

CHARTER TOWNSHIP OF GARFIELD PLANNING COMMISSION MEETING

Wednesday, December 14, 2022 at 7:00 pm
Garfield Township Hall
3848 Veterans Drive
Traverse City, MI 49684
Ph: (231) 941-1620

A G E N D A

ORDER OF BUSINESS

Call meeting to order

Pledge of Allegiance

Roll call of Board Members

1. Public Comment

Public Comment Guidelines:

Any person shall be permitted to address a meeting of The Planning Commission, which is required to be open to the public under the provision of the Michigan Open Meetings Act, as amended. (MCLA 15.261, et.seq.) Public Comment shall be carried out in accordance with the following Commission Rules and Procedures: a.) any person wishing to address the Commission is requested to state his or her name and address. b.) No person shall be allowed to speak more than once on the same matter, excluding time needed to answer Commissioner's questions. Where constrained by available time the Chairperson may limit the amount of time each person will be allowed to speak to (3) minutes. 1.) The Chairperson may at his or her own discretion, extend the amount of time any person is allowed to speak. 2.) Whenever a Group wishes to address a Committee, the Chairperson may require that the Group designate a spokesperson; the Chairperson shall control the amount of time the spokesperson shall be allowed to speak when constrained by available time. Note: If you are here for a Public Hearing, please hold your comments until that Public Hearing time.

2. Review and Approval of the Agenda – Conflict of Interest

3. Minutes – November 9, 2022

4. Correspondence

- a. Green Lake Township Public Notice regarding Township Master Plan
- b. Letter from Haggard's Plumbing & Heating dated November 28, 2022

5. Reports

- a. Township Board
- b. Planning Commissioners
 - i. Zoning Board of Appeals
 - ii. Parks and Recreation Commission
 - iii. Joint Planning Commission
- c. Staff Report
 - i. PD 2022-106 – Planning Department Monthly Report – November 2022
 - ii. PD 2022-110 – Planning Department Monthly Report – December 2022

6. Unfinished Business

- a. PD 2022-113 – Loving Neighbors Preschool Special Use Permit – Public Hearing
- b. PD 2022-114 – Birmley Hills Site Condominium – Findings of Fact

7. New Business

- a. PD 2022-115 – K1 Speed Indoor Kart Racing – Site Plan Review
- b. PD 2022-112 – TC Christian School Child Care at Church of the Living God SUP – Intro

8. Public Comment

9. Other Business

- a. 2023 Planning Commission Meeting Schedule

10. Items for Next Agenda – January 11, 2023

- a. Loving Neighbors Preschool Special Use Permit – Findings of Fact
- b. TC Christian School Child Care at Church of the Living God SUP – Public Hearing

11. Adjournment

**Joe Robertson, Secretary
Garfield Township Planning Commission
3848 Veterans Drive
Traverse City, MI 49684**

The Garfield Township Board will provide necessary reasonable auxiliary aids and services, such as signers for hearing impaired and audio tapes of printed materials being considered at the meeting to individuals with disabilities upon the provision of reasonable advance notice to the Garfield Township Board. Individuals with disabilities requiring auxiliary aids or services should contact the Garfield Township Board by writing or calling Lanie McManus, Clerk, Ph: (231) 941-1620.

**CHARTER TOWNSHIP OF GARFIELD
PLANNING COMMISSION MEETING
November 9, 2022**

Call Meeting to Order: Chair Racine called the November 9, 2022 Planning Commission meeting to order at 7:00pm at the Garfield Township Hall.

Pledge of Allegiance

The Pledge of Allegiance was recited by all in attendance.

Roll Call of Commission Members:

Present: Molly Agostinelli, Pat Cline, Joe Robertson, Chris DeGood, Robert Fudge and John Racine

Absent and Excused: Joe McManus

Staff Present: Planning Director John Sych and Deputy Planning Director Steve Hannon

1. Public Comment (7:00)

Fred Campbell inquired about adding Prince of Peace Church to the agenda for the evening.

Dale Trotman of Birmley Estates Drive commented on the Birmley Hills Site Condominium.

2. Review and Approval of the Agenda – Conflict of Interest (7:04)

Agostinelli moved and Fudge seconded to approve the agenda as presented.

Yeas: Agostinelli, Fudge, Cline, DeGood, Robertson, Racine

Nays: None

3. Minutes (7:04)

a. October 26, 2022 Regular Meeting

Cline moved and Robertson seconded to approve the October 26, 2022 Regular Meeting minutes as amended noting that there were two #4's on the minutes and one needs to be #3.

Yeas: Cline, Robertson, Fudge, DeGood, Agostinelli, Racine

Nays: None

4. Correspondence (7:02)

None

5. Reports (7:04)

Township Board Report

Agostinelli had no report.

Planning Commissioners

(i) Zoning Board of Appeals

Fudge had no report.

(ii) Parks and Recreation Commission

DeGood said staff has been working on the Commons Natural Area Design Plan and a recent open house to discuss the plans was well attended.

(iii) Joint Planning Commission

No report.

Staff Report

Hannon gave directions to comment on the Commons Design Plan through the Garfield Township website. Comments are due by November 21st. The Parks Master Plan will also have a comment period.

6. Unfinished Business

a. PD 2022-104 – Birmley Hills Site Condominium – Public Hearing (7:07)

This application is for a site condominium development of 35 single-family residential lots. According to the application, the lots will be between 15,000 and 38,000 square feet. Approximately 14% of the site will be preserved as open space and is primarily forested hills. The proposed development would be served by the water and sewer extending from the existing Birmley Hills Estates subdivision. The property is approximately 21.3 acres and is zoned as R-1 One-Family Residential. The property is at the end of Farmington Drive and Birmley Estates Drive which both provide access from Birmley Road. Commissioners asked if this site is required to connect its streets to neighboring properties to the east, south, and west. In reviewing the standards of the Zoning Ordinance, Staff identified that the site to the west is not subdivided and thus the proposed Birmley Hills site condominium is required to provide a street connection to the west. Carrie May, engineer for the project, explained the project to commissioners and the public. All water and sewer will be underground and the new access stub to the west has been added along with a water stub. Maintenance agreements will be in place for plowing and other maintenance of the private roads in the development.

Racine opened the public hearing at 7:17pm.

Ben Antonassi of Birmley Heights asked about the access points and tree cutting. He raised concerns about road damage during construction and asked about road safety and water pressure.

Dale Trotman of Birmley Estates Drive asked about greenspace requirements for this development in total and setbacks on the lots.

Adam Jury of Birmley Estates Drive asked about roads and traffic.
Steve Apostle of Fairway Point Drive commented on the road conditions in the existing sub and asked about a road connection to Traditions.
Steve Zakrajsek, developer of Traditions and purchaser of this property, acknowledged that the existing roads were in poor shape. He stated that there will be several different home plans and as few trees as possible would be removed.

Katie Gorman commented on stop signs and thought they would be helpful.

Racine closed the public hearing at 7:37pm.

Staff commented that the use matched the Zoning Ordinance and the use outlined for the R-1 zoning designation. The DPW and the project engineer and the township engineer are in approval of the water plans and water pressure will continue to be monitored. A stop sign is planned at an intersection within the development and Mr. Zakrajsek commented on any potential road assessments.

Agostinelli moved and Robertson seconded to direct staff to prepare Findings of Fact for application SPR-2022-16, submitted by T&R Investments, for a proposed site condominium development to be known as Birmley Hills at parcel 05-026-020-30.

Yeas: Agostinelli, Robertson, DeGood, Cline, Robertson, Racine
Nays: None

b. PD 2022-102 – 7Brew 2537 North US 31 – Special Use Permit – Findings of Fact (8:01)

This application requests approval of a Special Use Permit for a proposed 652-square foot drive-through coffee shop with only drive-through and walk-up service, with no dine-in services. Drive-through business uses are permitted via Special Use Permit in the C-G General Commercial District. The site (Parcel ID #05- 021-036-10) is occupied by the former PNC Bank building with drive-through. At its last meeting, commissioners directed staff to prepare findings of fact. Commissioners reviewed the findings of fact for the 7Brew Special Use Permit. Rob Larrea, Land Use Planning Consultant, spoke regarding the traffic patterns for the site and is confident that it is a safe egress and ingress. MDOT has approved the site as proposed. The township can revisit traffic issues and the plan can be adjusted if need be. Staff considers that requirements have been met.

Robertson moved and Agostinelli seconded THAT the Findings of Fact for application SUP 2022-01, as presented in Planning Department Report 2022-102 and being made a part of this motion, BE ADOPTED.

Yeas: Robertson, Agostinelli, DeGood, Cline, Fudge, Racine
Nays: None

Robertson moved and Fudge seconded THAT application SUP-2022-01 BE APPROVED, subject to the following conditions:

- 1. The lighting plan shall adjust the lighting fixtures to meet illumination levels in accordance with Section 517 of the Zoning Ordinance.*
- 2. A shared driveway easement and maintenance agreement shall be established for the shared driveway between the applicant and Mutual Gas located to the north.*
- 3. As per the requirements of Section 730 of the Zoning Ordinance, if the queuing of vehicles interferes with the free flow of traffic on the public roadway, then the Special Use Permit holder is subject to enforcement such as fines, injunctive relief and/or revocation of the Special Use Permit.*
- 4. As the traffic impact study indicates that the development will not be hindered by the location and its relationship to the often-busy US-31/South Airport Road intersection, monitoring of the operation on traffic patterns by Michigan Department of Transportation is recommended to ensure safe traffic movement.*
- 5. Final engineering review and approval by the Township Engineer is required including all infrastructure and stormwater.*
- 6. All final reviews from agencies with jurisdiction shall be provided prior to any Land Use Permits being issued.*
- 7. All proposed landscaping and site amenities shall be installed prior to the issuance of a Certificate of Occupancy.*
- 8. The applicant shall provide two (2) full-size plan sets, one (1) 11x17" plan set, and one electronic copy of the full application (in PDF format) with all updates as required by the conditions of this approval and indicating compliance with all provisions of the Zoning Ordinance.*
- 9. The applicant shall record promptly the amended Report and Decision Order (RDO) and any amendment to such order with the Grand Traverse County Register of Deeds in the chain of title for each parcel or portion thereof to which the RDO pertains. A copy of each recorded document shall be filed with the Director of Planning within thirty (30) days of final approval by the Township or approval shall be considered to have expired.*

*Yeas: Robertson, Fudge, DeGood, Agostinelli, Cline, Racine
Nays: None*

7. New Business (8:18)

a. PD 2022-103 – Loving Neighbors Preschool Special Use Permit – Introduction

This application by the Northern Lakes Community Church requests use of an existing 7,441 square foot church to accommodate a child care center. Child care centers are permitted in the A-Agricultural District by Special Use Permit. No new construction is planned. The church is located at 5444 Herkner Road, south of Long Lake Road and is

situated on approximately 5.94 acres. The zoning classification for this property is A- Agricultural. Fencing will be at least four feet high in the proposed playground area, parking is adequate for the proposed use and worship services will continue.

Cline moved and Fudge seconded THAT application SUP-2001-03-A, submitted by Julie Burton for a Special Use Permit for a child care center at Parcel 05-018-011-02, BE ACCEPTED, and BE SCHEDULED for a public hearing for the December 14, 2022 Regular Planning Commission meeting, subject to the following additional information being provided by the applicant:

1. The site plan is subject to review by others, including Metro Fire.

Yeas: Cline, Fudge, DeGood, Robertson, Agostinelli, Racine

Nays: None

8. Public Comment (8:23)

None

9. Other Business: (8:23)

None

10. Items for Next Agenda – December 14, 2022 (8:24)

- a. Loving Neighbor Preschool Special Use Permit – Public Hearing
- b. Birmley Hills Site Condominium – Findings of Fact

11. Adjournment

Fudge moved to adjourn the meeting at 8:26pm.

Joe Robertson, Secretary
Garfield Township Planning
Commission
3848 Veterans Drive
Traverse City, MI 49684



Green Lake Township
9394-10th Street
Interlochen MI 49643
(231) 276-9329
greenlaketownship.org

PUBLIC NOTICE

Green Lake Township, Grand Traverse County, Michigan Notice of Public Input Survey Regarding the Township Master Plan

Please take note that Green Lake Township is providing a public input survey to gain insight on the opinions of township residents, property owners and the like as we undertake planning efforts to develop our Master Plan and the Plan's Future Land Use Map for possible changes, in accordance with the requirements of the Michigan Planning Enabling Act, PA 33 of 2008, as amended.

The Township asks for your participation by completing the online survey and providing any comments regarding the Master Plan development.

Below you will find the link for the Master Plan Public Input Survey which can be found on the homepage for Green Lake Township – gogreenlake.org. The survey will become inactive on 12/25/22.

<https://s.surveypal.com/wc3ltdc1>

Your participation is encouraged.

Please direct any correspondence or questions to:

Green Lake Township
9394 10th Street
Interlochen, MI 49643
231-276-9329
zoning@greenlaketownship.org

Sincerely,

Alycia Reiten
Planning Zoning Director

RECEIVED

NOV 14 2022

PLANNING

November 28th, 2022

Garfield Township Planning Commission
3848 Veterans Drive,
Traverse City, Michigan 49684

Ref: Consideration of an application received from Northern Lakes Community Church for a proposed use of existing 7,441 square foot church to accommodate a child care center. The property is located at 5444 Herkner Road, south of North Long Lake Road. The Parcel #05-018-011-02 is 5.94 acres and is zoned A- Agricultural District. Child care centers are now permitted in the A-Agricultural District by Special Use Permit.


To whom it May Concerns,

Upon reviewing the above notice, I would like to express my view on the above request. Haggard's Plumbing & Heating is not opposed to the changes of the property and/or the request. If a property owner is fortunate enough to have the ability and the recourses in this time to either build and/or improve their existing property, it would only help the economy continue to grow. It would prove positive for the local, county, and state to do all we can to improve and promote in anyways possible.

Sincerely,

John Haggard

Haggard's Plumbing & Heating

 Charter Township of Garfield Planning Department Report No. 2022-106		
Prepared:	November 8, 2022	Pages: 2
Meeting:	November 15, 2022 Township Board	Attachments: <input type="checkbox"/>
Subject:	Planning Department Monthly Report for November 2022	

PURPOSE:

Staff provides a monthly report to the Township Board on activities of the Planning Department and the Planning Commission. Presentation of this report also provides a venue for the Township Board to have dialog with staff about any of the activities or planning-related issues facing the Township.

DEVELOPMENTS:

The Planning Commission is currently conducting the following development review activity:

7Brew – Special Use Permit

- *Location:* 2537 N US 31 South, near South Airport Road (former PNC Bank site)
- *Development Description:* Proposed drive-through coffee shop
- *Status:* The application was introduced at the Planning Commission meeting on 7/13/2022. The Commissioners expressed concerns about left-turn vehicular movements into and out of the site and there were some questions regarding site design. The application was tabled to allow the applicant to address these concerns and receive comments from OHM Advisors on their review of the applicants' traffic impact study. MDOT has also provided comments regarding the site. The applicant made some adjustments to the site plan and worked with the neighboring property owner to improve access to the site in response to these comments. The Planning Commission held a public hearing on the application at their meeting on 10/26/2022. Commissioners directed Staff to prepare Findings of Fact for the meeting on 11/9/2022.

Birmley Hills – Site Condominium

- *Location:* South of existing Birmley Hills Estates subdivision, south of Birmley Road
- *Development Description:* Proposed 35-lot single-family residential site condominium
- *Status:* The application was introduced at the Planning Commission meeting on 10/26/2022. The Commissioners asked if any street stub connections were needed to neighboring properties. Upon further review, Staff found that a stub connection to the west is needed to the west for streets and utilities. This connection will be incorporated into an updated site plan. A public hearing for this application was held on 11/9/2022.

Northern Lakes Community Church / Loving Neighbors Preschool – Special Use Permit

- *Location:* 5444 Herkner Road, near intersection with North Long Lake Road
- *Development Description:* Proposed childcare center in existing church building
- *Status:* The application was introduced at the Planning Commission meeting on 11/9/2022.

PLANNING:

Other Planning Department activities include the following:

- A third public open house was held on the Grand Traverse Commons Natural Area Design Plan on 11/7/2022 at Kirkbride Hall. Environmental Consulting & Technology, Inc. (ECT) presented the full draft plan and an overview of the proposed park design, trail system, and site elements. There was a discussion with a group of mountain bikers at the open house regarding the future status of the existing mountain biking area. Staff and the Parks and Recreation Commissioners will look to work with the mountain biking and other groups as projects to implement this plan are formulated and fully engineered. The final Design Plan will include a trail system design to account for the safety and activity of multiple user groups.
- Staff is working with the Parks and Recreation Commission on an update to the Township's 5-Year Parks and Recreation Master Plan. The Michigan DNR requires an up-to-date Parks and Recreation Plan to be updated by February 1 to be eligible for grants; the current Plan expires with the DNR on 12/31/2022. The following timeline is anticipated to complete the Parks and Recreation Plan:
 - 12/5/2022 – Parks and Recreation Commission will finalize the plan, motion to notice the required 30-day public review period, and recommend the plan to the Township Board
 - 12/11/2022 – Notice in the newspaper of the 30-day public review period
 - 12/13/2022 – Township Board to set a public hearing on the plan for 1/10/2023
 - 12/18/2022 – Notice in the newspaper of the public hearing
 - 1/10/2023 – End of 30-day public review period
 - 1/10/2023 – Township Board to hold a public hearing on the plan and adopt the plan
 - 2/1/2023 – Final 2023-2027 Parks and Recreation Master Plan submitted to DNR
- The summary report on the 2022 Community Survey was shared on the Planning Department page of the Township website, and the results were also shared in the Winter Newsletter.
- Staff worked on five applications which were submitted to the Grand Traverse County American Rescue Plan Advisory Committee on 10/31/2022. These applications requested funding to support infrastructure needs in the Township.

STAFF:

John Sych, AICP, Planning Director
Email: jsych@garfield-twp.com
Direct Line: (231) 225-3155

Stephen Hannon, AICP, Deputy Planning Director
Email: shannon@garfield-twp.com
Direct Line: (231) 225-3156



Charter Township of Garfield

Planning Department Report No. 2022-110

Prepared:	December 6, 2022	Pages:	2
Meeting:	December 13, 2022 Township Board	Attachments:	<input type="checkbox"/>
Subject:	Planning Department Monthly Report for December 2022		

PURPOSE:

Staff provides a monthly report to the Township Board on activities of the Planning Department and the Planning Commission. Presentation of this report also provides a venue for the Township Board to have dialog with staff about any of the activities or planning-related issues facing the Township.

DEVELOPMENTS:

The Planning Commission is currently conducting the following development review activity:

7Brew – Special Use Permit

- *Location:* 2537 N US 31 South, near South Airport Road (former PNC Bank site)
- *Development Description:* Proposed drive-through coffee shop
- *Status:* This application was introduced at the 7/13/2022 Planning Commission meeting and was initially tabled. Over the next few months, the applicant addressed concerns raised by the Planning Commission, responded to the comments on their traffic study, and worked with the neighboring property owner on improved access to the site. The Planning Commission held a public hearing on the application on 10/26/2022 and directed Staff to prepare Findings of Fact. The application was approved with conditions on 11/9/2022, but the Planning Commission will be reviewing a question on the Report and Decision Order on 12/14/2022.

Birmley Hills – Site Condominium

- *Location:* South of existing Birmley Hills Estates subdivision, south of Birmley Road
- *Development Description:* Proposed 35-lot single-family residential site condominium
- *Status:* The application was introduced at the Planning Commission meeting on 10/26/2022, and a public hearing was held on 11/9/2022. Commissioners directed Staff to prepare Findings of Fact for the 12/14/2022 meeting.

Northern Lakes Community Church / Loving Neighbors Preschool – Special Use Permit

- *Location:* 5444 Herkner Road, near intersection with North Long Lake Road
- *Development Description:* Proposed childcare center in existing church building
- *Status:* The application was introduced at the Planning Commission meeting on 11/9/2022 and a public hearing will be held at the 12/14/2022 meeting.

Church of the Living God / Traverse City Christian School ELC – Special Use Permit

- *Location:* 1514 Birmley Road, north side of Birmley Road
- *Development Description:* Proposed childcare center in existing church building
- *Status:* The application will be introduced at the Planning Commission meeting on 12/14/2022.

K1 Speed Indoor Kart Racing Center – Site Plan Review

- *Location:* 1212 South Airport Road, former Sears at Cherryland Center
- *Development Description:* Proposed kart racing indoor recreation facility
- *Status:* The application will be reviewed by the Planning Commission on 12/14/2022.

PLANNING:

Other Planning Department activities include the following:


- Staff is working with the Parks and Recreation Commission on an update to the Township's 5-Year Parks and Recreation Master Plan. The Michigan DNR requires an up-to-date Parks and Recreation Plan to be submitted by February 1 to be eligible for grants; the current Plan expires with the DNR on 12/31/2022. The Parks and Recreation Commission recommended adoption of the Plan at the 12/5/2022 meeting and motioned to notice the required 30-day public review period. The rest of the anticipated timeline is as follows:
 - 12/11/2022 – Notice in the newspaper of the 30-day public review period
 - 12/13/2022 – Township Board to set a public hearing on the plan for 1/10/2023
 - 12/18/2022 – Notice in the newspaper of the public hearing
 - 1/10/2023 – End of 30-day public review period
 - 1/10/2023 – Township Board to hold a public hearing on the Plan and adopt the Plan
 - 2/1/2023 – Deadline to submit final Plan to DNR

The 5-Year Parks and Recreation Master Plan will include the Grand Traverse Commons Natural Area Design Plan, which recently had its third public open house on 11/7/2022 at Kirkbride Hall. To capitalize on momentum from the planning process for the Commons Natural Area, Staff and the Parks and Recreation Commission will be working on the next steps to implement the projects from this Plan, including final engineering and continued discussions with stakeholders.

STAFF:

John Sych, AICP, Planning Director
Email: jsych@garfield-twp.com
Direct Line: (231) 225-3155

Stephen Hannon, AICP, Deputy Planning Director
Email: shannon@garfield-twp.com
Direct Line: (231) 225-3156

 Charter Township of Garfield Planning Department Report No. 2022-113		
Prepared:	December 7, 2022	Pages: 3
Meeting:	December 14, 2022 Planning Commission	Attachments: <input checked="" type="checkbox"/>
Subject:	Loving Neighbors Preschool at Northern Lakes Community Church Special Use Permit – Public Hearing	
File No.	SUP-2001-03-A	Parcel No. 05-018-011-02
Applicant:	Joe Schmidt/Northern Lakes Community Church	
Agent:	Julie Burton/Northern Lakes Community Church	
Owner:	Northern Lakes Community Church/Dr. Sam Jun, Pastor	

BRIEF OVERVIEW:

- Location: 5444 Herkner Road, south of North Long Lake Road
- Parcel area: 5.94 acres
- Existing land use: Church
- Existing zoning: A – Agricultural District

PURPOSE OF APPLICATION:

This application by the Northern Lakes Community Church requests use of an existing 7,441 square foot church to accommodate a child care center. Child care centers are permitted in the A-Agricultural District by Special Use Permit. No new construction is planned.

Aerial image of the subject property (property lines highlighted in blue):



SITE DESIGN AND ZONING COMPLIANCE OVERVIEW:

In approving any special use permit pursuant to Section 423, the Planning Commission may impose such reasonable standards, conditions, or requirements, in addition to or that supersede any standard specified in this ordinance, as it may deem necessary to protect the public interest and welfare. Such additional standards may include, but need not be limited to:

- a) Financing;
- b) Availability of adequate public facilities or services;
- c) Dedication of land;
- d) Reservation of land;
- e) Creation of special assessment districts;
- f) Creation of restrictive covenants or easements;
- g) Special setbacks;
- h) Yard requirements;
- i) Increased screening or landscaping requirements;
- j) Area requirements;
- k) Development phasing; or
- l) Standards pertaining to traffic, circulation, noise, lighting, hours of operation, protection of environmentally sensitive areas, and similar characteristics.

Staff offers the following comments regarding site design and compliance with the Zoning Ordinance:

Proposed Use:

The proposed child care center is to occupy an existing church. The child care center will operate Monday through Friday from 7:00 a.m. to 6:00 p.m. and will not conflict with current church activities.

Because there is no building construction, no building addition, nor similar type of construction, Staff has waived the requirements for a full site development plan. The only improvement is a playground that must meet the requirements of Section 720 in the Zoning Ordinance.

Parking:

The parking requirement for child care centers is one (1) parking space for each three hundred (300) square feet of floor space. In this case, the 7,441 square foot church building would require 25 parking spaces.

The current parking lot has 75 spaces which will be able to handle the parking of staff and parent vehicles, as well as vehicles used by church members during the week. Current church enrollment is approximately 50 people.

The center enrollment is proposed to have 29 children (infant through age 5) and 6 staff people. Parking demand will be limited as most children will be dropped off or picked up during the school hours of operation.

Signage:

Signs require sign permit review and are not approved under the site plan review process. The application states “Signs will be updated and are subject to sign permit review.”

Other Reviews:

Other reviews may be necessary, including Metro Fire.

Child Care Center:

Section 720 of the Zoning Ordinance outlines specific regulations and conditions for child care centers, including the following:

Facility shall maintain all valid state and local licenses.

The application states, “The proposed child care center will maintain all valid state and local licenses.”

All outdoor areas used for the care and supervision of patrons shall have appropriate fencing for the safety of the children in the group day-care home; consisting of a minimum 6-foot high privacy fence along the area adjoining another residence, and a minimum 4- foot high fence in the remaining area devoted to the day-care area.

The applications states that the approximate size of the playground is 59’ (along the building) x 45’ x 94’ x 30’ which is approximately 2,525 square feet. Since the playground does not adjoin a residence, no privacy fence is required; however, a 4-foot high fence is required.

Hours of operation shall not exceed sixteen (16) hours during a 24-hour period. The Planning Commission shall not prohibit evening operations completely but may establish limitations on hours of operation and/or activities between the hours of 10PM and 6AM.

The application states that the hours of operation will be 11 hours per 24-hour period from 7:00 a.m. to 6:00 p.m.

ACTION REQUESTED:

The purpose of this agenda item is to hold a public hearing on the application. If, following the applicant presentation and Planning Commission discussion, the Commission is prepared to direct Staff to prepare Findings of Fact, then the following motion is offered for consideration:

MOTION TO direct staff to prepare Findings of Fact for application SUP-2001-03-A, submitted by Julie Burton, for a Special Use Permit for a child care center at 5444 Herkner Road (Parcel 05-018-011-02).

Any additional information that the Planning Commission determines to be necessary should be added to this motion.

Attachments:

1. SUP Application dated October 6, 2022 with Impact Statement
2. Survey dated January 29, 2019
3. Playground Site Plan dated October 16, 2022
4. Church Addition Site Plan dated July 12, 2007 with playground identified
5. Site photos
6. Natural Playground Idea photographs



Charter Township of Garfield

Grand Traverse County

3848 VETERANS DRIVE
TRAVERSE CITY, MICHIGAN 49684
PH: (231) 941-1620 • FAX: (231) 941-1588

SPECIAL USE PERMIT (SUP) APPLICATION

ASSISTANCE

This application must be completed in full. An incomplete or improperly prepared application will not be accepted and will result in processing delays. Before submitting an application, it is recommended that you contact the Planning and/or Zoning Department to arrange an appointment to discuss your proposed application. Time is often saved by these preliminary discussions. For additional information or assistance in completing this development application, please contact the Planning Department at (231) 941-1620.

ACTION REQUESTED

New Special Use Permit
Major Amendment
Minor Amendment
Administrative Amendment

PROJECT / DEVELOPMENT NAME

APPLICANT INFORMATION

Name:
Address:
Phone Number:
Email:

AGENT INFORMATION

Name:
Address:
Phone Number:
Email:

OWNER INFORMATION

Name:
Address:
Phone Number:
Email:

CONTACT PERSON

Please select one person to be contact person for all correspondence and questions:

Applicant:

Agent:

Owner:

PROPERTY INFORMATION

Property Address:

Property Identification Number:

Legal Description:

Zoning District:

Master Plan Future Land Use Designation:

Area of Property (acres or square feet):

Existing Use(s):

Proposed Use(s):

PROJECT TIMELINE

Estimated Start Date:

Estimated Completion Date:

REQUIRED SUBMITTAL ITEMS

A complete application for a Special Use Permit consists of the following:

Application Form:

One original signed application

One digital copy of the application (PDF only)

Application Fee:

Fees are established by resolution of the Garfield Township Board and are set out in the current Fee Schedule as listed on the Planning Department page of the Township website (<http://www.garfield-twp.com>). Please make check out to Charter Township of Garfield.

Fee

Escrow Fee:

Additional fees may be required if a review by independent professional help is deemed necessary by the Township. If required, such additional fees must be placed in escrow by the applicant in accordance with the escrow policies of the Township and prior to any further processing of this application. Any unused escrow funds shall be returned to the applicant. Please complete an Escrow and Review (ER) Application form.

Site Development Plan:

Ten complete stapled 11"x17" paper sets (Administrative Amendments require one copy)

Two complete bound 24"x36" paper sets

One digital set (PDF only)

Written Information:

Ten paper copies of the Approval Criteria (Administrative Amendments require one copy)

One digital copy of the Approval Criteria (PDF only)

Ten paper copies of the Impact Assessment (Administrative Amendments require one copy)

One digital copy of the Impact Assessment (PDF only)

Digital items to be delivered via email or USB flash drive

SUBMITTAL DEADLINE

Submittal deadlines are listed on the Planning Department page of the Township website (<http://www.garfield-twp.com>). Please note that the listed dates are the deadlines after which submittals will not be considered for the indicated meeting. Any errors or missing information on an application submitted at the deadline will result in a delay in the processing of the application. An earlier submittal is encouraged to avoid possible delays.

WAIVERS

Submittal Waiver:

At the discretion of the Director of Planning, a Site Development Plan may be waived in any of the following cases when it is determined that the submission would serve no useful purpose:

1. The erection or enlargement of an accessory structure;
2. The enlargement of a principal building by less than 20 percent of its existing gross floor area, provided such enlargement will not result in a requirement for additional off-street parking;
3. A change in principal use where such change would not result in an increase in impervious surface area, additional off-street parking, site access, other external site characteristics or a violation of this ordinance.

Data Waiver:

The Director of Planning may waive a particular element of information or data otherwise required for a Site Development Plan upon a finding that the information or data is not necessary to determine compliance with this ordinance or that such information or data would not bear on the decision of the approval authority.

SITE PLAN

Check that your site plan includes all required elements for a Site Development Plan (SDP). Please use the Required Site Plan Elements Checklist below.

APPROVAL CRITERIA

Indicate, on a separate sheet of paper, how the proposed special use will comply with, meet, or facilitate each of the following Approval Criteria from § 423.E of the Zoning Ordinance. The Planning Commission must determine that each of these criteria are satisfied in order to grant approval of a Special Use Permit. A special use is permitted only if the applicant demonstrates that: special use is permitted only if the applicant demonstrates that:

The proposed use will be consistent with the purpose and intent of the master plan and this ordinance, including all regulations of the applicable zoning district;

The proposed use will be designed, constructed, operated and maintained so as to be compatible, harmonious and appropriate with the existing or planned character and uses of the neighborhood, adjacent properties and the natural environment;

The proposed use will not be detrimental, hazardous or disturbing to existing or future adjacent uses or to the public welfare by reason of excessive traffic, noise, dust, gas, smoke, vibration, odor, glare, visual clutter, electrical or electromagnetic interference;

Potential adverse effects arising from the proposed use on the neighborhood and adjacent properties will be minimized through the provision of adequate parking, the placement of buildings, structures and entrances, as well as the provision and location of screening, fencing, landscaping, buffers or setbacks;

The proposed use will retain as many natural features of the property as practicable, particularly where the natural features assist in preserving the general character of the neighborhood;

Adequate public and private infrastructure and services such as streets, water and sewage facilities, drainage structures, police and fire protection, and schools, already exist or will be provided without excessive additional requirements at public cost;

The establishment, maintenance, or operation of the proposed use shall not be detrimental to or endanger the public health, safety, morals, comfort, or general welfare;

The public interest and welfare supporting the proposed use shall be sufficient to outweigh individual interests that are adversely affected by the establishment of the proposed use;

Adequate measures shall be taken to provide ingress and egress so designed as to minimize traffic hazards and to minimize traffic congestion on the public roads;

Adequate measures shall be taken to provide vehicular and pedestrian traffic within the site, and in relation to streets and sidewalks servicing the site in a safe and convenient manner; and

The proposed use shall not impede the orderly development and improvement of surrounding property for uses permitted within the zoning district.

IMPACT ASSESSMENT

A written impact statement to include the following information:

A written illustrative description of the environmental characteristics of the site prior to development, i.e., topography, soils, vegetative cover, drainage, streams, creeks or ponds.

Types of uses and other man-made facilities.

The number of people to be housed, employed, visitors or patrons and vehicular and pedestrian traffic.

Phasing of the project including ultimate development proposals.

Natural features which will be retained, removed and/or modified including vegetation, drainage, hillsides, streams wetlands, woodlands, wildlife and water. The description of the areas to be changed shall include their effect on the site and adjacent properties. An aerial photo may be used to delineate the areas of change.

The method to be used to serve the development with water and sanitary sewer facilities.

The method to be used to control drainage on the site and from the site. This shall include runoff control during periods of construction.

If the public sewers are not available to the site, the Applicant shall submit a current approval from the Health Department or other responsible public agency indicating approval of plans for sewage treatment.

The method to be used to control any increase in effluent discharge to the air or any increase in noise level emanating from the site. Consideration of any nuisance that would be created within the site or external to the site whether by reason of dust, noise, fumes vibration, smoke or lights.

An indication of how the proposed use conforms with existing and potential development patterns and any adverse effects.

The proposed density in units per acre for residential developments.

Name(s) and address(es) of person(s) responsible for preparation of statement.

Description of measures to control soil erosion and sedimentation during grading and construction operations and until a permanent ground cover is established. Recommendations for such measures may be obtained from the County Soil Erosion and Sedimentation office.

Type, direction, and intensity of outside lighting.

General description of deed restrictions, if any.

ADDITIONAL INFORMATION

If applicable, provide the following further information:

	<u>Yes</u>	<u>No</u>	<u>Not Applicable</u>
A. <u>Sanitary Sewer Service</u>			
1. Does project require extension of public sewer line?			
If yes, has a Utility Agreement been prepared?			
2. Will a community wastewater system be installed?			
If yes, has a Utility Agreement been prepared?			
If yes, provide construction plans and specifications			
3. Will on-site disposal be used?			
If yes, is it depicted on plan?			
B. <u>Water Service</u>			
1. Does project require extension of public water main?			
If yes, has a Utility Agreement been prepared?			
2. Will a community water supply be installed?			
If yes, has a Utility Agreement been prepared?			
If yes, provide construction plans and specifications			
C. <u>Public utility easements required?</u>			
If yes, show on plan.			
D. <u>Stormwater Review/Soil Erosion</u>			
1. Soil Erosion Plans approved by Soil Erosion Office?			
If so, attach approval letter.			
If no, are alternate measures shown?			
2. Stormwater Plans approved by Township Engineer?			
If so, attach approval letter.			
If no, are alternate measures shown?			
Note: Alternate measures must be designed and sealed by a registered Engineer.			

E. Roads and Circulation

1. Are interior public streets proposed?

If yes, has Road Commission approved (attach letter)?

2. Will public streets connect to adjoining properties or future streets?

3. Are private roads or interior drives proposed?

4. Will private drives connect to adjoining properties service roads?

5. Has the Road Commission or MDOT approved curb cuts?

If yes, attach approved permit.

OTHER INFORMATION

If there is any other information that you think may be useful in the review of this application, please attach it to this application or explain it on a separate page.

REVIEW PROCESS

- Upon submittal of this application, Staff will review the materials submitted and will, within ten (10) working days, forward a determination of completeness to the applicant. If the submission is incomplete or noncompliant with the Zoning Ordinance, it will be returned to the applicant for revision. Once the submission is revised, Staff will again review it for completeness and again forward a determination to the applicant within ten (10) working days. This procedure shall be repeated until a complete submission is received.
- Once the application is deemed to be complete and submitted according to the application deadlines, it will be forwarded to the Planning Commission for review. The Planning Commission will determine if the application is complete and schedule a public hearing.
- Upon holding a public hearing, the Planning Commission may approve, approve with conditions, or deny the proposed special use.
- If approved or approved with conditions, the decision of the Planning Commission shall be incorporated into a written report and decision order.

PERMISSION TO ENTER SUBJECT PROPERTY

Permission is hereby granted to Garfield Township staff and Planning Commissioners to enter the premises subject to this application for the purposes of making inspections associated with this application, during normal and reasonable working hours.

Owner Signature:

Applicant Signature:

Agent Signature:

Date:

OWNER'S AUTHORIZATION

If the applicant is not the registered owner of the lands that is the subject of this application, the owner(s) must complete the authorization set out below.

I/We _____ authorize to make this application on my/our behalf and to provide any of my/our personal information necessary for the processing of this application. Moreover, this shall be your good and sufficient authorization for so doing.

Owner Signature:

Date:

AFFIDAVIT

The undersigned affirms that he/she or they is (are) the owner, or authorized agent of the owner, involved in the application and all of the information submitted in this application, including any supplemental information, is in all respects true and correct. The undersigned further acknowledges that willful misrepresentation of information will terminate this permit application and any permit associated with this document.

Owner Signature:

Date:

Applicant Signature:

Date:

Required Site Plan Elements Checklist (See § 956 of the Zoning Ordinance) Site Diagram (SD) / Administrative Site Plan (ASP) / Site Development Plan (SDP)		SD	ASP/ SDP
A. Basic Information			
1.	Applicant's name, address, telephone number and signature		
2.	Property owner's name, address, telephone number and signature		
3.	Proof of property ownership		
4.	Whether there are any options or liens on the property		
5.	A signed and notarized statement from the owner of the property that the applicant has the right to act as the owner's agent		
6.	The address and/or parcel number of the property, complete legal description and dimensions of the property, setback lines, gross and net acreages and frontage		
7.	A vicinity map showing the area and road network surrounding the property		
8.	Name, address and phone number of the preparer of the site plan		
9.	Project title or name of the proposed development		
10.	Statement of proposed use of land, project completion schedule, any proposed development phasing		
11.	Land uses and zoning classification on the subject parcel and adjoining parcels		
12.	Seal of the registered engineer, architect, landscape architect, surveyor, or planner who prepared the plan, as well as their name, address and telephone number		
B. Site Plan Information			
1.	North arrow, scale, and date of original submittal and last revision		
2.	Boundary dimensions of natural features		
3.	Natural features such as woodlots, water bodies, wetlands, high risk erosion areas, slopes over twenty-five percent (25%), beach, drainage, and similar features		
4.	Proposed alterations to topography and other natural features		
5.	Existing topographic elevations at two-foot intervals except shown at five-foot intervals where slopes exceed 18%		
6.	Soil erosion and sediment control measures as required by the Grand Traverse County Soil Erosion Department.		
7.	The location, height and square footage of existing and proposed main and accessory buildings, and other existing structures		
8.	Location and specifications for any existing or proposed (above or below ground) storage facilities for any chemicals, salts, flammable materials, or hazardous materials. Include any containment structures or clear zones required by county, state or federal government authorities		
9.	Proposed finish floor and grade line elevations of any structures <i>*Required only for habitable construction within the floodplain on site diagrams and administrative site plans.</i>	*	
10.	Existing and proposed driveways, including parking areas		
11.	Neighboring driveways and other vehicular circulation features adjacent to the site		
12.	A dimensional plan indicating the location, size and number of parking spaces of the on-site parking areas, and shared parking areas		
13.	Identification and dimensions of service lanes and service parking, snow storage areas, loading and unloading and docks		
14.	Proposed roads, access easements, sidewalks, bicycle paths, and other vehicular and pedestrian circulation features within and adjacent to the site		
15.	Location of and dimensions of curb cuts, acceleration, deceleration and passing lanes		
16.	Location of neighboring structures that are close to the parcel line or pertinent to the proposal		
17.	Location of water supply lines and/or wells		
18.	Location of sanitary sewer lines and/or sanitary sewer disposal systems		
19.	Location, specifications, and access to a water supply in the event of a fire emergency		
20.	Sealed (2) stormwater plans including the location and design of storm sewers, retention or detention ponds, swales, wastewater lines, clean out locations, connection points and treatment systems		
21.	A utility plan including the location of all other utilities on the site including but not limited to natural gas, electric, cable TV, telephone and steam		
22.	A sign plan indicating the location, size and specifications of all signs and advertising features, including cross sections		
23.	A lighting plan including exterior lighting locations with area of illumination illustrated by point values on a photometric plan, Kelvin rating, as well as the type of fixtures and shielding to be used		
24.	Proposed location of any open spaces, landscaping and buffering features such as buffer areas, vegetation belts, fences, walls, trash receptacle screening, and other screening features with cross sections shown		
25.	A Landscape plan and table identifying the species, size of landscape materials, and number proposed, compared to what is required by the Ordinance. All vegetation to be retained on site must also be indicated, as well as, its typical size by general location or range of sizes as appropriate		
26.	Statements regarding the project impacts on existing infrastructure (including traffic capacity, schools, and existing utilities, and on the natural environment on and adjacent to the site)		
27.	Changes or modifications required for any applicable regulatory agencies' approvals		

Approval Criteria/Impact Statement:

Northern Lakes Community Church wishes to utilize their existing building (addition added in 2007) for a preschool/childcare center in an effort to support our community. This is based on the immediate need in our local community and state to increase available childcare. Per the Networks Northwest Organization since 2016, there has been a huge decline in Licensed Child Care providers in our area, and waitlists are long at the centers that remain.

We plan to provide full day care for 29 children, infant through age 5. We would hire a director and staff of approximately 5 teachers. We hope to start up in fall of 2023, pending township permission and minor building updates required by the Fire Inspector.

Estimated hours of operation for the Preschool/Childcare will be 7:00am - 6:00pm. These we hope are "worst case" scenario....if we can be open less hours we would like that, however wanted to give the Township the longest hours possible.

This project will not change the current building size. We will add a playground off the north entrance to the newer portion of the building where the child care center will be housed. The playground will be a natural playground, surrounded by fencing to keep the children safely contained. The approximate size of the playground is 59' (along the building) x 45' x 94' x 30'. We have included pictures of examples of what a natural playground can look like.

Our current parking lot has 75 spaces, and will be able to handle the parking of staff and parent vehicles, as well as vehicles used by church members for their various meetings during the week. Our current church enrollment is approximately 50 people.

We do not anticipate any adverse affects on our surrounding neighbors or neighborhoods. The center's enrollment of 29 children and 6 staff people, will result in increased traffic during the morning and evening hours of approximately 35 cars, during pick up and drop off times. Currently the original building (our sanctuary) has an occupancy of 230 people. The addition, where the preschool will be housed has an approved occupancy of 100 people.

Our goal is to maintain the look of our current buildings and landscaping, with the addition of a natural playground area. The play ground is planned for an area that is currently grass. There is a wooded area beyond the playground location that we will keep as is. We like the woods and hope to allow children to take teacher guided walks in that woods!

We do not anticipate or plan for any topographical changes to our property. There are two drainage areas for water which will remain as is.

We do have outside lighting on a timer in our parking lot, and do not plan to change this.

10/11/22 - Additional Information as requested by John Sych, Director of Planning for Garfield Township:

- The proposed child care center will maintain all valid state and local licenses.
- No other improvements are proposed.
- Signs will be updated and are subject to sign permit review.

This was prepared by Julie Burton, identified as Agent for the Owner and Applicant.

CERTIFICATE OF SURVEY

Legend

- IRON SET
- IRON FOUND
- ⊙ MONUMENT FOUND
- △ NAIL SET
- ▲ NAIL FOUND
- ⊕ GOVERNMENT 1/4 CORNER
- ⊙ SECTION CORNER
- ⊕ CENTER 1/4 CORNER
- (R) RECORD
- (M) MEASURED

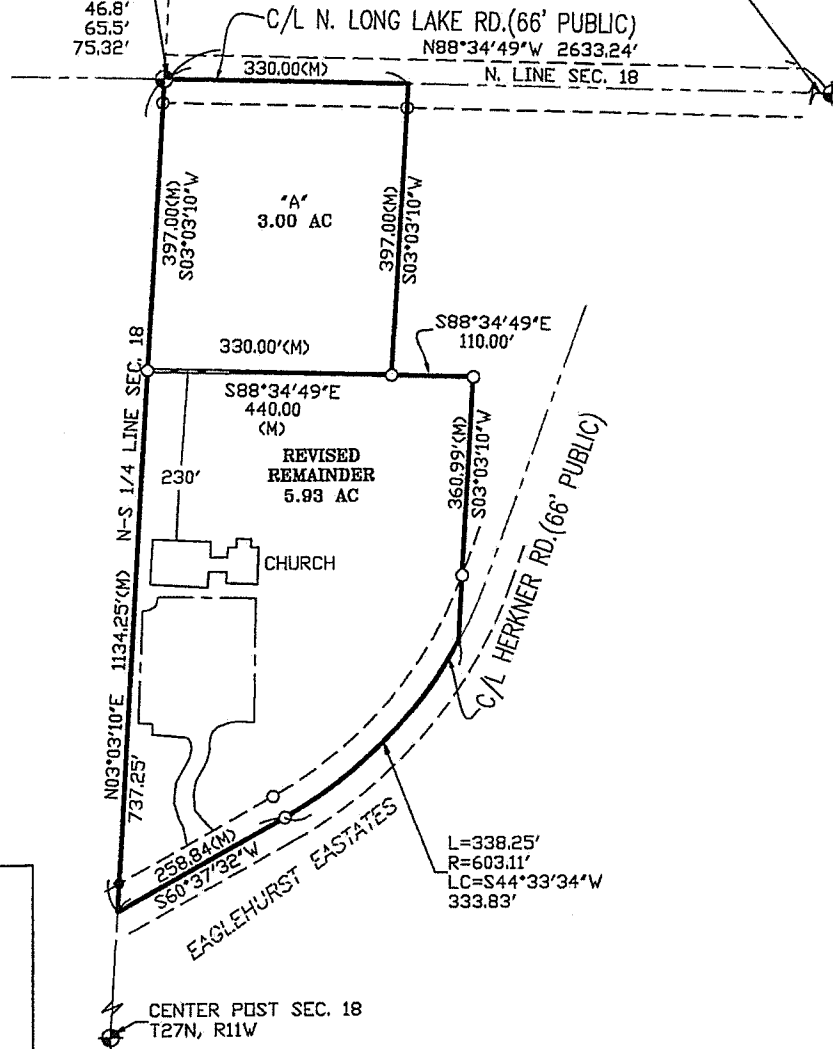
Scale: 1" = 200'

SPACE RESERVED FOR REGISTER OF DEEDS

N. 1/4 COR. SEC. 18
T27N, R11W
FD. REMON COR.
S40°W NW COR. GARAGE 177.75'
N36°W 1/2" REBAR 46.8'
S26°E 1/2" REBAR 65.5'
SOUTH P. POLE 75.32'

NE COR. SEC. 18
T27N, R11W
FD. REMON COR.
S20°W P. POLE 123.60'
N78°E 24" MAPLE 107.94'
S83°W 48" MAPLE 141.45'
S26°E TEL. POLE 54.40'

THIS PROPOSED PARCEL DIVISION IS
SUBJECT TO MUNICIPAL APPROVAL
PURSUANT TO THE "LAND DIVISION
ACT", P.A. 591 OF 1996, AS AMENDED.



ALTERATION OF ANY PART OF THIS DOCUMENT WITHOUT THE
PERMISSION OF BOB MITCHELL & ASSOCIATES IS PROHIBITED.

Jesse E. Mitchell
Professional Surveyor No. 54433

ERROR OF CLOSURE IS 1/10,000

BASIS OF BEARING: NAD 83 MI CENT SPCS

I, Jesse E. Mitchell, a Licensed Professional Surveyor in the State of Michigan, hereby certify that I have surveyed and mapped the above parcel of land; That the ratio of closure of the unadjusted field observations was within the accepted limits and that I have fully complied with the requirements of P.A. 132 of 1970.

CLIENT: NORTHERN LAKES COMMUNITY CHURCH

LOCATION:
PART OF NORTHEAST 1/4 OF SECTION 18
TOWN 27 NORTH, RANGE 11 WEST
GARFIELD TOWNSHIP,
GRAND TRAVERSE COUNTY, MICHIGAN.



Bob Mitchell & Associates
SURVEYING / ENGINEERING

404 West Main Street P.O. Box 306 NORTH 1ST STREET
Kingsley, MI 49649 HARTON, MI 49825
(231) 263-5463 • FAX (231) 263-7921
Toll Free in Michigan 1-800-533-8627
email Jesse@mapelville.com

DWN. JEM	DATE 01.29.2019 REVISED	FILE NO. 20170295
CK. WPM	F.D. BK. X PG. X	SHEET 1 OF 2

DESCRIPTION	
-------------	--

DESCRIPTION: A parcel of land situated in the Township of Garfield, County of Grand Traverse, State of Michigan and described as follows to-wit:

PARCEL "A"

Part of the Northeast 1/4, Section 18, Town 27 North, Range 11 West, more fully described as: Beginning at the North 1/4 corner of said Section 18; thence South 88°34'49" East, 330.00 feet, along the North line of said Section 18; thence South 03°03'10" West, 397.00 feet, parallel to the North-South 1/4 line of said Section 18; thence North 88°34'49" West, 330.00 feet, parallel to said North line of said Section 18; thence North 03°03'10" East, 397.00 feet, parallel to said North-South 1/4 line of said Section 18 to the Point of Beginning. Said parcel contains 3.00 acres.

SUBJECT TO all agreements, covenants, easements, right-of-ways, reservations and restrictions of record, if any.

DESCRIPTION: A parcel of land situated in the Township of Garfield, County of Grand Traverse, State of Michigan and described as follows to-wit:

REVISED REMAINDER PARCEL

Part of the Northeast 1/4, Section 18, Town 27 North, Range 11 West, more fully described as: Commencing at the North 1/4 corner of said Section 18; thence South 03°03'10" West, along the North and South One-Quarter line, 397.00 feet; thence South 88°34'49" East, 440.00 feet; thence South 03°03'10" West, 360.99 feet, parallel to said North-South 1/4 line of said Section 18, to a point on the centerline of Herkner Road; thence 338.25 feet on the arc of a 603.11 foot radius curve to the right, the long chord of which bears South 44°33'34" West, 338.83 feet; thence South 60°37'32" West, 258.84 feet, continuing along said centerline to the North-South 1/4 line of said Section 18; thence North 03°03'10" East, 737.25 feet, along said North-South 1/4 line to the Point of Beginning. Said parcel contains 5.93 acres.

SUBJECT TO all agreements, covenants, easements, right-of-ways, reservations and restrictions of record, if any.

ALTERATION OF ANY PART OF THIS DOCUMENT WITHOUT THE
PERMISSION OF BOB MITCHELL & ASSOCIATES IS PROHIBITED.

Jesse E. Mitchell
Professional Surveyor No. 54433

I, Jesse E. Mitchell, a Licensed Professional Surveyor in the State of Michigan, hereby certify that I have surveyed and mapped the above parcel of land; That the ratio of closure of the unadjusted field observations was within the accepted limits and that I have fully complied with the requirements of P.A. 132 of 1970.



BOB MITCHELL & ASSOCIATES
SURVEYING / ENGINEERING

404 West Main Street P.O. Box 306 NORTH 1ST STREET
Kingsley, MI 49649 Harrison, MI 48625
(231) 263-5463 • FAX (231) 263-7921
Toll Free in Michigan 1-800-533-6827
email jesse@mapcivilsurvey.com

CLIENT:

NORTHERN LAKES COMMUNITY CHURCH

LOCATION:

PART OF NORTHEAST 1/4 OF SECTION 18
TOWN 27 NORTH, RANGE 11 WEST
GARFIELD TOWNSHIP,
GRAND TRAVERSE COUNTY, MICHIGAN.

DWN. JEM

DATE 01.29.2019 REVISED

FILE NO. 20170295

CK. WPM

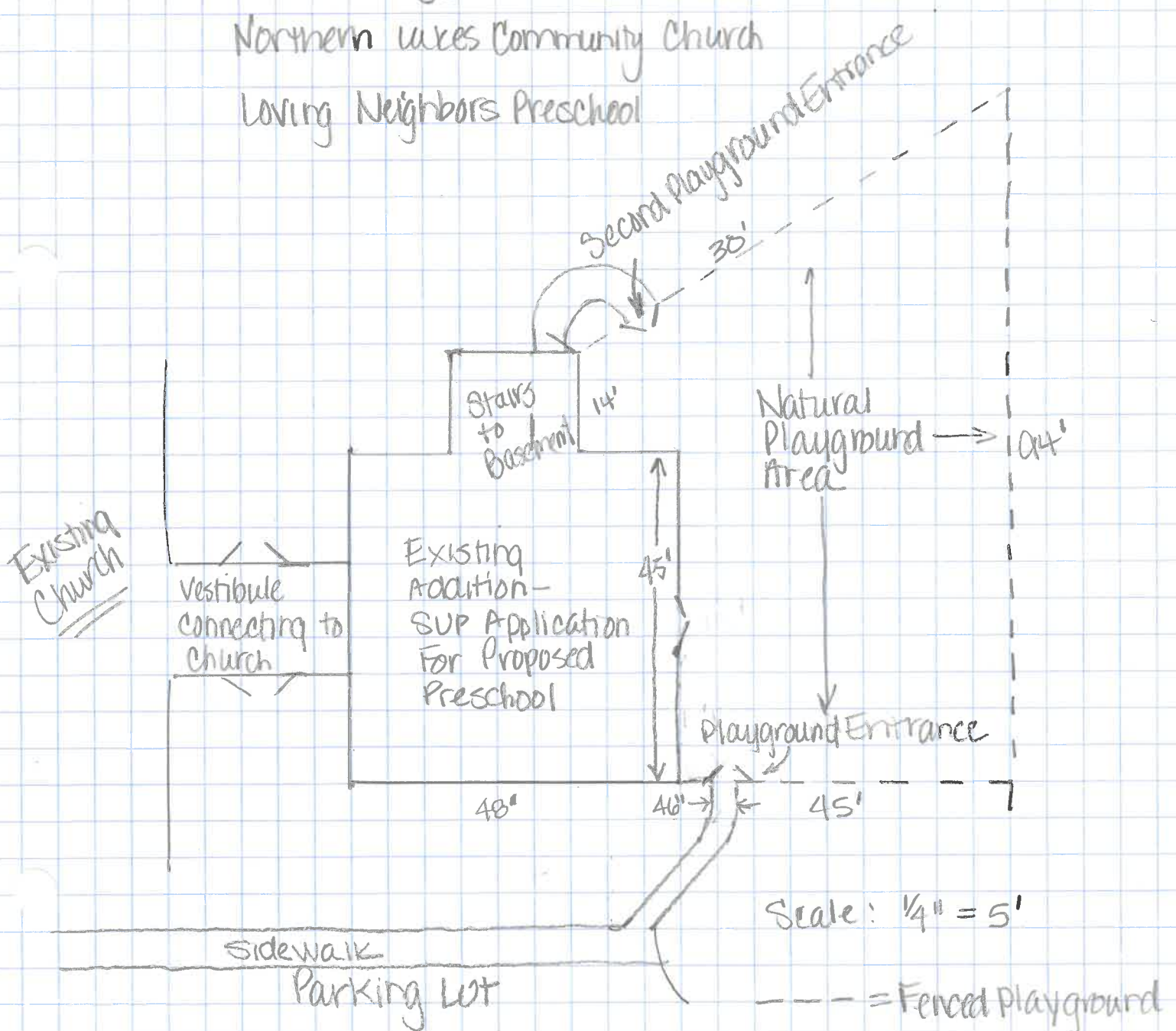
FLD. BK. X

PG. X

SHEET 2 OF 2

October 16, 2022
update

Proposed Playground Area for
Northern Lakes Community Church
Loving Neighbors Preschool



PROPOSED NEW

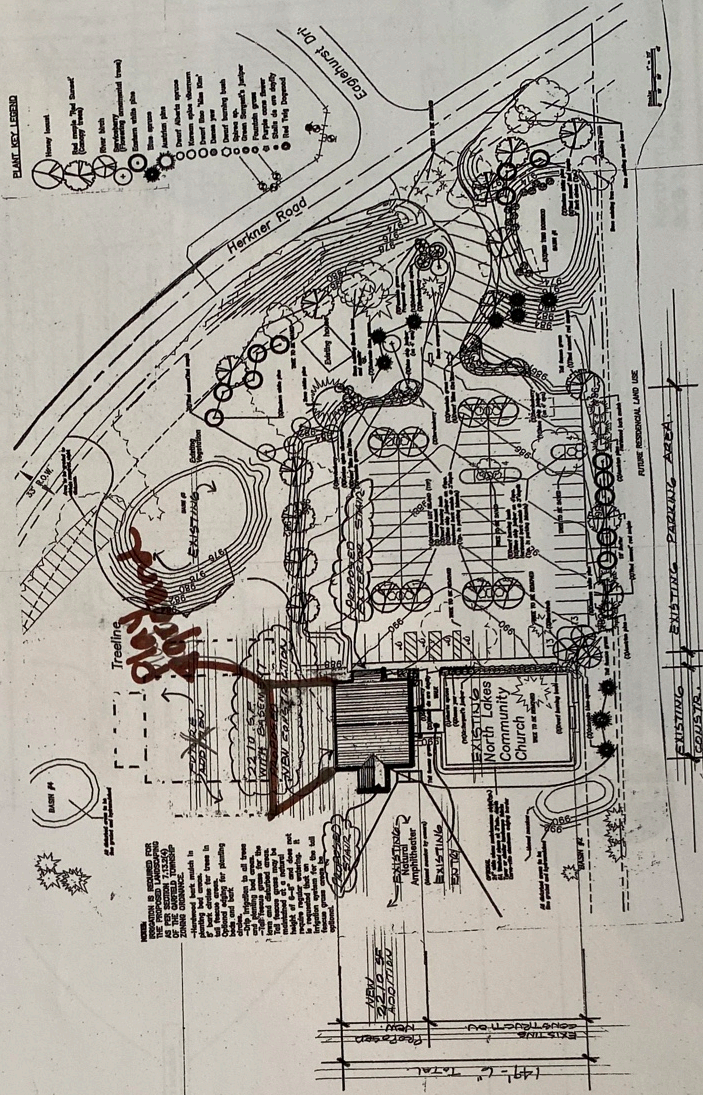
ADDITION FOR:

**NORTHERN
LAKES
COMMUNITY
CHURCH**

**5444 HERKNER RD.
TRAVERSE CITY, MI. 49684**

LIST OF DRAWINGS

- S1. SITE PLAN COVER SHEET
- A1. FOUNDATION PLAN
- A2. FLOOR PLAN
- A3. ELEVATIONS
- A4. ELEVATIONS
- A5. SECTION AND DETAILS
- A6. TJI FRAMING PLAN



PROPOSED SITE PLAN
SCALE 1/4\"/>

DAVID L. CHETI
ARCHITECT



Loving Neighbors Preschool: This photograph is from the parking lot. The larger building section on the left is the original church sanctuary building. The small connector building in the middle is the entrance for both the church and for the preschool. A foyer area. The building section on the right is going to house the preschool. The sidewalk that you will see on other photos is in the upper right area of the parking lot, near the large rock feature. This will provide access to the playground and a second door into the preschool building.



Loving Neighbors Preschool: This is the entrance to our church parking lot that is accessed via Herkner Road. The photograph was taken from across the street. The building is pretty well hidden from Herkner and most neighbors (probably not our best plan when we first built!).



Loving Neighbors Preschool: Entrance and foyer that connects the church building and the future preschool building. There are also double doors to the back yard area and a sidewalk...identical to the front doors.



Loving Neighbors Preschool: Sidewalk from parking lot into side yard of preschool building. After the playground and fencing is added this will go to a playground entrance (door), and to the side building entrance.



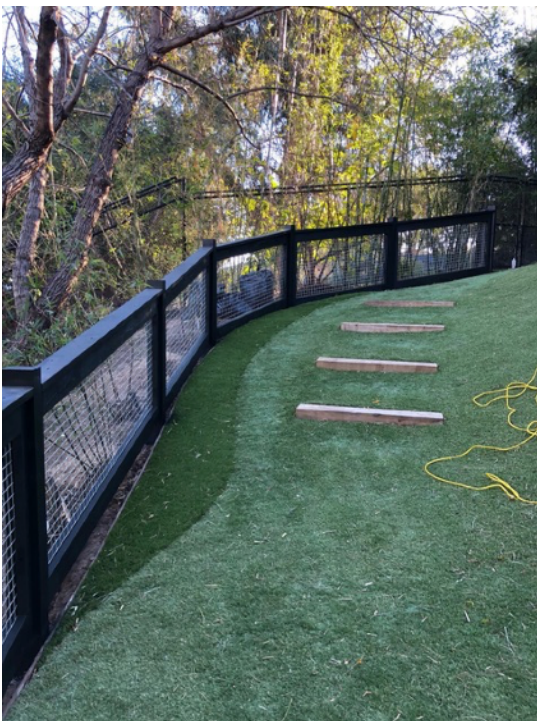
Loving Neighbors Preschool: Photo shows side of the Preschool building and location of future playground and the sidewalk approach from the parking lot. Red dashes show approximate location of playground. We kept it at least 10' short of the woods, so emergency vehicles could get through to the backyard of the church if needed.



Loving Neighbors Preschool: Photo also shows side of the Preschool building but more towards the back yard area. The playground will connect/end at the second corner marked with an X. The small white storage shed beyond the X is coming out.



The fencing on the left is the current fencing at the Children's House Montessori School, across from West High School. We like the look of the fencing that you can see through, and plan to use fencing that accomplishes this more open feel. The three fencing options below are what we are hoping to use (one like these), but have not done a full cost assessment of these options, so if it is acceptable to the township we would like to commit to an "open feel" fencing, that is finished with wood, and not just plain wood (too confining) and not chain link (not decorative enough).




Natural Playground Ideas:







 Charter Township of Garfield Planning Department Report No. 2022-114		
Prepared:	December 7, 2022	Pages: 7
Meeting:	December 14, 2022 Planning Commission	Attachments: <input checked="" type="checkbox"/>
Subject:	SPR 2022-16 Birmley Hills Site Condominium – Findings of Fact	
File No.	SPR 2022-16	Parcel No. 05-026-020-30
Owner:	T&R Investments, Steve Zakrajsek	
Agent:	Boyne Engineering and Design	

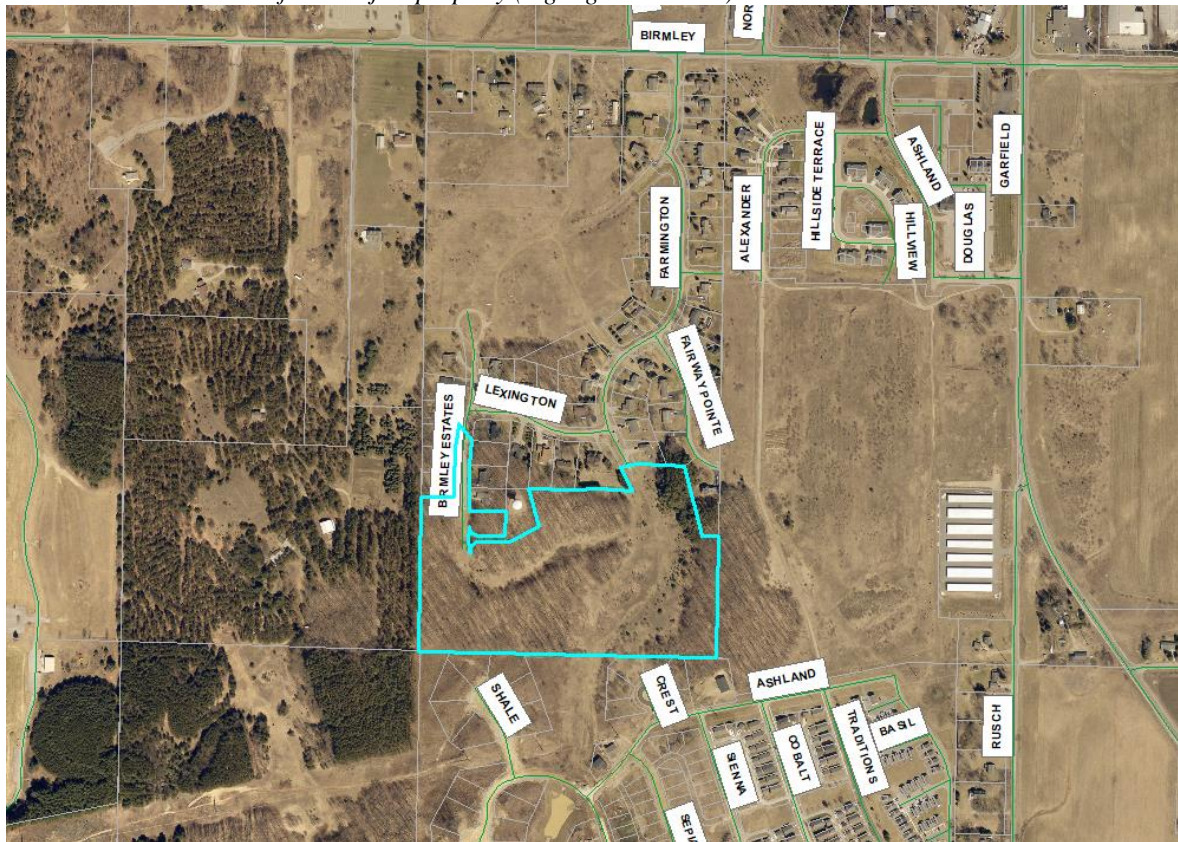
BACKGROUND:

Birmley Hills is a proposed 35-lot residential site condominium development immediately adjacent to the south of the existing Birmley Hills Estates subdivision. This application was introduced at the Planning Commission meeting on October 26, 2022. A public hearing was held at the November 9, 2022 meeting, at which Commissioners directed Staff to prepare the Findings of Fact for this application.

PURPOSE OF APPLICATION:

This application is for a site condominium development of 35 single-family residential lots. According to the application, the lots will be between 15,000 and 38,000 square feet in area. About 14% of the site will be preserved as open space and is primarily forested hills. The proposed development would be served by the water and sewer extending from the existing Birmley Hills Estates subdivision. These extensions of nearby utilities are currently being reviewed by the Township Engineer.

Zoomed-out aerial view of the subject property (highlighted in blue):



Zoomed-in aerial view of subject property (highlighted in blue):



SUBJECT PROPERTY:

The property is approximately 21.3 acres and is zoned as R-1 One-Family Residential. The property is at the end of Farmington Drive and Birmley Estates Drive which both provide access from Birmley Road.

STAFF COMMENT:

For the Planning Commission meeting on November 9, 2022, the applicants prepared an updated site plan drawing with a design showing a stub for water, sewer, and street connection to the adjacent property to the west. The street stub was found to be required based on Section 521 of the Zoning Ordinance and the Township Engineer's comments indicated a water main stub and sanitary main stub are also needed.

The public hearing was also held at the November 9, 2022 Planning Commission meeting, and there were several questions raised. These questions included the following:

- Some questions were raised about the effect of the proposed site condominium project on water pressure, with some people indicating issues with the current water pressure in the area. Staff and the Township Engineer offer the following information:
 - Residents located close to the Birmley water storage tank may experience water pressure issues due to low elevation of water storage tank and proximity to the tank. The tank and infrastructure have been in place since the late 1980s.
 - Currently, the minimum criteria of 40 PSI (pounds per square inch) at the main level of the residence are being provided, which meets the standard.
 - Construction of a new watermain loop for the proposed site condominium project would eliminate the existing dead ends and will help to improve water quality and further water pressure reductions are not anticipated.
 - According to the Grand Traverse County Department of Public Works, modifications are possible and can be made to improve consistency of the pressure and raise PSI slightly.

- Any residents with concerns are encouraged to contact the Planning Department with an address and description of when/where the lower pressures are being experienced. This information will be forwarded to the Township Engineer and the Grand Traverse County Department of Public Works for further investigation.
- Some questions concerned the impact of the project on existing subdivision roads, both in terms of construction and additional traffic.
 - Birmley Hills Estates Drive, Lexington Drive, and Farmington Drive are all public roads under the jurisdiction of the Grand Traverse County Road Commission (GTCRC). The GTCRC provided comments in November on the application, which are provided as an attachment, and no concerns with traffic levels have been cited.
 - The site condominium application includes information indicating that “According to the Institute of Transportation Engineers (ITE) publication for Trip Generation, 10th Edition, a Single-Family Detached home generates [an] Average Daily Traffic Rate of 9.44 trips per day divided between the two points of entry.” With 35 lots proposed for this site, this would generate about 330 total trips per day.
 - Section 618 of the Zoning Ordinance states that a “traffic impact report shall be required for any major development, special use permit, or site plan under the following described conditions” which include proposed developments that generate at least 150 trips during the peak hour or at least 500 trips per day, and proposed developments on 5-acre or larger sites. The Planning Director or Planning Commission can also waive the requirement for a traffic impact report if it is determined that such a report is “not necessary to determine needed road improvements or that no unsafe or hazardous conditions will be created by the development as proposed.” Given the total number of trips is anticipated to be under 500 per day and given the nature of the development as only single-family homes, Staff recommends the Planning Commission waive the requirement for a traffic impact report.
 - Metro Fire has also provided their comments on the application, which are provided as an attachment, and no concerns with traffic levels have been cited.
 - Other issues including the condition of existing public subdivision roads or stop signs on these roads are not affected by this development.
- Some people asked whether this site could be accessed from the south through the Traditions site instead of through the Birmley Hills Estates subdivision. Although this site and Traditions share the same owner, access to this site is currently from Birmley Estates Drive and Farmington Drive.
- There were questions regarding preserving trees on this site. The site plan describes two reserved open spaces, including a reserved wooded space in the southeast corner. It is anticipated that the tree removal would be primarily at the building sites for each home. Garfield Township does not have a tree preservation ordinance.

SITE CONDOMINIUM REVIEW CONSIDERATIONS:

Consultation

Section 429 B. of the Zoning Ordinance allows for the Planning Commission to consider input from the Township Attorney and Township Engineer as needed in its review of a condominium development plan, especially the master deed, deed restrictions, utility systems and streets, subdivision layout and design, and compliance with the Condominium Act. Other agencies will also review this application as needed. As noted above, the Township Engineer is reviewing the application for storm water, private roads, water, and sewer, and their letter dated November 1, 2022 is provided as an attachment.

FINDINGS OF FACT:

At its November 9, 2022 meeting, the Planning Commission directed Staff to prepare Findings of Fact for this site condominium application which are provided below. As stated in the Site Condominium Review Criteria within Section 429.G of the Zoning Ordinance, “For purposes of making a decision to approve, approve with conditions or to deny a site condominium subdivision plan, the Township shall consider and make findings with respect to the following criteria:”

- (1) *That each condominium lot in a site condominium subdivision shall be considered as a single lot and shall comply with all regulations of the zoning district in which it is located. In a condominium development containing single-family detached dwelling units, not more than one (1) dwelling unit shall be located on a condominium lot, nor shall a dwelling unit be located on a condominium lot with any other principal structure or use. Required yards shall be measured from boundaries of a condominium lot. These requirements shall be made part of the bylaws and recorded as part of the master deed*

*The Planning Commission may find this standard to be **MET** for the following reasons:*

- The application proposes 35 single-family lots on a site with R-1 One-Family Residential zoning. The lots as depicted on the site plan meet the minimum lot area of 15,000 square feet and minimum lot width of 100 feet for lots in R-1 with public sewer. These include the lots along the curve of a road, where lot width is measured from the front setback line instead of at the front lot line.

- (2) *That there is a proper relationship between the existing streets and highways within the vicinity, and proposed deceleration lanes, service drives, entrance and exit driveways, and parking areas to assure the safety and convenience of pedestrian and vehicular traffic, and that the proposed streets and access plan conform to any street or access plan adopted by the Township or the County Road Commission*

*The Planning Commission may find this standard to be **MET** for the following reasons:*

- The two proposed roads are Birmley Hills Drive, an extension of Birmley Estates Drive, and an extension of Farmington Court. These two roads currently provide access to the subject site. This system of roads connects to Birmley Road.
- Given that the total number of trips is anticipated to be under 500 per day and given the nature of the development as only single-family homes, Staff recommends the Planning Commission waive the requirement for a traffic impact report.
- A stub road connection to the adjacent parcel to the west is provided.
- The County Road Commission and Metro Fire have provided comments on the proposed site condominium, and no concerns with traffic levels have been cited.
- The proposed streets for this project appear to be a logical extension of the street pattern for this area and are in line with previous anticipated build-out of the neighborhood.

- (3) *That as many natural features of the landscape shall be retained as possible, particularly where they furnish a barrier or buffer between the project and adjoining properties used for dissimilar purposes, and where they assist in preserving the general appearance of the neighborhood or help control erosion or the discharge of storm waters*

*The Planning Commission may find this standard to be **MET** for the following reasons:*

- The applicants propose to reserve about 14% of the property as a wooded area including a contiguous area of 1.94 acres in the southeast corner of the property. This is a hilly area which helps provide a natural buffer to portions of Ashland Park and Traditions.
- Storm water management is subject to review by the Township Engineer.

(4) That any adverse effect of the proposed development and activities emanating therefrom upon adjoining residents or owners shall be minimized by appropriate screening, fencing or walls, or landscaping

*The Planning Commission may find this standard to be **MET** for the following reasons:*

- The proposed development consists of single-family homes, which are compatible with the existing single-family homes to the north in the Birmley Hills Estates subdivision and to the south within Traditions.
- The site is also compatible with the partially built Ashland Park site to the east.
- The site to the west is currently vacant but designated as Low Density Residential on the Future Land Use Map; the proposed development is compatible with the site to the west with the stub connection for water, sewer, and street connection provided.
- No major adverse effects are anticipated from the proposed development.

(5) That all provisions of this ordinance are complied with

*The Planning Commission may find this standard to be **MET** for the following reasons:*

- Development standards such as fences, lighting, landscaping, and parking are handled as part of the design for each individual condominium lot. The site plan notes that no site lighting is proposed for this development and that parking will be located on individual lots. No additional parking areas are proposed.
- As described above, Section 521.G(2) indicates that connecting streets are needed where “abutting areas are not subdivided,” and therefore a street stub connection to the west is provided to meet this standard. This street connection will also coincide with water and sewer connections to the west as indicated by the Township Engineer.
- Given that the total number of trips is anticipated to be under 500 per day and given the nature of the development as only single-family homes, Staff recommends the Planning Commission waive the requirement for a traffic impact report.
- Details for a proposed entrance sign are shown on Sheet C6.0. Signs require sign permit review and are not approved under the site plan review process.

(6) That all site condominium lots shall be provided access by either public or private roads in conformance with the requirements of this ordinance. All site condominium units shall be accessible to emergency vehicles

*The Planning Commission may find this standard to be **MET** for the following reasons:*

- All lots are proposed to be accessed by an extension of Farmington Court and by Birmley Hills Drive, which are proposed to be private roads.
- A stub street connection to the adjacent parcel to the west is provided, which will also be a private road.
- Access for emergency vehicles should reflect any comments from the relevant agencies.

- (7) *That a plan for erosion control and storm water discharge has been approved by the appropriate public agency; and*

*The Planning Commission may find this standard to be **MET** for the following reasons:*

- Review of erosion control and storm water will be handled by the Grand Traverse County Soil Erosion and Sedimentation and the Township Engineer, respectively. Storm water retention areas are shown on the west side behind Lot 22 and in northeast part of the site.

- (8) *That the plan as approved is consistent with the intent and purpose of zoning to promote public health, safety and general welfare; to encourage the use of lands in accordance with their character and adaptability to avoid the overcrowding of population; to lessen congestion on the public roads and streets; to reduce hazards to life and property; to facilitate adequate provisions for a system of transportation, sewage disposal, safe and adequate water supply, education, recreation and other public requirements; and to conserve the expenditure of funds for public improvements and services to conform with the most advantageous uses of land, resources and properties; to preserve property values and natural resources; and to give reasonable consideration to character of a particular area, its suitability for particular uses and the general appropriate trend and character of land, building, and population development and is otherwise in compliance with law.*

*The Planning Commission may find this standard to be **MET** for the following reasons:*

- The proposal is consistent with the current zoning of R-1 One-Family Residential and the Future Land Use Map designation of Low Density Residential. Further, the proposal is consistent with the intent to promote the public health, safety, and welfare and with the provisions of this standard.

PROCESS:

Site condominiums are reviewed by both the Planning Commission and Township Board. The Planning Commission shall hold a public hearing on the application and make a recommendation on the application to the Township Board. The Township Board conducts final review of the application but is not required to hold its own public hearing. This application was introduced at the Planning Commission meeting on October 26, 2022, and a public hearing was held on November 9, 2022. Findings of Fact, as described in the section above, are provided for the Planning Commission's consideration at this meeting.

ACTION REQUESTED:

The purpose of this agenda item is to consider Findings of Fact for this application. Following discussion and consideration, if the Planning Commissioners are comfortable with adopting these Findings of Fact, then the following motion is offered for consideration:

MOTION THAT the Findings of Fact for Application SPR 2022-16, submitted by T&R Investments, for a site condominium at Parcel #05-026-020-30, as presented in Planning Department Report 2022-114 and being made a part of this motion, BE ADOPTED.

The following motion is suggested to recommend approval of the project to the Township Board:

MOTION TO RECOMMEND TO the Township Board THAT application SPR 2022-16 BE APPROVED subject to the following conditions:

1. Final engineering review and approval by the Township Engineer is required including all infrastructure and stormwater.
2. All final reviews from agencies with jurisdiction shall be provided prior to any Land Use Permits being issued.
3. The applicant shall record promptly the Report and Decision Order (RDO) and any amendment to such order with the Grand Traverse County Register of Deeds in the chain of title for each parcel or portion thereof to which the RDO pertains. A copy of each recorded document shall be filed with the Township prior to any Land Use Permits being issued.
4. After recording the condominium plan, master deed, bylaws and deed restrictions, the developer shall file two (2) copies of each document, including all pertinent attachments, with the Township.
5. Condominium Protective Covenants and Deed Restrictions which hold harmless the Township for improvements within the site condominium subdivision and which require conformance with all conditions and requirements of condominium plan approval and this ordinance shall be required.
6. The Condominium Master Deed and Bylaws shall include the following statement: "Condominium Amendments which are recorded prior to the receipt of written Garfield Township Planning Department approval shall be considered null and void."
7. After the construction of all improvements, the developer shall file with the Township two (2) copies of the as-built condominium plan and a certification from the developer's engineer that the improvements have been installed in conformance with the approved construction drawings.

Any additional information the Planning Commission deems necessary should be added to this motion.

Attachments:

1. Application for Site Condominium Subdivision review dated September 22, 2022.
2. Birmley Hills Site Condominium Site Plan Set dated December 7, 2022.
3. Letter from Township Engineer dated November 1, 2022.
4. Letter from Metro Fire dated October 4, 2022.
5. Email from Grand Traverse County Road Commission dated November 8, 2022.



Charter Township of Garfield

Grand Traverse County

3848 VETERANS DRIVE
TRAVERSE CITY, MICHIGAN 49684
PH: (231) 941-1620 • FAX: (231) 941-1588

SITE CONDOMINIUM SUBDIVISION (SCSP) APPLICATION

ASSISTANCE

This application must be completed in full. An incomplete or improperly prepared application will not be accepted and will result in processing delays. Before submitting an application, it is recommended that you contact the Planning Department to arrange an appointment to discuss your proposed application. Time is often saved by these preliminary discussions. For additional information or assistance in completing this development application, please contact the Planning Department at (231) 941-1620.

ACTION REQUESTED

☒ Site Condominium Subdivision Plan Review

PROJECT / DEVELOPMENT NAME

BIRMLEY HILLS

APPLICANT INFORMATION

Name:

T & R INVESTMENTS

Address:

841 ASHLAND DRIVE, TC, MI 49696

Phone Number:

(231) 838-6004

Email:

zakrajseksteve@gmail.com

AGENT INFORMATION

Name:

BOYNE ENGINEERING AND DESIGN

Address:

PO BOX 94, BOYNE CITY, MI 49712

Phone Number:

(231) 499-8361

Email:

boyneeng@torchlake.com

OWNER INFORMATION

Name:

T & R

Address:

Phone Number:

Email:

CONTACT PERSON

Please select one person to be contact person for all correspondence and questions:

<input checked="" type="checkbox"/> Applicant:	Steve Zakrajsek
<input checked="" type="checkbox"/> Agent:	Carne May, P.E.
<input type="checkbox"/> Owner:	

PROPERTY INFORMATION

Property Address:	
Property Identification Number:	05-026-020-30
Legal Description:	SHEET CO.0
Zoning District:	R-1
Master Plan Future Land Use Designation:	
Area of Property (acres or square feet)	

SITE CONDOMINIUM SUBDIVISION PLAN

The site condominium subdivision plan shall indicate specific unit dimensions with front, rear and side site condominium lot lines allocated to each condominium unit. Parcels shall be referred to as site condominium lots. The description, size, location, and arrangement of the site condominium lots shall conform to the requirements of the Zoning Ordinance. All site condominium subdivision lots shall be deeded as limited common elements for the exclusive use of the owners of the condominium subdivision units. Each condominium dwelling unit shall be located within a condominium lot.

1. Name of the project, name and address of preparer, and date. ✓
2. The plan shall be of a scale not less than one inch (1") equals fifty feet (50'). ✓
3. All plans are to be accurately sealed. ✓
4. Layout and dimensions of all condominium lots.
5. Layout and dimensions of all roadways and pedestrian pathways. ✓
6. Adequate drainage of surface water, stormwater disposal methods. .
7. Distribution of telephone, electric, television, and other similar services by underground wire or cable.
8. First floor elevation of buildings (if applicable).
9. Location of gas lines.
10. Location of water lines, and hydrants or other appurtenances.
11. Location of sanitary sewer lines including the location and size of the proposed service.
12. Location of existing and proposed fencing, landscaping, screening, or other buffers required.
13. Location of streetlights and light fixture details.

REQUIRED SUBMITTAL ITEMS

A complete application for a Site Condominium Subdivision Plan consists of the following:

Application Form:

- ☒ One original signed application
- ☒ One digital copy of the application (PDF only)

Application Fee:

Fees are established by resolution of the Garfield Township Board and are set out in the current Fee Schedule as listed on the Planning Department page of the Township website (<http://www.garfield-twp.com>). Please make check out to Charter Township of Garfield.

☒ Fee

Site Condominium Subdivision Plan:

☒ Ten complete stapled 11"x17" paper sets

☒ Two complete bound 24"x36" paper sets

☒ One digital set (PDF only)

Digital items to be delivered via email or USB flash drive

SUBMITTAL DEADLINE

Submittal deadlines are listed on the Planning Department page of the Township website (<http://www.garfield-twp.com>). Please note that the listed dates are the deadlines after which submittals will not be considered for the indicated meeting. Any errors or missing information on an application submitted at the deadline will result in a delay in the processing of the application. An earlier submittal is encouraged to avoid possible delays.

REVIEW PROCEDURE

Subject to the standards of § 429.G of the Zoning Ordinance, a proposed Site Condominium Subdivision shall be reviewed in accordance with § 429.H and generally summarized as follows:

1. Agency Submittal: The applicant shall provide copies of the proposed site condominium subdivision plan to the following Grand Traverse County Agencies: Health Department (or Department of Public Works if proposed on municipal water and/or sanitary sewer), Drain Commissioner (or Township designee), Soil Erosion-Sedimentation Control Director (or Township designee), Road Commission (or Michigan Department of Transportation if proposed on a state highway), and the Metro Fire Department.
2. Independent Review: An independent engineer or other consultant may be hired, at the applicant's expense, to review the project and make recommendations to the Township.
3. Public Hearing: The Planning Commission shall hold a public hearing on the proposed site condominium subdivision plan, for the purpose of reviewing and making a recommendation of approval, approval with conditions, or denial to the Township Board.
4. Planning Commission Determination: If the Planning Commission determines that the proposed plan meets all requirements of this ordinance and the Condominium Act, the Planning Commission shall recommend approval or approval with conditions of the site condominium subdivision plan and shall send notice of action taken with comments to the Township Board. If the Planning Commission determines that the site condominium subdivision plan does not meet all requirements, the Planning Commission shall state its reason in its official minutes, shall forward same to the Township Board, and shall recommend disapproval of the plan by the Township Board until the objections causing disapproval have been changed to meet the requirements of this ordinance and the Condominium Act.
5. Township Board Determination: The Township Board shall approve the site condominium subdivision plan, with or without conditions, reject the plan and give its reasons, table the proceedings pending further review or pending changes to the plan to make it acceptable to the Board, or refer that application back to the Planning Commission for further review and report.

OTHER INFORMATION

If there is any other information that you think may be useful in the review of this application, please attach it to this application or explain it on a separate page.

PERMISSION TO ENTER SUBJECT PROPERTY


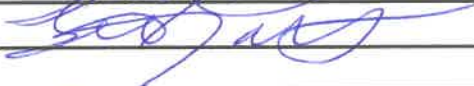

Permission is hereby granted to Garfield Township staff and Planning Commissioners to enter the premises subject to this application for the purposes of making inspections associated with this application, during normal and reasonable working hours.

Owner Signature:

Applicant Signature:

Agent Signature:

Date:




9-22-22

OWNER'S AUTHORIZATION

If the applicant is not the registered owner of the lands that is the subject of this application, the owner(s) must complete the authorization set out below.

I/We _____ am/are the registered owner(s) of the lands that is the subject of this application for a site condominium subdivision.

Owner Signature:

Date:

I/We _____ authorize to make this application on my/our behalf and to provide any of my/our personal information necessary for the processing of this application.

Owner Signature:

Date:

AFFIDAVIT


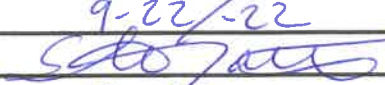
The undersigned affirms that he/she or they is (are) the owner, or authorized agent of the owner, involved in the application and all of the information submitted in this application, including any supplemental information, is in all respects true and correct. The undersigned further acknowledges that willful misrepresentation of information will terminate this permit application and any permit associated with this document.

Owner Signature:

Date:

Applicant Signature:

Date:


9-22-22

9-22-22



BOYNE ENGINEERING AND DESIGN, PLLC.

PO BOX 94 Boyne City, MI 49712 (231) 499-8361 boyneeng@torchlake.com

BIRMLEY HILLS
A SITE CONDOMINIUM PROPOSAL

September 22, 2022

Applicant / Owner: T & R Investments
841 Ashland Drive
Traverse City, MI 49696

Steve Zakrajsek (231) 838-6004

Meeting Date: October 26, 2022

Package Contents:

1. Statement of Proposed Use
2. Impact Statement & Traffic Assessment
3. Stormwater Control Plan
4. Engineered Plans 10 Sheets

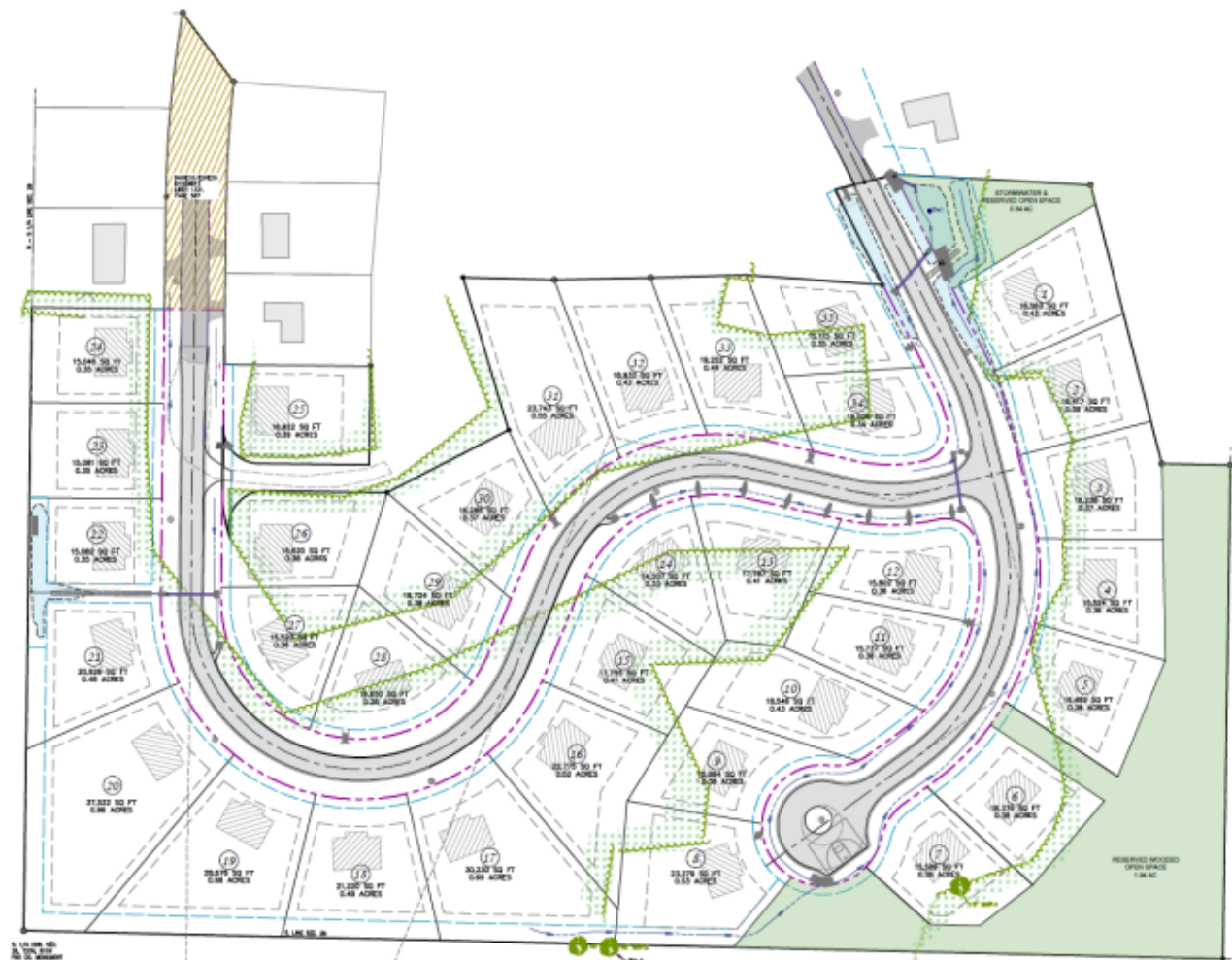
Dated 9/21/22

STATEMENT OF PROPOSED USE

Birmley Hills is a proposed 35 lot residential site condominium development on 21.3 acres located in Garfield Township's R-1 Residential zoning district.

The property is part of Section 26, Township 27 North, Range 11 West and is located at the end of Birmley Estates Drive and Farmington Drive off of Birmley Road. The Tax ID for the property is 05-026-020-30.

The lots in this proposed development are between 1,500 sf and 3,800 sf. Approximately 14% of the net acreage in this development is being reserved as open space and consists primarily of forested hills. The development will include 2 new 24' wide private roads which intersect and connect in a loop to Birmley Estates Drive and Farmington Road. Both existing roads have partial extensions where additional roads have previously been planned. Birmley Hills Drive is approximately 1,469 ft long and will intersect with Farmington Court, which is approximately 822 ft long and ends in a cul-de-sac. The proposed development will be served by municipal water and sewer also extending from the same Birmley Estates roads. There is a Garfield Township elevated water storage tank at the top of this development. All utilities will be underground and there is a monument sign proposed for the entry at Farmington Court.



IMPACT STATEMENT

**T & R Investments
841 Ashland Drive
Traverse City, MI 49696**

Contact: Steve Zakrajsek (231) 838-6004

Proposed Birmley Hills 35 Lot Residential Site Condominium

Tax ID: 05-026-020-30

1.) PROJECT DESCRIPTION:

Birmley Hills is a proposed 35 lot residential site condominium development located on 21.3 acres in Garfield Township's R-1 Residential zoning district.

The property is part of Section 26, Township 27 North, Range 11 West and is located at the end of Birmley Estates Drive and Farmington Drive off of Birmley Road. The Tax ID for the property is 05-026-020-30.

The lots in this proposed development are between 1,500 sf and 3,800 sf. Approximately 14% of the net acreage in this development is being preserved as open space and consists primarily of forested hills. The development will include 2 new 24' wide private roads which intersect and connect in a loop to Birmley Estates Drive and Farmington Road. Both existing roads have partial extensions where additional roads have previously been planned. Birmley Hills Drive is approximately 1,469 ft long and will intersect with Farmington Court, which is approximately 822 ft long and ends in a cul-de-sac. The cul-de-sac includes an elongated edge which will accommodate a sports court. The proposed development will be served by municipal water and sewer also extending from the same Birmley Estates roads. There is a Garfield Township elevated water storage tank at the top of this development. All utilities will be underground and there is a monument sign proposed for the entry at Farmington Court. The private right-of-way is 66 feet wide and there is an additional 10 foot public easement on both sides for municipal utilities. The road grades in this development range between 1% and 8.5%. Homes in the development are expected to average 1,800 square feet with some larger homes. There are forested slopes throughout the property and the roadways are located in the middle of the property to minimize disruption of those forests and impact on the neighboring community. Stormwater will be handled with open ditches along the roadways and basins near the natural discharge locations in keeping with the character of the adjacent development. There is a break in the direction of the stormwater watershed midway through the property. A stormwater control plan has been engineered to meet Garfield Township stormwater regulations which includes detention and infiltration basins with sediment forebays.

2.) DEMAND ON COMMUNITY SERVICES:

- A.) The development will be served by municipal sewer which is expected to have capacity for these homes. The plans will be reviewed by the Grand Traverse County Department of Public Works
- B.) The development will be served by municipal water which is also expected to have capacity for these homes. There is an elevated storage tank feeding the system directly adjacent to the development. The plans will be reviewed by the Grand Traverse County Department of Public Works.
- C.) According to the Institute of Transportation Engineers (ITE) publication for Trip Generation, 10th Edition, a Single-Family Detached home generates an Average Daily Traffic rate of 9.44 trips per day divided between the two points of entry. The Peak Hour traffic for this use would occur typically between the hours of 7:00am and 9:00 am with a rate of 0.74 trips per hour with outbound traffic accounting for 75% of those trips. This would equate to approximately 26 trips in that hour divided by the two points of entry. It is unlikely that a formal traffic study would find that this number of trips would reduce the Level of Service on the adjoining public roads. The plans will be reviewed by the Grand Traverse County Road Commission.
- D.) According to 2000 census data, this development could add approximately 35 children to local schools.
- E.) The Grand Traverse Metro Fire Department will review the plans for this relatively simple residential development. Appropriate home spacing, road grades, paving, access routes, turning radii and fire hydrants are included in the design.

1.) ENVIRONMENTAL IMPACTS:

- A.) The Engineered Site Plan includes proposed grading and soil erosion control measures.
- B.) The Engineered Site Plan includes a Stormwater Runoff Control Plan which addresses stormwater runoff and control according to the Garfield Township requirements. A soil erosion and sediment control permit will be required for construction of the project.
- C.) This project does not border on the shoreline and there are no wetlands in the vicinity of the proposed development.
- D.) This project preserves forested areas and will not significantly disturb the existing forested areas of the property outside of homesites. It would not negatively affect wildlife habitats in those areas. Some tree clearing will be required to construct the improvements and create buildable lots but will be minimized to the extent possible.
- E.) This project will not significantly contribute to air pollution due to the fact that it is not a commercial type use and is replacing the same residential uses elsewhere.
- F.) It is not anticipated that water pollution will result from this development. Increased runoff due to impervious surfaces is mitigated according to the Stormwater Control Plan and infiltration is planned in what are well draining sandy soils.
- G.) The proposed development can be expected to generate noise typical of a residential development which is not considered a harmful noise producing use.

This completes the impact statement for this project. If there are any questions regarding this statement or the project, please contact:

Boyne Engineering and Design - Ms. Carrie May, P.E. at (231) 499-8361.



BOYNE ENGINEERING AND DESIGN, PLLC.

PO BOX 94 Boyne City, MI 49712 (231) 499-8361 boyneeng@torchlake.com

SUMMARY OF
STORMWATER RUNOFF CONTROL PLAN
FOR

BIRMLEY HILLS A SITE CONDOMINIUM

GARFIELD TOWNSHIP, MI

BED PROJECT NO: 22016

September 22, 2022



Carrie May
9/22/22

STORMWATER CONTROL PLAN

DESCRIPTION

Birmley Hills is a proposed 35 lot residential site condominium development located in Garfield Township's R-1 Residential zoning district.

The property is part of Section 26, Township 27 North, Range 11 West and is located at the end of Birmley Estates Drive and Farmington Drive off of Birmley Road. The Tax ID for the property is 05-026-020-30.

Hydrology modeling and runoff calculations were performed by Boyne Engineering and Design using SCS TR-20 Method and Hydrocad software. Detailed model calculations are attached which correspond to the stormwater summary and watershed maps included on the engineered plans (See Sheet C2.1). The following parameters describe the site conditions and modeling assumptions.

WATERSHED

The overall watershed containing this 21.3 acre development is approximately 116 acres. Much of that watershed is upstream of the property and includes forested hills and pasture and range land. These areas do not generate significant runoff because of their cover and well-draining soils. The developed areas are modeled as 1/3 ac residential, paved surfaces, and wooded open space.

SOILS AND TERRAIN

The USDA Soil Conservation maps of this area show that the soils can be expected to be sandy. A test hole was dug at the location of the lower detention basin and these expectations were confirmed. Historical soil borings in other parts of the property corroborate sandy soils. The slopes on the site vary between 1% and 28% with the steep areas being largely confined areas not planned for development. The proposed drives have been profiled to follow the existing contours to the extent possible and to balance earthwork.

SOIL EROSION

The engineered Grading and Drainage plan (See Sheet C2.1) specifies temporary and permanent soil erosion measures including construction entrances, silt fence, minimum earth disturbance requirements, slope stabilization requirements, 3:1 and 4:1 maximum ditch and basin side slopes, stabilized overflows and level spreader outlets, and seeding requirements.

STORMWATER

The following summarizes the stormwater control requirements of Garfield Township and the design components which satisfy those requirements (See the attached detailed calculations and Sheet C2.1 of the engineered plans for more information).

- RUNOFF GENERATED FROM SITE IMPROVEMENTS IS RETAINED ON SITE IN RETENTION/INFILTRATION BASINS DESIGNED TO LIMIT OUTFLOW < 0.13 CFS PER ACRE FOR A 25 YEAR, 24HR STORM EVENT:

DEVELOPED AREA: 21.10 ACRE * 0.13 = 2.743 CFS ALLOWED
DESIGN OUTFLOW 25 YR, 24 HR EVENT: 2.28 CFS

- THE STORAGE VOLUME PROVIDED EXCEEDS REQUIREMENTS:

PREDEVELOPED 2 YEAR RUNOFF: 0.005af

DEVELOPED 25 YEAR GENERATED RUNOFF: 2.156af
DEVELOPED 25 YEAR INFILTRATION: $\frac{-1.175af}{=0.981af}$

STORAGE REQUIRED(0.981-0.005): 0.967af
STORAGE PROVIDED: 1.55 af

- BASIN SLOPES DO NOT EXCEED 3:1, NO SLOPES EXCEEDING 2:1
- SNOW STORAGE AREAS ARE INDICATED ON PLAN
- CHECK DAMS ARE PROVIDED AT DITCH LOCATIONS WITH ANTICIPATED FLOWS > 4FT/S AND EROSION CONTROL BLANKETS ARE SPECIFIED
- THE STORMWATER FACILITIES ARE DESIGNED TO SAFELY PASS A 100 YEAR, 24HR STORM EVENT WITHOUT INCREASING DOWNSTREAM FLOODING.
- BASINS ARE DESIGNED TO DRAIN THROUGH INFILTRATION WITHIN 72 HOURS

ATTACHMENTS

1. NRCS soil report
2. Hydrocad modeling and runoff calculations
3. Engineered Site Plans

ATTACHMENTS



United States
Department of
Agriculture

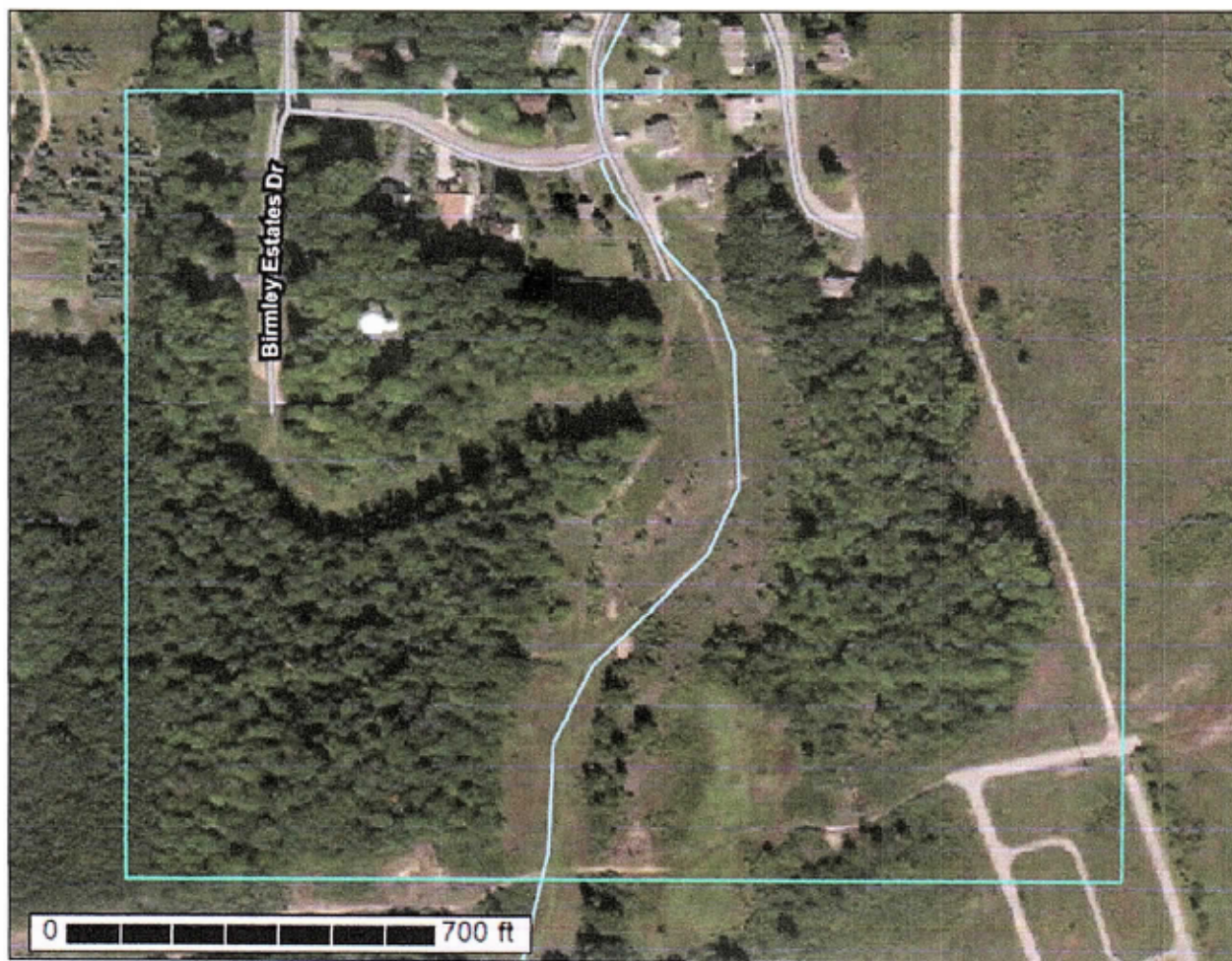
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

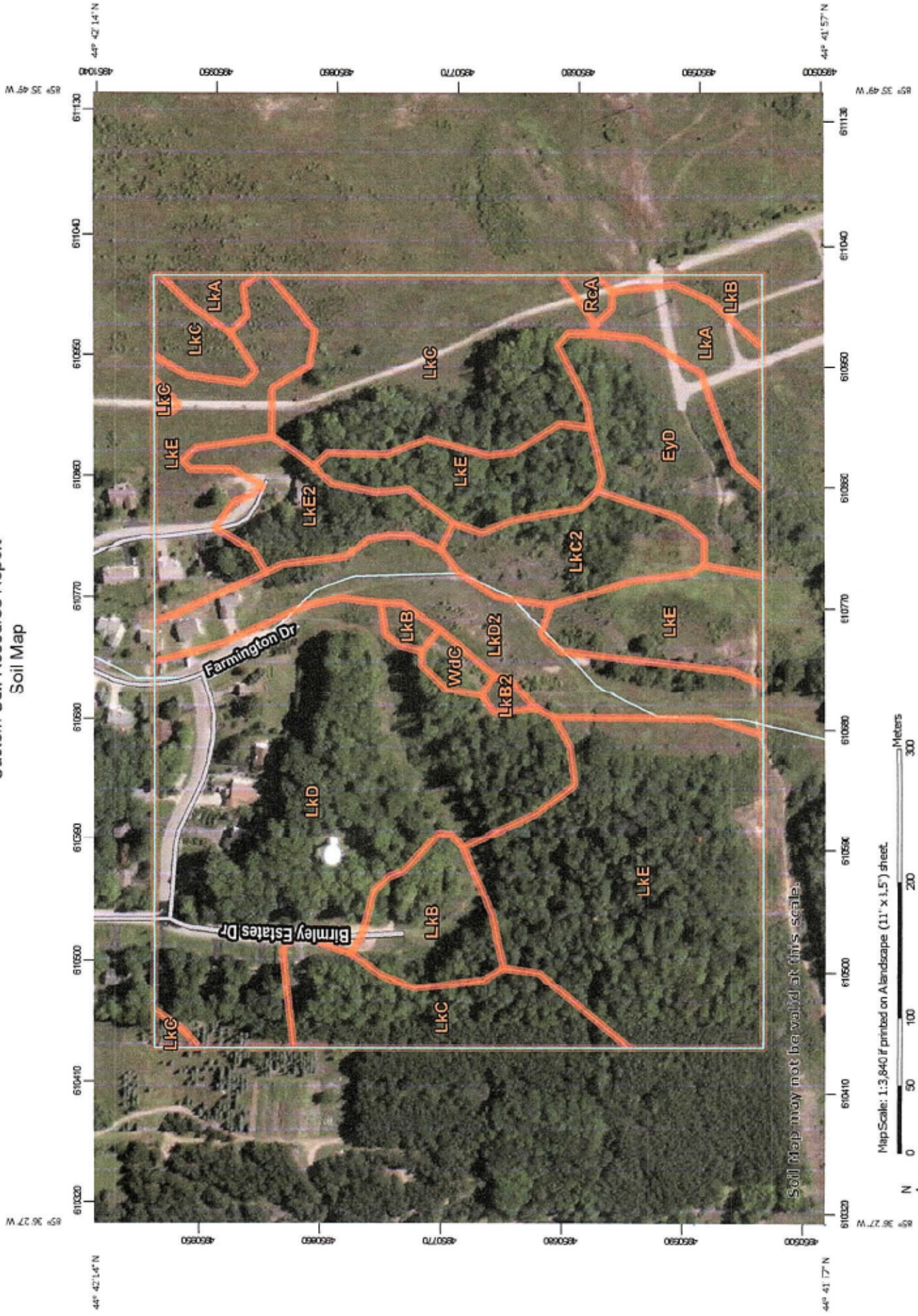
Custom Soil Resource Report for **Grand Traverse County, Michigan**

Birmley Estates



June 19, 2022

Custom Soil Resource Report Soil Map





































Soil Map may not be valid at this scale.

Map Scale: 1:3,840 if printed on A landscape (11" x 17") sheet.

0 50 100 200 300 Meters
0 150 300 600 900 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge ties: UTM Zone 16N WGS84

MAP LEGEND

	Area of Interest (AOI)		Soil Map Unit Polygons
	Soil Map Unit Lines		Soil Map Unit Points
	Special Point Features		Water Features
	Blowout		Streams and Canals
	Borrow Pit		Transportation
	Clay Spot		Rails
	Closed Depression		Interstate Highways
	Gravel Pit		US Routes
	Gravelly Spot		Major Roads
	Landfill		Local Roads
	Lava Flow		Background
	Marsh or swamp		Aerial Photography
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slip or Slip		
	Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Grand Traverse County, Michigan
Survey Area Data: Version 15, Sep 1, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009--Jun 19, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
EyD	Emmet sandy loam, 12 to 18 percent slopes	3.6	5.6%
LkA	Leelanau-Kalkaska loamy sands, 0 to 2 percent slopes	2.3	3.5%
LkB	Leelanau-Kalkaska loamy sands, 2 to 6 percent slopes	2.9	4.4%
LkB2	Leelanau-Kalkaska loamy sands, 2 to 6 percent slopes, moderately eroded	0.2	0.2%
LkC	Leelanau-Kalkaska loamy sands, 6 to 12 percent slopes	11.0	17.1%
LkC2	Leelanau-Kalkaska loamy sands, 6 to 12 percent slopes, moderately eroded	2.6	4.0%
LkD	Leelanau-Kalkaska loamy sands, 12 to 18 percent slopes	15.4	23.8%
LkD2	Leelanau-Kalkaska loamy sands, 12 to 18 percent slopes, moderately eroded	5.0	7.8%
LkE	Leelanau-Kalkaska loamy sands, 18 to 25 percent slopes	18.7	29.0%
LkE2	Leelanau-Kalkaska loamy sands, 18 to 25 percent slopes, moderately eroded	2.4	3.7%
RcA	Richter loams, 0 to 2 percent slopes, overwash	0.2	0.3%
WdC	Wind eroded land, sloping	0.4	0.5%
Totals for Area of Interest		64.6	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class.

Hydric soil rating: No

**LkB2—Leelanau-Kalkaska loamy sands, 2 to 6 percent slopes,
moderately eroded**

Map Unit Setting

National map unit symbol: 6c5z

Elevation: 600 to 1,900 feet

Mean annual precipitation: 27 to 34 inches

Mean annual air temperature: 39 to 46 degrees F

Frost-free period: 70 to 150 days

Farmland classification: Farmland of local importance

Map Unit Composition

Leelanau, moderately eroded, and similar soils: 60 percent

Kalkaska, moderately eroded, and similar soils: 40 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leelanau, Moderately Eroded

Setting

Landform: Moraines

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: 20 to 52 inches of sandy and loamy material over calcareous sandy glaciofluvial deposits

Typical profile

H1 - 0 to 7 inches: loamy sand

H2 - 7 to 28 inches: loamy sand

H3 - 28 to 36 inches: sandy loam

H4 - 36 to 60 inches: loamy sand

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: A

Ecological site: F096XA006MI - Snowy Rich Sandy Drift

Hydric soil rating: No

Description of Kalkaska, Moderately Eroded

Setting

Landform: Moraines, outwash plains

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy glaciofluvial deposits

Typical profile

H1 - 0 to 6 inches: loamy sand

H2 - 6 to 8 inches: sand

H3 - 8 to 36 inches: sand

H4 - 36 to 60 inches: sand

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: A

Ecological site: F096XA006MI - Snowy Rich Sandy Drift

Hydric soil rating: No

LkC—Leelanau-Kalkaska loamy sands, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 6c6D

Elevation: 600 to 1,900 feet

Mean annual precipitation: 27 to 34 inches

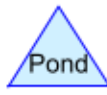
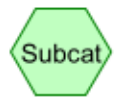
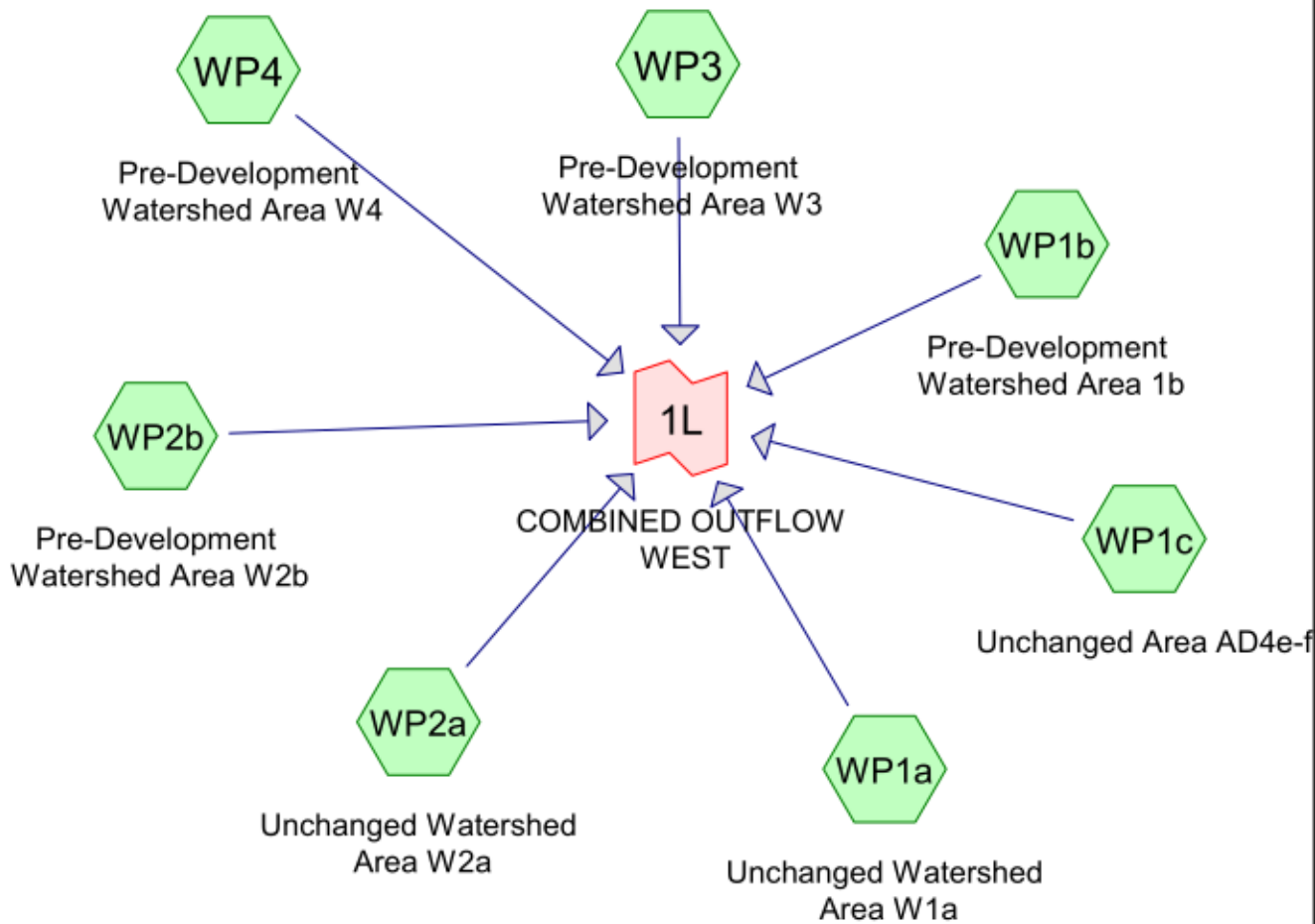
Mean annual air temperature: 39 to 46 degrees F

Frost-free period: 70 to 150 days

Farmland classification: Farmland of local importance

Map Unit Composition

Leelanau and similar soils: 55 percent



Routing Diagram for 22016 BIRMLEY HILLS PREDEVELOPED
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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25-Year	Type II 24-hr		Default	24.00	1	3.89	2

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Type II 24-hr 25-Year Rainfall=3.89"

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Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WP1a: Unchanged Runoff Area=3,964,046 sf 7.19% Impervious Runoff Depth=0.13"
Flow Length=5,546' Tc=111.9 min CN=44 Runoff=1.28 cfs 0.974 af

Subcatchment WP1b: Pre-Development Runoff Area=724,193 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=5,546' Tc=111.9 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment WP1c: Unchanged Area Runoff Area=139,558 sf 2.87% Impervious Runoff Depth=0.00"
Flow Length=823' Tc=49.5 min CN=33 Runoff=0.00 cfs 0.000 af

Subcatchment WP2a: Unchanged Runoff Area=30,019 sf 30.00% Impervious Runoff Depth=0.71"
Flow Length=300' Slope=0.0600 '/' Tc=39.8 min CN=60 Runoff=0.26 cfs 0.041 af

Subcatchment WP2b: Pre-Development Runoff Area=146,620 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=300' Slope=0.0600 '/' Tc=39.8 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment WP3: Pre-Development Runoff Area=24,099 sf 8.51% Impervious Runoff Depth=0.04"
Tc=15.0 min CN=39 Runoff=0.00 cfs 0.002 af

Subcatchment WP4: Pre-Development Runoff Area=25,056 sf 19.49% Impervious Runoff Depth=0.33"
Tc=15.0 min CN=51 Runoff=0.11 cfs 0.016 af

Link 1L: COMBINED OUTFLOW WEST Inflow=1.33 cfs 1.033 af
Primary=1.33 cfs 1.033 af

Total Runoff Area = 116.014 ac Runoff Volume = 1.033 af Average Runoff Depth = 0.11"
93.97% Pervious = 109.016 ac 6.03% Impervious = 6.998 ac

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Type II 24-hr 25-Year Rainfall=3.89"

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Summary for Subcatchment WP1a: Unchanged Watershed Area W1a

Runoff = 1.28 cfs @ 15.05 hrs, Volume= 0.974 af, Depth= 0.13"
 Routed to Link 1L : COMBINED OUTFLOW WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
1,216,417	36	Woods, Fair, HSG A
1,349,870	49	Pasture/grassland/range, Fair, HSG A
* 71,405	36	*Paved roads w/curbs & sewers, HSG A
* 779,709	36	*1/3 acre lots, 30% imp, HSG A
327,334	60	Woods, Fair, HSG B
49,414	69	Pasture/grassland/range, Fair, HSG B
* 169,897	60	*1/3 acre lots, 30% imp, HSG B
3,964,046	44	Weighted Average
3,679,164		92.81% Pervious Area
284,882		7.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	300	0.0600	0.13		Sheet Flow, DOWN FORESTED HILLSIDE
					Woods: Light underbrush n= 0.400 P2= 2.24"
72.1	5,246	0.0300	1.21		Shallow Concentrated Flow, WINDING THROUGH VALLEYS
					Short Grass Pasture Kv= 7.0 fps
111.9	5,546	Total			

Summary for Subcatchment WP1b: Pre-Development Watershed Area 1b

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
 Routed to Link 1L : COMBINED OUTFLOW WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
407,380	30	Woods, Good, HSG A
313,744	30	Meadow, non-grazed, HSG A
3,069	55	Woods, Good, HSG B
724,193	30	Weighted Average
724,193		100.00% Pervious Area

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Type II 24-hr 25-Year Rainfall=3.89"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	300	0.0600	0.13		Sheet Flow, DOWN FORESTED HILLSIDE Woods: Light underbrush n= 0.400 P2= 2.24"
72.1	5,246	0.0300	1.21		Shallow Concentrated Flow, WINDING THROUGH VALLEYS Short Grass Pasture Kv= 7.0 fps
111.9	5,546	Total			

Summary for Subcatchment WP1c: Unchanged Area AD4e-f

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
 Routed to Link 1L : COMBINED OUTFLOW WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
126,188	30	Woods, Good, HSG A
13,370	57	1/3 acre lots, 30% imp, HSG A
139,558	33	Weighted Average
135,547		97.13% Pervious Area
4,011		2.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
44.7	100	0.0200	0.04		Sheet Flow, FROM TOP OF WOODLAND Woods: Dense underbrush n= 0.800 P2= 2.24"
1.7	203	0.1500	1.94		Shallow Concentrated Flow, THROUGH WOODS Woodland Kv= 5.0 fps
1.3	123	0.0490	1.55		Shallow Concentrated Flow, THROUGH YARD Short Grass Pasture Kv= 7.0 fps
1.8	397	0.0153	3.67	6.89	Trap/Vee/Rect Channel Flow, DITCH Bot.W=2.00' D=0.50' Z= 4.0 & 3.0 ' Top.W=5.50' n= 0.024
49.5	823	Total			

Summary for Subcatchment WP2a: Unchanged Watershed Area W2a

Runoff = 0.26 cfs @ 12.45 hrs, Volume= 0.041 af, Depth= 0.71"
 Routed to Link 1L : COMBINED OUTFLOW WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
* 30,019	60	*1/3 acre lots, 30% imp, HSG B
21,013		70.00% Pervious Area
9,006		30.00% Impervious Area

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Type II 24-hr 25-Year Rainfall=3.89"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	300	0.0600	0.13		Sheet Flow, DOWN FORESTED HILLSIDE Woods: Light underbrush n= 0.400 P2= 2.24"

Summary for Subcatchment WP2b: Pre-Development Watershed Area W2b

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Routed to Link 1L : COMBINED OUTFLOW WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
116,908	30	Woods, Good, HSG A
29,712	30	Meadow, non-grazed, HSG A
146,620	30	Weighted Average
146,620		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	300	0.0600	0.13		Sheet Flow, across meadow/woods Woods: Light underbrush n= 0.400 P2= 2.24"

Summary for Subcatchment WP3: Pre-Development Watershed Area W3

Runoff = 0.00 cfs @ 18.39 hrs, Volume= 0.002 af, Depth= 0.04"

Routed to Link 1L : COMBINED OUTFLOW WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
19,999	30	Woods, Good, HSG A
4,100	83	Paved roads w/open ditches, 50% imp, HSG A
24,099	39	Weighted Average
22,049		91.49% Pervious Area
2,050		8.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, Direct Entry

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Type II 24-hr 25-Year Rainfall=3.89"

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Summary for Subcatchment WP4: Pre-Development Watershed Area W4

Runoff = 0.11 cfs @ 12.14 hrs, Volume= 0.016 af, Depth= 0.33"
 Routed to Link 1L : COMBINED OUTFLOW WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
15,288	30	Woods, Good, HSG A
9,768	83	Paved roads w/open ditches, 50% imp, HSG A
25,056	51	Weighted Average
20,172		80.51% Pervious Area
4,884		19.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, Direct Entry

Summary for Link 1L: COMBINED OUTFLOW WEST

Inflow Area = 116.014 ac, 6.03% Impervious, Inflow Depth = 0.11" for 25-Year event
 Inflow = 1.33 cfs @ 15.04 hrs, Volume= 1.033 af
 Primary = 1.33 cfs @ 15.04 hrs, Volume= 1.033 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

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BIRMLEY HILLS SITE CONDOMINIUM

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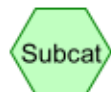
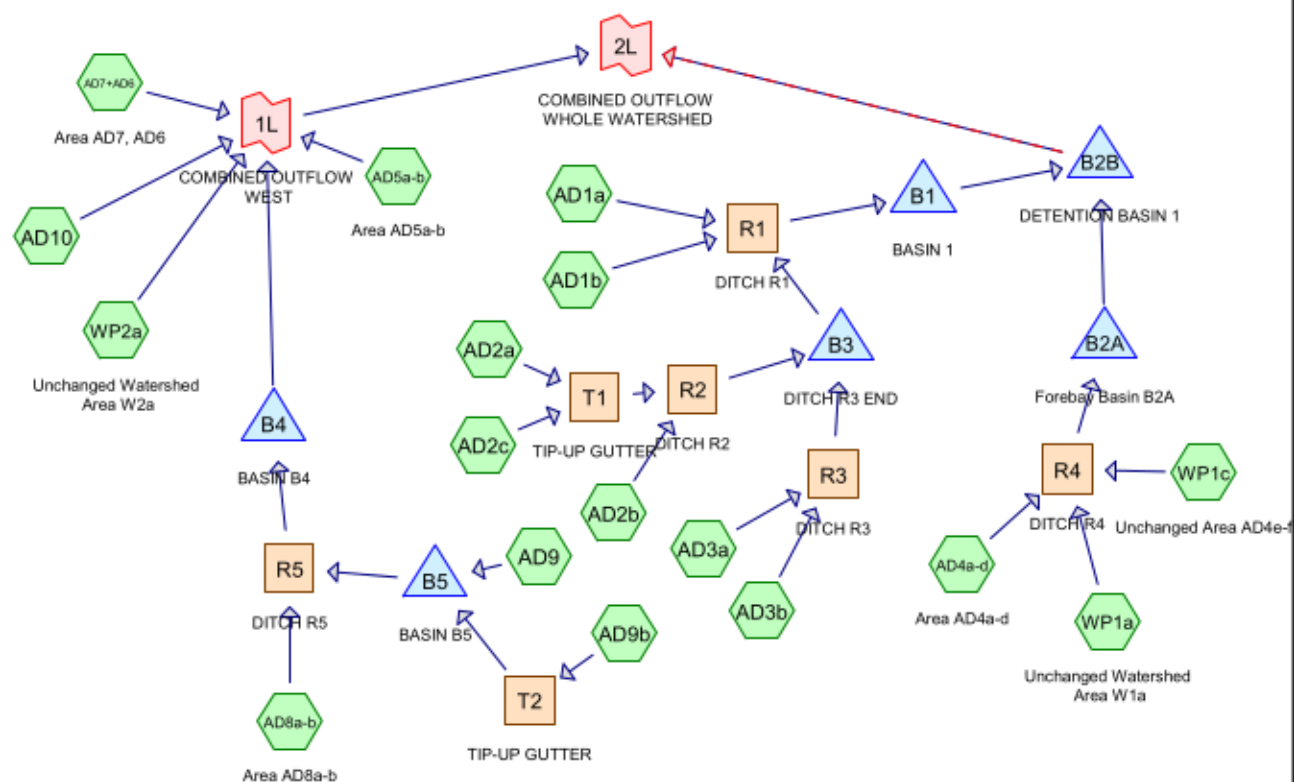
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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25-Year	Type II 24-hr		Default	24.00	1	3.89	2

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BIRMLEY HILLS SITE CONDOMINIUM

Type II 24-hr 25-Year Rainfall=3.89"

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Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment AD10:	Runoff Area=41,321 sf 20.00% Impervious Runoff Depth=0.33" Tc=15.0 min CN=51 Runoff=0.18 cfs 0.026 af
Subcatchment AD1a:	Runoff Area=91,393 sf 30.00% Impervious Runoff Depth=0.57" Tc=15.0 min CN=57 Runoff=1.11 cfs 0.100 af
Subcatchment AD1b:	Runoff Area=6,448 sf 100.00% Impervious Runoff Depth=3.66" Tc=15.0 min CN=98 Runoff=0.61 cfs 0.045 af
Subcatchment AD2a:	Runoff Area=86,887 sf 30.00% Impervious Runoff Depth=0.57" Tc=15.0 min CN=57 Runoff=1.05 cfs 0.095 af
Subcatchment AD2b:	Runoff Area=59,060 sf 30.00% Impervious Runoff Depth=0.57" Tc=15.0 min CN=57 Runoff=0.71 cfs 0.065 af
Subcatchment AD2c:	Runoff Area=19,495 sf 100.00% Impervious Runoff Depth=3.66" Tc=15.0 min CN=98 Runoff=1.85 cfs 0.136 af
Subcatchment AD3a:	Runoff Area=80,158 sf 30.00% Impervious Runoff Depth=0.57" Tc=15.0 min CN=57 Runoff=0.97 cfs 0.088 af
Subcatchment AD3b:	Runoff Area=9,125 sf 100.00% Impervious Runoff Depth=3.66" Tc=15.0 min CN=98 Runoff=0.87 cfs 0.064 af
Subcatchment AD4a-d: Area AD4a-d	Runoff Area=361,088 sf 25.31% Impervious Runoff Depth=0.33" Tc=15.0 min UI Adjusted CN=51 Runoff=1.56 cfs 0.231 af
Subcatchment AD5a-b: Area AD5a-b	Runoff Area=23,950 sf 35.37% Impervious Runoff Depth=0.71" Tc=15.0 min CN=60 Runoff=0.40 cfs 0.032 af
Subcatchment AD7+AD6: Area AD7, AD6	Runoff Area=26,325 sf 34.70% Impervious Runoff Depth=0.71" Tc=15.0 min CN=60 Runoff=0.44 cfs 0.036 af
Subcatchment AD8a-b: Area AD8a-b	Runoff Area=66,931 sf 31.50% Impervious Runoff Depth=0.62" Tc=15.0 min CN=58 Runoff=0.91 cfs 0.079 af
Subcatchment AD9:	Runoff Area=32,828 sf 30.00% Impervious Runoff Depth=0.57" Tc=15.0 min CN=57 Runoff=0.40 cfs 0.036 af
Subcatchment AD9b:	Runoff Area=15,425 sf 100.00% Impervious Runoff Depth=3.66" Tc=15.0 min CN=98 Runoff=1.47 cfs 0.108 af
Subcatchment WP1a: Unchanged	Runoff Area=3,964,046 sf 7.19% Impervious Runoff Depth=0.13" Flow Length=5,546' Tc=111.9 min CN=44 Runoff=1.28 cfs 0.974 af
Subcatchment WP1c: Unchanged Area	Runoff Area=139,558 sf 2.87% Impervious Runoff Depth=0.00" Flow Length=823' Tc=49.5 min CN=33 Runoff=0.00 cfs 0.000 af

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Subcatchment WP2a: Unchanged Runoff Area=30,019 sf 30.00% Impervious Runoff Depth=0.71"
Flow Length=300' Slope=0.0600 '/' Tc=39.8 min CN=60 Runoff=0.26 cfs 0.041 af

Reach R1: DITCH R1 Avg. Flow Depth=0.34' Max Vel=4.03 fps Inflow=4.29 cfs 0.401 af
n=0.024 L=145.0' S=0.0285 '/' Capacity=198.76 cfs Outflow=4.30 cfs 0.401 af

Reach R2: DITCH R2 Avg. Flow Depth=0.25' Max Vel=4.74 fps Inflow=3.53 cfs 0.296 af
n=0.024 L=344.0' S=0.0535 '/' Capacity=272.45 cfs Outflow=3.51 cfs 0.296 af

Reach R3: DITCH R3 Avg. Flow Depth=0.24' Max Vel=2.52 fps Inflow=1.80 cfs 0.151 af
n=0.024 L=325.0' S=0.0160 '/' Capacity=149.11 cfs Outflow=1.75 cfs 0.151 af

Reach R4: DITCH R4 Avg. Flow Depth=0.22' Max Vel=2.42 fps Inflow=1.56 cfs 1.205 af
n=0.024 L=640.0' S=0.0160 '/' Capacity=148.75 cfs Outflow=1.52 cfs 1.205 af

Reach R5: DITCH R5 Avg. Flow Depth=0.17' Max Vel=3.48 fps Inflow=1.47 cfs 0.210 af
n=0.024 L=82.0' S=0.0448 '/' Capacity=222.28 cfs Outflow=1.47 cfs 0.210 af

Reach T1: TIP-UP GUTTER Avg. Flow Depth=0.15' Max Vel=4.90 fps Inflow=2.84 cfs 0.231 af
n=0.013 L=330.0' S=0.0604 '/' Capacity=10.64 cfs Outflow=2.82 cfs 0.231 af

Reach T2: TIP-UP GUTTER Avg. Flow Depth=0.14' Max Vel=2.88 fps Inflow=1.47 cfs 0.108 af
n=0.013 L=296.0' S=0.0230 '/' Capacity=6.57 cfs Outflow=1.44 cfs 0.108 af

Pond B1: BASIN 1 Peak Elev=733.73' Storage=1,807 cf Inflow=4.30 cfs 0.401 af
Discarded=0.14 cfs 0.111 af Primary=3.82 cfs 0.291 af Secondary=0.00 cfs 0.000 af Outflow=3.96 cfs 0.401 af

Pond B2A: Forebay Basin B2A Peak Elev=736.62' Storage=4,079 cf Inflow=1.52 cfs 1.205 af
Discarded=0.26 cfs 0.384 af Primary=1.26 cfs 0.822 af Outflow=1.52 cfs 1.205 af

Pond B2B: DETENTION BASIN 1 Peak Elev=733.00' Storage=5,207 cf Inflow=3.82 cfs 1.113 af
Discarded=0.19 cfs 0.295 af Primary=1.33 cfs 0.817 af Secondary=0.00 cfs 0.000 af Outflow=1.53 cfs 1.113 af

Pond B3: DITCH R3 END Peak Elev=740.80' Storage=3,738 cf Inflow=5.26 cfs 0.447 af
Discarded=0.22 cfs 0.191 af Primary=3.18 cfs 0.256 af Outflow=3.40 cfs 0.447 af

Pond B4: BASIN B4 Peak Elev=768.29' Storage=2,894 cf Inflow=1.47 cfs 0.210 af
Discarded=0.17 cfs 0.182 af Primary=0.55 cfs 0.028 af Outflow=0.72 cfs 0.210 af

Pond B5: BASIN B5 Peak Elev=775.04' Storage=1,192 cf Inflow=1.83 cfs 0.144 af
Discarded=0.09 cfs 0.012 af Primary=0.61 cfs 0.131 af Outflow=0.70 cfs 0.144 af

Link 1L: COMBINED OUTFLOW WEST Inflow=1.10 cfs 0.164 af
Primary=1.10 cfs 0.164 af

Link 2L: COMBINED OUTFLOW WHOLE WATERSHED Inflow=2.25 cfs 0.981 af
Primary=2.25 cfs 0.981 af

Total Runoff Area = 116.025 ac Runoff Volume = 2.156 af Average Runoff Depth = 0.22"
88.29% Pervious = 102.439 ac 11.71% Impervious = 13.587 ac

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Summary for Subcatchment AD10:

Runoff = 0.18 cfs @ 12.14 hrs, Volume= 0.026 af, Depth= 0.33"
 Routed to Link 1L : COMBINED OUTFLOW WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
41,321	51	1 acre lots, 20% imp, HSG A
33,057		80.00% Pervious Area
8,264		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, MIN TC

Summary for Subcatchment AD1a:

Runoff = 1.11 cfs @ 12.11 hrs, Volume= 0.100 af, Depth= 0.57"
 Routed to Reach R1 : DITCH R1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
91,393	57	1/3 acre lots, 30% imp, HSG A
63,975		70.00% Pervious Area
27,418		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, MINIMUM DURATION

Summary for Subcatchment AD1b:

Runoff = 0.61 cfs @ 12.06 hrs, Volume= 0.045 af, Depth= 3.66"
 Routed to Reach R1 : DITCH R1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
6,448	98	Paved roads w/curbs & sewers, HSG A
6,448		100.00% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, MIN DURATION

Summary for Subcatchment AD2a:

Runoff = 1.05 cfs @ 12.11 hrs, Volume= 0.095 af, Depth= 0.57"
 Routed to Reach T1 : TIP-UP GUTTER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
86,887	57	1/3 acre lots, 30% imp, HSG A
60,821		70.00% Pervious Area
26,066		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, MINIMUM DURATION

Summary for Subcatchment AD2b:

Runoff = 0.71 cfs @ 12.11 hrs, Volume= 0.065 af, Depth= 0.57"
 Routed to Reach R2 : DITCH R2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
59,060	57	1/3 acre lots, 30% imp, HSG A
41,342		70.00% Pervious Area
17,718		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, MINIMUM DURATION

Summary for Subcatchment AD2c:

Runoff = 1.85 cfs @ 12.06 hrs, Volume= 0.136 af, Depth= 3.66"
 Routed to Reach T1 : TIP-UP GUTTER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

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Area (sf)	CN	Description
19,495	98	Paved roads w/curbs & sewers, HSG A
19,495		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, MIN DURATION

Summary for Subcatchment AD3a:

Runoff = 0.97 cfs @ 12.11 hrs, Volume= 0.088 af, Depth= 0.57"
 Routed to Reach R3 : DITCH R3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
80,158	57	1/3 acre lots, 30% imp, HSG A
56,111		70.00% Pervious Area
24,047		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, MINIMUM DURATION

Summary for Subcatchment AD3b:

Runoff = 0.87 cfs @ 12.06 hrs, Volume= 0.064 af, Depth= 3.66"
 Routed to Reach R3 : DITCH R3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
9,125	98	Paved roads w/curbs & sewers, HSG A
9,125		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, MIN DURATION

Summary for Subcatchment AD4a-d: Area AD4a-d

Runoff = 1.56 cfs @ 12.14 hrs, Volume= 0.231 af, Depth= 0.33"
 Routed to Reach R4 : DITCH R4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
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Area (sf)	CN	Adj	Description
251,898	57		1/3 acre lots, 30% imp, HSG A
15,821	98		Unconnected pavement, HSG A
90,300	30		Woods, Good, HSG A
3,069	55		Woods, Good, HSG B
361,088	52	51	Weighted Average, UI Adjusted
269,698			74.69% Pervious Area
91,390			25.31% Impervious Area
15,821			17.31% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, MIN TC

Summary for Subcatchment AD5a-b: Area AD5a-b

Runoff = 0.40 cfs @ 12.10 hrs, Volume= 0.032 af, Depth= 0.71"
 Routed to Link 1L : COMBINED OUTFLOW WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
22,112	57	1/3 acre lots, 30% imp, HSG A
1,838	98	Unconnected pavement, HSG A
23,950	60	Weighted Average
15,478		64.63% Pervious Area
8,472		35.37% Impervious Area
1,838		21.70% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, Direct Entry

Summary for Subcatchment AD7+AD6: Area AD7, AD6

Runoff = 0.44 cfs @ 12.10 hrs, Volume= 0.036 af, Depth= 0.71"
 Routed to Link 1L : COMBINED OUTFLOW WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

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Area (sf)	CN	Description
19,768	57	1/3 acre lots, 30% imp, HSG A
1,766	98	Unconnected pavement, HSG A
4,791	57	1/3 acre lots, 30% imp, HSG A
26,325	60	Weighted Average
17,191		65.30% Pervious Area
9,134		34.70% Impervious Area
1,766		19.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, Direct Entry

Summary for Subcatchment AD8a-b: Area AD8a-b

Runoff = 0.91 cfs @ 12.11 hrs, Volume= 0.079 af, Depth= 0.62"
 Routed to Reach R5 : DITCH R5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
65,496	57	1/3 acre lots, 30% imp, HSG A
1,435	98	Unconnected pavement, HSG A
66,931	58	Weighted Average
45,847		68.50% Pervious Area
21,084		31.50% Impervious Area
1,435		6.81% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, MIN TC

Summary for Subcatchment AD9:

Runoff = 0.40 cfs @ 12.11 hrs, Volume= 0.036 af, Depth= 0.57"
 Routed to Pond B5 : BASIN B5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
32,828	57	1/3 acre lots, 30% imp, HSG A
22,980		70.00% Pervious Area
9,848		30.00% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, MINIMUM DURATION

Summary for Subcatchment AD9b:

Runoff = 1.47 cfs @ 12.06 hrs, Volume= 0.108 af, Depth= 3.66"
 Routed to Reach T2 : TIP-UP GUTTER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
15,425	98	Paved roads w/curbs & sewers, HSG A
15,425		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, MIN DURATION

Summary for Subcatchment WP1a: Unchanged Watershed Area W1a

Runoff = 1.28 cfs @ 15.05 hrs, Volume= 0.974 af, Depth= 0.13"
 Routed to Reach R4 : DITCH R4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
1,216,417	36	Woods, Fair, HSG A
1,349,870	49	Pasture/grassland/range, Fair, HSG A
* 71,405	36	*Paved roads w/curbs & sewers, HSG A
* 779,709	36	*1/3 acre lots, 30% imp, HSG A
327,334	60	Woods, Fair, HSG B
49,414	69	Pasture/grassland/range, Fair, HSG B
* 169,897	60	*1/3 acre lots, 30% imp, HSG B
3,964,046	44	Weighted Average
3,679,164		92.81% Pervious Area
284,882		7.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	300	0.0600	0.13		Sheet Flow, DOWN FORESTED HILLSIDE
					Woods: Light underbrush n= 0.400 P2= 2.24"
72.1	5,246	0.0300	1.21		Shallow Concentrated Flow, WINDING THROUGH VALLEYS
					Short Grass Pasture Kv= 7.0 fps
111.9	5,546	Total			

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Summary for Subcatchment WP1c: Unchanged Area AD4e-f

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
 Routed to Reach R4 : DITCH R4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
126,188	30	Woods, Good, HSG A
13,370	57	1/3 acre lots, 30% imp, HSG A
139,558	33	Weighted Average
135,547		97.13% Pervious Area
4,011		2.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
44.7	100	0.0200	0.04		Sheet Flow, FROM TOP OF WOODLAND
					Woods: Dense underbrush n= 0.800 P2= 2.24"
1.7	203	0.1500	1.94		Shallow Concentrated Flow, THROUGH WOODS
					Woodland Kv= 5.0 fps
1.3	123	0.0490	1.55		Shallow Concentrated Flow, THROUGH YARD
					Short Grass Pasture Kv= 7.0 fps
1.8	397	0.0153	3.67	6.89	Trap/Vee/Rect Channel Flow, DITCH
					Bot.W=2.00' D=0.50' Z= 4.0 & 3.0 ' Top.W=5.50'
					n= 0.024
49.5	823	Total			

Summary for Subcatchment WP2a: Unchanged Watershed Area W2a

Runoff = 0.26 cfs @ 12.45 hrs, Volume= 0.041 af, Depth= 0.71"
 Routed to Link 1L : COMBINED OUTFLOW WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=3.89"

Area (sf)	CN	Description
* 30,019	60	*1/3 acre lots, 30% imp, HSG B
21,013		70.00% Pervious Area
9,006		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	300	0.0600	0.13		Sheet Flow, DOWN FORESTED HILLSIDE
					Woods: Light underbrush n= 0.400 P2= 2.24"

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Summary for Reach R1: DITCH R1

Inflow Area = 8.094 ac, 36.96% Impervious, Inflow Depth = 0.60" for 25-Year event
Inflow = 4.29 cfs @ 12.19 hrs, Volume= 0.401 af
Outflow = 4.30 cfs @ 12.20 hrs, Volume= 0.401 af, Atten= 0%, Lag= 0.5 min
Routed to Pond B1 : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.03 fps, Min. Travel Time= 0.6 min
Avg. Velocity= 1.18 fps, Avg. Travel Time= 2.0 min

Peak Storage= 155 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.34', Surface Width= 4.35'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 198.76 cfs

2.00' x 2.00' deep channel, n= 0.024
Side Slope Z-value= 3.0 4.0 ' / ' Top Width= 16.00'
Length= 145.0' Slope= 0.0285 ' / '
Inlet Invert= 738.68', Outlet Invert= 734.55'



Summary for Reach R2: DITCH R2

Inflow Area = 3.798 ac, 38.25% Impervious, Inflow Depth = 0.93" for 25-Year event
Inflow = 3.53 cfs @ 12.10 hrs, Volume= 0.296 af
Outflow = 3.51 cfs @ 12.12 hrs, Volume= 0.296 af, Atten= 1%, Lag= 0.9 min
Routed to Pond B3 : DITCH R3 END

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.74 fps, Min. Travel Time= 1.2 min
Avg. Velocity= 1.46 fps, Avg. Travel Time= 3.9 min

Peak Storage= 254 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.25', Surface Width= 3.78'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 272.45 cfs

2.00' x 2.00' deep channel, n= 0.024
Side Slope Z-value= 3.0 4.0 ' / ' Top Width= 16.00'
Length= 344.0' Slope= 0.0535 ' / '
Inlet Invert= 760.41', Outlet Invert= 742.00'

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Summary for Reach R3: DITCH R3

Inflow Area = 2.050 ac, 37.15% Impervious, Inflow Depth = 0.89" for 25-Year event
Inflow = 1.80 cfs @ 12.09 hrs, Volume= 0.151 af
Outflow = 1.75 cfs @ 12.12 hrs, Volume= 0.151 af, Atten= 2%, Lag= 1.5 min
Routed to Pond B3 : DITCH R3 END

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.52 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 6.9 min

Peak Storage= 225 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 3.70'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 149.11 cfs

2.00' x 2.00' deep channel, n= 0.024
Side Slope Z-value= 4.0 3.0 ' / ' Top Width= 16.00'
Length= 325.0' Slope= 0.0160 ' / '
Inlet Invert= 747.21', Outlet Invert= 742.00'



Summary for Reach R4: DITCH R4

Inflow Area = 102.495 ac, 8.52% Impervious, Inflow Depth = 0.14" for 25-Year event
Inflow = 1.56 cfs @ 12.14 hrs, Volume= 1.205 af
Outflow = 1.52 cfs @ 14.96 hrs, Volume= 1.205 af, Atten= 3%, Lag= 169.1 min
Routed to Pond B2A : Forebay Basin B2A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.42 fps, Min. Travel Time= 4.4 min
Avg. Velocity = 1.74 fps, Avg. Travel Time= 6.1 min

Peak Storage= 401 cf @ 14.96 hrs
Average Depth at Peak Storage= 0.22' , Surface Width= 3.57'
Bank-Full Depth= 2.00' Flow Area= 18.0 sf, Capacity= 148.75 cfs

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2.00' x 2.00' deep channel, $n = 0.024$
Side Slope Z-value= 4.0 3.0 ' ' Top Width= 16.00'
Length= 640.0' Slope= 0.0160 ' '
Inlet Invert= 747.21', Outlet Invert= 737.00'



Summary for Reach R5: DITCH R5

Inflow Area = 2.644 ac, 40.25% Impervious, Inflow Depth = 0.95" for 25-Year event
Inflow = 1.47 cfs @ 12.12 hrs, Volume= 0.210 af
Outflow = 1.47 cfs @ 12.12 hrs, Volume= 0.210 af, Atten= 0%, Lag= 0.2 min
Routed to Pond B4 : BASIN B4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.48 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 1.0 min

Peak Storage= 35 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 3.01'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 222.28 cfs

2.00' x 2.00' deep channel, $n = 0.024$
Side Slope Z-value= 3.0 ' ' Top Width= 14.00'
Length= 82.0' Slope= 0.0448 ' '
Inlet Invert= 772.42', Outlet Invert= 768.75'



Summary for Reach T1: TIP-UP GUTTER

Inflow Area = 2.442 ac, 42.83% Impervious, Inflow Depth = 1.14" for 25-Year event
Inflow = 2.84 cfs @ 12.08 hrs, Volume= 0.231 af
Outflow = 2.82 cfs @ 12.10 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.9 min
Routed to Reach R2 : DITCH R2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.90 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.86 fps, Avg. Travel Time= 3.0 min

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Peak Storage= 190 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.15' , Surface Width= 7.90'

Bank-Full Depth= 0.24' Flow Area= 1.6 sf, Capacity= 10.64 cfs

Custom cross-section, Length= 330.0' Slope= 0.0604 1'

Constant n= 0.013

Inlet Invert= 782.91', Outlet Invert= 762.99'



±

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
6.00	-0.12	0.12
12.00	-0.24	0.24
13.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0.0	0	0.00
0.12	0.4	6.5	6.5	129	1.68
0.24	1.6	13.0	13.0	515	10.64

Summary for Reach T2: TIP-UP GUTTER

Inflow Area = 0.354 ac, 100.00% Impervious, Inflow Depth = 3.66" for 25-Year event

Inflow = 1.47 cfs @ 12.06 hrs, Volume= 0.108 af

Outflow = 1.44 cfs @ 12.08 hrs, Volume= 0.108 af, Atten= 2%, Lag= 1.4 min

Routed to Pond B5 : BASIN B5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.88 fps, Min. Travel Time= 1.7 min

Avg. Velocity= 1.06 fps, Avg. Travel Time= 4.7 min

Peak Storage= 148 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.14' , Surface Width= 7.36'

Bank-Full Depth= 0.24' Flow Area= 1.6 sf, Capacity= 6.57 cfs

Custom cross-section, Length= 296.0' Slope= 0.0230 1'

Constant n= 0.013

Inlet Invert= 782.91', Outlet Invert= 776.10'

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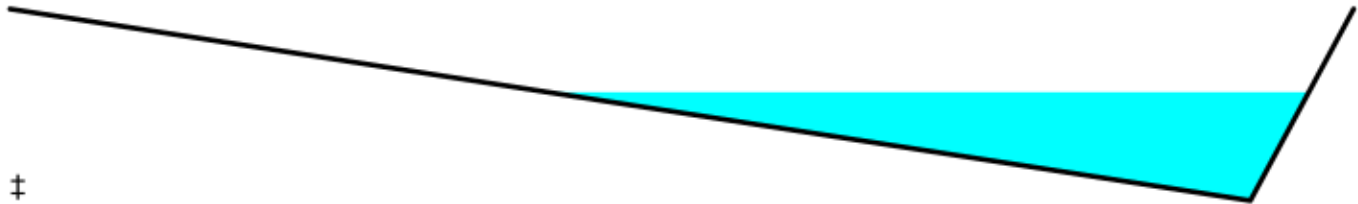
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Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	0.00	0.00
6.00	-0.12	0.12
12.00	-0.24	0.24
13.00	0.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0.0	0	0.00
0.12	0.4	6.5	6.5	115	1.03
0.24	1.6	13.0	13.0	462	6.57

Summary for Pond B1: BASIN 1

Inflow Area = 8.094 ac, 36.96% Impervious, Inflow Depth = 0.60" for 25-Year event
 Inflow = 4.30 cfs @ 12.20 hrs, Volume= 0.401 af
 Outflow = 3.96 cfs @ 12.29 hrs, Volume= 0.401 af, Atten= 8%, Lag= 5.5 min
 Discarded = 0.14 cfs @ 12.29 hrs, Volume= 0.111 af
 Primary = 3.82 cfs @ 12.29 hrs, Volume= 0.291 af
 Routed to Pond B2B : DETENTION BASIN 1
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 733.73' @ 12.29 hrs Surf.Area= 1,972 sf Storage= 1,807 cf

Plug-Flow detention time= 33.3 min calculated for 0.401 af (100% of inflow)
 Center-of-Mass det. time= 33.3 min (872.3 - 838.9)

Volume	Invert	Avail.Storage	Storage Description
#1	732.00'	3,866 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
732.00	16	0	0
732.55	732	206	206
733.00	1,216	438	644
734.00	2,251	1,734	2,378
734.55	3,160	1,488	3,866

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Device	Routing	Invert	Outlet Devices
#1	Primary	732.90'	24.0" Round Culvert L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 732.90' / 732.00' S= 0.0180 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Discarded	732.00'	3.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 680.00'
#3	Secondary	734.05'	2.0' long + 3.0 '/ SideZ (Profile 9) Broad-Crested Rectangular Weir Head (feet) 1.97 2.46 2.95 3.94 4.92 Coef. (English) 3.55 3.55 3.57 3.60 3.66

Discarded OutFlow Max=0.14 cfs @ 12.29 hrs HW=733.73' (Free Discharge)↳ **2=Exfiltration** (Controls 0.14 cfs)**Primary OutFlow** Max=3.80 cfs @ 12.29 hrs HW=733.73' TW=731.62' (Dynamic Tailwater)↳ **1=Culvert** (Inlet Controls 3.80 cfs @ 3.10 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=732.00' (Free Discharge)↳ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond B2A: Forebay Basin B2A**

Inflow Area = 102.495 ac, 8.52% Impervious, Inflow Depth = 0.14" for 25-Year event
 Inflow = 1.52 cfs @ 14.96 hrs, Volume= 1.205 af
 Outflow = 1.52 cfs @ 15.04 hrs, Volume= 1.205 af, Atten= 0%, Lag= 4.8 min
 Discarded = 0.26 cfs @ 15.04 hrs, Volume= 0.384 af
 Primary = 1.26 cfs @ 15.04 hrs, Volume= 0.822 af
 Routed to Pond B2B : DETENTION BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 736.62' @ 15.04 hrs Surf.Area= 3,685 sf Storage= 4,079 cf

Plug-Flow detention time= 75.7 min calculated for 1.205 af (100% of inflow)

Center-of-Mass det. time= 75.8 min (1,179.6 - 1,103.9)

Volume	Invert	Avail.Storage	Storage Description
#1	734.00'	5,614 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
734.00	80	0	0
735.00	912	496	496
736.00	2,441	1,677	2,173
736.50	3,441	1,471	3,643
737.00	4,441	1,971	5,614

Device	Routing	Invert	Outlet Devices
#1	Primary	736.50'	8.0' long + 3.0 '/ SideZ (Profile 9) Broad-Crested Rectangular Weir Head (feet) 1.97 2.46 2.95 3.94 4.92 Coef. (English) 3.55 3.55 3.57 3.60 3.66

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#2 Discarded 734.00' **3.000 in/hr Exfiltration over Surface area**
 Conductivity to Groundwater Elevation = 680.00'

Discarded OutFlow Max=0.26 cfs @ 15.04 hrs HW=736.62' (Free Discharge)

↑**2=Exfiltration** (Controls 0.26 cfs)

Primary OutFlow Max=1.26 cfs @ 15.04 hrs HW=736.62' TW=732.98' (Dynamic Tailwater)

↑**1=Broad-Crested Rectangular Weir** (Weir Controls 1.26 cfs @ 1.23 fps)

Summary for Pond B2B: DETENTION BASIN 1

Inflow Area = 110.589 ac, 10.60% Impervious, Inflow Depth = 0.12" for 25-Year event
 Inflow = 3.82 cfs @ 12.29 hrs, Volume= 1.113 af
 Outflow = 1.53 cfs @ 12.74 hrs, Volume= 1.113 af, Atten= 60%, Lag= 27.2 min
 Discarded = 0.19 cfs @ 12.74 hrs, Volume= 0.295 af
 Primary = 1.33 cfs @ 12.74 hrs, Volume= 0.817 af
 Routed to Link 2L : COMBINED OUTFLOW WHOLE WATERSHED
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Link 2L : COMBINED OUTFLOW WHOLE WATERSHED

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 733.00' @ 12.74 hrs Surf.Area= 2,696 sf Storage= 5,207 cf

Plug-Flow detention time= 97.8 min calculated for 1.112 af (100% of inflow)
 Center-of-Mass det. time= 97.9 min (1,133.1 - 1,035.2)

Volume	Invert	Avail.Storage	Storage Description
#1	729.50'	10,364 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
729.50	10	0	0
730.00	696	177	177
731.00	1,308	1,002	1,179
732.00	2,030	1,669	2,848
733.00	2,697	2,364	5,211
734.55	3,952	5,153	10,364

Device	Routing	Invert	Outlet Devices
#1	Primary	732.29'	15.0" Round Culvert L= 24.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 732.29' / 732.05' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	733.55'	5.0' long + 3.0 'x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Discarded	729.50'	3.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 680.00'

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#4 Device 1 732.32' **10.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
 #5 Device 1 733.30' **24.0" Horiz. Orifice/Grate** C= 0.600
 Limited to weir flow at low heads

Discarded OutFlow Max=0.19 cfs @ 12.74 hrs HW=733.00' (Free Discharge)↑ **3=Exfiltration** (Controls 0.19 cfs)**Primary OutFlow** Max=1.33 cfs @ 12.74 hrs HW=733.00' TW=0.00' (Dynamic Tailwater)↑ **1=Culvert** (Passes 1.33 cfs of 1.61 cfs potential flow)↑ **4=Orifice/Grate** (Orifice Controls 1.33 cfs @ 2.80 fps)↑ **5=Orifice/Grate** (Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=729.50' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond B3: DITCH R3 END**

Inflow Area = 5.848 ac, 37.86% Impervious, Inflow Depth = 0.92" for 25-Year event
 Inflow = 5.26 cfs @ 12.12 hrs, Volume= 0.447 af
 Outflow = 3.40 cfs @ 12.25 hrs, Volume= 0.447 af, Atten= 35%, Lag= 7.9 min
 Discarded = 0.22 cfs @ 12.25 hrs, Volume= 0.191 af
 Primary = 3.18 cfs @ 12.25 hrs, Volume= 0.256 af
 Routed to Reach R1 : DITCH R1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Peak Elev= 740.80' @ 12.25 hrs Surf.Area= 3,094 sf Storage= 3,738 cf

Plug-Flow detention time= 75.8 min calculated for 0.447 af (100% of inflow)

Center-of-Mass det. time= 75.9 min (926.2 - 850.3)

Volume	Invert	Avail.Storage	Storage Description
#1	738.00'	8,597 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
738.00	10	0	0
739.00	769	390	390
740.00	1,926	1,348	1,737
741.00	3,390	2,658	4,395
742.00	5,013	4,202	8,597

Device	Routing	Invert	Outlet Devices
#1	Primary	739.71'	15.0" Round Culvert L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 739.71' / 739.21' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Discarded	738.00'	3.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 680.00'

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Discarded OutFlow Max=0.22 cfs @ 12.25 hrs HW=740.80' (Free Discharge)↑**2=Exfiltration** (Controls 0.22 cfs)**Primary OutFlow** Max=3.17 cfs @ 12.25 hrs HW=740.80' TW=739.01' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.17 cfs @ 2.80 fps)**Summary for Pond B4: BASIN B4**

Inflow Area = 2.644 ac, 40.25% Impervious, Inflow Depth = 0.95" for 25-Year event

Inflow = 1.47 cfs @ 12.12 hrs, Volume= 0.210 af

Outflow = 0.72 cfs @ 12.77 hrs, Volume= 0.210 af, Atten= 51%, Lag= 39.1 min

Discarded = 0.17 cfs @ 12.75 hrs, Volume= 0.182 af

Primary = 0.55 cfs @ 12.77 hrs, Volume= 0.028 af

Routed to Link 1L : COMBINED OUTFLOW WEST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Peak Elev= 768.29' @ 12.75 hrs Surf.Area= 2,464 sf Storage= 2,894 cf

Plug-Flow detention time= 179.9 min calculated for 0.210 af (100% of inflow)

Center-of-Mass det. time= 180.0 min (1,032.1 - 852.1)

Volume	Invert	Avail.Storage	Storage Description
#1	766.00'	3,442 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
766.00	214	0	0
767.00	1,064	639	639
768.00	2,123	1,594	2,233
768.50	2,713	1,209	3,442

Device	Routing	Invert	Outlet Devices
#1	Discarded	766.00'	3.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 680.00'
#2	Primary	768.25'	20.0' long + 3.0 ' SideZ (Profile 9) Broad-Crested Rectangular Weir Head (feet) 1.97 2.46 2.95 3.94 4.92 Coef. (English) 3.55 3.55 3.57 3.60 3.66

Discarded OutFlow Max=0.17 cfs @ 12.75 hrs HW=768.29' (Free Discharge)↑**1=Exfiltration** (Controls 0.17 cfs)**Primary OutFlow** Max=0.54 cfs @ 12.77 hrs HW=768.29' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.54 cfs @ 0.70 fps)

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Summary for Pond B5: BASIN B5

Inflow Area = 1.108 ac, 52.38% Impervious, Inflow Depth = 1.56" for 25-Year event
 Inflow = 1.83 cfs @ 12.09 hrs, Volume= 0.144 af
 Outflow = 0.70 cfs @ 12.32 hrs, Volume= 0.144 af, Atten= 62%, Lag= 13.5 min
 Discarded = 0.09 cfs @ 12.32 hrs, Volume= 0.012 af
 Primary = 0.61 cfs @ 12.32 hrs, Volume= 0.131 af
 Routed to Reach R5 : DITCH R5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 775.04' @ 12.32 hrs Surf.Area= 1,260 sf Storage= 1,192 cf

Plug-Flow detention time= 14.8 min calculated for 0.144 af (100% of inflow)
 Center-of-Mass det. time= 14.8 min (814.2 - 799.4)

Volume	Invert	Avail.Storage	Storage Description
#1	771.92'	2,846 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
771.92	16	0	0
773.00	33	26	26
774.00	487	260	286
775.00	1,219	853	1,139
776.00	2,195	1,707	2,846

Device	Routing	Invert	Outlet Devices
#1	Primary	772.92'	18.0" Round Culvert L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 772.92' / 772.42' S= 0.0100 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	771.92'	3.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 680.00'
#3	Device 1	771.92'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.09 cfs @ 12.32 hrs HW=775.04' (Free Discharge)

↑ **2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.61 cfs @ 12.32 hrs HW=775.04' TW=772.56' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 0.61 cfs of 9.65 cfs potential flow)

↑ **3=Orifice/Grate** (Orifice Controls 0.61 cfs @ 7.01 fps)

Summary for Link 1L: COMBINED OUTFLOW WEST

Inflow Area = 5.436 ac, 34.30% Impervious, Inflow Depth = 0.36" for 25-Year event
 Inflow = 1.10 cfs @ 12.12 hrs, Volume= 0.164 af
 Primary = 1.10 cfs @ 12.12 hrs, Volume= 0.164 af, Atten= 0%, Lag= 0.0 min
 Routed to Link 2L : COMBINED OUTFLOW WHOLE WATERSHED

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

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Summary for Link 2L: COMBINED OUTFLOW WHOLE WATERSHED

Inflow Area = 116.025 ac, 11.71% Impervious, Inflow Depth = 0.10" for 25-Year event

Inflow = 2.25 cfs @ 12.75 hrs, Volume= 0.981 af

Primary = 2.25 cfs @ 12.75 hrs, Volume= 0.981 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

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- 10 Subcat AD9:
- 11 Subcat AD9b:
- 11 Subcat WP1a: Unchanged Watershed Area W1a
- 11 Subcat WP1c: Unchanged Area AD4e-f
- 12 Subcat WP2a: Unchanged Watershed Area W2a
- 12 Reach R1: DITCH R1
- 13 Reach R2: DITCH R2
- 14 Reach R3: DITCH R3
- 14 Reach R4: DITCH R4
- 15 Reach R5: DITCH R5
- 15 Reach T1: TIP-UP GUTTER
- 16 Reach T2: TIP-UP GUTTER
- 17 Pond B1: BASIN 1
- 18 Pond B2A: Forebay Basin B2A
- 19 Pond B2B: DETENTION BASIN 1
- 20 Pond B3: DITCH R3 END
- 21 Pond B4: BASIN B4
- 21 Pond B5: BASIN B5
- 22 Link 1L: COMBINED OUTFLOW WEST
- 22 Link 2L: COMBINED OUTFLOW WHOLE WATERSHED

GENERAL NOTES

1. THIS CONSTRUCTION PROJECT SHALL AT ALL TIMES AND IN ALL SITUATIONS PROCEED IN A MANNER CONSISTENT WITH THE REQUIREMENTS OF THE GARFIELD TOWNSHIP ZONING ORDINANCE: PART 81. SOIL EROSION AND SEDIMENTATION CONTROL OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, THE CURRENT GRAND TRAVERSE COUNTY CONSTRUCTION STANDARDS, AND ALL OTHER APPLICABLE RULES, REGULATIONS AND LAWS OF ANY OTHER AUTHORITY WITH JURISDICTION TO GOVERN SUCH CONSTRUCTION. THE CONTRACTOR SHALL KEEP A COPY OF THOSE REQUIREMENTS AND ALL CONSTRUCTION DOCUMENTS RELATED TO THIS PROJECT ON THE PROJECT AT ALL TIME AND REFERENCE SHALL BE MADE TO THEM FOR PROPER MATERIALS, METHODS, ETC. REGARDING CONSTRUCTION IMPROVEMENTS.
2. THE CONTRACTOR SHALL CHECK THESE PLANS AND FIELD VERIFY EXISTING CONDITIONS PRIOR TO STARTING WORK ON ANY SEGMENT OF THE PROJECT. IF THE CONTRACTOR HAS ANY QUESTIONS OR SUSPECTS THERE IS AN ERROR OR OMISSION WITHIN THE PLANS OR THE CONSTRUCTION STAKES, HE OR SHE SHALL NOT PROCEED UNTIL THE ENGINEER OR HIS OR HER REPRESENTATIVE HAS BEEN FULLY NOTIFIED, HAS RESPONDED, AND HAS SPECIFICALLY STATED THE CONTRACTOR MAY PROCEED.
3. EXISTING PUBLIC UTILITIES AND UNDERGROUND STRUCTURES SUCH AS PIPE LINES, ELECTRIC CONDUITS, SEWER AND WATER ARE IDENTIFIED BY THE BEST KNOWLEDGE OF THE SURVEYOR, HOWEVER, NEITHER THE CORRECTNESS NOR THE COMPLETENESS OF SUCH INFORMATION IS GUARANTEED. PRIOR TO THE START OF ANY WORK ON THE PROJECT, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND MISS DIG.(800) 482-7171. THE CONTRACTOR SHALL ENSURE THAT THE LOCATIONS OF ALL UTILITIES WITHIN THE VICINITY OF THE PROJECT ARE STAKED AND IDENTIFIED PRIOR TO PROCEEDING WITH WORK IN ANY AREA OF THE PROJECT. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OR RELOCATION OF EXISTING UTILITIES AND STRUCTURES AND SHALL SAVE THOSE UTILITIES AND STRUCTURES HARMLESS FROM DAMAGE, WHETHER PUBLICLY OR PRIVATELY OWNED. THE CONTRACTOR SHALL REPAIR, AT HIS OR HER COST, ANY DAMAGE TO THOSE UTILITIES AND STRUCTURES. UTILITY POLES, ANCHORING CABLES AND UTILITY FOUNDATIONS SHALL NOT BE DISTURBED OR UNDERMINED. CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANY AND PROVIDE PROPER SUPPORT OF SUCH UTILITIES IN THE VICINITY OF THE WORK, AND IF NECESSARY, INSTALL TEMPORARY SHEETING OR TRENCH BOXES TO MINIMIZE EXCAVATION LIMITS.
4. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE CAUSED TO THIS OR ADJACENT PROPERTY, AND FOR INJURY TO ANY PERSON, OCCURRING DURING OR AS A RESULT OF THE CONSTRUCTION PROCESS, WHETHER SUCH DAMAGE OR INJURY RESULTS FROM ANY ACTION OR LACK OF ACTION BY PRINCIPALS OF THE COMPANY, EMPLOYEES, SUBCONTRACTORS, OR SUPPLIERS. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS GOVERNING CONSTRUCTION SAFETY. THE CONTRACTOR SHALL ALSO FURNISH AND INSTALL ALL NECESSARY TEMPORARY SAFETY DEVICES, SAFEGUARDS, AND PROTECTIVE EQUIPMENT AND FOLLOW ALL ADVISABLE SAFETY PRACTICES NECESSARY TO PROTECT THE LIFE AND HEALTH OF EMPLOYEES AND THE PUBLIC DURING THE CONSTRUCTION PROCESS. NEITHER THE OWNER OR THE ENGINEER ASSUME ANY LIABILITY FOR MATTERS RELATING TO SAFETY AT THE CONSTRUCTION SITE.
5. ANY DAMAGE TO IMPROVEMENTS NOT CAUSED BY THE OWNER, PRIOR TO FINAL PROJECT ACCEPTANCE BY THE ZONING ADMINISTRATOR AND THE OWNER, SHALL BE REPAIRED OR REPLACED AS NECESSARY TO CONFORM WITH THE DESIGN AT THE EXPENSE OF THE CONTRACTOR.
6. THE CONTRACTOR SHALL NOTIFY THE GRAND TRAVERSE COUNTY CONSTRUCTION SUPERVISOR 3 DAYS PRIOR TO STARTING WORK AND SHALL FIRST PROVIDE ALL NECESSARY NOTICES, OBTAIN ALL REQUIRED PERMITS AND PAY ALL FEES ASSOCIATED WITH SUCCESSFULLY COMPLETING THE CONSTRUCTION PROCESS, INCLUDING ALL PUBLIC INSPECTION FEES.
7. ALL STUMPS, LARGE ROCKS, CONCRETE, SCRAP MATERIALS, TRASH AND OTHER DELETERIOUS MATERIAL SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
8. DURING CONSTRUCTION EXPOSE THE MINIMUM AREA OF SOIL FOR THE MINIMUM TIME POSSIBLE. SEE SOIL EROSION AND STORMWATER CONTROL NOTES.
9. THROUGH TRAFFIC ON ADJACENT ROADWAYS SHALL NOT BE INTERRUPTED WITHOUT EXPLICIT PERMISSION FROM, AND COORDINATION WITH THE GRAND TRAVERSE COUNTY ROAD COMMISSION. ALL WORK WITHIN THE COUNTY RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH THE COUNTY ROAD COMMISSION CONSTRUCTION SPECIFICATIONS AND PERMIT REQUIREMENTS. PAVEMENT CUTS ARE TO BE MADE WITH A SAW, IMMEDIATELY PRIOR TO PAVING.
10. ALL WORK IS TO BE PERFORMED WITHIN THE PROPERTY, WITHIN THE PUBLIC RIGHT-OF-WAY, OR WITHIN ESTABLISHED EASEMENTS. ALL WORK WITHIN EASEMENTS SHALL BE COORDINATED WITH THE EASEMENT HOLDER AND BE IN ACCORDANCE WITH THE LIMITATIONS AND RESTRICTIONS OF THOSE EASEMENTS. ANY WORK OUTSIDE OF THESE LIMITS SHALL BE COORDINATED AND APPROVED BY THE PROPERTY OWNER AFFECTED. DOCUMENTATION OF THIS ARRANGEMENT SHALL BE PROVIDED TO THE ZONING AUTHORITY. ANY DISRUPTION CAUSED TO ADJACENT PROPERTIES OR TO THE PUBLIC RIGHT-OF-WAY SHALL BE PROPERLY RESTORED INCLUDING LAWNS, SIDEWALKS, DRIVEWAYS, PLANTINGS, SIGNS, MAILBOXES, ETC., AT NO ADDITIONAL COST TO THE OWNER.
11. THE CONTRACTOR SHALL PROVIDE ADEQUATE ON-SITE SUPERVISION OF THE WORK AT ALL TIMES DURING THE CONSTRUCTION PROCESS. THERE SHALL BE ONE DESIGNATED ON-SITE SUPERVISOR AVAILABLE WHENEVER CONSTRUCTION IS UNDERWAY WHO HAS THE AUTHORITY TO ACT ON BEHALF OF THE CONTRACTOR.

** ALL ELEVATIONS ARE BASED ON:
NAVD 88 DATUM REFERENCED TO THE TRAVERSE CITY CORS

PUBLIC AUTHORITIES

GARFIELD TOWNSHIP
3848 VETERANS DRIVE
TRAVERSE CITY, MI 49684
Telephone: (231) 941-1620

GRAND TRAVERSE COUNTY D.P.W.
2650 LAFRANIER ROAD
TRAVERSE CITY, MI 49686
Telephone: (231) 995-6039

GRAND TRAVERSE COUNTY ROAD COMMISSION
1881 LAFRANIER ROAD
TRAVERSE CITY, MI 49684
Telephone: (231) 922.4848

GRAND TRAVERSE COUNTY DRAIN COMMISSIONER
2650 LAFRANIER ROAD
TRAVERSE CITY, MI 49686
Telephone: (231) 922.4807

GRAND TRAVERSE COUNTY SOIL EROSION & SEDIMENTATION CONTROL
2650 LAFRANIER ROAD
TRAVERSE CITY, MI 49686
Telephone: (231) 995-6051

GRAND TRAVERSE COUNTY ENVIRONMENTAL HEALTH DEPARTMENT
2650 LAFRANIER ROAD
TRAVERSE CITY, MI
Telephone: (231) 995-6051

EGLE - CADILLAC
120 W CHAPIN STREET
CADILLAC, MI 49601
Telephone: (231) 775-3960

UTILITY AGENCIES

CONSUMERS ENERGY ELECTRIC
Telephone: (231) 929-6242

DTE ENERGY NATURAL GAS
Telephone: (231) 932-2823

CHARTER COMMUNICATIONS CABLE
Telephone: (231) 929-7012

AT&T MICHIGAN TELEPHONE
Telephone: (231) 941-2707

EMERGENCY SERVICES

EMERGENCY CALLS

AMBULANCE SERVICE / POLICE / FIRE: 911

GRAND TRAVERSE METRO FIRE DEPARTMENT: 231.947-3000

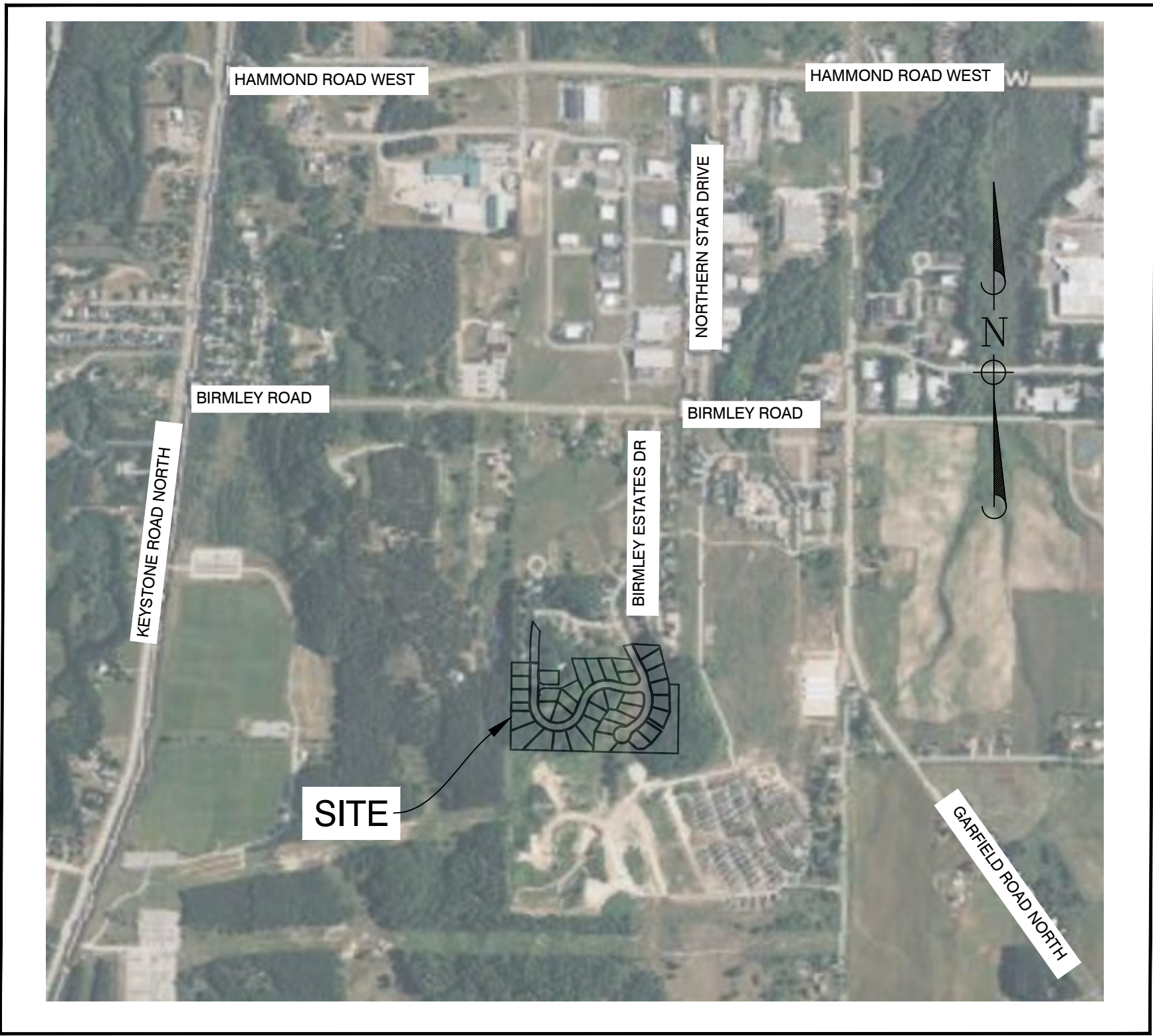
GRAND TRAVERSE COUNTY SHERIFF: 231.995-5000

MISS DIG: 1.800.482.7171



PLANS FOR:
BIRMLEY HILLS
SITE CONDOMINIUM

PART OF SECTION 26, TOWNSHIP 27 NORTH, RANGE 11 WEST, GARFIELD
TOWNSHIP, GRAND TRAVERSE COUNTY MICHIGAN



LOCATION MAP

NOT TO SCALE

LEGAL DESCRIPTION

PREPARED FOR STEVE ZAKRAJSAK

Total Parcel

Part of Section 26, Town 27 North, Range 11 West, Garfield Township, Grand Traverse County, Michigan more fully described as follows:

Beginning at the South one-quarter corner of said Section 26;
thence South 88°39'03" East, 1311.74 feet,
along the South line of said Section 26
thence North 00°51'35" East, 540.00 feet,
along the East one-eighth line of said Section 26
thence North 88°39'03" West, 75.00 feet.
thence North 14°19'07" West, 314.48 feet.
thence North 86°49'30" West, 214.48 feet.
thence South 75°27'05" West, 67.51 feet.
thence South 26°40'38" East, 116.61 feet.
thence North 85°43'06" West, 150.00 feet.
thence South 88°12'40" West, 104.89 feet.
thence South 88°46'29" West, 105.00 feet.
thence North 88°25'45" West, 100.00 feet.
thence South 16°38'02" East, 174.39 feet.
thence South 62°47'48" West, 149.46 feet.
thence North 89°15' 43" West, 132.95 feet.
thence Southwesterly, 76.79 feet, along said centerline on the arc of a 40.00 foot radius curve to the left, the central angle of which is 109°59'41" and the long chord of which bears South 35°44'33" West, 65.53 feet,
thence Northwesterly, 54.78 feet, along said centerline on the arc of a 157.00 foot radius curve to the right, the central angle of which is 19°59'26" and the long chord of which bears North 09°15'27" West, 54.50 feet,
thence North 00°44'17" East, 70.00 feet.
thence Southeasterly, 62.83 feet, along said centerline on the arc of a 40.00 foot radius curve to the left, the central angle of which is 90°00'11" and the long chord of which bears South 44°15'43" East, 56.57 feet,
thence South 89°15'43" East, 119.98 feet.
thence North 00°44'17" East, 107.92 feet.
thence North 89°15'43" West, 159.99 feet.
thence North 00°44'17" East, 182.33 feet.
thence Northeasterly, 126.78 feet, along said centerline on the arc of a 1233.86 foot radius curve to the right, the central angle of which is 05°53'13" and the long chord of which bears North 03°40'54" East, 126.72 feet,
thence North 36°27'22" West, 93.98 feet.
thence Southwesterly, 202.23 feet, along said centerline on the arc of a 1299.86 foot radius curve to the left, the central angle of which is 08°54'51" and the long chord of which bears South 05°11'42" West, 202.03 feet,
thence South 00°44'17" West, 122.58 feet.
thence North 89°15'43" West, 145.00 feet.
thence South 00°44'17" West, 682.00 feet,
along the North-South one-quarter line of said Section 26;
to the POINT OF BEGINNING of said Parcel.

Said described parcel contains 400,463.21 square feet (9.19 acres), more or less.

subject to any and all easements, reservations, restrictions and conveyances of record.

INDEX OF DRAWINGS:

- | | |
|------|--|
| C0.0 | COVER |
| C1.0 | EXISTING CONDITIONS SURVEY |
| C2.0 | OVERALL SITE ARRANGEMENT PLAN |
| C2.1 | OVERALL SITE GRADING AND DRAINAGE PLAN |
| C3.0 | SITE UTILITY PLAN |
| C4.0 | BIRMLEY HILL DRIVE PLAN AND PROFILE |
| C4.1 | FARMINGTON COURT PLAN AND PROFILE |
| C6.0 | SITE DETAILS |
| C6.1 | UTILITY DETAILS
*(BY GRAND TRAVERSE COUNTY DPW) |

OWNER / APPLICANT

T&R INVESTMENTS
841 ASHLAND DRIVE
TRAVERSE CITY, MI 49686

STEVE ZAKRAJSEK
(231) 838-3766

ENGINEER

BOYNE ENGINEERING AND DESIGN
PO BOX 94
BOYNE CITY, MI 49712
CONTACT CARRIE MAY, P.E.
PRINCIPAL ENGINEER
PHONE: (231) 499-8361

SURVEYOR

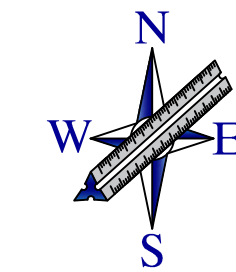
GOURDIE-FRASER
123 W FRONT ST
TRAVERSE CITY, MI 49684
PHONE: (231) 946-5874

PLAN APPROVAL

THESE CONSTRUCTION PLANS HAVE BEEN REVIEWED AND APPROVED BY THE GARFIELD TOWNSHIP WITH THE EXCEPTIONS, CONDITIONS AND MODIFICATIONS INDICATED BY ME ON THIS PLAN SET

GARFIELD TOWNSHIP PLANNER OR ZONING ADMINISTRATOR

DATE



BOYNE ENGINEERING
AND DESIGN
P.O. Box 94
Boyne City, MI 49727
(231) 499-8361
boyneengineering.com

BIRMLEY HILLS SITE CONDOMINIUM

PREPARED FOR:

T&R INVESTMENTS

841 Ashland Drive
Traverse City, MI

REVISIONS

NO:	DATE	APP'D	ISSUE / REVISION DESCRIPTION
1	11/17/22	CAM	AGENCY REVIEW MODIFICATIONS

COVER

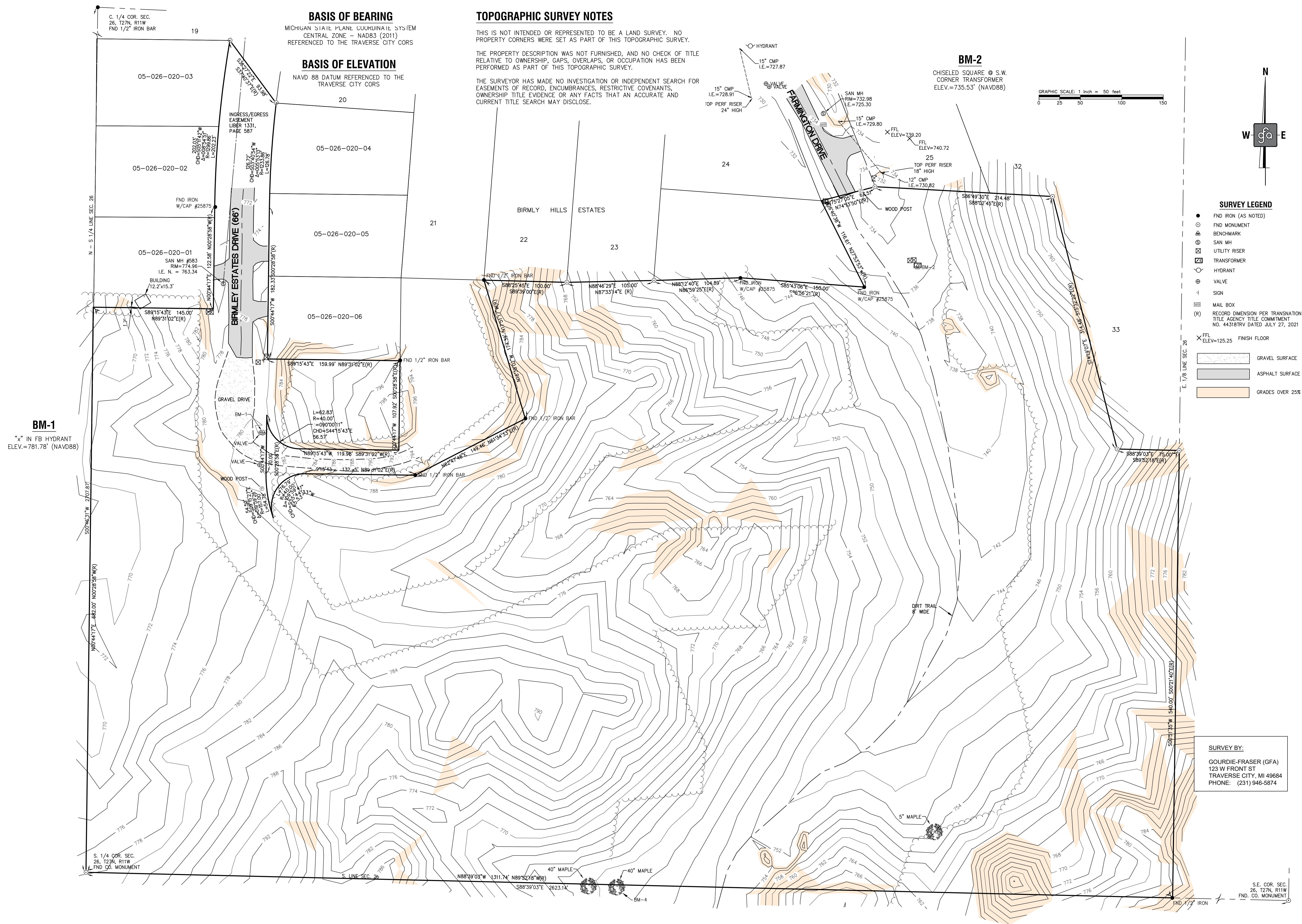
ORIGINAL ISSUE DATE:
09/21/2022

SCALE:

BED JOB NO. 22016

DRAWING NUMBER

C0.0



BIRMINGHAM HILLS SITE CONDOMINIUM

PREPARED FOR:
T&R INVESTMENTS

Traverse City, MI

725 E. STATE STREET

[illegible]

EXISTING CONDITIONS

ORIGINAL ISSUE DATE:	09/21/2022
SCALE:	1"=50'
BED JOB NO.	22016
DRAWING NUMBER	

C1.0

C:\USERS\CARRIE MAY\DOCUMENTS\BOYNE ENGINEERING\2022 JOBS\22016 BIRNLEY ESTATES\DESIGN\WORKING CAD - CURRENT\22078_SY TO CLIENT-8-26-22 WITH BORDER.DWG (09/19/22 7:43 PM) CARRIE MAY

SOILS

SOILS ON THIS PROPERTY HAVE BEEN OBSERVED TO BE SANDY - CONSISTENT WITH NRCS SOIL SURVEY MAPING

SEE SHEET C2.1 FOR TEST HOLES

LIGHTING

NO SITE LIGHTING IS PROPOSED FOR THIS DEVELOPMENT

PARKING

PARKING FOR THIS DEVELOPMENT WILL BE LOCATED ON INDIVIDUAL LOTS. NO ADDITIONAL PARKING AREAS ARE PROPOSED

COVERAGE AREAS

SITE ELEMENT	AREA	UNIT	% OF COVERAGE	NOTES
OVERALL SITE	21.3	AC		GROSS AREA (SEE CALCULATION THIS SHEET)
EX BUILDINGS	0	SF		VACANT
NEW BUILDINGS	0	SF		
PAVEMENT	63,647	SF	6.9%	
RESERVED WOODED OPEN SPACE	2.28	AC	10.7%	14.3% OF NET AREA

GROSS/NET AREA

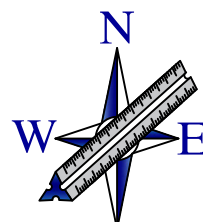
GROSS AREA: 21.33 AC
PUBLIC EASEMENTS: -2.09 AC
RIGHT-OF-WAYS: -3.88 AC
NET AREA: 15.36 AC

ZONING

GARFIELD TOWNSHIP ZONING INFORMATION					
CHARTER TOWNSHIP OF GARFIELD ORDINANCE 68 AMENDED THROUGH 9/26/21					
ZONING DISTRICT	MIN LOT PER UNIT	MAX HEIGHT/STORIES	YARD SETBACKS (FT)	MAX BUILDING COVERAGE	
R-1	15,000 SF	2-12 / 35'	30' 10' 30'	30%	
ONE FAMILY RESIDENTIAL					
* WITH PUBLIC SEWER					

LEGEND

---	PROPERTY LINE
---	LOT LINE
---	SETBACK
---	EASEMENT
---	RIGHT OF WAY
---	PROPOSED ROADWAY CENTER
---	EDGE OF PAVEMENT
---	STORMWATER FLOW
---	TREE LINE
---	EX PAVING / GRAVEL
---	STORMWATER BASIN
---	SOIL BORING
---	BENCHMARK



BOYNE ENGINEERING
AND DESIGN
P.O. Box 94
Boyne City, MI 49727
(231) 499-8361
boyneengineering.com

BIRMLEY HILLS SITE CONDOMINIUM

PREPARED FOR:
T&R INVESTMENTS

841 Ashtland Drive Traverse City, MI

Birmley Hills Drive					
Number	Radius	Length	Line/Chord Direction	Start Station	
C1		274.66	S0° 44' 17.26"W	0+41.00	
L1	185.00	511.71	S78° 30' 04.50"E	3+15.66	
L2		108.55	N22° 15' 33.74"E	8+27.36	
C2	190.00	267.03	N62° 31' 19.66"E	9+35.91	
L3		107.45	S77° 12' 54.41"E	12+02.94	
C3	200.00	94.61	N89° 13' 59.42"E	13+10.40	
L4		64.30	N75° 40' 53.26"E	14+05.00	

Farmington Court					
Number	Radius	Length	Line/Chord Direction	Start Station	
L5		236.80	S26° 40' 37.62"E	0+00.00	
C4	200.00	43.14	S20° 29' 52.18"E	2+36.80	
L6		117.75	S14° 19' 06.74"E	2+79.94	
C5	250.00	288.64	S19° 54' 26.80"W	3+97.69	
L39		125.17	S54° 08' 00.34"W	9+96.37	

Curve Table			Curve Table		
Curve #	Length	Radius	Curve #	Length	Radius
C6	11.23	233.00	C29	88.48	218.00
C7	39.03	233.00	C30	88.27	218.00
C8	32.61	283.00	C31	80.06	218.00
C9	93.41	283.00	C32	88.15	218.00
C10	92.15	283.00	C33	88.63	218.00
C11	30.02	283.00	C34	37.26	218.00
C12	89.92	283.00	C35	62.83	40.00
C13	42.03	60.37	C36	76.79	40.00
C14	37.58	66.00	C37	54.77	157.00
C15	88.58	66.00	C38	0.00	158.74
C16	27.22	66.00	C39	166.56	152.00
C17	43.18	66.00	C40	200.04	152.00
C18	31.72	60.37	C41	36.02	152.00
C19	10.31	60.37	C42	25.43	223.00
C20	38.52	217.00	C43	100.00	223.00
C21	111.32	217.00	C44	100.00	223.00
C22	84.48	217.00	C45	57.98	223.00
C23	58.33	35.00	C46	76.40	171.77
C24	105.98	233.00	C47	53.15	35.00
C25	61.67	157.00	C48	0.07	167.00
C26	158.98	157.00	C49	39.11	167.00
C27	6.57	218.00	C50	17.81	152.00
C28	100.00	218.00	C125	110.20	66.00

Parcel Line Table		
Line #	Length	Direction
L7	140.83	S26° 40' 37.74"E
L8	88.68	N26° 40' 37.74"W
L9	57.09	N14° 19' 06.74"W
L10	60.67	N14° 19' 06.74"W
L11	7.66	N54° 08' 05.99"E
L12	34.06	N54° 08' 05.99"E
L13	41.73	S54° 08' 05.99"W
L14	1.64	S77° 12' 54.41"E
L15	105.81	S77° 12' 54.41"E
L16	108.55	N22° 15' 33.74"E
L17	4.13	S0° 44' 17.26"W
L18	104.00	N0° 44' 17.26"E
L19	79.86	S0° 44' 17.26"W
L20	58.75	S0° 44' 17.26"E
L21	67.91	N0° 43' 50.02"E
L22	0.00	N0° 44' 17.09"E
L23	67.91	N0° 43' 50.02"E
L24	106.33	N0° 44' 17.25"E
L25	63.68	S22° 15' 33.74"W
L26	44.57	S22° 15' 33.74"W
L27	59.32	N77° 12' 54.41"W
L28	48.13	N77° 12' 54.41"W
L29	27.28	S26° 40' 37.74"E
L30	100.00	S26° 40' 37.74"E
L31	181.89	S59° 05' 36.35"W
L32	22.67	N31° 34' 23.85"E
L33	37.49	N31° 34' 23.85"E
L34	35.32	N4° 54' 58.66"E
L35	35.34	N0° 44' 17.26"E
L36	32.66	N0° 44' 17.26"E
L37	145.01	S89° 26' 56.26"E
L38	104.00	N0° 44' 17.26"E
L53	11.67	N0° 44' 17.25"E

REVISIONS

NO.	DATE	APP'D	ISSUE / REVISION DESCRIPTION
1	11/17/22	CAM	AGENCY REVIEW MODIFICATIONS
2	12/07/22	CAM	REMOVE SAN STUB & RENUMBER VALVES

OVERALL SITE
ARRANGEMENT PLAN

ORIGINAL ISSUE DATE:
09/21/2022
SCALE: 1"=50'
BED JOB NO. 22016
DRAWING NUMBER

C2.0



THE CONTRACTOR ADVISED THAT ALL SOIL EROSION MEASURES AND STORMWATER FACILITIES SHALL BE CONSTRUCTED AT THE EARLIEST FEASIBLE SCHEDULE. NO OTHER CONSTRUCTION ACTIVITIES SHALL PROCEED WHICH DO NOT DIRECTLY DRAIN TO THESE FACILITIES. THE CONTRACTOR SHALL INSTALL TEMPORARY FACILITIES ARE INSTALLED. PRIOR TO ACCEPTANCE OF THE PROJECT AS COMPLETE, ALL PERMANENT STORMWATER FACILITIES USED DURING CONSTRUCTION SHALL BE DEMOLISHED OR TO OPERATE IN THEIR DESIGNED CONDITION AT NO ADDITIONAL COST TO THE PROJECT.

2. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TEMPORARY SOIL EROSION CONTROL MEASURES PER P.A. 451 AS AMENDED. WITH THE USE OF SILT FENCE AND OTHER TEMPORARY MEASURES THE CONTRACTOR SHALL PROTECT THE ADJACENT AREA FROM ACCELERATED EROSION AND SEDIMENTATION FLOWS RESULTING FROM CONSTRUCTION. THE CONTRACTOR SHALL INSTALL ADDITIONAL TEMPORARY AND PERMANENT SOIL EROSION CONTROL MEASURES, IF DIRECTED BY THE ENGINEER OR SOIL EROSION CONTROL OFFICER, AT NO ADDITIONAL COST TO THE PROJECT.

3. SHOULD ADDITIONAL SOIL EROSION CONTROL MEASURES BE DETERMINED TO BE NECESSARY BY EITHER THE SOIL EROSION CONTROL OFFICER OR THE OWNER'S ENGINEER THEY SHALL BE IN PLACE NO LATER THAN 24 HOURS FROM THE TIME OF NOTIFICATION TO THE GENERAL CONTRACTOR FOR THE PROJECT. IF NOT PLACED IN 24 HOURS OR LESS ALL ON SITE CONSTRUCTION WILL BE HALTED UNTIL SUCH MEASURES ARE INSTALLED AND APPROVED BY EITHER THE SOIL EROSION CONTROL OFFICER OR THE OWNER'S ENGINEER.

4. ALL DISTURBED NON-HARD SURFACE AREAS TO BE STABILIZED WITH TOPSOIL, SEEDING, FERTILIZED AND MULCHED. DISTURBED AREAS SHALL BE TOPSOILED TO A DEPTH NOT LESS THAN FOUR (4) INCHES. SLOPES WHICH ARE BETWEEN 3:1 AND 2:1 GRADE SHALL BE SODDED AND STAKED OR RECEIVE SEEDING IN COMBINATION WITH DOUBLE NET, BIODEGRADABLE EROSION CONTROL BLANKET (EXCEL CC-4 OR EQUAL), IN CASE SHALL CONSTRUCTED SLOPES IN EXCESS OF 2:1 BE ALLOWED ON THE PROJECT. ALL SLOPES GREATER THAN 3:1 GRADE AND SUBJECT TO CONCENTRATED FLOWS SHALL RECEIVE PERMANENT TURF REINFORCING MATTING (EXCEL PPS-10 OR EQUAL). INSTALLATION OF EROSION CONTROL, BLANKETS AND TURF REINFORCING MATS SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS. STORMWATER CHANNELS AND BASINS SHALL BE INSTALLED ACCORDING TO THE DESIGNATION ON THE PLANS AND DETAILS.

5. CONTRACTOR SHALL STABILIZE DISTURBED EARTH IMMEDIATELY UPON ESTABLISHMENT OF FINAL GRADE AND SHALL BE SOLELY RESPONSIBLE FOR ESTABLISHMENT OF A HEALTHY STAND OF GRASS PRIOR TO THE ONSET OF GOOD WEATHER. ALL PERMANENT SOIL EROSION CONTROL MEASURES SHALL BE IN PLACE WITHIN 5 DAYS OF COMPLETION OF EARLY CHANGES

6. NEW STORM DRAINAGE PIPE SHALL BE CORRUGATED GALVANIZED STEEL PIPE, SMOOTH LINED CORRUGATED HDPE (C90) OR APPROVED EQUAL. A MINIMUM OF TWO (2) FEET OF COVER FROM FINISHED ELEVATION SHALL BE MAINTAINED OVER ALL STORM DRAIN PIPES.

7. ALL DRAINAGE PIPES THAT OUTLET AT GROUND SURFACE SHALL INCLUDE END SECTIONS.

8. ALL EXISTING STORM DRAINS WITHIN THE CONSTRUCTION ZONE TO BE INSTALLED/MONITORED WITH SILT SACKS. SACKS TO BE PULLED AS NEEDED TO KEEP SEDIMENT OUT.

10. EXISTING STORM DRAINAGE DITCHES SHALL BE REBUILT IF TIPPED OR IN REMOVED DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR OR REPLACEMENT AS REQUIRED. ALL DRAINAGE CULVERTS DAMAGED DURING CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

11. THE CONTRACTOR SHALL REMOVE ALL SEDIMENT OR SOLIDS THAT HAVE BEEN DROPPED, WASHED ONTO OR TRACKED OUT ON PUBLIC RIGHT-OF-WAY OR PRIVATE ROADS AT THE END OF EACH WORKING DAY OR AFTER EACH RAIN EVENT ON NON-WORK DAYS.

12. ALL REMOVED TOPSOIL WILL BE STOCKPILED WITHIN THE PROJECT AREA. IF ADDITIONAL TOPSOIL IS AVAILABLE AFTER TOPSOILING THE CONSTRUCTION AREA, IT WILL BE STOCKPILED WITHIN 1000 FEET OF THE CONSTRUCTION AREA AS DIRECTED BY THE OWNER OR ENGINEER.

13. THE CONTRACTOR SHALL REPAIR ALL WASHOUTS AND EROSION DURING THE GUARANTEE PERIOD OF ONE (1) YEAR AT NO ADDITIONAL COST TO THE OWNER.

14. IF REQUESTED BY THE ENGINEER OR SOIL EROSION CONTROL OFFICER, A WATER TRUCK SHALL BE REQUIRED TO WATER ON SITE DURING THE CONSTRUCTION PHASE OF THE PROJECT. THE WATER TRUCK SHALL BE USED AND DIRECTED BY THE ENGINEER OR SOIL EROSION CONTROL OFFICER TO CONTROL DUST AND WIND EROSION.

STORMWATER CONTROL:

A STORM WATER DRAINAGE STUDY OF THE EXISTING AND PROPOSED DEVELOPED CONDITIONS FOR THIS SITE HAS BEEN PERFORMED USING THE SCS TR-20 METHOD AND HYDROCAD VERSION 10. STORM WATER CONTROL FACILITIES HAVE BEEN DESIGNED TO MEET THE GARFIELD TOWNSHIP STORM WATER CONTROL ORDINANCE - PER THAT CODE:

- RUNOFF GENERATED FROM SITE IMPROVEMENTS IS RETAINED ON SITE IN RETENTION/INFILTRATION BASINS DESIGNED TO LIMIT OUTFLOW < 0.13 CFS PER ACRE FOR A 25 YEAR, 24HR STORM EVENT:

DESIGNED AREA: 21.10 ACRE	0.13 =	2.743 CFS ALLOWED
DESIGN OUTFLOW 25 YR, 24 HR EVENT:		1.88 CFS

- THE STORAGE VOLUME PROVIDED EXCEEDS REQUIREMENTS:

PREDEVELOPED 2 YEAR RUNOFF: 0.005cfs	
DEVELOPED 25 YEAR GENERATED RUNOFF:	2.156cfs
DEVELOPED 25 YEAR INFILTRATION:	-1.402cfs
STORAGE REQUIRED (0.749 - 0.005): 0.744cfs	-0.749cfs
STORAGE PROVIDED:	1.037af
(ADDITIONAL STORAGE IN DITCHES NOT INCLUDED)	

BASIN B4A
@ 1% BOD OF BASIN 768' = SEE NOTES SHEET

- BASIN SLOPES DO NOT EXCEED 3:1, NO SLOPES EXCEEDING 2:1
- SNOW STORAGE AREAS ARE INDICATED ON PLAN
- CHECK DAMS ARE PROVIDED AT DITCH LOCATIONS WITH ANTICIPATED FLOWS > 4FT/S AND EROSION CONTROL BLANKETS ARE SPECIFIED
- THE STORMWATER FACILITIES ARE DESIGNED TO SAFELY PASS A 100 YEAR, 24HR STORM EVENT WITHOUT INCREASING DOWNSTREAM FLOODING.
- BASINS ARE DESIGNED TO DRAIN THROUGH INFILTRATION WITHIN 72 HOURS

BASIN B1
RETENTION/INFILTRATION

TOP OF BASIN:	EL. = 734.5
BOTTOM OF BASIN:	EL. = 732.00
@ 1% BOD TO BASIN	
5W X 5L LEVEL STABILIZED	EL. = 734.05
OVERFLOW WEIR :	
50 LF OF 24" O CPE OUTLET	
@ 1% BOD TO BASIN	
END SECTIONS 2 SIDES	
100 YEAR HW ELEV:	EL. = 734.11
VOLUME PROVIDED:	3,866 CF

BASIN B2A
SEDIMENT FOREBAY

TOP OF BASIN:	EL. = 737.00
BOTTOM OF BASIN: <td>EL. = 734.00</td>	EL. = 734.00
@ 1% BOD TO BASIN	
8W X 5L LEVEL STABILIZED	EL. = 736.50
OVERFLOW WEIR :	
5W ACCESS PATH TO OVERFLOW	
100 YEAR HW ELEV:	EL. 736.86
VOLUME PROVIDED:	5,614 CF

BASIN B2B
RETENTION/INFILTRATION

TOP OF BASIN:	EL. = 734.5
BOTTOM OF BASIN: <td>EL. = 729.50</td>	EL. = 729.50
@ 1% BOD TO BASIN	
5W X 5L LEVEL STABILIZED	EL. = 733.55
OVERFLOW WEIR :	
24LF OF 10" W/ILET CONTROL	
STRUCTURE ON INLET	
END SECTION ON OUTLET	
@ 0.5 VERT ORIFICE	FL. = 732.32
24" @ 60 GPM FLOW RISER:	EL. = 733.30
100 YEAR HW ELEV:	EL. = 733.85
VOLUME PROVIDED:	10,364 CF

BASIN B3
RETENTION/INFILTRATION

TOP OF BASIN:	EL. = 742.00
BOTTOM OF BASIN: <td>EL. = 738.00</td>	EL. = 738.00
@ 1% BOD OF BASIN	
50 LF OF 15" O CPE OUTLET	
@ 1% END SECTION 2 SIDES	
100 YEAR HW ELEV:	EL. = 741.51
VOLUME PROVIDED:	8,597 CF

BASIN B4AB&B4B
RETENTION/INFILTRATION

TOP OF BASIN:	EL. = 768.95
BOTTOM OF BASIN: <td>EL. = 765.00</td>	EL. = 765.00
@ 1% BOD TO BASIN	
20W X 5L STABILIZED	
LEVEL SPREADER OUTLET	
OVERFLOW WEIR :	
5W ACCESS PATH TO	
ALONG DITCH LINE	
100 YEAR HW ELEV:	EL. = 768.40
VOLUME PROVIDED:	5,465 CF

TOP OF BASIN B4B:	EL. = 770.17
BOTTOM OF BASIN:	EL. = 767.00
@ 1% BOD TO BASIN	
20W X 5L STABILIZED	
LEVEL SPREADER OUTLET	
OVERFLOW WEIR :	
100 YEAR HW ELEV:	EL. = 769.30
100 YEAR HW ELEV:	EL. = 768.29
VOLUME PROVIDED:	8,413 CF

BASIN B5
RETENTION/INFILTRATION

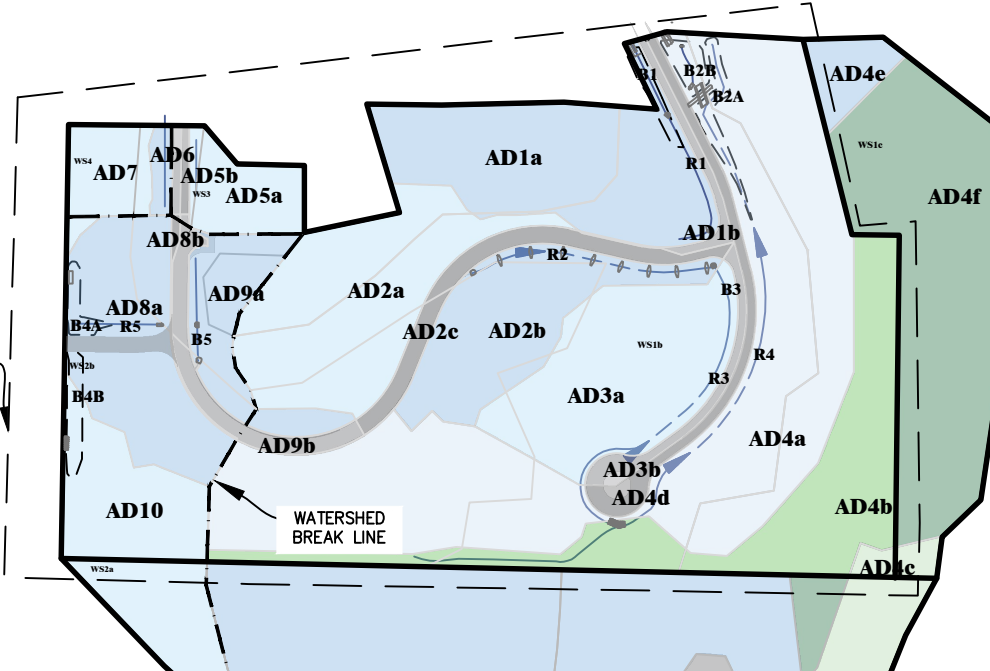
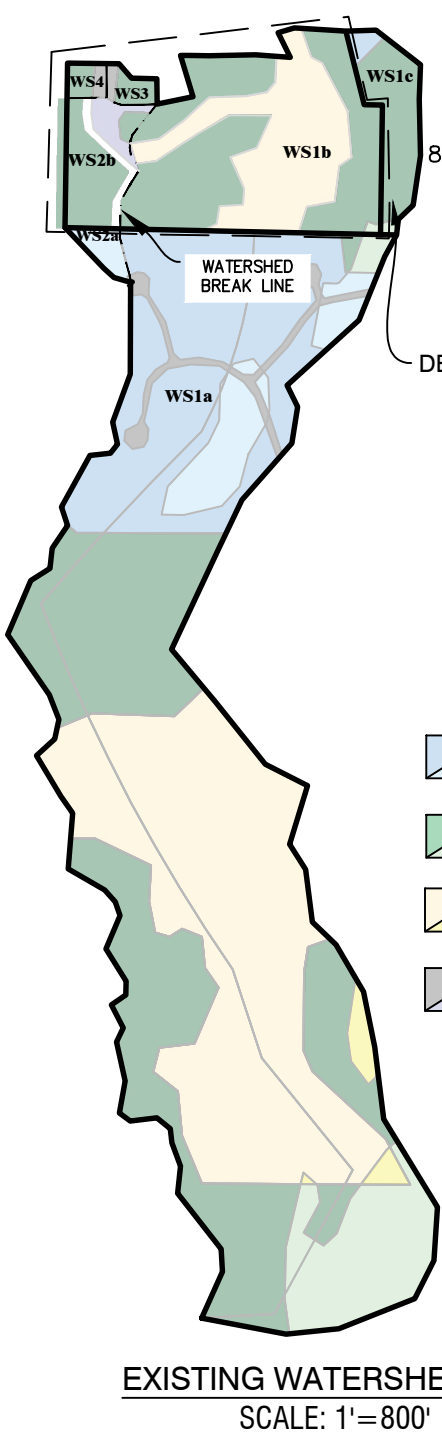
TOP OF BASIN:	EL. = 776.00
BOTTOM OF BASIN: <td>EL. = 771.00</td>	EL. = 771.00
@ 1% BOD TO BASIN	
24" @ 60 GPM OUTLET	
@ 1% END SECTIONS 2 SIDES	
100 YEAR HW ELEV:	EL. = 776.00
VOLUME PROVIDED:	2,745 CF

STORM OUTLET & INLET PROTECTION

PROVIDE STONE EROSION PROTECTION ON BOTH ENDS OF STORM PIPES AT INLET OUTLETS, AND ON OVERFLOWS AS SHOWN ON PLANS - MINIMUM REQUIREMENT IF NOT NOTED:

- INLETS: 4W X 4L - ANGULAR STONE #50 - 33X70 DEEP OVER NON-WOVEN GEOTEXTILE FABRIC
- OUTLETS: 4W X 4L - ANGULAR STONE #50 - 33X70 DEEP OVER NON-WOVEN GEOTEXTILE FABRIC

1. ALL WORK PERFORMED AND ALL MATERIALS SUPPLIED SHALL BE IN ACCORDANCE WITH THE CURRENT M.D.O.T. STANDARD SPECIFICATIONS AND CURRENT GRAND TRAVERSE COUNTY ROAD COMMISSION STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE INDICATED ON THE PLANS AND CONTRACT DOCUMENTS. THE CONTRACTOR IS REQUIRED TO FAMILIARIZE HIMSELF/HIMSELF WITH THESE SPECIFICATIONS.
2. THE ENGINEER SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO BITUMINOUS PAVING.
3. THE PREPARED SUBBASE MUST BE TESTED AND APPROVED PRIOR TO PLACEMENT OF BASE.
4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT THE GRAVEL TO BE USED ON THIS PROJECT IS APPROVED PRIOR TO PLACEMENT.
5. THE PREPARED GRAVEL WIDTH, DEPTH, AND COMPACTION MUST BE TESTED AND APPROVED BY THE OWNERS ENGINEER PRIOR TO BITUMINOUS PAVING.
6. ALL CONSTRUCTION SIGNING SHALL MEET M.M.U.T.C.D. STANDARDS.
7. TRAFFIC ON CONNECTING ROADS MUST BE MAINTAINED AT ALL TIMES. ANY LANE CLOSURE MUST BE APPROVED BY THE GRAND TRAVERSE COUNTY ROAD COMMISSION AT NO ADDITIONAL COST TO THE PROJECT.
8. ALL PAVEMENT CUTS ARE TO BE MADE WITH SAW, IMMEDIATELY PRIOR TO PAVING.
9. THE CONTRACTOR SHALL NOTIFY RESIDENTS 24 HOURS (EXCLUDING SATURDAYS AND SUNDAYS) IN ADVANCE OF DISRUPTION TO SERVICE, SUCH AS DRIVEWAY CLOSING.
10. PAVEMENT MARKING SHALL MEET M.D.O.T. SPECIFICATION AND STANDARDS.

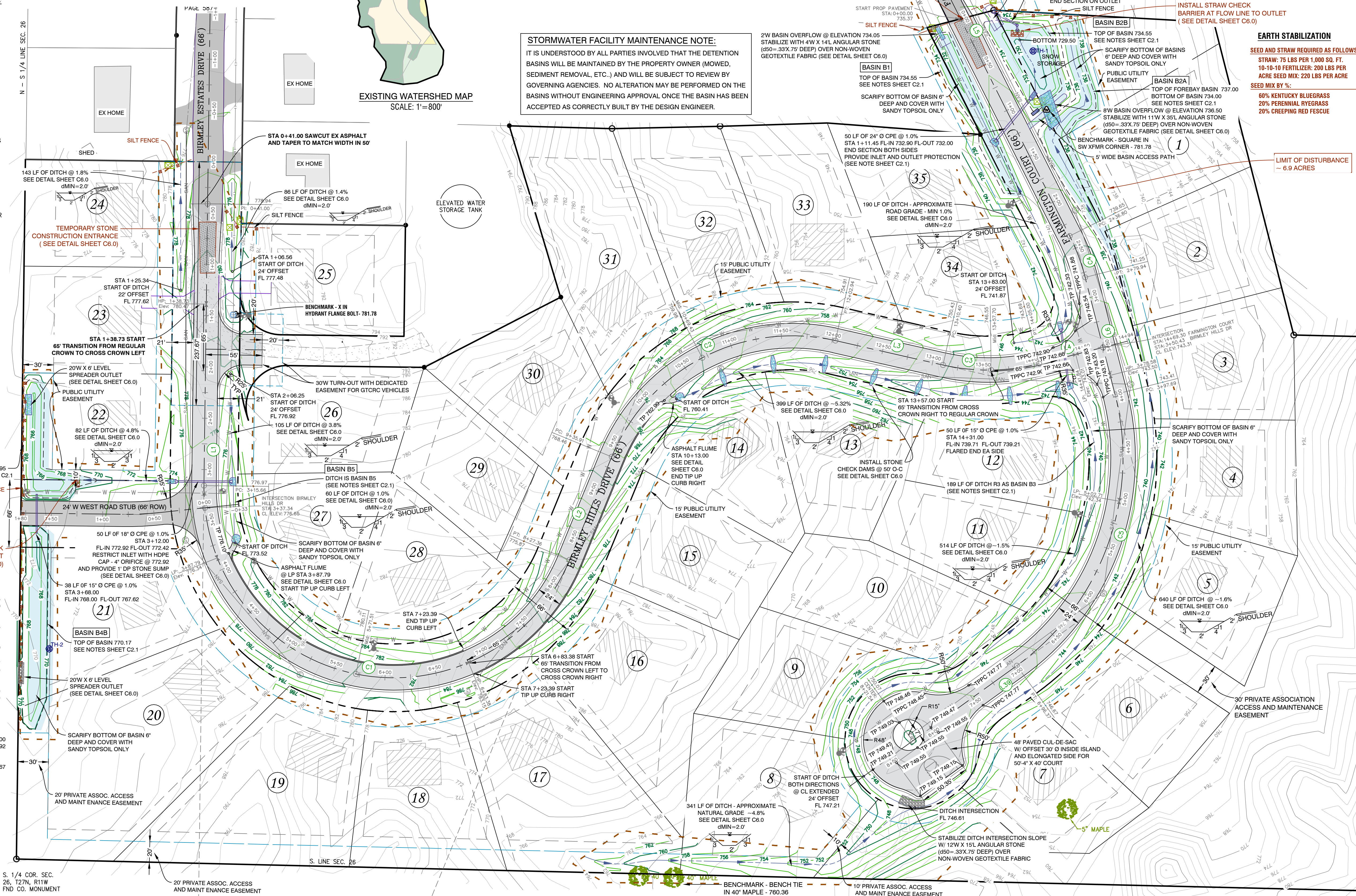


 BLUES: DEVELOPED
 GREENS: WOODED
 TANS: MEADOW/RANGE
 GRAYS: PAVED/GRAVEL

DEVELOPED AREA
SCALE: 1"=300'

* DETAILED STORM WATER CALCULATIONS ARE PROVIDED SEPARATELY AND REFERENCE WATERSHED MAPS AND AREA DESCRIPTIONS SHOWN ON THIS SHEET

IT IS UNDERSTOOD BY ALL PARTIES INVOLVED THAT THE DETENTION BASINS WILL BE MAINTAINED BY THE PROPERTY OWNER (MOWED, SEDIMENT REMOVAL, ETC.) AND WILL BE SUBJECT TO REVIEW BY GOVERNING AGENCIES. NO ALTERATION MAY BE PERFORMED ON THE BASINS WITHOUT ENGINEERING APPROVAL ONCE THE BASIN HAS BEEN ACCEPTED AS CORRECTLY BUILT BY THE DESIGN ENGINEER.



PROPERTY LINE
 LOT LINE
 SETBACK
 EASEMENT
 RIGHT OF WAY
 PROPOSED ROADWAY CENTER
 EDGE OF PAVEMENT
 STORMWATER FLOW
 900
 EXISTING 10' CONTOUR LINE
 900
 EXISTING 2' CONTOUR LINE
 900
 PROPOSED 10' CONTOUR LINE
 900
 PROPOSED 2' CONTOUR LINE
 TREE LINE
 LIMIT OF DISTURBANCE
 EX PAVING / GRAVEL
 SILT FENCING
 STORMWATER BASIN
 SOIL BORING
 BENCHMARK



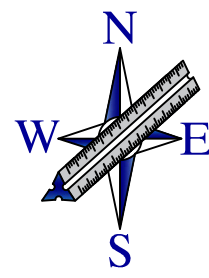
SEED AND STRAW REQUIRED AS FOLLOWS

STRAW: 75 LBS PER 1,000 SQ. FT.
10-10-10 FERTILIZER: 200 LBS PER
ACRE SEED MIX: 220 LBS PER ACRE

SEED MIX BY %:

60% KENTUCKY BLUEGRASS
20% PERENNIAL RYEGRASS
20% CREEPING RED FESCUE

LIMIT OF DISTURBANCE
~ 6.9 ACRES



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BIRMLEY HILLS SITE CONDOMINIUM

PREPARED FOR:

T&R INVESTMENTS

Traverse City, MI

841 Ashland Drive

REVISIONS			
NO:	DATE	APP'D	ISSUE / REVISION DESCRIPTION
1	11/17/22	CAM	AGENCY REVIEW MODIFICATIONS
2	12/07/22	CAM	REMOVE SAN STUB & RENUMBER VALVES

OVERALL SITE GRADING AND DRAINAGE PLAN

ORIGINAL ISSUE DATE:
09/21/2022

SCALE: 1"=50'

BFD JOB NO 22016

C2.1

WATERMAIN NOTES

- ALL CONSTRUCTION MATERIALS AND PROCEDURES MUST CONFORM WITH CURRENT DPW STANDARDS, SPECIFICATIONS AND DETAILS.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO THE START OF CONSTRUCTION OF THE WATER MAIN. CONTRACTOR SHALL ISSUE A WORK SCHEDULE TO THE ENGINEER PRIOR TO THE START OF WATER MAIN CONSTRUCTION.
- ALL WATER MAIN SHALL BE DR 18 C900 PVC MEETING CURRENT AWWA STANDARDS.
- WATER MAIN SHALL HAVE A MINIMUM OF SIX (6) FEET OF COVER BELOW EXISTING OR PROPOSED GRADE, UNLESS NOTED OTHERWISE ON THE PLANS.
- THE ALIGNMENT OF THE PROPOSED WATER MAIN IS PROVIDED FOR REFERENCE ONLY. CONTRACTOR MAY DEViate/DEFLECT AS NECESSARY TO AVOID CONFLICTS FOR EASIER CONSTRUCTION. COST FOR ADDITIONAL PIPE, FITTINGS, ETC. ARE INCLUDED IN THE COST OF THE PROJECT.
- LENGTH OF WATER MAIN SHALL BE DETERMINED ON A CASE BY CASE BASIS IN ORDER TO CONSTRUCT ACCORDING TO THE PLANS AND SPECIFICATIONS. COSTS FOR THE MAIN ARE INCLUDED IN THE COSTS OF THE PROJECT.
- RETAINER GLANDS SHALL BE USED ON ALL MECHANICAL JOINT FITTINGS.
- BURLAP, PLASTIC OR POLY (20 MILLS) OR APPROVED EQUAL SHALL BE PLACED BETWEEN THE CONCRETE THRUST BLOCK AND DEAD-END MAINS OR DEAD-END PLUGS, TEES, HYDRANTS AND CROSSES TO FACILITATE THE REMOVAL OF THE THRUST BLOCK FOR FUTURE EXTENSION AND MAINTENANCE.
- A PHYSICAL GAP SHALL BE MAINTAINED BETWEEN THE PROPOSED WATER MAIN AND THE EXISTING WATER MAIN UNTIL ALL WATER MAIN TESTING HAS BEEN COMPLETED AND APPROVED BY THE ENGINEER AND THE DPW.
- THE CONTRACTOR SHALL COORDINATE THE CONNECTION TO THE EXISTING WATER MAIN WITH THE DPW AND THE ENGINEER. THE DPW SHALL BE GIVEN A MINIMUM OF 24 HOURS NOTICE PRIOR TO ANY CONNECTIONS.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN WATER FOR FLUSHING AND TESTING PURPOSES. CONTRACTOR SHALL COORDINATE WITH THE DPW, IF WATER IS OBTAINED FROM THE CITY/VILLAGE/TOWNSHIP WATER SYSTEM, THE DPW SHALL BE GIVEN 24 HOURS NOTICE PRIOR TO USING ANY WATER FROM THE TOWNSHIP WATER SYSTEM.
- TO FACILITATE WATER SAMPLING, THE CONTRACTOR MAY INSTALL TWO (2) INCH CORPORATION STOPS AND TYPE K COPPER TUBE FROM THE TWO (2) INCH CORPORATION TO APPROXIMATELY FOUR (4) FEET ABOVE THE FINISH GRADE IN LOCATIONS APPROVED BY THE FIELD ENGINEER. AFTER THE WATER MAIN HAS BEEN FLUSHED AND SATISFACTORY BACTERIOLOGICAL ANALYSIS TESTS HAVE PASSED, THE TYPE 'K' COPPER TUBE SHALL BE REMOVED AND THE TWO (2) INCH CORPORATION WILL BE CLOSED. CONTRACTOR WILL INFORM THE FIELD REPRESENTATIVE/CONSTRUCTION REPRESENTATIVE TO ALLOW HIM TO WITNESS THE REMOVING OF THE COPPER TUBING AND THE CLOSING OF THE CORPORATION.
- PRIOR TO PIGGING AND FLUSHING ALL LINES SHALL BE CHARGED WITH WATER.
- ALL PERMANENT BLOW-OFF ASSEMBLIES SHALL BE CUT OFF BELOW GRADE AFTER TESTING IS COMPLETE. THE STANDING WATER WITHIN THE BLOW-OFF SHALL BE PUMPED OUT OF THE RISER CAPPED, BOLTED AND BURIED.
- CONTRACTOR SHALL PROPERLY DISPOSE OF CHLORINATED WATER USED IN TESTING OPERATIONS.
- ACTUAL WATER MAIN, HYDRANT AND GATE VALVE LOCATIONS SHALL BE FIELD STAKED PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE FIRE HYDRANTS AND VALVE BOXES TO THE FINISHED GRADE.
- THE CONTRACTOR MUST OBTAIN APPROVAL BEFORE DIRECTING ANY FLUSHING AND TESTING WATERS TO ANY COUNTY STORM WATER DRAINAGE DITCH SYSTEM. CONTRACTOR SHALL PROTECT THE DITCH FROM EROSION WHICH MAY REQUIRE THE USE AN ENERGY DISSIPATER ON THE DISCHARGE OF THE FLUSHING VALVE. ALL FLUSHING WATERS SHALL BE CONTAINED WITHIN THE DITCH AND SHALL NOT IMPACT THE ROADWAY OR ADJACENT LANDOWNERS. IF NOT APPROVED, AN ALTERNATE METHOD MUST BE DETERMINED AND APPROVED. ALL COSTS ASSOCIATED WITH FLUSHING, TESTING, AND DISCHARGING ARE INCLUDED IN THE COST OF THE PROJECT.
- WATER SERVICE LEADS SHOWN ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS SHALL BE DETERMINED BY THE DPW AND ENGINEER PRIOR TO PLACEMENT, IF APPLICABLE.
- CONTRACTOR MUST MAINTAIN A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET FROM ALL SANITARY SEWER AND STORM SEWER WHEN INSTALLING THE WATER MAIN, AS MEASURED FROM OUTSIDE TO OUTSIDE.
- CONTRACTOR MUST MAINTAIN A MINIMUM VERTICAL SEPARATION OF EIGHTEEN (18) INCHES AT ALL SANITARY SEWER AND STORM SEWER CROSSINGS WHEN INSTALLING THE WATER MAIN, AS MEASURED FROM OUTSIDE TO OUTSIDE.
- IT WILL BE REQUIRED THAT THE CONTRACTOR INSTALL ALL NEW WATER MAIN BELOW EXISTING WATER MAIN WHEN A CROSSING IS ENCOUNTERED. MAINTAIN A MINIMUM SIX (6) INCH SEPARATION FROM EXISTING WATER MAIN WITH PROPER BACKFILL/COMPACTION.
- FIRE HYDRANT ASSEMBLY SHALL CONSIST OF:
1-8"x6" TEE OR 1-8"x6" REDUCER
1-6" GATE VALVE
1-FIRE HYDRANT
- CONTRACTOR TO MAINTAIN WATER SERVICE TO CUSTOMERS AT ALL TIME WITH THE EXCEPTION OF LEAD TRANSFERS, IF APPLICABLE.
- CONTRACTOR TO PROTECT EXISTING WATER MAIN AND SERVICES DURING THE INSTALLATION OF THE PROPOSED WATER MAIN. IF EXISTING WATER MAIN IS DAMAGED, CONTRACTOR IS TO REPAIR TO MAINTAIN SERVICE TO RESIDENCE. ALL COST FOR THIS ARE INCLUDED IN THE COST OF THE PROJECT.
- ALL OPERATIONS OF EXISTING EQUIPMENT, VALVES, ETC. TO BE PERFORMED BY THE DPW STAFF ONLY.
- CONTRACTOR TO SUBMIT A CONSTRUCTION SCHEDULE AND SEQUENCE FOR APPROVAL PRIOR TO PERFORMING ANY WORK.

SANITARY SEWER/FORCE MAIN NOTES

- ALL CONSTRUCTION MATERIALS AND PROCEDURES MUST CONFORM WITH CURRENT DPW STANDARDS, SPECIFICATIONS AND DETAILS.
- ALL SANITARY SEWER SHALL BE SDR-35 PVC UNLESS DEEPER THAN 16 FT. SANITARY SEWER DEEPER THAN 16 FT SHALL BE SDR-26 AND MEET THE ASTM D 3034 REQUIREMENTS UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO THE START OF CONSTRUCTION OF THE SANITARY SEWER. CONTRACTOR SHALL ISSUE A WORK SCHEDULE TO THE ENGINEER PRIOR TO THE START OF SANITARY SEWER CONSTRUCTION.
- NO CONNECTION RECEIVING STORM WATER OR GROUND WATER SHALL BE MADE TO SANITARY SEWERS.
- NO CONNECTION TO THE EXISTING SANITARY SEWER SHALL BE MADE UNTIL THE NEW SEWER HAS BEEN INSTALLED, TESTED, INSPECTED, AND APPROVED BY THE ENGINEER AND THE DPW.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE MANHOLE RIMS TO THE FINISH GRADE ELEVATIONS. THE ELEVATIONS SHOWN ARE BASED UPON PLAN GRADES AND ARE SUBJECT TO CHANGE.
- THE ALIGNMENT OF THE PROPOSED SANITARY SEWER/FORCE MAIN IS SHOWN FOR REFERENCE ONLY. CONTRACTOR MAY DEViate/DEFLECT AS NECESSARY TO AVOID CONFLICTS FOR EASIER CONSTRUCTION. COSTS FOR ADDITIONAL PIPING, FITTINGS, ETC. SHALL BE INCLUDED IN THE COST OF THE PROJECT.
- CONTRACTOR MUST MAINTAIN A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET FROM ALL WATER MAIN WHEN INSTALLING THE SANITARY SEWER/FORCE MAIN, AS MEASURED FROM OUTSIDE TO OUTSIDE.
- CONTRACTOR MUST MAINTAIN A MINIMUM VERTICAL SEPARATION OF EIGHTEEN (18) INCHES AT ALL WATER MAIN CROSSINGS WHEN INSTALLING THE SANITARY SEWER/FORCEMAIN, AS MEASURED FROM OUTSIDE TO OUTSIDE.
- CONTRACTOR SHALL MAINTAIN A MINIMUM FIVE (5) FEET OF COVER OVER GRAVITY SANITARY SEWER AND SIX (6) FEET OF COVER OVER FORCE MAIN.
- IF THE CONTRACTOR CREATES HIGH POINTS IN THE FORCE MAIN DUE TO CONSTRUCTION METHODS, THE CONTRACTOR IS TO INSTALL ADDITIONAL AIR RELEASE STRUCTURES, AS PER SPECIFICATIONS, AT NO ADDITIONAL COST TO THE PROJECT.
- CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXISTING SANITARY SEWER/FORCE MAIN PRIOR TO MAKING ANY CONNECTIONS.
- CONTRACTOR SHALL MAINTAIN SEWER FLOWS AT ALL TIMES. PUMPING AND HAULING MAY BE REQUIRED TO TRANSFER FLOWS TO NEW LIFT STATION DURING CONNECTION TO EXISTING SANITARY SEWER/FORCE MAIN. STATION EXPERIENCES PEAK HOUR FLOWS UP TO XXX GPM AND EXISTING WET WELL HAS AVAILABLE HOLDING CAPACITY OF XXXX GALLONS. CONTRACTOR MUST VERIFY RATES. ALL COSTS FOR HAULING/TRANSFERING FLOWS ARE TO BE INCLUDED IN THE COST OF THE PROJECT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING ANY BY-PASS PUMPING AT NO ADDITIONAL COST TO PROJECT. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR HAVING A BACKUP METHOD IN THE EVENT THE PRIMARY BY-PASS PUMPING METHOD FAILS.
- ALL WORK TO BE COORDINATED WITH THE DPW AND ENGINEER.
- CONTRACTOR TO SUBMIT A CONSTRUCTION SCHEDULE AND SEQUENCE FOR APPROVAL PRIOR TO PERFORMING ANY WORK.

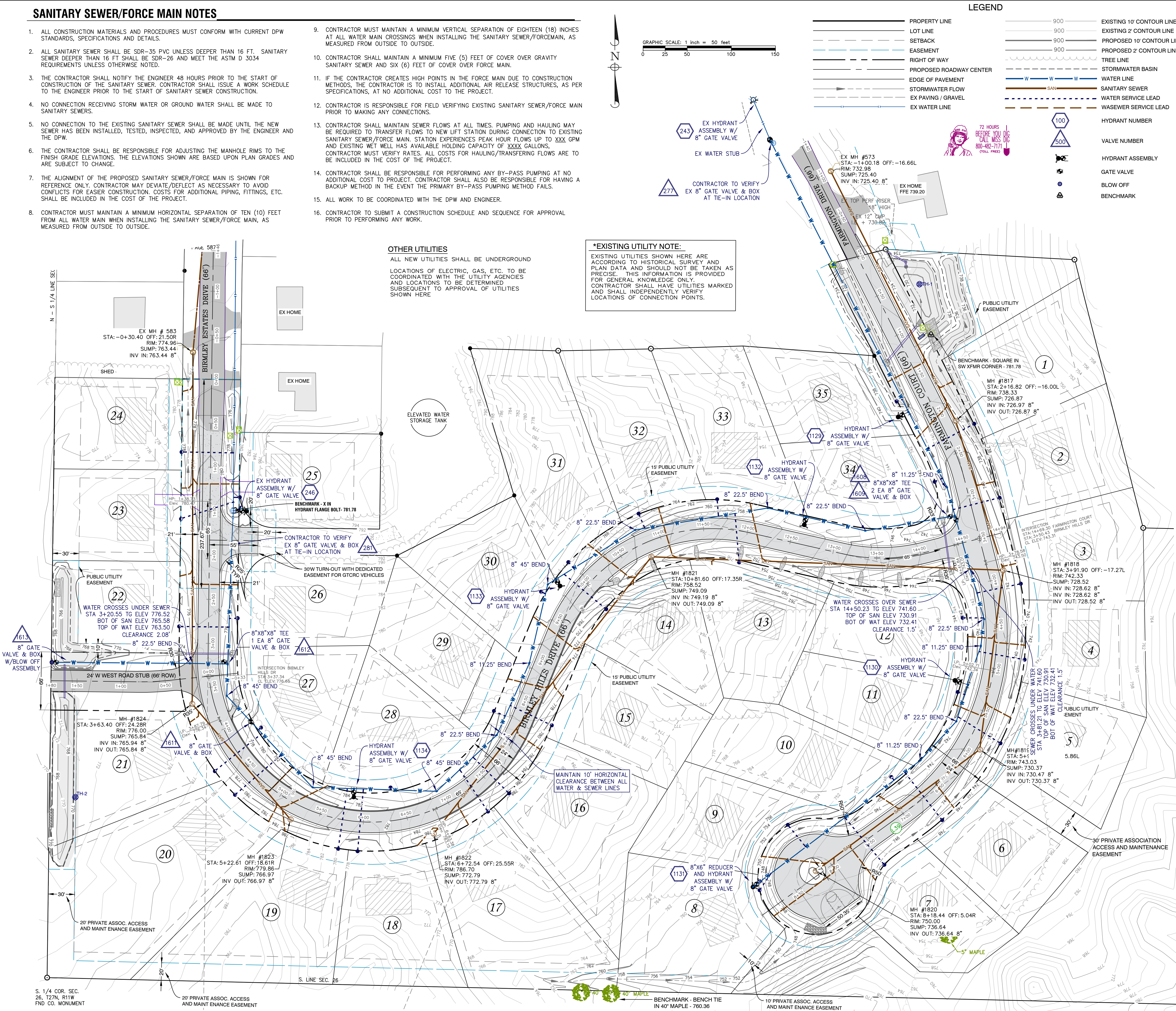
OTHER UTILITIES

ALL NEW UTILITIES SHALL BE UNDERGROUND

LOCATIONS OF ELECTRIC, GAS, ETC. TO BE COORDINATED WITH THE UTILITY AGENCIES AND LOCATIONS TO BE DETERMINED SUBSEQUENT TO APPROVAL OF UTILITIES SHOWN HERE

*EXISTING UTILITY NOTE:

EXISTING UTILITIES SHOWN HERE ARE ACCORDING TO HISTORICAL SURVEY AND PLAN DATA AND SHOULD NOT BE TAKEN AS PRECISE. THIS INFORMATION IS PROVIDED FOR GENERAL KNOWLEDGE ONLY. CONTRACTOR SHALL HAVE UTILITIES MARKED AND SHALL INDEPENDENTLY VERIFY LOCATIONS OF CONNECTION POINTS.

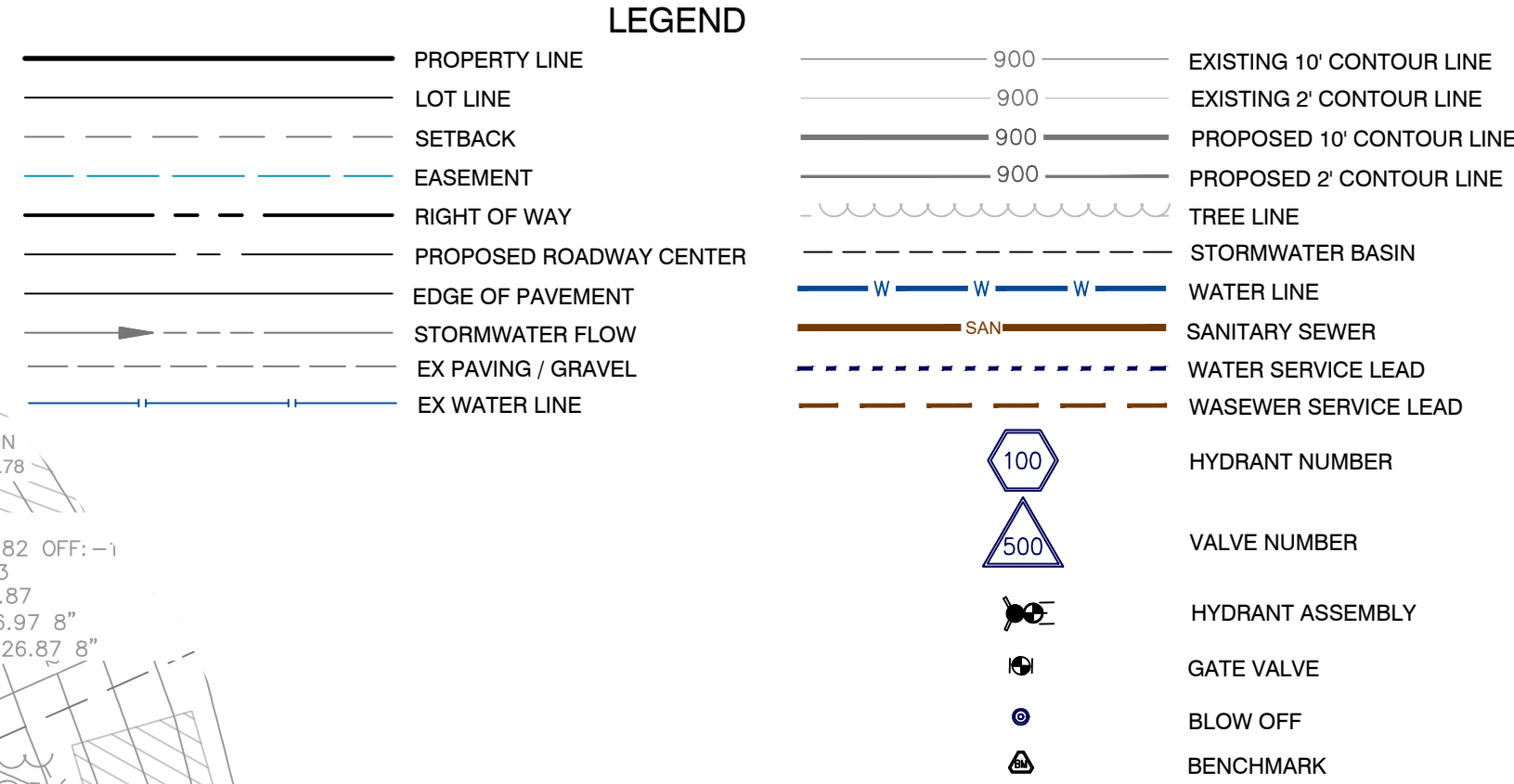


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CONTRACTOR SHALL HAVE UTILITIES MARKED
AND SHALL INDEPENDENTLY VERIFY
LOCATIONS OF CONNECTION POINTS.

ADDITIONAL NOTES:
SEE PLAN SHEETS FOR ADDITIONAL NOTES:
SHEET C0.0 - GENERAL NOTES
SHEET C0.1 - SITE GRADING AND DRAINAGE
SHEET C3.0 - UTILITIES

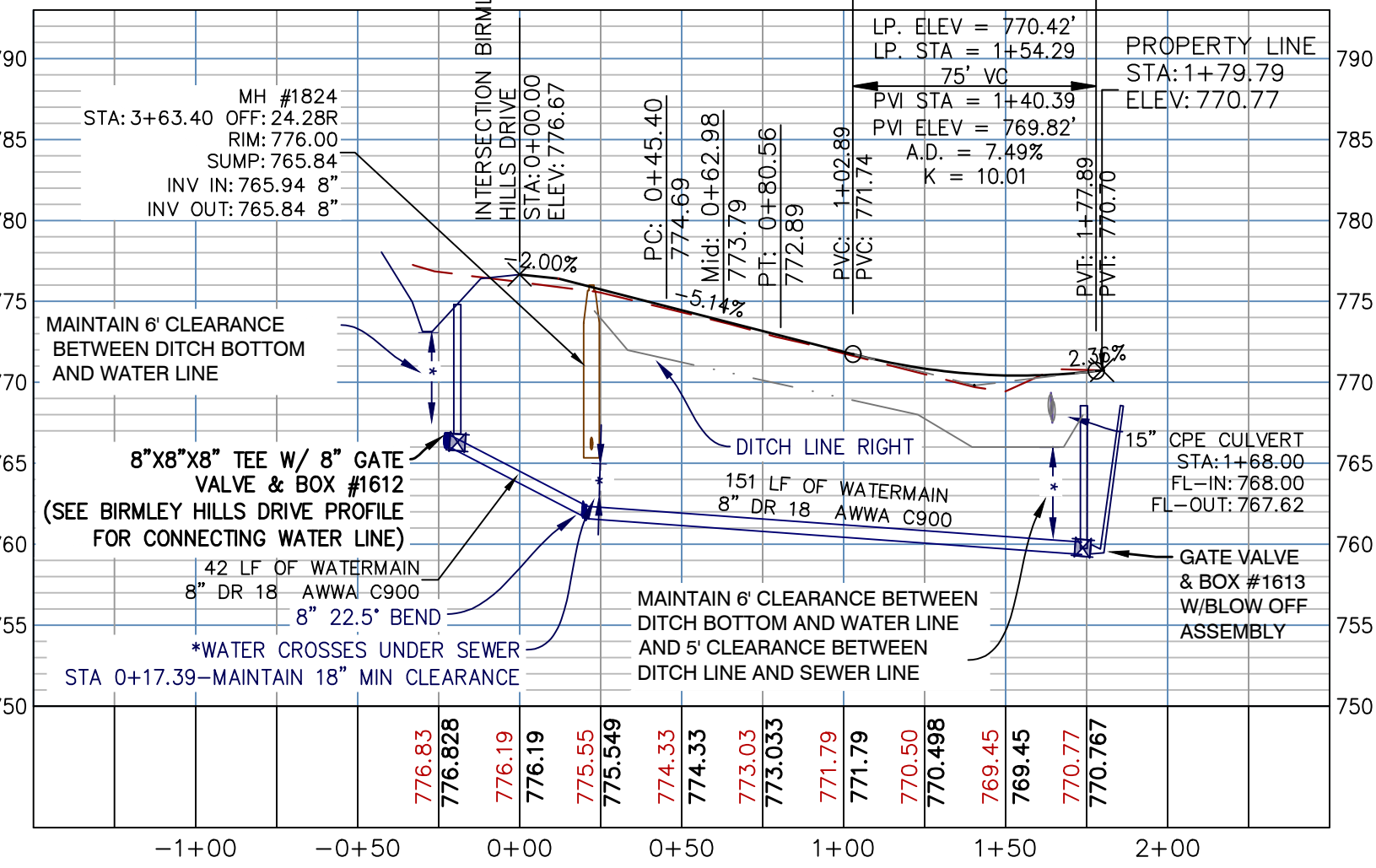
GRAPHIC SCALE: 1 inch = 50 feet
0 25 50 100 150

72 HOURS
BEFORE YOU DIG
800-482-7171
(TOLL FREE)



Birmley Hills Drive					
Number	Radius	Length	Line/Chord Direction	Start Station	
L1	274.68	50' 44" 17.26°W		0+41.00	
C1	185.00	511.71	S78° 30' 04.50"E	3+15.66	
L2	108.55	N22° 15' 33.74"E		8+27.36	
C2	190.00	267.03	N62° 31' 19.66"E	9+35.91	
L3	107.45	S77° 12' 54.41"E		12+02.94	
C3	200.00	84.61	N89° 13' 59.42"E	13+10.40	
L4	64.30	N78° 40' 53.26"E		14+05.00	

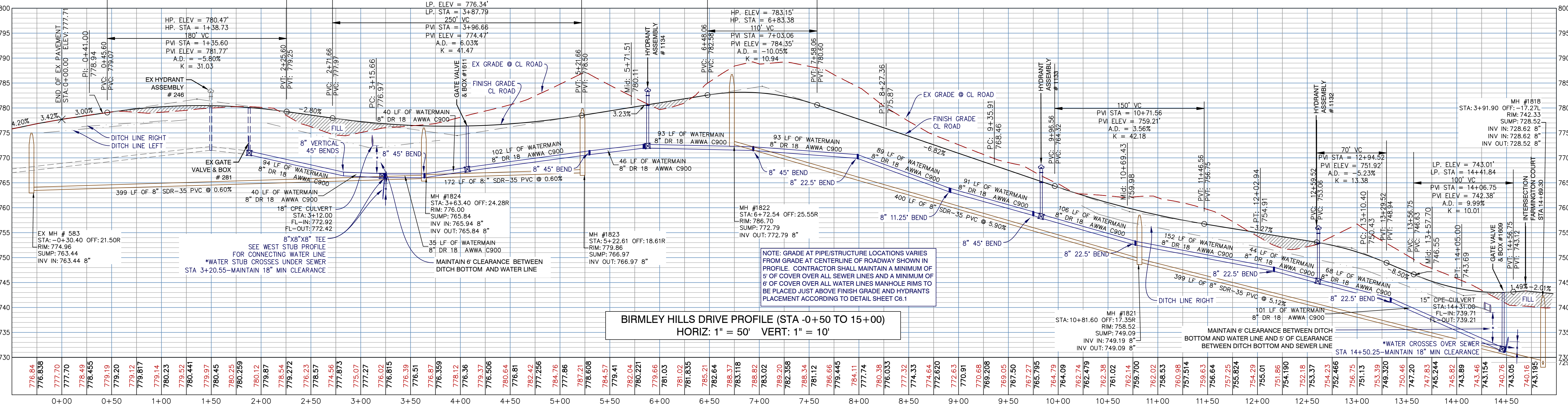
WEST ROAD STUB PROFILE (STA -0+33 TO 1+80)
HORIZ: 1" = 50' VERT: 1" = 10'



PAVING INSPECTION NOTE:
THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF
READINESS FOR THE FOLLOWING INSPECTIONS 48
HOURS IN ADVANCE:

1. EXCAVATION TO SUBGRADE OF PAVING
2. COMPLETION OF PAVING BASE COURSE
3. COMPLETION OF PAVING
4. SUBSTANTIAL COMPLETION OF PROJECT

THE ENGINEER'S INSPECTION DOES NOT RELIEVE THE
CONTRACTOR OF RESPONSIBILITY TO BUILD
ACCORDING TO PLANS, SPECIFICATIONS, AND
REGULATORY REQUIREMENTS.



**BOYNE ENGINEERING
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BIRMLEY HILLS SITE CONDOMINIUM
PREPARED FOR:
T&R INVESTMENTS
841 Ashland Drive
Traverse City, MI

REVISIONS			
NO.	DATE	APPD	ISSUE / REVISION DESCRIPTION
1	11/17/22	CAM	AGENCY REVIEW MODIFICATIONS
2	12/07/22	CAM	REMOVE SAN STUB & REMEMBER VALVES

**BIRMLEY HILLS DRIVE
PLAN & PROFILE**

ORIGINAL ISSUE DATE:
09/21/2022

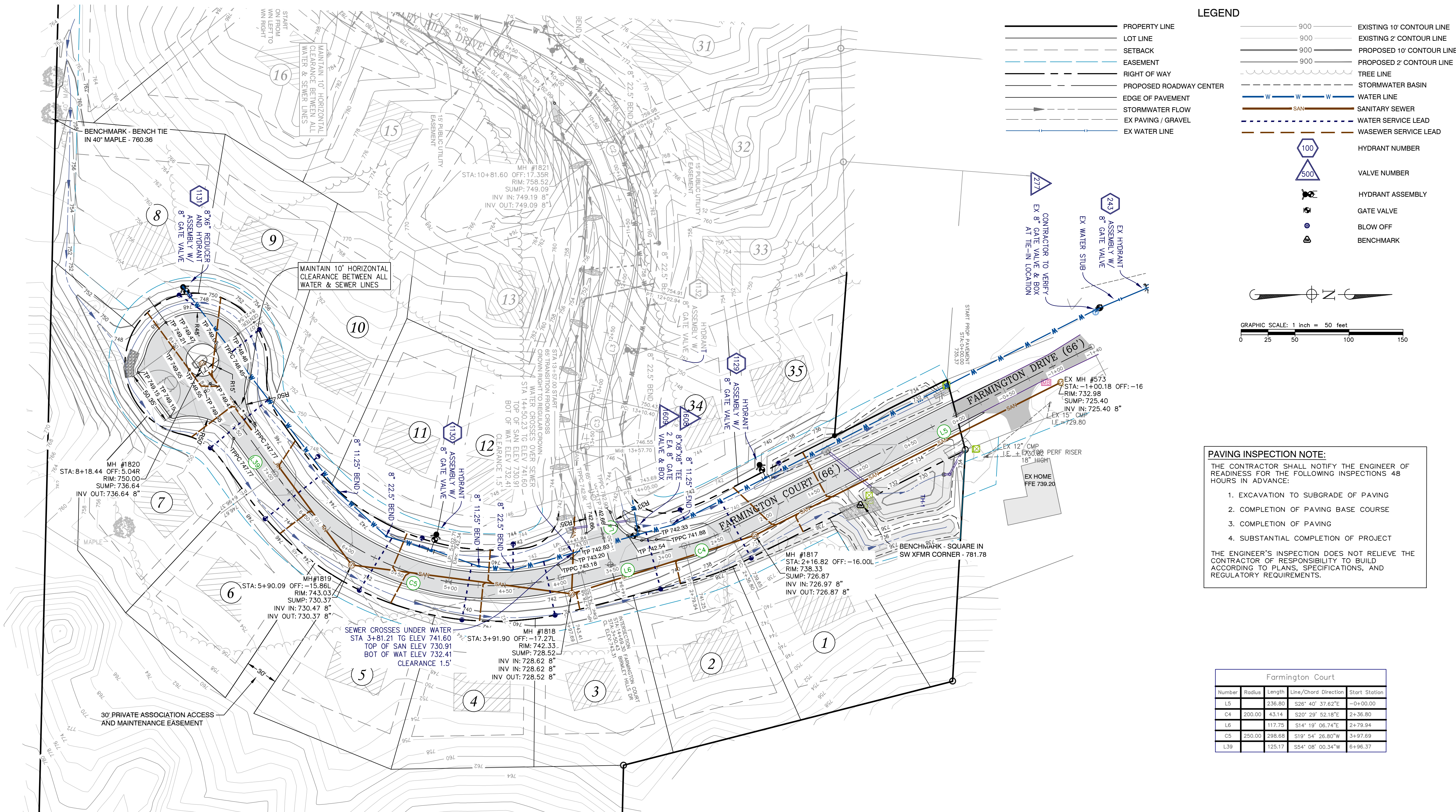
SCALE: 1"=50'

BED JOB NO. 22016

DRAWING NUMBER
C4.0

***EXISTING UTILITY NOTE:**
EXISTING UTILITIES SHOWN HERE ARE ACCORDING TO HISTORICAL SURVEY AND PLAN DATA AND SHOULD NOT BE TAKEN AS PRECISE. THIS INFORMATION IS PROVIDED FOR GENERAL KNOWLEDGE ONLY. CONTRACTOR SHALL HAVE UTILITIES MARKED AND SHALL INDEPENDENTLY VERIFY LOCATIONS OF CONNECTION POINTS.

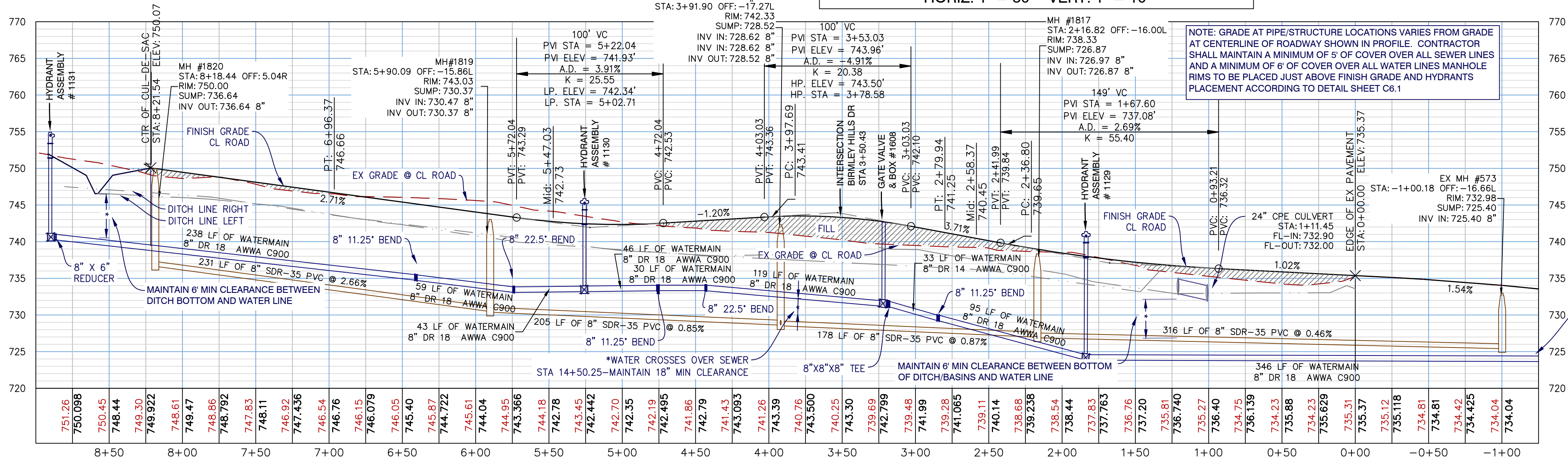
ADDITIONAL NOTES:
SEE PLAN SHEETS FOR ADDITIONAL NOTES:
SHEET C0.0 - GENERAL NOTES
SHEET C2.1 - SITE GRADING AND DRAINAGE
SHEET C3.0 - UTILITIES



PAVING INSPECTION NOTE:
THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF READINESS FOR THE FOLLOWING INSPECTIONS 48 HOURS IN ADVANCE:
1. EXCAVATION TO SUBGRADE OF PAVING
2. COMPLETION OF PAVING BASE COURSE
3. COMPLETION OF PAVING
4. SUBSTANTIAL COMPLETION OF PROJECT
THE ENGINEER'S INSPECTION DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY TO BUILD ACCORDING TO PLANS, SPECIFICATIONS, AND REGULATORY REQUIREMENTS.

Farmington Court				
Number	Radius	Length	Line/Chord Direction	Start Station
L5		236.80	S28° 40' 37.62"E	-0+00.00
C4	200.00	43.14	S20° 29' 52.18"E	2+36.80
L6		117.75	S14° 19' 06.74"E	2+79.94
C5	250.00	298.68	S19° 54' 26.80"W	3+97.69
L39		125.17	S54° 08' 00.34"W	6+96.37

FARMINGTON COURT PROFILE (STA -1+25 TO 8+90)
HORIZ: 1" = 50' VERT: 1" = 10'



SEE PLAN FOR PIPE CONNECTION APPROXIMATELY 346LF FROM HYDRANT 1129
CONTRACTOR TO VERIFY EX 8\"/>

BOYNE ENGINEERING AND DESIGN
P.O. Box 94
Boyne City, MI 49727
(231) 499-8361
boyneengineering.com

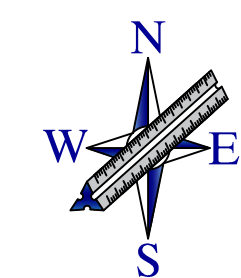
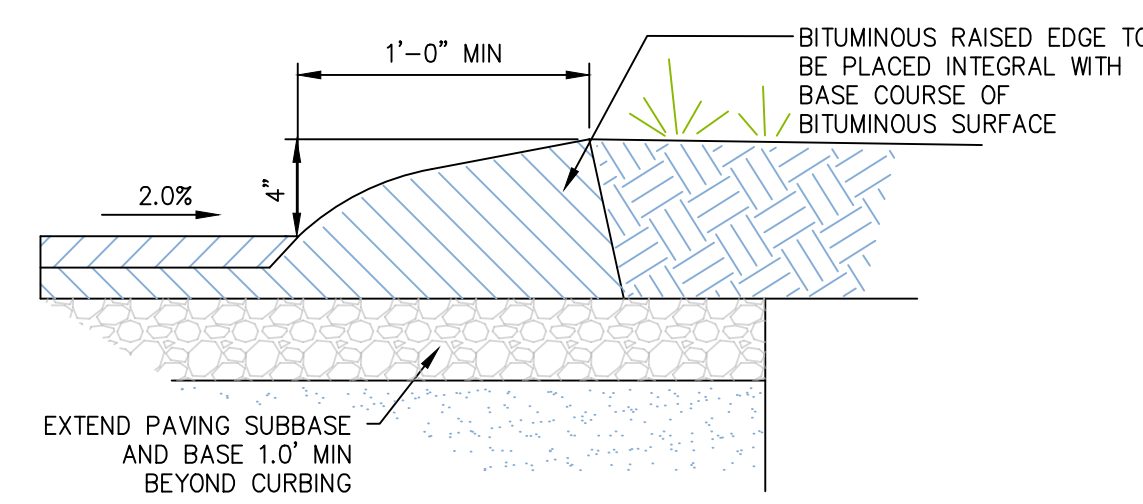
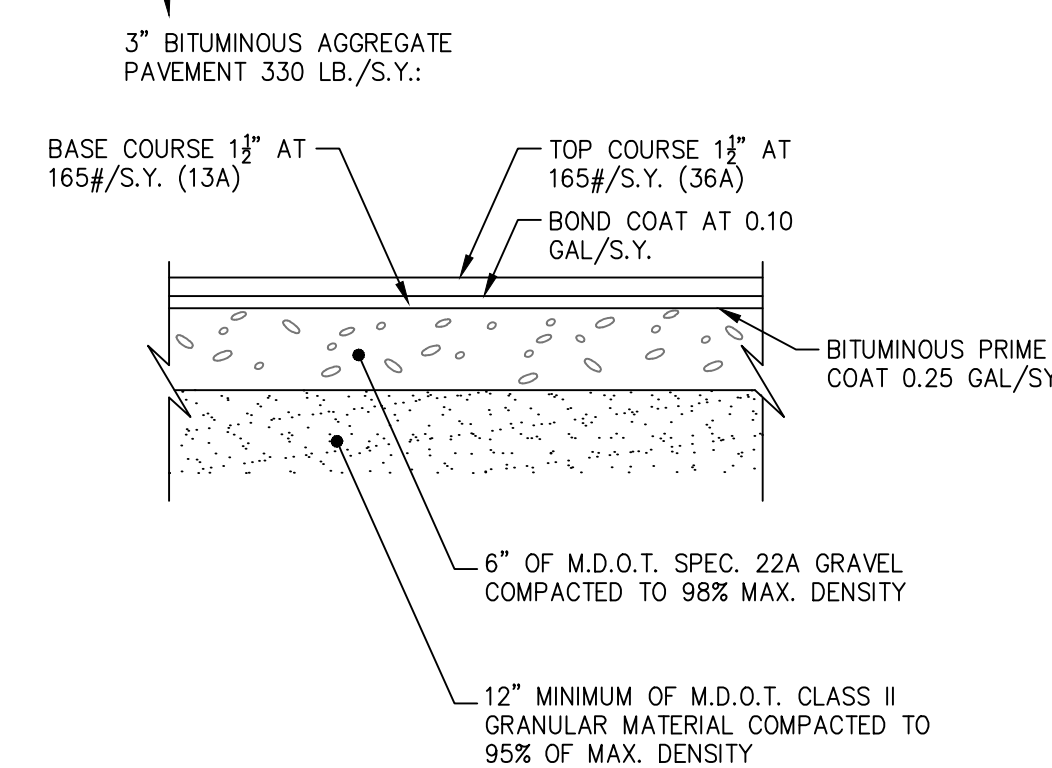
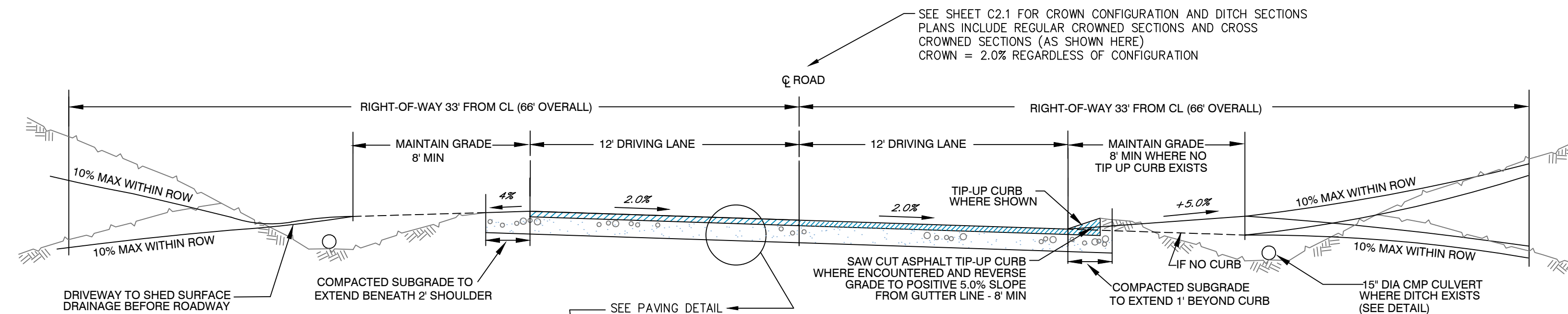
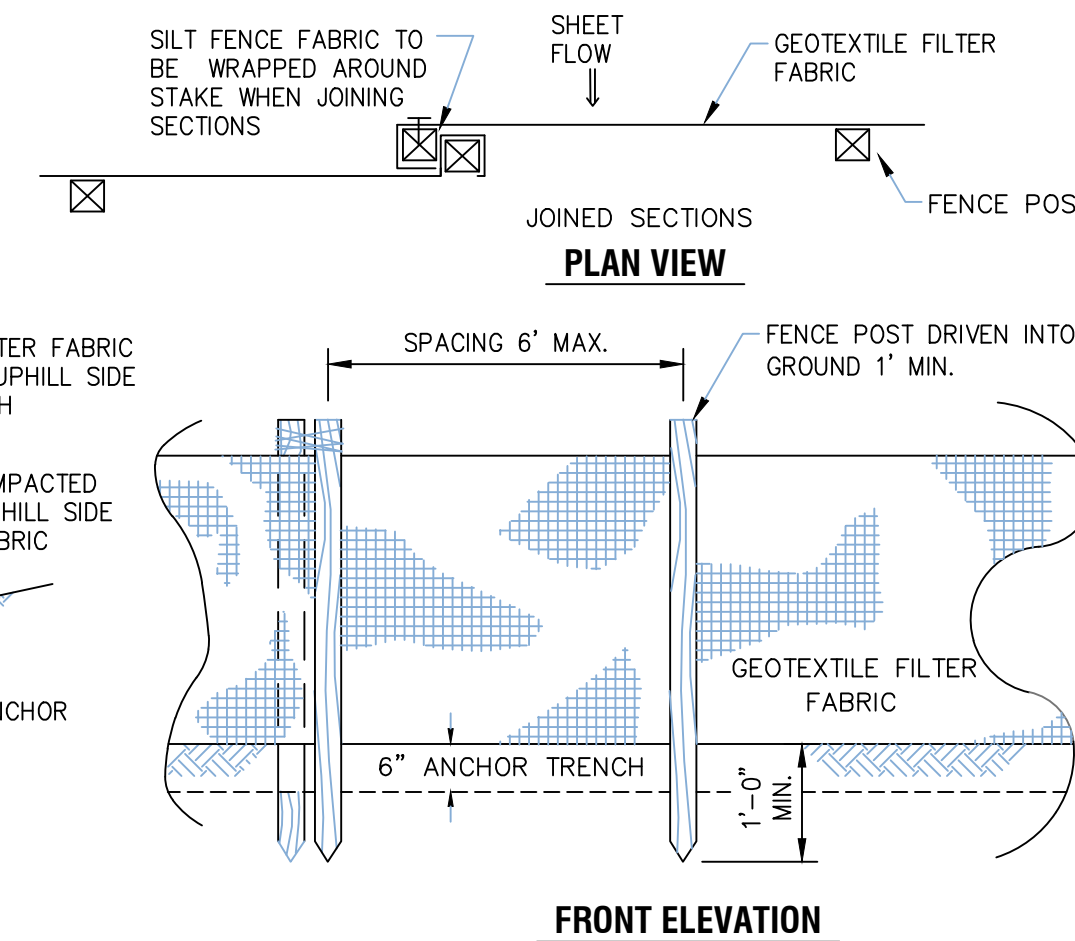
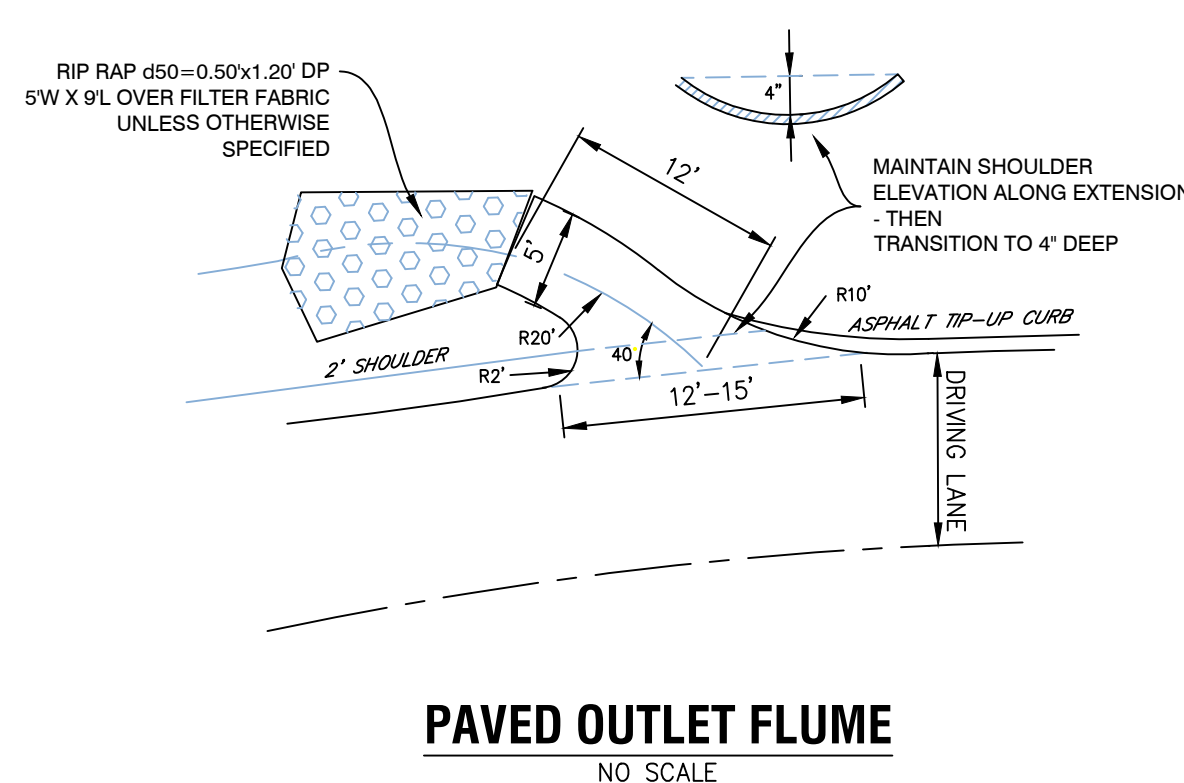
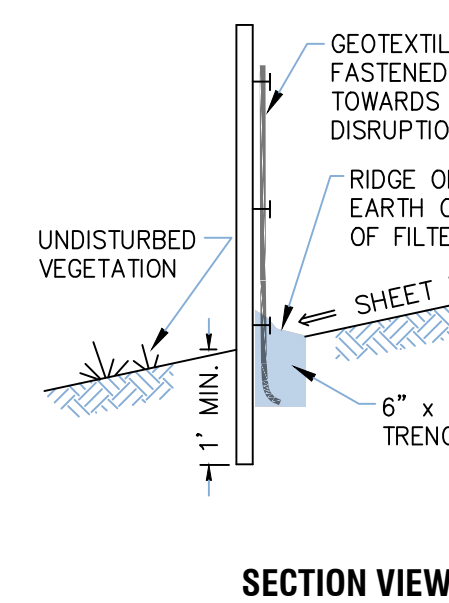
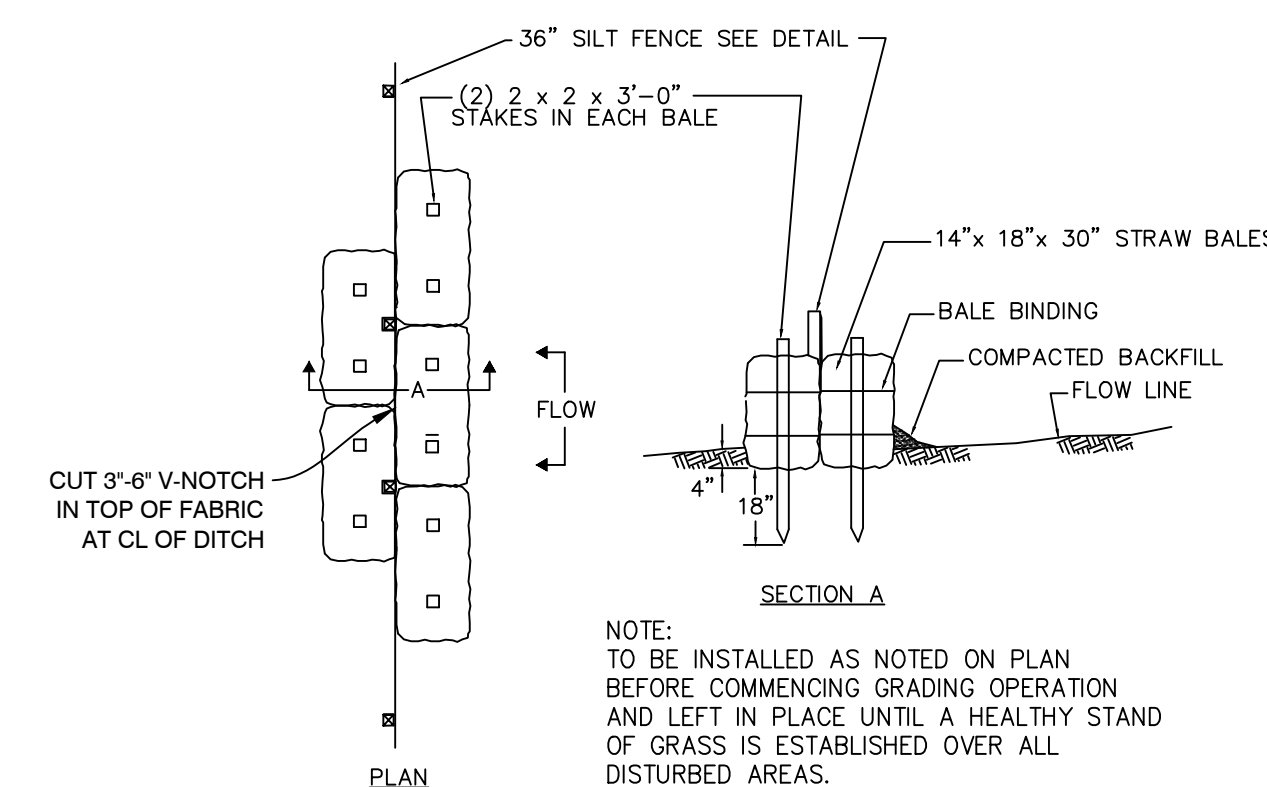
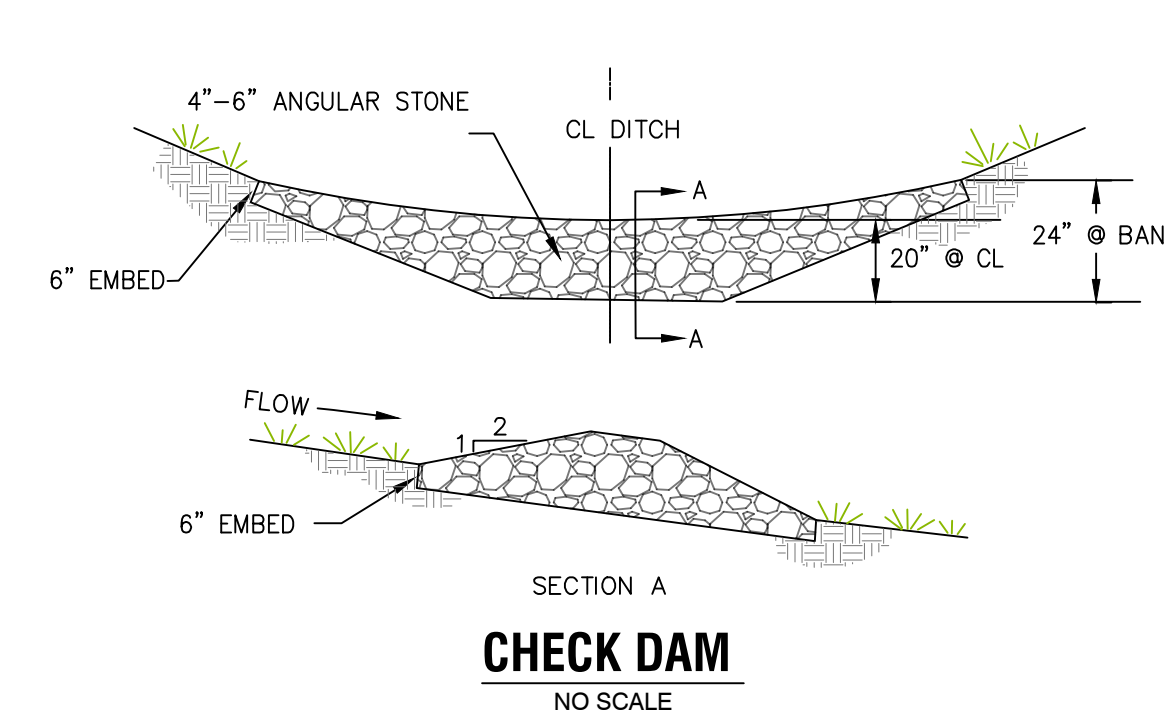
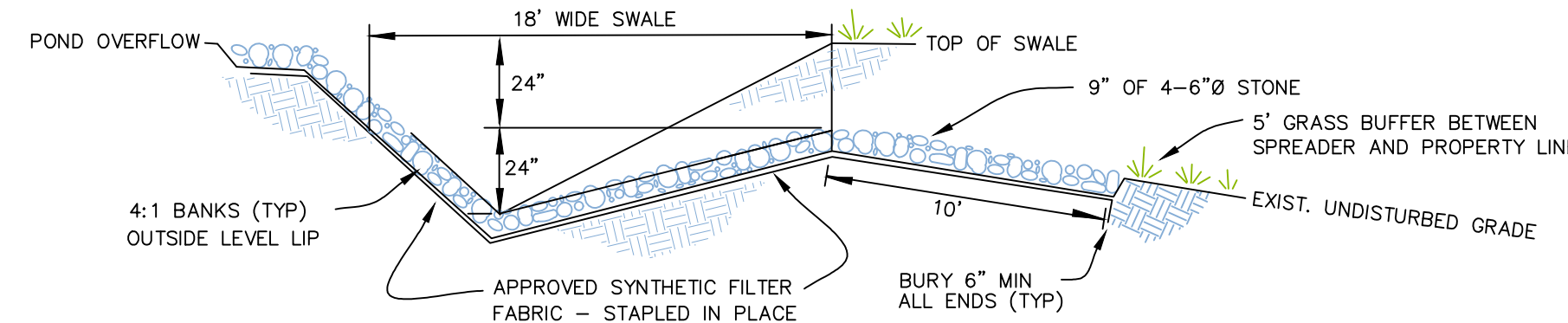
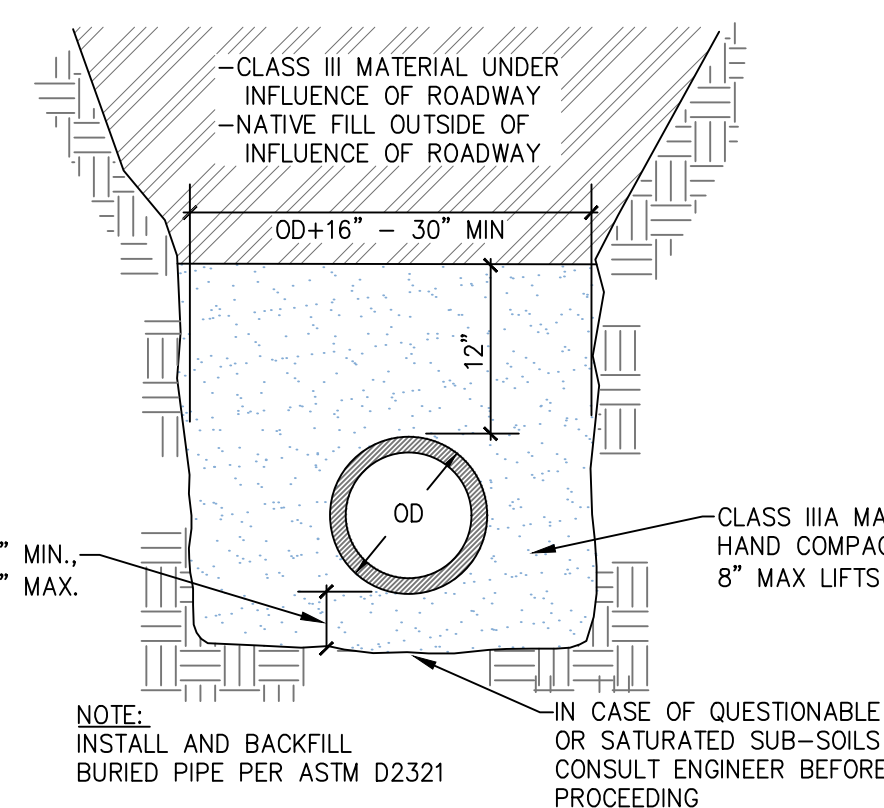
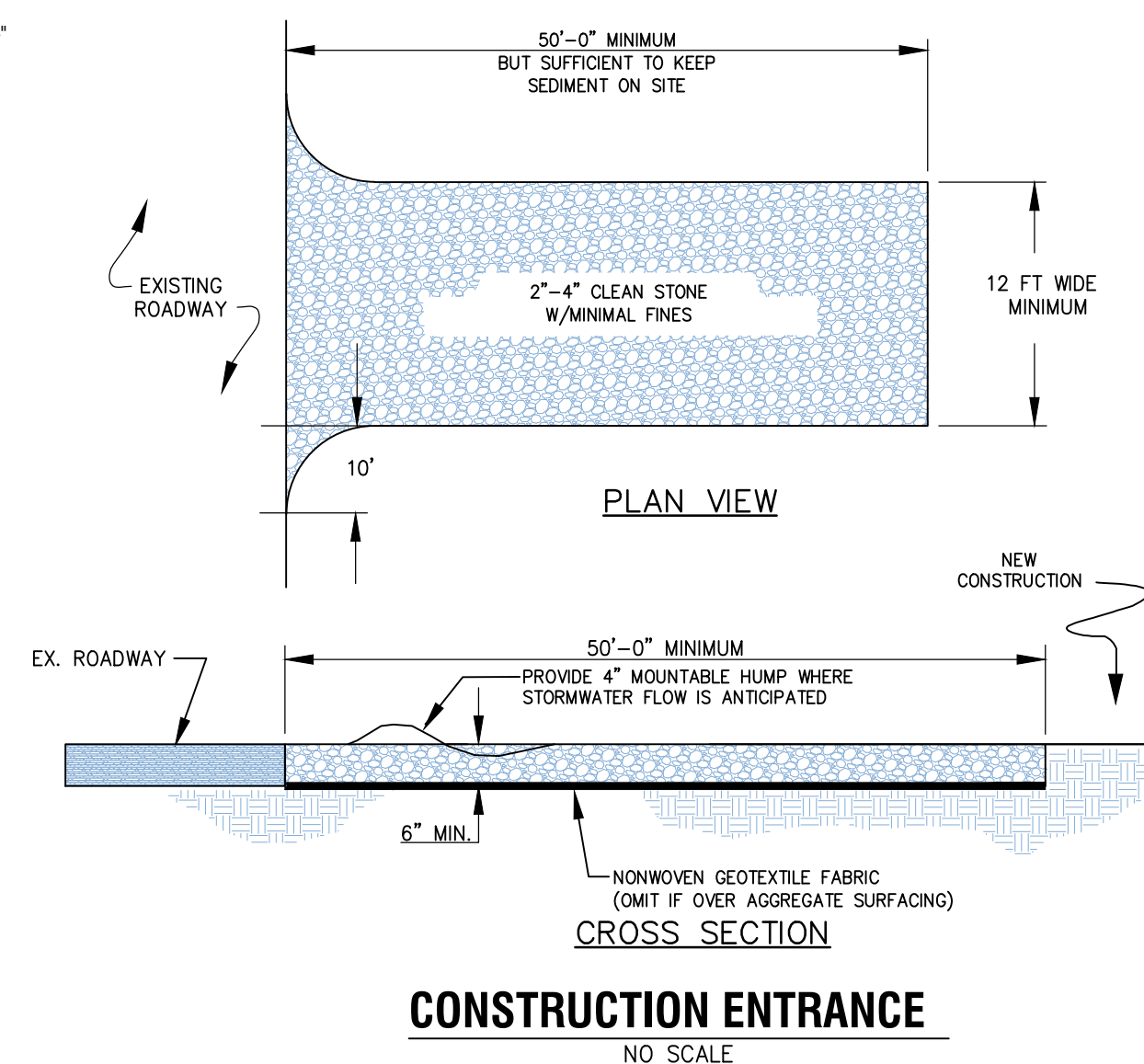
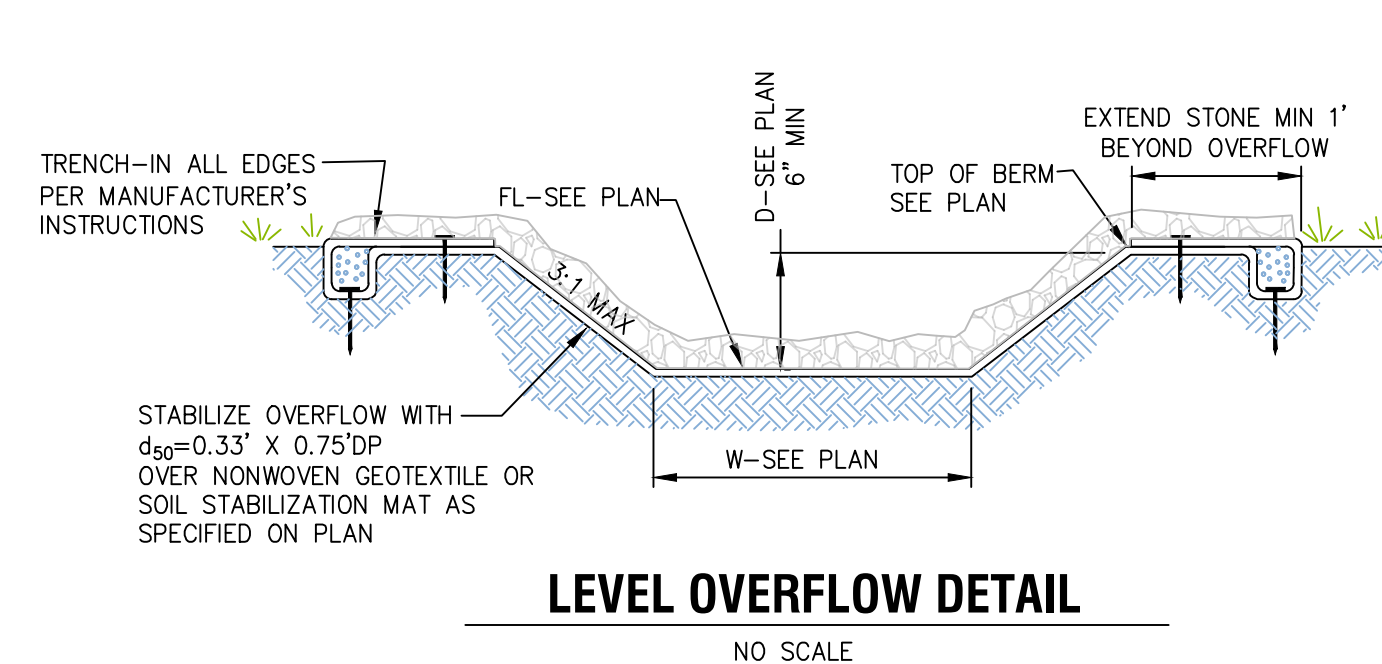
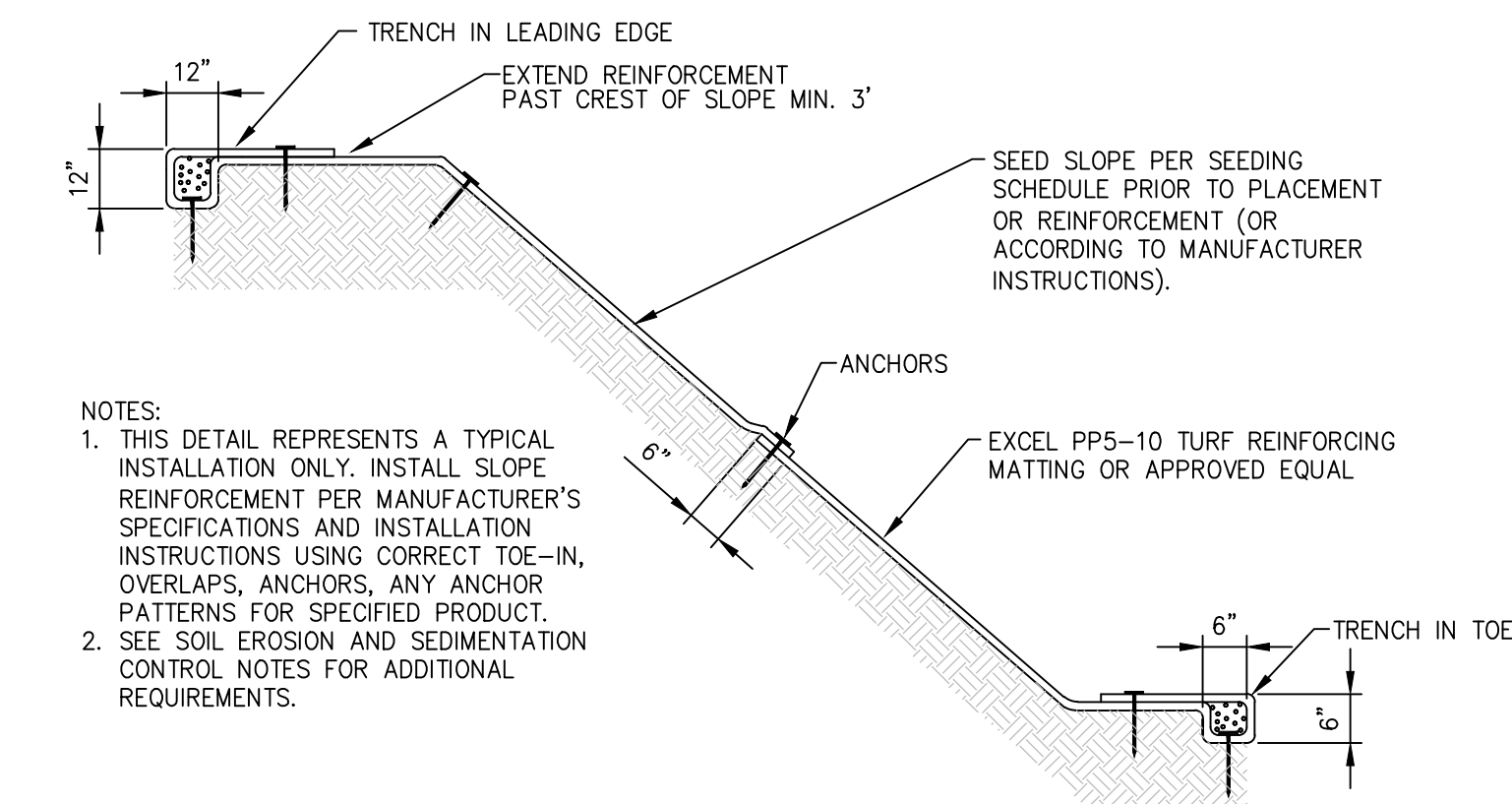
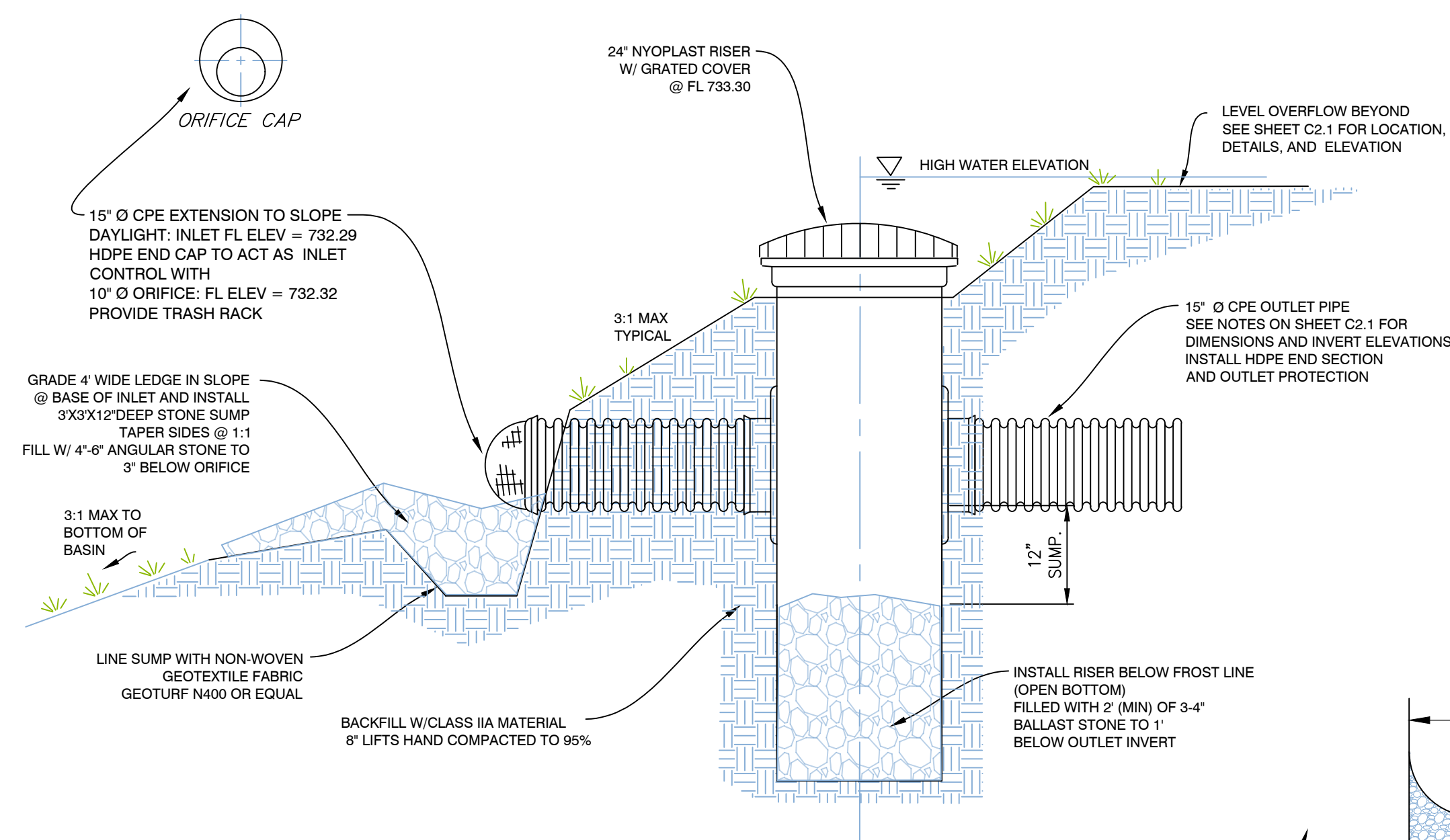
BIRMINGHAM HILLS SITE CONDOMINIUM
PREPARED FOR:
T&R INVESTMENTS
841 Ashland Drive
Traverse City, MI

NO.		DATE	APPD.	ISSUE / REVISION DESCRIPTION
1		11/17/22	CAM	AGENCY REVIEW MODIFICATIONS
2		12/07/22	CAM	REMOVE SAN STUB & REUMBER VALVES

FARMINGTON COURT
PLAN & PROFILE

ORIGINAL ISSUE DATE:
09/21/2022
SCALE: 1"=50'
BED JOB NO. 22016
DRAWING NUMBER

C4.1



**BOYNE ENGINEERING
AND DESIGN**
P.O. Box 94
Boyne City, MI 49727
(231) 499-8361
boyneengineering.com

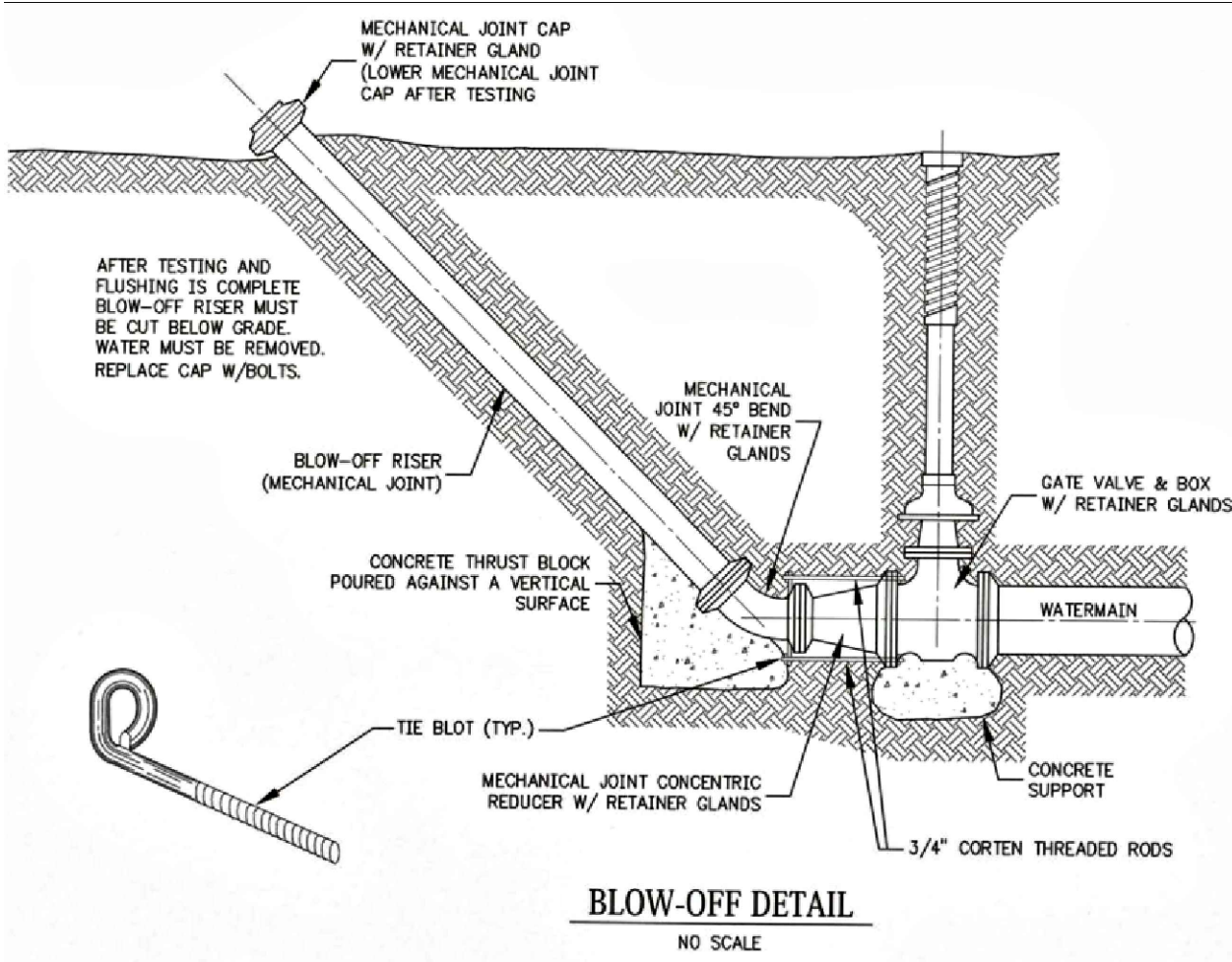
BIRMINGHAM HILLS SITE CONDOMINIUM
PREPARED FOR:
T&R INVESTMENTS

[illegible]

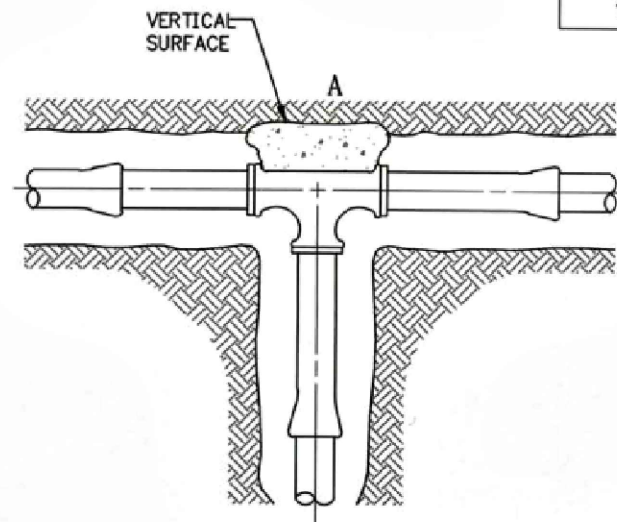
SITE DETAILS

ORIGINAL ISSUE DATE:	09/21/2022
SCALE:	
BED JOB NO.	22016
DRAWING NUMBER	

C6.0



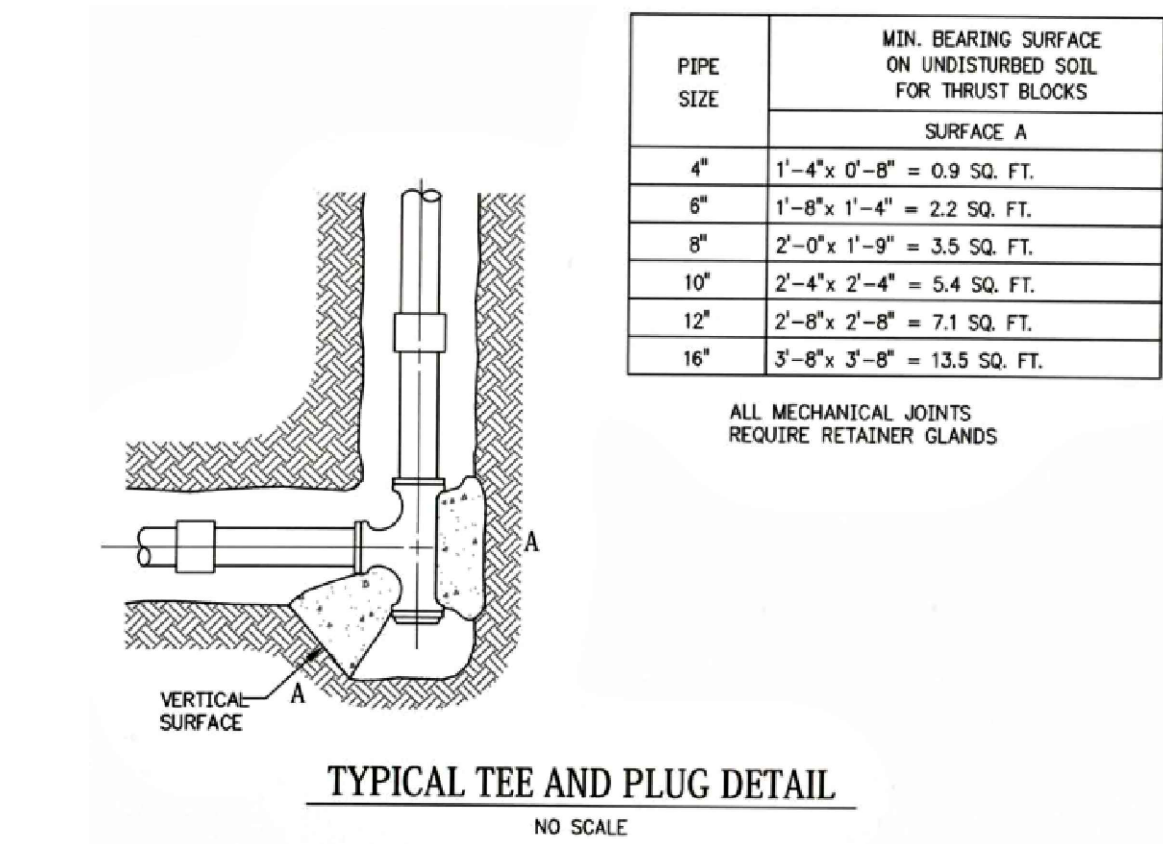
BLOW-OFF DETAIL
NO SCALE



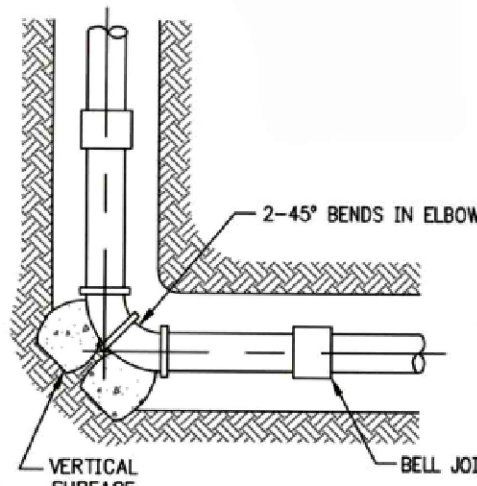
TYPICAL TEE CONNECTION DETAIL
NO SCALE

PIPE SIZE	MIN. BEARING SURFACE ON UNDISTURBED SOIL FOR THRUST BLOCKS	
	SURFACE A	
4"	1'-6" x 1'-6"	= 2.3 SQ. FT.
6"	1'-9" x 1'-9"	= 3.1 SQ. FT.
8"	2'-4" x 2'-4"	= 5.4 SQ. FT.
10"	2'-8" x 2'-8"	= 7.1 SQ. FT.
12"	3'-0" x 3'-0"	= 9.0 SQ. FT.
16"	4'-5" x 4'-5"	= 19.5 SQ. FT.

ALL MECHANICAL JOINTS REQUIRE RETAINER GLANDS



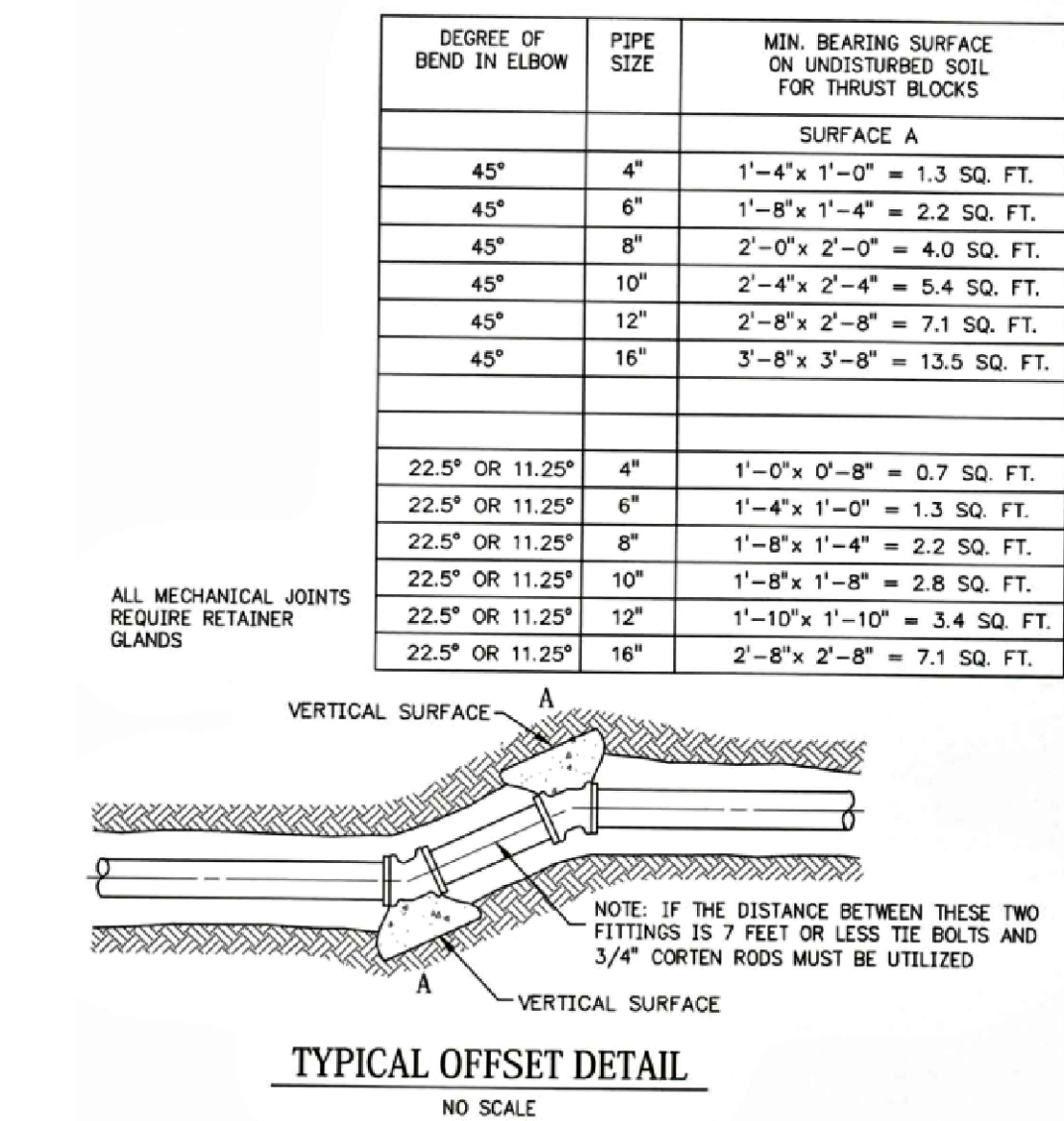
TYPICAL TEE AND PLUG DETAIL
NO SCALE



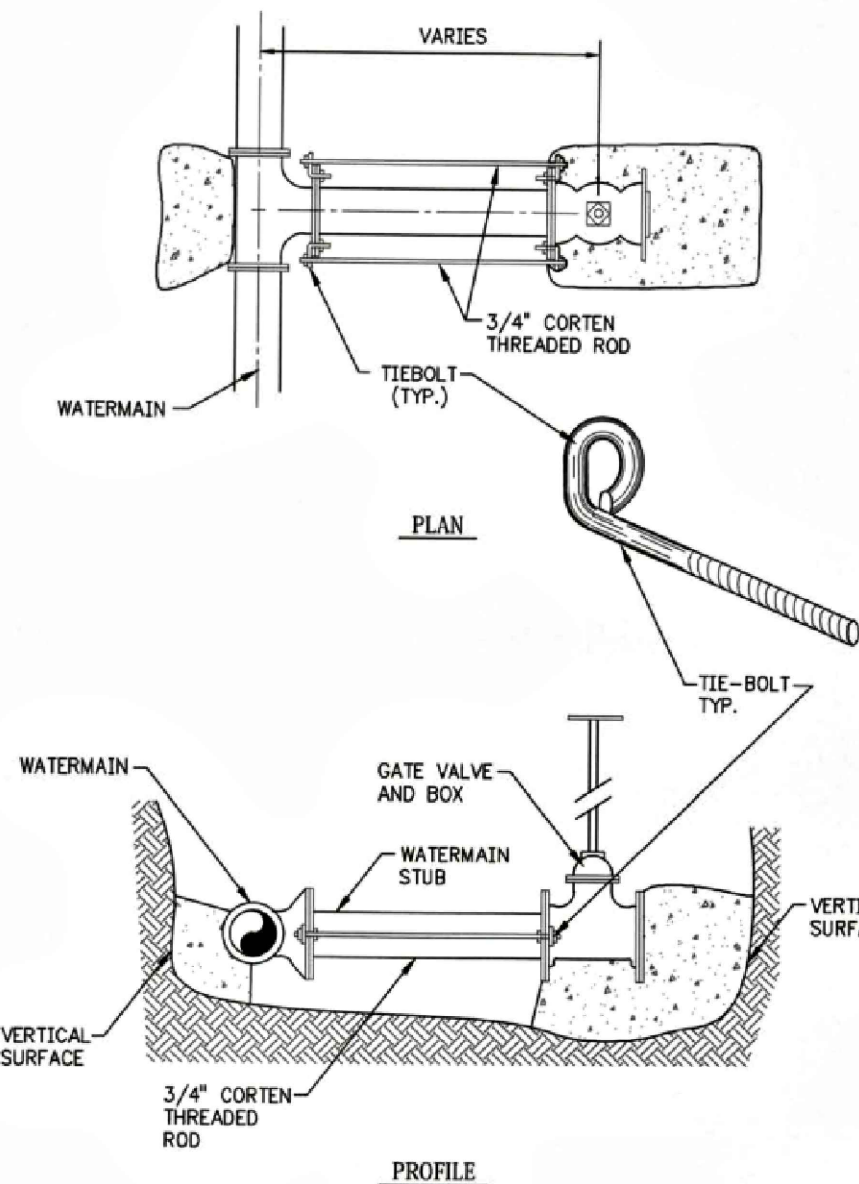
TYPICAL BEND DETAIL
NO SCALE

PIPE SIZE	MIN. BEARING SURFACE ON UNDISTURBED SOIL FOR THRUST BLOCKS	
	SURFACE A	
4"	1'-9" x 1'-8"	= 2.3 SQ. FT.
6"	2'-3" x 2'-0"	= 4.5 SQ. FT.
8"	2'-8" x 2'-5"	= 7.1 SQ. FT.
10"	3'-0" x 3'-0"	= 9.0 SQ. FT.
12"	3'-8" x 3'-8"	= 13.5 SQ. FT.
16"	5'-0" x 5'-0"	= 25 SQ. FT.

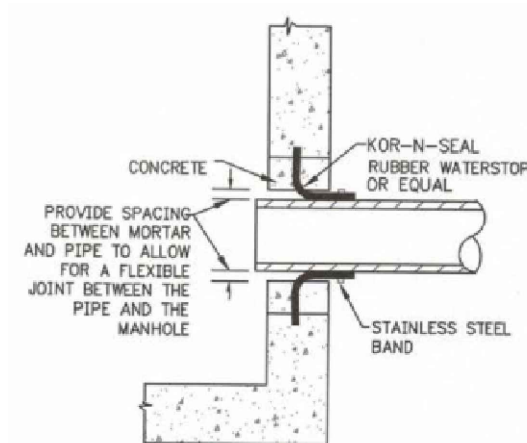
ALL MECHANICAL JOINTS REQUIRE RETAINER GLANDS



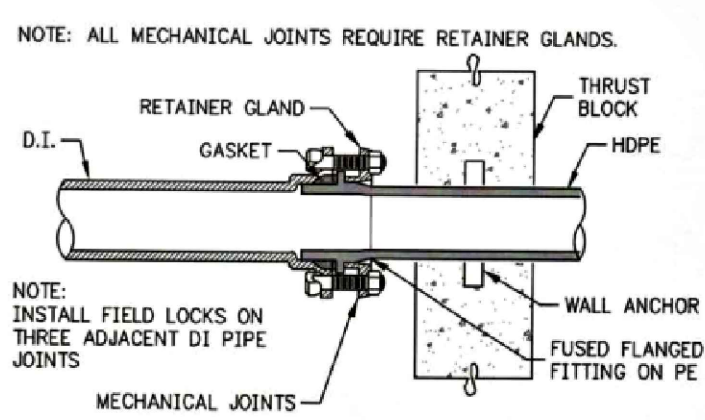
TYPICAL OFFSET DETAIL
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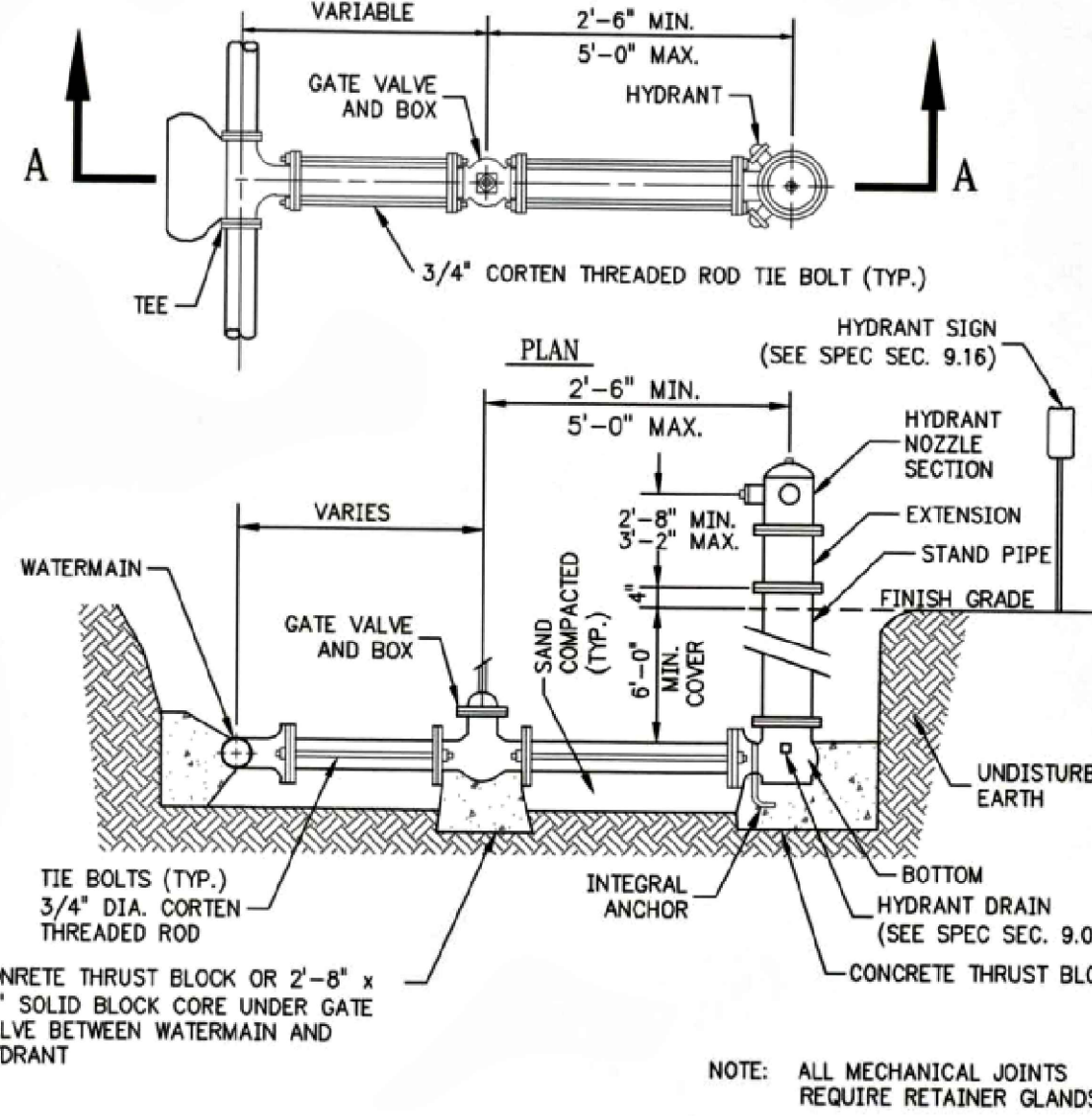
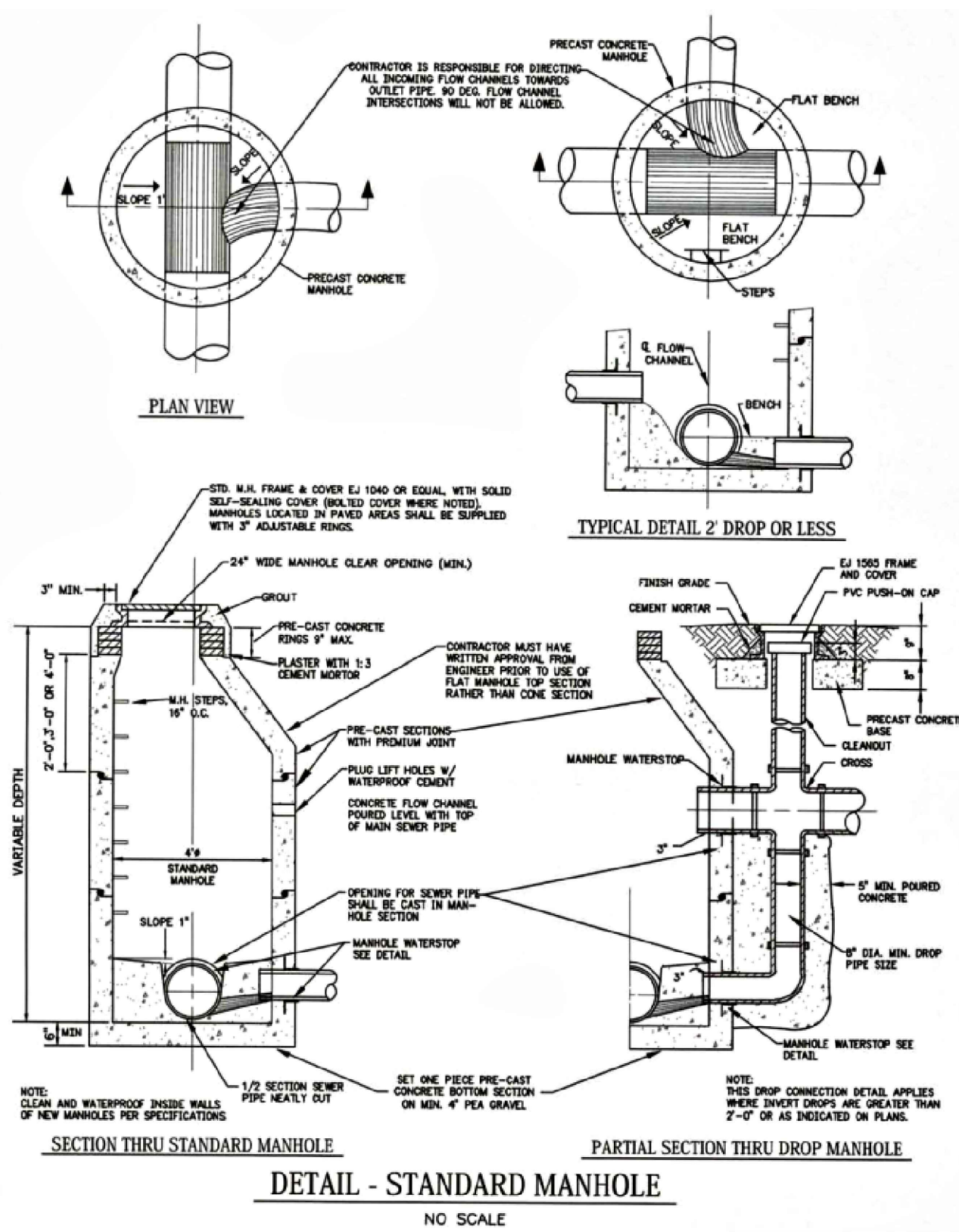
THRUST RESTRAINT DETAIL FOR ALL VALVES ON STUBBED LINES
NO SCALE



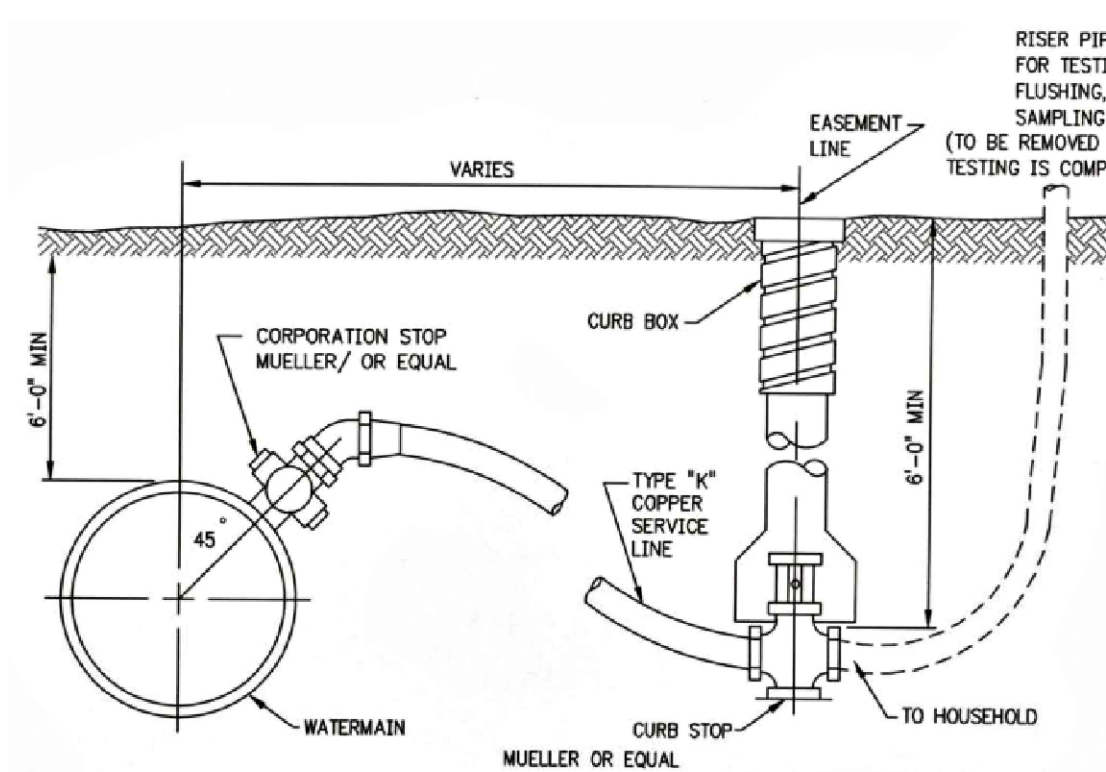
MANHOLE/WETWELL WATERSTOP DETAIL
NO SCALE



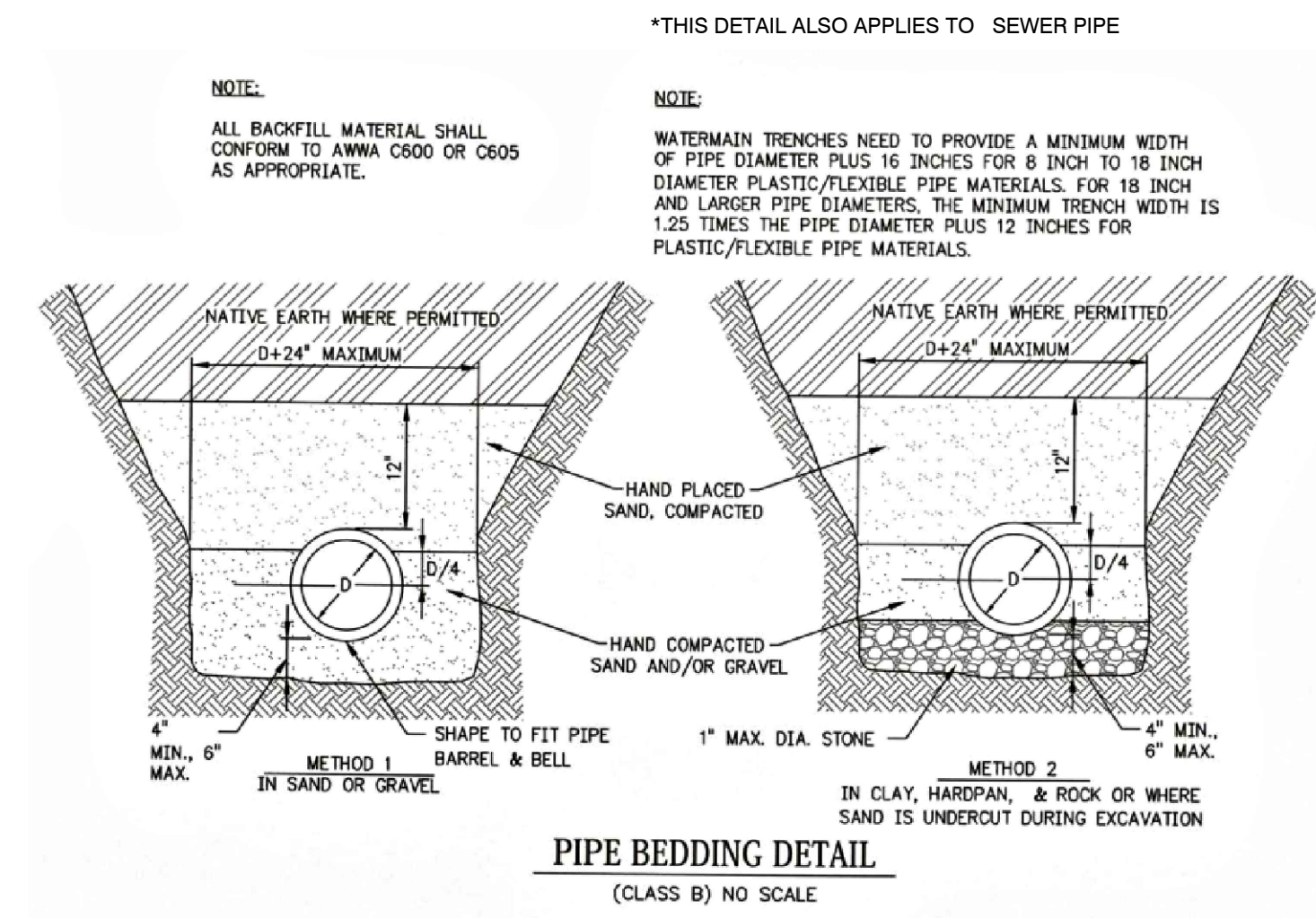
HDPE TO DI (M) ADAPTER DETAIL
NO SCALE



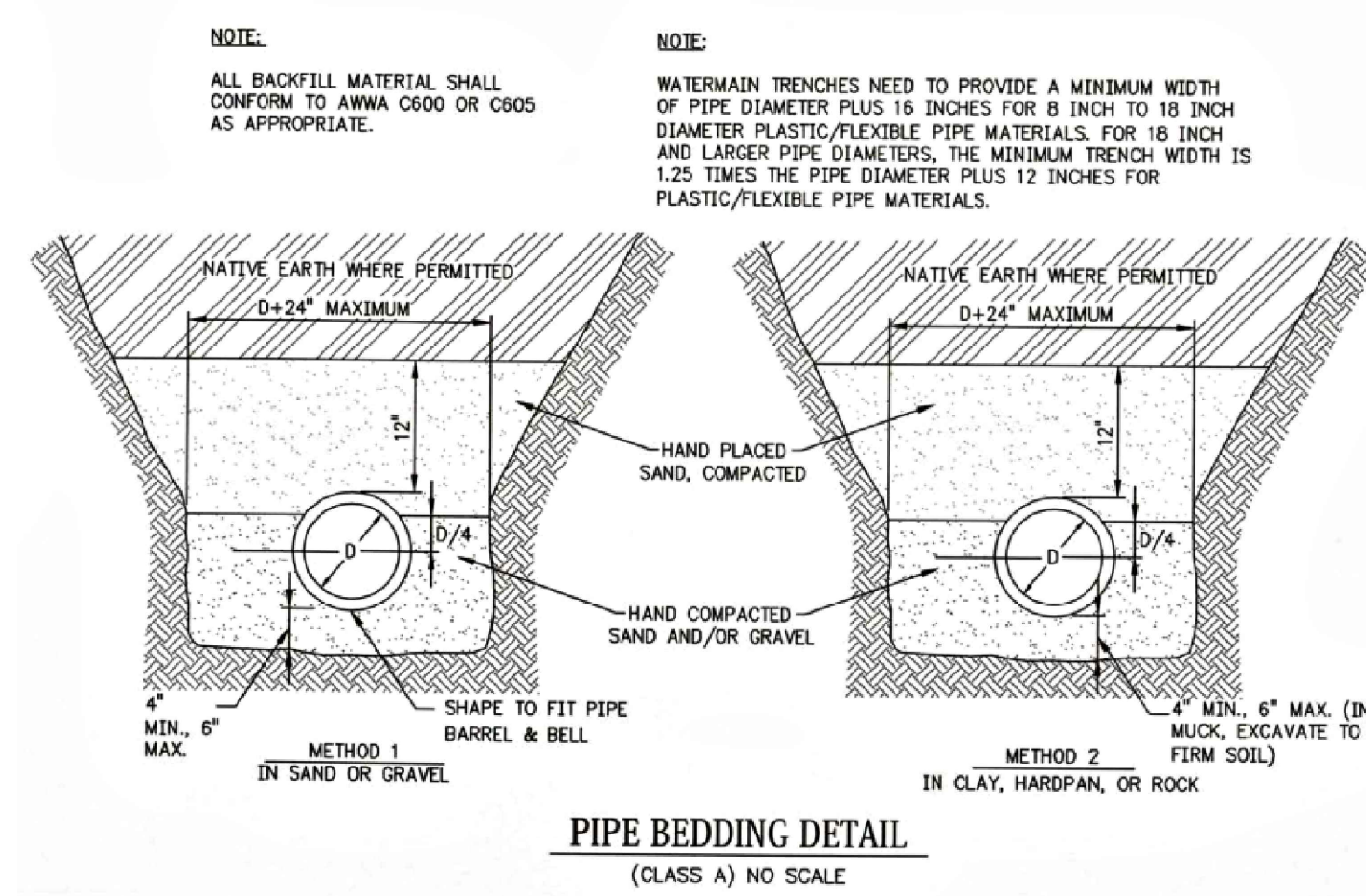
HYDRANT ASSEMBLY DETAIL
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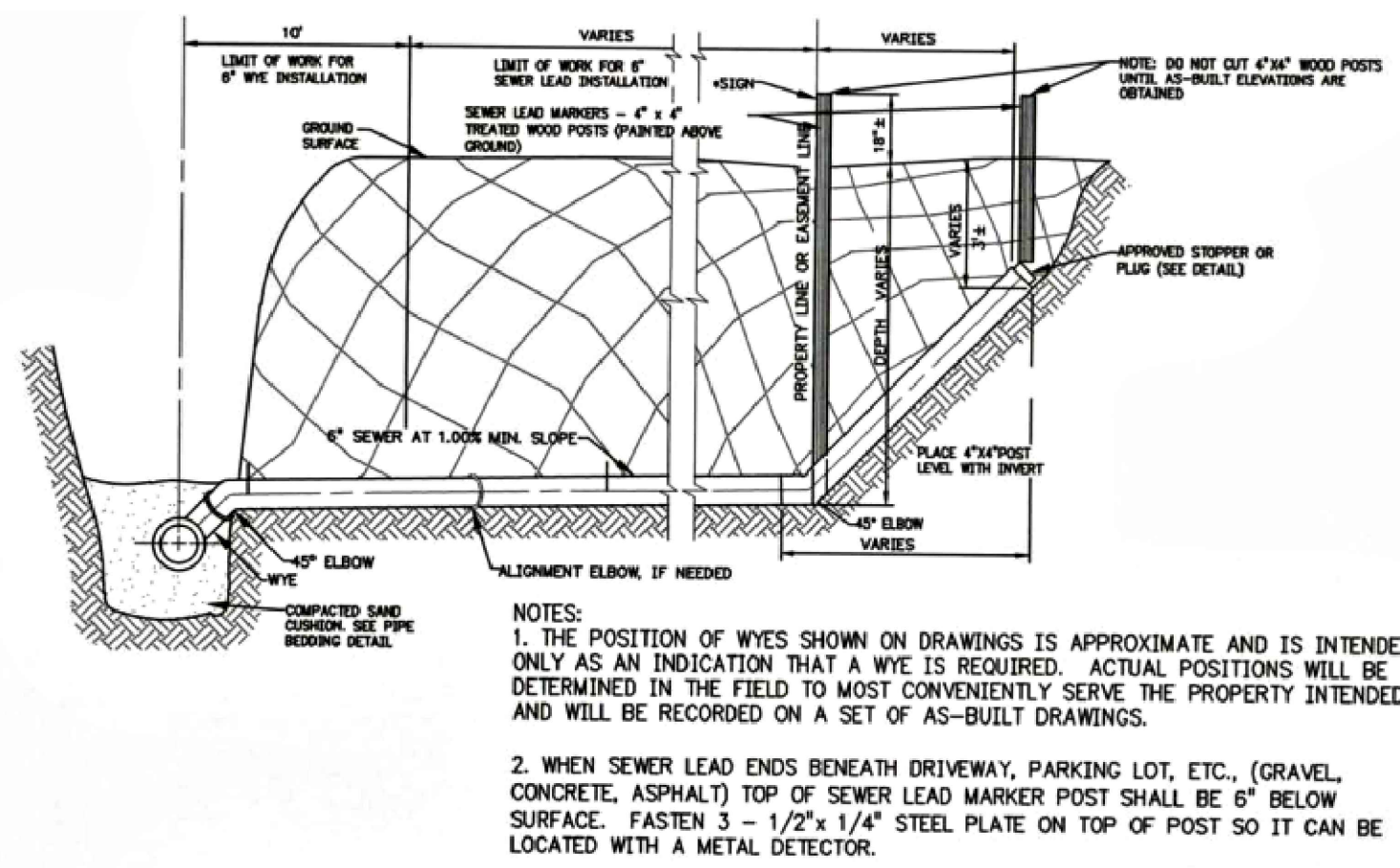
SERVICE CONNECTION DETAIL
NO SCALE



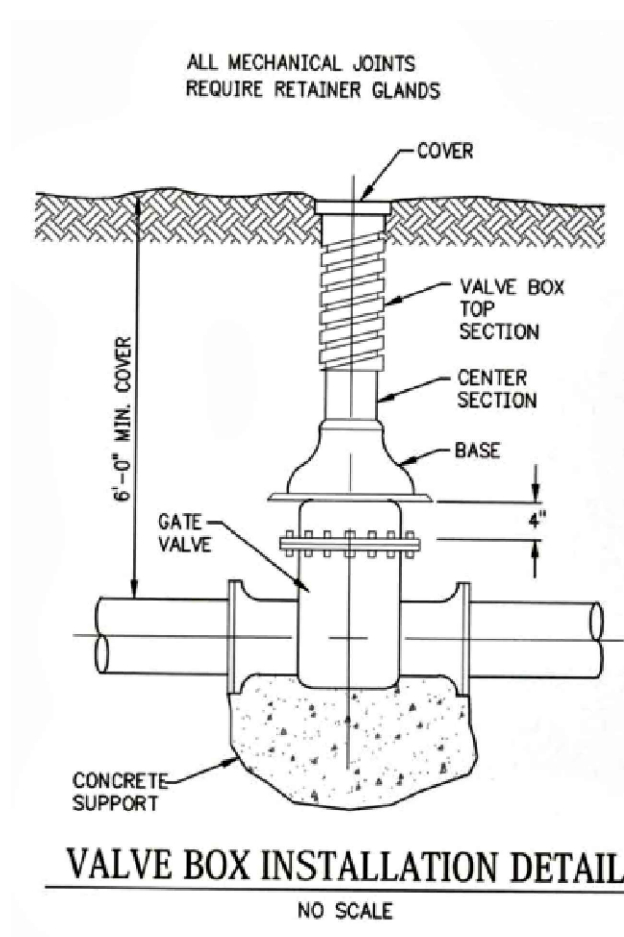
PIPE BEDDING DETAIL
(CLASS B) NO SCALE



PIPE BEDDING DETAIL
(CLASS A) NO SCALE



WYE AND SEWER LEAD INSTALLATION DETAIL
NO SCALE



VALVE BOX INSTALLATION DETAIL
NO SCALE

*DETAILS AND SPECIFICATIONS ON THIS SHEET ARE STANDARD DETAILS FROM THE GRAND TRAVERSE COUNTY DEPARTMENT OF PUBLIC WORKS

REVISIONS			
NO.	DATE	APP'D	ISSUE / REVISION DESCRIPTION
1	1/17/22	CAM	AGENCY REVIEW MODIFICATIONS



Engineering
Surveying
Testing &
Operations

123 West Front Street
Traverse City, Michigan 49684
231.946.5874 
231.946.3703 

November 1, 2022

Mr. Chuck Korn, Supervisor
Charter Township of Garfield
3848 Veterans Drive
Traverse City, MI 49684

RE: Birmley Hills Site Condominium – T&R Investments
Water Main and Sanitary Sewer Extension, Plan Review
GFA No. 22300

Dear Mr. Korn,

We have reviewed the plans for the proposed water and sewer system improvements associated with the above referenced project. The review was based on the current standards adopted by Garfield Township in conjunction with the Grand Traverse County Department of Public Works as well as Michigan Department of Environmental Quality requirements, Ten State Standards and accepted engineering practice for this area. The plans were prepared by Boyne Engineering & Design dated 9-21-22. Based upon our review on behalf of Garfield Township with respect to utilities, I offer the following comments.

DESCRIPTION OF THE PROPOSED PROJECT

Water System

The proposed water system extension consists of a scaled quantity of approximately 2,200 linear feet of 8-inch PVC C900 water main to service the proposed development with one (1) extension. The system incorporates two (2) connections that loop back to the water system and provide increased reliability to this service area. The development will be served by the Lower Pressure zone of the Birmley District.

Sanitary Sewer System

The proposed sanitary sewer system extension consists of a scaled quantity of approximately 2,480 linear feet of 8-inch PVC sanitary sewer to service the proposed development extension. The system incorporates two (2) connections to the existing sanitary sewer system.

IMPACT ON THE EXISTING SYSTEM

Sanitary Sewer System

The Garfield Township sanitary sewer collection system is divided up into eight (8) distinct service areas, designated by name according to the primary trunkline running along the respective road. In this case the proposed developed would be immediately serviced by the Garfield Road Service District. The development proposes to connect to the existing sanitary sewer system at five (5) locations, including connections at two (2) existing structures and three (3) new “doghouse” structures on existing sanitary lines. Sewer flow will follow the gravity sewer system to Birmley Road, and north along Garfield Road to



Garfield Lift Station No. 1. The design peak flows for the developments ultimate buildout is approximately 35 gpm. Garfield Lift Station No. 1 was upgraded in 2005 to increase firm capacity to 2,700 gpm. The lift station is currently experiencing peak flows of approximately 1,032 gpm. Based on our review, the existing lift station is capable of handling the anticipated peak flows from the development. One segment of sanitary sewer (8" line between Manhole 565 and 565G) is the restrictive segment and will be at or near 90% capacity with full build out at permit flow values. The Township is aware of this and will maintain monitoring of the system and sees no issue to allow the connection. Sewer review does not account for ability to provide basement service and only finish floor.

Water System

The Garfield Township water distribution system is divided up into five (5) distinct service districts with the limits defined by the existing infrastructure that services the users. In this case the proposed developed would be immediately serviced by the Birmley District. A portion of the development proposes to connect to the Birmley Primary Lower Pressure Zone receiving its supply directly from the City of Traverse City's four (4) million gallon storage tank on LaFranier road. Pressure is supplied by the Birmley Estates Elevated Storage Tank and maintained by Booster Station #2 having a rated firm capacity of 1,440 gpm. This portion of the development proposes to connect to existing water main at two (2) locations. All locations are within previously constructed phases of the development. Based upon information obtained from the 2011 Water Reliability Study and hydrant test data conducted by GFA, operating pressures are range from 45 to 65 psi with an available fire flow of approximately 1,800 gpm at 20 psi. It is estimated that the design maximum domestic demands for this portion the development are approximately 18 gpm to serve 35 REUs, therefore the existing infrastructure appears to be capable to accommodate. GFA has requested a recent hydrant test report from the DPW and awaiting results. Our evaluation does not account for basement and/or 2nd story service and is limited to ensure a minimum of 35 psi working pressure at the main and minimum of 40 psi static pressure at the house. Finish Floor Elevations are not provided however to comply should be at or below 770.

COMMENTS ON THE PLANS

General Comments

1. All design standards and specifications shall comply with the Current Standards adopted by Grand Traverse County Sewer and Water Systems (2017). Copies may be obtained from the Grand Traverse County Department of Public Works.
2. Please ensure all local regulatory permits including Soil Erosion and EGLE NPDES Permits are obtained. Please ensure Township receives copies of issued permits.
3. Please ensure all easements have been obtained and recorded with the Township prior to final acceptance of the utilities. Currently the plans illustrate an ingress/ egress easement however this shall be updated to include utilities and/or an additional 20' independent easement shall be provided for utilities and illustrated on the drawings.
4. Please ensure the Grand Traverse County DPW and Fire Department has reviewed the proposed plans and accepted.
5. The installation of water main, sewer main, hydrants, valves, and manholes shall not be installed within proposed sidewalk, and/or asphalt that would inhibit access by the DPW. Please ensure that there are no obstructions that would prohibit access. If this cannot be complied with,



please note the DPW is not responsible for any costs associated with replacement of such infrastructure such as the landscaping, drives. It appears some of the water main and sanitary sewer are in close proximity to or below proposed private drive.

6. Hydrant #s are incorrect as shown on the plans and shall be updated to reflect: 1229 to 1234
7. Please also note the following: In order for a developer to obtain their building permit and begin site work all permits must be issued including benefit fee payment to the DPW. However the DPW cannot accept this payment unless the infrastructure is either in place (water / sewer main) or a bond is provided by the developer equivalent to 100% of the cost of the utility. Please contact the DPW if you need further clarification, etc.
8. The applicant / design engineer is responsible to verify and confirm adequate water and sewer lead design (size and slope) are adequate to meet demands.
9. There appears to be a lot of water / sewer lead installed that cross proposed ditching along the road. Confirm adequate coverage will be provided for all service leads.
10. Two (2) benchmarks shall be provided on each utility sheet.
11. Applicant shall confirm that all water main and lines maintain 18" vertical and 10' horizontal separation from existing and proposed sewer (storm and sanitary) mains and leads.

Water Main Plan and Profile Comments

1. Portions of water main and valves appear to be located outside of the proposed easement. Please adjust easement or watermain to confirm all are located within the proposed easement.
2. Multiple locations along the water main will at the same elevation as sanitary sewer piping causing concerns for service lead crossings not maintaining appropriate separation. The profile shall be updated to illustrate the crossings and denote 18" separation.
3. Please note that C900 DR 18 is a minimum requirement and DR 14 is proposed.
4. Sheet C4.1 profile sta. 3+25 to 2+75 water main length not called out.
5. Water main stub shall be provided to the abutting western parcel to accommodate a future access.
6. A main line valves shall be installed on Sheet C4.0. Valves are to be installed every 1,000 feet to accommodate isolation.
7. It is recommended hydrants be installed at high points to act as air release. Please adjust locations as possible to accommodate.
8. Watermain shall maintain minimum of 18" vertical separation from all storm water ditches / basins and 10' horizontal.

Sanitary Sewer Plan and Profile Comments

1. The proposed slope between existing MH#583 and proposed MH #1824 is 0.38%. The minimum slope required by Ten States Standards for 8" pipe is 0.4% to ensure 2 feet per second. This is of concern due to this sewer serving only 10 REUs and the minimum slope should be avoided to prevent solid deposition.
2. Manholes in the profile appear to be below/above existing grade in all locations, the manhole rim should at or slightly above proposed grade as to not impede on regular maintenance activities such as plowing, mowing.
3. Portions of sanitary sewer main and manholes appear to be outside or directly on the easement line, please adjust to assure all sanitary sewer is located within the proposed utility easement.



4. A sanitary main stub shall be provided to the abutting western parcel to accommodate a future access/ connection.
5. Sewer Manhole 1822 appears to have flow in two (2) directions and shall be separated into two (2) manholes and segments rather than connected to prevent backups and surcharging.
6. Manhole 1818 inverts and sump elevations do match between sheet C4.0 and C4.1
7. All manholes shall be constructed to provide 1/10 drop between in and out inverts. MH #1819 illustrates both as the same.

COMMENTS ON THE PERMIT APPLICATIONS

EGLE Part 41 and Act 399 Please provide word document draft of the permit application with items 1 - 19 filled out.

1. Technical specifications need to be provided and are available on the GTC DPWs website. Please prepare three (3) copies submitted, signed and sealed.
2. Please provide basis of design for the project. A typical REU usage value 350 GPD/REU and a maximum of 4 peaking factor should be applied for sewer and 200 GPD/ REU and a maximum peaking factor of 3.0 for water.

At this point we expect that the design engineer will be making the above revisions and re-submitting the plans and permit applications for a minor second review. We will provide the subsequent review to verify the appropriate revisions have been made. Assuming the appropriate corrections have been made we will make recommendation to the Township for submission of permit application. At such time, four (4) copies of plans and specifications (signed/ sealed) including an Act 399 Permit Application will need to be provided for submission.

We appreciate the opportunity to assist the Township during the approval of this project. If you have any questions, please don't hesitate to contact me at (231) 946-5874.

Sincerely,

Jennifer Graham, P.E.
Project Manager

CC: John Divozzo, Director, GTC DPW
Carrie May, P.E., Boyne Engineering & Design



GRAND TRAVERSE METRO FIRE DEPARTMENT

FIRE PREVENTION BUREAU

897 Parsons Road ~ Traverse City, MI 49686
Phone: (231) 922-2077 Fax: (231) 922-4918 ~ Website: www.gtfire.org Email: info@gtfire.org

SITE PLAN REVIEW RECORD

ID # M7261-P1289

DATE: 10/4/2022

PROJECT NAME: Birmley Hills

PROJECT ADDRESS:

TOWNSHIP: Garfield

APPLICANT NAME: Steve Zakrajsek

APPLICANT COMPANY: T & R Investments

APPLICANT ADDRESS: 841 Ashland Dr.

APPLICANT CITY: Traverse City STATE: MI ZIP: 49696

APPLICANT PHONE: 231-838-6004

FAX #

REVIEW FEE: \$75.00

Reviewed By: Kathy Fordyce, Plan Reviewer

This review is based solely on the materials submitted for review and does not encompass any outstanding information. Compliance with all applicable code provisions is required and is the responsibility of the permit holder. Items not listed on the review do not negate any requirements of the code nor the compliance with same. Inspection requests must be made a minimum of 48 hours prior to needed inspection. This plan review is based on the 2015 International Fire Code, as adopted.



GRAND TRAVERSE METRO FIRE DEPARTMENT

FIRE PREVENTION BUREAU

897 Parsons Road ~ Traverse City, MI 49686
Phone: (231) 922-2077 Fax: (231) 922-4918 ~ Website: www.gtfire.org Email: Info@gtfire.org

SITE PLAN REVIEW

ID # M7261-P1289

DATE: 10/4/2022

1. 505.1 Address identification.

New and existing buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than 4 inches (102 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where required by the fire code official, address identification shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road and the building cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintained.

-Provide addresses during construction as well as permanently using numbers that area minimum height of 4 inches.

2. 505.2 Street or road signs.

Streets and roads shall be identified with approved signs. Temporary signs shall be installed at each street intersection when construction of new roadways allows passage by vehicles. Signs shall be of an approved size, weather resistant and be maintained until replaced by permanent signs.

-Provide street signs before construction begins.

3. 509.1 Fire protection equipment identification.

Fire protection equipment shall be identified in an approved manner. Rooms containing controls for air-conditioning systems, sprinkler risers and valves, or other fire detection, suppression or control elements shall be identified for the use of the fire department.

Approved signs required to identify fire protection equipment and equipment location shall be constructed of durable materials, permanently installed and readily visible.

- Provide hydrant signs for hydrants throughout the development.

4. 507.5.4 Obstruction.

Unobstructed access to fire hydrants shall be maintained at all times. The fire department shall not be deterred or hindered from gaining immediate access to fire protection equipment or fire hydrants.

5. 507.5.5 Clear space around hydrants.

A 3-foot (914 mm) clear space shall be maintained around the circumference of fire hydrants, except as otherwise required or approved.



GRAND TRAVERSE METRO FIRE DEPARTMENT

FIRE PREVENTION BUREAU

897 Parsons Road ~ Traverse City, MI 49686
Phone: (231) 922-2077 Fax: (231) 922-4918 ~ Website: www.gtfire.org Email: info@gtfire.org

6. 507.5.6 Physical protection.

Where fire hydrants are subject to impact by a motor vehicle, guard posts or other approved means shall comply with Section 312.

7. 503.2.7 Grade.

The grade of the fire apparatus access road shall be within the limits established by the fire code official based on the fire department's apparatus.

-Fire department apparatus access roads shall have road grades less than 10%.

Project may proceed with township approval process.

Steve Hannon

From: Steve Barry <sbarry@gtcrc.org>
Sent: Tuesday, November 8, 2022 2:43 PM
To: boyneeng@torchlake.com
Subject: RE: Birmley Hills Site Condominium Review

Carrie,

GTCRC does support and approve the 30' Tee section. Please advise when you would like to proceed.

Thank you,

Steve Barry
GTCRC Permit and Violations Agent
231-922-4849 EXT 205

From: boyneeng@torchlake.com <boyneeng@torchlake.com>
Sent: Tuesday, November 8, 2022 12:27 PM
To: Steve Barry <sbarry@gtcrc.org>
Subject: FW: Birmley Hills Site Condominium Review

Hi Steve, here is that drawing again. The width of the tee section is 30'.



CARRIE MAY, PE | OWNER/PRINCIPAL ENGINEER
BOYNE ENGINEERING AND DESIGN, PLLC
Direct Phone: 231-499-8361 | E-mail: boyneeng@torchlake.com
boyneengineering.com
PO Box 94, Boyne City, MI 49712

From: boyneeng@torchlake.com <boyneeng@torchlake.com>
Sent: Monday, October 24, 2022 10:37 AM
To: 'Steve Barry' <sbarry@gtcrc.org>
Subject: RE: Birmley Hills Site Condominium Review

Hi Steve,

I am attaching a revised sheet C2.0 for Birmley Hills showing the turn-out at the water tower entrance. The dedicated easement would of course go all the way back to the property line. As we discussed, we are proposing to provide this turn-out in a dedicated easement for your vehicles at the end of Birmley Estates Drive and a maintenance agreement for the Birmley Hills Site Condominium Association to plow the unmaintained "Stub" called Farmington Drive between the maintained county road and Farmington Court. Please let me know if this is adequate so I can provide it to the township as well.

Thanks,
Carrie



CARRIE MAY, PE | OWNER/PRINCIPAL ENGINEER
BOYNE ENGINEERING AND DESIGN, PLLC
Direct Phone: 231-499-8361 | E-mail: boyneeng@torchlake.com
boyneengineering.com
PO Box 94, Boyne City, MI 49712

From: Steve Barry <sbarry@gtcrc.org>
Sent: Monday, October 10, 2022 9:05 AM
To: boyneeng@torchlake.com
Subject: RE: Birmley Hills Site Condominium Review

Carrie,

I forgot to attach it here you go.

Thank you,

Steve Barry
GTCRC Permit and Violations Agent
231-922-4849 EXT 205

From: boyneeng@torchlake.com <boyneeng@torchlake.com>
Sent: Monday, October 10, 2022 8:40 AM
To: Steve Barry <sbarry@gtcrc.org>
Subject: RE: Birmley Hills Site Condominium Review

Hi Steve,
Thanks for letting me know. I didn't see a hammerhead detail in your specs after all. I am planning on using the shape detailed in the attached 2015 IFC specs (international fire code) . Is that acceptable?
Thanks,
Carrie



CARRIE MAY, PE | OWNER/PRINCIPAL ENGINEER
BOYNE ENGINEERING AND DESIGN, PLLC
Direct Phone: 231-499-8361 | E-mail: boyneeng@torchlake.com
boyneengineering.com
PO Box 94, Boyne City, MI 49712

From: Steve Barry <sbarry@gtcrc.org>
Sent: Monday, October 10, 2022 7:53 AM
To: boyneeng@torchlake.com
Subject: RE: Birmley Hills Site Condominium Review

Carrie,

I spoke to Wayne this morning and he is good with a hammerhead turn around. Let me know if you need anything.

Thank you,

Steve Barry
GTCRC Permit and Violations Agent
231-922-4849 EXT 205

From: boyneeng@torchlake.com <boyneeng@torchlake.com>
Sent: Monday, September 26, 2022 2:45 PM
To: Steve Barry <sbarry@gtcrc.org>
Subject: RE: Birmley Hills Site Condominium Review

Hi Steve,

Thanks for talking with me this afternoon. I will stop by tomorrow with a check and a hard copy of the plans. I am including a link below to a google drive with the plans and the submittal package that went to the Township for this development.

Google Drive with Birmley Hills Plans:


<https://drive.google.com/drive/folders/1aQNlbqNGNLxflpd4HMOXJKjiF01w3jB6?usp=sharing>

Thanks again, and have a nice afternoon,

Carrie



CARRIE MAY, PE | OWNER/PRINCIPAL ENGINEER
BOYNE ENGINEERING AND DESIGN, PLLC
Direct Phone: 231-499-8361 | E-mail: boyneeng@torchlake.com
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PO Box 94, Boyne City, MI 49712

 Charter Township of Garfield Planning Department Report No. 2022-115		
Prepared:	December 7, 2022	Pages: 7
Meeting:	December 14, 2022 Planning Commission	Attachments: <input checked="" type="checkbox"/>
Subject:	SPR-2022-21 – K1 Speed Indoor Kart Racing Site Plan Review	
Applicant / Owner:	Traverse Entertainment Group / Ulysses C. Walls, President	
Agent:	Gosling-Czubak Engineering Sciences, Inc. / Robert Verschaeve, P.E.	
File No.	SPR-2022-21	
Parcel No.	05-014-049-10	

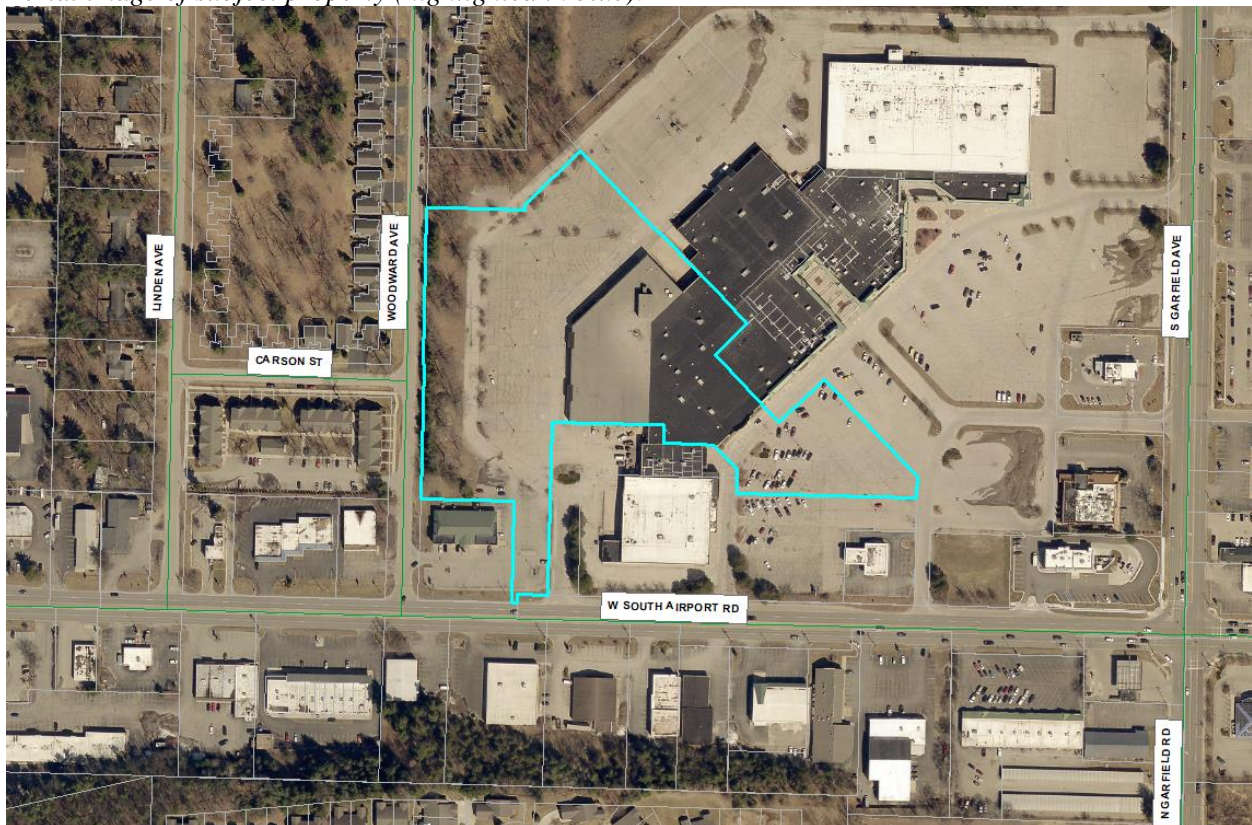
PURPOSE OF APPLICATION:

Applications for development within the C-P Planned Shopping Center shall be reviewed by the Planning Commission for compliance with Article 4, § 424 – Site Plans and Article 5 – Development Standards.

BACKGROUND:

The site is located at 1212 West South Airport Road, is approximately 8.48 acres, and is home to the former Sears building at Cherryland Center. The proposed project is to reuse a portion of the existing building as an indoor recreation facility for kart racing. Recreational facilities are a use permitted by right in the C-P Planned Shopping Center district. Other future uses were not identified in the application.

Aerial image of subject property (highlighted in blue):



SITE DEVELOPMENT REQUIREMENTS:***(1) General***

Applications for development within the C-P Planned Shopping Center shall be reviewed by the Planning Commission for compliance with Article 4, § 424 – Site Plans and Article 5 – Development Standards. The following criteria as listed in Section 424.F(1)(a)-(j) of the Zoning Ordinance are offered for consideration by the Planning Commission:

(a) Required Information. *All required information shall be provided.*

- The application was received by the Township on November 14, 2022 and Staff issued a Completeness Review on November 17, 2022, asking for some additional information and clarification on a few items. Any outstanding items may potentially be made a condition of site plan approval.

(b) Outside Agencies. *All applicable standards of outside agencies shall be met and all required permits and approvals from outside agencies shall be secured, or be made a condition of approval.*

- The applicant is required to comply with all agencies with jurisdiction. Agency approvals may be a condition of site plan approval.

(c) Essential Facilities and Services. *Adequate essential facilities and services, including highways, streets, police, fire protection, drainage structures, refuse disposal, water and sewage facilities, and schools, shall be available.*

- As this application is for a proposed redevelopment of an existing commercial site, many essential facilities and services are in place.
- The site is accessed from a major road and is serviced by existing public sewer and water.
- The site has been used as commercial without overburdening area municipal services.
- The site is served by an existing 8” municipal water line and an 8” sanitary sewer line.

(d) Natural Features. *Sensitive natural features, or existing natural features that provide a buffer between adjoining properties, or assist in preserving the general appearance of the neighborhood, or help control soil erosion or stormwater, shall be preserved to the greatest extent possible.*

- The proposed use does not alter the existing development pattern on the site. There are no known sensitive natural features on the site.

(e) Site Design. *All buildings and structures shall be designed, situated, constructed, operated and maintained so as to be harmonious, compatible, and appropriate in appearance, with the existing or intended character of the general vicinity. Site design shall minimize adverse effects upon owners and occupants of adjacent properties and the neighborhood.*

- The proposed use does not alter the existing development pattern on the site. The site is well-established and has been in place for over 40 years.

(f) Orientation. *Primary buildings or structures shall be oriented so that their main entrance faces the street upon which the lot fronts. If the development is on a corner lot, the main entrance may be oriented to either street or to the corner.*

- The site plan shows a partition wall in the existing building, with one part facing the front and one part facing the back of the site. The application does not indicate where within the building the proposed indoor entertainment center will be located.
- Both the front and back building entrances have internal sidewalks in front of them which allows for connections to future sidewalks along South Airport Road. Although this site has a small frontage on South Airport Road, it does not include any direct access.

(g) **Vehicle and Pedestrian Systems.** *The development, where possible, shall provide vehicular and pedestrian circulation systems which reflect and extend the pattern of streets, pedestrian and bicycle ways in the area. A proper relationship between existing and proposed roadways and parking areas shall be demonstrated, and the safety and convenience of pedestrian and vehicular traffic shall be assured. Travelways which connect and serve adjacent development shall be designed appropriately to carry the projected traffic.*

- The proposed use will rely on existing entrances to the Cherryland Center, with the most direct access from South Airport Road and additional access from Garfield Avenue.
- Sidewalks are proposed for the site's frontages on both South Airport Road and Woodward Avenue. Sidewalks are required based on the Non-Motorized Plan of the Master Plan and Section 522 of the Zoning Ordinance.

(h) **Shared Drives.** *Where the opportunity exists, developments shall use shared drives. Unnecessary curb cuts shall not be permitted.*

- As described above, the development site will use the existing entrance drives on Garfield Avenue and South Airport Road which serve the entire Cherryland Center.

(i) **Impervious Surfaces.** *The amount of impervious surface has been limited on the site to the extent practical.*

- The site is in an existing development. The proposed use does not reduce the impervious surface; however, no additional impervious surface is proposed. The existing landscaped areas will be maintained with three total trees being added.

(j) **Master Plan.** *The proposal is not in conflict with the land use policies, goals and objectives of the Township Master Plan.*

- The proposed use fits with the Future Land Use Map, as the parcel and surrounding vicinity are envisioned as Commercial, which accommodates a wide range of potential businesses, including recreational facilities.
- The site is part of the Barlow Garfield Neighborhood Plan which guides development in this neighborhood of the Township. This plan included several development principles for this neighborhood encompassing the following:
 - Allow for mixed-use development on primary corridors.
 - Account for public spaces that accommodate a variety of activities.
 - Encourage connectivity through sidewalks, trails, cross-access, and other means.
 - Allow sites to be designed at a scale that encourages a neighborhood character.
 - Allow for new housing with diverse selection of unit types and sizes.
 - Facilitate improvements for public infrastructure upon new development.

- The Barlow Garfield Neighborhood Plan envisions a connected, livable, community center within Garfield Township in this neighborhood. The proposed use activates the site and encourages additional active uses to be part of the site redevelopment.
- Furthermore, there should be enough parking to anticipate future redevelopment of other portions of the building.

The following review of the proposal with regards to the relevant sections within Article 5 – Development Standards is also provided:

Access Management

As described above, the development site will use the existing entrance drives on Garfield Avenue and South Airport Road which serve the entire Cherryland Center. This is consistent with the intent of access management standards including encouraging shared drives.

Dumpster Enclosures

There is an existing trash compactor on the site which will remain. If any dumpsters are proposed in the future, an enclosure would be needed to meet the standards of Section 516.

Lighting

Compliance with all lighting requirements of Section 517 shall be indicated for any new lighting fixtures, including fixture type, location, height, and note that fixtures will meet the maximum color temperature requirement of 3,500 K. There are several non-compliant lighting fixtures, including wall pack lighting fixtures located on the building and up lighting fixtures located on the ground at the front of the building.

A note on the site plan indicates that “any existing, non-compliant lighting, including wall pack fixtures will be removed from the site. New lighting to meet Zoning Ordinance Section 517.” A photometric plan is needed to ensure the proposed lighting meets the requirements of Section 517.

Stormwater Management and Pavement Evaluation

Stormwater review by the Township Engineer will be required prior to the issuance of a Land Use Permit. Stormwater management is part of the overall Cherryland Center stormwater system, and all necessary easements will need to be maintained.

Several areas of the parking lot appear to need crack sealing and seal coating. Staff requests that the Township Engineer review the condition of the asphalt and determine if any improvements are needed. The site plan indicates 8 pavement repair areas. Also, many parking spaces are no longer clearly denoted. A site plan note indicates “parking spaces, aisles, and traffic and parking signage related to the project will be re-striped and replaced to current ordinance requirements.”

Landscaping

Most of the site is embedded within Cherryland Center which has an overall landscape buffer with the surrounding area. There is an existing extensive buffer along the west lot line which, according to the application, contains more than 50 mature trees and is not proposed to be changed.

Section 532 requires parking area landscape areas of at least 10 square feet per parking space and 1 canopy tree per 100 square feet of interior landscape area. The site plan notes 459 parking spaces which would require 4,590 square feet of landscape area, and indicates 5,100 square feet as being provided. The site currently includes several landscape islands with 27 total trees. The applicants propose to add 3 trees to these existing islands. Based on the required landscape area, 46 total trees would be needed.

According to Section 530.H, the Planning Commission as the approval authority “may waive or adjust any requirement of this section in whole or in part provided that one or more of the following conditions exist upon the site:”

- (1) Existing conditions such as topography or vegetation provide an established screen or buffer which is equal to or superior in its ability to meet the Purpose of this Section. For the purposes of this subsection, vegetation requirements may be adjusted either in terms of the quantity of plantings otherwise required or in terms of the physical location of plantings otherwise required.
- (2) Decorative walls or fencing will be provided in lieu of all or some required plantings to provide an equal or superior buffer to meet the Purpose of this Section.
- (3) Natural features such as steep slopes or other topographical features make full compliance impractical or impossible.
- (4) Space limitations on the site or prevailing development patterns in the surrounding neighborhood justify alternative compliance.
- (5) Safety considerations warrant flexibility upon the site.
- (6) No practicable alternative in the placement of a building, structure, street or utility construction, access drives, stormwater management facilities, trails or pathways, or other site improvements is available.
- (7) In the instance of a waiver being requested, a modification request shall only be approved upon a determination that the existing site conditions or developed form of a property are such that the requirements of this section cannot reasonably be completed, that an alternative landscaping plan cannot be reasonably be substituted, and that the requested modification is the minimum modification necessary resulting from such site conditions or developed form.

Given that the proposed project is the redevelopment of an existing building, Staff is of the opinion that a partial landscaping waiver may be warranted. However, some supplemental landscaping is recommended for the locations against the front and rear of the building and at the large island at the front of the building.

A site plan note indicates that “all existing landscaping including parking islands and areas along building to be generally cleaned up and improved as needed by pruning, replacing dead trees and plants, adding new trees as noted, and replacing or adding mulch.”

Parking, Loading, and Snow Storage

Indoor recreational uses without fixed seats have a minimum parking requirement of 1 space for each 6 people allowed with a maximum of 1 space for each 3 people allowed. The building area is 96,259 square feet. The application indicates a maximum occupancy load of 50 people per square feet for a maximum of 1,925 total occupants for this building. This results in a minimum parking requirement of 321 spaces and maximum of 642 spaces, with 459 spaces being provided including 19 barrier free spaces. The application does not indicate how much of the building will be taken up by the indoor entertainment use or what additional future uses may be on this site. The parking requirements shall be reviewed when additional uses for the site are determined.

Bicycle parking shall be provided at the rate of 2 bicycle spaces per 25 motor vehicle spaces. The parking lot has 459 motor vehicle spaces which requires 37 bicycle spaces. The site plan indicates 13 double racks provided giving space for 26 bicycles. Six additional bicycle racks are needed to meet the standards of Section 522.C.

In accordance with Section 551.E.6, snow storage is required at the ratio of 10 square feet per 100 square feet of parking area. The site plan describes the parking area as 194,000 square feet which requires 19,400 square feet for snow storage; 19,535 square feet is provided including using some existing parking spaces on the west side.

The proposed snow storage areas in the parking spaces along the west side of the site are currently acceptable as the number of provided parking spaces exceeds the required minimum. However, if future land uses on the site increase the number of required parking spaces, then the snow storage may need to be relocated.

(2) External Access

The proposed development will gain its direct access from the existing Cherryland Center entrance drives.

(3) Internal Pedestrian Circulation

Section 522 requires pathways and interior sidewalks. The front and back building entrances have internal sidewalks in front of them which allows for connections to future sidewalks along South Airport Road.

(4) Non-Motorized Pathways

Sidewalks are proposed for the site's frontages on South Airport Road and Woodward Avenue. Sidewalks are required based on the Non-Motorized Plan of the Master Plan and Section 522 of the Zoning Ordinance.

(5) Building Placement

The building placement is existing development with no proposed changes.

(6) Vegetative Transition Strip

A fifty-foot-wide vegetative transition strip is required if the site abuts a residential or agricultural zone. An existing transition strip is in place.

(7) Service Drives

Access to the site, including the parking lots, is from existing service drives to a major thoroughfare.

(8) Prohibited Outdoor Storage

The applicant does not propose any outdoor storage on this site.

RECOMMENDATION:

Following the applicant presentation and Planning Commission discussion, if the Commission is prepared to decide on the application, then the following motion in support of approval is offered:

MOTION THAT application SPR-2022-21, submitted by Traverse Entertainment Group for an indoor recreational facility on parcel 05-014-049-10 located at 1212 West South Airport Road, BE APPROVED, subject to the following conditions:

1. A photometric plan is needed to ensure the proposed lighting meets the requirements of Section 517.
2. Stormwater review by the Township Engineer will be required prior to the issuance of a Land Use Permit. Stormwater management is part of the overall Cherryland Center stormwater system, and all necessary easements will need to be maintained.
3. A partial landscaping waiver is granted, however, some supplemental landscaping is recommended for the locations against the front and rear of the building and at the large island at the front of the building.
4. Six additional bicycle racks are needed to meet the standards of Section 522.C.

5. If future land uses on the site increase the number of required parking spaces, then the snow storage may need to be relocated.
6. All agency reviews, including review by the Township Engineer, shall be received, and deemed compliant prior to issuing a Land Use Permit or Building Permit.

Additional information deemed necessary by the Planning Commission should be added to the motion.

Attachments:

1. Site Plan Review Application – dated November 11, 2022
2. Site Plan Set from Gosling Czubak – dated December 2, 2022



Charter Township of Garfield

Grand Traverse County

3848 VETERANS DRIVE
TRAVERSE CITY, MICHIGAN 49684
PH: (231) 941-1620 • FAX: (231) 941-1588

SITE PLAN REVIEW (SPR) APPLICATION

ASSISTANCE

This application must be completed in full. An incomplete or improperly prepared application will not be accepted and will result in processing delays. Before submitting an application, it is recommended that you contact the Planning and/or Zoning Department to arrange an appointment to discuss your proposed application. Time is often saved by these preliminary discussions. For additional information or assistance in completing this development application, please contact the Planning Department at (231) 941-1620.

ACTION REQUESTED

- ☐ Site Diagram Review
☐ Administrative Site Plan Review
☒ Site Development Plan Review

PROJECT / DEVELOPMENT NAME

K1 Speed Indoor Kart Racing Center

APPLICANT INFORMATION

Name: Traverse Entertainment Group; Ulysses C. Walls, President
Address: 5250 E. Traverse Highway, Traverse City, MI 49684
Phone Number: 231-313-3800
Email: ucwalls@yahoo.com

AGENT INFORMATION

Name: Gosling Czubak Engineering Sciences, Inc.; Robert Verschaeve, P.E.
Address: 1280 Business Park Drive, Traverse City, MI 49686
Phone Number: 231-933-5102
Email: rmverschaeve@goslingczubak.com

OWNER INFORMATION

Name: Same as Applicant
Address:
Phone Number:
Email:

CONTACT PERSON

Please select one person to be contact person for all correspondence and questions:

<i>Applicant:</i>	Ulysses C. Walls
<i>Agent:</i>	
<i>Owner:</i>	

PROPERTY INFORMATION

<i>Property Address:</i>	1212 South Airport Road
<i>Property Identification Number:</i>	05-014-049-10
<i>Legal Description:</i>	See plans
<i>Zoning District:</i>	C-P, Planned Shopping
<i>Master Plan Future Land Use Designation:</i>	C-P
<i>Area of Property (acres or square feet):</i>	8.48 Acres
<i>Existing Use(s):</i>	Retail shopping
<i>Proposed Use(s):</i>	Recreational Facility

PROJECT TIMELINE

<i>Estimated Start Date:</i>	Upon Site Plan Approval
<i>Estimated Completion Date:</i>	May 1, 2023

REQUIRED SUBMITTAL ITEMS

A complete application for a Site Plan Review consists of the following:

Application Form:

- ☒ One original signed application
- ☒ One digital copy of the application (PDF only)

Application Fee:

Fees are established by resolution of the Garfield Township Board and are set out in the current Fee Schedule as listed on the Planning Department page of the Township website (<http://www.garfield-twp.com>). Please make check out to Charter Township of Garfield.

- ☒ Fee

Escrow Fee:

Additional fees may be required if a review by independent professional help is deemed necessary by the Township. If required, such additional fees must be placed in escrow by the applicant in accordance with the escrow policies of the Township and prior to any further processing of this application. Any unused escrow funds shall be returned to the applicant. Please complete an Escrow and Review (ER) Application form.

Site Diagram Review:

- ☐ Two complete stapled 11"x17" paper sets
- ☐ One digital set (PDF only)

Administrative Site Plan:

- ☐ Two complete stapled 11"x17" paper sets
- ☐ Two complete bound 24"x36" paper sets
- ☐ One digital set (PDF only)

Site Development Plan:

- ☐ Ten complete stapled 11"x17" paper sets
- ☒ Two complete bound 24"x36" paper sets
- ☒ One digital set (PDF only)

Digital items to be delivered via email or USB flash drive

SUBMITTAL DEADLINE

Submittal deadlines are listed on the Planning Department page of the Township website (<http://www.garfield-twp.com>). Please note that the listed dates are the deadlines after which submittals will not be considered for the indicated meeting. Any errors or missing information on an application submitted at the deadline will result in a delay in the processing of the application. An earlier submittal is encouraged to avoid possible delays.

WAIVERS

Submittal Waiver:

At the discretion of the Zoning Administrator in the case of a Site Diagram, or the Director of Planning in the case of an Administrative Site Plan or a Site Development Plan, the requirement to submit a Site Diagram, an Administrative Site Plan or a Site Development Plan may be waived in any of the following cases when it is determined that the submission would serve no useful purpose:

1. The erection or enlargement of an accessory structure;
2. The enlargement of a principal building by less than 20 percent of its existing gross floor area, provided such enlargement will not result in a requirement for additional off-street parking;
3. A change in principal use where such change would not result in an increase in impervious surface area, additional off-street parking, site access, other external site characteristics or a violation of this ordinance.

Data Waiver:

1. The Zoning Administrator may waive a particular element of information or data otherwise required for a Site Diagram upon a finding that the information is not necessary to determine compliance with this ordinance.
2. The Director of Planning may waive a particular element of information or data otherwise required for a Site Development Plan upon a finding that the information or data is not necessary to determine compliance with this ordinance or that such information or data would not bear on the decision of the approval authority.

SITE PLAN

Check that your site plan includes all required elements for a Site Diagram (SD), Administrative Site Plan (ASP), or Site Development Plan (SDP). Please use the Required Site Plan Elements Checklist below.

APPROVAL CRITERIA

An administrative site plan or site development plan shall conform to all provisions of the Zoning Ordinance and to the following site development standards which shall be reflected on the plan:

1. Required Information. All required information shall be provided.
2. Outside Agencies. All applicable standards of outside agencies shall be met and all required permits and approvals from outside agencies shall be secured, or be made a condition of approval.
3. Essential Facilities and Services. Adequate essential facilities and services, including highways, streets, police, fire protection, drainage structures, refuse disposal, water and sewage facilities, and schools, shall be available.
4. Natural Features. Sensitive natural features, or existing natural features that provide a buffer between adjoining properties, or assist in preserving the general appearance of the neighborhood, or help control soil erosion or stormwater, shall be preserved to the greatest extent possible.
5. Site Design. All buildings and structures shall be designed, situated, constructed, operated and maintained so as to be harmonious, compatible, and appropriate in appearance, with the existing or intended character of the general vicinity. Site design shall minimize adverse effects upon owners and occupants of adjacent properties and the neighborhood.
6. Orientation. Primary buildings or structures shall be oriented so that their main entrance faces the street upon which the lot fronts. If the development is on a corner lot, the main entrance may be oriented to either street or to the corner.
7. Vehicle and Pedestrian Systems. The development, where possible, shall provide vehicular and pedestrian circulation systems which reflect and extend the pattern of streets, pedestrian and bicycle ways in the area. A proper relationship between existing and proposed roadways and parking areas shall be demonstrated, and the safety and convenience of pedestrian and vehicular traffic shall be assured. Travelways which connect and serve adjacent development shall be designed appropriately to carry the projected traffic.
8. Shared Drives. Where the opportunity exists, developments shall use shared drives. Unnecessary curb cuts shall not be permitted.
9. Impervious Surfaces. The amount of impervious surface has been limited on the site to the extent practical.
10. Master Plan. The proposal is not in conflict with the land use policies, goals and objectives of the Township Master Plan.

ADDITIONAL INFORMATION

If applicable, provide the following further information:

A. <u>Sanitary Sewer Service</u>	Project will utilize existing sanitary sewer service to existing building	<u>Yes</u>	<u>No</u>	<u>Not Applicable</u>
1. Does project require extension of public sewer line?		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, has a Utility Agreement been prepared?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Will a community wastewater system be installed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, has a Utility Agreement been prepared?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, provide construction plans and specifications				
3. Will on-site disposal be used?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, is it depicted on plan?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B. Water Service Project will utilize existing water service to existing building

- | | | | |
|---|--------------------------|-------------------------------------|--------------------------|
| 1. Does project require extension of public water main? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| If yes, has a Utility Agreement been prepared? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Will a community water supply be installed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| If yes, has a Utility Agreement been prepared? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| If yes, provide construction plans and specifications | | | |

- C. Public utility easements required? ☐ ☐ ☒
- If yes, show on plan.

D. Stormwater Review/Soil Erosion

- | | | | |
|--|-------------------------------------|-------------------------------------|--------------------------|
| 1. Soil Erosion Plans approved by Soil Erosion Office? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| If so, attach approval letter. | | | |
| If no, are alternate measures shown? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Stormwater Plans approved by Township Engineer? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| If so, attach approval letter. | | | |
| If no, are alternate measures shown? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Note: Alternate measures must be designed and sealed by a registered Engineer.

Existing storm system. Owner will perform maintenance as noted on plan

E. Roads and Circulation

- | | | | |
|---|--------------------------|--------------------------|-------------------------------------|
| 1. Are interior public streets proposed? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| If yes, has Road Commission approved (attach letter)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Will public streets connect to adjoining properties or future streets? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Are private roads or interior drives proposed? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Will private drives connect to adjoining properties service roads? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Has the Road Commission or MDOT approved curb cuts? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| If yes, attach approved permit. | | | |

OTHER INFORMATION

If there is any other information that you think may be useful in the review of this application, please attach it to this application or explain it on a separate page.

REVIEW PROCESS

- Upon submittal of this application, Staff will review the materials submitted and will, within ten (10) working days, forward a determination of completeness to the applicant. If the submission is incomplete or noncompliant with the Zoning Ordinance, it will be returned to the applicant for revision. Once the submission is revised, Staff will again review it for completeness and again forward a determination to the applicant within ten (10) working days. This procedure shall be repeated until a complete submission is received.
- Once the application is deemed to be complete and submitted according to the application deadlines, it will be forwarded to the Planning Commission for review.
- The Planning Commission may approve, approve with conditions, or deny the application.

PERMISSION TO ENTER SUBJECT PROPERTY

Permission is hereby granted to Garfield Township staff and Planning Commissioners to enter the premises subject to this application for the purposes of making inspections associated with this application, during normal and reasonable working hours.

Owner Signature:

Ulysses Christopher Walls

Applicant Signature:

Agent Signature:

Robert H. Vanden

Date:

11 / 11 / 2022

OWNER'S AUTHORIZATION

If the applicant is not the registered owner of the lands that is the subject of this application, the owner(s) must complete the authorization set out below.

I/We _____ authorize to make this application on my/our behalf and to provide any of my/our personal information necessary for the processing of this application. Moreover, this shall be your good and sufficient authorization for so doing.

Owner Signature:

Date:

AFFIDAVIT

The undersigned affirms that he/she or they is (are) the owner, or authorized agent of the owner, involved in the application and all of the information submitted in this application, including any supplemental information, is in all respects true and correct. The undersigned further acknowledges that willful misrepresentation of information will terminate this permit application and any permit associated with this document.

Owner Signature:

Ulysses Christopher Walls

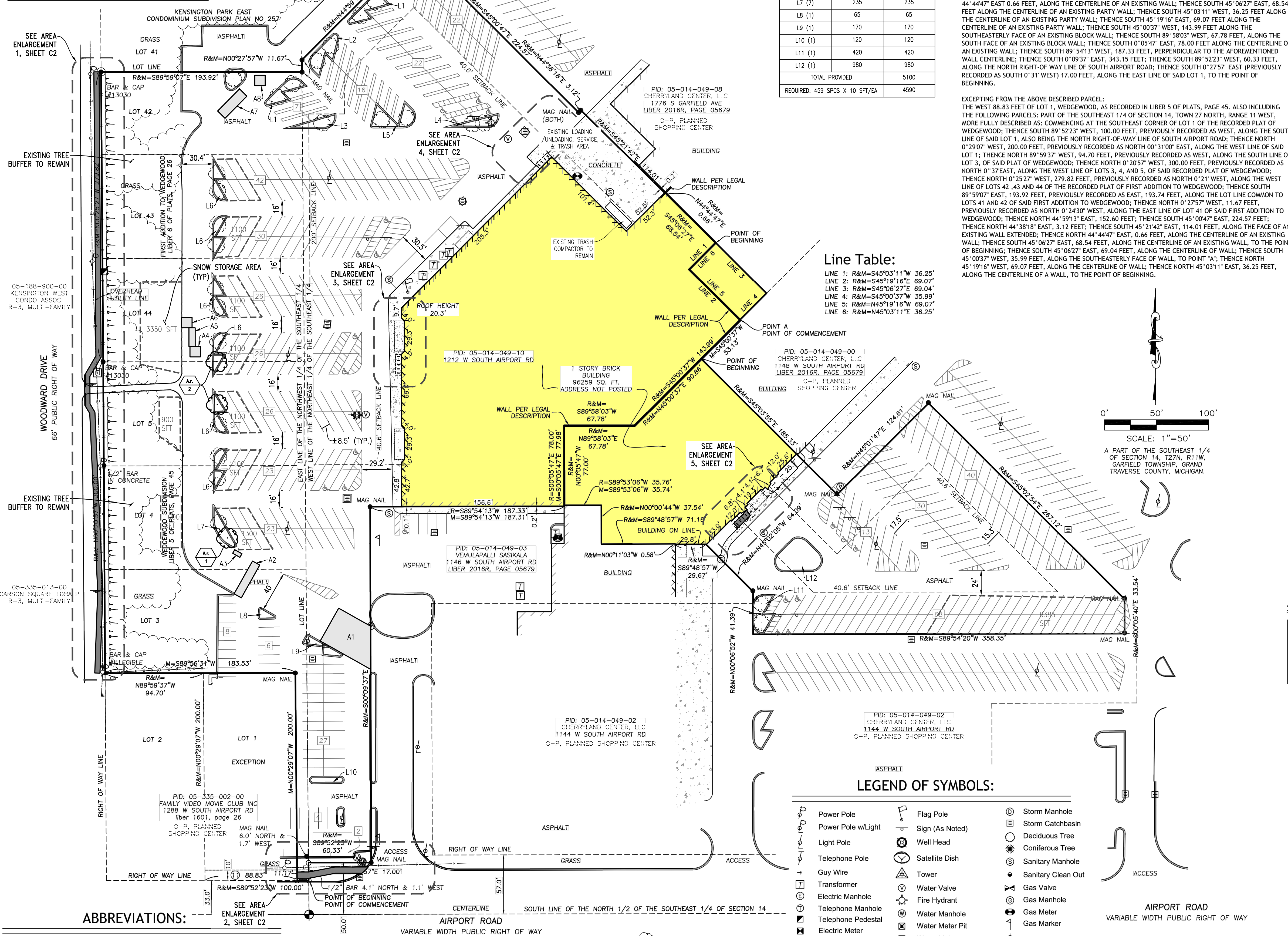
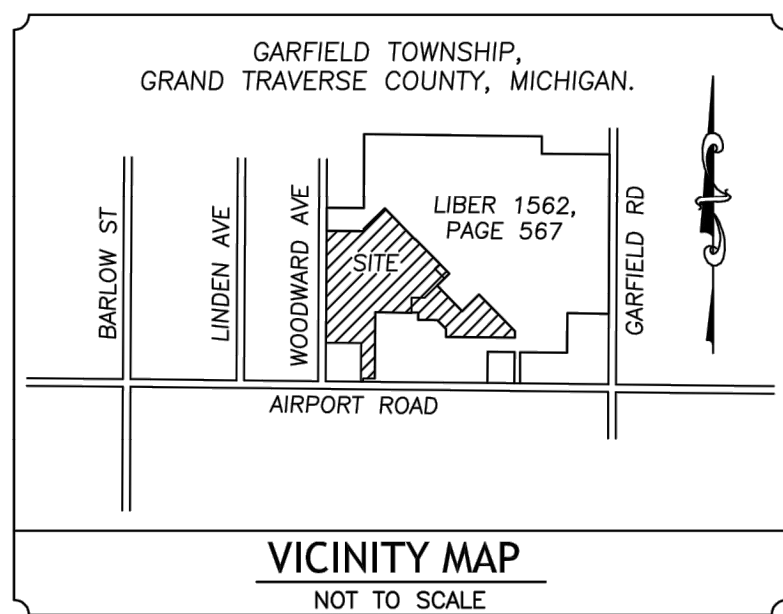
Date:

Applicant Signature:

Date:

11 / 11 / 2022

Required Site Plan Elements Checklist (See § 956 of the Zoning Ordinance) Site Diagram (SD) / Administrative Site Plan (ASP) / Site Development Plan (SDP)		SD	ASP/ SDP
A. Basic Information			
1. Applicant's name, address, telephone number and signature		<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Property owner's name, address, telephone number and signature		<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Proof of property ownership	Application affidavit signed	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Whether there are any options or liens on the property		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. A signed and notarized statement from the owner of the property that the applicant has the right to act as the owner's agent	Owner signed application	<input type="checkbox"/>	<input type="checkbox"/>
6. The address and/or parcel number of the property, complete legal description and dimensions of the property, setback lines, gross and net acreages and frontage		<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. A vicinity map showing the area and road network surrounding the property			<input checked="" type="checkbox"/>
8. Name, address and phone number of the preparer of the site plan		<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Project title or name of the proposed development		<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Statement of proposed use of land, project completion schedule, any proposed development phasing		<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Land uses and zoning classification on the subject parcel and adjoining parcels		<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. Seal of the registered engineer, architect, landscape architect, surveyor, or planner who prepared the plan, as well as their name, address and telephone number			<input checked="" type="checkbox"/>
B. Site Plan Information			
1. North arrow, scale, and date of original submittal and last revision		<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Boundary dimensions of natural features			<input checked="" type="checkbox"/>
3. Natural features such as woodlots, water bodies, wetlands, high risk erosion areas, slopes over twenty-five percent (25%), beach, drainage, and similar features			<input checked="" type="checkbox"/>
4. Proposed alterations to topography and other natural features			<input checked="" type="checkbox"/>
5. Existing topographic elevations at two-foot intervals except shown at five-foot intervals where slopes exceed 18%			<input checked="" type="checkbox"/>
6. Soil erosion and sediment control measures as required by the Grand Traverse County Soil Erosion Department.	N/A	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. The location, height and square footage of existing and proposed main and accessory buildings, and other existing structures			<input checked="" type="checkbox"/>
8. Location and specifications for any existing or proposed (above or below ground) storage facilities for any chemicals, salts, flammable materials, or hazardous materials. Include any containment structures or clear zones required by county, state or federal government authorities	N/A		<input checked="" type="checkbox"/>
9. Proposed finish floor and grade line elevations of any structures <i>*Required only for habitable construction within the floodplain on site diagrams and administrative site plans.</i>		<input type="checkbox"/> *	<input checked="" type="checkbox"/>
10. Existing and proposed driveways, including parking areas		<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Neighboring driveways and other vehicular circulation features adjacent to the site			<input checked="" type="checkbox"/>
12. A dimensional plan indicating the location, size and number of parking spaces of the on-site parking areas, and shared parking areas		<input type="checkbox"/>	<input checked="" type="checkbox"/>
13. Identification and dimensions of service lanes and service parking, snow storage areas, loading and unloading and docks			<input checked="" type="checkbox"/>
14. Proposed roads, access easements, sidewalks, bicycle paths, and other vehicular and pedestrian circulation features within and adjacent to the site			<input checked="" type="checkbox"/>
15. Location of and dimensions of curb cuts, acceleration, deceleration and passing lanes			<input checked="" type="checkbox"/>
16. Location of neighboring structures that are close to the parcel line or pertinent to the proposal			<input checked="" type="checkbox"/>
17. Location of water supply lines and/or wells		<input type="checkbox"/>	<input checked="" type="checkbox"/>
18. Location of sanitary sewer lines and/or sanitary sewer disposal systems		<input type="checkbox"/>	<input checked="" type="checkbox"/>
19. Location, specifications, and access to a water supply in the event of a fire emergency			<input checked="" type="checkbox"/>
20. Sealed (2) stormwater plans including the location and design of storm sewers, retention or detention ponds, swales, wastewater lines, clean out locations, connection points and treatment systems	NO CHANGES PROPOSED		<input type="checkbox"/>
21. A utility plan including the location of all other utilities on the site including but not limited to natural gas, electric, cable TV, telephone and steam	NO CHANGES PROPOSED		<input type="checkbox"/>
22. A sign plan indicating the location, size and specifications of all signs and advertising features, including cross sections			<input type="checkbox"/>
23. A lighting plan including exterior lighting locations with area of illumination illustrated by point values on a photometric plan, Kelvin rating, as well as the type of fixtures and shielding to be used	NO CHANGES PROPOSED		<input type="checkbox"/>
24. Proposed location of any open spaces, landscaping and buffering features such as buffer areas, vegetation belts, fences, walls, trash receptacle screening, and other screening features with cross sections shown			<input checked="" type="checkbox"/>
25. A Landscape plan and table identifying the species, size of landscape materials, and number proposed, compared to what is required by the Ordinance. All vegetation to be retained on site must also be indicated, as well as, its typical size by general location or range of sizes as appropriate			<input checked="" type="checkbox"/>
26. Statements regarding the project impacts on existing infrastructure (including traffic capacity, schools, and existing utilities, and on the natural environment on and adjacent to the site)	NO IMPACTS TO EXISTING		<input checked="" type="checkbox"/>
27. Changes or modifications required for any applicable regulatory agencies' approvals			<input checked="" type="checkbox"/>



ABBREVIATIONS:

R = RECORDED
M = MEASURED
C = CALCULATED
N = NORTH
E = EAST
S = SOUTH
W = WEST

T27N = TOWN 27 NORTH
R11W = RANGE 11 WEST
SQ. FT. = SQUARE FEET
NE = NORTHEAST
SE = SOUTHEAST
SW = SOUTHWEST
NW = NORTHWEST

AVE. = AVENUE
BLVD. = BOULEVARD
CT. = COURT
RD. = ROAD
ST. = STREET
PID = PARCEL AND OWNER IDENTIFICATION

PAVEMENT REPAIR AREAS		
AREA ID	DIMENSIONS (FT)	AREA (SFT)
A1	VARIABLES	1650
A2	8x32	256
A3	4x8	32
A4	10x10	100
A5	6x18	108
A6	10x10	100
A7	10x30	300
A8	10x10	100

EXISTING PARKING LANDSCAPE ISLAND AREAS		
AREA ID (NO.)	EA AREA (SFT)	TOTAL AREA (SFT)
L1 (3)	290	870
L2 (1)	385	385
L3 (1)	200	200
L4 (1)	185	185
L5 (1)	450	450
L6 (6)	170	1020
L7 (7)	235	235
L8 (1)	65	65
L9 (1)	170	170
L10 (1)	120	120
L11 (1)	420	420
L12 (1)	980	980
TOTAL PROVIDED		5100
REQUIRED: 459 SPCS X 10 SFT/EA		4590

PROPERTY DESCRIPTION:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE TOWNSHIP OF GARFIELD, GRAND TRAVERSE COUNTY, STATE OF MICHIGAN, AND IS DESCRIBED AS FOLLOWS:

LOTS 1, 3, 4 AND 5 OF THE RECORDED PLAT OF WEDGEWOOD, ALSO LOTS 42, 43 AND 44 OF THE RECORDED PLAT OF FIRST ADDITION TO WEDGEWOOD, ALSO PART OF THE SOUTHEAST QUARTER OF SECTION 14, ALL IN TOWN 27 NORTH, RANGE 11 WEST, GARFIELD TOWNSHIP, GRAND TRAVERSE COUNTY, MICHIGAN, MORE FULLY DESCRIBED AS: BEGINNING AT THE SOUTHEAST CORNER OF SAID LOT 1; THENCE SOUTH 89°52'23" WEST (PREVIOUSLY RECORDED AS WEST), 100.00 FEET ALONG THE SOUTH LINE OF SAID LOT 1, ALSO BEGIN THE NORTH RIGHT-OF-WAY LINE OF SOUTH AIRPORT ROAD; THENCE NORTH 0°29'07" WEST, (PREVIOUSLY RECORDED AS NORTH 0°31'00" EAST) 200.00 FEET, ALONG THE WEST LINE OF SAID LOT 1; THENCE NORTH 89°59'37" WEST (PREVIOUSLY RECORDED AS WEST) 94.70 FEET ALONG THE SOUTH LINE OF SAID LOT 3; THENCE NORTH 0°20'57" WEST (PREVIOUSLY RECORDED AS NORTH 0°37' EAST) 300.00 FEET, ALONG THE WEST LINE OF SAID LOTS 3, 4 AND 5; THENCE NORTH 0°25'27" WEST (PREVIOUSLY RECORDED AS NORTH 0°21' WEST) 279.82 FEET, ALONG THE WEST LINE OF SAID LOTS 42, 43 AND 44; THENCE SOUTH 89°59'07" EAST (PREVIOUSLY RECORDED AS EAST) 193.92 FEET (PREVIOUSLY RECORDED AS 193.74 FEET), ALONG THE LOT LINE COMMON TO LOTS 41 AND 42 OF SAID FIRST ADDITION TO WEDGEWOOD; THENCE NORTH 0°27'57" WEST (PREVIOUSLY RECORDED AS NORTH 0°24'30" WEST) 11.67 FEET ALONG THE EAST LINE OF LOT 41 OF SAID FIRST ADDITION TO WEDGEWOOD; THENCE NORTH 44°59'13" EAST, 152.60 FEET; THENCE SOUTH 45°00'47" EAST, 224.57 FEET; THENCE NORTH 44°38'18" EAST, 3.12 FEET; THENCE SOUTH 45°21'42" EAST, 114.01 FEET ALONG THE FACE OF AN EXISTING WALL EXTENDED; THENCE NORTH 44°44'47" EAST 0.66 FEET, ALONG THE CENTERLINE OF AN EXISTING WALL; THENCE SOUTH 45°06'27" EAST, 68.54 FEET ALONG THE CENTERLINE OF AN EXISTING PARTY WALL; THENCE SOUTH 45°03'11" WEST, 36.25 FEET ALONG THE CENTERLINE OF AN EXISTING PARTY WALL; THENCE SOUTH 45°19'16" EAST, 69.07 FEET ALONG THE CENTERLINE OF AN EXISTING PARTY WALL; THENCE SOUTH 89°58'03" WEST, 67.78 FEET, ALONG THE SOUTHEASTLY FACE OF AN EXISTING BLOCK WALL; THENCE SOUTH 0°05'47" EAST, 78.00 FEET, ALONG THE CENTERLINE OF AN EXISTING WALL; THENCE SOUTH 89°54'13" WEST, 187.33 FEET, PERPENDICULAR TO THE AFOREMENTIONED WALL CENTERLINE; THENCE SOUTH 0°09'37" EAST, 343.15 FEET; THENCE SOUTH 89°52'23" WEST, 60.33 FEET, ALONG THE NORTH RIGHT-OF-WAY LINE OF SOUTH AIRPORT ROAD; THENCE SOUTH 0°27'57" EAST (PREVIOUSLY RECORDED AS SOUTH 0°31' WEST) 17.00 FEET, ALONG THE EAST LINE OF SAID LOT 1, TO THE POINT OF BEGINNING.

EXCEPTING FROM THE ABOVE DESCRIBED PARCEL: THE WEST 88.83 FEET OF LOT 1, WEDGEWOOD, AS RECORDED IN LIBER 5 OF PLATS, PAGE 45, ALSO INCLUDING THE FOLLOWING PARCELS: PART OF THE SOUTHEAST 1/4 OF SECTION 14, TOWN 27 NORTH, RANGE 11 WEST, MORE FULLY DESCRIBED AS: COMMENCING AT THE SOUTHEAST CORNER OF LOT 1 OF THE RECORDED PLAT OF WEDGEWOOD; THENCE SOUTH 89°52'23" WEST, 100.00 FEET, PREVIOUSLY RECORDED AS WEST, ALONG THE SOUTH LINE OF SAID LOT 1, ALSO BEING THE NORTH RIGHT-OF-WAY LINE OF SOUTH AIRPORT ROAD; THENCE NORTH 0°29'07" WEST, 200.00 FEET, PREVIOUSLY RECORDED AS NORTH 0°31'00" EAST, ALONG THE WEST LINE OF SAID LOT 1; THENCE NORTH 89°59'37" WEST, 94.70 FEET, PREVIOUSLY RECORDED AS WEST, ALONG THE SOUTH LINE OF LOT 3, OF SAID PLAT OF WEDGEWOOD; THENCE NORTH 0°20'57" WEST, 300.00 FEET, PREVIOUSLY RECORDED AS NORTH 0°37' EAST, ALONG THE WEST LINE OF LOTS 3, 4, AND 5, OF SAID RECORDED PLAT OF WEDGEWOOD; THENCE NORTH 0°25'27" WEST, 279.82 FEET, ALONG THE WEST LINE OF SAID LOTS 42, 43 AND 44 OF THE RECORDED PLAT OF FIRST ADDITION TO WEDGEWOOD; THENCE SOUTH 89°59'07" EAST, 193.92 FEET, PREVIOUSLY RECORDED AS EAST, 193.74 FEET, ALONG THE LOT LINE COMMON TO LOTS 41 AND 42 OF SAID FIRST ADDITION TO WEDGEWOOD; THENCE NORTH 0°27'57" WEST, 11.67 FEET, PREVIOUSLY RECORDED AS NORTH 0°24'30" WEST, ALONG THE EAST LINE OF LOT 41 OF SAID FIRST ADDITION TO WEDGEWOOD; THENCE NORTH 44°59'13" EAST, 152.60 FEET; THENCE SOUTH 45°00'47" EAST, 224.57 FEET; THENCE NORTH 44°38'18" EAST, 3.12 FEET; THENCE SOUTH 45°21'42" EAST, 114.01 FEET, ALONG THE FACE OF AN EXISTING WALL EXTENDED; THENCE NORTH 44°44'47" EAST, 0.66 FEET, ALONG THE CENTERLINE OF AN EXISTING WALL; THENCE SOUTH 45°06'27" EAST, 68.54 FEET, ALONG THE CENTERLINE OF AN EXISTING PARTY WALL; THENCE SOUTH 45°03'11" WEST, 36.25 FEET, ALONG THE CENTERLINE OF AN EXISTING PARTY WALL; THENCE SOUTH 45°19'16" EAST, 69.07 FEET, ALONG THE CENTERLINE OF AN EXISTING PARTY WALL; THENCE SOUTH 89°58'03" WEST, 67.78 FEET, ALONG THE SOUTHEASTLY FACE OF A WALL, TO POINT "A"; THENCE NORTH 45°03'11" WEST, 69.07 FEET, ALONG THE CENTERLINE OF A WALL; THENCE NORTH 45°03'11" EAST, 36.25 FEET, ALONG THE CENTERLINE OF A WALL, TO THE POINT OF BEGINNING.

Line Table:

LINE 1: R&M=S45°03'11"W 36.25'
LINE 2: R&M=S45°19'16"E 69.07'
LINE 3: R&M=S45°06'27"E 69.04'
LINE 4: R&M=S45°00'37"W 35.99'
LINE 5: R&M=N45°19'16"W 69.07'
LINE 6: R&M=N45°03'11"E 36.25'

ALSO, COMMENCING AT SAID POINT "A"; THENCE SOUTH 45°00'37" WEST, 53.13 FEET, ALONG THE SOUTHEASTLY FACE OF A WALL, TO THE POINT OF BEGINNING; THENCE SOUTH 45°03'55" EAST, 185.33 FEET, ALONG THE CENTERLINE OF A WALL AND SAID CENTERLINE EXTENDED; THENCE NORTH 45°01'47" EAST, 124.61 FEET; THENCE SOUTH 45°02'54" EAST, 267.12 FEET; THENCE SOUTH 00°05'40" EAST, 33.54 FEET; THENCE SOUTH 89°54'20" WEST, 358.35 FEET; THENCE NORTH 00°06'52" WEST, 41.39 FEET; THENCE NORTH 45°02'05" WEST, 64.09 FEET; THENCE SOUTH 89°48'57" WEST, 29.67 FEET, ALONG THE SOUTH FACE OF A WALL; THENCE NORTH 00°11'03" WEST, 0.58 FEET, ALONG THE CENTERLINE OF A WALL; THENCE SOUTH 89°48'57" WEST, 71.16 FEET, ALONG THE CENTERLINE OF A WALL; THENCE NORTH 00°00'44" WEST, 37.54 FEET, ALONG THE CENTERLINE OF A WALL; THENCE SOUTH 89°53'06" WEST, 35.74 FEET, ALONG THE CENTERLINE OF A WALL; THENCE NORTH 00°05'47" WEST, 77.00 FEET, ALONG THE CENTERLINE OF A WALL; THENCE NORTH 89°58'03" EAST, 67.78 FEET, ALONG THE SOUTH FACE OF A WALL; THENCE NORTH 45°00'37" EAST, 90.86 FEET, ALONG THE SOUTHEASTLY FACE OF A WALL, TO THE POINT OF BEGINNING.

TOGETHER WITH NON-EXCLUSIVE EASEMENTS AS SET FORTH IN RECIPROCAL EASEMENT AGREEMENT RECORDED JUNE 7, 1983 AS LIBER 572, PAGE 65, AGREEMENT EVIDENCING OPENING DATE RECORDED IN LIBER 626, PAGE 791 AND AMENDMENT TO RECIPROCAL EASEMENT AGREEMENT RECORDED IN LIBER 745, PAGE 151 AND SECOND AMENDMENT TO RECIPROCAL EASEMENT AGREEMENT RECORDED IN LIBER 1255, PAGE 517 AND THIRD AMENDMENT TO RECIPROCAL EASEMENT AGREEMENT RECORDED IN LIBER 1562, PAGE 567.

PARCEL ID: 28-05-014-049-10
STREET ADDRESS: 1212 W. SOUTH AIRPORT RD, TRAVERSE CITY

PROJECT APPLICANT:

TRAVERSE ENTERTAINMENT GROUP
5250 E. TRAVERSE HWY
TRAVERSE CITY, MI 49684

SITE ADDRESS:

1212 W. SOUTH AIRPORT ROAD
TRAVERSE CITY, MI 49686

PROJECT DESCRIPTION:

RECREATIONAL/INDOOR ENTERTAINMENT USES INCLUDING:

- INDOOR ELECTRIC CART RACING
- RETAIL RACING APPAREL
- RESTAURANT STYLE LOUNGE
- ARCADE

PARKING CALCULATIONS:

RECREATION USE, PARKING BASED ON MAXIMUM OCCUPANCY LOAD:
50 SFT/OCCUPANT (TO BE VERIFIED W/ ARCHITECTURAL)
BUILDING AREA: 96,259 SFT
MAX OCCUPANCY: 96,259 SFT/50 SFT/OCCUPANT = 1,925 OCCUPANTS

MIN PARKING: 1,925/6 = 321 SPACES
MAX PARKING: 1,925/3 = 642 SPACES
TOTAL PARKING PROVIDED = 459 SPACES
ADA SPACES PROVIDED = 19 SPACES

REQUIRED BICYCLE PARKING: 2 PER 25 VEHICLE
MIN. BICYCLE PARKING: 321/25 = 13 DOUBLE RACKS

LANDSCAPING BUFFER TABLE:

PRIMARY LAND USE TYPE	ADJACENT (EXISTING) LAND USE TYPE	LANDSCAPE BUFFER TYPE	BUFFER "C" DESCRIPTION	MATERIAL TYPE	RATIO OF MATERIALS REQUIRED	FRONTAGE (LF)	NUMBER REQUIRED
ACTIVE RECREATION	WOODWARD DR (LOCAL ROAD)	BUFFER "C"	PLANTING REQUIREMENT: GROUND COVER AS SPECIFIED IN SECTION 5.3.0, PLUS 3 LARGE TREES, 3 MEDIUM OR SMALL TREES, 1 EVERGREEN OR CONIFEROUS TREE PER 100 LINEAR FEET OF GREENSPACE AREA. PLUS, MINIMUM 10' WIDE BUFFER.	LARGE TREES	3/100 LF OF FRONTAGE	580	18
				MEDIUM TREES	3/100 LF OF FRONTAGE	580	18
				CONIFEROUS OR EVERGREEN	1/100 LF OF FRONTAGE	580	6

REPLACEMENT LANDSCAPING SCHEDULE

KEY	BOTANICAL NAME COMMON NAME	MIN. REQ'D SIZE
A.r.	<i>Acer rubrum</i> 'October Glory' 'October Glory' Red Maple	2.5-3" cal.B&B

SITE DATA TABLE:

PARCEL I.D.	ZONING DISTRICT	PROPOSED USE	APPROVAL MECHANISM	MINIMUM LOT AREA (ACRES)	MINIMUM LOT WIDTH	FRONT SETBACK	SIDE SETBACK	REAR SETBACK	MAX BUILDING HEIGHT
05-014-049-10	C-P - PLANNED SHOPPING	RECREATIONAL FACILITY	SITE PLAN REVIEW	15,000 SF	60'	30'	30'	30'	50'/4 STORES

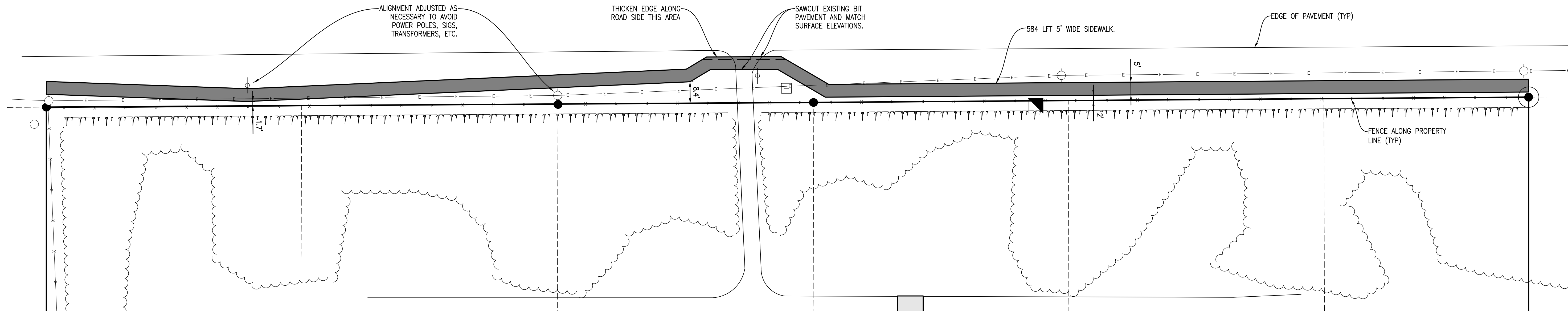
SITE PLAN NOTES:

- EXISTING SITE SURVEY REFLECTED AS PROVIDED BY TRAVERSE ENTERTAINMENT GROUP AND COMPLETED BY GEODETIC DESIGNS INC. DATED 3-9-2018.
- THIS PROJECT IS THE FOR THE RE-DEVELOPMENT OF THE FORMER SEARS STORE AT THE CHERRYLAND CENTER. THE PROPOSED USE IS FOR A NEW RECREATIONAL/INDOOR ENTERTAINMENT USE FOR AN INDOOR ELECTRIC CART RACING CENTER INCLUDING RETAIL AND LOUNGE SPACES.
- NO CHANGES TO DEVELOPED SITE AREA OR TOPOGRAPHY PROPOSED.
- NO ABOVE OR BELOW GROUND STORAGE FACILITIES FOR ANY CHEMICALS, SALTS, FLAMMABLE MATERIALS, OR HAZARDOUS MATERIALS IS REQUIRED OR PROPOSED.
- SNOW STORAGE AREA PROVIDED AT A RATE OF AT LEAST 10 SFT OF STORAGE PER 100 SFT OF PARKING AREA. PARKING AREA INCLUDES ±194,000 SFT.
REQUIRED SNOW STORAGE IS: 19,400 SFT.
SNOW STORAGE PROVIDED IS: 19,535 SFT.
SNOW STORAGE AREAS SHOWN IN PARKING AREAS ACCOUNTS FOR 71 SPACES
MINIMUM PARKING STILL MAINTAINED (459-71 = 388 SPACES > 321 MIN.)
- SIGNS SUBJECT TO SEPARATE REVIEW AND PERMITTING.
- PARKING SPACES, AISLES, AND TRAFFIC AND PARKING SIGNAGE RELATED TO THE PROJECT WILL BE RE-STRIPE AND REPLACED TO CURRENT ORDINANCE REQUIREMENTS.
- ANY EXISTING, NON-COMPLIANT LIGHTING, INCLUDING WALL PACK FIXTURES WILL BE REMOVED FROM THE SITE. NEW LIGHTING TO MEET ZONING ORDINANCE SECTION 517.
- ALL EXISTING LANDSCAPING INCLUDING PARKING ISLANDS AND AREAS ALONG BUILDING TO BE GENERALLY CLEANED UP AND IMPROVED AS NEEDED BY PRUNING, REPLACING DEAD TREES AND PLANTS, ADDING NEW TREES AS NOTED, AND REPLACING OR ADDING MULCH.
- NO CHANGES TO EXISTING WATER SUPPLY, SANITARY SEWER, STORM SEWER, GAS, ELECTRIC, OR COMMUNICATION UTILITIES ARE PROPOSED.
- EXISTING CATCH BASINS SUMPS AND STORM PIPING WITHIN SITE WILL BE CLEANED.

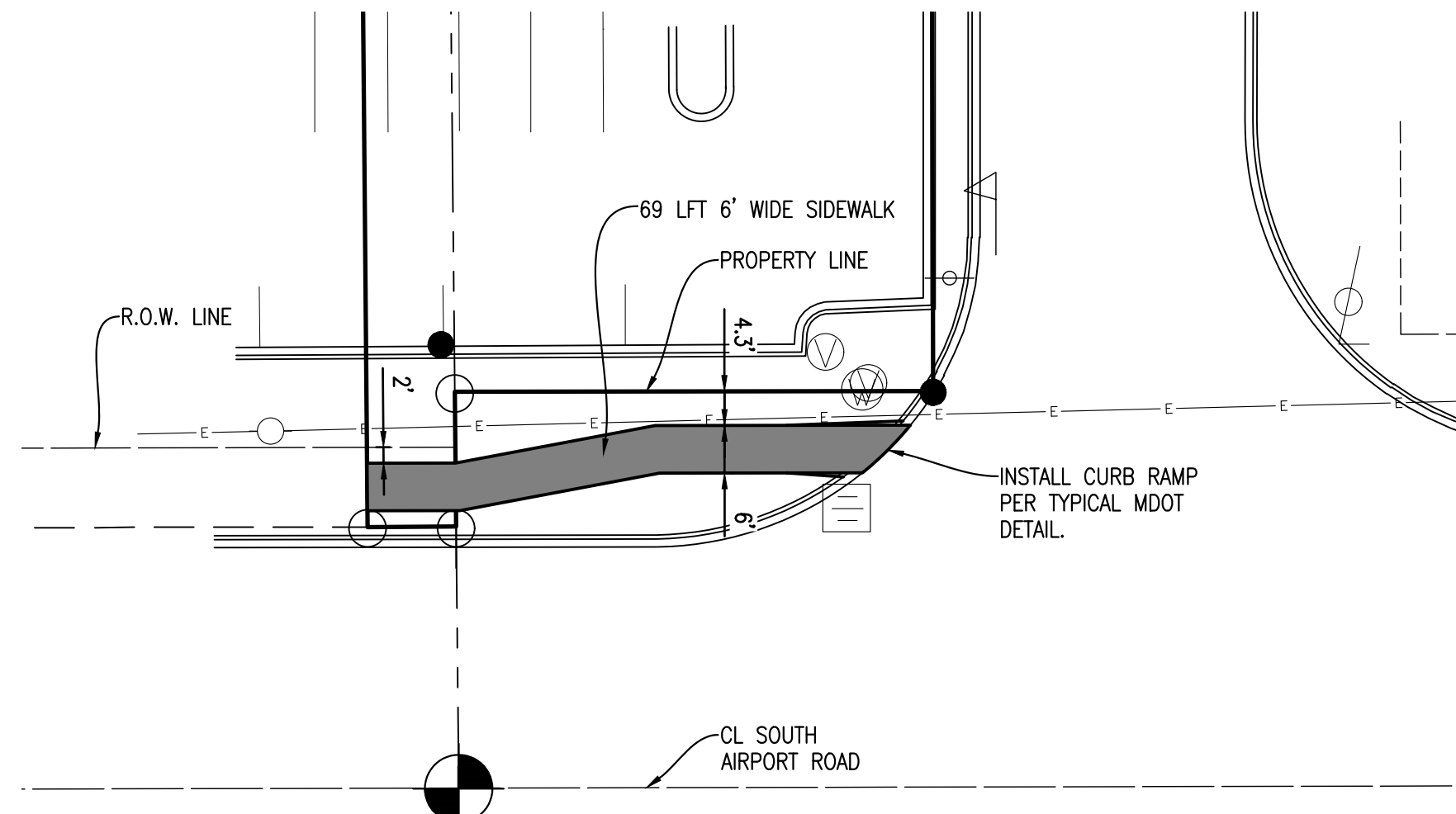
LEGEND OF SYMBOLS:

Power Pole	Flag Pole	Storm Manhole
Power Pole w/Light	Sign (As Noted)	Storm Catchbasin
Light Pole	Well Head	Deciduous Tree
Telephone Pole	Satellite Dish	Coniferous Tree
Guy Wire	Tower	Sanitary Manhole
Transformer	Water Valve	Sanitary Clean Out
Electric Manhole	Fire Hydrant	Gas Valve
Telephone Manhole	Water Manhole	Gas Manhole
Telephone Pedestal	Water Meter Pit	Gas Meter
Electric Meter	Water Meter	Gas Marker
Cable Box	Indicates Handicapped Parking	Section Corner
Air Conditioner Unit	Distance not to scale	Set 5/8" Bar & Cap
Easement Identifier		Found Corner Monument
		Monitoring Well

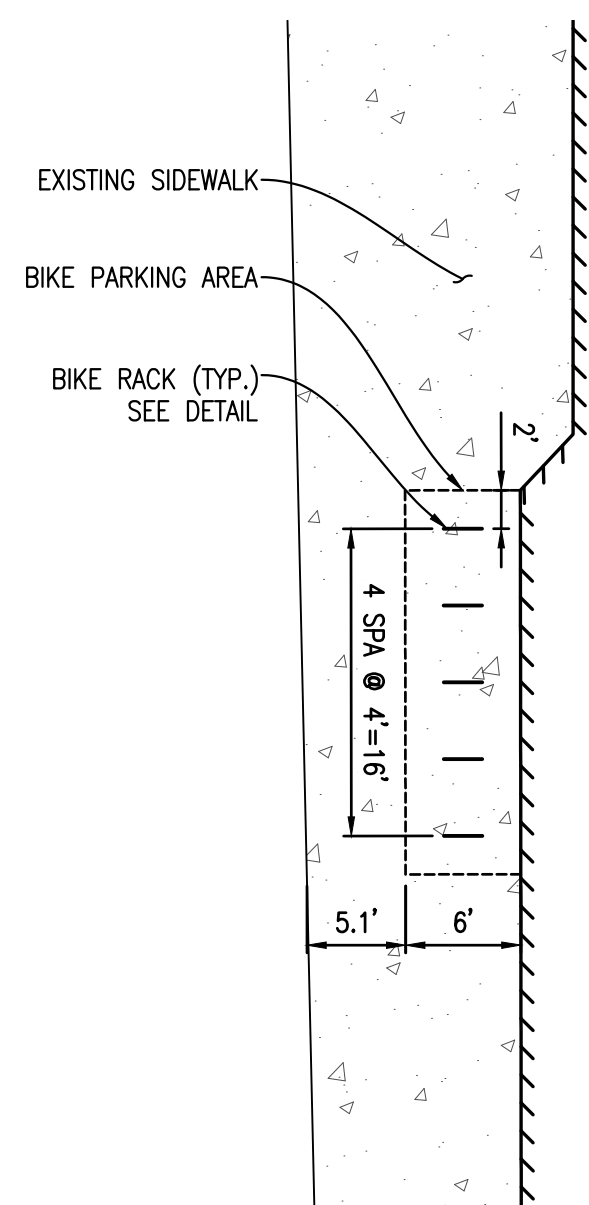
Revision	By	Date
1	12-2-2022	No.



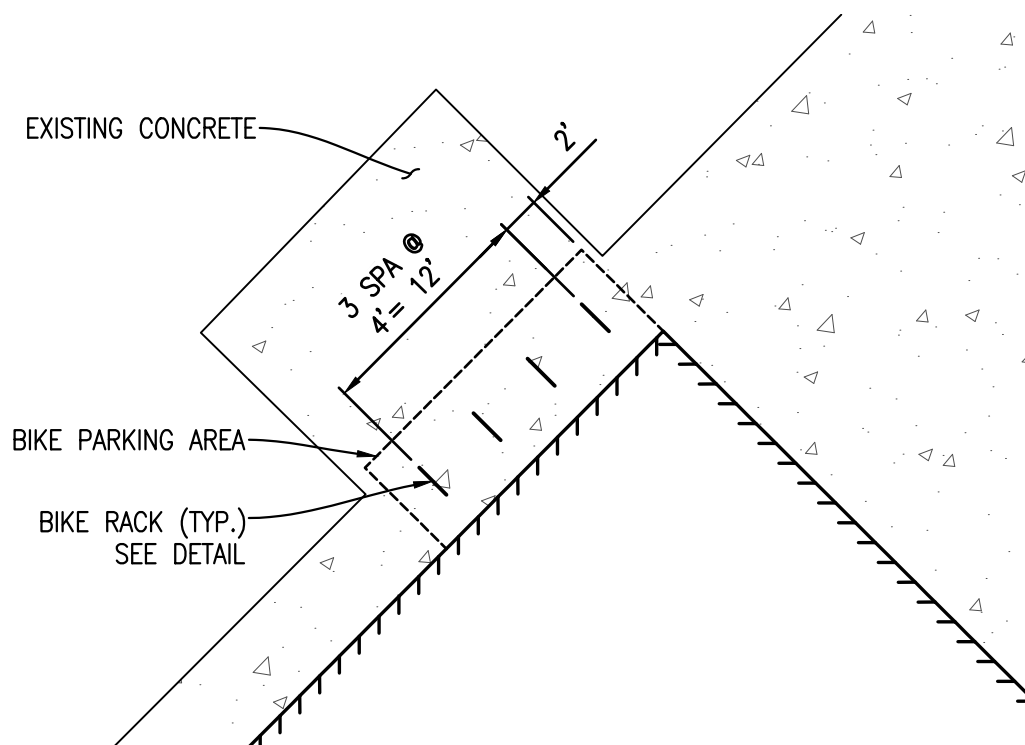
AREA ENLARGEMENT 1
WOODWARD DRIVE SIDEWALK PLAN
SCALE: 1" = 20'



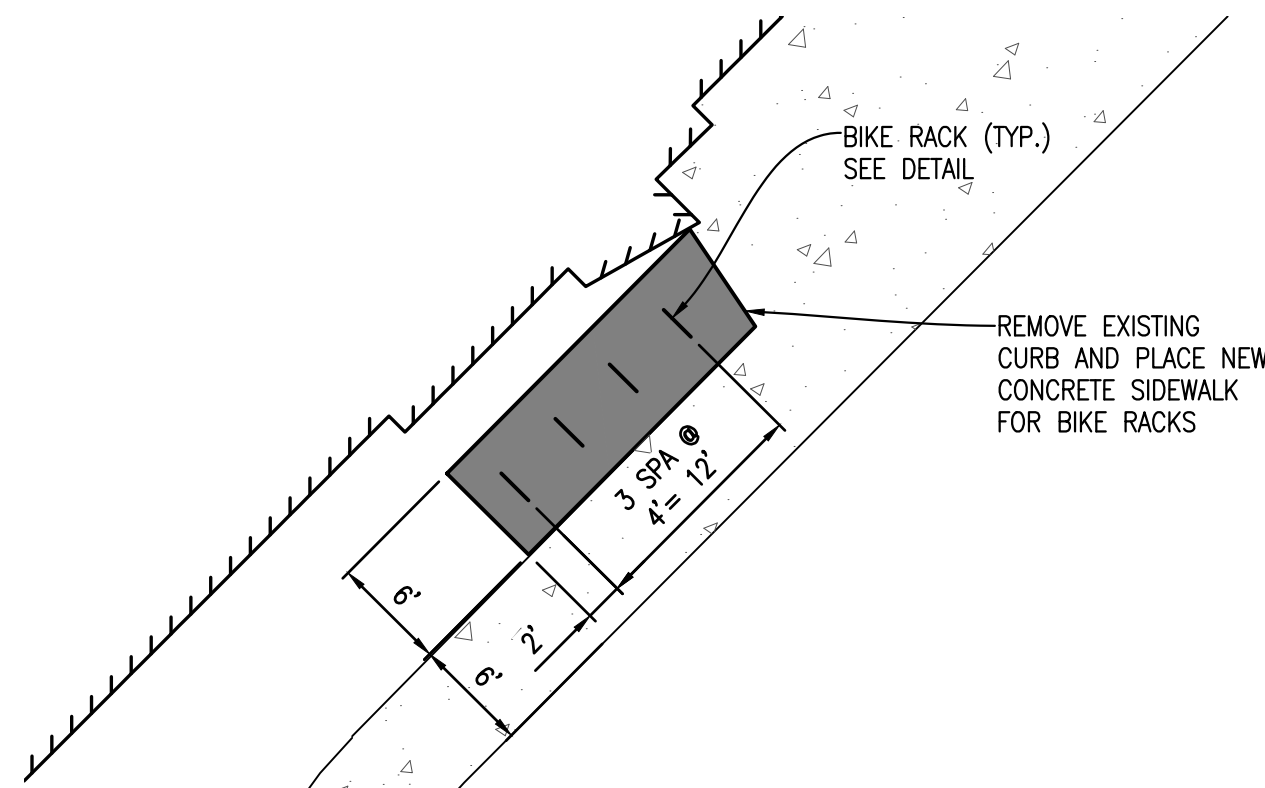
AREA ENLARGEMENT 2
SOUTH AIRPORT SIDEWALK PLAN
SCALE: 1" = 20'



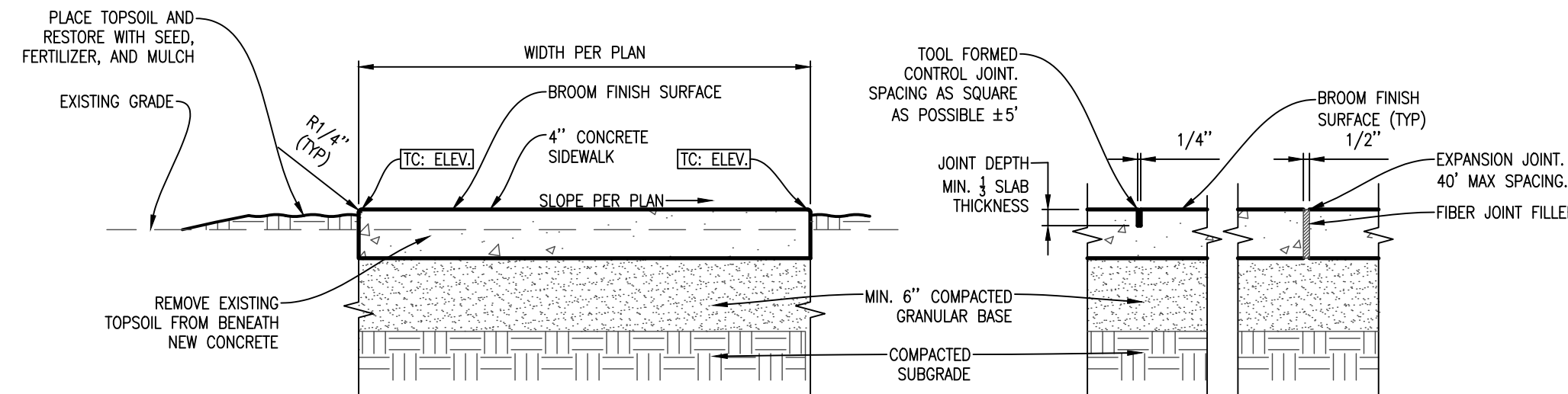
AREA ENLARGEMENT 3
BIKE RACK-1
SCALE: 1" = 10'



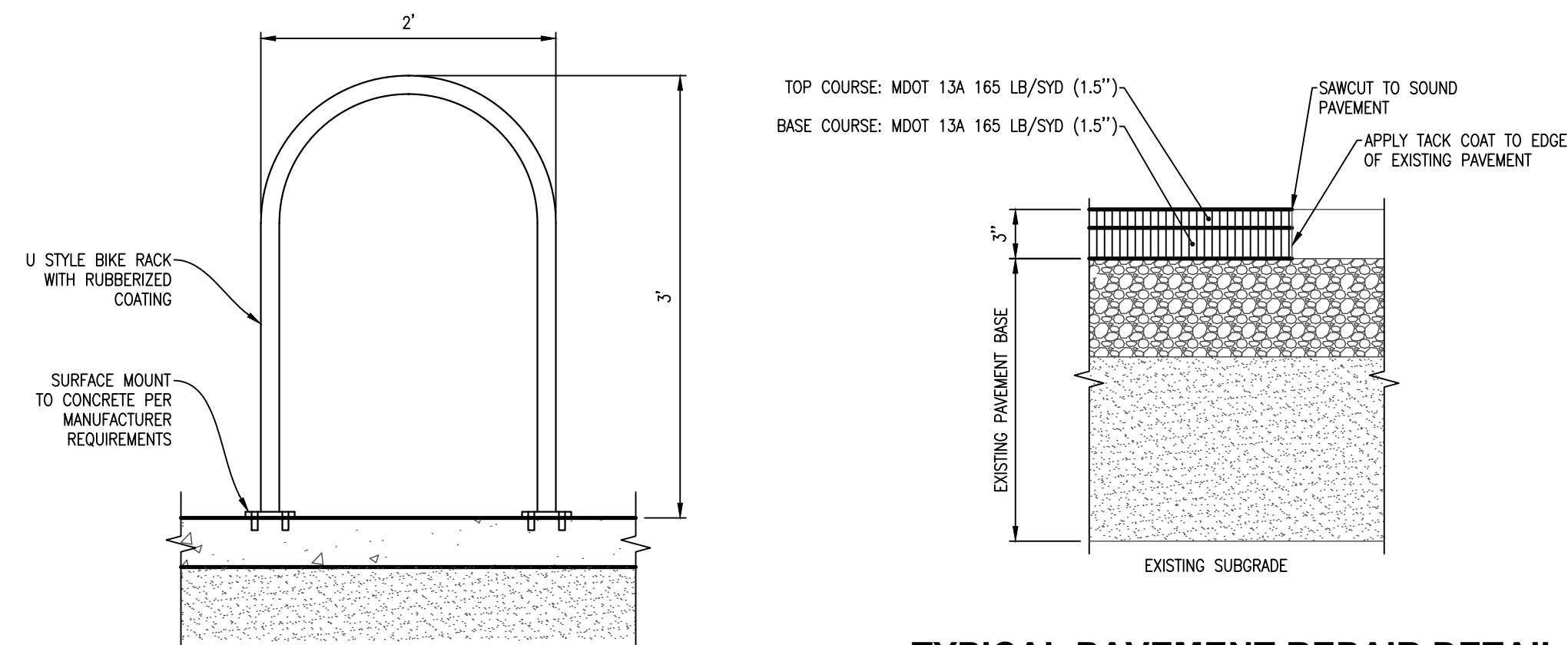
AREA ENLARGEMENT 4
BIKE RACK-2
SCALE: 1" = 10'



AREA ENLARGEMENT 5
BIKE RACK-3
SCALE: 1" = 10'

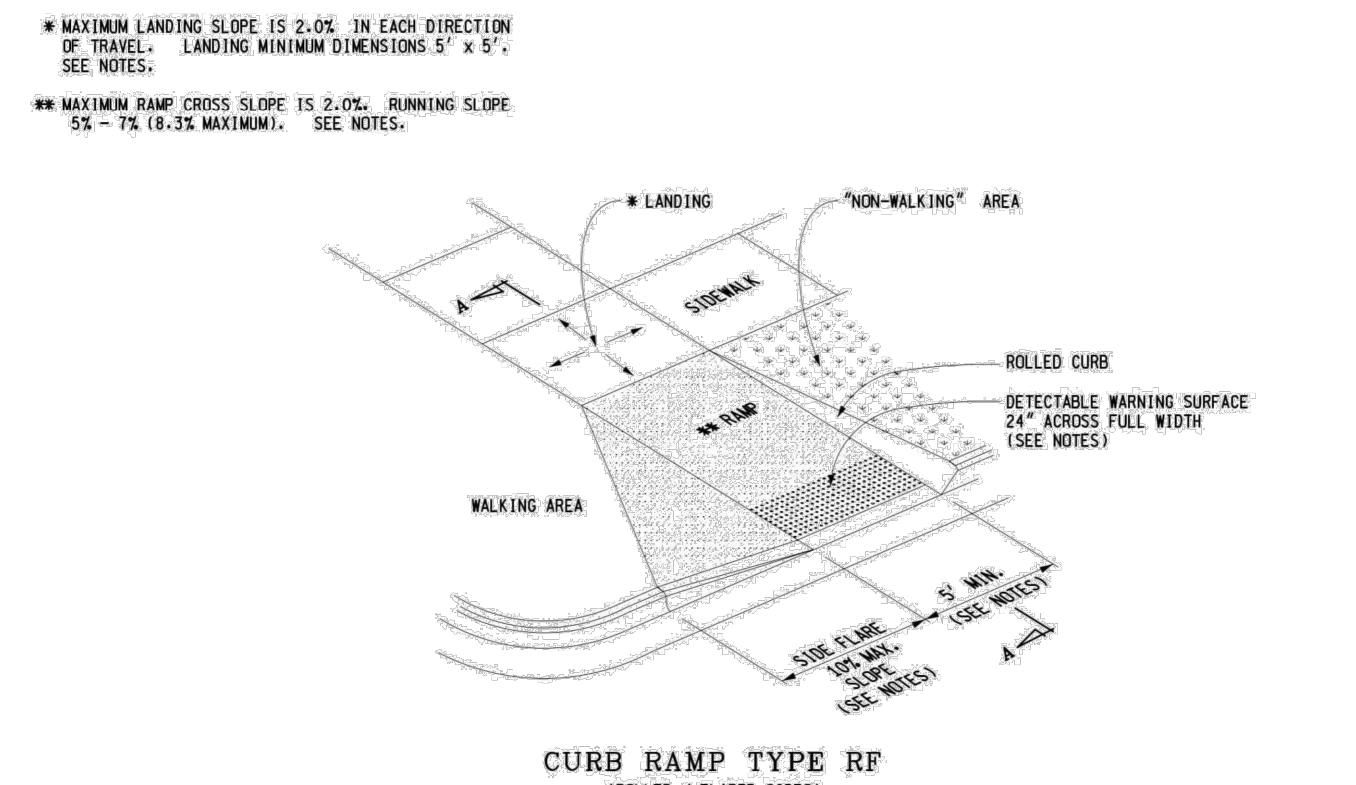


PERPENDICULAR SECTION
LONGITUDINAL SECTION
TYPICAL CONCRETE SIDEWALK DETAIL
NOT TO SCALE

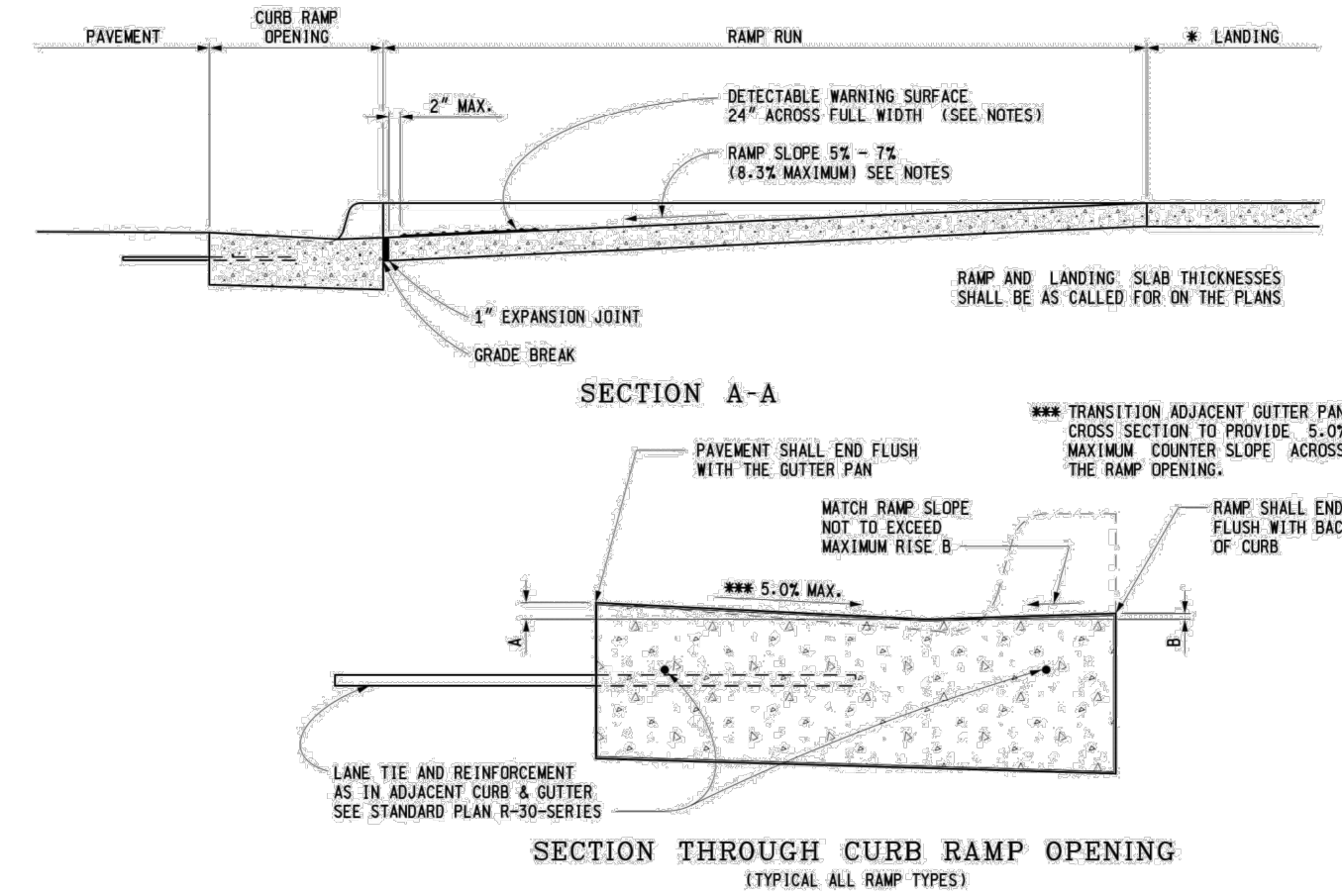


TYPICAL BIKE RACK DETAIL
NOT TO SCALE

TYPICAL PAVEMENT REPAIR DETAIL
NOT TO SCALE




CURB RAMP TYPE RF
(ROLLED / FLARED SIDES)



SECTION A-A
SECTION THROUGH CURB RAMP OPENING
(TYPICAL ALL RAMP TYPES)
NO SCALE

Revision	By	Date
1	RMV	12-2-2022

SITE PLAN ENLARGEMENTS & DETAILS
K1 SPEED INDOOR KART RACING CENTER
TRAVERSE ENTERTAINMENT GROUP

 Charter Township of Garfield Planning Department Report No. 2022-112			
Prepared:	December 7, 2022	Pages:	4
Meeting:	December 14, 2022 Planning Commission	Attachments:	<input checked="" type="checkbox"/>
Subject:	Traverse City Christian School Child Care at Church of the Living God Special Use Permit – Introduction		
File No.	SUP-2022-03	Parcel No.	05-026-014-10
Applicant:	Traverse City Christian School		
Agent:	Carly LaFreniere		
Owner:	Church of the Living God		

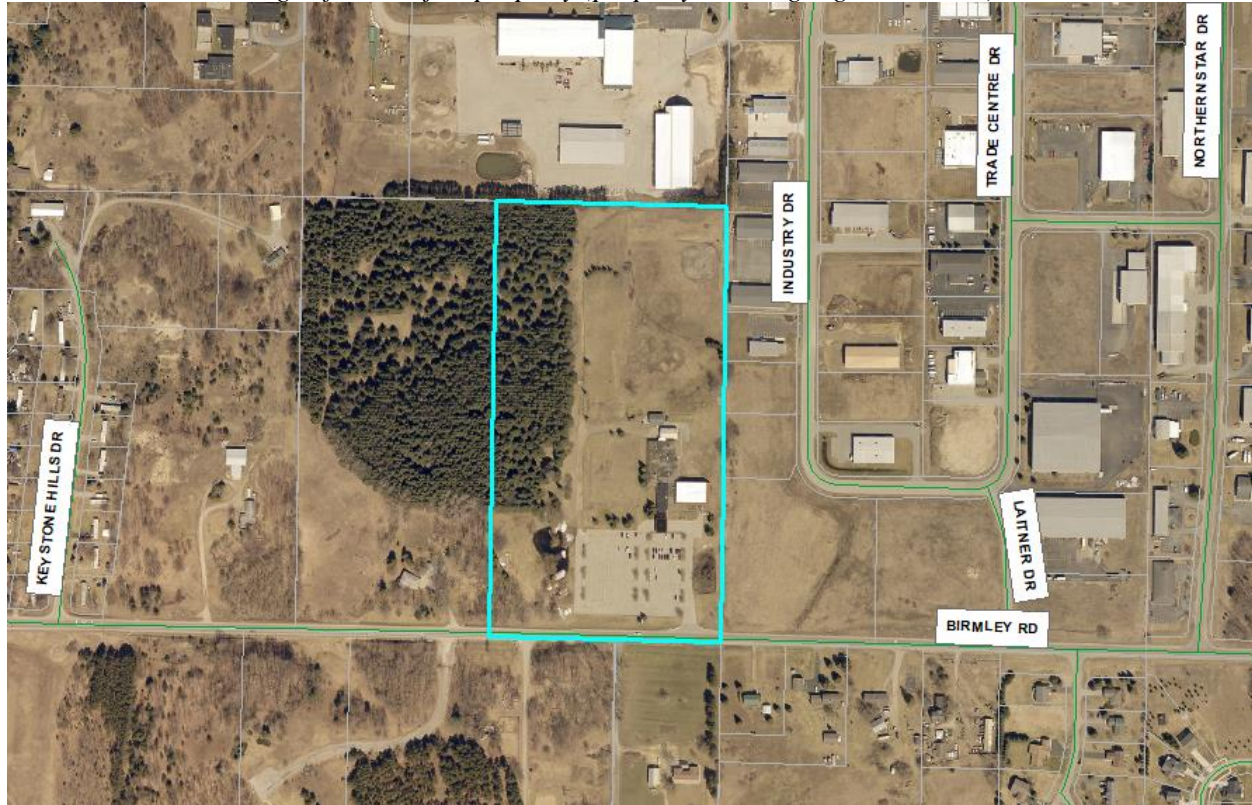
BRIEF OVERVIEW:

- Location: 1514 Birmley Road, north side of Birmley Road
- Parcel area: 21.84 acres
- Existing land use: Church
- Existing zoning: A – Agricultural District

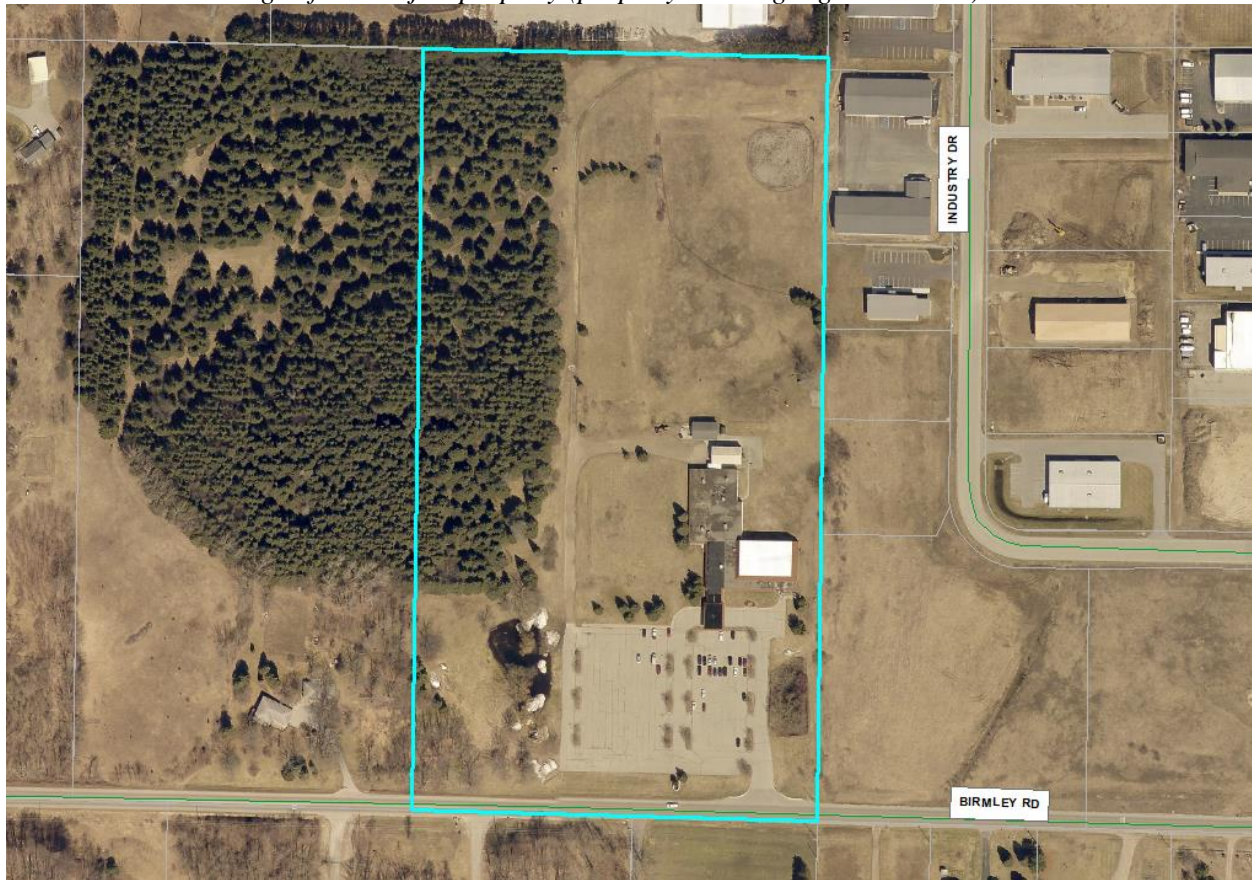
PURPOSE OF APPLICATION:

This application by Traverse City Christian School requests the use of an existing church building at 1514 Birmley Road for a child care center as an additional use. Child care centers are permitted via Special Use Permit in the A-Agricultural District. No new construction is planned.

Zoomed-out aerial image of the subject property (property lines highlighted in blue):



Zoomed-in aerial image of the subject property (property lines highlighted in blue):



SITE DESIGN AND ZONING COMPLIANCE OVERVIEW:

In approving any special use permit pursuant to Section 423, the Planning Commission may impose such reasonable standards, conditions, or requirements, in addition to or that supersede any standard specified in this ordinance, as it may deem necessary to protect the public interest and welfare. Such additional standards may include, but need not be limited to:

- a) Financing;
- b) Availability of adequate public facilities or services;
- c) Dedication of land;
- d) Reservation of land;
- e) Creation of special assessment districts;
- f) Creation of restrictive covenants or easements;
- g) Special setbacks;
- h) Yard requirements;
- i) Increased screening or landscaping requirements;
- j) Area requirements;
- k) Development phasing; or
- l) Standards pertaining to traffic, circulation, noise, lighting, hours of operation, protection of environmentally sensitive areas, and similar characteristics.

Staff offers the following comments regarding site design and compliance with the Zoning Ordinance:

Proposed Use

The proposed child care center will be an additional use inside an existing church building. According to the application, the child care center “would be open during business hours Monday-Friday year-round with several scheduled breaks consistent with the school year calendar. We hope to have up to 100 children and 15+ staff members.”

The application also states they “are proposing no changes to the building or grounds other than cosmetic and/or equipment upgrades and minor interior renovations.” Because there is no building construction, no building addition, nor similar type of construction proposed, Staff has waived the requirements for a full site development plan. The playground area will need to be enclosed by a privacy fence in accordance with Section 720.A(2) of the Zoning Ordinance.

Parking and Floor Area

The parking requirement for child care centers is one (1) parking space for each three hundred (300) square feet of floor space. The floor area proposed to be used for the child care center will include 4 small rooms totaling 1,758 square feet, 6 small rooms designated for future use totaling 3,600 square feet, and 1 large room totaling 2,064 square feet. This results in 7,422 square feet of the building for child care use which requires 25 parking spaces.

According to the application, there are 238 spaces in the existing church parking lot. If the peak times are different for the child care center and church, it is anticipated the existing parking lot can handle all parking needs for both uses. Arrival and departure times will also be staggered.

Signage

Signs require sign permit review and are not approved under the site plan review process. The applicants stated they understand signs are subject to sign permit review, and also indicated that the existing sign will most likely be replaced.

Other Reviews

Other reviews may be necessary, including Metro Fire.

Child Care Center

Section 720 of the Zoning Ordinance outlines specific regulations and conditions for child care centers:

Facility shall maintain all valid state and local licenses.

- The applicants stated that: “The facility will maintain all valid state and local licenses in accordance with Section 720.A.(1) of the Zoning Ordinance.”

All outdoor areas used for the care and supervision of patrons shall have appropriate fencing for the safety of the children in the group day-care home; consisting of a minimum 6-foot high privacy fence along the area adjoining another residence, and a minimum 4- foot high fence in the remaining area devoted to the day-care area.

- The applicants stated that: “A fence will consist of a 4 ft high, minimally 1,200 square foot privacy fence. Child Care Licensing will determine if the playground needs to be larger than the proposed 1,200 square feet.” If the playground is larger than the proposed 1,200 square feet, the fence will need to be enlarged to match.
- The applicants also indicated that a playground is in an area that does not adjoin another residence. There is an extensive tree buffer to the residence to the west.

Hours of operation shall not exceed sixteen (16) hours during a 24-hour period. The Planning Commission shall not prohibit evening operations completely but may establish limitations on hours of operation and/or activities between the hours of 10PM and 6AM.

- The application states the child care “center would be open during business hours Monday-Friday year round with several scheduled breaks consistent with the school year calendar.

ACTION REQUESTED:

The purpose of the introductory meeting is to accept the application and to identify any concerns that should be addressed prior to holding a public hearing on the application. As such, following an opportunity for applicant presentation and Commissioner discussion, the following motion is offered for consideration:

MOTION THAT application SUP-2022-03, submitted by Traverse City Christian School for a Special Use Permit for a child care center at Parcel 05-026-014-10, BE ACCEPTED, and BE SCHEDULED for a public hearing for the regular Planning Commission meeting on January 11, 2023, subject to the following additional information being provided by the applicant:

1. The site plan is subject to review by others, including Metro Fire.

Any additional information the Planning Commission deems necessary should be added to this motion.

Attachments:

1. Special Use Permit Application dated November 2, 2022
2. Approval Criteria and Impact Assessment dated November 3, 2022
3. Land Details dated November 1, 2022
4. Building Use Plan
5. Completeness Review Response dated November 21, 2022



Charter Township of Garfield

Grand Traverse County

3848 VETERANS DRIVE
TRAVERSE CITY, MICHIGAN 49684
PH: (231) 941-1620 • FAX: (231) 941-1588

SPECIAL USE PERMIT (SUP) APPLICATION

ASSISTANCE

This application must be completed in full. An incomplete or improperly prepared application will not be accepted and will result in processing delays. Before submitting an application, it is recommended that you contact the Planning and/or Zoning Department to arrange an appointment to discuss your proposed application. Time is often saved by these preliminary discussions. For additional information or assistance in completing this development application, please contact the Planning Department at (231) 941-1620.

ACTION REQUESTED

- ☒ New Special Use Permit
☐ Major Amendment
☐ Minor Amendment
☐ Administrative Amendment

PROJECT / DEVELOPMENT NAME

Traverse City Christian School Early Learning Center

APPLICANT INFORMATION

Name:

Traverse City Christian School

Address:

753 Emerson Rd. Traverse City MI 49696

Phone Number:

231-929-1747

Email:

info@tcchristian.org

AGENT INFORMATION

Name:

Carly LaFreniere

Address:

844 E 8th St. Traverse City, MI 49686

Phone Number:

231-360-8964

Email:

clafreniere@tcchristian.org

OWNER INFORMATION

Name:

Church Of the Living God

Address:

1514 Birmley Rd. Traverse City MI 49686

Phone Number:

231-947-7645

Email:

info@clgonline.org

CONTACT PERSON

Please select one person to be contact person for all correspondence and questions:

Applicant:

Agent:

Owner:

Traverse City Christian School
Carly LaFreniere
Church of the Living God

PROPERTY INFORMATION

Property Address:

Property Identification Number:

Legal Description:

Zoning District:

Master Plan Future Land Use Designation:

Area of Property (acres or square feet):

1514 Birmley Road Traverse City, MI 49686
28-05-026-014-10
E715' SE 1/4 NW 1/4 SEC 26 T27N R11 WEXCRDOW
AGRI
21.302 21.302 Acres

Existing Use(s):

Proposed Use(s):

Church
Church and Child Care Center / Early Learning Center

PROJECT TIMELINE

Estimated Start Date:

Estimated Completion Date:

12/1/22
12/1/23

REQUIRED SUBMITTAL ITEMS

A complete application for a Special Use Permit consists of the following:

Application Form:

- ☒ One original signed application
- ☒ One digital copy of the application (PDF only)

Application Fee:

Fees are established by resolution of the Garfield Township Board and are set out in the current Fee Schedule as listed on the Planning Department page of the Township website (<http://www.garfield-twp.com>). Please make check out to Charter Township of Garfield.

- ☒ Fee

Escrow Fee:

Additional fees may be required if a review by independent professional help is deemed necessary by the Township. If required, such additional fees must be placed in escrow by the applicant in accordance with the escrow policies of the Township and prior to any further processing of this application. Any unused escrow funds shall be returned to the applicant. Please complete an Escrow and Review (ER) Application form.

Site Development Plan:

- ☒ Ten complete stapled 11"x17" paper sets (Administrative Amendments require one copy)
- ☒ Two complete bound 24"x36" paper sets
- ☒ One digital set (PDF only)

Written Information:

- ☒ Ten paper copies of the Approval Criteria (Administrative Amendments require one copy)
- ☐ One digital copy of the Approval Criteria (PDF only)
- ☐ Ten paper copies of the Impact Assessment (Administrative Amendments require one copy)
- ☐ One digital copy of the Impact Assessment (PDF only)

Digital items to be delivered via email or USB flash drive

SUBMITTAL DEADLINE

Submittal deadlines are listed on the Planning Department page of the Township website (<http://www.garfield-twp.com>). Please note that the listed dates are the deadlines after which submittals will not be considered for the indicated meeting. Any errors or missing information on an application submitted at the deadline will result in a delay in the processing of the application. An earlier submittal is encouraged to avoid possible delays.

WAIVERS

Submittal Waiver:

At the discretion of the Director of Planning, a Site Development Plan may be waived in any of the following cases when it is determined that the submission would serve no useful purpose:

1. The erection or enlargement of an accessory structure;
2. The enlargement of a principal building by less than 20 percent of its existing gross floor area, provided such enlargement will not result in a requirement for additional off-street parking;
3. A change in principal use where such change would not result in an increase in impervious surface area, additional off-street parking, site access, other external site characteristics or a violation of this ordinance.

Data Waiver:

The Director of Planning may waive a particular element of information or data otherwise required for a Site Development Plan upon a finding that the information or data is not necessary to determine compliance with this ordinance or that such information or data would not bear on the decision of the approval authority.

SITE PLAN

Check that your site plan includes all required elements for a Site Development Plan (SDP). Please use the Required Site Plan Elements Checklist below.

APPROVAL CRITERIA

Indicate, on a separate sheet of paper, how the proposed special use will comply with, meet, or facilitate each of the following Approval Criteria from § 423.E of the Zoning Ordinance. The Planning Commission must determine that each of these criteria are satisfied in order to grant approval of a Special Use Permit. A special use is permitted only if the applicant demonstrates that: special use is permitted only if the applicant demonstrates that:

- ☒ The proposed use will be consistent with the purpose and intent of the master plan and this ordinance, including all regulations of the applicable zoning district;

- ☒ The proposed use will be designed, constructed, operated and maintained so as to be compatible, harmonious and appropriate with the existing or planned character and uses of the neighborhood, adjacent properties and the natural environment;
- ☒ The proposed use will not be detrimental, hazardous or disturbing to existing or future adjacent uses or to the public welfare by reason of excessive traffic, noise, dust, gas, smoke, vibration, odor, glare, visual clutter, electrical or electromagnetic interference;
- ☒ Potential adverse effects arising from the proposed use on the neighborhood and adjacent properties will be minimized through the provision of adequate parking, the placement of buildings, structures and entrances, as well as the provision and location of screening, fencing, landscaping, buffers or setbacks;
- ☒ The proposed use will retain as many natural features of the property as practicable, particularly where the natural features assist in preserving the general character of the neighborhood;
- ☒ Adequate public and private infrastructure and services such as streets, water and sewage facilities, drainage structures, police and fire protection, and schools, already exist or will be provided without excessive additional requirements at public cost;
- ☒ The establishment, maintenance, or operation of the proposed use shall not be detrimental to or endanger the public health, safety, morals, comfort, or general welfare;
- ☒ The public interest and welfare supporting the proposed use shall be sufficient to outweigh individual interests that are adversely affected by the establishment of the proposed use;
- ☒ Adequate measures shall be taken to provide ingress and egress so designed as to minimize traffic hazards and to minimize traffic congestion on the public roads;
- ☒ Adequate measures shall be taken to provide vehicular and pedestrian traffic within the site, and in relation to streets and sidewalks servicing the site in a safe and convenient manner; and
- ☒ The proposed use shall not impede the orderly development and improvement of surrounding property for uses permitted within the zoning district.

IMPACT ASSESSMENT

A written impact statement to include the following information:

- ☒ A written illustrative description of the environmental characteristics of the site prior to development, i.e., topography, soils, vegetative cover, drainage, streams, creeks or ponds.
- ☒ Types of uses and other man-made facilities.
- ☒ The number of people to be housed, employed, visitors or patrons and vehicular and pedestrian traffic.
- ☒ Phasing of the project including ultimate development proposals.
- ☒ Natural features which will be retained, removed and/or modified including vegetation, drainage, hillsides, streams wetlands, woodlands, wildlife and water. The description of the areas to be changed shall include their effect on the site and adjacent properties. An aerial photo may be used to delineate the areas of change.
- ☒ The method to be used to serve the development with water and sanitary sewer facilities.
- ☒ The method to be used to control drainage on the site and from the site. This shall include runoff control during periods of construction.
- ☒ If the public sewers are not available to the site, the Applicant shall submit a current approval from the Health Department or other responsible public agency indicating approval of plans for sewage treatment.

- ☒ The method to be used to control any increase in effluent discharge to the air or any increase in noise level emanating from the site. Consideration of any nuisance that would be created within the site or external to the site whether by reason of dust, noise, fumes vibration, smoke or lights.
- ☒ An indication of how the proposed use conforms with existing and potential development patterns and any adverse effects.
- ☒ The proposed density in units per acre for residential developments.
- ☒ Name(s) and address(es) of person(s) responsible for preparation of statement.
- ☒ Description of measures to control soil erosion and sedimentation during grading and construction operations and until a permanent ground cover is established. Recommendations for such measures may be obtained from the County Soil Erosion and Sedimentation office.
- ☒ Type, direction, and intensity of outside lighting.
- ☒ General description of deed restrictions, if any.

ADDITIONAL INFORMATION

If applicable, provide the following further information:

	<u>Yes</u>	<u>No</u>	<u>Not Applicable</u>
A. <u>Sanitary Sewer Service</u>			
1. Does project require extension of public sewer line?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, has a Utility Agreement been prepared?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Will a community wastewater system be installed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, has a Utility Agreement been prepared?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, provide construction plans and specifications			
3. Will on-site disposal be used?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, is it depicted on plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B. <u>Water Service</u>			
1. Does project require extension of public water main?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, has a Utility Agreement been prepared?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Will a community water supply be installed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, has a Utility Agreement been prepared?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, provide construction plans and specifications			
C. <u>Public utility easements required?</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, show on plan.			
D. <u>Stormwater Review/Soil Erosion</u>			
1. Soil Erosion Plans approved by Soil Erosion Office?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If so, attach approval letter.			
If no, are alternate measures shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Stormwater Plans approved by Township Engineer?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If so, attach approval letter.			
If no, are alternate measures shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Note: Alternate measures must be designed and sealed by a registered Engineer.			

E. Roads and Circulation

- | | | | |
|---|--------------------------|-------------------------------------|-------------------------------------|
| 1. Are interior public streets proposed? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| If yes, has Road Commission approved (attach letter)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Will public streets connect to adjoining properties or future streets? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Are private roads or interior drives proposed? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Will private drives connect to adjoining properties service roads? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Has the Road Commission or MDOT approved curb cuts? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| If yes, attach approved permit. | | | |

OTHER INFORMATION

If there is any other information that you think may be useful in the review of this application, please attach it to this application or explain it on a separate page.

REVIEW PROCESS

- Upon submittal of this application, Staff will review the materials submitted and will, within ten (10) working days, forward a determination of completeness to the applicant. If the submission is incomplete or noncompliant with the Zoning Ordinance, it will be returned to the applicant for revision. Once the submission is revised, Staff will again review it for completeness and again forward a determination to the applicant within ten (10) working days. This procedure shall be repeated until a complete submission is received.
- Once the application is deemed to be complete and submitted according to the application deadlines, it will be forwarded to the Planning Commission for review. The Planning Commission will determine if the application is complete and schedule a public hearing.
- Upon holding a public hearing, the Planning Commission may approve, approve with conditions, or deny the proposed special use.
- If approved or approved with conditions, the decision of the Planning Commission shall be incorporated into a written report and decision order.

PERMISSION TO ENTER SUBJECT PROPERTY

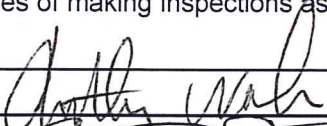



Permission is hereby granted to Garfield Township staff and Planning Commissioners to enter the premises subject to this application for the purposes of making inspections associated with this application, during normal and reasonable working hours.

Owner Signature:

Applicant Signature:

Agent Signature:

Date:

OWNER'S AUTHORIZATION

If the applicant is not the registered owner of the lands that is the subject of this application, the owner(s) must complete the authorization set out below.

I/We Church of The Living God authorize to make this application on my/our behalf and to provide any of my/our personal information necessary for the processing of this application. Moreover, this shall be your good and sufficient authorization for so doing.

Owner Signature:

Date:

Anthony Muhl
November 1, 2022

AFFIDAVIT

The undersigned affirms that he/she or they is (are) the owner, or authorized agent of the owner, involved in the application and all of the information submitted in this application, including any supplemental information, is in all respects true and correct. The undersigned further acknowledges that willful misrepresentation of information will terminate this permit application and any permit associated with this document.

Owner Signature:

Date:

Applicant Signature:

Date:

Anthony Muhl
November 1, 2022
[Signature]
Nov 2 2022

November 3, 2022

To Whom it May Concern,

Traverse City Christian School, in partnership with Church of The Living God, would like to propose a change in use of property for 1514 Birmley Road. Currently The Church of The Living God meets at this building, we would like to add an Early Learning center to include ages birth-6 years. The Early Learning center would be open during business hours Monday-Friday year round with several scheduled breaks consistent with the school year calendar. We hope to have up to 100 children and 15+ staff members.

We are proposing no changes to the building or grounds other than cosmetic and/or equipment upgrades and minor interior renovations. The property is set back far enough from the road and has enough space that there would be no nuisance to neighboring properties. Arrival and departure times would be staggered, flow of traffic should not be disrupted. There is a large parking lot with 238 spaces to allow parking for staff and visitors. Drive thru drop off/pick up is available for all families. The proposed childcare center would use the church's existing playground, but may be required by licensing to add a fence to enclose 1,200 square feet. The building was originally intended and has previously been used to service students and employ staff in an education environment.

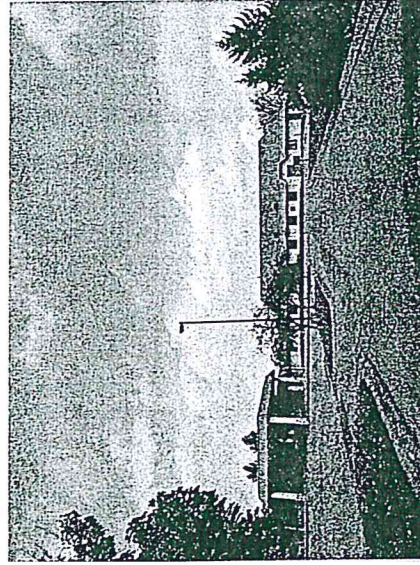
The project will begin once we are approved and end as soon as we secure licensing from the State of Michigan. The project could take 4-12 months depending on upgrades, inspections and the licensing process.

Thank you for your consideration,

A handwritten signature in black ink that reads "Carly LaFreniere". The signature is written in a cursive, flowing style.

Carly LaFreniere
Traverse City Christian School
753 Emerson Road
Traverse City, MI 49696
231-929-1747

Grantor	Grantee	Sale Price	Sale Date	Inst. Type	Terms of Sale	Liber & Page	Verified By	Prct. Trans.
AUTNER RALPH & MARY	CHURCH OF THE LIVING GOD	26,740	09/04/2003	WD	16-IC PAYOFF	2004/603	BUYER/SELLER	0.0
AUTNER RALPH & MARY	CHURCH OF THE LIVING GOD	26,740	09/06/1996	LC	03-ARM'S LENGTH	1118/299	BUYER/SELLER	0.0
Property Address 1514 BIRMLEY RD Owner's Name/Address CHURCH OF THE LIVING GOD 1514 BIRMLEY RD TRAVERSE CITY MI 49696-8817								
Class: COMMERCIAL-IMPROV		Zoning: A GRI		Building Permit(s)		Date		Status
School: TRAVERSE CITY SCHOOL DIST.				Com Add/Alter/Repair		10/19/2007		PB2007.192
P.R.E. 0%				Com Add/Alter/Repair		10/15/2007		PZ2007-134
MAP #: 2600						08/26/1997		PBI997.181
2023 Est		2023 Est		ADDITION/ALTERATION		/ /		C.O. ISSUE
X Improved		Vacant		Land Value Estimates for Land Table 23000.23000 GARFIELD RD AREA				
Public Improvements				* Factors *				
Dirt Road				Description Frontage Depth Front Depth Rate %Adj. Reason				Value
Gravel Road				<Site Value D>		0 100		0
Paved Road				GARFIELD PCLS > 25AC		21.302 Acres 14,439 100		307,588
Storm Sewer				23595 Sqft 0.00000 100		Total Est. Land Value =		307,588
Sidewalk				715 Actual Front Feet, 21.84 Total Acres				
Water				Land Improvement Cost Estimates				
Sewer				Description		Rate		Cash Value
Electric				D/W/P: 4in Concrete		6.62		23,454
Gas				Wood Frame		26.81		1,956
Curb				Ad-Hoc Unit-In-Place Items		Rate		Cash Value
Street Lights				Description		Size % Good		107,839
Standard Utilities				/C116/SUBDC/RESSI/STRI/PAVACSA		96 76		133,249
Underground Utils.				Total Estimated Land Improvements True Cash Value =		Size % Good		
						97258 72		
Topography of Site				Work Description for Permit PB2007.192, Issued 10/19/2007: COMM ALTERATION				
Level				CARL				
Rolling				E OK ON THREE ROOF TOP UNITS 12/19/07				
Low				Work Description for Permit PZ2007-134, Issued 10/15/2007: ADDITION TO COMM./INDUSTRIAL				
High				Work Description for Permit PB1997.181, Issued 08/26/1997: Work Class:437, Use: TEMP 12-22-97 EXP 1-22-98Reciept: , ()				
Landscaped								
Swamp								
Wooded								
Pond								
Waterfront								
Ravine								
Wetland								
Flood Plain								
Year	Land Value	Building Value	Assessed Value	Board of Review	Tribunal/Other	Taxable Value		
2023	EXEMPT	EXEMPT	EXEMPT			EXEMPT		
2022	EXEMPT	EXEMPT	EXEMPT			EXEMPT		
2021	0	0	0			0		
2020	0	0	0			0		



The Equalizer. Copyright (c) 1999 - 2009.
 Licensed To: Township of Garfield, County
 of Grand Traverse, Michigan

*** Information herein deemed reliable but not guaranteed***

Due W 715'

05-026-014-10

21.84ac

NET: 21.3ac

Due N 1330.78'

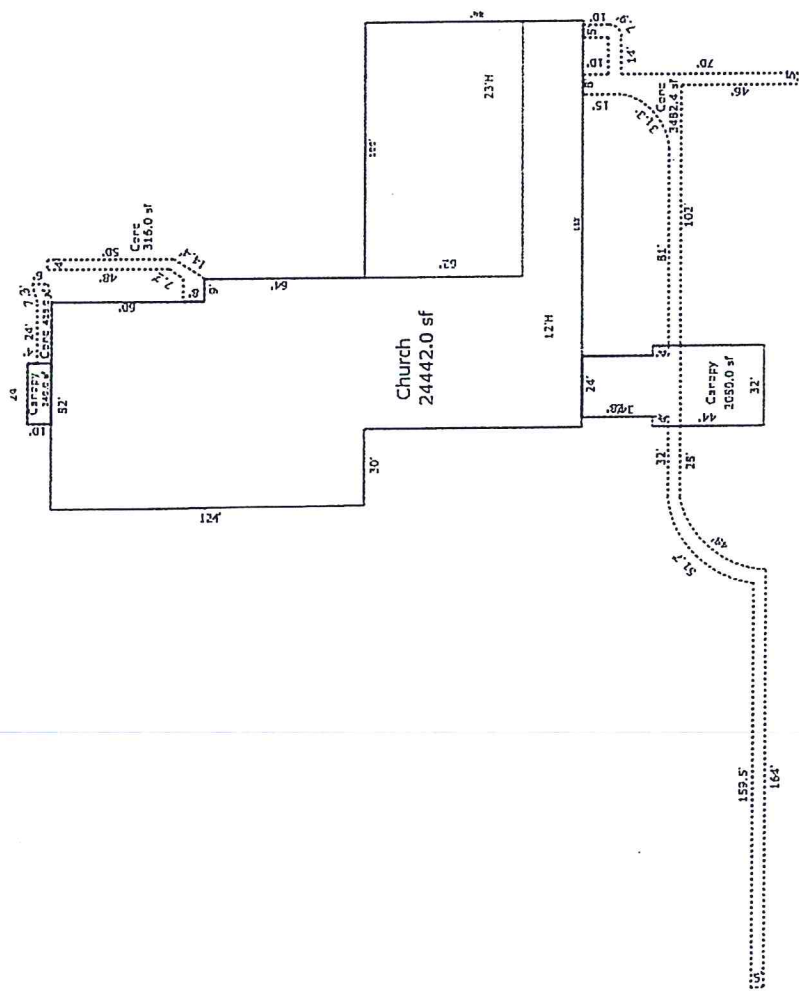


Due N 33'

Birmley Rd ROW
-23595.00 sf

Sketch by Apex Sketch

*** Information herein deemed reliable but not guaranteed***



Sketch by Apex Sketch

*** Information herein deemed reliable but not guaranteed***

Desc. of Bldg/Section: CHURCH		Religious Buildings - Churches With Sunday S	
Class: C		Construction Cost	
Floor Area: 24,442	Gross Bldg Area: 25,942	High	Above Ave.
Stories Above Grd: 1	Average Sty Hght: 15	Ave.	X Low
Bsmnt Wall Hght		*** Calculator Cost Data ***	
Depr. Table : 2%	Effective Age : 26	Quality: Average	
Physical %Good: 59	Func. %Good: 100	Heat#1: Complete H.V.A.C. 100	
Economic %Good: 100		Heat#2: No Heating or Cooling 0%	
1997 Year Built		Ave. SqFt/Story: 24442	
Remodeled		Has Elevators:	
23 Overall Bldg Height		*** Basement Info ***	
Comments:		Area: 24442	
		Type: Low	
		Perimeter:	
		Type:	
		Heat: Hot Water, Radiant Floor	
		* Mezzanine Info *	
		Area #1:	
		Type #1:	
		Area #2:	
		Type #2:	
		* Sprinkler Info *	
		Area: 24442	
		Type: Low	

<<<<< Calculator Cost Computations

Class: C Quality: Average

Stories: 1 Story Height: 15

Overall Building Height: 23

Base Rate for Upper Floors = 152.58

(10) Heating system: Complete H.V.A.C. Cost/SqFt: 52.72 100%

Adjusted Square Foot Cost for Upper Floors = 205.30

Total Floor Area: 24,442

Base Cost New of Upper Floors = 5,017,942

24,442 Sq.Ft. of Sprinklers @ 3.68, Cost New = 89,947

Reproduction/Replacement Cost = 5,107,889

Eff.Age:26 Phy.%Good/Abnr.Phy./Func./Econ./Overall %Good: 59 /100/100/100/59.0

Total Depreciated Cost = 3,013,655

Unit in Place Items

/CII16/YARI/PATR/WOOIBCA

/CII16/YARI/PATR/ALUOSBEA

Rate Quantity Arch %Good Depr.Cost

15.42 2080 1.00 59 18,923

10.80 68 1.00 59 433

ECF (2960 HAMMOND ASHLAND HEIDBREDER) 1.031 => TCV of Bldg: 1 = 3,127,034

Replacement Cost/Floor Area= 210.32 Est. TCV/Floor Area= 127.94

(11) Electric and Lighting:

(39) Miscellaneous:

Outlets:

Fixtures:

Few

Average

Many

Unfinished

Typical

Flex Conduit

Rigid Conduit

Armored Cable

Non-Metallic

Bus Duct

Incandescent

Fluorescent

Mercury

Sodium Vapor

Transformer

Slope=0

(13) Roof Structure:

(14) Roof Cover:

(40) Exterior Wall:

Thickness

Bsmnt Insul.

*** Information herein deemed reliable but not guaranteed***



Fellowship Hall wing

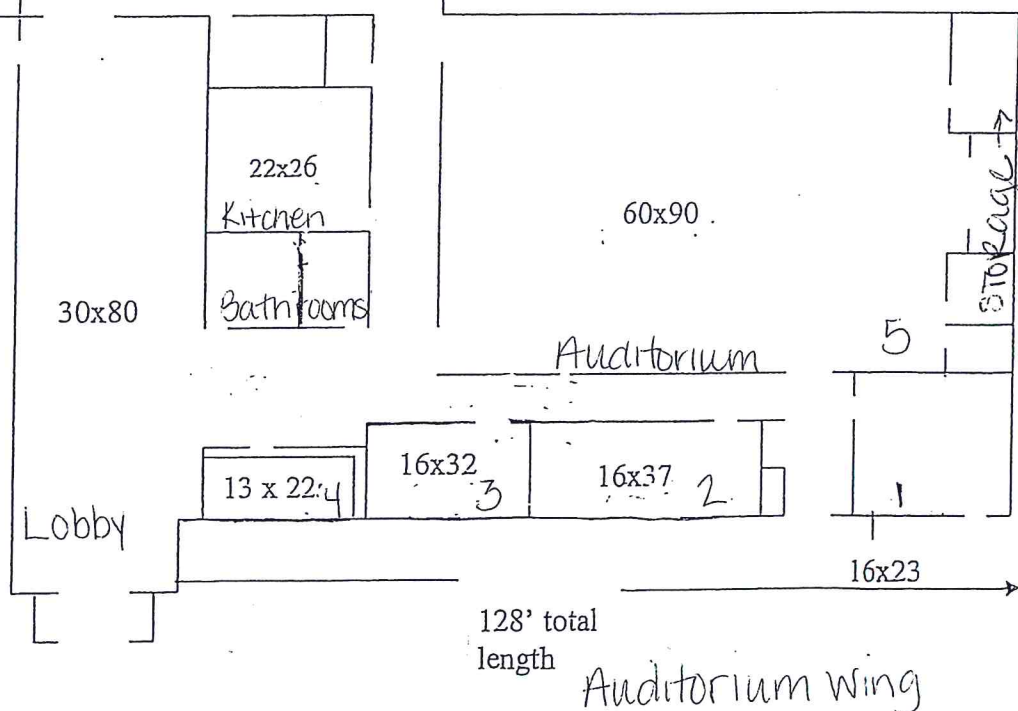


Numbered Room Use

1. Infant/Toddlers at opening
2. 2's at opening
3. 3's at opening
4. 4's at opening
5. Not used for childcare. Church use only.
6. Future use for preschool/Young 5's
7. Future use for Preschool/Young 5's
8. Future use for Preschool/Young 5's
9. Future use for Preschool/Young 5's
10. Future use for Preschool/Young 5's
11. Future use for Preschool/Young 5's
12. Not used for childcare. Church use only.
13. Gross motor space for childcare and children's church.

Non Numbered Room Use

- Kitchen will not be used for childcare.
- Offices, bathrooms and lobby will be used for church and childcare.
- Parking lot, entrance/exit, playground and all grounds will be used for church and childcare.



November 21, 2022

To Whom It May Concern,

This letter is a response to the completeness review submitted to Carly LaFreniere via email on November 9, 2022.

- 1) Fence Detail:** Please see the attached sketch referencing where a fence will be located. A fence will consist of a 4 ft high, minimally 1,200 square foot privacy fence. Child Care Licensing will determine if the playground needs to be larger than the proposed 1,200 square feet. The playground is located in an area that does not adjoin another residence. This fence will have one gate for entrance and exit. Please refer to the included sketch for the location of the playground and gate.
- 2) Maintaining License:** The facility will maintain all valid state and local licenses in accordance with Section 720.A.(1) of the Zoning Ordinance.
- 3) Signage:** The existing sign will most likely be replaced. In the event of a change to the existing or complete replacement of signage we understand that signs are subject to sign permit review. Our intent is to comply with any and all permit reviews for sign changes.

Thank you,

Carly LaFreniere
Traverse City Christian School



Charter Township of Garfield

Grand Traverse County

3848 VETERANS DRIVE
TRAVERSE CITY, MICHIGAN 49684
PH: (231) 941-1620 • FAX: (231) 941-1588

2023 PLANNING COMMISSION MEETING DATES

The Charter Township of Garfield Planning Commission meets on the second and fourth Wednesdays of each month, excepting the months of November and December. All meetings begin at 7:00 pm and are held at the Garfield Township Hall, 3848 Veterans Drive, Traverse City, Michigan. The adopted 2023 meeting schedule is as follows:

Regular Meeting

January 11, 2023
February 8, 2023
March 8, 2023
April 12, 2023
May 10, 2023
June 14, 2023
July 12, 2023
August 9, 2023
September 13, 2023
October 11, 2023
November 8, 2023
December 13, 2023

Study Session

January 25, 2023
February 22, 2023
March 22, 2023
April 26, 2023
May 24, 2023
June 28, 2023
July 26, 2023
August 23, 2023
September 27, 2023
October 25, 2023

Joe Robertson, Secretary
Garfield Township Planning Commission
3848 Veterans Drive
Traverse City, MI 49684

Garfield Township will provide necessary reasonable auxiliary aids and services, such as signers for hearing impaired and audio tapes of printed materials being considered at the meeting to individuals with disabilities upon the provision of reasonable advance notice to the Township. Individuals with disabilities requiring auxiliary aids or services should contact Garfield Township by writing or calling Lanie McManus, Clerk, Ph: (231) 941-1620.