WATER ABOVE THE STATIC HIGH WATER ELEVATION AT A PRE-DEVELOPED RELEASE RATE OF 0.2 CFS PER ACRE INTO WETLAND "E" ON THE EAST SIDE OF THE DEVELOPMENT. WETLAND "E" CONNECTS TO SMALL CREEKS AND FLOW CHANNELS DOWNSTREAM FROM OUR PARCEL AS PART OF THE HURON RIVER WATERSHED.

THE OUTLET STRUCTURE WILL ALSO PROVIDE AN EMERGENCY OVERFLOW AT THE 100-YEAR FLOOD VOLUME TO ALLOW WATER TO FLOW FREELY PAST THE RESTRICTED ORIFICES, AND PREVENT WATER FROM EXCEEDING THE DESIGN FLOOD ELEVATION.

PIPE SIZING HAS BEEN APPROXIMATED AND DETAILED DESIGN CALCULATIONS WILL BE PROVIDED FOR FINAL SITE PLAN/CONSTRUCTION PLANS FOR BOTH THE OUTLET STRUCTURE AND THE STORM SEWER SIZING.

Required Detention Volume
Livingston County Drain Commissioner's Office Detention Methodology
Project: Chilson Park
LE Job No. = 11216-2

Area, A =	23.18 Ac.
C =	0.30 Ave. Runoff Coefficient
K =	6.954
Allowable Q =	4.64 cfs (0.2 cfs per acre)

DURATION MINUTES	DURATION SECONDS	INTENSITY (IN/HR)	INCHES	INFLOW VOLUME IN RUNOFF x A x C	OUTFLOW DURATION x Q _o	STORAGE VOLUME INFLOW - OUTFLOW
5	300	9.17	2751	19130	1390.8	17740
10	600	7.86	4716	32795	2781.6	30013
15	900	6.88	6192	43059	4172.4	38887
20	1200	6.11	7332	50987	5563.2	45424
30	1800	5.00	9000	62586	8344.8	54241
60	3600	3.24	11664	81111	16689.6	64422
90	5400	2.39	12906	89748	25034.4	64714
120	7200	1.90	13680	95131	33379.2	61752
180	10800	1.34	14472	100638	50068.8	50569

Required Volume, V = 64714 cf

STORM WATER DETENTION POND CALCULATIONS
Project: CHESTNUT SPRINGS
Livingston Engineering Project No. 11216-2
Livingston County Drain Commission Method

I. Common Items and Assumptions:

- A. First Flush = $(0.5^2) \times \text{area} \times \text{developed C}$
- B. Bankfull Flood = $5,160 \times \text{area} \times \text{developed C}$
- C. Detention Volume Equation
 $V = ((A_1 + A_2) / 2) \times H$
where: A_1 = Area at top of storage elevation
 A_2 = Area at bottom of storage elevation
 H = Depth of analysis

II. Detention Pond Volumes:

- A. First Flush, Bankfull Flood and 100-year Storm Event
- 1. Contributing Area = 23.18 Ac.
- 2. Developed Runoff Coefficient

Area (A), Ac.	Coefficient (C)	A x C
Rooftop / Asphalt Area 2.87	0.90	2.58
Gravel Area 0.44	0.70	0.31
Lawn/Landscaped Area 19.88	0.20	3.98
Totals:	23.18	6.86
- 3. First Flush Volume:
 $V = (0.5^2) \times 43,560 \times 0.30 \times 23.18 = 12622 \text{ CF}$
- 4. 100-Year Flood Volume:
 $Q_A = (0.20 \times 23.18) = 4.64 \text{ CFS}$
 $V_f = 64714 \text{ CF}$

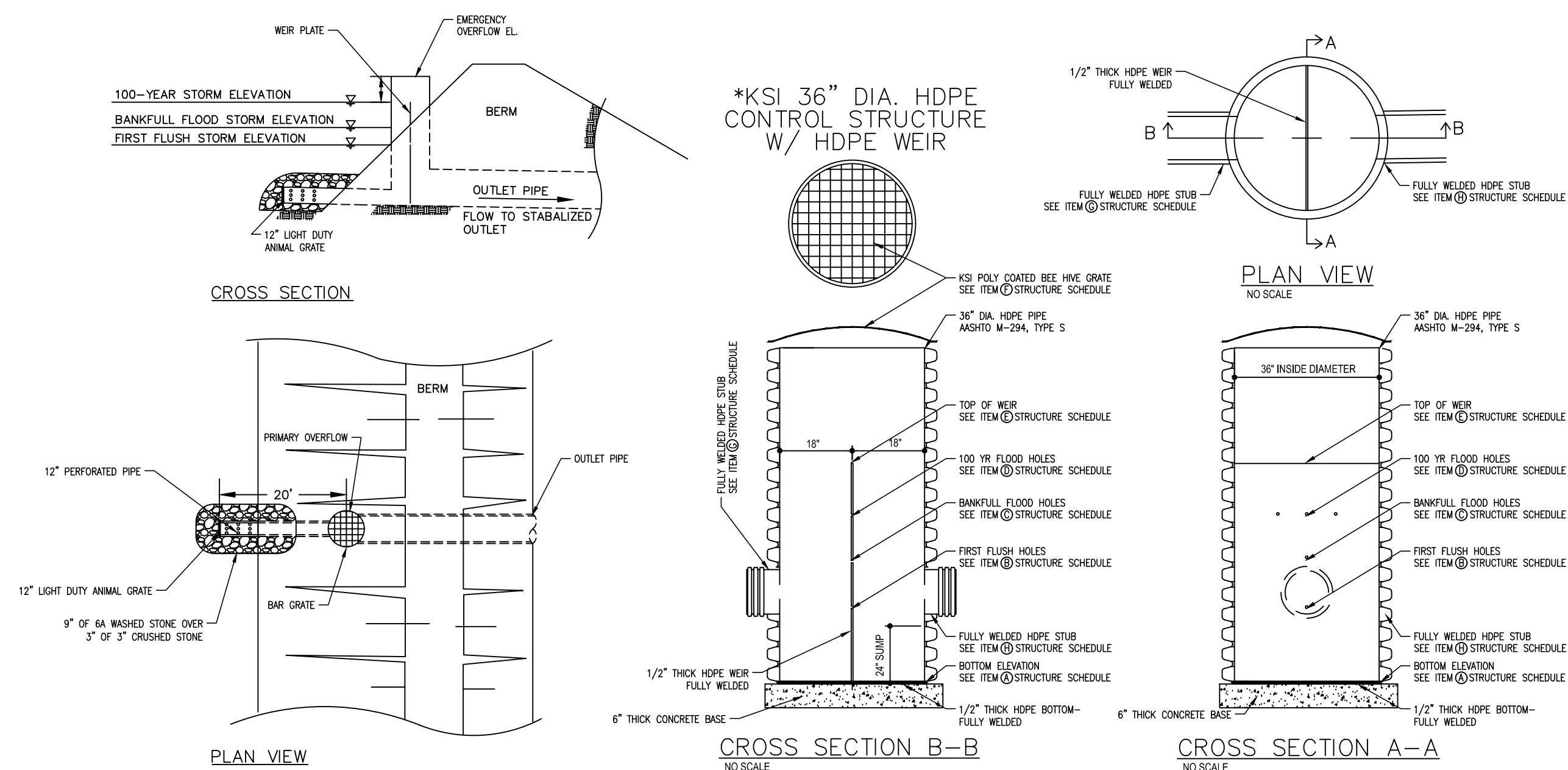
	Elev.	Area (sf)	Vol (cf)	Acc. Vol (cf)
Elev _o =	925.5	109756		
	926.0	121484	60122	60122
	927.0	139008	130246	190368
Total:				190368 CF

The following interpolations determine the pond water elevations for the three different storm events:

100 Yr. Flood:	927.0	-	926.0	=	x	-	926.0
	190368	-	60122		64714	-	60122

$x = 926.04$

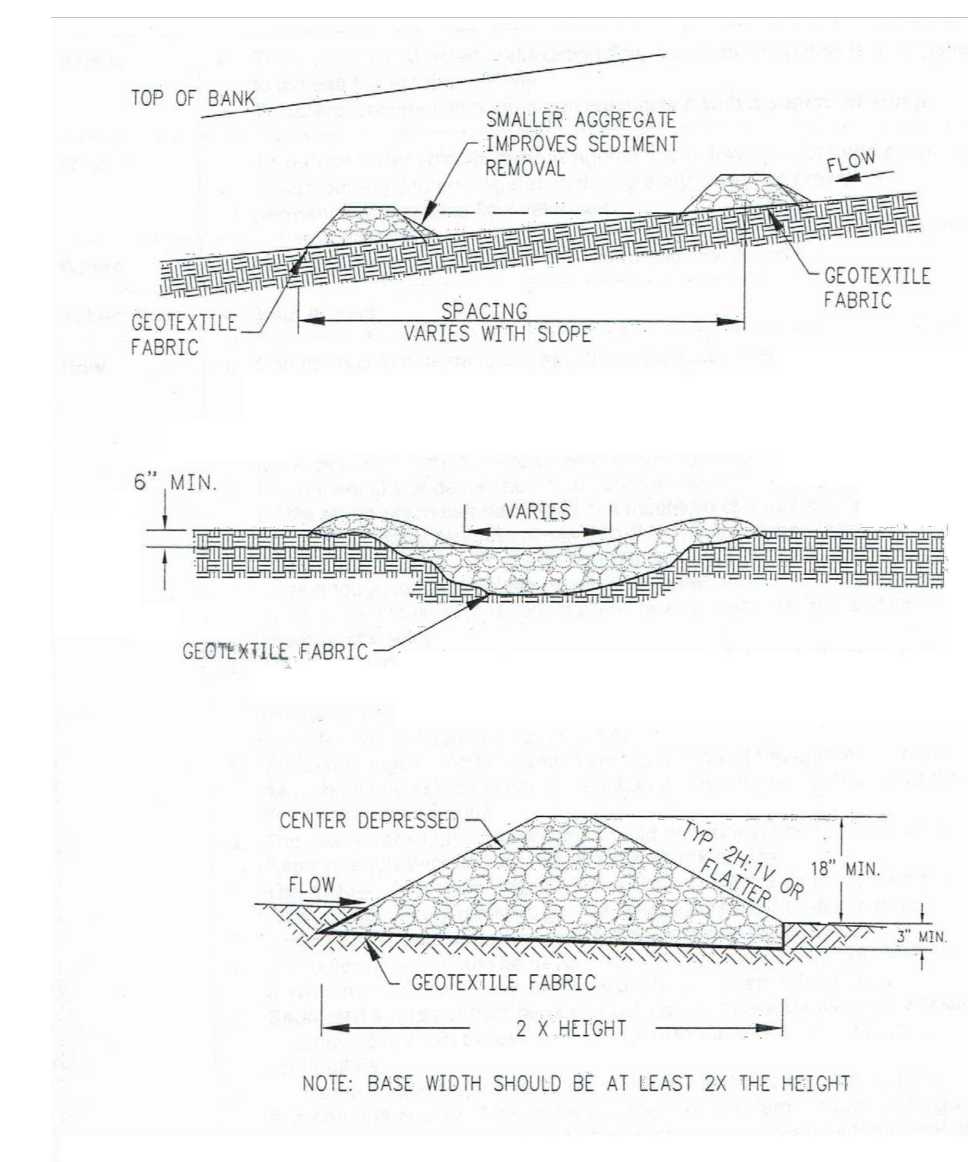
This yields a pond water elevation of 926.04 for the 100 Yr. Storm Event



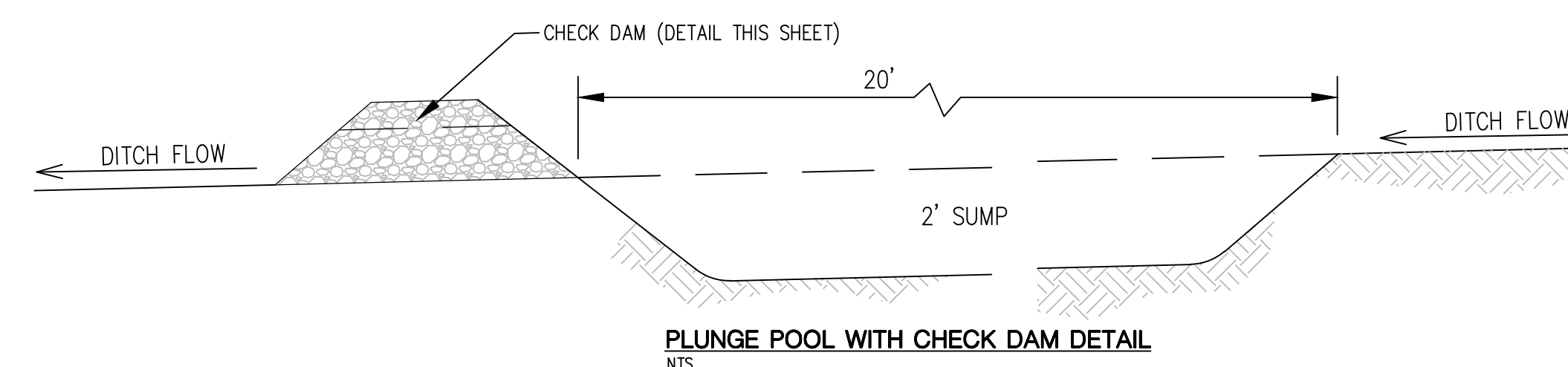
OUTLET STRUCTURE DETAIL

NOT TO SCALE

DETAIL PROVIDED BY THE FOLLOWING SUPPLIER:
KENNEDY SYSTEMS INC.(KSI) • 2111 SAGE LAKE ROAD • PRESCOTT, MICHIGAN 48756 • 800-699-4046
*OR ENGINEER APPROVED EQUAL



CHECK DAM DETAIL



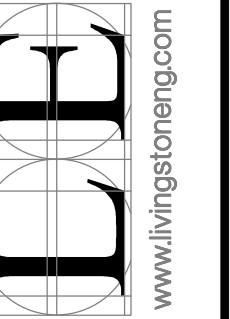
PLUNGE POOL WITH CHECK DAM DETAIL

NTS

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REVISIONS	DATE
PER TWP CONSULTANT REVIEW COMMENTS	5/23/2018

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Job No. 11216-2	Scale:	Vertical: T = 150'	Horizontal:



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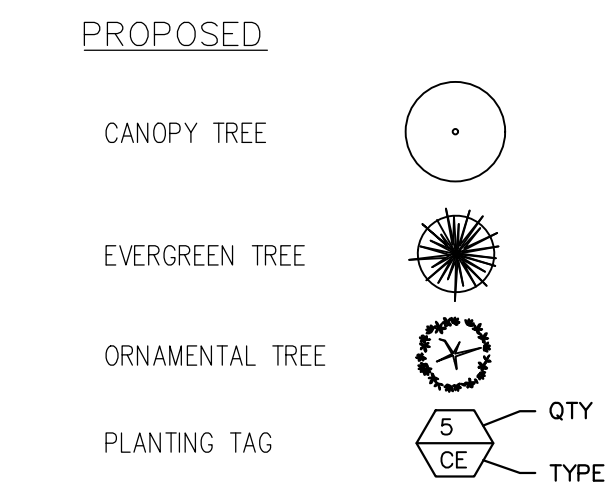
LANDSCAPE PLAN & DETAILS

LANDSCAPE REQUIREMENTS:

GENOA TOWNSHIP ZONING ORDINANCE, ARTICLE 12: SITE DEVELOPMENT REGULATIONS

SECTION 12.02: GREENBELTS, LANDSCAPE MATERIALS & SCREENING	REQUIRED	PROVIDED
12.02.02: RESIDENTIAL STREET TREES	2 CANOPY TREES SHALL BE PROVIDED ALONG A PUBLIC STREET OR PRIVATE ROAD FOR EACH RESIDENTIAL UNIT. (TOTAL UNITS ALONG PRIVATE ROAD = 19)	38 CANOPY TREES
12.02.05: DETENTION/RETENTION POND LANDSCAPING	DETENTION/RETENTION PONDS SHALL BE LANDSCAPED TO PROVIDE A NATURAL SETTING IN OPEN SPACE AREAS.	REQUESTING WAIVER FROM REQUIREMENTS BASED ON EXISTING WETLAND BOUNDARY & VEGETATION AROUND THE PROPOSED DETENTION POND.

LEGEND

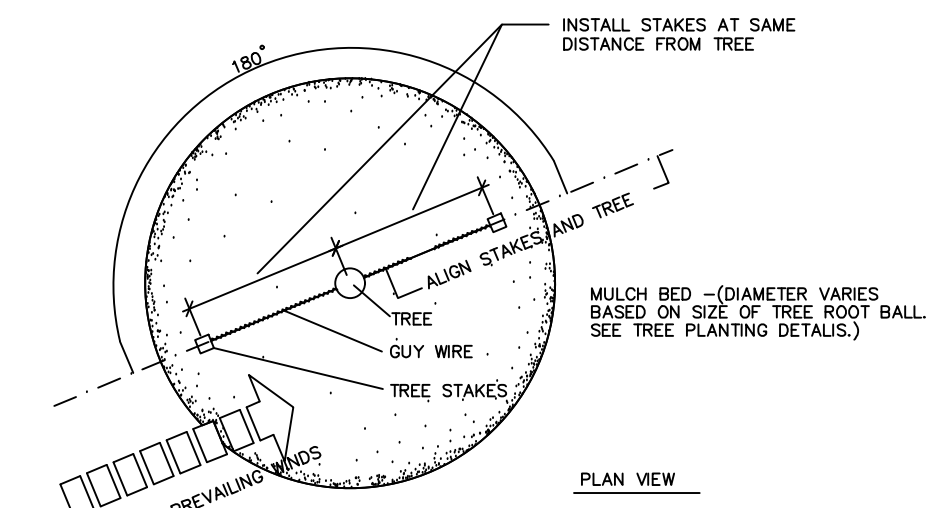


NOTES

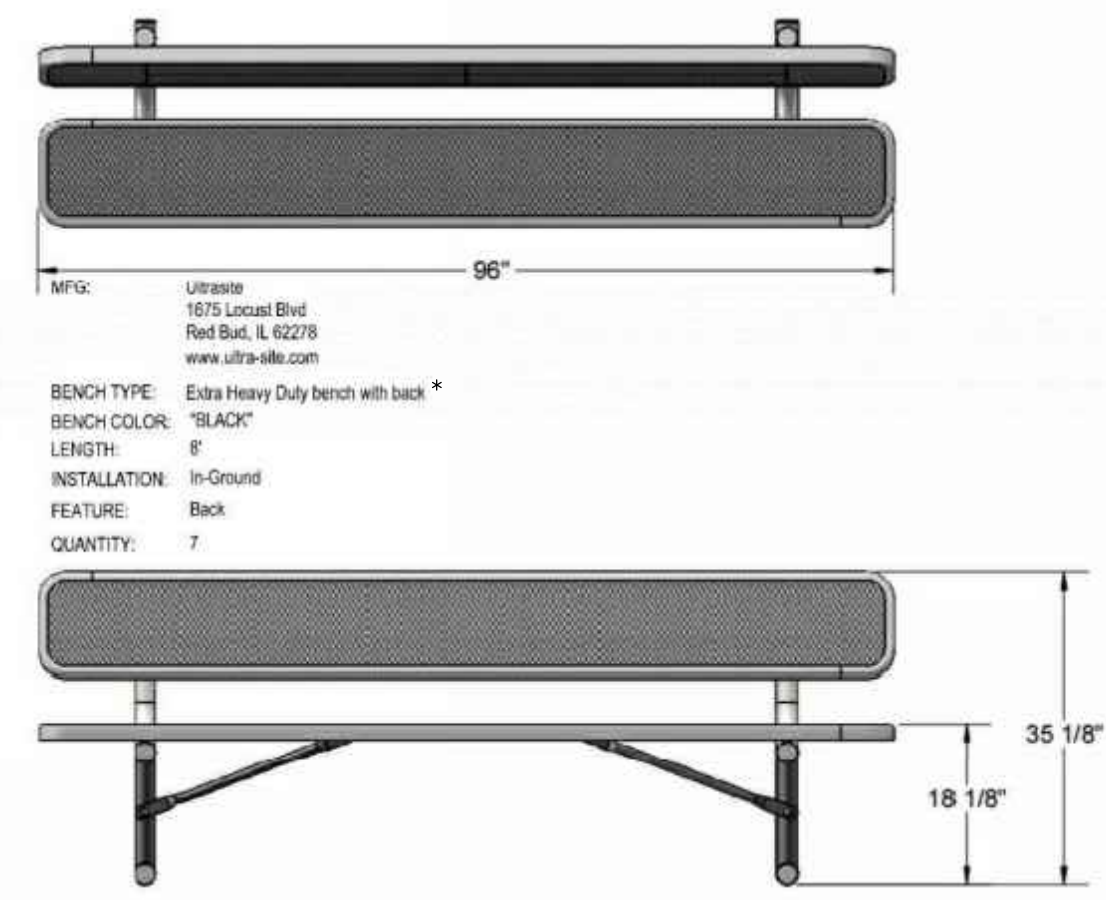
- The contractor(s) shall verify the location of all underground utilities prior to construction.
- Plants shall conform to the sizes as shown on the drawings and shall be of sound health. All measurements such as spread, ball size, height, caliper and quality designations shall be in conformance to the latest edition of the American Standards for Nursery Stock.
- All evergreen tree species are to be full, dense plants branched fully to the ground.
- Prune all dead and broken branches from all plants immediately after installation.
- 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.
- Organic mulch requirements: shade trees, ornamental trees and evergreen trees - 6" of shredded bark; shrubs and shrub beds - 4" of shredded bark; ground cover beds and perennial flowers - mulch with 1" of peat.

Planting List

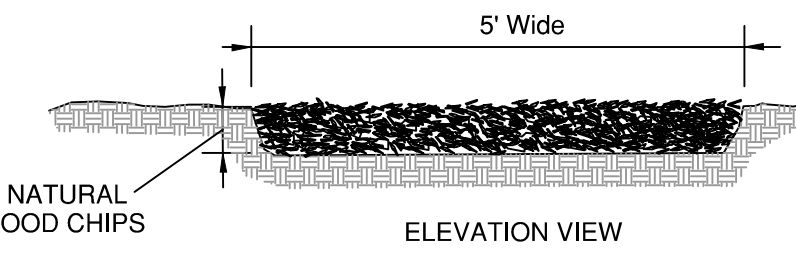
Canopy Trees				Min. Size		Root
Key	Qty	Genus	Common Name	Caliper	Height	
AC	12	Acer rubrum	Red Maple	2.5"		B & B
QU	13	Quercus Alba	White Oak	2.5"		B & B
TI	17	Tilia cordata	Little Leaf Linden	2.5"		B & B
Evergreen Trees				Min. Size		Root
Key	Qty	Genus	Common Name	Caliper	Height	
PA	4	Picea abies	Norway Spruce	6"		B & B
PG	4	Picea glauca	White Spruce	6"		B & B
Ornamental Trees				Min. Size		Root
Key	Qty	Genus	Common Name	Caliper	Height	
MP	7	Malus 'Prairifire'	Prairifire Flowering Crab	2"		B & B
MS	3	Malus 'Selkirk'	Selkirk Crab	2"		B & B



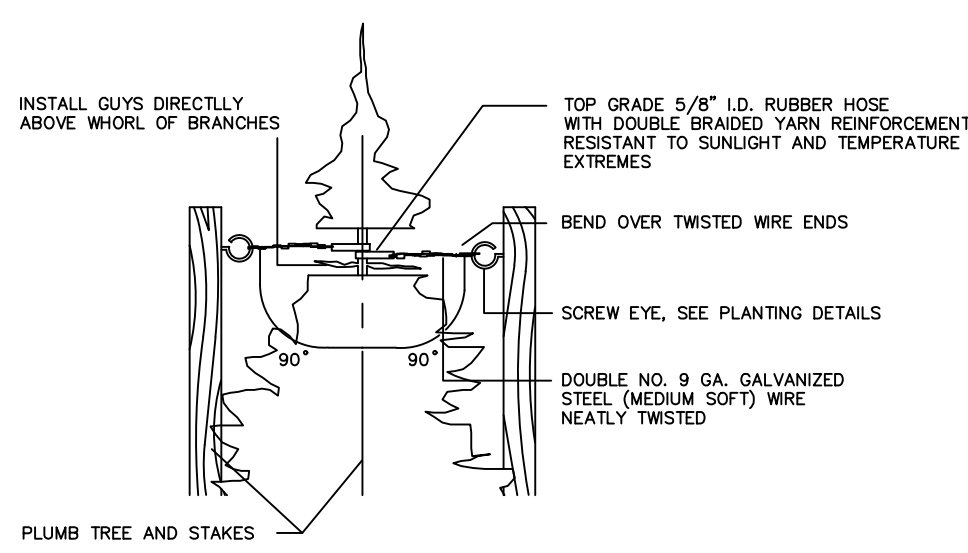
Stake Placement Detail
FOR EVERGREEN AND DECIDUOUS TREES



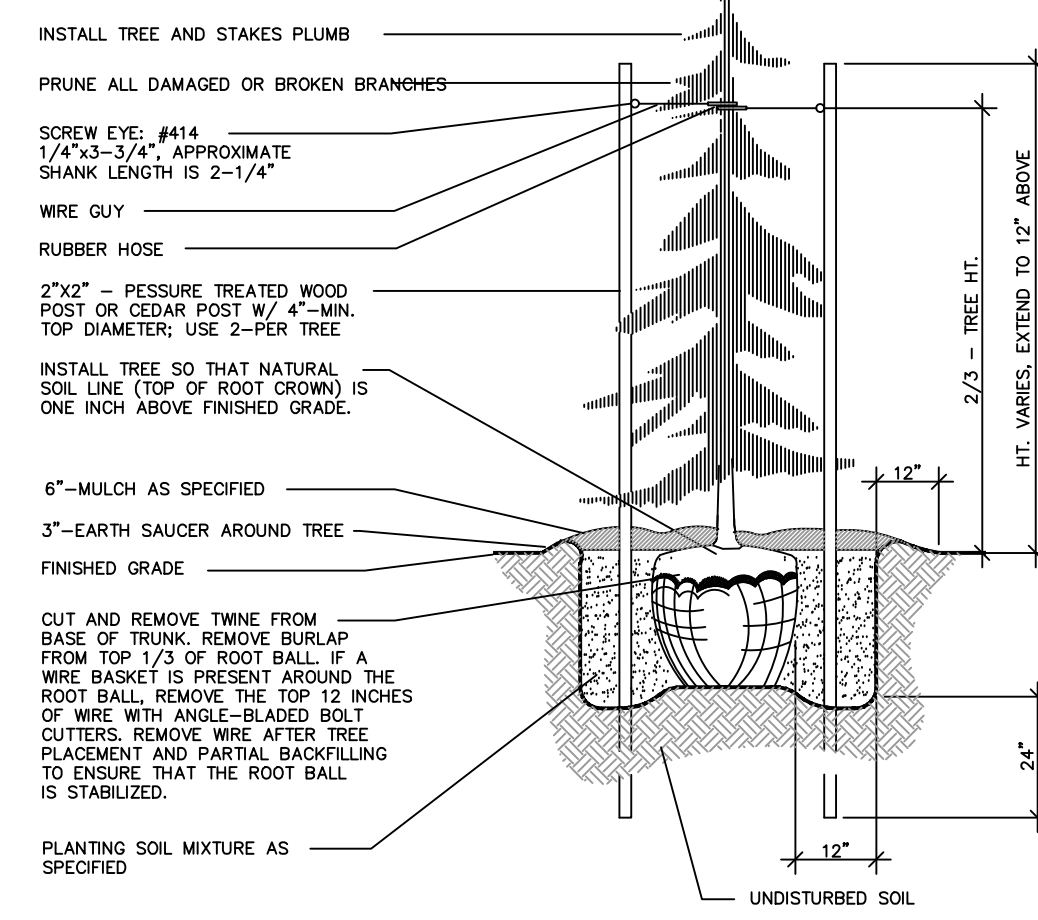
BENCH DETAIL
(NOT TO SCALE)



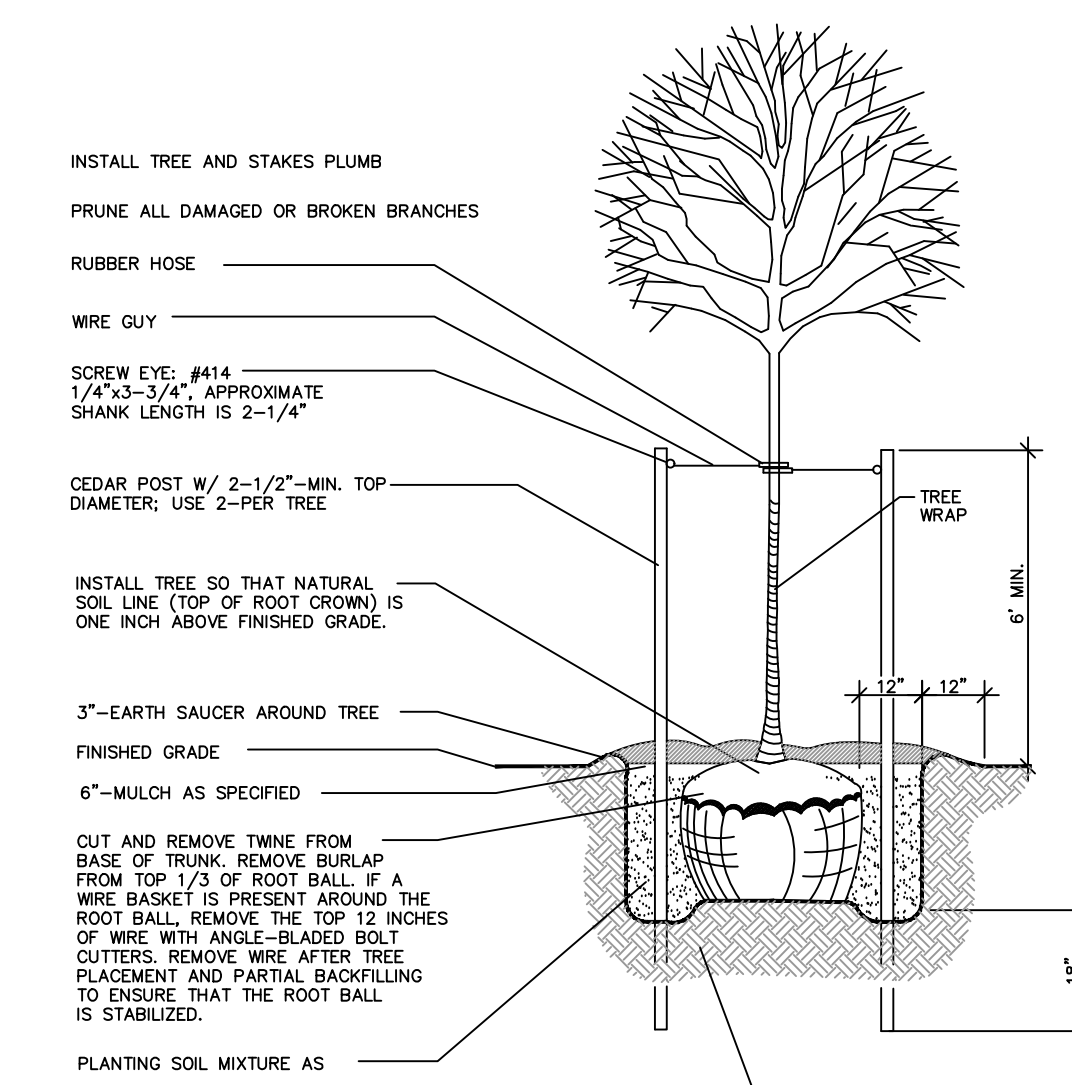
WOOD CHIP WALKING PATH
(NOT TO SCALE)



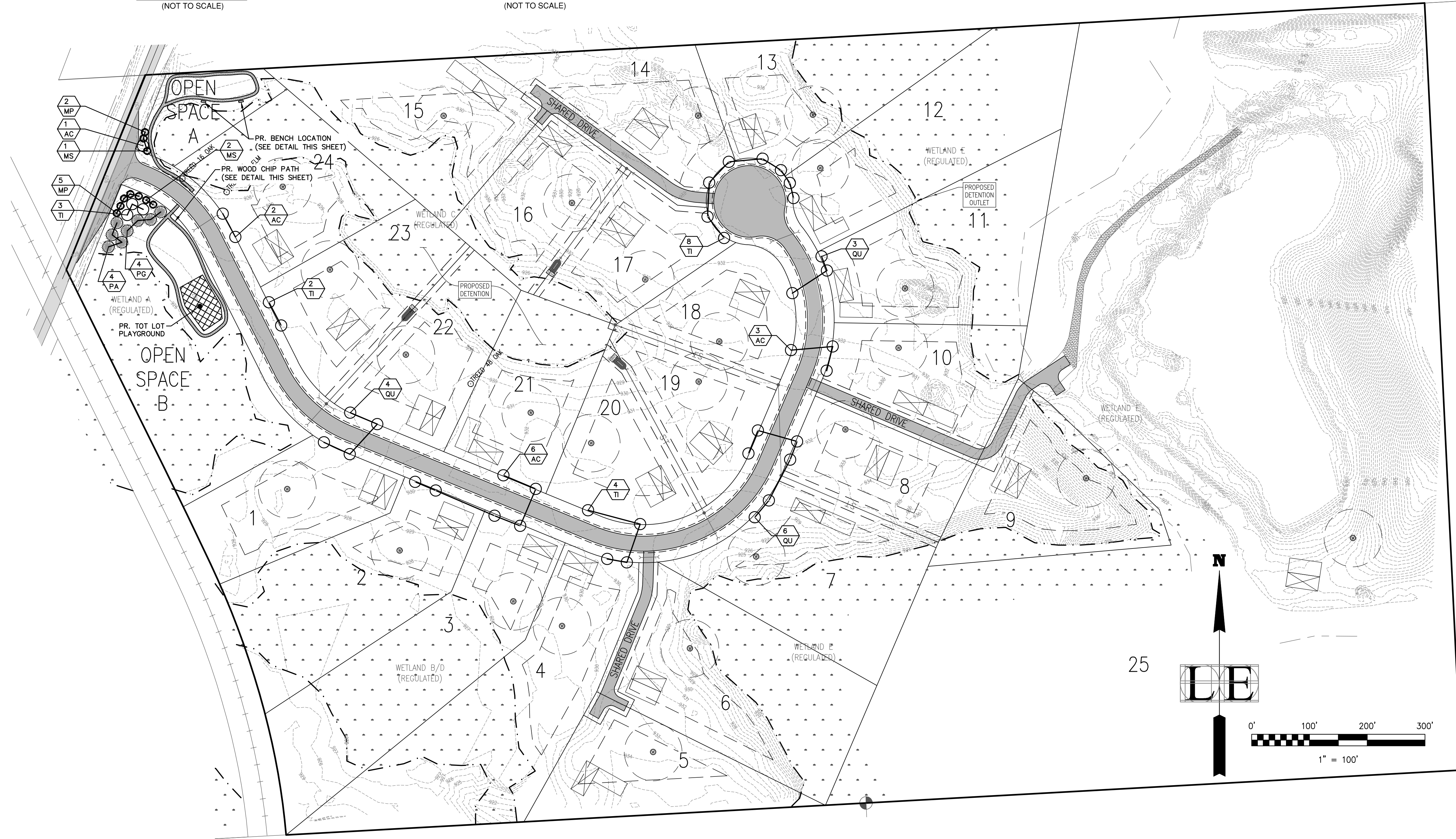
Guy Installation Detail
FOR EVERGREEN AND DECIDUOUS TREES



Evergreen Tree Planting/
Staking Detail



Deciduous Tree Planting/
Staking Detail



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LE

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6885 GRAND RIVER AVE SUITE 100
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810.598.9884
Electrical

CHESTNUT SPRINGS
CHILSON RD., GENOA TWP., LIVINGSTON COUNTY, MICHIGAN
SITE PLAN
LANDSCAPE PLAN & DETAILS

REVISIONS	DATE
Drawn: MJB	5/23/2018
Checked: PER TWP CONSULTANT REVIEW COMMENTS	
Approved: [Signature]	
Date: 5/23/2018	

Job No: 11216-2
Scale: Vertical: 1" = 100'
Horizontal: 1" = 100'

L1