



**GENOA CHARTER TOWNSHIP**  
**Application for Site Plan Review**

**TO THE GENOA TOWNSHIP PLANNING COMMISSION AND TOWNSHIP BOARD:**

APPLICANT NAME & ADDRESS: BIBLE BAPTIST CHURCH 2258 E. HIGHLAND RD. HOWELL, MI 48843  
*If applicant is not the owner, a letter of Authorization from Property Owner is needed.*

OWNER'S NAME & ADDRESS: Gary R. Boss

SITE ADDRESS: 3850 Golf Club Rd. PARCEL #(s): 11-05-200-002

APPLICANT PHONE: ( 517 ) 715-9233 OWNER PHONE: ( 810 ) 599-3952

OWNER EMAIL: TIM.CHRISTOSON@HOWELLCHURCH.ORG

LOCATION AND BRIEF DESCRIPTION OF SITE: 46.5 ACRE Parcel at SW corner Laton & Golf Club Roads. An existing 2 story Residence w/ outbuildings on the NWerly 5 ac. with surrounding Pond. Southerly 30+ Acres is High & rolling.

BRIEF STATEMENT OF PROPOSED USE: A 10 unit (1 AC. minimum) Development is SW Cor. of Site. Existing Residential Estate to remain, as is. Remaining easterly 1/2 of Property for Future Church Campus.

THE FOLLOWING BUILDINGS ARE PROPOSED: 10 - single family homes w/ potential attached or detached outbuilding on 1 acre (minimum) lots.

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

*X*  
*X*

BY: BIBLE BAPTIST; TIM CHRISTOSON

Gary R. Boss

ADDRESS: 2258 E. HIGHLAND RD. HOWELL, MI 48843

Gary R. Boss

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

1.) TIM CHRISTOSON of BIBLE BAPTIST CHURCH at PASTOR@HOWELLCHURCH  
Name Business Affiliation E-mail Address .ORG

**FEE EXCEEDANCE AGREEMENT**

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

SIGNATURE: [Signature] DATE: 4/15/2020 <sup>TC</sup>

PRINT NAME: TIM CHRISTOSON PHONE: 517-715-9233

ADDRESS: 2258 E. HIGHLAND RD. HOWELL MI 48843



## REQUIRED SITE PLAN CONTENTS

Each site plan submitted to the Township Planning Commission shall be in accordance with the provisions of the Zoning Ordinance. No site plan shall be considered until reviewed by the Zoning Administrator. The following information shall be included in the site plan submittal packet:

<u>SUBMITTED</u>	<u>NOT APPLICABLE</u>	<u>ITEM</u>												
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>Application form and fee:</b> A completed application form and payment of a non-refundable application fee. (A separate escrow fee may be required for administrative charges to review the site plan submittal.)												
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>Applicant information:</b> The name and address of the property owner and applicant, interest of the applicant in the property, the name and address of the developer, and current proof of ownership of the land to be utilized or evidence of a contractual ability to acquire such land, such as an option or purchase agreement.												
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>Scale:</b> The site plan should be drawn at an engineers scale on sheets measuring 24x36 inches at the scale noted below.												
		<table border="0"> <thead> <tr> <th style="text-align: center;"><u>ACREAGE</u></th> <th style="text-align: center;"><u>SCALE</u></th> </tr> </thead> <tbody> <tr> <td>160 or more</td> <td>1" = 200'</td> </tr> <tr> <td>5- 159.9</td> <td>1" = 100'</td> </tr> <tr> <td>2- 4.99</td> <td>1" = 50'</td> </tr> <tr> <td>1- 1.99</td> <td>1" = 30'</td> </tr> <tr> <td>0- .99</td> <td>1" = 20'</td> </tr> </tbody> </table>	<u>ACREAGE</u>	<u>SCALE</u>	160 or more	1" = 200'	5- 159.9	1" = 100'	2- 4.99	1" = 50'	1- 1.99	1" = 30'	0- .99	1" = 20'
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		<b><u>COVER SHEET CONTAINING</u></b>												
<input checked="" type="checkbox"/>	<input type="checkbox"/>	The name and address of the project.												
<input checked="" type="checkbox"/>	<input type="checkbox"/>	The name, address and professional seal of the architect, engineer, surveyor or landscape architect responsible for preparation of the site plan.												
<input checked="" type="checkbox"/>	<input type="checkbox"/>	A complete and current legal description and size of property in acres and square feet. Where a metes and bound description is used, lot line angles or bearings shall be indicated on the plan. Lot line dimensions and angles or angles or bearings shall be based upon a boundary survey and shall correlate with the legal description.												
<input checked="" type="checkbox"/>	<input type="checkbox"/>	A small location sketch of sufficient size and scale to locate the property within the Township.												
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Title block with north arrow, date of preparation and any revisions.												
		<b><u>EXISTING CONDITION SHEETS ILLUSTRATING</u></b>												
<input checked="" type="checkbox"/>	<input type="checkbox"/>	All existing lot lines and dimensions, including setback lines and existing or proposed easements.												
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing topography (minimum contour interval of two feet)												
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing natural features such as streams, marshes, ponds; wetlands labeled with size and type (upland, emergent, etc)												
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing woodlands shall be shown by an approximate outline of the total canopy; individual deciduous trees of eight inch caliper or larger and individual evergreen trees six feet in height or higher, where not a part of a group of trees, shall be accurately located and identified by species and size (caliper for deciduous, height for evergreen).												



Soil characteristics of the parcel to at least the detail as provided by the Soil Conservation Service Soil Survey of Livingston County. A separate map or overlay at the same scale as the site plan map may be used.



Zoning and current land use of applicant's property and all abutting properties and of properties across any public or private street from the site.



Indication of existing drainage patterns, surface or water bodies.



The limits of any wetland regulated by the MDEQ, including attachment of any MDEQ approved wetland determination or documentation that an application for an MDEQ review has been submitted. If an MDEQ regulated wetland is to be impacted, an indication of the status of application for an MDEQ wetland permit or copy of a permit including description of any wetland migration required attached.



Aerial photograph indicating the limits of the site, surrounding land uses and street system.



**PROPOSED PROJECT INFORMATION**

**Base information:** The location of all existing buildings, structures, street names and existing right-of-way, utility poles, towers, drainage ditches, culverts, pavement, sidewalks, parking areas and driveways on the property and within one-hundred feet of the subject property (including driveways on the opposite side of any street). Notes shall be provided indicating those which will remain and those which are to be removed.



**Building information:** Footprints, dimensions, setbacks, typical floor plans, and a sketch of any rooftop or ground mounted equipment to scale.



**Building elevations:** Elevation drawings shall be submitted illustrating the building design and height, and describing construction materials for all proposed structures. Elevations shall be provided for all sides visible from an existing or proposed public street or visible to a residential district. The Planning Commission may require color renderings of the building. Proposed materials and colors shall be specified on the plan and color chips or samples shall also be provided at the time of site plan review. These elevations, colors, and materials shall be considered part of the approval site plan (as amended 4/15/95).



**Building and lot coverage:** Percentage of building coverage and impervious surface ratio (all paved areas and building v. total lot area) compared to the percentages specified in the Table of Dimensional Standards Article 4.



**For residential developments:** Number of units for each project phase divided by acreage exclusive of any public right-of-way or private road access easement; lot area for each lot; and a description of the number of each unit by size and number of bedrooms; if a multi-phase development is proposed, identification of the areas included in each phase.



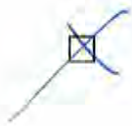
**For commercial and office uses:** The Gross Floor Area and Useable Floor Area of each use or lease space. For industrial uses: The floor area devoted to industrial uses and the area intended for accessory office use.



**Streets, driveways, and circulation:** The layout and dimensions of proposed lots, streets and drives (including grades, existing or proposed right-of-way or easement and pavement width, number of lanes and typical cross section showing surface and sub base materials and dimensions,



grades of all entrances and exits, location and typical detail of curbs, intersection radii), access points (including deceleration or passing lanes, distance from adjacent driveways or street intersection), sidewalks (width, pavement type and distance from street) and recreation areas. Written verification of any access easements or agreements for shared access or driveway curb return extending beyond the property line shall be required.



**Utilities:** Existing and proposed locations of utility services (with sizes), degrees of slope of sides of retention/detention ponds; calculations for size of storm drainage facilities; location of electricity and telephone poles and wires; location and size of surface mounted equipment for electricity and telephone services; location and size of underground tanks where applicable; location and size of outdoor incinerators; location and size of wells, septic tanks and drain fields; location of manholes, catch basins and fire hydrants; location, size, and inverts for storm and sanitary sewers, any public or private easements; notes shall be provided clearly indicating which existing services will remain and which will be removed.



**Grading and drainage:** A site grading plan for all developments where grading will occur, with existing and proposed topography at a minimum of two (2) foot contour intervals and with topography extending a minimum of twenty (20) feet beyond the site in all directions and a general description of grades within fifty (50) feet, and further where required to indicate stormwater runoff into an approved drain or detention/retention pond so as to clearly indicate cut and fill required. All finished contour lines are to be connected to existing contour lines at or before the property lines. A general description and location of the stormwater management system shall be shown on the grading plan. The Township Engineer may require detailed design information for any retention/detention ponds and stormwater outfall structures or basins. If MDEQ regulated wetlands are to be used, status of MDEQ permit application or copy of permit with attached conditions shall be provided.



**Landscape and screening:** A landscape plan indicating proposed ground cover and plant locations and with common plant name, number, and size at installation. For any trees over eight (8) inch caliper to be preserved. A detail shall be provided to illustrate protection around the tree's drip line. Berms, retaining walls or fences shall be shown with elevations or cross section from the surrounding average grade. The location, type and height of proposed fences shall be described.



**Waste receptacles:** Location of proposed outdoor trash container enclosures; size, typical elevation, and vertical section of enclosures; showing materials and dimensions in compliance with Zoning Ordinance Standards.



**Signs:** Locations of all signs including location, size, area type, height, and method of lighting. Note that all regulatory signs shall meet the standards from the Michigan Manual of Uniform Traffic Control Devices (MMUTCD).



**Lighting:** Details of exterior lighting including location, height, method of shielding and style of fixtures.



**Parking:** Parking, storage and loading/unloading areas, including the dimensions of typical space, aisle, and angle of spaces. The total number of parking and loading/unloading spaces to be provided and the method by which the required parking was calculated shall be noted.



The applicant shall erect flagged stakes at the perimeter points of the property to assist Township officials and staff in reviewing the site.



May 6, 2020

Planning Commission  
Genoa Township  
2911 Dorr Road  
Brighton, Michigan 48116

<b>Attention:</b>	Kelly Van Marter, AICP Planning Director and Assistant Township Manager
<b>Subject:</b>	Pine Summit – Preliminary Condominium Plan Review #2
<b>Location:</b>	3850 Golf Club Road – southwest corner of the Golf Club and Latson Road intersection
<b>Zoning:</b>	RR Rural Residential District

Dear Commissioners:

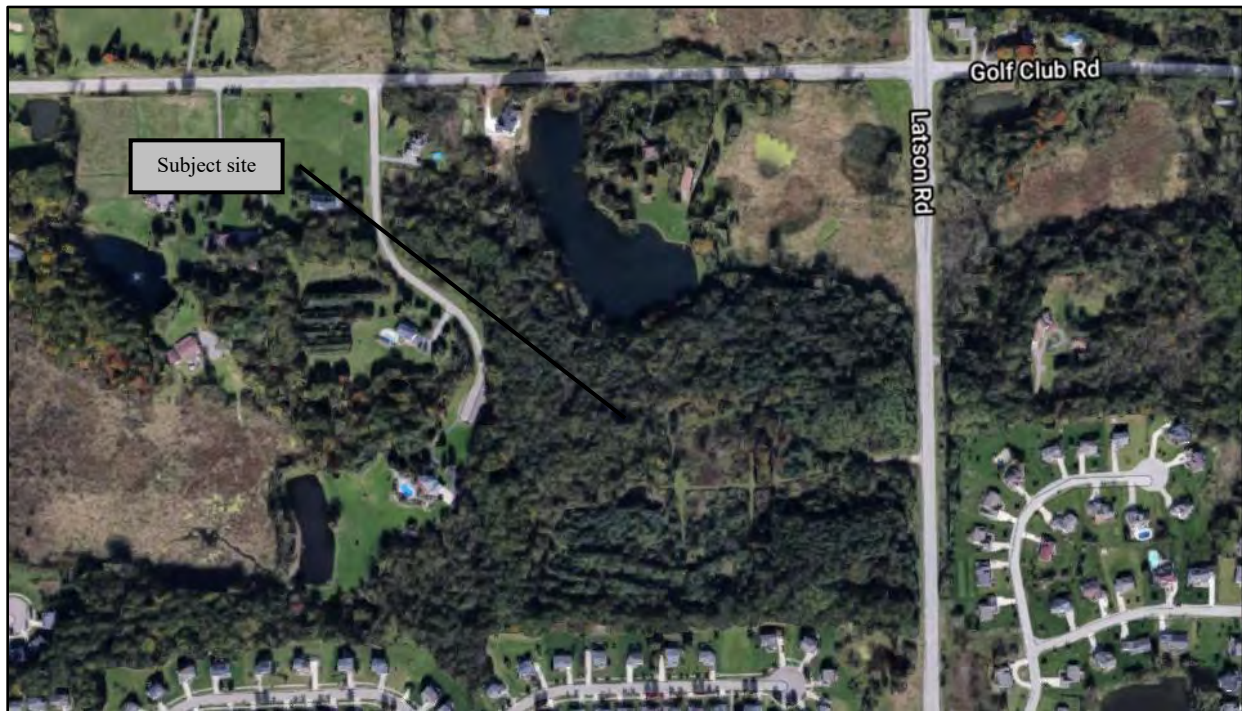
At the Township’s request, we have reviewed the revised preliminary condominium plan (dated 3/30/20) for Pine Summit. The applicant proposes a 10-unit residential development with minimum 1-acre lots along a new private road.

We have reviewed the proposal in accordance with the applicable provisions of the Genoa Township Zoning Ordinance.

**A. SUMMARY**

1. Favorable action must be conditioned upon granting of the LDR rezoning request.
2. The existing residence, park/nature preserve, and future church site are not included in the condominium. These properties must be separated from the existing parcel.
3. Condominium documents (Master Deed and By-Laws) must be provided with the final plan submittal. We recommend language be included ensuring protection of the wetlands, natural features setback and undisturbed wooded areas. Use and maintenance provisions for the park must also be provided.
4. There is an existing accessory building that will be located in a front yard via construction of the private road. The applicant notes that they will seek a variance from the ZBA to mitigate this condition. If a variance is not obtained, the building will need to be removed. Favorable action on this request must include a condition addressing the accessory building.
5. We defer technical review of the private road and shared residential driveways to the Township Engineer and Brighton Area Fire Authority; however, it should be noted that Planning Commission approval is needed do reduce the easement width and extend the maximum cul-de-sac length.
6. The applicant must provide a Private Road Maintenance Agreement, as required by the Township. If needed, this document must include provisions for use by parcels not included in the condominium.
7. Final plan submittal must include a landscape plan demonstrating compliance with the street tree requirements.
8. During construction, protection fencing must be provided around wooded areas/trees to be preserved.
9. Special land use approval is required for the encroachments into the 25-foot natural features setback (private road, landscape wall, grading, and stormwater management structures).
10. Any activities within the wetland areas are subject to review/approval by EGLE.





*Aerial view of site and surroundings (looking north)*

## **B. PROPOSAL/PROCESS**

The applicant proposes a 10-unit site condominium development along a new private road with lots of at least 1-acre in area.

The subject site is currently being reviewed for LDR rezoning (from RR). Rezoning is necessary to accommodate the 1-acre lot sizes proposed in this development. As such, favorable consideration of this proposal must be conditioned upon granting of the rezoning request.

Section 12.07 requires both preliminary and final approval for condominium plans. Procedurally, both reviews go through the Planning Commission for a recommendation to the Township Board, who has final approval authority.

Additionally, the revised submittal notes that the existing residence, park/nature preserve, and future church site are not part of the condominium and will be split from the development site via the land division process.

## **C. CONDOMINIUM PLAN REVIEW**

- 1. Submittal Requirements.** If preliminary approval is granted, the applicant will need to provide condominium documents (Master Deed and By-Laws) with their final plan submittal. These documents should be reviewed by the Township Attorney.

As noted in our initial review letter, we recommend the condominium documents identify and emphasize protection of ponds, wetlands, and the natural features setback for future owners.

Furthermore, given the significant amount of wooded areas, the condominium documents should identify and provide for protection of these trees outside of building envelopes/construction zones.

The cover letter included with the revised submittal indicates that the applicant will address these items in the condominium documents.

- 2. Dimensional Requirements.** The LDR District requires minimum lot sizes of 1-acre (area) and 150 feet (width). Each of the Units proposed meets or exceeds the minimum lot area and width requirements of the LDR District.

Building envelopes that meet or exceed minimum LDR setbacks are also depicted, though we view the north side of Unit 1 as a rear yard (depicted as a side yard).

As noted in our initial review letter, construction of the private road will result in an accessory building in a front yard, which is not permitted by Section 11.04. The applicant has indicated that they will apply for a variance to mitigate this condition. If a variance is not granted, the applicant will need to remove the accessory building.

Favorable consideration of the private road must include a condition addressing the accessory building.

- 3. Pedestrian Circulation.** Per Section 12.05, internal sidewalks are not required for the proposed development.
- 4. Private Road and Shared Residential Driveways.** The project includes a private road, which connects to Golf Club Road, as well as 2 internal shared driveway extensions.

The shared residential driveways meet or exceed the requirements of Section 15.04 with respect to the number of residences served (4 units proposed, which is the maximum allowed), easement width (33' proposed, which is the minimum requirement) and driveway width (20' proposed, while the minimum allowed is 16'). We defer to the Township Engineer with respect to the construction standards.

The private road is 26' wide within a 50' easement. Section 15.05 requires a 66' wide easement, though the Planning Commission has the ability to reduce the width to 50', per Section 15.05.03(b).

The proposed cul-de-sac road exceeds the maximum length allowed by Section 15.05.03(d) – 1,400' proposed vs. 1,000' maximum allowed. However, the Planning Commission has the authority to modify this requirement based on input from the Township Engineer and Brighton Area Fire Authority.

We defer to the Township Engineer and Brighton Area Fire Authority for technical review of the private road design and construction.

Lastly, the applicant must provide a Private Road Maintenance Agreement demonstrating the financial and maintenance assurances required by the Township. If access to the existing residence, park/nature preserve and future church site is proposed via the private road, this document must also include provisions for use by the parcels not included in the condominium.

- 5. Landscaping.** The submittal includes a landscape plan (Sheet 7), which states that no new plantings are proposed and that required plantings will be provided via preservation of existing mature trees.

The preliminary grading plan identifies the limits of grading/clearing related to infrastructure construction. A landscape plan must be included with the final plan submittal depicting the required street trees (either existing to be preserved or newly proposed, due to the extent of grading/clearing).

As previously noted, we recommend the applicant incorporate tree protection language into the condominium documents to ensure preservation of these areas. Furthermore, during construction, tree protection fencing must be provided around the wooded areas to be preserved. The applicant has acknowledged such in the cover letter included with the revised submittal.



- 6. Natural Features.** Portions of the private road, landscape wall on the east side of the private road, and the south forebay encroach into the 25-foot natural features setback. The limits of grading/clearing also encroach into this protected area.

The applicant has indicated that the wetlands are regulated. As such, the applicant must apply for and obtain special land use approval for the encroachments noted above (Section 13.02.04). The applicant may apply for special land use review/approval simultaneously with the request for final plan review.

Any activities within the wetlands themselves are subject to review/approval by the Department of Environment, Great Lakes and Energy (EGLE); although, the applicant has indicated that the landscape wall can be constructed from the upslope so as to avoid disturbance within the wetland.

- 7. Park/Open Space.** Though not required, a park is included in the condominium development north of Unit 3. As previously noted (and acknowledged by the applicant), the condominium documents must provide use and maintenance provisions for the park.
- 8. Lighting.** The cover letter included with the revised submittal notes that street lighting is not proposed as part of this project.
- 9. Buildings.** The cover letter included with the revised submittal notes that sample building elevations will be included with the final plan submittal.
- 10. Signs.** The submittal includes details for a residential identification sign. The proposed size, height and setbacks comply with the requirements of Section 16.07.06.

The applicant has acknowledged the need to obtain a sign permit from the Township prior to installation.

- 11. Grading, Drainage, and Utilities.** We defer to the Township Engineer for review and comment on the site engineering elements of the proposal.

Should you have any questions concerning this matter, please do not hesitate to contact our office.

Respectfully,  
**SAFEBUILT STUDIO**



Brian V. Borden, AICP  
Planning Manager



April 23, 2020

Ms. Kelly Van Marter  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

**Re: Pine Summit  
Preliminary Site Plan Review No. 2**

Dear Ms. Van Marter:

Tetra Tech performed a second plan review of the Pine Summit Development preliminary plans. The plans, last dated March 30, 2020, were prepared by Boss Engineering on behalf of Bible Baptist Church. The development is located on 46.5 acres in the southwest quadrant of the Golf Club Road and Latson Road intersection. The petitioner is proposing 10 single-family homes in the southwest corner of the property, with the southeast portion of the property being reserved for a future church. The proposed units will be serviced by a 1,400-foot private drive and two shared driveways. We offer the following comments:

#### **GENERAL NOTES**

1. The lot sizes shown on the LDR rezoning plan are all over 1 acre, which matches the LDR zoning requirement of 1 unit per acre. The general layout presented on the site plan is acceptable.
2. Eventually the Bible Baptist Church will require its own site plan for review and site plan approval.

#### **TRAFFIC/ROADWAYS**

1. The plan proposes a private drive with a dead-end that is approximately 1,400 feet long. This is longer than the maximum private road length of 1,000 feet as required in the Genoa Township Engineering Standards. Given the natural features of the site and the limited access points to adjacent Latson Road we would support a deviation for the private road length.
2. The private road entrance on Golf Club Road will need to be approved by the Livingston County Road Commission, and approval should be provided to the Township for final site plan approval.
3. The site plan shows a 12-foot franchise easement. The Petitioner extended the franchise easement through the future church area to Latson Road, rather than extending it north on the private drive to the Golf Club Road intersection as previously requested. This alternate route is acceptable.

**Tetra Tech**

401 South Washington Square, Suite 100, Lansing, MI 48933  
Tel 517.316.3930 Fax 517.484.8140 [www.tetrattech.com](http://www.tetrattech.com)



## DRAINAGE/GRADING

1. Storm sewer sizing calculations should be included in the final site plan and the size of the proposed storm sewer and storm structures should be shown on the final site plan.

## UTILITIES

1. The LDR zoning does not require public water and sewer utilities, but Marion, Howell, Ocoola, and Howell Sewer and Water Authority (MHOG) water is available on the west side of Latson Road and sewer in the Rolling Ridge Condominiums to the south of the subject site. The petitioner is proposing to connect to the existing water stub on Latson Road to provide service to the future church and to 4 of the 10 units. We recommend that if municipal water is being provided to some of the lots, it should be provided to all 10 units.
2. The petitioner is proposing a dead-end water main with a stub to the south for potential future connection to the existing 8-inch water main on Sugarbush Drive. Looping the water main is more desirable than a dead end main as it provides increased water quality and reliability. We therefore recommend that the water main be connected to the existing water main on Sugarbush Drive as part of this phase of the development to benefit the proposed homes, rather than possibly being done in the future. The petitioner should also include a 25-foot utility easement to the edge of the property to facilitate this connection.
3. The petitioner is not proposing municipal sanitary sewer service for the proposed units and is instead proposing to install septic systems for sanitary sewer disposal. Perk tests should be presented showing that the soils are suitable for septic fields as part of the final site condominium plan submittal.
4. After final site plan approval, construction plans will need to be submitted to MHOG Sewer and Water Authority for approval of any water improvements and permitting.

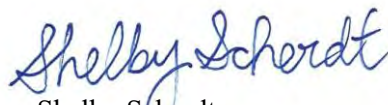
The preliminary plan shows adequate access to the site and except for the comments above, a satisfactory concept for the public infrastructure. The final site plan should be submitted with the required documents and agreements. The preliminary site plan comments can be addressed in the final site plan documents and submitted for further review.

Please call or email if you have any questions.

Sincerely,



Gary J. Markstrom, P.E.  
Vice President



Shelby Scherdt  
Project Engineer



# BRIGHTON AREA FIRE AUTHORITY

615 W. Grand River Ave.  
Brighton, MI 48116  
o: 810-229-6640 f: 810-229-1619

April 9, 2020

Amy Ruthig  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

RE: Bible Baptist Church  
3850 Golf Club Road  
Howell, MI 48843

Dear Amy:

The Brighton Area Fire Department has reviewed the above-mentioned site plan. The new submittal was received on April 8, 2020, and is dated March 30, 2020. This project is based on an existing 46.88-acre parcel that is requesting rezoning of the property from an RR to an LDR which will modify the density to 10 1+ acre parcels and future church development. The intention of the is to develop 10 of the parcels and utilize the remaining site area for the development of a multi-use church and associated parking and facilities. A full site plan evaluation with more specific comments will be conducted when a complete set is produced for review.

The plan review is based on the requirements of the International Fire Code (IFC) 2018 edition.

**All previous comments and concerns have been addressed on this recent submission.**

Additional comments will be given during the building plan review process (specific to the building plans and occupancy). The applicant is reminded that the fire authority must review the fire protection systems submittals (sprinkler & alarm) prior to permit issuance by the Building Department and that the authority will also review the building plans for life safety requirements in conjunction with the Building Department. If you have any questions about the comments on this plan review please contact me at 810-229-6640.

Cordially,

A handwritten signature in black ink, appearing to read "R. Boisvert".

Rick Boisvert, CFPS  
Fire Marshal



**IMPACT ASSESSMENT  
For  
“Residential Development ”**

**of  
Bible Baptist Church  
GENOA TOWNSHIP  
LIVINGSTON COUNTY, MICHIGAN**

Prepared for:

**Applicant  
Bible Baptist Church  
2258 E. Highland Rd.  
Howell, Michigan 48843**

**Owner:  
Gary R. Boss  
3850 Golf Club Road  
Howell, Mi, 48843**

Prepared by:

**Steve Morgan  
4432 Glen Eagles Ct.  
Brighton, Mi. 48116  
586-942-9751  
and  
Brent LaVanway  
Boss Engineering  
3121 E Grand River  
Howell, Michigan 48843**

**March 2, 2020**

## INTRODUCTION

The purpose of this Impact Assessment (IA) Report is to show the effect that the proposed residential development has on various factors in the general vicinity of the use. The format used for presentation of this report conforms to the Submittal Requirements For Impact Assessment/Impact Statement Guidelines in accordance with Section 13.05 of the published Zoning Ordinance for Genoa Township, Livingston County, Michigan.

## DISCUSSION ITEMS

- A. Name(s) and address(es) of person(s) responsible for preparation of the Impact Assessment and a brief statement of their qualifications.

Prepared by:

Steven R. Morgan PLS  
4432 Glen Eagles Ct.  
Brighton, Michigan 48116  
And

Brent LaVanway PE  
Boss Engineering  
3121 E Grand River  
Howell, Michigan 48843

Prepared for:

Applicant:  
Bible Baptist Church  
2258 E. Highland Rd.  
Howell, Mi 48843

Owner:  
Gary R. Boss  
3850 Golf Club Road  
Howell, Mi 48843

- B. Description of the site, including existing structures, man made facilities, and natural features, all-inclusive to within 10' of the property boundary.***

The subject property is located in the NE ¼ of Section 5, Genoa Township, Livingston County, MI.

Part of Tax ID 11 05 200 002

The subject site is located on the southwest corner of Golf Club Road and Latson Road.

The subject site is bordered:

- North by the 3 acre +/- pond and adjacent single family residence (circa 1928) which is proposed LDR
- East by a parcel anticipated to become a Church campus which is proposed LDR
- South by an existing Subdivision, Sugar Bush Drive, (zoned RPUD, 10 units per acre)
- West by large parcels, (zoned RR).

Current Zoning of the subject site is Rural Residential (RR) however is anticipated to be rezoned to Low Density Residential (LDR). Sewer and Water is along entire the Easterly line

(Latson Road) of the parent parcel and accessible at the Southerly Property line at Sugarbush Drive.

As noted above the proposed zoning is LDR (1 unit/Acre). The residential development plan proposes 10 site condominium units of one acre or larger.

**C. *Impact on natural features: A written description of the environmental characteristics of the site prior to development, i.e., topography, soils, vegetative cover, drainage, streams, creeks or ponds.***

**GENERAL OVERVIEW (Parent Tract)**

**AREA 1**

The Northwesterly 10 Acres of the site is the location of the existing residence. This Area consists of two parts: The House, located on the top of a gently rolling hill, and the Pond adjacent to the House along the southerly and westerly portions. The private entrance road to the proposed residential development will cross the easterly portion of this area.

**AREA 2**

The Northeasterly 10 Acres of the site is relatively flat of which aprox. 5 acres is a wetland. There are 2 man-made ditches within this wetland that flow northerly under Golf Club Road into a small wetland in Oceola Township.

**AREA 3**

The Southerly 26+ Acres is gently sloped to moderately steep slopes. The entire area is heavily wooded with a mixture of evergreens and hardwoods. The northerly portion of Area 3 flows naturally north to the existing lake and or the existing wetland. The southerly portion of Area 3 flows generally southeast into an existing drainage area along Latson Road.

All lots, a portion of the private road and the stormwater management will be located in this area. Clearing of trees will be kept to a minimum by use of curb and gutter for the private road, use of shared drives instead of roads and no clearing on lots except for necessary utilities.

**SPECIFIC OVERVIEW**

The soils and natural features throughout the site are specified on the Natural Features map (Sheet 2 of the attached site plan indicates the development footprint).

**D. *Impact on storm water management: description of soil erosion control measures during construction.***

The preliminary site plan indicates stormwater management basins to be constructed during the infrastructure construction. These basins will pre-treat the stormwater prior to discharge to the pond and wetland. The detailed construction plans will be reviewed by the Township Engineer and the Soil Erosion Control permit will be reviewed and issued by the Livingston County Drain Commissioner.

**E. *Impact on surrounding land use: Description of proposed usage and other man-made facilities; how it conforms to existing and potential development patterns. Effects of added lighting, noise or air pollution which could negatively impact adjacent properties.***



The Residential Development of this site will require a Private Road from Golf Club Road, proceeding southerly to a Cul-de-Sac. A possible future “emergency only” connection to Sugarbush Drive at the southerly property line, (for health, safety, and welfare purposes), may be considered, if allowed. The normal traffic pattern will be along the Collector Road, to the North, exiting unto Golf Club Road.

This development will have little, if any, impact on the northerly 15 acres of the site. The development will require maintaining a significant portion of the existing forested property along the westerly, easterly and southerly property lines. These natural buffers will minimize lighting and noise to existing developed, adjacent properties. The Low density residential development will have minimal air pollution impact.

***F. Impact on public facilities and services: Description of number of residents, employees, patrons, and impact on general services, i.e., schools, police, fire.***

The Site Plan for this Development is for a 10 Unit Residential Development in the Southwesterly Portion of the Parent Tract with approximately 35 residents. There may be the potential of 10-15 students added to the Howell School District.

This Development will use “onsite” sewer and a combination of individual wells and MHOG water on each unit.

Normal police and fire protection services should remain unchanged.

***G. Impact on public utilities: description of public utilities serving the project, i.e., water, sanitary sewer, and storm drainage system. Expected flows projected in residential units.***

As noted above on site septic systems are anticipated for each home. The water supply will be a combination of individual wells and MHOG public water.

The Storm Water Management Plan will outlet into the existing pond and wetlands at the northern portion of the property.

***H. Storage or handling of any hazardous materials: Description of any hazardous materials used, stored, or disposed of on-site.***

No storing or handling of any hazardous materials on this residential property.

***I. Impact on traffic and pedestrians: Description of traffic volumes to be generated and their effect on the area.***

According to the Southeast Michigan Council of Governments (SEMCOG) website the two way traffic on Golf Club Road (2018 count) between Eager and Latson Roads is 7140 trips per day. Using 3% per year increase the current two way traffic count is 7354 trips. The two way traffic on Latson Road (2012 count) between Aster Drive and Golf Club Road is 17,650 trips per day. Also using a 3% annual increase the adjusted 2019 count is 21,707 trips per day. Based on the ratio of traffic on Latson Road and Golf Club Road it is anticipated that any development

will result in approximately 75% of the traffic utilizing Latson Road and 25% utilizing Golf Club Road.

The proposed development plan consists of 10 single family residential homes.

According to the Institute of Transportation Engineers 10<sup>th</sup> Edition there can be anticipated 9.44 trips per day for a single family detached residence. One trip is defined as a one way traffic movement. The proposed Low Density Residential zoning will result in a total of 94.4 trips per 24 hour period. The additional trips per day will have a negligible impact on the existing roadway network and will keep the levels of service the same for both Golf Club and Latson Roads (1% increase on Golf Club Road and 0.03% increase on Latson Road).

The Livingston County Road Commission will be required to review and approve the private road entrance at Golf Club Road.

***J. Special provisions: Deed restrictions, protective covenants, etc.***

There is a document addressing shared maintenance of the existing pond between the Gary R. Boss Trust and the adjacent owner to the northwest.

***K. Description of all sources:***

- Genoa Township Zoning Ordinance
- "Soil Survey of Livingston County Michigan" Soil Conservation Services, USDA
- Livingston County Road Commission/SEMCOG Traffic counts



# PRELIMINARY SITE PLAN FOR PINE SUMMIT

## PART OF NE QUARTER, SECTION 5 GENOA TOWNSHIP, LIVINGSTON COUNTY, MI

### PROPERTY DESCRIPTION:

PARCEL: 4711-05-200-002

Part of the Northeast 1/4 of Section 5, T2N-R4E, Genoa Township, Livingston County, Michigan, more particularly described as follows: Commencing at the Northeast Corner of Section 5; thence along the centerline of Golf Club Road (66 feet wide Right of Way) and the North line of Section 5, S 88°30'31" W, 730.69 feet, to the POINT OF BEGINNING of the Parcel to be described; thence S 01°28'44" E, 89.32 feet; thence Southerly along an arc left, having a length of 95.37 feet, a radius of 255.00 feet, a central angle of 21°25'43", and a long chord which bears S 12°11'36" E, 94.82 feet; thence S 22°54'27" E, 48.20 feet; thence Southerly along an arc right, having a length of 102.92 feet, a radius of 205.00 feet, a central angle of 28°45'50", and a long chord which bears S 08°31'32" E, 101.84 feet; thence S 05°51'23" W, 106.87 feet; thence Southerly along an arc left, having a length of 111.96 feet, a radius of 255.00 feet, a central angle of 25°09'25", and a long chord which bears S 06°43'20" E, 111.07 feet; thence S 19°18'02" E, 56.36 feet; thence Southerly along an arc right, having a length of 46.42 feet, a radius of 205.00 feet, a central angle of 12°58'23", and a long chord which bears S 12°48'51" E, 46.32 feet; thence S 61°47'37" W, 240.47 feet; thence S 78°27'38" W, 37.51 feet; thence S 33°03'40" E, 190.64 feet; thence S 37°48'47" W, 16.04 feet; thence Southerly along an arc left, having a length of 328.67 feet, a radius of 255.00 feet, a central angle of 73°50'59", and a long chord which bears S 00°53'18" W, 306.39 feet; thence Southerly along an arc right, having a length of 37.54 feet, a radius of 50.00 feet, a central angle of 43°01'02", and a long chord which bears S 14°31'40" E, 36.66 feet; thence Southeasterly along an arc left, having a length of 169.71 feet, a radius of 75.00 feet, a central angle of 129°39'06", and a long chord which bears S 57°50'42" E, 135.75 feet; thence Southeasterly along an arc right, having a length of 262.06 feet, a radius of 340.00 feet, a central angle of 44°09'43", and a long chord which bears S 24°11'55" E, 255.62 feet; thence S 02°12'10" E, 48.95 feet; thence S 67°47'59" W, 676.25 feet; thence N 02°36'49" W, 1107.42 feet; thence N 88°30'31" E, 200.00 feet; thence N 02°36'49" W, 536.70 feet; thence along the centerline of Golf Club Road and the North line of Section 5, N 88°30'31" E, 392.29 feet, to the POINT OF BEGINNING, containing 18.48 acres, more or less, and subject to the rights of the public over the existing Golf Club Road. Also subject to any other easements or restrictions of record.

Bearings are based on Michigan State Plane Coordinate System, South Zone.

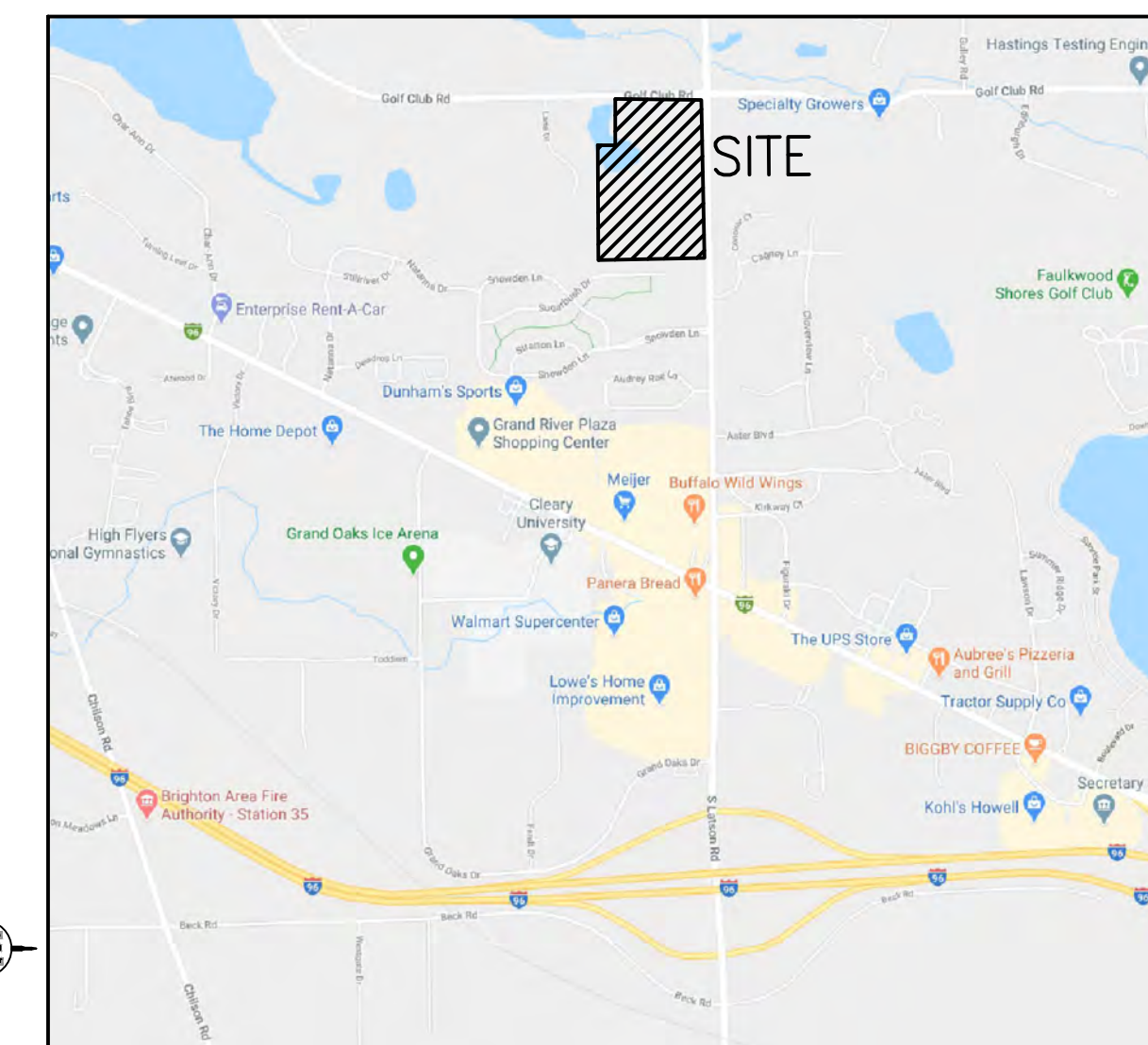
### CONSTRUCTION NOTES

THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING NOTES AND ANY WORK INVOLVED SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

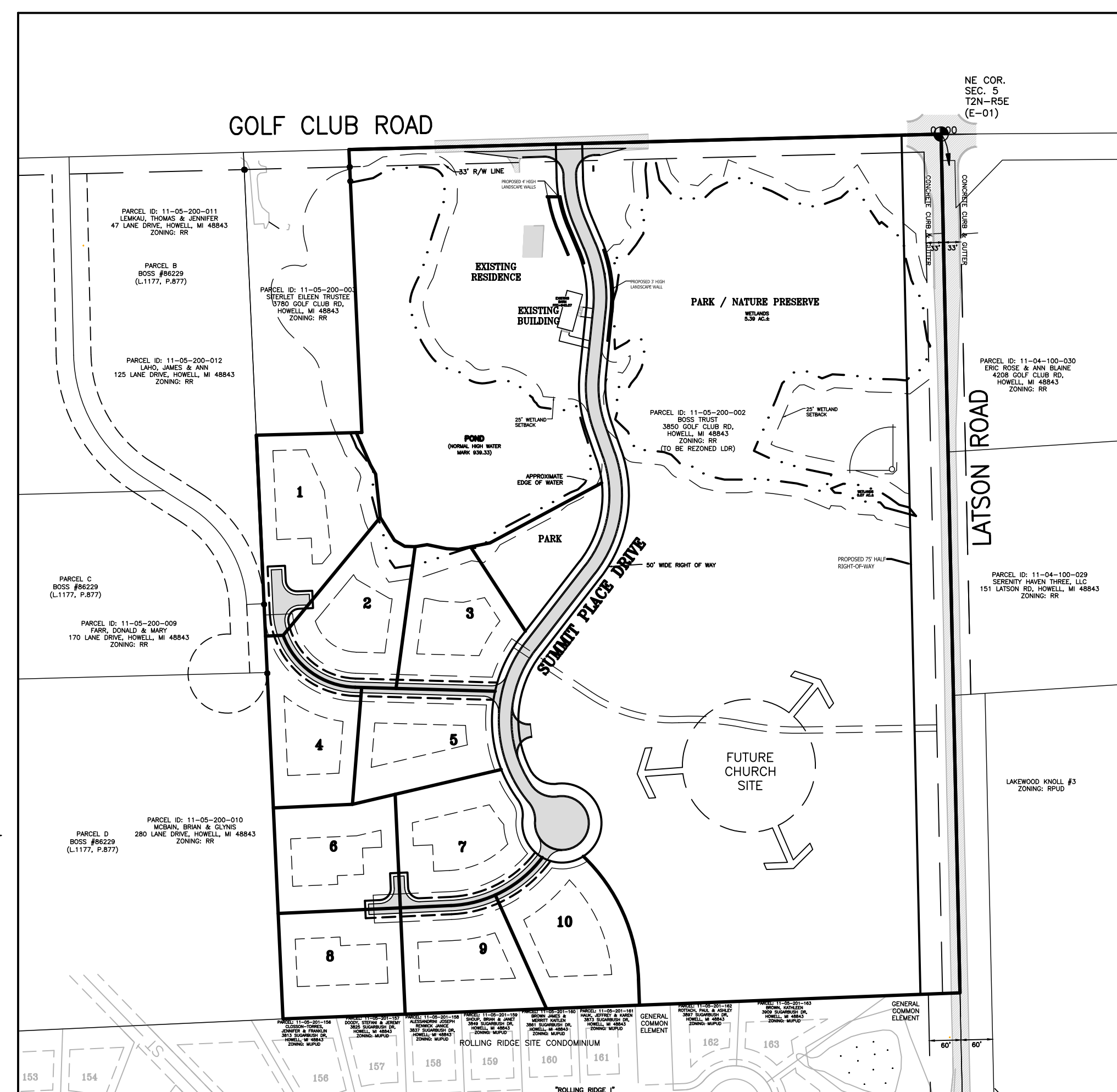
1. THE CONTRACTOR SHALL HOLD HARMLESS THE DESIGN PROFESSIONAL, MUNICIPALITY, COUNTY, STATE AND ALL OF ITS SUB CONSULTANTS, PUBLIC AND PRIVATE UTILITY COMPANIES, AND LANDOWNERS FOR DAMAGES TO INDIVIDUALS AND PROPERTY, REAL OR OTHERWISE, DUE TO THE OPERATIONS OF THE CONTRACTOR AND/OR THEIR SUBCONTRACTORS.
2. DO NOT SCALE THESE DRAWINGS AS IT IS A REPRODUCTION AND SUBJECT TO DISTORTION.
3. A GRADING PERMIT FOR SOIL EROSION-SEDIMENTATION CONTROL SHALL BE OBTAINED FROM THE GOVERNING AGENCY PRIOR TO THE START OF CONSTRUCTION.
4. IF DUST PROBLEM OCCURS DURING CONSTRUCTION, CONTROL WILL BE PROVIDED BY AN APPLICATION OF WATER, EITHER BY SPRINKLER OR TANK TRUCK.
5. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH LOCAL MUNICIPAL STANDARDS AND SPECIFICATIONS.
6. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED TOWNSHIP, COUNTY, AND STATE OF MICHIGAN PERMITS.
7. PAVED SURFACES, WALKWAYS, SIGNS, LIGHTING AND OTHER STRUCTURES SHALL BE MAINTAINED IN A SAFE, ATTRACTIVE CONDITION AS ORIGINALLY DESIGNED AND CONSTRUCTED.
8. ALL BARRIER-FREE FEATURES SHALL BE CONSTRUCTED TO MEET ALL LOCAL, STATE AND A.D.A. REQUIREMENTS.
9. ANY DISCREPANCY IN THIS PLAN AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE DESIGN ENGINEER PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL SETBACKS, EASEMENTS AND DIMENSIONS SHOWN HEREON BEFORE BEGINNING CONSTRUCTION.
10. THE CONTRACTOR SHALL CONTACT ALL OWNERS OF EASEMENTS, UTILITIES AND RIGHTS-OF-WAY, PUBLIC OR PRIVATE, PRIOR TO THE START OF CONSTRUCTION.
11. THE CONTRACTOR SHALL COORDINATE WITH ALL OWNERS TO DETERMINE THE LOCATION OF EXISTING LANDSCAPING, IRRIGATION LINES & PRIVATE UTILITY LINES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING LANDSCAPING, IRRIGATION LINES, AND PRIVATE UTILITY LINES.
12. THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE UPON COMPLETION OF THE PROJECT.
13. THE CONTRACTOR SHALL MAINTAIN THE SITE IN A MANNER SO THAT WORKMEN AND PUBLIC SHALL BE PROTECTED FROM INJURY, AND ADJOINING PROPERTY PROTECTED FROM DAMAGE.
14. THE CONTRACTOR SHALL KEEP THE AREA OUTSIDE THE "CONSTRUCTION LIMITS" BROOM CLEAN AT ALL TIMES.
15. THE CONTRACTOR SHALL CALL MISS DIG A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
16. ALL EXCAVATION UNDER OR WITHIN 3 FEET OF PUBLIC PAVEMENT, EXISTING OR PROPOSED SHALL BE BACKFILLED AND COMPACTED WITH SAND (MDOT CLASS II).
17. ALL PAVEMENT REPLACEMENT AND OTHER WORKS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE TOWNSHIP, INCLUDING THE LATEST MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
18. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.
19. NO ADDITIONAL COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR ANY DELAY OR INCONVENIENCE DUE TO THE MATERIAL SHORTAGES OR RESPONSIBLE DELAYS DUE TO THE OPERATIONS OF SUCH OTHER PARTIES DOING WORK INDICATED OR SHOWN ON THE PLANS OR IN THE SPECIFICATION OR FOR ANY REASONABLE DELAYS IN CONSTRUCTION DUE TO THE ENCOUNTERING OR EXISTING UTILITIES THAT MAY OR MAY NOT BE SHOWN ON THE PLANS.
20. DURING THE CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL NOT PERFORM WORK BY PRIVATE AGREEMENT WITH PROPERTY OWNERS ADJACENT TO THE PROJECT.
21. IF WORK EXTENDS BEYOND NOVEMBER 15, NO COMPENSATION WILL BE DUE TO THE CONTRACTOR FOR ANY WINTER PROTECTION MEASURES THAT MAY BE REQUIRED BY THE ENGINEER.
22. NO TREES ARE TO BE REMOVED UNTIL MARKED IN THE FIELD BY THE ENGINEER.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE PROPERTY BEYOND THE CONSTRUCTION LIMITS INCLUDING BUT NOT LIMITED TO EXISTING FENCE, LAWN, TREES AND SHRUBBERY.
24. ALL AREAS DISTURBED BY THE CONTRACTOR BEYOND THE NORMAL CONSTRUCTION LIMITS OF THE PROJECT SHALL BE SODDED OR SEEDDED AS SPECIFIED OR DIRECTED BY THE ENGINEER.
25. ALL ROOTS, STUMPS AND OTHER OBJECTIONABLE MATERIALS SHALL BE REMOVED AND THE HOLE BACKFILLED WITH SUITABLE MATERIAL. WHERE GRADE CORRECTION IS REQUIRED, THE SUBGRADE SHALL BE CUT TO CONFORM TO THE CROSS-SECTION AS SHOWN IN THE PLANS.
26. TRAFFIC SHALL BE MAINTAINED DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL SIGNS AND TRAFFIC CONTROL DEVICES. FLAG PERSONS SHALL BE PROVIDED BY THE CONTRACTOR IF DETERMINED NECESSARY BY THE ENGINEER. ALL SIGNS SHALL CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AT NO COST TO THE TOWNSHIP. NO WORK SHALL BE DONE UNLESS THE APPROPRIATE TRAFFIC CONTROL DEVICES ARE IN PLACE.
27. ALL DEMOLISHED MATERIALS AND SOIL SPOILS SHALL BE REMOVED FROM THE SITE AT NO ADDITIONAL COST, AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
28. AFTER REMOVAL OF TOPSOIL, THE SUBGRADE SHALL BE COMPACTED TO 95% OF ITS UNIT WEIGHT.
29. ALL GRADING IN THE PLANS SHALL BE DONE AS PART OF THIS CONTRACT. ALL DELETERIOUS MATERIAL SHALL BE REMOVED FROM THE SUBGRADE PRIOR TO COMPACTING.
30. NO SEEDING SHALL BE DONE AFTER OCTOBER 15 WITHOUT APPROVAL OF THE ENGINEER.
31. ANY EXISTING APPURTENANCES SUCH AS MANHOLES, GATE VALVES, ETC. SHALL BE ADJUSTED TO THE PROPOSED GRADE AND SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
32. SOIL EROSION MEASURES SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL VEGETATION HAS BEEN RE-ESTABLISHED.
33. ALL PERMANENT SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF THE MICHIGAN MUTCD MANUAL AND SHALL BE INCIDENTAL TO THE CONTRACT.
34. ACCESS ROADS TO THE SITE SHALL BE MAINTAINED DURING CONSTRUCTION AND SHALL BE CONSTRUCTED TO BE CAPABLE OF SUPPORTING THE IMPOSED LOAD OF FIRE APPARATUS WEIGHING AT LEAST 75,000 POUNDS.

### INDEMNIFICATION STATEMENT

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



**LOCATION MAP**  
NO SCALE



**OVERALL SITE MAP**  
NO SCALE

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	COVER SHEET
2	NATURAL FEATURES PLAN
3	EXISTING CONDITIONS & DEMOLITION PLAN
4	SITE PLAN
5	PRELIMINARY GRADING & DRAINAGE PLAN
6	PRELIMINARY SUMMIT PLACE DRIVE PROFILE
7	LANDSCAPE PLAN
8	CONSTRUCTION DETAILS

### APPLICANT:

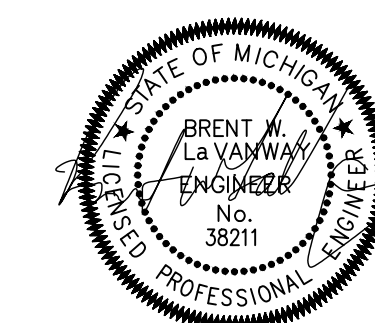
**BIBLE BAPTIST CHURCH**  
2258 EAST HIGHLAND ROAD  
HOWELL, MI 48843  
CONTACT: MR. TIM CHRISTOSON  
PHONE: 517-715-9223

### PROPERTY OWNER:

**MR. GARY BOSS**  
3850 GOLF CLUB ROAD  
HOWELL, MI 48843

### PREPARED BY:

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



FOR SITE PLAN APPROVAL ONLY!  
NOT FOR CONSTRUCTION

<b>1</b>					
1	ST	BL	PER TOWNSHIP REVIEW	3-30-20	ISSUE DATE: 3-4-20
	NO	BY	CK	REVISION	DATE
				19-353	35311



**NATURAL FEATURES NARRATIVE:**

SEVERAL NATURAL FEATURES WERE IDENTIFIED DURING AN ON-SITE VISIT TO THE PROPERTY ON AUGUST 23, 2019 THAT INCLUDE WETLANDS AND A VARIETY OF WOODLAND STANDS. BELOW IS A BRIEF DESCRIPTION OF EACH NATURAL FEATURE, LABELED AS ZONES "A-V". ALTHOUGH THE TOTAL SITE IS MEASURED AT 46.88 ACRES, THE ZONES DESCRIBED BELOW ARE APPROXIMATELY 41.11 ACRES WHEN ADDED TOGETHER. NOTE THAT EACH ZONE IS MEASURED TO AN APPROXIMATE SIZE AND THAT ZONES ARE SEPARATED BY A PATH THAT IS ROUGHLY 12' WIDE AND IS NOT ACCOUNTED FOR IN THE CALCULATIONS.

**ZONE "A"**  
AN ESTIMATED 4.62 ACRE "FRESHWATER POND", AS DESCRIBED BY THE NATIONAL WETLANDS INVENTORY, IS POSITIONED ON SITE AND CONTIGUOUS TO THE NEIGHBORING LOT TO THE WEST. THE ON-SITE ACREAGE IS ESTIMATED TO BE 3.88 ACRES. THE POND EDGE IS MOWN LAWN AND HAS A SOUTHERN BORDER OF NORWAY MAPLE TREES, AND A WESTERN BORDER OF BLACK CHERRY, AMERICAN ELM, VARIOUS OAKS AND SPRUCE TREES, SIZES RANGING FROM 4-18" AT DBH WITH TREES BEING SPACED AN AVERAGE OF 12' APART. THE POND COLLECTS STORMWATER FROM ROUGHLY 9 ACRES OF LAND FROM THE WEST AND SOUTH, WITH SLOPES RANGING FROM 10-20%.

**ZONE "B"**  
AT APPROXIMATELY 0.9 ACRES IN SIZE, THIS ZONE IS COMPOSED OF WAWASEE LOAM SOILS WITH SLOPES BETWEEN 6-12%. TREE SPECIES INCLUDE AN EQUAL MIX OF BLACK WALNUT, BLACK CHERRY, AMERICAN ELM, COTTONWOOD, AND BITTERNUT HICKORY SIZES RANGING FROM 6'-30" AND AVERAGING ABOUT 10' DBH. THE UNDERSTORY IS MOSTLY NON-EXISTENT BUT CONTAINS A SCATTERING OF HONEYSUCKLE AND VARIOUS PATCHES OF HERBACEOUS MATERIAL. AN ADDITIONAL AND APPROXIMATE 2.17 ACRES OF MANAGED PRIVATE PROPERTY IS FOUND TO THE WEST AND SOUTH OF THIS ZONE AND CONTAINS WAWASEE LOAM SOIL THAT SLOPES AT 6-12% TOWARDS THE POND IN ZONE "A".

**ZONE "C"**  
ZONE "C" IS A SMALL WOODLAND POCKET APPROXIMATELY 0.17 ACRES IN SIZE IS COMPOSED OF BLACK LOCUST, VARIOUS LARGE WILLOWS, AND BOXELDERS. TREES RANGE FROM 4-22" AT DBH. THIS POCKET IS IN A FLAT AREA THAT BORDERS FRESHWATER EMERGENT WETLANDS TO THE EAST, AND CONTAINS CARLISLE MUCK SOILS, WHICH ARE HYDRIC IN NATURE.

**ZONE "D"**  
ZONE "D" IS SET WITHIN A MANAGED SPACE NEXT TO AN OUTBUILDING, IS APPROXIMATELY 0.13 ACRES IN SIZE, AND HAS MOWN LAWN AS AN UNDERSTORY. SOILS ARE COMPOSED OF WAWASEE LOAMS AND THERE IS A STAND OF MATURE NORWAY SPRUCE TREES THAT ARE ROUGHLY 12' AT DBH AND SPACED OUT ABOUT 10-15' APART.

**ZONE "E"**  
A FRESHWATER EMERGENT WETLAND THAT IS APPROXIMATELY 5.45 ACRES IN SIZE WAS IDENTIFIED IN ZONE "E". THE AREA IS COMPOSED OF CARLISLE MUCK SOILS AND IS DOMINATED BY REED CANARY GRASS, PHRAGMITES, BROADLEAF CATTAIL, AND A VARIETY OF FORBES AND RUSHES. THIS WETLAND COLLECTS A LARGE AMOUNT OF STORMWATER RUNOFF FROM THE CONIFER STAND TO THE SOUTH, AND FROM THE ADJACENT ROAD SYSTEMS. MANICURED LAWN BORDERS THE NORTHERN AND EASTERN EDGES OF THIS ZONE AND MAKE UP APPROXIMATELY 1.22 ACRES.

**ZONE "F"**  
ZONE "F" IS ANOTHER MANAGED AREA WITH MANICURED LAWN THAT IS APPROXIMATELY 0.43 ACRES IN SIZE AND HAS A SERIES OF NORWAY SPRUCE TREES PLANTED IN A DOUBLE ROW. THE TREES ARE ROUGHLY 12' AT DBH AND SPACED ROUGHLY 15' APART. SOILS ARE WAWASEE LOAMS AND SLOPING EAST TOWARDS THE WETLAND IN ZONE "E". AT THE EASTERN EDGE OF THIS ZONE, THERE ARE SEVERAL LARGE WILLOW TREES AND BLACK WALNUTS, SOME OF WHICH MAY QUALIFY AS LANDMARK TREES.

**ZONE "G"**  
ZONE "G" IS A FILL AREA OF APPROXIMATELY 1.16 ACRES THAT WAS FORMERLY USED AS A SPORTS FIELD. IT HAS SINCE BECOME OVERGROWN WITH A VARIETY OF MEADOW FORBES AND GRASSES.

**ZONE "H"**  
ZONE "H" IS AN APPROXIMATELY 0.07 ACRE FRESHWATER EMERGENT/FORESTED WETLAND. THERE ARE POCKETS OF LARGE COTTONWOOD TREES AND WILLOWS WITH SOME SEDGES AND WETLAND FORBES WITHIN THE DELINEATED AREA. THIS ZONE COLLECTS STORMWATER RUNOFF FROM THE SOUTHERN HILLSIDE OF THE PROPERTY AND SLOWLY DRAINS WATER TO THE WEST INTO THE LARGER WETLAND IN ZONE "E".

**ZONE "I"**  
ZONE "I" IS A LARGE AREA, APPROXIMATELY 7.63 ACRES IN SIZE, AND COMPOSED ALMOST ENTIRELY OF NORWAY SPRUCE TREES RANGING FROM 5-18" AT DBH, SPACED 10-15' APART, AND MAKE UP ROUGHLY 90% OF THE TREE POPULATION. THE REMAINING 10% OF TREE COVER IS COMPOSED OF BLACK CHERRY, BLACK LOCUST, RED OAK, AND AMERICAN ELM, ALL OF WHICH ARE BETWEEN 6-18" AT DBH. THE UNDERSTORY IS ALMOST NON-EXISTENT. THE EASTERN 75% OF THIS ZONE IS COMPOSED OF MIAMI LOAM SOILS WITH SLOPES RANGING FROM 25-35%, AND THE WESTERN 25% IS A FOX-BOYER COMPLEX WITH SLOPES RANGING FROM 12-18%.

**ZONE "J"**  
ZONE "J" IS APPROXIMATELY 2.38 ACRES IN SIZE AND IS A SLIGHT TRANSITION FROM THE ZONE "I" CONIFEROUS COMMUNITY TO A MORE DECIDUOUS FOREST STAND. THE DOMINANT SPECIES HERE ARE RED AND WHITE OAK, SHAGBARK AND BITTERNUT HICKORY, BLACK CHERRY, AND AMERICAN ELM. THERE ARE SEVERAL LARGE NORWAY SPRUCE TREES, BUT THEY ARE NO LONGER THE DOMINANT SPECIES. ALL OF THESE TREES ARE MATURE AND ARE 6-18" AT DBH AND SPACED ROUGHLY 10' APART. AN UNDERSTORY OF GREEN ASH, HICKORY, AND HONEYSUCKLE IS PRESENT, THOUGH NOT OVERBEARING. SOILS ARE A FOX-BOYER COMPLEX WITH 18-25% SLOPES THAT DRAIN TO THE LARGE POND IN ZONE "A".

**ZONE "K"**  
ZONE "K" IS APPROXIMATELY 2.85 ACRES IN SIZE AND BORDERS MUCH OF THE SOUTHERN AND WESTERN BOUNDARIES OF THE SITE. THIS FOREST STAND IS ALMOST ENTIRELY DECIDUOUS AND CONTAINS MATURE RED OAKS, BLACK CHERRY, AMERICAN ELM, HICKORY, AND VARIOUS MAPLE TREES RANGING FROM 5-18" AT DBH, THOUGH THERE ARE SEVERAL LANDMARK TREES IN THIS ZONE THAT MUST BE NOTED. THE TREES ARE SPACED ROUGHLY 15' APART. THE SOILS ARE MIAMI LOAMS WITH 18-25% SLOPES THAT SHED WATER TOWARDS THE SOUTHERN BOUNDARIES OF THE SITE.

**ZONES "L", "M", "N"**  
THESE THREE ZONES MAKE UP A LARGER OPEN SPACE, APPROXIMATELY 1.68 ACRES IN SIZE AND IS ALMOST ENTIRELY FREE OF TREE SPECIES. INSTEAD, THE AREA IS POPULATED WITH A DOMINANCE OF GREY DOGWOOD SHRUBS, VARIOUS MEADOW FORBES, GRASSES, AND VINES. THERE ARE A FEW LARGE BUT DEAD ELM TREES AT THE EASTERN EDGE OF ZONE "N", AND SEVERAL NORWAY MAPLE TREES AT THE NORTHERN PORTION OF ZONE "N". THE LAND IS MUCH FLATTER IN THIS AREA WHERE SOILS ARE A FOX-BOYER COMPLEX WITH SLOPES AT 2-6% THAT GENTLY DRAIN TO THE WEST.

**ZONES "O" AND "P"**  
THESE ZONES MAKE UP APPROXIMATELY 1.31 ACRES OF THE SITE AND ARE LARGE STANDS OF DECIDUOUS TREES THAT INCLUDE SHAGBARK AND BITTERNUT HICKORY, AMERICAN ELM, BLACK CHERRY, AND BLACK LOCUST. THE TREES ARE SPACED ROUGHLY 15' APART AND RANGE FROM 4-12" AT DBH, THOUGH THERE ARE SEVERAL LANDMARK TREES IN THIS AREA THAT MUST BE NOTED. THESE ZONES ARE AT ONE OF THE HIGHEST POINTS OF THE SITE WITH WAWASEE LOAMS SLOPING 2-6% TO THE WEST.

**ZONE "Q"**  
THIS ZONE IS APPROXIMATELY 1.57 ACRES IN SIZE AND HAS A DOMINANCE OF BLACK LOCUST TREES THAT MAKE UP 70% OF THE FOREST STAND. THE REMAINING TREE SPECIES ARE AMERICAN ELM, BLACK CHERRY, AND HICKORY. ALL TREES ARE MATURE RANGING FROM 5-18" AT DBH AND SPACED 15' APART ON AVERAGE. THE EASTERN EDGE OF THIS ZONE IS SLOPING STEEPLY AT 25-35% TO THE EAST TOWARDS LATSON ROAD AND TO THE NORTH TOWARDS ZONE "H". THE WESTERN AND SOUTHERN PORTIONS OF ZONE "Q" ARE RELATIVELY FLAT. THE SOILS ARE A MIX OF WAWASEE LOAMS AND MIAMI LOAMS.

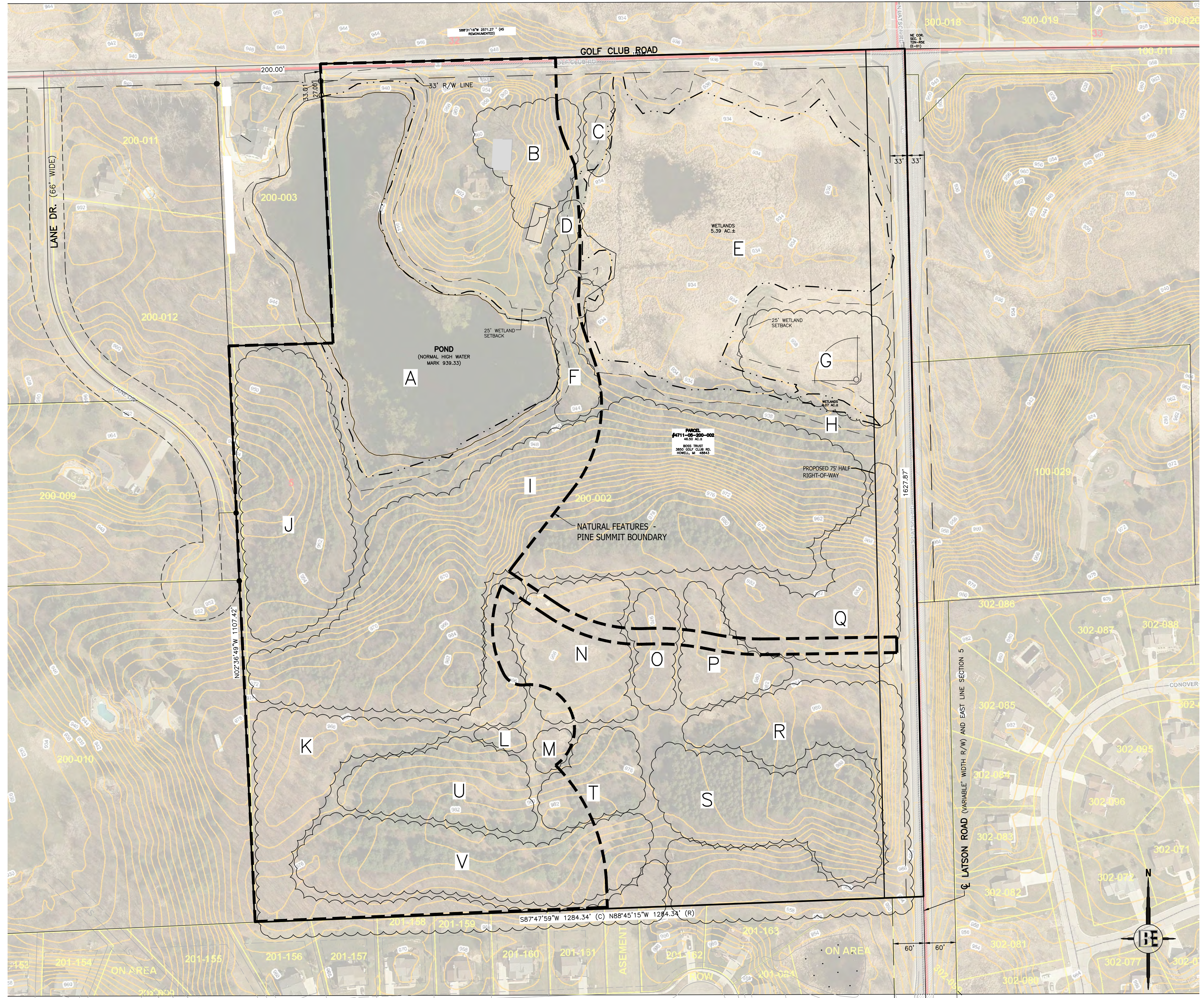
**ZONE "R"**  
SIMILAR TO ZONE "Q", ZONE "R", WHICH IS APPROXIMATELY 2.60 ACRES IN SIZE, IS DOMINATED BY BLACK LOCUST TREES WHICH MAKE UP 70% OF THE FOREST STAND, WHILE THE REMAINING 30% COVER IS COMPOSED OF AMERICAN ELM, BLACK LOCUST, AND BLACK CHERRY TREES. ALL TREES RANGE FROM 4-18" AT DBH AND AVERAGE ABOUT 10' AT DBH SPACED ROUGHLY 15' APART. THE UNDERSTORY IS MADE UP OF SEVERAL DECIDUOUS SAPLINGS AND SOME HONEYSUCKLE, BUT OTHERWISE OPEN. STEEP SLOPES OF 25-35% RUN EAST TOWARDS LATSON ROAD, WHILE THE SOUTHERN EDGE OF THIS ZONE SLOPES MORE GENTLY TO THE SOUTH AT ROUGHLY 10%. THE SOILS ARE A MIX OF MIAMI LOAM AND WAWASEE LOAM.

**ZONE "S"**  
SIZED AT APPROXIMATELY 1.73 ACRES, ZONE "S" IS A LARGE CONIFER STAND COMPOSED MOSTLY OF NORWAY SPRUCE TREES. THE SOUTHERN PORTION OF THIS ZONE IS PLANTED WITH ROWS OF WHITE FIR TREES. ALL TREES IN THIS AREA ARE BETWEEN 4-18" AT DBH AND PLANTED BETWEEN 6-12' APART ON AVERAGE. THE LANDSCAPE SLOPES GENTLY TO THE WEST AT ROUGHLY 2-6%. THE SOILS ARE MOSTLY WAWASEE LOAMS, THOUGH THE SOUTHERN PORTION IS A FOX-BOYER COMPLEX SOIL.

**ZONE "T"**  
ZONE "T" IS A SMALLER AND MORE OPEN AREA THAT IS APPROXIMATELY 0.64 ACRES IN SIZE. IT IS POPULATED WITH YOUNGER FRASIER FIR AND SCOTCH PINE TREES THAT ARE NOT MUCH LARGER THAN 8" AT DBH. GRASSES AND FORBES OCCUPY THE SPACES BETWEEN. THIS ZONE HAS A MIX OF FOX-BOYER COMPLEX SOILS, AND WAWASEE LOAMS THAT SLOPE TO THE NORTHEAST AT ROUGHLY 2-6%.

**ZONE "U"**  
ZONE "U" IS APPROXIMATELY 1.10 ACRES IN SIZE AND POPULATED WITH SCOTCH PINE TREES AND SEVERAL NORWAY SPRUCE TREES THAT RANGE BETWEEN 6-12" AT DBH AND ARE SPACED ABOUT 15' APART. SOILS ARE MIAMI LOAMS AND FOX-BOYER COMPLEX SOILS THAT SLOPE TO THE NORTH AT ABOUT 12%. THE UNDERSTORY IS MINIMAL, THOUGH SOME SMALLER DECIDUOUS SPECIES ARE SPROUTING.

**ZONE "V"**  
ZONE "V" IS APPROXIMATELY 2.04 ACRES IN SIZE AND POPULATED WITH WHITE PINE TREES THAT ARE PLANTED IN ROWS ON THE SOUTHERN EDGE, WITH A MIX OF SCOTCH PINE AND WHITE PINE ON THE NORTHERN PORTION. THESE TREES ARE BETWEEN 6-18" AT DBH AND SPACED 15' APART WITH NO UNDERSTORY OBSERVED. THE TREES ARE PLANTED ON A RIDGE WITH MIAMI LOAM SOILS TO THE SOUTH, AND FOX-BOYER COMPLEX SOILS TO THE NORTH WITH SLOPES RANGING FROM 2-6%.



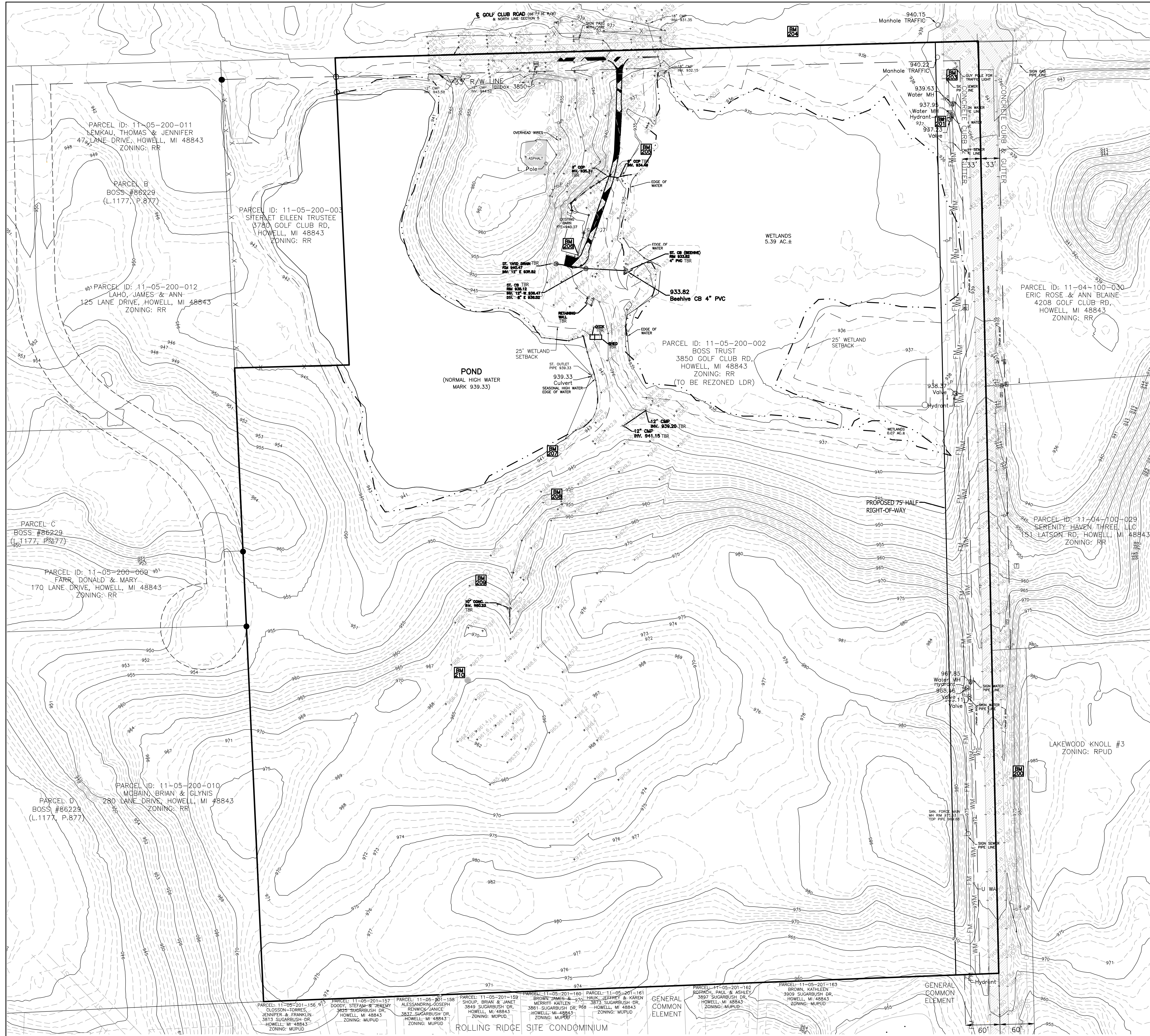
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**BEBOSS Engineering**  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
517.546.4836 FAX 517.548.1670

PROJECT	PINE SUMMIT		
PREPARED FOR	BIBLE BAPTIST CHURCH		
	2258 EAST HIGHLAND ROAD HOWELL, MI 48843 517-715-9223		
TITLE	NATURAL FEATURES PLAN		
DESIGNED BY:	JH		
DRAWN BY:	KJ		
CHECKED BY:			
SCALE	1" = 100'		
JOB NO.	19-353-3		
DATE	3-3-20		
SHEET NO.	2		







**LEGEND**

- 900 EXISTING CONTOUR
- EXISTING SPOT ELEVATION
- POWER POLE
- GUY WIRE
- LIGHT POLE
- HYDRANT
- WATER GATE VALVE
- WATER MANHOLE
- MANHOLE
- STORM INVERT
- TELEPHONE RISER
- CABLE TV RISER
- U.G. CABLE TV MARKER
- MAILBOX
- SIGN
- DECIDUOUS TREE
- CONIFEROUS TREE
- STEEL ROD OR PIPE FOUND
- WOOD LATH SET
- SECTION CORNER

- GENERAL SURVEY NOTES:**
1. WETLANDS FLAGGED AND TIED OUT BY BOSS ENGINEERING SPRING 2019.
  2. BEARINGS ARE BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE.
  3. SUBSURFACE UTILITIES NOT LOCATED FOR THIS SURVEY MAY EXIST. IT IS THE RESPONSIBILITY OF THE OWNER OF THE RESPECTIVE UTILITY TO ACCURATELY LOCATE SUCH UTILITIES.
  4. EASEMENTS OR RESTRICTIONS OF RECORD NOT DEPICTED ON THIS DRAWING MAY EXIST.
  5. ELEVATIONS WERE ESTABLISHED FROM GPS OBSERVATION, AND USING OPUS POST-PROCESS SYSTEM. (NAVD88 DATUM)
  6. CONTOURS ARE SHOWN AT 1 FOOT INTERVALS.
  7. THE LOCATIONS OF STORM SEWER, SANITARY SEWER & WATERMAIN, AS SHOWN ON THIS DRAWING ARE APPROXIMATE. THE LOCATIONS ARE BASED ON PHYSICAL FIELD LOCATIONS OF STRUCTURES.
  8. ALL WORK SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE MUNICIPALITY, THE COUNTY, AND THE STATE OF MICHIGAN.
  9. ALLOW THREE WORKING DAYS BEFORE YOU DIG, CALL MISS DIG TOLL FREE 1-800-482-7171.

**CLEARING NOTE:**  
CLEARING OF TREES WILL BE LIMITED TO ONLY THAT WHICH IS REQUIRED TO CONSTRUCT THE DEVELOPMENT INFRASTRUCTURE.

- SITE BENCHMARKS (NAVD88 DATUM):**
- BM #200 = NAIL/TAG W/S P-POLE E/S LASTON RD. 785± NORTH OF CONOVER CT. ELEV.=971.41
  - BM #201 = ARROW ON HYD W/S OF LASTON RD. 135± SOUTH OF GOLF CLUB RD. ELEV.=939.50
  - BM #202 = FD. R.R. SPIKE W/S P-POLE W/S LASTON RD. 118± NORTH OF SNOWDEN LANE. ELEV.=955.59
  - BM #203 = FD. R.R. E/S OF GUY POLE W/S OF LASTON RD. 44± SOUTH OF GOLF CLUB RD. ELEV.=942.12
  - BM #205 = PK NAIL/TAG W/S 40" WILLOW TREE 170± SOUTH OF GOLF CLUB RD. & 160± NORTH OF BARN. ELEV.=935.10
  - BM #206 = LANDSCAPE SPIKE SET S/E CORNER OF POLE BARN. ELEV.=940.32
  - BM #207 = PK NAIL/TAG S/S 12" MAPLE TREE S/S OF POND. ELEV.=945.31
  - BM #208 = PK NAIL/TAG SET 10" PINE TREE 50± EAST OF TWO TRACK RUNNING N&S & 150± SOUTH OF POND, N/S OF TWO TRACK RUNNING E&W. ELEV.=954.73
  - BM #209 = PK NAIL/TAG S/S 12" ELM TREE 142± SOUTH OF POND. ELEV.=959.69
  - BM #210 = PK NAIL/TAG E/S 8" PINE TREE 330± SOUTH OF POND. ELEV.=966.83



Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DC	Carlsde muck, 0 to 2 percent slopes	0.8	13.4%
FIB	Fox-Boyer complex, 2 to 6 percent slopes	2.0	4.0%
FID	Fox-Boyer complex, 12 to 18 percent slopes	8.3	16.4%
FIE	Fox-Boyer complex, 18 to 25 percent slopes	4.5	8.9%
MdB	Wassasee loam, 2 to 6 percent slope	7.2	14.2%
MdC	Wassasee loam, 6 to 12 percent slopes	6.9	13.5%
MOD	Miami loam, 12 to 18 percent slopes	5.9	11.5%
MOF	Miami loam, 25 to 35 percent slopes	5.6	11.0%
W	Water	3.8	7.5%
Totals for Area of Interest		58.8	100.0%

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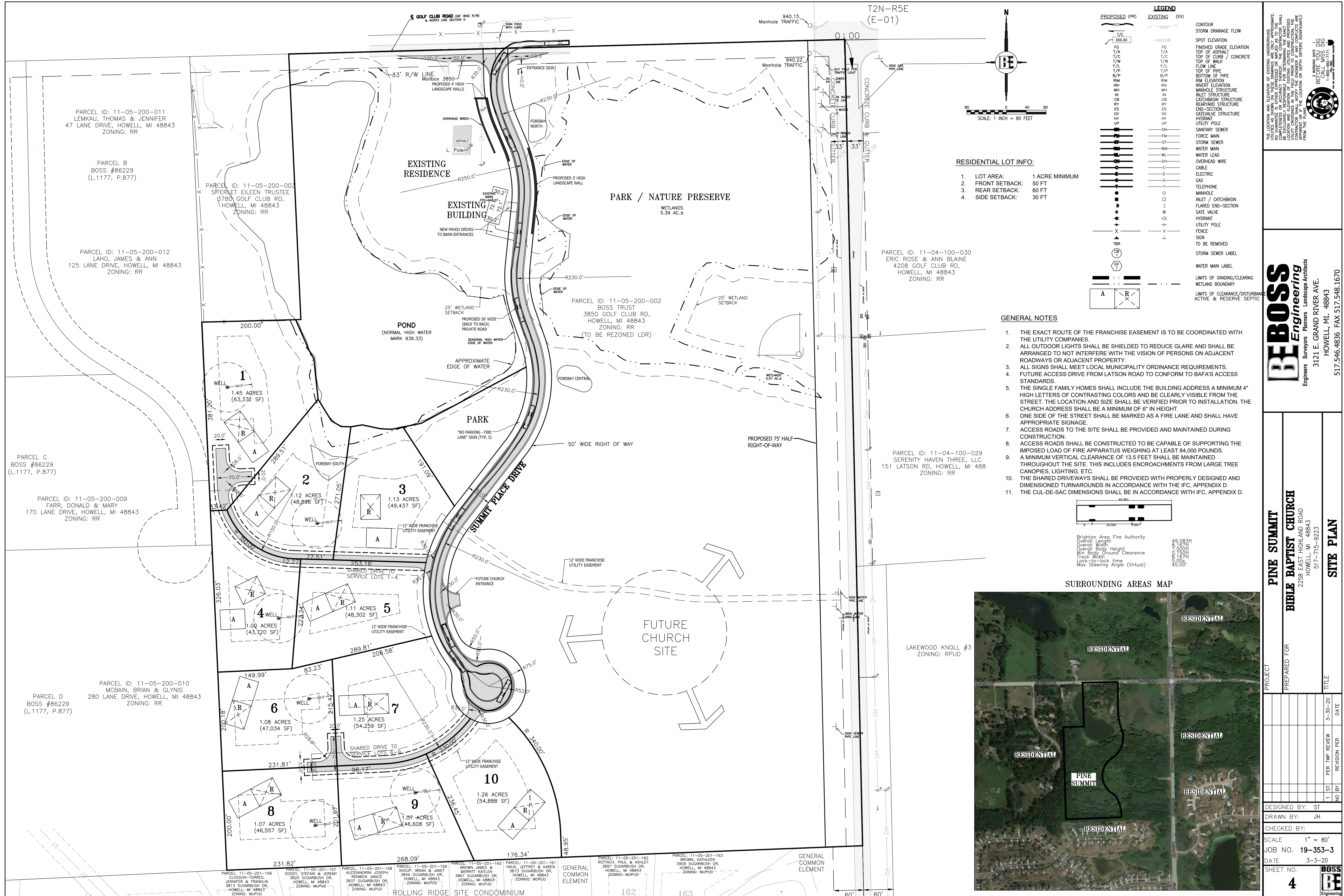
**PINE SUMMIT**  
**BIBLE BAPTIST CHURCH**  
2258 EAST HIGHLAND ROAD  
HOWELL, MI 48843  
517-715-9223

PROJECT: PINE SUMMIT  
PREPARED FOR: BIBLE BAPTIST CHURCH  
DATE: 3-30-20

TITLE: EXISTING CONDITIONS & DEMOLITION PLAN  
REVISION PER: 1-1ST  
NO BY: 1-1ST

DESIGNED BY: ST  
DRAWN BY: KJ  
CHECKED BY: [ ]  
SCALE: 1" = 80'  
JOB NO. 19-353-3  
DATE: 3-3-20  
SHEET NO. 3





**LEGEND**

PROPOSED (PR)	EXISTING (EX)	DESCRIPTION
---	---	CONTOUR
---	---	STORM DRAINAGE FLOW
---	---	SPOT ELEVATION
---	---	FINISHED GRADE ELEVATION
---	---	TOP OF ASPHALT
---	---	TOP OF CURB / CONCRETE
---	---	TOP OF WALK
---	---	TOP OF FLOW LINE
---	---	TOP OF PIPE
---	---	BOTTOM OF PIPE
---	---	RM ELEVATION
---	---	INVERT ELEVATION
---	---	MANHOLE STRUCTURE
---	---	INLET STRUCTURE
---	---	CATCHBASIN STRUCTURE
---	---	REARWARD STRUCTURE
---	---	END-SECTION
---	---	GATE VALVE STRUCTURE
---	---	HYDRANT
---	---	UTILITY POLE
---	---	SANITARY SEWER
---	---	FORCE MAIN
---	---	STORM SEWER
---	---	WATER MAIN
---	---	WATER LEAD
---	---	OVERHEAD WIRE
---	---	CABLE
---	---	ELECTRIC
---	---	GAS
---	---	TELEPHONE
---	---	MANHOLE
---	---	INLET / CATCHBASIN
---	---	FLARED END-SECTION
---	---	GATE VALVE
---	---	HYDRANT
---	---	UTILITY POLE
---	---	FENCE
---	---	SIGN
---	---	TO BE REMOVED
---	---	STORM SEWER LABEL
---	---	WATER MAIN LABEL
---	---	LIMITS OF GRADING/CLEARING
---	---	WETLAND BOUNDARY
---	---	LIMITS OF CLEARANCE/DISTURBANCE
---	---	ACTIVE & RESERVE SEPTIC

**RESIDENTIAL LOT INFO:**

- LOT AREA: 1 ACRE MINIMUM
- FRONT SETBACK: 50 FT
- REAR SETBACK: 60 FT
- SIDE SETBACK: 30 FT

**GENERAL NOTES**

- THE EXACT ROUTE OF THE FRANCHISE EASEMENT IS TO BE COORDINATED WITH THE UTILITY COMPANIES.
- ALL OUTDOOR LIGHTS SHALL BE SHIELDED TO REDUCE GLARE AND SHALL BE ARRANGED TO NOT INTERFERE WITH THE VISION OF PERSONS ON ADJACENT ROADWAYS OR ADJACENT PROPERTY.
- ALL SIGNS SHALL MEET LOCAL MUNICIPALITY ORDINANCE REQUIREMENTS. FUTURE ACCESS DRIVE FROM LATSON ROAD TO CONFORM TO BAFAs ACCESS STANDARDS.
- THE SINGLE FAMILY HOMES SHALL INCLUDE THE BUILDING ADDRESS A MINIMUM 4" HIGH LETTERS OF CONTRASTING COLORS AND BE CLEARLY VISIBLE FROM THE STREET. THE LOCATION AND SIZE SHALL BE VERIFIED PRIOR TO INSTALLATION. THE CHURCH ADDRESS SHALL BE A MINIMUM OF 6" IN HEIGHT.
- ONE SIDE OF THE STREET SHALL BE MARKED AS A FIRE LANE AND SHALL HAVE APPROPRIATE SIGNAGE.
- ACCESS ROADS TO THE SITE SHALL BE PROVIDED AND MAINTAINED DURING CONSTRUCTION.
- ACCESS ROADS SHALL BE CONSTRUCTED TO BE CAPABLE OF SUPPORTING THE IMPOSED LOAD OF FIRE APPARATUS WEIGHING AT LEAST 84,000 POUNDS.
- A MINIMUM VERTICAL CLEARANCE OF 13.5 FEET SHALL BE MAINTAINED THROUGHOUT THE SITE. THIS INCLUDES ENCROACHMENTS FROM LARGE TREE CANOPIES, LIGHTING, ETC.
- THE SHARED DRIVEWAYS SHALL BE PROVIDED WITH PROPERLY DESIGNED AND DIMENSIONED TURNAROUNDS IN ACCORDANCE WITH THE IFC, APPENDIX D.
- THE CUL-DE-SAC DIMENSIONS SHALL BE IN ACCORDANCE WITH IFC, APPENDIX D.

Brighton Area Fire Authority

Overall Length	49.083ft
Overall Width	8.167ft
Overall Body Height	7.500ft
Min Body Ground Clearance	6.167ft
Track Width	6.167ft
Lock-to-lock time	1.250sec
Max Steering Angle (Virtual)	45.00°

**SURROUNDING AREAS MAP**



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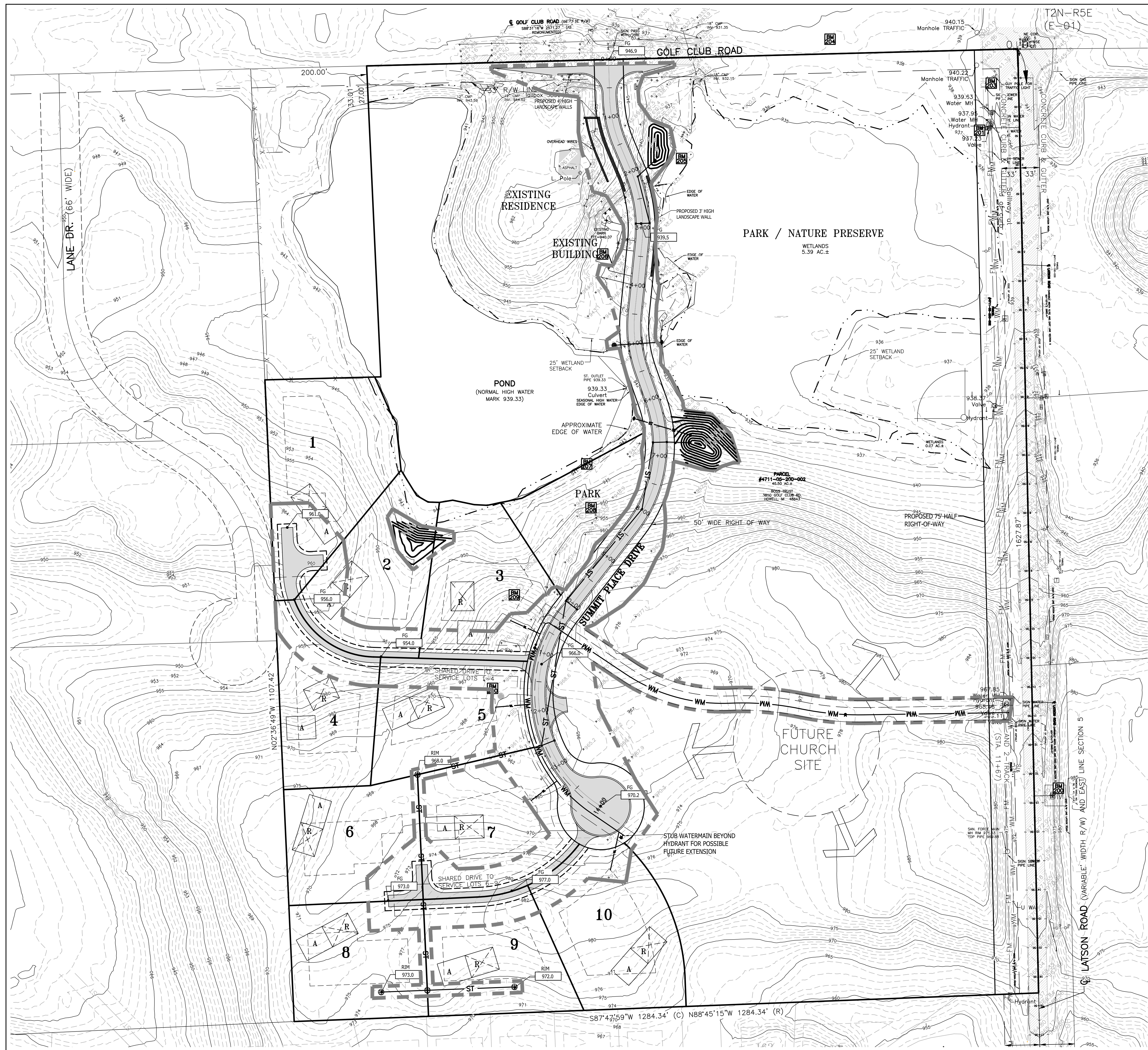
**PINE SUMMIT BIBLE BAPTIST CHURCH**  
 2258 EAST HIGHLAND ROAD  
 HOWELL, MI 48843  
 517-715-9223

**SITE PLAN**

NO	BY	PER	TWP	REVIEW	DATE
1	ST	JH			3-30-20

DESIGNED BY: ST  
 DRAWN BY: JH  
 CHECKED BY:  
 SCALE: 1" = 80'  
 JOB NO. 19-353-3  
 DATE 3-3-20  
 SHEET NO. 4

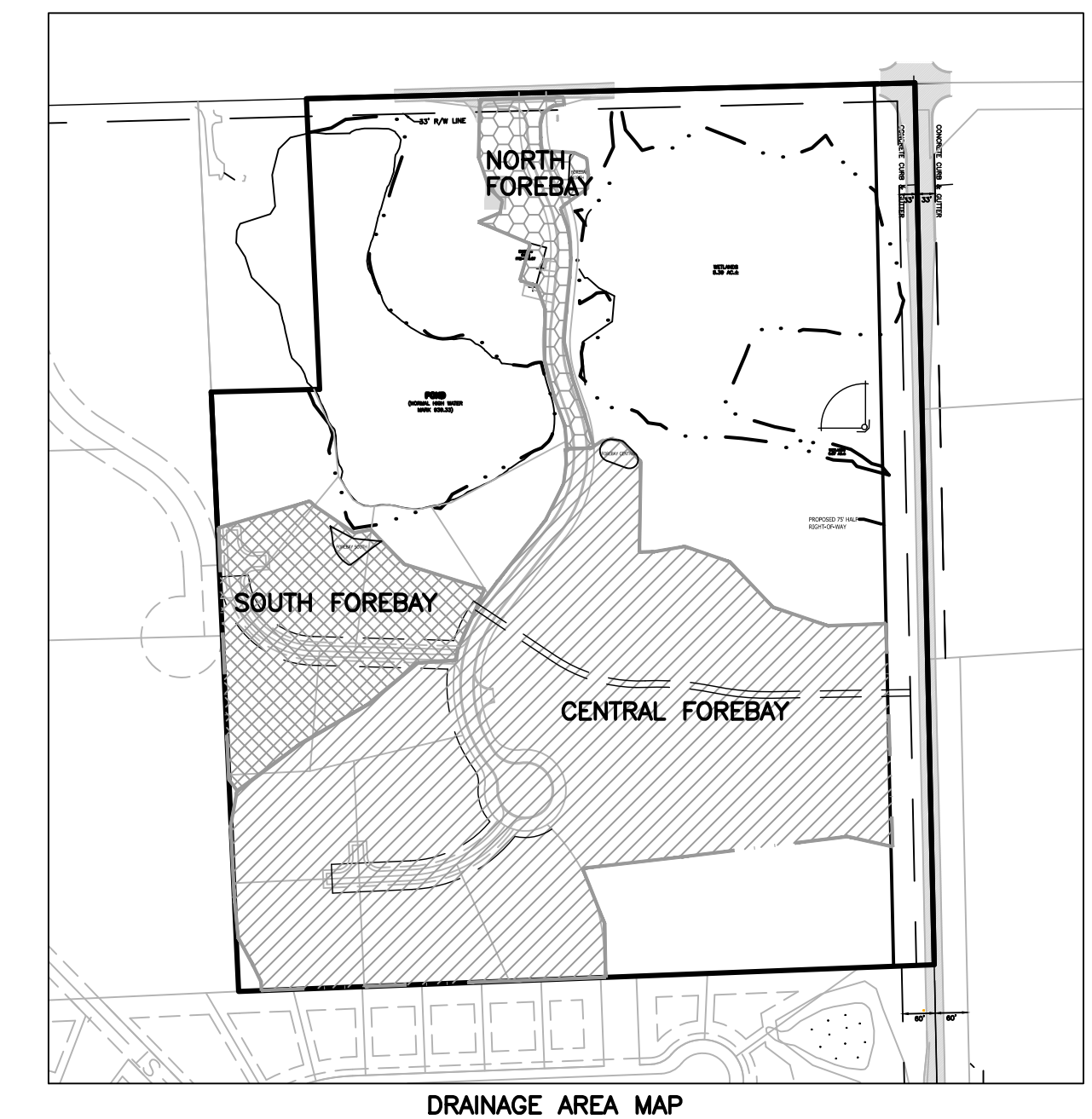




SCALE: 1 INCH = 80 FEET

**LEGEND**

PROPOSED (PR)	EXISTING (EX)	
FG	FG	CONTOUR
T/C	T/C	STORM DRAINAGE FLOW
T/W	T/W	SPOT ELEVATION
F/L	F/L	FINISHED GRADE ELEVATION
T/P	T/P	TOP OF ASPHALT
B/P	B/P	TOP OF CURB / CONCRETE
RM	RM	TOP OF MANHOLE
IN	IN	FLOW LINE
MH	MH	TOP OF PIPE
CB	CB	BOTTOM OF PIPE
RY	RY	RIM ELEVATION
ES	ES	INVERT ELEVATION
GV	GV	MANHOLE STRUCTURE
UP	UP	INLET STRUCTURE
		CATCHBASIN STRUCTURE
		REARWARD STRUCTURE
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		SANITARY SEWER
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		GATE VALVE
		HYDRANT
		UTILITY POLE
		FENCE
		SIGN
		TO BE REMOVED
		STORM SEWER LABEL
		WATER MAIN LABEL
		LIMITS OF GRADING/CLEARING
		WETLAND BOUNDARY
		LIMITS OF CLEARANCE/DISTURBANCE



**UTILITY NOTES**

- ALL WATERMAIN TO BE CENTERED IN A 25 FOOT WIDE WATERMAIN EASEMENT.

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HOWELL, MI. 48843  
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---

PROJECT: **PINE SUMMIT**

PREPARED FOR: **BIBLE BAPTIST CHURCH**

2258 EAST HIGHLAND ROAD  
HOWELL, MI 48843  
517-715-9223

TITLE: **PRELIMINARY GRADING & DRAINAGE PLAN**

NO	BY	DATE	REVISION PER
1	ST	3-30-20	

---

DESIGNED BY: ST

DRAWN BY: ST

CHECKED BY:

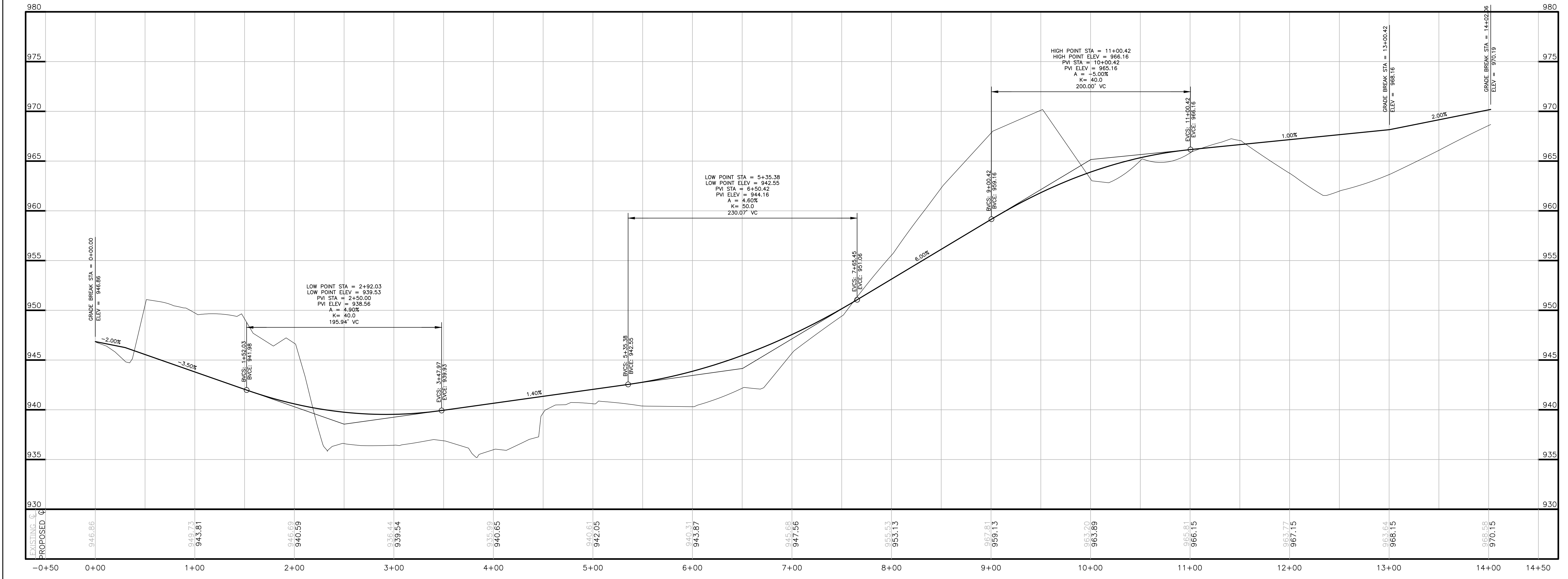
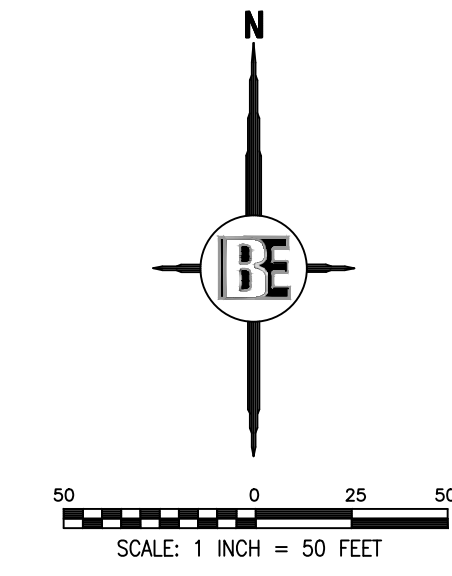
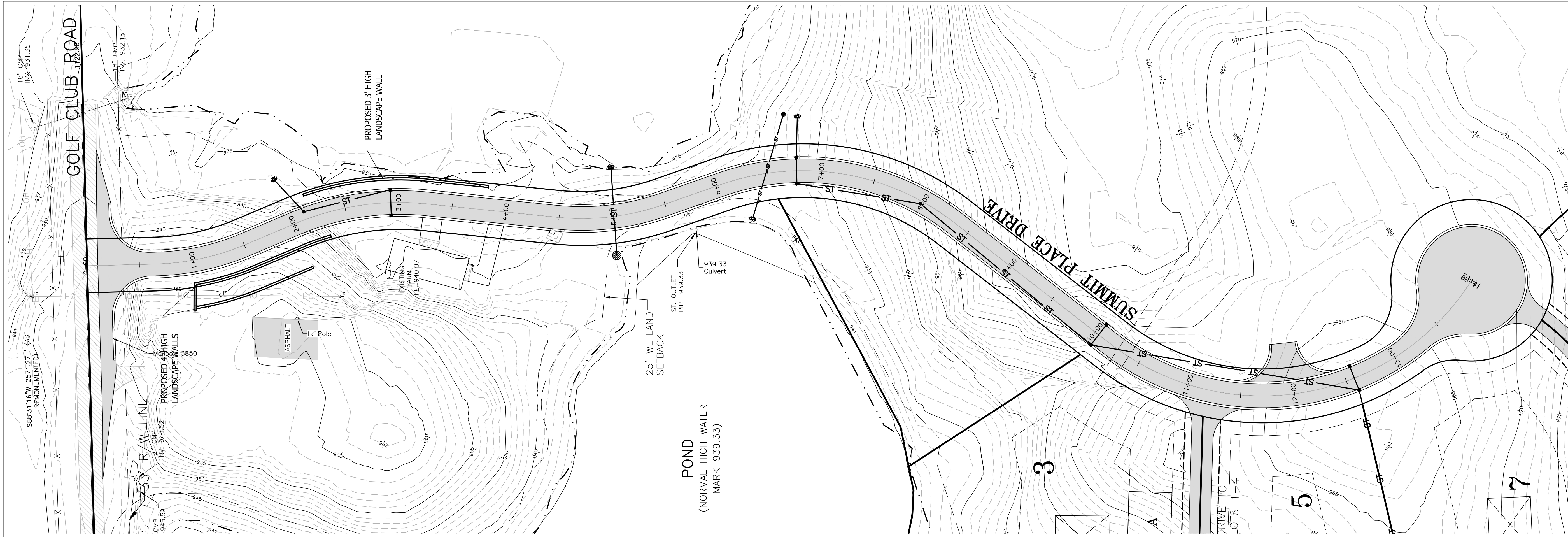
SCALE: 1" = 80'

JOB NO. 19-353-3

DATE: 3-3-20

SHEET NO. **5**





THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING THE EXACT LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE USER SHALL BE RESPONSIBLE FOR OBTAINING THE EXACT LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE USER SHALL BE RESPONSIBLE FOR OBTAINING THE EXACT LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION.

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PROJECT: **PINE SUMMIT**  
 PREPARED FOR: **BIBLE BAPTIST CHURCH**  
 2258 EAST HIGHLAND ROAD  
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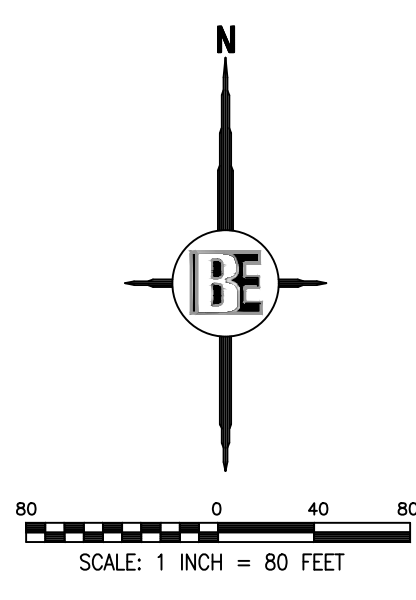
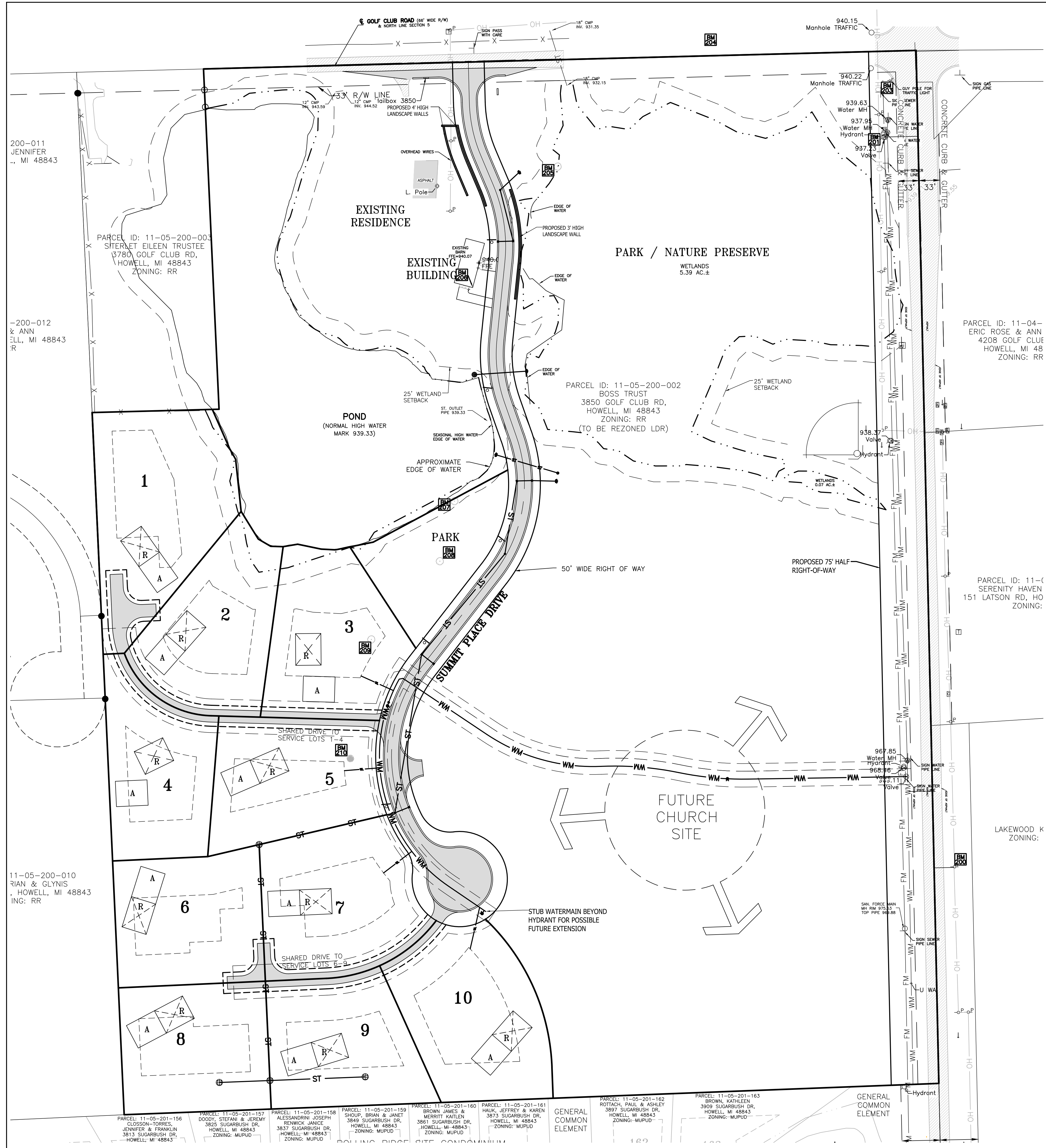
TITLE: **PRELIMINARY SUMMIT RIDGE DRIVE PLAN & PROFILE**

NO	BY	PER	TWP	REVIEW	PER	DATE
1	ST					3-30-20

DESIGNED BY: ST  
 DRAWN BY: ST  
 CHECKED BY:

SCALE: 1" = 50'  
 JOB NO. 19-353-3  
 DATE: 3-3-20  
 SHEET NO. **6**





**LANDSCAPE REQUIREMENTS**

1. ZONING: LOW DENSITY RESIDENTIAL (LDR)  
 ARTICLE 12.02.02 - RESIDENTIAL STREET TREES  
 REQUIREMENT: TWO (2) CANOPY STREET TREES SHALL BE PROVIDED ALONG A PUBLIC STREET OR PRIVATE ROAD FOR EACH RESIDENTIAL UNIT.  
 10 LOTS x 2 TREES/LOT = 20 TREES REQUIRED.  
 NOTE: THE PLANNING COMMISSION MAY ALLOW EXISTING TREES (3) INCH CALIPER OR GREATER, PRESERVED IN GOOD CONDITION, TO BE COUNTED TOWARDS THIS REQUIREMENT.  
 PROVIDED: ZERO (0) NEW TREES PROVIDED AS EACH LOT CONTAINS MULTIPLE MATURE TREES OVER THREE (3) INCHES CALIPER AND IN GOOD CONDITION ALONG THE PRIVATE ROADS AND SERVICE DRIVES.  
 TREES THAT ARE BEING UTILIZED TO MEET THE LANDSCAPE REQUIREMENTS WILL BE PROVIDED DURING FINAL SITE PLAN.

**GENERAL LANDSCAPE NOTES:**

- ALL PLANT MATERIAL SHALL CONFORM TO THE REQUIREMENTS AND SPECIFICATIONS OF THE GOVERNING MUNICIPALITY AND SHALL BE NURSERY GROWN. ALL SIZES AND MEASUREMENTS SHALL CONFORM TO ANSI Z60 STANDARDS. ALL PLANT MATERIAL SHALL BE OF SELECTED SPECIMEN QUALITY AND HAVE A NORMAL HABIT OF GROWTH. ALL PLANT MATERIAL IS SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT.
- ALL PLANT MATERIALS SHALL BE BALLED AND BURLAPPED STOCK OR CONTAINER STOCK. NO BARE ROOT STOCK IS PERMITTED. ALL PLANT BALLS SHALL BE FIRM, INTACT AND SECURELY WRAPPED AND BOUND.
- ALL PLANT BEDS SHALL BE EXCAVATED OF ALL BUILDING MATERIALS AND OTHER EXTRANEOUS OBJECTS AND POOR SOILS TO A MINIMUM DEPTH OF 12 INCHES AND BACKFILLED TO GRADE WITH PLANTING MIX (SEE BELOW).
- PLANTING MIXTURE SHALL CONSIST OF 4 PARTS TOPSOIL FROM ON SITE, 1 PART PEAT, AND 5 POUNDS OF SUPERPHOSPHATE PER CUBIC YARD OF MIX. INGREDIENTS SHALL BE THOROUGHLY BLENDED TO A UNIFORM CONSISTENCY.
- ALL PLANT BEDS AND INDIVIDUAL PLANTS SHALL BE MULCHED WITH A 3 INCH LAYER OF SHREDDED BARK MULCH.
- ALL PLANTS AND PLANT BEDS SHALL BE THOROUGHLY WATERED UPON COMPLETION OF PLANTING AND STAKING OPERATIONS.
- THE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR A PERIOD OF 1 YEAR FROM THE DATE THE WORK IS ACCEPTED, IN WRITING, BY THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL REPLACE, WITHOUT COST TO THE OWNER, WITHIN A SPECIFIED PERIOD TIME, ALL DEAD PLANTS, AND ALL PLANTS NOT IN A VIGOROUS, THRIVING CONDITION, AS DETERMINED BY THE LANDSCAPE ARCHITECT DURING AND AT THE END OF THE GUARANTEE PERIOD. REPLACEMENT STOCK SHALL CONFORM TO THE ORIGINAL REQUIREMENTS.
- ALL LANDSCAPE BEDS SHALL BE EDGED WITH BLACK ALUMINUM EDGING, 1/8" X 4". INSTALL PER MANUFACTURER'S INSTRUCTIONS. ALL EDGING SHALL BE INSTALLED IN STRAIGHT LINES OR SMOOTH CURVES WITHOUT IRREGULARITIES.
- SOD SHALL BE DENSE, WELL ROOTED TURF, FREE OF WEEDS. IT SHALL BE COMPRISED OF A BLEND OF AT LEAST TWO KENTUCKY BLUEGRASSES AND ONE FESCUE. IT SHALL HAVE A UNIFORM THICKNESS OF 3/4 INCH, AND CUT IN UNIFORM STRIPS NOT LESS THAN 10 INCHES BY 18 INCHES. SOD SHALL BE KEPT MOIST AND LAID WITHIN 36 HOURS AFTER CUTTING.  
 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH A DENSE LAWN OF PERMANENT GRASSES, FREE OF LUMPS AND DEPRESSIONS. ALL SODDED AREAS THAT BROWN PLUT OR HAVE NOT FIRMLY KNITTED TO THE SOIL, BASE WITHIN A PERIOD OF ONE MONTH SHALL BE REPLACED BY THE CONTRACTOR, AT NO COST TO THE OWNER.
- ALL AREAS OF THE SITE THAT BECOME DISTURBED DURING CONSTRUCTION AND ARE NOT TO BE PAVED, STONED, LANDSCAPED, OR SODDED SHALL BE SEEDED AND MULCHED.  
 SEED MIXTURE SHALL BE AS FOLLOWS:  
 KENTUCKY BLUEGRASS (CHOOSE 3 VARIETIES: ADELPHI, RUGBY, GLADE OR PARADE) 30%  
 RUBY RED OR DAWSON RED FINE FESCUE 30%  
 ATLANTA RED FESCUE 20%  
 PENNFINE PERENNIAL RYE 20%  
 THE ABOVE SEED MIXTURE SHALL BE SOWN AT A RATE OF 250 POUNDS PER ACRE. PRIOR TO SEEDING, THE SOIL LAYER SHALL BE FERTILIZED WITH A COMMERCIAL FERTILIZER WITH A 10-0-10 ANALYSIS:  
 10% NITROGEN: A MINIMUM OF 25% FROM A UREA-FORMALDEHYDE SOURCE  
 0% PHOSPHATE  
 10% POTASH: SOURCE TO BE POTASSIUM SULFATE OR POTASSIUM NITRATE.  
 THE FIRST FERTILIZER APPLICATION SHALL BE AT A RATE OF 10 POUNDS OF BULK FERTILIZER PER 1000 SQUARE FEET.  
 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH A DENSE LAWN OF PERMANENT GRASSES, FREE OF LUMPS AND DEPRESSIONS. ANY PART OF THE AREA THAT FAILS TO SHOW A UNIFORM GERMINATION SHALL BE RESEDED AND SUCH RESEEDING SHALL CONTINUE UNTIL A DENSE LAWN IS ESTABLISHED. DAMAGE TO SEEDING AREAS RESULTING FROM EROSION SHALL BE REPAIRED BY THE CONTRACTOR.
- ALL PLANT MATERIALS SHALL BE FREE OF WEEDS, INSECTS AND DISEASE.

THE DESIGN AND UTILIZATION OF UTILITIES SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE EXACT LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE EXACT LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE EXACT LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION.

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 HOWELL, MI 48843  
 517-715-9223

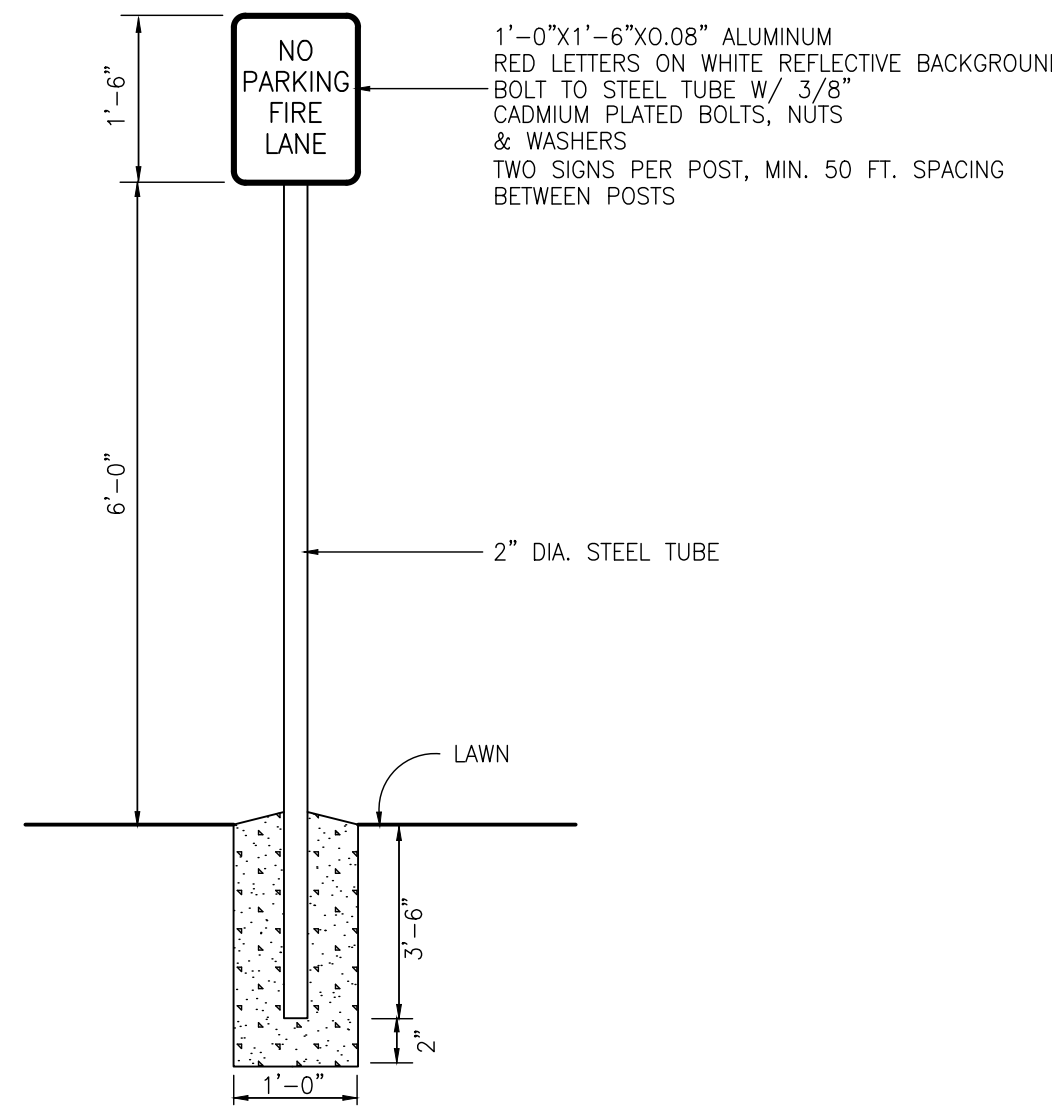
PROJECT: BIBLE BAPTIST CHURCH  
 PREPARED FOR: BIBLE BAPTIST CHURCH  
 TITLE: LANDSCAPE PLAN

NO	BY	REVISION	DATE
1	JH	PER TWP REVIEW	3-30-20

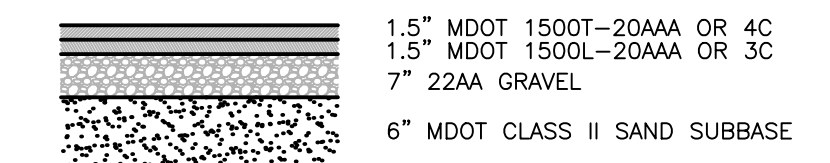
DESIGNED BY: JH  
 DRAWN BY: JH  
 CHECKED BY: JH

SCALE: 1" = 80'  
 JOB NO. 19-353-3  
 DATE: 3-3-20  
 SHEET NO. 7

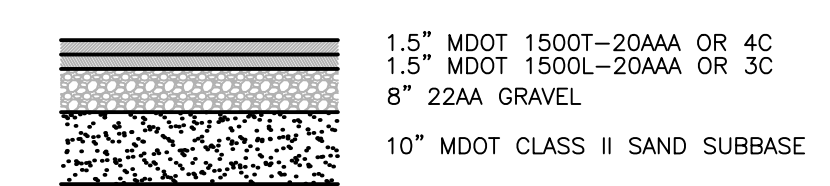




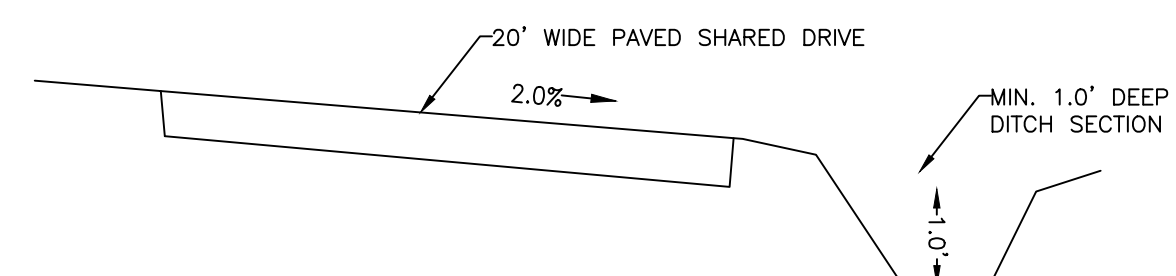
**NO PARKING SIGN DETAIL**  
(NO SCALE)



**ASPHALT SECTION WITHIN GOLF CLUB ROAD R.O.W.**  
(NO SCALE)



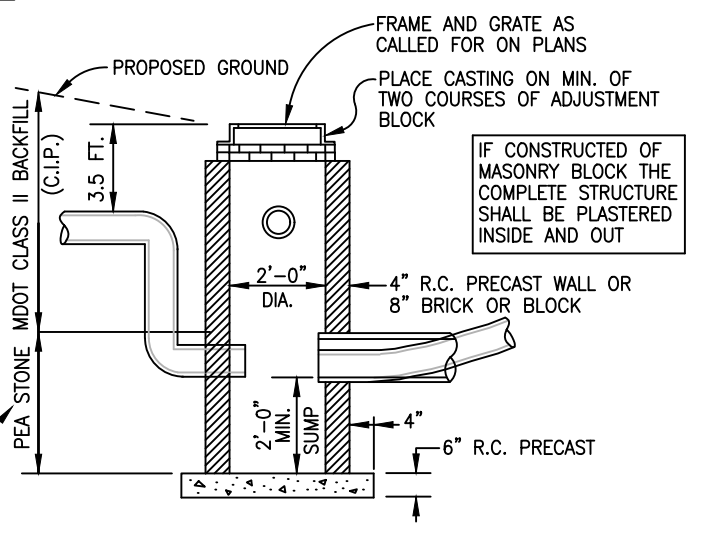
**PRIVATE ROAD ASPHALT SECTION**  
(NO SCALE)



**TYPICAL SHARED DRIVE CROSS SECTION**  
(NO SCALE)

**INSTALL SUBDRAINS AT ALL CATCH BASINS LOCATED WITHIN ROADWAY**

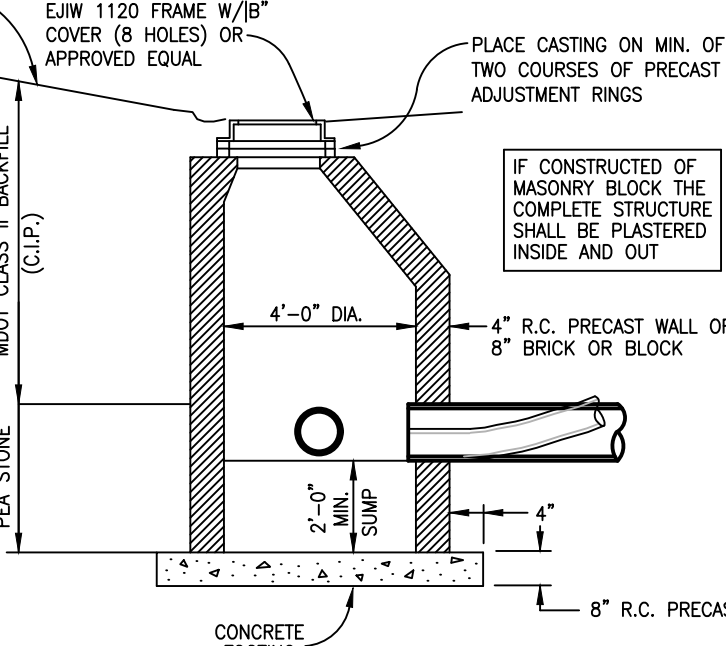
- 4 L.F. (MIN.) 6" PERFORATED P.V.C. PIPE WRAPPED WITH GEOTEXTILE FABRIC PLACED AT LOWEST INVERT PARALLEL TO ROAD OR LINE OF PIPE. BACK-FILLED WITH PEA STONE ONE FOOT ABOVE PIPE.
- AT LOWPOINT CATCH BASINS 20 L.F. (MIN.) OF 6" PERFORATED P.V.C. PIPE WRAPPED WITH GEOTEXTILE FABRIC, STARTING AT LOWEST INVERT AND CONTINUING AT 3.5 FT. BELOW ROAD-WAY, PARALLEL TO ROAD. (BOTH DIRECTIONS) BACK-FILLED WITH PEA STONE TO THE SUBBASE.



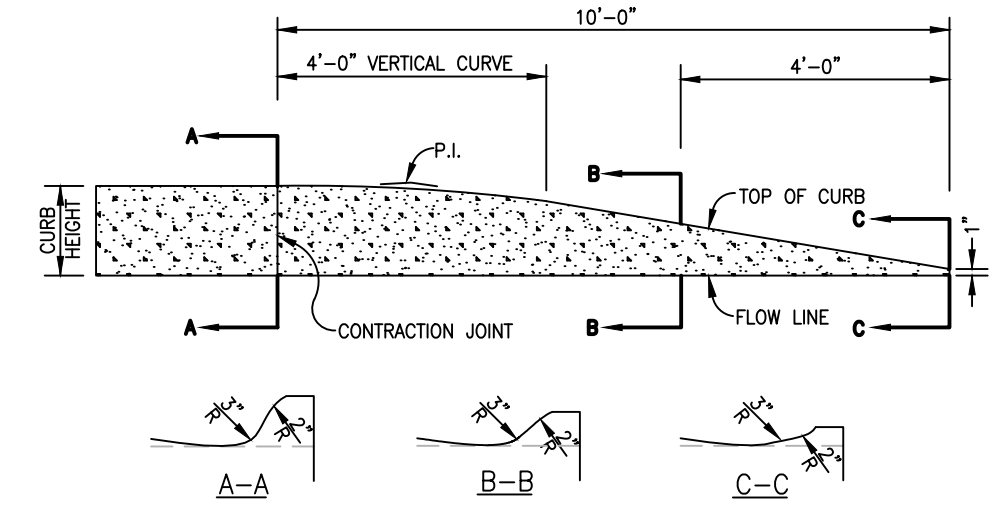
**2 FT. DIA. CATCH BASIN W/SUMP**  
(NO SCALE)

**INSTALL SUBDRAINS AT ALL CATCH BASINS LOCATED WITHIN ROADWAY**

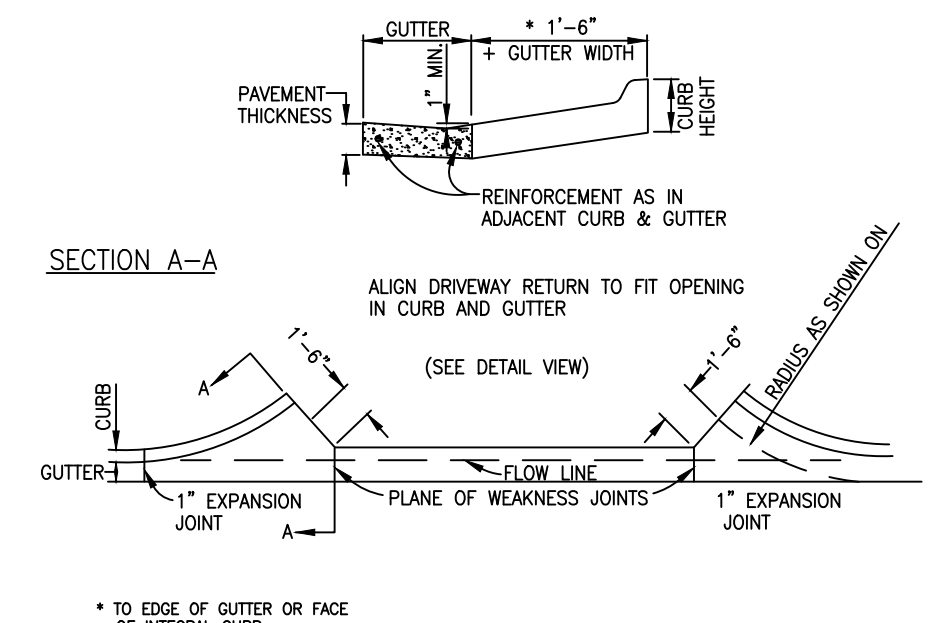
- 4 L.F. (MIN.) 6" PERFORATED P.V.C. PIPE WRAPPED WITH GEOTEXTILE FABRIC PLACED AT LOWEST INVERT PARALLEL TO ROAD OR LINE OF PIPE. BACK-FILLED WITH PEA STONE ONE FOOT ABOVE PIPE.



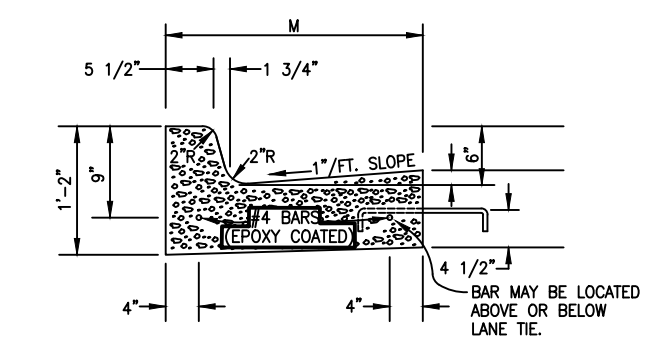
**4 FT. DIA. STORM MANHOLE W/SUMP**  
(NO SCALE)



**CONCRETE CURB AND GUTTER ENDINGS**  
(NO SCALE)



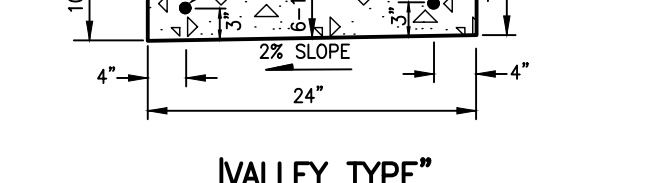
**CONCRETE DRIVEWAY OPENING - MDOT STANDARD II-42, DETAIL 'M'**  
(NO SCALE)



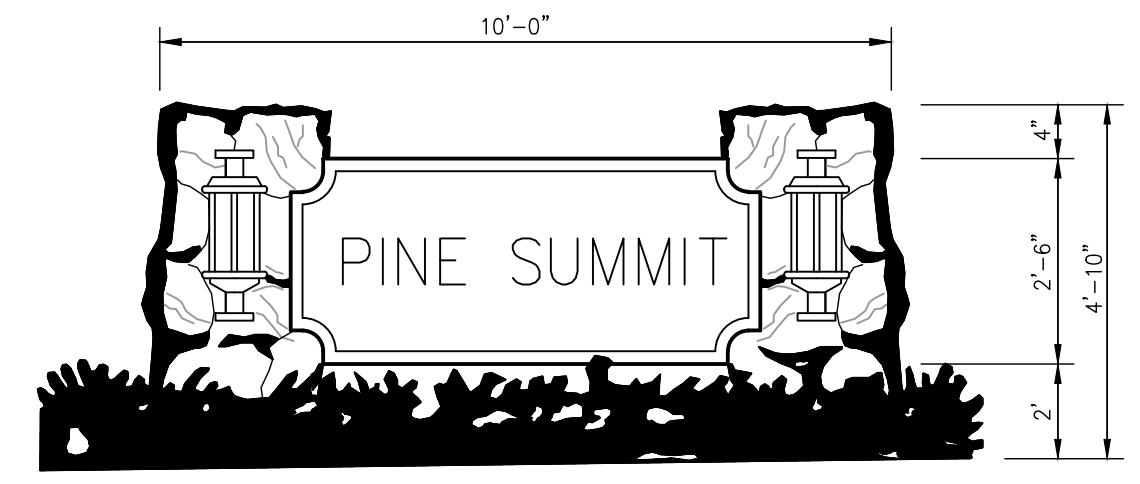
**CONCRETE CURB & GUTTER - TYPE F (WITHIN GOLF CLUB ROAD ROW)**  
(NO SCALE)

DETAIL	DIMENSIONS	LANE TIES	CONCRETE CUTOFF/LIN.FT.
F1	1'-4"	7/8"	0.0484
F2	1'-8"	7/8"	0.0484
F3	2'-0"	1 3/8"	0.0610
F4	2'-0"	1 3/8"	0.0610
F5	2'-4"	1 3/8"	0.0737
F6	2'-4"	1 3/8"	0.0737

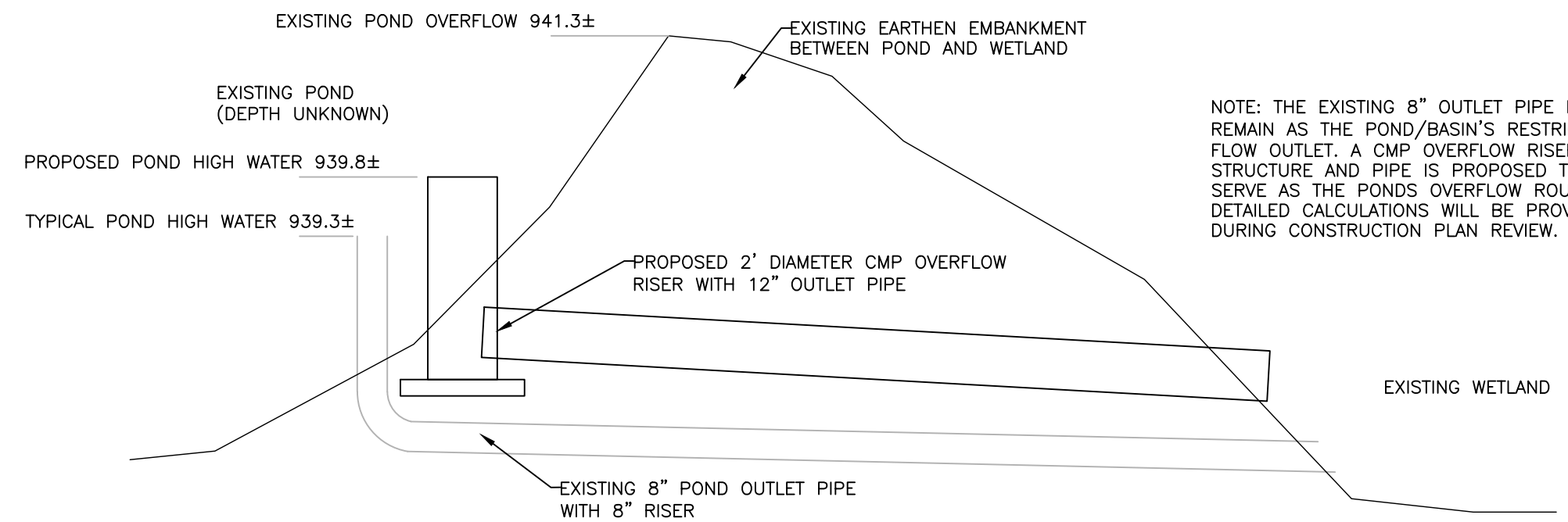
**CONCRETE CURB & GUTTER - TYPE F (WITHIN GOLF CLUB ROAD ROW)**  
(NO SCALE)



**VALLEY TYPE MOUNTABLE CURB & GUTTER DETAILS**  
(NO SCALE)



**ENTRANCE SIGN DETAIL**  
SCALE: NONE



**EXISTING/PROPOSED POND OUTLET PIPE DETAIL**  
(NO SCALE)

NOTE: THE EXISTING 8" OUTLET PIPE IS TO REMAIN AS THE POND/BASIN'S RESTRICTED FLOW OUTLET. A CMP OVERFLOW RISER STRUCTURE AND PIPE IS PROPOSED TO SERVE AS THE POND'S OVERFLOW ROUTE. DETAILED CALCULATIONS WILL BE PROVIDED DURING CONSTRUCTION PLAN REVIEW.

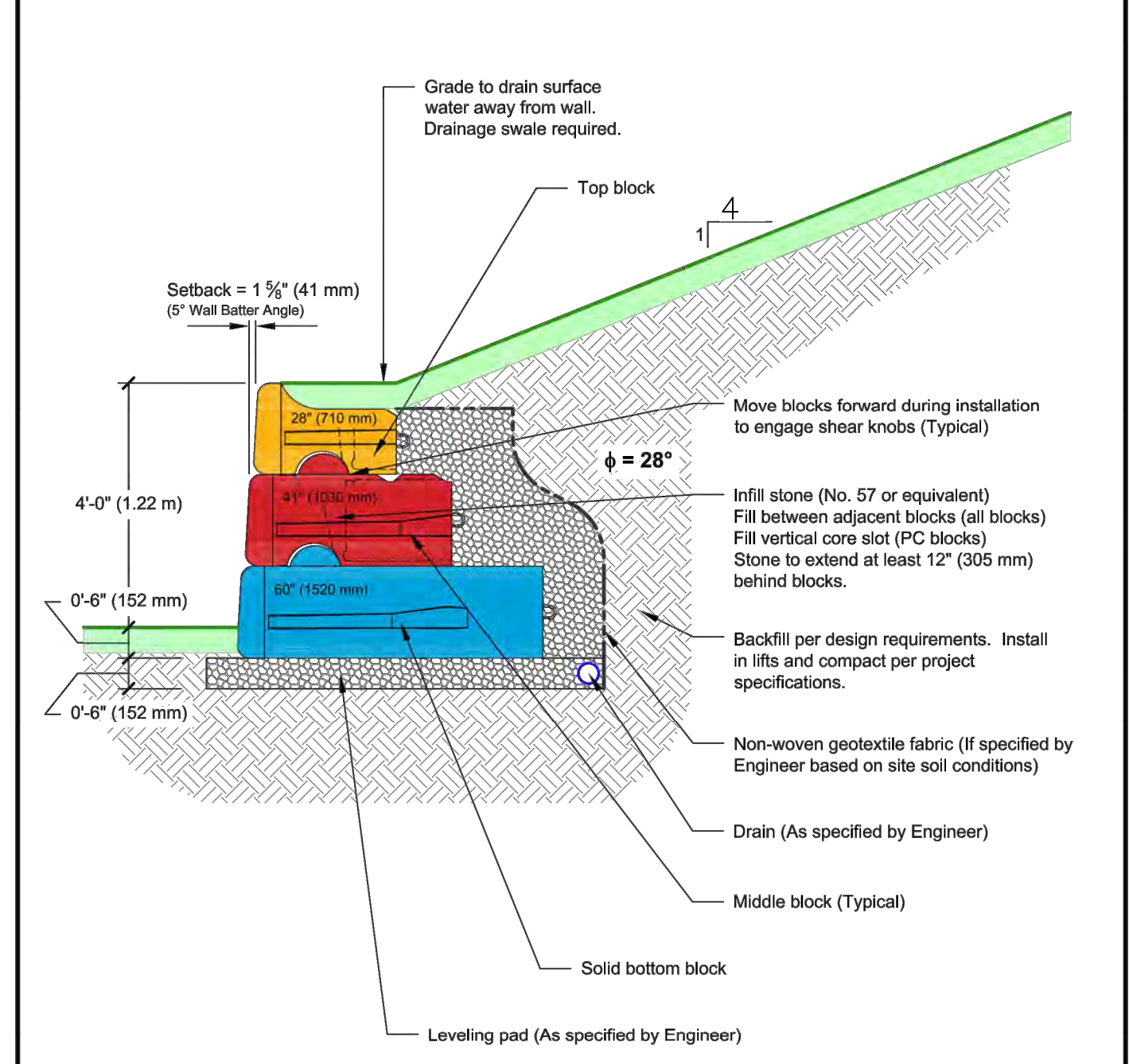
$\phi = 28^\circ$  SILTY SAND or CLAYEY SAND

**LOAD CONDITION C** | 1:2.5 BACK SLOPE, NO LIVE LOAD SURCHARGE, NO TOE SLOPE

**3 BLOCK HIGH SECTION**

- (1) 28" (710 mm) Block
- (1) 41" (1030 mm) Block
- (1) 60" (1520 mm) Block

**PRELIMINARY**  
Professional Engineering Design  
Required for Construction



**LANDSCAPE WALL DETAIL**  
SCALE: NONE

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site. Final wall design must address both internal and external drainage and all modes of wall stability.

DESIGNED BY: C. Kruger  
APPROVED BY: J. Johnson  
DATE: June 10, 2015  
SHEET: 1 of 1

**Preliminary Wall Section**  
Silty Sand or Clayey Sand,  $\phi = 28^\circ$   
1 : 2.5 Back Slope, No Live Load Surcharge, No Toe Slope

**RED ROCK**  
05481 US 31 SOUTH, CHARLEVOIX, MI 49720  
(800) 222-8000 ext.2070 • engineering@red-rock.com

**NORTH FOREBAY VOLUME CALCS**

**LIVINGSTON COUNTY DETENTION BASIN CALCULATIONS**

AREA (ACRES)	IMPERVIOUS FACTOR	ACRE IMPERVIOUS
0.50	0.9	0.45
0.00	0.7	0.00
0.90	0.2	0.18

COMPOUND C: 0.45  
TOTAL DRAINAGE AREA: 1.40 ACRES

K1 = AxC (Design Constant) = 0.63  
Qa = MAX ALLOW OUTFLOW (0.1 CFS / ACRE) = 0.140 CFS

DURATION MINUTES	DURATION SECONDS	INTENSITY (IN/HR)	INCHES	INFLOW VOLUME IN RUNOFF x Ax C	OUTFLOW INFLOW - OUTFLOW	STORAGE VOLUME
5	300	9.17	2750	1733	42	1691
10	600	7.86	4714	2970	84	2886
15	900	6.88	6188	3898	126	3772
20	1200	6.11	7333	4620	168	4452
30	1800	5.00	9000	5670	252	5418
60	3600	3.24	11647	7338	504	6834
90	5400	2.39	12913	8135	756	7379
120	7200	1.90	13655	8603	1008	7595
180	10800	1.34	14488	9127	1512	7615

REQUIRED 100 YEAR DETENTION VOLUME = 7615 CF

FOREBAY VOLUME  
V(F) = 5% OF THE 100-YEAR STORM VOLUME BASED ON THE AREA TRIBUTARY TO THE INLET

V(F) = (0.05)(V100)  
V(F) = 381 CF  
FOREBAY STORAGE VOLUME REQUIRED: 381 CF

FOREBAY STORAGE VOLUME PROVIDED:

ELEV	AREA	VOLUME	CUMMULATIVE VOLUME
935	2237	1789	1789
934	1340	979	
933	617	364	
932	110		

**CENTRAL FOREBAY VOLUME CALCS**

**LIVINGSTON COUNTY DETENTION BASIN CALCULATIONS**

AREA (ACRES)	IMPERVIOUS FACTOR	ACRE IMPERVIOUS
4.90	0.9	4.41
0.00	0.7	0.00
11.10	0.2	2.22

COMPOUND C: 0.41  
TOTAL DRAINAGE AREA: 16.00 ACRES

K1 = AxC (Design Constant) = 6.56  
Qa = MAX ALLOW OUTFLOW (0.1 CFS / ACRE) = 1.600 CFS

DURATION MINUTES	DURATION SECONDS	INTENSITY (IN/HR)	INCHES	INFLOW VOLUME IN RUNOFF x Ax C	OUTFLOW INFLOW - OUTFLOW	STORAGE VOLUME
5	300	9.17	2750	1804	480	17560
10	600	7.86	4714	30926	960	29966
15	900	6.88	6188	40590	1440	39150
20	1200	6.11	7333	48107	1920	46187
30	1800	5.00	9000	59040	2880	56180
60	3600	3.24	11647	75405	5760	70545
90	5400	2.39	12913	84710	8640	76070
120	7200	1.90	13655	89578	11520	78058
180	10800	1.34	14488	95040	17280	77760

REQUIRED 100 YEAR DETENTION VOLUME = 78058 CF

FOREBAY VOLUME  
V(F) = 5% OF THE 100-YEAR STORM VOLUME BASED ON THE AREA TRIBUTARY TO THE INLET

V(F) = (0.05)(V100)  
V(F) = 3903 CF  
FOREBAY STORAGE VOLUME REQUIRED: 3903 CF

FOREBAY STORAGE VOLUME PROVIDED:

ELEV	AREA	VOLUME	CUMMULATIVE VOLUME
943	2414	2066	4556
942	1717	1419	2291
941	1120	872	
940	624	414	
939	204	110	
938	15		

**SOUTH FOREBAY VOLUME CALCS**

**LIVINGSTON COUNTY DETENTION BASIN CALCULATIONS**

AREA (ACRES)	IMPERVIOUS FACTOR	ACRE IMPERVIOUS
1.00	0.9	0.90
0.00	0.7	0.00
2.50	0.2	0.50

COMPOUND C: 0.40  
TOTAL DRAINAGE AREA: 3.50 ACRES

K1 = AxC (Design Constant) = 1.4  
Qa = MAX ALLOW OUTFLOW (0.1 CFS / ACRE) = 0.350 CFS

DURATION MINUTES	DURATION SECONDS	INTENSITY (IN/HR)	INCHES	INFLOW VOLUME IN RUNOFF x Ax C	OUTFLOW INFLOW - OUTFLOW	STORAGE VOLUME
5	300	9.17	2750	3850	105	3745
10	600	7.86	4714	6600	210	6390
15	900	6.88	6188	8663	315	8348
20	1200	6.11	7333	10267	420	9847
30	1800	5.00	9000	12600	630	11970
60	3600	3.24	11647	16306	1260	15046
90	5400	2.39	12913	18078	1890	16188
120	7200	1.90	13655	19117	2520	16597
180	10800	1.34	14488	20283	3780	16503

REQUIRED 100 YEAR DETENTION VOLUME = 16597 CF

FOREBAY VOLUME  
V(F) = 5% OF THE 100-YEAR STORM VOLUME BASED ON THE AREA TRIBUTARY TO THE INLET

V(F) = (0.05)(V100)  
V(F) = 830 CF  
FOREBAY STORAGE VOLUME REQUIRED: 830 CF

FOREBAY STORAGE VOLUME PROVIDED:

ELEV	AREA	VOLUME	CUMMULATIVE VOLUME
946	2742	1953	1953
945	1163	683	
944	202	63	
943.5	50		

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**BEBOSS Engineering**  
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**PINE SUMMIT**  
BIBLE BAPTIST CHURCH  
2258 EAST HIGHLAND ROAD  
HOWELL, MI 48843  
517-715-9223

PROJECT: PINE SUMMIT  
PREPARED FOR: BIBLE BAPTIST CHURCH  
TITLE: CONSTRUCTION DETAILS

NO	BY	DATE	REVISION
1	ST	3-30-20	
1	ST	PER TWP REVIEW	

DESIGNED BY: ST  
DRAWN BY: ST  
CHECKED BY:  
SCALE: NO SCALE  
JOB NO. 19-353-3  
DATE: 3-3-20  
SHEET NO. 8