



**AGENDA**  
**CHARTER TOWNSHIP OF MERIDIAN**  
**ZONING BOARD OF APPEALS MEETING**  
October 21, 2026 6:30 pm

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1. CALL MEETING TO ORDER
2. APPROVAL OF THE AGENDA
3. CORRECTIONS, APPROVAL, AND RATIFICATION OF MINUTES
  - A. June 17, 2026 Meeting Minutes
  - B. August 18, 2026 Meeting Minutes
4. COMMUNICATIONS
5. UNFINISHED BUSINESS
6. NEW BUSINESS
  - A. **ZBA CASE NUMBER: 26-13 (6206 Columbia), Monroe and deJong-Monroe**  
LOCATION: 6206 Columbia  
PARCEL ID: 33-02-02-03-402-021  
ZONING DISTRICT: RR, Rural Residential  
The applicant has requested a variance to allow a lot split that would create two 60 foot wide lots, where 65 feet is required.
  - B. **ZBA CASE NUMBER: 26-14 (2075 W Grand River), Chick-fil-A, Inc.**  
LOCATION: 2075 West Grand River Avenue  
PARCEL ID: 33-02-02-21-276-014  
ZONING DISTRICT: C-3, Commercial  
The applicant has request a variance to allow canopies over the drive throughs to be installed that do not meet the minimum rear yard setback.
7. OTHER BUSINESS
8. PUBLIC REMARKS
9. BOARD MEMBER COMMENTS
10. ADJOURNMENT

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Variance requests may be subject to change or alteration upon review of request during preparation of the staff memorandum. Therefore, Sections of the Code of Ordinances are subject to change. Changes will be noted during public hearing meeting.

Individuals with disabilities requiring auxiliary aids or services should contact the Meridian Township Board by contacting:  
Assistant Planner Keith Chapman, 5151 Marsh Road, Okemos, MI 48864 or 517.853.4580 - Ten Day Notice is Required.  
Meeting Location: 5151 Marsh Road, Okemos, MI 48864 Township Hall

CHARTER TOWNSHIP OF MERIDIAN  
REGULAR MEETING ZONING BOARD OF APPEALS 2026  
5151 Marsh Road, Okemos MI 48864-1198  
517.853.4000, Township Hall Room  
Wednesday, June 17, 2026 6:30 pm

PRESENT: Chair Mansour, Vice-Chair Koenig, Member Benoit, Member Trezise, and Member Nahum

ABSENT:

STAFF: Associate Planner Chapman  
Director Schmitt

1. CALL MEETING TO ORDER

Chair Mansour called the June 17, 2026, regular meeting for the Meridian Township Zoning Board of Appeals to order at 6:30 pm. Chair Mansour called the roll of the Board.

2. APPROVAL OF THE AGENDA

**Member Benoit moved to approve the agenda for the June 17, 2026, regular meeting for the Meridian Township Zoning Board of Appeals. Seconded by Member Nahum.**

**ROLL CALL VOTE YEAS: Chair Mansour, Vice-Chair Koenig, Member Benoit, Member Trezise, Member Nahum**

**NAYS: None**

**Motion carried: 5-0**

3. CORRECTIONS, APPROVAL AND RATIFICATION OF MINUTES

**Member Koenig moved to approve the minutes for the May 20, 2026 regular meeting for the Meridian Township Zoning Board of Appeals with one correction. Under New Business, case no. 26-05, member Benoit voted nay. So, the vote should read 3-1. Seconded by Member Benoit.**

**ROLL CALL VOTE YEAS: Chair Mansour, Vice-Chair Koenig, Member Trezise, Member Benoit, Member Nahum**

**NAYS: None**

**Motion carried: 5-0**

4. COMMUNICATIONS

NONE

5. UNFINISHED BUSINESS

NONE

6. NEW BUSINESS

- A. **ZBA CASE NO.: 26-07 (4734 Okemos), Okemos Community Church, 4734 Okemos Rd., Okemos, MI 48864**  
LOCATION: 4734 Okemos Road  
PARCEL ID: 21-426-023  
ZONING DISTRICT: PO (Professional Office)  
The applicant is proposing to construct solar panels in the front yard at 4734 Okemos Road.

Associate Planner Chapman gave an overview of the application.

Robert Barnhart, the applicant, provided an overview of the scope of the work.

Chair Mansour stated that the request meets criteria one.

Chair Mansour stated that the request meets criteria two.

Chair Mansour stated that the request meets criteria three.

Chair Mansour stated that the request meets criteria four.

Chair Mansour stated that the request meets criteria five.

**Member Trezise moved to approve the variance as requested in the memo from Associate Planner Chapman for ZBA Case No. 26-07 (4734 Okemos), Okemos Community Church, 4734 Okemos Rd., Okemos, MI 48864. Seconded by Member Nahum.**

**ROLL CALL VOTE**

**YEAS: Chair Mansour, Vice-Chair Koenig, Member Nahum, Member Benoit, Member Trezise**

**NAYS: None**

**Motion carried: 5-0**

7. OTHER BUSINESS

NONE

8. PUBLIC REMARKS

NONE

9. BOARD MEMBER COMMENTS

NONE

10. ADJOURNMENT

**Chair Mansour adjourned the June 17, 2026 regular meeting for the Meridian Township Zoning Board of Appeals. Approved unanimously.**

Meeting adjourned at 6:58 pm.



CHARTER TOWNSHIP OF MERIDIAN  
REGULAR MEETING ZONING BOARD OF APPEALS 2026  
5151 Marsh Road, Okemos MI 48864-1198  
517.853.4000, Township Hall Room  
Wednesday, August 19, 2026, 6:30 pm

PRESENT: Chair Mansour, Vice-Chair Koenig, Member Benoit, Member Trezise

ABSENT: Member Nahum

STAFF: Director Schmitt

1. CALL MEETING TO ORDER

Chair Mansour called the August 19, 2026, regular meeting for the Meridian Township Zoning Board of Appeals to order at 6:30 pm. Chair Mansour called the roll of the Board.

2. APPROVAL OF THE AGENDA

Member Trezise indicated that item 3 Corrections, Approval and Ratification of Minutes should be removed from the agenda because no minutes were received. Also, ZBA Case 26-09 (6227 W. Reynolds), Karen Stilson should be removed from the agenda because the case has been withdrawn.

**Member Trezise moved to approve the amended agenda for the August 19, 2026, regular meeting for the Meridian Township Zoning Board of Appeals. Seconded by Chair Mansour.**

**ROLL CALL VOTE      YEAS: Chair Mansour, Vice-Chair Koenig, Member Benoit, Member Trezise**

**NAYS: None**

**Motion carried: 4-0**

3. CORRECTIONS, APPROVAL AND RATIFICATION OF MINUTES

NONE

4. COMMUNICATIONS

NONE

5. UNFINISHED BUSINESS

NONE

6. NEW BUSINESS

- A. **ZBA CASE NO.:** 26-08 (1930 Grand River), Sheetz Inc.  
**LOCATION:** 1878 & 1930 Grand River Avenue  
**PARCEL ID:** 33-02-02-22-153-007  
**ZONING DISTRICT:** C-2 (Commercial)  
The applicant has requested a variance to exceed the maximum number of vehicle fueling stations for a new gas station.

Director Schmitt gave an overview of the application.

Alex Siwicki, the applicant, provided an overview of the scope of the work.

Chair Mansour stated that the request meets criteria one.

Chair Mansour stated that the request meets criteria two.

Chair Mansour stated that the request meets criteria three.

Chair Mansour stated that the request meets criteria four.

Chair Mansour stated that the request meets criteria five.

**Vice-Chair Koenig moved to approve the variance from 86-404 (e)(13)(b)(1) requested for ZBA Case No. 26-08 (1878 & 1930 Grand River Avenue), Sheetz Inc, 1878 & 1930 Grand River Okemos, MI 48864. Seconded by Member Benoit.**

**ROLL CALL VOTE**                      **YEAS: Chair Mansour, Vice-Chair Koenig, Member Trezise, Member Benoit**

**NAYS: None**

**Motion carried: 4-0**

- B. **ZBA CASE NO.:** 26-10 (2736 Grand River), CESO, Inc.  
**LOCATION:** 2736 Grand River Avenue  
**PARCEL ID:** 33-02-02-17-460-017  
**ZONING DISTRICT:** C2, Commercial  
The applicant is requesting a variance for the required residential setback and the building foundation landscaping requirement for a new gas station.

Director Schmitt gave an overview of the application.

Sergio Garcia, applicant, provided an overview of the scope of the work.

The Board held extensive discussion on the criteria, focusing on criteria two.

Chair Mansour stated that the request meets criteria one.

Chair Mansour stated that the request meets criteria two.

Chair Mansour stated that the request meets criteria three.

Chair Mansour stated that the request meets criteria four.

Chair Mansour stated that the request meets criteria five.

**Member Trezise moved to grant the variance from Section 86-404 (e)(13)(b)(2) requested for ZBA Case No. 26-10 (2736 Grand River Avenue), CESO, Inc, 2736 Grand River Avenue, East Lansing, MI 48823. Seconded by Chair Mansour.**

**ROLL CALL VOTE**

**YEAS: Chair Mansour, Vice-Chair Koenig, Member Benoit, Member Trezise**

**NAYS: None**

**Motion carried: 4-0**

Discussion that if the landscaping variance is rejected, the Director of Planning and Development will have the ability to approve the landscaping as shown on the site plan for the project.

**Member Trezise moved to deny the variance from Section 86-758 (2) requested for ZBA Case No. 26-10 (2736 Grand River Avenue), CESO, Inc, 2736 Grand River Avenue, East Lansing, MI 48823. Seconded by Member Benoit.**

**ROLL CALL VOTE**

**YEAS: Chair Mansour, Vice-Chair Koenig, Member Benoit, Member Trezise**

**NAYS: None**

**Motion carried: 4-0**

7. OTHER BUSINESS

NONE

8. PUBLIC REMARKS

NONE

9. BOARD MEMBER COMMENTS

Member Benoit commented that the need for approving three gas station variances in the last two months is not great and he hopes the Township will continue to encourage other transportation means that will not require these types of variances in the future.

10. ADJOURNMENT

**Chair Mansour adjourned the August 19, 2026 regular meeting for the Meridian Township Zoning Board of Appeals. Approved unanimously.**

Meeting adjourned at 8:29 pm.

**From:** [Lisa Hansknecht](#)  
**To:** [Tim Schmitt](#)  
**Subject:** Variance #26-13 6206 Columbia Drive  
**Date:** Tuesday, October 13, 2026 7:51:57 AM

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You don't often get email from [REDACTED]. [Learn why this is important](#)

October 13, 2026

Timothy Schmitt, Director  
Community Planning and Development  
Charter Township of Meridian  
5151 Marsh Rd.  
Okemos, MI 48864

**RE: Zoning Board of Appeals #26-13 (6206 Columbia)  
6206 Columbia Street**

Dear Mr. Chapman:

We are homeowners and live a few doors down from the property listed above that has requested a variance. It is my understanding that someone wants permission to split this single property into two lots. **We strongly oppose this change.**

This is not the first time that someone has wanted to split property into smaller lots on this block. A few years back, we opposed a variance to the lots right next to the one now in question which would have divided one lot into three smaller lots. Instead, that single lot was divided into two lots; and the street's density already increased due to the new homes, driveways, and traffic on the curve in the road.

The variance in question would create even more danger on the curve of the road. Our street is not wide and the curve where this lot is located already poses a danger to pedestrians without trying to pack in more driveways and parked cars. We would also like to note that this lot is next to a lake access for the homes across the street from the lake. There is simply not enough room to divide this lot into two lots and have room for the access path as well.

Trying to squeeze in more homes is short sighted and poor public policy, especially as Meridian Township is making progress on other fronts to address climate change. It is not safe nor sustainable to increase the density of homes and traffic as proposed, especially on a lake front.

The Appeals public hearing is scheduled the same evening as the Lake Lansing Property Owners General Membership meeting, so we cannot attend. So this letter serves to express our strong opposition to this variance and request that you deny it without delay. Feel free to call us with any questions (cells: [REDACTED], respectively).

Sincerely and thank you for your consideration,

Lisa Hansknecht and Lisa Bain  
6178 Columbia Street

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## Objection to variance request

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[REDACTED]  
To: <schmidt@meridian.mi.us>

Fri, Oct 9 at 4:31 PM

Hello Mr. Schmidt,

We would like to formally object to the variance request 86-374(d)(2) for existing lot at 6206 Columbia St, Haslett.

We have lived on Columbia St. for almost 40 years. We've seen a lot of construction projects, especially in that area. That particular property, in our opinion, isn't large enough to split into 2 lots. The size of each lot would be too small, and too congested for that particular area. The slope of the curve coming down Columbia is always a bit of a hazard, and the addition of potentially two families would exacerbate the danger on the road- extra cars, traffic, and way too many pedestrians to accommodate more density.

Columbia is a narrow road, and far too often, near-accidents happen. The narrowness means there is hardly room for cars to pass each other now.

Also noteworthy is that this lot is next to a lake access for lot owners on the other side of the street. There is truly not enough space there to accommodate what is requested.

We strongly urge you to deny this variance request.

Please feel free to contact either myself or my husband at the following numbers:

Karen [REDACTED]

Mark Strolle [REDACTED]

Thank you for your consideration.

Karen J. Reiff and Mark Strolle  
6174 Columbia

Sent from Gmail Mobile



**To:** Zoning Board of Appeals  
**From:** Timothy R. Schmitt, AICP, Director of Community Planning and Development  
**Date:** October 16, 2026  
**Re:** ZBA Case No. #26-13 – 6206 Columbia

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**ZBA CASE NO.:** 26-13 – 6206 Columbia – Jeffrey Monroe and Joyce deJong-Monroe  
**LOCATION:** 6206 Columbia  
**PARCEL ID:** 33-02-02-03-402-021  
**ZONING DISTRICT:** RB, Single-Family, High Density Residential

The applicant is requesting a variance from the following section of the Code of Ordinances:

- Section 86-374(d)(2) Minimum Interior Width: 65 feet. Interior lot widths may be reduced for no more than 25% of the lots in any one subdivision plat, provided lots so reduced are no less than 60 feet in width, the interior lot width of the subdivision plat averages 65 feet in width, and no more than two adjacent lots shall be less than 65 feet in width.

Jeffrey Monroe and Joyce deJong Monroe, the applicants, are requesting a variance to allow the existing lot at 6206 Columbia to be split into two lots, both 60 feet in width. This would allow the construction of two new homes on the lot, which is currently vacant. There was previously a house on the property, which was demolished in 2025.

The Zoning Board of Appeals previously reviewed the same request from the previous owners of the property and approved the variance on May 17, 2023. The previous owners did not move forward with recording the split at the time and that variance has expired. No other factor has changed on the property or in the area, since that approval. The current applicant has provided additional information about the size of surrounding lots and previous variances granted, as part of their application. The minutes from the May 17, 2023 ZBA meeting can be found [HERE](#).

The Zoning Ordinance requires lots in the RB zoning district to have a minimum of 65 feet of frontage. The proposed lot split would create two, 60 foot wide lots, which is the specific variance being requested.

#### **Attachments**

1. Variance application
2. Site location map



**CHARTER TOWNSHIP OF MERIDIAN  
PLANNING DIVISION  
5151 MARSH ROAD, OKEMOS, MI 48864  
(517) 853-4560**

**VARIANCE APPLICATION**

- A. Applicant Jeffrey S Monroe & Joyce L deJong-Monroe  
Address of Applicant 200 Albert Ave, Unit 816, East Lansing, MI, 48823  
200 Albert Ave, Unit 816, East Lansing, MI, 48823  
Telephone (Work) 5173882339 Telephone (Home) 5173882339  
Fax \_\_\_\_\_ Email address: jeffreysmonroe@gmail.com  
Interest in property (circle one): ☒ Owner ☐ Tenant ☐ Option ☐ Other
- B. Site address/location 6206 Columbia St, Haslett, MI, 48840  
Zoning district Haslett Parcel number 33-02-03-402-021
- C. Nature of request (Please check all that apply):  
☒ Request for variance(s)  
☐ Request for interpretation of provision(s) of the "Zoning Ordinance" of the Code of Ordinances  
☐ Review an order, requirements, decision, or a determination of a Township official charged with interpreting or enforcing the provisions of the "Zoning Ordinance" of the Code of Ordinances

Zoning Ordinance section(s) Section 86-374 (D)(2) Minimum interior lot width. 65 feet.

- D. Required Supporting Material Supporting Material if Applicable  
-Property survey -Architectural sketches  
-Legal description -Other  
-Proof of property ownership or approval letter from owner  
-Site plan to scale  
-Written statement, which demonstrates how all the review criteria will be met (See next page)

Jeffrey S Monroe Joyce L deJong-Monroe JEFFREYS MONROE  
Signature of Applicant Print Name Date 8/28/26  
Fee: \$350 Received by/Date: 8/28/26

*I (we) hereby grant permission for members of the Charter Township of Meridian Zoning Board of Appeals, Township staff members and the Township's representatives or experts the right to enter onto the above described property (or as described in the attached information) in my (our) absence for the purposes of gathering information including but not limited to the taking and the use of photographs. (Note to Applicant(s): This is optional and will not affect any decision on your application.)*

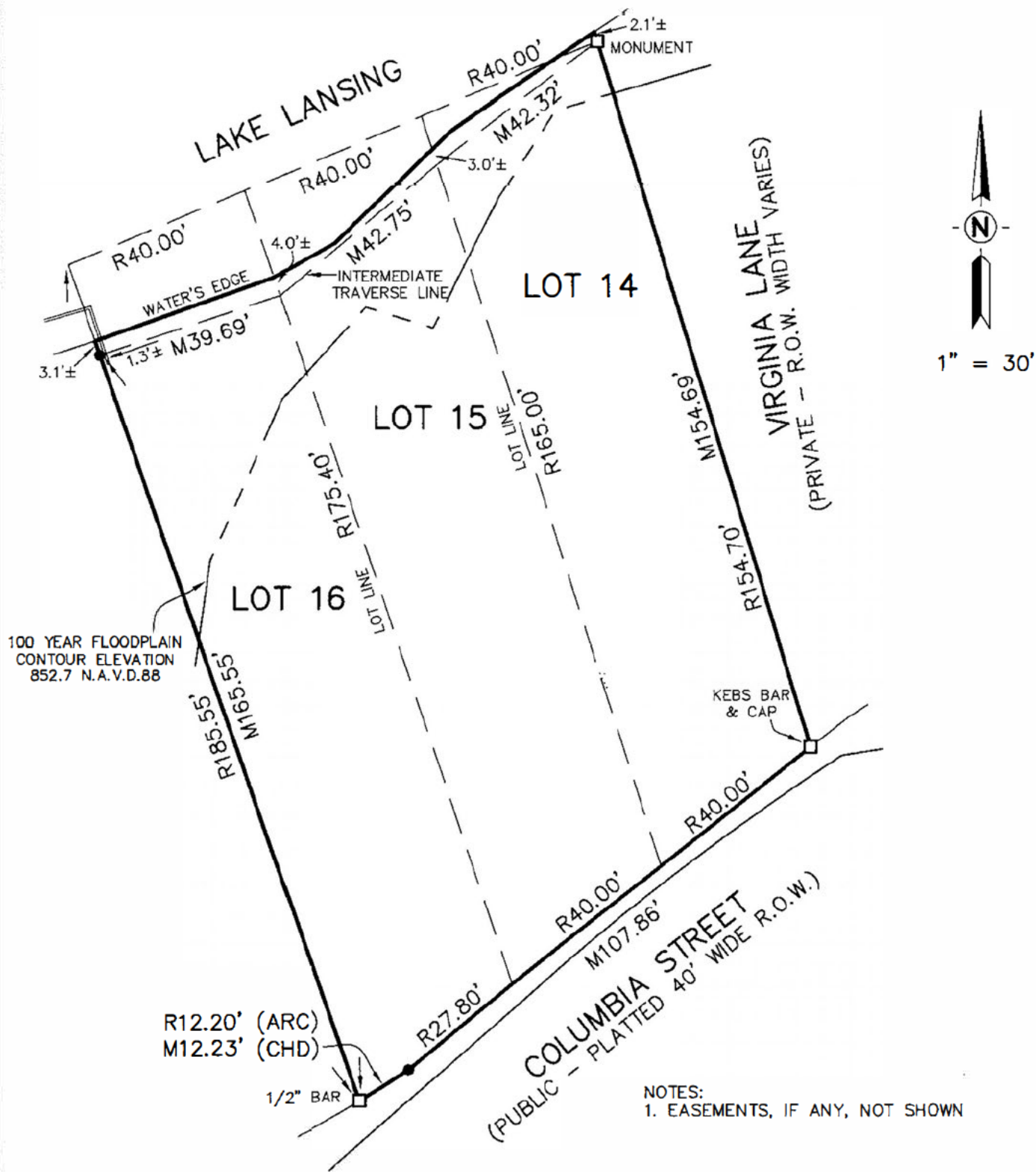
Jeffrey S Monroe 8-28-26  
Signature of Applicant(s) Date  
Joyce L deJong-Monroe 8/28/26  
Signature of Applicant(s) Date

For:  
Jeffrey & Joyce Monroe  
6206 Columbia Street  
Haslett, MI 48840

**LOT SURVEY**  
**EXISTING CONDITIONS**  
**Exhibit A**

Survey Address:  
6206 Columbia Street  
Haslett, MI 48840  
Tax ID# 33-02-02-03-402-021

Legal Description (as provided): Lots 14, 15 & 16, Lakebrook No. 1, Meridian Township, Ingham County, Michigan, according to the recorded plat thereof, as recorded in Liber 12 of Plats, Page 10, Ingham County Records.



I hereby certify only to the parties hereon that we have surveyed, at the direction of said parties, the above described lot, and that we have found or set, as noted hereon, permanent markers to all corners of said lot and that all visible encroachments of a permanent nature upon said lot are as shown on this survey. Said lot subject to all easements and restrictions of record.

- R = Recorded Distance
- M = Measured Distance
- = Distance Not to Scale
- = Deed Line
- = Set 1/2" Bar with Cap
- = Found Iron as Noted
- ▨ = Concrete, Asphalt, Deck, and Porch
- \*— = Fence
- 0.0'± = Denotes Distance to the Survey Line

DANE B. PASCOE  
PROFESSIONAL SURVEYOR

DATE  
No. 54434



**KEBS, INC.** KYES ENGINEERING  
BRYAN LAND SURVEYS

2116 HASLETT ROAD, HASLETT, MI 48840  
PH. 517-339-1014 FAX. 517-339-8047

13432 PRESTON DRIVE, MARSHALL, MI 49068  
PH. 269-781-9800 FAX. 269-781-9805

DRAWN BY KDB

SECTION 3, T4N, R1W

FIELD WORK BY NAW

JOB NUMBER:

SHEET 1 OF 2

100629.LOT



# EXHIBIT B

## COLUMBIA STREET SURROUNDING PARCEL CONTEXT

6206 Columbia Street, Haslett, Michigan

**Purpose:** To place the subject parcel and the proposed approximately 59.89-foot and 60.20-foot lots in the context of existing residential parcels along Columbia Street.

### LAKE LANSING

|                   |                    |                            |                                         |                                |                               |                             |                  |
|-------------------|--------------------|----------------------------|-----------------------------------------|--------------------------------|-------------------------------|-----------------------------|------------------|
| 6220<br>16,553 sf | 6218<br>~16,988 sf | 6216<br>15,246 sf<br>80 ft | 6206<br>20,473 sf<br>120 ft<br>existing | 6200<br>10,890 sf<br>~58.09 ft | 6198<br>11,326 sf<br>57.81 ft | 6192<br>9,627 sf<br>60.5 ft | 6190<br>8,276 sf |
|-------------------|--------------------|----------------------------|-----------------------------------------|--------------------------------|-------------------------------|-----------------------------|------------------|

### COLUMBIA STREET

|                   |                  |                           |
|-------------------|------------------|---------------------------|
| 6203<br>~5,663 sf | 6231<br>6,316 sf | 6226<br>9,148 sf<br>51 ft |
|-------------------|------------------|---------------------------|

### Key context

The existing 6206 Columbia parcel is approximately 120 feet wide. The KEBS proposed division creates two substantially equal parcels with surveyed interior lot widths of approximately **59.89 feet** and **60.20 feet**. Nearby documented frontages include approximately 58.09 feet, 57.81 feet, 60.5 feet, and 51 feet.

**Important:** This exhibit is a presentation schematic, not a boundary survey or legal description. Read it together with the KEBS survey drawing for the subject property and current Township/County records.

Meridian Township Parcel Viewer



All rights reserved

# EXHIBIT C

## COLUMBIA STREET LOT WIDTH AND AREA COMPARISON

Vicinity of 6206 Columbia Street, Haslett, Michigan

| Address       | Lot area             | Known frontage / dimensions        | Comparison                                         |
|---------------|----------------------|------------------------------------|----------------------------------------------------|
| 6206 Columbia | 20,473 sf (0.47 ac)  | 120 x 169 ft                       | Subject parcel; proposed 59.89 / 60.20 ft division |
| 6200 Columbia | 10,890 sf (0.25 ac)  | ~58.09 ft (2018 ZBA configuration) | Narrower than both proposed parcels                |
| 6198 Columbia | 11,326 sf (0.26 ac)  | 57.81 x 182.45 ft                  | Narrower than both proposed parcels                |
| 6192 Columbia | 9,627 sf (0.22 ac)   | 60.5 x 183 ft                      | Approximately the same frontage                    |
| 6190 Columbia | 8,276 sf (0.19 ac)   | Frontage not verified              | Smaller lot area                                   |
| 6216 Columbia | 15,246 sf (0.35 ac)  | 80 x 190 ft                        | Larger frontage                                    |
| 6218 Columbia | ~16,988 sf (0.39 ac) | Frontage not verified              | Larger lot area                                    |
| 6220 Columbia | 16,553 sf (0.38 ac)  | Frontage not verified              | Larger lot area                                    |
| 6226 Columbia | 9,148 sf (0.21 ac)   | 51 ft; irregular                   | About 9 ft narrower than proposed                  |
| 6203 Columbia | ~5,663 sf (0.13 ac)  | Frontage not verified              | Substantially smaller area                         |
| 6231 Columbia | 6,316 sf (0.145 ac)  | Frontage not verified              | Substantially smaller area                         |

**Key point for the ZBA:** The KEBS survey proposes interior lot widths of approximately **59.89 feet** and **60.20 feet**. Those widths require relief of approximately **5.11 feet** and **4.80 feet**, respectively, from the current 65-foot standard. Several nearby Columbia Street parcels are at or below approximately 60 feet. Township records document the 2018 approval of nearby lot widths of approximately 58.09 and 57.81 feet.

**Source note:** Areas and dimensions are compiled from the previously prepared Columbia Street exhibit using public property records, county/listing-derived data, and Township ZBA records. Proposed Parcel A and Parcel B dimensions are taken from the KEBS proposed land-division survey included as Exhibit D.

For:  
Jeffrey & Joyce Monroe  
6206 Columbia Street  
Haslett, MI 48840

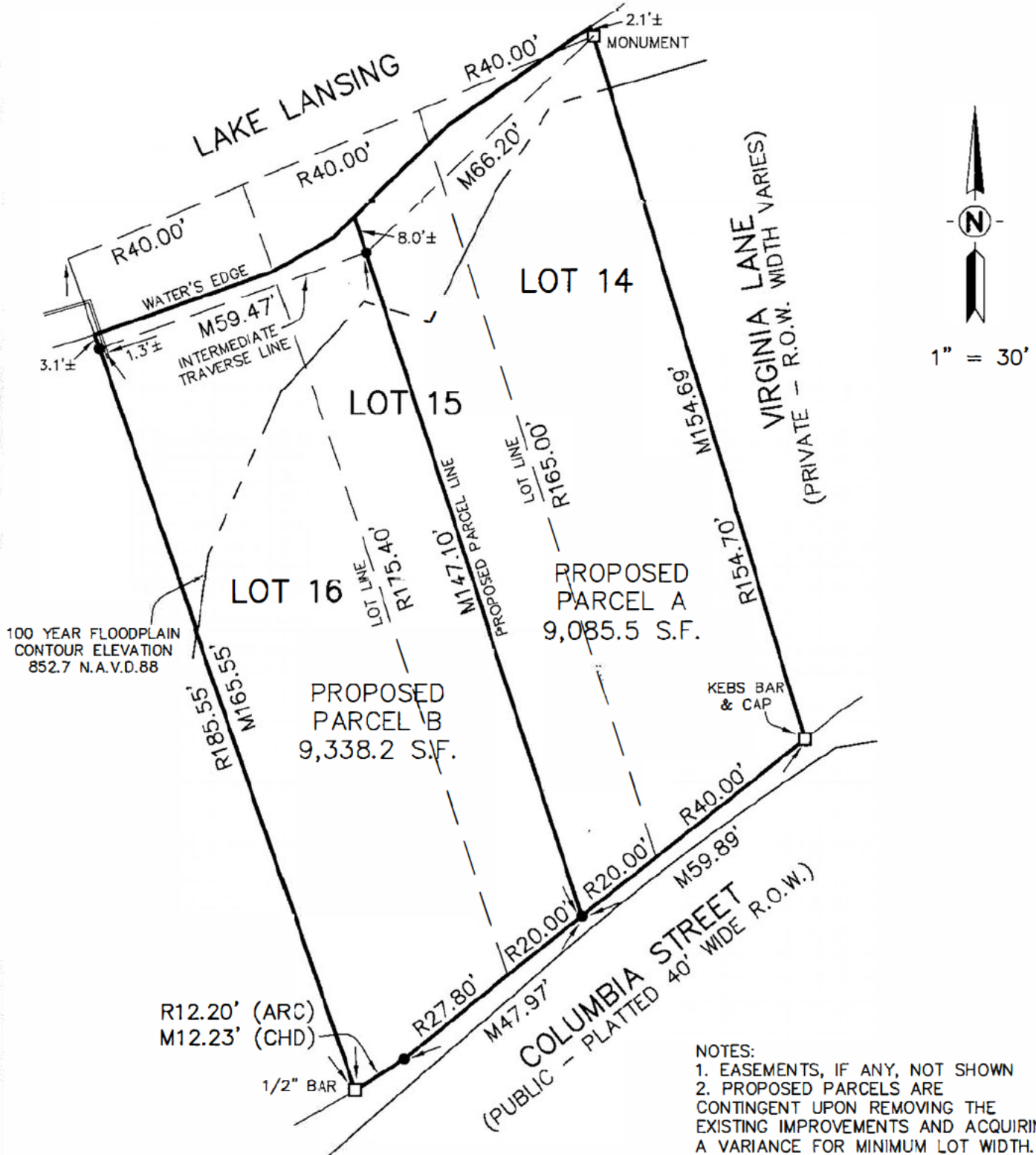
# LOT SURVEY PROPOSED

Exhibit D

Survey Address:  
6206 Columbia Street  
Haslett, MI 48840  
Tax ID# 33-02-02-03-402-021

Legal Description: Proposed Parcel A: Lot 14 and the Easterly 1/2 of Lot 15, Lakebrook No. 1, Meridian Township, Ingham County, Michigan, according to the recorded plat thereof, as recorded in Liber 12 of Plats, Page 10, Ingham County Records.

Proposed Parcel B: Lot 16 and the Westerly 1/2 of Lot 15, Lakebrook No. 1, Meridian Township, Ingham County, Michigan, according to the recorded plat thereof, as recorded in Liber 12 of Plats, Page 10, Ingham County Records.



I hereby certify only to the parties hereon that we have surveyed, at the direction of said parties, the above described lot, and that we have found or set, as noted hereon, permanent markers to all corners of said lot and that all visible encroachments of a permanent nature upon said lot are as shown on this survey. Said lot subject to all easements and restrictions of record.

- R = Recorded Distance
- M = Measured Distance
- = Distance Not to Scale
- = Deed Line
- = Set 1/2" Bar with Cap
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- ▨ = Concrete, Asphalt, Deck, and Porch
- \*\*\* = Fence
- 0.0'± = Denotes Distance to the Survey Line

DANE B. PASCOE  
PROFESSIONAL SURVEYOR

DATE  
No. 54434



**KEBS, INC.** KYES ENGINEERING  
BRYAN LAND SURVEYS

2116 HASLETT ROAD, HASLETT, MI 48840  
PH. 517-339-1014 FAX. 517-339-8047

13432 PRESTON DRIVE, MARSHALL, MI 49068  
PH. 269-781-9800 FAX. 269-781-9805

DRAWN BY KDB

SECTION 3, T4N, R1W

FIELD WORK BY NAW

JOB NUMBER:

SHEET 2 OF 2

100629.LOT

# EXHIBIT E

## PRIOR MERIDIAN TOWNSHIP ZBA RECORDS

### Relevant Columbia Street dimensional-variance history

This exhibit summarizes the portions of official Meridian Township Zoning Board of Appeals records most directly relevant to the requested lot-width variance at 6206 Columbia Street. It is intended as a concise reference; the official Township records remain the controlling source.

#### 1. 6200 Columbia Street - January 10, 2018

**Request.** The applicant sought to reconfigure two parcels into two lots below the 65-foot minimum interior lot-width requirement. Township minutes state that the proposed widths were **58.09 feet and 57.81 feet**, requiring relief of 6.91 feet and 7.19 feet.

**Board discussion.** The minutes record discussion of the Lake Lansing Overlay District, the historical lot pattern, the curve of Columbia Street, buildability, and whether equalizing the two parcels would make them more consistent with land in the area.

**Decision.** The ZBA approved the variance by a **3-2 vote**. Members Rios and Jackson and Chair Beauchine voted yes; Members Ohlrogge and Lane voted no.

**Why it is relevant.** The approved approximately 58-foot lot widths are narrower than the approximately 60-foot parcels now proposed at 6206 Columbia.

Official source: Meridian Township, February 14, 2018 ZBA Meeting Packet, January 10, 2018 meeting minutes, pp. 2-5.

Official record URL: [www.meridian.mi.us/media/r2jmdyk3/february-14-2018-zoning-board-of-appeals-meeting-packet.pdf](http://www.meridian.mi.us/media/r2jmdyk3/february-14-2018-zoning-board-of-appeals-meeting-packet.pdf)

## EXHIBIT E - PRIOR ZBA RECORDS (continued)

### 2. 6206 Columbia Street - ZBA Case No. 23-01 - May 17, 2023

**Property.** 6206 Columbia Street, Tax Parcel 03-402-021, zoned RB (Single Family, High Density) and Lake Lansing Overlay.

**Request.** Township records describe the variance as a request to create **two new parcels below the 65-foot minimum lot width** on the approximately 0.46-acre property.

**Board discussion.** The minutes record questions concerning the status of the combined parcel, floodplain impacts, and whether future variances would be required. Staff stated that any additional variances would have to be presented separately to the ZBA.

**Decision.** Township records identify ZBA Case 23-01, 6206 Columbia Street, as **approved**. The meeting record reflects approval by a **4-0 vote**, with Field-Foster, Trezise, Koenig, and Mansour voting yes.

**Why it is relevant.** The Board previously considered and approved the same basic dimensional issue on the subject property: creation of two residential parcels below the 65-foot lot-width standard. The prior approval later expired and does not bind the present Board.

Official source: Meridian Township, 2023 ZBA records / July 19, 2023 ZBA Meeting Packet containing the May 17, 2023 minutes.

Official record URL: [www.meridian.mi.us/media/qudp4qd4/july-19-2023-zoning-board-of-appeals-meeting-packet.pdf](http://www.meridian.mi.us/media/qudp4qd4/july-19-2023-zoning-board-of-appeals-meeting-packet.pdf)

**Submission note:** Copies of the complete official Township meeting records may be appended behind this summary. This summary does not alter or replace the official minutes.





## GEOTECHNICAL EVALUATION REPORT

6206 COLUMBIA ROAD  
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

SME Project Number: 100832.00  
November 4, 2025







11800 Exit 5 Parkway  
Suite 106  
Fishers, IN 46037

T (317) 876-0200

[www.sme-usa.com](http://www.sme-usa.com)

November 4, 2025

Mr. Daniel Bollman, AIA  
East Arbor Architecture  
511 Bailey Street  
East Lansing, Michigan 48823

Via E-mail: [daniel@eastarbor.com](mailto:daniel@eastarbor.com)

RE: Geotechnical Evaluation Report  
6206 Columbia Road  
Meridian Township, Ingham County, Michigan  
SME Project No. 100832.00

Dear Mr. Bollman:

We have completed our geotechnical evaluation for the referenced project. This report presents the results of our observations and analyses, our geotechnical recommendations, and a discussion of potential construction considerations based on the information disclosed by the borings.

We appreciate this opportunity to be of service. If you have questions or require additional information, please contact me.

Sincerely,

**SME**

A handwritten signature in blue ink that reads "Alexandra R. Costanzo".

Alexandra R. Costanzo, PE  
Project Manager

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## 1. INTRODUCTION

This report presents the results of the geotechnical evaluation performed by SME for the new residential structure at 6206 Columbia Road in Meridian Township, Ingham County, Michigan. This evaluation was performed in general accordance with SME Proposal No. P02748.25, dated July 18, 2025, authorized by East Arbor Architecture.

The purpose of this evaluation was to explore subsurface soil and groundwater conditions and provide geotechnical engineering recommendations for design and construction of the proposed structure. Our services included field exploration, laboratory testing, and engineering analysis.

SME completed three borings (B1 through B3) at the project site on October 20, 2025. Refer to the boring logs included in Appendix A for the specific depth of each individual boring. The approximate boring locations are depicted on Image No. 1 and on the Boring Location Diagram located in Appendix A (Figure No. 1). Soil descriptions and the field and laboratory test results are presented on the boring logs. Exploration and laboratory testing procedures are presented in Section 3.



**IMAGE NO. 1: Excerpt from Figure No. 1 in Appendix A – Boring Location Diagram (north facing upward)**



## 1.1 SITE CONDITIONS

The project site lies north of Columbia Road in proximity to Lake Lansing to the north. The site currently consists of grass-covered areas and the existing residence and garage, with a heavily wooded area along the west side of the lot. The site is generally gently sloping toward the lake and existing ground surface elevations vary from approximately 858 feet near the existing residence to about 850 feet toward the lakeside, indicating a downward gradient to the north. The property is bordered by Columbia Road to the south, wooded/residential parcels to the west and east, and Lake Lansing to the north.

## 1.2 PROJECT DESCRIPTION

The project will consist of the design and construction of a new two-story residential building to replace the existing residence after demolition. The new residence will include a walk-out basement (i.e., lake level). The main level finished floor elevation (FFE) is planned to be at 864 ft, and the lower level at 854 ft. A detached two-story garage is planned on the west side of the parcel. Foundation loads were not available at the time of this report.

Given the site topography, we anticipate localized cuts and fills on the order of 2 to 3 feet within building and driveway/patio areas to establish final subgrade levels for the main level of the structure, with deeper excavations locally for the walk-out basement as required by final grading and architectural plans.

The recommendations of this report are based on the information provided above and the results of the field and laboratory evaluation. Contact SME if the final design information differs from that discussed herein so we can review and update our recommendations as appropriate.



IMAGE NO. 1: Aerial Image of the Project Site

1.3 SUBSURFACE CONDITIONS

Refer to the boring logs in Appendix A for details of the subsurface conditions encountered at the specific boring locations. In summary, the borings disclosed thin surficial materials (topsoil and/or gravel) underlain by fill, a thick organic stratum (peat and organic silt), and then natural cohesive and granular soils extending to the explored depths of the borings.

The surface materials consisted of approximately 3 to 6 inches of topsoil or gravel. Beneath the surface, fill soils (i.e., sand, silty sand, and sandy lean clay) were encountered to depths ranging from about 5 to 7 feet below existing grade, corresponding to approximate elevations of 846 to 852 feet. The fill exhibited variable conditions, from very loose to very dense, where granular in nature and hard where cohesive in nature.

Below the fill, a thick organic layer (6 to 16 feet) composed of peat and organic silt was present across the site, extending to elevation 830 feet. Laboratory testing indicated high organic content (Loss on Ignition (LOI) as high as 26 percent). These organic deposits were typically very loose and are expected to be highly compressible, with potential for significant settlement under new loads. Based on the boring logs, the organic deposits are thickest in the northern portion of the site (toward the lakeshore) and decrease in thickness toward the south.

At greater depth, the borings encountered natural soils consisting of very stiff lean clays and loose to dense sands, and medium dense silt which extended to the termination depths of the borings. Auger refusal was not encountered within the explored depths.

Groundwater was observed during drilling at depths corresponding to approximate elevations between 843 and 849.5 feet (about 9 to 10 feet below existing grade, depending on ground surface elevation at each boring). Groundwater was generally not observed at completion of drilling, likely due to borehole caving.

TABLE 1: GROUNDWATER SUMMARY TABLE

| BORING NO. | G.W. DEPTH DURING DRILLING (feet) | G.W. DEPTH UPON COMPLETION OF DRILLING (feet) | INITIAL G.W. ELEVATION (feet) | G.W. ELEVATION UPON COMPLETION OF DRILLING (feet) |
|------------|-----------------------------------|-----------------------------------------------|-------------------------------|---------------------------------------------------|
| B1         | 10                                | NE                                            | 848                           | NE                                                |
| B2         | 10                                | NE                                            | 843                           | NE                                                |
| B3         | 9                                 | NE                                            | 849.5                         | NE                                                |
| Min.       | 9                                 | NE                                            | 843                           | NE                                                |
| Max.       | 10                                | NE                                            | 849.5                         | NE                                                |

NE = Not Encountered

In soils containing significant amounts of fines (e.g., silt and/or clay), the groundwater level in an open borehole may take considerable time to reach equilibrium. Therefore, the readings above represent only short-term observations during and immediately after drilling. Long-term or seasonal groundwater fluctuations should be anticipated. Installation of groundwater observation wells (piezometers) would be required to accurately determine the stabilized groundwater level at this site.



Refer to the Field Testing Procedures in Appendix B for additional information about groundwater level measurements. If more information regarding groundwater levels at this site is required, then we recommend performing additional subsurface assessment(s).

## 2. ANALYSIS AND RECOMMENDATIONS

### 2.1 SITE PREPARATION AND EARTHWORK

#### 2.1.1 EXISTING ORGANIC SOIL CONSIDERATIONS

The subsurface profile includes thick organic deposits (peat and organic silt with high LOI beneath shallow fill. These materials are very loose and highly compressible, with potential for significant settlement under new loading. Large-scale removal and replacement of the organic deposits is not practical for building support due to thickness, variability, and constructability constraints (e.g., high groundwater levels). Accordingly, shallow spread foundations or concrete floor slabs are not recommended for the residence. Foundations for the building and floor slabs should consist of deep foundations (See Section 2.2).

Long-term settlement is anticipated surrounding the structure due to the presence of deep organic deposits. Several inches to a foot differential settlement is possible over the first 10 to 20 years. As a result, exterior surfaces and structures should be constructed with flexible materials such as gravel, brick pavers, or asphalt concrete, rather than rigid concrete. Deep foundations—like those recommended for the main building—should also be considered for sensitive exterior structures, particularly if they are connected to the house at entry points, such as an attached porch or deck.

#### 2.1.2 GENERAL SITE SUBGRADE PREPARATION

During demolition of the existing building and at-grade slabs, remove all below-grade portions of the building, including floor slabs, foundations, foundation walls, and utilities. After demolition, clear the proposed building areas of asphalt, Portland cement concrete (PCC), vegetation, topsoil, and other deleterious materials to expose suitable underlying inorganic subgrade soils. Completely remove tree root mats, if any.

Extend the clearing and stripping a minimum of 5 feet beyond the limits of the proposed building footprints and pavement areas, and areas to receive engineered fill. Based on the boring information, we expect organic soils will be exposed in the lower level of the structure after clearing, stripping and initial grade for foundation construction.

Reroute existing utilities that are within the building addition footprint to outside of the building area. Remove abandoned utilities and backfill the resulting excavations with granular engineered fill. If it is necessary for existing utilities to be abandoned in-place, the utilities must not conflict with the proposed construction, they must be fully grouted, and the suitability of the existing backfill must be verified for structural support. Do not abandon utilities in-place within the zone of influence of proposed foundations.

The contractor needs to remove ponded surface water and prevent run-off from reaching foundation excavations and areas of prepared subgrade. The contractor needs to also establish positive surface drainage at the onset of construction to mitigate the potential for subgrade disturbance. To reduce the potential of subgrade disturbance across the site, restrict construction traffic to dedicated areas of the site that can be controlled and stabilized as needed.



### 2.1.3 ENGINEERED FILL REQUIREMENTS

New fill used for backfill and raising site grades needs to be granular (sand), free of frozen soil, significant organics, and construction debris, potentially expansive and/or chemically active materials, particle sizes hindering compaction, cobbles, boulders, or significant debris fragments or pieces. If the proposed engineered fill soils contain more than 4 percent organics, or debris larger than 6 inches in nominal diameter, do not use soils for engineered fill. Also, if debris material is significantly variable in nature, suspect in origin, or greater than about 5 percent of the soil (by weight), do not use soils for engineered fill.

Spread fill in level layers with a loose thickness appropriate for the type of equipment used to obtain compaction, but not exceeding 9 inches thick. Thinner lifts will be required in confined spaces and where compaction is achieved with walk-behind rollers/compactors or plate compactors mounted on a backhoe or excavator (e.g., Ho-Pac®). Compact the fill to a minimum of 95 percent of the maximum dry density as determined in accordance with the Modified Proctor test. Compact sand fill with a smooth drum vibratory roller or vibratory plate compactors.

In confined areas, in areas where drainage is required, and in areas where compaction is accomplished primarily by hand-operated equipment, use an approved granular material, such as MDOT Class II granular material as backfill. SME should verify the suitability of proposed soils for use as drainage fill, by performing gradation analyses during construction.

## 2.2 FOUNDATION RECOMMENDATIONS

### 2.2.1 DEEP FOUNDATIONS (HELICAL PIERS)

Given the thickness and compressibility of the organic deposits, deep foundations consisting of helical piers are recommended to transfer building loads through unsuitable soils into competent strata at depth. While timber or augercast piles could be used, helical piers are best suited for light residential buildings in these conditions.

Helical piers are a specific type of micro-pile foundation that consists of a steel plate, or plates, formed into the shape of a helix, and attached to a central steel shaft. The helix or helices are attached to a lead section and the helical pier is installed by applying torque to the shaft of the lead section and rotating or screwing the plate(s) and shaft into the soil. Shaft extensions are added to continue advancement of the lead section to a suitable bearing depth. Typically, the diameter of the helix plates ranges from about 6 to 14 inches and multiple helices may be used on the lead section to increase the load capacity compared to the use of a single helix. The following image depicts the generalized installation method.



**IMAGE NO. 3: Helical Pier Installation Overview** ( Image provided by: <http://www.griptide.com/products/helical-pier-system.aspx>)

Helical piers are well suited to resist axial (e.g., tension and compression) loads for new foundation construction. However, the lateral loading ability of helical piers is low, compared to other foundation types, because of the small diameter of their shaft. Some lateral load conditions may be accommodated by helical piers installed on a batter, although this is not common. Using thicker-walled shafts or grout reinforcement in the upper pier section can improve lateral strength if needed.

There are several different manufacturers of helical piers, with each manufacturer offering slightly different components, such as solid or hollow shafts. However, each manufacturer's helical pier system is based on the general description provided above. Local contractors sometimes have licensing agreements with helical pier manufacturers to install the specific type of helical pier distributed by that manufacturer.

There are several advantages of using a helical pier foundation system, compared to other deep foundation systems, for support of relatively lightly-loaded structures. Mobilization of a helical pier contractor should be economical relative to other types of pile installation equipment. In addition, the resistance of the piers can be estimated during installation by measuring the torque required to install the helical piers, which is then correlated to the required bearing pressure using empirical relationships established by the helical pier manufacturer. Therefore, there is a level of confidence that suitable bearing conditions are achieved based on the torque readings. This method of confirmation allows the final pier depths to be adjusted during construction, if necessary, to account for variations in soil conditions at the specific pier locations. In addition, helical piers can be installed with limited noise and vibrations, which is an important consideration when construction takes place near existing adjacent structures.

Based on conditions encountered in the borings, specifically Boring B2, we recommend helical piers extend through the organic soils and bear at least 15 feet into the underlying competent soils which is typically very stiff lean clays and/or loose to dense sands, and/or medium dense silt. The allowable working capacity of the helical piers will depend on the number and size of the helices used, and the bearing soils.

Based on our experience with similar soil conditions, we estimate an allowable pier working capacity of 25 kips is achievable for a triple helix pier, consisting of 8-inch, 10-inch and 12-inch helices, bearing in stiff clay and /or medium dense sand. We recommend a target helical pier tip elevation of 815 feet so each of the helices of the pier are well below the organic soil deposit. As required by the pier manufacturer, the final pier depths (i.e., below elevation 815 feet) will be determined based on the torque resistance achieved by each individual pier during installation. Therefore, to achieve the torque resistance associated with the design working capacity, some piers may extend deeper than elevation 815 feet.

The allowable working capacity must be based on a factor of safety of at least 2.0 applied to the ultimate pier capacity (as verified by the minimum torque during installation). Helical pier materials should include a hot-dipped galvanized coating conforming to ASTM A153 as needed to mitigate the potential for corrosion.

We recommend the installation of the piers be observed by SME to verify the required torque and the target pier depth is achieved. We also recommend the helical pier contractor include unit prices for adjustments to the depths of the helical piers so that adjustments to the contract amount can be made based on the actual pier lengths required.

Because on the variety of helical pier systems, the many combinations of helices that could be used, and the proprietary nature of the various systems, the final design of helical piers must be the responsibility of an engineer retained by the helical pier contractor. Helical pier design should consider pier buckling, lateral loading, and corrosion protection.

It should be noted that a design allowable working capacity outside the estimated capacity presented above could be desirable, based on the pier layout (i.e., minimum pier spacing) to be developed by the engineer that prepares the foundation plan for the project. The actual required design allowable working capacity at each pier location should be indicated on the foundation plan and provided to the helical pier contractor for use in their design. SME can review the design submittal by the helical pier contractor, to verify the design is consistent with the recommendations of this report.

We recommend using a minimum design spacing of at least 30 inches or three pile diameters between adjacent piles (center-to-center) within a group, whichever is greater. The use of closer pile spacing would require additional evaluation of the group effect. Generally, we recommend using a minimum of three piles per pile group for stability purposes. Groups of one or two piles can be used if grade beams or other suitable methods are used to provide the required lateral structural support. The bottom of pile caps and grade beams in areas exposed to freezing conditions, such as along exterior walls, should be extended to at least 42 inches below the design ground surface elevation.

We estimate a total static settlement of less than 1/2-inch at the top of the helical piers under the recommended design working compressive capacity. Differential settlements between similarly loaded piers or piles should be negligible. The settlement estimates provided are based on the boring information, working pile capacities, the referenced design structural loads, our experience with similar structures and soil conditions, and field verification of suitable bearing soils by SME.

## 2.3 BELOW-GRADE WALLS AND DRAINAGE

Below-grade (basement) walls will be required for the lower level of the residence. Basement walls should be backfilled with MDOT Class II granular material. Positive surface drainage should be established away from exterior below-grade walls and roof downspouts should not be discharged onto the ground surface above below-grade walls.

Below-grade wall backfill that will support floor slabs and other improvements should be compacted to a minimum of 95 percent of the maximum dry density as determined by the Modified Proctor test. As a minimum, backfill that will not be used for structural support of pavements, floor slabs, patios, deck posts, or sidewalks should be compacted to the degree where it is stable under construction equipment. Care should be exercised during compaction of the wall backfill to avoid overstressing the walls. If required, walls should be designed to accommodate the additional stresses associated with operating compaction equipment adjacent to the wall. Below-grade walls should be backfilled only after proper bracing is in place.

For the recommended granular backfill material, a unit weight of 120 pounds per cubic foot (pcf) and a friction angle of 33 degrees can be considered for design purposes. The appropriate earth pressure coefficient will depend on whether the wall is allowed to rotate. Any basement/lower level walls generally



should be rigid walls or restrained, this is typically the case for below-grade walls that are braced by the floor framing at the top of the wall, so they do not rotate sufficiently to permit the lower active earth pressure ( $K_a$ ) condition to be reached. Therefore, an at-rest lateral earth pressure coefficient ( $K_0$ ) of 0.45, with an equivalent fluid at-rest pressure of 57 psf per foot of wall height is recommended for calculating the lateral earth pressures. This equivalent fluid pressure would increase linearly from 0 psf at the ground surface, to a maximum at the base of the wall. Any additional lateral pressures due to surcharge loading, such as from adjacent floor or column loads, sloping ground, or parking loads, should be added to the above lateral earth pressure for design.

The earth pressure presented above is for a drained granular backfill. To reduce the potential for the build-up of hydrostatic pressure behind below-grade walls, we recommend permanent edge drains be installed along the base of the perimeter below-grade walls. The perimeter edge drains should consist of a minimum 6-inch-diameter perforated plastic drain pipe, wrapped with a filter fabric and surrounded by 6 inches of a filter material, such as pea gravel (MDOT 34G or 34R) wrapped with a filter fabric. The perimeter drains should be discharged to a gravity outlet, if possible. Otherwise, provisions for pumping the water will be required. We recommend the drain design include provisions for providing access to the drains for cleaning and maintenance.

Consider installing underfloor drains below the basement slab, especially when the lower floor is near lake level. Use 4-inch plastic drain pipes spaced every 15–20 feet and connect them to the perimeter drain and sump pump system.

According to the MRC and because the water table will be influenced by the lake, the exterior of the basement walls must be waterproofed with a membrane. Using a waterproofing membrane will provide adequate resistance to moisture vapor transmission through the basement walls and will protect against groundwater intrusion during flooding or if surface water that seeps into the wall backfill ponds briefly before it is collected by the drainage system at the base of the walls.

### 3. EVALUATION PROCEDURES

#### 3.1 FIELD EXPLORATION

The proposed number, locations, and depths of the borings were determined jointly by client and SME. SME located the borings in the field and obtained the existing ground surface elevations at the boring locations using our hand-held global positioning system (GPS). The elevations on the boring logs are rounded to the nearest 1/2-foot.

The borings were advanced using a rotary drill rig equipped with continuous flight augers. The borings included soil sampling based on Split-Barrel Sampling procedures.

Groundwater level measurements were recorded during and immediately after completion of each boring. After completion of drilling and obtaining groundwater level measurements, the boreholes were backfilled with auger cuttings.

The Field Testing Procedures in Appendix B provides more detailed descriptions of field tests typically performed by SME and referenced in this report.

Soil samples recovered from the field exploration were taken to our laboratory for further observations and testing.

Upon completion of the laboratory testing, boring logs were prepared and include the soil descriptions, penetration resistances, pertinent field observations, and the results of the laboratory testing. Each log also includes the estimated existing ground surface elevation. Explanations of symbols and terms used on the boring logs are provided on the Boring Log Terminology sheet included in Appendix A.

Soil samples are normally retained in our laboratory for 60 days and are then disposed, unless instructed otherwise.

### 3.2 LABORATORY TESTING

The laboratory testing program consisted of visually classifying the recovered samples in accordance with ASTM D-2488. Based on the laboratory testing, we prepared soil descriptions and assigned a group symbol for the various soil strata observed based on the Unified Soil Classification System (USCS). In addition, moisture content and hand penetrometer tests were performed on portions of cohesive samples obtained.

The Laboratory Testing Procedures in Appendix B provides descriptions of the laboratory tests. The results of the laboratory tests are presented on the boring logs and included in Appendix A.

## 4. SIGNATURES

### PREPARED BY:



Omid Bigdarvish, PhD, PE  
Project Engineer

### REVIEWED BY:



Timothy H. Bedenis, PE, BC.GE  
Chief Geotechnical Engineer



## **APPENDIX A**

**BORING LOCATION DIAGRAM (FIGURE NO. 1)**

**BORING LOG TERMINOLOGY**

**BORING LOGS (B1 THROUGH B3)**



**LOCATION MAP**  
NOT TO SCALE



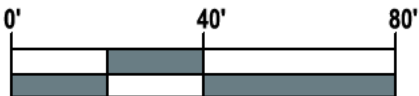
**LEGEND**



APPROXIMATE BORING LOCATION

NOTES:

- 1. AERIAL IMAGE TAKEN FROM NEARMAPS WITH AN IMAGE DATE OF 04/09/2023.



GRAPHIC SCALE: 1" = 40'



|     |               |             |            |
|-----|---------------|-------------|------------|
| No. | Revision Date | Date        | 10/06/2025 |
|     |               | CADD        | T. VERLEYE |
|     |               | Designer    | S. MEEKHOF |
|     |               | Project No. | 100832.00  |

DRAWING NOTE: SCALE DEPICTED IS MEANT FOR 8.5"x11" AND WILL SCALE INCORRECTLY IF PRINTED ON ANY OTHER SIZE MEDIA

**BORING LOCATION DIAGRAM**  
**6206 COLUMBIA ROAD**  
**MERIDIAN TOWNSHIP, MICHIGAN**

NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR CONSENT OF SME



Figure No. 1





# BORING LOG TERMINOLOGY

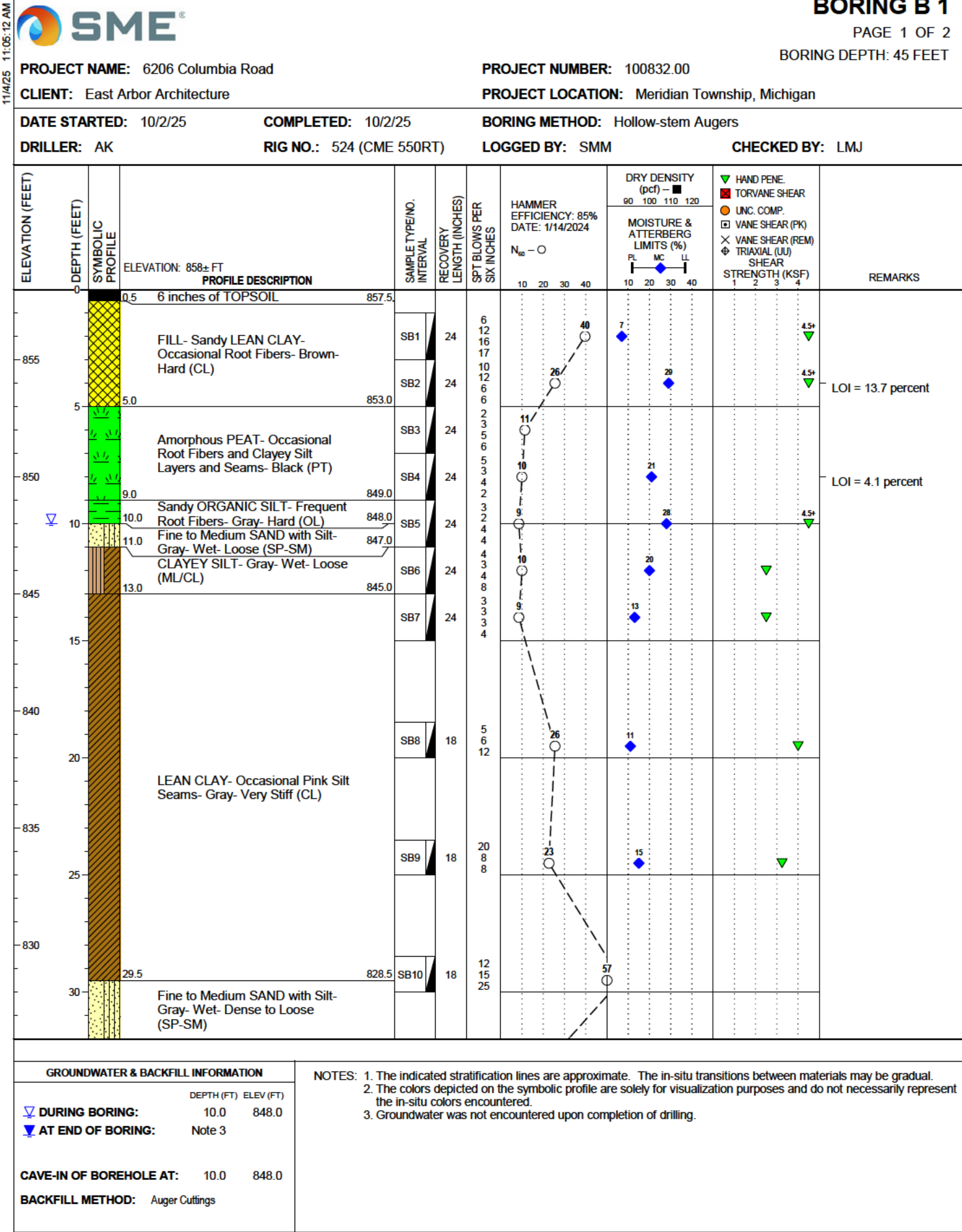
| UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART                                          |                                         |                                                                           |
|---------------------------------------------------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------|
| COARSE-GRAINED SOIL<br>(more than 50% of material is larger than No. 200 sieve size.) |                                         |                                                                           |
| Clean Gravel (Less than 5% fines)                                                     |                                         |                                                                           |
| GRAVEL<br>More than 50% of coarse fraction larger than No. 4 sieve size               |                                         | GW Well-graded gravel; gravel-sand mixtures, little or no fines           |
|                                                                                       |                                         | GP Poorly-graded gravel; gravel-sand mixtures, little or no fines         |
|                                                                                       | Gravel with fines (More than 12% fines) |                                                                           |
|                                                                                       |                                         | GM Silty gravel; gravel-sand-silt mixtures                                |
|                                                                                       |                                         | GC Clayey gravel; gravel-sand-clay mixtures                               |
| Clean Sand (Less than 5% fines)                                                       |                                         |                                                                           |
| SAND<br>50% or more of coarse fraction smaller than No. 4 sieve size                  |                                         | SW Well-graded sand; sand-gravel mixtures, little or no fines             |
|                                                                                       |                                         | SP Poorly-graded sand; sand-gravel mixtures, little or no fines           |
|                                                                                       | Sand with fines (More than 12% fines)   |                                                                           |
|                                                                                       |                                         | SM Silty sand; sand-silt-gravel mixtures                                  |
|                                                                                       |                                         | SC Clayey sand; sand-clay-gravel mixtures                                 |
| FINE-GRAINED SOIL<br>(50% or more of material is smaller than No. 200 sieve size)     |                                         |                                                                           |
| SILT AND CLAY<br>Liquid limit less than 50%                                           |                                         | ML Inorganic silt; sandy silt or gravelly silt with slight plasticity     |
|                                                                                       |                                         | CL Inorganic clay of low plasticity; lean clay, sandy clay, gravelly clay |
|                                                                                       |                                         | OL Organic silt and organic clay of low plasticity                        |
|                                                                                       |                                         |                                                                           |
| SILT AND CLAY<br>Liquid limit 50% or greater                                          |                                         | MH Inorganic silt of high plasticity, elastic silt                        |
|                                                                                       |                                         | CH Inorganic clay of high plasticity, fat clay                            |
|                                                                                       |                                         | OH Organic silt and organic clay of high plasticity                       |
|                                                                                       |                                         |                                                                           |
| HIGHLY ORGANIC SOIL                                                                   |                                         | PT Peat and other highly organic soil                                     |

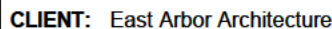
| OTHER MATERIAL SYMBOLS |  |  |
|------------------------|--|--|
|                        |  |  |
|                        |  |  |
|                        |  |  |
|                        |  |  |

| LABORATORY CLASSIFICATION CRITERIA                                                                                                                                                                                                                                                                                                           |                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| GW                                                                                                                                                                                                                                                                                                                                           | $C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3 |
| GP                                                                                                                                                                                                                                                                                                                                           | Not meeting all gradation requirements for GW                                                               |
| GM                                                                                                                                                                                                                                                                                                                                           | Atterberg limits below "A" line or PI less than 4                                                           |
| GC                                                                                                                                                                                                                                                                                                                                           | Atterberg limits above "A" line with PI greater than 7                                                      |
| SW                                                                                                                                                                                                                                                                                                                                           | $C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3 |
| SP                                                                                                                                                                                                                                                                                                                                           | Not meeting all gradation requirements for SW                                                               |
| SM                                                                                                                                                                                                                                                                                                                                           | Atterberg limits below "A" line or PI less than 4                                                           |
| SC                                                                                                                                                                                                                                                                                                                                           | Atterberg limits above "A" line with PI greater than 7                                                      |
| Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:                                                                                                                                                 |                                                                                                             |
| Less than 5 percent.....GW, GP, SW, SP                                                                                                                                                                                                                                                                                                       |                                                                                                             |
| More than 12 percent.....GM, GC, SM, SC                                                                                                                                                                                                                                                                                                      |                                                                                                             |
| 5 to 12 percent.....Cases requiring dual symbols                                                                                                                                                                                                                                                                                             |                                                                                                             |
| <ul style="list-style-type: none"> <li>• SP-SM or SW-SM (SAND with Silt or SAND with Silt and Gravel)</li> <li>• SP-SC or SW-SC (SAND with Clay or SAND with Clay and Gravel)</li> <li>• GP-GM or GW-GM (GRAVEL with Silt or GRAVEL with Silt and Sand)</li> <li>• GP-GC or GW-GC (GRAVEL with Clay or GRAVEL with Clay and Sand)</li> </ul> |                                                                                                             |
| If the fines are CL-ML:                                                                                                                                                                                                                                                                                                                      |                                                                                                             |
| <ul style="list-style-type: none"> <li>• SC-SM (SILTY CLAYEY SAND or SILTY CLAYEY SAND with Gravel)</li> <li>• SM-SC (CLAYEY SILTY SAND or CLAYEY SILTY SAND with Gravel)</li> <li>• GC-GM (SILTY CLAYEY GRAVEL or SILTY CLAYEY GRAVEL with Sand)</li> </ul>                                                                                 |                                                                                                             |
| PARTICLE SIZES                                                                                                                                                                                                                                                                                                                               |                                                                                                             |
| Boulders                                                                                                                                                                                                                                                                                                                                     | - Greater than 12 inches                                                                                    |
| Cobbles                                                                                                                                                                                                                                                                                                                                      | - 3 inches to 12 inches                                                                                     |
| Gravel- Coarse                                                                                                                                                                                                                                                                                                                               | - 3/4 inches to 3 inches                                                                                    |
| Gravel- Fine                                                                                                                                                                                                                                                                                                                                 | - No. 4 to 3/4 inches                                                                                       |
| Sand- Coarse                                                                                                                                                                                                                                                                                                                                 | - No. 10 to No. 4                                                                                           |
| Sand- Medium                                                                                                                                                                                                                                                                                                                                 | - No. 40 to No. 10                                                                                          |
| Sand- Fine                                                                                                                                                                                                                                                                                                                                   | - No. 200 to No. 40                                                                                         |
| Silt and Clay                                                                                                                                                                                                                                                                                                                                | - Less than (0.074 mm)                                                                                      |
| PLASTICITY CHART                                                                                                                                                                                                                                                                                                                             |                                                                                                             |
|                                                                                                                                                                                                                                                                                                                                              |                                                                                                             |

| VISUAL MANUAL PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| When laboratory tests are not performed to confirm the classification of soils exhibiting borderline classifications, the two possible classifications would be separated with a slash, as follows:                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                       |
| For soils where it is difficult to distinguish if it is a coarse or fine-grained soil:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                       |
| <ul style="list-style-type: none"> <li>• SC/CL (CLAYEY SAND to Sandy LEAN CLAY)</li> <li>• SM/ML (SILTY SAND to SANDY SILT)</li> <li>• GC/CL (CLAYEY GRAVEL to Gravelly LEAN CLAY)</li> <li>• GM/ML (SILTY GRAVEL to Gravelly SILT)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                       |
| For soils where it is difficult to distinguish if it is sand or gravel, poorly or well-graded sand or gravel; silt or clay; or plastic or non-plastic silt or clay:                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                       |
| <ul style="list-style-type: none"> <li>• SP/GP or SW/GW (SAND with Gravel to GRAVEL with Sand)</li> <li>• SC/GC (CLAYEY SAND with Gravel to CLAYEY GRAVEL with Sand)</li> <li>• SM/GM (SILTY SAND with Gravel to SILTY GRAVEL with Sand)</li> <li>• SW/SP (SAND or SAND with Gravel)</li> <li>• GP/GW (GRAVEL or GRAVEL with Sand)</li> <li>• SC/SM (CLAYEY to SILTY SAND)</li> <li>• GM/GC (SILTY to CLAYEY GRAVEL)</li> <li>• CL/ML (SILTY CLAY)</li> <li>• ML/CL (CLAYEY SILT)</li> <li>• CH/MH (FAT CLAY to ELASTIC SILT)</li> <li>• CL/CH (LEAN to FAT CLAY)</li> <li>• MH/ML (ELASTIC SILT to SILT)</li> </ul> |                                                                                                                                       |
| DRILLING AND SAMPLING ABBREVIATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                       |
| 2ST                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | - Shelby Tube - 2" O.D.                                                                                                               |
| 3ST                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | - Shelby Tube - 3" O.D.                                                                                                               |
| AS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | - Auger Sample                                                                                                                        |
| GS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | - Grab Sample                                                                                                                         |
| LS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | - Liner Sample                                                                                                                        |
| NR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | - No Recovery                                                                                                                         |
| PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | - Pressuremeter                                                                                                                       |
| RC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | - Rock Core diamond bit. NX size, except where noted                                                                                  |
| SB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | - Split Barrel Sample 1-3/8" I.D., 2" O.D., except where noted                                                                        |
| VS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | - Vane Shear                                                                                                                          |
| WS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | - Wash Sample                                                                                                                         |
| OTHER ABBREVIATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                       |
| WOH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | - Weight of Hammer                                                                                                                    |
| WOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | - Weight of Rods                                                                                                                      |
| SP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | - Soil Probe                                                                                                                          |
| PID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | - Photo Ionization Device                                                                                                             |
| FID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | - Flame Ionization Device                                                                                                             |
| DEPOSITIONAL FEATURES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                       |
| Parting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | - as much as 1/16 inch thick                                                                                                          |
| Seam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | - 1/16 inch to 1/2 inch thick                                                                                                         |
| Layer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | - 1/2 inch to 12 inches thick                                                                                                         |
| Stratum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | - greater than 12 inches thick                                                                                                        |
| Pocket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | - deposit of limited lateral extent                                                                                                   |
| Lens                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | - lenticular deposit                                                                                                                  |
| Hardpan/Till                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | - an unstratified, consolidated or cemented mixture of clay, silt, sand and/or gravel, the size/shape of the constituents vary widely |
| Lacustrine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | - soil deposited by lake water                                                                                                        |
| Mottled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | - soil irregularly marked with spots of different colors that vary in number and size                                                 |
| Varved                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | - alternating partings or seams of silt and/or clay                                                                                   |
| Occasional                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | - one or less per foot of thickness                                                                                                   |
| Frequent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - more than one per foot of thickness                                                                                                 |
| Interbedded                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | - strata of soil or beds of rock lying between or alternating with other strata of a different nature                                 |
| DESCRIPTION OF RELATIVE QUANTITIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                       |
| The visual-manual procedure uses the following terms to describe the relative quantities of notable foreign materials, gravel, sand or fines:                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                       |
| Trace                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | - particles are present but estimated to be less than 5%                                                                              |
| Few                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | - 5 to 10%                                                                                                                            |
| Little                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | - 15 to 25%                                                                                                                           |
| Some                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | - 30 to 45%                                                                                                                           |
| Mostly                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | - 50 to 100%                                                                                                                          |

| CLASSIFICATION TERMINOLOGY AND CORRELATIONS                                                                                                                                                                                                                       |                                               |                |                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------|--------------------------------------------------|
| Cohesionless Soils                                                                                                                                                                                                                                                |                                               | Cohesive Soils |                                                  |
| Relative Density                                                                                                                                                                                                                                                  | N <sub>60</sub> (N-Value)<br>(Blows per foot) | Consistency    | Undrained Shear Strength (kips/ft <sup>2</sup> ) |
| Very Loose                                                                                                                                                                                                                                                        | 0 to 4                                        | Very Soft      | <2                                               |
| Loose                                                                                                                                                                                                                                                             | 5 to 10                                       | Soft           | 2 - 4                                            |
| Medium Dense                                                                                                                                                                                                                                                      | 11 to 30                                      | Medium         | 5 - 8                                            |
| Dense                                                                                                                                                                                                                                                             | 31 to 50                                      | Stiff          | 9 - 15                                           |
| Very Dense                                                                                                                                                                                                                                                        | 51 to 80                                      | Very Stiff     | 16 - 30                                          |
| Extremely Dense                                                                                                                                                                                                                                                   | Over 81                                       | Hard           | > 30                                             |
| Standard Penetration 'N-Value' = Blows per foot of a 140-pound hammer falling 30 inches on a 2-inch O.D. split barrel sampler, except where noted. N <sub>60</sub> values as reported on boring logs represent raw N-values corrected for hammer efficiency only. |                                               |                |                                                  |



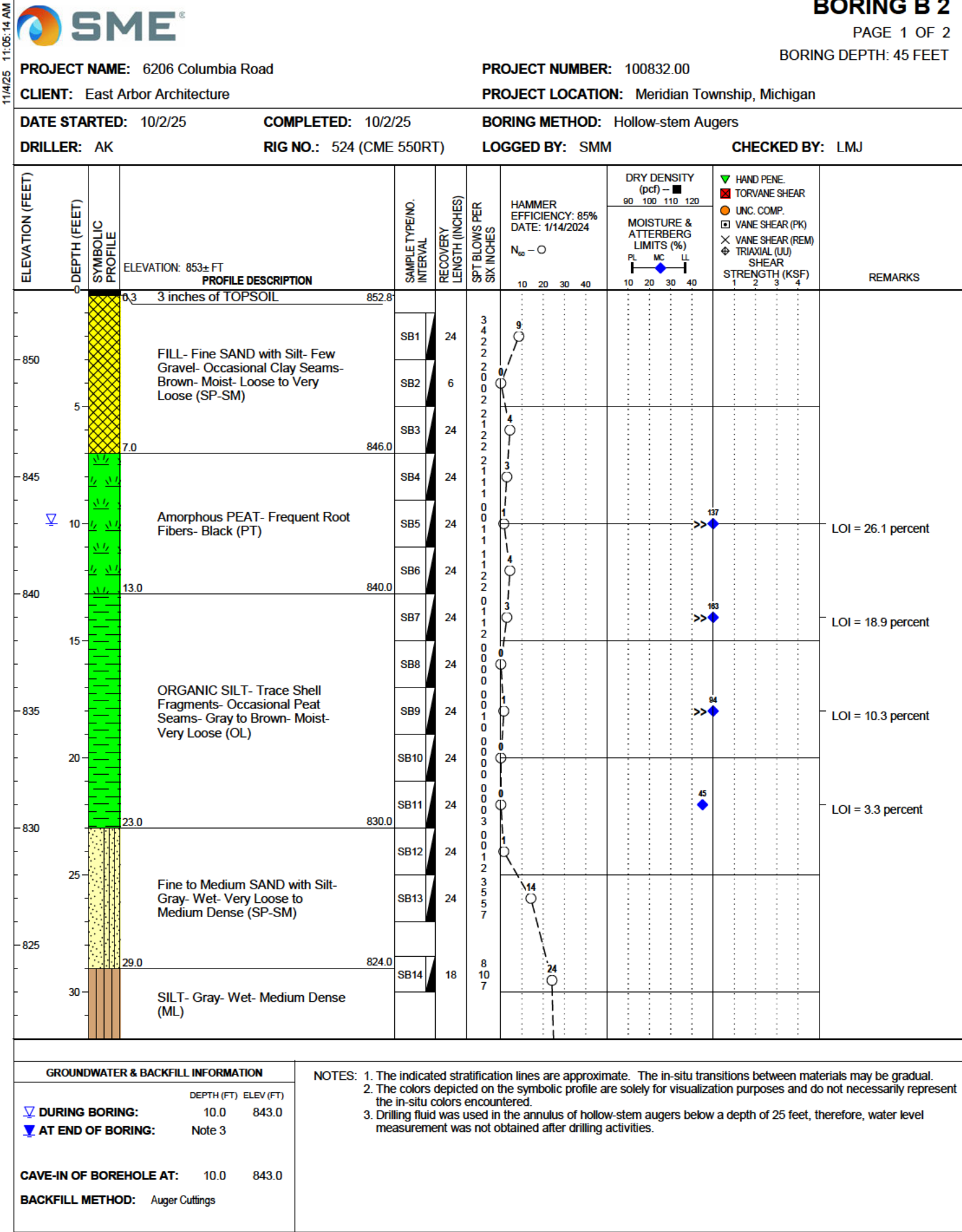


**PROJECT LOCATION:** Meridian Township, Michigan

BORING DEPTH: 45 FEET

[illegible]





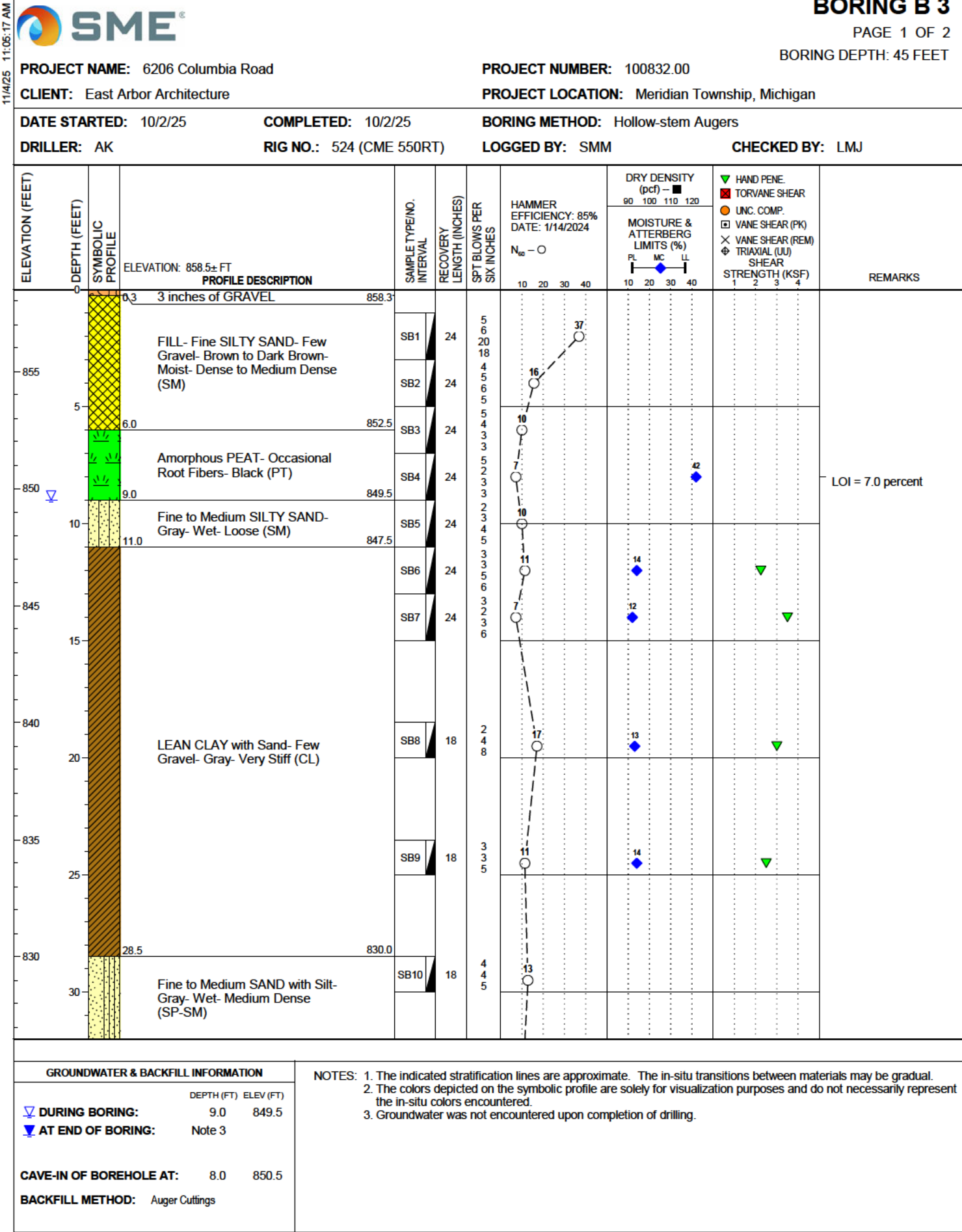


BORING DEPTH: 45 FEET

**PROJECT NUMBER:** 100832.00

**PROJECT LOCATION:** Meridian Township, Michigan

[illegible]





BORING DEPTH: 45 FEET

**PROJECT LOCATION:** Meridian Township, Michigan

[illegible]

## **APPENDIX B**

### **FIELD TESTING PROCEDURES**

### **LABORATORY TESTING PROCEDURES**

### **LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS**



## FIELD TESTING PROCEDURES

### STANDARD PENETRATION TESTS

The Standard Penetration Tests (SPT) generally follow the American Standard Test Method (ASTM) D-1586 “Standard Test Method for SPT and Split-Barrel Sampling of Soils”. It is typically performed using a 2-inch O.D. split-spoon sampler, which is driven to obtain samples at selected intervals. The number of blows of a 140-pound hammer dropping 30 inches is recorded for each of three or four, 6-inch penetration intervals for an 18 or 24-inch drive at each sample location. The sum of blow counts for the second and third 6-inch penetration intervals equals the raw (uncorrected) N-value for a given sample interval (i.e. 5-4-2,  $N = 6$ ). We periodically calibrate SME’s drill rig auto-hammers. The hammer efficiency determined from this calibration is used to calculate the corrected N-values ( $N_{60}$ ), as reported on the logs. When sampling in rock or hard soil, where a penetration of 6 inches or less was obtained for 50 hammer blows, the actual blow count and depth of penetration in inches for that interval is recorded (i.e. 50/2”). When sampling in very loose or very soft soil, where a penetration of more than 6 inches is obtained for a single hammer blow, the actual depth of penetration for that hammer blow is recorded (i.e. 1-0-0). Where the sampling equipment advanced under its own weight, “WOH” (weight of hammer) and the corresponding penetration depth are shown on the boring logs.

### INFILTRATION TESTS

In-situ infiltration tests generally follow the double-ring infiltrometer field test procedures outlined in Appendix E in the Low Impact Development (LID) Manual for Michigan (dated 2008) prepared by the Southeast Michigan Council of Governments (SEMCOG). This procedure is also referenced in the States of Indiana, Ohio, and Kentucky applicable local manuals. The double-ring infiltrometer field test set-up consists of performing a boring or test pit to the test depth, installing an outer 6-inch-diameter standpipe and an inner 4-inch-diameter standpipe, and then driving the standpipes a suitable distance, per the referenced manual, below the bottom of the test depth. Soil is pre-soaked with approximately 12 inches of water for approximately one hour. The water drop rate per the last 30 minutes of the soaking period determines the subsequent interval for infiltration readings (i.e., 10- or 30-minute intervals). After completing the soaking period, standpipes are filled with water to a height of approximately 12 inches above the test depth, and water level changes in the standpipes are measured with a water level measuring tape with markings every 0.01 feet and recorded after the time intervals. This procedure is repeated until a minimum of four consecutive height changes within 1/4-inch of one another are measured. The height drop that occurred during the final time interval or the average stabilized rate is used to calculate the infiltration rate. After completion of the double-ring infiltrometer field test, the standpipes are removed, and the test hole is backfilled.

### DYNAMIC CONE PENETROMETER (DCP)

#### USACE TESTS

Dynamic Cone Penetrometer (DCP) testing designed by the U.S. Army Corps of Engineers (USACE) is conducted to estimate the California Bearing Ratio (CBR) of the subgrade materials and existing pavement sub-layers. The USACE DCP consists of a 5/8-inch-diameter steel rod with a steel cone attached to one end driven by a sliding dual mass hammer. The rate of penetration per blow is measured at selected penetration, or hammer drop, intervals. CBR is an index commonly used in pavement design that provides an indication of subgrade support characteristics. The Corps of Engineers developed relationships to estimate the CBR value from the results of the USACE DCP test.

#### SME DCP TESTS

SME Dynamic Cone Penetrometer (DCP) test consists of dropping a 10-pound slide hammer that falls 24 inches and drives a rod with a 1-1/8-inch conical tip into the subgrade. The number of hammer drops required to drive the cone penetrometer are recorded for each six-inch increment and are used to estimate the relative density of the granular soils. The DCP blow counts were used to estimate Standard Penetration Test resistances (N-values) commonly used in geotechnical evaluations, based on empirical correlations developed by SME.

## PRESSUREMETER TESTING

Pressuremeter testing in the field models the static loading characteristics of the soil and the resulting analyses based on pressuremeter test results are considered to be a more accurate indicator of the ultimate foundation bearing pressure, and associated settlement, than analyses using empirical correlations based on dynamic test methods, such as the Standard Penetration Test (SPT) and/or dynamic cone penetrometer (DCP) tests. Results of the SPT and/or DCP were recorded, at the pressuremeter test locations and depths to provide additional information on the relative density of the in-place subgrade, and to correlate the pressuremeter test results with data obtained at other site locations. The pressuremeter test depths were selected to provide representative information corresponding to the bearing soils anticipated within the stress influence zone of the proposed footings at the design bearing levels.

In the pressuremeter test, a radial expandable cylindrical probe is inserted into a prepared borehole at the selected testing depth. After obtaining N-values from driving a standard 2-inch O.D. diameter split-spoon sampler, borehole preparation consisted of then driving a 3-inch O.D. split-spoon sampler (or using a roller bit with wash rotary methods) to develop the appropriately sized borehole diameter for the pressuremeter probe. The cylindrical probe was inserted into the borehole to the sampling depth and then expanded against the sides of the borehole by pressurizing fluid within the system using a hydraulic screw-jack console positioned at the ground surface.

Simultaneous measurements of pressure and volume change within the probe were observed at the pressuremeter console and recorded. The pressure was incrementally increased until the maximum probe volume was reached, or until significant creep deformation (soil failure) was observed.

## MUCK PROBE

The muck probe consists of a smooth rod about 1/2-inch in diameter manually pushed into the subgrade until encountering significant resistance (determined “by feel”), presumably indicating the bottom of organic soil stratum.

## VANE SHEAR TESTING

In-situ vane shear testing generally follows the American Standard Test Method (ASTM) D-2573 “Standard Test Method for Field Vane Shear Test in Cohesive Soil”. Per the ASTM, the field vane shear test consists of placing a four-bladed vane (sized based on the expected cohesive soil strength) in the undisturbed soil and rotating it from the surface at a constant rate to determine the torque required to shear a cylindrical surface with the vane. This torque, or moment, is then converted to the unit shearing resistance of the failure surface by limit equilibrium analysis. Friction of the vane rod and instrument is either minimized during readings by an open hole, casing, or accounted for and subtracted from the total torque to determine the torque applied to the vane. After initially shearing the soil to determine the peak “undisturbed” ultimate shear strength, the test can be repeated to determine the remolded “residual” ultimate shear strength. The ratio of the peak shear strength divided by the remolded shear strength equals the degree of sensitivity.

### DEGREE OF SENSITIVITY

| DEGREE OF SENSITIVITY | DESCRIPTION          |
|-----------------------|----------------------|
| 2                     | Insensitive          |
| 4                     | Moderately Sensitive |
| 8                     | Extra Sensitive      |

## ELECTRICAL RESISTIVITY TESTING

Field or laboratory resistivity testing generally follows the American Standard Test Method (ASTM) G-57 “Standard Test Method for Measurement of Soil Resistivity Using the Four-Electrode Method”.

## FIELD TESTING

Per the ASTM, the field Wenner four-electrode method requires four metal electrode probes placed with equal separation at various distances in a straight line. The probes are inserted in the surface of the soil to a depth not exceeding 5 percent of the minimum separation of the electrodes (or 12 inches maximum, whichever is less). The electrode separation is selected with consideration of the soil strata location and depth of interest. A voltage is impressed between the outer electrodes and the voltage drop between the inner electrodes is measured. The resulting resistivity measurement represents the average resistivity of a hemisphere of soil of a radius equal to the electrode separation.

## LABORATORY TESTING

Soil is tamped into a soil box to resemble the compaction where the soil sample was taken until the soil is level with the top of the box. Two brass pins are inserted at the premanufactured distances into the soil sample with two endpins connected to the box. The four test leads are connected to the soil box. A voltage is impressed between the two endpins to measure the resistance, and soil resistivity is calculated based on the product-specified conversion.

## CONE PENETRATION TESTING

Cone Penetration Tests (CPT) measures the soil resistance to the penetration of a standard 10 square centimeter (cm) projected area. The cone is hydraulically pushed into the soil at approximately a 2 cm per second rate. Soil resistance is recorded in kilograms per square cm at 20 cm depth intervals. Soil friction values are measured by a friction sleeve at each test interval.

## LABORATORY TESTING PROCEDURES

### VISUAL ENGINEERING CLASSIFICATION

Visual classification was performed on recovered samples. The appended General Notes and Unified Soil Classification System (USCS) sheets include a brief summary of the general method used visually classify the soil and assign an appropriate USCS group symbol. The estimated group symbol, according to the USCS, is shown in parentheses following the textural description of the various strata on the boring logs appended to this report. The soil descriptions developed from visual classifications are sometimes modified to reflect the results of laboratory testing.

### MOISTURE CONTENT

Moisture content tests were performed by weighing samples from the field at their in-situ moisture condition. These samples were then dried at a constant temperature (approximately 110° C) overnight in an oven. After drying, the samples were weighed to determine the dry weight of the sample and the weight of the water that was expelled during drying. The moisture content of the specimen is expressed as a percent and is the weight of the water compared to the dry weight of the specimen.

### HAND PENETROMETER TESTS

In the hand penetrometer test, the unconfined compressive strength of a cohesive soil sample is estimated by measuring the resistance of the sample to the penetration of a small calibrated, spring-loaded cylinder. The maximum capacity of the penetrometer is 4.5 tons per square-foot (tsf). Theoretically, the undrained shear strength of the cohesive sample is one-half the unconfined compressive strength. The undrained shear strength (based on the hand penetrometer test) presented on the boring logs is reported in units of kips per square-foot (ksf).

### TORVANE SHEAR TESTS

In the Torvane test, the shear strength of a low strength, cohesive soil sample is estimated by measuring the resistance of the sample to a torque applied through vanes inserted into the sample. The undrained shear strength of the samples is measured from the maximum torque required to shear the sample and is reported in units of kips per square-foot (ksf).

### LOSS-ON-IGNITION (ORGANIC CONTENT) TESTS

Loss-on-ignition (LOI) tests are conducted by first weighing the sample and then heating the sample to dry the moisture from the sample (in the same manner as determining the moisture content of the soil). The sample is then re-weighed to determine the dry weight and then heated for four hours in a muffle furnace at a high temperature (approximately 440° C). After cooling, the sample is re-weighed to calculate the amount of ash remaining, which in turn is used to determine the amount of organic matter burned from the original dry sample. The organic matter content of the specimen is expressed as a percent compared to the dry weight of the sample.

### ATTERBERG LIMITS TESTS

Atterberg limits tests consist of two components. The plastic limit of a cohesive sample is determined by rolling the sample into a thread and the plastic limit is the moisture content where a 1/8-inch thread begins to crumble. The liquid limit is determined by placing a 1/2-inch-thick soil pat into the liquid limits cup and using a grooving tool to divide the soil pat in half. The cup is then tapped on the base of the liquid limits device using a crank handle. The number of drops of the cup to close the gap formed by the grooving tool 1/2 inch is recorded along with the corresponding moisture content of the sample. This procedure is repeated several times at different moisture contents and a graph of moisture content, and the corresponding number of blows is plotted. The liquid limit is defined as the moisture content at a nominal 25 drops of the cup. From this test, the plasticity index can be determined by subtracting the plastic limit from the liquid limit.



## LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS

### EXISTING FILL

It is sometimes difficult to distinguish between existing fill present at a site and natural soils based on samples and cuttings from small-diameter boreholes, especially if portions of the fill do not contain man-made materials, debris, topsoil, or organic layers, and when the fill appears similar in composition to the local natural soils. Therefore, consider the delineation of fill described on the logs, if encountered, to be approximate.

The composition of existing site fill, if encountered, may change abruptly over short distances and will vary from what is reported on the logs. The descriptions of debris within fill may not accurately indicate the quantity, composition, or size of the debris, and may not fully include the types of debris existing within the site fills. Perform test pits if existing fill is encountered to further evaluate the condition of the fill, particularly if the fill will be utilized for support of overlying structures and/or other improvements.

### GROUNDWATER

Hydrostatic groundwater levels, and perched groundwater conditions, will fluctuate throughout the year, based on variations in precipitation, evaporation, run-off, and other factors. The groundwater information reported on the logs represent conditions at the time the readings were taken and may vary from the groundwater conditions encountered at other times.

### SUBSURFACE PROFILE

The profile described in this report and included on the logs is a generalized description of the conditions observed. The stratification depths described in this report and shown on the logs indicate a zone of transition from one soil type to another. They are not meant to delineate exact depths of change between soil types. Soil conditions may vary between or away from the exploration locations. Refer to the logs for the soil descriptions, rock descriptions (when applicable), and results of the field and laboratory tests at the specific exploration locations.

If only borings with hollow-stem or solid-stem augers are performed, consider thickness measurements of surficial materials reported on the logs (e.g., gravel, asphalt, concrete, aggregate base) to be approximate since mixing of the surface materials with the underlying subgrade can occur while advancing the augers, and it is difficult to measure the thickness of surface materials in small-diameter boreholes. Perform additional evaluations for more accurate measurements of surface materials, such as test pits for topsoil and gravel thicknesses, coring for pavement thicknesses, and hand sampling for aggregate thickness.

### RADON

The need for radon control systems for this project was not evaluated as part of our current scope of services. Contact the local building authority to verify whether radon control systems are necessary to meet the applicable local building codes or other requirements. If radon control methods are required, incorporate the recommendations regarding the below-slab leveling course materials and vapor retarders presented in this report with the specific materials and measures necessary to meet the applicable radon control methods. Contact SME for further recommendations.



## **APPENDIX C**

### **IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING REPORT GENERAL COMMENTS**

# Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

## Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared solely for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

## Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

## You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

## This Report May Not Be Reliable

*Do not rely on this report* if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

## Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

## This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

## This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

## Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

## Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

## Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

## Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.



Telephone: 301/565-2733

e-mail: [info@geoprofessional.org](mailto:info@geoprofessional.org) [www.geoprofessional.org](http://www.geoprofessional.org)



## GENERAL COMMENTS

### BASIS OF GEOTECHNICAL REPORT

This report has been prepared in accordance with generally accepted geotechnical engineering practices to assist in the design and/or evaluation of this project. If the project plans, design criteria, and/or other project information referenced in this report and utilized by SME to prepare our recommendations are changed, the conclusions and recommendations contained in this report are not considered valid unless the changes are reviewed, and the conclusions and recommendations of this report are modified or approved in writing.

The discussions and recommendations contained in this report are based on the available project information, described in this report, and the geotechnical data obtained from the field exploration at the locations indicated in the report. Variations in soil and groundwater conditions commonly occur between or away from sampling locations. The nature and extent of the variations may not become evident until the time of construction. If significant variations are observed during construction, SME must be contacted to reevaluate the recommendations of this report.

In the process of obtaining and testing samples and preparing this report, procedures are followed that represent reasonable and accepted practice in the field of geotechnical engineering. Specifically, field logs are prepared during the field exploration that describe field occurrences, sampling locations, and other information. Samples obtained in the field are frequently subjected to additional testing and reclassification in the laboratory and differences may exist between the field logs and the report logs.

The engineer preparing the report reviews the field logs, laboratory classifications, and test data and then prepares the report logs. Our recommendations are based on the contents of the report logs and the information contained therein.

### REVIEW OF DESIGN DETAILS, PLANS, AND SPECIFICATIONS

Retain SME to review the design details, project plans, and specifications to verify those documents are consistent with the recommendations contained in this report.

### REVIEW OF REPORT INFORMATION WITH PROJECT TEAM

Implementation of our recommendations may affect the design, construction, and performance of the proposed improvements, along with the potential inherent risks involved with the proposed construction. The client and key members of the design team, including SME, should discuss the issues covered in this report so the issues are understood and applied in a manner consistent with the owner's budget, tolerance of risk, and expectations for performance and maintenance.

### FIELD VERIFICATION OF GEOTECHNICAL CONDITIONS

SME needs to be retained to continue our services through construction so we may observe and evaluate the actual subsurface conditions relative to the recommendations made in this report, and so we can verify the recommendations of this report are properly implemented during construction. This may avoid misinterpretation of our recommendations by other parties and will allow us to review and modify our recommendations if variations in the site subsurface conditions are encountered.

### PROJECT INFORMATION FOR CONTRACTOR

This report and any future addenda or other reports regarding this site needs to be made available to prospective contractors prior to submitting their proposals for their information only and to supply them with facts relative to the subsurface evaluation and laboratory test results. If the selected contractor encounters subsurface conditions during construction, which differ from those presented in this report, the contractor needs to promptly describe the nature and extent of the differing conditions in writing and SME needs to be notified so we can verify those conditions. The construction contract needs to include provisions for dealing with differing conditions, and contingency funds for potential problems during earthwork and foundation construction. We would be pleased to assist with the development of contract provisions based on our experience.

The contractor needs to be prepared to handle environmental conditions encountered at this site, which may affect the excavation, removal, or disposal of soil; dewatering of excavations; and health and safety of workers. Any Environmental Assessment reports prepared for this site need to be made available for review by bidders and the successful contractor.

### **THIRD PARTY RELIANCE/REUSE OF THIS REPORT**

This report has been prepared solely for the use of our Client for the project specifically described in this report. This report cannot be relied upon by other parties not involved in the project, unless specifically allowed by SME in writing. SME also is not responsible for the interpretation by other parties of the geotechnical data and the recommendations provided herein.





*Passionate People Building  
and Revitalizing our World*











**To:** Zoning Board of Appeals  
**From:** Timothy R. Schmitt, AICP, Director of Community Planning and Development  
**Date:** October 16, 2026  
**Re:** ZBA Case No. #26-14 – 2075 W Grand River

---

**ZBA CASE NO.:** 26-14 – 2075 West Grand River – Chick-Fil-A, Inc.  
**LOCATION:** 2075 West Grand River Avenue  
**PARCEL ID:** 33-02-02-21-276-014  
**ZONING DISTRICT:** C-3, Commercial

The applicant is requesting a variance from the following section of the Code of Ordinances:

- Section 86-405(e)(13) a.1.: Side and rear yards shall be at least 20 feet, except that all buildings shall be located in accordance with the Master Plan for Major Streets and Highways, Meridian Charter Township, Ingham County, Michigan for established setbacks. This subsection does not apply to drive-in uses adjacent to residential districts.

CPH Consulting LLC, on behalf of Chick-Fil-A, Inc, the applicant, is requesting a variance to allow the construction a canopy over their drive through area. The canopy is 1,052 square feet and provides cover for the drive through lanes and would be located 9 feet, 11 inches from the southern property line, which is the rear yard. A setback of 20 feet is required.

The Zoning Board of Appeals previously reviewed a nearly identical request on February 16, 2022 and approved it. At that time, the canopy was slightly larger and encroached up to 6 feet, 8 inches from the property line. The canopy was never installed and the variance has since expired. No other factor has changed on the property or in the area, since that approval. The minutes from the February 16, 2022 ZBA meeting can be found [HERE](#).

The Zoning Ordinance requires a setback of 20 feet in the rear yard of all C-3 zoned properties. The applicant is proposing a canopy to be installed only 9 feet, 11 inches from the rear property line, which is the specific variance being requested.

#### **Attachments**

1. Variance application
2. Site location map

**CHARTER TOWNSHIP OF MERIDIAN  
PLANNING DIVISION  
5151 MARSH ROAD, OKEMOS, MI 48864  
(517) 853-4560**

**VARIANCE APPLICATION**

A. Applicant CPH Consulting LLC, on behalf of Chick-fil-A Inc.  
Address of Applicant 500 W Fulton St Sanford, FL 32771  
500 W Fulton St Sanford, FL 32771  
Telephone (Work) 407-322-6841 x1102 Telephone (Home) \_\_\_\_\_  
Fax \_\_\_\_\_ Email address: linda.barr@cphcorp.com  
Interest in property (circle one): ☐ Owner ☐ Tenant ☐ Option ☒ Other

B. Site address/location 2075 W Grand River Ave Okemos, MI 48864  
Zoning district C-3 Parcel number 33-02-02-21-276-014

C. Nature of request (Please check all that apply):  
☒ Request for variance(s)  
☐ Request for interpretation of provision(s) of the "Zoning Ordinance" of the Code of Ordinances  
☐ Review an order, requirements, decision, or a determination of a Township official charged with interpreting or enforcing the provisions of the "Zoning Ordinance" of the Code of Ordinances

Zoning Ordinance section(s) Sec. 405(13)(a)(1) - Rear Setback

D. Required Supporting Material Supporting Material if Applicable  
-Property survey -Architectural sketches  
-Legal description -Other  
-Proof of property ownership or approval letter from owner  
-Site plan to scale  
-Written statement, which demonstrates how all the review criteria will be met (See next page)

\_\_\_\_\_  
Signature of Applicant Linda Barr, CPH Consulting LLC 9/18/2026  
Print Name Date

Fee: \$500.00 Received by/Date: \_\_\_\_\_

*I (we) hereby grant permission for members of the Charter Township of Meridian Zoning Board of Appeals, Township staff members and the Township's representatives or experts the right to enter onto the above described property (or as described in the attached information) in my (our) absence for the purposes of gathering information including but not limited to the taking and the use of photographs. (Note to Applicant(s): This is optional and will not affect any decision on your application.)*

\_\_\_\_\_  
Signature of Applicant(s) 9/18/2026 Date  
\_\_\_\_\_  
Signature of Applicant(s) Date

## **VARIANCE APPLICATION SUPPLEMENT**

### **A variance will be granted, if the following Review Criteria are met:**

1. Unique circumstances exist that are peculiar to the land or structure, that are not applicable to other land or structures in the same zoning district and these unique circumstances are not self-created.
2. Strict interpretation and enforcement of the literal terms and provisions of this chapter would result in practical difficulties that would prevent the owner from using the property for a permitted purpose.
3. Granting the variance is the minimum action necessary which would carry out the spirit of this zoning ordinance, secure public safety, and provide substantial justice.
4. Granting the variance will not adversely affect adjacent land or the essential character in the vicinity of the property.
5. Granting the variance will be generally consistent with public interest and the purposes and intent of this chapter.

### **Effect of Variance Approval:**

1. Granting a variance shall authorize only the purpose for which it was granted.
2. The effective date of a variance shall be the date of the Zoning Board of Appeals approves such variance.
3. A building permit must be applied for within 24 months of the date of the approval of the variance, and a Certificate of occupancy must be issued within 18 months of the date the building permit was issued, otherwise the variance shall be null and void.

### **Reapplication:**

1. No application for a variance, which has been denied wholly or in part by the Zoning Board of Appeals, shall be resubmitted until the expiration of one (1) year or more from the date of such denial, except on grounds of newly discovered evidence or proof of changed conditions found by the Zoning Board of Appeals to be sufficient to justify consideration.





9/16/2025

**Reference: Chick-fil-A #03695 Okemos  
2075 W Grand River Avenue Okemos, MI 48864  
Letter of Authorization**

To Whom It May Concern:

Please accept this letter as authorization for CPH Consulting, LLC to act as agent in applications, correspondence and representation of all approval and permitting matters required for Chick-fil-A at the location referenced above.

Sincerely,

Chick-fil-A Inc.

Subscribed and sworn to before me this 17 day of September 2026.

Notary Public   
Seal

My Commission Expires: 5.12.2029

**LISA HAWKINS  
NOTARY PUBLIC  
Coweta County  
State of Georgia  
My Comm. Expires May 12, 2029**



500 West Fulton Street  
Sanford, FL 32771  
Phone: 407.322.6841  
Fax: 407.330.0639

September 18, 2026

Charter Township of Meridian  
Community Planning Department  
Attention: Brian Shorkey, Principal Planner  
5151 Marsh Road Okemos, MI 48864  
517-853-4000

RE: Chick-Fil-A #03695 Okemos FSU  
2075 Grand River Avenue Okemos, MI 48864  
Variance Application Written Statement

To Whom it May Concern,

Chick-fil-A, as part of their restaurant reinvestment program, is seeking approval of a Variance and Minor Site Plan Amendment at their existing restaurant at 2075 Grand River Avenue, near the Southeast corner of Okemos Road and Grand River Avenue. This request is being respectfully re-submitted in renewal of Variance #22-01-19-1 that was approved February 16, 2022. This re-submittal is intended to carry forward a similar canopy scope and setback relief described in variance #22-01-19-1.

The existing parcel is a 1.32-acre pad site zoned C-3 Commercial District and incorporated within the existing Meijer Grocery Store Shopping Center. The fast-food restaurant has operated for several years and was developed in accordance with Charter Township of Meridian and shopping-center design standards. The existing 4,730-square-foot restaurant is located at the southwest corner of the Chick-fil-A parcel. Existing site amenities include a dual-lane drive-thru with two two-way communication order-point menu boards, a drive-up service window, an illuminated off-street paved parking lot, an existing masonry-screen-wall trash enclosure with metal gates, and a rear service area. The property and streetscape are landscaped with trees, turf, decomposed granite, and shrubbery native to the area. The southern portion of the drive-thru and one menu-board canopy were previously allowed beyond the existing 20-foot rear-yard setback along the south property line.

Chick-fil-A proposes one canopy within the existing drive-thru lane. The Face-to-Face Canopy is a 1,052-square-foot steel structure, located in the drive-thru lane near the existing menu boards.

A 40-foot-long portion of the Face-to-Face Canopy would extend beyond the existing 20-foot rear-yard setback to approximately 10 feet 1 inches. Chick-fil-A therefore requests re-approval to install the Face-to-Face order-point canopy beyond the setback line as described in Sec. 405(13)(a)(1). The 20-foot rear-yard setback creates an excessive separation between two commercial properties and limits the canopy's ability to serve the existing drive-thru operation. The proposed Face-to-Face Canopy is shorter and proposes a lesser encroachment than what was previously approved under Variance #22-01-19-1, which measured at 1,280 Square Feet and extended 13 feet 4 inches beyond the existing setback.

During peak operating periods, the existing two-way communication menu boards may not process orders quickly enough, which can lead to on-site congestion, vehicles blocking business entrances, or vehicles backing into public streets. Chick-fil-A team members use tablets and work outside during these peak periods to take and process orders. The proposed canopy would protect team members from inclement weather, improve working conditions, and support more consistent and efficient drive-thru service.



Comparable canopy structures have been installed at other Chick-fil-A locations nationwide. Those locations have benefited from reduced traffic backups, improved employee working conditions, and quicker service. The proposed canopy would be independent, open-sided, freestanding structures constructed with steel framing, cantilevered beams, and caisson footings. Supporting columns may be finished with powder-coat paint or framed and wrapped with materials matching the existing restaurant. Recessed LED lighting would be installed within the premanufactured painted metal deck, and fans and heaters would provide relief from varying weather conditions. These design options allow the structures to remain architecturally compatible with the existing restaurant and surrounding shopping center.

Granting the variance would not adversely affect the site or neighboring properties. The canopy would not emit noise or noxious odors and would not materially alter existing drainage patterns or cause flooding. Landscaping beneath the Face-to-Face Canopy would be modified only where the footings are installed, and no trees would need to be removed. Pervious and impervious areas near the canopy would be slightly adjusted. Stormwater from the canopies would be collected by internal rain gutters and discharged to the existing pavement, following the site's existing drainage pattern and utilizing the existing drainage system. The project would not alter on-site parking or the established character of the property.

Construction of the canopy is anticipated to occur in three phases while the restaurant remains in operation. During the first weekend, footings and underground conduit would be installed and the pavement trenched and patched. Work would begin after normal business hours and excess soil would be removed promptly. During the second week, steel would be erected, the roof decking installed, and lights and fans mounted. During the third week, utility connections would be completed and required inspections scheduled. Construction areas would be safely barricaded throughout the work to protect the public and restaurant operations.

The proposed canopies remain a needed operational improvement for this site. Reapproval of Variance #22-01-19-1 would allow Chick-fil-A to implement the same site improvement while maintaining the existing drive-thru configuration, parking, drainage, and character of the surrounding commercial development. Chick-fil-A looks forward to working with the Charter Township of Meridian Community Planning Department to complete the 2026 resubmittal.

Sincerely,

CPH Consulting, LLC.

**Jason Toole, P.E., LEED AP**

Vice President

o 850.563.1490 (Ext. 4801)

c 850.774.9575

[jtoole@cphcorp.com](mailto:jtoole@cphcorp.com)



## LEGEND

|   |                                    |
|---|------------------------------------|
| ● | IRON PIN FOUND, AS NOTED           |
| ▲ | P. K. N.A.L. SET (PKS)             |
| ■ | P. K. N.A.L. FOUND (PKF), AS NOTED |
| ○ | BENCHMARK, AS NOTED                |
| ○ | SIGN, AS NOTED                     |
| ○ | SEWER CLEAN OUT                    |
| ○ | SEWER MANHOLE                      |
| ○ | FIRE HYDRANT                       |
| ○ | WATER VALVE                        |
| ○ | UTILITY POLE                       |
| ○ | GUY WIRE                           |
| ○ | ELECTRIC METER                     |
| ○ | ELECTRIC BOX                       |
| ○ | ROOF DRAIN                         |
| ○ | IRRIGATION VALVE                   |
| ○ | GAS METER                          |
| ○ | GAS VALVE                          |
| ○ | FOC PULL BOX                       |
| ○ | TELEPHONE BOX                      |
| ○ | CURB INLET                         |
| ○ | GRATE INLET                        |
| ○ | STORM MANHOLE                      |
| ○ | ROUND INLET                        |
| ○ | GATE POST                          |
| ○ | UMBRELLA                           |
| ○ | PROPERTY LINE                      |
| ○ | EASEMENT LINE                      |
| ○ | SETBACK LINES                      |
| ○ | OVERHEAD W. RE                     |
| ○ | UNDERGROUND ELECTRIC               |
| ○ | FENCE LINE                         |
| ○ | GAS LINE, AS NOTED                 |
| ○ | WATER LINE, AS NOTED               |
| ○ | SANITARY SEWER, AS NOTED           |
| ○ | UNDERGROUND FIBER OPTIC            |
| ○ | FOC                                |
| ○ | STORM SEWER P.P.E., AS NOTED       |
| ○ | ST                                 |
| ○ | OVERHANG                           |
| ○ | PLANTER                            |
| ○ | LIGHT POLE                         |
| ○ | LIGHT POLE(2-WAY)                  |



Know what's below.  
Call before you dig.

## TABLE A NOTES:

- ITEM 3: THIS PROPERTY IS LOCATED WITHIN AN AREA HAVING ZONE DESIGNATIONS OF ZONE "AE" BY THE SECRETARY OF HOUSING AND URBAN DEVELOPMENT, ON FLOOD INSURANCE RATE MAP NO. 26065C0156D, WITH AN EFFECTIVE DATE OF AUG. 16, 2011, IN THE CHARTER TOWNSHIP OF MERIDIAN, STATE OF MICHIGAN, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PROPERTY IS SITUATED.
- ITEM 5: CONTOURS WERE DERIVED FROM RANDOM SHOTS AND CROSS SECTIONS AND ARE SHOWN AT ONE FOOT INTERVALS. ELEVATIONS SHOWN HEREON ARE BASED ON GPS OBSERVATIONS TOGETHER WITH AN OPUS SOLUTION, DATED 7/29/2016 (NAD83, GEOID13).
- ITEM 6A: NO ZONING LETTER SENT TO THIS SURVEYOR.
- ITEM 16: THERE WAS NO EVIDENCE OF RECENT EARTH MOVING, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELDWORK.
- ITEM 17: THERE WAS NO EVIDENCE OF RECENT EARTH MOVING, RIGHT OF WAY LINES, THERE WAS NO EVIDENCE OF STREET OR STREET SIDEWALK CONSTRUCTION OR REPAIRS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELDWORK.

## LAND DESCRIPTION (PER DEED):

PART OF THE NORTHEAST 1/4 OF SECTION 21, TOWN 4 NORTH, RANGE 1 WEST, MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE EAST 1/4 CORNER OF SAID SECTION 21, THENCE NORTH 00 DEGREES 05 MINUTES 59 SECONDS WEST (RECORDED AS NORTH 00 DEGREES 00 MINUTES 00 SECONDS EAST) 400.00 FEET ALONG THE EAST LINE OF SAID SECTION 21, THENCE NORTH 77 DEGREES 33 MINUTES 36 SECONDS WEST (RECORDED AS NORTH 77 DEGREES 18 MINUTES 37 SECONDS WEST) 450.35 FEET, THENCE NORTH 00 DEGREES 40 MINUTES 26 SECONDS EAST (RECORDED AS NORTH 00 DEGREES 35 MINUTES 25 SECONDS EAST) 300.00 FEET TO THE SOUTHERLY RIGHT-OF-WAY LINE OF GRAND RIVER AVENUE (M-43) (120 FEET WIDE), THENCE ALONG THE SOUTHERLY RIGHT-OF-WAY LINE OF GRAND RIVER AVENUE (M-43) THE FOLLOWING TWO COURSES:

391 FEET ALONG THE ARC OF A 569.65 FOOT RADIUS CURVE TO THE LEFT HAVING A CHORD BEARING NORTH 76 DEGREES 33 MINUTES 38 SECONDS WEST (RECORDED AS NORTH 76 DEGREES 38 MINUTES 39 SECONDS WEST) 39.71 FEET AND NORTH 77 DEGREES 05 MINUTES 40 SECONDS WEST (RECORDED AS NORTH 76 DEGREES 50 MINUTES 41 SECONDS WEST) 100.47 FEET TO THE POINT OF BEGINNING, THENCE 19.61 FEET ALONG THE ARC OF A 33.00 FOOT RADIUS CURVE TO THE RIGHT HAVING A CHORD BEARING SOUTH 17 DEGREES 01 MINUTES 43 SECONDS EAST 19.32 FEET, THENCE SOUTH 00 DEGREES 00 MINUTES 10 SECONDS WEST 41.70 FEET, THENCE SOUTH 89 DEGREES 44 MINUTES 19 SECONDS WEST 319.80 FEET, THENCE 45.68 FEET ALONG THE ARC OF A 29.00 FOOT RADIUS CURVE TO THE RIGHT HAVING A CHORD BEARING NORTH 45 DEGREES 07 MINUTES 55 SECONDS WEST 41.10 FEET, THENCE NORTH 00 DEGREES 00 MINUTES 10 SECONDS WEST 82.82 FEET, THENCE NORTH 89 DEGREES 59 MINUTES 50 SECONDS EAST 27.50 FEET, THENCE NORTH 00 DEGREES 00 MINUTES 10 SECONDS WEST 86.00 FEET TO THE SOUTHERLY RIGHT-OF-WAY LINE OF GRAND RIVER AVENUE (M-43), THENCE SOUTH 77 DEGREES 05 MINUTES 40 SECONDS EAST (RECORDED AS SOUTH 76 DEGREES 50 MINUTES 41 SECONDS EAST) 354.22 FEET ALONG THE SOUTHERLY RIGHT-OF-WAY LINE OF GRAND RIVER AVENUE (M-43) TO THE POINT OF BEGINNING, CONTAINING 1.32 ACRES OF LAND, MORE OR LESS.

## UTILITY CONTACTS

PLANNING/ZONING DEPARTMENT  
MERIDIAN TOWNSHIP PLANNING DEPARTMENT  
5151 MARSH ROAD  
OKEMOS, MI 48864  
PETER MENGER  
517-853-4576  
menger@meridian.mi.us

JENNIFER QUINLIVAN  
517-853-4580  
quinlivan@meridian.mi.us

FIRE MARSHAL  
MERIDIAN TOWNSHIP FIRE DEPARTMENT  
5151 MARSH ROAD  
OKEMOS, MI 48864  
TAVIS MILLER  
517-853-4720  
millerov@meridian.mi.us

## TRAFFIC ENGINEERING

SEE PLANNING

MDOT:  
JAMES SIMON  
517-750-0447  
simonj15@michigan.gov

SANITARY SEWER & WATER  
MERIDIAN TOWNSHIP ENGINEERING DEPARTMENT  
5151 MARSH ROAD  
OKEMOS, MI 48864  
YOUSHA ISHRAIDI  
517-853-4460  
ishraidi@meridian.mi.us

STORM DRAINAGE  
INGHAM COUNTY DRAIN COMMISSIONER  
707 BUIH STREET  
MASON, MI 48854

GAS & ELECTRIC UTILITY  
CONSUMERS ENERGY  
JESSE WILLIAMS  
517-374-2252  
jwilliams@cmsenergy.com

TELEPHONE/INTERNET UTILITY  
AT&T  
HEATHER VALLEE-KNOBLAUCH  
517-337-3610  
haz139@att.com

CABLE UTILITY  
COMCAST  
LUKE VOELZKE  
517-242-9367  
Lucas\_Voelzke@cable.comcast.com

## OWNER INFORMATION

PAR: 33020221276014  
Chick-fil-A, Inc., a Georgia Corporation, whose address is  
5200 Buffington Road, Atlanta, Georgia, 30349-2998  
Inst. No. 2016-037477

PART OF THE NE 1/4 OF SECTION 21,  
TOWN 4 NORTH, RANGE 1 WEST,  
MERIDIAN TOWNSHIP, INGHAM COUNTY,  
MICHIGAN

## CLIENT INFORMATION

CPI CONSULTING, LLC  
500 WEST FULTON STREET  
SANFORD, FL 32771

## NOTES CORRESPONDING TO SCHEDULE B-II: FOR INFORMATION PURPOSES ONLY

SUBJECT TO FIDELITY NATIONAL TITLE UPDATE REPORT ORDER NO. 30115659, DATED JANUARY 29, 2026. ALL PLOTTABLE EASEMENTS FROM SAID REPORT ARE SHOWN HEREON. PREVIOUS EASEMENTS ARE SHOWN PER THE ALTA SURVEY CONDUCTED ON JULY 10, 2015 BY ENGINEERING FOR RESULTS, 13500 REECK ROAD, SOUTHGATE, MI 48195

FIDELITY NATIONAL TITLE  
TITLE UPDATE REPORT BEGINNING OCTOBER 19, 2016 AND EXTEND NG THROUGH JANUARY 8, 2026.  
ORDER # 30115659  
ITEMS 1 DID NOT CONTAIN ANY ADDITIONAL EASEMENTS THAT AFFECTED THE SUBJECT PROPERTY.

2. Grant of Easement in favor of The Charter Township of Meridian, a Michigan Municipal Corporation set forth in instrument recorded on October 19, 2016 in Instrument No. 2016-037476. **AFFECTS, AS SHOWN HEREON.**

3. Non-Exclusive Driveway Access Easement Agreement in favor of Chick-Fil-A, Inc., a Georgia corporation set forth in instrument recorded on October 19, 2016 in Instrument No. 2016-037478. **DRIVEWAY EASEMENT, BENEFITS SUBJECT PARCEL.**

4. Covenants, conditions and restrictions but omitting any covenants or restrictions, if any, including but not limited to those based upon race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, source of income, gender, gender identity, gender expression, medical condition or genetic information, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law, as set forth in the document recorded on October 19, 2016, as Document No. Instrument No. 2016-037479. **AFFECTS, NO ADDITIONAL PLOTTABLE EASEMENTS.**

5. Notice of Commencement by instrument recorded on October 31, 2016 in Instrument No. 2016-037853. **SUBJECT TO THIS ITEM.**

6. Easement for Electric Facilities in favor of Consumers Energy Company, a Michigan corporation set forth in instrument recorded on December 20, 2016 in Instrument No. 2016-044453. **AFFECTS, AS SHOWN HEREON.**

## PARKING COUNT

REGULAR - 52  
HANDICAP - 3

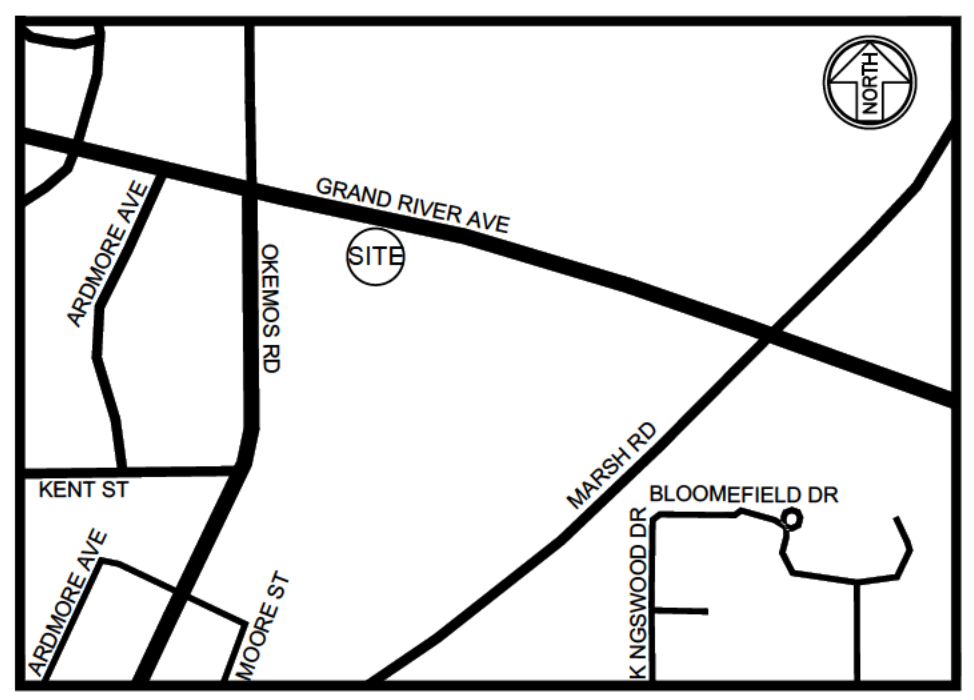
## SITE ADDRESS

28588 2075 W Grand River Ave,  
Okemos, MI 48864

## SETBACK NOTE:

Setback information shown hereon was taken from the ALTA Survey conducted on July 10, 2015 by Engineering for Results, 13500 Reeck Road, Southgate, MI 48195

## LOCATION MAP NTS



## SURVEY NOTES:

INFORMATION REGARDING THE PRESENCE, SIZE AND LOCATION OF UNDERGROUND UTILITIES IS SHOWN HEREON. THIS INFORMATION HAS BEEN SHOWN BASED ON THE LOCATION OF ABOVE GROUND APPURTENANCES, AVAILABLE DESIGN PLANS, AND FLAGS AND PAINT PLACED BY THE UNDERGROUND PROTECTION SERVICE. NO CERTIFICATION IS MADE AS TO THE ACCURACY OF THOROUGHNESS OF THE INFORMATION CONCERN NG UNDERGROUND UT LITIES AND STRUCTURES SHOWN HEREON. (MICHIGAN ONE CALL 811 OR 1-800-482-7171.)

A PRIVATE UT LITY LOCATE WAS PERFORMED ON A PORTION OF THIS SITE AT THE TIME OF THIS SURVEY.

CONTACT PROPER AUTHORITIES BEFORE BUILDING NEAR UTILITY LINES, FOR EASEMENT WIDTH AND RESTRICTIONS. UTILITY ES ARE APPROXIMATE AND SHOULD BE VERIFIED PRIOR TO ANY CONSTRUCTION.

THIS SURVEY HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF THE PERSON OR ENTITIES NAMED HEREON. NO EXPRESS OR IMPLIED WARRANTIES WITH RESPECT TO THE INFORMATION SHOWN HEREON IS TO BE EXTENDED TO ANY PERSONS OR ENTITIES OTHER THAN THOSE SHOWN HEREON.

LIST OF ENCROACHMENTS: NONE.

AT THE TIME OF THIS SURVEY THERE WAS NO OBSERVED EVIDENCE ON SITE OF USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDF LL.

AT THE TIME OF THIS SURVEY THERE WAS NO DEL NEATION OF WETLANDS ON THIS SITE.

AT THE TIME OF THIS SURVEY THERE WAS NO OBSERVED EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION REPAIRS.

GROUND MEASUREMENTS ARE USED AS THE BASIS FOR LOCATION OF ALL FEATURES OF THE SUBJECT PROPERTY.

AT THE TIME OF THIS SURVEY THERE WAS NO OBSERVED EVIDENCE OF CURRENT EARTH MOV NG WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.

ALL MATTERS SHOWN ON RECORDED PLATS ARE SHOWN ON SURVEY.

A TITLE UPDATE REPORT WAS PROV DED TO THE SURVEYOR.

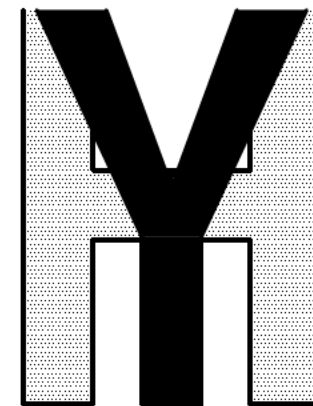
THE PROPERTY DESCRIBED N THE TITLE COMMITMENT IS THE SAME PROPERTY AS DEPICTED ON THE SURVEY.

UNLESS STATED OTHERWISE, ANY MONUMENT REFERRED TO HEREIN AS AN "RON PIN SET" IS A SET 5/8" DIAMETER REBAR, 30" N LENGTH, WITH A BLUE PLASTIC CAP STAMPED "MI PL 4001063517".

I HEREBY CERTIFY (OR STATE) THAT ALL PARTS OF THIS SURVEY AND DRAWING HAVE BEEN COMPLETED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE STANDARDS OF PRACTICE FOR SURVEYING N THE STATE OF MICHIGAN TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BEL EF.



Chick-fil-A  
5200 Buffington Road  
Atlanta, Georgia 30349-2998



YOUNG & HOBBS  
AND  
ASSOCIATES  
1202 CROSSLAND AVE.  
CLARKSVILLE, TN 37040  
PHONE 931-645-2524  
FAX 931-645-2768

PRELIMINARY, NOT  
FOR RECORDING  
OR TRANSFER

CHICK-FIL-A  
GRAND RIVER  
2075 W GRAND RIVER AVE,  
OKEMOS, MI 48864

FSR# 03695

| REVISION | SCHEDULE | DATE | DESCRIPTION |
|----------|----------|------|-------------|
| 1        |          |      |             |

|               |         |
|---------------|---------|
| YHA PROJECT # | 104-26  |
| DATE (FIELD)  | 7/29/26 |
| DATE (OFFICE) | 7/30/26 |
| CHECKED BY    | DRH     |

AS-BUILT  
SURVEY  
SHEET 1 OF 1

SHEET NUMBER

C-010





