



**COHOCTAH PLANNING COMMISSION  
MEETING  
October 03, 2024 at 7:00 PM  
Township Hall | Fowlerville, Michigan**

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*The Township will provide necessary reasonable auxiliary aids and services to individuals with disabilities at the meeting upon 72 hour advance notice by contacting Barb Fear, Township Clerk, by email: [bfearclerk@gmail.com](mailto:bfearclerk@gmail.com), phone: (517) 546-0655, or mail: 10518 N Antcliff Rd Fowlerville MI 48836.*

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**AGENDA**

**CALL TO ORDER**

**PLEDGE OF ALLEGIANCE** – *Moment of Silence*

**ROLL CALL**

**APPROVAL OF AGENDA**

**APPROVAL OF MINUTES**

- [1.](#) 09/05/2024 PC Meeting Minutes

**CALL TO THE PUBLIC**

**MATTERS PERTAINING TO THE GENERAL PUBLIC**

**UNFINISHED BUSINESS**

- [2.](#) Master Plan Review

**NEW BUSINESS**

- [3.](#) Proposed Livingston County EMS Site Plan Review

**CALL TO THE PUBLIC**

**ADJOURNMENT**



**COHOCTAH PLANNING COMMISSION  
MEETING  
September 05, 2024 at 7:00 PM  
Township Hall | Fowlerville, Michigan**

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*The Township will provide necessary reasonable auxiliary aids and services to individuals with disabilities at the meeting upon 72 hour advance notice by contacting Barb Fear, Township Clerk, by email: [bfearclerk@gmail.com](mailto:bfearclerk@gmail.com), phone: (517) 546-0655, or mail: 10518 N Antcliff Rd Fowlerville MI 48836.*

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**MINUTES**

**CALL TO ORDER**

**PLEDGE OF ALLEGIANCE** – *Moment of Silence*

**ROLL CALL**

All PC members were present except DeFrancisco

**APPROVAL OF AGENDA**

Motion to approve Agenda was made by Beach and 2nd by Newton

Motion passed

**APPROVAL OF MINUTES**

Motion to Amend and Approve 8/13/2024 PC Meeting Minutes to include and clarify the discussion of renaming the Solar Energy Overlay to the new name of Renewable Energy Overlay District

Motion made by Charrette and 2nd by Newton

Motion passed

1. 08-13-2024 PC Meeting Public Hearing Renewable Energy Overlay Minutes

Minutes were amended to include the discussion of renaming the Solar Energy Overlay and the new expansion the Renewable Energy Overlay District

**CALL TO THE PUBLIC**

During First call to the Public a resident of Cohoctah Twp was heard regarding a continued issue and disapproval of the Livingston County Road Commission and the upkeep/maintaining of roads in Cohoctah Twp

**MATTERS PERTAINING TO THE GENERAL PUBLIC**

There were no matters pertaining to the public to address

**UNFINISHED BUSINESS**

There was no old business to discuss

**NEW BUSINESS**

2. Renewal of Hardship Temporary Mobile Home Permits

There were 2 Renewals of Hardship Mobile Home Permits submitted.

3530 Gannon Rd

Motion made by Charrette to approve renewal until Sept of 2025

2nd by Newton

Motion passed

10400 Owosso

Motion made by Charrette to approve renewal until Sept of 2025

2nd by Cican

Motion passed

### **CALL TO THE PUBLIC**

During the second Call to the Public a Cohoctah Resident was heard regarding the closeness of the Newly expanded Renewable Energy Overlay District and the closeness to the Shiawassee River and voiced his concern over the possible destruction of trees in the area.

### **ADJOURNMENT**

Motion to Adjourn was made by Cican and 2nd by Engel

Motion passed

Meeting was adjourned at 7:15pm



Cohoctah Township  
2024 Master Plan



# **Cohoctah Township 2024 Master Plan**

Cohoctah Township, Michigan

Adopted MONTH YEAR

Written by the Cohoctah Township Planning Commission  
with assistance from Carlisle/Wortman Associates, Inc.

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## Chapter 1: Cohoctah Township Master Plan Overview

The Cohoctah Township Master Plan is adopted pursuant to the authority of the Michigan Planning Enabling Act, Public Act 33 of 2008. It serves as the guide for the Cohoctah Township Zoning Ordinance pursuant to the Michigan Zoning Enabling Act, Public Act 110 of 2006 as amended.

The Master Plan is not the same as the Zoning Ordinance. A Zoning Ordinance is enforceable by law, whereas a Master Plan is not. Zoning is public regulation of the use of land; a community's land is divided into various zoning districts which permit certain uses of land within that zone (residential, commercial, industrial, etc.). Typical zoning regulations address building height, bulk, lot area, setbacks, parking, and landscaping.

By contrast, a Master Plan is a guide to the future use of land in Cohoctah Township. Local officials use this document as a decision-making guide when considering rezonings and other development requests, potential public improvements and other investments that have long-term implications for the community. The Master Plan identifies and examines a wide range of physical issues including population, housing, natural resources, traffic and circulation, public services, and land use. The analysis of each of these physical issues is then translated into a series of goals and objectives for the Township. The Master Plan process culminates into the creation of a Future Land Use Plan and Map, which divides the land into future land use designations (not districts) with recommended development guidelines and illustrates how the Township should develop over time.

### Purpose

The Plan is intended to be a tool to assist decision making for a number of planning related issues. The Plan and its supporting documentation contain most of the data necessary to assist elected and appointed officials and the public with:

#### 1. Zoning Decisions

This Master Plan blueprints the future of Cohoctah Township. Zoning decisions should be in keeping with the goals and objectives of the plan. The Cohoctah Township Zoning Ordinance, when aligned with the Cohoctah Township Master Plan, will be the Plan's main tool for implementation.

#### 2. Land Use Decisions

A primary function of Cohoctah Township government is the recommendation and review of land use decisions that preserve the health, safety, and welfare of its residents. Decisions regarding special uses, variances, site plans, and transportation are regular agenda items for the Township Board and Planning Commission. The Master Plan provides necessary land use information for making difficult decisions.

#### 3. Public Infrastructure

Prime development land combined with highway access and location within easy commuting distance of several major labor markets, has made Livingston County one of the fastest growing counties in Michigan. This rapid growth is steadily moving from the southeast corner of the county to the rest of the county, and it is straining local infrastructure. The Master Plan is a component of the decision-making process when proposing public services. While public water and sewer service is not currently an issue in Cohoctah Township, it could be in the future. Roads also play an important role in growth. To be fiscally responsible and give the township a measure of control over future growth, new infrastructure must correspond with the Master Plan.



1. **Vision**

The development of this Plan required many different entities concerned with the future of Cohoctah Township to work together. Through a combination of public meetings, surveys, and inventories of existing land uses, the community has developed this Plan to preserve and protect the rural character of Cohoctah Township.

<b>Plan Components</b>
------------------------

**Background Studies and Trends**

Many chapters of the Master Plan provide an inventory of specific conditions. For example, Chapter 2: Community Character explains the location, history, and community resources of the Township; and Chapter 3: Demographic Profile summarizes the population, housing, income, occupations, education and agricultural data and trends of the Township. These background studies allow the Planning Commission and Township Board to develop and implement a Master Plan based on an assessment of the existing and future trends of Cohoctah Township.

**Goals & Objectives**

A vital part of the Master Plan is the goals and objectives, often called policy statements. These statements aid in decision making based on principles the Township has decided are vital to the future well-being of the community. The goals and objectives also provide valuable background in the development of the future land use plan and map. The goals and objectives state what the community plans to do when faced with certain decisions. For example, the Township could have as a goal “the protection of the Township’s rural character”. When faced with a rezoning or site plan that would involve inappropriately high densities or an inordinate number of curb cuts, the Township may be justified in denying the request based on the Master Plan goal and related objectives.

**Future Land Use Plan**

The Master Plan also contains a description of the kinds of land uses planned for the future and a map showing the areas proposed for each kind of use. The Plan designations (or categories) identify portions of the Township for specific land uses. These may include residential, commercial, agricultural, etc. This section of the Plan will probably be the most used of the entire plan due to its relationship to other planning issues.

**Appendices**

The appendices of the Master Plan contain a variety of resources that were key components in establishing the body of the Plan. They include the following:

Citizen Survey – X survey responses were submitted from township property owners. The survey asked a number of questions related to the future vision of the Township. These responses contributed to the development of Master Plan goals and objectives, which in turn were used to develop the plan map.

Cohoctah Township Master Plan Goals & Objectives Fact Sheet – This reference list of demographics and planning trends were identified through the research and analysis that went into creating chapters of the 2024 Cohoctah Township Master Plan. The fact sheet was used as a source material for developing the goals and objectives of the Plan.

## How the Plan was Prepared

The current Cohoctah Township Comprehensive Plan was adopted in January 2011. With the passage of more than ten years, the 2011 plan no longer reflects current conditions and issues. Additionally, the passage of the Michigan Planning Enabling Act (Public Act 33) in 2008, requires that master plans be reviewed and updated no less than once every five years. With these facts in mind, the Cohoctah Township Planning Commission recognized the need for an updated Master Plan and began preliminary work. A citizen survey was sent out by mail in mid-2023 to obtain citizen input in the Master Plan. The surveys were due at the end of May 2023. In October of 2023 the Township hired Carlisle Wortman Associates, Inc. to assist the Cohoctah Township Planning Commission with the preparation of the plan.

After the Cohoctah Township Planning Commission proposed a draft Master Plan, the Plan was submitted to the Cohoctah Township Board for review and comment. The Township Board approved the distribution of the proposed draft, and it was sent to the notice list that received the notice of intent to plan.

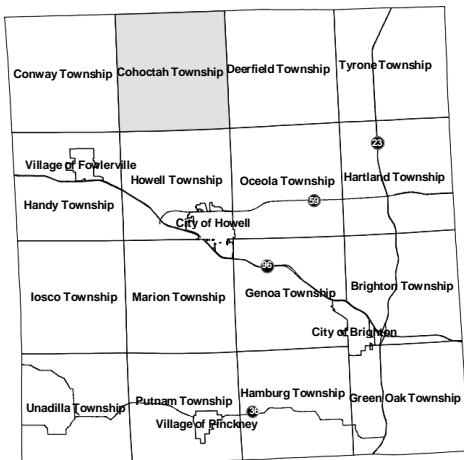
A public hearing was noticed and held after the public comment period ended. The hearing was held on December 2, 2010 at the Cohoctah Township Hall. The Cohoctah Township Master Plan was adopted by the Township Board on January 13, 2011. Following adoption, the Planning Commission Secretary submitted copies of the adopted master plan to the same entities to which copies of the proposed master plan were required to be submitted.

Commented [JP1]: Add dates when available

## Chapter 2: Cohoctah Township Community Character

Livingston County has been ranked the fastest growing county in Michigan for over ten consecutive years, and because of this distinction, Cohoctah Township has also experienced development pressures and population growth. The location, history and facilities of the Township have shaped and continue to shape the character of this rural community.

### Location



Cohoctah Township is located in the northernmost tier of Livingston County townships. The Township borders the Livingston County communities of Conway Township to the west, Howell Township to the south and Deerfield Township to the east. The Township borders Burns Township in Shiawassee County to the north.

The Township is approximately 36 square miles in land area. A commuter lifestyle is prevalent in Cohoctah Township since there are no major employers located within the Township. The center of Cohoctah Township is approximately nine (9) miles north of I-96, approximately thirteen (13) miles west of U.S. 23, and ten (10) miles south of I-69 between Lansing and Flint. Therefore, the Township is not highly accessible from a regional perspective. State Highway M-59

which travels east-west is slightly closer to the Township at approximately 8 miles south of the Township, and State Highway M-52 which travels in a north-south direction, is approximately nine (9) miles to the west.

The Township has three settlements: Cohoctah Center in the northwest, Cohoctah in the northeast, and Oak Grove in the southeast. The City of Howell lies approximately six miles south of the township, and the Village of Fowlerville is approximately a four-mile drive from Cohoctah Township's southwestern corner. The Village of Byron lies four miles north of the Cohoctah settlement.

The Southeast Michigan Council of Governments (SEMCOG) is the regional planning agency for a seven-county area, including Cohoctah Township in Livingston County. The remaining SEMCOG counties include Washtenaw, Oakland, Wayne, Monroe, Macomb, and St. Clair.

## Community History

Cohoctah Township was originally known as Tuscola Township. In 1857 the name was changed to Bristol Township, and in 1867 it was changed again, to its present name. It is believed that Cohoctah was the name of a former Indian chief, although no one knows for sure.

Settlers and speculators began purchasing land in Cohoctah Township in 1833. At that time there were many more swamps and marshes which have since been drained to make the land tillable. There was much evidence of the Native American population, although reportedly none were permanent inhabitants of the township at the time of settlement. Many were seen on hunting excursions, however, or on their way to Detroit.

The territory was bought by two types of purchasers; those intending to settle and develop the land, and investors. A trader named Gilbert W. Prentiss was the first settler in the township. He made two claims in the NE ¼ of Section 22, totaling 120 acres, in 1833. The first permanent resident, and second settler, was John Sanford from New York. He came in the summer of 1834 and began what was known as Sanford Settlement in Section 27 (Byron and Chase Lake Road) which was for some time the center of the township's population. Three-quarters of the township's acreage was purchased in one year, beginning in May of 1836, with an average size of 146 acres per sale. The first surveyor's record of the first regular highway in Cohoctah was in 1836 from Howell to John Sanford's residence.

In 1846 the first grist mill and dam were built on a 40-acre tract of land in the north part of Section 36 on Bo-bish-e-nung Creek, which at this point had a fall of over 13 feet. About the same time a small store was also built, and soon a village began to develop. It was called Chemungville after a county in New York. The post office was called Oak Grove.

There were several German-speaking settlers in early Cohoctah. In the late 1850's or 1860's, the area known as Sprungtown grew around a steam sawmill near the current Cohoctah Center. It was named after a prominent citizen, Isaac Sprung, and at its peak Sprungtown contained two stores, two blacksmith shops, about a dozen homes, and a population of fifty. It was hoped that the railroad would come to Sprungtown. In 1857 Tuscola was renamed Bristol Township, and in 1867 it was changed again to Cohoctah. In 1874 the Sprungtown post office was moved to Cohoctah.

Sources: Mrs. Chester Randles in *History & Folklore of Livingston County* (1969, Livingston County Extension Council) and *History of Livingston County, Michigan, 1880*.

## **Community Resources**

Over time, community resources in Cohoctah Township have grown to meet the increased needs of the township population. Those needs have changed because of the gradual transition from an agricultural community to a more rural residential community. It is anticipated that the demands on community resources will continue to increase as the township's population grows.

### **Township Offices**

The Cohoctah Township Hall is located at 10518 Antcliff Road in the settlement of Cohoctah Center. The Township Hall was previously a general store. The facility has been utilized for township government since 1950. The Township Hall houses the offices of Cohoctah Township elected officials such as the Township Supervisor, Clerk, Treasurer, and various other township personnel. In anticipation of future growth in the Township, the Township Board recently purchased approximately 42 acres of land across from the current township hall. The property may be used for a future township hall, a second fire station, a township park, or a combination thereof.

### **Public Safety and Emergency Services**

Cohoctah Township is serviced by the Howell Area Fire Department which maintains a fire substation in the Township. The substation is located at Oak Grove Road and Chase Lake Road near the settlement of Oak Grove. The substation is manned by two firefighters on weekdays and by on-call firefighters on the weekends.

Police protection is provided by the Livingston County Sheriff Department and the Michigan State Police. Police are dispatched under the "closest car" policy. If there is an emergency requiring police service, the closest car to the emergency is dispatched to the scene. The closest car could be either a County Sheriff car or a State Police car. Back-up assistance is provided under the same policy.

Emergency ambulance service in Cohoctah Township is provided by Livingston County Ambulance Service. The closest hospital facility is Saint Joseph Mercy Livingston Hospital in the City of Howell (14.5 miles south).

### **Utilities**

Cohoctah Township residents are served by individual septic systems and private wells. One development in the Township (the Church of Nazarene camp) is serviced by a private water system, however there is currently no municipal sewer or water provision in the Township.

### **Cemeteries**

The township has two cemeteries located in the southeast quadrant of the Township. Sanford Cemetery is an eight (8) acre cemetery located in Section 27, and Boutel Cemetery is an approximate two and 1/2 (2.5) acre cemetery located in Section 24. Cohoctah Township is currently expanding the Boutel Cemetery.

### **School Districts**

Cohoctah Township is part of three public school districts, the largest being Howell Public Schools. A northern segment of the township is part of Byron Area Schools, while a western segment of the township is part of Fowlerville Community Schools. Cohoctah Township does not contain any school facilities that are a part of these school districts.

In addition to Cohoctah Township, the Howell Public School District includes all of the City of Howell, much of Genoa, Marion, Oceola, Howell and Deerfield Townships, and parts of Iosco, Handy and Putnam Townships. The School District includes twelve (12) school facilities within a 143 square mile area, eight of which are located in the City of Howell.

Byron Area Schools contain three (3) school facilities that are located in the Village of Byron in Shiawassee County. The school district is 80 square miles in size.

Fowlerville Community Schools not only includes a portion of Cohoctah Township, it includes all of the Village of Fowlerville, most of Conway, Handy and Iosco Townships, and parts of Howell and Unadilla Townships. The school district contains five (5) school facilities within a 113 square mile area.

### **Recreation**

The two primary recreational resources in Cohoctah Township are the Cohoctah Township Park and the Oak Grove State Game Area.

Cohoctah Township Park is located at the corner of Preston and Allen Roads in the southeast corner of the Township, and it is easily accessed from Oak Grove Road, a paved primary roadway. The 40-acre park is open from April 1 through October 31 from dawn to dusk each day. Two riding rings, an announcer's booth, a gravel parking facility, and a playground are the only improvements to the park at this time. Many 4-H and equestrian events are held at this recreation site.

The Oak Grove State Game Area is located along the eastern boundary of Cohoctah Township and western Deerfield Township. The Cohoctah portion of the game area consists of over 800 acres of land located in Sections 24, 25 and 36. The Game Area provides natural habitat for hunting and hiking.

Residents of Cohoctah Township also have access to additional public recreational resources through Lutz County Park and the Howell Area Parks & Recreation Authority. Lutz County Park is located in the northwest portion of Deerfield Township near the Cohoctah Township line. This county park opened in 2008 and it contains hiking trails and picnic facilities. Howell Area Parks & Recreation Authority offers a variety of programs for a non-contributing government participation fee.

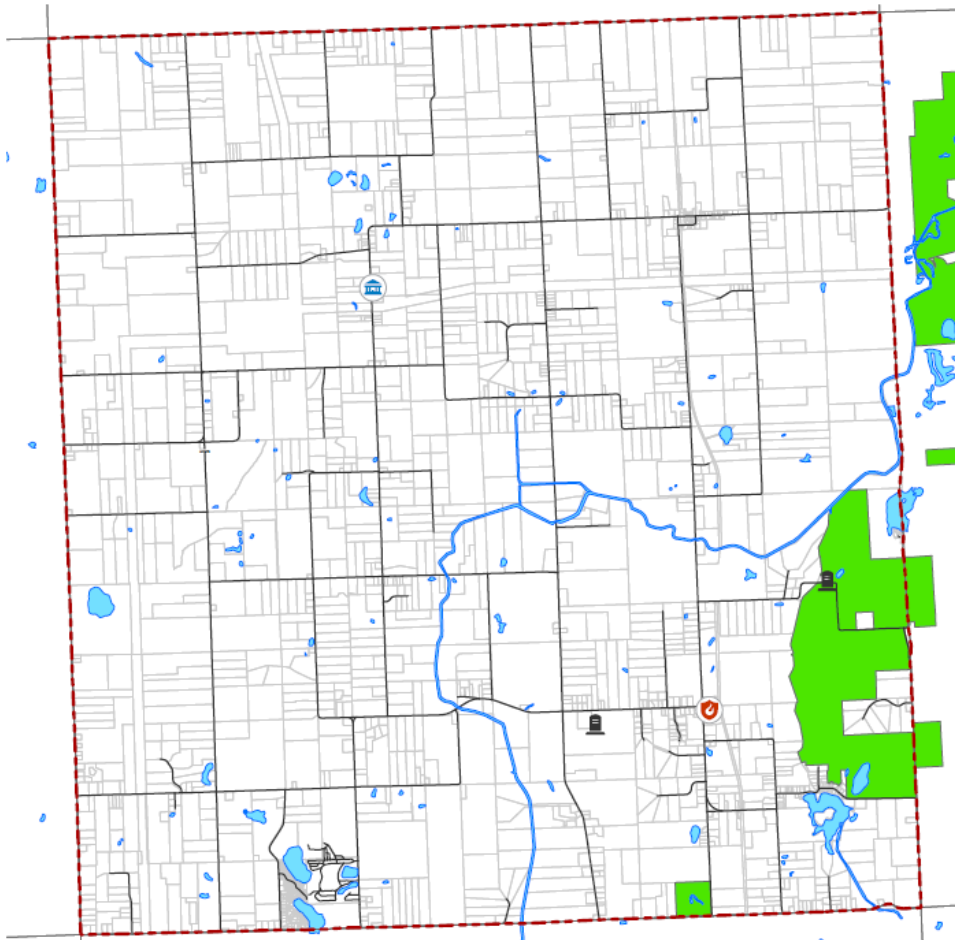
Private recreational resources are also present in the Township, such as Hunters Ridge Golf Course on Byron Road in Section 22 of the Township.

### **Other Community Facilities**

A U.S. Post Office is located in the settlement of Cohoctah on Cohoctah Road.








### **Resources in Neighboring Communities**

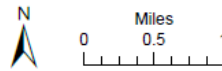
Cohoctah Township is located between the Village of Fowlerville and the City of Howell where many additional community resources are located. For instance, Township residents in the Fowlerville School District have access to the Fowlerville District Library in the Village of Fowlerville and Township residents in the Howell School District have access to the Howell Carnegie District Library in the City of Howell.



## Community Resources and Facilities

Cohoctah Township  
Livingston County, Michigan

- |  |   |
|--|---|
|  Fire Station |  Township Boundary |
|  Cemetery     |  Lakes and Creeks  |
|  Townhall     |  Parks             |
|  Roads        |  Parcels           |



### Chapter 3: Cohoctah Township Demographic Profile

In preparation for the development and amendment of the Cohoctah Township Master Plan, several demographic characteristics were compiled and analyzed to add understanding to the unique community needs of Cohoctah Township as compared to surrounding communities and Livingston County as a whole. 2010 and 2020 Census figures were utilized when analyzing the demographic profile of the Township.

## Population

The Township's population remained relatively stable for decades until more rapid population growth occurred after 1960. Since 2000, there has been relatively little change in population.

Table 3-1: Population Profile / Projections									
1960	1970	1980	1990	2000	2010	2020	2030	2040	2050
1,160	1,454	2,436	2,693	3,394	3,317	3,246	3,235	3,295	3,308

Source: U.S. Census, SEMCOG Community Profiles

Between the 2010 and 2020 censuses, the Township population has experienced little change, only a 2% decrease. Between 2010 and 2000, the township has followed the same trend of a slowly dwindling population.

***Cohoctah Township's percent population change has been trending downward since 2000***

Table 3-2: Percent Population Change				
2000 Census	% change 2000-2010	2010 Census	% change 2010 - 2020	2020 Census
3,394	-2.3%	3,317	-2.1%	3,246

Source: U.S. Bureau of the Census

Compared with the surrounding communities of Conway, Deerfield, Handy, and Howell Townships in Livingston County, Cohoctah Township is the only community to experience a decline in population within the past decade.

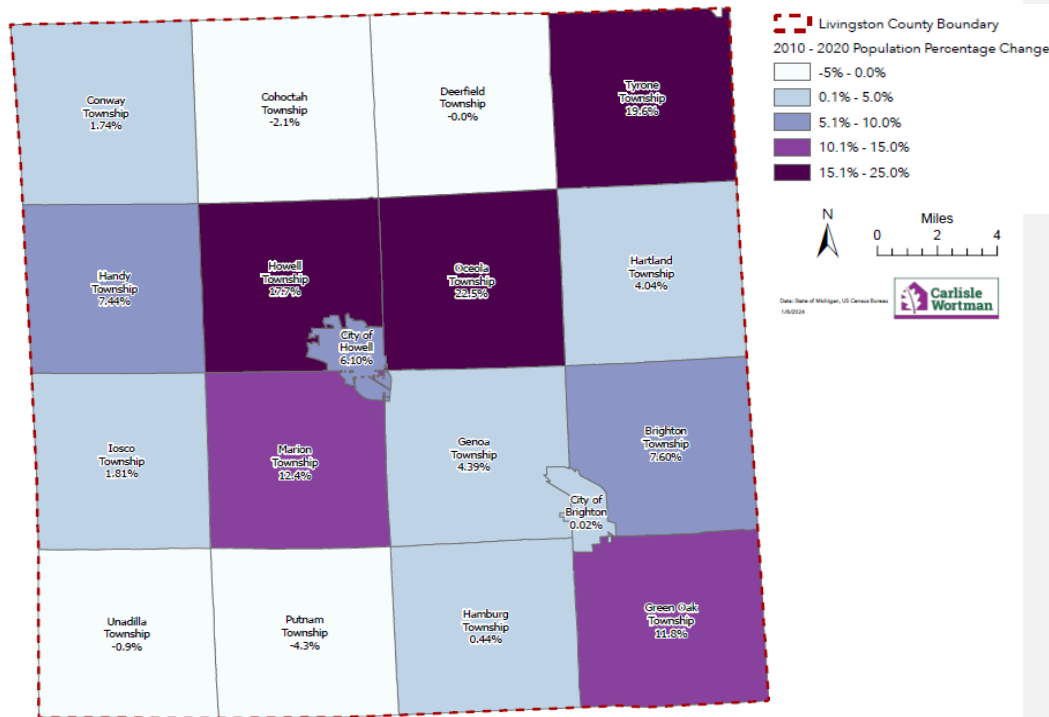
Table 3-3: 2010 – 2020 Population Comparison				
Community	2010 Population	2020 Population	Numerical Change 2010 – 2020	% Change 2010 - 2020
<b>Cohoctah Township</b>	<b>3,317</b>	<b>3,246</b>	<b>-71</b>	<b>-2.1%</b>
Conway Township	3,546	3,608	62	1.7%
Deerfield Township	4,170	4,166	-4	0.0009%
Howell Township	6,702	7,893	1,191	17.8%
Handy Township	5,120	5,651	531	10.4%
<b>Livingston County</b>	<b>180,967</b>	<b>193,866</b>	<b>12,899</b>	<b>7.1%</b>

Source: U.S. Census, SEMCOG Community Profiles



Cohoctah Township has lost 71 residents within the last decade. Cohoctah Township's 2.1% population decrease is significant, as it was the only declining population among the surrounding communities and much lower than Livingston County's growth rate of 7.1%.

## County Population Percentage Change



The Southeast Michigan Council of Governments (SEMCOG) estimates that Cohoctah Township's population as of July 2022 is 3,213, even lower than that of the 2020 census. This reflects a numerical change of -214 persons in a twelve-year time period from 2010. This estimate suggests a - 6.3% population growth for this decade, which is considerably less than the 26% growth rate of the 1990 – 2000 decade.

In the long term, SEMCOG forecasts that Cohoctah Township's population will grow slightly to 3,235 by 2030, 3,295 by 2040, and 3,308 by 2050. This reflects a 2020 to 2050 population gain of 62 persons for a percent change of 1.9%. As a result, growth is expected to be very incremental between the years 2020 and 2050, with very little gains per decade.

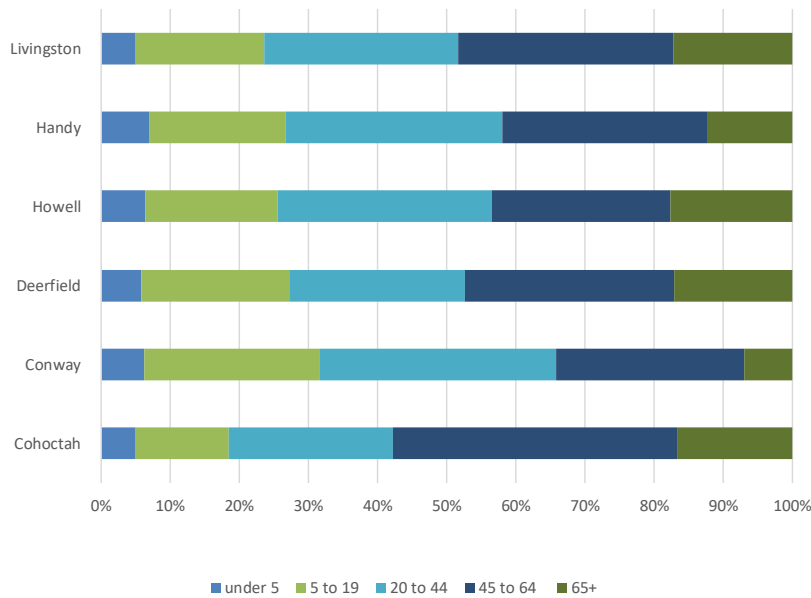
Compared to the surrounding communities, Cohoctah Township is expected to gain the least amount of residents between 20020 and 2050. A total gain of 62 people is expected in Cohoctah Township, while Conway Township is expected to gain 716 new residents, and Deerfield Township is expected to gain 426 new residents. Howell and Handy Townships is expected to gain significantly more new residents in this 2020-to-2050-time frame, with gains of 3,116 and 2,371 respectively.

## Age Distribution

Different age groups within a population have certain needs, as each group is in a different stage of life. Determining which age groups are the largest can help communities target and plan for certain

land uses that will best cater to those needs. Having the ability to snapshot the current age distribution within the Township is a helpful tool in gauging which types of development will best cater to the needs of the Township. Based on the figure below, more than 50% of the population within the Township is aged 45 or higher, the largest percentage when compared to surrounding communities.

This indicates that developments that are more appealing to aging populations, for example additional multi-family housing such as condos and duplexes can help provide more options for families looking to downsize who still want to experience the rural and high-quality way of life that Cohoctah Township provides.



Source: 2020 ACS 5-year estimates

## Housing

Although population is an important factor to consider when contemplating the potential future impacts upon a community, it is the built environment or housing units that will accommodate future population growth and have the most impact on future land use.

**Table 3-6: Housing Unit Comparison**

Community	Total Housing Units			
	2010	2020	Change	
			#	%
<b>Cohoctah Township</b>	<b>1,176</b>	<b>1,217</b>	<b>41</b>	<b>3.5%</b>
Conway Township	1,199	1,285	86	7.2%
Deerfield Township	1,481	1,676	195	13.2%
Howell Township	2,531	3,114	583	23%
Handy Township	2,991	3,411	420	14%
<b>Livingston County</b>	<b>67,380</b>	<b>78,441</b>	<b>11,061</b>	<b>16.4%</b>

Source: 2020 ACS 5-year estimates

The number of housing units in Cohoctah Township grew very little between 2010 and 2020, with only 41 new housing units being constructed during this time (3.5% increase). Cohoctah Township's growth in housing units is lower than that of surrounding Livingston County communities. In terms of total housing units, the surrounding communities of Deerfield, Howell and Handy Townships surpass Cohoctah Township.

**Table 3-7: Household Comparison**

Community	Total Households		2020 Census Family Households		2020 Census Non-Family Households		Average Household Size	Average Family Size
	2010	2020	#	%	#	%		
	<b>Cohoctah Township</b>	<b>935</b>	<b>1,328</b>	<b>854</b>	<b>64.3%</b>	<b>474</b>		
Conway Township	968	1,174	915	77.9%	259	22.1%	3.06	3.44
Deerfield Township	1,155	1,499	1,048	69.9%	451	30.1%	2.84	3.50
Howell Township	1,838	2,605	1,960	75.2%	637	24.8%	2.71	3.10
Handy Township	2,161	3,044	2,165	71.1%	879	28.9%	2.76	3.25
<b>Livingston County</b>	<b>50,578</b>	<b>72,905</b>	<b>52,171</b>	<b>71.6%</b>	<b>20,734</b>	<b>28.4%</b>	<b>2.60</b>	<b>3.06</b>

Source: 2020 ACS 5-year estimates

Cohoctah Township has gained 393 households since 2010, which represents a 42% percent increase. This 2010 – 2020 numerical change in households is greater than all Conway and Deerfield Townships, but less than that of Howell and Handy Townships. The Township's 1,328 households contain a larger average household size (3.0 persons) than all communities except Conway Township, but the smallest average family size (3.0 persons) among the surrounding Livingston County communities. Most of the surrounding communities have average household sizes under 3 persons whereas Cohoctah and Conway Townships have an average household size over 3 persons. Like all Livingston County townships, Cohoctah Township households are predominantly composed of families (64.3%) with a lesser number of households consisting of a non-family composition (35.6%).

Cohoctah Township's median housing value of \$237,400 is slightly lower than the county's median value (\$256,100) but greater than the rest of the surrounding communities. The value of most Cohoctah Township homes ranges from \$200,000 to \$499,999, with the largest number of homes valued in the \$300,000 to \$499,999 category. The change in these values over the last 10 years has been dramatic. Between the 2010 and 2020 censuses, Cohoctah Township's median housing value increased by 28.5% as shown in table 3-9 below. In comparison, all surrounding communities had less of a change in numeric value and rate of increase.

*The value of most Cohoctah Township homes fall in the \$100,000 to \$149,999 category*

Community	Median Value of Owner-Occupied Units			
	2010	2020	# Change	% Change
<b>Cohoctah Township</b>	<b>\$184,700</b>	<b>\$237,400</b>	<b>\$52,700</b>	<b>28.5%</b>
Conway Township	\$198,200	\$209,300	\$11,100	5.6%
Deerfield Township	\$216,700	\$235,900	\$19,200	8.9%
Howell Township	\$170,800	\$203,200	\$40,000	18.9%
Handy Township	\$163,200	\$169,400	\$6,200	3.8%
<b>Livingston County</b>	<b>\$216,400</b>	<b>\$256,100</b>	<b>\$39,700</b>	<b>18.3%</b>

Source: 2020 ACS 5-year estimates

**Income**

Livingston County has the highest median household income in the state (\$100,139) and is second only to Oakland County for the highest median family income (\$75,284). Cohoctah Township's median values of \$63,889 (household) and \$95,268 (family) are in the upper half of Livingston County community values.

Community	Median Income 2010		Median Income 2020		Household Change	
	Household	Family	Household	Family	#	%
<b>Cohoctah Township</b>	<b>\$63,899</b>	<b>\$71,023</b>	<b>\$63,889</b>	<b>\$95,268</b>	<b>-\$10</b>	<b>-0%</b>
Conway Township	\$68,077	\$76,638	\$86,771	\$83,594	\$18,694	27.5%
Deerfield Township	\$62,331	\$78,955	\$78,860	\$99,706	\$16,529	26.5%
Howell Township	\$70,081	\$75,500	\$72,911	\$84,394	\$2,830	4.0%
Handy Township	\$53,750	\$69,073	\$63,864	\$67,774	\$10,114	18.8%
<b>Livingston County</b>	<b>\$72,129</b>	<b>\$82,637</b>	<b>\$84,274</b>	<b>\$100,663</b>	<b>\$12,145</b>	<b>16.8%</b>

Source: 2020 ACS 5-year estimates

The Township's income figures are most comparable to Howell and Conway Township. Over the last ten years, Cohoctah Township's household median income has increased by \$13,556 or 30.8%. Most Cohoctah Township households have a household and family income in the \$75,000 and \$99,999 range.

**Most Cohoctah Township households have an income range of \$75,000 to \$99,999**

## Occupations

According to the 2020 Census, Cohoctah Township has an employed civilian population aged 16 and over, consisting of 2,815 workers. Most of these workers (81%) are private wage and salary workers with self-employed workers in their own unincorporated business comprising the second largest class of workers in the Township (12.8%) and government workers comprising the third largest class of workers in the Township (6.1%).

As recorded in the 2020 Census, the dominant occupation category in Cohoctah Township is *Management, Business, Science, and Arts Occupation*. 476 or 25.9% of the 1,670 workers claim this as their occupation. *Natural Resources, Construction, and Maintenance Occupations* is the second largest occupation category with 413 workers or 22.5% of the employed civilian population aged 16 and over. The third largest occupation category in the Township is *Sales and Office Occupations*. This occupational category has 373 workers or 20.4% of workers.

**Table 3-11: Cohoctah Township Occupations**

Occupation	Number	Percent
Management, Business, Science, and Arts	476	25.9%
Service Occupations	345	18.9%
Sales and Office	373	20.4%
Natural Resources, Construction, and Maintenance	413	22.5%
Production, Transportation, and Material Moving	225	12.3%
<b>Total</b>	<b>1,832</b>	<b>100%</b>

Source: 2020 ACS 5-year estimates

## Education

Cohoctah Township is part of three public school districts, the largest being Howell Public Schools. A western segment of the township is in the Fowlerville Community Schools district, while a northern segment of the township is in the Byron Area Schools district. Cohoctah Township does not contain any of school facilities that are a part of these districts.

The 2020 Census recorded 538 Cohoctah Township residents age 3 years and older that are enrolled in school. The majority of these students (46.4%) are enrolled in elementary school grades 1 through 8. The second largest percentage of students (32.5%) are enrolled in high school grades 9 through 12 and the third largest percentage of students are enrolled in college or graduate school (19.7%).

Cohoctah Township consists of a well-educated population aged 25 years and older. 85% of this adult population group have graduated from high school or obtained a higher degree level. Cohoctah

Township's educational attainment level is slightly lower than surrounding communities and Livingston County's 95.5% high school graduate or higher attainment.

**Table 3-12: Educational Attainment Comparison  
Population 25 years and over**

Community	Population 25 years and over	Less than 9 <sup>th</sup> grade	9 <sup>th</sup> – 12 <sup>th</sup> grade, no diploma	High School graduate	% High School graduate or higher	% Bachelor's degree or higher
<b>Cohoctah Township</b>	<b>2,490</b>	<b>13</b>	<b>361</b>	<b>823</b>	<b>85%</b>	<b>13.9%</b>
Conway Township	2,233	11	101	906	95%	20.6%
Deerfield Township	2,909	23	82	950	96.4%	26.0%
Howell Township	4,862	118	125	1,660	95%	25.8%
Handy Township	5,711	62	277	2,295	94.1%	17.5%
<b>Livingston County</b>	<b>134,751</b>	<b>1,261</b>	<b>4,736</b>	<b>35,200</b>	<b>95.5%</b>	<b>36.5%</b>

Source: 2020 ACS 5-year estimates

Cohoctah Township does not have as large a percent of population 25 years and over that have obtained a bachelor's degree or higher. 13.9% of this adult population group in Cohoctah Township has obtained a bachelor's degree or higher as compared to 36.5% in Livingston County as a whole.

## Agriculture

Agricultural activities figure prominently in the Cohoctah Township way of life. U.S. Census of Agriculture figures are only compiled on a county-wide basis, therefore the best local indicator of agricultural activity is by tracking the number of farms enrolled in Public Act 116 Farmland and Open Space Preservation contracts.

Each of these agreements between the State and a landowner, represents a temporary restrictive covenant regarding the use of the land. A landowner voluntarily agrees to preserve their land for agriculture in exchange for certain tax benefits and exemptions for various special assessments. An agreement runs with the land and is for a jointly agreed upon length of time (at least 10 years).

The thirty-two (32) current Farmland and Open Space Preservation contracts in Cohoctah Township far outnumber most other Livingston County communities with the exception of Conway, Handy and Unadilla Townships. The table below illustrates the location of the Farmland and Open Space Preservation contracts in Cohoctah Township.

**Table 3-13: Cohoctah Township Farmland and Open Space Preservation Contracts**

Size in Acres	Section Number	Quadrant of Township
75	32	Southwest
40	33	Southwest
160	33	Southwest
130	33	Southwest
130	35	Southeast
20	35	Southeast
11	6	Northwest
85	17	Northwest
40	8	Northwest
15	18	Northwest
91	7	Northwest
98	7	Northwest
64	7	Northwest
40	18	Northwest
78	8,9	Northwest
21	7	Northwest

Size in Acres	Section Number	Quadrant of Township
47	18	Northwest
28	18	Northwest
98	7	Northwest
Not Found	17	Northwest
190	6	Northwest
64	18	Northwest
117	6	Northwest
60	3	Northeast
69	3	Northeast
118	12	Northeast
10	12	Northeast
44	3	Northeast
65	3	Northeast
60	1	Northeast
40	3	Northeast
101	1,2	Northeast

Table 3-14: Summary Table of Farmland and Open Space Preservation Contracts		
Quadrant of the Township	Total Number of Contracts	Total Number of Acres Under Contract
Northeast	9	567
Northwest	17	1000+
Southeast	2	150
Southwest	4	405
<b>TOTALS</b>	<b>32</b>	<b>2,209</b>

Source: Michigan Department of Agriculture, Farmland and Open Space Preservation Program, November 2023

Most of the Farmland and Open Space Preservation contracts in Cohoctah Township (53%) are in the northwest quadrant of the township; particularly sections 6,7,17 and 18. The second highest number of contracts are in northeast quadrant, followed by the southwest and southeast quadrants.

The largest amount of acreage held in these contracts was also in the northwest quadrant where over 1,000 acres (49% of the acreage preserved in all Cohoctah Township contracts) are preserved in 17 contracts. The largest amount of acreage held in a single contract is 190 acres in section 6 of the northwest quadrant. More than half of the contracts (24 out of 32) in Cohoctah Township are for less than 100 acres.

Like most communities in Livingston County, agriculture is not as prominent in Cohoctah Township as it was in years past. Each decade, agricultural land use has diminished due to various circumstances such as future generations choosing not to farm, low return on commodities making farming unprofitable, and increased residential growth and development.

## Demographic Trends in Cohoctah Township

From the demographics analyzed in this section, we can identify some trends that should influence future planning and development in Cohoctah Township. Following are identified trends and how they may impact Township planning.

- **Trend:** In similar comparison with the surrounding municipalities, Cohoctah Township has the highest percentage of population aged 45 and older. **Planning Implication:** The need for senior housing options may start to increase, a portion of the Township should be master planned for senior living in the coming years. Settlement areas in the Township are the logical location for senior uses because these areas offer more services (post office, stores, etc.) than more rural areas of the Township.
- **Trend:** Cohoctah Township's population is currently experiencing a decline and is projected to continue. **Planning Implication:** Future planning should focus on promoting development that will improve the quality of life for current residents, rather than preparing for new ones.
- **Trend:** Cohoctah Township has a larger average household size and a smaller average family size than most surrounding Livingston County communities. **Planning Implication:** Larger dwelling units may prevail in the Township. Future residential land use should accommodate family-scale housing in variable sized to accommodate smaller families. Future recreation planning should consider the activity needs of families.
- **Trend:** Compared with surrounding communities, Cohoctah Township has one of the lowest household median income, with family median income ranking higher. **Planning Implication:** The Master Plan could allow for limited expansion of commercial and industrial development that may add employment opportunities in the community, thereby impacting income. Commercial and industrial future land use planning could concentrate on growth in agricultural-related commerce and industry.
- **Trend:** Agricultural activities figure prominently in the Cohoctah Township way of life. The thirty-two (32) current Farmland and Open Space Preservation contracts in Cohoctah Township far outnumber most other Livingston County communities with the exception of Conway, Deerfield, and Handy Townships. **Planning Implication:** A future land use classification in Cohoctah Township could encourage the continuation of agricultural activities.



## Chapter 4: Cohoctah Township Transportation Profile

This chapter of the Plan will address transportation issues within Cohoctah Township. This information is helpful when weighing the impacts of proposed development in the community.

Cohoctah Township is not highly accessible from a regional perspective. The center of Cohoctah Township is approximately nine (9) miles north of I-96, approximately thirteen (13) miles west of U.S. 23, and ten (10) miles south of I-69 between Lansing and Flint. State Highway M-59 which travels east-west is slightly closer to the Township at approximately 8 miles south of the Township, and State Highway M-52 which travels in a north-south direction, is approximately nine (9) miles to the west.

### Existing Road Conditions

Cohoctah Township's existing roadway system is predominantly made up of county primary and county local roads. County local roads are designed to receive traffic from the larger county primary roads and redistribute the traffic throughout the Township to dwelling units. Cohoctah Township contains 25.75 miles of county primary roads and 54.46 miles of county local roads. There are very few smaller roadways in Cohoctah Township, such as subdivision roads or private roads.

The surface of most roads in Cohoctah Township are gravel. The table below shows that Cohoctah Township has 60.72 miles of gravel roads as compared to only 19.12 miles of paved roadway. In comparison to surrounding Livingston County townships, Cohoctah Township has more paved roadway than Conway and Deerfield Townships, but significantly less than Howell Township. Interestingly, Cohoctah Township's 80.21 total miles of county primary and local roadway is higher than most other Livingston County townships; only the more urbanized communities of Tyrone, Hartland, Brighton, Green Oak, Genoa and Hamburg Township have more total miles of county roadway.

**Table 4-1: Cohoctah Township Road Surface Type (In miles)**

Primary Paved	Local Paved	Subs Paved	Total Local Paved	Total Roads Paved	Primary Gravel	Local Gravel	Subs Paved	Total Local Gravel	Total Roads Gravel
17.84	1.28	0	1.28	19.12	7.76	52.96	0	52.96	60.72

Source: Livingston County Road Commission, October 2023

## Transportation Improvements

The Transportation Improvement Program (TIP) for Southeast Michigan is a listing of all transportation projects receiving federal funding in Southeast Michigan. The TIP contains the short-range transportation projects due to be completed from 2023 – 2026; projects that are in keeping with the 2045 Regional Transportation Plan for Southeast Michigan (RTP). The 2045 RTP is the long-range vision for the transportation network in the seven-county Southeast Michigan region. It serves as a guide for developing a transportation system that is accessible, safe, and reliable and contributes to a higher quality of life for the region's citizens. The Plan is necessary to meet requirements allowing federal transportation money to be spent in the region. It contains \$35 billion in federal, state, and local funding for road and transit projects, as well as policies and initiatives designed to guide the region forward.

***The TIP lists short-range regional transportation projects receiving federal funding, and the 2045 RTP conveys the long-range vision for the regional transportation network***

The TIP lists one short-range transportation project for Cohoctah Township, which consists of a bridge replacement located on East Cohoctah Road. The RTP does not contain any transportation projects specific to Cohoctah Township; however, it does contain county-wide projects that will benefit Cohoctah Township residents.

## Traffic Volumes

Two-way, twenty-four-hour traffic counts for roads within Cohoctah Township are recorded by the Livingston County Road Commission and by the Michigan Department of Transportation. The traffic count data in the table below and on the next page, shows that the most recent traffic counts in Cohoctah Township were taken in the years 2021 and 2023. During this time period, twenty (20) segments of roadway in the township had traffic counts of over one thousand (1,000). The majority of these high traffic count roadway segments are hard top roads, implying that an increase in traffic volume occurs if the roadway is paved.

**Table 4-4: 2008 and 2009 Cohoctah Township Traffic Counts Greater than 1,000**

Year of Traffic Count	Traffic Count	Road	Road Segment
2023	6,511	Oak Grove	From Allen to Sanford S
2023	4,425	Oak Grove	From Sanford S to Jacob Hill
2023	4,292	Oak Grove	From Sanford N to Chase Lake
2023	4,077	Oak Grove	From Preston to Sanford N
2023	3,348	Oak Grove	From Gannon to Cohoctah
2023	2,626	Oak Grove	From Chase Lake to Jones
2023	2,539	Oak Grove	From Jones to Stelzer
2023	1,998	Oak Grove	From Stelzer to Gannon
2023	1,799	Oak Grove	From Richards to Lovejoy
2023	1,783	Oak Grove	From Cohoctah to Richards

**Table 4-4: 2008 and 2009 Cohoctah Township Traffic Counts  
Greater than 1,000**

Year of Traffic Count	Traffic Count	Road	Road Segment
2021	1,174	Chase Lake	From Byron to Oak Grove
2021	1,147	Chase Lake	From Burkhart S. to Schrepfer
2021	1,084	Chase Lake	From Geer E. to Handy
2021	1,312	Cohoctah	From Byron to Durand
2021	2,292	Cohoctah	From Oak Grove S to Stelzer
2021	1,832	Cohoctah	From Durand to Oak Grove S
2021	1,409	Faussett	From Larch to Fisher
2021	1,525	Faussett	From Sanford to Larch
2021	1,253	Owosso	From Allen to Chase Lake
2021	1,362	Sanford	From Oak Grove S. To Faussett

Source: Livingston County Road Commission, Michigan Department of Transportation

The traffic counts offer a good indication of where traffic volumes are the greatest in Cohoctah Township. The greatest traffic flows are found along the following six (6) township roadways: Oak Grove; Sanford; Chase Lake; Cohoctah; Faussett; and Owosso. The majority of these roadways (4) are paved primary roadways, while two (2) roadways are local gravel (Sanford and Owosso).

***Cohoctah Township's highest 2021/2023 traffic counts are on 3 paved primary roadways and 2 gravel local roadways.***

Different facilities and land uses have been shown to generate different amounts of traffic. Any facility or land use which attracts or causes traffic is known as a traffic generator. By using a process known as trip generation it is possible to

estimate the volume of trips going to or leaving a particular facility or land use. The Institute of Transportation Engineers (ITE) has calculated trips for a variety of uses, which are listed below as a reference for future development. In this table, Peak Hour Trips refer to the p.m. hours of 4 p.m. to 6 p.m. A "trip" is a one-way movement; for instance, 10 trips = 5 in + 5 out. For example, if a development is proposed with ten new single-family homes, the expected traffic generated daily (on weekdays) would be around 96 one-way vehicle trips (9.57 x 10 homes). During peak evening hours, about 10 trips can be expected for the development (1.02 x 10 homes).

Traffic impact studies look at a proposed project and estimate the number of vehicle trips the project will generate. The table below is applied, along with an analysis of what direction traffic will approach from, and a review of the site plan for access and circulation issues. Traffic impact studies will be developed by a qualified preparer with experience and background in traffic-related analyses. Cohoctah Township will consider requiring traffic impact studies for any project that may cause or attract traffic such as medium to large sized residential developments.

Type of Land Use	Peak Hour Trips*	Average Daily Trips*
<b>Residential Uses (per unit)</b>		
Single Family Home (detached)	0.94	9.43
Apartment	0.51	6.74
Condominium	0.57	7.20
Mobile Home	.58	7.12
<b>Commercial Uses (per 1,000 sq. ft. floor area, if not otherwise noted)</b>		
Hardware/Paint Store (per employee)	3.67	27.69
Convenience Store	49.11	762.28
Supermarket	8.95	93.84
Fast Food Restaurant (with drive-thru)	33.03	467.48
Service Station (per pump)	13.91	172.01
Drugstore (without drive-thru)	8.51	90.08
<b>Industrial Uses</b>		
Light Industrial	0.65	4.87
Industrial Park	0.34	3.37
Manufacturing	0.74	4.75
Warehousing	0.18	1.71

Source: ITE Generation Manual 11<sup>th</sup> Edition

<b>Traffic Accidents</b>
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The Southeast Michigan Council of Governments (SEMCOG) traffic crash data reveals that several intersections in Cohoctah Township have sustained a high number of accidents over the last five years between 2017 and 2021. The ten intersections in the Township that have incurred the most vehicle accidents, are listed in the table below.

Intersection	Total Crashes 2017 - 2021	Year That the Most Crashes Occurred
Cohoctah Road @ Durand Road	6	2018,19,20 (2 crashes)
Chase Lake Road @ Oak Grove Road	6	2018,20 (2 crashes)
Cohoctah Road @ Oak Grove Road	5	2019 (3 crashes)
Oak Grove Road @ Stelzer Road	5	2021 (3 crashes)
Oak Grove Road @ Allen Road	5	2017,18 (2 crashes)
Oak Grove Road @ Gannon Road	4	2017,18,19,20 (1 crash)
Burkhart Road @ Chase Lake Road	4	2017,18,19,21 (1 crash)
Oak Grove Road @ Sanford Road	4	2019,21 (2 crashes)
Oak Grove Road @ Jacob Hill Road	4	2017,19 (2 crashes)
Cohoctah Road @ Byron Road	3	2021 (2 crashes)

Source: Southeast Michigan Council of Governments (SEMCOG)

Note: This crash report includes all crashes occurring within 150 feet of the intersection.

During the five year span a total of forty-six (46) accidents have occurred at these intersections. Intersections that included Oak Grove Road figured most prominently in the highest crash intersections (5 out of 10 intersections). The Oak Grove Road intersection at Gannon Road has incurred at least one traffic crash per year between 2017 – 2020.

There were no fatalities recorded at any of these ten intersections during the five-year time period. Out of the 46 crashes occurring at these intersections, only 1 resulted in a crash in which the outcome was a serious injury, 7 resulted in a crash with other injuries, and the bulk of crashes resulted in property damage only (38 or 82.6%).

The majority of accidents at these intersections involved a single vehicle. Deer were involved in a total of 19 crashes or approximately 41% of all the crashes at these ten intersections. Alcohol played a part in 1 of the total 46 crashes.

SEMCOG's 2017-2021 traffic crash data by road segment is depicted in the table below. This data reveals that two hundred and ninety-one (291) accidents have occurred on the township's top ten highest crash road segments over the five-year span. The most accidents of any segment (73) have occurred on Oak Grove Road from Chase Lake Road to Cohoctah Road West.

<b>Road Segment</b>	<b>Total Crashes 2017 - 2021</b>	<b>Year That the Most Crashes Occurred</b>
Oak Grove Road from Chase Lake Road to Cohoctah Road West	73	2019,20 (17 crashes)
Oak Grove Road from Marr Road to Sanford Road	45	2018 (13 crashes)
Faussett Road from Sanford Road to Latson Road North	35	2019 (10 crashes)
Byron Road from Marr Road to Chase Lake Road	29	2018 (7 crashes)
Burkhart Road North from Marr Road to Chase Lake Road	28	2019 (8 crashes)
Cohoctah Road West from Antcliff Road North to Oak Grove Road	27	2018 (11 crashes)
Hayner Road from Fowlerville Road North to Hayner Road	20	2019 (6 crashes)
Owosso Road from Marr Road to Chase Lake Road	16	2017,20 (4 crashes)
Oak Grove Road from Oak Grove Road to Chase Lake Road	10	2021 (4 crashes)
Chase Lake Road from Byron Road to Oak Grove Road	8	2017 (3 crashes)

Source: Southeast Michigan Council of Governments  
 Note: Road segments extend beyond the township boundaries.

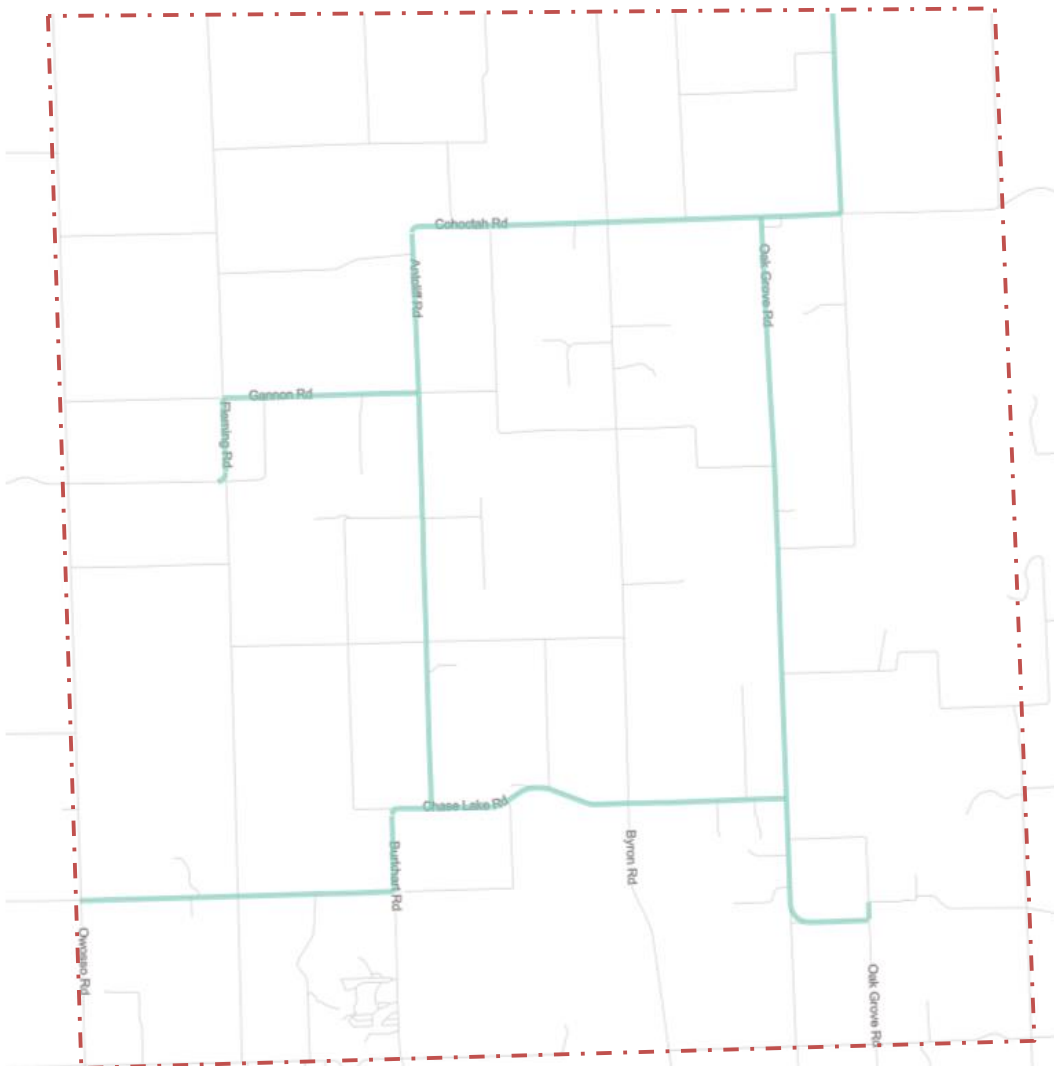
There was one fatality reported in the 291 crashes occurring on the eleven high crash road segments. The fatality occurred on Burkhart Road North between Marr Road and Chase Lake Road. The majority (88%) of accidents resulted in property damage only. The largest contributing factor to these crashes was deer (57%).

## Other Transportation Resources

The only existing public transportation available to Cohoctah residents, is a county-wide small bus dial-a-ride service from Livingston Essential Transportation Service (L.E.T.S.). L.E.T.S. has lift-equipped small buses that provide service within the county, limited service for persons to county dialysis centers, and a regional service for medical appointments in Ingham, Genesee, Oakland and Washtenaw Counties. Persons with a documented disability or who are at least 60 years of age, ride at a reduced fare.

Maple Grove Airport in neighboring Conway Township is the closest public airport to Cohoctah Township. This small, privately owned airport is located near the Conway/Cohoctah township line on Sherwood Road. The Spencer J. Hardy Airport, located in Howell Township, is another public airport within close proximity of the Township. This airport is owned and operated by Livingston County government. The Capital City Airport in Lansing and Bishop International Airport in Flint are the closest public airports with commercial airline passenger service.

Cohoctah Township has one active railroad line. The Great Lakes Central Railway (GLC) freight carrier travels north/south from the City of Ann Arbor through the City of Howell and northward through Cohoctah Township into Shiawassee County.




**Average Daily Trips**



 Township Boundary

**Township Daily Traffic Counts**

Source: SEMCOG 

## Chapter 5: Cohoctah Township Natural Features

The natural environment forms the basis of a community's development. It is important to inventory the natural features of Cohoctah Township in order to allow the community to grow in a manner that preserves the natural features that attracted people to the community in the first place. The following inventory is an important tool in deciding land use issues, guiding future growth and development, and preventing the destruction of valuable natural features. Development in the Township should be directed to areas that are most capable of sustaining physical changes to the landscape without negatively impacting the community's natural features. Conversely, those areas of the Township that contain valuable natural features should be master planned for less intensive development.

### Geology and Topography

The bedrock of the eastern part of the Upper Peninsula and the entire Lower Peninsula of Michigan is made up of Paleozoic and Mesozoic sedimentary rocks of Cambrian to Jurassic age. These gently dipping rocks constitute a large geological structure known as the Michigan basin. The Paleozoic rocks of the Michigan basin contain important resources of petroleum, limestone, dolomite, shale, salt and gypsum.

Repeated advances of large continental glaciers during Pleistocene time eroded and broke down soil and rocks and then redeposited this material as sediments as the glaciers melted and retreated. Most of Michigan is covered by glacial sediments or gravels, sands, and clays derived from them. Virtually all of the geographic and topographic features of Michigan, particularly of the Lower Peninsula, were shaped by glacial and melt water action<sup>3</sup>.

The vast majority of Cohoctah Township sits upon bedrock composed of Coldwater Shale. A very small portion of the Township at the northern edge of Sections 1,2,3 sits upon bedrock composed of Marshall Sandstone. Both types of bedrock are composed predominantly of shales, and they were created during the Paleozoic Era.

The elevation of Cohoctah Township ranges from a low 840 to a high of 960 feet above sea level. The topography throughout most of the township varies between 850 and 895 feet. The lowest spot in the Township at 840 ft. is near the juncture of Bogue Creek and C&C Union drains in Section 24. The highest spot in the Township at 960 ft. is near the middle of Section 31 in the southwest corner of the Township.

Cohoctah Township is generally level with few locations of steep slopes (>18%). Steep slopes are most abundant in the southern half of the Township where the majority of the township lakes and streams are located. The only exception to this pattern is Section 4 in the northern tier of Cohoctah Township sections.

***Steep slopes of >18% tend to be more concentrated in the southern half of Cohoctah Township near lakes and streams***

Areas that contain steep slopes should remain undisturbed. These areas should be viewed as natural and aesthetic open space areas. If development should occur, sensitive site planning would be required along these slopes to prevent soil erosion. Care must be taken to ensure that extensive grading is minimized and to ensure that other natural features such as vegetation and topsoil are retained.

<sup>3</sup> Michigan Department of Environmental Quality (MDEQ), Geological and Land Management Division (GLMD), 2003



## Soils and Septic Limitations

According to the Soil Survey of Livingston County, Michigan, soils in Cohoctah Township consist of five soil Associations: Miami-Conover, Miami-Brookston, Miami-Hillsdale, Carlisle-Houghton-Gilford, and Spinks-Oakville-Boyer-Oshtemo. Each soil association is comprised of more than one kind of soil as described below.

Miami-Conover soils are the dominant soil association in Cohoctah Township and throughout Livingston County. This soil association makes up about 33 percent of county soils. This soil association can be characterized as follows: *Nearly level to strongly sloping, well-drained and somewhat poorly drained, medium-textured soils on till plains and moraines.* About 35 percent of the Miami-Conover association is made up of Miami soils, about 15 percent of Conover soils and about 50 percent of minor soils. The minor soils in this association are Owosso, Metea, Metamora, Brookston, and Carlisle. This soil association is present throughout the middle and southern portions of the Township in Sections 18 – 36. Sections 19, 20, 29 and 30 consist entirely of this soil association. Most areas of these soils are used as cropland, pasture and woodland.

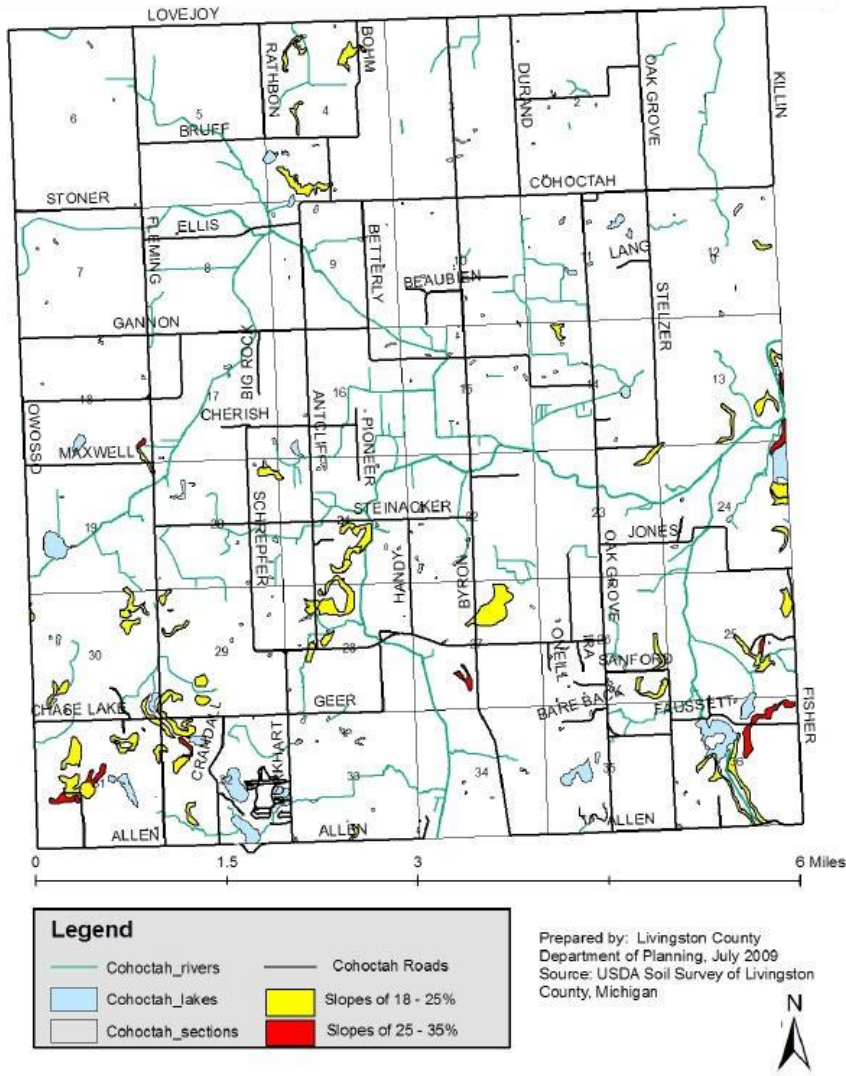
The second largest soil association in Cohoctah Township is Miami-Brookston. This soil association comprises about 4 percent of the county. About 50 percent of the association is made up of Miami soils, about 25 percent of Brookston soils, and about 25 percent of minor soils. The minor soils in this soil association are Hillsdale, Metamora, Locke, and Linwood. Miami-Brookston soils can be described as: *Nearly level to gently sloping, well-drained and poorly drained, medium-textured soils on till plains.* This soil association is found throughout the northern half of the Township in Sections 1 – 12 and 16 – 18. Sections 2,3,6 and 8 consist entirely of Miami-Brookston soils. Most areas of these soils are used as cropland, pasture and small woodlots.

Miami -Hillsdale soils can be characterized as follows: *strongly sloping to hilly, well-drained, medium-textured and moderately coarse textured soils on moraines and till plains.* County-wide this soil association makes up about 6 percent of the soils. The major soils in this association are Miami soils (50 percent), and Hillsdale soils (30 percent). Minor soils make up about 20 percent of the soil association and include Conover, Brookston, Spinks, Fox, Boyer, and Carlisle. This soil association is present only in the northeast corner of Cohoctah Township in Sections 1 and 12. The less sloping areas of these soils are used for crops while the more hilly areas are used for pasture, as woodland, and for recreation.

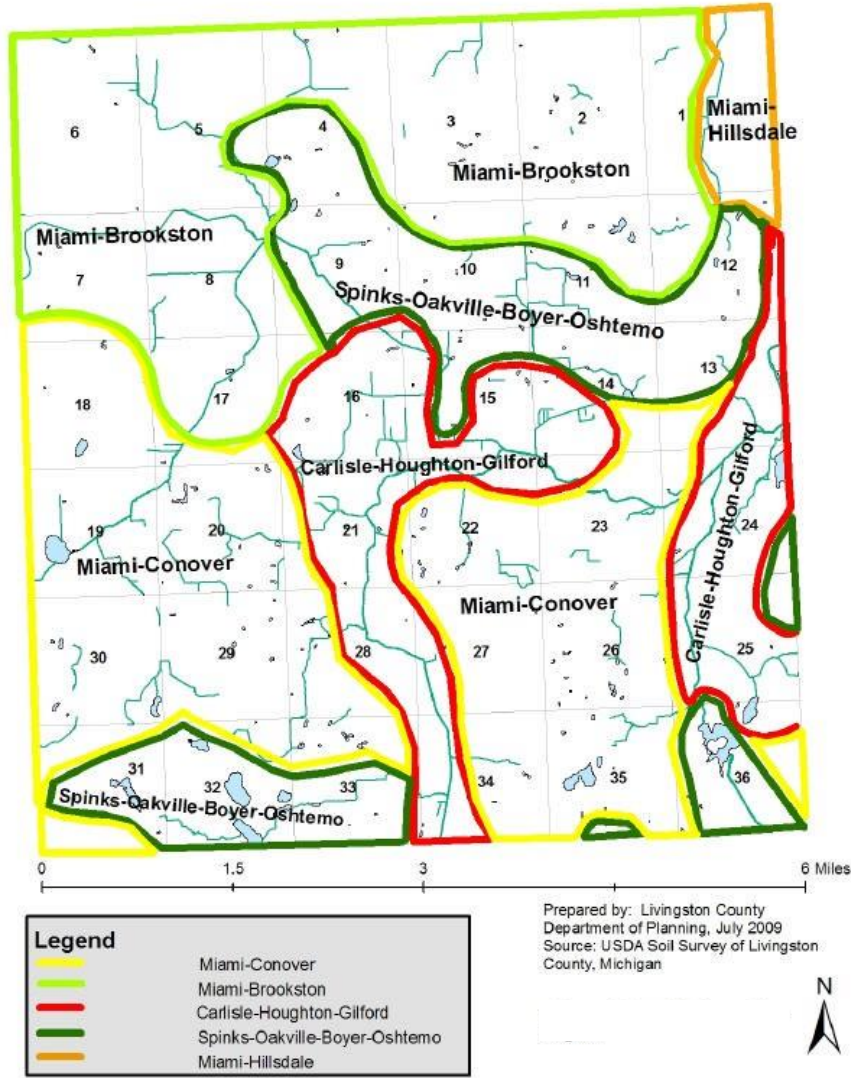
Carlisle-Houghton-Gilford soils comprise about 19 percent of the county. This soil association can be described as follows: *Nearly level, very poorly drained, organic soils and moderately coarse textured soils on outwash plains, in glacial drainageways, and on lake plains.* The major soils in this association are Carlisle (45 percent), Houghton (10 percent), Gilford (10 percent) and minor soils (35 percent). The minor soils in this association are Wasepi, Colwood, Brady, and Bronson. This soil association extends in a ribbon from the southeast corner to the middle of the Township. Land use in this soil association varies, most of the land area is idle or used as woodlands. Some areas are used as cropland and pasture, if adequately drained.

Three smaller areas of the Spinks-Oakville-Boyer-Oshtemo association are found in the Township in both the northern and southern halves of the Township. This soil association can be characterized as follows: *Strongly sloping to hilly, well-drained, coarse-textured soils dominantly on moraines.* Across the county this soil association makes up about 6 percent of the soils. About 50 percent of the association is made up of Spinks-Oakville loamy sands, about 40 percent Boyer-Oshtemo and about 10 percent minor soils consisting of Fox, Brady, Rifle and Tawas. Most areas of these soils are idle or are used for woodland or recreation. The soils are poorly suited for crops grown in the area and are only moderately well suited to pasture and as woodland.

# Cohoctah Township Steep Slope Classifications



# Cohoctah Township General Soil Associations



In these five general soil associations, each soil has a different capacity for drainage and therefore a varying ability to support onsite septic disposal. A map of the septic limitations of these soils is a great tool to use when deciding where to direct development. Areas under greater septic constraints should be planned for less density. Another useful tool is the table below which illustrates whether the most common soil types in Cohoctah Township have Slight, Moderate or Severe limitations for septic systems.

<b>Table 5-1: Soils Classified by Septic System Limitations</b>		
<b>Slight (soil name and slope)</b>	<b>Moderate (soil name and slope)</b>	<b>Severe (soil name and slope)</b>
BrA Boyer loamy sand (0-2%)	BuA Brady loamy sand (0-2%) Moderate to Severe	By Brookston loam (0-2%)
BrB Boyer loamy sand (2-6%)	BwA Bronson loamy sand (0-2%)	BtE Boyer-Oshtemo loamy sand (18-25%)
BrC Boyer loamy sand (6-12%)	BsA Boyer loamy sand, silty (0-2%)	BtF Boyer-Oshtemo loamy sand (25 - 35%)
BtA Boyer-Oshtemo loamy sand (0-2%)	BsB Boyer loamy sand, silty (2-6%)	Cc Carlisle muck (0-2%)
BtB Boyer-Oshtemo loamy sand (2-6%)	BtD Boyer-Oshtemo loamy sand (12-18%)	Cr Colwood fine sandy loam (0-2%)
BtC Boyer-Oshtemo loamy sand (6-12%)	FrD Fox Boyer Complex (12-18%)	CvA Conover Loam (0-2%)
FoA Fox sandy loam (0-2%)	HID Hillsdale sandy loam (12-18%)	CvB Conover Loam (2-6%)
FoB Fox sandy loam (2-6%)	MnA Metea loamy sand (0-2%) Moderate to Severe	CxA Conover –Miami Loams (0-2%)
FoC Fox sandy loam (6-12%)	MnB Metea loamy sand (2-6%) Moderate to Severe	Gd Gilford sandy loam (0-2%)
FrB Fox-Boyer complex (2-6%)	MnC Metea loamy sand (6-12%) Moderate to Severe	FrE Fox Boyer Complex (18-25%)
FrC Fox-Boyer complex (6-12%)	MoD Miami Loam (12-18%)	FrF Fox Boyer Complex (25-40%)
HdB Hillsdale loamy sand (2-6%)	OmA Owosso-Miami sandy loam (0-2%)	HIE Hillsdale sandy loam (18-25%)
HdC Hillsdale loamy sand (6-12%)	OmB Owosso-Miami sandy loam (2-6%)	Ho Houghton muck (0-2%)
HIB Hillsdale sandy loam (2-6%)	OmC Owosso-Miami sandy loam (6-12%)	Lm Linwood muck (0-2%)
HIC Hillsdale sandy loam (6-12%)	OmD Owosso-Miami sandy loam (12-18%)	LoB Locke sandy loam (0-4%)
HmB Hillsdale-Miami loams (2-6%)	SvD Spinks-Oakville loamy sands (12-18%)	MIB Metamora sandy loam (0-4%)
HmC Hillsdale-Miami loams (6-12%)		MoE Miami Loam (18-25%)
MoA Miami Loam (0-2%)		MoF Miami Loam (25-35%)
MoB Miami Loam (2-6%)		Rf Rifle muck (0-2%)
MoC Miami Loam (6-12%)		SvE Spinks-Oakville loamy sands (18-25%)
MrB Miami-Conover loams (2-6%)		SvF Spinks-Oakville loamy sands (25-35%)
SvB Spinks-Oakville loamy sands (0-6%)		Tm Tawas muck (0-2%)
SvC Spinks-Oakville loamy sands (6-12%)		WeA Wasepi sandy loam (0-2%)

## Watersheds

A watershed is an area of land that drains to a common point. Ultimately a watershed drains into a particular watercourse or water body such as a Great Lake. The rationale for watershed management is that if we properly manage activities on the land that drains to bodies of water, we will protect and improve the water resources of the state.

Nearly all of Cohoctah Township drains into the Shiawassee River Watershed, which drains to Lake Huron. The southwest corner of the Township is the only exception; this land area drains into the Grand Watershed which ultimately drains to Lake Michigan.

The headwaters of the Shiawassee River Watershed are primarily located in Livingston and Oakland counties. This watershed is one of the best examples of a warm-water river system in its eco-region. The watershed is about 742,400 acres in size. Its waters support over 40 species of fish, including darters, minnows, and channel catfish, and 12 species of freshwater mussel. The river also plays an integral role in the travels of migratory waterfowl and shorebirds. The swamps and fens adjacent to the river's headwaters support several globally rare species, including the Indiana bat, eastern massasauga rattlesnake, Blanding's turtle, and insects such as the Poweshiek Skipperling.<sup>b</sup>

## Lakes, Ponds, Rivers, Creeks, and Drains

Surface water in the township is in the form of lakes, ponds, rivers, creeks and drains. There are 8 small lakes and ponds in Cohoctah Township that consist of 5 acres or more; they are described in the following table:

**Table 5-2: Cohoctah Township Lakes and Ponds of 5 Acres or More**

Lake Name	Section(s)	Acreage	Maximum Depth In Feet	Public Access
Schuler	4,5	7.2	Unknown	No
Sabine	19	18	Unknown	No
Hidden	24	5.3	Unknown	No
Lake Cohoctah/ Sandy Bottom	32	21	Unknown	No
Cook	32	6.2	15	No
Mud	32	8.1	Unknown	No
Oak Grove Mill Pond	36	49	8	No
Hosley Pond	36	13	Unknown	No

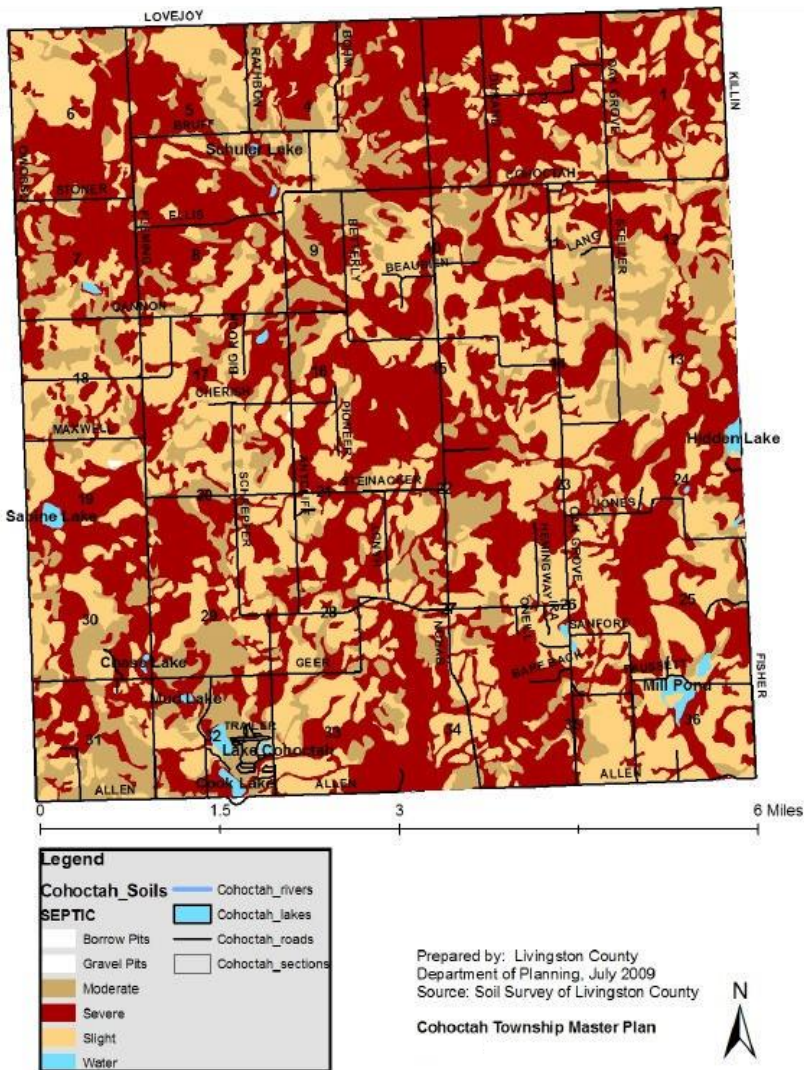
Source: Michigan Lake Inventory Bulletin No. 47 by Humphrys and Green

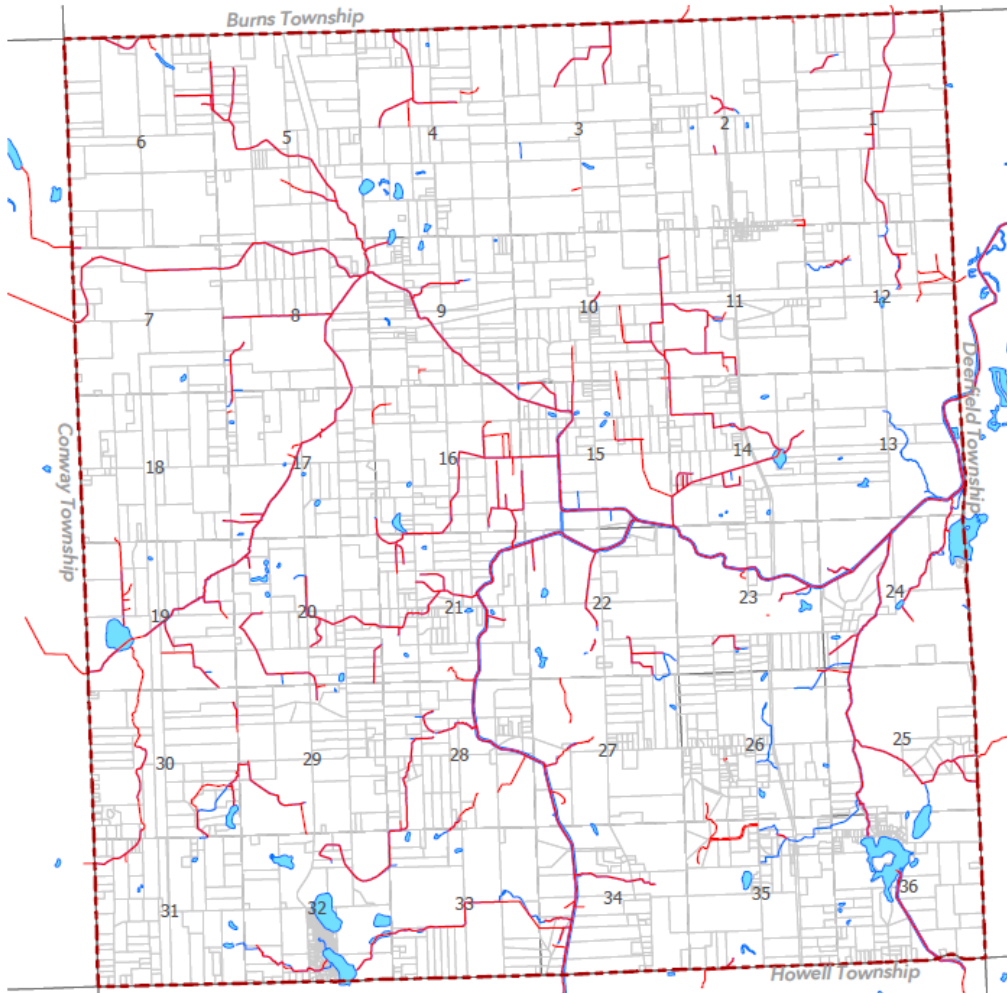
Lake and pond resources in Cohoctah Township can be described as small and scattered throughout the Township. None of these water resources have public access. The largest water bodies, Lake Cohoctah/Sandy Bottom Lake, and the Oak Grove Mill Pond are found in the southernmost tier of the Township in Sections 32 and 36. Lake Cohoctah/Sandy Bottom Lake is the site of the Church of Nazarene camp.

Most of the lake lots in Cohoctah Township were created decades ago and they are very narrow in width. Many were constructed as summer homes but have been converted to year-round use.

<sup>b</sup> Shiawassee River Watershed, The Nature Conservancy website, 2009







# Cohoctah Township Septic Limitations

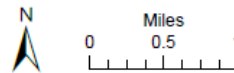




## Lakes, Pond, Rivers, Creeks and Drains

Cohoctah Township  
Livingston County, Michigan

- |   |  |
|---|--|
|  Township Boundary |  Lakes and Creeks |
|  Open Drains       |  Parcels          |
|  Rivers            |  Sections         |



Date: Livingston County GIS, MCOOT  
12/13/2023



Dense Lakefront development presents many environmental challenges. For instance, this type of development often results in groundwater contamination from septic systems located near lake shores in high water table areas. Surface waters are also polluted from runoff over impervious surfaces such as driveways, roads, and roofs. This runoff carries with it tar, rubber, salt, oil, gasoline, and other fluids from automobiles. Lakefront lawns also contribute to lake pollution by sending runoff into lakes that carries fertilizer, weed killer, insecticides, and other chemicals with it.

The South Branch of the Shiawassee River roughly bisects the southern half of the township to its center, then runs eastward into Deerfield Township. Several tributaries, including Sprague Creek, and drains scattered around the township empty into the river. This combination of natural and manmade drainage, when combined with the township's wetlands, provides areas of water storage and dissipation.

## Wetlands and Floodplains

Existing in many different forms such as bogs, marshes, and swamps, wetlands are one of the most important natural resources upon which a community depends. Wetlands are complex ecological systems that function in a number of beneficial ways. Wetlands reduce flood hazards by providing storm water storage. Wetlands that overlay groundwater recharge areas improve groundwater quality by filtering the water as it percolates through the soil. They act similarly near surface water by filtering run-off. They are also highly productive ecosystems which provide an essential habitat for much of Michigan's fish and wildlife at some time during their life cycles.

Wetland areas are interspersed throughout the township. The wetlands often act as transitional areas between the aquatic ecosystems and the surrounding uplands. The largest wetland systems are primarily adjacent to lakes or rivers. The largest wetland systems in the Township are associated with Sabine Lake and Sprague Creek in Section 19, the South Branch of the Shiawassee River in Sections 33, 34 and 27, and the Oak Grove State Game area in Sections 24 and 25.

There are three primary types of wetlands in Cohoctah Township: 1) emergent wetlands; 2) scrub/shrub wetlands; and 3) forested wetlands with an overstory of trees and an understory of shrubs. As water levels rise and fall, some ecological succession may be occurring as the wetlands shift from emergent marsh to forested wetlands.

Under Public Act 451 of 1994, certain wetland areas are protected more stringently by the Michigan Department of Environmental Quality. These include wetlands that are contiguous to an inland lake, pond, river, stream, or similar surface water feature and wetlands that are five acres or larger in area and located in counties which contain a population of at least 100,000 people, which includes Livingston County. Data for this map was compiled from the National Wetlands Inventory. Although this mapping data has proven to be highly accurate and helpful, the only foolproof way to identify wetlands is through a site visit.

Like most communities in Michigan, some areas of Cohoctah Township are susceptible to flooding. A floodplain is the low-lying area adjacent to a watercourse that is prone to flooding. Areas with a high degree of wet soils and limited drainage may also be susceptible to flooding. Periodic flooding of these areas is critical to the types of vegetation and animal species which live here. Floodplains also contain water during periods of high stream levels. Development in floodplains will be limited due to the inability to site septic systems and building foundations, and the threat of property damage. Any alteration to a floodplain will disrupt the drainage flow during high water periods and potentially divert flooding to other areas. Federal, state and local laws regulate encroachment, dredging and filling with flood plain areas. The middle of Cohoctah Township is where the largest floodplain area lies, surrounding the convergence of creeks, drains and the branches of the Shiawassee River.



## Agricultural Land

Agricultural land serves a variety of benefits to the township. It provides locally grown food and important wildlife habitats. Beyond these obvious benefits, the township's agricultural land serves as a part of the rural atmosphere that attracts residents to Cohoctah Township, provides food for wildlife, helps to control flooding, protects wetlands and watersheds, and helps to maintain good air quality.

As explored in Chapter 3: Demographic Profile, Cohoctah Township farmers are active participants in the State of Michigan's P.A. 116 Farmland and Open Space Preservation program. Enrollment in this program is voluntary. A landowner agrees to preserve their land for agriculture in exchange for certain tax benefits and exemptions for various special assessments. An agreement runs with the land and is for a jointly agreed upon length of time (at least 10 years). There are currently thirty-two (32) Farmland and Open Space Preservation contracts in Cohoctah Township which far outnumbers most other Livingston County townships.

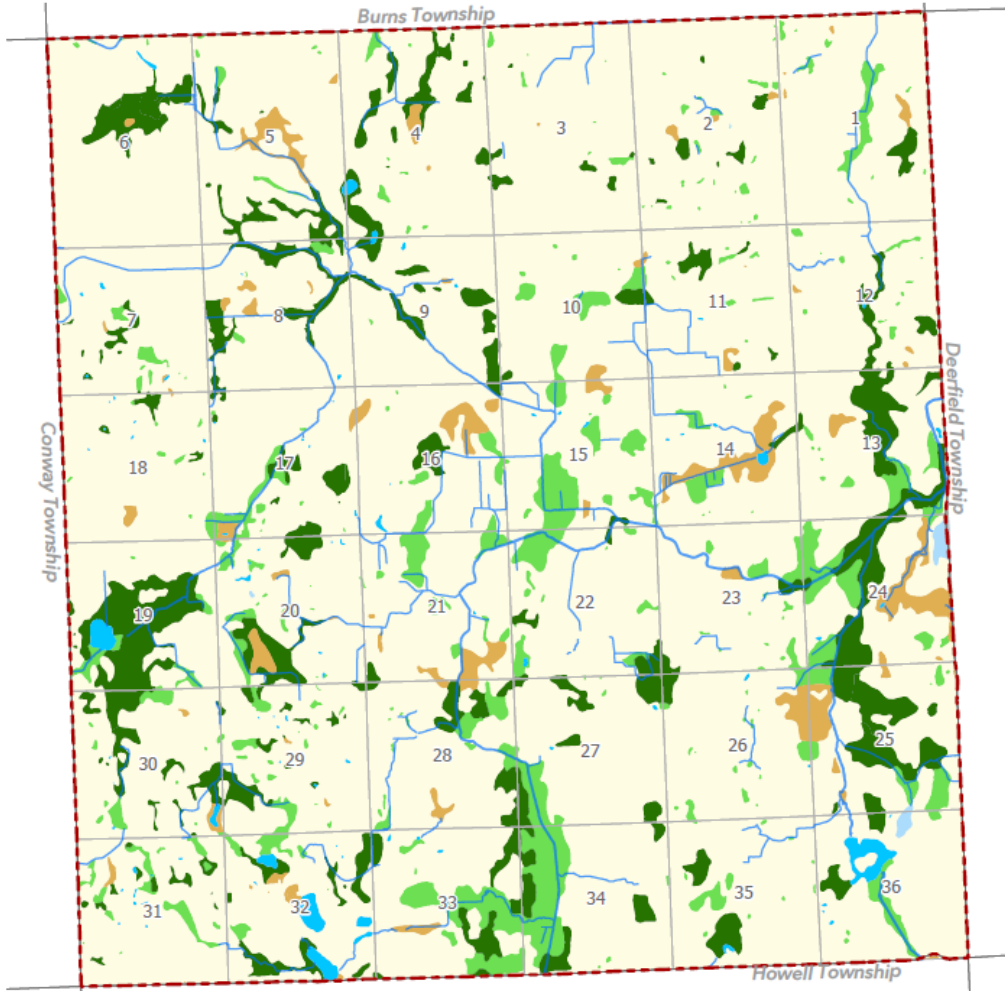
The map on page 37 shows prime farmland in the township. Prime farmland soil types exhibit the following characteristics: zero to six percent slope, slight erosion hazard, slow runoff and moderately rapid to moderately slow permeability. Soils classified on the map as "prime farmland in drained areas" exhibit the same characteristics but are subject to ponding and insufficient natural drainage. These soils are well suited to farming only if they are adequately drained. Soil types associated with the map are listed in the table below. Prime farmland typically produces higher crop yields and may require less intensive management practices. The two largest crops grown in Cohoctah Township are corn and soybeans. The largest area of contiguous Prime Farmland soil is in the northeast corner of the Township primarily in Sections 1,2,3,11 and 12. This northeast area of Prime Farmland corresponds with the township quadrant that has the second highest number of P.A. 116 contracts.

The *Soil Survey of Livingston County* contains detailed soil data descriptions and maps, as well as information on suitability for farming, development, wildlife, and other categories. The survey was developed by the Soil Conservation Service (a division of the United States Department of Agriculture (USDA) Natural Resources Conservation Service).

**Table 5-3: Prime Farmland Soil Types**

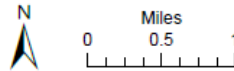
Prime Farmland Soil Types	Prime Farmland in Drained Areas
ApA Arkport fine sandy loam (0-2% slope)	Ba Barry sand loam
ApB Arkport fine sandy loam (2-6% slope)	Be Berville loam
BuA Brady loamy sand (0-2% slope)	Bv Breckenridge loamy sand
BwA Bronson loamy sand (0-2% slope)	By Brookston loam
FoA Fox sandy loam (0-2% slope)	Cr Colwood fine sandy loam
FoB Fox sandy loam (2-6% slope)	CvA Conover loam (0-2% slope)
HdB Hillsdale loam sand (2-6% slope)	CvB Conover loam (2-6% slope)
HIB Hillsdale sandy loam (2-6% slope)	CxA Conover-Miami loams (0-2% slope)
HmB Hillsdale-Miami loams (2-6% slope)	Gd Gifford sandy loam
MnA Metea loamy sand (0-2% slope)	Lc Lamson fine sandy loam
MnB Metea loamy sand (2-6% slope)	LoB Locke sandy loam (0-4% slope)
MoA Miami loam (2-6% slope)	MIB Metamora sandy loam (0-4% slope)
MoB Miami loam (2-6% slope)	Pc Pewamo clay loam
MrB Miami-Conover loams (2-6% slope)	Se Sebewa loam
OmA Owosso-Miami sandy loam (0-2% slope)	Wh Washtenaw silt loam
OmB Owosso-Miami sandy loam (2-6% slope)	

Source: Soil Survey of Livingston County, Soil Conservation Service and the Michigan State Agricultural Experiment Station, Issued November 1974, and reissued December 1993.



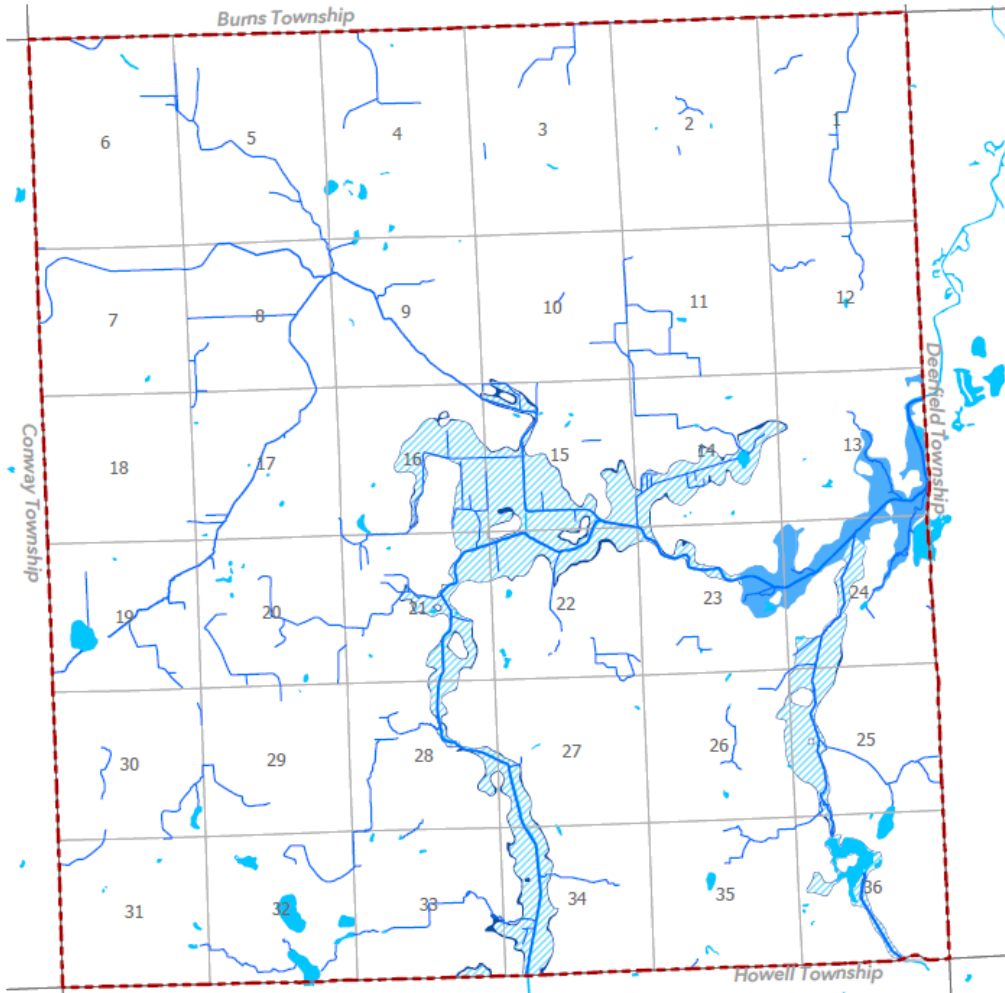
## Wetlands

Cohoctah Township  
Livingston County, Michigan









Data: Livingston County GIS, MDCOT  
12/14/2023

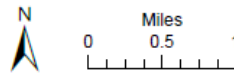




## Township Floodplains

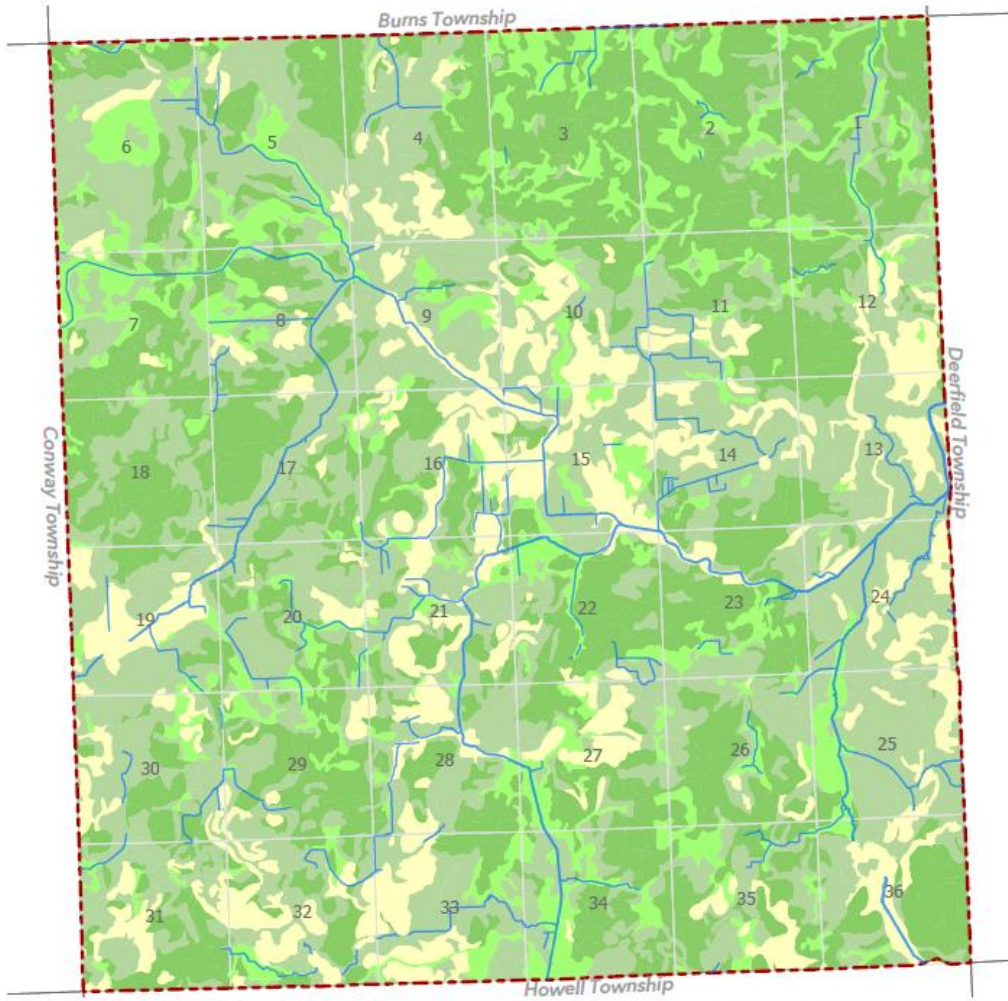
Cohoctah Township  
Livingston County, Michigan

-  Township Boundary
-  Rivers
-  Lakes and Creeks
-  1% Annual Chance Flood Event
-  1% Annual Chance Flood Event Base Flood Elevation (BFEs)
-  Areas of moderate flood hazard



Data: Livingston County GIS  
10/13/2023

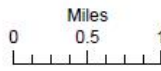




## Prime Farmland

Cohoctah Township  
Livingston County, Michigan

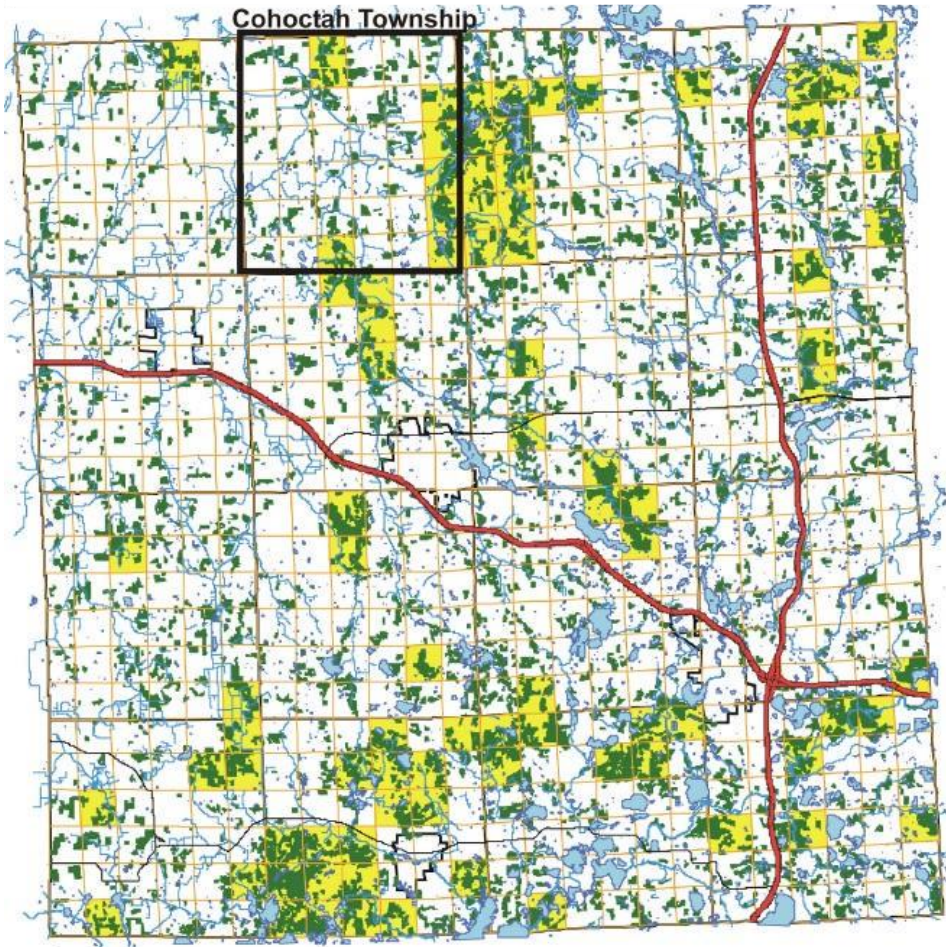
- All areas are prime farmland
- Farmland of local importance
- Not prime farmland
- Township Boundary
- Prime farmland if drained
- Rivers



Data: Livingston County GIS  
12/14/2023



## Livingston County's Largest Woodland Areas



Legend	
	Freeways
	Rivers
	Lakes
	Sections
	Woodlands
	Dense Woodlands

Prepared By: Livingston County Department of Planning,  
August 2004  
Note: The woodlands that are depicted comprise  
approximately 30-65% of the section in which they are located  
or approximately 190 to 414 acres of the 640 acre section.  
Source: MIRIS Land Cover Data, 2000

### Cohoctah Township Master Plan



## Woodlands

The preservation of woodlands in the township is important for a number of reasons. Besides adding to the rural character of the township, woodlands provide habitat for wildlife and plants, recreation opportunities for citizens, and scenic landscapes. Woodlands located near the roadway contribute to the rural character of the township by creating a sense of enclosure because of the close proximity of the vegetation to the roadway. Woodlands also serve as buffers between developments further accentuating the rural feel that is desired by those living in the township, and they filter noise and dust and contribute to air quality and atmospheric cooling.

It is important to consider the extent and type of woodlands present when making land use decisions. Developments that occur within woodlands should be carefully designed to keep as many trees standing as possible.

The Southeast Michigan Council of Governments (SEMCOG) updated land use/land cover for each community in the Southeast Michigan region indicates the Township comprises of 10,185 acres of tree canopy (41.4% of the Township), significantly more compared to Handy (6,421 acres), Howell (8,377 acres), Conway (7,678 acres) Townships.

In the *Hazard Mitigation Plan Livingston County, Michigan*, woodlands have been examined on a section-by-section basis throughout the county for emergency management purposes such as assessing the risk of wildfire. Most sections in Livingston County are one square mile in size or 640 acres. The largest woodland areas in the county are those that comprise approximately 30-65% of the section or approximately 190 to 414 acres of the 640-acre section.

Seven of the thirty-six sections in Cohoctah Township meet these standards; largely because much of the land in these sections is publicly owned and preserved. Sections 12,13, 24, 25 and 36 along the eastern boundary of the Township is one such large woodland area. Collectively these five sections form the largest contiguous area of woodlands in Cohoctah Township. Much of the woodland area in these sections is preserved in public ownership by the Michigan Department of Natural Resources (MDNR) in the Oak Grove State Game Area. Sections 4 and 33 are two other sections in the township that contain significant woodlands (see map shown above, Livingston County's Largest Woodland Areas).

## Livingston County's High-Quality Natural Areas

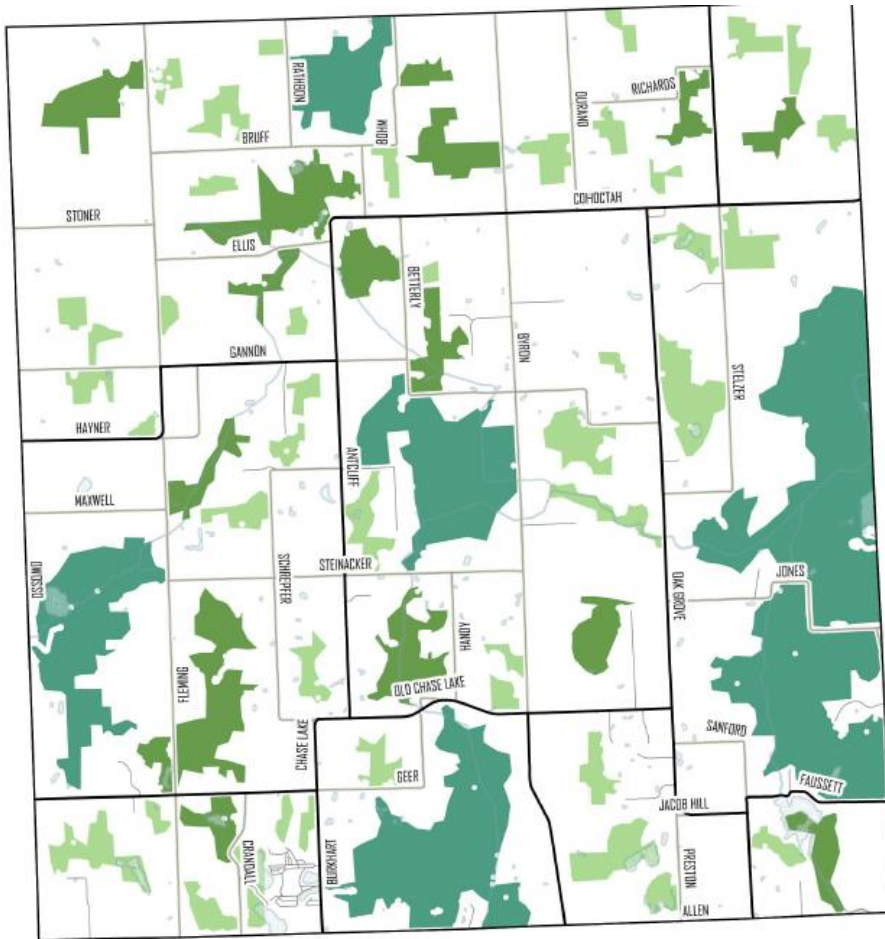
In partnership with a group of county citizens and government officials, aerial photography was used to map natural areas throughout the county resulting in a 2022 Livingston County Department of Planning study entitled: Livingston County's High-Quality Natural Areas.

The natural areas were then prioritized by using a set of criteria to differentiate one natural area from another. These criteria include: the size and shape of the natural area, the presence of rivers or streams, and the amount of connection one natural area has to surrounding natural areas, among others. Using these criteria natural lands are grouped into three categories of varying conservation priority; Priority 1, Priority 2 and Priority 3 natural areas with "Priority 1" areas having the highest cumulative scores and being considered the most ecologically valuable.

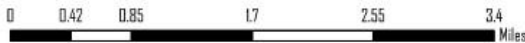
The map on the next page illustrates that Cohoctah Township contains six (6) Priority I areas scattered throughout the township, primarily in the mid to southern half of the township. The largest Priority 1 natural area includes two nearly contiguous areas along the eastern boundary of the township in Sections 12,13, 23, 24, 25, 26, and 36. These two areas total 2,379 acres of land, much of which is owned by the Michigan Department of Natural Resources as part of the Oak Grove State Game Area. Another large Priority 1 area consisting of 1,023 acres in Sections 27, 28, 33 and 34 is primarily owned by Heritage Acres LLC.

Priority II areas are more abundant and are scattered throughout the township. In Cohoctah Township these areas typically range between 40 and 150 acres in size, and they are privately owned. Priority III areas are typically less than 40 acres in size. These areas are also scattered throughout the Township, and they are privately owned.

One of the most straightforward planning methods for preserving the high quality of natural areas that have been identified through this study, is an open space development or planned unit development option enabled through a zoning ordinance. When working with a developer proposing an open space or planned unit development, a community may be able to negotiate what portions of the site are preserved. Using the Livingston County's High-Quality Natural Areas report, a community can insist that high quality natural areas are preserved as open space, focusing residential land uses onto adjacent vacant or cleared land. Doing so will preserve high quality natural areas, while also serving as a selling point for development.



# Cohoctah Township High Quality Natural Areas – 2021



High Quality Natural Areas are defined as places on the landscape dominated by native vegetation that have various levels of potential for harboring high quality natural areas and unique natural features. Scoring criteria used to prioritize sites included: total size, size of core area, length of stream corridor, landscape connectivity, restorability of surrounding land, parcel fragmentation, vegetation quality, and biological rarity score.

Data Sources: Livingston County GIS, Natural Features Inventory (MNFI) Biotics Database, SEMCOG

- |               |                                   |
|---------------|-----------------------------------|
| Interstate    | <b>High Quality Natural Areas</b> |
| US Highway    | <b>Priority Class and Score</b>   |
| State Highway | Priority 1 (17 - 45)              |
| Major Road    | Priority 2 (11 - 16)              |
| Minor Road    | Priority 3 (0-10)                 |
| Waterbody     |                                   |



## Environmental Concerns

The Environmental Health Division of the Livingston County Health Department compiles and maps information on known or suspected sites of environmental sensitivity in Livingston County (Livingston County Environmental Awareness Handbook 2002). The six (6) categories of sites they identify are:

- 1.) Sites of Environmental Contamination
- 2.) Open/Closed Leaking Underground Storage Tanks
- 3.) Areas of High Nitrate Levels
- 4.) Areas of High Arsenic Levels
- 5.) Closed Dump/Landfill Sites
- 6.) Active Septage Disposal Sites (See Map "Environmental Concerns").

Sites of Environmental Contamination - Part 201 (Environmental Remediation) of the Natural Resources and Environmental Protection Act (1994 P.A. 451, as amended) regulates sites of environmental contamination in Michigan. A site of environmental contamination is defined as: "the release of a hazardous substance, or the potential release of a discarded hazardous substance, in a quantity which is or may become injurious to the environment or to the public health, safety or welfare." Clean-up of these sites is administered by the Environmental Response Division of the Michigan Department of Environmental Quality. Cohoctah Township has no known sites of environmental contamination.

Underground Storage Tanks - Underground storage tanks are widely used by large and small industries, farmers, and individual homeowners to store fluids such as petroleum fuels, acids, metals, solvents and chemical wastes. Leaking underground storage tanks account for roughly 50% of all groundwater contamination sites. There are underground storage tanks listed with the Michigan Department of Environmental Quality (MDEQ) as "Open" and "Closed." "Open" means that the site is currently listed with MDEQ as either "inactive" or "Cleanup Actions Taken or in Progress". "Closed" means a site where cleanup actions have been completed, although the site may not meet current environmental standards. Cohoctah Township does not have any "Open" or "Closed" Underground Storage Tanks.

Areas of High Nitrate Levels - Nitrate is a naturally occurring form of nitrogen found in soil and groundwater, that in moderate amounts is a harmless part of food and water. However, nitrates in sufficient concentrations in drinking water can be toxic to infants and young animals. This happens when nutrients, especially nitrogen and phosphorous, leach into the ground and enter the ground water. The sources of the nutrients are usually from water running off well-fertilized agricultural fields, water containing high levels of phosphorous-based detergents, or some industrial process. Excessive levels of nitrate can cause methyhemoglobinemia, or blue baby disease, which is a blood disorder that primarily affects infants under six months of age.

According to the Livingston County Health Department, high nitrate levels are often associated with poorly constructed or improperly located wells. Newly installed wells should be installed uphill and at least 100 feet away from septic systems, barnyards, feedlots, and chemical storage facilities.

The U.S. EPA has established a maximum contaminant level of 10 milligrams per liter for public water systems. The Livingston County Department of Public Health has chosen 5 milligrams per liter as an indicator of possible aquifer vulnerability. Using this standard, there are eight (8) sites of elevated nitrate levels in Cohoctah Township. Seven (7) of these sites existed prior to 1994, most of which are located in the southwest quadrant of the Township. One (1) water supply site was compromised between 1994 and 2001. This site is on Chase Lake Road in Section 27.

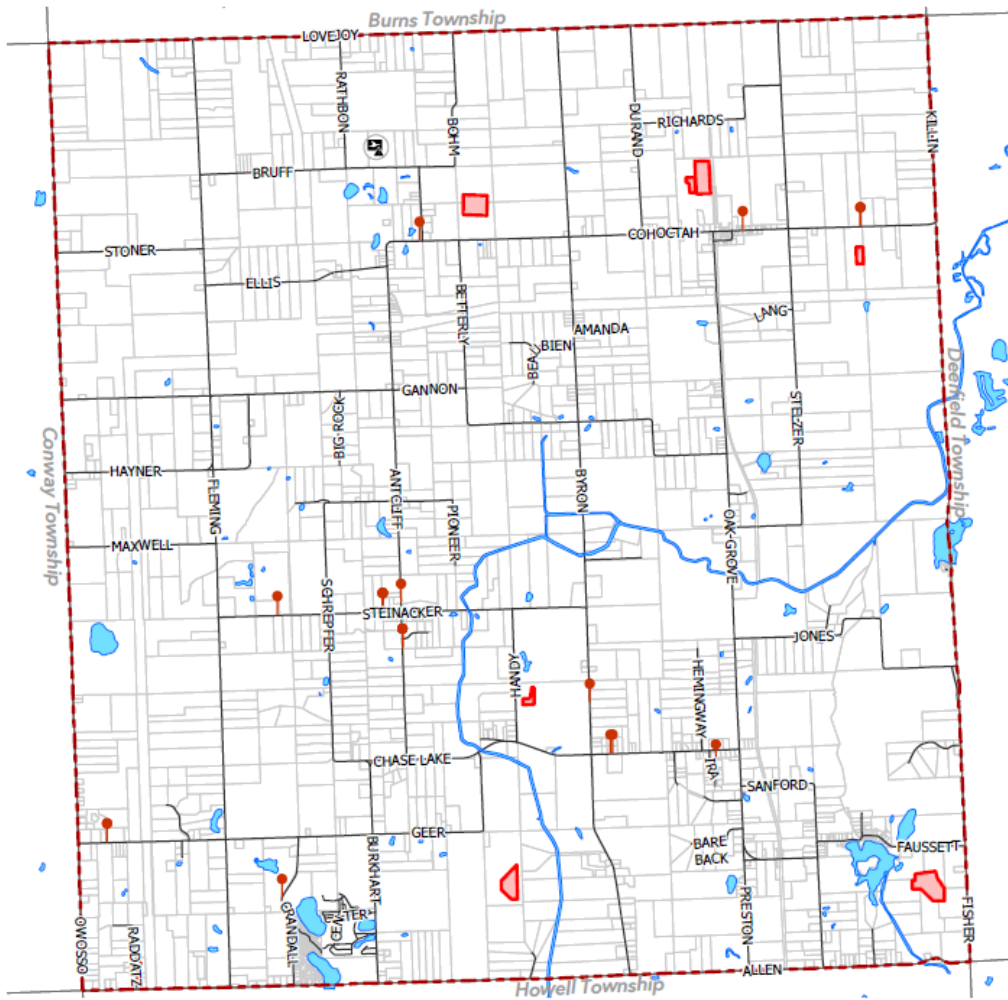
Areas of High Arsenic Levels - Arsenic is a naturally occurring element that, through erosion and weathering of rock, can end up in groundwater, soil, and plants. Arsenic can combine with other elements to form inorganic and organic arsenicals. Inorganic arsenicals are generally more toxic than organic arsenicals and are more often found in drinking wells and groundwater. The primary danger from arsenic is that it is a known carcinogen, but other effects of arsenic consumption are nausea, vomiting, diarrhea, thickening and discoloration of the skin (which may lead to skin cancer), and numbness of feet and hands. Arsenic has also been associated with the development of diabetes and has been reported to affect the human vascular system.

Based on guidelines from the Safe Drinking Water Act, the United States Environmental Protection Agency (U.S. EPA) set the Maximum Contaminant Level (MCL) of arsenic at 10 micrograms per liter or parts per billion (ppb). Arsenic has been detected in six (6) well samples in Cohoctah Township. Three wells have an arsenic level of less than 10 micrograms per liter and three wells have an arsenic level between 11 - 25 micrograms per liter.

Closed Dump and Landfill Sites – The Livingston County Department of Public Health maintains a list of closed dump/landfill sites within the County. The information includes where the landfill was located, who operated it, and when the landfill closed. In general, little information is available and there are a number of landfill sites around the County that are either untraceable or unknown entirely, possibly because they were illegal operations. There are currently 18 known closed landfill sites in Livingston County, one of which is found in Cohoctah Township. This landfill near the intersection of Bruff and Rathbon in Section 4 closed in the early 1970's.

Licensed Septage Disposal Sites – Septage is defined as the anaerobic slurry of residual wastes, sludge and scum that is mechanically pumped from a septic tank and subsequently transferred to a licensed disposal facility. The most common method of septage disposal used to be direct land application at a licensed septage disposal site. Recent state legislation radically changed the way septage must be handled and a septage receiving station was built by Livingston County government in Hartland Township to accommodate septage volumes. The intent of this station is to eliminate the very real groundwater contamination risks associated with land application practices and get this material into the sewers. Similar to way that many lakes in our community have installed sewers to stop the contamination of their lake from septic systems, this facility treats septage wastes in an effort to prevent groundwater contamination.

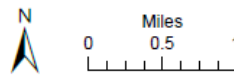
The two (2) formerly licensed septage disposal sites in Cohoctah Township were located in Section 2 along Byron Road, and Section 36 near Fisher and Allen Roads.



## Environmental Concerns

Cochoctah Township  
Livingston County, Michigan

-  Township Boundary
-  Historical Septage Disposal Sites
-  Lakes and Creeks
-  Roads
-  Closed Landfill
-  Areas with Elevated Nitrates
-  Parcels



Data: Livingston County GIS  
12/14/2023



## Chapter 6: Cohoctah Township Existing Land Use

Existing land use in Cohoctah Township was analyzed by using the Southeast Michigan Council of Governments (SEMCOG) land coverage map. SEMCOG's most recent update of land use/land cover data for the county was in the year 2020. The Township Existing Land Use map depicts this land coverage analysis, and it can be found at the end of this chapter.

### Land Use Categories

SEMCOG uses the following twenty-one (21) land use categories to describe and map land use throughout the region.

Single-Family Residential consists of detached housing units intended to be occupied by families of all shapes and sizes. These developments can be within subdivisions, neighborhoods, or on large lots.

Attached Condo Housing includes condominium developments which are intended to house generally two families in one housing unit, each with its own dedicated space.

Multi-Family Housing includes developments such as apartment buildings where many family units can be located within a single structure.

Mobile Home includes prefabricated homes and are generally located in mobile home parks.

Agricultural / Rural Residential includes any residential parcel containing 1 or more homes where the parcel is 3 acres or larger.

Mixed Use includes those parcels containing buildings with Hospitality, Retail, or Office square footage and housing units, sometimes within the same structure.

Retail consists of commercial businesses, restaurants, grocery stores, and other similar uses that are intended to provide services to the public.

Office includes buildings which provide office space to various types of businesses.

Hospitality consists of uses such as hotels and other accommodations which provide temporary stay and various services to traveling populations.

Medical includes hospitals, urgent care, and other similar services which provide medical care to residents.

Institutional consists of government owned facilities and property used for various agencies.

Industrial includes areas designated for uses such as manufacturing, processing, and treatment of various materials.

Recreation / Open Space includes parks and land designated for the enjoyment of residents as well as preserving the natural resources and environment of a community.

Cemetery consists of areas set aside for burials and other related activities.

Golf Course are intended for providing space for the public to engage in golf activities and consist of courses, driving, ranges, and sometimes lodging for golfers.

Parking is areas designated for public parking, and is generally located near commercial and retail uses, as well as many businesses.

Extractive includes areas where various materials are removed from the ground and transported to various uses.

TCU stands for transportation, communication, and utilities which are areas designated for facilities and land uses that provide these services to the general public, sometimes in the form of easements.

Vacant are parcels where no land use currently exists on site. These sites provide great opportunities for future development or conservation.

Water is classified as areas where natural bodies of water are found, such as lakes, ponds, streams, and wetlands.

Not Parceled includes all areas within a community that are not covered by a parcel legal description.

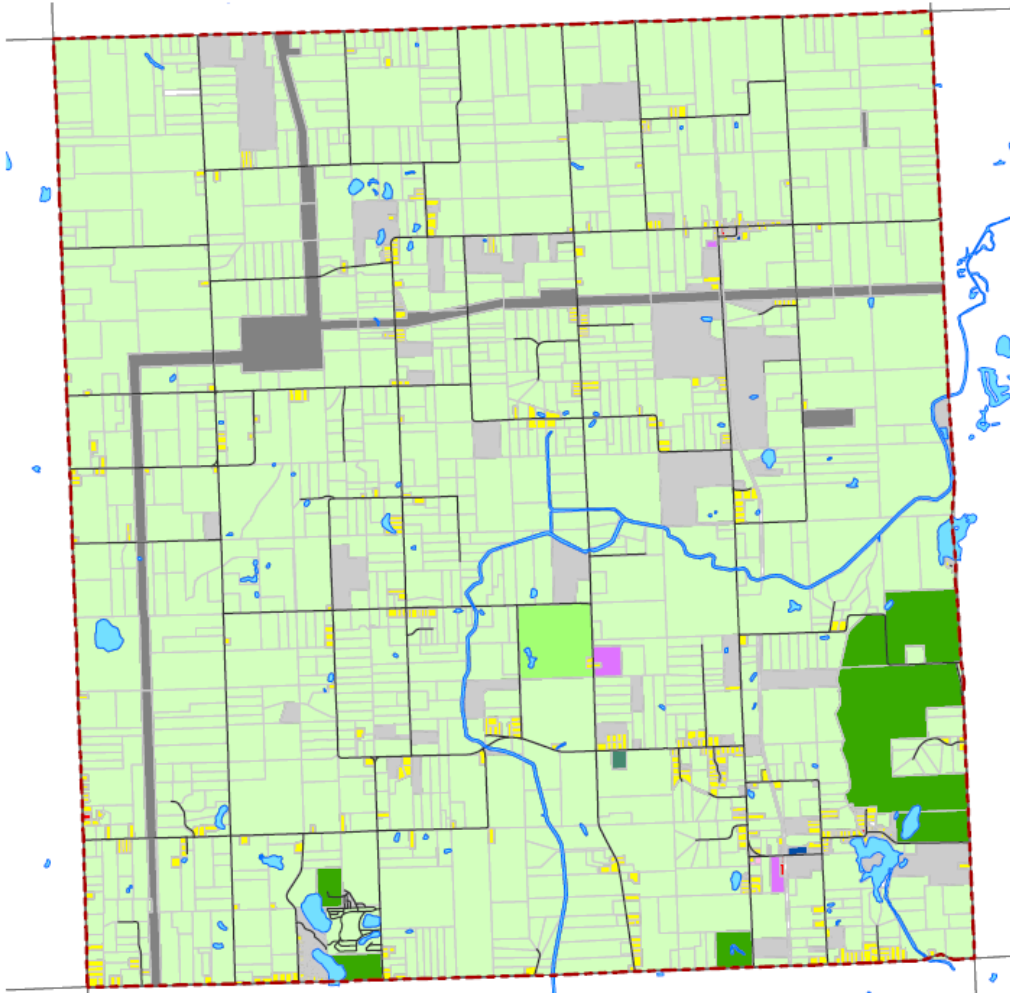
The table below on page 47 is SEMCOG's profile of the twenty-one land use categories described above. This profile summarizes change in land use and land cover from 2015 to 2020.

Alternative Energy is a new category that does not originate from SEMCOG but is original to Cohoctah Township. Land uses within this category consists of wind, solar, hydro, and other forms of green energy. These types of uses should be properly screened from conflicting land uses, and be constructed in a manner that does not impact the natural and rural character of the Township.

Note: The Existing Land Use map condenses some of the above categories in order to provide for greater organization and ease of viewing.

<b>Table 6-1: Cohoctah Township Land Use Change, 2015 – 2020</b>				
<b>Land Use</b>	<b>Acres 2015</b>	<b>Acres 2020</b>	<b>Change</b>	<b>% Change</b>
Single-Family Residential	641.4	640.4	-1.1	-0.2%
Attached Condo Housing	0	0	0	0%
Multi-Family Housing	0	0	0	0%
Mobile Home	0	0	0	0%
Agricultural/Rural Residential	21,255.8	20,432.2	-823.7	-3.9%
Mixed Use	33.6	0	-33.6	-100%
Retail	6.5	6.5	0	0%
Office	2.3	2.3	0	0%
Hospitality	0	0	0	0%
Medical	0	0	0	0%
Institutional	82.4	6.6	-75.7	-92%
Industrial	39.7	39.7	0	0%
Recreational/Open Space	740.1	773.7	33.6	4.5%
Cemetery	8.1	8.1	0	0%
Golf Course	156.6	156.6	0	0%
Parking	0	0	0	0%
Extractive	0	0	0	0%
TCU	713.8	713.8	0	0%
Vacant	532.4	1,432.9	900.5	169.1%
Water	294.7	294.7	0	0%
Not Parceled	94.4	94.4	0	0%
<b>Total</b>	<b>24,601.8</b>	<b>24,601.8</b>	<b>0</b>	<b>0%</b>

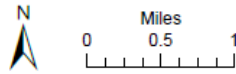
Source: Southeast Michigan Council of Governments (SEMCOG)



### Existing Land Use

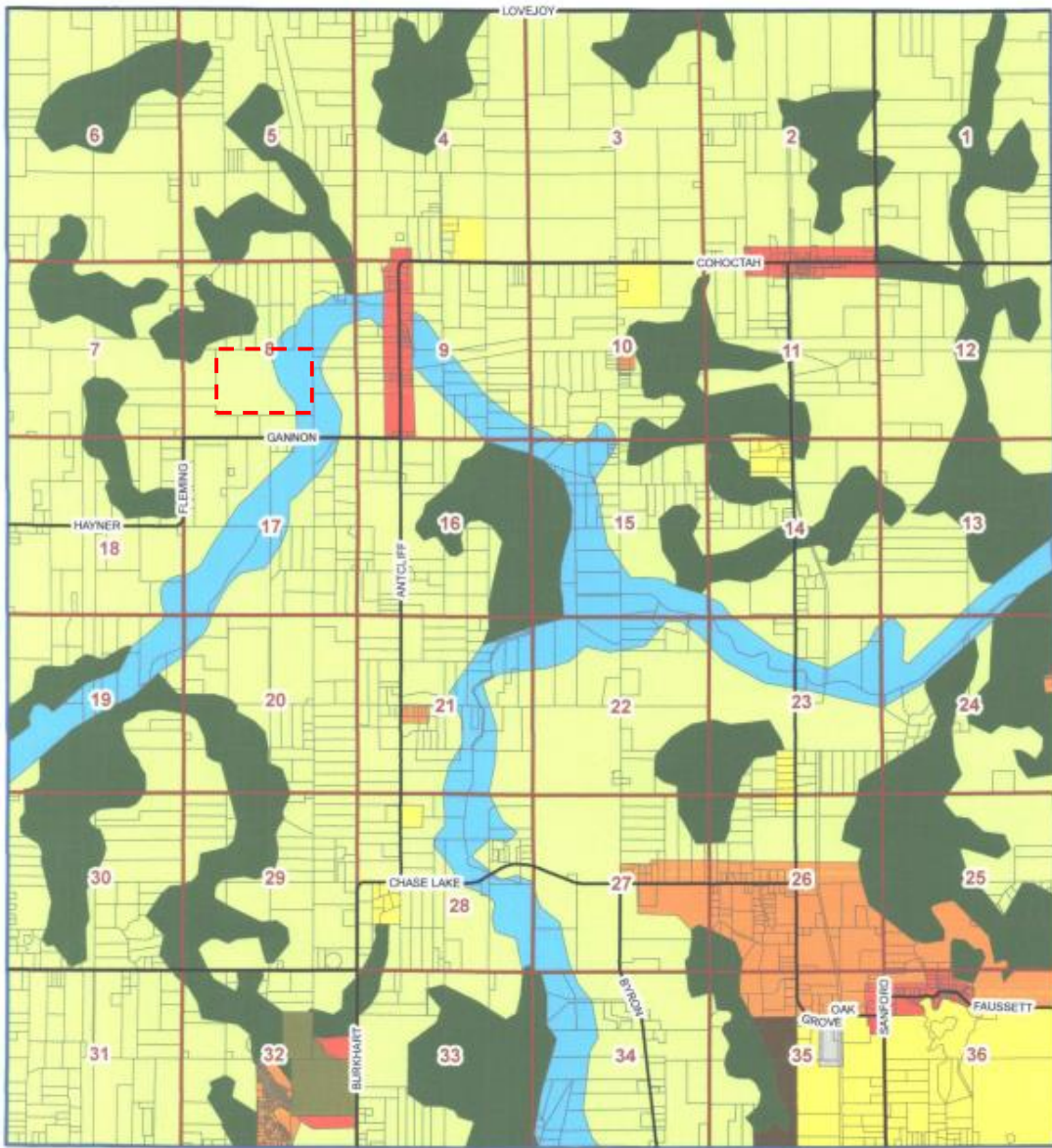
Cohoctah Township  
Livingston County, Michigan

- |                                  |                                      |
|----------------------------------|--------------------------------------|
| Agricultural / Rural Residential | Cemetery                             |
| Single-family Housing            | Transit / Communications / Utilities |
| Office                           | Vacant                               |
| Retail                           | Water                                |
| Industrial                       | Township Boundary                    |
| Institutional                    | Parcels                              |
| Recreation / Open Space          | Roads                                |
| Golf Course                      |                                      |



Data: Livingston County GIS, SEMCOG  
12/14/2023





- |                            |   |                                       |  |
|----------------------------|---|---------------------------------------|--|
| Major Road                 | <b>Zoning</b>                                 | Light Industrial District, LI         | Limited Recreation Residential District, LRR |
| Cohoctah Township Boundary | Neighborhood Service Commercial District, NSC | Mobile Home Residential District, MHR | Suburban Residential District, SR            |
| Cohoctah Township Sections | Waterways Resource Development District, WRD  | Resource Development District, RD     | Settlement District, S                       |
| Cohoctah Parcels           | Agricultural Residential District, AR         | Rural Residential District, RR        | Solar Overlay District                       |

Livingston County, Michigan  
 Information Technology Department  
 G.I.S. Division 517.548.3230



North arrow pointing up.

Orthophotos Flown Spring 2010  
 Printed April 18, 2015  
 Parcel lines are a representation only.  
 Not intended for survey purposes.



## Chapter 7: Cohoctah Township Goals and Objectives

Master Plan goals and objectives aid local decision-making by establishing principles that the township has decided are vital to the future well-being of the community. Goals and objectives also serve as township policy statements for land use decisions and provide valuable background in the development of the future land use map. For purposes of this plan, the relationship between goals and objectives is defined as follows:

**Goals:** Broad conceptual statements of what Cohoctah Township would like to achieve and accomplish over time.

**Objectives:** Measurable detailed statements of how Cohoctah Township will work toward achieving the goals.

### Development of Goals and Objectives

The goals and objectives of the Cohoctah Township Master Plan were created through the review of several information sources. For instance, several themes emerged from resident responses to the Cohoctah Township Citizen Survey (see Appendix A). Regarding residential development in the Township, survey responses revealed that 28% of residents feel the rate of residential growth is much too fast while 44% felt the rate of growth was about right. Additionally, most prefer that single family homes be developed on lots of 10 acres or more in size. Regarding future land use planning, respondents called for the continued preservation of farmland and natural resources as the highest planning priority, as well as expanding the blight ordinance to maintain the condition of properties and structures. Planning issues that were deemed unimportant to survey respondents were the development of small box stores, and if any development were to be introduced, the favored location was the downtown Cohoctah area. When asked about the possibility of new Township park improvements, respondents indicated that additional community events would be a welcome incentive to use park facilities. The expansion of play equipment was also a recurrent response. When asked about the state of development within the Township over the next five to ten years, the preservation of rural character and farmland was the most recurring answer, as well as better internet access and road maintenance.

In addition to the results of the citizen survey, the Cohoctah Township Planning Commission considered the goals and objectives of the 2002 Cohoctah Township Comprehensive Plan and 2010 Master Plan, the goals and objectives of the Livingston County Comprehensive Plan, and a reference list of demographics and planning trends that were identified through the research and analysis that went into creating chapters of the 2024 Cohoctah Township Master Plan (see Appendix B for Cohoctah Township Master Plan Goals and Objectives Fact Sheet). Each of these source materials stimulated ideas that were formed into the goals and objectives of the following fifteen (15) subject headings:

- Planning and Zoning
- Township Services and Facilities
- Transportation
- Natural Features and Open Space Preservation
- Agriculture
- Housing and Residential Development
- Commercial Areas and Development
- Industrial Areas and Development
- Hazard Mitigation
- Alternative energy (solar/wind)
- Tiny homes
- Mobile home parks
- Small box stores
- Short term rentals
- Medium/high density residential development

## Planning and Zoning

**GOAL:** Coordinate planning efforts with neighboring communities.

Objective: Minimize zoning and future land use conflicts along boundaries with neighboring communities.

Objective: Coordinate planning efforts regarding shared resources such as watersheds and road, greenway and water corridors.

Objective: Collaborate with neighboring communities on the provision of governmental facilities and services.

**GOAL:** Maintain easy to understand, action-oriented master plan language that guides future land use decisions and includes a procedure for periodically updating the plan while providing meaningful public participation in the process.

Objective: Use the Cohoctah Township Master Plan as a basis for establishing zoning regulations that are easily understood by citizens and developers.

Objective: Encourage a balance between growth and development, and protection and enhancement of the quiet, scenic, rural character of Cohoctah Township.

## Township Services and Facilities

**GOAL:** Develop township services and facilities as necessary and financially practical.

Objective: Increase public services and facilities only when consistent with demand from township population growth.

Objective: Support the implementation of the Cohoctah Township Parks & Recreation Plan.

Objective: Assist the Township Board of Trustees in identifying development options for township land holdings.

## Transportation

**GOAL:** Provide adequate access to the road system with as few traffic interruptions as possible.

Objective: Keep curb cuts to a minimum to lessen their impact on road maintenance, traffic flow, safety, and aesthetics.

Objective: Preserve the rural feel of the current road network, including continuing the current mix of paved and unpaved roads, preserving the tree canopy, and screening buildings from the view of passers-by on roads.

## Transportation

**GOAL:** Maintain Township Road system at its current level of service or at an improved level of service.

Objective: Consider requiring traffic impact studies for any project that may cause or attract traffic such as medium to large sized residential developments.

## Natural Features and Open Space Preservation

**GOAL:** Preserve and enhance the township's rural character, natural systems, and open space.

Objective: Development in the Township should be directed to areas that are most capable of sustaining physical changes to the landscape without negatively impacting the community's natural features.

Objective: Encourage preservation of existing trees and natural features on new development sites, especially when they act as a visual or physical buffer along roads and neighboring land uses.

Objective: Explore the use of land conservancies or trusts to protect natural features and open space in Cohoctah Township.

## Agriculture

**GOAL:** Keep farming a viable and visible part of Cohoctah Township's future land use plan.

Objective: Use zoning and site planning techniques to preserve agricultural land, open space, and unobstructed views of fields, pastures, and agricultural buildings.

Objective: Support the landowner's Right to Farm when proper agricultural practices are followed.

Objective: Protect drainageways for agricultural land use.

Objective: Give farmers the tools or range of options necessary to develop portions of their property while keeping farming viable on the rest.

Objective: Explore transfer of development rights (TDR), purchase of development rights (PDR), land conservancy, P.A. 116, or other methods to preserve working agricultural lands.

Objective: Encourage property tax policies that assess farmland for present use rather than potential use.

## Housing and Residential Development

**GOAL:** Preserve a traditional rural character to the land use pattern in the township while planning for orderly future residential development.

Objective: Carefully review development in settlement areas to preserve the unique character of these communities.

**GOAL:** Provide a more environmentally sensitive residential environment by preserving the natural character of open fields, stands of trees, ponds, streams, hills, and similar natural features.

Objective: Promote open space developments, innovative residential design, and site development standards that maintain the rural character of the township and conserve farmland and open space.

Objective: Group lots for development on private roads to lessen the number of driveway curb cuts on public roads and decrease the visual impact of residential build-out along roads.

Objective: Encourage new development in densities appropriate for what the roads, soils, and drainage will bear.

## Commercial Areas and Development

**GOAL:** Encourage only commercial development that serves the needs of the township residents.

Objective: Continue the use of home occupations to accommodate small scale office and service establishments.

Objective: Limit small box stores to only settlement districts.

## Industrial Areas and Development

**GOAL:** Allow light industrial uses in appropriate areas that do not create adverse impacts on surrounding existing or future land uses.

Objective: Allow only light industrial uses that can be supported by existing paved roads.

## Hazard Mitigation

**GOAL:** Conserve natural features and protect residents and property from natural or man-made hazards.

Objective: Prevent new construction in flood plains and construction which would degrade wetlands; and in sensitive natural resource areas only allow development harmonious with the preservation of natural features on the site.

Objective: Keep the township's Hazardous Materials Ordinance updated and timely.

Objective: Enact a natural features buffer in which no development of any kind can take place.

## Alternative Energy

**GOAL:** Provide opportunities for alternative energy options to be introduced to the area while still preserving the rural character of the Township.

Objective: Work with state agencies and potential developers to ensure the goals of the Township are being met.

Objective: Adopt solar and wind farm ordinances which can be used as a guideline for future developers.

## Small Box Stores

**GOAL:** Provide residents with opportunities to access various commercial options within the Township.

Objective: Limit small box stores as only a permitted use in the Settlement district.

Objective: Ensure new small box stores are constructed and designed in a manner that fits the aesthetics and character of the neighborhood it is located in.

## Medium/High Density Residential Development

**GOAL:** Allow the development of medium to high density residential developments within the Township to provide growth opportunities for the community and residents of all ages.

Objective: Limit the location of such developments to within the Settlement District of the Township.

Objective: Ensure new developments are constructed and designed to be compatible with the surrounding historical architecture of the community.

## Chapter 8: Cohoctah Township Future Land Use

The future land use plan is a combination of the township's current goals and its vision for the future, which is a desire to preserve the township's rural character. It is intentionally general in scope and was developed based on the township's goals and objectives, an analysis of natural features, current and future demographics, existing land use, and the results of a Cohoctah Township Citizen Survey.

The future land use map designates development densities that carry out the goals of the future land use plan. The district boundaries drawn on the map do not necessarily correspond to property lines. As properties are proposed for development or rezoning, they are analyzed on a case-by-case basis to determine their relationship to the future land use plan and map. The future land use map is expected to guide Cohoctah Township's future land use development and it will be reviewed at least every five years.

Another component of the future land use plan is the provision of services.

Development should not occur unless the appropriate public services are in place and available. This includes roads, police and fire protection, emergency services, general governmental and other services. There are currently no plans in the foreseeable future for the township to provide public sewage disposal or water. If appropriate services are not in place, the landowner may, with the Township Board's approval, assume the financial burden of providing services independently and to the township's standards.

A classic growth-related issue in the township is roads. While some people living along dirt and gravel roads clamor for improvements (mainly paving), the majority have identified the dirt and gravel roads as characteristic of a rural community. They note that paving roads will only attract more (and faster) traffic and more development, leading to the further deterioration of the rural qualities that are so inviting to so many. While unpaved roads may be a nuisance to those who must drive them with any frequency, they are a part of living in the country, like farm odors, car/deer collisions, and a ten-mile excursion to the grocery store. There are many trade-offs that come with the decision to live in the country.

### Future Land Use Classifications

Cohoctah Township is a rural community with predominantly agricultural and residential uses. In surveys and public meetings, residents and township officials placed preserving rural character and open space as a top priority. Many attributes describing "rural" were identified, some of which include farms, farmland, and farm animals; trees; wetlands; gravel roads; sparse development; rivers; scenic views; and wildlife. Preserving and protecting these attributes are a major focus of the future land use plan.

When assigning future land uses, many factors come into play. Each type of use has a different set of criteria that must be met, the compatibility between neighboring land uses must be considered, as must the available infrastructure, and the overall interactions between land uses in the township as a whole must be scrutinized. Maintaining a sense of balance is fundamental to the future land use map.

***The Master Plan portrays a community's vision for the future. The plan provides future land use categories with recommended guidelines for development in each category. This is called the Future Land Use Plan.***

**Master Plan = Policy Guidelines**

***The Future Land Use Plan of the Cohoctah Township Master Plan is implemented through the legally binding regulations of the Cohoctah Township Zoning Ordinance which establishes zoning categories for each type of land use.***

**Zoning Ordinance = Legally binding zoning regulations**

Residential developments should be placed or screened in such a manner that they are as out of sight as possible from public roads and preserve trees and natural features found on each site. Minimal industrial and commercial growth is planned and limited to neighborhood-type businesses meeting the needs of Township residents. All development should minimize the number of curb cuts onto public roads, by sharing driveways and the use of private roads, to maximize road safety and smooth traffic flow. Specific development standards and lot sizes are set out in the Township zoning ordinance.

Many factors were taken into consideration when future land use districts were delineated. The lack of public water and sewer make soil types one important consideration. The types of soils and steep slopes found in Cohoctah Township limit development potential in many areas. Not all soils are suitable for residential or other types of development, and lots larger than the minimum size allowed will sometimes be necessary to support septic systems. Another factor is whether roads are paved or unpaved. Paved roads' higher carrying capacities are more suitable for higher density development. The preservation of agricultural uses, open space, and rural character is another consideration which residents have consistently indicated is important to them. Proximity to the township's three Settlements, in an effort to keep density more concentrated around historic village-like areas, is also a factor.

Chapter 5: Natural Features explains soils found in Cohoctah in greater detail, including areas of steep slopes, lists of soil classifications with septic system limitations and prime farmland soil types.

The land use classifications found on the Cohoctah Township Future Land Use map, are described below.

### **Residential Land Uses**

Recommended residential densities on the future land use map primarily range from a minimum of one acre-per-unit to ten acres-per-unit unless an area is located within the settlement district or manufactured home residential district. Actual buildable lot sizes will vary, and it may not be possible to develop land at the highest density allowed. Residential development should be placed or screened in such a manner that it is out of sight as much as possible from public roads and preserves trees and natural features found on each site. Farming and a rural lifestyle should continue to be the primary focus of residential land uses.

Residential development will respect agricultural uses and be located away from them whenever possible. Residential development must also respect the farmer's right to farm and realize that some farming activities cause noise, smells, or activities that some non-farmers may find offensive. Farming plays an important role in the history, character, and economy of Cohoctah Township. This Plan encourages the continuation and further development of farming and farm-related businesses and activities in the township.

### **Settlement**

There are three Settlement areas in the township: Oak Grove, Cohoctah Center, and Cohoctah. Each has a mainly residential land use pattern at higher densities than most other areas of the township, and has some other uses mixed in: Oak Grove has a church, Cohoctah has a feed mill, post office, and gas station, and Cohoctah Center is home to the Township Hall. Future development in the Settlements is limited to uses in keeping with the current and historic character of each, and will be at a similar scale, density, and lot size. The township reviews projects proposed in Settlements to evaluate the impact on adjacent land uses and the Settlement as a whole.

This future land use designation corresponds to the Settlement zoning district in the Cohoctah Township Zoning Ordinance. The Settlement District has a minimum lot area of 30,000 square feet.

### **Agriculture/Residential**

Agricultural/Residential comprises the majority of the land area in the township. This classification is intended to encourage the continuation of agricultural activities while providing opportunities for low-density residential development in areas of significant agricultural resources. Low density development is appropriate because of the lack of public sewer or water, mostly unpaved roads, frequently poor soil conditions for septic systems, and the Township's and residents' desire to preserve agricultural uses, open space, and rural character. The minimum recommended single family lot size is 10 acres. Farming and residential uses should be allowed by right. Residential development should respect agricultural uses and should be located away from them whenever possible. Residential development must also respect the farmer's right to farm and realize that some farming activities cause noise, smells, or activities that some non-farmers may find offensive.

Farming plays an important role in the history, character, and economy of Cohoctah Township. This Plan encourages the continuation and further development of farming and farm-related businesses and activities in the Township.

This future land use designation corresponds to the Agricultural Residential zoning district in the Cohoctah Township Zoning Ordinance. This district has a minimum lot area of 20 acres with the exception of single-family residential uses as referred to above.

### **Rural Residential**

The majority of the Rural Residential area lies north and west of the Suburban Residential area along Oak Grove and Chase Lake Roads. Both are paved, and for the most part have soils with "slight" or "moderate" septic system limitations. There are a few exceptions, however, where soils are severely limited for septic systems and two acre lots may not meet Livingston County Environmental Health standards for septic fields. The Chase Lake Road Rural Residential area is a natural extension of the denser Suburban Residential area around the Oak Grove settlement, and the Oak Grove Road corridor links the Oak Grove and Cohoctah settlements via a main thoroughfare. Also, the township fire station is located on Oak Grove Road at Chase Lake, central to the higher density areas of the township. Lastly, the Cohoctah Road Rural Residential area links the Cohoctah and Cohoctah Center settlements along a paved, primary thoroughfare.

The following criteria apply to Rural Residential areas:

- Areas of Rural Residential density, with a recommended minimum density of 2 acres per dwelling unit, should be located along paved roads. Paved roads are better able than gravel roads to accommodate new traffic generated by this type of residential development.
- Rural Residential areas should be located contiguous to areas classified at a higher density, such as Settlements or Suburban Residential areas, or link areas of higher density. They may be used as buffers between lands designated at higher and lower densities. This plan strongly discourages the creation of future "islands" of residential areas that are not contiguous to a more densely designated area.
- For the minimum recommended density of 2 acres per dwelling unit, soils will have to be able to support septic systems at that density. Chapter 5: Natural Features classifies Livingston County soil types by their septic system limitations (slight, moderate, or severe). The desired soil characteristics for this density fall in the "slight" classification, with limited areas of "moderate" septic system limitations.

The siting of new homes and lots in this classification should 1) have adequate road setbacks and take advantage of natural features or new plantings to screen homes from the view of passers-by on roads, 2) be located along shared driveways or private roads in order to reduce the number of curb



cuts onto the pavement, and 3) preserve trees and other natural features. These measures are to protect the rural feel and character of the township while acknowledging the desire for controlled development at this density.

The Rural Residential future land use designation corresponds to the Rural Residential zoning district in the Cohoctah Township Zoning Ordinance. The Rural Residential district has a minimum lot area of 2 acres.

<b>Residential Future Land Use Designation</b>	<b>Future Land Use Development Densities</b>	<b>Corresponding Zoning District (s)</b>	<b>Zoning District Development Densities</b>
Settlement	Similar scale, density, and lot size as existing Settlement lots	Settlement	30,000 square feet
Agricultural /Residential	1 dwelling unit per 10 acres	Agricultural Residential	20 acres except as otherwise provided in the zoning ordinance
Rural Residential	1 dwelling unit per 2 acres	Rural Residential	2 acres
Suburban Residential	1 dwelling unit per 1 acre	Suburban Residential	1 acre 21,780 sq. ft. with public or common sewer and water
Manufactured Home Residential	15,000 sq. ft. with public or common sewer and water 25,000 sq. ft. without public or common sewer and water	Mobile Home Residential	15,000 sq. ft. with public or common sewer and water 25,000 sq. ft. without public or common sewer and water
Recreation Residential	Similar scale, density, and lot size as existing Recreation Residential lots	Settlement	30,000 square feet

Source: Cohoctah Township Zoning Ordinance, Adopted 1987.

### **Suburban Residential**

The Suburban Residential future land classification is the densest of the residential classifications. The southeast corner of the township, where most land of this classification is located, has a larger percentage of soils suitable for development at this density than most other areas of the township. It also has good access to paved roads (Oak Grove, Chase Lake, and Faussett Roads) and abuts an existing Settlement area. The southeast corner of the township is best suited to future suburban-type development because of its good access due south on Oak Grove Road to the City of Howell. Like the Rural Residential classification, lots in Suburban Residential areas will whenever possible be configured to share driveways or private roads, preserve natural features and trees, and screen houses from the view of passers-by on roads.

In Section 32, east of Crandall Road, the Indian Springs Lake Subdivision is designated Suburban Residential. This is an existing, platted, small-lot subdivision. It does not meet all the criteria for Suburban Residential areas, but that designation best matches its existing high density, since that

density is not expected to decrease during the life of this Plan. The following criteria apply to Suburban Residential areas:

- Areas of Suburban Residential density, with a minimum recommended density of one acre per dwelling unit, should be located along paved roads. Paved roads are capable of handling the traffic volume generated by this type of residential development.
- Suburban Residential areas should be located contiguous to Settlements. This is in keeping with the township's desire to keep growth on smaller lots concentrated around existing historic settlement areas.
- Suburban Residential lands should be located in areas of soils most likely to support septic systems at this density. Chapter 5: Natural Features classifies Livingston County soil types by their septic system limitations (slight, moderate, or severe). The desired soil characteristics for this density fall in the "slight" classification.

The Suburban Residential future land use designation corresponds to the Suburban Residential zoning district in the Cohoctah Township Zoning Ordinance. This zoning district has a minimum lot area of 1 acre.

#### **Manufactured Home Residential**

The intent of the Manufactured Home Residential future land use category is to provide township land area that can be developed in the future as single-family home lots sited with manufactured housing. Due to the potential high-density nature of this type of housing development, manufactured housing is planned for land area along paved roadway within close proximity of higher density housing. This future land use is also intended to buffer industrial areas from residential areas.

In Section 35, south of Oak Grove Road, the west side of Preston Road is designated Manufactured Home Residential. This is an existing area of manufactured housing sited on single family lots. It does not meet the paved road criteria for Manufactured Home Residential, but it is located within close proximity of higher density housing. The designation provides a transition in future and existing land use from the Light Industrial and Rural Residential (2 acre) designations/uses on the east side of Preston Road and the Agricultural/ Residential (10 acre) designation/land use adjacent to the west of the Manufactured Home Residential designation.

This future land use designation corresponds to the Mobile Home Residential zoning district in the Cohoctah Township Zoning Ordinance. This zoning district has a minimum lot area of 15,000 square feet for lots with public or common sewer and water and 25,000 square feet for lots without public or common sewer and water.

#### **Recreation Residential**

This classification provides for the preservation of natural features as well as the provision of residential and recreation amenities to the residents of Cohoctah Township and visitors to the Township. This designation has been planned for the Church of Nazarene camp within Section 32 of the Township. Land uses permitted within this classification would include single family residences, campgrounds, places of assembly, and recreational amenities such as bike paths, pedestrian trails, athletic fields, beach areas and associated facilities.

Future development in Recreation Residential is limited to uses in keeping with the current and historic character of the Church of Nazarene camp, and will be at a similar scale, density, and lot size. New development in this area must be sensitive to surrounding land uses, the environment and the carrying capacity of well and septic and/or water and sewer provision in the camp. The township will

review projects proposed, to evaluate the impact on adjacent land uses and the Church of Nazarene camp as a whole.

This future land use designation corresponds to the Settlement zoning district in the Cohoctah Township Zoning Ordinance. The Settlement District has a minimum lot area of 30,000 square feet.

### **Open Space and Rural Preservation Development District**

This is a special residential development alternative that is not found on the Future Land Use Map, but instead may be applied to any district that allows single-family residential housing in Cohoctah Township, with the exception of Settlement areas.

The minimum required project size for an Open Space and Rural Preservation development is ten acres, and a minimum of 50% of the site must be permanently protected as open space.

### **Conservation and Recreation Land**

#### **River Conservation**

Rivers, streams, creeks, and wetlands are greatly influenced by encroaching development. In some cases, trees and natural vegetation are removed from the shoreline to give homeowners improved access and views of the water. Fertilizers, pesticides, and other chemicals from lawns and gardens near waterbodies and wetlands may damage water quality, kill native species, or cause excessive algal blooms. Land development, fill, or excavation may lead to shoreline erosion caused by increased surface runoff. In one way or another, traditional development of waterfront or wetland-front property causes visual and environmental damage at the development site and connected or downstream areas.

In addition, wetlands store flood waters and trap nutrients and sediments that otherwise would enter streams, lakes and groundwater supplies. These include oil, grease, lead, zinc, copper and mercury from roads, parking lots and sidewalks, and nitrogen phosphorous and pesticides from lawn care procedures. Wetland plants utilize excess nutrients that otherwise would cause algae growth in lakes. Their holding capacity for all of these things is limited, however.

River Conservation areas include the Shiawassee River corridor, Sprague Creek, Bogue Creek, other perennial streams and creeks, and wetlands associated with these waterways. The river, streams, and creeks are buffered for 500 feet on each side. All wetlands that fall partially or entirely within this buffer are included in the River Conservation area and have their own 100-foot buffer (see next paragraph). The 500-foot stream buffer was determined by Michigan's wetland statute, Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Digital wetland data used to map these areas correlates with the National Wetlands Inventory maps.

Each of the wetlands included in the River Conservation area has a 100-foot buffer (which often overlaps with the 500-foot stream buffer). To prevent adverse impacts to wetlands as well as their associated rivers, streams, or creeks, no development should take place within this wetland buffer area. This includes dwellings, accessory structures, or roadways. In the 100-foot buffer zone, no vegetation should be removed or altered. The vegetation helps control erosion, filter sediment from runoff, provide shade, maintain scenic character, and provide plant and animal habitat.

Lands within the River Conservation area should only be used for conservation, recreation, or residential land uses. Because of these lands' important contributions to groundwater recharge, surface water, flood control, and wildlife habitat, development should be limited to one dwelling per ten acres.

When a parcel falls into two Future Land Use districts, one of which is River Conservation, development should be located outside of the River Conservation portion of the site whenever possible.

This future land use designation corresponds to the Waterways Resource Development zoning district in the Cohoctah Township Zoning Ordinance. This zoning district has a minimum lot area of twenty (20) acres.

### **Public/Recreation**

This classification includes both publicly owned as well as privately owned land for recreation or governmental purposes. The classification includes uses such as the game area, the Township lands, fire hall, cemeteries, and golf course.

Hunter's Ridge is the only golf course in the township, and it provides valuable recreation opportunities. The State Game Area provides wildlife habitat, preserved forest areas, and opportunities for hunting, hiking, and similar outdoor recreation. The Township Park consists of 40 acres with two riding rings, an announcer's booth, a gravel parking facility and a playground.

This future land use designation corresponds in part to the Resource Development zoning district in the Cohoctah Township Zoning Ordinance. This zoning district has a minimum lot area of 20 acres in area, except as otherwise may be provided in the Cohoctah Township Zoning Ordinance.

### **Commercial and Industrial Land Uses**

Minimal industrial and commercial growth is planned due to the township's current limited infrastructure, and it is limited to neighborhood-type businesses meeting the needs of township residents. When siting new commercial or industrial uses, each development's impact will be measured in terms of demands it would place on local services, roads, and surrounding land uses. Proposals for new commercial or light industrial will understand and acknowledge, through appropriate site design, this Plan's goal of preserving the township's rural character and identity. Several factors discourage commercial or industrial development at any scale greater than a local one serving resident's needs: the township's location is not convenient to major highways; there are few paved primary roads; and the township's population is sparse. Uses that require large amount of power and resources, such as crypto mining, is discouraged.

### **Commercial**

Commercial uses are limited to local-scale businesses that serve the residents of Cohoctah Township. Permitted uses envisioned for commercial areas are small retail (such as gas stations, video stores, convenience, or hardware stores) and service establishments (such as beauty shops, insurance or real estate offices, or banks). Small scale office and service establishments may be accommodated as home occupations outside of commercial areas at the discretion of the township. On the future land use map, the area designated for new commercial development has frontage along two sides on Oak Grove Road, which is paved and the most heavily traveled of the township's roads. It also has good access to the Oak Grove settlement area.

This future land use designation corresponds to the Neighborhood Service Commercial zoning district in the Cohoctah Township Zoning Ordinance. This zoning district has a minimum lot area of one (1) acre except where a lot or parcel is serviced by a public or common water supply system and public wastewater disposal and treatment system, in which case the lot or parcel may have a minimum area of 15,000 square feet per principal use.

**Light Industrial**

Cohoctah Township has few paved primary roadways, which limits truck traffic, and no direct access to major highways. The Light Industrial classification is intended to allow uses such as warehousing, assembly, packaging, tool and die shops, and other small manufacturing uses. As in the Commercial area, these are small, local-scale operations. The Light Industrial area on the future land use map is located near the Commercial area, and features good, paved access on Oak Grove Road (the township’s most heavily traveled road). In addition, the rail line passes through the site, offering shipping alternatives.

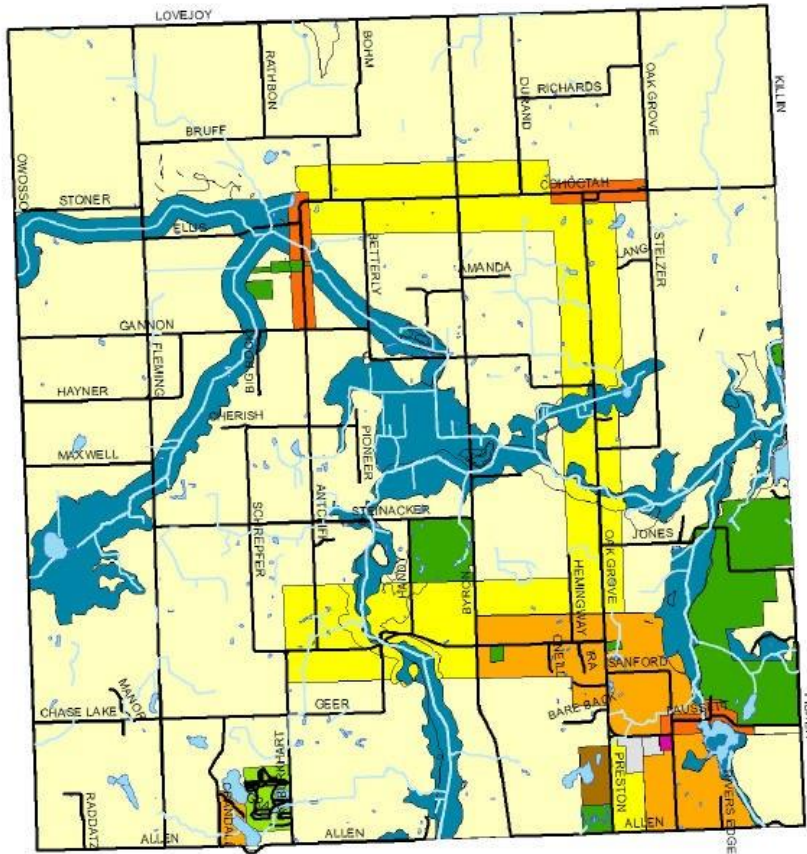
This future land use designation corresponds to the Light Industrial zoning district in the Cohoctah Township Zoning Ordinance. This zoning district has a minimum lot area of two (2) acres except where a lot or parcel is serviced by a public or common water supply system and public wastewater disposal and treatment system, in which case the lot or parcel may have a minimum area of 40,000 square feet per principal use.

**Table 8-2: Future Land Use Non-Residential Designations and Corresponding Zoning Districts**

<b>Non-Residential Future Land Use Designation</b>	<b>Future Land Use Development Densities</b>	<b>Corresponding Zoning District (s)</b>	<b>Zoning District Development Densities</b>
River Conservation	500 ft. stream buffer 100 ft. wetland buffer	Waterways Resource Development	20 Acres
Public/Recreation	Not specific	Resource Development	20 Acres except as otherwise provided in the zoning ordinance
Commercial	Not specific	Neighborhood Service Commercial	1 acre 15,000 square feet with public sewer & water
Light Industrial	Not specific	Light Industrial	2 acres 40,000 square feet with public sewer & water

Source: Cohoctah Township Zoning Ordinance, Adopted 1987.

# Cohoctah Township Future Land Use



Legend	
Future Land Use Designation	
<span style="display:inline-block; width:15px; height:15px; background-color:yellow; border:1px solid black;"></span> Agriculture/Residential	<span style="display:inline-block; width:15px; height:15px; background-color:lightpink; border:1px solid black;"></span> Commercial
<span style="display:inline-block; width:15px; height:15px; background-color:lightyellow; border:1px solid black;"></span> Rural Residential	<span style="display:inline-block; width:15px; height:15px; background-color:lightgrey; border:1px solid black;"></span> Light Industrial
<span style="display:inline-block; width:15px; height:15px; background-color:orange; border:1px solid black;"></span> Suburban Residential	<span style="display:inline-block; width:15px; height:15px; background-color:lightgreen; border:1px solid black;"></span> Recreation Residential
<span style="display:inline-block; width:15px; height:15px; background-color:darkorange; border:1px solid black;"></span> Settlement	<span style="display:inline-block; width:15px; height:15px; background-color:green; border:1px solid black;"></span> Public/Recreation
<span style="display:inline-block; width:15px; height:15px; background-color:brown; border:1px solid black;"></span> Manufactured Home Residential	<span style="display:inline-block; width:15px; height:15px; background-color:blue; border:1px solid black;"></span> River Conservation

Prepared by: Livingston County  
 Department of Planning, June 2010  
 Source: Livingston County Geographic  
 Information System

Cohoctah Township Master Plan  
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## **Chapter 9: Cohoctah Township Implementation Strategies**

Implementation is not only the most important part of a Master Plan, but also the most difficult. Once adopted, the Cohoctah Township Master Plan is the official policy guide to be used by the Township Board and the Planning Commission for making future zoning and land use decisions. The text and the maps within the Master Plan provide a base level of understanding about current planning conditions and about the community's desire for future growth and development. As the composition of Township officials, trustees and planning commissioners change over the years, this plan will provide continuity regarding planning policy.

### **Implementation Strategies**

Cohoctah Township will use the following strategies to implement the Plan to the township's best advantage.

#### **Use the Plan for Making Zoning and Land Use Decisions**

- Reference the Master Plan for land use decisions. Relying on the Plan as a basis for land use decisions gives the Plan, Planning Commission and Township Board greater credibility.
- Use the Plan in a consistent manner so the integrity of the Plan is not compromised.
- Keep properties that are proposed for rezoning consistent with the future land use map. This is an effective, long-term method of carrying out the future land use plan.

#### **Periodically Update the Plan and Associated Ordinances**

- Update sections of the Master Plan as needed to reflect changing conditions and resident perspectives in the township. This includes reviewing the goals and objectives section of the Plan periodically.
- Hold a joint meeting between the Township Planning Commission and Township Board periodically to review the Master Plan and make necessary updates.
- Revise the Township Zoning Ordinance where necessary to reflect the Master Plan. Zoning is the major tool used to put the Plan into action and shape future growth and development. It is used to support the goals and policies of the Master Plan.
- Review the Township General Ordinance to make sure they are aligned with the goals and policies of this Plan.
- As required by the Michigan Planning Enabling Act, P.A. 33, as amended, at least every five years after the adoption of a Master Plan, the Township Planning Commission will review the Master Plan and determine whether to take any action to amend the Plan or adopt a new Master Plan. This review and the Planning Commission's findings will be recorded in the Planning Commission minutes.

#### **Community Education**

- Educate residents on the intent of the Master Plan and involve them in carrying out its mission whenever possible. Public understanding and support is critical to the effectiveness of the planning process.

## **Flexible Development Options**

- **Open Space and Rural Preservation Development District** – The Cohoctah Township Zoning Ordinance provides the flexible development option of Open Space and Rural Preservation Development in those districts that allow single-family residential housing as a permitted principal use. This excludes the Mobile Home Residential, Light Industrial, and Neighborhood Service Commercial districts. Open Space and Rural Preservation Development is also not allowed in the Settlement District.

This concept offers an alternative to reduce the disruptive environmental impacts of traditional subdivision and single-family development and encourages innovative housing development that is sensitive to the environment and strives to preserve the traditional rural character of Cohoctah Township's land use pattern. This is accomplished through the permanent dedication of open space in each development and reduced lot size to allow more sensitive placement of homes.

Single-family housing developments that use the Open Space and Rural Preservation alternative must demonstrate that they are preserving the rural character and natural environment of the township. These developments must preserve the natural character of natural features such as, but not limited to, open fields, stands of trees, large individual trees, ponds, streams, hills, wetlands, and other natural features, as well as agricultural uses. These features define Cohoctah Township's rural character, give it economic viability (through farming), and provide significant wildlife habitat, drainage, and water recharge areas.

The minimum required project size for an Open Space and Rural Preservation development is ten acres, and a minimum of 50% of the site must be permanently protected as open space.

- **Planned Unit Development District** – Another flexible development option enabled by the Cohoctah Township Zoning Ordinance is the Planned Unit Development (PUD) District.

The intent of the PUD District is to permit greater flexibility and consequently more creative design of various types of development than are possible under conventional zoning regulations. It is the intention of this district to allow flexible land use composition and design without sacrificing the basic principles of sound zoning practice. The basic zoning districts and their permitted uses as established in this Ordinance will form the land use base for designing a combination of uses permitted in each district. Development will take the form of clustering principal uses and activities at a higher density than would otherwise be possible under the respective district regulations, on a preferred portion of a parcel while maintaining the overall density of development of the parcels consistent with the district regulations. Another option would be to combine the planning of land uses and activities from several districts as one project on the same clustering principle.

A PUD must also include a land, water or land/water permanent open space area constituting not less than twenty-five percent of the total (a) land area, or (b) land area, plus no more than 300 feet into or no more than one-half the width or distance across, a natural surface water area of the waterfront parcel. The required open space must be set aside in the form of an irrevocable conveyance.

All development in this district shall be limited to tracts of land having an area of at least the minimum number of acres required for the respective types of PUD Districts. All development in this district shall also be restricted to sites having access to a hard surfaced roadway and accepted and maintained by the County Road Commission, except for RR, and Planned Unit Development Districts.



## Appendix A: Cohoctah Township Citizen Survey

The Cohoctah Township Planning Commission conducted a township-wide citizen survey as part of their efforts to gather community information for the preparation of the 2024 Cohoctah Township Master Plan. The master plan citizen survey was made available to residents of the Township in the form of hard paper copies located in the Township Hall as well as online through the Township website. The survey was due May 15<sup>th</sup>, 2023, and 109 surveys were returned to the Planning Commission.

On the following pages is a copy of the survey form with responses inserted and highlighted in bold. Not everyone who returned a survey filled out every question, so response rates correspond to the number of people who answered that question (not the number that turned in a survey).

### Q1 How do you feel about the residential growth in the township over the last 5 years

Answered: 109 Skipped: 0

ANSWER CHOICES	RESPONSES	
Much too fast	28.44%	31
A little too fast	26.61%	29
About right	44.04%	48
Too slow	0.92%	1
<b>TOTAL</b>		<b>109</b>

### Q2 Which lot size or density for single family homes do you think is appropriate for future residential development

Answered: 109 Skipped: 0

ANSWER CHOICES	RESPONSES	
Houses clustered on small parcels leaving undeveloped open spaces	1.83%	2
One house on 1 acre	6.42%	7
One house on 2 acres	20.18%	22
One house on 5 acres	22.94%	25
One house on 10 acres or more	48.62%	53
<b>TOTAL</b>		<b>109</b>

### Q3 In regard to land use planning, the township should:

Answered: 108 Skipped: 1

ANSWER CHOICES	RESPONSES	
Focus on the preservation of farmland	84.26%	91
Focus on the preservation of natural resources	53.70%	58
Expand the blight ordinance	35.19%	38
Total Respondents: 108		

### Q4 What improvements, additions or activities would you like to see added to the township park?

Answered: 43 Skipped: 66

#	RESPONSES	DATE
1	None	5/23/2023 1:35 PM
2	N/A	5/16/2023 6:06 AM
3	walking paths, lighting	5/15/2023 9:13 AM
4	I'm sorry, I'm not prepared to answer this at length at this time. I am very happy to see the start of a Pickleball court!	5/14/2023 7:34 PM
5	Walking paths & an unlocked gate so residents can use it	5/8/2023 7:07 PM
6	Areana	5/7/2023 6:45 PM
7	None	5/7/2023 6:30 PM
8	Unlock the gates	5/7/2023 1:04 PM
9	More movie night type events	5/6/2023 5:31 PM
10	Gazebo for family events	5/6/2023 9:57 AM
11	None it's a waste	5/6/2023 9:41 AM
12	None	5/6/2023 7:32 AM
13	Maybe some swings for the children.	5/6/2023 2:17 AM
14	Playground	5/5/2023 8:40 PM
15	Solar celebration for the work done to preserve our rural township	5/5/2023 6:05 PM
16	? Never used the park.	5/5/2023 3:44 PM
17	Better restroom facility	5/5/2023 3:44 PM
18	Cohoctah is a large township, I would like to see a separate park more west that has playground equipment for children.	5/5/2023 2:40 PM
19	Annual Community Picnics, with added petting Zoo, Beer Tent, Live Music, team competitions etc....a true community event	5/5/2023 2:12 PM
20	Flowers	5/5/2023 1:55 PM

21	Covered arena	5/5/2023 1:38 PM
22	More equipment	5/5/2023 11:39 AM
23	Ice rink, movie/concert series	5/5/2023 10:56 AM
24	Boardwalk at the millpond	5/5/2023 10:29 AM
25	Expanded playground area and walking trail	5/5/2023 10:18 AM
26	Expanded kids playground	5/5/2023 10:07 AM
27	The park is great. It doesn't need to be a rule restricted fancy park. A person can find a park like that anywhere. Go to town.	5/4/2023 12:25 PM
28	Basketball courts	5/4/2023 7:43 AM
29	Having a nice place for us to hang is great.	5/3/2023 9:10 PM
30	N/A	5/3/2023 1:11 AM
31	None at this time	5/2/2023 9:30 PM
32	No opinion	5/2/2023 12:45 PM
33	Is there room for more picnic pavilions?	5/1/2023 7:00 PM
34	Some swing sets for all ages.	5/1/2023 5:14 PM
35	Never has used it.	5/1/2023 1:52 PM
36	We never use it; we go to Howell City Park	5/1/2023 11:41 AM
37	Community Pool	4/30/2023 6:40 PM
38	Need things in there for kids, Pavilions walking/running paths unless I missed things.	4/30/2023 2:15 PM
39	haven't been there so can not say.	4/30/2023 11:56 AM
40	None. Do away with it	4/30/2023 11:18 AM
41	Community gatherings. Flower show dog shows farmer's market	4/29/2023 9:55 PM
42	I don't use so I don't have an opinion	4/29/2023 3:32 PM
43	More play sets for the children.	4/29/2023 2:47 PM

### Q5 Would small box stores, like Dollar General, be beneficial for township residents?

Answered: 109 Skipped: 0

ANSWER CHOICES	RESPONSES	
Yes	5.50%	6
No	84.40%	92
If yes, where?	10.09%	11
<b>TOTAL</b>		<b>109</b>

## Q6 Are you in favor of using agricultural land for:

Answered: 91 Skipped: 18

ANSWER CHOICES	RESPONSES	
Solar	12.09%	11
Wind	6.59%	6
Other green energy	9.89%	9
Other (please specify)	81.32%	74
Total Respondents: 91		

#	OTHER (PLEASE SPECIFY)	DATE
1	None	5/31/2023 7:20 AM
2	Use it as farm land	5/23/2023 1:35 PM
3	FARM LAND	5/16/2023 6:06 AM
4	I suggest using it for Agriculture (!) and/or protected wildlife areas.	5/14/2023 7:34 PM
5	None	5/13/2023 8:33 AM
6	Single family homes only	5/12/2023 4:57 PM
7	Farming	5/9/2023 8:11 PM
8	Farm	5/9/2023 8:37 AM
9	None adds blight to community	5/9/2023 7:04 AM
10	NO! to all of the above	5/8/2023 7:07 PM
11	Nothing	5/7/2023 6:45 PM
12	Agricultural land for ag ONLY	5/6/2023 5:31 PM
13	Food	5/6/2023 4:09 PM
14	None of the above	5/6/2023 2:43 PM
15	recreational use and preservation of green space	5/6/2023 2:10 PM
16	No	5/6/2023 1:17 PM
17	None- only farming and hunting	5/6/2023 12:43 PM
18	FARMING	5/6/2023 7:32 AM
19	Leave the land alone	5/6/2023 6:36 AM
20	No	5/6/2023 5:43 AM
21	Farming	5/6/2023 2:17 AM
22	None of the above! Use the land to grow food supplies	5/5/2023 8:52 PM
23	Only agriculture	5/5/2023 6:58 PM
24	Farming only	5/5/2023 6:42 PM
25	Ag Farming only	5/5/2023 6:05 PM
26	None of the above	5/5/2023 4:22 PM

27	Power plants in urban areas	5/5/2023 3:44 PM
28	NO! Leave things alone.	5/5/2023 3:44 PM
29	Farm only. Block all utility use of wind solar and other power facilities. Private Solar - one per plot is ok	5/5/2023 3:44 PM
30	None	5/5/2023 3:18 PM
31	None of the above	5/5/2023 2:54 PM
32	No, most of the area is too residential.	5/5/2023 2:40 PM
33	No Industrial on Agricultural Land	5/5/2023 2:12 PM
34	Leave the land the way it is	5/5/2023 1:55 PM
35	Farming food resources	5/5/2023 12:56 PM
36	No	5/5/2023 11:39 AM
37	No	5/5/2023 10:56 AM
38	Agriculture	5/5/2023 10:28 AM
39	Farming/ hunting	5/5/2023 10:18 AM
40	No. I am interested in the area remaining as it was planned to be when I investigated before I moved here.	5/4/2023 12:25 PM
41	Not really	5/4/2023 7:43 AM
42	NO	5/3/2023 9:10 PM
43	I support the land being used for agricultural purposes only. If it gets to a point where green energy is going to be used, why not make the set back requirements farther than the minimum requirements? If you are trying to take a neutral stance, but support what most the community wants (which is no Solar), then increase set back requirements from rural/residential neighbors who will be impacted by sound, runoff, aesthetics.	5/3/2023 3:10 PM
44	farming	5/3/2023 9:12 AM
45	Kept agricultural. No industrial solar, or wind projects. Those should only be placed in industrial zoned areas.	5/3/2023 9:08 AM
46	No	5/2/2023 8:53 PM
47	farm land only	5/2/2023 5:17 PM
48	Farming	5/2/2023 12:45 PM
49	NOT AT ALL	5/1/2023 7:00 PM
50	Food	5/1/2023 5:14 PM
51	agricultural use	5/1/2023 4:17 PM
52	Agricultural–Absoltely nothing "green" by today's definition.	5/1/2023 8:25 AM
53	Whatever gives the farmers money to survive. Except selling it for mass housing development.	4/30/2023 6:40 PM
54	Farming only	4/30/2023 4:08 PM
55	No commercial scale faciliiti	4/30/2023 2:54 PM
56	Not in favor for using agricultural land for any solar or wind	4/30/2023 2:49 PM
57	Wind: you can still use land	4/30/2023 2:15 PM

58	not any of it. The name say it, AGRICUTLURAL, NOT energy systems that do not work. Solar in Michigan? What a joke. Wind? The blades all come from china and CAN NOT be recycled.	4/30/2023 11:56 AM
59	We cannot afford to lose agricultural land for unproven energy sources such as solar farms, wind turbines, etc.- cause & effect of these energy sources is unknown for the long term.	4/30/2023 11:40 AM
60	Farmland.	4/30/2023 11:12 AM
61	for farmland	4/30/2023 11:07 AM
62	Crops	4/30/2023 7:50 AM
63	Crops	4/30/2023 7:40 AM
64	farming	4/30/2023 7:34 AM
65	food production	4/30/2023 6:54 AM
66	Absolutely not!	4/29/2023 10:25 PM
67	Preservation of farm land and orchards	4/29/2023 9:55 PM
68	The growing of crops for humans and animals	4/29/2023 8:09 PM
69	I am not in favor of agricultural land being used for solar wind or other green energy	4/29/2023 7:52 PM
70	No Leave our township the way it is.	4/29/2023 5:06 PM
71	no on all green energy	4/29/2023 5:04 PM
72	Keep farm land for crops. NO GREEN ENERGY	4/29/2023 3:31 PM
73	NO GREEN ENERGY USE!!!!	4/29/2023 2:47 PM
74	None of these	4/28/2023 11:50 AM

## Q7 What would you like to see over the next 5-10 years regarding developments or improvements within the township?

Answered: 87 Skipped: 22

#	RESPONSES	DATE
1	Preserve rural farmland	5/31/2023 7:20 AM
2	Don't develop keep as is	5/23/2023 1:35 PM
3	Road improvements	5/20/2023 7:56 AM
4	Open space and nature, wildlife preservation. Police presence to slow down fast insane drivers on Oak Grove Road. Let all the other townships around grow and get congested, polluted, crime filled, traffic issues and undesirable to families. Lets work to keep Cohoctah township the special, cozy, relaxing place it is. For what its worth live over by the turn on Oak Grove Road where it's becoming dead mans curve with dangerous drivers and gets worse every year. Preserve what's left and let us continue to be blessed to call Cohoctah our home.	5/16/2023 6:06 AM
5	improved internet access, road improvements, possible recycling program	5/15/2023 9:13 AM
6	Efforts to continue to protect our rural living, maintain the natural resources and enhance education to encourage land owners to do the same. (Reducing autumn olives and other invasive species). Our native plants and wildlife numbers have drastically dropped as well as wetland areas. Thank you Cohoctah board members. You are appreciated!	5/14/2023 7:34 PM
7	Pave main dirt roads, improve dirt roads, expand internet to entire township	5/13/2023 8:33 AM
8	Better wi-fi in the area.	5/12/2023 4:57 PM

9	Continue to maintain our rule lifestyle.	5/9/2023 8:11 PM
10	Do want to see subdivisions in the township.	5/9/2023 8:37 AM
11	Create access to Oak Grove Mill Pond for recreational fishing and swimming like it use to be	5/9/2023 7:04 AM
12	Better roads, both paved & gravel!	5/8/2023 7:07 PM
13	Roads	5/7/2023 6:45 PM
14	Nothing, keep status quo	5/7/2023 6:30 PM
15	No more gas stations or stores	5/7/2023 1:04 PM
16	No sub divisions. Those ruin rural areas. Keep it simple!	5/7/2023 7:08 AM
17	Better internet throughout the township.	5/6/2023 5:38 PM
18	Please continue to fight the solar and wind developments. We love our township the way it is. Thank you so much for all you do!	5/6/2023 5:31 PM
19	Better roads	5/6/2023 4:09 PM
20	More road grading .	5/6/2023 2:43 PM
21	Better drainage, dirt roads with better gravel, Lovejoy has very few pot holes between Fleming and Rathbun but Fleming has lots of pot holes. Garbage removal cheaper, and the supervisor in charge of ensuring garbage isn't dumping on vacant lots to take care of the matter such as the garbage in the field on the south side of lovejoy. Filled a complaint about it months ago and the garbage is still there.	5/6/2023 12:43 PM
22	Get in the Howell park system. Upgrade the dirt roads. Stop residents from turning their properties into junkyards, it's gotten real bad in this township	5/6/2023 9:41 AM
23	I just want to preserve as much farmland as possible in our area. We moved out to the country to live in the country.	5/6/2023 8:04 AM
24	High speed internet for everyone.	5/6/2023 6:36 AM
25	Better road maintenance. Higher penalties for blight within the Township. Lower speed limits within the township, especially where there are homes. More people are on bikes and speed limits are too high for the riders safety. People drive WAY above posted limits!!!!	5/6/2023 6:21 AM
26	No Solar farms!! I would like to see them preserve the farming community and less subdivisions.	5/6/2023 2:17 AM
27	Preserve the Rural character of Township! Stop the goldiggers from destroying our way of life.	5/6/2023 12:24 AM
28	Expand internet access	5/5/2023 8:52 PM
29	Dust control on dirt roads applied sooner More Recycling	5/5/2023 6:58 PM
30	Small home development low density.	5/5/2023 6:42 PM
31	Improved roads - owosso especially. NO INDUSTRIAL SCALE SOLAR.	5/5/2023 6:12 PM
32	High speed Internet	5/5/2023 6:05 PM
33	Better care and management of our roads.	5/5/2023 3:44 PM
34	Better roads, better internet. Pave dirt roads and police traffic issues (reckless driving and speed) we must take care of blight and homes with debris and junk. Need enforcement and fines	5/5/2023 3:44 PM
35	Infrastructure for high speed fiber optic Internet access.	5/5/2023 3:18 PM
36	Better road care or maybe a few more paved	5/5/2023 2:49 PM

37	I just don't want to see subdivisions in Cohoctah or a Dollar General. Sadly, we have Mugg and Bopps now and I do feel that serves what Cohoctah residents need. Kroger and the Dollar General are close enough. People have moved here to get away from the stores, lights and traffic. My family has been here for 100 years and have seen the changes and have accepted them. But we don't need anymore developments.	5/5/2023 2:44 PM
38	1. All roads need completely redone. I have replaced shocks on 3 vehicles, and 2 of them need them replaced again. Dirt roads are decaying at a faster rate than can be repaired, and continued scraping does nothing to fix them. and is a constant complaint with all residents. Need to move to Gravel road vs a Dirt Road. 2. Better CEllPhone and WIFI Service	5/5/2023 2:12 PM
39	Its great the way it is	5/5/2023 1:55 PM
40	Keeping this area rural and not being over developed, More small community events like parades, Allowing Airbnb in accessory buildings	5/5/2023 1:38 PM
41	Better internet options. Not becoming another suburb. Small community events. Dredge Madden Drain so it isn't standing water.	5/5/2023 1:37 PM
42	I would like to see some cleanup of properties around here. Too many that have a lot sitting out looking bad.	5/5/2023 11:39 AM
43	INTERNET!!!!!!!!!!!!	5/5/2023 10:56 AM
44	Boardwalk at the Oak Grove millpond for people to fish safely from. Sidewalk from the village of Oak Grove to the new gas station for kids to walk safely on.	5/5/2023 10:29 AM
45	Better internet, roads, and affordable trash service.	5/5/2023 10:18 AM
46	Natural gas, food/bar in downtown.	5/5/2023 10:10 AM
47	Internet	5/5/2023 10:07 AM
48	I moved here because it was a small rural area, without all of the stores and signs and people and rules. I would like to see it remain as is.	5/4/2023 12:25 PM
49	Restaurant or bar on corner oak Grove and cohoctah.	5/4/2023 7:43 AM
50	I would like Old Chase Lake Rd paved, and many more paved roads.	5/3/2023 9:10 PM
51	I know it is a county issue, but Pavement or better up keep of dirt roads.	5/3/2023 3:10 PM
52	keeping natural corridors and natural landscape on roadways to conceal development	5/3/2023 9:12 AM
53	Tighter regulations on home owners whose property looks like a junk yard. Made to clean them up. Improvements made to the dirt roads. More frequent dust control.	5/3/2023 9:08 AM
54	More paved roads	5/3/2023 1:11 AM
55	Keep it rural. Continue to allow home occupations as a first option to expand business within the community before allowing box type stores.	5/2/2023 9:30 PM
56	Please try to keep solar and wind out. No more gas stations/stores. Stay rural, 10 acre minimum, & crack down on all the homes with so much blight. When we moved here 26 years ago we had a hard time finding country property to move to (I commuted 65 miles oneway to metro airport every day & it was worth it). Country living is even harder to find now. I enjoy the quiet, privacy & all the wild life. And always keep the 4 of July it's so nice you see it twice parade!	5/2/2023 8:53 PM
57	Put lime on all the roads so they will not be so full of pot holes. Not only for the golf course.	5/2/2023 5:17 PM
58	Fix the cohoctah rd bridge	5/2/2023 12:45 PM
59	Paving Durand Road. Fixing the bridge that is out on Cohoctah road. Of course both of those fall under the road commission.	5/1/2023 7:00 PM
60	Road improvements	5/1/2023 5:14 PM
61	if possible, access to cable internet in some areas easiest to provide as a start	5/1/2023 4:17 PM



62	INTERNET!!! Roads! Work on paving roads that are still gravel. Like the rest of Burkhart Rd, and Chase Lake. Also Byron at least up to Chase Lake. These are main roads and have too much traffic, the road graders can't keep up with them.	5/1/2023 4:02 PM
63	ditch digging of drains	5/1/2023 2:26 PM
64	More community activities	5/1/2023 1:52 PM
65	Join the Howell Area Parks & Recreation Authority	5/1/2023 11:41 AM
66	Pave Byron from Allen to Chase Lake. Pave Durand Rd from Cohoctah Rd to Lovejoy. Pave Chase Lake Rd from Antcliff to Township line but ideally to Robb Rd. In that order.	5/1/2023 8:25 AM
67	Drive in theater.	4/30/2023 6:40 PM
68	Continued dirt road improvements. Mowing ditch row by roads.	4/30/2023 4:08 PM
69	as little development as possible	4/30/2023 2:49 PM
70	Good question. Came back here for country living don't want it to grow too fast and be wanting to move to get my country living again. Dollar general wouldn't be bad but going in the old general store would be best. To not take up anymore land. Along with areas cleaned up better.	4/30/2023 2:15 PM
71	Leave a good thing alone.	4/30/2023 11:56 AM
72	The obvious – better road system care & maintenance, whether Cohoctah Township performs this work or not. They represent the residents of this area. Additionally, some restrictions/controls regarding trash, abandoned vehicles, equip., etc. in yards of homeowners. Our property values for tax purpose keep increasing which is hard to believe with all the junk yards around the township.	4/30/2023 11:40 AM
73	I think they need to address the drainage system. Redo, retrench.	4/30/2023 11:18 AM
74	We need to improve on blight in our community. There are too many homes that look like junkyards. Unfortunately this does effect the value of their neighbors home.	4/30/2023 11:12 AM
75	The house across the street from the Townhall is being run into the ground and I don't understand why they are allowing that they need to be a good tenant in there that will care for the home.	4/30/2023 11:10 AM
76	blight ordinance, drive down Cohoctah rd, township looks like a shithole with some of the houses.	4/30/2023 11:07 AM
77	Drainage improvement on township, especially Schrepfer Rd	4/30/2023 7:50 AM
78	Pave a major road like Byron, Chase Lake, Burkhart, to help alleviate traffic on other paved roads	4/30/2023 7:34 AM
79	better care of the roads by the county	4/30/2023 6:54 AM
80	No large subdivision approvals and ZERO solar. We must preserve our farmland.	4/29/2023 10:25 PM
81	I like it just the way it is, that is why I live here	4/29/2023 8:09 PM
82	Keep us agricultural and limit to the best of your ability the takeover of our farmland from green energy. Keep crypto farming out of our township all together.	4/29/2023 5:19 PM
83	natural gas	4/29/2023 5:04 PM
84	Reasonable guide lines and rules as to the safety and appearance of our area. Clean up of properties. Lets fix what we have before building more.	4/29/2023 3:32 PM
85	No wind or solar farms. Tearing up our land, reducing our farmland for "green energy" that we won't even get to benefit from. Stop this nonsense!	4/29/2023 3:31 PM
86	I like it the way it is now.	4/29/2023 2:47 PM
87	No solar farms.	4/28/2023 11:50 AM

## **Appendix B: Cohoctah Township Master Plan Goals and Objectives Fact Sheet**

The following reference list of demographics and planning trends was identified through the research and analysis that went into creating chapters of the 2010 Cohoctah Township Master Plan. The purpose of the list was to summarize some of the major findings of fact revealed in the Plan, so that the Planning Commission might address these facts when drafting the goals and objectives of Chapter 7.

### **General Points**

- Cohoctah Township borders Shiawassee County
- The Township has four (4) settlements
- Cohoctah Township has experienced less population growth than surrounding Livingston County communities (projected to decline).
- Cohoctah Township has a low % of population under 18
- Cohoctah Township has a low % of population over 65, the greatest age group is 45 to 64
- The Township's median household income is in the lower half of Livingston County while family income has improved.
- Cohoctah Township has a well-educated population – 85% of the adult population has graduated from high school or obtained a higher degree

### **Township Services and Facilities**

- 42 acres of vacant land is owned by the Township across from the hall – for a future township hall, a second fire station, a township park or combo.
- Howell Area Fire Department has a fire substation in the Township.
- No municipal sewer or water provision – septic and well
- Cohoctah Township has a 40-acre township park that has horse facilities.
- 800 acres of the Oak Grove State Game Area is located along the eastern township boundary – natural habitat for hunting and hiking.
- The largest private recreation resource in the township is Hunter's Ridge Golf Course.
- A U.S. Post Office is located in the settlement of Cohoctah on Cohoctah Road.
- Cohoctah Township is midway between the Village of Fowlerville and the City of Howell – the many resources of these two communities are available to township residents.

### **Transportation**

- Cohoctah Township's roadway system is predominantly county primary and county local roads – 79.66 miles which is higher than most Livingston County Townships.
- There are very few smaller roadways in Cohoctah Township, such as subdivision roads or private roads.
- The surface of most roads in the Township is gravel.
- Most of the gravel roads in the Township are of better quality and can accommodate more traffic than the countywide average.

### **Transportation (continued)**

- Cohoctah Township will consider requiring traffic impact studies for any project that may cause or attract traffic such as medium to large sized residential developments.
- Intersections that included Oak Grove Road figured most prominently in the highest crash intersections.
- The vast majority of accidents have occurred on Oak Grove Road from Chase Lake Road to Cohoctah Road west.
- The only existing public transportation available to Cohoctah residents is LETS – the county-wide small bus dial-a-ride service.
- The Great Lakes Central Railway (GLC) freight carrier travels north/south from the City of Ann Arbor through the City of Howell and northward through Cohoctah Township into Shiawassee County.
- A commuter lifestyle is prevalent.

### **Commercial and Industrial Areas of Development**

- No major employers in Township
- The dominant occupation category in Cohoctah Township is Management, Business, Science, and Arts. Second is Service Occupations. Third is Sales and Office.
- Limited expansion of commercial and industrial development may add employment opportunities in the Township, thereby impacting income.
- Commercial and Industrial future land use planning could concentrate on growth in agricultural-related commerce and industry.

### **Natural Features and Open Space Preservation**

- Development in the Township should be directed to areas that are most capable of sustaining physical changes to the landscape without negatively impacting the community's natural features.
- Those areas of the Township that contain valuable natural features should be comprehensively planned for less intensive development.
- Cohoctah Township is generally level with few locations of steep slopes (>18%) – steep slopes are most abundant in the southern half of the Township where the majority of lakes and streams are located.
- Areas that contain steep slopes should remain undisturbed or developed with sensitive site planning to prevent soil erosion.
- Areas of the Township with severe septic limitations should be planned for less density.
- Nearly all the Township drains into the Shiawassee River Watershed which drains to Lake Huron. - the rationale for watershed management is that if we properly manage activities on the land that drains to bodies of water, we will protect and improve the water resources of the state.
- The headwaters of the Shiawassee River Watershed are primarily located in Livingston and Oakland counties.

### **Natural Features and Open Space Preservation (continued)**

- There are 8 small lakes and ponds scattered throughout Cohoctah Township - each consists of 5 acres or more.
- No water resources in the Township have public access
- The largest water bodies are found in the southern tier of the Township
- Wetland areas are interspersed throughout the Township.
- The largest wetland systems are adjacent to lakes or rivers (e.g. Shiawassee, Sabine Lake, Sprague Creek, and Oak Grove State land)
- Developments that occur within woodlands should be carefully designed to keep as many trees standing as possible.
- 5 sections along the eastern boundary of the Township form the largest contiguous area of woodlands in the Township (much in game area)
- Cohoctah Township contains 6 Priority 1 High-Quality Natural Areas – primarily in the mid to southern half of the Township.
- The largest Priority 1 area includes two nearly contiguous areas along the eastern boundary of the Township – 2,442 acres (much in game area)
- When working with a developer of a PUD or open space development, the Township may be able to negotiate what portions of the site are preserved – the High-Quality Natural Areas should be preserved.

### **Agriculture**

- The Township's agricultural land serves as a part of the rural atmosphere that attracts residents to Cohoctah Township
- Cohoctah farmers are active participants in the P.A. 116 program – there are currently 32 P.A. 116 agreements in the Township which far outnumbers most Livingston County townships
- Most Cohoctah P.A. 116 agreements are in the NW quadrant of the Township (also most acres) – the second highest number are in the NE quadrant.
- The largest area of contiguous Prime Farmland soil is in the northeast corner of the Township.
- SEMCOG land use data shows that between 2015 and 2020 there was a decline in the number of acres used for agricultural pursuits and farmsteads.
- A future land use classification in the Township should encourage the continuation of agricultural activities.
- Gradual transition from an agricultural community to a rural residential community.

### **Housing and Residential Development**

- Lake lots in the Township are very narrow in width – most of the homes on these lots were constructed as summer homes but are now used year-round
- The greatest change in Township land use between 2015 and 2020 was an increase in vacant land (169% increase)
- Gradual transition from an agricultural community to a rural residential community.
- The number of housing units in the Township has grown steadily, however the growth in housing units is slower than that of surrounding communities.
- The median housing value in the Township is slightly lower than the County's median housing value and higher than most Livingston County communities.

### **Housing and Residential Development (continued)**

- The township has a larger average household size and a larger average family size than most surrounding Livingston County communities.

### **Hazard Mitigation**

- Lakefront development often results in groundwater contamination from septic systems located near lake shores in high water table areas.
- Lakefront development also results in surface water pollution from runoff over impervious surfaces such as driveways, roads and roofs.
- Lakefront lawns also contribute to lake pollution by sending runoff into lakes that carries fertilizer, weed killer, insecticides and other chemicals.
- Wetlands reduce flood hazards by providing storm water storage.
- Floodplains are in low-lying areas next to watercourses that are prone to flooding.
- Development in floodplains will be limited due to the inability to site septic systems and building foundations, and the threat of property damage.
- The middle of the Township is where the largest floodplain lies surrounding the convergence of creeks, drains and the branches of the Shiawassee River.
- Wild fire risk - 5 sections along the eastern boundary of the Township form the largest contiguous area of woodlands in the Township (much in game area)
- Areas that contain steep slopes should remain undisturbed or developed with sensitive site planning to prevent soil erosion.
- To avoid high nitrate levels, wells should be installed uphill and at least 100 feet away from septic systems, barnyards, feedlots and chemical storage facilities.
- Most of Cohoctah Township's high nitrate level areas are in the SW quadrant of the Township.

## Appendix C: Cohoctah Township Board Resolution of Approval And Adoption Of 2011 Master Plan (To be replaced)

### TOWNSHIP OF COHOCTAH COUNTY OF LIVINGSTON, MICHIGAN

#### COHOCTAH TOWNSHIP BOARD RESOLUTION OF APPROVAL AND ADOPTION OF 2011 MASTER PLAN

**WHEREAS**, the Michigan Planning Enabling Act (PA 33 of 2008 as amended) authorizes the Planning Commission to prepare a Master Plan for the use, development and preservation of all lands in the Township; and

**WHEREAS**, the Planning Commission has prepared a proposed Master Plan and submitted the plan to the Township Board for review and comment in accordance with the Michigan Planning Enabling Act; and

**WHEREAS**, on September 9, 2010, the Cohoctah Township Board received and reviewed the proposed Master Plan prepared by the Planning Commission and authorized distribution of the Master Plan to the Notice Group entities identified in the Michigan Planning Enabling Act; and

**WHEREAS**, notice was provided to the Notice Group entities as required by the Michigan Planning Enabling Act; and

**WHEREAS**, the Planning Commission properly noticed and held a public hearing on December 2, 2010 to consider public comment on the proposed Master Plan, and to further review and comment on the proposed Master Plan; and

**WHEREAS**, the Township Board has exercised by resolution its right to approve or reject the proposed Master Plan pursuant to the authority to do so as provided in MCL 125.3843; and

**WHEREAS**, the Planning Commission has undertaken the review of existing land uses in the Township, a review of the existing Master Plan provisions and maps, input received from the Township Board and public hearing and with the assistance of the Livingston County Planning Department; and

**WHEREAS**, the Planning Commission and Township Board find that the proposed Master Plan is desirable and proper and furthers the use, preservation, and development goals and strategies of the Township; and

**WHEREAS**, the Planning Commission and Township Board find that the Master Plan will accurately reflect and implement the Township's goals and strategies for the use, preservation, and development of lands in Cohoctah Township; and

**WHEREAS**, the Planning Commission and Township Board find the proposed Master Plan, is coordinated, adjusted, harmonious, efficient, and economical; and

**WHEREAS**, the Planning Commission and Township Board considered the character of the Township and its suitability for particular uses, judged in terms of factors such as trends in land and population development and believes the proposed Master Plan will best promote public health,

safety, morals, order, convenience, prosperity and general welfare in accordance with the Township's present and future needs; and

**WHEREAS**, the proposed Master Plan addresses one or more of the following: a system of transportation to lessen congestion on the streets, safety from fire and other dangers, light and air, healthful and convenient distribution of population, good civic design and arrangement as well as wise and efficient expenditure of public funds, public utilities such as sewage disposal and water supply and other public improvements, recreation and the use of resources in accordance with their character and adaptability; and

**WHEREAS**, the Planning Commission has recommended the approval and adoption of the 2011 Master Plan.

**THEREFORE BE IT HEREBY RESOLVED AS FOLLOWS:**

1. **Approval of 2011 Master Plan.** The Cohoctah Township Board hereby approves the proposed 2011 Master Plan and adopts the Master Plan which shall be known as the 2011 Master Plan, including all of the chapters, figures, maps and tables contained therein.

2. **Distribution of the 2011 Master Plan.** The approval granted is the final step for adoption of the 2011 Master Plan and the 2011 Master Plan shall be effective immediately. The Cohoctah Township Board hereby authorizes distribution of the 2011 Master Plan according to the Planning Enabling Act.

The foregoing resolution was offered by Shurrer

Second offered by Boek

Upon roll call vote the following voted:

"Aye": Fordick, Meek, Buckner, Boek, Thurner

"Nay": none

The Supervisor declared the resolution adopted.

Brenda Meek  
Brenda Meek, Township Clerk

I certify the foregoing is a true Resolution adopted by the Cohoctah Township Board at a regularly scheduled meeting duly noticed and conducted in compliance with the Open Meetings Act on the 13 day of January, 2011.

Brenda Meek  
Brenda Meek, Township Clerk

**APPLICATION FOR SITE PLAN REVIEW**

**DELIVER/MAIL TO:**  
COHOCTAH TOWNSHIP HALL  
10518 ANTCLIFF RD  
FOWLerville, MI 48836

**COHOCTAH TOWNSHIP**  
LIVINGSTON COUNTY

APPLICANT Livingston County EMS APPLICATION DATE 9-5-2024

MAILING ADDRESS 1911 Tooley Road CITY/ZIP Howell 48855 APPLICATION # \_\_\_\_\_

TELEPHONE NUMBER 517-546-6220 APPLICATION FEE \_\_\_\_\_

PROPERTY TAX CODE NUMBER(S) 4702-26-400-0016

1. Attach a completed land use application.
2. Attach 13 copies of the preliminary site plan drawing.
3. Following approval of the preliminary site plan, submit 13 copies of the final site plan, other data and exhibits that support the final site plan.
4. The site plan is to contain the following information, or the drawing submitted under the land use permit can be utilized if it also contains the following information and is accurately drawn to scale:
  - a. The date, north arrow and scale. The scale shall be not less than 1" = 20' on property under three (3) acres, and at least 1" = 100' for those three (3) acres or more.
  - b. Statistical data including number of dwelling units, size of dwelling units, if any, and total gross acreage involved. In the case of a proposed subdivision or land parcel partitioning, the size and location of each parcel shall be shown.
  - c. The location and dimensions of all existing and proposed drives, sidewalks, curb openings, signs, exterior lighting, and curbing.
  - d. Vehicular traffic and pedestrian circulation features within and without the site.
  - e. The location of all proposed landscaping, fences or walls.
  - f. Size and location of existing and proposed utilities, including proposed connections to public sewer or water supply system.
  - g. A location map indicating the relationship of the site to the surrounding land uses.



- h. The location and pavement width and right-of-way width of all abutting roads, streets, alleys, or easements.
- i. Properties and respective zoning abutting subject property.
- j. The location and size of all surface water drainage facilities.

5. Applicant to initial the following statements to show understanding of the restrictions and time parameters listed below:

- a. No grading, removal of trees or other vegetation, landfilling or construction of improvements shall commence for any development which requires Site Plan approval until the same is approved by the Planning Commission. \_\_\_\_\_
- b. The Planning Commission has sixty (60) days from the filing date to approve or deny the Preliminary Site Plan. \_\_\_\_\_
- c. Approval of the Preliminary Site Plan is valid for a period of six (6) months unless an application for Final Site Plan approval is filed. \_\_\_\_\_
- d. Applicant acknowledges that a six (6) month extension may be granted upon written request if approved by the Planning Commission. \_\_\_\_\_
- e. Applicant acknowledges that the Planning Commission shall have sixty (60) days to approve or disapprove of the Final Site Plan. \_\_\_\_\_
- f. Applicant acknowledges approval of the Final Site Plan expires six (6) months after approval unless a Land Use Application is applied for and granted. \_\_\_\_\_
- g. Applicant acknowledges that the Final Site Plan approval shall expire one (1) year following the date of approval unless construction has begun in accordance with the plan. \_\_\_\_\_
- h. Applicant acknowledges that a decision of the Planning Commission can be appealed to the Zoning Board of Appeals within ten (10) days from the date of the decision of the Planning Commission. \_\_\_\_\_
- i. Applicant is responsible for contacting the Zoning Administrator and requesting the necessary inspections. \_\_\_\_\_
- j. Applicant acknowledges any improvement not in accordance with the approved Final Site Plan shall be deemed a violation of the ordinance and be subject to the penalties of the ordinance. \_\_\_\_\_

APPLICANT'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

\*\*\*\*\*

**TOWNSHIP USE ONLY**

Planning Commission decision:

- 1. Approved \_\_\_\_\_

2. Denied \_\_\_\_\_

\_\_\_\_\_

Signature Planning Commission Chairman \_\_\_\_\_

Date: \_\_\_\_\_

Site plan 8/24 B.F.

# TRANSMITTAL

Lindhout Associates architects aia pc  
10465 citation drive, brighton, michigan 48116

www.lindhout.com

810-227-5668 (fax) 810-227-5855



## LIVINGSTON COUNTY EMS COHOCTAH TOWNSHIP SUBSTATION

COMM. NO. 24063

**DATE:** September 11, 2024

**TO:** Cohoctah Township Hall  
Barb Fear, Township Clerk  
10518 Antcliff Rd.  
Fowlerville, MI 48836

**ATTN:** Barb

We transmit herewith the following:

### QUANTITY

### DESCRIPTION

9	Sets of sealed Site Plan Submission Drawings
1	Site Plan Application

### REMARKS:

Per your request. An electronic copy will be sent via email.

**FROM:** Brad Alvord, Project Architect/Partner

**PROPERTY DESCRIPTION:**

DESCRIPTION OF PARCEL PER  
LIVINGSTON COUNTY TAX ROLL:  
SEC 26 T4N R4E N 5 AC OF N 1/2 OF  
SE 1/4 OF SEC 26 WHICH IS LYING W  
OF ANN ARBOR RAILROAD ROW SPLIT  
FROM 400-001

# PRELIMINARY SITE PLAN FOR LIVINGSTON COUNTY EMS - COHOCTAH SUBSTATION PART OF SE QUARTER, SECTION 26 COHOCTAH TOWNSHIP, LIVINGSTON COUNTY, MI



**LOCATION MAP**  
NO SCALE

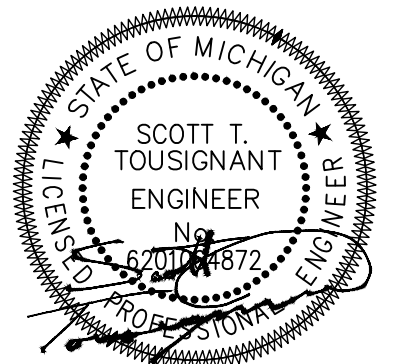


**OVERALL SITE MAP**  
NO SCALE

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	COVER
2	GENERAL NOTES & LEGEND
3	EXISTING CONDITIONS & DEMOLITION PLAN
4	SITE PLAN
5	GRADING & DRAINAGE PLAN
6	SOIL EROSION & SEDIMENTATION CONTROL PLAN
7	UTILITY PLAN
8	BASIN DETAILS
9	STORM PLAN & PROFILE
10	LANDSCAPE PLAN
11	NATURAL FEATURES PLAN
12	CONSTRUCTION DETAILS
PLANS BY OTHERS	
1	LIGHTING PLAN (GASSER BUSH)
A1.0	FLOOR PLAN (LINDHOUT ASSOCIATES)
A2.1	EXTERIOR ELEVATIONS (LINDHOUT ASSOCIATES)
A2.2	EXTERIOR ELEVATIONS (LINDHOUT ASSOCIATES)
A3.0	RENDERED VIEWS (LINDHOUT ASSOCIATES)

PREPARED FOR:

LINDHOUT ASSOCIATES ARCHITECTS  
10465 CITATION DRIVE  
BRIGHTON, MI 48116  
CONTACT: BRAD ALVORD  
PHONE: 810.227.5668  
EMAIL: BMA@LINDHOUT.COM



PREPARED BY:

**BEBOSS**  
*Engineering*  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
517.546.4836 FAX 517.548.1670  
CONTACT: SCOTT TOUSIGNANT  
EMAIL: SCOTT@BOSSENG.COM

LIGHTING BY:

GASSER BUSH ASSOCIATES  
30984 INDUSTRIAL RD.  
LIVINGSTON, MI 48150  
CONTACT: BRAD ALVORD  
PHONE: 810.227.5668  
EMAIL: BMA@LINDHOUT.COM

PERMITS & APPROVALS		
AGENCY	DATE SUBMITTED	DATE APPROVED
• COHOCTAH TOWNSHIP	-	-
• LCDC - SESC	-	-
• LCRC	-	-

**INDEMNIFICATION STATEMENT**

THE CONTRACTOR SHALL HOLD HARMLESS THE DESIGN PROFESSIONAL, MUNICIPALITY, COUNTY, STATE AND ALL OF ITS SUB CONSULTANTS, PUBLIC AND PRIVATE UTILITY COMPANIES, AND LANDOWNERS FOR DAMAGES TO INDIVIDUALS AND PROPERTY, REAL OR OTHERWISE, DUE TO THE OPERATIONS OF THE CONTRACTOR AND/OR THEIR SUBCONTRACTORS.

	1		
NO	BY	CK	REVISION
			DATE
			ISSUE DATE: 9/10/24
			JOB NO: 24-176

GENERAL NOTES

- 1. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED TOWNSHIP, COUNTY, AND STATE OF MICHIGAN PERMITS.
2. A GRADING PERMIT FOR SOIL EROSION-SEDIMENTATION CONTROL SHALL BE OBTAINED FROM THE GOVERNING AGENCY PRIOR TO THE START OF CONSTRUCTION.
3. IF DUST PROBLEM OCCURS DURING CONSTRUCTION, CONTROL WILL BE PROVIDED BY AN APPLICATION OF WATER, EITHER BY SPRINKLER OR TANK TRUCK.
...
35. WHERE CITY/TOWNSHIP STANDARD CONSTRUCTION DETAILS/SPECIFICATIONS ARE PROVIDED AND ARE IN CONFLICT WITH NOTES AND SPECIFICATIONS HEREIN, THE CITY/TOWNSHIP STANDARD SHALL GOVERN.

INDEMNIFICATION STATEMENT

THE CONTRACTOR SHALL HOLD HARMLESS THE DESIGN PROFESSIONAL, MUNICIPALITY, COUNTY, STATE, AND ALL OF ITS SUB CONSULTANTS, PUBLIC AND PRIVATE UTILITY COMPANIES, AND LANDOWNERS FOR DAMAGES TO INDIVIDUALS AND PROPERTY, REAL OR OTHERWISE, DUE TO THE OPERATIONS OF THE CONTRACTOR AND/OR THEIR SUBCONTRACTORS.

CONTRACTOR TO FOLLOW MANUFACTURER SPECS/RECOMMENDATIONS THAT SUPERCEDE PLANS

GENERAL GRADING & SESC NOTES

- 1. THE CONTRACTOR SHALL HAVE IN PLACE ALL REQUIRED EROSION CONTROL METHODS AS INDICATED ON THE CONSTRUCTION PLANS AND AS REQUIRED BY GENERAL PRACTICE. SPECIFIC MEANS, METHODS AND SEQUENCES OF CONSTRUCTION MAY DICTATE ADDITIONAL SOIL EROSION CONTROL MEASURES BE NEEDED. THE CONTRACTOR SHALL COORDINATE WITH THE DESIGN ENGINEER ON THESE ANTICIPATED METHODS. ADDITIONAL SOIL EROSION CONTROL METHODS SHALL BE INCIDENTAL TO THE SCOPE OF WORK.
2. ACTUAL FIELD CONDITIONS MAY DICTATE ADDITIONAL OR ALTERNATE SOIL EROSION CONTROL MEASURES BE UTILIZED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DEFICIENCIES OR FIELD CONDITIONS THAT WARRANT ADDITIONAL AND/OR ALTERNATIVE SESC MEASURES BE UTILIZED.
...
11. ALL EXCAVATION UNDER OR WITHIN 3 FEET OF PUBLIC PAVEMENT, EXISTING OR PROPOSED SHALL BE BACKFILLED AND COMPACTED WITH SAND (MDOOT CLASS II).

GENERAL LANDSCAPE NOTES

- 1. ALL PLANT MATERIAL SHALL CONFORM TO THE REQUIREMENTS AND SPECIFICATIONS OF THE GOVERNING MUNICIPALITY. ALL STOCK SHALL BE NURSERY GROWN, CONFORMING TO ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK", AND IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICE. STOCK SHALL EXHIBIT NORMAL GROWTH HABIT AND BE FREE OF DISEASE, INSECTS, EGGS, LARVAE, & DEFECTS SUCH AS KNOTS, SUN-SCALD, INJURIES, ABRASIONS, OR DISFIGUREMENT. ALL PLANT MATERIAL SHALL BE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT.
2. ALL PLANT MATERIALS SHALL BE BALLED AND BURLAPPED OR CONTAINER STOCK. NO BARE ROOT STOCK IS PERMITTED. ALL PLANT BALLS SHALL BE FIRM, INTACT, AND SECURELY WRAPPED AND BOUND.
...
12. ALL AREAS OF THE SITE THAT BECOME DISTURBED DURING CONSTRUCTION AND ARE NOT TO BE PAVED, STONED, LANDSCAPED, OR SODDED SHALL BE SEED AND MULCHED.
SEED MIXTURE SHALL BE AS FOLLOWS:
KENTUCKY BLUEGRASS (CHOOSE 3 VARIETIES - ADLPHI, RUGBY, GLADE, OR PARADE) 30%
RUBY RED OR DAWSON RED FINE FESCUE 30%
ATLANTA RED FESCUE 20%
PENNFINE PERENNIAL RYE 20%

GENERAL UTILITY NOTES

- 1. BEDDING SHALL EXTEND A MINIMUM OF 4" BELOW THE PIPE, UNLESS OTHERWISE NOTED ON THE PLANS. BEDDING SHALL BE OF UNIFORM GRADATION MDOOT 6&A STONE OR MDOOT CLASS II GRANULAR MATERIAL FOR SANITARY AND STORM PIPE AND MDOOT CLASS II GRANULAR MATERIAL ONLY FOR WATERMAIN.
2. WHERE UNSTABLE GROUND CONDITIONS ARE ENCOUNTERED, STONE BEDDING SHALL BE USED AS DIRECTED BY THE ENGINEER.
3. BACKFILL SHALL BE OF A SUITABLE MATERIAL AND SHALL BE FREE OF ANY ORGANIC MATERIALS AND ROCKS.
...
5. 18" MINIMUM VERTICAL SEPARATION AND 10" HORIZONTAL SEPARATION IS TO BE MAINTAINED BETWEEN WATERMAIN AND SANITARY/STORM SEWER TO THE MAXIMUM EXTENT POSSIBLE.

GENERAL STORM NOTES

- 1. ALL STORM PIPE LENGTHS ARE SHOWN FROM C/L TO C/L OF STRUCTURE OR FROM C/L OF STRUCTURE TO DISCHARGE END OF FLARED END SECTION.
2. STORM PIPE MATERIALS SHALL BE AS FOLLOWS:
2.1. RCP(REINFORCED CONCRETE PIPE); SHALL MEET THE REQUIREMENTS OF ASTM C76 WITH MODIFIED GROOVED TONGUE AND RUBBER GASKETS MEETING THE REQUIREMENTS OF ASTM C443. RCP TO BE EITHER CLASS IV OR V AS CALLED OUT ON THE PLANS.
2.2. PVC(POLYVINYL CHLORIDE); SHALL MEET THE REQUIREMENTS OF ASTM D3034.
...
10. THE PROPOSED DRAINAGE SYSTEM IS TO BE OWNED AND PROPERLY MAINTAINED BY THE PROPERTY OWNER

LINES & HATCHES LEGEND

Legend showing symbols for PROPOSED (PR) and EXISTING (EX) lines and hatches. Includes symbols for CONTOUR, SPOT ELEVATION, SANITARY SEWER, SANITARY LEAD, FORCE MAIN, PRESSURE SEWER, STORM SEWER, WATER MAIN, WATER LEAD, FIBER OPTIC, OVERHEAD WIRE, CABLE, ELECTRIC, GAS, TELEPHONE, FENCE, SILT FENCE, WETLAND BOUNDARY, LIMITS OF GRADING/CLEARING, LIMITS OF DRAINAGE, MODIFIED CURB, CONCRETE, HIGH STRENGTH CONCRETE, ASPHALT, HIGH STRENGTH ASPHALT, WETLAND, SANITARY SEWER LABEL, STORM SEWER LABEL, WATER MAIN LABEL, SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY).

LIGHTING LEGEND

Legend showing symbols for PROPOSED (PR) and EXISTING (EX) lighting fixtures. Includes symbols for DOUBLE FIXTURE LIGHT POLE, SINGLE FIXTURE LIGHT FIXTURE, WALL MOUNTED LIGHT FIXTURE, GROUND LIGHT FIXTURE, FOOT CANDLES ON SITE, FOOT CANDLES OFF SITE, FOOT CANDLES CONTOURS, CANOPY MOUNTED LIGHT FIXTURE.

LANDSCAPE LEGEND

Legend showing symbols for EXISTING and PROPOSED landscape elements. Includes symbols for EXISTING CONIFER TREE, EXISTING DECIDUOUS TREE, PROPOSED CONIFER TREE, PROPOSED DECIDUOUS TREE, PROPOSED PROTECTION TREE, PROPOSED ORNAMENTAL TREE, PROPOSED DECIDUOUS SHRUBS, PROPOSED GRASSES & PERENNIALS, PROPOSED LANDSCAPE BOULDER, SOD, SEED, MULCH.

SYMBOL LEGEND

Legend showing symbols for various utility and site markers. Includes symbols for STORM DRAINAGE FLOW, GUY WIRE, POWER POLE, TRANSFORMER PAD, ELECTRICAL RISER, U.G. ELECTRIC MARKER, ELECTRICAL METER, AIR CONDITIONING UNIT, TELEPHONE RISER, U.G. TELEPHONE MARKER, GAS RISER, U.G. GAS MARKER, GAS METER, CABLE TV RISER, U.G. CABLE TV MARKER, MAILBOX, WELL, WATER MANHOLE, GATE VALVE (EXISTING), GATE VALVE (PROPOSED), HYDRANT (EXISTING), HYDRANT (PROPOSED), CATCH BASIN (EXISTING), YARD CATCH BASIN (EXISTING), CATCH BASIN (PROPOSED), STORM MANHOLE (EXISTING), STORM MANHOLE (PROPOSED), END SECTION (EXISTING), END SECTION (PROPOSED), SANITARY MANHOLE (EXISTING), SANITARY MANHOLE (PROPOSED), PUMP CHAMBER, TRAFFIC SIGN, SIGN (EXISTING), SIGN (PROPOSED), SOIL BORING, STEEL ROD SET, STEEL ROD OR PIPE FOUND, WOOD LATH SET, HUB SET, MONUMENT FOUND, SECTION CORNER, GAS PUMP, ANTENNA, SATELLITE DISH, NEWSPAPER BOX, PARKING METER, PHONE BOOTH, HANDICAP SYMBOL, BENCHMARK, LIGHT POLE.

ABBREVIATIONS

Table of abbreviations: FFE FINISHED FLOOR ELEVATION, BEF BASEMENT FLOOR ELEVATION, GFE GARAGE FLOOR ELEVATION, FG FINISHED GRADE, T/A TOP OF ASPHALT, T/C TOP OF CURB, T/CO TOP OF CONCRETE, T/W TOP OF WALK, T/P TOP OF PIPE, B/P/P BOTTOM OF PIPE, F/L FLOW LINE, RIM RIM ELEVATION (AT FLOW LINE), INV INVERT ELEVATION, MH MANHOLE, CB CATCH BASIN, RY REAR YARD, YD YARD DRAIN, RD ROOF DRAIN, FES FLARED END SECTION, CMP CORRUGATED METAL PIPE, CPP CORRUGATED PLASTIC PIPE, RCP REINFORCED CONCRETE PIPE, HDPE HIGH DENSITY POLYETHYLENE, PVC POLYVINYL CHLORIDE, DIP DUCTILE IRON PIPE, GV GATE VALVE, GW GATE VALVE IN WELL, GVB GATE VALVE IN BOX, HYD HYDRANT, FDC FIRE DEPARTMENT CONNECTION, UP UTILITY POLE, NFV NOT FIELD VERIFIED, TBR TO BE REMOVED, L LIBER, P PAGE, L.C.R. LIVINGSTON COUNTY RECORDS, (M&R) MEASURED AND RECORD, L.O.B. POINT OF BEGINNING.

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN ON THESE DRAWINGS AS ONLY APPROXIMATE. NO ASSURANCE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL COMPLETELY VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES. BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE PLANS. BE CONTACTED AT THE FOLLOWING PHONE NUMBER: 517.546.4836. BE CONTACTED AT THE FOLLOWING FAX NUMBER: 517.546.4836.

BEBOSS Engineering logo and contact information: BEBOSS Engineering, Engineers Surveyors Planners Landscape Architects, 3121 E. GRAND RIVER AVE., HOWELL, MI. 48843, 517.546.4836, 517.546.4836.

LIVINGSTON COUNTY EMS - COHOCTAH SUBSTATION, LINDHOOT ASSOCIATES AIA, PC, 1046 CITATION DRIVE, BRIGHTON, MI 48116, 810.227.5568.

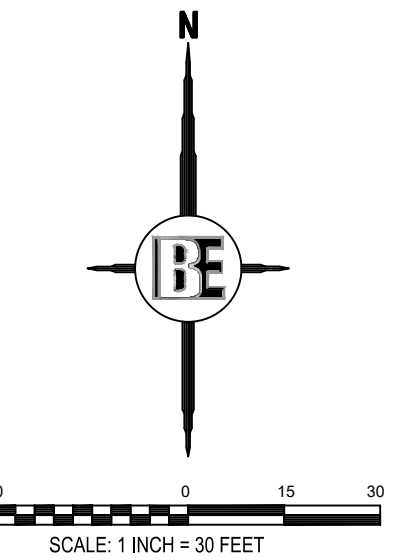
Table with columns for PROJECT, PREPARED FOR, TITLE, DATE, REVISION, PER, I, BY, NO. Includes fields for DESIGNED BY: ST, DRAWN BY: MJD, CHECKED BY:, SCALE: NO SCALE, JOB NO: 24-176, DATE: 9/10/2024, SHEET NO. 2.

**DESCRIPTION OF PARCEL PER LIVINGSTON COUNTY TAX ROLL:**  
 SEC 26 T4N R4E N 5 AC OF N 1/2 OF SE 1/4 OF SEC 26 WHICH IS LYING W OF ANN ARBOR RAILROAD ROW SPLIT FROM 400-001

- GENERAL SURVEY NOTES:**
- BEARINGS ARE BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE.
  - SUBSURFACE UTILITIES NOT LOCATED FOR THIS SURVEY MAY EXIST. IT IS THE RESPONSIBILITY OF THE OWNER OF THE RESPECTIVE UTILITY TO ACCURATELY LOCATE SUCH UTILITIES.
  - EASEMENTS OR RESTRICTIONS OF RECORD NOT DEPICTED ON THIS DRAWING MAY EXIST.
  - ELEVATIONS WERE ESTABLISHED WITH GPS USING OPUS GPS POST-PROCESSING. (NAVD83 DATUM)
  - CONTOURS ARE SHOWN AT 1 FOOT INTERVALS.
  - THE LOCATIONS OF UNDERGROUND UTILITIES, AS SHOWN ON THIS DRAWING ARE APPROXIMATE.
  - THE LOCATIONS ARE BASED ON PHYSICAL FIELD LOCATIONS OF STRUCTURES ALONG WITH MISS DIG MARKINGS.
  - ALL WORK SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE MUNICIPALITY, THE COUNTY, AND THE STATE OF MICHIGAN.
  - ALLOW THREE WORKING DAYS BEFORE YOU DIG, CALL MISS DIG TOLL FREE 1-800-482-7171.

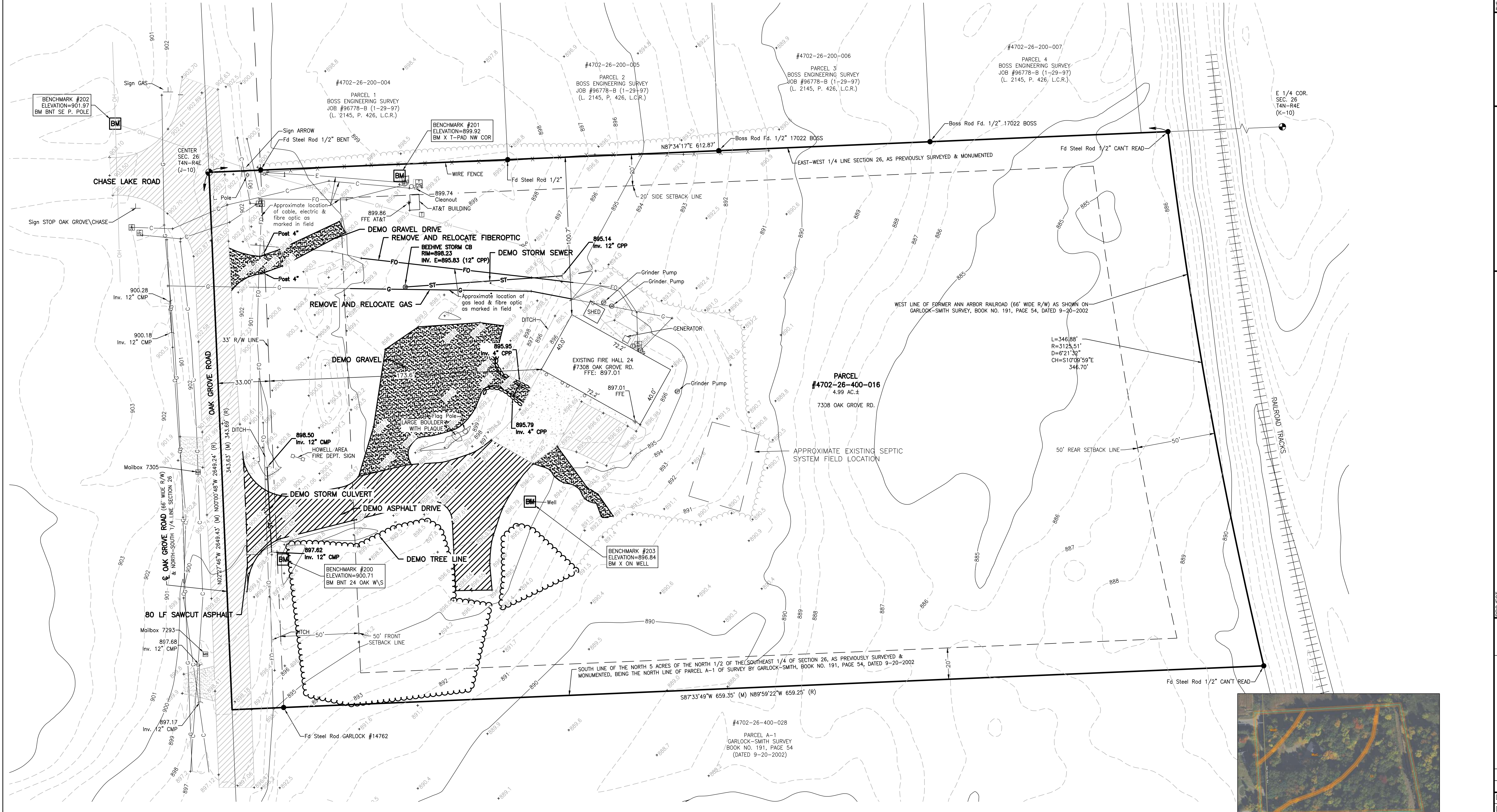
CURRENT ZONING: SUBURBAN RESIDENTIAL DISTRICT (SR)  
 MINIMUM SETBACK REQUIREMENTS:  
 FRONT = 50 FEET  
 SIDES = 20 FEET  
 REAR = 50 FEET  
 MAXIMUM LOT COVERAGE = 30%  
 MAXIMUM BUILDING HT. = 35 FEET

SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO RESPONSIBILITY OF THE CONTRACTOR SHALL BE ASSUMED FOR THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF UTILITIES CROSSING IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS.

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**SOIL MAP (WEB SOIL SURVEY)**  
 NOT TO SCALE

**SOILS:**  
 Ls - LAMSON FINE SANDY LOAM  
 MoB - WAWASEE LOAM, 2 TO 6 PERCENT SLOPES  
 MoC - WAWASEE LOAM, 6 TO 12 PERCENT SLOPES

**BE BOSS**  
 Engineering  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670

PROJECT: **LIVINGSTON COUNTY EMS - COHOCTAH SUBSTATION**  
 PREPARED FOR: **LINDHOUT ASSOCIATES AIA, PC**  
 10465 CITATION DRIVE  
 BRIGHTON, MI 48116  
 810.227.5668

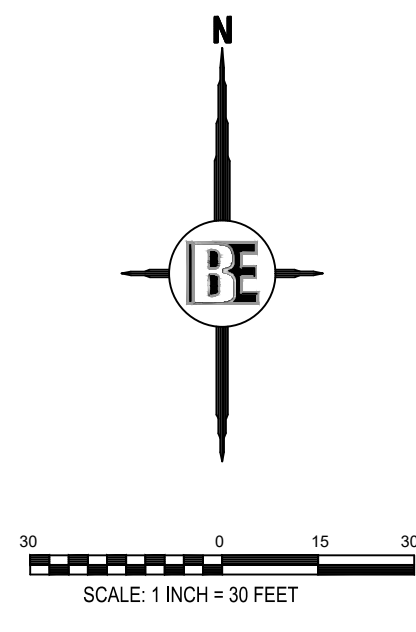
TITLE: **EXISTING CONDITIONS & DEMOLITION PLAN**

NO	BY	DATE	REVISION PER

DESIGNED BY: ST  
 DRAWN BY: MJD  
 CHECKED BY:  
 SCALE: 1" = 30'  
 JOB NO: 24-176  
 DATE: 9/10/2024  
 SHEET NO.

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SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF UTILITIES PRIOR TO CONSTRUCTION.

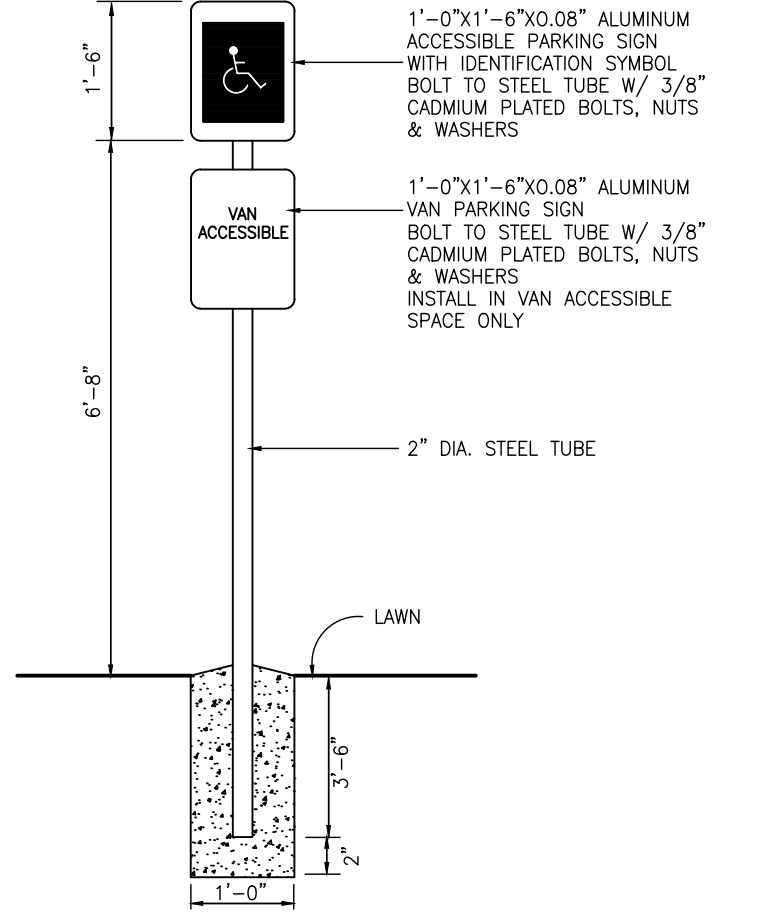
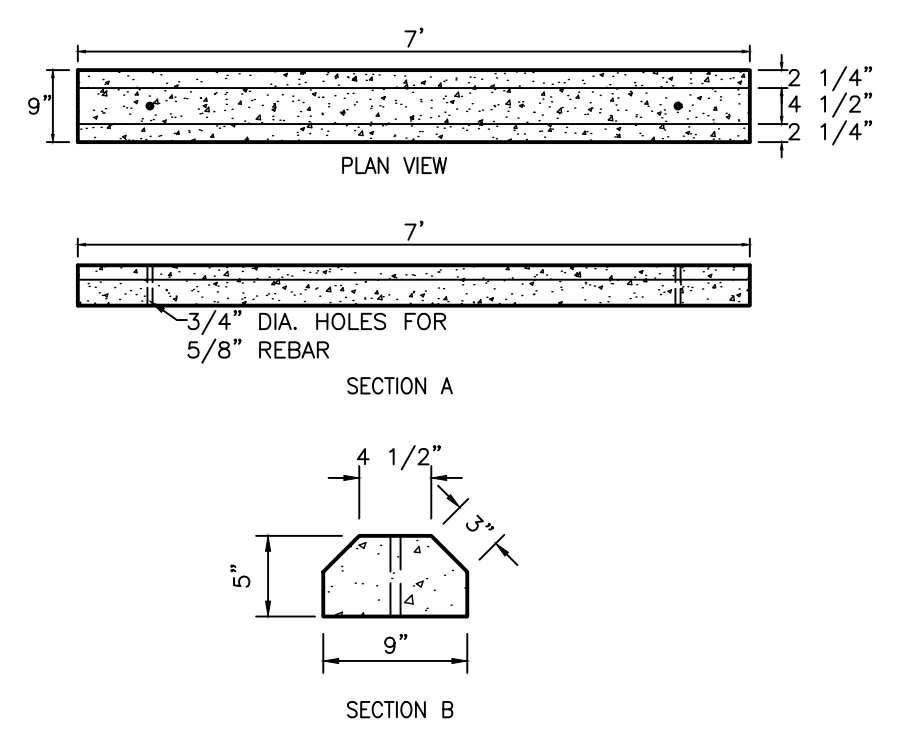
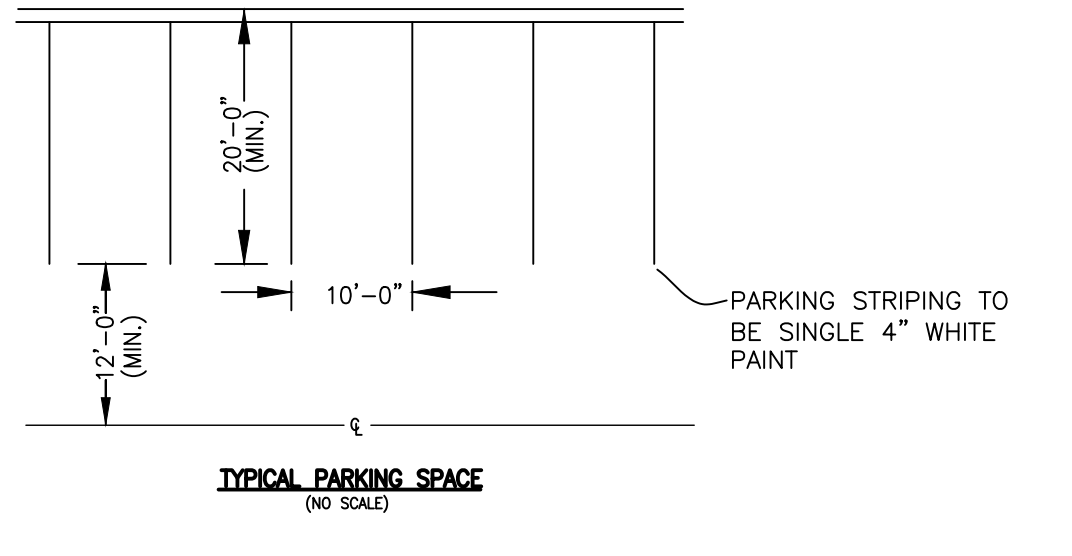
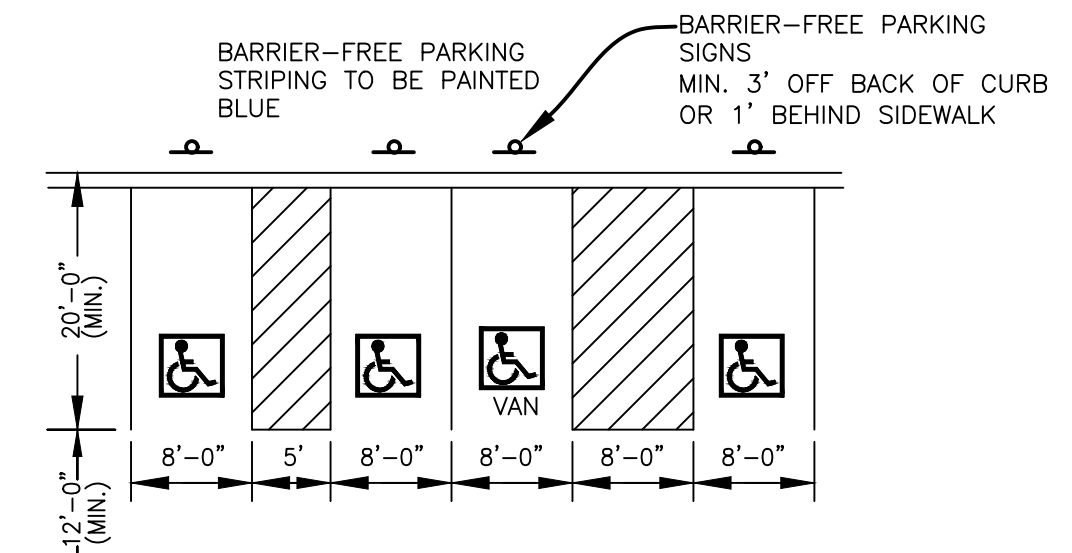
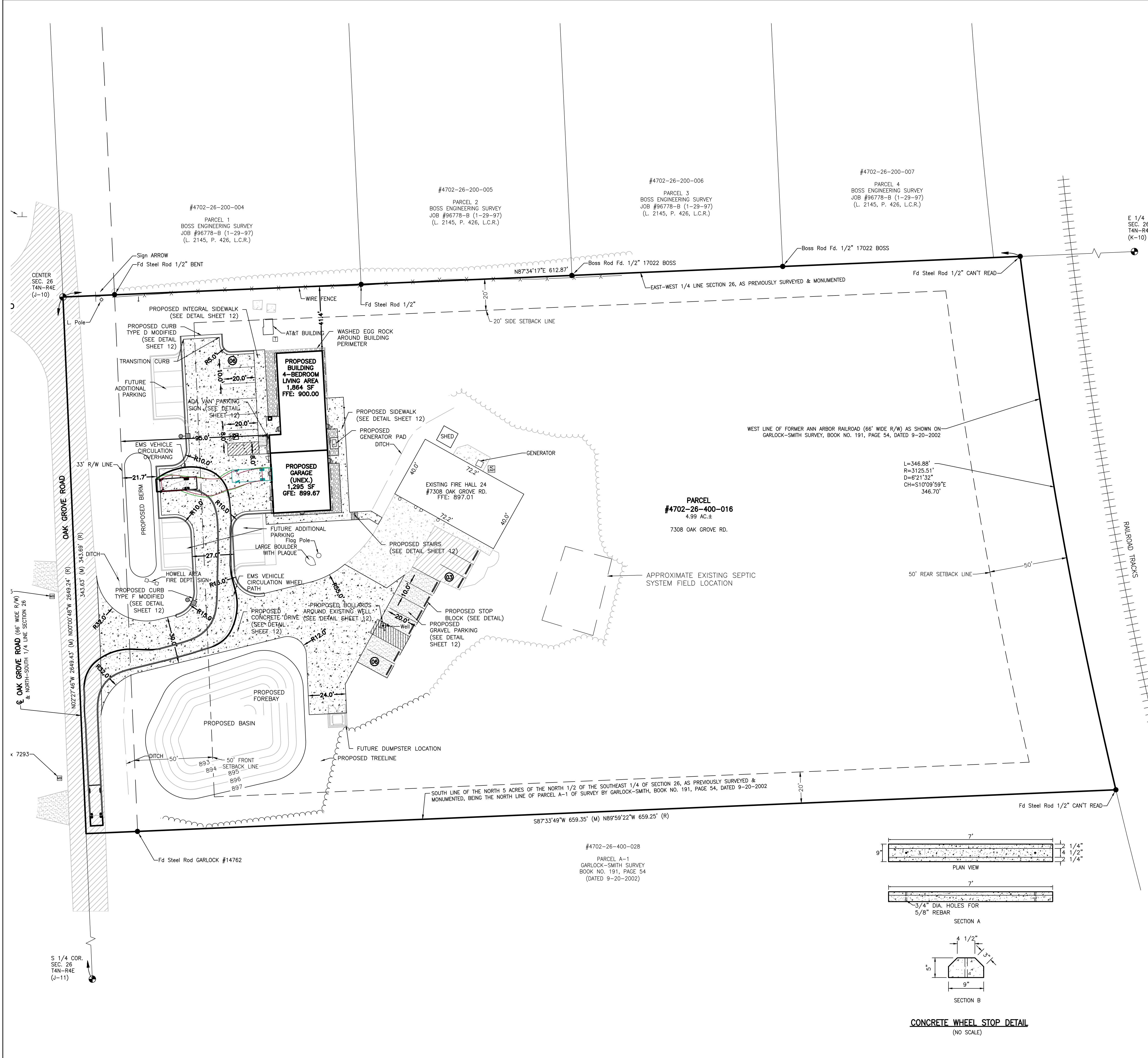
BOSS ENGINEERING  
CALL MSS DIG  
1-800-467-7171  
www.boss-engineering.com

**SITE DATA:**

CURRENT ZONING: SUBURBAN RESIDENTIAL DISTRICT (SR)

MINIMUM SETBACK REQUIREMENTS:  
FRONT = 50 FEET  
SIDES = 20 FEET  
REAR = 50 FEET  
MAXIMUM LOT COVERAGE = 30%  
MAXIMUM BUILDING HT. = 35 FEET

PROPOSED BUILDING SETBACKS:  
FRONT: 95 FT  
SIDE: 41 FT  
REAR: 335 FT  
LOT COVERAGE: 3%



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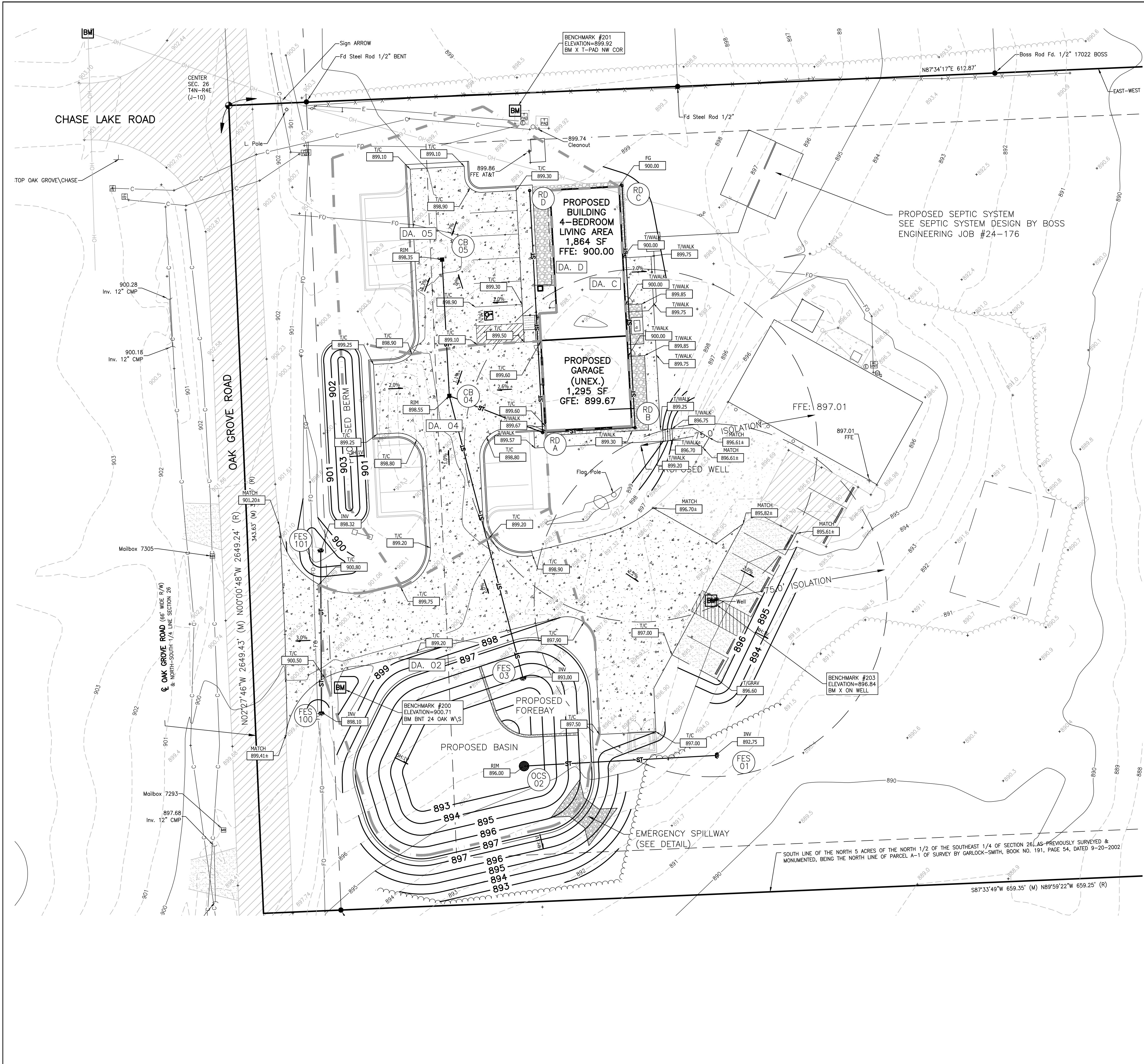
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
517.546.4836 FAX 517.548.1670

PROJECT: LIVINGSTON COUNTY EMS - COHOCTAH SUBSTATION  
PREPARED FOR: LINDHOUT ASSOCIATES AIA, PC  
10465 CITATION DRIVE  
BRIGHTON, MI 48116  
810.227.5668

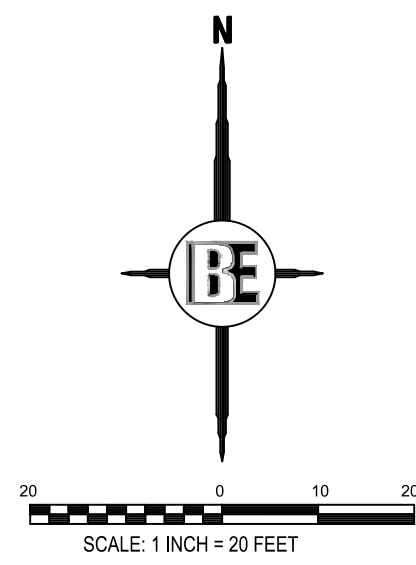
TITLE: SITE PLAN

NO.	BY	REVISION	DATE

DESIGNED BY: ST  
DRAWN BY: MJD  
CHECKED BY:  
SCALE: 1" = 30'  
JOB NO: 24-176  
DATE: 9/10/2024  
SHEET NO. 4



SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

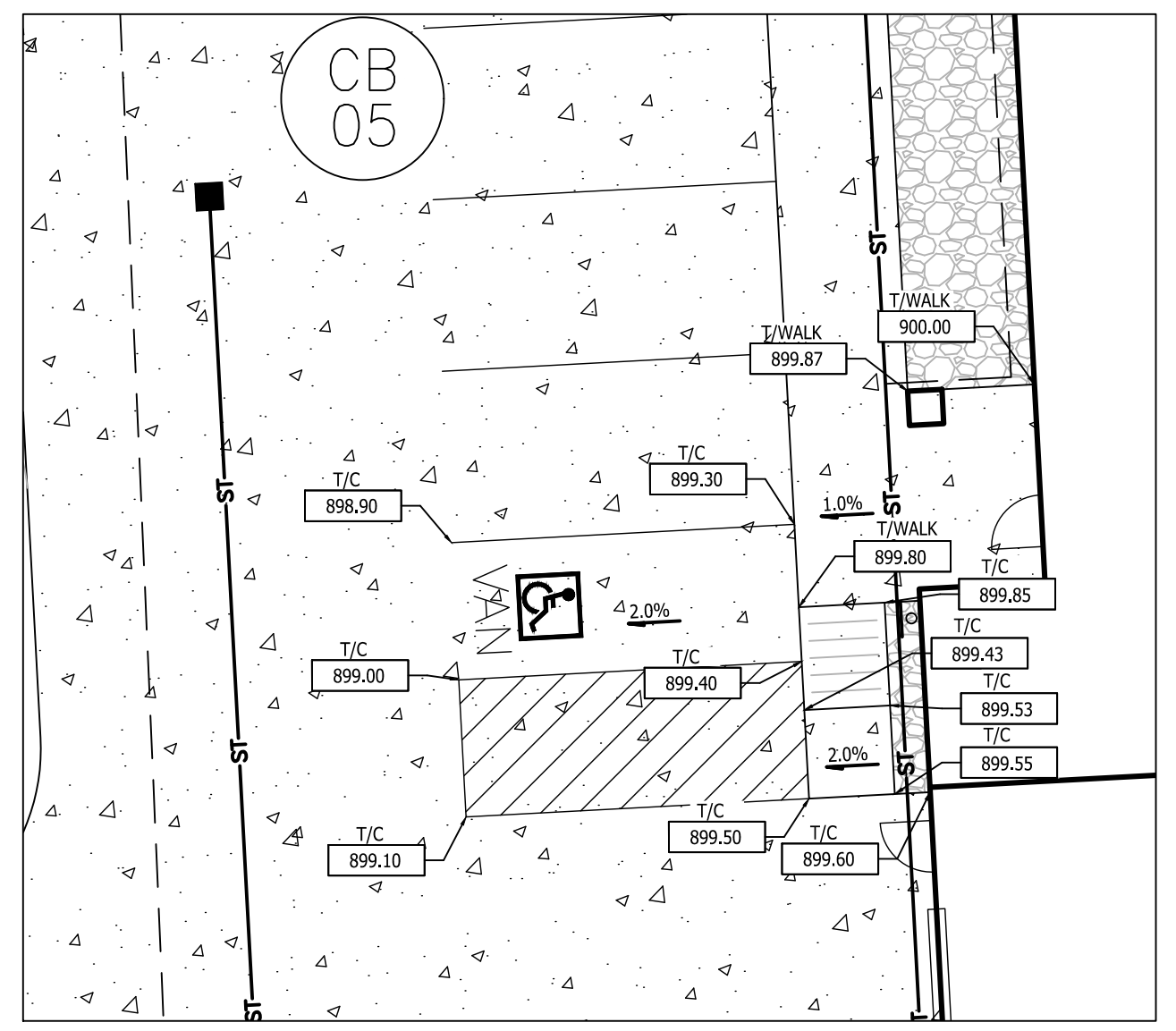


DRAINAGE AREA	TOTAL AREA (AC)	IMP. AREA (AC)	C VALUE	A <sup>c</sup>
2	0.29	0.08	0.40	0.12
4	0.17	0.13	0.74	0.13
5	0.19	0.11	0.60	0.11
C	0.04	0.04	0.90	0.03
D	0.04	0.04	0.90	0.03
<b>TOTALS</b>	<b>0.73</b>	<b>0.40</b>	<b>0.58</b>	<b>0.43</b>

**EXISTING DRAINAGE:**  
 THE EXISTING SITE IS PARTIALLY DEVELOPED. SITE IMPERVIOUS RUNOFF SHEET FLOWS TO GRASSED AREAS AND SWALES AROUND THE EXISTING DRIVE AND BUILDING. THE SITE SLOPES FROM THE NORTHWEST CORNER IN THE EAST AND SOUTHEASTERLY DIRECTION.

**PROPOSED DRAINAGE:**  
 THE SITE WILL CONTINUE TO DRAIN FROM THE NORTHWEST CORNER TO THE EAST. ALL NEW IMPERVIOUS IS PROPOSED TO BE CAPTURED BY THE PROPOSED STORM NETWORK. A SERIES OF CATCH BASINS ARE PROPOSED WITHIN THE SITE TO CAPTURE AND TRANSMIT STORM WATER TO THE PROPOSED DETENTION BASIN ALONG SOUTHERN EDGE OF THE EXISTING DRIVE.

THE BASIN CONSISTS OF A FOREBAY, WITH THE USE OF GABION BASKET WALLS WITHIN THE BASIN TO CREATE A SEPARATE FOREBAY SPACE. THE BASIN WILL UTILIZE AN OUTLET CONTROL STRUCTURE TO DISCHARGE STORM WATER AT A PREDEVELOPMENT RATE TO THE EAST AS LIKE THE EXISTING CONDITION. A RIP RAP EMERGENCY OVERLAND OVERFLOW SPILLWAY IS PROPOSED WHICH WILL DIRECT OVERFLOW STORM WATER TO THE SAME EAST DISCHARGE LOCATION.



ADA DETAILED GRADING SCALE: 1" = 10'

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND DEPTH OF EXISTING UTILITIES CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS.

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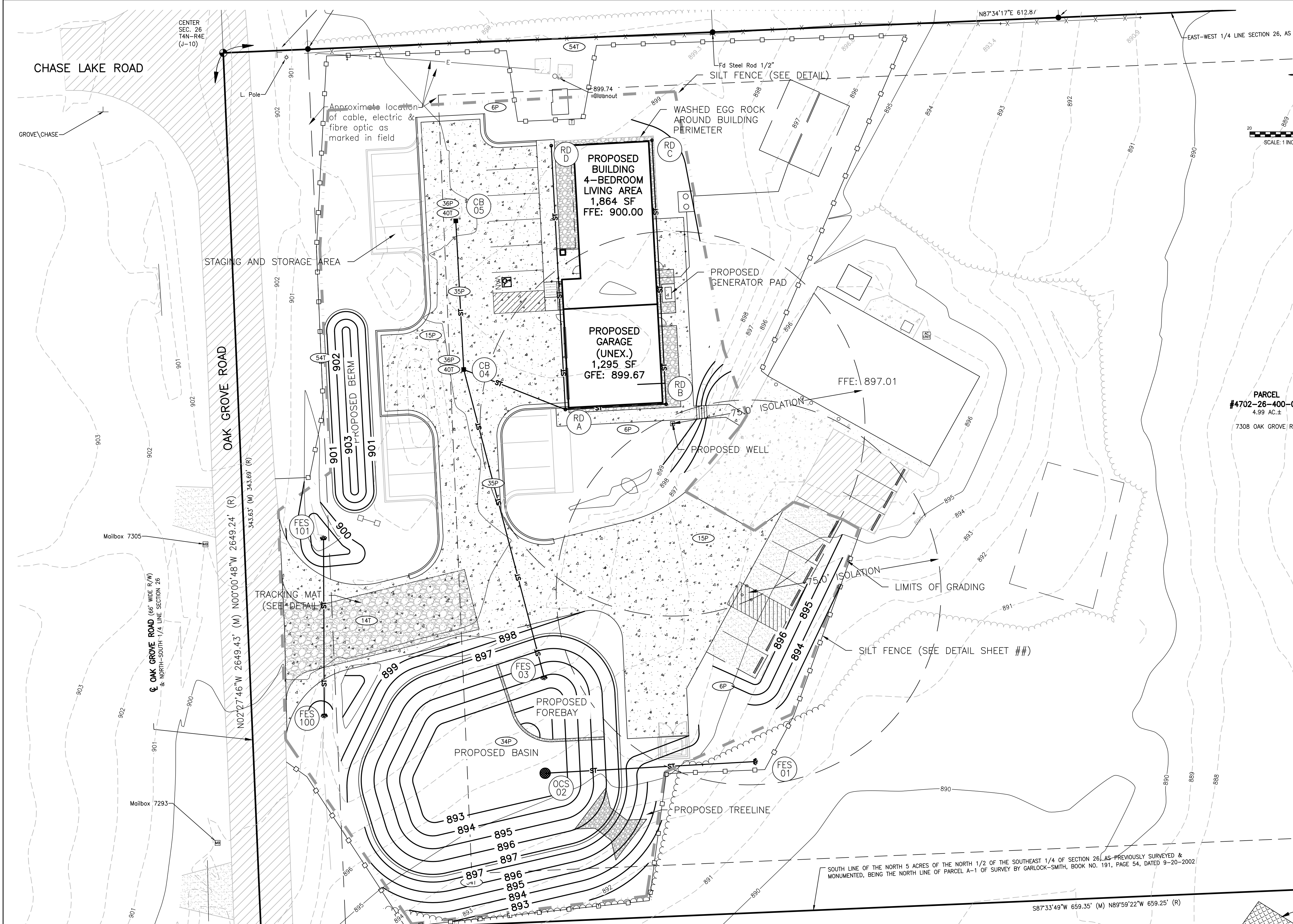
PROJECT: LIVINGSTON COUNTY EMS - COHOCTAH SUBSTATION  
 PREPARED FOR: LINDHOOT ASSOCIATES AIA, PC  
 10462 CITATION DRIVE  
 BRIGHTON, MI 48116  
 810.227.5568

NO.	BY	DATE	REVISION

DESIGNED BY: ST  
 DRAWN BY: MJD  
 CHECKED BY:  
 SCALE: 1" = 20'  
 JOB NO: 24-176  
 DATE: 9/10/2024  
 SHEET NO. 5

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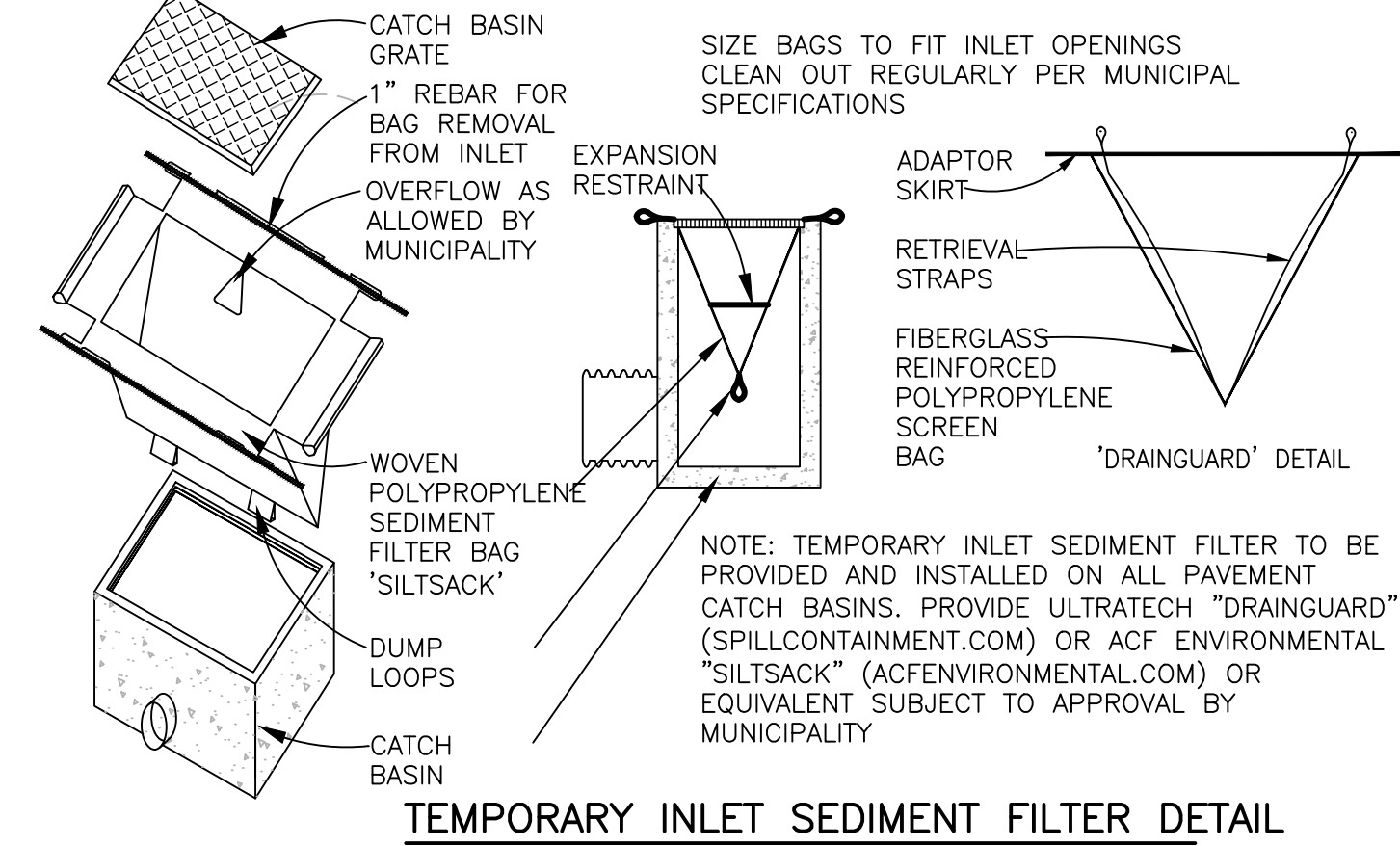
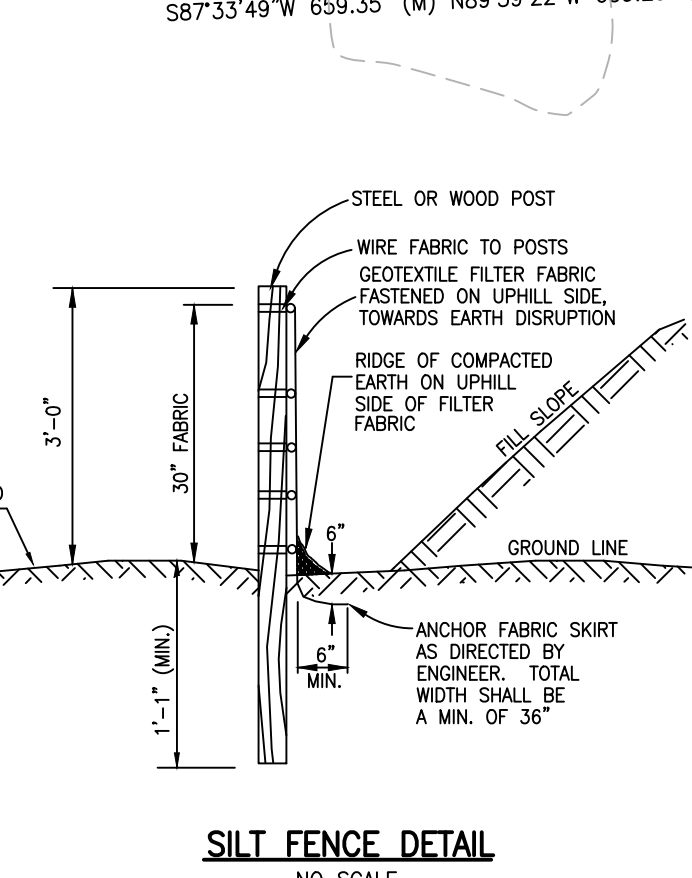
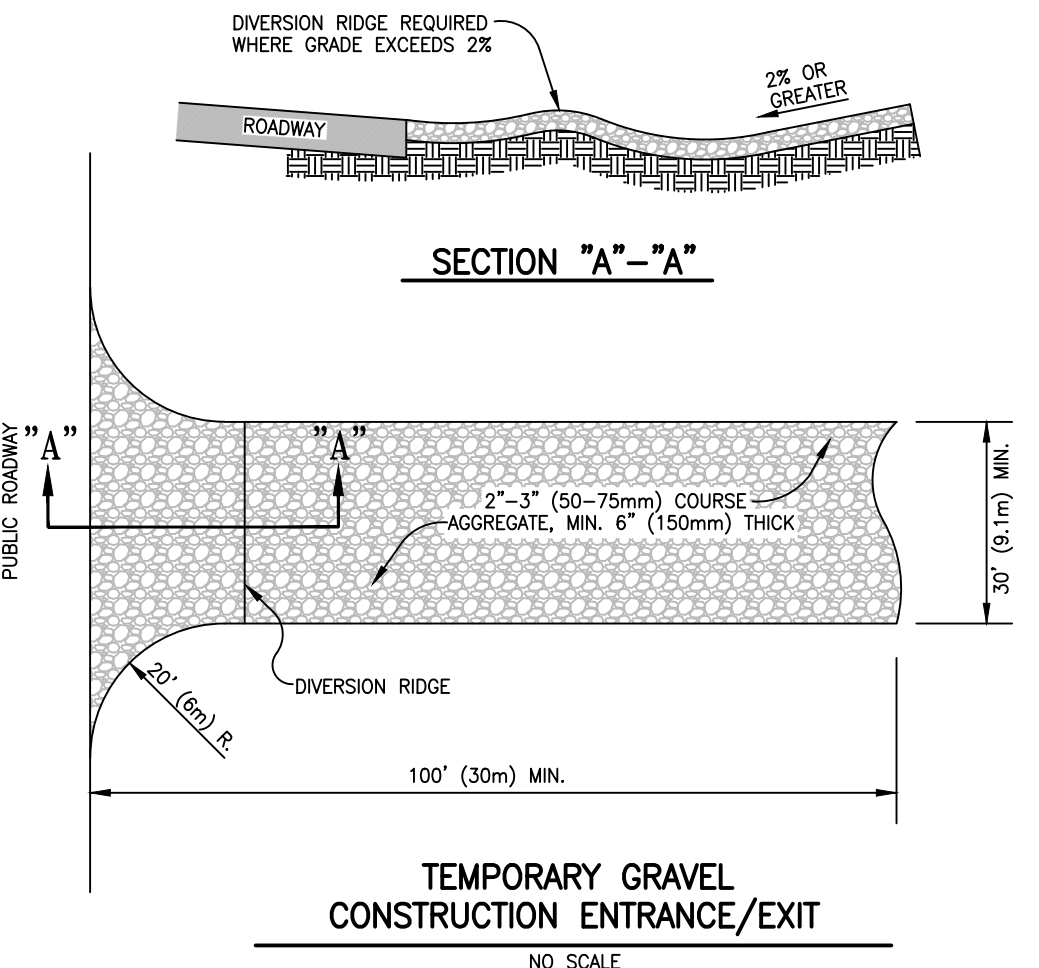
SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

SOIL EROSION CONTROL MEASURES		
1		TOPSOIL MAY BE STOCKPILED ABOVE BERM AREAS TO ACT AS A DIVERSION STOOPPLE SHOULD BE TEMPORARILY SEEDED
6		EXPECTED ESTABLISHMENT OF VEGETATIVE COVER EFFECTIVE FOR DRAMAWAYS WITH LOW VELOCITY SOAKED PLACED IN SMALL QUANTITIES BY UNPROTECTED PERSONNEL
13		USED WHERE VEGETATION IS NOT EARLY ESTABLISHED EFFECTIVE FOR HIGH VELOCITIES OR HIGH CONCENTRATIONS PERMITS RUNOFF TO INCREASE SOIL DISPERSES ENERGY FLOW AT SYSTEM OUTLETS
14		STABILIZES SOIL SURFACE, THIS MINIMIZES EROSION PERMITS CONSTRUCTION TRAFFIC IN ADVERSE WEATHER MAY BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS
15		PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RUNOFF VELOCITY IRREGULAR SURFACE WILL HELP SLOW VELOCITY
34		TRAPS SEDIMENT RELEASES RUNOFF AT NON-EROSIVE RATES CONTROLS RUNOFF AT SYSTEM OUTLETS CAN BE USUAL AMOUNTS
35		SYSTEM REMOVES COLLECTED RUNOFF FROM SITE, PARTICULARLY FROM PAVED AREAS CAN ACCEPT LARGE CONCENTRATIONS OF RUNOFF CONDUCTS RUNOFF TO MANIPULATED SEWER SYSTEM OR STABILIZED OUTLET LOCATION USE EACH BASIN TO COLLECT SEDIMENT
36		COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF MAY USE FILTER CLOTH OVER INLET
40		EASY TO SHAPE COLLECTS SEDIMENT MAY BE CLEANED AND EXPANDED AS NEEDED
49		REDUCES FLOW VELOCITY CATCHES SEDIMENT CAN BE CONSTRUCTED OF LOGS, STRAW, HAY, ROCK, LUMBER, WOODSHPY OR SAND BAGS
54		USES GEOTEXTILE FABRIC AND POSTS OR POLES. EASY TO CONSTRUCT AND LOCATE AS NECESSARY. (SEE DETAIL THIS SHEET)

T= TEMPORARY, P= PERMANENT  
TOTAL DISTURBED AREA= 1.20 AC.

DEWATERING NOTE:

- ANY DEWATERING REQUIRED SHALL HAVE A DEWATERING PLAN SUBMITTED PRIOR TO STARTING THE ACTIVITY AND MAY REQUIRE EGLE APPROVAL.



**SURFACE WATER & COUNTY DRAINS**

WETLAND - ON SITE  
 LAKES - APPROXIMATELY 9140 FT NORTHEAST TO HIDDEN LAKE  
 STREAMS - APPROXIMATELY 2890 FT EAST TO BOGUE CREEK  
 BASINS - APPROXIMATELY 205 FT SOUTH AT 7500 SANFORD ROAD  
 DRAINS - APPROXIMATELY 1890 FT WEST TO IRA ACRES DRAIN  
 PONDS - APPROXIMATELY 205 FT SOUTH AT 7500 SANFORD ROAD

**PROPOSED CONST. SCHEDULE FOR THE YEAR 2025**

ACTIVITY	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
DEMO & CLEAR							
MASS GRADING							
UNDERGROUND UTILITY							
BUILDING CONSTRUCTION							
FINAL GRADING							
SEED & MULCH							

**CONSTRUCTION SEQUENCE**

THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT EROSION IS MINIMIZED AND THAT COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES IS MAINTAINED THROUGHOUT EXECUTION OF THIS PROJECT.

DAYS	ACTIVITY
1	INSTALL SILT FENCE AS SHOWN ON PLANS.
5	ROUGH GRADE AND INSTALL STORM DRAINAGE.
1 DAY	INSTALL INLET PROTECTION ON STORM INLETS.
180 DAY	START BLDG. CONSTRUCTION
4 DAYS	INSTALL PAVEMENT
4 DAYS	FINE GRADE AROUND BUILDING, SPREAD TOPSOIL, SEED OR SOD AS APPLICABLE.
1 DAY	REMOVE ALL EROSION CONTROL STRUCTURES.
1 DAY	REMOVE ACCUMULATED SILT FROM ALL EXISTING DRAINAGE.

**CONTROLS & MEASURES NARRATIVE**

ACTIVITY	DESCRIPTION
MAINTAIN LANDSCAPING, REPLACE MULCH	COLLECT GRASS, TREE, AND SHRUB CLIPPINGS. DISPOSE IN APPROVED CONTAINER. REPLACE DEAD SOD, TREES AND SHRUBS.
CLEAN INLETS	REMOVE LITTER, SEDIMENT, AND DEBRIS. DISPOSE OF IN APPROVED LANDFILL.
COLLECT LITTER	DISPOSE OF WITH INLET DEBRIS.
SWEEP PARKING LOT	REMOVE MUD, DIRT, GREASE AND OIL WITH PERIODIC SWEEPING
DUST CONTROL	SPRINKLE WATER AS NEEDED

**CONTROLS & MEASURES POST CONSTRUCTION SEQUENCE**

ACTIVITY	WEEKLY	MONTHLY	AS REQUIRED
MAINTAIN LANDSCAPING, REPLACE MULCH	X	X	X
CLEAN INLETS		X	X
COLLECT LITTER	X		X
SWEEP PARKING LOT		X	X

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO ASSURANCE IS MADE AS TO THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND DEPTH OF ALL UTILITIES CROSSING IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS.

**BEBOSS Engineering**  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670

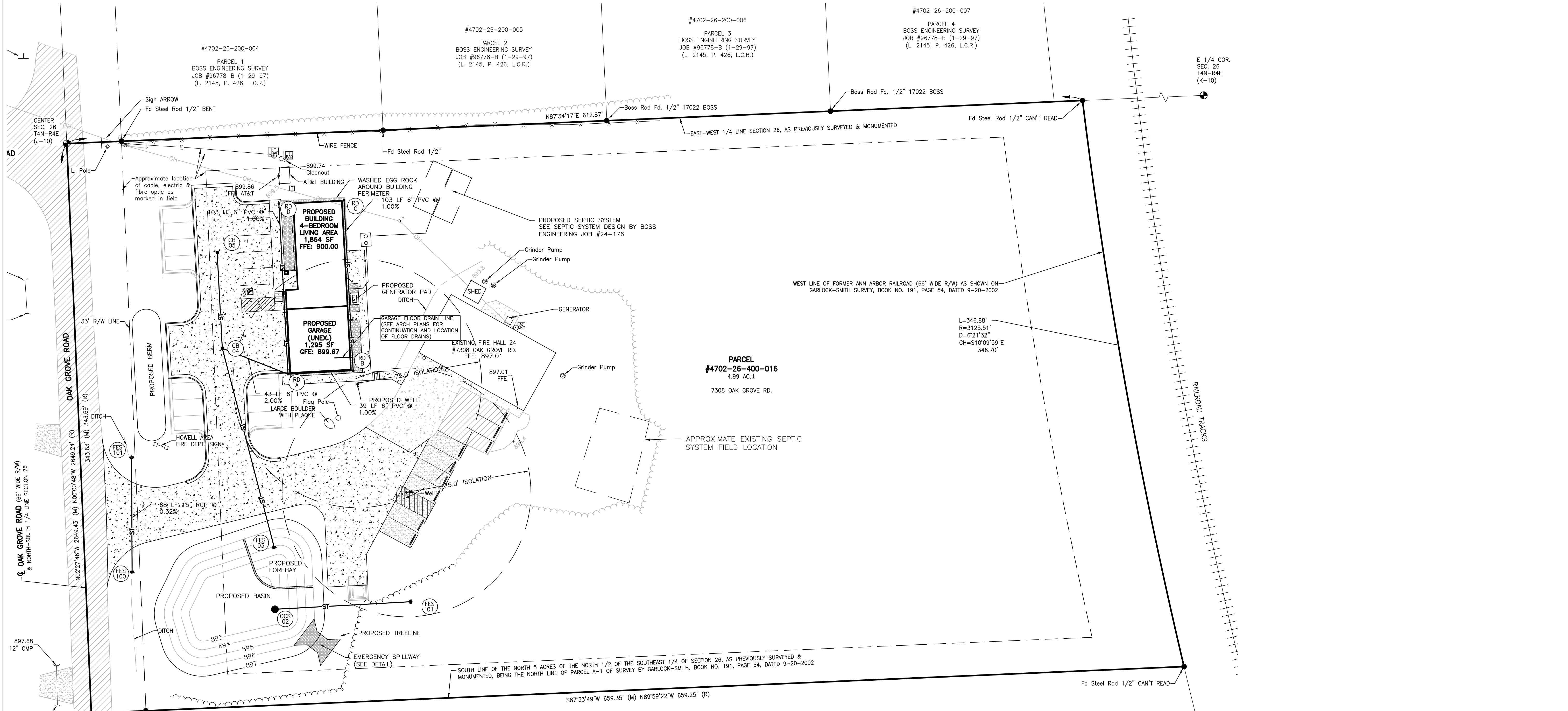
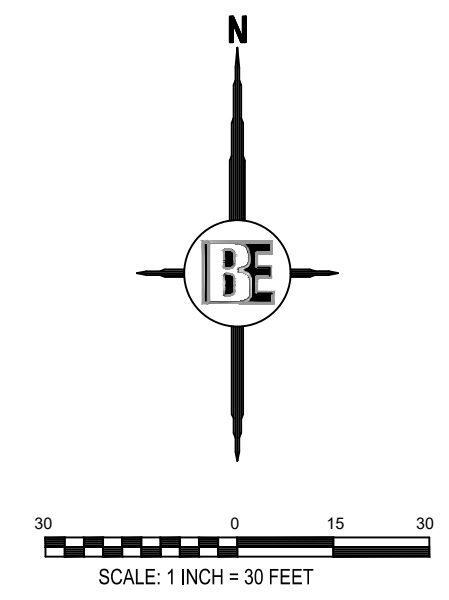
PROJECT: **LIVINGSTON COUNTY EMS - COHOCTAH SUBSTATION**

PREPARED FOR: **LINDHOUT ASSOCIATES AIA, PC**  
 10465 CITATION DRIVE  
 BRIGHTON, MI 48116  
 810.227.5668

TITLE: **SOIL EROSION & SEDIMENTATION CONTROL PLAN**

DESIGNED BY:	DATE
ST	
DRAWN BY:	MJD
CHECKED BY:	
SCALE:	1" = 20'
JOB NO.:	24-176
DATE:	9/10/2024
SHEET NO.:	6

SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



**100-YEAR PIPE FLOW CALCULATION FOR OCS**

FROM	TO	DRAIN AREA	ACRES	RUNOFF COEFF	EQUIV. AREA A * C	INTEN-SITY I	TIME OF CONC. Tc	ADD'L RUNOFF Q	RUNOFF (CFS) Q	PIPE LENGTH (LF)	PIPE DIA. (IN)	VELOCITY FLOWING FULL (FPS)	HYDRAULIC GRADIENT SLOPE %	ACTUAL SLOPE USED	MANNING COEFFICIENT	MANNING FLOW CAPACITY	MANNING'S VELOCITY (FT/SEC)	TIME (MIN)	HG ELEV UPPER END	HG ELEV LOWER END	RIM ELEV UPPER END	RIM ELEV LOWER END	INVERT UPPER END	INVERT LOWER END
C	B	C	0.04	0.90	0.03	4.38	15.00	0.15	103	6	2.01	0.49%	1.00%	0.013	0.56	2.87	0.60	897.49	896.46	900.00	900.00	897.09	896.06	
B	A	B	-	-	-	-	15.60	0.15	0.30	39	6	2.55	0.79%	1.00%	0.013	0.56	2.87	0.23	896.46	896.06	900.00	900.00	896.06	895.66
A	4	A	-	-	-	-	15.83	-	0.30	43	6	3.24	1.28%	2.00%	0.013	0.80	4.05	0.18	896.06	895.21	900.00	898.55	895.66	894.81
5	4	5	0.19	0.60	0.11	4.38	15.00	0.50	0.50	58	12	1.80	0.16%	0.32%	0.013	2.02	2.57	0.38	895.40	895.21	898.35	898.55	894.60	894.41
4	3	4	0.17	0.74	0.13	4.33	15.38	0.30	1.36	129	12	2.38	0.27%	0.32%	0.013	2.02	2.57	0.83	895.21	894.80	898.55	-	894.41	894.00
D	A	D	0.04	0.90	0.03	4.38	15.00	0.15	103	6	2.01	0.49%	1.00%	0.013	0.56	2.87	0.60	897.09	896.06	900.00	900.00	896.69	895.66	
2	1	ALL	0.73	0.58	0.42674	6.14	15.83	2.62	81	12	3.34	0.54%	0.32%	0.013	2.02	2.57	0.53	893.98	893.54	895.00	-	893.00	892.74	

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517.546.4836 FAX 517.548.1670

PROJECT: LIVINGSTON COUNTY EMS - COHOCTAH SUBSTATION

PREPARED FOR: LINDHOUT ASSOCIATES AIA, PC

10462 CITATION DRIVE  
BRIGHTON, MI 48116  
810.227.5668

TITLE: UTILITY PLAN

NO	BY	DATE	REVISION

DESIGNED BY: ST

CHECKED BY: MJD

SCALE: 1" = 30'

JOB NO: 24-176

DATE: 9/10/2024

SHEET NO. 7

SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

**LIVINGSTON COUNTY DETENTION BASIN CALCULATIONS**

AREA (ACRES)	IMPERVIOUS FACTOR	ACRE IMPERVIOUS
0.40	0.9	0.36
0.00	0.7	0.00
0.33	0.2	0.07

COMPOUND C: 0.58  
TOTAL DRAINAGE AREA: 0.73 ACRES

**WATER QUALITY VOLUME V<sub>WQ</sub>**  
 $V_{WQ} = 3.630(C)(A) = 1537 \text{ FT}^3$   
 Are upstream infiltration BMP's provided? No  
 $V_p = 0.15(V_{WQ}) = 231 \text{ FT}^3$

**WATER QUALITY RATE FOR MECHANICAL STRUCTURE**  
 $T_c = \text{MAX TIME OF CONCENTRATION} = 15.83 \text{ MIN}$   
 $Q_{WQ} = (C)(A)(30.2 / (T_c + 9.17))^{0.81} = 0.94 \text{ CFS}$

**CHANNEL PROTECTION VOLUME CONTROL - REQUIRED**  
 $V_{CP-R} = 4.719(C)(A) = 1998 \text{ FT}^3$

**CHANNEL PROTECTION VOLUME CONTROL - PROVIDED**  
 In-Situ Infiltration rate = 1 IN/HR  
 Are upstream infiltration BMP's provided? No  
 Basin Footprint Infiltration Area Required = 799 FT<sup>2</sup>  
 $V_{CP-P} = 0 \text{ FT}^3$

**CHANNEL PROTECTION RATE CONTROL (EXTENDED DETENTION VOLUME)**  
 $V_{ED} = 6.897(C)(A) = 2920 \text{ FT}^3$

**EXTENDED DETENTION OUTLET RATE**  
 $Q_{ED} = V_{ED} / (48 \text{ hr}) = 0.017 \text{ CFS}$   
 $H_{ED} = V_{ED} / (4,800 (H)^{1/2}) = 1.0 \text{ 1" HOLES}$   
 H = 3.00 FT  
 ELEV<sub>ED</sub> = 895.15 FT

**100-YEAR ALLOWABLE OUTLET RATE**  
 $Q_{DRAIN} = \text{Restricted Drain Rate} = 0.1 \text{ CFS/ACRE}$   
 $Q_{VIR} = 1.1055 - 0.206LN(A) = 1.000 \text{ CFS/ACRE}$   
 $Q_{100R} = (\text{LESSER OF } Q_{DRAIN} \text{ \& } Q_{VIR})^A = 0.073 \text{ CFS}$

CONTACT LIVINGSTON COUNTY DRAIN COMMISSION FOR ALLOWABLE RELEASE RATE

**100-YEAR DETENTION VOLUME**  
 $V_{100R} = 18985(C)(A) = 8038 \text{ FT}^3$   
 $Q_{100IN} = (C)(A)(83.3 / (T_c + 9.17))^{0.81} = 2.80 \text{ CFS}$   
 $R = 0.206 - 15 \ln(Q_{100R} / Q_{100IN}) = 0.7420$   
 $V_{100D} = V_{100R} - R \cdot V_{CP-P} = 5964 \text{ FT}^3$   
 Is  $V_{100D} \geq V_{ED}$ ? YES  
 $V_{100D} = 5964 \text{ FT}^3$

**FOREBAY STORAGE VOLUME PROVIDED:**

ELEVATION	AREA	VOLUME	TOTAL VOLUME	DHWL
896	1130	972	2,105	DHWL
895	814	1,133	1,133	
894	545	681	681	BOTTOM OF STORAGE
893	319	0	0	SUMP
892	136	0	0	SUMP
891	21	0	0	SUMP

**BASIN STORAGE PROVIDED**

ELEVATION	AREA	DEPTH	VOLUME	TOTAL VOLUME	
897	6467	1	5,254	11,767	FREEBOARD
896	4040	1	3,797	6,513	DHWL
895	3553	1	2,717	2,717	
894	2663	1	1,332	1,332	
893	1880				BOTTOM OF STORAGE

PROVIDED FOOTPRINT OF BASIN BOTTOM AREA: 1880 FT<sup>2</sup>

**OUTLET CONTROL STRUCTURE**

**Q<sub>ED ACTUAL</sub>**  
 $H_{ED} = 1 \text{ (1" HOLES)}$   
 $A_{ED} = 0.0055 \text{ FT}^2$   
 $Q_{ED-ACTUAL} = (A_{ED})(0.62 \times (2 \times 32.2 \times h)^{0.5}) = 0.047 \text{ CFS}$

**Q<sub>100ALL OUTLET</sub>**  
 $Q_{100-ACTUAL} = Q_{100R} - Q_{ED-ACTUAL} = 0.026 \text{ CFS}$   
 $A_{100} = Q_{100-ACTUAL} / (0.62 \times (2 \times 32.2 \times (ELEV_{DHWL} - ELEV_{ED}))^{0.5}) = 0.006 \text{ FT}^2$   
 AREA OF 1 INCH DIAMETER ORIFICE = 0.005 FT<sup>2</sup>  
 $\# \text{ ORIFICES} = A_{100} / 0.005 = 1.0 \text{ ORIFICES}$

**OVERFLOW SPILLWAY DESIGN**

Design Flow Rate:  $Q_{100IN} = 2.80 \text{ CFS}$   
 Depth of Spillway:  $D_{SPILL} = 6 \text{ INCHES}$   
 Width of Spillway:  $W_{SPILL} = Q_{100IN} / (3.33 D_{SPILL}^{3/2}) = 2.2 \text{ FT}$

**BASIN DESIGN SUMMARY**

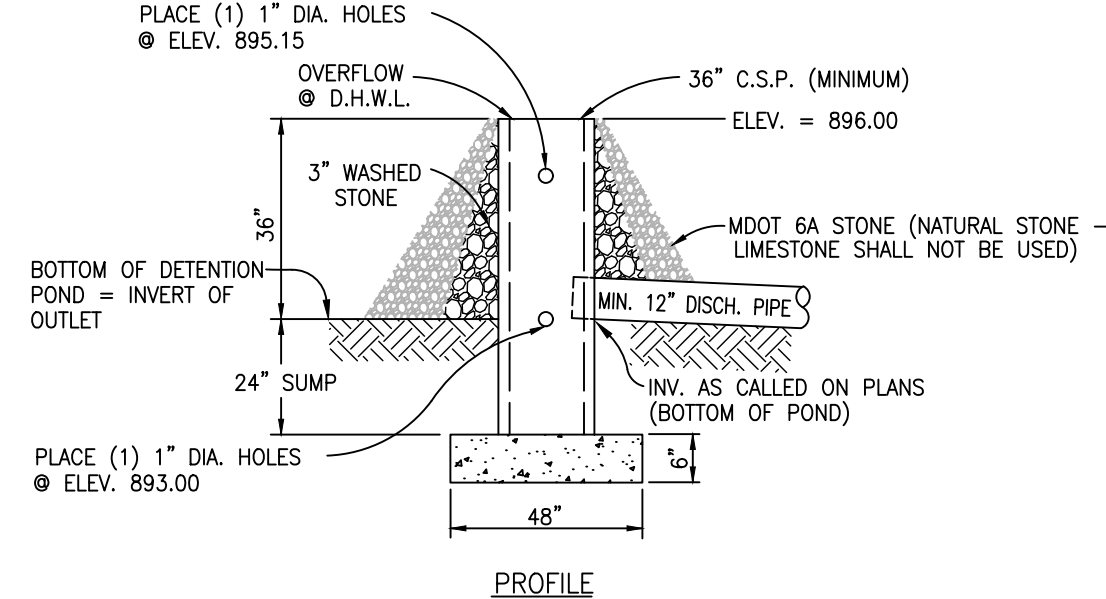
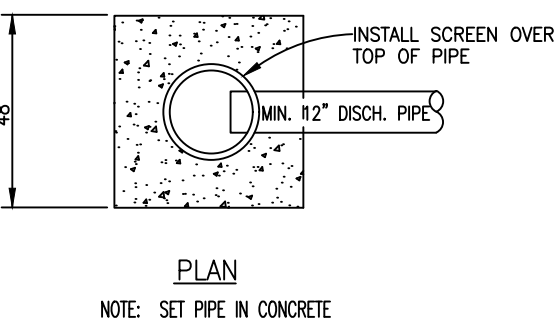
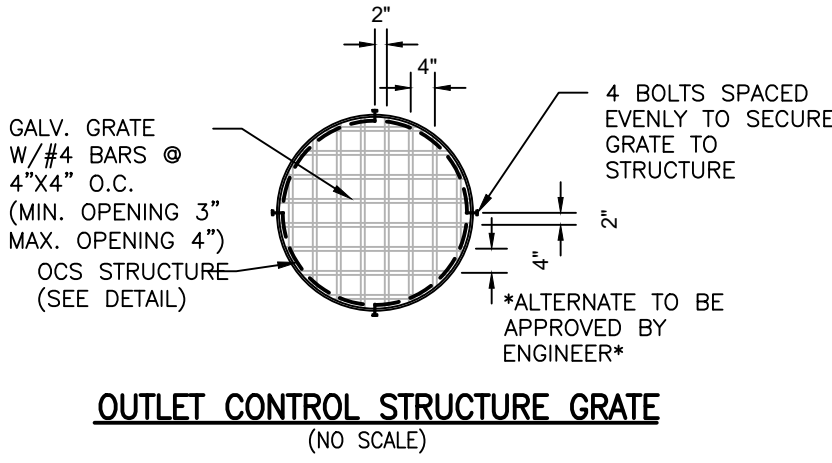
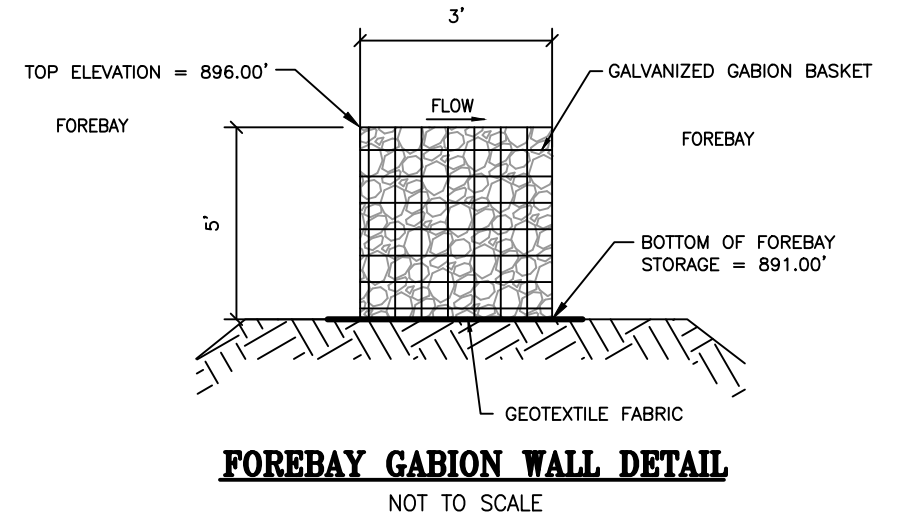
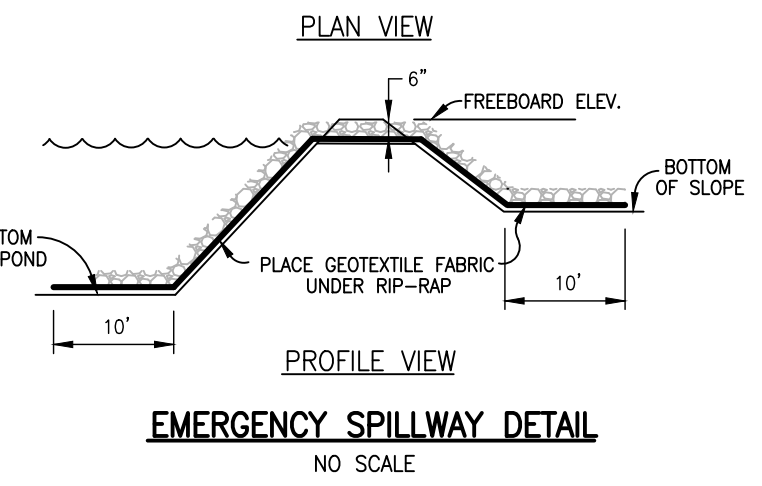
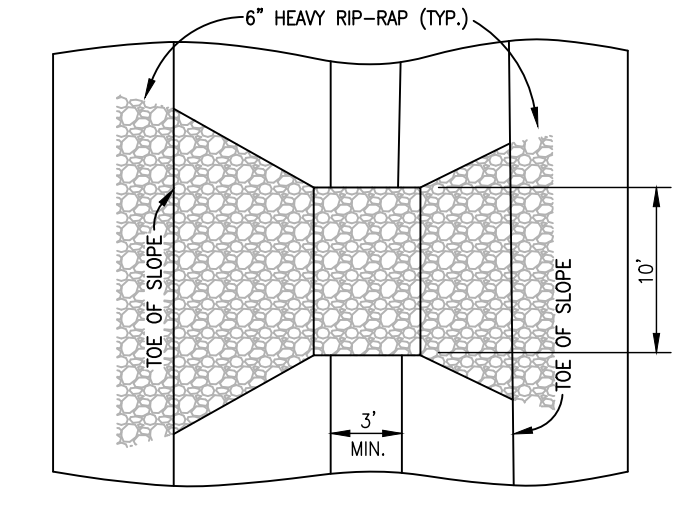
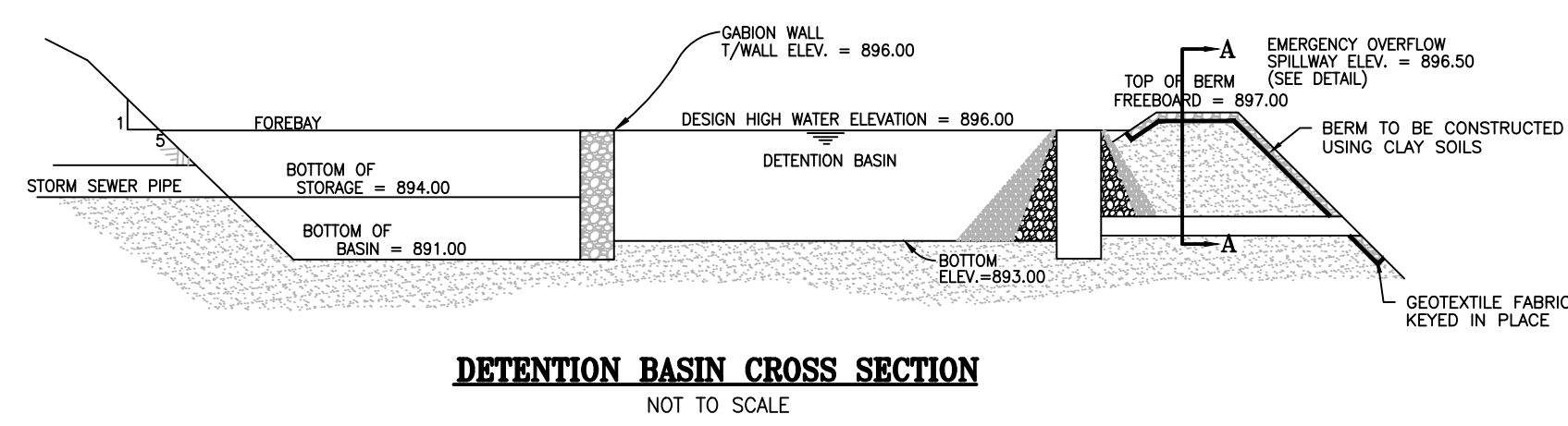
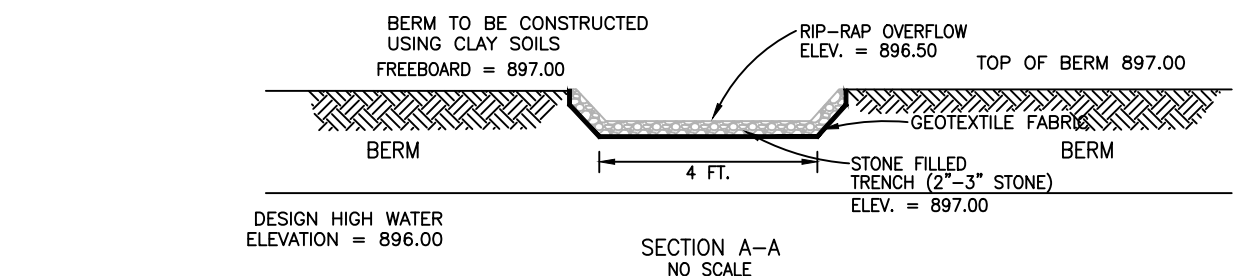
FOREBAY SIZE REQUIRED =	1537 FT <sup>3</sup>
FOREBAY SIZE PROVIDED =	2105 FT <sup>3</sup>
BASIN SIZE REQUIRED =	5964 FT <sup>3</sup>
BASIN SIZE PROVIDED =	6,513 FT <sup>3</sup>

**ORIFICE DESIGN SUMMARY**

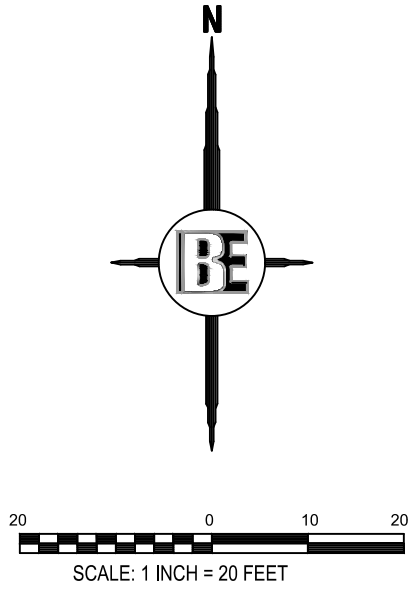
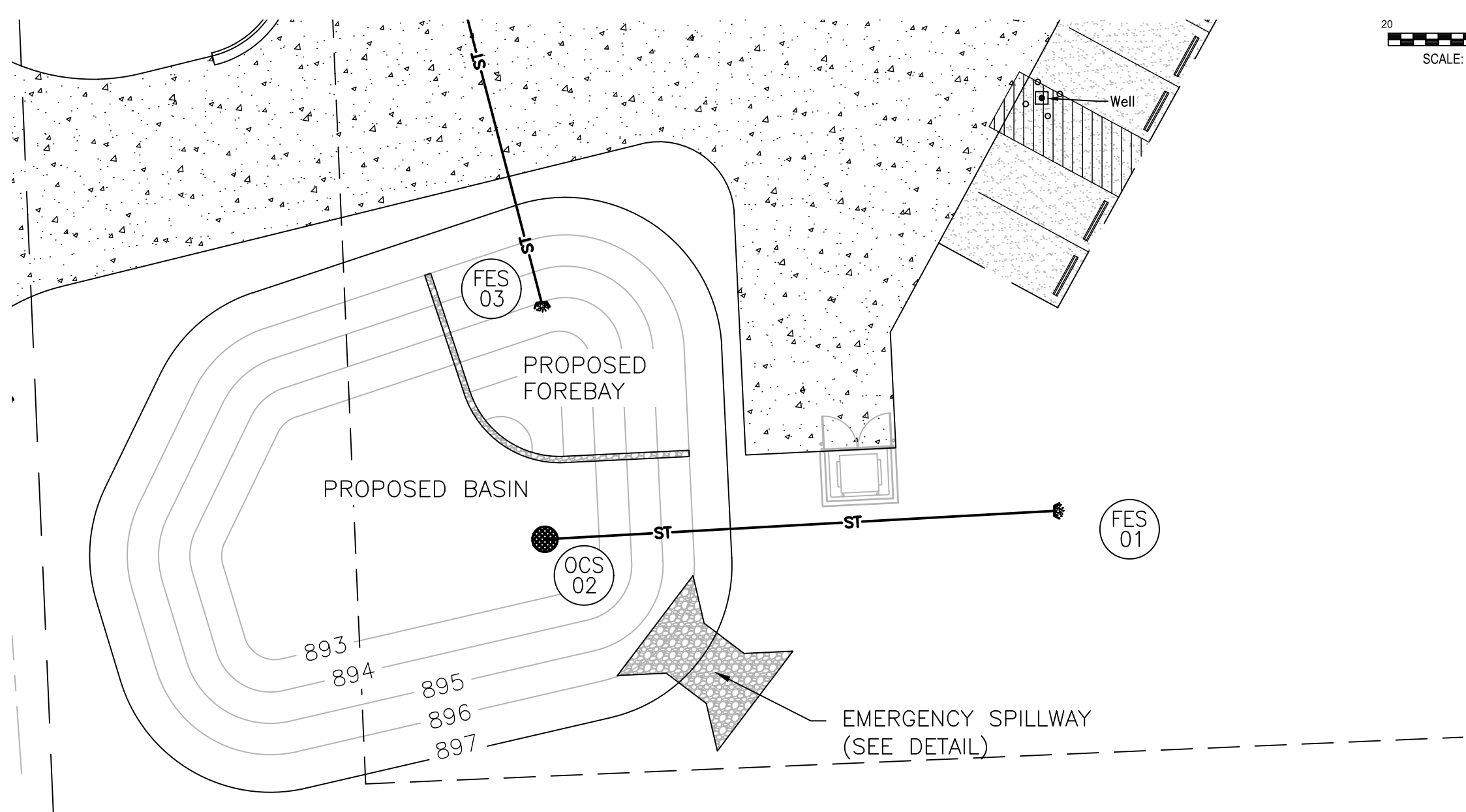
ELEVATION	# OF HOLES	DIAMETER OF HOLES
893.00	1.0	1-INCH
895.15	1.0	1-INCH

**OVERFLOW SPILLWAY SUMMARY**

WIDTH OF OVERFLOW SPILLWAY =	3 FT
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**LCDC DETENTION/SEDIMENTATION POND OUTLET CONTROL STRUCTURE (NO SCALE)**



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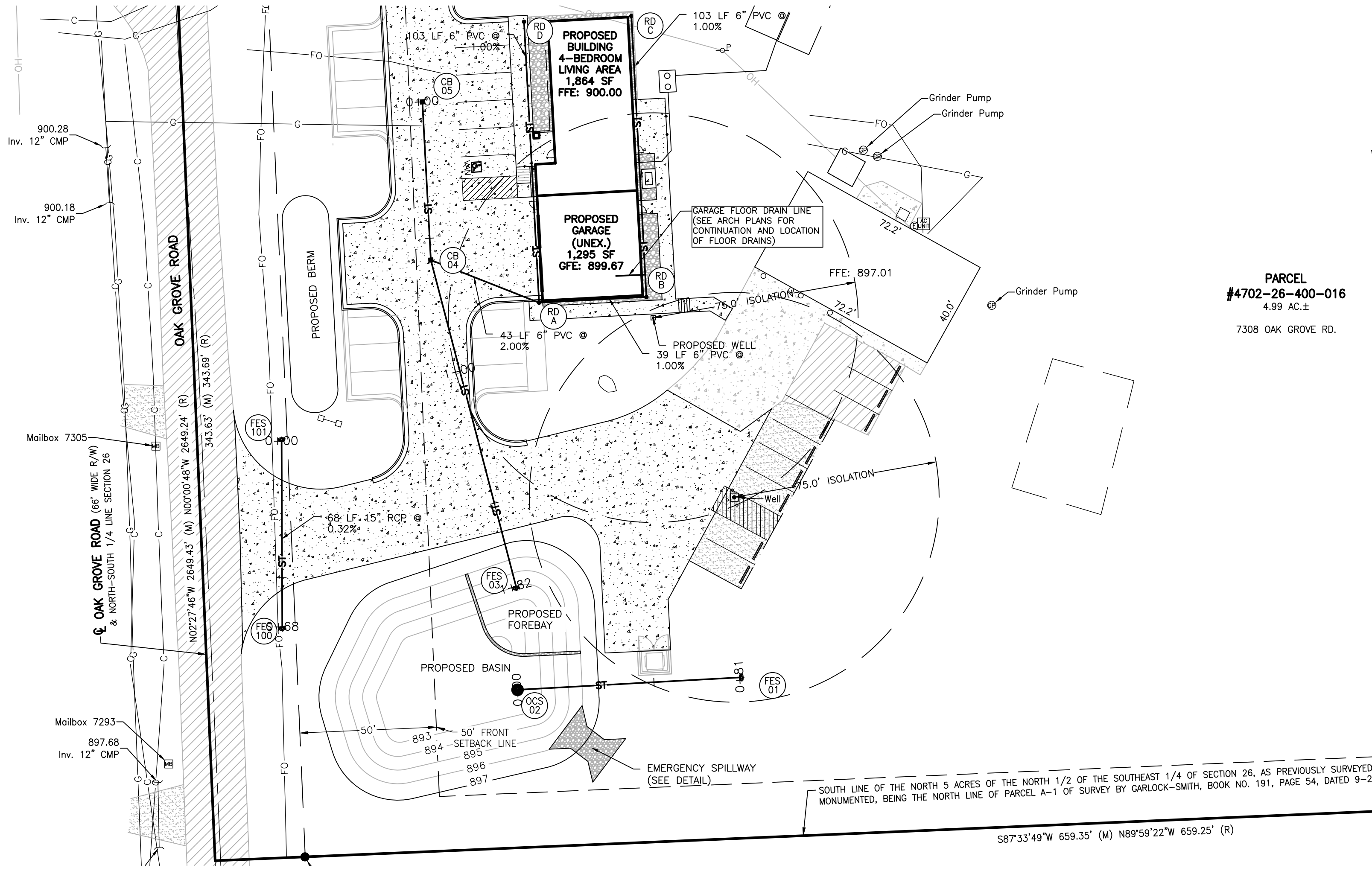
**BEBOSS Engineering**  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670

PROJECT: LIVINGSTON COUNTY EMS - COHOCTAH SUBSTATION  
 PREPARED FOR: LINDHOUT ASSOCIATES AIA, PC  
 10465 CITATION DRIVE  
 BRIGHTON, MI 48116  
 810.227.5568

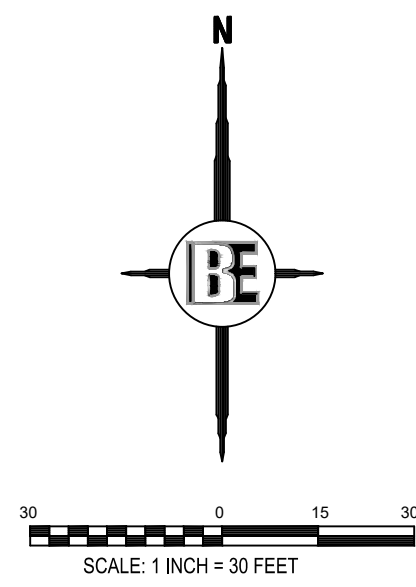
TITLE: BASIN DETAILS

NO.	BY	DATE	REVISION PER
1	ST		
2	MJD		

DESIGNED BY: ST  
 DRAWN BY: MJD  
 CHECKED BY:  
 SCALE: 1" = 20'  
 JOB NO: 24-176  
 DATE: 9/10/2024  
 SHEET NO. 8

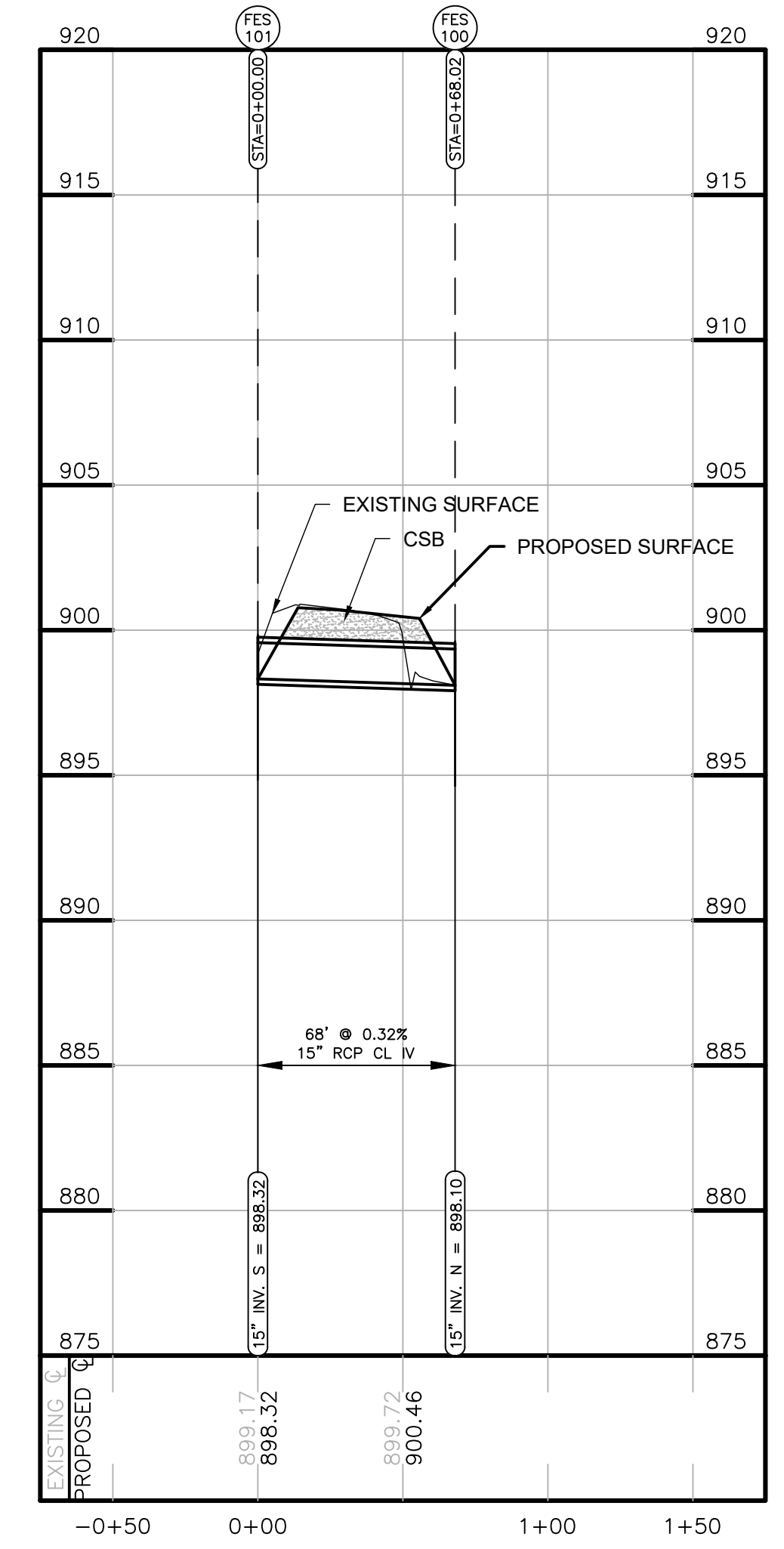
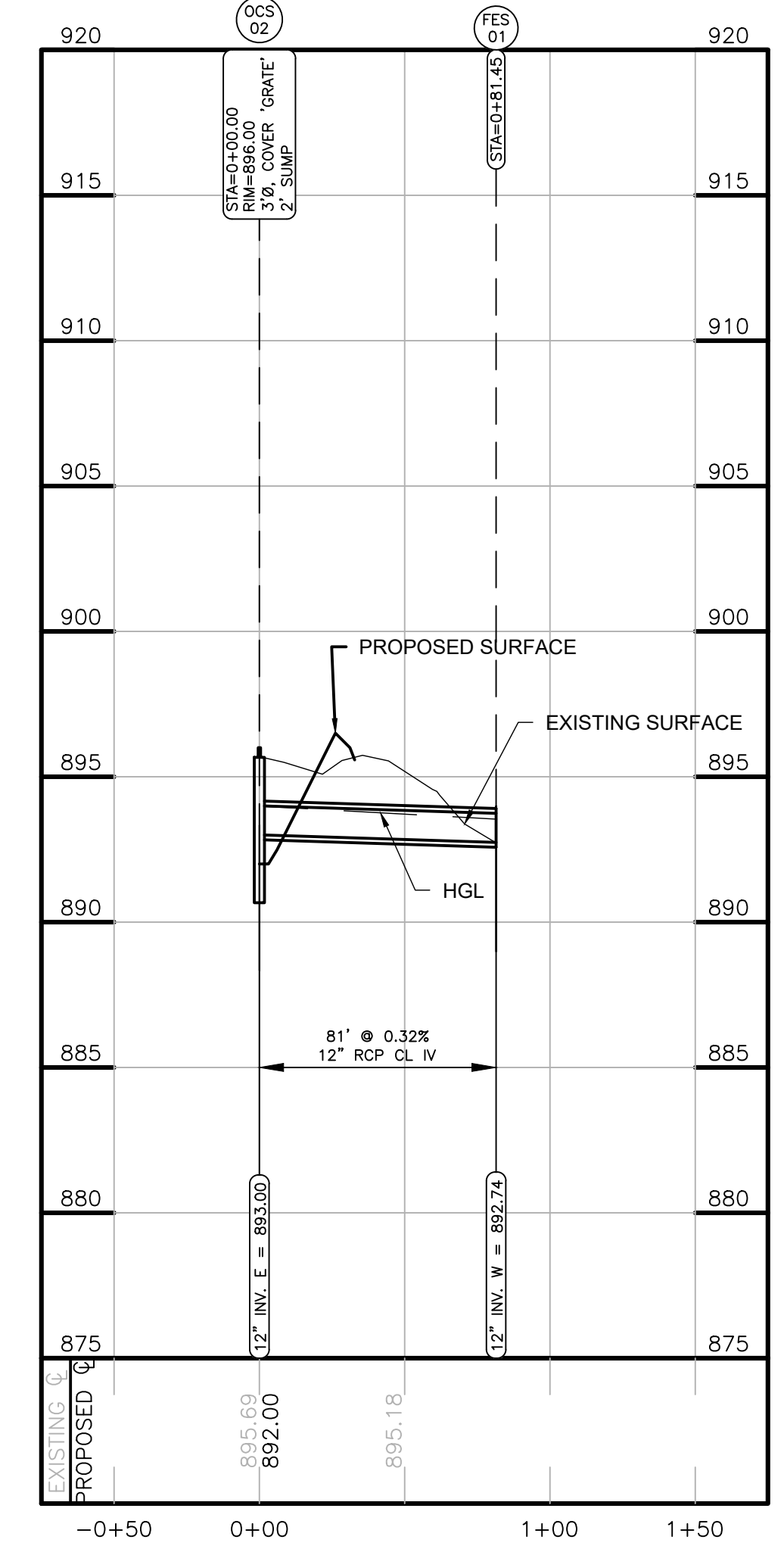
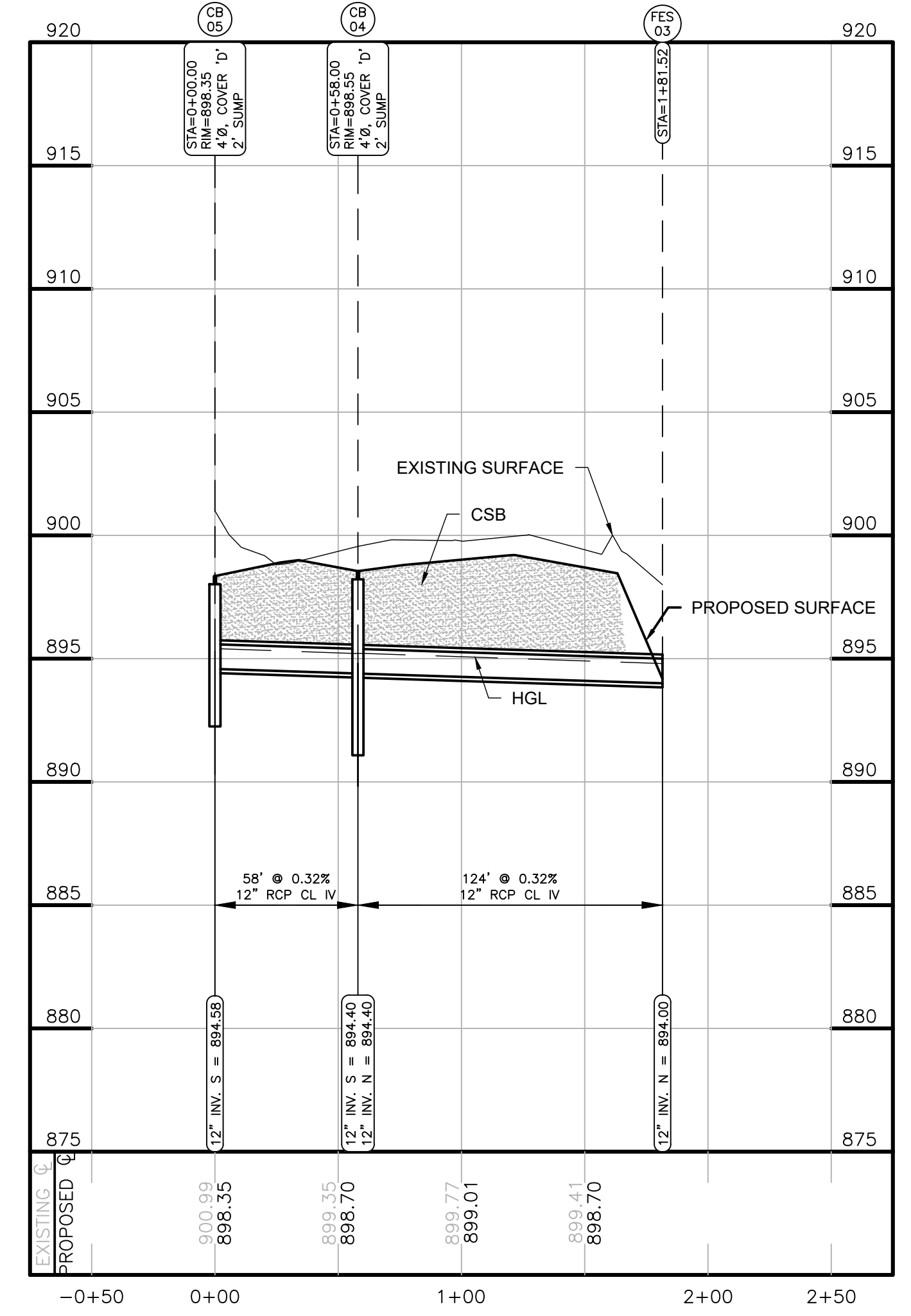


SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



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BE ENGINEERING, INC.  
CALL MSS DIG  
1-800-962-4827  
www.be-engineering.com



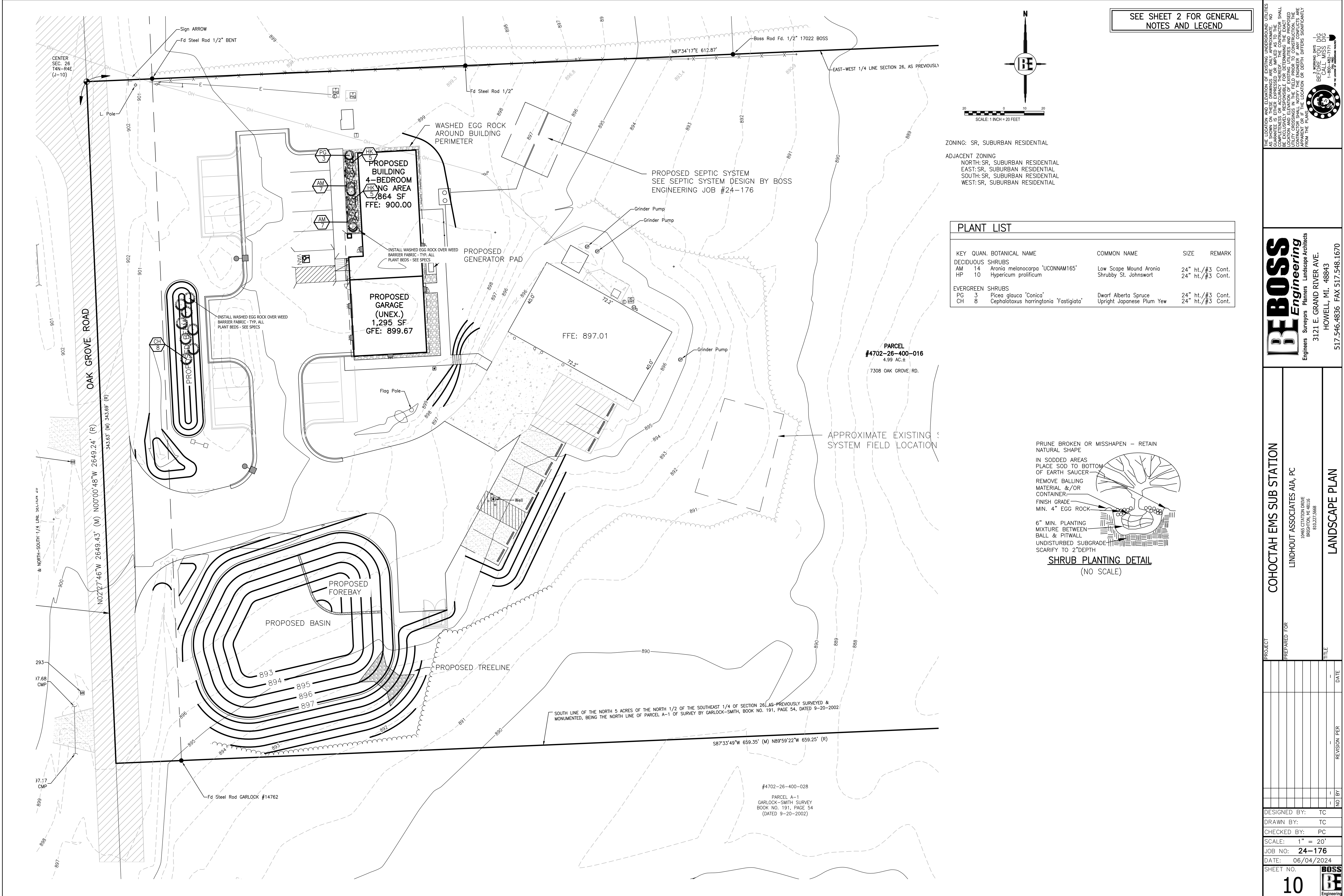
SCALE: 1" = 5' (VERT)  
1" = 50' (HORIZ)

PROJECT: COHOCTAH EMS SUB STATION  
PREPARED FOR: LINDHOUT ASSOCIATES AIA, PC  
10462 CITATION DRIVE  
BRIGHTON, MI 48116  
810-227-5668

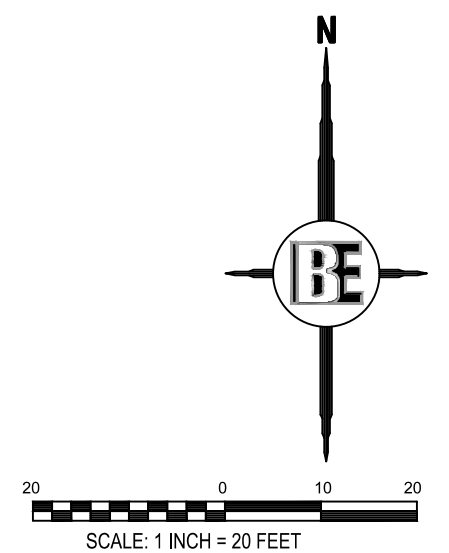
NO	BY	REVISION	PER	DATE

DESIGNED BY: ST  
DRAWN BY: MJD  
CHECKED BY:  
SCALE: 1" = 30'  
JOB NO: 24-176  
DATE: 06/04/2024  
SHEET NO: 9





SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

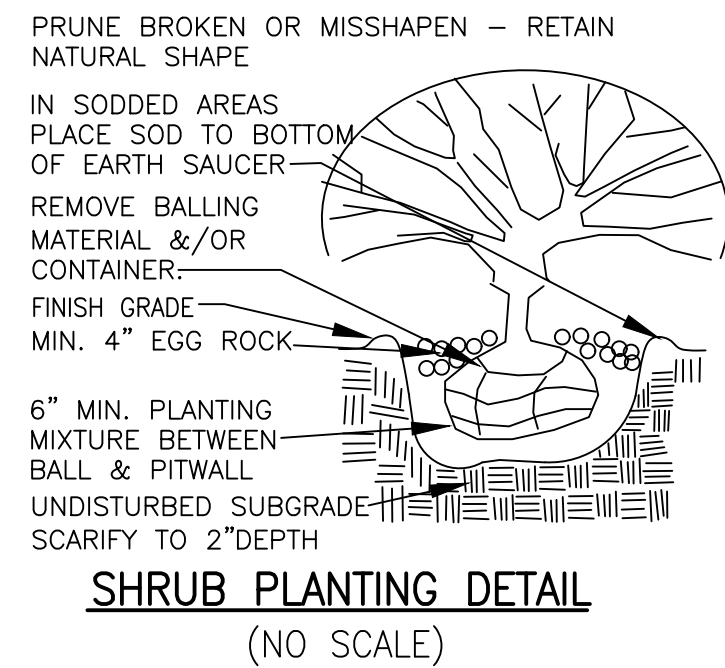


ZONING: SR, SUBURBAN RESIDENTIAL

ADJACENT ZONING  
 NORTH: SR, SUBURBAN RESIDENTIAL  
 EAST: SR, SUBURBAN RESIDENTIAL  
 SOUTH: SR, SUBURBAN RESIDENTIAL  
 WEST: SR, SUBURBAN RESIDENTIAL

**PLANT LIST**

KEY	QUAN.	BOTANICAL NAME	COMMON NAME	SIZE	REMARK
<b>DECIDUOUS SHRUBS</b>					
AM	14	<i>Aronia melanocarpa</i> 'UCONNAM165'	Low Scape Mound Aronia	24" ht./#3 Cont.	
HP	10	<i>Hypericum prolificum</i>	Shrubby St. Johnswort	24" ht./#3 Cont.	
<b>EVERGREEN SHRUBS</b>					
PG	3	<i>Picea glauca</i> 'Conica'	Dwarf Alberta Spruce	24" ht./#3 Cont.	
CH	8	<i>Cephalotaxus harringtonia</i> 'Fastigiata'	Upright Japanese Plum Yew	24" ht./#3 Cont.	



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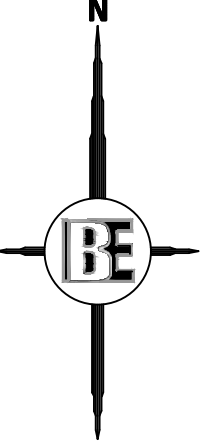
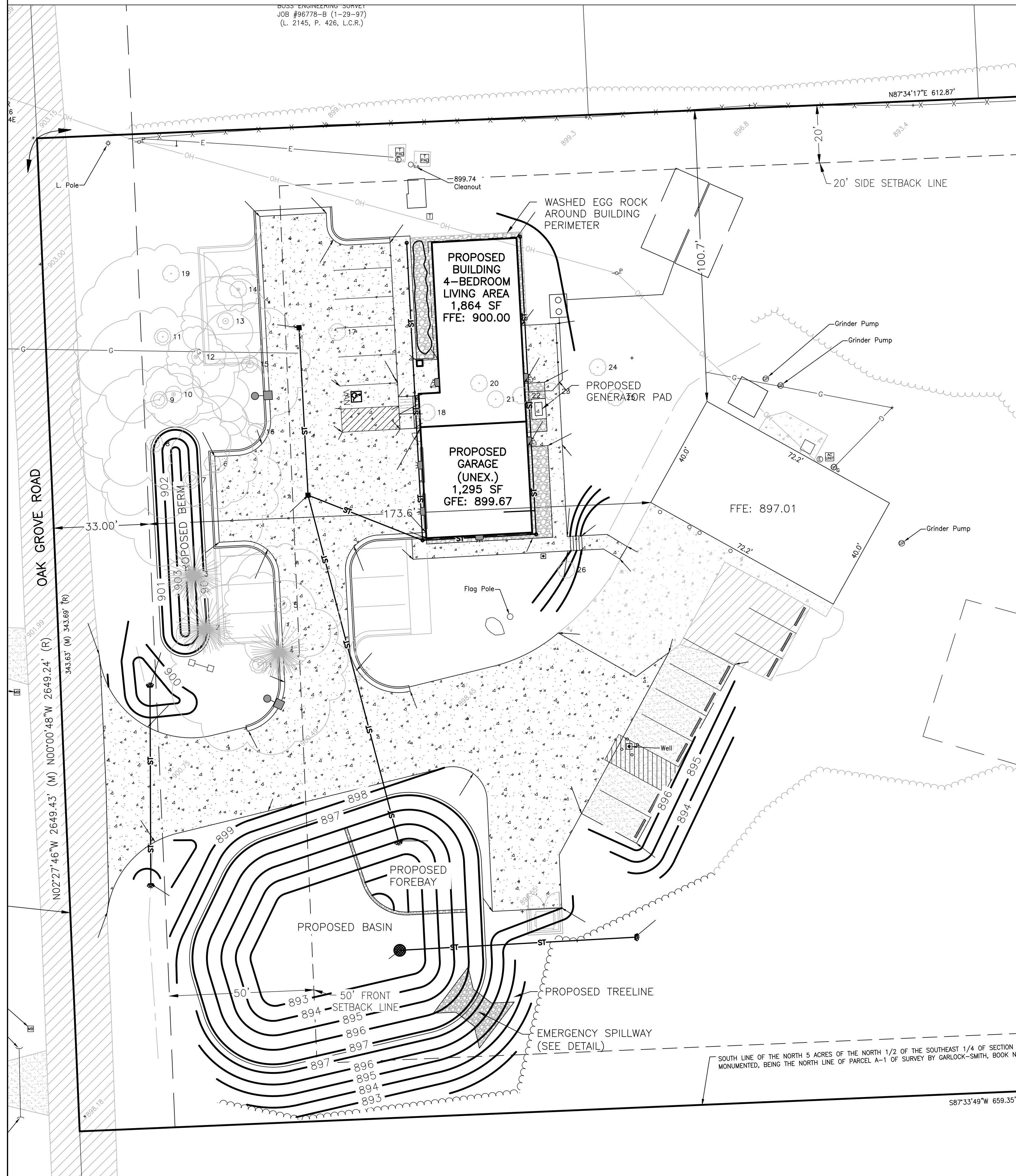
PROJECT: COHOCTAH EMS SUB STATION  
 PREPARED FOR: LINDHOUT ASSOCIATES AIA, PC  
 10465 CITATION DRIVE  
 BRIGHTON, MI 48116  
 810.227.5688  
 TITLE: LANDSCAPE PLAN

DESIGNED BY: TC  
 DRAWN BY: TC  
 CHECKED BY: PC

NO	BY	REVISION PER	DATE

DATE: 06/04/2024  
 JOB NO: 24-176  
 SCALE: 1" = 20'

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 AutoCAD PDF (General Documentation).pc3



SCALE: 1" = 20' FEET

TREE INVENTORY

Tree #	Botanical Name	Common Name	Dia.	Type	Other Dia.	Condition	
1	Quercus alba	White Oak	30	Deciduous		Good	
2	Pinus sylvestris	Scotch Pine	10	Coniferous		Good	TBR
3	Pinus sylvestris	Scotch Pine	6	Coniferous		Good	TBR
4	Pinus sylvestris	Scotch Pine	10	Coniferous		Good	TBR
5	Prunus serotina	Black Cherry	17	Deciduous		Good	
6	Carya cordiformis	Bitternut Hickory	13	Deciduous	13	Good	TBR
7	Quercus alba	White Oak	28	Deciduous		Good	TBR
8	Quercus alba	White Oak	16	Deciduous		Good	
9	Quercus alba	White Oak	26	Deciduous		Good	
10	Carya ovata	Shagbark Hickory	13	Deciduous		Good	
11	Quercus rubra	Red Oak	24	Deciduous		Good	
12	Quercus rubra	Red Oak	11	Deciduous		Good	
13	Prunus serotina	Black Cherry	16	Deciduous		Good	
14	Prunus serotina	Black Cherry	13	Deciduous		Good	
15	Quercus alba	White Oak	13	Deciduous		Good	
16	Quercus rubra	Red Oak	26	Deciduous		Good	TBR
17	Cornus florida	Flowering Dogwood	12	Deciduous		Good	TBR
18	Quercus rubra	Red Oak	19	Deciduous		Good	TBR
19	Carya ovata	Shagbark Hickory	14	Deciduous		Good	
20	Quercus alba	White Oak	12	Deciduous		Good	TBR
21	Carya cordiformis	Bitternut Hickory	8	Deciduous		Good	TBR
22	Carya ovata	Shagbark Hickory	9	Deciduous		Good	TBR
23	Ulmus americana	American Elm	16	Deciduous		Good	TBR
24	Carya ovata	Shagbark Hickory	10	Deciduous		Good	
25	Prunus serotina	Black Cherry	12	Deciduous		Good	
26	Cornus florida	Flowering Dogwood	9	Deciduous		Good	TBR

NATURAL FEATURES NARRATIVE  
THE AREA BETWEEN THE ROAD AND THE EXISTING FIRE HALL CONSISTS OF BERMS CROSSING BETWEEN DECIDUOUS CANOPY TREES (OAKS, HICKORIES, AND SOME BLACK CHERRY.) FORBS ARE LIMITED (A FEW GOLDENROD, HEART-LEAVED ASTER) WITH THE UNDERSTORY ON THE BERMS MAINLY BEING MOSS AND TURF. SHRUBS CONSISTED OF GOOSEBERRY, AUTUMN OLIVE, AND HONEYSUCKLE.

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND DEPTH OF EXISTING UTILITIES CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF EXISTING UTILITIES CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF EXISTING UTILITIES CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF EXISTING UTILITIES CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION.

**BEBOSS**  
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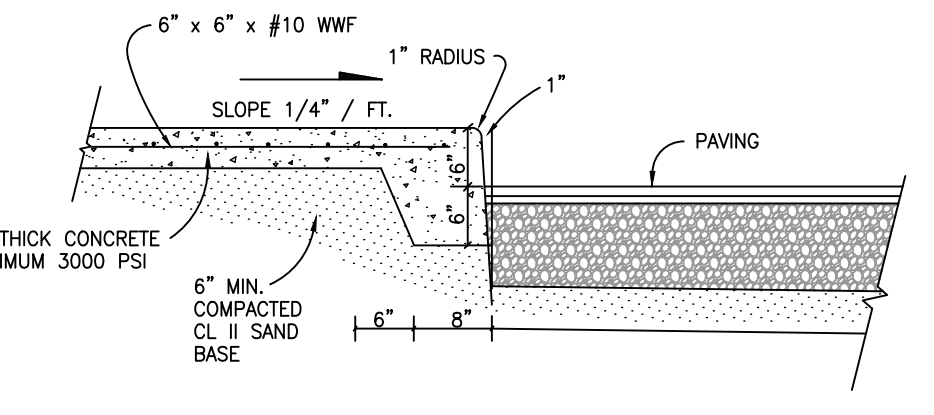
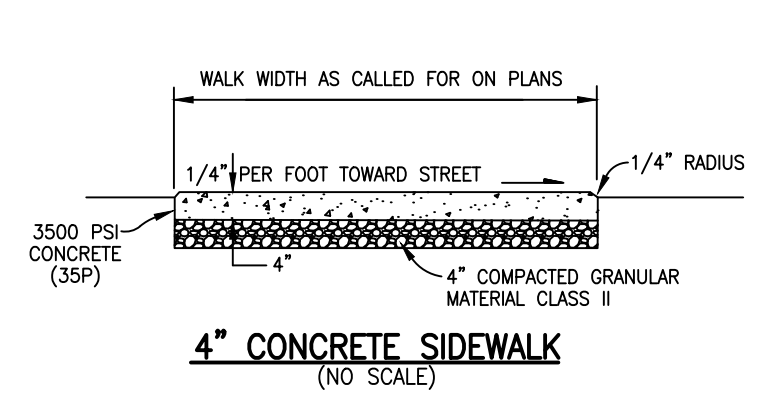
PROJECT: COCHOCTAH EMS SUB STATION  
PREPARED FOR: LINDHOUT ASSOCIATES AIA, PC  
10462 CITATION DRIVE  
BRIGHTON, MI 48116  
810.227.5668

NO.	BY	REVISION	PER	DATE

DESIGNED BY: TC  
DRAWN BY: TC  
CHECKED BY: PC  
SCALE: 1" = 20'  
JOB NO: 24-176  
DATE: 06/04/2024

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AutoCAD PLOT (s) - External Documentation.plt

SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



INTEGRAL CONCRETE WALK / CURB DETAIL (NO SCALE)

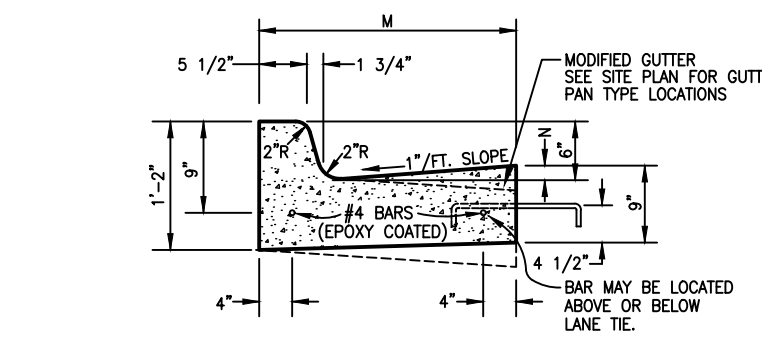
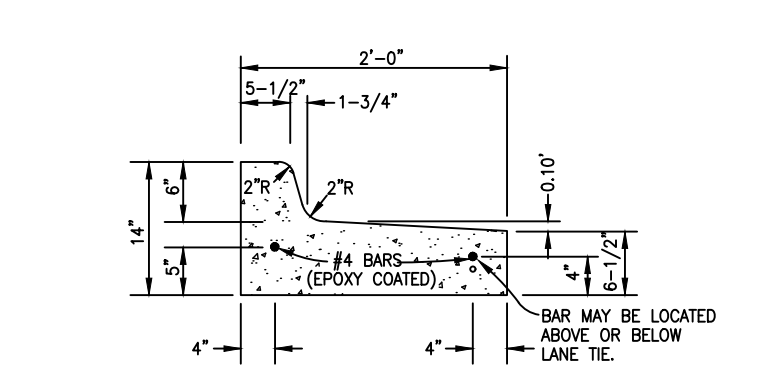
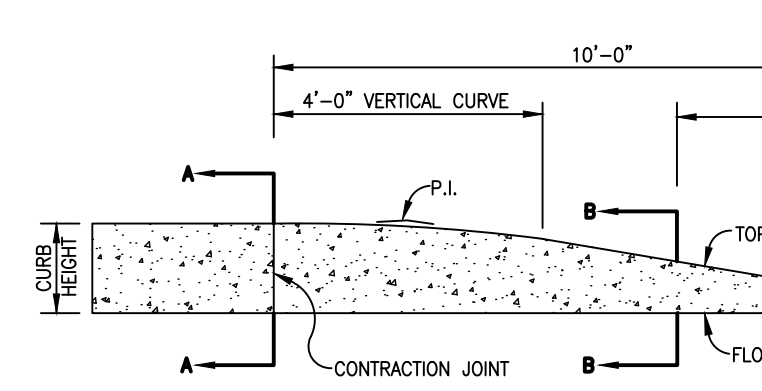


Table with 4 columns: DETAIL, DIMENSIONS, LANE TIES, CONCRETE CU.YD./LIN.FT.

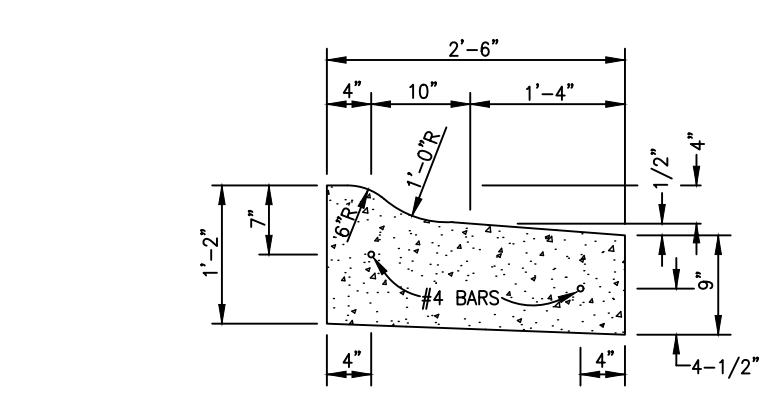
CONCRETE CURB & GUTTER TYPE F (NO SCALE)



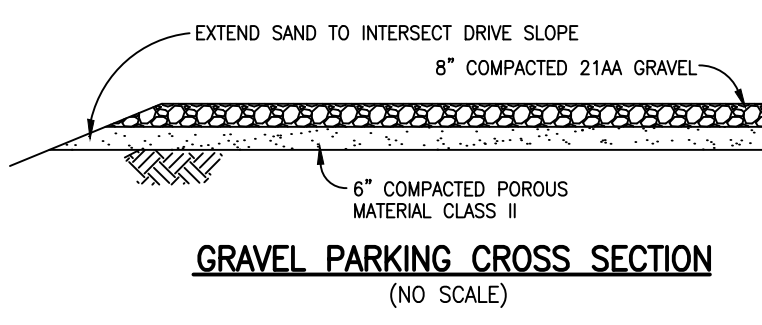
MODIFIED BARRIER (M.D.O.T. TYPE F4) (FOR ISLANDS ONLY) (NO SCALE)



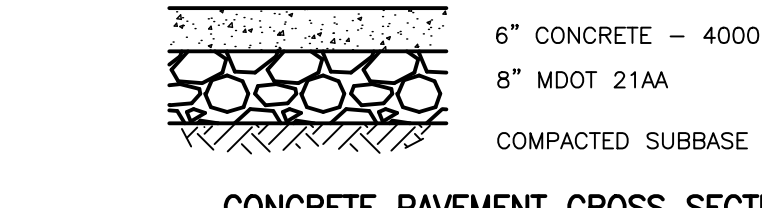
CONCRETE CURB AND GUTTER ENDINGS (NO SCALE)



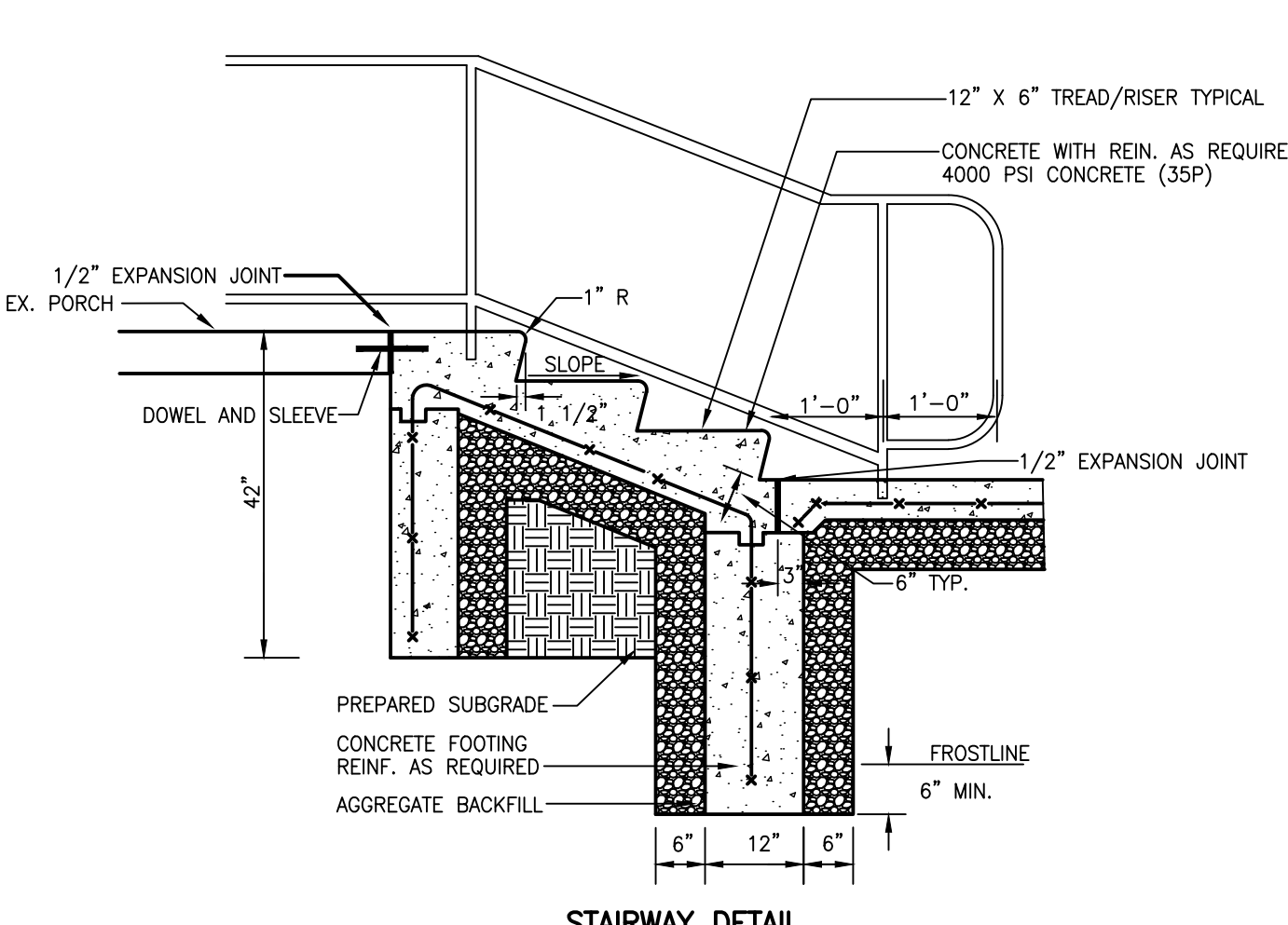
MODIFIED TYPE D CURB (REF. MDT DETAIL I-30D) (NO SCALE)



GRAVEL PARKING CROSS SECTION (NO SCALE)



CONCRETE PAVEMENT CROSS SECTION (NO SCALE)



STAIRWAY DETAIL (NO SCALE)

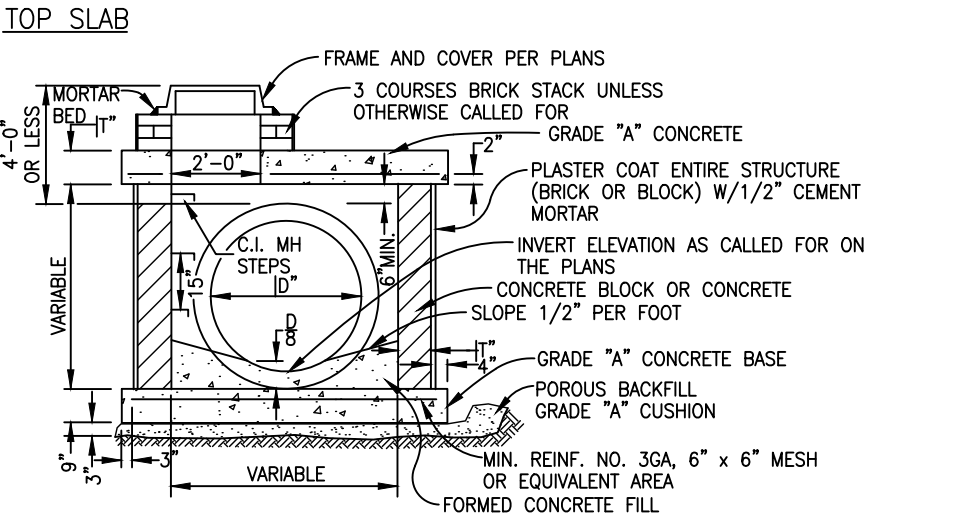
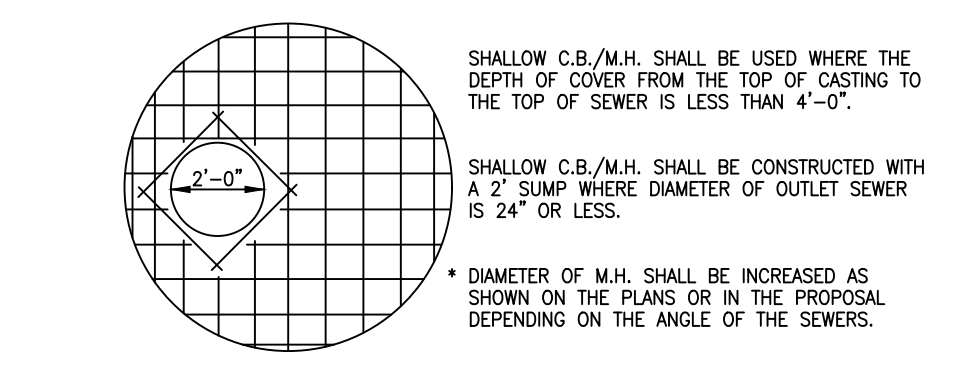
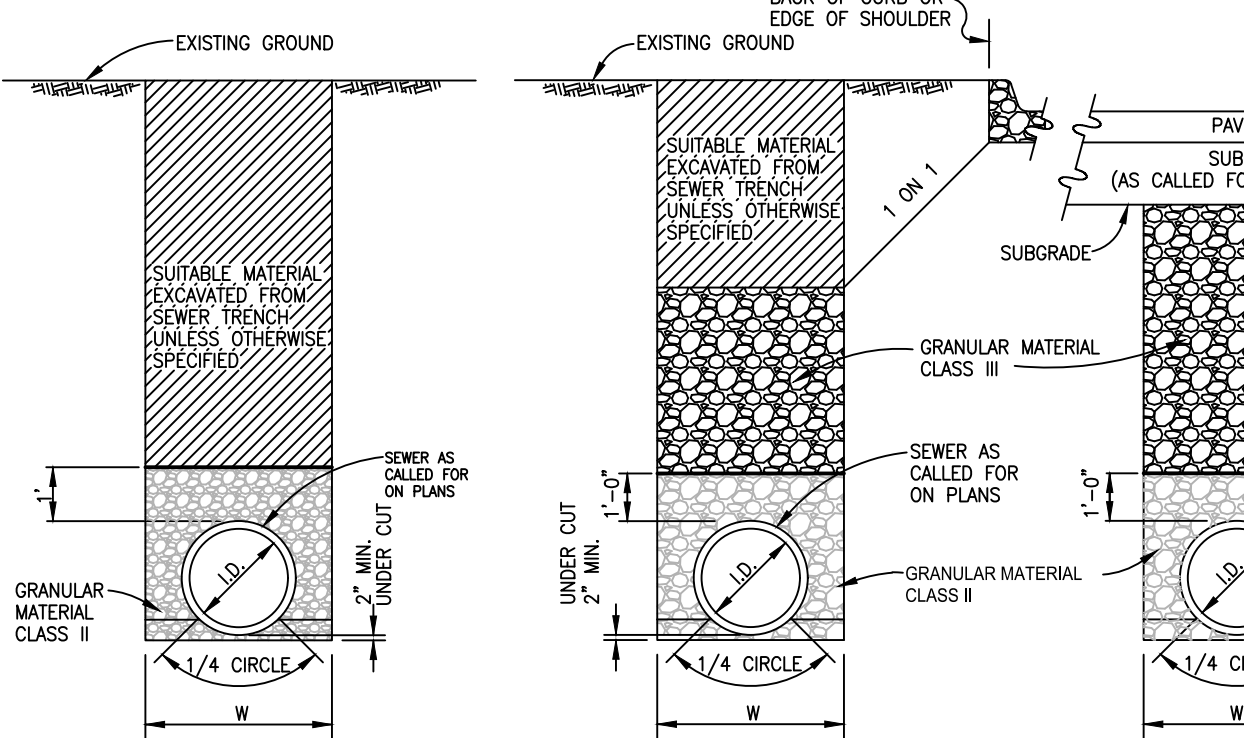
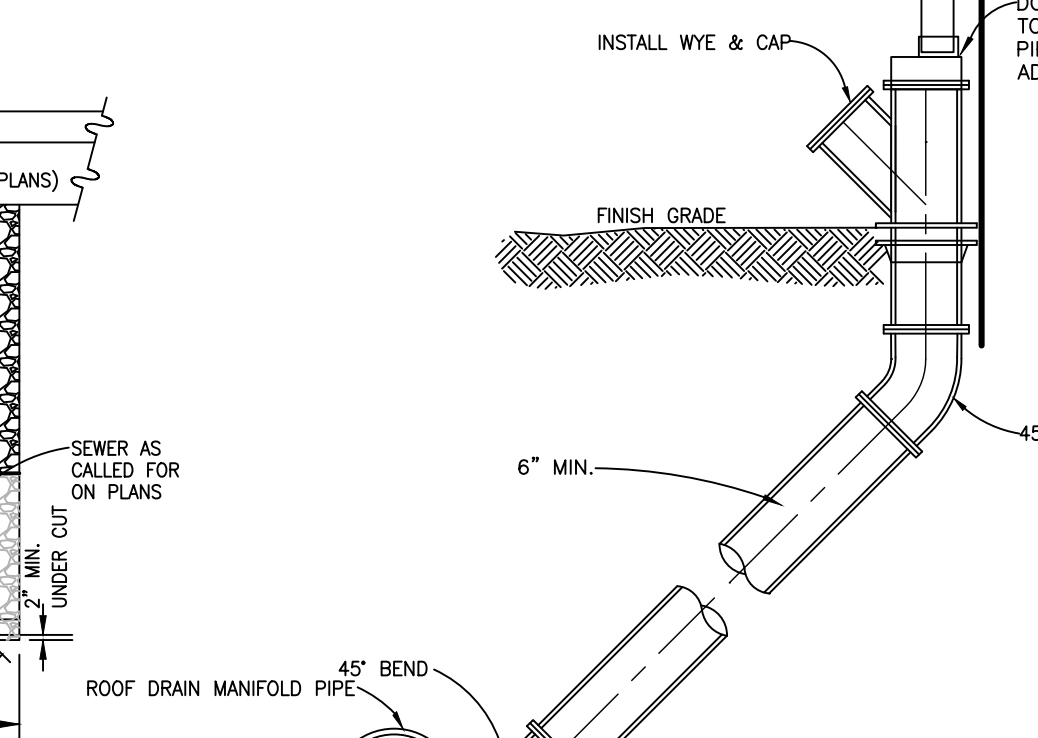


Table with 7 columns: OUTLET ID", M.H. I. DIA., TOP SLAB I", WALLS I", REINFORCED STEEL.

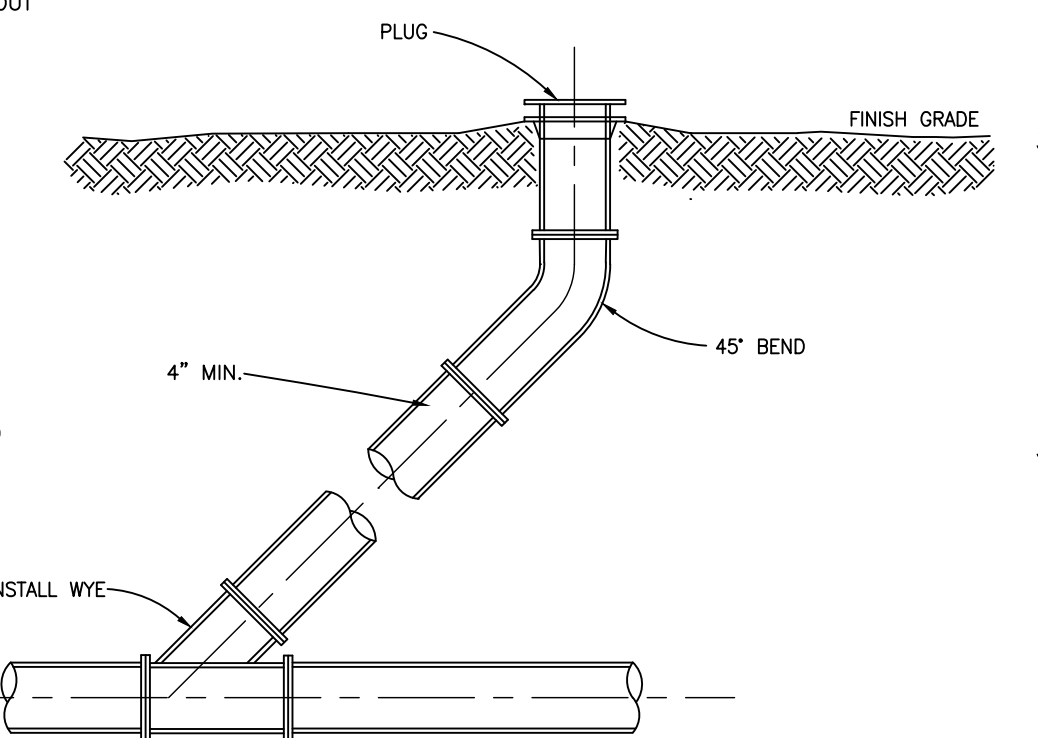
SHALLOW C.B./M.H. DETAIL (NO SCALE)



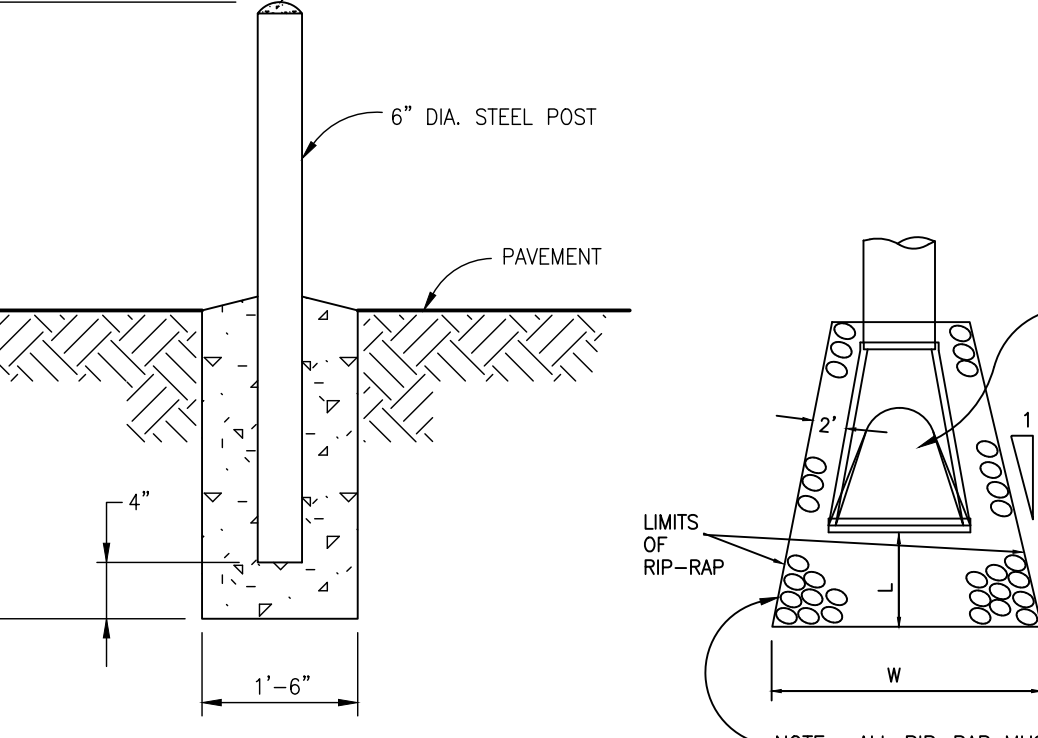
SEWER NOT UNDER ROADBED (REF. MDT DETAIL IV-83D) NO SCALE



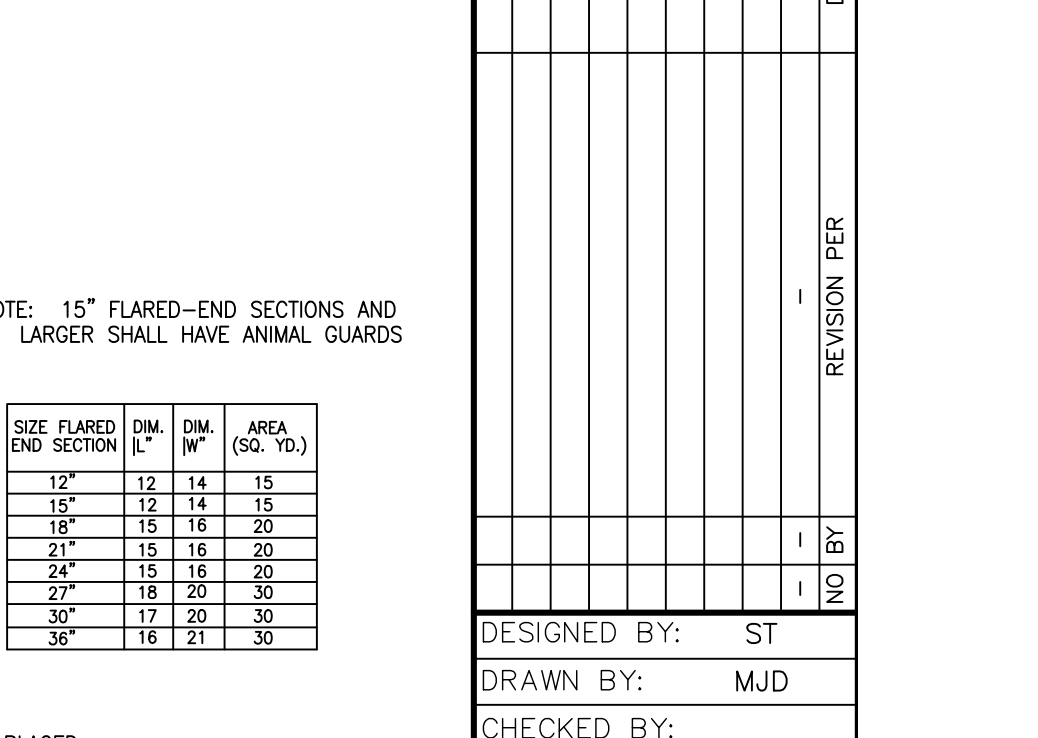
SEWER UNDER ROADBED OR WITHIN INFLUENCE OF ROADBED (REF. MDT DETAIL IV-83D) NO SCALE



STORM SEWER CLEANOUT NO SCALE



ROOF DRAIN CLEANOUT DETAIL NO SCALE

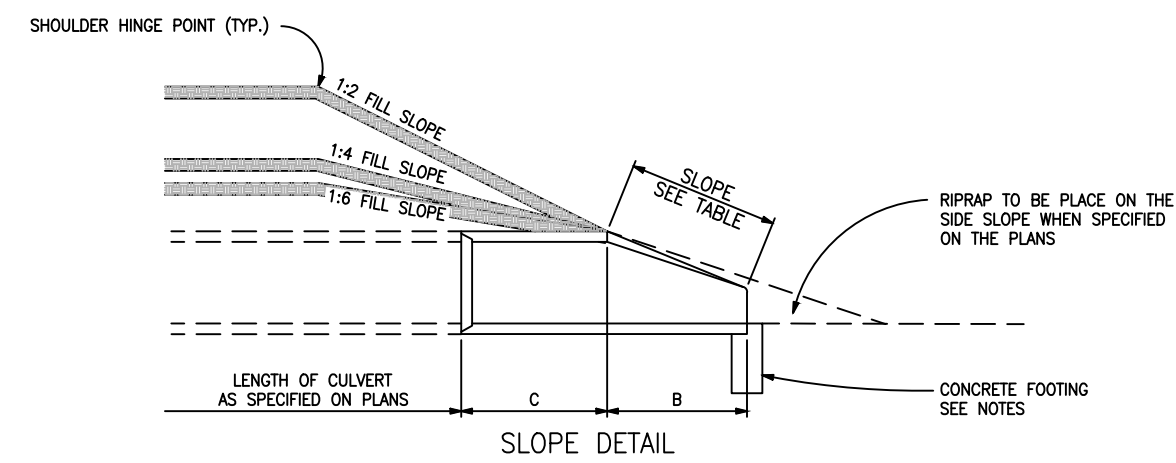


STORM SEWER CLEANOUT NO SCALE

LIVINGSTON COUNTY SOIL EROSION PERMIT TEMPLATE TEMPORARY CONTROLS AND SEQUENCE

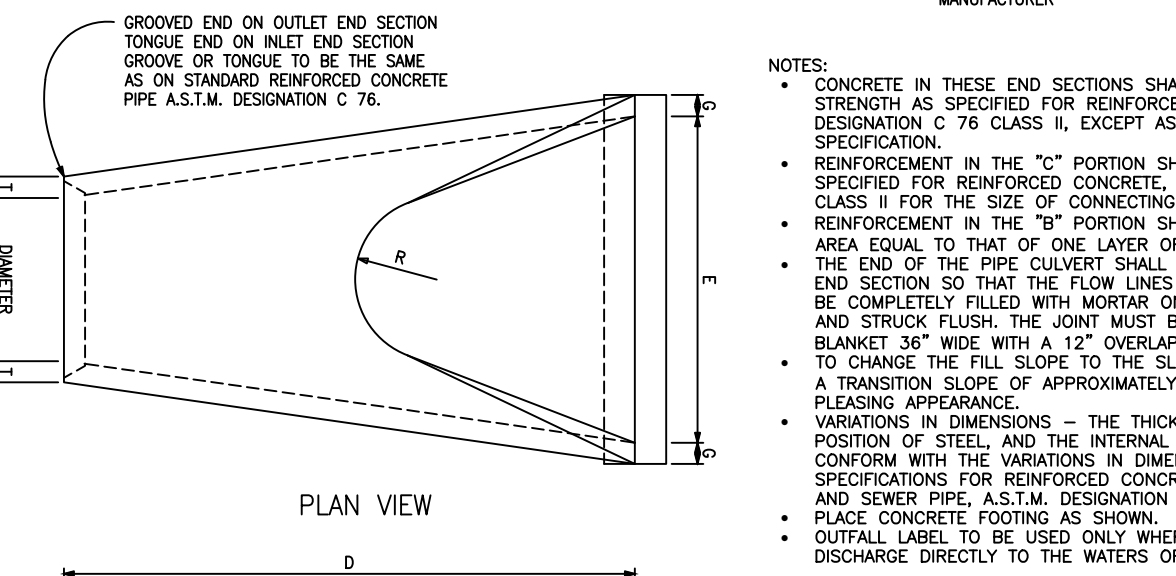
- 1. NOTIFY LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE 24 HOURS PRIOR TO START OF GRADE WORK.
2. IN ACCORDANCE WITH PUBLIC ACT NO. 53, OF 1974 THE PERMIT HOLDER SHALL CALL MISS DIG FOR STAKING AND LOCATING OF UTILITIES...
3. (IMPORTANT NOTICE) RETENTION/RETENTION PONDS SHALL BE EXCAVATED, TOPSOILED, SEEDED, MULCHED AND TACKED PRIOR TO THE START OF MASSIVE EARTH DISRUPTION.
4. 36" M.D.O.T SPECIFICATION TYPE SILT FABRIC FENCE AS SHOWN ON PLANS SHALL BE PLACED AND MAINTAINED ALONG PERIMETER ON ALL LOW LYING AREAS OF THE CONSTRUCTION SITE TO FILTER RUNOFF BEFORE LEAVING PROJECT SITE.
5. ALL TEMPORARY EROSION CONTROL DEVICES AS NOTED ON PLANS SHALL BE INSTALLED PRIOR TO THE START OF MASSIVE EARTH DISTRIBUTION.
6. PLAN DOES DENOTE A DETAILED EROSION CONTROL DEVICE TO RESTRICT TRACKING OF MATERIAL ONTO THE HIGHWAY. STONE DIAPERS SHALL BE INSTALLED AT ALL INGRESS/EGRESS AREAS OF THE SITE PRIOR TO THE START OF MASSIVE EARTH DISRUPTION.
7. RETENTION/RETENTION/SEDIMENTATION PONDS SHALL BE EXCAVATED, TOPSOILED, SEEDED, MULCHED AND TACKED PRIOR TO THE START OF MASSIVE EARTH DISRUPTION.
8. DETENTION POND OUTLETS SHALL BE OF THE STANDPIPE AND STONE FILTER STABILIZATION SYSTEM. OUTLET FLOW SHALL NOT EXCEED 0.20 CUBIC FEET OF WATER PER SECOND/PER ACRE.
9. THE EMERGENCY SPILLWAY FROM THE DETENTION POND SHALL BE SODDED AND PEGGED, OR RIP RAPPED, 15 FEET PAST THE TOE OF THE SLOPE OF THE BERM.
10. DIKES AND BERMS SHALL BE FREE OF ALL ORGANIC MATTER.
11. RETENTION/RETENTION PONDS SHALL BE FENCED WITH A 4' CHAIN LINK FENCE, INCLUDING A 12' ACCESS GATE FOR MAINTENANCE UNLESS MINIMUM 5 FT. HORIZONTAL TO 1 FT. VERTICAL SIDE SLOPES ARE PROVIDED.
12. ALL UNIMPROVED DISTURBED AREAS SHALL BE STRIPPED OF TOPSOIL WHICH WILL BE STORED ONSITE DURING THE EXCAVATING STAGE.
13. SOIL EROSION CONTROLS SHALL BE MONITORED DAILY BY THE ON-SITE ENGINEER, OR CONTRACTOR, WHICHEVER CASE APPLIES.
14. ON SITE DITCHES SHALL BE OF THE FLAT BOTTOM TYPE MINIMUM WIDTH OF 2' WITH A MINIMUM OF 3 HORIZONTAL TO 1 VERTICAL SIDE SLOPES, 3:1.
15. DITCHES WITH STEEP SLOPES WILL NEED FLOW CHECKS TO PREVENT SCOURING OF THE DITCH BOTTOM. THESE SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER OR INSPECTOR.
16. SLOPES IN EXCESS OF 3 HORIZONTAL TO 1 VERTICAL SHALL NOT BE USED EXCEPT WITH A MECHANICAL DEVICE SUCH AS A RETAINING WALL, TERRACING, OR OTHER PRIOR APPROVED DEVICE.
17. STORM DRAINS
18. STORM WATER INLETS SHALL HAVE AS A TEMPORARY CONTROL A STRAW BALE BARRIER AND STONE FILTER INSTALLED AROUND THE INLET DURING CONSTRUCTION.
19. BURLAP AND PEA STONE FILTERS WILL NEED TO BE CHANGED AFTER EACH RAINFALL.
20. COUNTY CODE REQUIRES A MINIMUM PIPE SIZE OF 12" IN DIAMETER. IF SMALLER PIPE IS NEEDED FOR OUTLET PURPOSES THE 12" CAN BE BAFFLED TO THE CORRECT SIZE.
21. ALL STORM DRAIN OUTLETS 15" IN DIAMETER OR LARGER SHALL HAVE ANIMAL GUARDS INSTALLED TO PREVENT ENTRANCE TO THE SYSTEM.

- 22. ALL STORM DRAINAGE PIPE 30" IN DIAMETER OR LARGER SHALL BE POINTED, AT THE JOINTS ON THE INSIDE WITH MORTAR, AFTER BACKFILLING.
23. ALL STORM DRAIN OUTLETS THAT DO NOT EMPTY INTO THE RETENTION/RETENTION POND SHALL HAVE A TEMPORARY 5'X10'X3' SUMP INSTALLED AT THE TERMINATION OF THE STORM SEWER.
24. STORM WATER OUTLETS DO DENOTE RIP RAP. ALL OUTLETS SHALL BE RIP RAPPED OVER KEVED FILTER FABRIC WITH A MINIMUM OF 15 SQ. YARDS OF 6" OR LARGER STONE.
25. RIP RAP AS NOTED ON THE PLAN SHALL BE OF A FUNNEL SHAPE CONSTRUCTION, WIDTH SHALL INCREASE AS DISTANCE FROM THE OUTLET POINT INCREASES AT A 3:1 RATIO.
26. RIP RAP SHALL BE 6" IN DIAMETER OR LARGER. GROUTING MAY BE NECESSARY, AND SHALL BE A MINIMUM OF 6" IN DEPTH WITH THE STONE SET IN THE CEMENT SLURRY.
27. STORM WATER OUTLET IS IN NEED OF A SPLASH BLOCK WHICH IS NOT NOTED ON THE PLAN. INSTALL SPLASH BLOCK IF SLOPE OF THE PIPE IS 4% OR GREATER.
28. IT WILL BE NECESSARY FOR THE DEVELOPER TO HAVE THE STORM DRAINAGE LINES CLEANED PRIOR TO FINAL INSPECTION BY THE LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE.
29. ALL UNIMPROVED DISTURBED AREAS SHALL BE RE-TOP SOILED, WITH A MINIMUM OF 3" OF MATERIAL, SEEDED, MULCHED AND TACKED WITHIN 15 DAYS OF THE COMPLETION OF THE MASSIVE EARTH DISRUPTION.
30. IN THE NON-GROWING SEASON, TEMPORARY STABILIZATION OF MASSIVELY EXPOSED AREAS FOR WINTER STABILIZATION SHALL BE DONE WITH STRAW MATTING.
31. PERIODIC INSPECTIONS WILL BE MADE THROUGHOUT THE COURSE OF THE PROJECT. IT WILL BE THE RESPONSIBILITY OF THE MANAGERS OF THE PROJECT TO CONTACT THIS OFFICE FOR THE FINAL INSPECTION AT THE END OF THE PROJECT.
32. THE ISSUING BUILDING DEPARTMENT SHALL NOT ISSUE THE CERTIFICATE OF OCCUPANCY UNTIL THE FINAL INSPECTION LETTER FROM THE LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE HAS BEEN OBTAINED.
33. PER THE LIVINGSTON COUNTY DRAIN COMMISSIONER THE SEEDING, FERTILIZER AND MULCH MINIMUM QUANTITIES SHALL BE AS FOLLOWS:
AS HYDRO-SEEDING HYDRO-SEEDING IS NOT ACCEPTABLE FOR SLOPES EXCEEDING 1%: IN SUCH CASES STABILIZATION SHALL BE DONE WITH STRAW MULCH WITH A TACKIFIER.
MAINTENANCE SCHEDULE FOR SOIL EROSION CONTROLS
1. SILT FENCE SHALL BE INSPECTED WEEKLY AND AFTER EACH MAJOR STORM EVENT.
2. TRACKING PAD SHALL BE INSPECTED MONTHLY FOR ACCUMULATED DIRT.
3. DETENTION/RETENTION POND SHALL BE INSPECTED QUARTERLY ON A PERMANENT BASIS.
4. CATCH BASINS SHALL BE INSPECTED ANNUALLY FOR ACCUMULATION OF SEDIMENT.
5. COMMON AREAS SHALL BE STABILIZED NO LATER THAN 15 DAYS AFTER GRADE WORK.

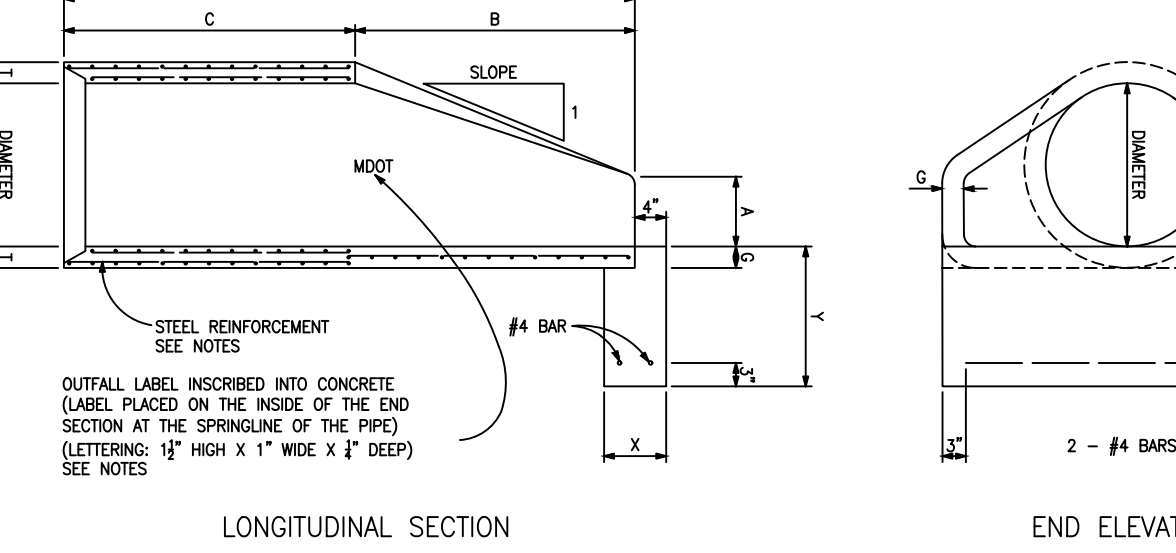


SLOPE DETAIL

TABLE OF DIMENSIONS. Table with 11 columns: PIPE DIAMETER (INCHES), APPROX. SLOPE, T (INCHES), A (INCHES), B (INCHES), C (INCHES), D (INCHES), E (INCHES), G (INCHES), R (INCHES), X (INCHES), Y (INCHES).

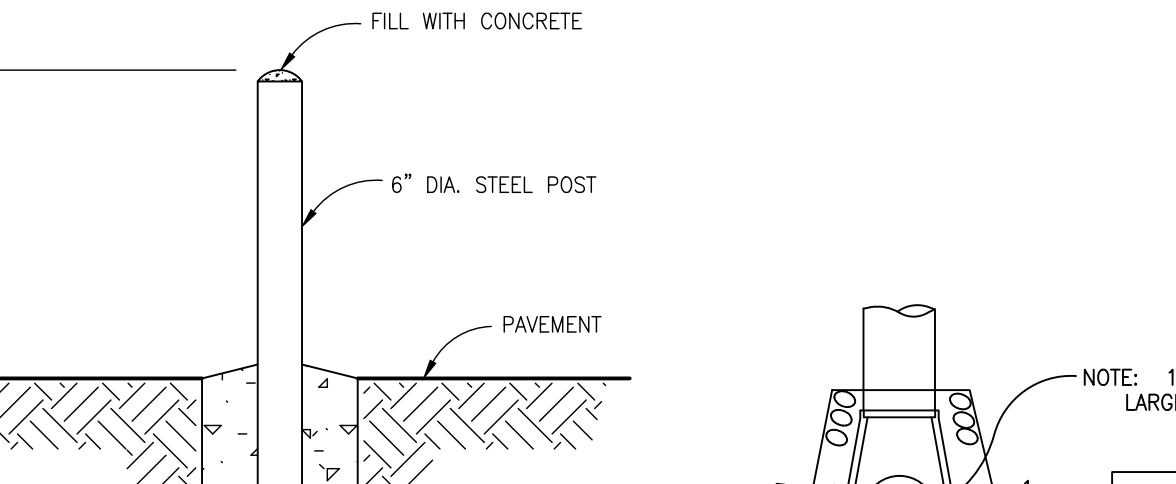


PRECAST CONCRETE END SECTION FOR PIPE CULVERT (REF. MDT DETAIL R-86-F)



LONGITUDINAL SECTION END ELEVATION

STRUCTURE FRAMES & COVERS. Table with 5 columns: COVER, TYPE, USE, EAST JORDAN (OR EQUAL), TYPE OF COVER OR GRATE.



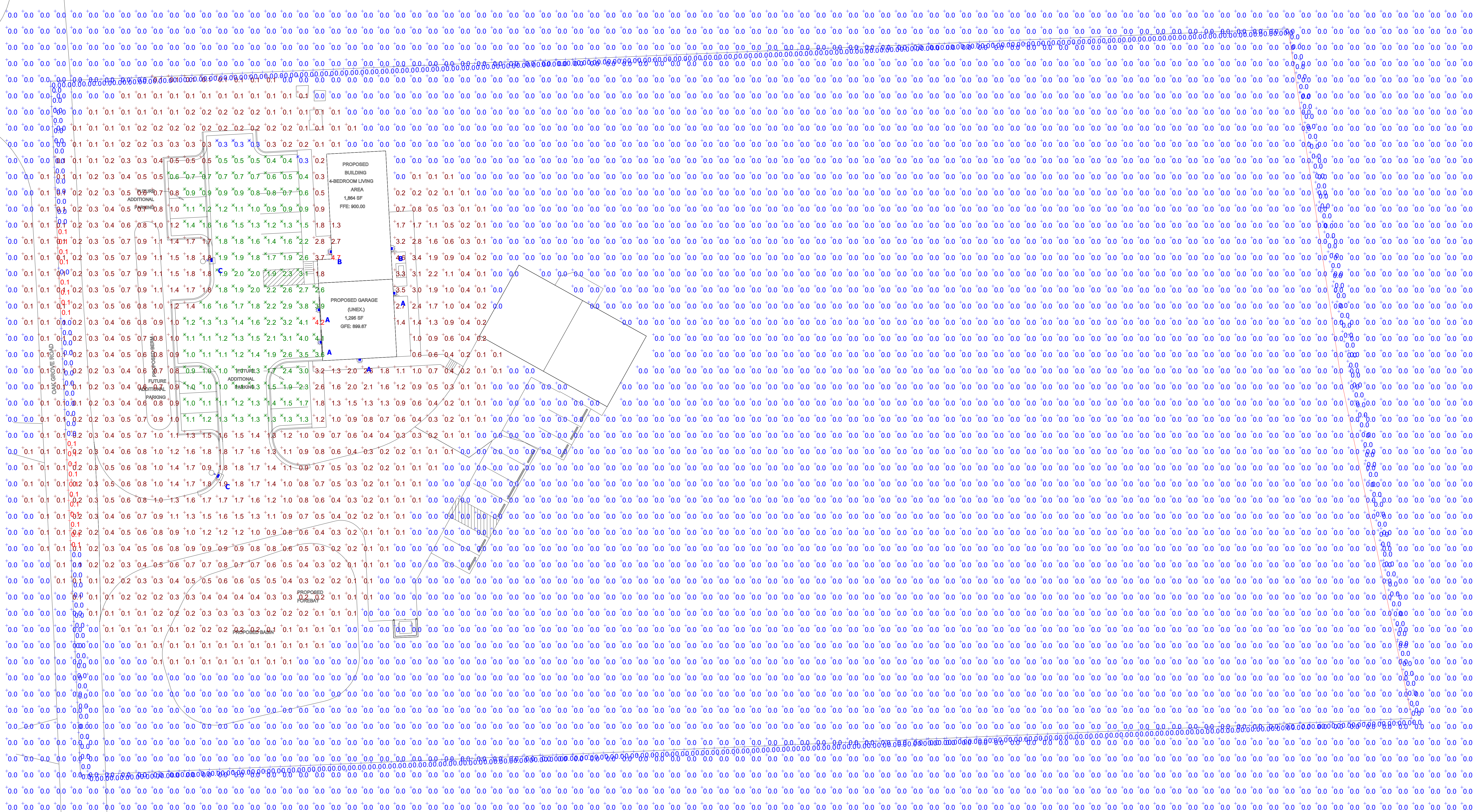
TYPICAL RIP-RAP DETAIL (SCALE: NONE)

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO ASSURANCE IS MADE THAT THESE UTILITIES ARE ACCURATELY LOCATED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES CROSSING IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS AND APPROVALS FROM THE PLANS.

BEBOSS Engineering. Engineers Surveyors Planners Landscape Architects. 3121 E. GRAND RIVER AVE. HOWELL, MI. 48843. 517.546.4836 FAX 517.548.1670

LIVINGSTON COUNTY EMS - COHOCTAH SUBSTATION. LINDHOOT ASSOCIATES AIA, PC. 1046 CATTARAUGUS DRIVE BRIGHTON, MI 48115 810.227.5668. CONSTRUCTION DETAILS.

DESIGNED BY: ST. DRAWN BY: MJD. CHECKED BY: NO SCALE. JOB NO: 24-176. DATE: 9/10/2024. SHEET NO. 12.



Plan View  
Scale: 1" = 20'

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Overall	+	0.1 fc	4.7 fc	0.0 fc	N/A	N/A
Proposed Parking	X	1.5 fc	4.2 fc	0.3 fc	14.0:1	5.0:1
Boundary	+	0.0 fc	0.1 fc	0.0 fc	N/A	N/A

Schedule									
Symbol	Label	QTY	Manufacturer	Catalog	Description	Lamp Output	LLF	Input Power	Mounting Height
⏏	A	4	Lithonia Lighting	WDGE2 LED P3 40K 70CRI T4M	WDGE2 LED WITH P3 - PERFORMANCE PACKAGE, 4000K, 70CRI, TYPE 4 MEDIUM OPTIC	3552	0.9	32,137	12'
⏏	B	2	Lithonia Lighting	WDGE2 LED P2 40K 70CRI T4M	WDGE2 LED WITH P2 - PERFORMANCE PACKAGE, 4000K, 70CRI, TYPE 4 MEDIUM OPTIC	2278	0.9	18,981	8'
⏏	C	2	Lithonia Lighting	RSX1 LED P3 40K R5	RSX Area Fixture Size 1 P3 Lumen Package 4000K CCT Type R5 Distribution	14396	0.9	109.44	20'

**General Note**  
 1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.  
 2. SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR.  
 3. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0" & 5' - 0"

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THIS LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIREMENTS DEFINED IN ASHRAE 90.1 2013. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT AS@GASSERBUSH.COM OR 734-266-6705.

**Alternates Note**  
 THE USE OF FIXTURE ALTERNATES MUST BE RESUBMITTED TO THE CITY FOR APPROVAL.

**Ordering Note**  
 FOR INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

**Mounting Height Note**  
 MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE. POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT LESS BASE HEIGHT.

**RSX1 LED Area Luminaire**

**Specifications**  
 Efficacy: 0.57 W (0.055 W)  
 Length: 21.8" (554 mm)  
 Width: 13.7" (348 mm)  
 Height: 3.7" (94 mm)  
 Weight: 22.2 lbs (10.1 kg)

**Introduction**  
 The new RSX1 LED Area luminaire delivers maximum value by providing uniform average lighting, long life and consistent performance. The RSX1 delivers 1,000 to 17,000 lumens per fixture, depending on the fixture size and CCT.

**Ordering Information**  
 EXAMPLE: RSX1 LED P4 40K R5 MVOLT SPA DBXDO

**WDGE2 LED Architectural Wall Source Precision Reflective Optic**

**Specifications**  
 Depth: 11.5"  
 Depth (D): 11.5"  
 Width: 11.5"  
 Height: 11.5"  
 Weight: 13.5 lbs

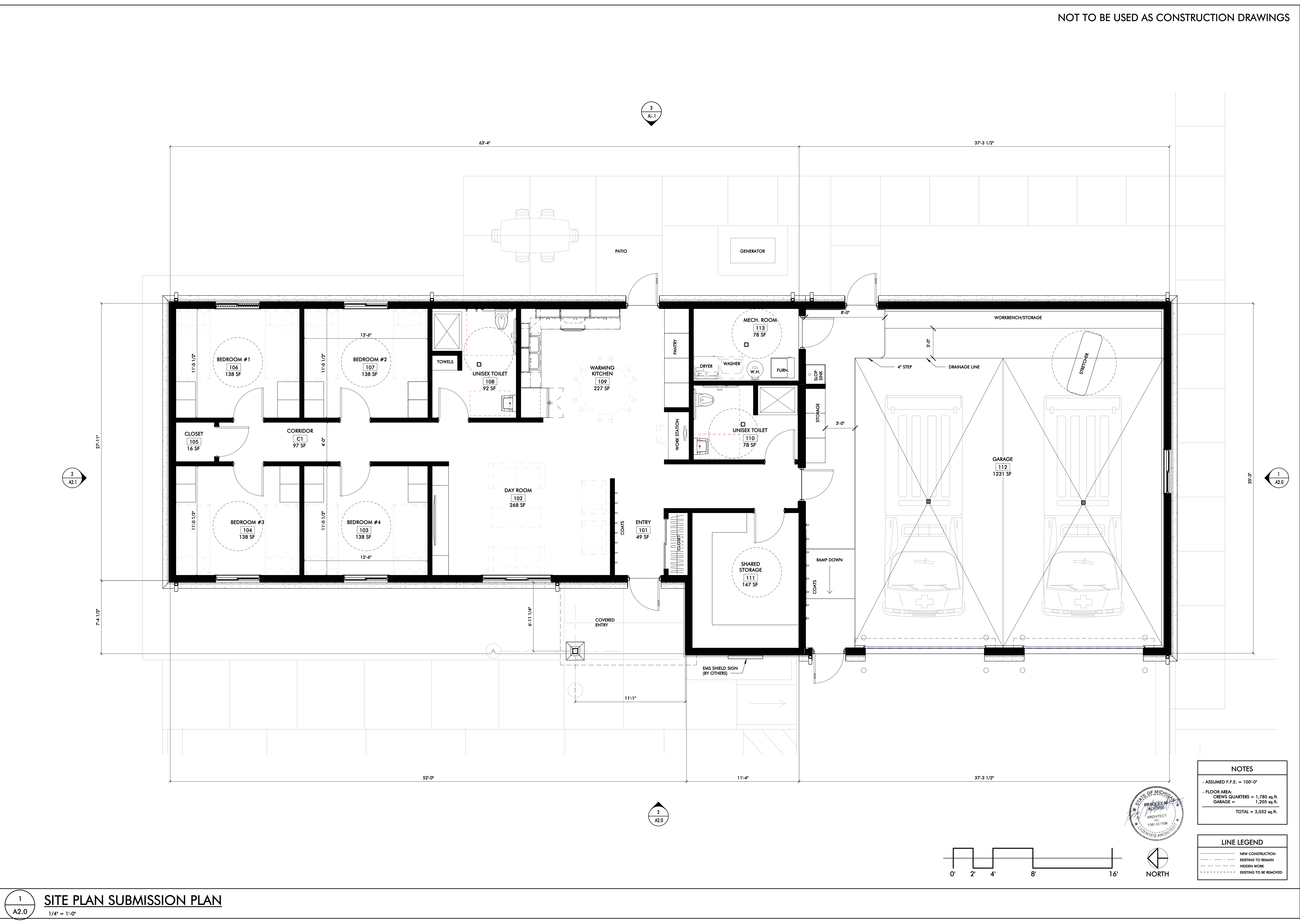
**Introduction**  
 The WDGE2 LED family is designed to meet the needs of the modern building. It provides a high-quality, uniform light output with a precision reflective optic.

**Ordering Information**  
 EXAMPLE: WDGE2 LED P3 40K R5CIN T4M SVK DBXDO



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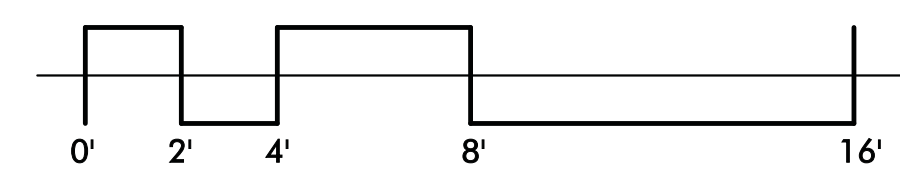


**NOTES**

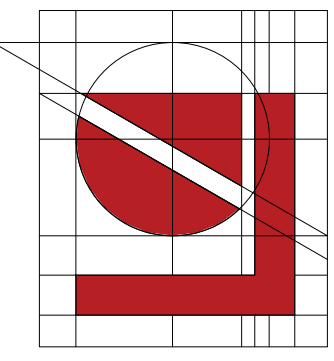
- ASSUMED F.F.E. = 100'-0"
- FLOOR AREA:  
CREW QUARTERS = 1,780 sq.ft.  
GARAGE = 1,205 sq.ft.  
TOTAL = 3,032 sq.ft.

**LINE LEGEND**

- NEW CONSTRUCTION
- EXISTING TO REMAIN
- HIDDEN WORK
- EXISTING TO BE REMOVED



1 SITE PLAN SUBMISSION PLAN  
A2.0 1/4" = 1'-0"



Lindhout Associates  
architects aia pc  
Brighton, Michigan 48116-9510  
10465 Citation Drive, (810) 227-5668  
www.lindhout.com

CONSULTANT

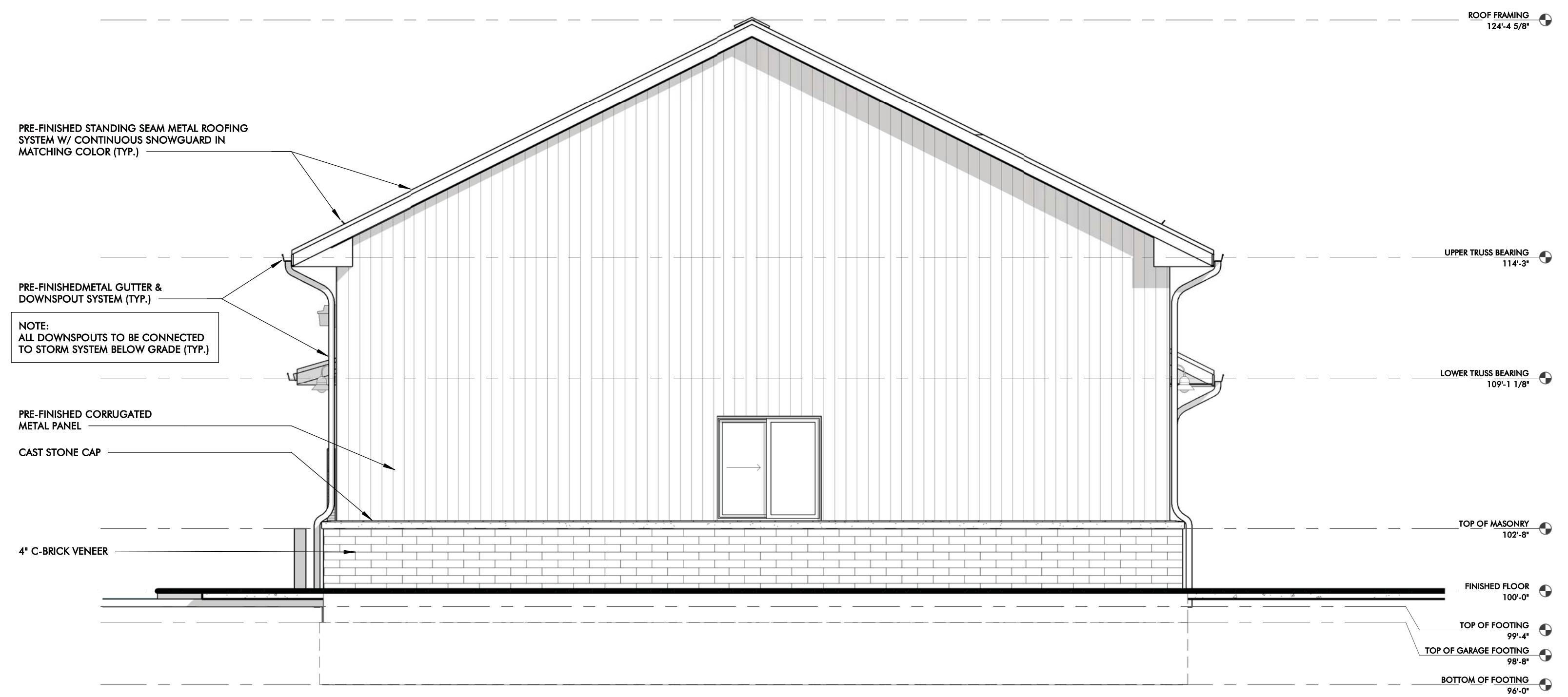
DATE:	9-10-2024
ISSUED FOR:	SITE PLAN SUBMISSION
APP:	
CHECKED:	ISA
DRAWN:	ALV

COHOCTAH TWP. SUBSTATION FOR:  
LIVINGSTON COUNTY EMS  
7304 OAK GROVE RD., HOWELL, MI 48855  
EXTERIOR ELEVATIONS

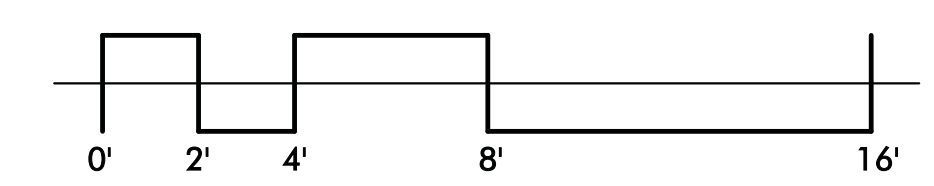
A2.0  
24063



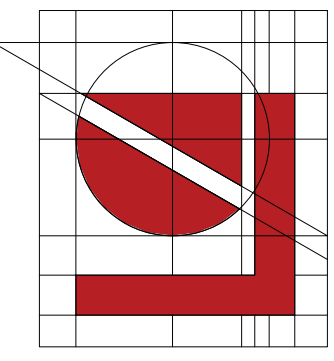
2 WEST ELEVATION  
A1.0 1/4" = 1'-0"



1 SOUTH ELEVATION  
A1.0 1/4" = 1'-0"



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Lindhout Associates  
architects aia pc  
Brighton, Michigan 48116-9510  
10465 Citation Drive, Brighton, Michigan 48116-9510  
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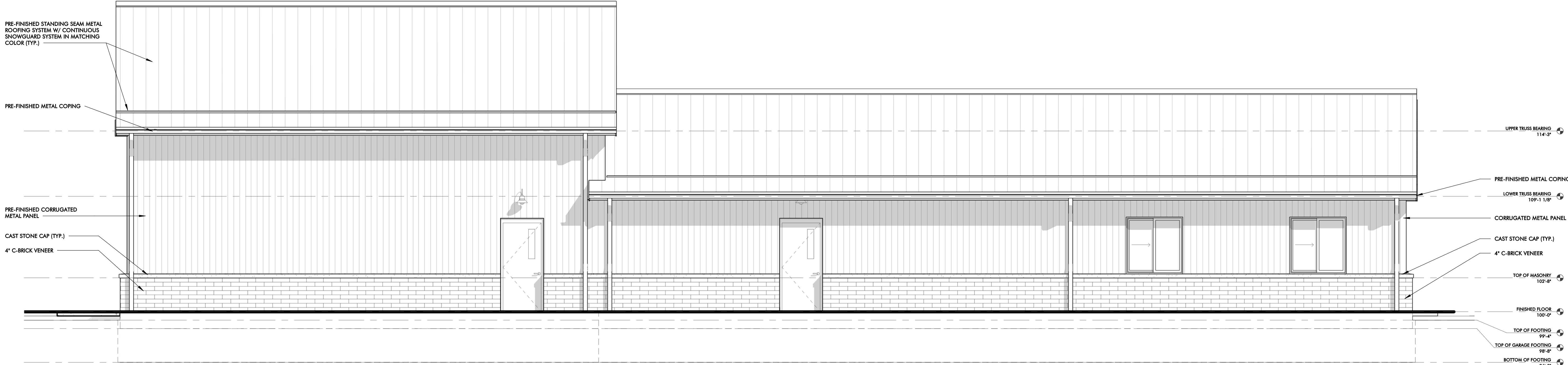
CONSULTANT

DATE:	9-10-2024
DATE:	9-10-2024
ISSUED FOR:	SITE PLAN SUBMISSION
APP:	
CHECKED:	USA
DRAWN:	ALV

COHOCTAH TWP. SUBSTATION FOR:  
LIVINGSTON COUNTY EMS  
7304 OAK GROVE RD., HOWELL, MI 48855  
EXTERIOR ELEVATIONS

A2.1  
24063

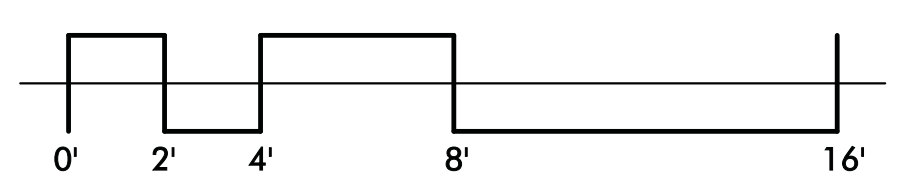
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3 EAST ELEVATION  
A1.0 1/4" = 1'-0"



2 NORTH ELEVATION  
A1.0 1/4" = 1'-0"



DATE PLOTTED: 9/8/2024 9:38:00 AM FILE LOCATION: C:\Users\CD\Documents\Projects\24063 - Livingston County EMS\24063 - LC EMS Cohoatch Substation\dwg\24063 - Livingston County EMS.dwg



1  
A4.0 VIEW LOOKING SOUTHEAST

NOT TO SCALE



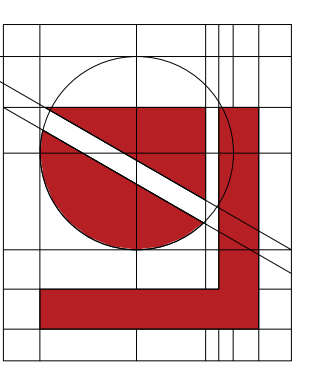
2  
A4.0 VIEW LOOKING NORTHWEST

NOT TO SCALE



3  
A4.0 BIRDSEYE VIEW LOOKING SOUTHEAST

NOT TO SCALE



**Lindhout Associates**  
architects aia pc  
10465 Citation Drive, Brighton, Michigan 48116-9510  
www.lindhout.com (810) 227-5668 Fax: (810) 227-5855

CONSULTANT

DRAWN: ALV TRB	DATE: 9-10-2024	ISSUED FOR: SITE PLAN SUBMISSION
CHECKED: HMA		
APP: [Signature]		

COHOATCH TWP. SUBSTATION FOR:  
**LIVINGSTON COUNTY EMS**  
7304 OAK GROVE RD., HOWELL, MI 48855  
**RENDERED VIEWS**

A3.0  
24063