Director's Report

Project Name: Panera

Description: Final site plan approval and PDA recommendation

Date on Agenda this packet pertains to: January 16, 2025

☐Public Hearing

☒Initial Submittal

☐Revised Plans

☐Preliminary Approval

☒Final Approval

☐Special Land Use

☐Rezoning

☒Other: PDA

Contact	Consultants & Departments	Approval	Denial	Approved w/Conditions	Other	Comments
Sean O'Neil	CDD Director	☐	☐	☐	☒	
DLZ	Engineering Consultant	☐	☐	☒	☐	See letter dated 12/30/2024.
Justin Quagliata	Staff Planner	☐	☐	☒	☐	See letter dated 01/07/2025.
Jason Hanifen	WLT Fire Marshal	☐	☐	☒	☐	See letter dated 12/13/2024.
Dave Hieber	Assessor	☐	☐	☐	☒	

DLZ
ARCHITECTURE • ENGINEERING • PLANNING
SURVEYING • CONSTRUCTION SERVICES

INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

December 30, 2024

Sean O' Neil, Director
Community Development Department
Charter Township of White Lake
7525 Highland Road
White Lake, Michigan 48383

RE: Panera Bread and Retail Development- Preliminary Site Plan Review – 4th Review

Ref: DLZ No. 2345-7567-03 Design Professional: Stonefield Engineering & Design

Dear Mr. O' Neil,

Our office has performed a Preliminary Site Plan review for the above-mentioned revised plan dated December 9, 2024. The plans were reviewed for feasibility based on general conformance with the Township Engineering Design Standards.

General Site Information

This approximately 1.624 acre site is located north of M-59, west of Bogie Lake Road, and southeast of Meijer.

Site Improvement Information:

- Construction of an approximately 2,445 square foot restaurant with drive through, an approximately 1,589 square foot restaurant(fast food/carry out), and approximately 3,038 square foot retail space. Total square footage: 7,072.
- Associated paved and curbed parking area, including three (3) ADA parking spaces.
- One entrance off Meijer Drive.
- Water and sanitary sewer service.
- Storm water management facilities.

The following items should be noted with respect to Planning Commission review:

We note that comments from our July 10, 2023 review are in *italics*. Responses to those comments are in **bold**. New comments are in standard font.

a) *The applicant will need to provide information detailing whether this site falls under the Meijer Storm Water Management Facilities Easement, Maintenance Agreement and Lien document or if a new agreement will be required for this development. Likely a new agreement will be required and supporting exhibits will need to be provided. Please refer to the Township DPS review letter dated March 2, 2023 for further information. Applicant provided a copy of an agreement related to the Meijer storm detention and retention basins. This agreement does not appear to apply to the outlots or future improvements on the outlots. DLZ recommends a new Storm Water Maintenance Facilities Easement, Maintenance Agreement, and Lien be provided for this development to cover the proposed stormwater devices that are part of this development.* **Comment remains. Design engineer indicates that a new agreement will be provided after Preliminary Site Plan approval and during Final Engineering Plan submittal/review.**

b) *Per the Meijer Storm District Map dated 05/23/2003, the southern portion of this site is proposed to drain to an inlet (38A) located to the southeast of the site (at northwest corner of M-59 and Bogie Lake Road). The Panera plan proposes to route all of the developed flow to the existing 15" storm sewer in Meijer Drive. Design engineer shall demonstrate that adequate capacity exists in the existing 15" storm sewer to the north such that the sewer can accept developed flow for the entire Panera site. Comment addressed for this level of review. Future submittals will need to look at downstream pipe capacity to the outlet because the project area is larger than the original drainage district anticipated.* **Comment remains.**

c) *Based on grading shown, the proposed Cosmo's Car Wash catch basin proposed to the east will collect some of the drainage from the Panera Bread site (drainage from greenspace area east of Panera retaining wall). The design engineer for Panera will be required to verify that Cosmo's Car Wash Storm Sewer and pretreatment unit have the capacity to accommodate this off site flow. A drainage agreement and easement with Cosmo's Car Wash will be required.* ***Comment remains and has been addressed at this level of review. Design engineer response is that the drainage agreement and easement will be provided under separate cover when complete. The drainage agreement/easement as well as calculations to demonstrate Cosmo's storm sewer capacity shall be required prior to FSP/FEP approval.*** **Comment outstanding. The current plan now proposes grading offsite and onto the property to the east; we understand the Cosmo's Car Wash development is no longer moving forward, however an offsite grading easement and agreement will still need to be reached with the adjacent property owner.**

d) *ADA parking spaces will need to meet ADA standards in terms of slopes and dimensions; further details will be reviewed at the time of Final Site Plan/Final Engineering Plan submittal.* **Comment**

remains. Design engineer states that additional grading details will be provided at the time FEP submittal.

e) *Preliminary grading of the site has been proposed and demonstrates general drainage patterns; we note that the proposed 997 contour near the northwest corner of the site will result in ponding of water with no positive outlet. We further note that the wall grades on the south of the property are off in elevation with a top of wall grade 40 feet below the bottom. Please note that retaining walls over 30" in height will require a decorative railing. Please revise. Comment partially addressed. A yard inlet has been provided at the low point. In addition, proposed wall height elevations have now been adjusted. Please add a note regarding the requirement for decorative fencing at the top of the wall.* **A note regarding the installation of a guardrail at the top of the retaining wall has been added to Sheet C-3. A detail of the guardrail shall be required at the time of FEP submittal. In addition, please add a guardrail note to the wall that is proposed next to the dumpster. A guardrail is required for this wall as it exceeds 30" in height.**

f) *Details regarding the proposed retaining wall shall be provided on the FSP/FEP; we note that it shall be demonstrated that the proposed retaining wall along the eastern side of the property shall provide the required support to manage the lateral and vertical stresses of a standard fire truck. Comment remains. Engineer notes that retaining wall design and specifications shall be provided under separate cover. We note that the design and specifications shall be signed and sealed by a structural Professional Engineer. In addition, calculations/report shall demonstrate that wall shall not impact proposed sanitary sewer at the point where the sewer crosses under the wall.* **Comment remains. Per engineer, wall design and specifications will be provided at the time of Final Engineering Plan (FEP) submittal.**

g) The Culver's development across the Meijer's drive has moved forward and is currently under construction, please show the proposed location of the Culver's drives on the plan set to confirm alignment with the proposed drive on the Panera site.

h) Offsite grading is proposed on the property to the east. The design engineer has noted that a temporary grading easement is to be obtained and can be provided at the time of Final Engineering Plan (FEP) submittal.

i) The proposed entrance encroaches onto the parcel to the east. A permanent easement for this encroachment or a shared access agreement shall be required. This can be provided at the time of Final Engineering Plan (FEP) submittal.

j) The proposed one-way drive on site is now shown as 17' in width. A minimum 20' width is required per Township Zoning Ordinance 5.11.Q v. We defer to the Township Planning department if a variance will be required for this drive width.

k) Minimum time of concentration for storm sewer sizing calculations shall be 15 minutes per WLT Engineering Design Standards. This can be updated on the Final Engineering Plan (FEP) submittal package.

Recommendation

The plans for the proposed development have changed the proposed site entrance location and proposed grading from the previous submittal. Most significantly, the plans need to be updated to show the proposed drive aligns with the drive that is to be constructed as part of the Culver's development. Upon confirming these drives align, we would recommend approval of the preliminary site plan subject to Planning direction on the one-way drive width, and with the understanding the applicant is proceeding at their own risk with the need for offsite grading and drainage agreements as currently designed. Please update the plans per item g) above and resubmit for review. The remaining comments have been addressed for the PSP level of review and can be addressed at the time of Final Engineering Plan (FEP) submittal.

Please feel free to contact our office should you have any questions.

Sincerely,

DLZ Michigan

Michael Leuffgen, P.E.
Department Manager

Victoria Loemker, P.E.
Senior Engineer

Cc: Andrew Littman, Community Development, *via email*
Matteo Passalacqua, Carlisle Wortman, *via email*
Hannah Kennedy-Galley, Community Development, *via email*
Aaron Potter, DPS Director, White Lake Township, *via email*
Jason Hanifen, Fire Marshall, White Lake Township, *via email*

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WHITE LAKE TOWNSHIP
PLANNING COMMISSION

REPORT OF THE
COMMUNITY DEVELOPMENT DEPARTMENT

TO: **Planning Commission**

FROM: **Sean O'Neil, AICP, Community Development Director**

Matteo Passalacqua, Planning Consultant

DATE: **January 7, 2025**

RE: **Panera Bread**
Preliminary Site Plan – Review #3

Staff reviewed the revised site plan prepared by Stonefield Engineering & Design (revision date May 5, 2023). The following comments from the first review dated February 27, 2023 are listed below. Responses to those comments are provided in **(red)**.

Since the second revision, the applicant has modified the proposed site plan in revised drawings dated December 12, 2024. The planning consultant has reviewed the third revision to the site plan and provided comments in **(blue)**.

In a letter dated December 13, 2024, the applicant has highlighted the changes to the site plan. They are provided below:

- **Proposed building increased from a 2 tenant 5868 SF building to a 4 tenant 7072 SF building – addition of 1204 SF**
- **Full movement driveway shifted from the northwest corner to the northeast corner of the property**
- **Additional patio space added for the eastern restaurant use**
- **Parking changes o Existing plan required 56 spaces and proposed 56 spaces**
- **The new plan requires 69 spaces and proposes 58 spaces – a Waiver is being requested**

As it relates to site layout and proposed uses, the original intent of proposal is intact and modifications to bulk and placement are minimal.

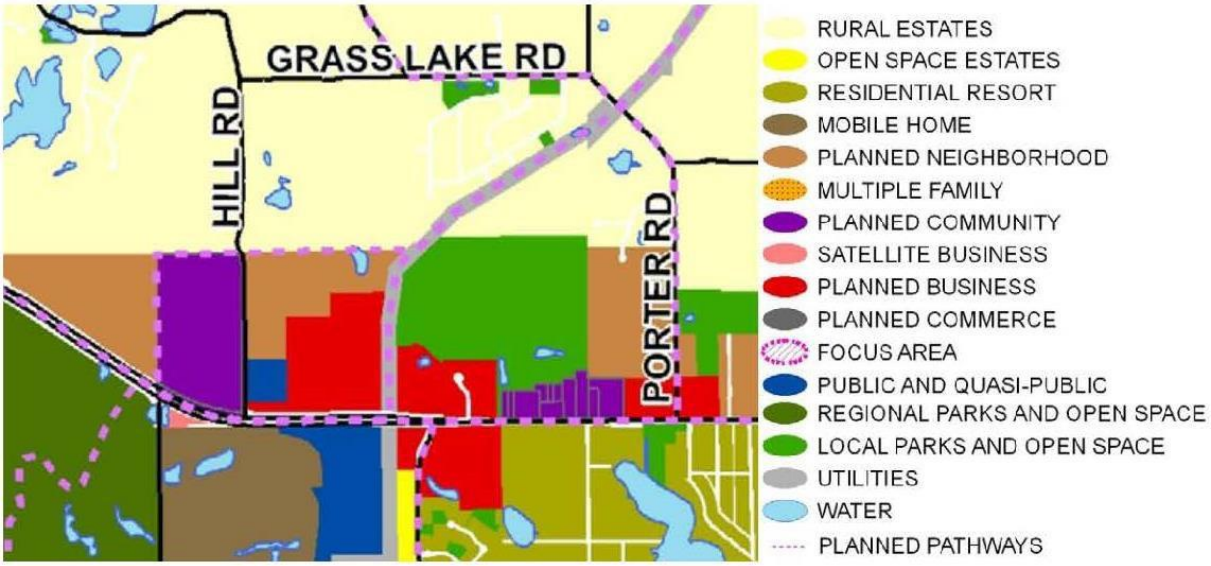
White Lake Retail II, LLC has requested preliminary site plan approval to construct a 5,868 square foot two-tenant building consisting of a 3,206 square foot drive-thru Panera Bread restaurant and a 2,662 square foot retail space on 1.63 acres of Parcel Number 12-20-276-035. **The building is now proposed to be 7,072 square feet. Two retail spaces are provided, both at 1,519 square feet. Two restaurants (one with a drive thru) are provided offering 1,589 square feet and 2,445 square feet.**

The site plan review application lists the wrong address and parcel number, and a larger parcel size than proposed on the site plan. Revise accordingly. Additionally, the parcel number located in the Land Use and Zoning Table on Sheet C-3 is incorrect. Revise accordingly. Furthermore, the address listed in the title on the Coversheet and in the title blocks on all sheets in the plan set are incorrect. The subject parcel does not possess an address. Remove the incorrect address from the plan set. (Comments addressed. The parcel numbers and address have been corrected. Parcel size has also been corrected on the site plan application). The subject site is part of a Meijer outlot, zoned PB (Planned Business), and located north of Highland Road (M-59) and south of the Meijer private drive. **Prior to final site plan submission, a land division application shall be submitted to the Assessing Department to separate the proposed outlot parcel from the remaining Meijer property. (Comment remains as a notation. This requirement has been acknowledged by the Applicant's engineer in the response letter provided to the first review).**

Master Plan

The Future Land Use Map from the Master Plan designates the subject site in the Planned Business category. All development in Planned Business is required to adhere to strict access management principles in order to minimize traffic conflict and maximize safety throughout the M-59 corridor. Connections to and segments of the Township community-wide pathway system are required as an integral part of all Planned Business development.

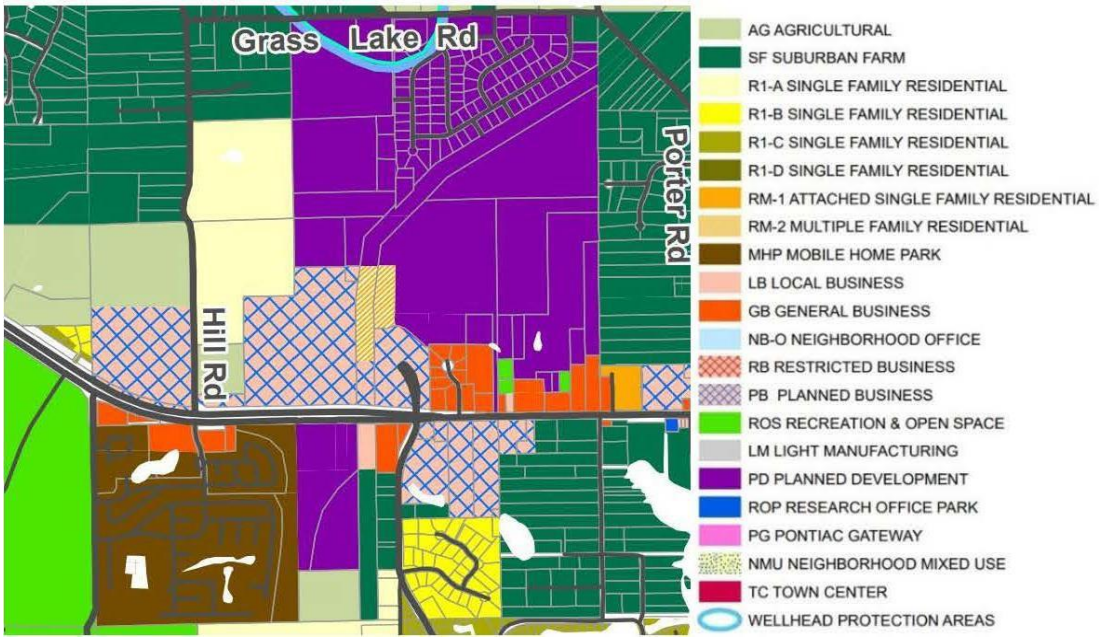
FUTURE LAND USE MAP



Zoning

Drive-thru restaurants and retail commercial uses are principal permitted uses with site plan review and approval in the PB zoning district. A minimum lot area of 10 acres is required in the PB District (the PB district does not have a minimum lot width requirement). **Label the dimensions of the proposed property lines on Sheet C-3.** **(Comment addressed. All property lines have been dimensioned).** The subject site (proposed parcel) contains 1.63 acres of lot area. While the lot area does not meet the minimum requirement, the Meijer outlots were contemplated at the time of the initial development. A waiver from the minimum area requirement is not necessary.

ZONING MAP



Physical Features

Currently the site is undeveloped. The Michigan Department of Environment, Great Lakes, and Energy (EGLE) Wetland Map and the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map indicate neither wetlands nor floodplain are present on or near the site.

Access

The Meijer Development Agreement prohibits any outlot from having direct access and/or a curb-cut onto Highland Road (M-59). Two proposed driveways to the Meijer private drive would provide access to the site. Two-way undivided driveways must have a throat width of 25 feet. **The throat width shall be increased by one foot, from 24 feet to 25 feet (comment outstanding – driveway throat width shall exclude the gutter pan) (comment addressed. The full access drive width is 31 feet).** (throat length is the distance parallel to the centerline of a driveway from the public or private road right-of-way or access easement to the first on-site location at which a driver can make a right-turn or left-turn). The zoning ordinance states the number of driveways permitted for a site shall be the minimum number necessary to provide safe and efficient access for regular traffic and emergency vehicles. **The easterly driveway shall be eliminated. Revise accordingly. (Comment addressed. The easterly driveway has been removed) (The easterly drive has been reinstated. We defer to Township Engineering on the placement of the drive as it relates placement relevant to the access road and adjacent development.)**

The Fire Truck Turning Exhibit (Sheet C-13) indicates a fire truck traversing over a curb, landscaping, a snow storage area, a sidewalk, and another curb to exit the site. Driving outside of designated fire lanes is not, pursuant to the zoning ordinance, acceptable for the efficient and effective use of fire apparatus (likely also noncompliant with the Fire Code). Sheet C-13 shall be revised to demonstrate fire apparatus can enter and exit the site by utilizing drive aisles/maneuvering lanes and the site driveway. Fire truck circulation is now shown on Sheet C-14. We defer to Township Public Safety on the validity of the proposed circulation however we note that there may be issues for emergency vehicles utilizing the one-way drive to the east of the building. The one-way drive aisle has been reduced in width from 20 feet to 17 feet. This does not conform to the Section 5.11.Q.v requirement that one way drive aisles be 20 feet wide. This should be corrected in the revised plan.

All dimensions for drive widths and parking space depth shall be revised. The site plan measures drive widths to the back or face of curb; road measurement surface is taken between the edges of the gutter pan (drive width shall be provided between the edges of the gutter pan). (Comment outstanding. Drive aisle width shall exclude the gutter pan). Furthermore, gutter pan shall not be included in the measurement of parking space depth. (Comment partially addressed. Excluding the gutter pan from stall dimensions results in a minimum proposed standard space of 9' x 18', which is compliant with the zoning ordinance. Revise the proposed column for Section 5.11.Q within the Off-Street Parking Requirements Table to reflect 9' x 18' spaces. The barrier-free spaces shall be revised to exclude gutter pan from the width of the spaces). Provide a note on Sheet C-3 stating such. (Comment outstanding). (Comment addressed).

The zoning ordinance requires a minimum eight-foot-wide sidewalk along the Highland Road property frontage. Sidewalk along the aforementioned frontage was constructed by Meijer at the time of the initial development **(the width of the existing sidewalk shall be dimensioned on the site plan). (Comment addressed. Existing sidewalk width (six feet) has been dimensioned on the plans). The Applicant shall be required to repair/replace any broken sections of concrete within the frontage sidewalk adjacent to the site along Highland Road, as determined by the Township Engineering Consultant. This shall be noted on Sheet C-3. (Comment addressed. A note has been added as required).**

A six-foot-wide sidewalk is required along the Meijer private drive. The site plan shall be revised to provide a six-foot-wide concrete sidewalk (the width shall be dimensioned on the plan) extending across the entire northerly frontage; the concrete sections shall be constructed through the driveway. (Comment addressed. A six-foot-wide concrete sidewalk has been proposed along the northern frontage).

Utilities

Municipal water and sanitary sewer are available to serve the site. The Township Engineering Consultant will perform an analysis of utilities, stormwater, and grading to ensure compliance with all applicable ordinances as well as the Township Engineering Design Standards.

Staff Analysis

When reviewing the preliminary site plan, the Planning Commission should consider if the project meets the design standards for Planned Business developments found in Article 6, Section 7 of the zoning ordinance, the appropriateness of the requested waivers, and the site standards and development procedures for a PB development as outlined in Articles 5 and 6, respectively, of the zoning ordinance.

The Planned Business development review process is summarized by the following steps:

1. Preliminary Site Plan: During this review, the site layout and use(s) are established, the amount of open space is determined, and other project details are decided upon. The Planning Commission holds a public hearing, reviews the PB proposal, and makes a recommendation to the Township Board. The Township Board takes final action, approving or denying the preliminary site plan.

2. Final Site Plan: At this time building materials and colors, landscaping, and outdoor lighting are finalized and all conditions of preliminary site plan approval must be satisfied. The Planning Commission reviews and takes action to approve or deny the final site plan, and also reviews the proposed Development Agreement and makes a recommendation to the Township Board.

3. Development Agreement: Upon recommendation by the Planning Commission, the Township Board takes final action on the Development Agreement.

The following standards for drive-thrus found in Article 4, Section 17 of the zoning ordinance must also be utilized:

A. *A front yard setback of at least sixty (60) feet shall be required.* The proposed front yard setback from the north property line is 116.50 feet. **The building setback from the south (front) property line shall be dimensioned on the site plan. The Land Use and Zoning Table shall also be revised to identify the rear setback as a front setback. The Required column in the aforementioned table is also incorrect and shall be revised; the 150-foot maximum front yard setback is not applicable (remove said line from Sheet C-3 and the row in the Land Use and Zoning Table). Per the Meijer Development Agreement, the Highland Road setback requirement for this outlot is 75 feet. Revise accordingly. (Comments addressed. Setbacks have been corrected and all dimensions included).**

   The proposed column for the minimum front yard parking setback (Highland Road) within the Land Use and Zoning Table shows 50.3 feet, and the plan dimensions this setback as 50.2 feet. Revise for consistency. (Comment addressed. All setback information provided on Sheet C-3 is correct and conforms to standards).

B. *Entrance and exit drives shall be at least one hundred (100) feet from any street intersection and two hundred (200) feet from any residential district.* The nearest street intersection (Bogie Lake Road and Meijer private drive – to the east) is approximately 181 feet from the proposed easterly driveway (to be removed – see previous page). Additionally, the proposed driveway exceeds the minimum 200-foot setback from a residential zoning district. **(Comment outstanding. We defer to Township Engineering on access requirements, however note that the easterly drive has been reinstated. The distance from the easterly drive to Bogie Lake Road should be provided on Sheet C-3.)**

C. *An outdoor lighting plan shall specify the type of fixtures to be used, light intensity, and method of shielding the fixtures so that light does not project onto adjoining properties or on any public or private street or right-of-way. Dropped fixtures shall not be allowed. The site plan shall include a photometric plan and catalog details for all proposed fixtures. Outdoor lights must meet the performance standards of Section 5.18.* See the Outdoor Lighting section of this review.

D. *An obscuring fence, screen wall, or land form buffer shall be provided in accordance with the provisions of Section 5.19 on all sides abutting a residential district.* The property does not abut a residential district.

E. *Adequate off-street waiting space shall be provided to prevent drive-through customers from waiting on a public or private street.* Fast food restaurants with indoor seating require minimum stacking (per lane) of eight (8) vehicles inclusive of the vehicle at the window. The site plan shows 19 waiting spaces for the ordering station, and there are a few additional waiting spaces not indicated prior to reaching the pick-up window. **Nine (9) stacking spaces are shown on the revised site plan leading up to the order station. Additional stacking spaces are provided between the order station and pickup window.**

Building Architecture and Design

In accordance with the M-59 architectural character requirements, exterior building materials shall be comprised primarily of high quality, durable, low maintenance material, such as masonry, stone, brick, glass, or equivalent materials. Buildings should be completed on all sides with acceptable materials **(consideration shall be given to the north facade design as it would be visible from a street. The north facade shall resemble a front facade, not a rear facade)**. **(Comment addressed. The north facade is now comprised of brick veneer with spandrel glazing to give the appearance of windows).**

New renderings showing the elevations for the four (4) tenant building are provided on Sheet P-01. Front façade design elements have been incorporated into the North elevation via the use of spandrel glass. We note the functionality of this space is the rear of the building and traffic utilizing Bogie Lake Road is for the purpose of accessing other outlets or Meijer. For this reason, we are agreeable to allowing the removal of spandrel glass in lieu of foundation landscaping that screens all mechanical equipment and utilities infrastructure along the northern elevation.

The proposed materials for the 19-foot-tall building are a mix of EFIS (exterior insulation finishing system), aluminum wood-look cladding system, brick veneer, and fiberglass panels. **The building materials do not meet the architectural requirements of the Township, and the building is not designed to create a pleasing appearance. Aluminum cladding, EFIS, and fiberglass panels are not considered high-quality materials. Seventy (70) percent of all elevations of the building should be covered with some type of brick or cultured stone product. (Comment addressed. The north, east, and west facades of the building are now primarily covered with brick veneer, and the north facade contains increased window coverage (the EIFS remains undesirable)). (Comment addressed. See comments above regarding north elevation).**

All buildings shall have windows at eye level covering at least 30 percent of the front facade (north and south elevations of the building). The building elevations shall be revised to provide the required windows, and a window coverage calculation shall be provided on the building elevations. (Comments addressed. The north and south facades now contain the required window coverage, and such coverage has been noted on the exterior elevations). (Comment outstanding. Window coverage percentages should be added to Sheet P-01 for south elevation and north elevation (pending comment above)).

Sheets A200, A201, and A101 reference sheets not provided in the plan set – provide the referenced sheets or remove references to sheets not provided. (Sheets labeled "A" were not

provided in the revised site plan but should be revised and included in the application.)

A sample board of building materials to be displayed at the Planning Commission meeting and elevations in color are required by the zoning ordinance and must be submitted at final site plan. Additionally, the address (street number) location shall be shown on the building. Six-inch-tall numbers visible from the street shall be required. The address location is subject to approval of the Fire Marshal. (Comments remain as a notation).

Parking

In addition to the required stacking spaces (which must be provided as described on Page 5 of this review), one parking space per 75 square feet of gross floor area is required for the drive- thru restaurant (33 spaces) and one parking space per 200 square feet of gross floor area is required for the retail space (15 spaces). The additional carry out restaurant requires one parking space per 75 square feet of gross floor area (21 spaces) In total, 69 parking spaces are required and 58 parking spaces are proposed around the building. Since the original site plan submission, the zoning ordinance has been updated to allow 75% of the required parking for a site. Per this allowance, the site provides acceptable parking, and the waiver request can be removed from Sheet C-3. The required number of barrier-free parking spaces are also provided.

A snow storage plan was not provided. Information on method of snow storage shall be provided (denote snow storage areas on Sheet C-3). (Comment addressed. A snow storage area has been indicated on Sheet C-3). Winter maintenance of parking lot landscape islands shall be required where heavy applications of salt and de-icing products occur through the use of salt tarps which minimize soil absorption and ultimately reduce plant disorders. (Comment addressed. A maintenance note has been added to Sheet C-8).

Off-Street Loading Requirements

The zoning ordinance requires one loading space for a development of this size. Such loading and unloading space must be an area 10 feet by 50 feet, with a 15-foot height clearance. One loading space is proposed. General Note 13 on Sheet C-3 states any loading/unloading would occur off-hours as to not conflict with customer traffic flow.

Trash Receptacle Screening

The zoning ordinance requires dumpsters to be surrounded by a six-foot-tall wall on three sides and an obscuring wood gate on a steel frame on the fourth side, located on a six-inch concrete pad extending 10 feet in front of the gate, with six-inch concrete-filled steel bollards to protect the rear wall and gates. **Four-inch bollards are proposed. Revise accordingly. (Comment addressed. Trash enclosure bollards have been revised to six-inches).** The zoning ordinance also states dumpsters and trash storage enclosures shall be constructed of the same decorative masonry materials as the buildings to which they are accessory. Brickform concrete (simulated brick pattern) or stained, decorative CMU block are not permitted where the principal building contains masonry. Plain CMU block is also prohibited. **The dumpster enclosure shall be faced with the same brick veneer as the facade of the building with a steel-backed wood gate painted a complementary color to the brick/cultured stone. Revise the trash enclosure detail to show incorporation of the aforementioned design elements. (Comment addressed. A note has been added to the trash enclosure detail).**

The proposed enclosure is located northwest of the building. The zoning ordinance prohibits trash enclosures within a required front yard setback, and does not allow enclosures closer to the front lot line than the principal building. The proposed dumpster enclosure is located closer to the Meijer private drive than the building and within the front yard setback. **A waiver is required to allow the dumpster enclosure to project into the front yard and a waiver is required to allow the dumpster enclosure to encroach into the front yard setback. (Comment outstanding. Waivers have been requested by the Applicant). Per comments regarding the north elevation of the building and its relation as dual frontage property, we recommend additional landscaping screening be proposed around the dumpster enclosure in lieu of a waiver for placement.**

General Note 14 on Sheet C-3 states all trash pick-up would occur off-hours as to not conflict with customer traffic flow.

The trash enclosure detail on Sheet C-9 shall be revised to be consistent with Sheet C-3 which shows partitioning wall(s) separating the southerly third of the enclosure from the northerly two-thirds of the enclosure. Sheet C-3 shall include labels to note the type of bins to be placed in each portion of the enclosure (Comment addressed).

Landscaping and Screening

Landscaping must comply with the provisions of the zoning ordinance and should be designed to preserve existing significant natural features and to buffer service areas, parking lots, and dumpsters. A mix of evergreen and deciduous plants and trees are preferred, along with seasonal accent plantings. A landscape plan is not required as part of the preliminary site plan, but was provided for consideration and will be reviewed in detail during final site plan review if the preliminary site plan is approved. Following are initial comments on the landscape plan:

- All required landscape areas in excess of 200 square feet shall be irrigated to assist in maintaining a healthy condition for all plantings and lawn areas. **An irrigation plan shall be provided at final site plan. (Comment remains as a notation. This requirement has been acknowledged by the Applicant's engineer in the response letter provided to the first review).**

- **No more than two planted trees in a row shall be of the same species. (Comment addressed. Species have been revised).**

- **Within the Highland Road greenbelt, evergreen trees shall be required. (Comment outstanding. Nellie Stevens Holly is not an acceptable evergreen tree). (Comment addressed. Large arborvitae and red cedars are located within the Highland Road greenbelt).**

- **The labels on Sheet C-8 (C-9) stating "area to be lawn" shall be revised to include "sod lawn." (Comment addressed. Labels have been revised accordingly).**

- **The tree and shrub planting details on Sheet C-10 (C-11) mention mulch. The zoning ordinance states the mulch product itself shall be at least doubled-shredded quality. Revise accordingly. (Comment addressed. Details have been updated to note double-shredded mulch).**

- **Unless waived by the Planning Commission, or the administrative staff reviewing the plan, a landscape plan shall be prepared by a landscape architect registered in the State of Michigan.**

Landscaping arrangement has been modified regarding the placement and species of plants however proposed changes conform to ordinance standards.

Outdoor Lighting

Site lighting is required to comply with the zoning ordinance. Information on site lighting was provided and will be reviewed in detail during final site plan review. Following are initial

comments on the lighting (photometric) plan:

- Lighting shall be shielded from adjacent properties and designed to reflect continuity with the pedestrian orientation of the area. Floodlights, wall pack units, and other types of unshielded lights, and lights where the lens or bulb is visible outside of the light fixture are not permitted except in service areas where the lights will not generally be visible by the public or adjacent residential properties. Lights underneath canopies must be fully recessed into the canopy to minimize glare from the light source.

- Partial lighting fixture specifications were provided on the photometric plan. **Complete catalog details (lighting fixture specification sheets) for all proposed fixtures shall be provided. Light fixture selections and colors are subject to review and approval by the Township. (Comment outstanding. The wall pack housing color is not identified on Sheet C-11). (Comment outstanding. Sheet C-8 does not display building wall packs however proposed building mounted lighting is shown in the light fixture legend. If no building lighting is proposed, legend should be amended.)**

- **Revise the Lighting Statistics Table to include footcandle information at the building. (Comment addressed. The table has been updated to include building information).**

- **The proposed overall parcel average footcandle level of 1.4 (1.7) exceeds the allowable average of 0.5 footcandle. Therefore, a waiver is required. (Comment outstanding. A waiver has been requested by the Applicant).**

Signs

The site plan does not show the location of a monument sign. Per the Meijer Development Agreement, freestanding signs are prohibited from being located on any individual outlot. If allowed by Meijer, the tenants may be identified on the freestanding sign at the northwest corner of Bogie Lake Road and Highland Road.

A maximum of one wall sign is permitted for each principal building. In instances where a parcel has frontage on two streets, an additional wall sign may be permitted on the building facing the secondary thoroughfare, which is no greater than five percent of the wall area on which the sign is placed. Where permitted, wall signs must be located flat against the building's front facade or parallel to the front facade on a canopy. The building elevations show five wall signs on the building (north, south, and west facades). **The two wall signs on the west elevation shall be removed, or waivers are required. (Comment addressed. The aforementioned signs have been removed from the building) (See comment below). Additionally, one of the two wall signs shall be removed from the south elevation, or a waiver is required. (Comment addressed. The aforementioned signs are now proposed to be one sign) (See comment below).** Staff does not support signage waivers. The building elevations should be revised to comply with the sign standards.

The revised four tenant structure is shown on Sheet P-01. Placeholders for wall signs are shown on the south and north elevations. Signage is reviewed and approved administratively by the Township.

Outdoor Dining

Sheet C-3 shows two outdoor patios on the southeast and southwest corners of the structure. One is 398 sqft and the other is 206 sqft.

Outdoor dining is subject to the following standards found in Article 4, Section 18 of the zoning ordinance:

A. *The Planning Commission shall determine that the use is designed and will be operated so as not to create a nuisance to property owners adjacent to or nearby the eating establishment. As such, the proposed use shall meet the following minimum criteria:*

i. *The establishment may operate only during the following hours:*
- *Monday thru Thursday: 8:00 a.m. – 12:00 midnight*
- *Friday: 8:00 a.m. – 2:00 a.m.*
- *Saturday: 10:00 a.m. – 2:00 a.m.*
- *Sunday: 10:00 a.m. – 10:00 p.m.*

Panera Bread (All Tenants) would be required to operate within the allowed hours.

ii. *The use of exterior loudspeakers is prohibited where the site abuts a residential district or use. The noise level at the lot line shall not exceed 70 dB.*

Panera Bread (All Tenants) would be required to adhere to said performance standard.

iii. *An outdoor lighting plan shall specify the type of fixtures to be used, light intensity, and method of shielding the fixtures so that light does not project onto adjoining properties or on any public or private street or right-of-way. Dropped fixtures shall not be allowed. The site plan shall include a photometric plan and catalog details for all proposed fixtures. Outdoor lights must meet the performance standards of Section 5.18.*

Information on site lighting was provided and will be reviewed in detail during final site plan if the preliminary site plan is approved. Initial comments on the lighting (photometric) plan were previously provided in this report.

B. *Additional parking spaces must be provided according to the following:*

i. *Outdoor dining areas for more than 30 people or which include either permanent or seasonal structures, such as awning, roofs, or canopies, may be required to provide additional parking according to the following:*

a. *If the outdoor seating is 25% of the indoor seating or less, no additional parking is necessary.*

b. *If the outdoor seating is 26%-50% of the indoor seating, the restaurant may be required to provide up to 125% of the parking required for the indoor space.*

c. *If the outdoor seating is over 50% of the indoor seating capacity, the restaurant may be required to provide up to 150% of the parking required for the indoor space.*

An outdoor patio is proposed at the southwest corner of the building. **Label the size (square footage) of the patio, as well as the proposed number of tables and chairs, on Sheet C-3. (Comment outstanding. The square footage has been added to the sheet however seat count is still needed).**

Community/Public Benefit

A waiver from the Community Impact Statement (CIS) requirement should be requested. (Comment outstanding. A waiver has been requested by the Applicant). While staff supports waiving submission of a CIS, **a community/public benefit must be provided to qualify for development in the PB district. (Comment addressed. In the response letter provided to the first review, the Applicant's engineer indicated a $20,000 donation to the Parks and Recreation Fund is proposed).** For PB developments, a public benefit(s) must be provided to offset the impact(s) of development on the Township. Community benefits are intended to be for the use and enjoyment of the public-at-large and must be commensurate with the waivers requested for the project. **A community/public benefit is not proposed. (Comment addressed. See response to previous comment).**

Planning Commission Options / Recommendation

The Planning Commission may recommend approval, approval with conditions, or denial of the preliminary site plan to the Township Board. **Staff recommends the plans be revised and resubmitted to address the items identified in this memorandum. A response letter detailing changes made to the plan shall be provided upon resubmission. A revised list of requested waivers shall also be provided~~, along with a proposed community/public benefit~~.**

Miscellaneous Comments

- **The building elevations and floor plan shall be sealed by the registered architect who prepared the plans. (Comment outstanding)**

- **The survey shall be sealed by the professional surveyor who prepared the plan. (Comment addressed. The survey has been signed and sealed).**

Fire Department
Charter Township of White Lake

7420 Highland Road
White Lake, MI 48383
Office (248) 698-3993
www.whitelaketwp.com/fire

Site / Construction Plan Review

To: Sean O'Neil, Planning Department Director

Date: 12/23/2024

Project: Highland Rd. Outlet B

Job #: 220180

Date on Plans: 12/09/2024

The Fire Department has the following comments with regard to the 1st review of preliminary plans for the project known as Highland Rd. Outlet B:

1. Hydrants. Add an additional hydrant to the southwest corner of the parking lot island.
2. Access. All turn radiuses shall accommodate the largest Fire Department Apparatus (40'). The angle of site approach and departure shall not exceed 8 degrees. All fire lanes must be a minimum of 20.
3. The access drive shall be designed and maintained to support the imposed loads of fire apparatus and shall be surfaced so as to provide all weather driving capabilities.

Jason Hanifen
Fire Marshal
Charter Township of White Lake
(248)698-3993
jhanifen@whitelaketwp.com

Plans are reviewed using the International Fire Code (IFC), 2015 Edition and Referenced NFPA Standards.

From:	David Hieber
To:	Hannah Kennedy-Galley
Cc:	Sean O"Neil; Andrew L. Littman
Subject:	RE: Panera Revised PSP - due 12/30
Date:	Monday, December 16, 2024 11:46:18 AM

Good morning Hannah,

This will require a Land Division.
Thanks
Dave

From: Hannah Kennedy-Galley <HKennedy@whitelaketwp.com>
Sent: Monday, December 16, 2024 11:15 AM
To: Michael Leuffgen <mleuffgen@dlz.com>; Victoria Loemker, P.E. <vloemker@dlz.com>; Jason Hanifen <JHanifen@whitelaketwp.com>; John Holland <JHolland@whitelaketwp.com>; Aaron Potter <APotter@whitelaketwp.com>; Daniel Keller <DKeller@whitelakepolice.com>; David Hieber <dhieber@whitelaketwp.com>; Andrew L. Littman <alittman@whitelaketwp.com>
Cc: Sean O'Neil <SONeil@whitelaketwp.com>; Ashley Ambrugy <AAmburgy@whitelaketwp.com>
Subject: Panera Revised PSP - due 12/30

Hi all,

Please find the revised plans for the Panera development below.

https://www.dropbox.com/scl/fo/g5rch68efy3pr7kbj1qwk/AKVUE9w2LjsRIOrIw4LXCQg?rlkey=qntpzxbu6x685ugjq4jgs3ktp&dl=0

Thanks,
Hannah Kennedy-Galley
Executive Secretary
Community Development Department
White Lake Charter Township
7525 Highland Road
White Lake, MI 48383
Ph : 248-698-3300 x163
Fx: 248-698-3995

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SITE DEVELOPMENT PLANS

FOR

HIGHLAND ROAD

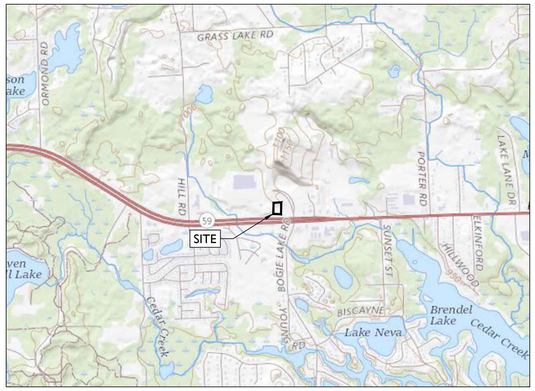
OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-276-035

HIGHLAND ROAD (M-59) - OUTLOT B

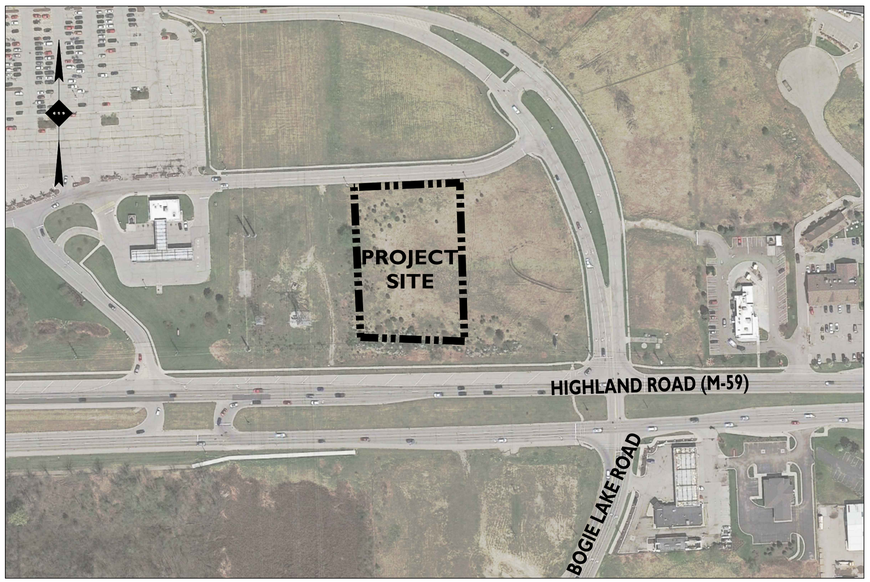
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN



SOURCE: USGS NATIONAL MAPPER

LOCATION MAP

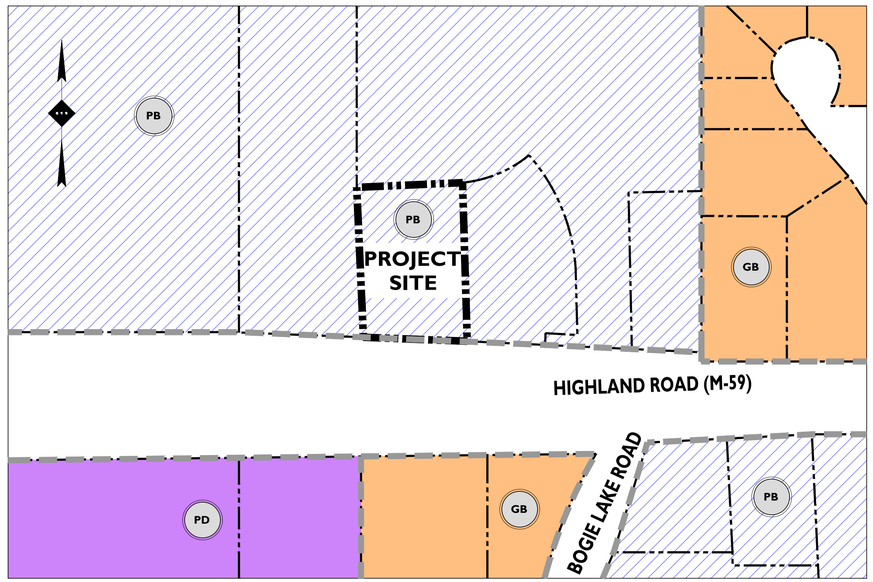
SCALE: 1" = 2,000'±



SOURCE: GOOGLE EARTH PRO

AERIAL MAP

SCALE: 1" = 150'±



SOURCE: CITY OF WHITE LAKE ZONING MAP

ZONING MAP

SCALE: 1" = 150'±

APPLICANT

WHITE LAKE RETAIL II, LLC
30200 TELEGRAPH ROAD SUITE 205
BINGHAM FARMS, MI 48025

ZONING RELIEF TABLE

RELIEF TYPE	CODE SECTION	REQUIRED	PROPOSED
WAIVER	§ 6.6	COMMUNITY IMPACT STATEMENT (CIS)	NONE
WAIVER	§ 5.19.N.i.c.	NO ENCLOSURES SHALL BE PERMITTED WITHIN A REQUIRED FRONT YARD (60 FT) OR STREET-SIDE SIDE YARD SETBACK, NOR CLOSER TO THE FRONT LOT LINE THAN THE PRINCIPAL BUILDING (116.5 FT).	20.5 FT FROM FRONT LOT LINE
WAIVER	§ 5.18.G.viii	MAXIMUM AVERAGE WALKWAY ILLUMINATION: 1.0 FC	2.12 FC
WAIVER	§ 5.18.G.viii	MAXIMUM GENERAL ILLUMINATION: 0.5 FC	1.7 FC

WHITE LAKE CHARTER TOWNSHIP ENGINEERING NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWNSHIP'S CURRENT STANDARDS AND SPECIFICATIONS.
2. THE CONTRACTOR SHALL NOTIFY THE TOWNSHIP ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION, 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
3. CONTRACTOR SHALL CONTACT MISS DIG AT 800-482-7171, 72 HOURS IN ADVANCE OF CONSTRUCTION, FOR EXISTING UNDERGROUND UTILITY LOCATIONS.
4. IN ORDER TO VERIFY COMPLIANCE WITH APPROVED PLANS, FULL-TIME CONSTRUCTION OBSERVATION WILL GENERALLY BE REQUIRED DURING ALL PHASES OF UNDERGROUND SITE CONSTRUCTION INCLUDING INSTALLATION OF SANITARY SEWER, STORM SEWERS, DRAINS, WATERMAINS AND APPURTENANCES AS WELL AS PRIVATE STREET CURBING AND PAVING CONSTRUCTION. INTERMITTENT OBSERVATIONS WILL BE MADE FOR SITE GRADING, PARKING LOT CURBING AND PAVING, RETAINING WALL CONSTRUCTION AND OTHER SURFACE ACTIVITY.

PLAN REFERENCE MATERIALS:

1. THIS PLAN SET REFERENCES THE FOLLOWING DOCUMENTS INCLUDING, BUT NOT LIMITED TO:
   - ALTA / NSPS LAND TITLE SURVEY PREPARED BY KEM-TEC & ASSOCIATES INC. DATED 06/21/2023
   - ARCHITECTURAL PLANS PREPARED BY ARCHVISION ARCHITECTS
   - GEOTECHNICAL REPORT PREPARED BY TBD CONSULTANTS DATED XX/XX/XXXX
   - AERIAL MAP OBTAINED FROM GOOGLE EARTH PRO
   - LOCATION MAP OBTAINED FROM USGS NATIONAL MAPPING SYSTEM
2. ALL REFERENCE MATERIAL LISTED ABOVE SHALL BE CONSIDERED A PART OF THIS PLAN SET AND ALL INFORMATION CONTAINED WITHIN THESE MATERIALS SHALL BE UTILIZED IN CONJUNCTION WITH THIS PLAN SET. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN A COPY OF EACH REFERENCE AND REVIEW IT THOROUGHLY PRIOR TO THE START OF CONSTRUCTION.

Know what's **below**
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PLANS PREPARED BY:

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555 S. Old Woodward Avenue, Suite 12L, Birmingham, MI 48009
Phone 248.247.1115

PROPERTY DESCRIPTION (PARENT PARCEL):

LAND SITUATED IN THE TOWNSHIP OF WHITE LAKE, COUNTY OF OAKLAND, STATE OF MICHIGAN, DESCRIBED AS: PART OF THE NORTHEAST 1/4 OF SECTION 20, TOWN 3 NORTH, RANGE 8 EAST, BEGINNING AT A POINT DISTANT N 00°31'08" E 198.92 FEET AND NORTH 89°58'09" E 519.78 FEET AND S 87°30'16" E513.36 FEET FROM CENTER OF SECTION 20; THENCE N 00°39'06" E 981.32 FEET; THENCE N 90°00'00" E 156.11 FEET; THENCE N 63°45'10" E 76.30 FEET; THENCE N 83°08'44" E 68.91 FEET; THENCE S 73°02'19" E 100.53 FEET; THENCE S 50°34'37" E 136.92 FEET ; THENCE S 50°09'11" E 120.23 FEET; THENCE S 50°21'46" E 66.40 FEET; THENCE S 32°53'46" E 42.85 FEET; THENCE N 90°00'00" E 49.43 FEET; THENCE S 00°19'28" W 474.21 FEET; THENCE N 89°40'32" W 147.67 FEET; THENCE ALONG A CURVE TO THE RIGHT, RADIUS 533.50 FEET, CHORD BEARING S 05°00'27" E 94.46 FEET, A DISTANCE OF 94.59 FEET; THENCE S 00°01'09" E 236.61 FEET; THENCE ALONG A CURVE TO THE RIGHT, RADIUS 5637.58 FEET, CHORD BEARING N 85°18'14" W 118.86 FEET, A DISTANCE OF 118.86 FEET; THENCE N 84°42'00" W 51.36 FEET; THENCE N01°30'56" E 30.03 FEET; THENCE S 88°29'04" E 63.50 FEET; THENCE N 03°10'30" W 150.32 FEET; THENCE ALONG A CURVE TO THE LEFT, RADIUS 966.50 FEET, CHORD BEARING N 19°25'09" W 233.59 FEET, A DISTANCE OF 234.17 FEET; THENCE S 60°22'37" W 36.86 FEET; THENCE ALONG A CURVE TO THE RIGHT, RADIUS 233 FEET, CHORD BEARING S 75°11'17" W 119.13 FEET, A DISTANCE OF 120.47 FEET; THENCE S 90°00'00" W 15.98 FEET; THENCE S 01°30'56" W 332.20 FEET; THENCE N 84°42'00" W189.40 FEET; THENCE ALONG A CURVE TO THE LEFT, RADIUS 5821.58 FEET, CHORD BEARING N 84°52'11" W 28.38 FEET, A DISTANCE OF 28.38 FEET TO THE POINT OF BEGINNING.

PROPERTY DESCRIPTION (PARCEL 'A'):

LAND SITUATED IN THE TOWNSHIP OF WHITE LAKE, COUNTY OF OAKLAND, STATE OF MICHIGAN, DESCRIBED AS: PART OF THE NORTHEAST 1/4 OF SECTION 20, TOWN 3 NORTH, RANGE 8 EAST, BEGINNING AT A POINT DISTANT NORTH 00 DEGREES 31 MINUTES 08 SECONDS EAST 198.92 FEET AND NORTH 89 DEGREES 58 MINUTES 09 SECONDS EAST 519.78 FEET AND SOUTH 87 DEGREES 30 MINUTES 16 SECONDS EAST 513.36 FEET FROM CENTER OF SECTION 20; THENCE NORTH 00 DEGREES 39 MINUTES 06 SECONDS EAST 312.07 FEET; THENCE SOUTH 90 DEGREES 00 MINUTES 00 SECONDS EAST (DUE EAST) 222.10 FEET; THENCE SOUTH 01 DEGREE 30 MINUTES 56 SECONDS WEST 332.20 FEET; THENCE NORTH 84 DEGREES 42 MINUTES 00 SECONDS WEST 189.40 FEET; THENCE ALONG A CURVE TO THE TO THE LEFT, RADIUS 5821.58 FEET, CHORD BEARING NORTH 84 DEGREES 52 MINUTES 11 SECONDS WEST 28.38 FEET, A DISTANCE OF 28.38 FEET TO THE POINT OF BEGINNING.

SHEET INDEX

DRAWING TITLE	SHEET #
COVER SHEET	C-1
DEMOLITION PLAN	C-2
SITE PLAN	C-3
GRADING PLAN	C-4
STORMWATER MANAGEMENT PLAN	C-5 & C-6
UTILITY PLAN	C-7
LIGHTING PLAN	C-8
LANDSCAPING PLAN	C-9
CONSTRUCTION DETAILS	C-10 TO C-13
FIRE TRUCK TURNING EXHIBIT	C-14

ADDITIONAL SHEETS

DRAWING TITLE	SHEET #
ALTA / NSPS LAND TITLE SURVEY	1 OF 1
WHITE LAKE TWP WATERMAIN DETAILS	1 OF 1
WHITE LAKE TWP STORM SEWER DETAILS	1 OF 1
WHITE LAKE TWP SANITARY DETAILS	1 OF 1
OAKLAND COUNTY SOIL EROSION DETAILS	1 OF 1

ISSUE	DATE	BY	DESCRIPTION
9	12/09/2024	VF	FOR TOWNSHIP SITE PLAN APPROVAL
8	11/21/2024	AF	FOR CLIENT REVIEW
7	04/23/2024	MPH	TOWNSHIP ENGINEERING SUBMISSION
6	08/11/2023	EM	REVISED BUILDING AREAS
5	06/22/2023	EM	RESUBMISSION FOR SITE PLAN APPROVAL
4	05/05/2023	EM	RESUBMISSION FOR SITE PLAN APPROVAL
3	04/11/2023	EM	FOR CLIENT REVIEW
2	03/16/2023	EM	FOR CLIENT REVIEW
1	02/14/2023	EM/JRC	SUBMISSION FOR SITE PLAN APPROVAL

NOT APPROVED FOR CONSTRUCTION

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SITE DEVELOPMENT PLANS

HIGHLAND ROAD
OUTLOT B
PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-276-035
HIGHLAND ROAD (M-59) - OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

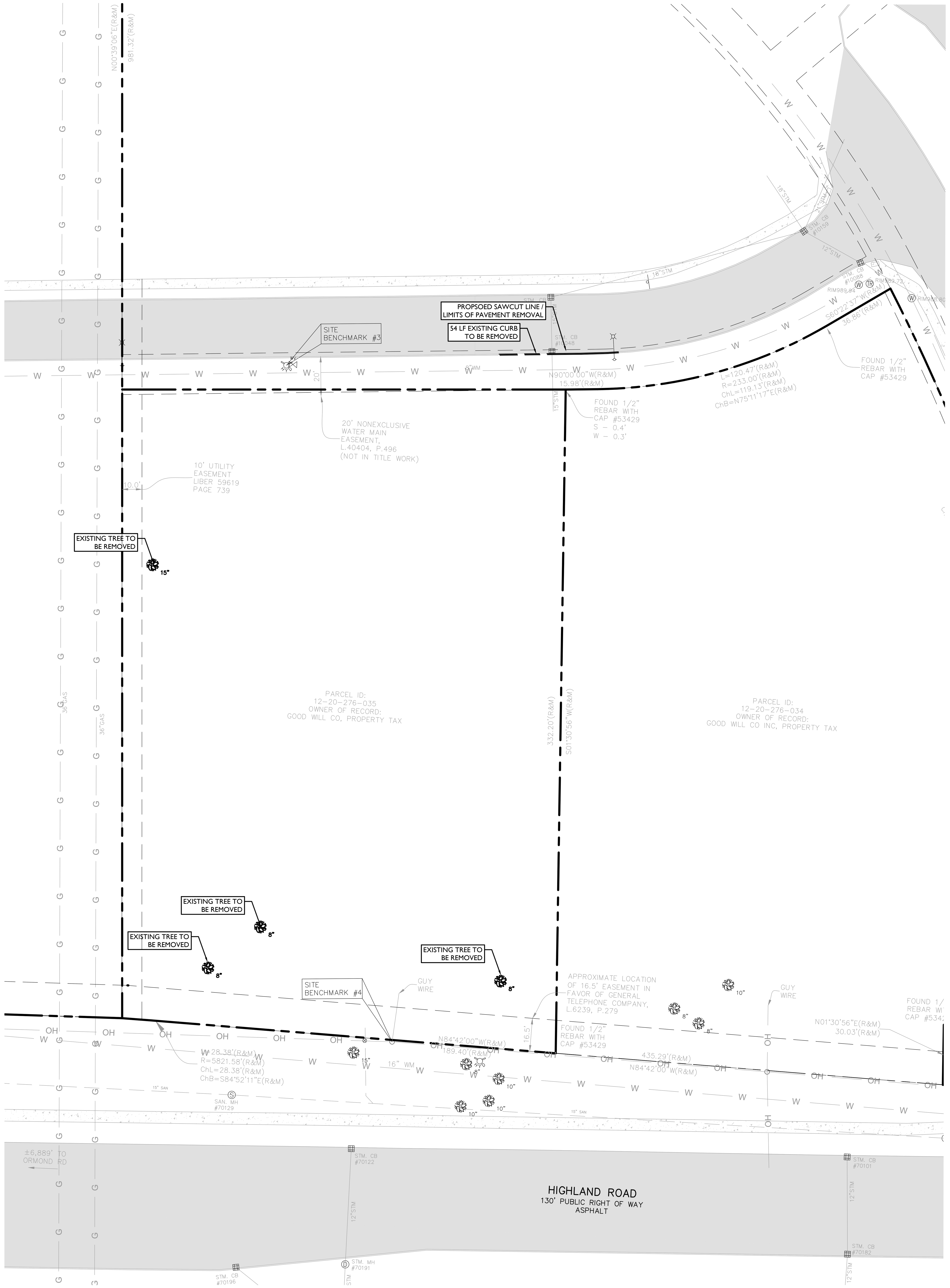
STONEFIELD engineering & design

SCALE: AS SHOWN | PROJECT ID: DET-220180

TITLE: COVER SHEET

DRAWING: C-1

V:\DET\2022\DET-220180-ALIS\C-000 HIGHLAND ROAD, CHARTER TOWNSHIP OF WHITE LAKE, MICHIGAN\TOP\M-01 COVER.DWG



SYMBOL	DESCRIPTION
▬ ▬ ▬	PROPERTY LINE
— — —	FEATURE TO BE REMOVED / DEMOLISHED

ALL SITE FEATURES WITHIN THE PROPERTY LINES INDICATED ON THIS PLAN ARE TO REMAIN AND BE PROTECTED THROUGHOUT CONSTRUCTION UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IF SIGNIFICANT DISCREPANCIES ARE DISCERNED BETWEEN THIS PLAN AND FIELD CONDITIONS

ALL TREES ON THIS PLAN INDICATED TO BE PROTECTED THROUGHOUT CONSTRUCITION SHALL BE EQUIPPED WITH A TREE PROTECTION FENCE. NO CONSTRUCTION SHALL OCCUR UNTIL TREE PROTECTION FENCE HAS BEEN INSTALLED AND APPROVED BY THE COMMUNITY DEVELOPMENT DIRECTOR.

MDOT NOTES:

1. A SINGLE LANE CLOSURE IS ALLOWED M-F FROM 9 AM TO 3 PM IN ACCORDANCE WITH MDOT TRAFFIC TYPICALS M0020 & M0240
2. M-59 TO BE KEPT FREE AND CLEAR OF DIRT/DEBRIS
3. DAILY SWEEPING MAY BE REQUIRED

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DEMOLITION NOTES

1. THE WORK REFLECTED ON THE DEMOLITION PLAN IS TO PROVIDE GENERAL INFORMATION TOWARDS THE EXISTING ITEMS TO BE DEMOLISHED AND/OR REMOVED. THE CONTRACTOR IS RESPONSIBLE TO REVIEW THE ENTIRE PLAN SET AND ASSOCIATED REPORTS/REFERENCE DOCUMENTS INCLUDING ALL DEMOLITION ACTIVITIES AND INCIDENTAL TASKS NECESSARY TO COMPLETE THE SITE IMPROVEMENTS.
2. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF DEMOLITION ACTIVITIES.
3. EXPLOSIVES SHALL NOT BE USED UNLESS WRITTEN CONSENT FROM BOTH THE OWNER AND ANY APPLICABLE GOVERNING AGENCY IS OBTAINED. BEFORE THE START OF ANY EXPLOSIVE PROGRAM, THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL LOCAL, STATE, AND FEDERAL PERMITS. ADDITIONALLY, THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL SEISMIC TESTING AS REQUIRED AND ANY DAMAGES AS THE RESULT OF SAID DEMOLITION PRACTICES.
4. ALL DEMOLITION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL CODES. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL UTILITIES ARE DISCONNECTED IN ACCORDANCE WITH THE UTILITY AUTHORITY'S REQUIREMENTS PRIOR TO STARTING THE DEMOLITION OF ANY STRUCTURE. ALL EXCAVATIONS ASSOCIATED WITH DEMOLISHED STRUCTURES OR REMOVED TANKS SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO SUPPORT SITE AND BUILDING IMPROVEMENTS. A GEOTECHNICAL ENGINEER SHOULD BE PRESENT DURING BACKFILLING ACTIVITIES TO OBSERVE AND CERTIFY THAT BACKFILL MATERIAL WAS COMPACTED TO A SUITABLE CONDITION.
5. DEMOLISHED DEBRIS SHALL NOT BE BURIED ON SITE. ALL WASTE/DEBRIS GENERATED FROM DEMOLITION ACTIVITIES SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN ALL RECORDS OF THE DISPOSAL TO DEMONSTRATE COMPLIANCE WITH THE ABOVE REGULATIONS.

30' 0' 30' 60'

GRAPHIC SCALE IN FEET
1" = 30'

ISSUE	DATE	BY	DESCRIPTION
9	12/09/2024	VF	FOR TOWNSHIP SITE PLAN APPROVAL
8	11/21/2024	AF	FOR CLIENT REVIEW
7	04/23/2024	MPH	TOWNSHIP ENGINEERING SUBMISSION
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SITE DEVELOPMENT PLANS

HIGHLAND ROAD OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-276-035
HIGHLAND ROAD (M-59) - OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

STATE OF MICHIGAN
JONATHAN REID COOKSEY
ENGINEER
No. 6201069428
LICENSED PROFESSIONAL ENGINEER
MICHIGAN LICENSE No. 6201069428
LICENSED PROFESSIONAL ENGINEER

STONEFIELD
engineering & design

SCALE: 1" = 30'	PROJECT ID: DET-220180

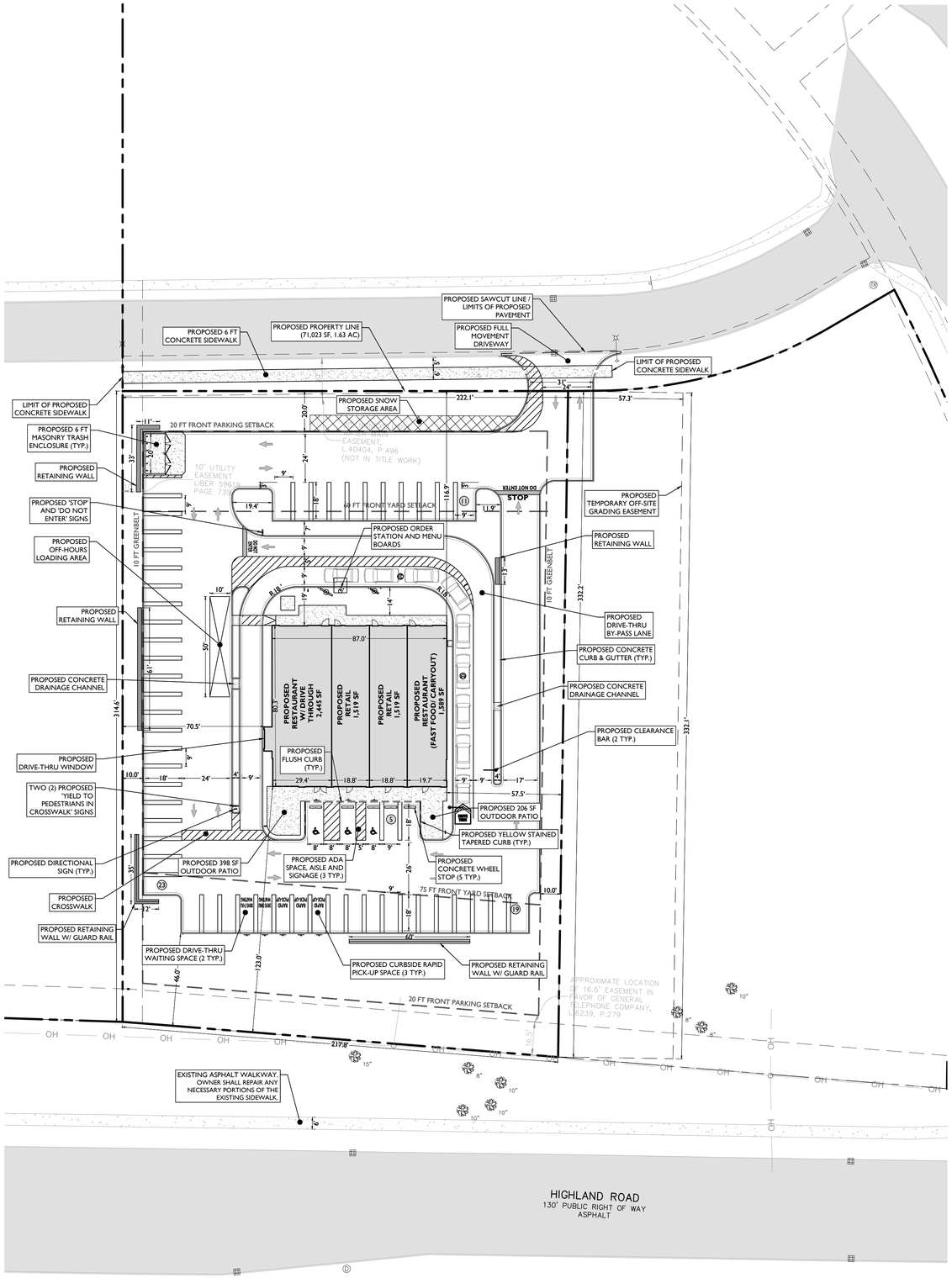
TITLE:

DEMOLITION PLAN

DRAWING:

C-2

V:\DET\2022\DET-220180-ALRIG-6001 HIGHLAND ROAD, CHARTER TOWNSHIP OF WHITE LAKE, MI\CADD\PLOT\SDP-02-DEMO.DWG



LAND USE AND ZONING

PID: 12-20-276-035		
PLANNED BUSINESS DISTRICT (PB)		
PROPOSED USE		
RESTAURANT WITH DRIVE-THRU	PERMITTED USE	
RESTAURANT, CARRY OUT	PERMITTED USE	
RETAIL STORE	PERMITTED USE	
ZONING REQUIREMENT	**REQUIRED**	**PROPOSED**
MINIMUM LOT AREA	10 ACRES (1)	71,023 SF (1.63 AC)
MAXIMUM BUILDING HEIGHT	35 FT / 2 STORIES	19.0 FT / 1 STORY
MINIMUM FRONT YARD SETBACK (SERVICE DRIVE)	60 FT (2)	116.9 FT
MINIMUM FRONT YARD SETBACK (HIGHLAND ROAD)	75 FT (3)	123.0 FT
MINIMUM SIDE YARD SETBACK	N/A	57.5 FT
MINIMUM REAR YARD SETBACK	N/A	N/A
MINIMUM GREENBELT BUFFER	10 FT FROM ADJACENT PROPERTIES	10.0 FT
MINIMUM FRONT YARD PARKING SETBACK (SERVICE DRIVE)	20 FT	20.0 FT
MINIMUM FRONT YARD PARKING SETBACK (HIGHLAND ROAD)	20 FT	46.0 FT

(1) § 3.11(x): A SMALLER PARCEL MAY BE PERMITTED BY PLANNING COMMISSION

(2) § 4.17: A FRONT YARD SETBACK OF AT LEAST SIXTY (60) FT REQUIRED FOR DRIVE- THRU

(3) PER THE MEIJER DEVELOPMENT AGREEMENT, THE HIGHLAND ROAD SETBACK REQUIREMENT FOR THIS OUTLOT IS 75 FEET

OFF-STREET PARKING REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 5.11 (m)	DRIVE-THRU PARKING: 1 SPACE PER 75 SF GROSS FLOOR AREA (2,445 SF)(1 SPACE / 75 SF) = 33 SPACES RETAIL PARKING: 1 SPACE PER 200 SF GROSS FLOOR AREA (3,038 SF)(1 SPACE / 200 SF) = 15 SPACES RESTAURANT (FAST FOOD/CARRY OUT): 1 SPACE PER 75 SF GROSS FLOOR AREA (1,589 SF)(1 SPACE / 75 SF) = 21 SPACES **TOTAL: 33 + 15 + 21 = 69 SPACES**	58 SPACES (W)
§ 5.11.Q	90° PARKING: 9 FT X 18 FT W/ 24 FT AISLE	9 FT X 18 FT (1) W/ 24 FT AISLE
§ 5.11.M.i	DRIVE-THRU STACKING: 8 VEHICLES	9 VEHICLES
§ 5.11.M.i	DRIVE-THRU STACKING DIMENSIONS: 9 FT X 20 FT W/ 25 FT MIN RADIUS	10 FT X 20 FT W/ 25 FT RADIUS
§ 5.22 (p)	LOADING ZONE: 10 FT X 50 FT	10 FT X 50 FT
§ 5.11.O	ADA REQUIRED PARKING SPACES: 51-70 TOTAL SPACES = 3 ADA SPACES	3 ADA SPACES

(1) GUTTER PANS ARE NOT TO BE INCLUDED WITHIN THE SHOWN PARKING AND DRIVE AISLE DIMENSIONS

(W) WAIVER

SYMBOL	DESCRIPTION
	PROPERTY LINE
	SETBACK LINE
	SAWCUT LINE
	PROPOSED CURB & GUTTER
	PROPOSED FLUSH CURB
	PROPOSED TAPERED CURB
	PROPOSED SIGNS / BOLLARDS
	PROPOSED BUILDING
	PROPOSED CONCRETE
	PROPOSED BUILDING DOORS
	PROPOSED RETAINING WALL WITH GUIDE RAIL

MDOT NOTES:

1. NO LANE CLOSURES PROPOSED
2. M-59 TO BE KEPT FREE AND CLEAR OF DIRT/DEBRIS
3. DAILY SWEEPING MAY BE REQUIRED

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY AND FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS AND THE PROPOSED SCOPE OF WORK (INCLUDING DIMENSIONS, LAYOUT, ETC.) PRIOR TO INITIATING THE IMPROVEMENTS IDENTIFIED WITHIN THESE DOCUMENTS. SHOULD ANY DISCREPANCY BE FOUND BETWEEN THE EXISTING SITE CONDITIONS AND THE PROPOSED WORK THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND ENSURE THAT ALL REQUIRED APPROVALS HAVE BEEN OBTAINED PRIOR TO THE START OF CONSTRUCTION. COPIES OF ALL REQUIRED PERMITS AND APPROVALS SHALL BE KEPT ON SITE AT ALL TIMES DURING CONSTRUCTION.
3. ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS STONEFIELD ENGINEERING & DESIGN, LLC. AND IT'S SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES AND LIABILITIES INCLUDING ATTORNEY'S FEES ARISING OUT OF CLAIMS BY EMPLOYEES OF THE CONTRACTOR IN ADDITION TO CLAIMS CONNECTED TO THE PROJECT AS A RESULT OF NOT CARRYING THE PROPER INSURANCE FOR WORKERS COMPENSATION, LIABILITY INSURANCE, AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE.
4. THE CONTRACTOR SHALL NOT DEVIATE FROM THE PROPOSED IMPROVEMENTS IDENTIFIED WITHIN THIS PLAN SET UNLESS APPROVAL IS PROVIDED IN WRITING BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF CONSTRUCTION.
6. THE CONTRACTOR SHALL NOT PERFORM ANY WORK OR CAUSE DISTURBANCE ON A PRIVATE PROPERTY NOT CONTROLLED BY THE PERSON OR ENTITY WHO HAS AUTHORIZED THE WORK WITHOUT PRIOR WRITTEN CONSENT FROM THE OWNER OF THE PRIVATE PROPERTY.
7. THE CONTRACTOR IS RESPONSIBLE TO RESTORE ANY DAMAGED OR UNDERMINED STRUCTURE OR SITE FEATURE THAT IS IDENTIFIED TO REMAIN ON THE PLAN SET. ALL REPAIRS SHALL USE NEW MATERIALS TO RESTORE THE FEATURE TO ITS EXISTING CONDITION AT THE CONTRACTORS EXPENSE.
8. CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE SHOP DRAWINGS, PRODUCT DATA, AND OTHER REQUIRED SUBMITTALS FOR REVIEW. STONEFIELD ENGINEERING & DESIGN, LLC. WILL REVIEW THE SUBMITTALS IN ACCORDANCE WITH THE DESIGN INTENT AS REFLECTED WITHIN THE PLAN SET.
9. THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
10. THE CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN THE PUBLIC RIGHT-OF-WAY IN ACCORDANCE WITH THE APPROPRIATE GOVERNING AUTHORITY AND SHALL BE RESPONSIBLE FOR THE PROCUREMENT OF STREET OPENING PERMITS.
11. THE CONTRACTOR IS REQUIRED TO RETAIN AN OSHA CERTIFIED SAFETY INSPECTOR TO BE PRESENT ON SITE AT ALL TIMES DURING CONSTRUCTION & DEMOLITION ACTIVITIES.
12. SHOULD AN EMPLOYEE OF STONEFIELD ENGINEERING & DESIGN, LLC. BE PRESENT ON SITE AT ANY TIME DURING CONSTRUCTION, IT DOES NOT RELIEVE THE CONTRACTOR OF ANY OF THE RESPONSIBILITIES AND REQUIREMENTS LISTED IN THE NOTES WITHIN THIS PLAN SET.
13. ANY LOADING/UNLOADING TO OCCUR OFF-HOURS AS TO NOT CONFLICT WITH CUSTOMER TRAFFIC FLOW.
14. ALL TRASH PICKUP TO OCCUR OFF-HOURS AS TO NOT CONFLICT WITH CUSTOMER TRAFFIC FLOW.

30' 0' 30' 60'

GRAPHIC SCALE IN FEET
1" = 30'

ISSUE	DATE	BY	DESCRIPTION
9	12/09/2024	VF	FOR TOWNSHIP SITE PLAN APPROVAL
8	11/21/2024	AF	FOR CLIENT REVIEW
7	04/23/2024	MPH	TOWNSHIP ENGINEERING SUBMISSION
6	08/11/2023	EM	REVISED BUILDING AREAS
5	06/22/2023	EM	RESUBMISSION FOR SITE PLAN APPROVAL
4	05/05/2023	EM	RESUBMISSION FOR SITE PLAN APPROVAL
3	04/11/2023	EM	FOR CLIENT REVIEW
2	03/16/2023	EM	FOR CLIENT REVIEW
1	02/14/2023	EM/JRG	SUBMISSION FOR SITE PLAN APPROVAL

NOT APPROVED FOR CONSTRUCTION

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Phone 248.247.1115

SITE DEVELOPMENT PLANS

HIGHLAND ROAD OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-276-035
HIGHLAND ROAD (M-59) - OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

STATE OF MICHIGAN — TIMOTHY REED CROCKEY — ENGINEER — No. 6201068630 — LICENSED PROFESSIONAL ENGINEER — MICHIGAN LICENSE NUMBER 6201069428 — LICENSED PROFESSIONAL ENGINEER

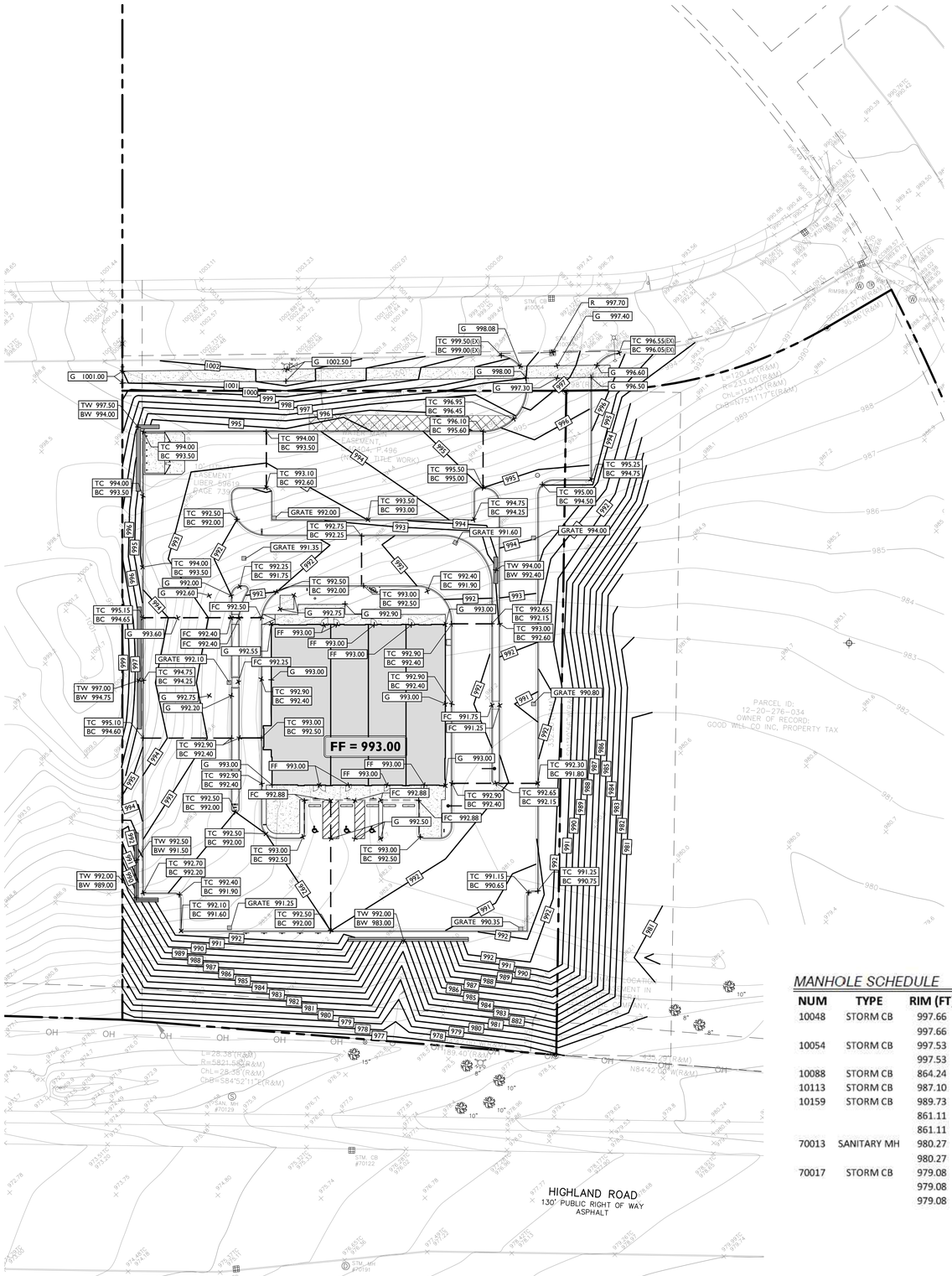
STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: DET-220180

TITLE: SITE PLAN

DRAWING: C-3

V:\DET\2022\DET-220180-ALAN\CAD\180 HIGHLAND ROAD, CHARTER TOWNSHIP OF WHITE LAKE, MI\CAD\PLOT\DEP-SUITE1.DWG



SYMBOL / DESCRIPTION

SYMBOL	DESCRIPTION
	PROPERTY LINE
100	PROPOSED GRADING CONTOUR
RIDGELINE	PROPOSED GRADING RIDGELINE
	PROPOSED DIRECTION OF DRAINAGE FLOW
G 100.00	PROPOSED GRADE SPOT SHOT
TC 100.50 / BC 100.00	PROPOSED TOP OF CURB / BOTTOM OF CURB SPOT SHOT
FC 100.00	PROPOSED FLUSH CURB SPOT SHOT

GRADING NOTES

1. ALL SOIL AND MATERIAL REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. ANY GROUNDWATER DE-WATERING PRACTICES SHALL BE PERFORMED UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL. THE CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY PERMITS FOR THE DISCHARGE OF DE-WATERED GROUNDWATER. ALL SOIL IMPORTED TO THE SITE SHALL BE CERTIFIED CLEAN FILL. CONTRACTOR SHALL MAINTAIN RECORDS OF ALL FILL MATERIALS BROUGHT TO THE SITE.
2. THE CONTRACTOR IS REQUIRED TO PROVIDE TEMPORARY AND/OR PERMANENT SHORING WHERE REQUIRED DURING EXCAVATION ACTIVITIES, INCLUDING BUT NOT LIMITED TO UTILITY TRENCHES, TO ENSURE THE STRUCTURAL INTEGRITY OF NEARBY STRUCTURES AND STABILITY OF THE SURROUNDING SOILS.
3. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 4 INCHES TO 7 INCHES ABOVE EXISTING GRADES UNLESS OTHERWISE NOTED. THE CONTRACTOR WILL SUPPLY ALL STAKEOUT CURB GRADE SHEETS TO STONEFIELD ENGINEERING & DESIGN, LLC FOR REVIEW AND APPROVAL PRIOR TO POURING CURBS.
4. THE CONTRACTOR IS RESPONSIBLE TO SET ALL PROPOSED UTILITY COVERS AND RESET ALL EXISTING UTILITY COVERS WITHIN THE PROJECT LIMITS TO PROPOSED GRADE IN ACCORDANCE WITH ANY APPLICABLE MUNICIPAL, COUNTY, STATE AND/OR UTILITY AUTHORITY REGULATIONS.
5. MINIMUM SLOPE REQUIREMENTS TO PREVENT PONDING SHALL BE AS FOLLOWS:
   - CURB GUTTER: 0.50%
   - CONCRETE SURFACES: 1.00%
   - ASPHALT SURFACES: 1.00%
5. A MINIMUM SLOPE OF 1.00% SHALL BE PROVIDED AWAY FROM ALL BUILDINGS. THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE FROM THE BUILDING IS ACHIEVED AND SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IF THIS CONDITION CANNOT BE MET.
6. FOR PROJECTS WHERE BASEMENTS ARE PROPOSED, THE DEVELOPER IS RESPONSIBLE TO DETERMINE THE DEPTH TO GROUNDWATER AT THE LOCATION OF THE PROPOSED STRUCTURE. IF GROUNDWATER IS ENCOUNTERED WITHIN THE BASEMENT AREA, SPECIAL CONSTRUCTION METHODS SHALL BE UTILIZED AND REVIEWED/APPROVED BY THE CONSTRUCTION CODE OFFICIAL. IF SUMP PUMPS ARE UTILIZED, ALL DISCHARGES SHALL BE CONNECTED DIRECTLY TO THE PUBLIC STORM SEWER SYSTEM WITH APPROVAL FROM THE GOVERNING STORM SEWER SYSTEM AUTHORITY.

ADA NOTES

1. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION WITHIN THE ADA PARKING SPACES AND ACCESS AISLES.
2. THE CONTRACTOR SHALL PROVIDE COMPLIANT SIGNAGE AT ALL ADA PARKING AREAS IN ACCORDANCE WITH STATE GUIDELINES.
3. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 5.00% RUNNING SLOPE AND A MAXIMUM OF 2.00% CROSS SLOPE ALONG WALKWAYS WITHIN THE ACCESSIBLE PATH OF TRAVEL (SEE THE SITE PLAN FOR THE LOCATION OF THE ACCESSIBLE PATH). THE CONTRACTOR IS RESPONSIBLE TO ENSURE THE ACCESSIBLE PATH OF TRAVEL IS 36 INCHES WIDE OR GREATER UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
4. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION AT ALL LANDINGS. LANDINGS INCLUDE, BUT ARE NOT LIMITED TO, THE TOP AND BOTTOM OF AN ACCESSIBLE RAMP, AT ACCESSIBLE BUILDING ENTRANCES, AT AN AREA IN FRONT OF A WALK-UP ATM, AND AT TURNING SPACES ALONG THE ACCESSIBLE PATH OF TRAVEL. THE LANDING AREA SHALL HAVE A MINIMUM CLEAR AREA OF 60 INCHES BY 60 INCHES UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
5. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 8.33% RUNNING SLOPE AND A MAXIMUM 2.00% CROSS SLOPE ON ANY CURB RAMPS ALONG THE ACCESSIBLE PATH OF TRAVEL. WHERE PROVIDED, CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 10.00% IF A LANDING AREA IS PROVIDED AT THE TOP OF THE RAMP. FOR ALTERATIONS, A CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 8.33% IF A LANDING AREA IS NOT PROVIDED AT THE TOP OF THE RAMP. CURBS RAMPS SHALL NOT RISE MORE THAN 6 INCHES IN ELEVATION WITHOUT A HANDRAIL. THE CLEAR WIDTH OF A CURB RAMP SHALL BE NO LESS THAN 36 INCHES WIDE.
6. ACCESSIBLE RAMPS WITH A RISE GREATER THAN 6 INCHES SHALL CONTAIN COMPLIANT HANDRAILS ON BOTH SIDES OF THE RAMP AND SHALL NOT RISE MORE THAN 30" IN ELEVATION WITHOUT A LANDING AREA IN BETWEEN RAMP RUNS. LANDING AREAS SHALL ALSO BE PROVIDED AT THE TOP AND BOTTOM OF THE RAMP.
7. A SLIP RESISTANT SURFACE SHALL BE CONSTRUCTED ALONG THE ACCESSIBLE PATH AND WITHIN ADA PARKING AREAS.
8. THE CONTRACTOR SHALL ENSURE A MAXIMUM OF ¼ INCHES VERTICAL CHANGE IN LEVEL ALONG THE ACCESSIBLE PATH. WHERE A CHANGE IN LEVEL BETWEEN ¼ INCHES AND ½ INCHES EXISTS, CONTRACTOR SHALL ENSURE THAT THE TOP ¼ INCH CHANGE IN LEVEL IS BEVELED WITH A SLOPE NOT STEEPER THAN 1 UNIT VERTICAL AND 2 UNITS HORIZONTAL (2:1 SLOPE).
9. THE CONTRACTOR SHALL ENSURE THAT ANY OPENINGS (GAPS OR HORIZONTAL SEPARATION) ALONG THE ACCESSIBLE PATH SHALL NOT ALLOW PASSAGE OF A SPHERE GREATER THAN ½ INCH.

30' 0' 30' 60'
GRAPHIC SCALE IN FEET
1" = 30'

MANHOLE SCHEDULE

NUM	TYPE	RIM (FT)	SIZE (IN)	DIR	INV ELEV (FT)	NUM	TYPE	RIM (FT)	SIZE (IN)	DIR	INV ELEV (FT)
10048	STORM CB	997.66	12	N	984.91	70046	STORM CB	979.24	18	W	974.04
		997.66	12	S	985.06			979.24	18	E	973.89
10054	STORM CB	997.53	12	S	984.93	70095	SANITARY MH	980.49	15	NE	951.09
		997.53	12	NE	984.78			980.49	15	W	951.29
10088	STORM CB	864.24	12	NW	859.94	70101	STORM CB	979.37	12	S	975.77
10113	STORM CB	987.10	12	E	982.55	70122	STORM CB	975.46	12	S	971.46
10159	STORM CB	989.73	12	SE	983.48	70129	SANITARY MH	975.17	15	E	951.07
		861.11	12	SW	854.86			975.17	15	W	951.17
		861.11	12	NW	854.81	70182	STORM CB	980.28	12	N	975.03
70013	SANITARY MH	980.27	8	N	970.67			980.28	12	S	975.08
		980.27	8	SE	970.47	70191	STORM MH	976.75	12	S	971.15
70017	STORM CB	979.08	18	W	973.68			976.75	12	N	971.20
		979.08	18	N	973.53	70196	STORM CB	975.22	12	SE	971.22
		979.08	12	NE	974.18	70211	STORM BEEHIVE	978.23	18	E	974.53

ISSUE	DATE	BY	DESCRIPTION
9	12/09/2024	VF	FOR TOWNSHIP SITE PLAN APPROVAL
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7	04/23/2024	MPH	TOWNSHIP ENGINEERING SUBMISSION
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2	03/16/2023	EM	FOR CLIENT REVIEW
1	02/14/2023	EM/JKG	SUBMISSION FOR SITE PLAN APPROVAL

NOT APPROVED FOR CONSTRUCTION

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SITE DEVELOPMENT PLANS

HIGHLAND ROAD OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-276-035
HIGHLAND ROAD (M-59) - OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

STATE OF MICHIGAN — TIMOTHY RAYMOND COBEY — ENGINEER — No. 6201053428 — PROFESSIONAL ENGINEER
MICHIGAN LICENSE NUMBER 6201053428
LICENSED PROFESSIONAL ENGINEER

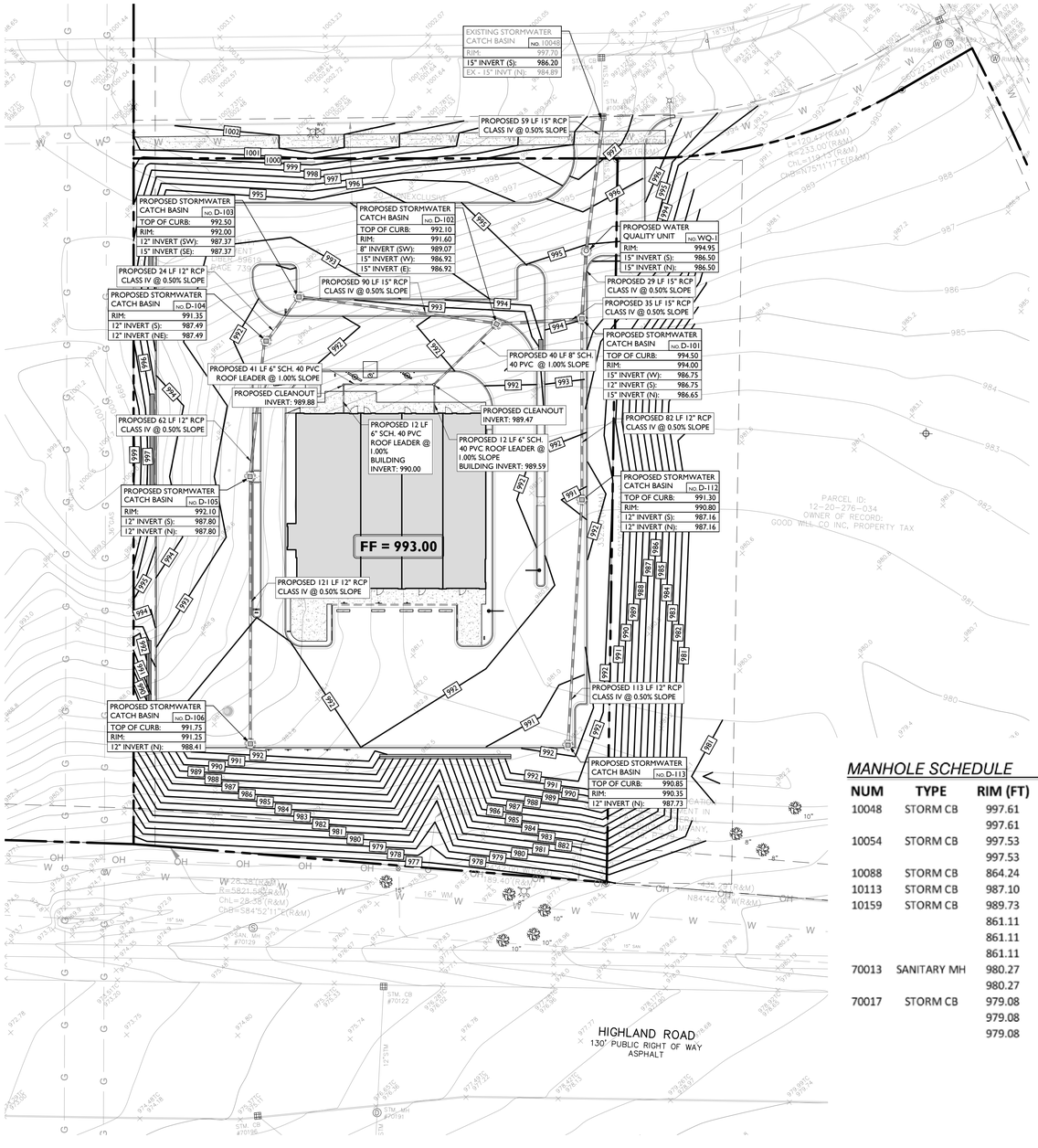
STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: DET-220180

TITLE: GRADING PLAN

DRAWING: C-4

V:\DET\2022\DET-220180-ALAN\GBM\HIGHLAND ROAD, CHARTER TOWNSHIP OF WHITE LAKE, MI\CAD\PLOT\TOP PLAN\GRADING



SYMBOL / DESCRIPTION

SYMBOL	DESCRIPTION
	PROPERTY LINE
100	PROPOSED GRADING CONTOUR
RIDGELINE	PROPOSED GRADING RIDGELINE
	PROPOSED STORMWATER STRUCTURES
	PROPOSED STORMWATER PIPING

MANHOLE SCHEDULE

NUM	TYPE	RIM (FT)	SIZE (IN)	DIR	INV ELEV (FT)	NUM	TYPE	RIM (FT)	SIZE (IN)	DIR	INV ELEV (FT)
10048	STORM CB	997.61	15	N	984.89	70046	STORM CB	979.24	18	W	974.04
		997.61	15	S	985.17			979.24	18	E	973.89
10054	STORM CB	997.53	15	S	984.93	70095	SANITARY MH	980.49	18	NE	951.09
		997.53	18	NE	984.78			980.49	18	W	951.29
10088	STORM CB	864.24	12	NW	859.94	70101	STORM CB	979.37	12	S	975.77
10113	STORM CB	987.10	12	E	982.55	70122	STORM CB	975.46	12	S	971.46
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		861.11	18	SW	854.86			975.17	18	W	951.17
		861.11	18	NW	854.81	70182	STORM CB	980.28	12	N	975.03
		861.11	21	NE	PER PLAN			980.28	12	S	975.08
70013	SANITARY MH	980.27	8	N	970.67	70191	STORM MH	976.75	12	S	971.15
		980.27	8	SE	970.47			976.75	12	N	971.20
70017	STORM CB	979.08	18	W	973.68	70196	STORM CB	975.22	12	SE	971.22
		979.08	24	N	973.53	70211	STORM BEEHIVE	978.23	18	E	974.53
		979.08	12	NE	974.18						

DRAINAGE AND UTILITY NOTES

1. THE CONTRACTOR TO PERFORM A TEST PIT PRIOR TO CONSTRUCTION (RECOMMEND 30 DAYS PRIOR) AT LOCATIONS OF EXISTING UTILITY CROSSINGS FOR STORMWATER IMPROVEMENTS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IN WRITING.
2. CONTRACTOR SHALL START CONSTRUCTION OF STORM LINES AT THE LOWEST INVERT AND WORK UP-GRADIENT.
3. THE CONTRACTOR IS REQUIRED TO CALL THE APPROPRIATE AUTHORITY FOR NOTICE OF CONSTRUCTION/EXCAVATION AND UTILITY MARK OUT PRIOR TO THE START OF CONSTRUCTION IN ACCORDANCE WITH STATE LAW. CONTRACTOR IS REQUIRED TO CONFIRM THE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES IN THE FIELD. SHOULD A DISCREPANCY EXIST BETWEEN THE FIELD LOCATION OF A UTILITY AND THE LOCATION SHOWN ON THE PLAN SET OR SURVEY, THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IMMEDIATELY IN WRITING.
4. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD OF THE AS-BUILT LOCATIONS OF ALL PROPOSED UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR SHALL NOTE ANY DISCREPANCIES BETWEEN THE AS-BUILT LOCATIONS AND THE LOCATIONS DEPICTED WITHIN THE PLAN SET. THIS RECORD SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.

EXCAVATION, SOIL PREPARATION, AND DEWATERING NOTES

1. THE CONTRACTOR IS REQUIRED TO REVIEW THE REFERENCED GEOTECHNICAL DOCUMENTS PRIOR TO CONSTRUCTION. THESE DOCUMENTS SHALL BE CONSIDERED A PART OF THE PLAN SET.
2. THE CONTRACTOR IS REQUIRED TO PREPARE SUBGRADE SOILS BENEATH ALL PROPOSED IMPROVEMENTS AND BACKFILL ALL EXCAVATIONS IN ACCORDANCE WITH RECOMMENDATIONS BY THE GEOTECHNICAL ENGINEER OF RECORD.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SHORING FOR ALL EXCAVATIONS AS REQUIRED. CONTRACTOR SHALL HAVE THE SHORING DESIGN PREPARED BY A QUALIFIED PROFESSIONAL. SHORING DESIGNS SHALL BE SUBMITTED TO STONEFIELD ENGINEERING & DESIGN, LLC. AND THE OWNER PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL OPEN EXCAVATIONS ARE PERFORMED AND PROTECTED IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS.
5. THE CONTRACTOR IS RESPONSIBLE FOR ANY DEWATERING DESIGN AND OPERATIONS, AS REQUIRED, TO CONSTRUCT THE PROPOSED IMPROVEMENTS. THE CONTRACTOR SHALL OBTAIN ANY REQUIRED PERMITS FOR DEWATERING OPERATIONS AND GROUNDWATER DISPOSAL.

30' 0' 30' 60'
GRAPHIC SCALE IN FEET
1" = 30'

ISSUE	DATE	BY	DESCRIPTION
9	12/09/2024	VF	FOR TOWNSHIP SITE PLAN APPROVAL
8	11/21/2024	AF	FOR CLIENT REVIEW
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1	02/14/2023	EM/JKG	SUBMISSION FOR SITE PLAN APPROVAL

NOT APPROVED FOR CONSTRUCTION

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SITE DEVELOPMENT PLANS

HIGHLAND ROAD OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-276-035
HIGHLAND ROAD (M-59) - OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

SOUTHWYCK COCKREY ENGINEER No. 62-54036 LICENSED PROFESSIONAL ENGINEER STATE OF MICHIGAN
MICHIGAN LICENSED PROFESSIONAL ENGINEER No. 6254036

STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: DET-220180

TITLE: STORMWATER MANAGEMENT PLAN

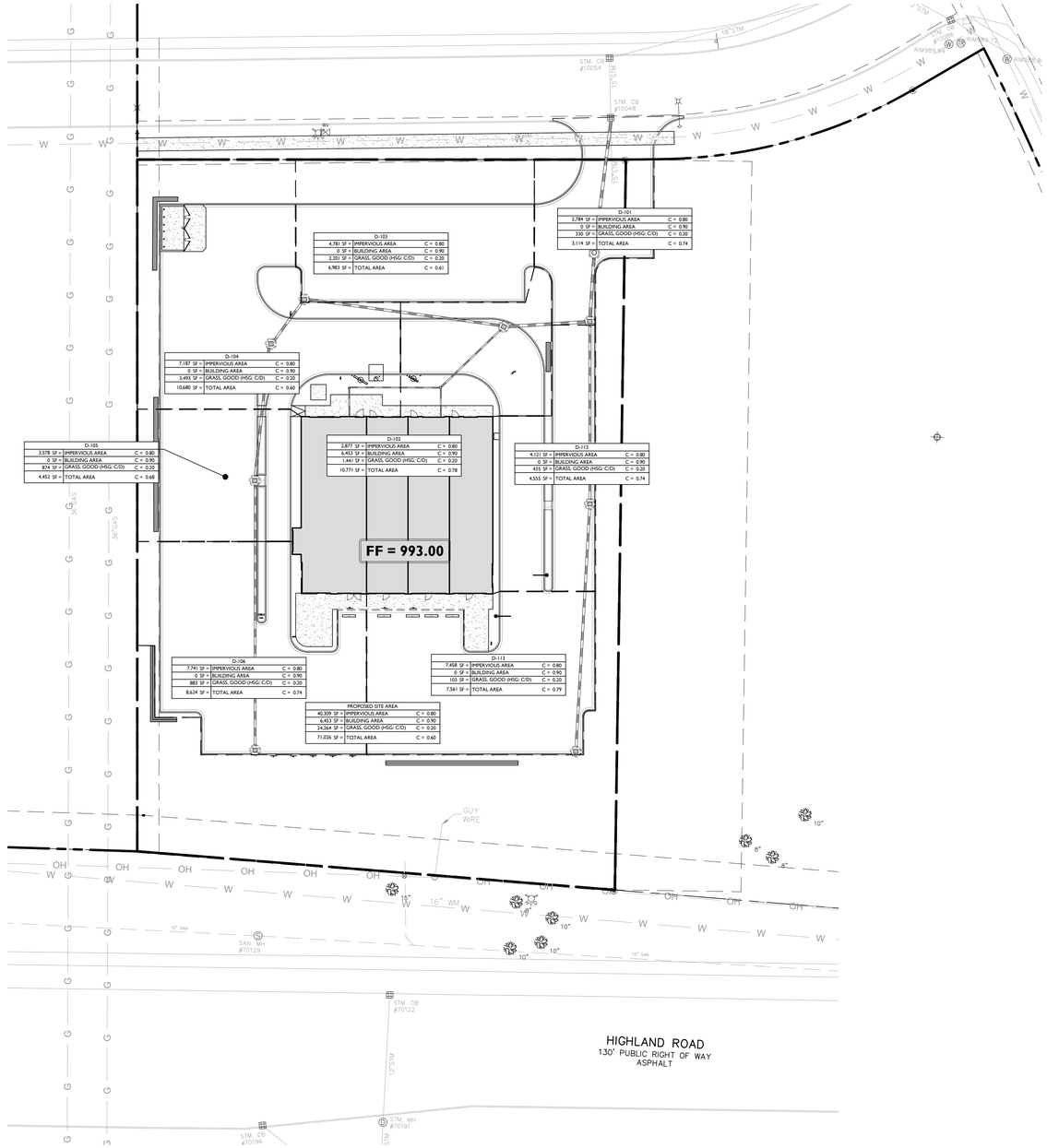
DRAWING: C-5

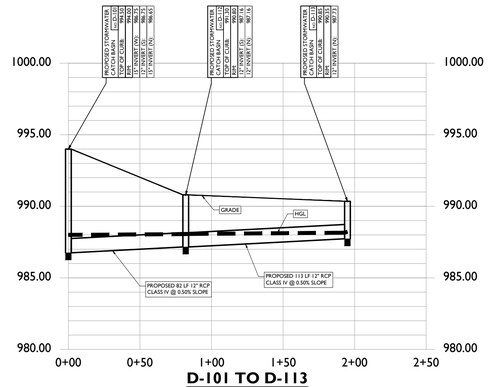
V:\DET\2022\DET-220180-AUG-680 HIGHLAND ROAD, CHARTER TOWNSHIP OF WHITE LAKE, MI\CAD\PLOT\DP-05STRM.DWG

10-YR STORMWATER SYSTEM DESIGN

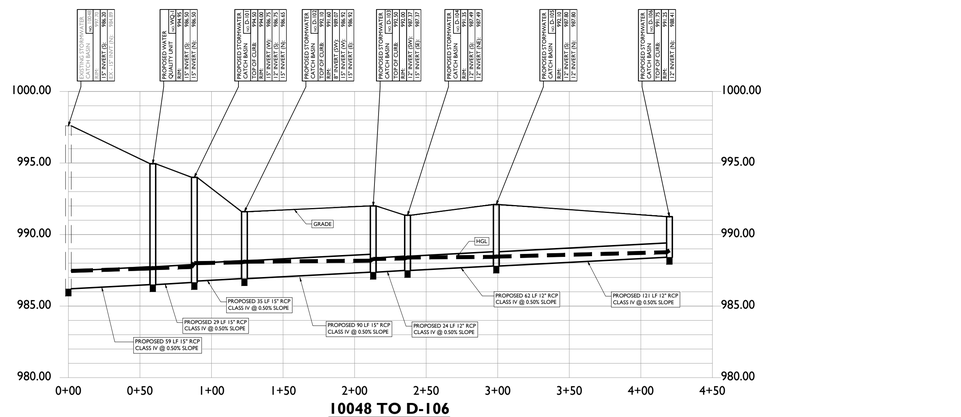
Line #	Line ID	Rim Elevation Downstream (FT)	Rim Elevation Upstream (FT)	Invert Downstream (FT)	Invert Upstream (FT)	Pipe Size (IN)	Pipe Length (FT)	Pipe Slope (%)	Q Required (CFS)	Pipe Capacity (CFS)	Velocity Downstream (FPS)	HGL Downstream (FT)	HGL Upstream (FT)	Drainage Area (AC)	Runoff Coefficient	Time of Concentration (MIN)	Rainfall Intensity (IN/HR)
1	10048 TO WQ-1	997.70	994.95	986.20	986.50	15.0	59.0	0.50	3.84	4.60	3.13	987.45	987.63	0.00	0.00	12.90	4.18
2	WQ-1 TO D-101	994.95	994.00	986.50	986.65	15.0	29.0	0.50	3.86	4.64	3.26	987.66	987.73	0.07	0.74	12.80	4.21
3	D-101 TO D-102	994.00	991.60	986.75	986.92	15.0	35.0	0.50	2.80	4.50	2.28	988.00	988.06	0.25	0.78	12.50	4.25
4	D-102 TO D-103	991.60	992.00	986.92	987.37	15.0	90.0	0.50	2.03	4.57	1.69	988.10	988.17	0.16	0.61	11.80	4.37
5	D-103 TO D-104	992.00	991.35	987.37	987.49	12.0	24.0	0.50	1.61	2.52	2.12	988.30	988.33	0.25	0.60	11.60	4.41
6	D-104 TO D-105	991.35	992.10	987.49	987.80	12.0	62.0	0.50	0.98	2.52	1.31	988.40	988.44	0.10	0.68	11.00	4.53
7	D-105 TO D-106	992.10	991.25	987.80	988.41	12.0	121.0	0.50	0.70	2.53	1.27	988.46	988.76	0.20	0.74	10.00	4.73
8	D-101 TO D-112	994.00	990.80	986.75	987.16	12.0	82.0	0.50	0.93	2.52	1.18	988.00	988.05	0.10	0.74	11.30	4.47
9	D-112 TO D-113	990.80	990.35	987.16	987.73	12.0	113.0	0.50	0.64	2.53	0.85	988.07	988.16	0.17	0.79	10.00	4.73

CONVEYANCE CALCULATIONS





D-101 TO D-113



10048 TO D-106

STORM SEWER PROFILES

GRAPHIC SCALE IN FEET
1" = 50'
HORIZONTAL SCALE

GRAPHIC SCALE IN FEET
1" = 5'
VERTICAL SCALE

GRAPHIC SCALE IN FEET
1" = 30'

SYMBOL	DESCRIPTION
	PROPERTY LINE
100	PROPOSED GRADING CONTOUR
RIDGELINE	PROPOSED GRADING RIDGELINE
	PROPOSED STORMWATER STRUCTURES
	PROPOSED STORMWATER PIPING

SITE RUNOFF SUMMARY

Q = C*I*A	POST-DEVELOPMENT
C (VALUE)	0.60 (2)
I (INTENSITY) (1)	3.89
A (AREA)	1.63 AC
Q (FLOW RATE)	3.80 CFS

(1) I = 175/(T+25) PER WHITE LAKE TOWNSHIP ENGINEERING DESIGN STANDARDS FOR THE 10-YEAR, 24-HOUR STORM. I = 175/(20+25), I = 3.89

(2) SITE IS ACCOUNTED FOR WITHIN EXISTING BASIN AND DESIGNED C-VALUE OF 0.75.

ISSUE	DATE	BY	DESCRIPTION
9	12/09/2024	VF	FOR TOWNSHIP SITE PLAN APPROVAL
8	11/21/2024	AF	FOR CLIENT REVIEW
7	04/23/2024	MPH	TOWNSHIP ENGINEERING SUBMISSION
6	08/11/2023	EM	REVISED BUILDING AREAS
5	06/22/2023	EM	RESUBMISSION FOR SITE PLAN APPROVAL
4	05/05/2023	EM	RESUBMISSION FOR SITE PLAN APPROVAL
3	04/11/2023	EM	FOR CLIENT REVIEW
2	03/16/2023	EM	FOR CLIENT REVIEW
1	02/14/2023	EM/JKG	SUBMISSION FOR SITE PLAN APPROVAL

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design
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Phone 248.247.1115

SITE DEVELOPMENT PLANS

HIGHLAND ROAD OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-376-035
HIGHLAND ROAD (M-59) · OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

JONATHAN D. COOKSEY, ENGINEER, STATE OF MICHIGAN, 70169428, LICENSED PROFESSIONAL ENGINEER

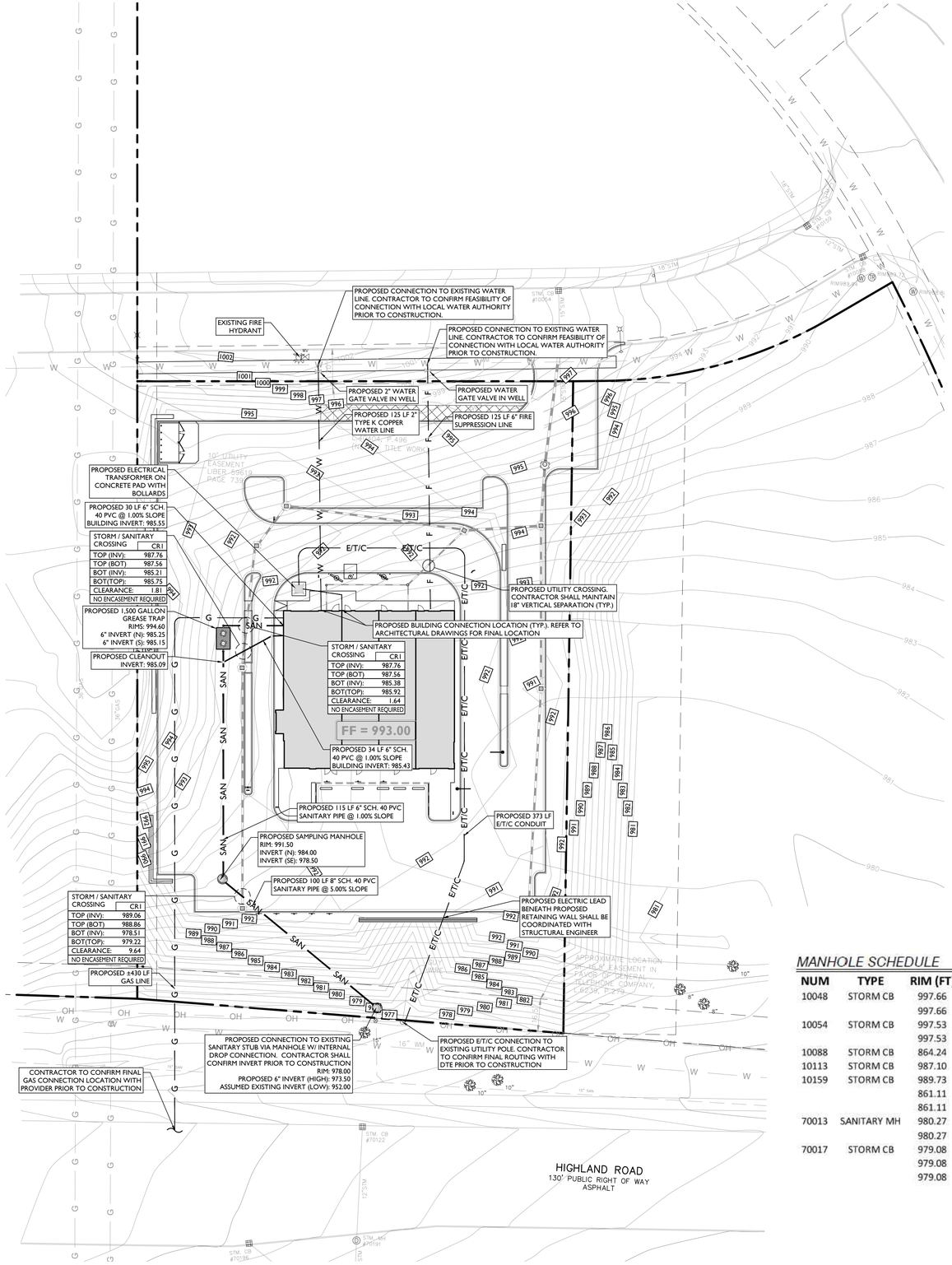
STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: DET-220180

TITLE: STORMWATER MANAGEMENT PLAN

DRAWING: C-6

V:\DET\2022\DET-220180-ALAN\C-601 HIGHLAND ROAD, CHARTER TOWNSHIP OF WHITE LAKE, MICHIGAN\PDF\DET-SDS-STM.DWG



SYMBOL / DESCRIPTION

SYMBOL	DESCRIPTION
	PROPERTY LINE
SAN	PROPOSED SANITARY LATERAL
W	PROPOSED DOMESTIC WATER SERVICE
E/T/C	PROPOSED E/T/C CONDUITS
G	PROPOSED GAS LINE
	PROPOSED VALVE
S	PROPOSED SANITARY MANHOLE / CLEANOUT
T	PROPOSED TRANSFORMER ON CONCRETE PAD WITH BOLLARDS

MANHOLE SCHEDULE

NUM	TYPE	RIM (FT)	SIZE (IN)	DIR	INV ELEV (FT)	NUM	TYPE	RIM (FT)	SIZE (IN)	DIR	INV ELEV (FT)
10048	STORM CB	997.66	12	N	984.91	70046	STORM CB	979.24	18	W	974.04
		997.66	12	S	985.06			979.24	18	E	973.89
10054	STORM CB	997.53	12	S	984.93	70095	SANITARY MH	980.49	15	NE	951.09
		997.53	12	NE	984.78			980.49	15	W	951.29
10088	STORM CB	864.24	12	NW	859.94	70101	STORM CB	979.37	12	S	975.77
10113	STORM CB	987.10	12	E	982.55	70122	STORM CB	975.46	12	S	971.46
10159	STORM CB	989.73	12	SE	983.48	70129	SANITARY MH	975.17	15	E	951.07
		861.11	12	SW	854.86			975.17	15	W	951.17
		861.11	12	NW	854.81	70182	STORM CB	980.28	12	N	975.03
70013	SANITARY MH	980.27	8	N	970.67			980.28	12	S	975.08
		980.27	8	SE	970.47	70191	STORM MH	976.75	12	S	971.15
70017	STORM CB	979.08	18	W	973.68			976.75	12	N	971.20
		979.08	18	N	973.53	70196	STORM CB	975.22	12	SE	971.22
		979.08	12	NE	974.18	70211	STORM BEEHIVE	978.23	18	E	974.53

DRAINAGE AND UTILITY NOTES

1. THE CONTRACTOR IS REQUIRED TO CALL THE APPROPRIATE AUTHORITY FOR NOTICE OF CONSTRUCTION/EXCAVATION AND UTILITY MARK OUT PRIOR TO THE START OF CONSTRUCTION IN ACCORDANCE WITH STATE LAW. CONTRACTOR IS REQUIRED TO CONFIRM THE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES IN THE FIELD. SHOULD A DISCREPANCY EXIST BETWEEN THE FIELD LOCATION OF A UTILITY AND THE LOCATION SHOWN ON THE PLAN SET OR SURVEY, THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IMMEDIATELY IN WRITING.
2. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN IN OPERATION ALL UTILITIES NOT DESIGNATED TO BE REMOVED.
3. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO ANY EXISTING UTILITY IDENTIFIED TO REMAIN WITHIN THE LIMITS OF THE PROPOSED WORK DURING CONSTRUCTION.
4. A MINIMUM HORIZONTAL SEPARATION OF 10 FEET IS REQUIRED BETWEEN ANY SANITARY SEWER SERVICE AND ANY WATER LINES. IF THIS SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASEMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. ALL WATER LINES SHALL BE VERTICALLY SEPARATED ABOVE SANITARY SEWER LINES BY A MINIMUM DISTANCE OF 18 INCHES. IF THIS SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASEMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN, LLC.
6. THE CONTRACTOR TO PERFORM A TEST PIT PRIOR TO CONSTRUCTION (RECOMMEND 30 DAYS PRIOR) AT LOCATIONS OF EXISTING UTILITY CROSSINGS FOR WATER AND SANITARY SEWER CONNECTION IMPROVEMENTS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IN WRITING.
7. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING GAS, ELECTRIC AND TELECOMMUNICATION CONNECTIONS WITH THE APPROPRIATE GOVERNING AUTHORITY.
8. CONTRACTOR SHALL START CONSTRUCTION OF ANY GRAVITY SEWER AT THE LOWEST INVERT AND WORK UP-GRADIENT.
9. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD SET OF PLANS REFLECTING THE LOCATION OF EXISTING UTILITIES THAT HAVE BEEN CAPPED, ABANDONED, OR RELOCATED BASED ON THE DEMOLITION/REMOVAL ACTIVITIES REQUIRED IN THIS PLAN SET. THIS DOCUMENT SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.
10. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD OF THE AS-BUILT LOCATIONS OF ALL PROPOSED UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR SHALL NOTE ANY DISCREPANCIES BETWEEN THE AS-BUILT LOCATIONS AND THE LOCATIONS DEPICTED WITHIN THE PLAN SET. THIS RECORD SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.

30' 0' 30' 60'
GRAPHIC SCALE IN FEET
1" = 30'

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SITE DEVELOPMENT PLANS

HIGHLAND ROAD OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-276-035
HIGHLAND ROAD (M-59) - OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

STATE OF MICHIGAN
TIMOTHY REED COOLEY
ENGINEER
MICHIGAN LICENSE NUMBER 6201069428
LICENSED PROFESSIONAL ENGINEER

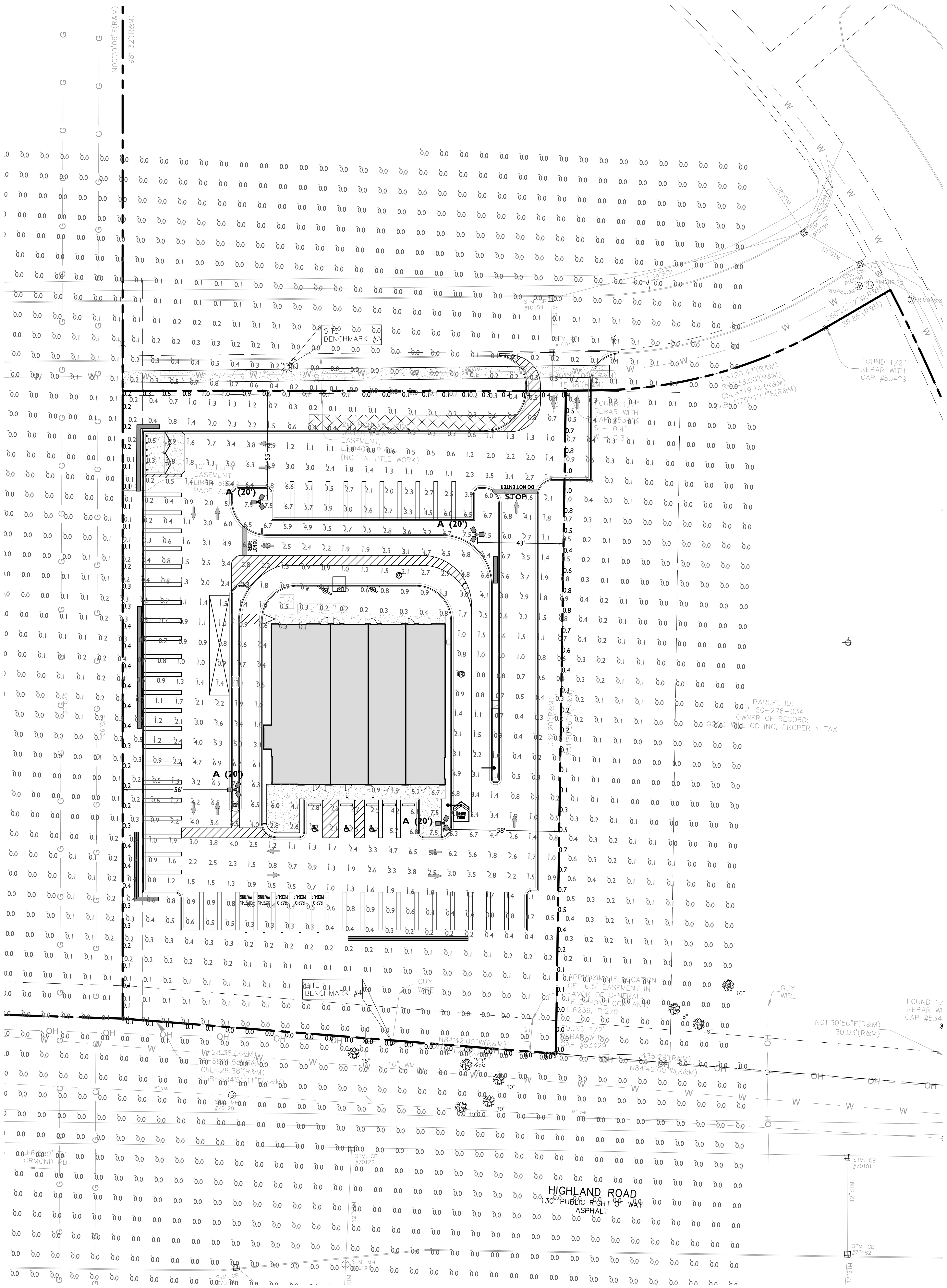
STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: DET-220180

TITLE: UTILITY PLAN

DRAWING: C-7

V:\DET\2022\DET-220180-ALAN\CAD\ 1 HIGHLAND ROAD, CHARTER TOWNSHIP OF WHITE LAKE, MICHIGAN\DOTP\DOTP-PLOTS.DWG



SYMBOL	DESCRIPTION
A (XX')	PROPOSED LIGHTING FIXTURE (MOUNTING HEIGHT)
+X.X	PROPOSED LIGHTING INTENSITY (FOOTCANDLES)
	PROPOSED AREA LIGHT
	PROPOSED BUILDING MOUNTED LIGHT

PROPOSED LUMINAIRE SCHEDULE

SYMBOL	LABEL	QUANTITY	LIGHTING SPECIFICATION	DISTRIBUTION	LLF	MANUFACTURER	IES FILE
	A	4	PFPRV PREVAIL POLE AND FIXTURE COMBO - LED TRIPLE 120° WITH HOUSE SIDE SHIELD	3	0.9	EATON	PRV-C25-D-UNV-T3-BZ-7030-HSS.ies

LIGHTING REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 5.18.G	LIGHT FIXTURES SHALL BE FULL CUT OFF AT 90°	PROVIDED
§ 5.18.G.iii	MINIMUM PROPERTY LINE SETBACK: 5 FT	43 FT
§ 5.18.G.vii.a	MAXIMUM FIXTURE HEIGHTS:	
	WITHIN 25 FT OF PROPERTY LINE: 16 FT	N/A
	WITHIN 26-60 FT OF PROPERTY LINE: 20 FT	20 FT
	WITHIN 61-100 FT OF PROPERTY LINE: 25 FT	20 FT
	> 100 FT OFF PROPERTY LINE: 30 FT	N/A
§ 5.18.G.iii	PERMITTED GLARE:	
	ALL PROPERTY LINES: 1.0 FC	1.0 FC
§ 5.18.G.viii	FOOT CANDLE LIMITS (MAXIMUM AVERAGE):	
	GENERAL: 0.5 FC	1.7 FC (W)
	DRIVEWAY: 2.0 FC	2.0 FC
	PARKING: 2.0 FC	2.0 FC
	WALKS: 1.0 FC	2.12 (W)
	PROTECTIVE: 1.0 FC	N/A
	BUILDING: 5.0 FC	2.1 FC
	LOADING AREAS: 1.0 FC	1.0 FC

(W) WAIVER

LIGHTING STATISTICS

DESCRIPTION	AVERAGE	MINIMUM	MAXIMUM
OVERALL PARCEL	1.7 FC	0.0 FC	7.5 FC
DRIVEWAY & PARKING AREAS	2.0 FC	0.0 FC	7.5 FC
BUILDING	2.1 FC	0.1 FC	6.4 FC
PROPERTY LINE	0.3 FC	0.00 FC	1.0 FC

(1) ALL CALCULATIONS MEASURED 6 FT ABOVE GRADE

GENERAL LIGHTING NOTES

1. THE LIGHTING LEVELS DEPICTED WITHIN THE PLAN SET ARE CALCULATED UTILIZING DATA OBTAINED FROM THE LISTED MANUFACTURER. ACTUAL ILLUMINATION LEVELS AND PERFORMANCE OF ANY PROPOSED LIGHTING FIXTURE MAY VARY DUE TO UNCONTROLLABLE VARIABLES SUCH ARE WEATHER, VOLTAGE SUPPLY, LAMP TOLERANCE, EQUIPMENT SERVICE LIFE AND OTHER VARIABLE FIELD CONDITIONS.
2. WHERE APPLICABLE, THE EXISTING LIGHT LEVELS DEPICTED WITHIN THE PLAN SET SHALL BE CONSIDERED APPROXIMATE. THE EXISTING LIGHT LEVELS ARE BASED ON FIELD OBSERVATIONS AND THE MANUFACTURER'S DATA OF THE ASSUMED OR MOST SIMILAR LIGHTING FIXTURE MODEL.
3. UNLESS NOTED ELSEWHERE WITHIN THIS PLAN SET, THE LIGHT LOSS FACTORS USED IN THE LIGHTING ANALYSIS ARE AS FOLLOWS:
   - LIGHT EMITTING DIODES (LED): 0.90
   - HIGH PRESSURE SODIUM: 0.72
   - METAL HALIDE: 0.72
4. THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IN WRITING, PRIOR TO THE START OF CONSTRUCTION, OF ANY PROPOSED LIGHTING LOCATIONS THAT CONFLICT WITH EXISTING/ PROPOSED DRAINAGE, UTILITY, OR OTHER IMPROVEMENTS.
5. THE CONTRACTOR IS RESPONSIBLE TO PREPARE A WIRING PLAN AND PROVIDE ELECTRIC SERVICE TO ALL PROPOSED LIGHTING FIXTURES. THE CONTRACTOR IS REQUIRED TO PREPARE AN AS-BUILT PLAN OF WIRING AND PROVIDE COPIES TO THE OWNER AND STONEFIELD ENGINEERING & DESIGN, LLC.

30' 0' 30' 60'
GRAPHIC SCALE IN FEET
1" = 30'

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SITE DEVELOPMENT PLANS

HIGHLAND ROAD OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-276-035
HIGHLAND ROAD (M-59) - OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

STATE OF MICHIGAN JONATHAN REID COOKSEY ENGINEER
MICHIGAN LICENSE No. 6201069428
LICENSED PROFESSIONAL ENGINEER

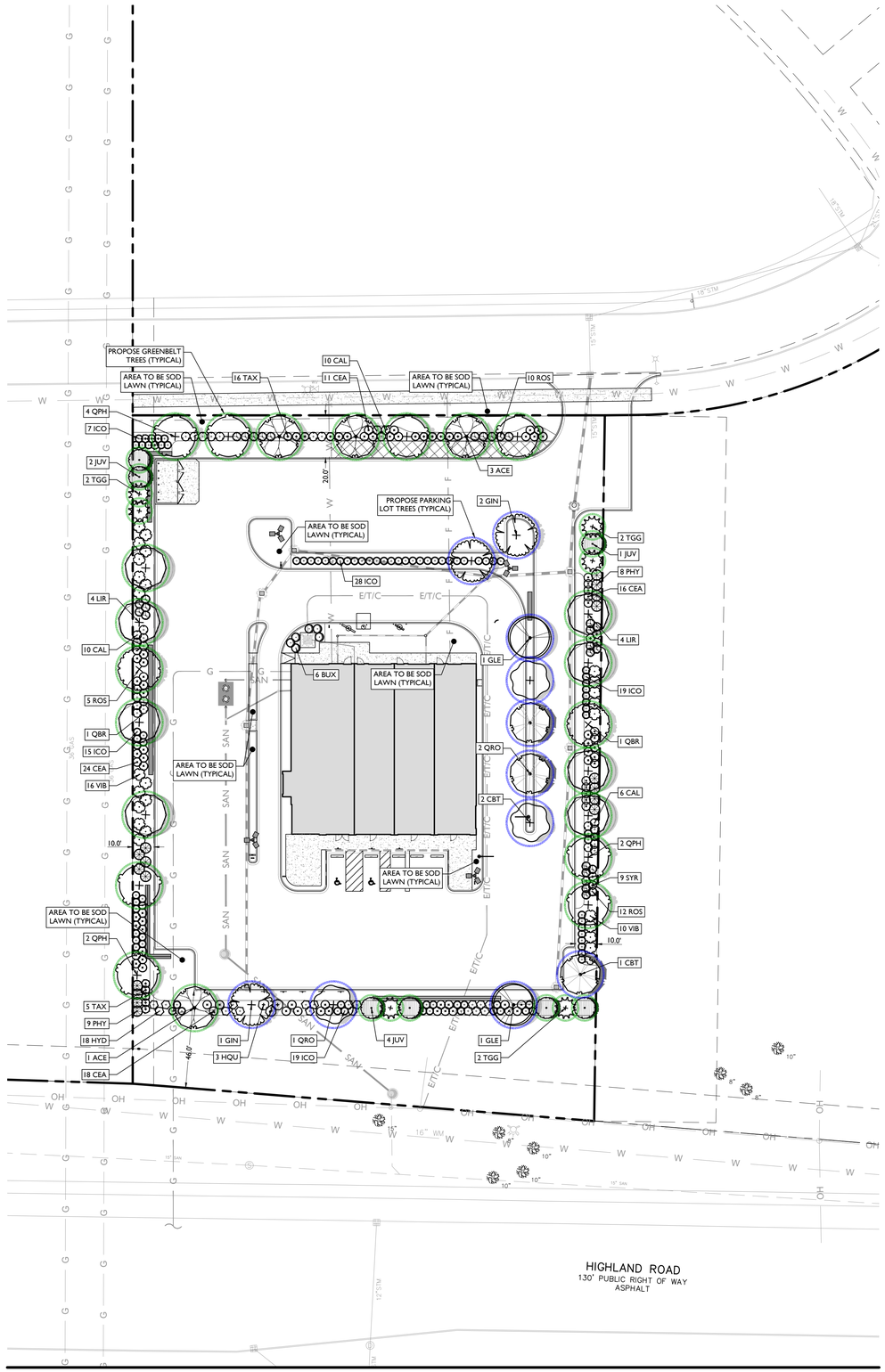
STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: DET-220180

TITLE: LIGHTING PLAN

DRAWING: C-8

V:\DET\2022\DET-220180-ALRIG-6001 HIGHLAND ROAD, CHARTER TOWNSHIP OF WHITE LAKE, MI\CADD\PLOTS\SDP-07-LGHT.DWG



LANDSCAPING AND BUFFER REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 5.19	LANDSCAPING ISLANDS	
	MINIMUM 200 SF IN ANY SINGLE LANDSCAPE AREA	COMPLIES
§ 5.19	GREENBELT LANDSCAPING: PB ADJACENT TO PB ZONE [1]	
	PB ZONE ADJACENT TO PB ZONE: 10 FT WIDTH	WEST: 10.0 FT SOUTH: 46.0 FT EAST: 10.0 FT
	PB ZONE ADJACENT TO ROW: 20 FT WIDTH	20.0 FT
	1 DECIDUOUS/EVERGREEN TREE & 8 SHRUBS FOR EVERY 30 LF BUFFER	
	HIGHLAND ROAD: 202 FT	
	(202 FT) * (1 TREE / 30 LF) = 7 TREES	7 TREES
	(202 FT) * (8 SHRUBS / 30 LF) = 54 SHRUBS	54 SHRUBS
	EAST PROPERTY LINE: 287 FT	
	(287 FT) * (1 TREE / 30 LF) = 10 TREES	10 TREES
	(287 FT) * (8 SHRUBS / 30 LF) = 78 SHRUBS	78 SHRUBS
	SOUTH PROPERTY LINE: 218 FT	
	(218 FT) * (1 TREE / 30 LF) = 7 TREES	7 TREES
	(218 FT) * (8 SHRUBS / 30 LF) = 58 SHRUBS	58 SHRUBS
	WEST PROPERTY LINE: 315 FT	
	(315 FT) * (1 TREE / 30 LF) = 11 TREES	11 TREES
	(315 FT) * (8 SHRUBS / 30 LF) = 84 SHRUBS	84 SHRUBS
§ 5.19.E	INTERIOR LOT LANDSCAPING	
	15% OF TOTAL LOT AREA	
	(71,024 SF) * (0.15)= 10,654 SF	21,160 SF (29%)
	1 TREE PER 300 SF REQUIRED INTERIOR LANDSCAPING AREA	
	(10,654 SF) * (1 TREE / 300 SF) = 36 TREES	36 TREES
	5 SHRUBS FOR EVERY 300 SF REQUIRED INTERIOR LOT LANDSCAPING AREA	
	(10,654 SF) * (5 SHRUBS / 300 SF) = 177 SHRUBS	177 SHRUBS
§ 5.19.G.ii	PARKING LOT LANDSCAPING	
	20 SF PER PARKING SPACE	
	(56 SPACES) * (20 SF / 1 SPACE) = 1,120 SF	6,378 SF
	1 TREE PER 100 SF OF REQUIRED PARKING LOT LANDSCAPING AREA	
	(1,120 SF) * (1 TREE / 100 SF) = 11 TREES	11 TREES
	3 SHRUBS FOR EVERY 100 SF REQUIRED PARKING LOT LANDSCAPING AREA	
	(1,120 SF) * (3 SHRUBS / 100 SF) = 34 SHRUBS	34 SHRUBS

(1) PER § 5.19.iii THE PLANNING COMMISSION MAY PERMIT A COMBINATION OF A REQUIRED BUFFER TYPE UPON FINDING THAT THE COMBINED LANDSCAPING AND/OR SCREENING WILL ACHIEVE THE SAME EFFECT AS OTHERWISE REQUIRED

PLANT SCHEDULE

DECIDUOUS TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
	ACE	4	ACER RUBRUM	RED MAPLE	2.5" - 3" CAL	B&B
	CBT	3	CARPINUS BETULUS	EUROPEAN HORNBEAM	2.5" - 3" CAL	B&B
	GIN	3	GINKGO BILOBA `AUTUMN GOLD`	AUTUMN GOLD MAIDENHAIR TREE	2.5" - 3" CAL	B&B
	GLE	2	GLEDITSIA TRIACANTHOS INERMIS 'SHADEMASTER	SHADEMASTER HONEY LOCUST	2.5" - 3" CAL	B&B
	LIR	8	LIRIODENDRON TULIPIFERA	TULIP POPLAR	2.5" - 3" CAL	B&B
	QBR	2	QUERCUS BOREALIS	NORTHEN RED OAK	2.5" - 3" CAL	B&B
	QPH	8	QUERCUS PHELLOS	WILLOW OAK	2.5" - 3" CAL	B&B
	QRO	3	QUERCUS ROBUR	ENGLISH OAK	2.5" - 3" CAL	B&B
EVERGREEN TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
	TGG	7	THUJA STANDISHII X PLICATA 'GREEN GIANT'	GREEN GIANT ARBORVITAE	7` - 8` HT	B&B
	JUV	6	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	7` - 8` HT	B&B
SHRUBS	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
	CEA	69	CEANOTHUS AMERICANUS	NEW JERSEY TEA	30" - 36"	POT
	CAL	2	CLETHRA ALNIFOLIA	SUMMERSWEET CLETHRA	30" - 36"	POT
	HYD	18	HYDRANGEA MACROPHYLLA `ENDLESS SUMMER`	BAILMER HYDRANGEA	30" - 36"	POT
	HQU	3	HYDRANGEA QUERCIFOLIA	OAKLEAF HYDRANGEA	30" - 36"	POT
	PHY	17	PHYSOCARPUS OPULIFOLIUS	NINEBARK	30" - 36"	POT
	ROS	27	ROSA X `DOUBLE KNOCKOUT`	ROSE	30" - 36"	POT
	SYR	9	SYRINGA PATULA 'MISS KIM'	MISS KIM KOREAN LILAC	30" - 36"	POT
	VIB	26	VIBURNUM DENTATUM	VIBURNUM	30" - 36"	POT
EVERGREEN SHRUBS	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
	BUX	6	BUXUS MICROPHYLLA `WINTER GEM`	GLOBE WINTER GEM BOXWOOD	15" - 18"	POT
	ICO	88	ILEX GLABRA `COMPACTA`	COMPACT INKBERRY	30" - 36"	B&B
	TAX	21	TAXUS X MEDIA 'DENSIFORMIS'	DENSE ANGLO-JAPANESE YEW	30" - 36"	B&B

NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN ON THE LANDSCAPE PLAN AND WITHIN THE PLANT LIST, THE PLAN SHALL DICTATE.

WHITE PINE IS A PROHIBITED SPECIES AND SHALL NOT BE USED AS A SUBSTITUTE FOR WHITE SPRUCE.

ALL TREES ON THIS PLAN INDICATED TO BE PROTECTED THROUGHOUT CONSTRUCTION SHALL BE EQUIPPED WITH A TREE PROTECTION FENCE. NO CONSTRUCTION SHALL OCCUR UNTIL TREE PROTECTION FENCE HAS BEEN INSTALLED AND APPROVED BY THE COMMUNITY DEVELOPMENT DIRECTOR.

SYMBOL	DESCRIPTION
	PROPOSED GREENBELT REES
	PROPOSED PARKING LOT TREES

Know what's **below** **Call** before you dig.

IRRIGATION NOTE:

1. IRRIGATION CONTRACTOR TO PROVIDE A DESIGN FOR AN IRRIGATION SYSTEM SEPARATING PLANTING BEDS FROM LAWN AREA PRIOR TO CONSTRUCTION. DESIGN IS TO BE SUBMITTED TO THE PROJECT LANDSCAPE DESIGNER FOR REVIEW AND APPROVAL. WHERE POSSIBLE, DRIP IRRIGATION AND OTHER WATER CONSERVATION TECHNIQUES SUCH AS RAIN SENSORS SHALL BE IMPLEMENTED. CONTRACTOR TO VERIFY MAXIMUM ON SITE DYNAMIC WATER PRESSURE AVAILABLE MEASURED IN PSI. PRESSURE REDUCING DEVICES OR BOOSTER PUMPS SHALL BE PROVIDED TO MEET SYSTEM PRESSURE REQUIREMENTS. DESIGN TO SHOW ALL VALVES, PIPING, HEADS, BACKFLOW PREVENTION, METERS, CONTROLLERS, AND SLEEVES WITHIN HARDSCAPE AREAS.
2. ALL REQUIRED SITE IRRIGATION SYSTEMS SHALL INCLUDE A RAIN SENSOR OR SIMILAR MEASURE TO ENSURE IRRIGATION DOES NOT OCCUR DURING OR SHORTLY AFTER PRECIPITATION EVENTS. ALL SITE PLANS SHALL NOTE INSTALLATION OF REQUIRED IRRIGATION.

LANDSCAPING NOTES

1. THE CONTRACTOR SHALL RESTORE ALL DISTURBED GRASS AND LANDSCAPED AREAS TO MATCH EXISTING CONDITIONS UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
2. THE CONTRACTOR SHALL RESTORE ALL DISTURBED LAWN AREAS WITH A MINIMUM 4 INCH LAYER OF TOPSOIL AND SOD.
3. THE CONTRACTOR SHALL RESTORE MULCH AREAS WITH A MINIMUM 3 INCH LAYER OF MULCH (DOUBLE-SHREDDED QUALITY).
4. THE MAXIMUM SLOPE ALLOWABLE IN LANDSCAPE RESTORATION AREAS SHALL BE 3 FEET HORIZONTAL TO 1 FOOT VERTICAL (3:1 SLOPE) UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
5. THE CONTRACTOR IS REQUIRED TO LOCATE ALL SPRINKLER HEADS IN AREA OF LANDSCAPING DISTURBANCE PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL RELOCATE SPRINKLER HEADS AND LINES IN ACCORDANCE WITH OWNER'S DIRECTION WITHIN AREAS OF DISTURBANCE.
6. THE CONTRACTOR SHALL ENSURE THAT ALL DISTURBED LANDSCAPED AREAS ARE GRADED TO MEET FLUSH AT THE ELEVATION OF WALKWAYS AND TOP OF CURB ELEVATIONS EXCEPT UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET. NO ABRUPT CHANGES IN GRADE ARE PERMITTED IN DISTURBED LANDSCAPING AREAS.
7. TREES SHALL NOT BE PLANTED CLOSER THAN 4 FT TO PROPERTY LINE.
8. TREES SHALL NOT BE PLANTED CLOSER THAN 3 FT TO EXISTING WATER MAIN.
9. ALL REQUIRED LANDSCAPE PLANTINGS SHALL BE GUARANTEED FOR A PERIOD OF TWO (2) YEARS.
10. WINTER MAINTENANCE OF PARKING LOT LANDSCAPE ISLANDS SHALL BE REQUIRED WHERE HEAVY APPLICATIONS OF SALT AND DE-ICING PRODUCTS OCCUR THROUGH THE USE OF SALT TARPS WHICH MINIMIZE SOIL ABSORPTION AND ULTIMATELY REDUCE PLANT DISORDERS

30' 0' 30' 60'
GRAPHIC SCALE IN FEET
1" = 30'

PAUL DEVITTO, L.L.A.
MICHIGAN LICENSE No. 3901001797
LICENSED LANDSCAPE ARCHITECT

ISSUE	DATE	BY	DESCRIPTION
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STATE OF MICHIGAN
JONATHAN D. COOKSEY
LICENSED PROFESSIONAL ENGINEER
6201069428
MICHIGAN LICENSE NUMBER
LICENSED PROFESSIONAL ENGINEER

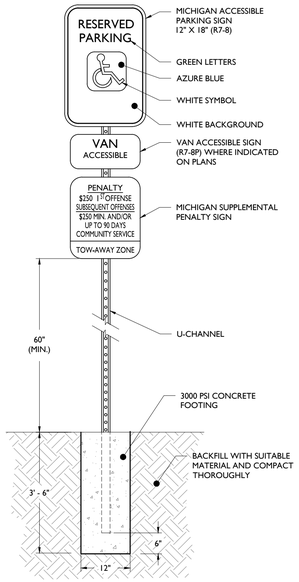
STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: DET-220180

TITLE: LANDSCAPING PLAN

DRAWING: C-9

V:\DET\2022\DET-220180-ALAN\C-001 HIGHLAND ROAD, CHAPTER TOWNSHIP OF WHITE LAKE, MICHIGAN\PDF\SP-08-LANDSCAPE

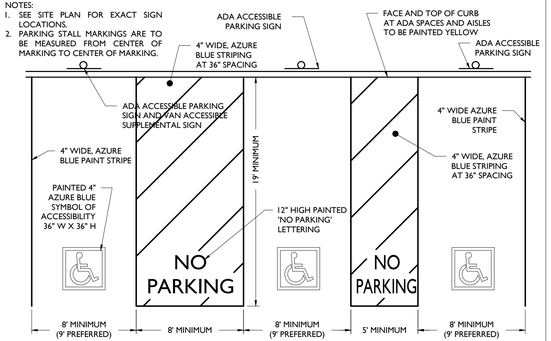


ACCESSIBLE PARKING SIGN DETAIL

NOT TO SCALE

1

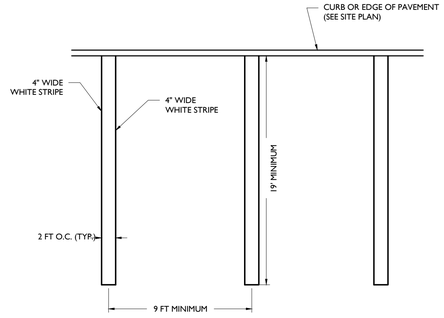
NOTES:
1. SEE SITE PLAN FOR EXACT SIGN LOCATIONS.
2. PARKING STALL MARKINGS ARE TO BE MEASURED FROM CENTER OF MARKING TO CENTER OF MARKING.



ACCESSIBLE PARKING STALL MARKINGS

NOT TO SCALE

2



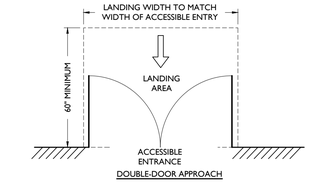
PARKING STALL MARKINGS (DUAL)

NOT TO SCALE

3

PAVEMENT STRIPING & MARKINGS NOTES:
1. ALL SIGNING AND STRIPING IN EXISTING CONDITION IN CONFLICT WITH THE PROPOSED DESIGN PLAN SHALL BE REMOVED.
2. ALL PROPOSED SIGNING AND STRIPING SHALL CONFORM TO THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
3. PAVEMENT STRIPING AND MARKINGS SHALL BE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE LOCAL, COUNTY AND STATE REQUIREMENTS.
4. UNLESS OTHERWISE SPECIFIED, ALL STRIPING AND MARKINGS IN THE PUBLIC RIGHT-OF-WAY SHALL BE OF THERMOPLASTIC PAINT OR PREFORMED THERMOPLASTIC MARKINGS.
5. UNLESS OTHERWISE SPECIFIED, ON SITE PARKING STALL STRIPING, FIRE LANE STRIPING AND DIRECTIONAL ARROWS SHALL BE EPOXY PAINT. ON SITE STOP BARS, "DO NOT ENTER" BARS, AND ASSOCIATED LETTERING SHALL BE THERMOPLASTIC PAINT OR PREFORMED THERMOPLASTIC MARKINGS.

4



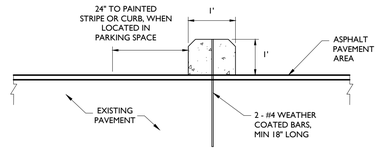
DOUBLE-DOOR APPROACH

ACCESSIBLE ENTRANCE LANDING DETAIL

NOT TO SCALE

NOTES:
1. MAXIMUM SLOPE ON LANDING SHALL BE 1:50 IN ALL DIRECTIONS
2. DIMENSIONS SHOWN HERE ARE THE MINIMUM DIMENSIONS REQUIRED FOR AN ADA COMPLIANT LANDING AT THE ACCESSIBLE ENTRANCE. REFER TO SITE PLAN FOR SITE SPECIFIC DIMENSIONS THAT MAY SPECIFY A LARGER LANDING AREA.
3. CONTRACTOR SHALL CONTACT THE ENGINEER BEFORE CONSTRUCTION IF THE ACCESSIBLE ENTRANCE ON SITE DOES NOT MATCH THE SCENARIO SHOWN ABOVE.

5

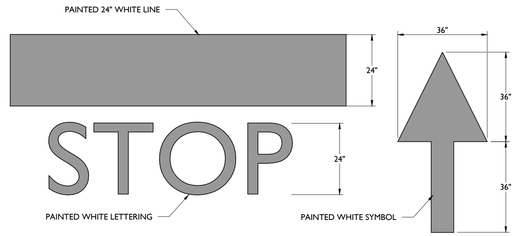


CONCRETE WHEEL STOP DETAIL

NOT TO SCALE

NOTES:
2. WHEEL STOP SHALL BE 6' LONG.
3. WHEEL STOP SHALL BE PREFABRICATED CONCRETE.

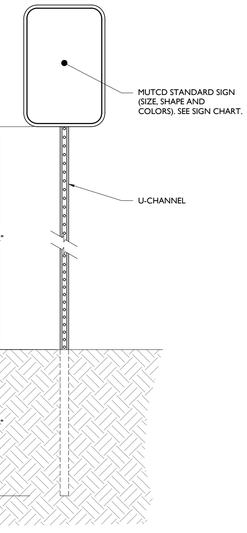
6



STOP BAR & ARROW

NOT TO SCALE

7



SIGN POST

NOT TO SCALE

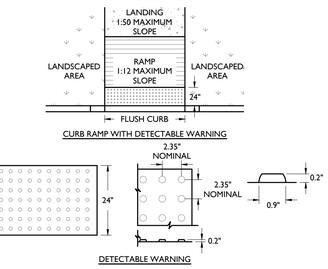
M.U.T.C.D. NUMBER	TEXT	COLOR		SIZE OF SIGN (WIDTH X HEIGHT)	TYPE OF MOUNT
		LEGEND	BACKGROUND		
STOP SIGN (R1-1)	STOP	WHITE	RED	36"x36"	GROUND
DO NOT ENTER (R5-1)	DO NOT ENTER	RED	WHITE	30"x30"	GROUND

NOTE:
1. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE FEDERAL HIGHWAY ADMINISTRATION (FHWA) MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), EXCEPT AS NOTED.
2. ALL SIGNS SHALL BE MOUNTED AS TO NOT OBSTRUCT THE SHAPE OF "STOP" (R1-1) AND "YIELD" (R1-2) SIGNS.

SIGN DATA TABLE

NOT TO SCALE

8



CURB RAMP WITH DETECTABLE WARNING

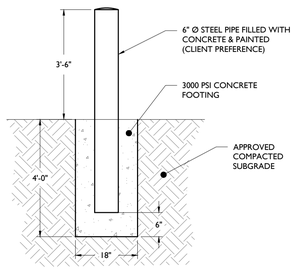
DETECTABLE WARNING

CURB RAMP DETAIL

NOT TO SCALE

NOTES:
1. CROSS SLOPE ON RAMP SHALL NOT EXCEED 2%
2. A FLUSH CURB SHALL HAVE A MINIMUM WIDTH OF 36". SEE PLAN FOR EXACT WIDTH.
3. DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
4. VISUAL CONTRAST: THERE SHALL BE A MINIMUM OF 70% CONTRAST IN LIGHT REFLECTANCE BETWEEN THE DETECTABLE WARNING AND AN ADJOINING SURFACE.
5. DETECTABLE WARNING STRIP REQUIRED WHERE RAMP DIRECTS PEDESTRIAN TRAFFIC TOWARDS VEHICLE TRAVEL WAY. WARNING STRIP SHALL BE CAST-IN-PLACE.
6. RAMP SHALL HAVE A MAXIMUM RISE OF 6" WITHOUT A HANDRAIL

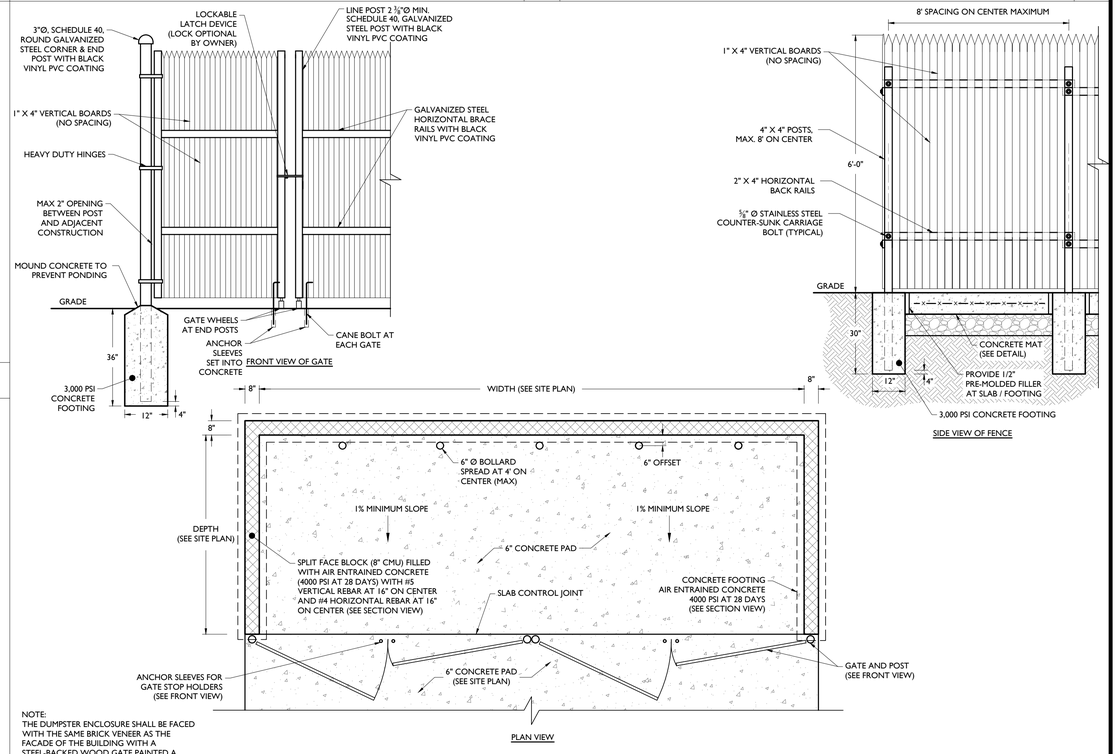
9



BOLLARD

NOT TO SCALE

10



NOTE:
THE DUMPSTER ENCLOSURE SHALL BE FACED WITH THE SAME BRICK VENEER AS THE FACADE OF THE BUILDING WITH A STEEL-BACKED WOOD GATE PAINTED A COMPLEMENTARY COLOR TO THE BRICK/CULTURED STONE

DOUBLE TRASH / RECYCLE ENCLOSURE DETAIL

NOT TO SCALE

11

ISSUE	DATE	BY	DESCRIPTION
9	12/09/2024	VF	FOR TOWNSHIP SITE PLAN APPROVAL
8	11/21/2024	AF	FOR CLIENT REVIEW
7	04/23/2024	MPH	TOWNSHIP ENGINEERING SUBMISSION
6	08/11/2023	EM	REVISED BUILDING AREAS
5	06/22/2023	EM	RESUBMISSION FOR SITE PLAN APPROVAL
4	05/05/2023	EM	RESUBMISSION FOR SITE PLAN APPROVAL
3	04/11/2023	EM	FOR CLIENT REVIEW
2	03/16/2023	EM	FOR CLIENT REVIEW
1	02/14/2023	EM/JKG	SUBMISSION FOR SITE PLAN APPROVAL

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design
Birmingham, MI · New York, NY · Salem, MA
Princeton, NJ · Tampa, FL · Rutherford, NJ
www.stonefieldeng.com
555 S. Old Woodward Avenue, Suite 12L, Birmingham, MI 48009
Phone 248.247.1115

SITE DEVELOPMENT PLANS

HIGHLAND ROAD OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-276-035
HIGHLAND ROAD (M-59) - OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

STATE OF MICHIGAN
JONATHAN FRED COOKSEY
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MICHIGAN LICENSE NO. 6201069428
LICENSED PROFESSIONAL ENGINEER

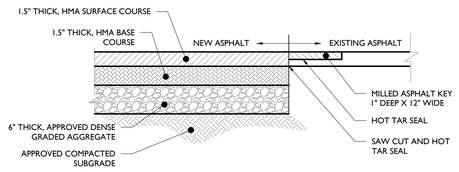
STONEFIELD engineering & design

SCALE: AS SHOWN | PROJECT ID: DET-220180

TITLE: CONSTRUCTION DETAILS

DRAWING: C-10

V:\DET\2022\DET-220180 (BRADLAND)\HIGHLAND ROAD, CHARTER TOWNSHIP OF WHITE LAKE, MI\CAD\PDF\TOSP-PH 1-3 DETS.DWG

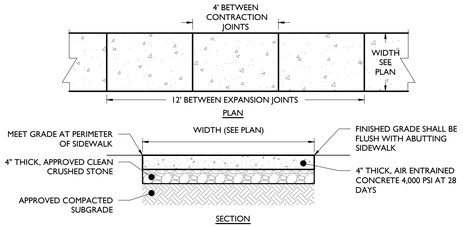


FULL DEPTH ASPHALT PAVEMENT DETAIL

NOT TO SCALE

NOTE:
HMA MIX AND DENSE GRADED AGGREGATE SHALL CONFORM TO STATE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.

1

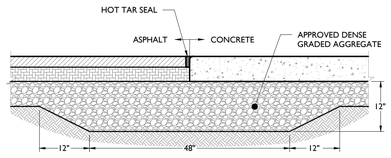


CONCRETE WALKWAY

NOT TO SCALE

NOTES:
1. MAXIMUM CROSS SLOPE SHALL BE ¼" PER FOOT.
2. ½" EXPANSION JOINTS SHALL BE PROVIDED AT 12' INTERVALS WITH PRE-MOLDED, BITUMINOUS JOINT FILLER, RECESSED ½" FROM THE SURFACE.
3. 1" DEEP BY ½" WIDE, TOOLED CONTRACTION JOINTS SHALL BE PROVIDED AT 4' INTERVALS.
4. EXPANSION JOIN SHALL BE PROVIDED WHERE ADJACENT TO A BUILDING.

2

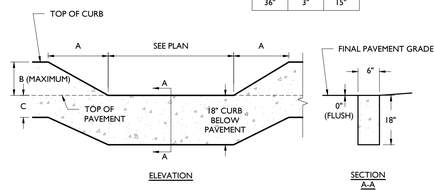


CONCRETE TO ASPHALT TRANSITION

NOT TO SCALE

3

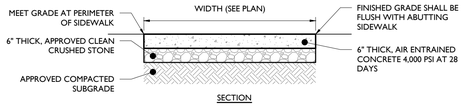
FLUSH CURB DIMENSIONS		
A	B	C
72"	6"	12"
60"	5"	13"
48"	4"	14"
36"	3"	15"



FLUSH CURB

NOT TO SCALE

4

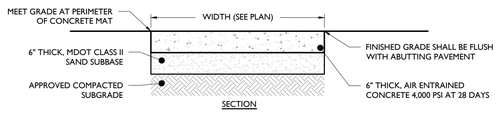


CONCRETE PAVEMENT

NOT TO SCALE

NOTES:
1. ½" EXPANSION JOINTS WITH WATER SEAL SHALL BE PROVIDED AT 12' INTERVALS WITH PRE-MOLDED, BITUMINOUS JOINT FILLER, RECESSED ¼" FROM THE SURFACE. LONGITUDINAL REBAR TO BE CUT AT EXPANSION JOINTS.
2. 1" DEEP BY ¼" WIDE, TOOLED CONTRACTION JOINTS SHALL BE PROVIDED AT MID-POINT BETWEEN EXPANSION JOINTS OR 6' INTERVALS MAX.
3. CONCRETE SHALL RECEIVE BROOM FINISH.
4. ALL EXPOSED CORNERS TO HAVE 12" CHAMFER.

5

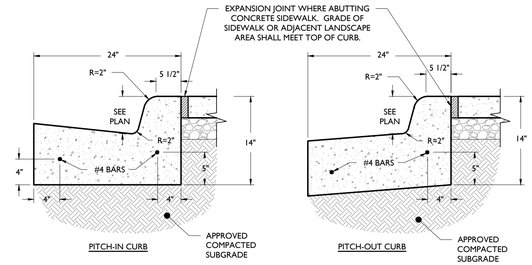


CONCRETE MAT

NOT TO SCALE

NOTES:
1. ½" EXPANSION JOINTS WITH WATER SEAL SHALL BE PROVIDED AT 12' INTERVALS WITH PRE-MOLDED, BITUMINOUS JOINT FILLER, RECESSED ¼" FROM THE SURFACE. LONGITUDINAL REBAR TO BE CUT AT EXPANSION JOINTS.
2. 1" DEEP BY ½" WIDE, TOOLED CONTRACTION JOINTS SHALL BE PROVIDED AT MID-POINT BETWEEN EXPANSION JOINTS OR 6' INTERVALS MAX.
3. CONCRETE SHALL RECEIVE BROOM FINISH.
4. ALL EXPOSED CORNERS TO HAVE 12" CHAMFER.

6

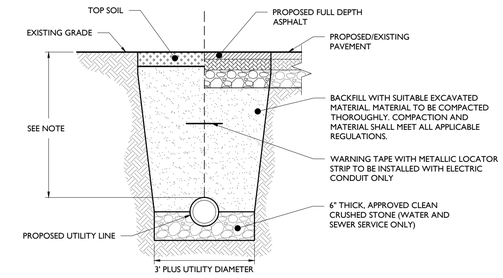


CONCRETE CURB AND GUTTER DETAIL

NOT TO SCALE

NOTES:
1. CONCRETE SHALL BE 3500 PSI AT 28 DAYS, AIR-ENTRAINED.
2. TRANSVERSE EXPANSION JOINTS SHALL BE PROVIDED AT 20 FOOT INTERVALS WITH PRE-MOLDED, BITUMINOUS JOINT FILLER, RECESSED ½" FROM SURFACE.
3. HALF DEPTH CONTRACTION JOINTS SHALL BE PROVIDED AT 10 FOOT INTERVALS.
4. 14" CURB DEPTH SHALL BE MAINTAINED AT DEPRESSED OR FLUSH CURBED AREAS.

7

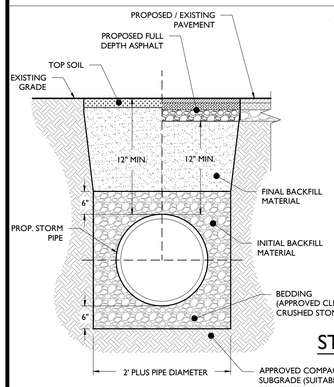


UTILITY TRENCH

NOT TO SCALE

NOTE:
MINIMUM PIPE COVER SHALL BE AS FOLLOW:
- ELECTRIC SERVICE - PER APPLICABLE UTILITY AUTHORITY
- GAS SERVICE - PER APPLICABLE UTILITY AUTHORITY
- SEWER SERVICE - 36" MINIMUM
- WATER SERVICE - 48" MINIMUM

8

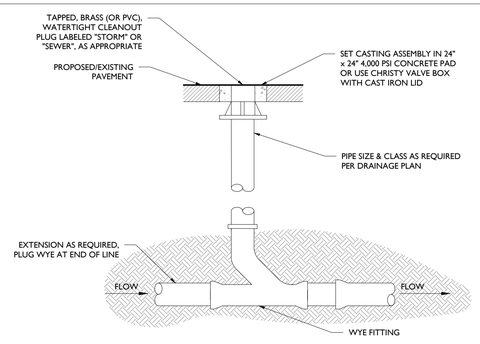


NOTES:
1. ALL PIPE SYSTEM INSTALLATIONS SHALL MEET ALL APPLICABLE STANDARDS AND SPECIFICATIONS.
2. ALL HDPE PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS" (LATEST EDITION).
3. ALL RCP PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C76-15, "STANDARD SPECIFICATION FOR REINFORCED CONCRETE CULVERT, STORM DRAIN, AND SEWER PIPE" (LATEST EDITION).
4. FOR NON HDPE OR RCP PIPE INSTALLATIONS, CONTRACTOR SHALL INSTALL PIPE IN ACCORDANCE WITH ALL APPLICABLE STANDARDS AND SPECIFICATIONS.
5. WHERE THE TRENCH BOTTOM IS UNSTABLE, CONTRACTOR SHALL PROVIDE SUITABLE BACKFILL MATERIAL AS REQUIRED BY ENGINEER OR PER GEOTECH RECOMMENDATIONS.
6. MINIMUM COVER IN TRAFFIC AREAS IS 12" UP TO 48" DIAMETER PIPE AND 24" FOR 54" - 60" DIAMETER PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT.
7. CONTRACTOR SHALL INSTALL SUITABLE MATERIAL FOR INITIAL AND FINAL BACKFILL. BACKFILL COMPACTION SHOULD MEET ALL APPLICABLE STANDARDS AND SPECIFICATIONS.

STORM TRENCH DETAIL

NOT TO SCALE

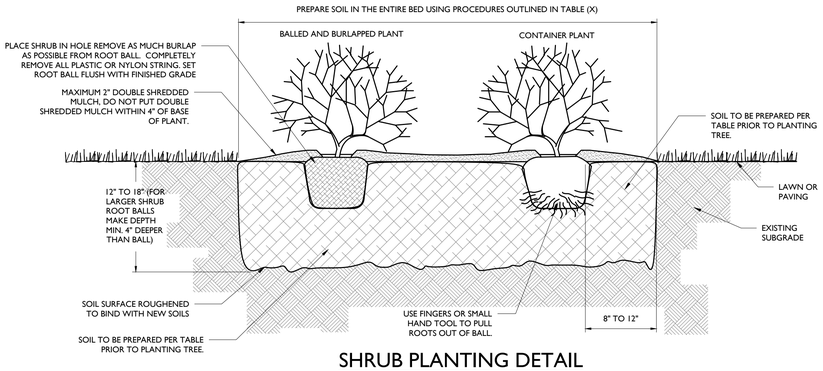
9



HARDSCAPE CLEAN-OUT

NOT TO SCALE

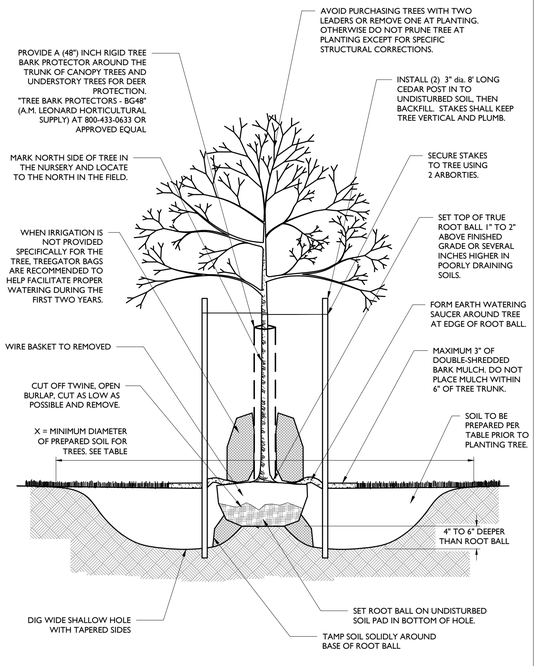
10



SHRUB PLANTING DETAIL

NOT TO SCALE

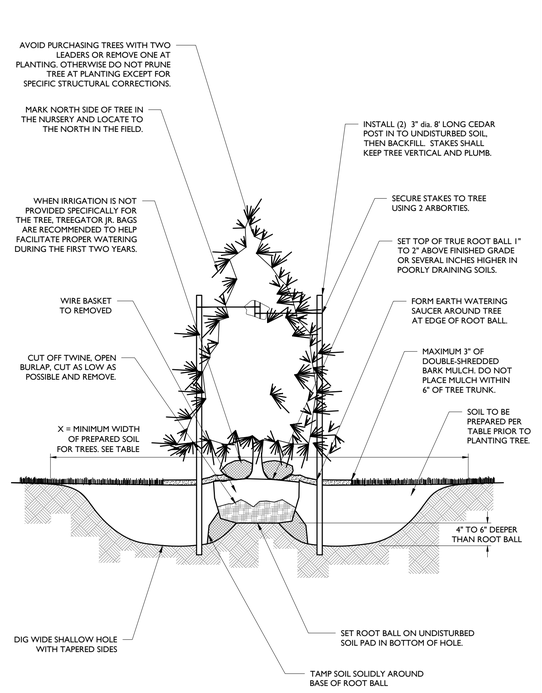
11



DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

12



CONIFEROUS TREE PLANTING DETAIL

NOT TO SCALE

13

ISSUE	DATE	BY	DESCRIPTION
9	12/09/2024	VF	FOR TOWNSHIP SITE PLAN APPROVAL
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3	04/11/2023	EM	FOR CLIENT REVIEW
2	03/16/2023	EM	FOR CLIENT REVIEW
1	02/14/2023	EM/JKG	SUBMISSION FOR SITE PLAN APPROVAL

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design
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Phone 248.247.1115

SITE DEVELOPMENT PLANS

HIGHLAND ROAD OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-376-035
HIGHLAND ROAD (M-59) - OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

STATE OF MICHIGAN
JONATHAN REED COOKSEY
ENGINEER
No. 6069428
PROFESSIONAL ENGINEER
MICHIGAN LICENSE NO. 6069428
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: AS SHOWN | PROJECT ID: DET-220180

TITLE: CONSTRUCTION DETAILS

DRAWING: C-11

V:\DET\2022\DET-220180 ALASG-001 HIGHLAND ROAD, CHARTER TOWNSHIP OF WHITE LAKE, MI\CAD\PDT\DEP-KN 11-SHTS.DWG

Lumark

Catalog #		Type	
Project			
Comments		Date	
Prepared by			

DESCRIPTION

The Prevail™ LED pole and fixture combination makes selection and installation of poles and fixtures simple. Included is the die-cast Prevail area, site and roadway luminaire with standard mounting arm, square straight steel pole, anchor bolts, base cover, template and hardware. Stock configurations are available in single and dual fixture combinations. The Prevail luminaire delivers a new level of versatility and value in patent pending, architectural design that delivers energy savings greater than 85% and replaces 150-450W metal halide fixtures. The Prevail fixture and pole combo is ideal for general area/site lighting applications.

SPECIFICATION FEATURES

Construction
Construction is comprised of a heavy-duty, single-piece die-cast aluminum housing in dark bronze polyester powder paint. The die-cast aluminum door is tethered to provide easy access to the driver if replacement is required. The optics is mounted on a versatile, aluminum plate that dissipates heat from the LEDs resulting in longer life of the fixture. The fixture is IP66 and 3G vibration rated (ANSI C136.31).

Optics
Available in Type III and IV distributions with lumen packages ranging from 7,000 to 20,000 nominal lumens. Light engine configurations consist of 1 or 2 high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L91/50,000 hours at 25ºC) per IESNA TM-21. For the ultimate level of spill light control, an optional house side shield accessory can be field or factory installed.

Electrical
Available in 120-277V 50/60Hz, 10kV/10kA surge protection standard. 0-10V dimming driver is standard with leads external to the fixture to accommodate controls capability such as dimming and occupancy. Suitable for ambient temperatures from -40ºC to 40ºC.

Mounting
The versatile, patent pending, standard mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the standard mounting arm enables wiring of the fixture without having to access the driver compartment. A knock-out on the standard mounting arm enables round pole mounting.

Pole
Shaft is one-piece construction ASTM A500 grade "B" steel, shot blasted and finished in dark bronze polyester powder coat. Anchor base is fabricated from ASTM grade steel. ASTM A366 steel full base cover is provided to enclose base plate and anchor bolts. Anchor bolts are per ASTM A576 with two nuts, two flat washers, and one lock washer. Hardware and threaded portion of bolt are hot dip galvanized. 3" hook for 3/4" bolt. 4" hook for 1" bolt.

Finish
Housing and cast parts finished in five-stage super TGIC polyester bronze powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear.

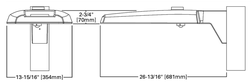
Warranty
Five-year warranty.

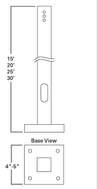
PFPRV PREVAIL POLE AND FIXTURE COMBO

LED

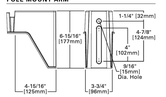
POLE AND FIXTURE COMBO

DIMENSIONS





POLE MOUNT ARM



CERTIFICATION DATA

UL and cUL Wet Location Listed
IP66-Rated
3G Vibration Rated
ISO 9001

ENERGY DATA

Electronic LED Driver
0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 and 60Hz,
347V/60Hz, 480V/60Hz
-40°C Minimum Temperature Rating
+40°C Ambient Temperature Rating

EPA

Effective Projected Area (Sq. Ft.): 0.75
(1 fixture)

SHIPPING DATA

Approximate Net Weight:
200lbs. (9.09 kgs.) **(1 fixture)**

EATON
Powering Business Worldwide

TD600029EN
October 15, 2019 11:09 AM

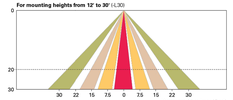
CONTROL OPTIONS

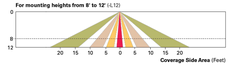
0-10V (D)
This fixture is offered standard with 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (PER and PER7)
Photocontrol receptacles provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PER7 receptacle.

Dimming Occupancy Sensor (MSP/DIM-LXX)
These sensors are factory installed in the luminaire housing. When a sensor for dimming operation (/DIM) is selected, the luminaire will dim down to approximately 50 percent power after five minutes of no activity detected. When activity is detected, the luminaire returns to full light output.

These occupancy sensors include an integral photocell that can be activated or inactivated with the programming remote / configuration tool for "dusk-to-dawn" control or "daylight harvesting". Note: For MSP sensors, the factory preset is ON (Enabled). The programming remote / tool is a wireless tool that can be utilized to change the dimming level, time delay, sensitivity and other parameters. A variety of sensor lenses are available to optimized the coverage pattern for mounting heights from 8'-30'.





POWER AND LUMENS

Light Engine		C15	C25	C40	C60
Nominal Power (Watts)		57W	87W	143W	183W
Input Current @ 120V (A)		0.43	0.80	1.09	1.32
Input Current @ 277V (A)		0.19	0.35	0.48	0.57
Type III	Lumens	7,111	13,183	17,144	20,050
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4
Type IV	Lumens	7,088	13,140	17,097	19,984
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G4	B3-U0-G5

LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (50,000 Hours)	Theoretical L70 (Hours)
25°C	> 91.30%	> 194,000
40°C	> 87.59%	> 134,000

LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
10°C	1.02
15°C	1.01
25°C	1.00
40°C	0.99

ORDERING INFORMATION

Sample Number: PFPRV-1-C25-T3-15-N-NAB

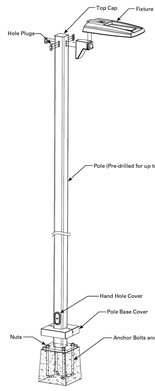
Series 1,2	Number of Fixtures	Light Engine	Distribution	Pole Height	Maximum Wind Zone (MPH)	Options (Add as Suffix)	Accessories (Order Separately)
PFPRV=Prevail Pole and Fixture Combo	1=1 2=2 3=3 4=4	C15=(1 LED) 7,100 Nominal Lumens C25=(2 LED) 13,100 Nominal Lumens C40=(2 LED) 17,100 Nominal Lumens C60=(2 LED) 20,000 Nominal Lumens	T3=Type III T4=Type IV	15=15' 20=20' 25=25' 30=30'	Blank=80 9=90 0=100	N/AB=No Anchor Bolts (Used when ordered separately) HSS=House Side Shield * MSP/DIM-L12=Integrated Sensor for Dimming Operation, 8' - 12' Mounting Height MSP/DIM-L30=Integrated Sensor for Dimming Operation, 12' - 30' Mounting Height PER=NEMA 3PIN Twistlock Photocontrol Receptacle * PER7=NEMA 7PIN Twistlock Photocontrol Receptacle *	HS/VERD=House Side Shield *

NOTES: 1 4000K CCT, standard bronze, 120-277V, 0-10V dimming. 2 Standard mount arm included with fixture. Supplied with straight steel shaft, anchor bolts, template, base cover and hardware. 3 HSS not available with C60 lumen package. Ordered as an option, it will come factory installed. Ordered as a field-installable accessory, must order quantity one per optic/LED. 4 Not available with MSP options.

SPECIFICATIONS FOR FIXTURES 'A'

NOT TO SCALE

PREVAIL POLE AND FIXTURE COMBO



INCLUDED POLE REFERENCE TABLES

1 Fixture (EPA= 0.75)

Pole Height (Feet)	Wind Zone (MPH) 80	90	100
15	SSS4A15SFM4*		
20	SSS4A20SFM4*		
25	SSS4A25SFM4*	SSS5A25SFM4*	
30	SSS5A30SFM4*	SSS6M30SFM4*	

2 Fixtures (EPA= 1.50)

Pole Height (Feet)	Wind Zone (MPH) 80	90	100
15	SSS4A15SFM4*		
20	SSS4A20SFM4*		
25	SSS4A25SFM4*	SSS5A25SFM4*	
30	SSS5A30SFM4*	SSS6M30SFM4*	

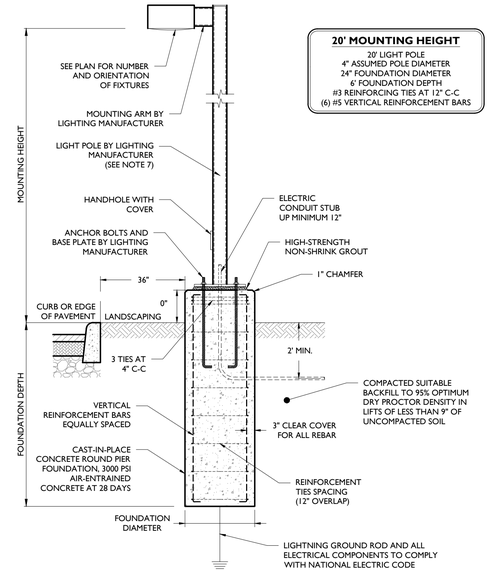
3 Fixtures (EPA= 2.25)

Pole Height (Feet)	Wind Zone (MPH) 80	90	100
15	SSS4A15SFM4*		
20	SSS4A20SFM4*		
25	SSS4A25SFM4*	SSS5A25SFM4*	
30	SSS5A30SFM4*	SSS6M30SFM4*	

4 Fixtures (EPA= 3.00)

Pole Height (Feet)	Wind Zone (MPH) 80	90	100
15	SSS4A15SFM4*		
20	SSS4A20SFM4*		
25	SSS4A25SFM4*	SSS5A25SFM4*	
30	SSS5A30SFM4*	SSS6M30SFM4*	

NOTES:
1. Uses hardware kit POLSSHDWC4FCHKP.
2. Uses hardware kit POLSSHDWC5FCHKP.



20 FT LIGHT POLE INSTALLATION DETAIL

NOT TO SCALE

NOTES:
1. MINIMUM SOIL BEARING PRESSURE OF 1500 PSF, SOIL FRICTION ANGLE OF 30 DEGREES, AND SOIL DRY UNIT WEIGHT OF 120 PCF SHALL BE CONFIRMED IN THE FIELD BY A QUALIFIED PROFESSIONAL.
2. CAST-IN-PLACE CONCRETE SHALL BE CONSOLIDATED USING VIBRATOR.
3. ALL REBAR TO BE NEW GRADE 60 STEEL.
4. PRE-CAST PIERS ACCEPTABLE UPON WRITTEN APPROVAL OF SHOP DRAWING BY ENGINEER.
5. CONCRETE TO BE INSTALLED A MINIMUM OF 7 DAYS PRIOR TO INSTALLING LIGHT POLE. POURED CONCRETE MIX REQUIRED TO OBTAIN 80% OF DESIGN STRENGTH PRIOR TO INSTALLING LIGHT POLE.
6. CONCRETE SHALL HAVE A MAXIMUM SLUMP OF 4" (WITHIN 1" TOLERANCE).
7. POLE SHALL BE RATED FOR 10 MPH HIGHER THAN MAXIMUM WIND SPEED 33FT ABOVE GROUND FOR THE AREA BASED ON ANSI/ASCE 7-93.
8. POUR TO BE TERMINATED AT A FORM.
9. WORK SHALL CONFORM TO ACI BEST PRACTICES FOR APPROPRIATE TEMPERATURE AND WEATHER CONDITIONS.
10. CONTRACTOR TO TEMPORARILY SUPPORT ADJACENT SOIL AND STRUCTURES DURING EXCAVATION IF REQUIRED.

ISSUE	DATE	BY	DESCRIPTION
9	12/09/2024	VF	FOR TOWNSHIP SITE PLAN APPROVAL
8	11/21/2024	AF	FOR CLIENT REVIEW
7	04/23/2024	MPH	TOWNSHIP ENGINEERING SUBMISSION
6	08/11/2023	EM	REVISED BUILDING AREAS
5	06/22/2023	EM	RESUBMISSION FOR SITE PLAN APPROVAL
4	05/05/2023	EM	RESUBMISSION FOR SITE PLAN APPROVAL
3	04/11/2023	EM	FOR CLIENT REVIEW
2	03/16/2023	EM	FOR CLIENT REVIEW
1	02/14/2023	EM/JRC	SUBMISSION FOR SITE PLAN APPROVAL

NOT APPROVED FOR CONSTRUCTION

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Phone 248.247.1115

SITE DEVELOPMENT PLANS

HIGHLAND ROAD
OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-276-035
HIGHLAND ROAD (M-59) - OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

STONEFIELD
engineering & design

SCALE: AS SHOWN | PROJECT ID: DET-220180

TITLE:
CONSTRUCTION DETAILS

DRAWING:
C-12

V:\DET\2022\DET-220180-ALNG-001 HIGHLAND ROAD, CHARTER TOWNSHIP OF WHITE LAKE, MI\CAD\PLOTS\SP-PV-13 DETS.DWG

Project: 6001 Highland Rd.
Location: White Lake, MI

CONTECH ENGINEERED SOLUTIONS

Purpose: To calculate the first flush runoff flow rate (WQF) over a given site area. In this situation the WQV to be analyzed is the runoff produced by the first 1" of rainfall.

Reference: United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual.

Given:

Structure Name	A (acres)	A (miles^2)	Runoff Coefficient	Percent Imp. (%)*	t_c (min)	t_c (hr)
WQ-1	1.63	0.00255	0.58	46.67	15.0	0.250

* Assumes runoff coefficient of 0.3 for pervious areas and 0.9 for impervious areas.

Procedure: The Water Quality Flow (WQF) is calculated using the Water Quality Volume (WQV). This WQV, converted to watershed inches, is substituted for the runoff depth (Q) in the Natural Resources Conservation Service (formerly Soil Conservation Service), TR-55 Graphical Peak Discharge Method.

1. Compute WQV in watershed inches using the following equation:

$$WQV = P * R$$

where: WQV = water quality volume (watershed inches)
P = design precipitation (inches)
R = volumetric runoff coefficient = 0.05 + 0.009(I)
I = percent impervious cover

Structure Name	Percent Imp. (%)	R	P (in)	WQV (in)	WQV (cf)
WQ-1	46.67	0.470	1	0.750	4438

2. Compute the NRCS Runoff Curve Number (CN) using the following equation, or graphically using Figure 2-1 from TR-55 (USDA, 1986):

$$CN = 1000 / [10+5P+10Q-10(Q^2+1.25QP)^{1/2}]$$

where: CN = Runoff Curve Number
P = design precipitation (inches)
Q = runoff depth (watershed inches)

Structure Name	Q (in)	CN
WQ-1	0.750	97.54

Project: 6001 Highland Rd.
Location: White Lake, MI

CONTECH ENGINEERED SOLUTIONS

3. Using computed CN, read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55; compute I_a/P, interpolating when appropriate.

Structure Name	I_a (in)	I_a/P
WQ-1	0.041	0.041

4. Compute the time of concentration (t_c) in hours and the drainage area in square miles. A minimum t_c of 0.167 hours (10 minutes) should be used.

Structure Name	t_c (hr)	A (miles^2)
WQ-1	0.250	0.00255

5. Read the unit peak discharge (q_u) from Exhibit 4-II in Chapter 4 of TR-55 for appropriate t_c for type II rainfall distribution.

Structure Name	t_c (hr)	I_a/P	q_u (csm/in)
WQ-1	0.250	0.041	731

6. Substituting WQV (watershed inches) for runoff depth (Q), compute the water quality flow (WQF) from the following equation:

$$WQF = (q_u)*(A)*(Q)$$

where: WQF = water quality flow (cfs)
q_u = unit peak discharge (cfs/mi^2/inch)
A = drainage area (mi^2)
Q = runoff depth (watershed inches)

Structure Name	q_u (csm/in)	A (miles^2)	Q (in)	WQF (cfs)
WQ-1	731	0.00255	0.750	1.40

Estimated Net Annual Solids Load Reduction
Based on the Rational Rainfall Method

CONTECH ENGINEERED SOLUTIONS

Kril Sports Complex
Pinckney
WQU

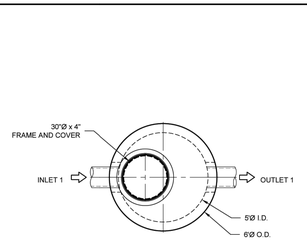
CASCADE separator™

AREA	1.63	acres	**CASCADE MODEL**	CS-4	
WEIGHTED C	0.58		**PARTICLE SIZE**	110	microns
TC	15.00	minutes	**RAINFALL STATION**	78	

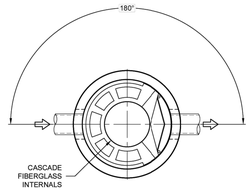
Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	% Rainfall Volume Treated	Total Flowrate (cfs)	Removal Efficiency (%)	Incremental Removal (%)
0.02	13.13%	13.1%	13.1%	0.02	100.0	13.1
0.04	11.36%	24.5%	11.4%	0.04	100.0	11.4
0.06	10.08%	34.6%	10.1%	0.06	100.0	10.1
0.08	7.49%	42.1%	7.5%	0.08	100.0	7.5
0.10	7.01%	49.1%	7.0%	0.09	100.0	7.0
0.12	5.37%	54.4%	5.4%	0.11	100.0	5.4
0.14	4.73%	59.2%	4.7%	0.13	100.0	4.7
0.16	4.13%	63.3%	4.1%	0.15	100.0	4.1
0.18	3.53%	66.8%	3.5%	0.17	100.0	3.5
0.20	2.99%	69.8%	3.0%	0.19	100.0	3.0
0.25	5.50%	75.3%	5.5%	0.24	100.0	5.5
0.30	4.47%	79.8%	4.5%	0.28	100.0	4.5
0.35	3.85%	83.6%	3.9%	0.33	100.0	3.9
0.40	2.16%	85.8%	2.2%	0.38	99.2	2.1
0.45	2.09%	87.9%	2.1%	0.43	97.6	2.0
0.50	1.31%	89.2%	1.3%	0.47	96.0	1.3
0.75	5.07%	94.3%	5.1%	0.71	88.1	4.5
1.00	2.58%	96.9%	2.6%	0.95	80.2	2.1
1.50	2.50%	99.4%	2.5%	1.42	64.3	1.6
2.00	0.51%	99.9%	0.5%	1.89	48.4	0.2
2.54	0.15%	100.0%	0.1%	2.40	37.3	0.1
						97.5

Removal Efficiency Adjustment[2] = 6.5%
Predicted % Annual Rainfall Treated = 93.5%
Predicted Net Annual Load Removal Efficiency = 91.0%

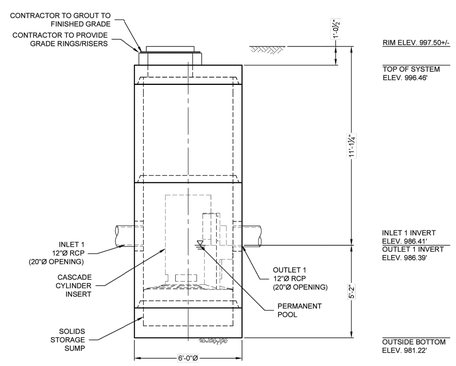
1 - Based on 5.5 years of 15 minute precipitation data form NCDC station 2102 at Detroit City Airport in Detroit, MI
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.



PLAN VIEW
(INTERNALS NOT SHOWN)



SECTION FOR PIPE ORIENTATION
(TOP SLAB NOT SHOWN)



ELEVATION VIEW

MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	CS-5 FIBERGLASS CYLINDER INSERT, STD.	CONTECH
4	CS-5 ALUMINUM INSTALLATION BRACKET	CONTECH
1	SEALANT FOR JOINTS	CONTRACTOR
1	30"Ø x 4" FRAME AND COVER, EJ#41600483, OR EQUIV.	CONTRACTOR

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com
3. CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR MANHOLE STRUCTURE.
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 9500 LBS.
OF 4 PIECES

MAXIMUM FOOTPRINT = 6'Ø

CONTECH **PROPOSAL** DRAWING

NCI LAYOUT 1A

MARK	DATE	REVISION DESCRIPTION	BY
		—	

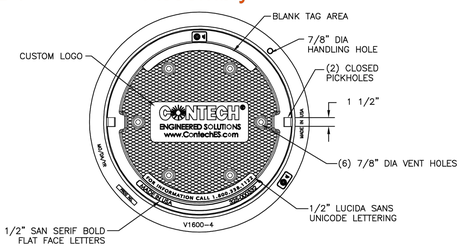
CS-5 - 747328-10
HIGHLAND ROAD MEIJER
WHITE LAKE, MI
for SYSTEM: WQ-1

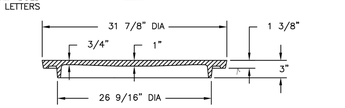
CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
800.338.1122 (513.645.7000) FAX (513.645.7993)

CASCADE separator™

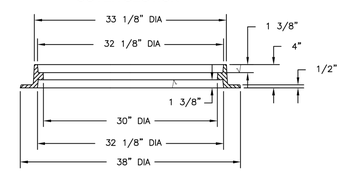
DATE:	03/15/23
DESIGNED: CJG	DRAWN: CJG
CHECKED: MSB	APPROVED: MSB
PROJECT No.: 747328	SEQUENCE No.: 10
SHEET: 1 OF 1	

1810B4 V1600-4 Assembly





COVER SECTION



FRAME SECTION

ej

Product Number
41600483
Design Features
-Materials
Cover
Gray Iron (CL35B)
Frame
Gray Iron (CL35B)

-Design Load
Heavy Duty
-Open Area
n/a
-Coating
Undipped
- √ Designates Machined Surface

Certification
- ASTM A48
- H25
-
-Country of Origin: USA

Major Components
00180783
41600410

Drawing Revision
5/9/2007 Designer: SMH
2/14/2022 Revised By: DAE

Disclaimer
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

Contact
800 626 4653
ejco.com

WATER QUALITY UNIT CALCULATIONS & SPECIFICATIONS

NOT TO SCALE

ISSUE	DATE	BY	DESCRIPTION
9	12/09/2024	VF	FOR TOWNSHIP SITE PLAN APPROVAL
8	11/21/2024	AF	FOR CLIENT REVIEW
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2	03/16/2023	EM	FOR CLIENT REVIEW
1	02/14/2023	EM/JKC	SUBMISSION FOR SITE PLAN APPROVAL

NOT APPROVED FOR CONSTRUCTION

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Phone 248.247.1115

SITE DEVELOPMENT PLANS

HIGHLAND ROAD OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-276-035
HIGHLAND ROAD (M-59) - OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

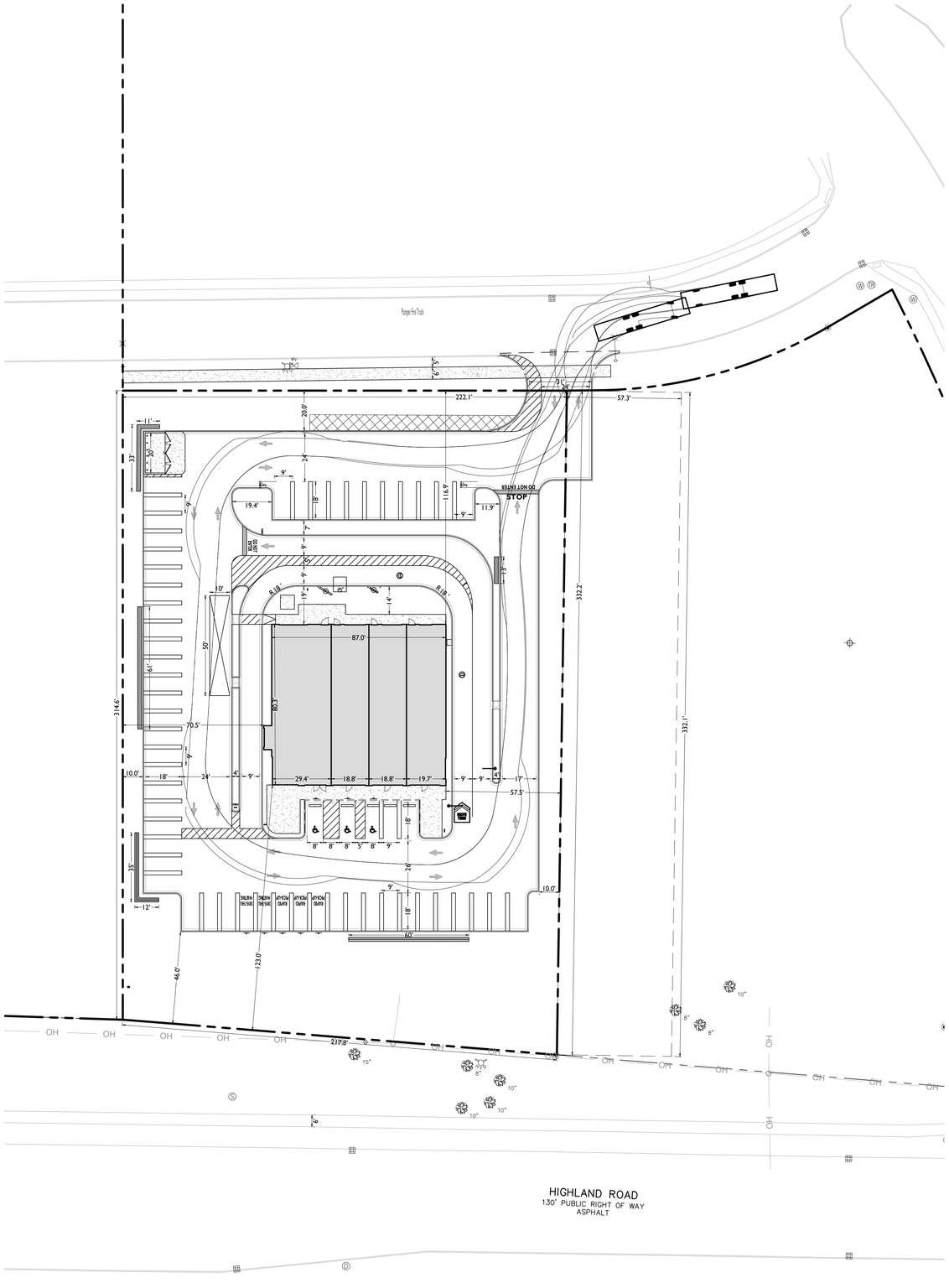
STATE OF MICHIGAN
TIMOTHY FRED COONEY
ENGINEER
No. 61069428
PROFESSIONAL
12/09/2024
MICHIGAN LICENSE NO. 61069428
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: AS SHOWN | PROJECT ID: DET-220180

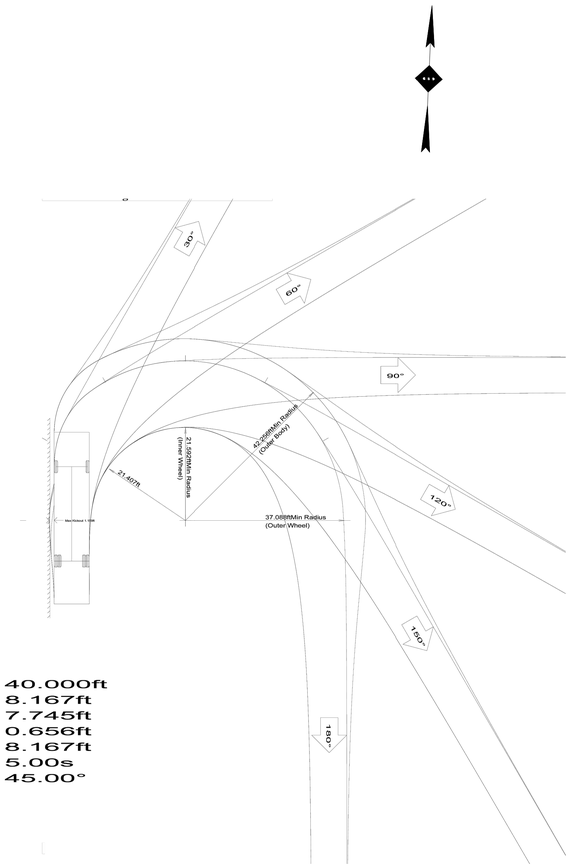
TITLE:
CONSTRUCTION DETAILS

DRAWING:
C-13

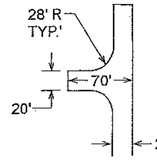


Pumper Fire Truck

Overall Length	40.000ft
Overall Width	8.167ft
Overall Body Height	7.745ft
Min Body Ground Clearance	0.656ft
Track Width	8.167ft
Lock-to-lock time	5.00s
Max Wheel Angle	45.00°



PUMPER FIRE TRUCK
VECHICLE TURNING DATA



ACCEPTABLE ALTERNATIVE
TO 120' HAMMERHEAD

INTERNATIONAL FIRE CODE
ALTERNATIVE HAMMERHEAD

30' 0' 30' 60'
GRAPHIC SCALE IN FEET
1" = 30'

ISSUE	DATE	BY	DESCRIPTION
9	12/09/2024	VF	FOR TOWNSHIP SITE PLAN APPROVAL
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6	08/11/2023	EM	REVISED BUILDING AREAS
5	06/22/2023	EM	RESUBMISSION FOR SITE PLAN APPROVAL
4	05/05/2023	EM	RESUBMISSION FOR SITE PLAN APPROVAL
3	04/11/2023	EM	FOR CLIENT REVIEW
2	03/16/2023	EM	FOR CLIENT REVIEW
1	02/14/2023	EM/KG	SUBMISSION FOR SITE PLAN APPROVAL

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design
Birmingham, MI · New York, NY · Salem, MA
Princeton, NJ · Tampa, FL · Rutherford, NJ
www.stonefieldeng.com
555 S. Old Woodward Avenue, Suite 12L, Birmingham, MI 48009
Phone 248.247.1115

SITE DEVELOPMENT PLANS

HIGHLAND ROAD OUTLOT B

PROPOSED COMMERCIAL DEVELOPMENT

PARCEL ID: 12-20-276-035
HIGHLAND ROAD (M-59) - OUTLOT B
WHITE LAKE TOWNSHIP
OAKLAND COUNTY, MICHIGAN 48383

STATE OF MICHIGAN
JONATHAN FRED COONSEY
ENGINEER
No. 69428
PROFESSIONAL ENGINEER
MICHIGAN LICENSE NO. 6201069428
LICENSED PROFESSIONAL ENGINEER

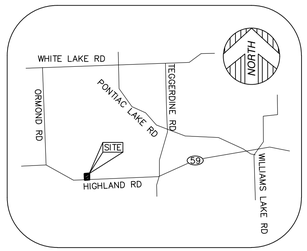
STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: DET-220180

TITLE:
FIRE TRUCK TURNING EXHIBIT

DRAWING:
C-14

I:\DET\2022\DET-220180-ALNG-001 HIGHLAND ROAD, CHARTER TOWNSHIP OF WHITE LAKE, MI\CAD\PLOTS\SP-14 TRUCK.DWG



VICINITY MAP
(NOT TO SCALE)

PARKING
NO MARKED PARKING ON SITE.

PARCEL AREA
PARENT PARCEL (12-20-276-035)
561,271± SQUARE FEET = 12.885± ACRES
PARCEL A
70,752± SQUARE FEET = 1.624± ACRES

BASIS OF BEARING
NORTH 00°31'08" EAST, BEING THE NORTH & SOUTH 1/4 LINE OF SECTION 20, AS DESCRIBED.

BENCHMARK
BENCHMARK #1
TURN ARROW ON HYDRANT, FIRST HYDRANT ALONG WEST SIDE OF BOGIE LAKE ROAD NORTH OF HIGHLAND ROAD.
ELEVATION = 982.44' (NAVD 88)

BENCHMARK #2
TURN ARROW ON HYDRANT, FIRST HYDRANT ALONG NORTH SIDE OF HIGHLAND ROAD EAST OF BOGIE LAKE ROAD (NOT SHOWN; OFFSITE).
ELEVATION = 985.56' (NAVD 88)

BENCHMARK #3
ARROW ON TOP OF HYDRANT ON SOUTH SIDE OF ACCESS ROAD TO MEIJER.
ELEVATION = 1004.57' (NAVD 88)

BENCHMARK #4
MAG NAIL IN NORTH FACE OF UTILITY POLE ON SOUTH SIDE OF SITE.
ELEVATION = 977.89' (NAVD 88)

SURVEYOR'S NOTES
1. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES OTHER THAN THE STRUCTURE INVENTORY SHOWN HEREON.

2. THERE IS NO OBSERVED EVIDENCE OF CURRENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.

3. THE SURVEYOR IS UNAWARE OF ANY PROPOSED CHANGES IN STREET RIGHT OF WAY LINES. THERE IS NO OBSERVED EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS.

MANHOLE SCHEDULE

NUM	TYPE	RIM (FT)	SIZE (IN)	DIR	INV ELEV (FT)
10048	STORM CB	997.61	15	N	984.89
		997.61	15	S	985.17
10054	STORM CB	997.53	15	S	984.93
		997.53	18	NE	984.78
10088	STORM CB	864.24	12	NW	859.94
10113	STORM CB	987.10	12	E	982.55
10159	STORM CB	989.73	12	SE	983.48
		861.11	18	SW	854.86
		861.11	18	NW	854.81
		861.11	21	NE	PER PLAN
70013	SANITARY MH	980.27	8	N	970.67
		980.27	8	SE	970.47
70017	STORM CB	979.08	18	W	973.68
		979.08	24	N	973.53
		979.08	12	NE	974.18
70046	STORM CB	979.24	18	W	974.04
		979.24	18	E	973.89
70095	SANITARY MH	980.49	18	NE	951.09
		980.49	18	W	951.29
70101	STORM CB	979.37	12	S	975.77
70122	STORM CB	975.46	12	S	971.46
70129	SANITARY MH	975.17	18	E	951.07
		975.17	18	W	951.17
70182	STORM CB	980.28	12	N	975.03
		980.28	12	S	975.08
70191	STORM MH	976.75	12	S	971.15
		976.75	12	N	971.20
70196	STORM CB	975.22	12	SE	971.22
70211	STORM BEEHIVE	978.23	18	E	974.53

ZONING REGULATIONS
PB– PLANNED BUSINESS DISTRICT

*MINIMUM LOT AREA – 10 ACRES
*MINIMUM LOT WIDTH – TO BE DETERMINED BY PLANNING COMMISSION

*MINIMUM LOT COVERAGE – GOVERNED BY PARKING, LOADING, LANDSCAPING, ETC.

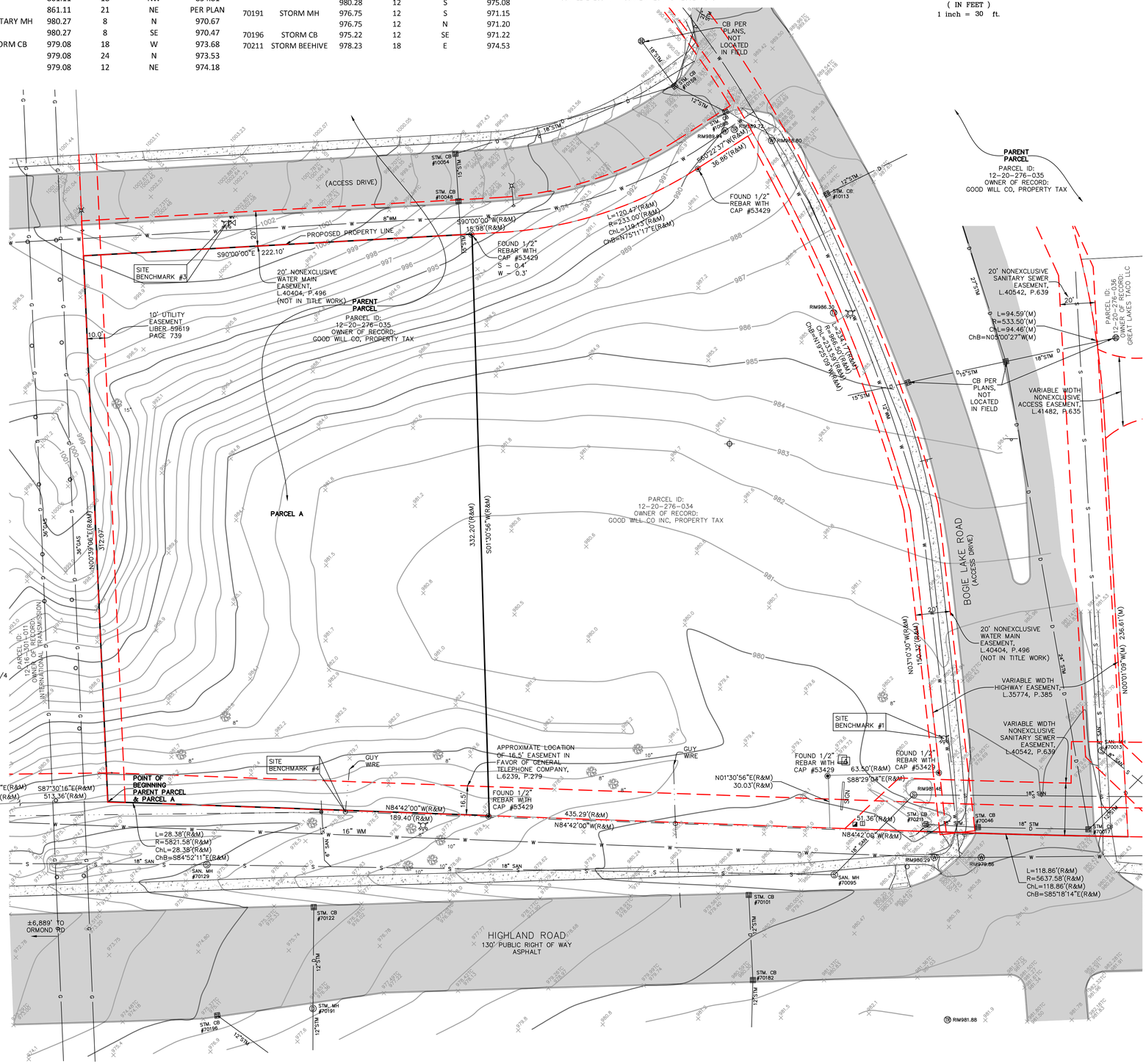
*REQUIRED MINIMUM SETBACK –
FRONT – 50 FEET
SIDE – TO BE DETERMINED BY PLANNING COMMISSION
REAR – TO BE DETERMINED BY PLANNING COMMISSION

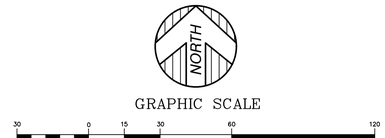
*MAXIMUM HEIGHT – 35 FEET/2 STORIES

NOTE: ALL ZONING INFORMATION IS TAKEN FROM THE TOWNSHIP OF WHITE LAKE WEBSITE. ALL ZONING INFORMATION MUST BE VERIFIED FOR COMPLETENESS WITH CURRENT ZONING REGULATIONS.

LEGEND
- FOUND MONUMENT (AS NOTED)
- FOUND SECTION CORNER (AS NOTED)
- (R&M) RECORD AND MEASURED DIMENSION
- (R) RECORD DIMENSION
- (M) MEASURED DIMENSION
- +0.00 GROUND ELEVATION
- ELECTRIC PANEL
- TRANSFORMER
- UTILITY POLE
- GAS LINE MARKER
- LIGHT POLE WITH STREET LAMP
- CABLE TV RISER
- TRAFFIC SIGNAL
- TRAFFIC SIGNAL MANHOLE
- SANITARY MANHOLE
- ROUND CATCH BASIN
- SQUARE CATCH BASIN
- STORM DRAIN MANHOLE
- FIRE HYDRANT
- WATER GATE MANHOLE
- WATER VALVE
- WELL
- LIGHTPOST/LAMP POST
- SINGLE POST SIGN
- SOIL BORING
- DECIDUOUS TREE (AS NOTED)
- PARCEL BOUNDARY LINE
- ADJOINER PARCEL LINE
- EASEMENT (AS NOTED)
- CONCRETE CURB
- EDGE OF CONCRETE (CONC.)
- FENCE (AS NOTED)
- WALL (AS NOTED)
- OVERHEAD UTILITY LINE
- E ELECTRIC LINE
- G GAS LINE
- S SANITARY LINE
- D STORM LINE
- W WATER LINE
- MINOR CONTOUR LINE
- MAJOR CONTOUR LINE
- ASPHALT
- CONCRETE

NORTH 1/4 CORNER OF SECTION 20, T.3N., R.8E.
N–S 1/4 LINE
2665.34'(M)
N89°58'09"E(R&M) 519.78'(R&M)
S87°30'16"E(R&M) 513.36'(R&M)
N00°31'08"E(R&M) 198.92'(R&M)
POINT OF COMMENCEMENT CENTER OF SECTION 20, T.3N., R.8E.





PROPERTY DESCRIPTION
LAND SITUATED IN THE STATE OF MICHIGAN, COUNTY OF OAKLAND, TOWNSHIP OF WHITE LAKE,

PARCEL A:
A PART OF THE NORTHEAST 1/4 OF SECTION 20, TOWN 3 NORTH, RANGE 8 EAST, BEGINNING AT A POINT DISTANT NORTH 00 DEG. 31' 08" EAST 198.92 FEET AND NORTH 89 DEG. 58' 09" EAST 519.78 FEET AND SOUTH 87 DEG. 30' 16" EAST 513.36 FEET FROM THE CENTER OF SECTION 20; THENCE NORTH 00 DEG. 39' 06" EAST 312.07 FEET; THENCE SOUTH 90 DEG. 00' 00" EAST (DUE EAST) 222.10 FEET; THENCE SOUTH 01 DEG. 30' 56" WEST 332.20 FEET; THENCE NORTH 84 DEG. 42' 00" WEST 189.40 FEET; THENCE ALONG A CURVE TO THE LEFT, RADIUS 5821.58 FEET, CHORD BEARING NORTH 84 DEG. 52' 11" WEST, 28.38 FEET, A DISTANCE OF 28.38 FEET TO THE POINT OF BEGINNING. (ACCORDING TO THE SURVEY BY KEM-TEC PROFESSIONAL ENGINEERING, SURVEYING & ENVIRONMENTAL SERVICES, PROJECT NO. 22-02031 DATED AUGUST 25, 2022 AND LAST REVISED MARCH 31, 2023)

TOGETHER WITH NONEXCLUSIVE DRIVEWAY ACCESS EASEMENT AGREEMENT BY AND BETWEEN AND MEIJER, INC. AND WHITE LAKE RETAIL MANAGEMENT II LLC DATED _____, 2023 AND RECORDED _____, 2015 IN LIBER _____, PAGE _____.

TITLE REPORT NOTE
ONLY THOSE EXCEPTIONS CONTAINED WITHIN THE FIDELITY NATIONAL TITLE INSURANCE COMPANY COMMITMENT No. GLT2300196, DATED OCTOBER 15, 2023, AND RELISTED BELOW WERE CONSIDERED FOR THIS SURVEY. NO OTHER RECORDS RESEARCH WAS PERFORMED BY THE CERTIFYING SURVEYOR.

10. AN OIL AND GAS LEASE FOR THE TERM THEREIN PROVIDED WITH CERTAIN COVENANTS, CONDITIONS AND PROVISIONS, TOGETHER WITH EASEMENTS, IF ANY, AS SET FORTH THEREIN, DATED: NOVEMBER 23, 1965 LESSOR: WOOD CRAFT HOMES, INC., A MICHIGAN CORPORATION LESSEE: BUCKEYE PIPE LINE COMPANY RECORDING DATE: JANUARY 12, 1966 RECORDING NO: LIBER 4835, PAGE 150 (A 20' EASEMENT CENTERED ON THE PIPELINE WITHIN THE PART OF PARCEL ID 12-20-276-035 AS SURVEYED; EXACT LOCATION OF SAID PIPELINE IS UNKNOWN)

12. RIGHT(S) OF WAY AND/OR EASEMENT(S) AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: IN FAVOR OF: GENERAL TELEPHONE COMPANY OF MICHIGAN, A MICHIGAN CORPORATION RECORDING NO: LIBER 6239, PAGE 279 (AS SHOWN)

14. ROAD AND GRADING EASEMENT RECORDING DATE: JANUARY 24, 2003 RECORDING NO.: LIBER 27727, PAGE 92 (DOCUMENT NOT PROVIDED AT TIME OF SURVEY)

15. MEMORANDUM OF DEVELOPMENT AGREEMENT EXECUTED BY: TOWNSHIP OF WHITE LAKE AND GOOD WILL CO, INC, A MICHIGAN CORPORATION RECORDING DATE: JULY 28, 2003 RECORDING NO: LIBER 30116, PAGE 166 MEMORANDUM OF AMENDED DEVELOPMENT AGREEMENT RECORDING DATE: OCTOBER 8, 2015 RECORDING NO: LIBER 48677, PAGE 714 (SEE DOCUMENT FOR TERMS AND CONDITIONS)

22. NONEXCLUSIVE WATER MAIN EASEMENT BY AND BETWEEN GOOD WILL CO. INC. AND THE CHARTER TOWNSHIP OF WHITE LAKE DATED JUNE 4, 2008 AND RECORDED IN LIBER 40404, PAGE 496. (DOCUMENT NOT PROVIDED AT TIME OF SURVEY.)

23. TOGETHER WITH NONEXCLUSIVE DRIVEWAY ACCESS EASEMENT AGREEMENT BY AND BETWEEN AND MEIJER, INC AND WHITE LAKE RETAIL MANAGEMENT II LLC DATED _____, 2023 AND RECORDED _____, 2015 IN LIBER _____, PAGE _____.

24. TERMS, COVENANTS, CONDITIONS, RESTRICTIONS, ENCUMBRANCES AND EASEMENTS OF NONEXCLUSIVE UTILITY EASEMENT AGREEMENT RECORDED SEPTEMBER 6, 2024 IN LIBER 59619, PAGE 739. (AS SHOWN.)

FLOOD NOTE
SUBJECT PARCEL LIES WITHIN:

OTHER AREA (ZONE X): AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

AS SHOWN ON FLOOD INSURANCE RATE MAP: MAP NUMBER 26125C0319F, DATED 9/29/2006, PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

ADDITIONAL SURVEYOR'S NOTES
1. SUBJECT PROPERTY ABUTS HIGHLAND ROAD, BUT HAS NO DIRECT VEHICULAR ACCESS TO HIGHLAND ROAD, A PUBLIC RIGHT OF WAY. ACCESS TO SUBJECT PROPERTY VIA VARIABLE WIDTH HIGHWAY EASEMENT (BOGIE LAKE ROAD ACCESS DRIVE) LIBER 35774 PAGE 385, AND VIA ACCESS DRIVE (NO CURRENT EASEMENT AT TIME OF SURVEY).

2. UTILITIES (WATER, GAS, ELECTRIC, TELEPHONE, SEWER, AND STORM DRAINAGE) ARE AVAILABLE AND SERVICE THE PROPERTY AND ALL UTILITY LINES ENTER THE PREMISES THROUGH ADJOINING PUBLIC STREETS OR THROUGH APPURTENANT EASEMENTS WHICH ARE SHOWN ON THE SURVEY.

3. THERE IS NO OBSERVED EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.

SURVEYOR'S CERTIFICATION
TO ALRIG USA; WHITE LAKE RETAIL MANAGEMENT II LLC; MEIJER, INC.; AND FIDELITY NATIONAL TITLE INSURANCE COMPANY:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 5, 6A, 7A, 8, 9, 11A, 11B, 13, 14, 16, 17, AND 18 OF TABLE A, THEREOF. THE FIELD WORK WAS COMPLETED ON 08/01/22.

DATE OF PLAT OR MAP: 08/10/22

ANTHONY T. SYCKO, JR., P.S.
PROFESSIONAL SURVEYOR
MICHIGAN LICENSE NO. 47976
22556 GRATIOT AVE., EASTPOINTE, MI 48021
TSycko@kemtec-survey.com

STATE OF MICHIGAN
ANTHONY T. SYCKO, JR
PROFESSIONAL SURVEYOR
No. 4001047976
LICENSED PROFESSIONAL SURVEYOR

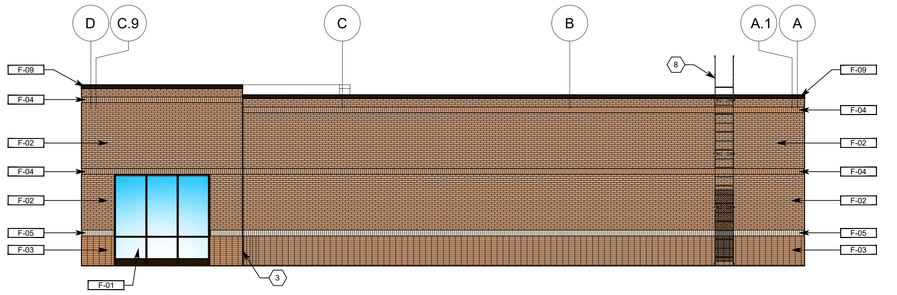
KEM-TEC
PROFESSIONAL ENGINEERING, SURVEYING & ENVIRONMENTAL SERVICES
A GROUP OF COMPANIES
Ann Arbor (734) 994-0888
Grand Blanc (888) 694-0001
Eastpointe (800) 266-7222
Detroit (313) 758-0877
www.kemteagroupofcompanies.com

ALTA / NSPS LAND TITLE SURVEY
PREPARED FOR: ALRIG USA
6001 HIGHLAND RD, WHITE LAKE, MICHIGAN,
PART OF SECTION 20,
TOWN 3 NORTH, RANGE 8 EAST

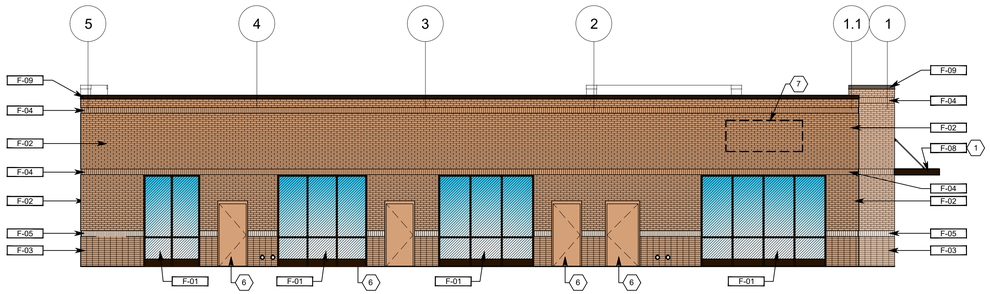
REVISION	DATE	BY
9	11/01/24	JV
EDITED SURVEYOR'S CERTIFICATION		
8	10/29/24	JO
REVISED TITLE WORK		
7	04/22/24	JDM
REVISED MANHOLE SCHEDULE		
6	06/22/23	MRJ
REVISED STORM		
5	05/22/23	MRJ
REVISED TITLE WORK & PER REVIEW COMMENTS		
4	03-31-23	JDM
ADDED CERTIFICATION PARTIES		

DRAWN BY: JO 08/05/22
CHECKED BY: ATS 08/10/22
DATE: AUGUST 10, 2022
PROJECT NO. 22-02031
SCALE: 1" = 30'

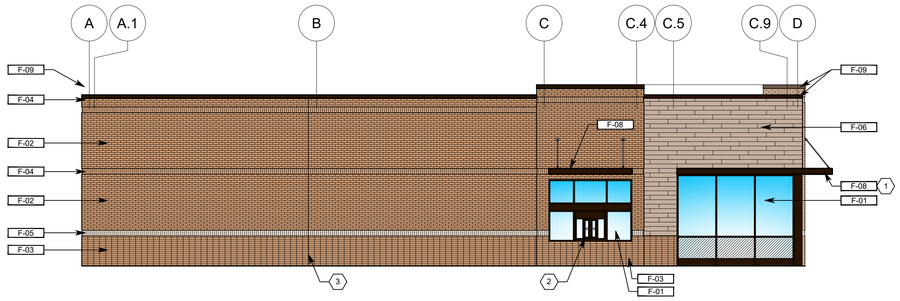
1
1 OF 1 SHEETS



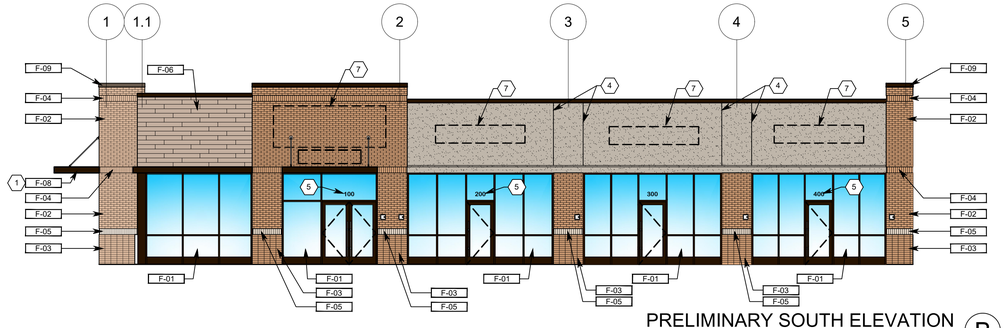
PRELIMINARY EAST ELEVATION (E)
1/8" = 1'-0"



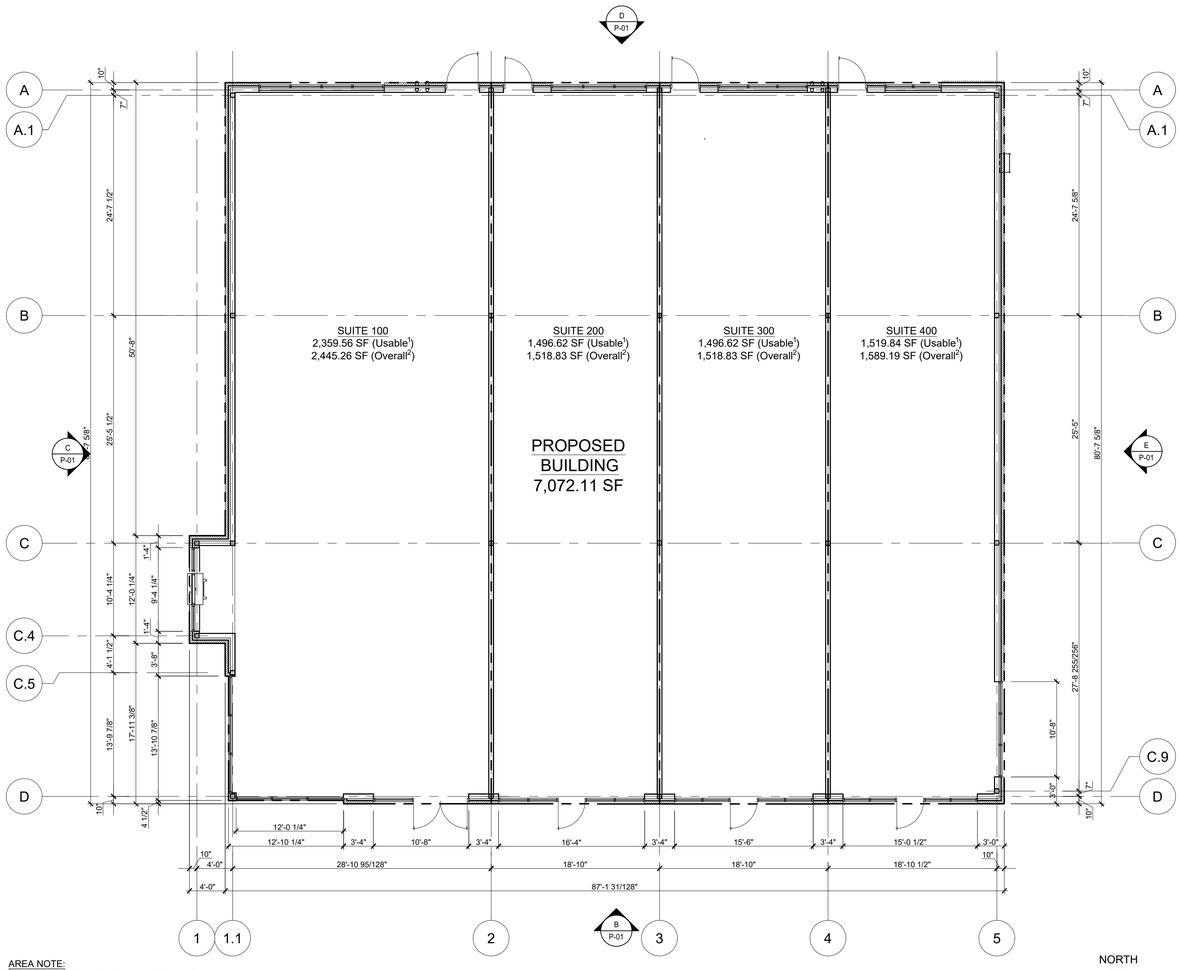
PRELIMINARY NORTH ELEVATION (D)
1/8" = 1'-0"



PRELIMINARY WEST ELEVATION (C)
1/8" = 1'-0"



PRELIMINARY SOUTH ELEVATION (B)
1/8" = 1'-0"



PRELIMINARY FLOOR PLAN (A)
0 4' 8' 16'

NORTH

AREA NOTE:
[1] Usable area dimensioned to exterior face of framing and center of tenant separation walls
[2] Overall area dimensioned to face of foundation and cener of tenant separation walls

EXTERIOR FINISHES KEY

F-01 — SPL - DENOTES SPANDREL GLAZING

STOREFRONT
THERMALLY BROKEN ALUM. FRAME 1" CLEAR INSULATED GLAZING
MFR: KAWNEER - COLOR: DARK BRONZE

F-02

MODULAR BRICK VENEER
MFR: MCNEAR
RUNNING BOND PATTERN
COLOR: SANTIAGO CREATE MATERIALS CUSTOM BLEND

F-03

MODULAR BRICK VENEER
MFR: MCNEAR
STACK BOND PATTERN
COLOR: SANTIAGO CREATE MATERIALS CUSTOM BLEND

F-04

MODULAR BRICK VENEER
MFR: MCNEAR
SOLDIER COURSE
COLOR: SANTIAGO CREATE MATERIALS CUSTOM BLEND

F-05

MODULAR BRICK VENEER
MFR: GLEN GERY
SOLDIER COURSE
COLOR: GOLDEN BUFF

F-06

FIBER CEMENT SIDING
MFR: NICHIHA (HORIZONTAL)
STYLE: VINTAGEWOOD - WOOD SERIES
COLOR: SPRUCE

F-07

EIFS
MFR: DRYVIT
COLOR: (MATCH) SW7030 ANEW GRAY

F-08

METAL CANOPY
MFR: AMERICAN PRODUCTS, INC.
COLOR: DARK BRONZE
SEE NOTE 1

F-09

PREFINISHED METAL FASCIA TRIM
MFR: PAC CLAD OR EQUAL
COLOR: (MATCH) MATTE BLACK (RAL#7021)

NOTES

1. PRE-MANUFACTURED ALUMINUM CANOPY W/ TIE RODS WITH FINISHED UNDERSIDE, PROVIDED/INSTALLED BY LANDLORD MANF: AMERICAN PRODUCTS, INC. COLOR: DARK BRONZE, CANOPY TO INCLUDE LIGHTING, INTERNAL DRAIN (TO TIE INTO STORM), CANOPY UNDERSIDE TO HAVE FINISH TO MATCH
2. DRIVE-THRU WINDOW, MFR: QUIKSERV MODEL: FM42E TO BE INSTALLED AS PART OF SHELL CONSTRUCTION IN STOREFRONT SURROUND. COLOR TO MATCH STOREFRONT.
3. CONTROL JOINT WHERE INDICATED.
4. 'V' GROOVE WHERE INDICATED
5. BUILDING ADDRESS SIGN VERIFY SIZE, LOCATION, AND STYLE WITH LOCAL FIRE DEPARTMENT
6. HOLLOW METAL SERVICE DOOR. EXTERIOR PAINT FINISH TO MATCH ADJACENT MATERIAL.
7. SIGNAGE LOCATION
8. METAL ROOF ACCESS LADDER WITH LOCKING GATE

CURRENT ISSUE

ISSUE	DATE	REV.	DESCRIPTION
1	10/23/2024		PRELIMINARY DESIGN
2	10/29/2024		PRELIMINARY DESIGN RESUBMISSION
3	11/8/2024		REVISED PLAN AND ELEVATIONS
4	11/15/2024		REVISED SPRINKLER ROOM LOCATION, CANOPY LOCATIONS

SHREMSHOCK
Gerald S. Shremshock, Architect
Timothy J. Shremshock, Architect
info@shremshock.com
www.shremshock.com
Shremshock Architects, Inc.
7775 Walton Parkway Ste. 250 New Albany, OH 43054
t: 614 545 4550 | f: 614 545 4555

ALRIG USA
PROPOSED 4 TENANT
SHELL BUILDING
HIGHALAND ROAD - OUTLOT B
WHITE LAKE, MI. 48383

PELIMINARY FLOOR
PLAN AND ELEVATIONS

DRAWN BY: RCB
CHECKED BY: DHB

PRELIMINARY
NOT FOR CONSTRUCTION

SAI # 240492
DRAWING NUMBER:
P-01

PLOTTED: 12/12/2024 2:18 PM

CHARTER TOWNSHIP OF WHITE LAKE
SITE PLAN REVIEW APPLICATION
Community Development Department, 7525 Highland Road, White Lake, Michigan 48383
(248) 698-3300 x5

APPLICANT AND PROPERTY INFORMATION

Applicant: White Lake Retail Management II, LLC

Phone: 248-643-4444 Email Address: teamrachel@alrigusa.com

Address: 30200 Telegraph Road, Suite 205, Bingham Farms, MI 48025
(Street) (City) (State) (Zip)

Applicant's Legal Interest in Property: Purchase/Development

Property Owner: Meijer, Inc. Phone: 616-791-3909

Address: 2929 Walker Ave NW, Grand Rapids, MI 49544
(Street) (City) (State) (Zip)

PROJECT INFORMATION

Project Name: Highland Road Meijer Outlot B Parcel I.D. No.: 12-20-276-035

Proposed Use: Retail, Restaurant & Restaurant with Drive-Thru Current Zoning: PB

Existing Use: Vacant Parcel Size: 1.6 AC Floor Area / No. of Units Approx. 6,453 SF

TYPE OF DEVELOPMENT

- [ ] Subdivision
- [ ] Site Condominium
- [x] Commercial
- [ ] Multiple Family
- [ ] Special Land Use
- [ ] Industrial
- [ ] Adult Entertainment

SITE PLAN SUBMITTAL CHECKLIST

- [x] PDF File **and** One Paper Copy (sealed and no larger than 24x36)
- [x] Application Review Fees (to be calculated by the Community Development Department)

*** PLANS WILL NOT BE ACCEPTED UNLESS FOLDED ***

REQUIRED SIGNATURES

MEIJER, INC.

By: Michael Flickinger Dec-13-2024
(Signature of Property Owner) (Date)

Rachel Delaney 12/13/24
(Signature of Applicant) (Date)

Legal BD

Bus. Ka

Bus. _____

SIGNATURES TO BE VERIFIED BY THE TOWNSHIP

This checklist, based on the Engineering Design Standards, is provided to the design engineer for reference during plan preparation.

CHARTER TOWNSHIP OF WHITE LAKE
Engineering Design Standards
Preliminary Plan Checklist

Project Name _____ Location _____

WLT File No. _____ J&A File No. _____ Date of Plans reviewed _____

Review by Johnson & Anderson, Inc. By _____ Date _____

Deficient/Acceptable	Authority	Item
		GENERAL
	A.1.	Sealed by Licensed Michigan Design Professional
	2.	Sheet size 24" x 36"
		Scale 1" =50' or better
	3.	Elevations on USGS Datum, no assumed datum Bench mark(s) shown
	4.	Existing and proposed storm sewers, sanitary sewers and watermains shown. Proposed easements by note. Proposed pipe diameters and lengths.
	5.	Adequate dimensioning of drives, parking, utilities
	6.	Streets per RCOC, or Pvt. Road Ordinance
	7.	General indication of proposed grading
		GRADING/PAVING
	B.2.	Enough control elevations shown to verify: Max/Min. Grades Grass Areas
		Max/Min. Grades Asphalt Areas
		Max/Min. Grades Concrete Areas
	7.	Fill or structure in flood plain or wetland? Show limits.
	8.	Road centerline radii if streets are shown (min 230' per RCOC)
		STORM DRAINAGE
	C.1.a.	Easement for drainage across other's property
	f.	10' separation from buildings
	i.	Provide treatment to eliminate sedimentation into wetland or natural drainage course
	j.	Minimum pipe size 8" (PVC), 12" if public
		Show preliminary pipe size
		DETENTION/RETENTION BASINS
	C.4.b.	Maximum release rate generally 0.2 Cfs per acre
	c.	Detention by OCDC method unless MDOT jurisdiction, preliminary calculations shown
	g.	Side slopes max 1 on 3 with fence 1 on 6 unfenced 8', gate required if fenced
	j.	Proper SO-2 Outlet noted
	k.	12' Access Easements noted
	m.	Basin volume calculated above exist or proposed water level
	n.	No outlet retention basin V= 33,000AC (2-100 yr storms) provide SCS soil type
	o.	No retention in parking areas
	l.	Limits of detention show
	s.	Maximum depth of parking lot detention 9"

Deficient/Acceptable	Authority	Item
		LEACHING BASINS
	5.a.	Demonstrate that no other storm outlet is available
	b.	Adequate soils exist in area, show SCS soil type
	c.	Drainage area to each basin is acceptable
		WATERMAIN
	2.	Watermains to be on north and east side of street
	6.	No dead ends longer than 600 feet
	8.	Easements noted, 20 feet wide, 60 feet wide in private roads.
	9.	Designed to deliver 1000 GPM at 20 psi residual pressure per hydrant
	11.	Domestic services may tap into fire line with separate shut offs within easement
	14.	Gate valve with hydrant or blow off at dead end lines
	15.	Extend WM across frontage. Use master plan size if larger than 8".
	17.	Min. diameter for public WM - 8"
	21.	Hydrant spacing 500 feet along roads and streets in residential areas, 300' comm areas
	22.	Hydrant spacing around commercial buildings and manufacturing establishments variable determined on case by case basis and per Fire Department
	23.	Double hydrant coverage in high density residential developments
	24.	Hydrants to be at least 50 feet from buildings or trash enclosures
	25.	Hydrants located at street intersections where practical.
	27.	Hydrants and valves readily accessible.
	30.	WM to circle cul-de-sac to last lot w/hydrant in island.
	31.	10' separation from buildings or structures required.
		SANITARY SEWER
	E.1.	Min depth below road 8', min cover 4'
	5.	Sanitary sewers to be on south and west side of street
	7.	20' wide easements required
	8.	Min dia. for HL 6". Max length 150'
	10.	Sewers serving multiple buildings 8" dia. min. If buildings are on more than 1 property sewer must be public
	11.	10' separation from buildings or structures required
	14.	1000 gal grease trap required for food service uses or as required by OCDC
	15.	No ground water or surface water connections to sanitary sewer
	16.	Sanitary sewer extended across frontage. Use master plan size if larger than 8"
	20.	Show pipe size
		Sampling manhole provided commercial/industrial uses

WHITE LAKE CHARTER TOWNSHIP
ENGINEERING DESIGN STANDARDS

A. GENERAL

1. The plans and specifications shall be prepared under the supervision of an Engineer registered in the State of Michigan and each sheet of the plans, excepting standard detail sheets provided by the Township, shall have imprinted thereon the seal and signature of that Engineer. Alternatively, the cover sheet only may be sealed and signed by the Engineer if the sheet index is contained thereon.

2. Plans may consist of: (a) a cover sheet showing a plan view of the complete project, (b) plan and profile sheets, and (c) detail sheets. Sheet size shall be 24" X 36". Plan and profile sheets shall be drawn to a minimum scale of 1" = 50' horizontally and a minimum of 1" = 5' vertically. Plan sets of 20 sheets or less shall be folded to 9"x12" with the title block out prior to submittal to the Township.

3. Elevations shall be based on NAD 88 with two permanent bench marks established at least every 1200' and shown on the plans.

4. All easements, lengths and sizes of sewers and water mains shall be shown.

5. Location (relative to property lines) of proposed streets and sanitary, storm and water lines shall be shown on the plans.

6. Design of public streets shall be in accordance with either Road Commission for Oakland County or MDOT standards, as applicable. Private roads serving site condominiums shall meet RCOC standards for residential subdivisions unless open ditches are requested for imperative environmental reasons in which case pavement width shall be not less than 22 feet. All private roads shall also meet the requirements of the Private Easement Roads section of the Township Zoning Ordinance.

7. Proposed site grading shall be shown on the plans by the use of contours at one or two foot intervals and/or spot elevations and flow arrows to realistically demonstrate the proposed route of flow of surface drainage.

8. Place notes on the plans as follows:

   a. All construction shall be in accordance with the Township's current standards and specifications.
   b. The Contractor shall notify the Township Engineer and/or the authority having jurisdiction, 48 hours prior to the beginning of construction.

c. Contractor shall contact MISS DIG at 800-482-7171, 72 hours in advance of construction, for existing underground utility locations.

d. In order to verify compliance with approved plans, full-time construction observation will generally be required during all phases of underground site construction including installation of sanitary sewer, storm sewers, drains, watermains and appurtenances as well as private street curbing and paving construction. Intermittent observations will be made for site grading, parking lot curbing and paving, retaining wall construction and other surface activity.

9. Where it is necessary to extend off site improvements and/or utilities in order to meet the current requirements of the Township ordinances, these improvements shall be the sole responsibility of the developer. However, once these improvements become public property the entity having jurisdiction shall have all rights and responsibilities to the improvements or utilities, subject to maintenance and guarantee bonds and agreements.

10. There shall be ten feet of horizontal separation between large trees and sanitary sewers, watermains and public storm sewers except as otherwise provided herein.

11. All projects requiring site plan review are required to submit electronic record copy drawings (as-builts) at the end of the project, prior to final certificate of occupancy. Drawing requirements are appended to these standards for reference. Similarly, a certificate of compliance will be required regarding construction of any storm water sedimentation or storage basin, copy of the form is appended for reference.

12. Topography shall be provided extending to at least 50 feet off-site and shall extend to the opposite right of way line of abutting streets. Elevation contours at one foot vertical intervals shall be provided in areas of construction except in areas of terrain steeper than 1v:3h where the contours may be extended to two foot intervals. Ground measured elevations shall be provided at the site perimeter.

B. GRADING AND PAVING

1. Any earth disruption of more than one acre or within 500 feet of a lake or stream or adjacent to any protected wetland will require a soil erosion control permit from White Lake Township. Any site with 5 acres or more of disturbed land will require a notice of coverage for the storm water discharge under the NPDES program as administered by the MDEQ.

2. Minimum and maximum grades shall be as follows unless approved by the Township Engineer:

	Minimum	Maximum
Grass Areas	1%	1 v to 3 h
Asphalt	1%	4% (8% in driveways)
Concrete	0.5%	4% (8% in driveways)

3. The limits of earth disruption shall be shown on the site plan.

4. All disturbed areas shall be revegetated prior to issuance of the final certificate of occupancy. Topsoil in a quantity to cover disturbed areas to a depth of 3" must be retained on site. Vegetation coverage shall be acceptable to the Township erosion control specialist prior to acceptance.

5. All grading shall meet the adjacent property grades unless a grading easement is obtained from the adjacent property owner.

6. Any grade changes which, in the opinion of the Township Engineer require a soil retaining system shall be designed by a qualified structural or geotechnical engineer. A detail of the retaining structure, with calculations shall be submitted to the Township Engineer for review. Any portion of a retaining wall more than 30" high shall have provided at the top of said wall a decorative railing not less than 42" high (non-residential uses) meeting the requirements of Section 1012.3 of the Michigan Building Code. The fence or railing for residential uses shall not be less than 36" high.

7. No filling or structures shall be placed in any floodplain unless compensatory volume is provided. All buildings shall comply with Michigan Building Code, F.E.M.A., and Township codes and ordinances regarding floodplain elevations.

8. Minimum standards for the construction of all asphalt parking areas and drives shall be 1.5" of inches of MDOT 36-A bituminous mix wearing course over 1.5" of bituminous mix MDOT 13-A leveling course on 6 inches of compacted MDOT 21AA stone or 8 inches of compacted 22A gravel. Construction of private roads shall meet the current requirements of the Road Commission for Oakland County.

9. All concrete areas shall be constructed in accordance with M.D.O.T. standards.

10. When paved areas are excavated, asphalt areas shall be saw-cut and removed to a distance equal to the depth of excavation (i.e. within a 1:1 slope from the bottom of excavation). Concrete shall be removed to the first joint past the distance equal to the depth of excavation. Granular backfill compacted in layers to a minimum of 95% of maximum unit weight is required in all excavations within a 1:1 slope of existing or proposed pavement.

C. STORM DRAINAGE SYSTEMS & RETENTION/DETENTION STANDARDS

1. General

a. When concentrated storm water is proposed to be discharged over, onto or across private property other than that owned by the developer, an agreement between the owners must be executed relieving the Township of any responsibility for damage that might occur. Both the form and content of said agreement shall be subject to the approval of the Township's legal counsel. Such an agreement shall be submitted to (and approved by) the Township prior to construction.

b. One copy of a plan shall be submitted to the Township Engineer on which is delineated the limits and acreage of the area(s) contributing surface drainage to:

(1) Each catch basin and inlet structure,
(2) Each proposed crossroad culvert, and
(3) Each existing crossroad culvert affected.

c. All notes, details and specifications found on the "Storm Sewer Standard Details Sheet" shall apply.

2. Manholes, catch basins and inlets.

a. Generally, manholes shall be placed not more than 400' apart for sewers less than 30" diameter and 600' apart for larger sewers.

b. The minimum inside diameter of all manholes, catch basins and inlet structures shall be 48", with the following exception:

Inlet structures from which water will be discharged directly into a catch basin, may be 24" inside diameter. The depth of such inlets shall be no greater than 5.0' and no less than 3.5' from top of frame and cover to invert and shall allow no entrance pipes other than sub-drains. The exit pipe shall be no larger than 12".

c. Manholes and inlet structures may be constructed of brick, manhole block, precast concrete (ASTM C478), or cast-in-place concrete.

d. All manhole block or brick structures shall be plastered on the outside with 1 to 2.5 mix of portland cement mortar, 1/2" thick. No lime shall be added.

e. The type of covers and grates for catch basins and inlets shall be shown on the plans.

f. Horizontal separation from buildings shall be a minimum of 10 feet or a distance which will allow a 1:1 slope to the base of the foundation whichever is greater.

g. Where different sized pipes come together in a manhole the 8/10 ths flow lines shall match.

h. In commercial or industrial districts the 1st manhole upstream from an outlet which is released to a wetland or open watercourse, even through a detention basin, shall have a 3 ft. deep sump and a trapped outlet designed to retain 12" of floating solids or liquids. Proprietary storm water treatment systems will be considered on a case-by-case basis as an alternative to trapped sumps and sediment forebays.

i. Storm sewers which discharge to any wetland or natural water course shall be treated for sedimentation by use of a detention basin, leaching/sedimentation basin or a long, flat, broad swale. Proprietary storm water treatment systems will be considered on a

case-by-case basis as an alternative to trapped sumps and sediment forebays.

j. Residential developments with high water tables or heavy soils in which frequent sump pump use is expected, shall provide underground storm sewer taps to each lot stubbed at the property line with a 3" diameter schedule 40 PVC pipe and temporarily marked with a 4" x 4" timber.

k. Any storm sewer carrying off-site water and/or surface drainage other than from roof conductors or sump pump leads shall be at least 12" in size.

3. Storm Sewer Capacity, Design and Velocity.

a. The following are permissible slopes for each pipe size for concrete pipe:

Pipe Size	Minimum. % of Grade 2.5 ft/sec	Maximum % of Grade 10 ft/sec
8"	0.60	8.35
10"	0.40	6.20
12"	0.32	4.88
15"	0.24	3.62
18"	0.20	2.84
21"	0.16	2.30
24"	0.14	1.94
27"	0.12	1.66
30"	0.10	1.44
36"	0.08	1.12
42"	0.06	0.92
48"	0.05	0.76
54"	0.04	0.60

b. Sewer design capacity shall be determined by the rational method, (Q = A.C.I.), based on a 10 year storm with a 15 minute initial time of concentration. Single family areas may use an initial time of concentration of 20 minutes. Rainfall intensity shall be calculated using the formula I=175/(t+25) where t is the time of concentration. Velocities, capacity and friction losses shall be based on Manning's formula generally with n = 0.013 for concrete pipe and 0.021 for corrugated metal pipe. 0.010 may be used for smooth bore plastic pipe.

c. Hydraulic gradient (HGL) shall be shown, to scale, on the profile if the pipe is surcharged or a note provided on the plan that the hydraulic grade line is contained within the pipe. Pipe design shall be such that the HGL shall generally be held at least one foot below the rim of all structures; exceptions may be made at the discretion of the Township Engineer for depressed truck docks and rear yard swales which are well below adjacent building grades.

d. Inlet structures in the public street right-of-way shall be spaced a maximum of 400' apart or a maximum of 400' each way from high points. The spacing and/or number of inlet structures required to accommodate the design flows in streets and in private drives and parking areas, shall be based on a maximum of 1 cfs per 90 square inches of opening in an inlet or catch basin cover.

e. Generally, drops of over 2.0' at manholes, from invert of higher pipe to lower pipe, shall be avoided. Drops of over 2.0' require a two foot sump in the manhole to act as a water cushion.

4. Storm Water Retention/Detention.

Storm water management in the form of detention, or retention shall be required and maintained for all new developments, whenever the design engineer is unable to substantiate the adequacy of the receiving body of water or storm drainage facility.

In general, detention is defined as storm systems utilizing a controlled release rate, thereby detaining the stormwater. Detention basins have a positive outlet. Retention basins are defined as those systems that do not have a positive outlet, except through percolation and/or evapo-transpiration.

Wherever possible detention shall be preferred over retention or leaching basins. Leaching basins should only be used in a very specific set of circumstances as outlined herein and then only when other storm water management systems are not possible.

a. Release rates for storm water detention facilities shall comply with the requirements of the governmental unit having jurisdiction of the receiving facility.

b. In general, the release rate shall not exceed 0.2 cubic feet per second (cfs) per acre of that land currently draining to the proposed outlet.

c. Detention volume, in cubic feet, shall be calculated by the O.C.D.C. simplified detention basin design method utilizing the 100 year design frequency rainfall of $275/(t+25)$ where t is the time in minutes.

d. In general, the following runoff factors shall be used, either the given weighted value or an alternate calculated value based on actual mix of area types. An alternate green space C factor may apply (natural forest/porous soils could be lower, steep grass slopes on heavy soil could be higher).

SURFACE	C FACTOR
Green space	0.20
Pavement	0.80
Roof	0.90

Connected open water (wet basin)	1.00
SF developments (weighted)	0.35
Multiple Developments (weighted)	0.60
Commercial (weighted)	0.75

e. For retention or detention basins a minimum 12" free board shall be provided between the design high water level and the secondary overflow.

f. The top berm of a retention or detention basin shall be a minimum of 6" above the overflow spillway. Armored overflow spillways of bermed basins shall be provided to prevent destruction of the basin in the case of overtopping. Armoring shall be commensurate with the risk to downstream areas in the event of a major overtopping. Sod or other soft armoring may be acceptable in low risk situations; rip-rap, gabion or concrete may be required in higher risk situations.

g. Generally, side slopes shall be no steeper than 1v to 3h if fenced with chain link 5' high, or 1v to 6h if unfenced. An 8' (minimum) gated access opening shall be provided for all fenced basins. Alternative slopes may be considered if proper engineering data and maintenance provisions are clearly provided for evaluation. Innovative slope designs are encouraged if significant aesthetic benefit is gained by using materials such as boulder walls. Pedestrian and vehicular safety must be maintained in all cases. Side slopes of 1v to 4h will be considered for unfenced dry detention basins.

h. Slope bottom of detention basin to outlet, to provide for total dewatering for dry basins. Minimum slope for dry basins shall be 1.00 percent. Permanent wet basins are encouraged where the water table allows in order to provide for additional sediment removal. Wet basins shall provide for a minimum two foot water depth.

i. Specify method(s) to be used for sealing the bottom and sides of the basin, where elevated groundwater or seepage would adversely affect nearby properties.

j. The detention basin shall provide a permanent outlet filter set to overflow at the 1 year frequency storm, and a primary overflow structure at the 100 year frequency level. The filter shall be equal to the Oakland County Drain Commissioner Detention Basin Outlet Filter (CMP) Detail SO-2.

k. Provide 12' wide easements for access when a basin maintenance agreement is required.

l. Limits of detention (outline of the water at the 100 year design level) must be clearly shown on the site plan.

m. If detention is provided in an area which has permanent standing water, detention volume will be calculated above the permanent water line

n. Where it is not possible to provide a positive outlet for storm water management a retention basin (i.e. no outlet) may be used. This basin shall be designed to accommodate storm water from two consecutive 100 yr. storms and soils and water table information shall be provided to substantiate that water levels will return to pre-existing conditions at least once per year. The formula for retention volume in cubic feet shall be 33,000AC where A is the drainage area under proposed conditions and C is the weighted runoff factor.

o. There shall be no retention (i.e. no positive outlet) in parking areas.

p. All retention/detention basin areas shall be re-vegetated prior to issuance of a certificate of occupancy. All soil erosion control measures shall remain in place until vegetation is re-established sufficiently to control erosion. A cash bond shall be placed with the Township to guarantee that when the development is fully stabilized, any basin relying on infiltration will be drained and any accumulated sediment will be removed and that the bottom and sides of the basin deeply scarified to allow infiltration and the basin will be revegetated.

q. An agreement for operation and/or maintenance of all detention and/or retention basin facilities shall be required by the Township. The agreement, both as to form and content, shall be subject to the approval of the Township Attorney.

r. No more than 50% of the total required detention storage volume shall be provided above the surface in the parking lot or drive access areas. The remaining storage may be incorporated in the connecting storm pipes, in open graded stone storm sewer trench backfill, in the risers of the storm sewer structures, in underground storage tanks and in open detention basins.

By limiting parking lot detention to 50% of the total, the frequent heavier storm will be contained completely underground. Light rainfalls will generally be conveyed through the restrictive outlet pipe or orifice without the need for detention.

s. Maximum detention depth over any catch basin in parking or access aisles shall be 8" (0.67 feet). The maximum depth in any non-handicapper accessible parking space shall be 6" (0.50 feet). Barrier free parking and access routes shall not be used for stormwater storage nor shall sidewalks connecting the parking area to the building.

t. All parts of the building shall be protected from flooding due to storage levels 12" (1.00 feet) above the 100 year design level of the parking lot storage. If at all possible, an overland flow route shall be provided which is below the flood level of the building.

u. To provide additional storage beyond the parking lot, the following alternates (in any combination) are allowable:

1) Over sizing of the storm sewer connecting pipes utilizing normally accepted

pipe materials while maintaining minimum cover requirements and a free draining pipe invert.

2) Utilizing a "French Drain" trench with open graded pipe backfill completely contained in a geotextile filter fabric. The stone voids may be assumed to be no more than 40% of the backfill volume. The pipe shall be hydraulically connected to the stone backfill utilizing perforated smooth bore corrugated polyethylene pipe (N-12 or Hi-Q). Only storage volume above a free draining invert will be allowed unless exceptionally granular native soils and a deep water table can be demonstrated.

3) Underground tanks constructed of concrete, fiberglass, polyethylene or corrugated metal. All tanks not in a green space protected from vehicular traffic by curbing or a substantial natural barrier shall be designed for H-20 heavy duty traffic loading. CMP tanks shall meet MDOT standard gauge requirements, but in any case shall not be less than 10 gauge and shall be galvanized and bituminous coated on the exterior or shall be aluminized. All tanks shall have manhole access utilizing a cast iron frame and lid and manhole rungs meeting the requirements of MIOSHA.

4) Open basins meeting existing detention basin requirements.

5) Proprietary underground storage devices will be evaluated on a case by case basis.

v. Open detention or retention basins shall be constructed and stabilized and be provided with the outlet, filter and overflow devices prior to commencing mass grading of the balance of the site. During site construction, the detention basin outlet will be temporarily restricted to no greater than a 3" outlet.

5. Engineered Infiltration Systems

Engineered Infiltration Systems may be utilized when all the following conditions exist:

a. No adequate storm sewer, open ditch, or road drain is available for storm water disposal and an open retention pond is not prudent or feasible.

b. Soil composition is optimum and ground water table is suitable for percolation. Optimum soil conditions defines soil composed entirely of coarse sand, gravel, or a coarse sand gravel mixture. A soils report by a licensed engineer with borings to ~~20~~ 10 feet below the bottom of the infiltration system with groundwater level data and in situ or laboratory determined permeability rates and recommending the advisability of an Engineered Infiltration System shall be provided.

c. Leaching basins shall be sized as a combination storage and groundwater discharge

detention basin with storage volume determined the same as open detention basins. The discharge rate shall not exceed a perc rate of 6" per hour for the bottom and sides of the soil/stone interface (sides of the trenches). Stone voids ratio may be assumed as 0.40.

One of two standard basins based on the designs shown on the Township Standard Storm Sewer Detail Sheet or proprietary underground storage/infiltration systems or other engineered systems if approved by the Township Engineer may be used.

6. Sedimentation Forebays/Pretreatment

a. Open detention/retention basins shall be provided with a sediment forebay constructed in accordance with the standards of the Oakland County Drain Commissioner, Engineering Design Standards for Storm Water Facilities. In general, the capacity shall be adequate to contain a one-year storm and release it over a period of 48 hours.
b. The volume, above any permanent water level, may be considered in calculation total detention volume of the basin system.
c. Proprietary water treatment devices, such as the StormCeptor or Aqua Swirl will be considered on a case by case basis as a substitute for a sediment forebay. Those devices may also be considered as a pretreatment device prior to discharging to an underground detention/recharge system or an open water course.

d. Surface water discharge of commercial areas to an engineered infiltration system shall require pretreatment to remove oil, grease, floating trash and approximately 80% of the Total Suspended Solids (TSS) in order to protect the water table aquifer.

D. WATER SUPPLY AND DISTRIBUTION SYSTEMS.

1. Water mains shall be installed with a minimum of 6'-0" of cover except at gate wells where they shall be installed with a 5' depth of cover, so that a standard valve key can be used to operate the valve.

2. Watermains shall generally be installed on the north or east side of the street at 7.5' off the property line.

3. If street trees are required, they shall be placed a far from the main as possible, but in no case less than 3' from the watermain.

4. Watermains not located within a public street right-of-way shall be within either a 60' wide utility/ingress-egress easement dedicated to White Lake Township in the case of private streets or in a 20' wide easement if it is not in juxtaposition with a public street or in an easement extending to 10' beyond the watermain in the case of the easement being in juxtaposition with a public street. Variances from this requirement may be considered on a case by case basis by the Township Engineer. In the case of 20' easements not in juxtaposition with a public road, no structures or trees, other than small ornamental trees or shrubs will be allowed in the easement.

5. Refer to Ordinance 22, for design requirements of significant off-site watermains. In general off-site watermains shall be designed by the Township Engineer at the developer's expense unless the design engineer can demonstrate recent and substantial experience in public sector municipal utility design. In either case, the watermain may be constructed by the developer's contractor, under inspection by the Township Engineer.

6. Plans and specifications shall be prepared in accordance with the White Lake Township Standards and shall include profiles for watermains 16" in diameter and larger. Special profiles or cross sections may be required in some instances.

7. In general, all water systems in developments requiring more than 600 feet of watermain shall be looped, i.e. there shall be two or more sources of supply. It shall be the decision of the Township Engineer whether a water system must be looped.

8. A barrel to barrel separation of 10 feet shall be maintained between watermain and sanitary sewers, sewer leads or storm sewers. A minimum of 18" of vertical separation is required. Watermains below sanitary sewers are to be avoided, if it must occur, the crossing shall be perpendicular and no watermain joint shall be closer than 8 feet from the sewer.

9. All watermains installed on private property must be centered in 20-foot wide exclusive easements. If watermains are installed in private roads, easements, which are the full width of the road, are required.

10. Distribution systems shall be designed to be capable of delivering a minimum of 1,000 gallons per minute at 20 pounds per square inch pressure at each hydrant.

11. In general, all watermains shall be Ductile Iron Class 54 with push on joints including bends and tees. Watermains installed by directional boring methods may be ductile iron with special joints or HDPE DR 9 meeting AWWA C906 and ANSI-NSF-61 standards.

12. Domestic water services with line sizes and material shall be shown for all buildings other than single family detached dwellings.

    The minimum acceptable size shall be 1". The basis of size for all others shall be determined by the developer's engineer and submitted for approval by the municipality prior to submittal of final plans.

    Domestic services may tap into fire lines within easement. Separate shutoffs are required for both the fire line and domestic line.

13. Watermain profiles, where required by these standards must include the pipe diameter, slope, pipe material and class, control center line elevations, existing and proposed ground profile at centerline of construction and locations where sand backfill is required.

14. All utility crossings must be shown in the profile view.

15. All dead end watermains except those in cul-de-sacs, terminate with a gate valve and hydrant. A blow-off may be substituted with Water Department and Fire Chief approval.

16. The watermain shall be extended across the entire frontage of the site. Size and location shall be as required by the Township Engineer.

17. Maximum 6" hydrant lead length shall be 40 feet.

18. Water mains shall be a minimum of 8" diameter except for hydrant leads under 40' long, which may be 6" diameter.

19. Valves and gate wells shall be so located that no more than four valves must be closed to isolate a section of water main.

20. Valves shall be located so that no more than 800 feet of watermain will out of service.

21. All connections to an existing watermain shall be accomplished utilizing tapping sleeves valves and wells unless other methods are specifically authorized by the Township Engineer.

22. Hydrant spacing along roads and streets shall be 500 feet maximum in single family residential areas and 300 feet maximum in commercial, multiple family or industrial areas.

23. Hydrant spacing around commercial buildings and manufacturing establishments is variable and will be determined on a case by case basis.

24. In general, hydrants in high density residential developments shall be located so that the most remote part of every building can be reached from a minimum of two hydrants, utilizing a maximum unobstructed hose length of 300' from any hydrant.

25. Hydrants shall be located so that they are at least 50' distant from any building or trash enclosure.

26. Whenever practical hydrants shall be located at street intersections.

27. All mainline gate valves are to be within gate wells. The valves must be the same size as is the watermain.

28. Both hydrants and the related auxiliary valves are to be located so that they are readily accessible by fire fighting equipment. An improved all-weather-surfaced road or drive, at least extending to within 15' of each hydrant, shall be provided. Temporary hydrants may be exempted from this requirement.

29. Standard White Lake Township detail sheets for watermains are required to be included in all final construction plans where watermains are being proposed.

30. Hydrants must be located such that the centerline is 6 feet behind the back of curb or in the backside of ditches. Ditch enclosures must be provided for hydrants located behind the ditch line and must be sized to convey the normal 10 year design flow of all upstream tributary areas.

31. Watermains around cul-de-sacs shall extend far enough around them to serve all contiguous lots. The associated fire hydrant at the terminus is to be located in the cul-de-sac island in a position most prominent to incoming traffic.

32. Horizontal separation from buildings shall be a minimum of 10 feet or a distance which will allow a 1:1 slope to the base of the foundation whichever is greater.

33. Prior to acceptance of the watermain by the Township, the following shall be submitted, reviewed and approved by the Township:
    a. Waiver of lien and sworn statement from the contractor/developer.
    b. Maintenance Bond - 50% of the value of the water system for two (2) years from the date of acceptance, wording shall be as required by Ordinance 22.
    c. Bill of Sale or Dedication for the water distribution system
    e. Executed watermain easements.
    e. Adobe PDF compatible electronic file and 2 full size sealed paper copies of the approved as-built plan.

E. SANITARY SEWER SYSTEMS.

1. Generally, no sewer shall be less than 8' in depth to the invert below crown of road, and in no case shall have less than 4' of cover.

    a. Sewers shall generally be installed on the south or west side of the street at 7.5' off the property line.

    b. If street trees are required, they shall be placed a far from the sewer as possible, but in no case less than 3' from the sewer.

    c. Sewers not located within a public street right-of-way shall be within either a 60' wide utility/ingress-egress easement dedicated to White Lake Township in the case of private streets or in a 20' wide easement if it is not in juxtaposition with a public street or in an easement extending to 10' beyond the sewer in the case of the easement being in juxtaposition with a public street. Variances from this requirement may be considered on a case by case basis by the Township Engineer. In the case of 20' easements not in juxtaposition with a public road, no structures or trees, other than small ornamental trees or shrubs will be allowed in the easement.

    d. Pipe materials and joints as well as standard construction details for manholes, drop connections, sumps, house lead and risers and low pressure sewers shall be in accordance with the current standards of White Lake Township and the

Oakland County Department of Public Works.

6. A listing of the current Oakland County Department of Public Works "Sanitary Sewer Construction Notes" shall be incorporated in the plans and all requirements and all regulations contained in these notes shall be followed.

7. The "Standard Bedding" details of the Oakland County Department of Public Works shall apply for type of pipe utilized.

8. Service leads to commercial buildings shall be a minimum 6" diameter and a maximum length of 150'. Approved cleanouts shall be located at intervals of no more than 75', and at all changes in direction. A 4' diameter sampling manhole located near the building shall be provided in the building lead for all commercial and industrial uses or residential uses involving food service. The manhole cover of the sampling manhole shall be marked sanitary sewer but shall not reference White Lake Township or Oakland County.

9. Service leads shall be installed at a minimum one percent (1%) grade

10. Any sewer serving more than one building shall be a minimum 8" sewer with manholes. Any sewer serving more than one property shall be a public sewer.

11. No sanitary sewer shall be installed closer than 10' distant from any building, swimming pool or other structure or a distance which will allow a 1:1 slope to the base of the foundation whichever is greater.

12. There shall be a temporary 1 ft. sump in the furthest downstream manhole for construction and testing purposes.

13. The last run (furthest upstream run) shall have a minimum grade of 1%, unless approved by the Township Engineer.

14. All leads to commercial or institutional food service operations shall have a 1000 gallon grease interceptor. The kitchen facilities only shall be connected to this interceptor.

15. Downspouts, foundation drains, weep tiles or any conduit that carries stormwater or groundwater will not be permitted to discharge into the sanitary sewer system. Floor drains shall connect to the sanitary sewer. Uncovered truck docks shall be connected to the storm sewer system and shall be trapped.

16. Extension of the sanitary sewer across the entire frontage of the site and/or as required by the Township to service upstream properties is required. The size and location shall be as required by the Township Engineer.

17. Sanitary sewer will be located so as to provide unrestricted access for maintenance and inspection. Wherever possible the sanitary sewer should be located within 15 feet of a paved road or parking area.

18. Both existing and proposed ground elevations shall be shown on profiles.

19. Utility crossings (sanitary, storm, water, houselead and water services), with elevations, shall be shown on all profiles. Generally, a minimum of 18" clearance, vertically shall be provided between utilities. Watermain should be above sanitary sewer.

20. Lengths of run between structures, pipe size and class, percentage of grade, and elevation of tops of frame and cover, and dimensions to all leads from the nearest down-stream manhole shall be indicated on the profiles of storm and sanitary.

21. External drop connections shall be used for all manhole locations with 18 inches or more difference between inverts of pipes unless otherwise approved. Current Oakland County standards shall be utilized.

22. Where pipes of differing sizes join in a manhole the 8/10ths flow lines shall match.

23. Where an angle of less than 135 degrees is created by two pipes in a manhole, the outflowing invert shall be a minimum of 0.1 ft. lower than the inflowing invert.

24. Additional items pertaining to sanitary sewer capacities and depths of cover for pipe materials, etc., can be found in the "Sanitary Sewer Standard Details" sheet(s). All notes, standards and specifications found on the "Sanitary Sewer Details" sheet shall apply.

25. A completed Part 41 of Act 451 permit application shall be provided for review with the sanitary sewer plans. A sample form is available from the Township Engineer.

26. Prior to acceptance of the sewer by the Township, the following shall be submitted, reviewed and approved by the Township:
    a. Waiver of lien and sworn statement from the contractor/developer.
    b. Maintenance Bond - 50% of the value of the sewer system for two (2) years from the date of acceptance.
    c. Bill of Sale or Dedication for sewer.
    d. Executed sewer easements.
    e. Adobe PDF compatible electronic file and 2 full size sealed paper copies of the approved as-built plan.

END

Charter Township of White Lake
Checklist of As-Built Drawing Requirements

A. Grading
1. Rear yard swale elevations and enough on site elevations to clearly indicate drainage patterns and confirm that the site was built in substantial conformance with the construction drawings.
2. Finish floor elevation of all buildings.
3. Location and height and type of retaining walls.

B. Storm Sewer
1. Pipe lengths, sizes and slopes.
2. Rim elevations of drainage structures.
3. Pipe inverts.
4. Pipe material and class.
5. Joint type
6. Two dimensional ties to manholes, not required for CB=s or inlets in pavement. Back of curb is sufficient for one tie, property corners are not acceptable, existing building corners, trees, other utility structures and hydrants are acceptable, preferably at a distance of less than 100 feet.
7. Structure numbers.
8. Pipe manufacturer and structure manufacturer.
9. Casting types by manufacturer catalog number.
10. Verification of special features such as trapped catch basins or leaching basins.

C. Detention/Retention Basins
1. As-built volume with calculations.
2. Elevations of primary and secondary overflows.
3. Elevations of inlet and outlet pipe.
4. Berm and spillway weir elevations.
5. Outlet restrictor location and size.
6. Certification must be provided and sealed by an engineer licensed in the State of Michigan to verify that the detention or retention basin volume and restrictor size is in substantial conformance with the construction documents.
7. Bottom and top of slope elevations to determine that side slopes meet plan slopes.
8. As-built basin contours at one foot intervals

D. Sanitary Sewer (if requested by Township sewer engineer)
1. Length between manholes, pipe sizes and slopes.
2. Rim elevations of manholes.
3. Casing size, length, thickness and filling material and location along sewer run.
4. Two dimensional ties to manholes and cleanouts and leads. Back of curb is sufficient for one tie, property corners are not acceptable, existing building corners, trees, other utility structures and hydrants are acceptable, preferably at a distance of less than 100 feet.
5. Pipe material and joint type.
6. Pipe manufacturer and manhole manufacturer and casting make and model no.
7. Pipe inverts at structures.
8. Manhole numbers.
9. Wye locations.

10. Special detail for force main structure, including part manufacturer and model nos.
11. All start-up data and O. & M. manuals for pump station

E. Watermain
1. Length between valves and wells, tees, bends, other fittings
2. Size of pipe.
3. Pipe material class and joint type.
4. Manufacturer of pipe, gate wells, valves, hydrants, fittings.
5. At least two dimensional ties to gate valves and wells. Back of curb is sufficient for one tie, property corners are not acceptable, existing building corners, trees, other utility structures and hydrants are acceptable, preferably at a distance of less than 100 feet.
6. Finish grade of hydrants, rim elevation of gate wells.
7. Special details for utility crossings showing location of vertical bends, pipe clearances, type of restraints.
8. Casing size, length, thickness and filling material.
9. Hydrant and gate valve numbers.
10. Verification that the watermain is no closer than 6 feet to the edge of and is within the easement or public right-of-way line

Information must be placed on a copy of the construction plans with design information crossed out, not erased. Provide two blueprints for review prior to providing digital copy.

It is not necessary to provide duplicate information in both the plan view and profile view however, the location of all as-built information must be clearly referenced.

A legend to identify as-built information must be provided.

Redraw profiles if pipe elevations vary by more than 2.0 feet or pipe lengths change by more than 20 feet.

All as-built information must be presented in a clear and concise manner.

When approved, an Adobe PDF compatible digital file shall be submitted to the Township Engineer. If that is not possible, a clean paper copy supplied by the design engineer will be scanned by the Township Engineer. In either case, two sealed sets of prints are required. All site plan sheets except standard details and including the cover sheet shall be provided.

CERTIFICATION OF STORM WATER BASIN CONSTRUCTION FOR THE CHARTER TOWNSHIP OF WHITE LAKE OAKLAND COUNTY, MICHIGAN

PROJECT NAME

ADDRESS OR LOCATION DESCRIPTION

TOWNSHIP FILE # _____ SECTION _____

BASIN(S) LOCATION OR DESCRIPTION:

In accordance with the requirements of the Charter Township of White Lake, I hereby certify to the Charter Township of White Lake that as of this date the storm water sedimentation, detention or retention basin(s), for all intents and purposes, was (were) constructed according to the plans approved by the Charter Township of White Lake, and that the basin(s) will detain the volume as shown on the approved construction plans with the required one foot of freeboard and that in the case of detention basins, the outlet restrictor and all overflow devices have been built per plan.

SEAL

By: _____

Michigan Licensed Surveyor or Engineer

Date: _____

Firm Name: _____

Address: _____