

2436 S ORTONVILLE RD | ORTONVILLE, MI 48462



Commercial Vacant Land

**FOR
SALE**
OFFERED AT
\$ 299,900

- Commercial Land
- Zoned C-1
- 4.52 Acres
- 852 FT Road Frontage
- Located on Busy M-15
- Retail Strip Mall w/Drive Thru
- Sewer Tap/Lead at Site
- Well Needed
- Pre Lim Site Plan Approved

For more information: **Wilhelm & Associates (248) 625-9500 | www.wilhelmrealtors.com**



2436 Ortonville Road, Brandon Twp, Michigan 48462-8643

MLS#: **20250006057**
 P Type: **Land**
 Status: **Active**

Area: **02031 - Brandon Twp**
 DOM: **N/0/0**

Short Sale: **No**
 Trans Type: **Sale**
ERTS/FS

LP: **\$299,900**
 OLP: **\$299,900**



Location Information

County: **Oakland**
 Township: **Brandon Twp**
 Mailing City: **Ortonville**
 Side of Str:
 School District: **Brandon**
 Location: **Between Seymour Lake Rd & Glass Rd**

Waterfront Information

Water Name:
 Water Facilities:
 Water Features:
 WaterFront Feet:

Lot Information

Acreage: **4.52**
 List \$/Acre: **\$66,349.55**
 Min Lots/Acre:
 Lot Dim: **852 X 256 X 830 X 133**
 Road Front Feet: **852**
 Zoning: **Commercial**

Land Contract Information

Land DWP:
 Land Int Rate: **%**
 Land Payment:
 Land Terms:



Contact Information

Name: **TOM WILHELM**
 Phone: **(248) 891-1000**

Additional Information

Internet Avail:
 Mineral Rights:
 Sqft Min Lot:
 Survey:
 Irrigation:
 Perk:

Recent CH: **02/06/2025 : New : PS->ACTV**

Listing Information

Listing Date: 02/06/25	Off Mkt Date:	Pending Date:	MLS Source: REALCOMP
Restrictions:	ABO Date:	Contingency Date:	BMK Date:
Directions: Ortonville Rd (M-15) just past Seymour Lake Rd on the Left before Glass Rd	Protect Period: 180	Exclusions:	Originating MLS# 20250006057
Terms Offered: Cash, Conventional		Short Sale: No	Possession: At Close

Features

Current Use: **Unimproved**
 Water Source: **Well-Needed**
 Sewer: **Public Sewer (Sewer-Sanitary)**

Legal/Tax/Financial

Property ID: 0329152008	Restrictions:	Ownership: Standard (Private)
Tax Summ: \$1,361	Tax Winter: \$1,293	Oth/Spec Assmnt: 0.00
SEV: 45,960.00	Taxable Value: \$45,960.00	Existing Lease: No
Legal Desc: T5N, R9E, SEC 29 PART OF W 1/2 OF SEC BEG AT PT DIST N 01-50-48 E 880.69 FT & S 83-48-44 E 100.02 FT, S 42-01-51 E 447.64 FT, N 26-54-28 E 10.39 FT FROM W 1/4 COR, TH N 26-54-28 E 255.90 FT, TH S 51-30-00 E 473.65 FT, TH ALG CURVE TO RIGHT, RAD 5669.65 FT, CHORD BEARS S 48-47-15 E 378 FT, DIST OF 378.09 FT, TH S 43-07-22 W 133.50 FT, TH ALG CURVE TO LEFT, RAD 380 FT, CHORD BEARS N 68-41-30 W 247.21 FT, DIST OF 251.79 FT, TH ALG CURVE TO RIGHT, RAD 400 FT, CHORD BEARS N 58-56-18 W 384.61 FT, DIST OF 401.22 FT, TH N 30-12-11 W 77.03 FT, TH N 54-17-12 W 99.85 FT TO BEG 4.52 A 2-16-05 FR 005		

Agent/Office Information

List Office:	List Office Ph:
List Agent:	List Agent Ph:
Co-list Agent:	Co-list Agent Ph:

Remarks

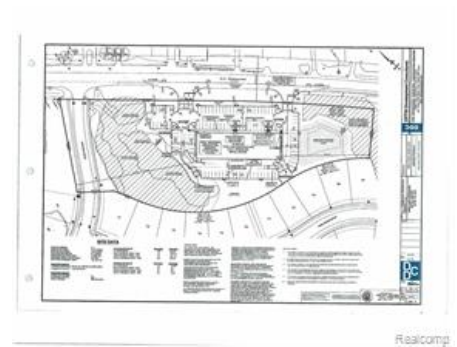
Public Remarks: **PRELIMINARY SITE PLAN for Retail Center w/Drive Thru. Sewer Tap/Lead at Site! 852 Ft of Road Frontage on Highly Traveled M-15 Road located between Seymour Lake Rd and Glass Rd off M-15 (Ortonville Rd). It is Zoned C-1 Local Commercial Business District. Perfect Land for Drive Thru/Dine In Coffee Shop or Restaurant, Medical Building, Bakery, Funeral Home, Photographic Studio, Bank, Office Building and Much Much More!**

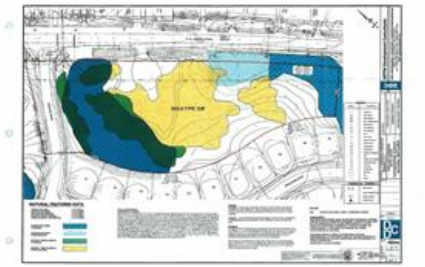
REALTOR® Remarks: **This Property is Well & Sewer Tap/Lead at Site, Zoned C-1 Local Business District. See "Docs" for Proposed Use List.**

Notices and Disclaimers

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Realcomp

2436 Ortonville Rd



2 Foot Contours	100 yr - FEMA Floodplain
5 Foot Contours	100 yr (detailed) - FEMA Floodplain
FEMA Base Flood Elevations	500 yr - FEMA Floodplain
FEMA Cross Sections	FLOODWAY - FEMA Floodplain

Disclaimer: The information provided herewith has been compiled from recorded deeds, plats, tax maps, surveys and other public records. It is not a legally recorded map or survey and is not intended to be used as one. Users should consult the information sources mentioned above when questions arise. FEMA Floodplain data may not always be present on the map.

OAKLAND COUNTY MICHIGAN
 Economic Development & Community Affairs
David Coulter
 Oakland County Executive

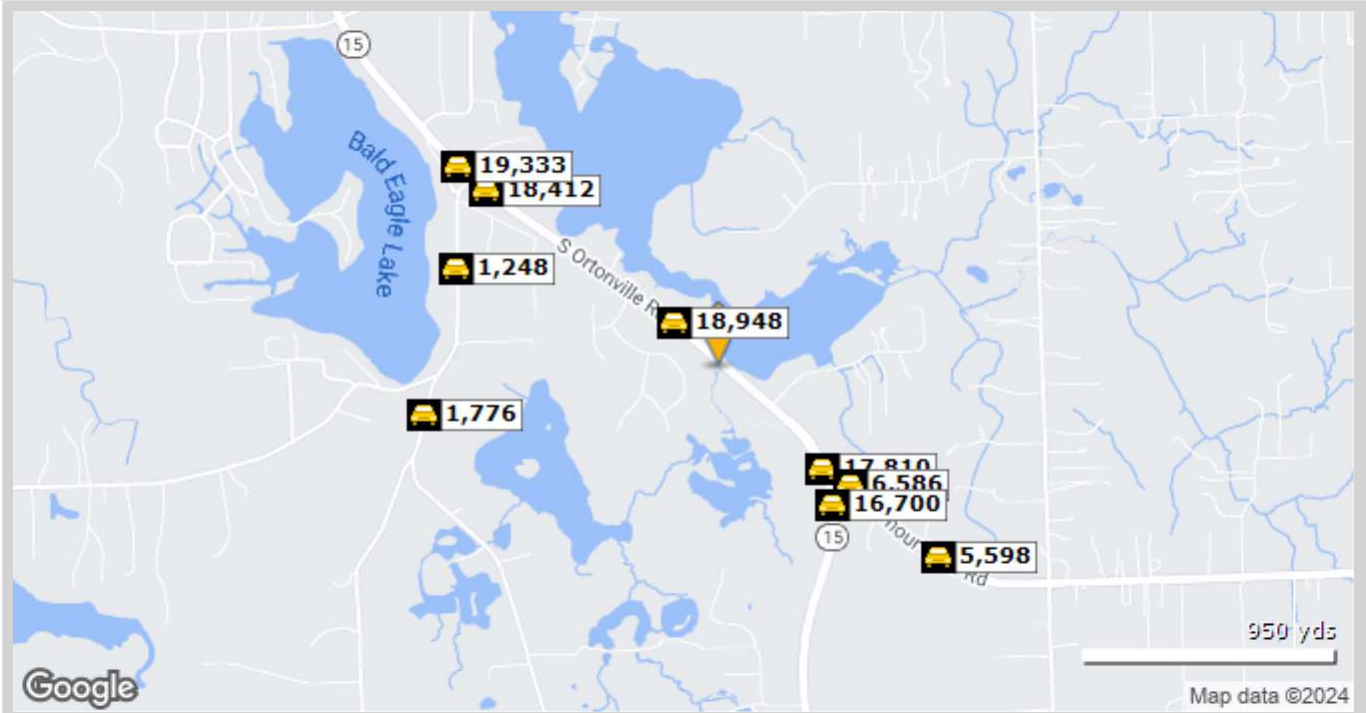
Date Created: 1/5/2024

NORTH
 1 inch = 200 feet

Traffic Count Report

2436 S Ortonville Rd, Ortonville, MI 48462

Building Type: **Land**
 Class: -
 RBA: -
 Typical Floor: -
 Total Available: **0 SF**
 % Leased: **0%**
 Rent/SF/Yr: -



	Street	Cross Street	Cross Str Dist	Count Year	Avg Daily Volume	Volume Type	Miles from Subject Prop
1	S Ortonville Rd	Long Lake Dr	0.12 NW	2022	18,853	MPSI	.14
2	S Ortonville Rd	Long Lake Dr	0.12 NW	2021	18,948	MPSI	.14
3	S Ortonville Rd	E Seymour Lake Rd	0.03 SE	2022	17,810	MPSI	.31
4	E Seymour Lake Rd	S Ortonville Rd	0.05 W	2022	6,586	MPSI	.38
5	S Ortonville Rd	E Seymour Lake Rd	0.05 N	2022	16,700	MPSI	.38
6	Allen Rd	W Seymour Lake Rd	0.14 N	2022	1,248	MPSI	.61
7	E Seymour Lake Rd	Mystic Ct	0.16 NW	2022	5,598	MPSI	.63
8	S Ortonville Rd	Allen Rd	0.04 NW	2022	18,412	MPSI	.64
9	Allen Rd	Bald Eagle Lake Rd	0.09 N	2022	1,776	MPSI	.64
10	S Ortonville Rd	Allen Rd	0.04 SE	2022	19,333	MPSI	.72

Demographic Summary Report

2436 S Ortonville Rd, Ortonville, MI 48462

Building Type: **Land** Total Available: **0 SF**
 Class: - % Leased: **0%**
 RBA: - Rent/SF/Yr: -
 Typical Floor: -



Radius	1 Mile	2 Mile	5 Mile
Population			
2028 Projection	1,768	5,387	34,362
2023 Estimate	1,730	5,306	34,098
2010 Census	1,508	4,817	32,387
Growth 2023 - 2028	2.20%	1.53%	0.77%
Growth 2010 - 2023	14.72%	10.15%	5.28%
2023 Population by Hispanic Origin	54	158	1,349
2023 Population	1,730	5,306	34,098
White	1,672 96.65%	5,117 96.44%	32,526 95.39%
Black	14 0.81%	48 0.90%	392 1.15%
Am. Indian & Alaskan	3 0.17%	10 0.19%	128 0.38%
Asian	16 0.92%	59 1.11%	485 1.42%
Hawaiian & Pacific Island	1 0.06%	3 0.06%	14 0.04%
Other	24 1.39%	68 1.28%	552 1.62%
U.S. Armed Forces	0	0	8
Households			
2028 Projection	656	1,951	12,150
2023 Estimate	641	1,919	12,037
2010 Census	554	1,725	11,335
Growth 2023 - 2028	2.34%	1.67%	0.94%
Growth 2010 - 2023	15.70%	11.25%	6.19%
Owner Occupied	572 89.24%	1,749 91.14%	11,080 92.05%
Renter Occupied	69 10.76%	170 8.86%	957 7.95%
2023 Households by HH Income	640	1,918	12,038
Income: <\$25,000	26 4.06%	56 2.92%	594 4.93%
Income: \$25,000 - \$50,000	87 13.59%	224 11.68%	1,698 14.11%
Income: \$50,000 - \$75,000	152 23.75%	403 21.01%	1,837 15.26%
Income: \$75,000 - \$100,000	104 16.25%	334 17.41%	1,969 16.36%
Income: \$100,000 - \$125,000	100 15.63%	290 15.12%	1,700 14.12%
Income: \$125,000 - \$150,000	57 8.91%	245 12.77%	1,242 10.32%
Income: \$150,000 - \$200,000	61 9.53%	208 10.84%	1,560 12.96%
Income: \$200,000+	53 8.28%	158 8.24%	1,438 11.95%
2023 Avg Household Income	\$107,339	\$112,682	\$119,794
2023 Med Household Income	\$88,221	\$95,658	\$98,996

PRELIMINARY SITE PLAN LONG LAKE CROSSINGS

RETAIL \ COMMERCIAL CENTER
BRANDON TOWNSHIP, OAKLAND COUNTY, MICHIGAN
SECTION 29 , TOWN 5 NORTH, RANGE 9 EAST

CONTACT INFORMATION

BRANDON TOWNSHIP
RONALD LAPP, SUPERVISOR
395 MILL STREET
ORTONVILLE, MI 48462
PHONE: (248) 627-4916
FAX: (248) 627-3719

BRANDON TOWNSHIP
TIMOTHY J. PALUIAN
DIRECTOR OF PLANNING & BUILDING
395 MILL STREET
ORTONVILLE, MI 48462
PHONE: (248) 627-4916
FAX: (248) 627-3719

BRANDON TOWNSHIP
FIRE DEPARTMENT
53 SOUTH STREET
ORTONVILLE, MI 48462
PHONE: (248) 627-4000
FAX: (248) 627-3161

MICHIGAN DEPT. OF TRANSPORTATION
OAKLANDTSC
PAUL AJEGBA, MANAGER
2300 DIXIE HIGHWAY
WATERFORD, MI 48328
PHONE: (248) 451-0001
FAX: (248) 451-0108

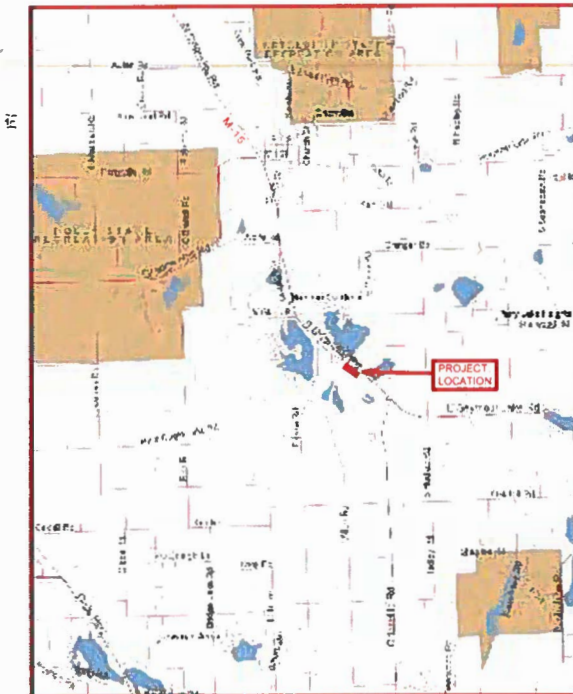
NOT APPROVED-PERMIT LIST

BRANDON TWP PRELIMINARY SITE PLAN APPROVAL
BRANDON TWP ZONING BOARD OF APPEALS
BRANDON TWP FINAL SITE PLAN APPROVAL
MOOT RIGHT-OF-WAY PERMIT
OAKLAND COUNTY SOIL EROSION PERMIT
DEQ NPDES NOTICE OF COVERAGE (NOT REQUIRED)
DEQ PART 41 WASTEWATER PERMIT (NOT REQUIRED)
DEQ ACT 399 WATER SYSTEM PERMIT
DEQ PART 303 WETLANDS PERMIT

APPROVED-PERMIT LIST



SITE MAP
1" = 200'



PROJECT LOCATION
1" = 1 MILE

SHEET INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	TOPOGRAPHIC SURVEY \ NATURAL FEATURES PLAN
3	SITE PLAN
4	SITE GRADING \ SOIL EROSION PLAN
5	STORM WATER MANAGEMENT PLAN
6	UTILITY PLAN
7	DETAIL SHEET

VARIANCE REQUEST

1) THE DEVELOPER IS REQUESTING A VARIANCE FROM THE 25' WETLAND BUFFER GRADING REQUIREMENT. DUE TO THE SHAPE OF THE EXISTING WETLANDS LOCATED ON THE SITE THERE ARE SEVERAL AREAS WHERE GRADING IS PROPOSED WITHIN THE 25' BUFFER UNDER THE PROPOSED PLAN. THE PROPOSED WETLAND IMPACTS ARE MINIMUM AND EXTRA SOIL EROSION AND PROTECTIVE MEASURES WILL NEED TO BE TAKEN ALONG THE WETLAND AREAS TO PROVIDE ADDITIONAL PROTECTION.

ENGINEER/SURVEYOR

Diffin Development Consultants, LLC
Civil Engineering • Surveying • Construction Services

Matthew A Diffin, P.E.
Principal

22660 Trillium Drive
Novi, MI 48375
Phone: (248) 943-8244
Fax: (866) 690-4307
E-mail: mdiffin@diffindevelopment.com
Web: diffindevelopment.com

Michigan & Florida

DEVELOPER \ OWNER

B.L.L. COMMERCIAL
PROPERTY COMPANY LLC

MARK WITKIEWICZ
DEVELOPMENT MANAGER
32100 TELEGRAPH ROAD, SUITE 220
BINGHAM FARMS, MICHIGAN 48025
PH: (248) 540-1434
Fax: (248) 540-1608

72 HOURS
(3 WORKING DAYS)
**BEFORE YOU DIG
CALL MISS DIG**
800-482-7171



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

DIFFIN Development Consultants

DDC

SE CTION 29
TOWN 5 NORTH, RANGE 9 EAST
BRANDON TOWNSHIP
OAKLAND COUNTY, MICHIGAN

CLIENT: B.L.L. COMMERCIAL PROPERTY COMPANY, L.L.C.
LONG LAKE VILLAGE
RETAIL CENTER
COVER SHEET

CAD FILE

REVISIONS
DATE: 8-8-07

DDC

SCALE: NONE

DR: L D CH: M D

PM: MATTHEW A DIFFIN

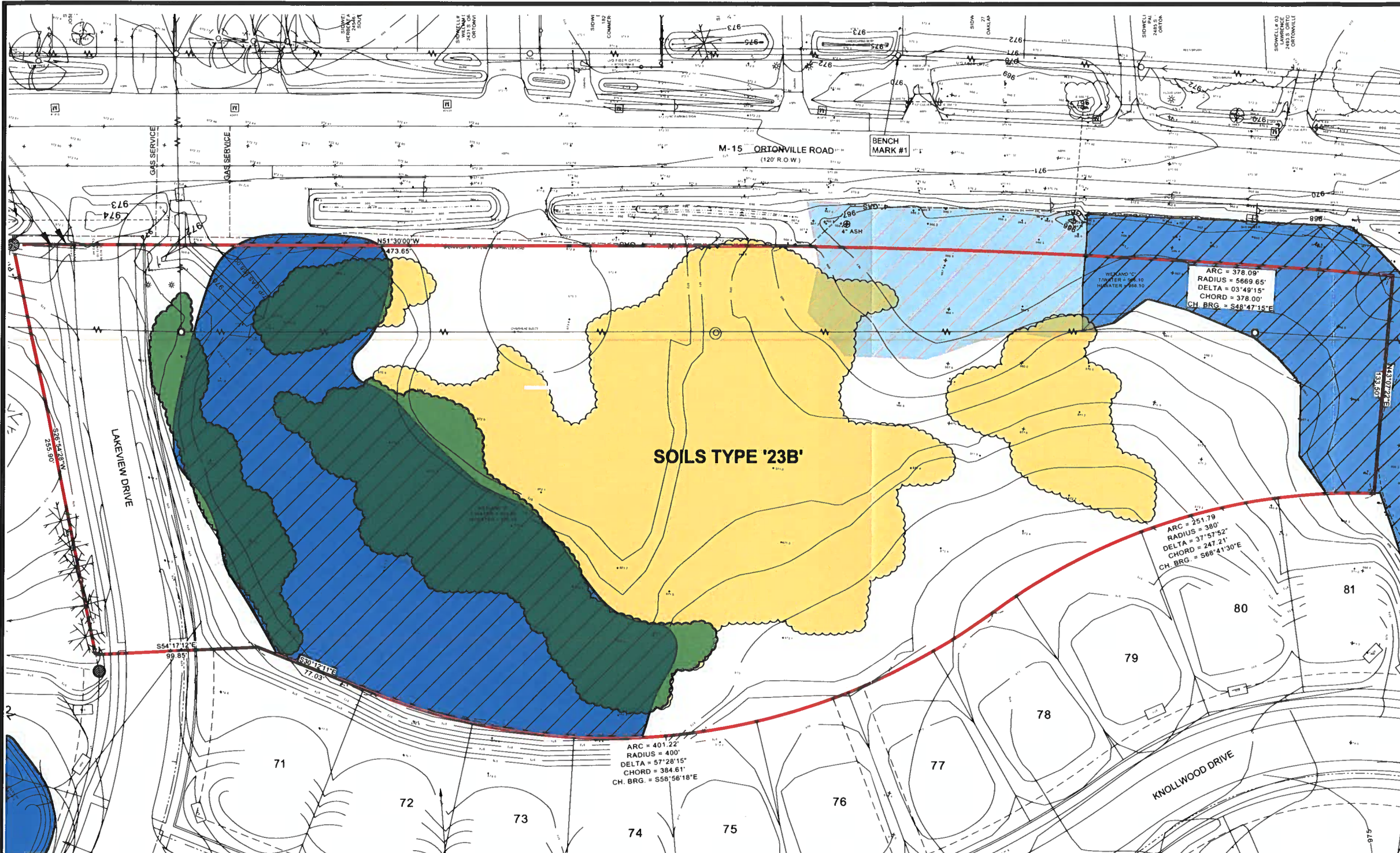
BOOK

JOB NO: 060904

FILE NO:

1 OF 7

CIVIL ENGINEERING • SURVEYING • CONSTRUCTION SERVICES
CIVIL ENGINEERING • SURVEYING • CONSTRUCTION SERVICES
22660 TRILLIUM DRIVE, NOVI, MI 48375
PH: (248) 943-8244, FAX: (866) 690-4307
WEB: diffindevelopment.com



LEGEND

SYMBOL	DESCRIPTION
○	CLEAN OUT
□	ELEC RISER
⊕	FIRE HYDRANT
⊞	ELEC TRANSFORMER
⌒	GUY ANCHOR
⊙	STM MANHOLE
⊖	SAN MANHOLE
⊕	VENT
○	LIGHT POLE
○	WATER STOP BOX
○	WATER VALVE
○	SPEAKER BOX
○	POWER POLE
○	ROUND CATCH BASIN
○	SIGN
○	SQUARE CATCH BASIN
○	TELEPHONE RISER
○	SET IRON
○	FOUND IRON
○	ELECTRIC
○	GAS
○	FENCE

REMOVAL LEGEND

X X	REMOVE PIPE
///	SAWCUT REMOVE CURB
○	REMOVE OBJECT
■	REMOVE EX BIT.

NATURAL FEATURES DATA

GROSS SITE AREA	4.52 ACRES
EXISTING WETLANDS	±1.65 ACRES
WETLAND DISTURBANCE	±0.3 ACRES
EXISTING TREES & BRUSH	±1.94 ACRES
TREES & BRUSH DISTURBANCE	±1.27 ACRES

EXISTING WETLANDS TO REMAIN	
EXISTING WETLANDS TO BE REMOVED	
EXISTING TREES & BRUSH TO REMAIN	
EXISTING TREES & BRUSH TO BE REMOVED	

LEGAL DESCRIPTION
COMMERCIAL PARCEL
 Part of the west 1/2 of Section 29, T.5 N., R.9 E., Brandon Township, Oakland County, Michigan, being more particularly described as follows: Commencing at the West 1/4 corner of said Section 29 as recorded in Liber 20081, Page 152, Oakland County Records: Thence along the west line of said Section 29 as monumented N 01°50'48" E, 880.59 feet to a point, said point being S 01°50'48" W, 300.00 feet from the intersection of the southwesterly right-of-way line of Ortonville Road (M-15) (120 feet wide) and the said west line of Section 29; thence S 83°48'44" E, 100.02 feet; thence S 42°01'51" E, 447.64 feet; thence N 26°54'28" E, 10.39 feet to the Point of Beginning; Thence N 26°54'28" E, 255.90 feet to the said southwesterly right-of-way line of Ortonville Road; thence along said right-of-way line S 51°30'00" E, 473.65 feet to a point of a non-tangent curve; thence continuing along said right-of-way line, 378.09 feet along a curve to the right, radius 5669.65 feet, central angle 03°49'15", chord bearing S 48°47'15" E, 378.00 feet to a non-tangent line; thence S 43°07'22" W, 133.50 feet to a point of a non-tangent curve; thence 251.79 feet along a curve to the left, radius 380.00 feet, central angle 37°57'52" chord bearing N 58°41'30" W, 247.21 feet to a point of reverse curvature; thence 401.22 feet along a curve to the right, radius 400.00 feet, central angle 57°28'15", chord bearing N 58°56'18" W, 384.61 feet to a point of tangency; thence N 30°12'11" W, 77.03 feet; thence N 54°17'12" W, 99.85 feet to the Point of Beginning, containing 4.5169 acres more or less.

Wetlands
 Wetland B - is predominately forested wetland that is characterized by white ash and American elm in the canopy layer. There are a couple of areas within the B wetland boundary where there are little to no trees and the wetland transitions into wet meadow vegetation.

Wetland C - is a small forested wetland located along the southern property boundary that is characterized by white ash and American elm. Wetland C continues off-site to the south.

Woodlands
 The approximately 1.92 acres of trees and brush shown on the natural features plan vary in size and species within the uplands and lowland areas. The vast majority of the woodlands on site are found in or along the wetland or wetland fringe areas. The site plan has been designed to leave these areas along the wetlands primarily undisturbed to provide screening and buffering between the commercial and residential uses.

The tree species identified during the Long Lake Village submittal consisted of species such as American Elm, Aspen, Birch, Black Cherry, Cottonwood, Red Oak, Scotch Pine, Sugar Maple, White Ash, and White Pine. These trees are mainly 5" to 15" in diameter with health ranging from poor to good.

SOIL KEY
 23B SISSON FINE SANDY LOAM, 1-6 PERCENT SLOPES

BENCH MARKS
 REFERENCE BENCHMARK: (NGS PID AB 3083) HORIZONTAL CONTROL DISK SET IN TOP OF CONCRETE MONUMENT, LOCATED 38 FEET WEST OF THE CENTERLINE OF M-15 AND APPROXIMATELY 77.5 FEET SOUTH OF CENTERLINE OF DRIVEWAY TO HOUSE NUMBER 1027 (APPROXIMATELY 1 MILE NORTH OF GRANGE HALL ROAD). ELEVATION 939.757 (NAVD88)

SITE BENCH MARK #1: SPIKE IN POWER POLE LOCATED APPROXIMATELY 57 FEET NORTH-EAST OF THE CENTERLINE M-15 AND APPROXIMATELY 60 FEET SOUTH-EAST OF THE DRIVEWAY TO HOUSE NUMBER 2475. ELEVATION = 972.05 (NAVD88)

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE MANNER AND ARE NOT TO BE CONSIDERED AS A GUARANTEE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL UTILITIES TO BE REMOVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCURRED BY THE CONTRACTOR'S FAILURE TO EXACTLY



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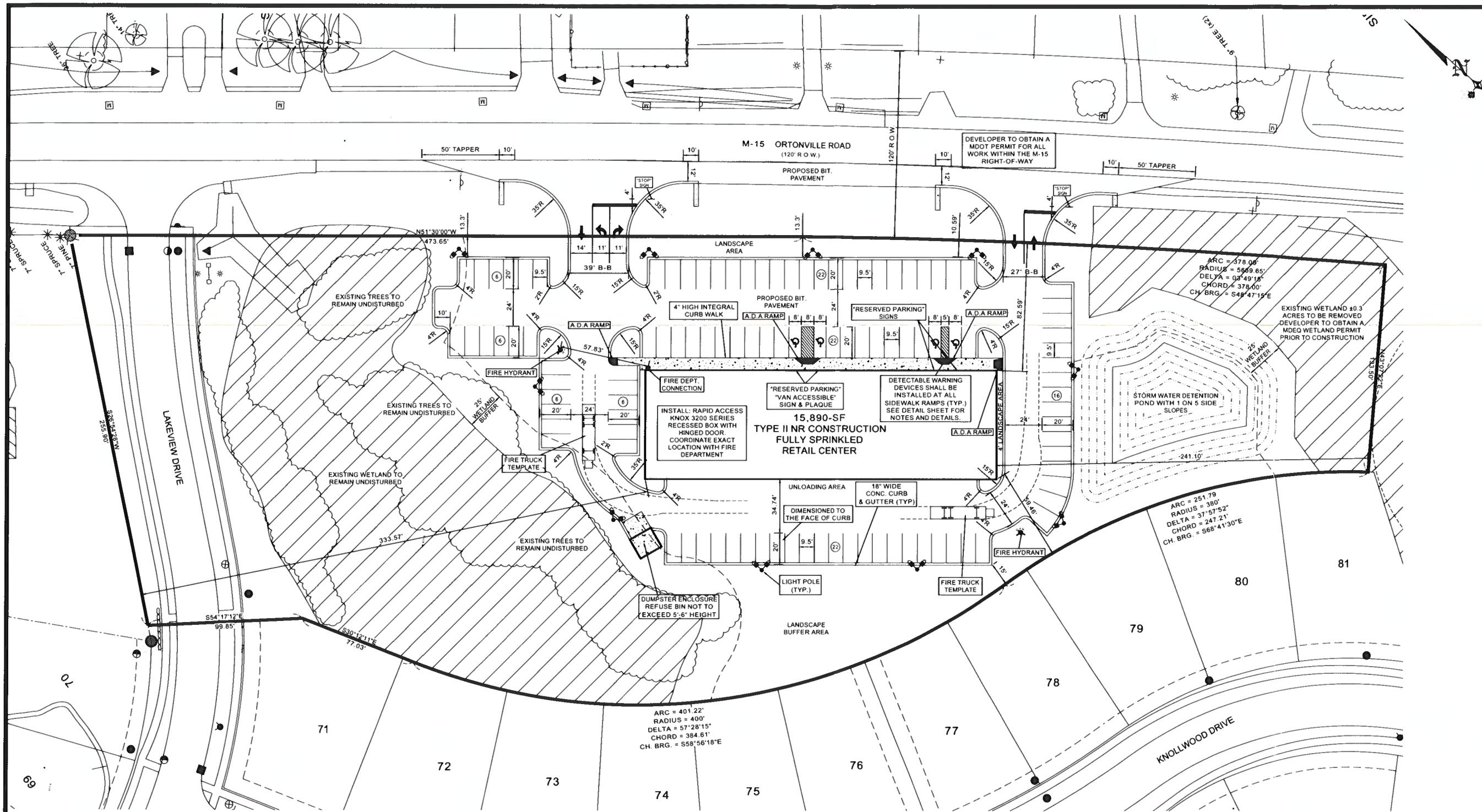
SECTION 29
 TOWN 5 NORTH, RANGE 9 EAST
 BRANDON TOWNSHIP
 OAKLAND COUNTY, MICHIGAN

CLIENT: B.L.L. COMMERCIAL PROPERTIES COMPANY L.L.C.
 LONG LAKE VILLAGE RETAIL CENTER
 TOPOGRAPHIC SURVEY / NATURAL FEATURES

REVISIONS
 DATE: 8-6-07



SCALE: 1"=30'
 DR. LD. CH. M.D.
 P.M. MATTHEW A. DIFFIN
 BOOK
 JOB NO. 061003
 FILE NO.
 2 OF 7



SITE DATA

EXISTING ZONING C-1
 GROSS SITE AREA 4.52 ACRES
 EXISTING WETLANDS 1.65 ACRES
 WETLAND DISTURBANCE 0.3 ACRES
 PROPOSED BUILDING AREA 15,890-SF
 MAXIMUM HEIGHT OF BUILDING 35 FEET
 PROVIDED PAVEMENT AREA 64,707-SF

REQUIRED PARKING
 1 SPACE FOR EACH 150-SF OF GROSS FLOOR AREA
 15,890-SF/150-SF = 106 SPACES

PROVIDED PARKING
 HANDI CAP SPACES 4
 STANDARD SPACES 102
 TOTAL SPACES 106-SPACES

BUILDING SETBACKS	REQUIRED	PROVIDED
M-15 SETBACK	40'	82.59'
EAST SETBACK PROP. LINE	15'	333.57'
WEST SETBACK PROP. LINE	15'	241.10'
SOUTH SETBACK PROP. LINE	25'	59.46'

PARKING SETBACKS	REQUIRED	PROVIDED
M-15 SETBACK	10'	10.59'
EAST SETBACK PROP. LINE	10'	NA
NORTH SETBACK PROP. LINE	10'	NA
SOUTH SETBACK PROP. LINE	10'	15.0'

GENERAL NOTES:

ALL LIGHTS SHALL BE SQUARE, ARM MOUNTED, CUT-OFF TYPE LUMINAIRE W/250 WATT METAL HALIDE LAMP WITH VERTICAL REFLECTOR. ALL LIGHTING SHALL BE DIRECTED AWAY FROM ADJOINING PARCELS (TYP.).

REFER TO UTILITY PLANS AND PROFILES FOR STORM SEWER, SANITARY SEWER, WATERMANS, AND BUILDING CONNECTION LOCATIONS, SIZES, AND INVERTS.

CONTRACTOR TO COMPLY WITH MDOT AND OAKLAND COUNTY ROAD COMMISSION REQUIREMENTS FOR ALL WORK PERFORMED WITHIN M-15 RIGHT OF WAY. CONTRACTOR TO OBTAIN PERMIT FROM THE MICHIGAN DEPT. OF TRANSPORTATION PRIOR TO THE START OF CONSTRUCTION.

REFER LANDSCAPE ARCHITECTS PLAN FOR ALL PLANTINGS, BERMING, LANDSCAPE DETAILS, AND MATERIALS (TYP.).

ALL PARKING AREAS AND LANDSCAPE ISLANDS TO HAVE 18" CURB AND GUTTER (TYP.) UNLESS OTHERWISE NOTED.

GENERAL CONTRACTOR TO COORDINATE AND INSTALL UNDERGROUND ELECTRICAL CONDUIT TO PARKING LOT UTILITIES, AND DIRECTIONAL SIGNS. GENERAL CONTRACTOR TO PROVIDE A UNIT PRICE FOR INSTALLATION OF IRRIGATION SLEEVES. EXACT QUANTITY AND LOCATION TO BE DETERMINED PRIOR TO THE START OF CONSTRUCTION. WITNESS THE LOCATION OF EACH SLEEVE.

DEVELOPER TO INSTALL FIRE LANE SIGN AS NECESSARY PER THE TOWNSHIP FIRE DEPARTMENTS REQUIREMENTS. CONTRACTOR SHALL COORDINATE INSTALLATION OF SIGNS WITH THE TOWNSHIP'S FIRE MARSHAL (TYP.).

ALL TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL COMPLY WITH THE DESIGN AND PLACEMENT REQUIREMENTS OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

PAVEMENT STRIPING SHALL BE MDOT FAST DRY PAVEMENT MARKING. ALL ARROWS, STOP BARS, AND LANE LINES (4" WIDE SINGLE LINE) BETWEEN TURN LANES AND LANES IN THE SAME DIRECTION OF TRAVEL SHALL BE WHITE. LINES SEPARATING OPPOSITE DIRECTIONS OF TRAFFIC SHALL BE 4" WIDE DOUBLE YELLOW. BARRIER-FREE SPACE MARKINGS AND HATCHING SHOULD BE BLUE AND ALL OTHER MARKING MAY BE EITHER WHITE OR YELLOW. ALL PEDESTRIAN CROSS WALKS SHALL BE STRIPED WITH 12" WIDE WHITE DIAGONAL LINES AT 45° ANGLES SPACED 24" APART (TYP.).

Exterior Lighting

- All outdoor lighting in all Use Districts used to light the general area of a specific site shall be shielded to reduce glare and shall be so arranged as to reflect lights away from all adjacent residential districts or adjacent residences.
- All light fixtures must be mounted to a height of 25 ft. or less. The entire site to be limited to light poles with a maximum height of 25 ft.
- All outdoor lighting in all Use Districts shall be directed toward and confined to the ground areas of lawns or parking lots.
- All lighting in nonresidential districts used for the external illumination of buildings, so as to feature said buildings; shall be placed and shielded so as not to interfere with the vision of persons on adjacent highways or adjacent property.
- Illumination of signs shall be directed or shaded downward so as not to interfere with the vision of persons on the adjacent highways or adjacent property.
- Artificial light shall be maintained in a manner so as not to constitute a hazard or nuisance.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN PROVEN BY FIELD SURVEY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL UTILITIES TO BE DELETED BEFORE COMMENCING WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE UTILITIES.

CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE OWNER OR ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK OR PERSONS ENGAGED IN THE WORK OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE UTILITIES.

(3 WORKING DAYS)
**BEFORE YOU DIG
 CALL MISS DIG**
 800-482-7171

DIFFIN Development Consultants
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 PH: (248) 943-8244, FAX: (866) 690-4307
 WEB: diffindevelopment.com

DDC

SECTION 29
 TOWN 8 NORTH, RANGE 9 EAST
 BRANDON TOWNSHIP
 OAKLAND COUNTY, MICHIGAN

CLIENT: B.L.L. COMMERCIAL PROPERTIES COMPANY L.L.C.
 LONG LAKE CROSSING RETAIL CENTER
 SITE PLAN

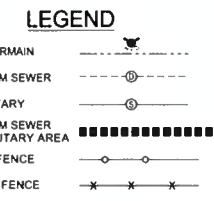
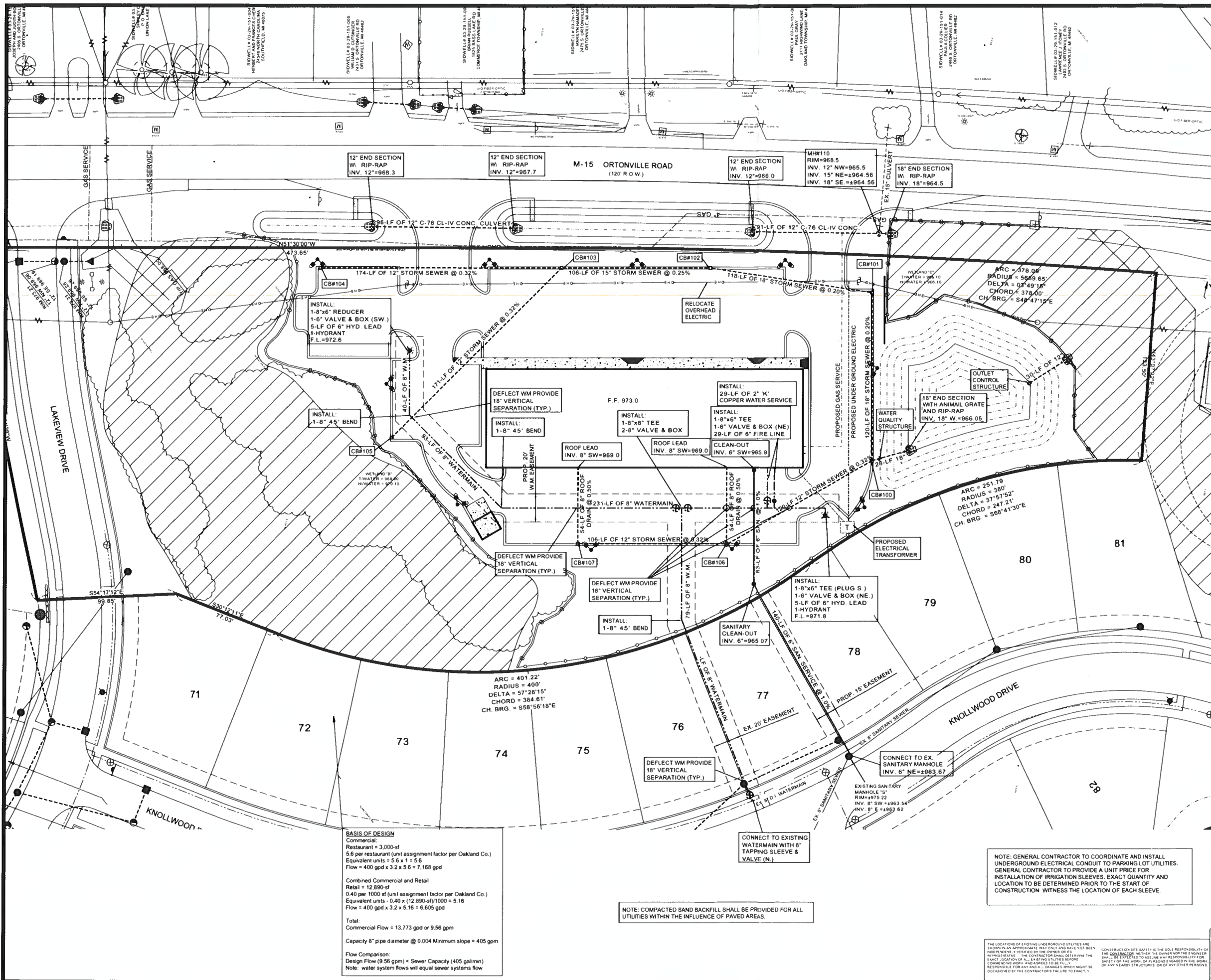
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SCALE: 1"=30'

DR L/D CH M/D
 P/M MATTHEW A DIFFIN

BOOK
 JOB NO: 061003
 FILE NO:

3 OF 7



NOTE: GREASE TRAPS SHALL BE PROVIDED ON SANITARY SERVICES FOR ALL FOOD BEVERAGE ESTABLISHMENTS.

ALL UTILITIES TO BE INSTALLED PER BRANDON TOWNSHIP STANDARDS AND SPECIFICATIONS.

NOTE: GENERAL CONTRACTOR TO COORDINATE AND INSTALL UNDERGROUND ELECTRICAL CONDUIT TO PARKING LOT UTILITIES. GENERAL CONTRACTOR TO PROVIDE A UNIT PRICE FOR INSTALLATION OF IRRIGATION SLEEVES. EXACT QUANTITY AND LOCATION TO BE DETERMINED PRIOR TO THE START OF CONSTRUCTION. WITNESS THE LOCATION OF EACH SLEEVE.

NOTE: COMPACTED SAND BACKFILL SHALL BE PROVIDED FOR ALL UTILITIES WITHIN THE INFLUENCE OF PAVED AREAS.

BASIS OF DESIGN
 Commercial:
 Restaurant = 3,000-sf
 5.6 per restaurant (unit assignment factor per Oakland Co.)
 Equivalent units = 5.6 x 1 = 5.6
 Flow = 400 gpd x 3.2 x 5.6 = 7,168 gpd
 Combined Commercial and Retail
 Retail = 12,890-sf
 0.40 per 1000 sf (unit assignment factor per Oakland Co.)
 Equivalent units = 0.40 x (12,890-sf)/1000 = 5.16
 Flow = 400 gpd x 3.2 x 5.16 = 6,605 gpd
 Total:
 Commercial Flow = 13,773 gpd or 9.56 gpm
 Capacity 8" pipe diameter @ 0.004 Minimum slope = 405 gpm
 Flow Comparison:
 Design Flow (9.56 gpm) < Sewer Capacity (405 gal/min)
 Note: water system flows will equal sewer systems flow

(3 WORKING DAYS)
**BEFORE YOU DIG
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SECTION 29
 TOWN 5 NORTH, RANGE 9 EAST
 BRANDON TOWNSHIP
 OAKLAND COUNTY, MICHIGAN

CLIENT: B.L.L. COMMERCIAL PROPERTIES COMPANY L.L.C.
 LONG LAKE CROSSINGS RETAIL CENTER
 UTILITY PLAN

CAD FILE

NO.	DATE	REVISIONS

DATE: 8-8-07



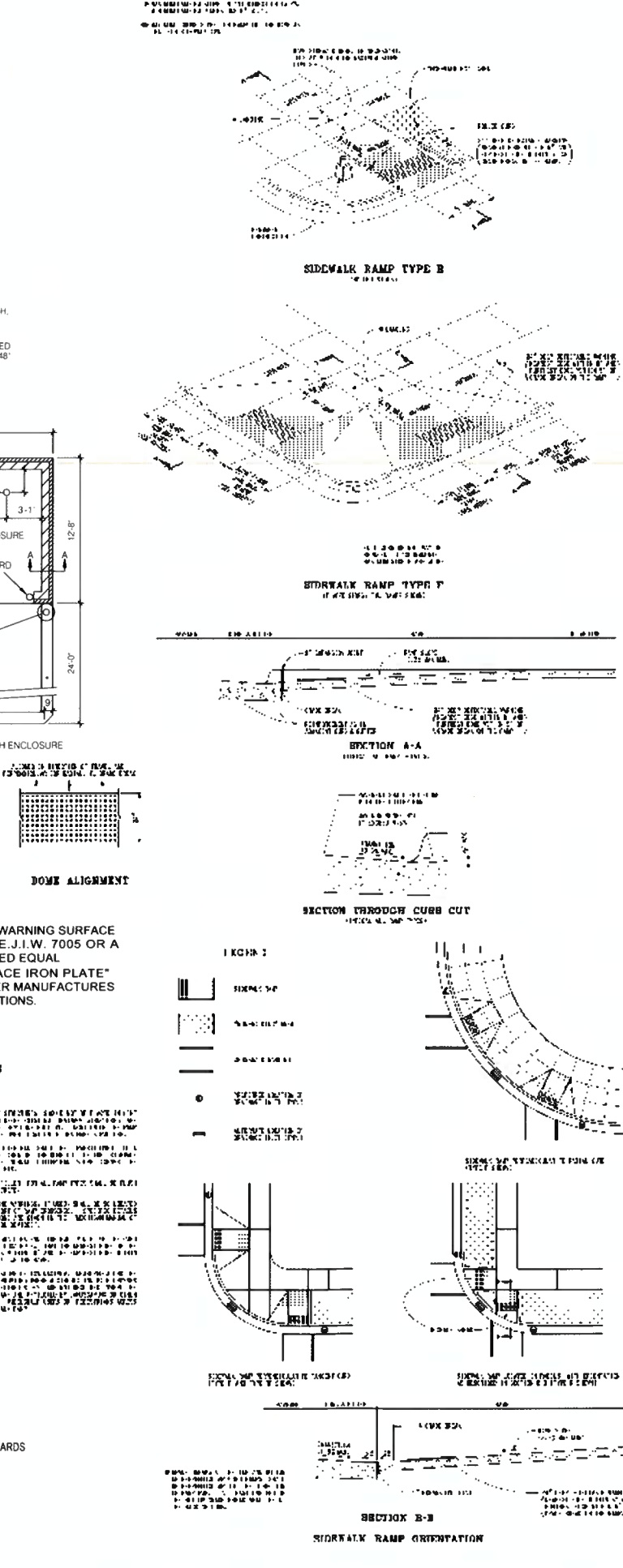
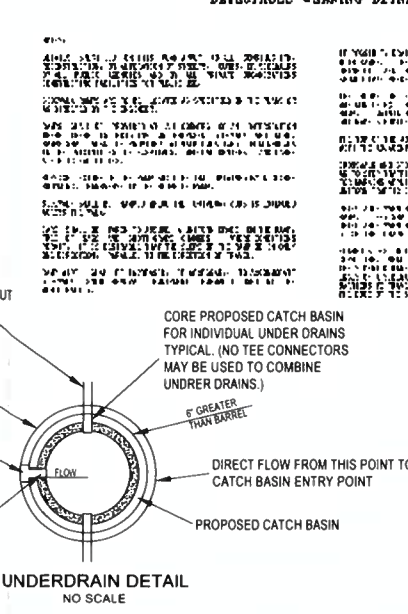
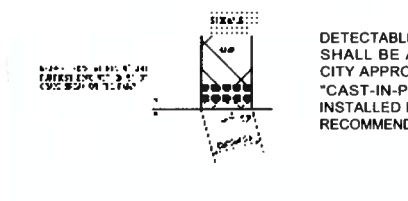
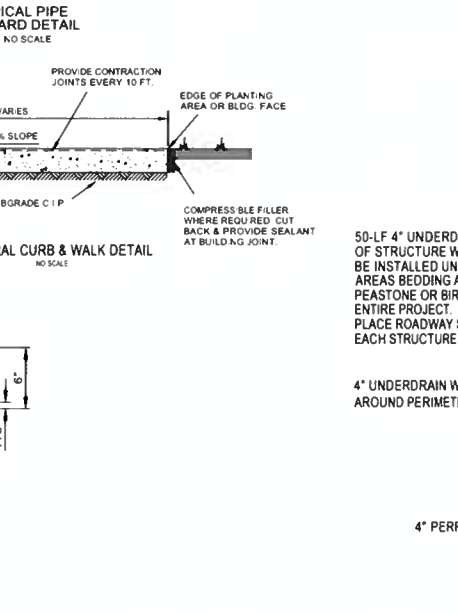
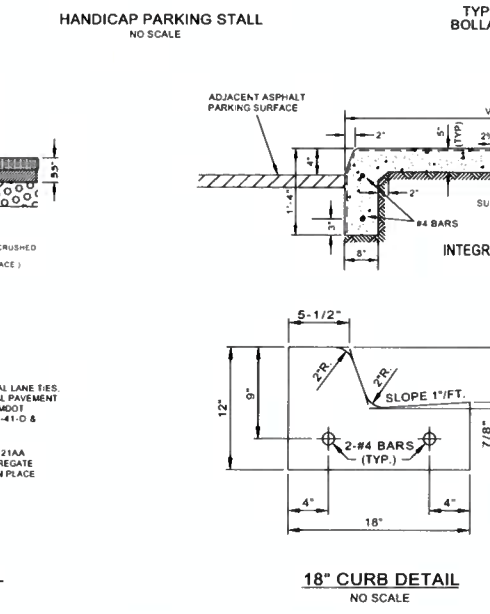
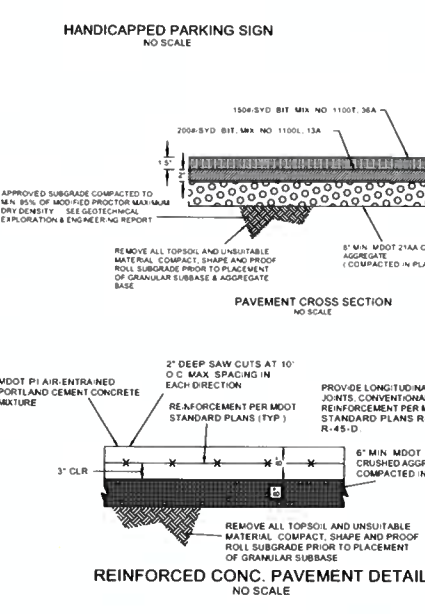
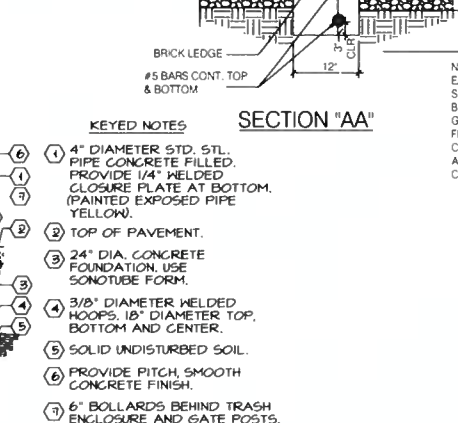
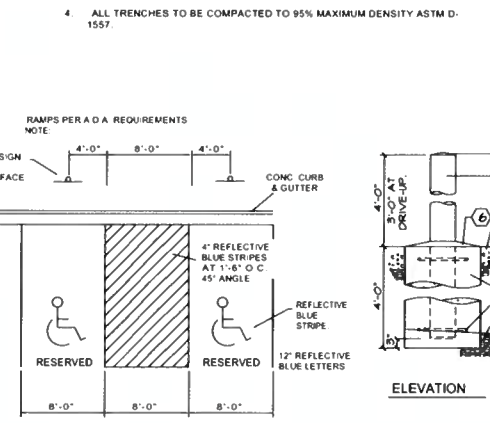
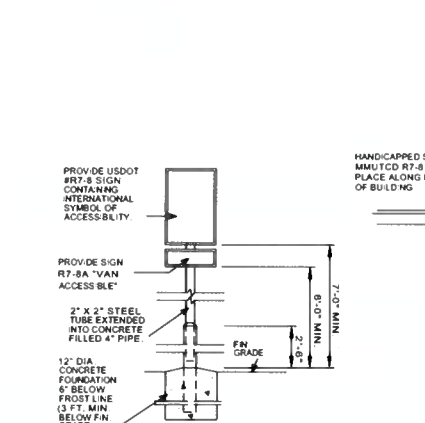
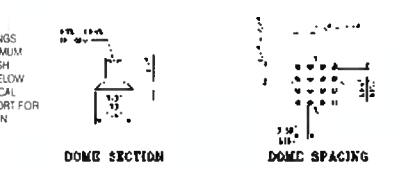
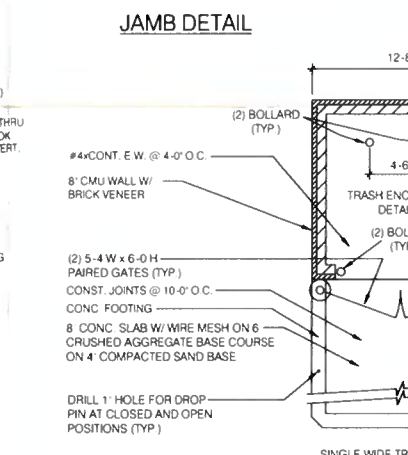
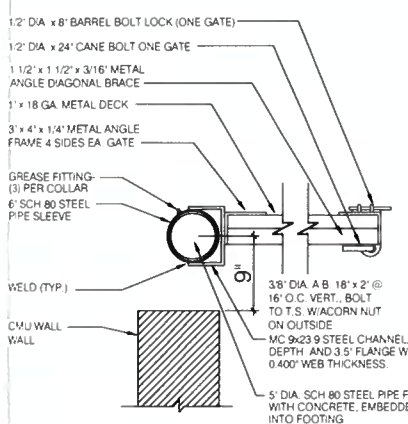
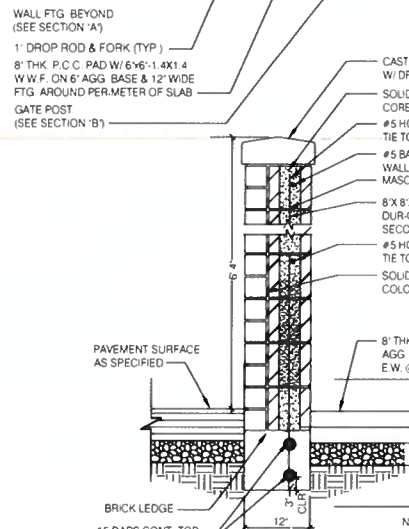
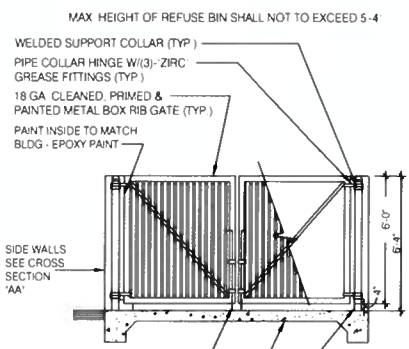
SCALE: 1"=30'

DR: LD CH: MD
 PM: MATTHEW A. DIFFIN
 BOOK:
 JOB NO: 061003
 FILE NO:
6 OF 7

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN AS AN APPROXIMATE GROUND SURFACE. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES BEFORE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES OR NEARBY STRUCTURES OR OF ANY OTHER PERSONS OR PROPERTY CAUSED BY THE CONTRACTOR'S FAILURE TO VERIFY.

- GENERAL NOTES**
- ALL WORK TO BE DONE IN ACCORDANCE WITH MICHIGAN DEPARTMENT OF TRANSPORTATION, MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY, AND THE OAKLAND COUNTY, & BRANDON TWP. STANDARDS.
 - ALL SURPLUS FILL MATERIAL AND TOPSOIL SHALL BE REMOVED FROM SITE.
 - CONTRACTOR TO OBTAIN ALL REQUIRED PERMITS FROM BRANDON TWP, OAKLAND CO., MDOE, MDEQ PRIOR TO THE START OF CONSTRUCTION.
 - THE EXISTING UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE LOCATIONS. THE CONTRACTOR SHOULD CONTACT THE APPROPRIATE UTILITY COMPANY FOR THE EXACT LOCATION AND DEPTH OF EACH UTILITY.
 - THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. ALL COSTS FOR LOCATING, REMOVING, REPLACING, OR RELOCATING THESE UTILITIES SHALL BE INCIDENTAL TO CONSTRUCTION. ALL UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED WITH LIKE MATERIAL AT NO ADDITIONAL COST TO THE OWNER.
 - CONTRACTOR SHALL VERIFY THE DEPTH AND HORIZONTAL LOCATION OF ALL EXISTING UTILITIES BEFORE ANY WORK IS STARTED. THE EXACT LOCATION OF EXISTING UTILITIES SHALL BE DETERMINED BY HAND DIGGING.
 - CONTRACTOR SHALL NOTIFY PROPER GOVERNMENTAL INSPECTION AGENCY 48 HOURS PRIOR TO STARTING CONSTRUCTION.
 - COMPACTED SAND BACKFILL M.D.O.T. CLASS II LIMITED TO 1" MAXIMUM SIZE OR APPROVED EQUAL IS TO BE USED EXCLUSIVELY IN ALL UTILITY TRENCHES UNDER ALL PAVED AREAS OR WITHIN A 10' INFLUENCE OF THE PAVED AREAS THROUGHOUT THE COURSE OF THE PROJECT UNLESS OTHERWISE SPECIFIED. COMPACT TO 95% OF ITS MAXIMUM UNIT WEIGHT AS DETERMINED BY ASTM D 1557-78.
 - THE CONTRACTOR SHALL ABIDE BY ALL REQUIREMENTS OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION REGARDING CONSTRUCTION, MAINTAINING TRAFFIC, BARRICADING, BORING, BACKFILL, AND RESTORATION. THERE WILL BE NO ADDITIONAL COMPENSATION DUE TO THE CONTRACTOR FOR COMPLYING WITH THESE REQUIREMENTS.
 - THE CONTRACTOR SHALL BE REQUIRED TO COMPLETE ALL WORK IN AN EXPEDITIOUS MANNER AND SHALL NOT STOP CONSTRUCTION FOR EXTENDED PERIODS ONCE CONSTRUCTION HAS BEGUN.
 - THE CONTRACTOR SHALL FURNISH THE OWNER & BRANDON TWP. ONE COMPLETE SET OF "AS-BUILT" MYLARS UPON COMPLETION OF THE PROJECT.
 - THE CONTRACTOR SHALL MAINTAIN IN SERVICE, ALL EXISTING SANITARY SEWER, WATER OR STORM SEWER SERVICE CONNECTIONS.
 - THE CONTRACTOR SHALL REMOVE OFF SITE ALL TREES, VEGETATION, CONCRETE, STUMPS, FOOTING, AND FOUNDATIONS FROM PROJECT SITE AND DISPOSED OF AT A DISPOSAL SITE APPROVED TO ACCEPT THIS DEBRIS. PROVIDE OWNER WITH LOCATION(S) OF DISPOSAL SITE(S).
 - DUMPSTER ENCLOSURE TO BE CMU CONSTRUCTION. CONTRACTOR TO SUBMIT FENCE GATE AND ENCLOSURE DETAILS TO ENGINEER PRIOR TO CONSTRUCTION.
 - THE CONTRACTORS SHALL NOT ADJUST STRUCTURES TO FINAL GRADE UNTIL FINAL CURB AND PAVEMENT ELEVATIONS HAVE BEEN STAKED.
 - THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL STRUCTURES, AND MATERIAL CERTIFICATIONS FOR APPROVAL PRIOR TO ORDERING MATERIALS.

- GENERAL NOTES BITUMINOUS PAVING**
- CONTRACTOR TO THOROUGHLY CLEAN PAVEMENT PRIOR TO PLACEMENT OF FINAL LIFT BITUMINOUS SURFACING.
 - ALL WORK TO BE DONE IN ACCORDANCE WITH M.D.O.T. 1990 STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4 00 04 THRU 4 00 19, TABLE 7 10 2.
 - BITUMINOUS MIXTURE TO BE IN ACCORDANCE WITH M.D.O.T. 7 10 06.
 - BITUMINOUS MIX TO BE M.D.O.T. NO. 1100T 36A AND M.D.O.T. NO. 1100L 20AA, A-C 120-150 OR APPROVED EQUAL. THICKNESS IS SPECIFIED ON DETAIL.
 - ALL TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL COMPLY WITH THE DESIGN AND PLACEMENT REQUIREMENTS OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
 - PAVEMENT STRIPING SHALL BE MDOOT FAST DRY PAVEMENT MARKING ALL ARROWS, STOP BARS, AND LANE LINES (4" WIDE SINGLE LINE) BETWEEN TURN LANES AND LANES IN THE SAME DIRECTION OF TRAVEL SHALL BE WHITE. LINES SEPARATING OPPOSITE DIRECTIONS OF TRAFFIC SHALL BE 4" WIDE DOUBLE YELLOW. BARRIER-FREE SPACE MARKINGS AND HATCHING SHOULD BE BLUE AND ALL OTHER MARKING MAY BE EITHER WHITE OR YELLOW. ALL PEDESTRIAN CROSS WALKS SHALL BE STRIPED WITH 12" WIDE WHITE DIAGONAL LINES AT 45° ANGLES SPACED 24" APART (TYP.).
- STORM SEWER**
- REINFORCED CONCRETE C-76 CL IV W/ PREMIUM JOINT.
 - PRIOR TO CONSTRUCTION ANY DRAINAGE STRUCTURE, THE CONTRACTOR SHALL DETERMINE FOR HIMSELF WHAT TYPE OF TOP SECTION HE SHALL USE IN ESTABLISHING THE DESIGNATED RIM ELEVATIONS.
 - CASTINGS AND FRAMES WITHIN PARKING AREA SHOULD BE EJIW #30 WAY TYPE M2 COVER. USE SOLID COVER HEAVY DUTY ON ALL STORM MANHOLES.
 - CASTINGS WITHIN 18" CURB & GUTTER SHALL BE EJIW 7205M.
- WATERLINE**
- MINIMUM COVER TO TOP OF WATERMAIN SHALL BE 6 FEET FROM FINISHED GRADE.
 - MINIMUM HORIZONTAL DISTANCE BETWEEN WATERMAINS AND SEWERS SHALL BE 10 FEET.
 - ALL PRESSURE TAPS TO EXISTING WATERMAINS SHALL BE MADE ONLY UNDER BRANDON TWP SUPERVISION. CONTRACTOR SHALL NOTIFY THE BRANDON TWP FOR OPENING AND/OR CLOSING EXISTING VALVES OR WHEN CONNECTING TO EXISTING STUBS, AND FOR ALL PRESSURE TAPS.
 - ALL MATERIALS TO BE APPROVED BY THE BRANDON TWP PRIOR TO THE START OF CONSTRUCTION.
- SANITARY SEWER**
- SANITARY SEWER PIPE
 - 1) MANLINE: SDR 26 P.V.C. OR ABS TRUSSWELDED JOINTS
 - 2) SEWER SERVICES: PVC ASTM D3034 SDR 23.5
 - ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE LATEST BRANDON TWP STANDARD SPECIFICATIONS AND STANDARD DETAILS FOR SANITARY SEWER CONSTRUCTION.
 - ALL SEWER WILL BE INSPECTED AND GIVEN FINAL APPROVAL BY THE BRANDON TWP BEFORE BACKFILLING IS ALLOWED.
 - ALL TRENCHES TO BE COMPACTED TO 95% MAXIMUM DENSITY ASTM D-1557.



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DDC

SECTION 29
 TOWN 5 NORTH, RANGE 9 EAST
 BRANDON TOWNSHIP
 OAKLAND COUNTY, MICHIGAN

CLIENT: B.L.L. COMMERCIAL PROPERTIES COMPANY L.L.C.
 LONG LAKE CROSSINGS RETAIL CENTER
 DETAIL SHEET

CAD FILE: _____
 REVISIONS: _____
 DATE: 8-8-07

DDC

SCALE: 1"=30'

DR. L.D. CH. M.D.
 PM. MATTHEW A. DIFFIN
 BOOK: _____
 JOB NO. 061003
 FILE NO. 7 OF 7

SOILS INVESTIGATION
PROPOSED DRIVE-THRU COFFEE SHOP
ORTONVILLE ROAD AND LONG LAKE DRIVE
BRANDON TOWNSHIP, MICHIGAN

SILVERMAN COMPANIES
121 W. LONG LAKE ROAD
SUITE 150
BLOOMFIELD HILLS, MICHIGAN 48304

AUGUST 7, 2023
BY
McDOWELL & ASSOCIATES

McDowell & Associates

Geotechnical, Environmental & Hydrogeological Services • Materials Testing & Inspection

21355 Hatcher Avenue, Ferndale, MI 48220
Phone: (248) 399-2066 • Fax: (248) 399-2157
www.mcdowasc.com

August 7, 2023

Silverman Companies
121 W. Long Lake Road
Suite 150
Bloomfield Hills, Michigan 48304

Job No. 23-295

Attention: Mr. Buzz Silverman

Subject: Soils Investigation
Proposed Drive-Thru Coffee Shop
Ortonville Road and Long Lake Drive
Brandon Township, Michigan

Dear Mr. Silverman:

In accordance with your request, we have made a Soils Investigation at the subject project.

Seven (7) Soil Test Borings, designated as 1 through 7, were performed at the locations you required. The approximate locations of the borings are shown on the Soil Boring Location Plan which accompanies this report. The borings were advanced to depths of fifteen feet six inches (15'6") and twenty feet six inches (20'6") below the existing ground surface at the boring locations.

Soil descriptions, groundwater observations, and the results of field and laboratory tests are to be found on the accompanying Logs of Soil Test Borings and summary sheet of Sieve Analysis results.

Borings 1, 2, 3, 6 and 7 encountered six inches (6") to two feet four inches (2'4") of topsoil, one foot six inches (1'6") to three feet one inch (3'1") of soft to firm brown to variegated silty clay and slightly compact to compact brown clayey silt to fine sand, followed by slightly compact to very compact brown to gray silt which were found throughout the remainder of these borings. Borings 4 and 5 encountered nine inches (9") of topsoil, followed by firm to stiff brown to blue silty clay and medium compact to compact brown to gray silt to silty fine sand.

Mid-Michigan Office

3730 James Savage Road, Midland, MI 48642
Phone: (989) 496-3610 • Fax: (989) 496-3190

Soil descriptions and depths shown on the boring logs are approximate indications of change from one soil type to another and are not intended to represent an area of exact geological change or stratification. Also, the site shows some signs of modification which could indicate fill and soil conditions different from those encountered at the boring locations.

Water was encountered in the borings at depths ranging from two feet four inches (2'4") to six feet seven inches (6'7") below the existing ground surface. Water was measured upon completion of the drilling operation in Boring 3 at a depth of two feet seven inches (2'7"). The other borings were found to cave in upon completion at depths ranging from three feet two inches (3'2") to seven feet two inches (7'2"). It should be noted that short-term groundwater observations may not provide a reliable indication of the depth of the water table. In clay and silt soils this is due to the slow rate of infiltration of water into the borehole as well as the potential for water to become trapped in overlying layers of granular soils during periods of heavy rainfall. Water levels in granular soils fluctuate with seasonal and climatic changes as well as the amount of rainfall in the area immediately prior to the measurements. It should be expected that groundwater level fluctuations may occur on a seasonal basis and that seams of water-bearing sands or silts could be found within the various clay strata at the site.

Standard Penetration Tests were made during sampling using an automatic hammer. These tests indicate that the site soils have generally poor to fair strengths and densities. Tests taken at a depth of two feet six inches (2'6") gave results ranging from 3 to 10 blows per foot. The five-foot (5') test values varied from 3 to 13 blows per foot. At a depth of seven feet six inches (7'6"), the results ranged from 5 to 13 blows per foot. At ten feet (10') and below, penetration indices varied from 4 to 10 blows per foot.

Present plans call for constructing a one-story slab-on-grade coffee shop building. It is assumed that the new building will transmit relatively light loads to the supporting soils. New pavements will service the building.

Based on project information provided and the results of field and laboratory tests, it is believed that the new structure could be supported by conventional spread or strip footings founded on competent native soils. If conventional footings for the new building are installed to rest on native non-organic soils at the site, then all exterior footings should be constructed at or below a minimum frost penetration depth of three feet six inches (3'6") below finished grade. All interior and exterior load-bearing footings should extend through non-engineered fill soils, soils containing a significant amount of organic substances, or excessively weak soils. All strip footings should be continuously reinforced in order to minimize the noticeable effects of differential settlement.

The structure's footings could be proportioned for the design soil pressures shown in the following chart provided this results in the footings bearing on native non-organic soils.

<u>Boring</u>	<u>Depth</u>		<u>Soil Pressure (psf)</u>
1	1'6"	to 6'6"	1,000
	7'0"	to 9'6"	2,000
	10'0"	to 12'0"	2,500
2	2'6"	to 4'0"	1,500
	4'6"	to 10'6"	2,500
	11'0"	to 12'0"	1,000
3	1'6"	to 3'6"	1,000
	4'0"	to 12'0"	3,000
4	1'6"	to 7'6"	2,500
	8'0"	to 12'0"	2,000
5	1'6"	to 3'6"	1,500
	4'0"	to 7'0"	2,500
	7'6"	to 12'0"	2,000
6	1'6"	to 4'0"	2,500
	4'6"	to 7'0"	3,000
	7'6"	to 12'0"	2,500
7	1'6"	to 7'0"	1,500
	7'6"	to 10'6"	2,000
	11'0"	to 12'0"	1,500

Based on the above chart, it appears that lower strength soils may be encountered in the vicinity of Borings 1, 2, 3, 5 and 7 which may necessitate larger than normal footing sizes.

Wet silt soils were found at the planned footing depth at Borings 3, 5 and 6. Silt soils may be difficult to work in and may exhibit a strength loss when their overburden is removed. It is imperative that the footing excavations be made with as little disturbance to the subsoils as practicable since silts are expected to be very sensitive to vibrations during construction. It is recommended that the footing excavations in the vicinity of these borings be over-excavated about one foot (1') deeper and two feet (2') wider than the planned footing size. The footing excavations should then be wrapped with non-woven filter fabric such as CSI/Geoturf N400 and backfilled with tamped 1" x 3" crushed limestone. The filter fabric should be wrapped over the top of the stone prior to constructing the footings to help reduce potential migration of the silts into the tamped stone. It appears that the bearing soils (silts) have an associated allowable bearing pressure of at least one thousand pounds per square foot (1,000 psf) as shown in the above chart.

It should be noted that footing excavations may be near or below the level at which water was encountered in Borings 3, 5, 6 and 7. Depending upon the depth of the footings relative to the existing ground surface and the actual conditions at the time of construction, it may be necessary to depress the water table in these locations to allow for footings to be constructed. It is sometimes possible to construct strip footings a foot or so below the water table in coarse granular soils using a rapid sequence of excavation and placement of concrete. If this is not possible, it may be necessary to use special dewatering techniques to depress the water table in the vicinity of these borings. Extreme care must be exercised during the dewatering operation if any nearby structures or utilities are sensitive to settlement. Care must be taken to minimize the removal of soils fines during the pumping operation. It is very difficult to dewater silt soils.

Concrete floors or floor-supporting backfill could be placed at or near the present grade in the vicinity of the borings. Any topsoil, organic soil, fill soil, soft or loose soil, or other obviously objectionable material should be removed and the subgrade thoroughly proof-compacted with heavy, rubber-tired equipment. If during the proof-compaction operation areas are found where the soils yield excessively, the yielding materials should be scarified, dried and recompacted or removed and replaced with engineered fill. Where fill or backfill is required to raise the subgrade for concrete floors, it is suggested that clean, well-graded granular soils be used. If clay material is utilized, it should be placed within 2% of its optimum moisture content. The fill should be deposited in horizontal lifts not to exceed nine inches (9") in thickness with each lift being compacted uniformly to a minimum density of 95% of its maximum value as determined by the Modified Proctor Test (AASHTO T-180 or ASTM D-1557).

It appears that the subgrade soils consist of mostly silt soils. We would expect the clay and silt soils to have low California Bearing Ratios (CBRs) on the order of 3% and a modulus of subgrade reaction of about one hundred pounds per cubic inch (100 pci). It appears these soils have a high percentage of silt-size particles which would indicate they could tend to have a severe frost heave potential.

Based on the above estimated CBR values, we have made the following pavement analysis. The site soils appear to be very susceptible to frost heave. Consequently, it is suggested that in areas of automobile and light truck traffic three inches (3") of asphalt with eight inches (8") of high quality, well-graded granular base course be used. In the areas subject to a considerable amount of truck traffic, it is recommended that the asphalt thickness be increased by a minimum of one and one-half inches (1½"). In the areas to be paved, the site should be prepared in a manner similar to that recommended above. In addition, the subgrade should be reworked until approximately the upper one foot (1') of the subgrade is compacted to at least 95% of its maximum dry density as determined by the Modified Proctor Test. It is recommended as a minimum that stub drains be provided at the storm sewer catch basins to provide some drainage for the pavement base. The subgrade should be properly sloped to allow drainage of surface water. Eight inches (8") of concrete pavement should be used in the dumpster area and other intensive truck wheel load areas. Edge drains should be installed in shallow groundwater areas, such as possibly in the vicinity of Borings 2 and 6, and in irrigated landscaped areas.

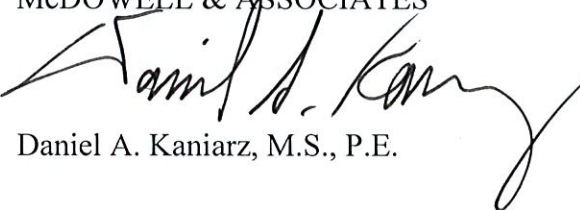
Experience indicates that the actual subsoil conditions at the site could vary from those found at the test borings made at specific locations. It is, therefore, essential that McDowell & Associates be notified of any variation of soil conditions to determine their effects on the recommendations presented in this report. The evaluations and recommendations presented in this report have been formulated on the basis of reported or assumed data relating to the proposed project. Any significant change in this data in the final design plans should be brought to our attention for review and evaluation with respect to the prevailing subsoil conditions.

It is recommended that the services of McDowell & Associates be engaged to observe the soils in the footing excavations prior to concreting in order to test the soils for the required bearing capacities. Testing should also be performed to check that suitable materials are being used for controlled fills and that they are properly placed and compacted.

If we can be of any further service, please feel free to call.

Very truly yours,

McDOWELL & ASSOCIATES

A handwritten signature in black ink, appearing to read "Daniel A. Kaniarz", written over the printed name below.

Daniel A. Kaniarz, M.S., P.E.

DAK/nm



McDOWELL & ASSOCIATES
 Geotechnical, Environmental, & Hydrogeologic Services
 21355 Hatcher Avenue • Ferndale, MI 48220
 Phone: (248) 399-2066 • Fax: (248) 399-2157

JOB NO. 23-295

SURFACE ELEV. _____ DATE 8-1-2023

LOG OF SOIL BORING NO. 1

PROJECT Soils Investigation
 LOCATION Proposed Drive-Thru Coffee Shop
Ortonville Road and Long Lake Drive
Brandon Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		0'6" Moist dark brown sandy TOPSOIL						
			Compact moist brown fine SAND with gravel						
A	2		2'0" Compact moist light brown SILT	3					
SS			2'6" Compact moist brown clayey SILT	5	7.4				
	3			5					
	4		4'0" Slightly compact moist brown fine sandy SILT						
B	5			1					
SS				1	25.1				
	6			2					
	7		6'7" Medium compact wet brown SILT						
C	8			2					
SS				2	22.6				
	9			3					
	10		9'6" Compact wet brown SILT						
D	11			2					
SS				3					
	12			4					
	13								
	14								
E	15		14'6" Compact wet gray SILT						
SS				2					
	16			2					
	17			4					
	18		17'6" Compact wet gray SILT with occasional moist blue silty clay seams						
	19			1					
F	20			2					
SS				3					
	21		20'6"						
	22								
	23								
	24								
	25								

Note: Used automatic hammer.

- TYPE OF SAMPLE
 D. - DISTURBED
 U.L. - UNDIST. LINER
 S.T. - SHELBY TUBE
 S.S. - SPLIT SPOON
 R.C. - ROCK CORE
 () - PENETROMETER

REMARKS:
 Standard Penetration Test - Driving 2" OD Sampler 1' With
 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
 G.W. ENCOUNTERED AT 6 FT. 7 INS.
 G.W. ENCOUNTERED AT FT. INS.
 G.W. AFTER COMPLETION 5 FT. 7 INS.
 G.W. AFTER HRS. FT. INS.
 G.W. VOLUMES MEDIUM-HEAVY CAVE IN AT 57"



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LOG OF SOIL BORING NO. 2
 PROJECT Soils Investigation
 LOCATION Proposed Drive-Thru Coffee Shop
Ortonville Road and Long Lake Drive
Brandon Township, Michigan

JOB NO. 23-295
 SURFACE ELEV. _____ DATE 8-1-2023

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1								
	2		Moist dark brown clayey TOPSOIL						
A	2			2					
SS	3		2'4"	2	19.7				
	4		Medium compact moist brown clayey SILT	2					
	5								
B	5		4'0"	3					
SS	6		Compact moist to wet brown SILT with trace of fine sand and moist brown silty clay seams	4	22.9				
	7								
C	7		6'8"	2					
SS	8			3	22.3				
	9			4					
	10								
D	10		Compact wet brown SILT	2					
SS	11			3					
	12			4					
	13								
	14								
E	14		13'6"	1					
SS	15		Medium compact wet gray SILT	2					
	16		15'6"	2					
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24		Note: Used automatic hammer.						
	25								

TYPE OF SAMPLE
 D. - DISTURBED
 U.L. - UNDIST. LINER
 S.T. - SHELBY TUBE
 S.S. - SPLIT SPOON
 R.C. - ROCK CORE
 () - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1' With
 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT 4 FT. 3 INS.
 G.W. ENCOUNTERED AT 6 FT. 8 INS.
 G.W. AFTER COMPLETION 7 FT. 2 INS.
 G.W. AFTER HRS. FT. INS.
 G.W. VOLUMES MEDIUM CAVE IN AT 7'2"



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LOG OF SOIL
 BORING NO. 3

PROJECT Soils Investigation
 LOCATION Proposed Drive-Thru Coffee Shop
Ortonville Road and Long Lake Drive
Brandon Township, Michigan

JOB NO. 23-295

SURFACE ELEV. _____ DATE 8-1-2023

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		0'8" Moist dark brown sandy TOPSOIL with vegetation						
A	2		Slightly compact moist brown fine SAND with trace of gravel	1					
SS	3		2'4" Slightly compact wet brown fine SAND	1	18.0				
	4		3'0" Soft moist variegated silty CLAY	2					
B	5		3'9" Compact wet brown clayey SILT	5					
SS	6		4'6" Very compact wet gray SILT with trace of fine sand and occasional moist blue clay seams	6	18.1				
	7			7					
C	8		7'0" Compact wet gray SILT	4					
SS	9			4	18.5				
	10		8'6" Compact wet gray SILT	5					
D	11								
SS	12			2					
	13			4					
	14			4					
E	15		12'6" Compact wet gray SILT with occasional moist clayey silt seams	4					
SS	16			3					
	17			4					
	18			4					
	19								
F	20		20'6" Compact wet gray SILT	4					
SS	21			4					
	22			6					
	23								
	24								
	25								

Note: Used automatic hammer.

- TYPE OF SAMPLE
 D. - DISTURBED
 U.L. - UNDIST. LINER
 S.T. - SHELBY TUBE
 S.S. - SPLIT SPOON
 R.C. - ROCK CORE
 () - PENETROMETER

REMARKS:
 Standard Penetration Test - Driving 2" OD Sampler 1' With
 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
 G.W. ENCOUNTERED AT 2 FT. 4 INS.
 G.W. ENCOUNTERED AT FT. INS.
 G.W. AFTER COMPLETION 2 FT. 7 INS.
 G.W. AFTER HRS. FT. INS.
 G.W. VOLUMES HEAVY



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JOB NO. 23-295

SURFACE ELEV. _____ DATE 8-1-2023

LOG OF SOIL BORING NO. 4

PROJECT Soils Investigation

LOCATION Proposed Drive-Thru Coffee Shop
Ortonville Road and Long Lake Drive
Brandon Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		0'9" Moist dark brown sandy TOPSOIL with little vegetation						
A	2		Medium compact moist brown SILT	2					
SS	3		2'6" 3	3	21.9				
	4		4						
B	5		Compact moist brown SILT	3					
SS	6		4'10" Compact wet brown SILT with trace of fine sand and moist variegated silty clay seams	3	22.5				
	7		6'0" 3						
C	8		Compact wet brown SILT with wet fine sand lenses	3					
SS	9		9'0" 3						
	10		2						
D	11		12						
SS	12		Medium compact wet gray SILT						
	13								
	14								
E	15		9'0" 3						
SS	16		15'0" 3						
	17		15'6" Stiff moist blue silty CLAY	3					
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

Note: Used automatic hammer.

- TYPE OF SAMPLE
 D. - DISTURBED
 U.L. - UNDIST. LINER
 S.T. - SHELBY TUBE
 S.S. - SPLIT SPOON
 R.C. - ROCK CORE
 () - PENETROMETER

REMARKS:
 Standard Penetration Test - Driving 2" OD Sampler 1' With
 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
 G.W. ENCOUNTERED AT 4 FT. 10 INS.
 G.W. ENCOUNTERED AT FT. INS.
 G.W. AFTER COMPLETION 3 FT. 2 INS.
 G.W. AFTER HRS. FT. INS.
 G.W. VOLUMES MEDIUM CAVE IN AT 3'2"



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JOB NO. 23-295

SURFACE ELEV. _____ DATE 8-1-2023

LOG OF SOIL BORING NO. 5

PROJECT Soils Investigation
 LOCATION Proposed Drive-Thru Coffee Shop
Ortonville Road and Long Lake Drive
Brandon Township, Michigan

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		Moist dark brown sandy TOPSOIL						
			Moist brown fine SILT						
A	2		Firm moist brown silty CLAY with traces of sand and pebbles	1					
SS				2	26.7				
	3		Medium compact moist brown SILT	2					
	4								
B	5		Compact wet brown fine sandy SILT with wet fine sand lenses	2					
SS				3	20.8				
				3					
	6								
C	7		Compact wet brown SILT with occasional moist clayey silt seams	3					
SS				3					
				3					
	8		Firm moist blue silty CLAY	3					
	9								
D	10		Medium compact wet gray SILT	2					
SS				2	19.6				
				3					
	11								
	12								
	13								
	14								
E	15		Compact wet gray silty fine SAND	2					
SS				3					
				3					
	16								
	17								
	18		Firm moist blue silty CLAY						
	19								
F	20		Compact wet gray SILT	2					
SS				3					
				4					
	21								
	22								
	23								
	24								
	25								

Note: Used automatic hammer.

TYPE OF SAMPLE
 D. - DISTURBED
 U.L. - UNDIST. LINER
 S.T. - SHELBY TUBE
 S.S. - SPLIT SPOON
 R.C. - ROCK CORE
 () - PENETROMETER

REMARKS:

Standard Penetration Test - Driving 2" OD Sampler 1' With
 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT 3 FT. 6 INS.
 G.W. ENCOUNTERED AT _____ FT. _____ INS.
 G.W. AFTER COMPLETION 3 FT. 10 INS.
 G.W. AFTER _____ HRS. _____ FT. _____ INS.
 G.W. VOLUMES MEDIUM-HEAVY CAVE IN AT 3'10"



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LOG OF SOIL
 BORING NO. 6

PROJECT Soils Investigation
 LOCATION Proposed Drive-Thru Coffee Shop
Ortonville Road and Long Lake Drive
Brandon Township, Michigan

JOB NO. 23-295

SURFACE ELEV. _____ DATE 8-1-2023

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		0'7" Moist dark brown sandy TOPSOIL						
			1'3" Moist brown SILT						
A SS	2		Firm moist variegated silty CLAY	2					
	3			3	24.4				
	4								
B SS	5		Compact wet brown SILT	3					
	6			4	21.8				
	7			4					
C SS	8		7'0" Very compact wet brown clayey SILT with trace of fine sand	6	21.0				
	9			7					
D SS	10		8'6" Compact wet gray SILT	2					
	11			3					
	12			3					
	13								
	14		13'0" Compact wet gray SILT with occasional moist blue silty clay seams						
E SS	15			1					
	16			3					
	17			5					
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

Note: Used automatic hammer.

- TYPE OF SAMPLE
 D. - DISTURBED
 U.L. - UNDIST. LINER
 S.T. - SHELBY TUBE
 S.S. - SPLIT SPOON
 R.C. - ROCK CORE
 () - PENETROMETER

REMARKS:
 Standard Penetration Test - Driving 2" OD Sampler 1' With
 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
 G.W. ENCOUNTERED AT 2 FT. 6 INS.
 G.W. ENCOUNTERED AT FT. INS.
 G.W. AFTER COMPLETION 4 FT. 9 INS.
 G.W. AFTER HRS. FT. INS.
 G.W. VOLUMES HEAVY CAVE IN AT 4'9"



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 21355 Hatcher Avenue • Ferndale, MI 48220
 Phone: (248) 399-2066 • Fax: (248) 399-2157

LOG OF SOIL
 BORING NO. 7

PROJECT Soils Investigation
 LOCATION Proposed Drive-Thru Coffee Shop
Ortonville Road and Long Lake Drive
Brandon Township, Michigan

JOB NO. 23-295

SURFACE ELEV. _____ DATE 8-1-2023

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		0'9" Moist dark brown sandy TOPSOIL						
A	2		Medium compact moist brown fine SAND with traces of gravel and silt	2					
SS	3		2'6" Firm moist brown silty CLAY	2	19.4		*	(1500)	
	4		3'9" Medium compact wet variegated clayey SILT						
B	5		4'6" Medium compact wet brown SILT with trace of fine sand	2					
SS	6		7'0" Compact wet brown SILT	2	24.1				
	7		8'6" Medium compact wet brown SILT	2					
C	8		13'0" Medium compact wet gray SILT with trace of fine sand	3	22.4				
SS	9			3					
	10			2					
D	11			2					
SS	12			3					
	13								
	14								
E	15			1					
SS	16			2					
	17			2					
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

Note: Used automatic hammer.

TYPE OF SAMPLE
 D. - DISTURBED
 U.L. - UNDIST. LINER
 S.T. - SHELBY TUBE
 S.S. - SPLIT SPOON
 R.C. - ROCK CORE
 () - PENETROMETER

REMARKS: *Calibrated Penetrometer

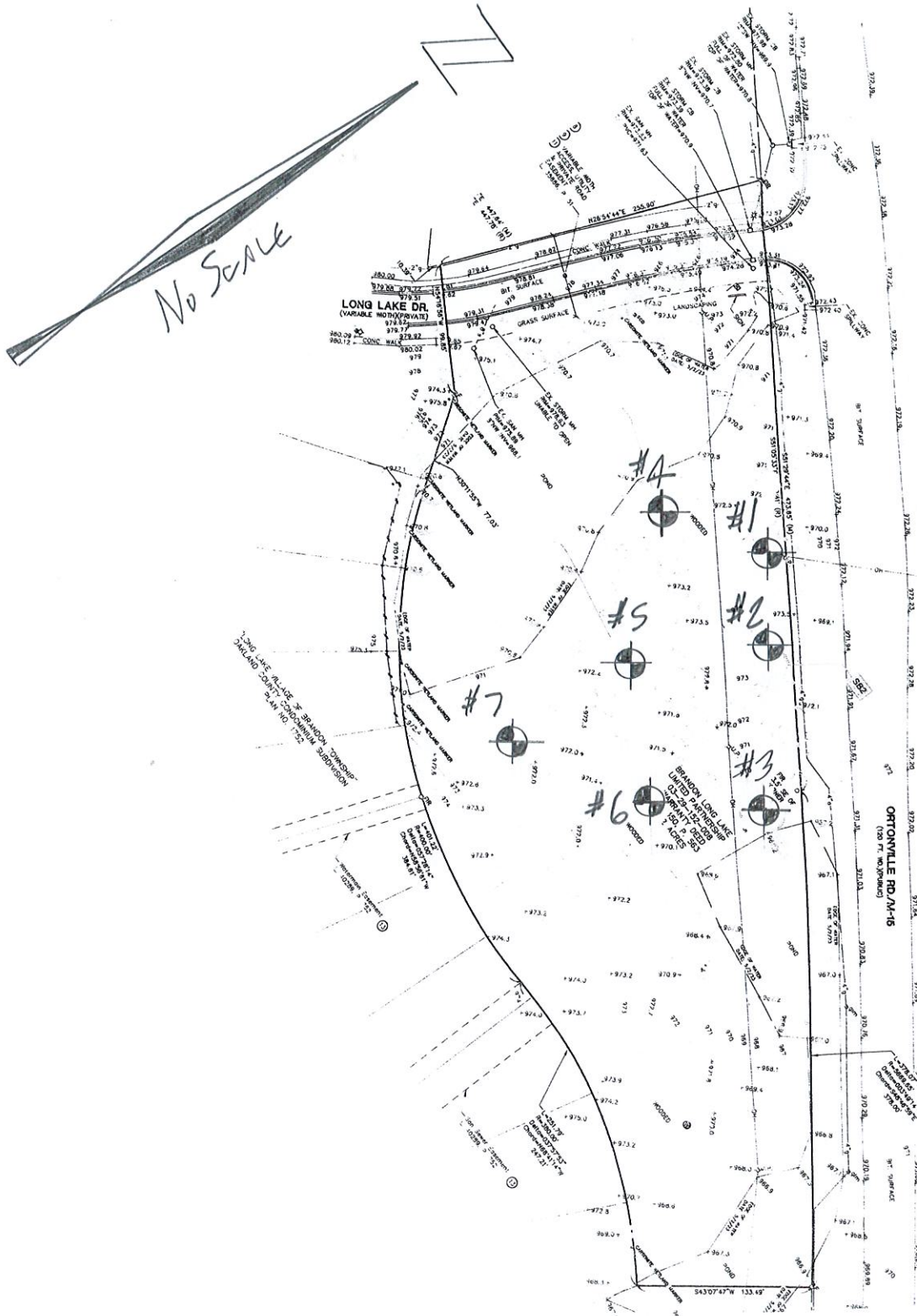
Standard Penetration Test - Driving 2" OD Sampler 1' With
 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT 3 FT. 9 INS.
 G.W. ENCOUNTERED AT FT. INS.
 G.W. AFTER COMPLETION 5 FT. 4 INS.
 G.W. AFTER HRS. FT. INS.
 G.W. VOLUMES MEDIUM-HEAVY CAVE IN AT 5'4"

SIEVE ANALYSIS

Boring	Sample	% Passing #4 Sieve	% Passing #10 Sieve	% Passing #40 Sieve	% Passing #100 Sieve	% Passing #200 Sieve
1	B	100.0	100.0	99.5	97.8	87.3
2	B	100.0	100.0	99.8	99.2	90.7
3	B	100.0	100.0	99.5	98.9	92.4
4	B	100.0	99.8	98.5	97.6	89.8
5	B	100.0	98.4	93.0	91.8	76.4
6	C	100.0	100.0	99.9	99.7	95.1
7	B	100.0	99.9	99.7	99.2	92.4



Son Boring Location Plan

#23-295

Sec. 46-208. - Local business district (C-1).

(a) *Intent.* The C-1 local business district is intended to permit retail business and service uses which are needed to serve the nearby residential areas. In order to promote such business developments so far as is possible and appropriate in each area, uses are prohibited which would create hazards, offensive and loud noises, vibration, smoke, glare, or heavy truck traffic. The intent of this district is also to encourage the concentration of local business areas to the mutual advantage of both the consumers and merchants and thereby to promote the best use of land at certain strategic locations and to avoid the continuance of encouraging multitenant "strip commercial" development along heavily traveled roads.

(b) *Permitted uses.*

- (1) Office buildings and uses when goods or wares are not commercially created, exchanged or sold.
- (2) Medical or dental clinics.
- (3) Financial establishments such as banks, credit unions, savings and loan associations.
- (4) Township buildings and uses.
- (5) Public utility buildings and uses but not including storage yards, when operating requirements necessitate locating within the district to serve the immediate vicinity.
- (6) Business and private schools operated within a completely enclosed building.
- (7) Photographic studios.
- (8) Funeral homes.
- (9) Retail establishment for the sale of alcoholic beverages, baked goods, bicycles, books, confection drugs, flowers, groceries, hardware, hobby equipment, jewelry, music, notions, paints, periodicals, sundry small household articles, tobacco, and similar establishments.
- (10) Personal service establishments performing services on the premises, such as barber and beauty shops; watch, radio, television, clothing and shoe repair, tailor shops, locksmith and similar establishments.
- (11) Laundry or dry cleaning customer outlets, coin-operated laundromats, self-serve dry cleaning centers and the like. Dry cleaning or laundry plants serving more than one customer service outlet are prohibited.
- (12) Eating and drinking establishments when food or beverage is consumed within a completely enclosed building. Establishments with a character of a drive-in or open front store are permitted.
- (13) Private service clubs, fraternal organizations and lodge halls.

(c) *Special uses.*

- (1) Automobile service station subject to the requirements of section 46-291.
- (2) Arcades.
- (3) Churches, when bordering residential districts, subject to section 46-294.
- (4) Open air businesses, subject to section 46-299.
- (5) Day care facilities and group day care homes subject to section 46-286.

(Ord. of 3-17-2008, § 4.04(E))