SCIO TOWNSHIP PLANNING COMMISSION
PC Meeting
July 10, 2023
7:00 PM
Scio Township Hall, 827 N. Zeeb Road, Ann Arbor, MI 48103

The Township Planning Commission will meet in Meeting Hall at Township Hall at 827 N. Zeeb Road. Members of the public may join either in person, or via Zoom at https://us02web.zoom.us/j/89009902499 or http://zoom.us and entering Meeting ID 890 0990 2499 or by calling 1 312 626 6799 and entering Meeting ID 890 0990 2499. Persons with disabilities requiring any accommodation for participation in this meeting should contact the Township Clerk at (734) 369-9400 or clerk@sciotownship.org.

AGENDA

I. CALL TO ORDER

II. PLEDGE OF ALLEGIANCE

III. ROLL CALL
Culbertson, Cheng, Hyde, Moore, Sharma, Human, Reiser,

IV. ADOPTION OF AGENDA

V. COMMUNICATIONS AND CORRESPONDENCE

Information **COMMUNICATIONS/CORRESPONDENCE**

VI. PRESENTATIONS REQUESTED BY THE PLANNING COMMISSION

VII. PUBLIC COMMENT

People wishing to address the Planning Commission on matters which are not on the public hearing portion of the agenda or seek information on any other matters. Such oral presentations shall be limited to three (3) minutes except a representative or spokesperson of an organization shall have five (5) minutes to address the Commission.

VIII. PUBLIC HEARINGS

The Chairperson will declare such a meeting open and state its purpose and rules of procedure for the hearing. The applicant will be heard first. The Planning Commission may or may not take formal action on this or these matters at this meeting.

1 ***Possible Action*** **CU# 23008 Blank Slate Creamery, allow retail sales,**

IX. UNFINISHED BUSINESS

1 ***Possible Action*** **CU# 23007 Best Friends Pet Care, commercial kennel,**

2 ***Discussion Only*** **ESCAP discussion,**

3 ***Discussion Only*** **Jackson Rd zoning and overlay district discussion,**

4 ***Discussion Only*** **PUD discussion,**

X. NEW BUSINESS

1 ***Discussion Only*** **Solar zoning ordinance discussion,**

XI. REPORTS

Information **REPORTS / COMMISSION ACTIVITY**

XII. APPROVAL OF MINUTES

1 ***Possible Action*** **Minutes of 2023-06-26, pending,**

XIII. ADJOURNMENT

AGENDA
Scio Township Planning Commission
COMMUNICATIONS/CORRESPONDENCE

FOR MEETING DATE OF: July 10, 2023
PREPARED ON: 20230706
PREPARED BY: Fran Szuma
SUBMITTED BY: Planning

ITEM TYPE: Information

ATTACHMENTS:
correspondence for pc 20230710

Frances Szuma

From: patsina2 <patsina2@comcast.net>
Sent: Tuesday, July 4, 2023 6:17 PM
To: Planning Commission; Kristy Aiken
Subject: Best Friends Pet Care, Inc Conditional Use Application

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Planning Commissioners,

Last month, Mr. Keith Moreau, a representative from Best Friends Pet Care, Inc., appeared before your commission to discuss his Conditional
Use Application to conduct business in a vacant suite at the Jackson Road Meijer's store. As you are aware, Mr. Moreau plans to operate a doggy daycare/dog grooming salon within the Meijer's suite. A grocery store!

There are a few reasons listed on the application as to why we believe this plan should be scrapped.

* Employees of the dog daycare will bag up the dog waste and put it into the trash dumpster.
How unappealing, actually how disgusting that could be to shoppers entering and exiting the store. Will the waste be carried out as little bags or large garbage bags? In a cart?

* An exterior pet relief station will be installed. Not sure where that could happen as this location has no grassy area close by. Strictly concrete and asphalt that can sometimes be too hot for pets to walk on.

* There will be modifications to the store exterior as a separate entrance for the pets and owners. However, the interior entrance to the suite will continue to be used by the 6 or 8 employees so they may have access to the restrooms within the store. We don't believe this suite has an exhaust system separate from the rest of the grocery store, so how will any dog odor be evacuated when these doors are opened?

For the reasons noted above, we ask that the members of this Planning Commission not approve and not move forward with any recommendation to the Board of Trustees to approve the Best Friends Pet Care, Inc's Conditional Use Application.

Our family loves dogs. Our last dog was a large Old English sheepdog that brought mamy years of joy to our home in Scio. What we don't love is sharing our grocery shopping experience with dogs.

There are food stores for food and pet stores for pets. We don't believe any food store/pet grooming store is going to attract any new grocery customers to the Scio Meijer store. If anything, Meijer may lose business such as ours and others we have heard from who would consider shopping elsewhere.

Thanking you in advance for your serious consideration of our request to deny the subject application.

Sincerely,

William & Patricia Stein
Long-time Scio residents
Long-time Meijer shoppers

AGENDA # 1
Scio Township Planning Commission
CU# 23008 Blank Slate Creamery, allow retail sales,

FOR MEETING DATE OF: July 10, 2023
PREPARED ON: 20230706
PREPARED BY: Fran Szuma
SUBMITTED BY: Planning

ITEM TYPE: Possible Action

ATTACHMENTS:
Blank Slate Creamery application
Blank Slate Creamery review
Blank Slate Creamery narrative
BSC legal description
BSC-commercial concepts 1st amd
Blank Slate Creamery plans

Township of Scio

827 N. Zeeb Road · Ann Arbor, MI 48103
734/369-9400 · 734/665-0825 Fax
www.ScioTownship.org

Applications will not be processed until deemed complete. Incomplete applications will be destroyed after 90 days.

CONDITIONAL USE 23008

PROPERTY ID NO. H-08-19-155-003

ZONING DISTRICT I-1

APPLICATION DATE Comml Concepts Center

APPLICANT: Blank Slate Creamery, LLC
AGENT/DEVELOPER
300 W Liberty
STREET, NUMBER
Ann Arbor, MI 48103
CITY, STATE, ZIP
734-218-3242
PHONE NUMBER
siglerjanice@gmail.com
E-MAIL ADDRESS

OWNER: Block M Properties, LLC
AGENT/DEVELOPER
300 W Liberty
STREET, NUMBER
Ann Arbor, MI
CITY, STATE, ZIP
734-780-5988
PHONE NUMBER
jsigler@umich.edu
E-MAIL ADDRESS

PROPERTY ADDRESS: 7879 Jackson Rd, Suite C, Ann Arbor, MI 48103

SIZE OF PROPERTY (AREA): 3,220 sq ft, (conditional use approval sought for 178 sq ft - 5.5% of total area)

LEGAL DESCRIPTION: ☑ ATTACHED

DEED RESTRICTIONS: ☑ NONE ☐ ATTACHED

AREA DESCRIPTION: ATTACH SEPARATE INFORMATION PURSUANT TO SECTION 36-220 OF THE SCIO TOWNSHIP ZONING ORDINANCE.

PURPOSE OF APPLICATION (INCLUDE ALL ANTICIPATED ACTIVITIES): see attached

I AGREE TO GIVE PERMISSION FOR OFFICIALS OF SCIO TOWNSHIP TO ENTER THE PROPERTY SUBJECT TO THIS APPLICATION FOR PURPOSES OF INSPECTION.

☑ *Property owner authorization letter attached.*

SIGNATURE OF AGENT/DEVELOPER — DATE 5/25/23

SIGNATURE OF OWNER — DATE 5/25/23

Janice Sigler, Owner, Blank Slate Creamery, LLC
PRINT NAME

Gerald Sigler, Owner, Block M Properties, LLC
PRINT NAME/TITLE

00730530 #5695 (1) COND $115.00 **FOR OFFICE USE ONLY** (1) FEES $80.00 (3) COND $40.00 Recording

THIS APPLICATION HAS BEEN REVIEWED FOR COMPLIANCE WITH THE TOWNSHIP ZONING ORDINANCE, AND FOR ACCURACY OF PROPERTY DESCRIPTION:

ORDINANCE ADMINISTRATOR — DATE

PUBLIC HEARING NOTICE:
PUBLIC HEARING:
PLANNING COMM. RECOMMENDATION:
☐ APPROVAL, DATE
☐ DENIAL, DATE
TOWNSHIP BOARD OF TRUSTEES:
☐ APPROVED, DATE
☐ DENIED, DATE

APPLICATION RECEIVED:

TOWNSHIP CLERK — DATE

FEE RECEIVED DATE

Township of Scio

827 N. Zeeb Road • Ann Arbor, MI 48103
734/369-9400 • 734/665-0825 Fax
www.ScioTownship.org

Applications will not be processed until deemed complete.
Incomplete applications will be destroyed after 90 days.

SITE PLAN 23009

☐ ADMINISTRATIVE SITE PLAN
☒ FULL SITE PLAN
DATE 20230530
PROPERTY ID NO. # -08-19-155-003
ZONING DISTRICT I-1

APPLICANT: Blank Slate Creamery LLC
AGENT/DEVELOPER
300 W. Liberty
STREET, NUMBER
Ann Arbor MI 48103
CITY, STATE, ZIP
734-218-3242
PHONE
FAX
sigerjanice@gmail.com
EMAIL

OWNER: Block M Properties LLC
NAME
300 W. Liberty
STREET, NUMBER
Ann Arbor MI 48103
CITY, STATE, ZIP
734-780-5488
PHONE
FAX
jsiger@umich.edu
EMAIL

PROPOSED NAME OF DEVELOPMENT: Blank Slate Creamery LLC
ADDRESS OF PROPERTY (OR POPULAR ADDRESS): 7879 Jackson Rd suite C
LEGAL DESCRIPTION: ☒ ATTACHED ☐ ON SITE PLAN
LOT SIZE: 3220 (AREA) DEED RESTRICTIONS: ☒ NONE ☐ ATTACHED
DESCRIPTION OF PROPOSED USE: see letter

STORIES: ☒ EXISTING 1 ☐ NEW
SQ. FT.: ☐ ADDITION ☐ NEW

SANITARY FACILITIES: ☒ SEWER ☐ SEPTIC
WATER: ☒ MUNICIPAL ☐ PRIVATE WELL

SQ. FT. BY USE:
☐ COMMERCIAL 178
☐ OFFICE
☐ WAREHOUSE 3,042
☐ MANUFACTURING
☐ OTHER

I AGREE TO GIVE PERMISSION FOR OFFICIALS OF SCIO TOWNSHIP TO ENTER THE PROPERTY SUBJECT TO THIS APPLICATION FOR PURPOSES OF INSPECTION.

☒ *Property owner authorization letter attached.*

SIGNATURE OF APPLICANT 5/30/23 DATE
Emma Sigler Controller
PRINT NAME

SIGNATURE OF OWNER 5/30/23 DATE
Emma Sigler owner, member
PRINT NAME/TITLE

FEES SEE COND

FOR OFFICE USE ONLY

THIS APPLICATION HAS BEEN REVIEWED FOR COMPLIANCE WITH THE TOWNSHIP ZONING ORDINANCE, AND FOR ACCURACY OF PROPERTY DESCRIPTION:

ORDINANCE ADMINISTRATOR DATE

PLANNING COMMISSION ACTION:
☐ APPROVED, DATE
☐ DENIED, DATE

TOWNSHIP BOARD:
☐ APPROVED, DATE
☐ DENIED, DATE

APPLICATION RECEIVED DATE:
FEE RECEIVED: CASH CHECK
SP DATE
SW
WA

EXPIRATION DATE:

Carlisle | Wortman
ASSOCIATES, INC.
117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

Date: June 29, 2023

Conditional Land Use
For
Scio Township, Michigan

File No.:	CU 23008 / PSP 23009
Applicant:	Blank Slate Creamery, LLC
Project Name:	Blank Slate Creamery
Plan Date:	February 21, 2023
Location:	7879 Jackson Road, Suite C H-08-19-155-003
Zoning:	I-1, Limited Industrial / JROD, Jackson Road Overlay District
Action Requested:	Conditional land use approval for retail use.
Required Information:	Deficiencies are noted in the following sections of this review.

PROJECT AND SITE DESCRIPTION

The applicant is requesting conditional use approval to provide carry out/retail activities to allow for pick-up for on-line orders of limited products.

The site contains an existing multi-tenant structure with associated parking and site improvements. The applicant indicates their operations will be conducted in Suite C which contains 3,220 square feet of space to pasteurize and then freeze ice cream and sorbet, as well as produce other related dessert products such as cookies, brownies, ice cream cakes and pies. Orders must be placed 15-30 minutes in advance from a limited menu of pre-packaged items. It

is not intended to be a high-volume use. The applicant has noted they will limit the number of orders per hour if volume becomes too high on any given day. Pick-up would be offered between the hours of 3PM and 9PM daily. The applicant is requesting the condition use approval to allow a limited commercial carryout/retail activity in 178 square feet (5.5%) of the space.

Retail sales when conducted in conjunction with a principal use are allowed as a conditional use. However, retail sales are limited to 10% of the gross floor area of the business.



LAND USE AND ZONING

The subject site has been developed as a multiple-tenant industrial facility.

North: The subject site is bordered to the north by proposed office/industrial uses – Koucar development under construction. This area is zoned I-1, Limited Industrial.

South: South of the site are office uses zoned OS, Office Service.

East: East of the subject site is a vacant property zoned R-C, Recreation Conservation.

West: West of the site are various office/industrial uses including Ann Arbor Recycling having PUD and I-1 zoning.

Items to be Addressed: *None.*

MASTER PLAN

The subject site and all surrounding properties are depicted in the Master Plan as Mixed-Use Office/Industrial. The intent of this designation is to provide business opportunities with varied office, research, and light industrial uses. Commercial and high-density residential uses are also appropriate in mixed-use developments. In general, uses envisioned in these areas must have little or no impact on nearby residential uses.

Office uses, light industrial uses, office research uses are anticipated in the Office/Industrial future land use classification. Zoning districts that coincide with the Office/Industrial future land use classification include OS, Office Service; I-1, Limited Industrial; and IRP, Industrial Research Park.

The existing I-1 zoning is consistent with the Master Plan future land use designation.

Items to be Addressed: *None.*

NATURAL RESOURCES

The site contains an existing multi-tenant industrial structure and associated improvements. No additional natural features will be disturbed as part of the proposed conditional use request.

Items to be Addressed: *None.*

ESSENTIAL FACILITIES AND SERVICES

The site is located within the Township's water and sewer districts. The applicant is proposing a new 4-inch sanitary sewer lead along the east side of the property into the proposed suite. We defer review of utilities to the Utility Director and Township Engineer.

Items to be Addressed: *Utility Director / Township Engineer review of existing and proposed utility connections.*

CONDITIONAL USE STANDARDS

The Zoning Ordinance identifies six (6) standards and findings that must be met (Section 36-224 1-6). We note that most of these issues are addressed in the body of this analysis; however, we will provide the following brief commentary for reference.

(1) Will be harmonious, and in accordance, with the objectives and regulations of this Ordinance.

Due to the location of the site adjacent to similar industrial/office uses, and no residential land uses are in the vicinity, the proposed uses of the site would be compatible to the existing uses and surrounding area.

(2) Will be compatible with the natural environment and existing and future land uses in the vicinity.

The site has been planned and zoned for development, and the surrounding area have been developed as industrial/office uses.

(3) *That the proposed use will be served adequately by essential public facilities and services such as highways, streets, police and fire protection, drainage ways, refuse disposal, or that the persons or agencies responsible for the establishment of the proposed use shall be able to provide adequately any such service.*

The site is located within the Township's water and sewer districts. Any utility modifications will be considered during site plan review.

(4) *That the proposed use will not be detrimental, hazardous, or disturbing to the existing or future neighboring uses, persons, property or the public welfare.*

The surrounding uses are zoned I-1, PUD and OS, and include light industrial, and office uses. The proposed uses are not considered to be detrimental, hazardous, or disturbing to the existing future neighboring uses or persons.

(5) *That the proposed use will not create additional requirements at public cost for public facilities and services that will be detrimental to the economic welfare of the community.*

No additional public facilities and services are anticipated.

(6) *Will be compatible with the Township's adopted Master Plan.*

As noted above the use is in conformance with the Township's Master Land Use Plan.

Items to be Addressed: *None.*

VARIANCES

No variances are needed.

SITE PLAN REVIEW

A full site plan review is not required based on the standards outlined in Section 36-220(b) (no site modifications are proposed or required).

1. **Parking.** Section 36-278(h) requires parking be provided for all uses on the site. The proposed industrial/manufacturing use requires one (1) space for each 500 square feet of floor area plus one (1) space for each 200 square feet of retail floor area. This equates to seven (7) parking spaces. The applicant has demonstrated the location of ten (10) parking spaces (5 at the front and 5 at the rear) on site to meet their needs. A total of 50 spaces are provided for all tenants on-site.

2. **Loading.** No designated loading area is provided. Turning radii for delivery vehicles is provided on Sheet SP1. The applicant should indicate the timing and frequency of deliveries to ensure they do not conflict with other tenant needs or customer parking.
3. **Floor Plan:** A floor plan of the facility demonstrating the areas where various operations will be conducted is provided. This includes the 178 square foot retail portion at the front (northeast) corner of the space.

Items to be Addressed: *1) List other uses on site to ensure parking needs are met. 2) Provide timing and frequency of deliveries.*

RECOMMENDATIONS

Based upon the information provided by the applicant and the comments of this analysis, the following items will need to be addressed to the satisfaction of the Planning Commission prior to making a recommendation on the Blank Slate Creamery – retail conditional use - (7879 Jackson Road, Suite C / H-08-19-155-003) to the Township Board:

1. List other uses on site to ensure parking needs are met.
2. Provide timing and frequency of deliveries.

CARLISLE/WORTMAN ASSOC., INC.
Douglas J. Lewan, AICP
Executive Vice President

CARLISLE/WORTMAN ASSOC., INC.
Laura K. Kreps, AICP
Senior Associate

#124-2318

cc: Janice Sigler via siglerjanice@gmail.com

H -08-19-155-003
CU# 23008 / PSP# 23009
BLANK SLATE CREAMERY

May 25, 2023

Planning Commission
Township of Scio
827 N. Zeeb
Ann Arbor, MI 48103

RE: Conditional Use Application
7879 Jackson Rd, Suite C
Prop ID: H-08-19-155-003

Planning Commission Members:

Block M Properties, LLC purchased the property at 7879 Jackson Rd, Suite C, in order to lease it to Blank Slate Creamery, LLC (a related entity) for the purpose of ice cream production. Specifically, Blank Slate will pasteurize and then freeze ice cream and sorbet, as well as producing other related dessert products such as cookies, brownies, and ice cream cakes & pies. The property is 3,220 sq ft and is currently zoned LI – Light Industrial. Applicant is requesting Conditional Use approval to conduct limited commercial carryout activity in a small portion (178 sq ft or 5.5%) of the property.

Background

Blank Slate Creamery opened its first ice cream shop in 2014 in downtown Ann Arbor. Immediately successful and annually recognized as "Best Ice Cream/Dessert" in Ann Arbor publications, Blank Slate eventually opened a second shop in Brighton, while continuing to produce all ice cream for both shops in a small (500 q ft) portion of its downtown Ann Arbor location. Sales have risen to such an extent that the production space is no longer adequate to meet demand.

The property at 7879 Jackson Rd was purchased to allow for a significant increase in ice cream production and storage. Renovation of the space has been underway since January 2023, under the guidance of not only the Scio Township Building Department, but also the Washtenaw County Health Department and the Michigan Department of Agriculture.

Commercial Activity

While the vast majority of the ice cream produced on-site will be delivered to Blank Slate's shops in Ann Arbor & Brighton, as well as potentially to local restaurants and grocery stores, Blank Slate would like to make online retail sales available to local residents. We do not desire to establish another "scoop shop" like we have in Ann Arbor or Brighton, rather we are proposing a pick up location for customers who have placed an online order in advance from a limited menu of pre-packaged items (e.g., pints, half pints, cakes, pies, etc.). Orders must be placed 15-30 minutes in advance, and the customer can quickly come in to pick it up or call and we'll run it out to their car.

We do not intend for this to be a high volume activity—that would not be sustainable with our staffing model nor consistent with the location, so if volume becomes too high on any given day, we would

impose limits in our online sales system to cut off sales after a certain number of transactions per hour. We anticipate offering daily pick-up hours of 3:00-9:00 pm.

We respectfully request your approval of this Conditional Use application. If you have any questions or need additional information, please do not hesitate to contact us.

Sincerely,

Janice Sigler, Owner/Sole Member
Blank Slate Creamery, LLC
300 W Liberty
Ann Arbor, MI 48103
734-218-3242
siglerjanice@gmail.com

Jerry Sigler, Owner/Sole Member
Block M Properties, LLC
300 W Liberty
Ann Arbor, MI 48103
734-780-5988
jsigler@umich.edu

H -08-19-155-003
CU# 23008 / PSP# 23009
BLANK SLATE CREAMERY

LEGAL DESCRIPTION

the "Real Property" located in WASHTENAW County, State of Michigan:

TOWNSHIP OF SCIO, COUNTY OF WASHTENAW, STATE OF MICHIGAN, AS FOLLOWS:

UNIT 3, COMMERCIAL CONCEPTS CENTER, ACCORDING TO THE MASTER DEED RECORDED IN LIBER 4480, PAGE 720, WASHTENAW COUNTY RECORDS, DESIGNATED AS WASHTENAW COUNTY CONDOMINIUM SUBDIVISION PLAN NO. 488, TOGETHER WITH RIGHTS IN GENERAL COMMON ELEMENTS AND LIMITED COMMON ELEMENTS AS SET FORTH IN THE MASTER DEED AND AS DESCRIBED IN ACT 59 OF THE PUBLIC ACTS OF 1978, AS AMENDED.

The Real Property or its address is commonly known as 7879 JACKSON RD, SUITE C, ANN ARBOR, MI 48103-9559. The Real Property tax identification number is H-08-19-155-003.

(12)

L: 5485 P: 847 6652675 ADM
06/08/2022 09:33 AM Total Pages: 6
Lawrence Kestenbaum, Washtenaw Co

FIRST AMENDMENT TO THE MASTER DEED

COMMERICAL CONCEPTS CENTER

This First Amendment to the Master Deed of Commercial Concepts Center ("First Amendment") is made on May 5, 2022 by Commercial Concepts Center Association, Inc., a Michigan nonprofit corporation ("Association"), whose address is 30 Parkland Plaza, Suite A, Ann Arbor, Michigan 48103, pursuant to the provisions of the Michigan Condominium Act ("Act") and the terms of the Master Deed (defined below).

BACKGROUND

A. The Association is the administrator of Commercial Concepts Center ("Project"), a condominium project established pursuant to the Master Deed recorded in Liber 4480, at Page 720, Washtenaw County Records ("Master Deed"), and designated as Washtenaw County Condominium Subdivision Plan No. 488.

B. the Association desires, pursuant to the terms of this First Amendment, to amend the Master Deed and the condominium subdivision plan of the Project, which is Exhibit B to the recorded Master Deed, for the purpose of modifying the dimensions of the Project Units and the percentage of value assigned to each Unit.

C. This First Amendment was approved by the requisite number of Project Co-Owners and first mortgagees of record, pursuant to Article IX of the Master Deed and the Act.

Accordingly, upon the recording of this First Amendment, the Association amends the Master Deed and its Exhibit B as follows:

1. Condominium Subdivision Plan. The attached Exhibit B to the First Amendment to the Master Deed (Replat No. 1 to Washtenaw County Condominium Subdivision Plan No. 488) fully restates and replaces all sheets of Exhibit B to the Master Deed as originally recorded (sheets 1 through 4, inclusive). The previously recorded Exhibit B to the Master Deed shall have no further force or effect.

2. Percentage of Value Assignment. The table in Section 5.3 of the Master Deed detailing (a) each Unit number and (b) the percentage of value assigned to each Unit is fully restated as follows:

(6)

Unit	Percentage of Value
Unit 1	27.20%

Time Submitted for Recording
Date 6. 8 2022 Time 9:15 AM
Lawrence Kestenbaum
Washtenaw County Clerk/Register

Unit 2	7.10%
Unit 3	15.24%
Unit 4	26.98%
Unit 5	23.48%
Total	100%

All other provisions of the Master Deed as previously recorded, including the Project Bylaws, remain in full force and effect.

Dated:
05/05/2022

COMMERCIAL CONCEPTS CENTER ASSOCIATION,
A Michigan nonprofit corporation

By: Sheila Wang
Its: President
#

STATE OF MICHIGAN)
) ss.
COUNTY OF WASHTENAW)

The foregoing First Amendment to the Master Deed was acknowledged before me on 05/05/2022 by Sheila Wang, President of the Commercial Concepts Center Association, a Michigan nonprofit corporation, on behalf of the Association.

Kelly Winn
Name:
Notary Public, County of Washtenaw
My commission expires: 4/3/2025
Acting in County of Washtenaw

Drafted by and when recorded return to:#
Eric F. Sloat (P81842)#
538 N. Division Street#
Ann Arbor, Michigan 48104#

KELLY WINN
Notary Public, State of Michigan
County Of Washtenaw
My Commission Expires 04-03-2025
Acting in the County of _____

REPLAT NO. 1 TO WASHTENAW COUNTY CONDOMINIUM SUBDIVISION PLAN NO. 488
EXHIBIT "B" TO THE FIRST AMENDMENT TO THE MASTER DEED OF

COMMERCIAL CONCEPTS CENTER

LOCATED IN THE NE 1/4 OF SECTION 19, T2S, R5E, SCIO TOWNSHIP WASHTENAW COUNTY, MICHIGAN.

DEVELOPER:
COMMERCIAL CONCEPTS & DESIGN, LLC.
5277 JACKSON RD.
ANN ARBOR, MI 48103

SURVEYOR:
ARBOR LAND CONSULTANTS, INC
6653 SCHNEIDER RD.
MANCHESTER, MI 48158
(734) 669-2960

LEGAL DESCRIPTION:

A 2.48 acre parcel of land in the NE 1/4 of Section 19, T2S, R5E, Scio Township, Washtenaw County, Michigan described as commencing at the Center of said Section 19; thence South 89°21'12" East 400.00 feet along the East-West 1/4 line of said Section 19; thence North 02°31'52" East 931.91 feet; thence North 83°31'00" East 174.49 feet to the POINT OF BEGINNING; thence North 04°30'00" West 447.27 feet; thence 225.41 feet along the Centerline of Jackson Road along the arc of a 3819.85 feet radius curve to the right, having a central angle of 03°22'52" and a chord which bears North 86°10'20" East 225.38 feet; thence South 00°40'50" West 544.94 feet; thence North 89°19'10" West 176.89 feet; thence North 04°30'00" West 82.12 feet to the POINT OF BEGINNING, being subject to the rights of the public over the northerly 60 feet thereof for Jackson Road.

NOTE:
This condominium subdivision plan is not required to contain detailed project design plans prepared by the appropriate licensed design professional. Such project design plans are filed, as part of the construction permit application, with the enforcing agency for the state construction code in the relevant governmental subdivision. The enforcing agency may be a local building department or the state department of licensing and regulatory affairs

This amendment is being filed to redefine the Unit Layouts within the building

SHEET INDEX:
1.) COVER SHEET
2.) SITE PLAN & UNIT PLANS
3.) SURVEY PLAN
4.) UTILITY PLAN

STATE OF MICHIGAN
KEVIN J. GINGRAS
License No. 4001049278
LICENSED PROFESSIONAL SURVEYOR

KEVIN J. GINGRAS, P.S. NO. 49278

AS-BUILT DATE: JANUARY 21, 2022

ARBOR LAND CONSULTANTS
Professional Land Surveyors
6653 Schneider Rd. • Manchester, MI • 48158
(734) 669-2960 • arborlandinc.com

CLIENT:
COMMERCIAL CONCEPTS & DESIGN, LLC.
5277 JACKSON RD.
ANN ARBOR, MI 48103

COMMERCIAL CONCEPTS CENTER
REPLAT NO. 1
EXHIBIT B TO THE 1ST AMENDMENT TO THE MASTER DEED
COVER SHEET

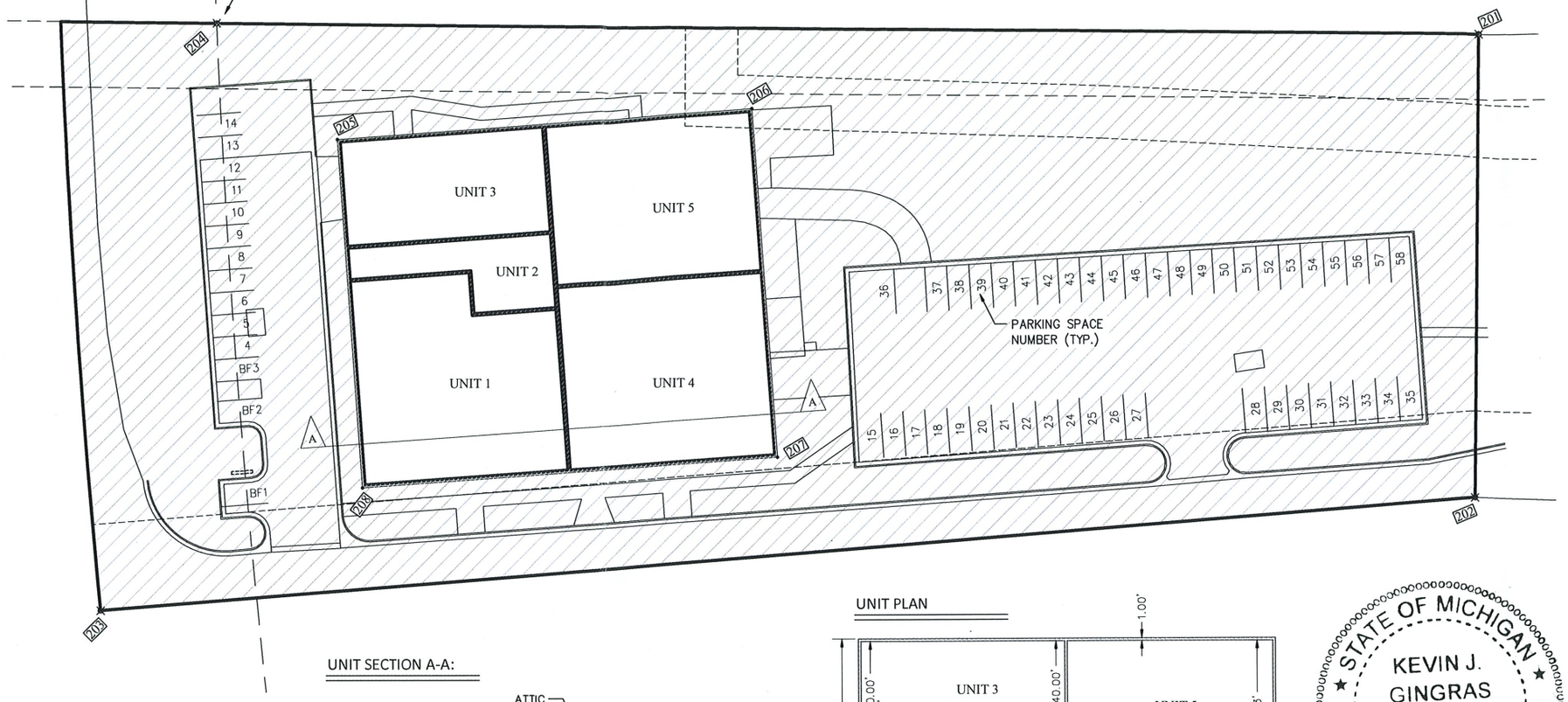
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REVISION:	DATE:
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ORIGINAL ISSUE	1-21-22

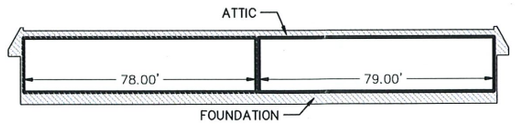
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SHEET 1 OF 4

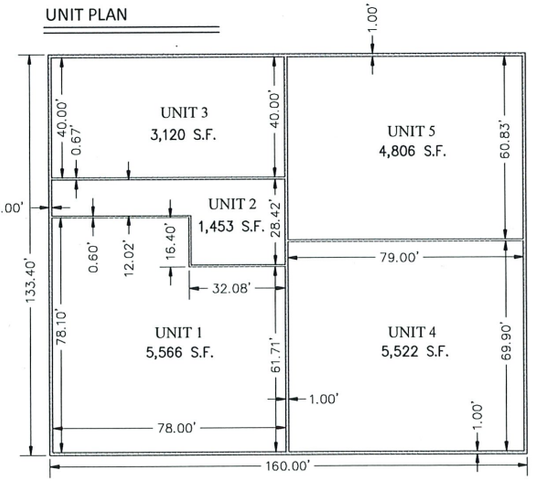
BENCHMARK:
TOP OF IRON ROD IN CONCRETE
MONUMENT AT NE CORNER OF SITE.
ELEV. = 903.89' NAVD88



UNIT SECTION A-A:



UNIT PLAN



POINT TABLE

NO.	NORTHING (Y)	EASTING (X)
201	5862.22	5797.82
202	5864.32	5620.95
203	6392.08	5579.42
204	6347.05	5803.58
205	6300.93	5759.22
206	6141.32	5770.45
207	6131.96	5637.38
208	6291.57	5626.16

UNIT AREA TABLE

UNIT	AREA (S.F.)	% TOTAL
1	5,566	27.20
2	1,453	7.10
3	3,120	15.24
4	5,522	26.98
5	4,806	23.48

STATE OF MICHIGAN
KEVIN J. GINGRAS
License No. 4001049278
LICENSED PROFESSIONAL SURVEYOR

KEVIN J. GINGRAS, P.S. #49278

AS-BUILT DATE: JANUARY 21, 2022

ARBOR LAND CONSULTANTS
Professional Land Surveyors
6653 Schneider Rd. • Manchester, MI • 48158
(734) 669-2980 • arborlandinc.com

CLIENT:
COMMERCIAL CONCEPTS & DESIGN, LLC.
5277 JACKSON RD.
ANN ARBOR, MI 48103

COMMERCIAL CONCEPTS CENTER

REPLAT NO. 1
EXHIBIT B TO THE 1ST AMENDMENT TO THE MASTER DEED

SITE PLAN & UNIT PLAN

JOB NUMBER: 19921

REVISION:	DATE:
-	-
-	-
-	-
-	-
ORIGINAL ISSUE	1-21-22

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SHEET 2 OF 4

BASIS OF BEARINGS:

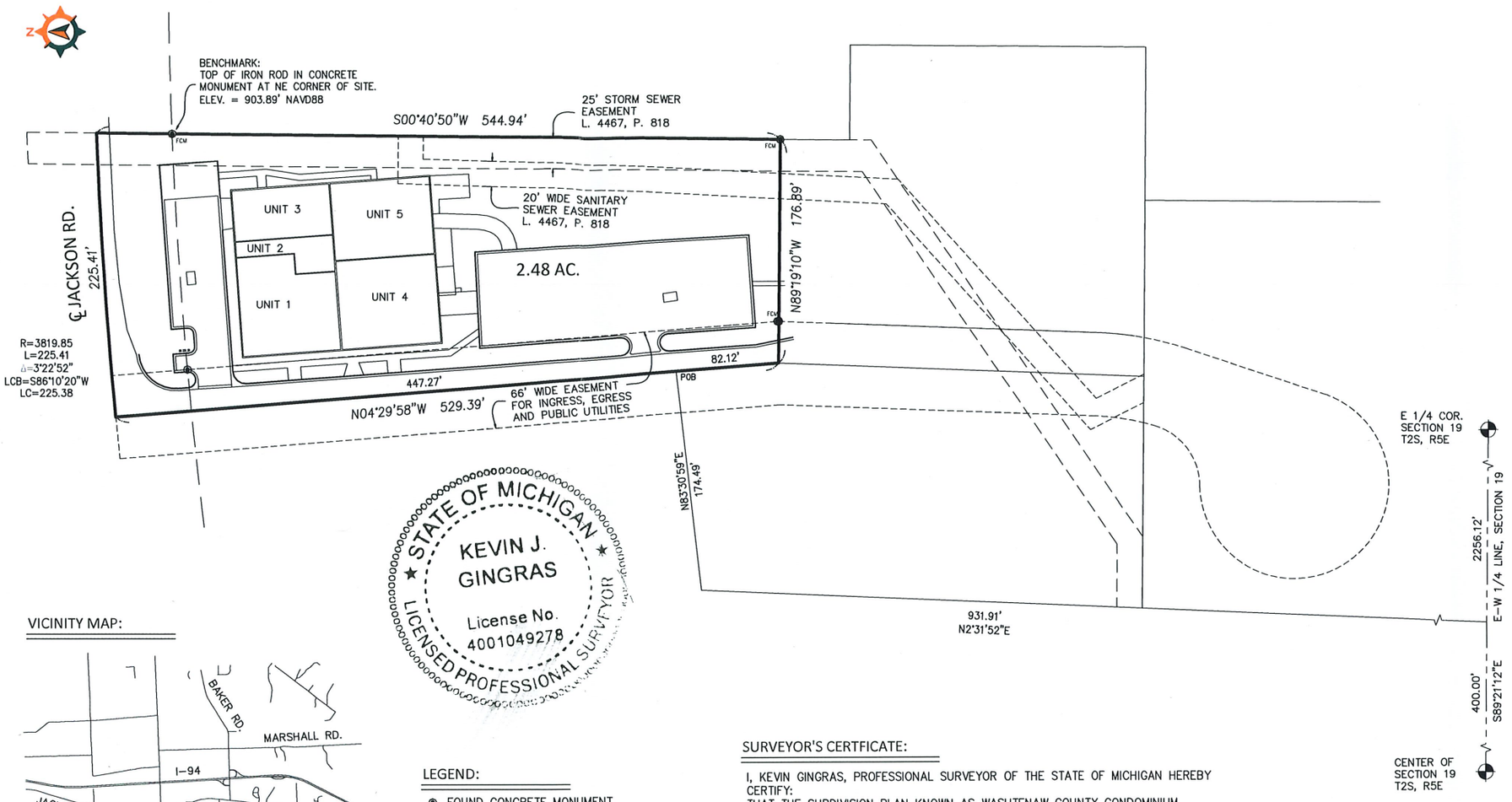
BEARINGS ARE BASED ON WASHTENAW COUNTY CONDOMINIUM SUBDIVISION PLAN NO. 488 EXHIBIT B DOCUMENTS RECORDED IN L. 4480, P. 720

BENCHMARK:

FOUND MAG NAIL IN WEST SIDE OF UTILITY POLE AT SW CORNER INTERSECTION OF S. MAIN STREET AND W. DAVIS STREET.
ELEVATION = 862.06' (NAVD88)

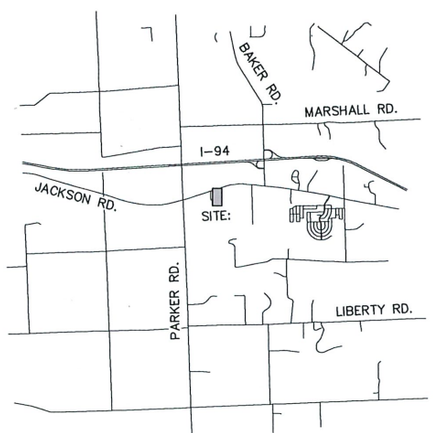
FLOOD PLAIN:

THIS SITE DOES NOT LIE WITHIN A FEDERALLY DESIGNATED FLOOD ZONE.



STATE OF MICHIGAN
KEVIN J. GINGRAS
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VICINITY MAP:



LEGEND:

- FOUND CONCRETE MONUMENT
- FOUND IRON PIPE
- BENCHMARK
- LIMITED COMMON ELEMENT
- GENERAL COMMON ELEMENT

SCALE:
0 20 40 80 160
1" = 40'

SURVEYOR'S CERTFICATE:

I, KEVIN GINGRAS, PROFESSIONAL SURVEYOR OF THE STATE OF MICHIGAN HEREBY CERTIFY:
THAT THE SUBDIVISION PLAN KNOWN AS WASHTENAW COUNTY CONDOMINIUM SUBDIVISION PLAN NO. 488, AS SHOWN ON THE ACCOMPANYING DRAWINGS, REPRESENTS A SURVEY ON THE GROUND MADE UNDER MY DIRECTION.
THAT THERE ARE NO EXISTING ENCROACHMENTS UPON THE LANDS AND PROPERTY DESCRIBED.
THAT THE REQUIRED MONUMENTS AND IRON MARKERS HAVE BEEN LOCATED IN THE GROUND AS REQUIRED BY RULES PROMULGATED UNDER SECTION 142 OF ACT NUMBER 59 OF THE PUBLIC ACTS OF 1978, AS AMENDED.
THAT THE ACCURACY OF THIS SURVEY IS WITHIN THE LIMITS REQUIRED BY THE RULES PROMULGATED UNDER SECTION 142 OF ACT NUMBER 59 OF THE PUBLIC ACTS OF 1978, AS AMENDED.
THAT THE BEARINGS SHOWN ARE NOTED ON SURVEY PLAN AS REQUIRED BY THE RULES PROMULGATED UNDER SECTION 142 OF ACT NUMBER 59 OF THE PUBLIC ACTS OF 1978, AS AMENDED.

KEVIN J. GINGRAS, P.S. #49278

AS-BUILT DATE: JANUARY 21, 2022

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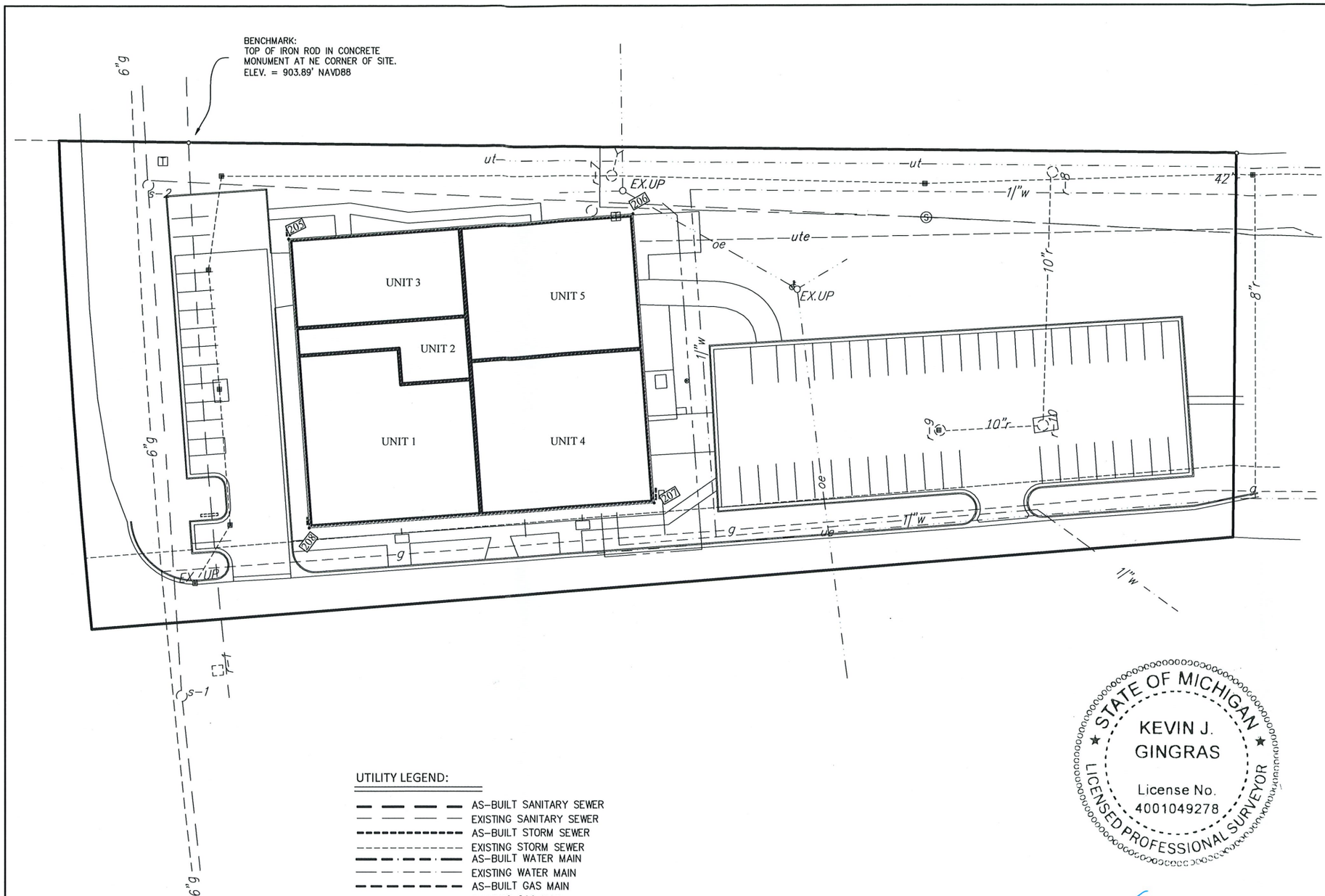
REPLAT NO. 1
EXHIBIT B TO THE 1ST AMENDMENT TO THE MASTER DEED

SURVEY PLAN

JOB NUMBER: 19921

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UTILITY LEGEND:

- AS-BUILT SANITARY SEWER
- EXISTING SANITARY SEWER
- AS-BUILT STORM SEWER
- EXISTING STORM SEWER
- AS-BUILT WATER MAIN
- EXISTING WATER MAIN
- AS-BUILT GAS MAIN
- EXISTING GAS MAIN
- AS-BUILT ELECTIRC SERVICE
- EXISTING ELECTIRC SERVICE

STATE OF MICHIGAN
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AS-BUILT DATE: JANUARY 20, 2022

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COMMERCIAL CONCEPTS CENTER

REPLAT NO. 1
EXHIBIT B TO THE 1ST AMENDMENT TO THE MASTER DEED

UTILITY PLAN

JOB NUMBER:	19921
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-	-
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SHEET 4 OF 4

DO NOT SCALE DRAWINGS

Blank Slate Creamery

RENOVATIONS

7879 JACKSON ROAD ANN ARBOR, MICHIGAN

PROJECT DESCRIPTION

PROJECTS INVOLVE RENOVATIONS TO 3220 SF EXISTING SUITE -
CONTINUATION OF USE F-2
ICE CREAM KITCHEN FOR ICE CREAM PRODUCTION.

- 7 EMPLOYEES
- 10 PARKING SPACES

WORK INCLUDES SELECTIVE DEMOLITION / PAINTING / / / NEW FLOOR SURFACES (EPOXY FLOOR) / NEW EQUIPMENT /
NEW DOORS NEW TOILET ROOM / NEW EQUIPMENT / NEW WINDOW / NEW EXTERIOR DOOR
NEW MECHANICAL HVAC / NEW PLUMBING / NEW LIGHTING & RELOCATED LIGHTING, NEW ELECTRICAL OUTLETS

GENERAL **NOTES**

1. COORDINATE ALL RELATED CONSTRUCTION WORK OUTSIDE OF THE TENANT SUITE AND ANY UTILITY SHUTDOWNS REQUIRED FOR CONSTRUCTION WITH OWNER. DISRUPTION TO FIRST FLOOR TENANTS MST BE KEPT TO A MINIMUM.
2. MECHANICAL, ELECTRICAL, FIRE PROTECTION AND FIRE ALARM SYSTEMS ARE TO BE PERFORMED AS DESIGN/BUILD CONTRACTS. EACH CONTRACTOR SHALL PROVIDE THE APPROPRIATE DOCUMENTATION NECESSARY FOR BUILDING PERMITS AND SHALL COORDINATE DESIGN & CONSTRUCTION WITH ALL RELATED TRADES.
3. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CODE COMPLIANT SYSTEMS AND SHALL PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES.
4. ALL DIMENSIONS SHOWN ON DRAWINGS ARE TO BE FIELD VERIFIED.
5. PROVIDE REQUIRED EMERGENCY LIGHTING AS REQUIRED BY CODE.

CODE INFORMATION:
BUILDING NOTES

BUILDING TYPE: **III B (NON-PROTECTED)**
ONE STORY - MASONRY EXTERIOR / CONCRETE FLOOR + FOUNDATION /
STEEL JOIST / METAL DECK ROOF STRUCTURE

NO FIRE SPRINKLER
OCCUPANCY: F-2 USE

OCCUPANCY: 3200**SF** = **15** PEOPLE

CONSTRUCTION

FOUNDATIONS: EXISTING CONCRETE.
STRUCTURE: EXISTING MASONRY W/
STEEL JOIST / CONCRETE FLOORING.
(UNPROTECTED CONSTRUCTION).
ROOF SYSTEM: EXISTING STEEL JOIST / METAL DECK W/
MEMBRANE ROOFING.
EXTERIOR WALLS: EXISTING CONCRETE MASONRY UNITS
INTERIOR WALLS: METAL STUDS / GYP BD

CODE INFORMATION:
CURRENT BUILDING CODES

BUILDING:	**2015** Michigan Rehabilitation Code for Existing Buildings (International Building Code & State Amendments)
MECHANICAL:	Michigan Mechanical Code (**2015** International Mechanical Code & State Amendments)
ELECTRICAL:	Michigan Electrical Code (**2018** National Electrical Code & State Amendments)
PLUMBING:	Michigan Plumbing Code (**2015** International Plumbing Code & State Amendments)
BARRIER FREE:	Michigan accessibility provisions of the Michigan Building Code. CABO/A117.1-**2009** Accessible and Usable Buildings and Facilities.
ENERGY:	Michigan Uniform Energy Code.

Mechanical, Electrical & Plumbing
require separate permits and inspections

Comply with following code sections:
2015 MRCEB: SECTION 410.7
2015 MBC: SECTION 307
2015 MBC:1109.12.3 MBC: 2406.4
2015 MMC: 403.3.2.3

ICC A117.1 Standard: SECTION 404.2.5
ASHREA 90.1 Standard: 9.1.2

The following building inspections are required:
Rough (scheduled after mechanical, electrical and plumbing have passed rough inspection).
Insulation (if applicable). (NOT APPLICABLE)
Above ceiling (scheduled after mechanical electrical and plumbing have passed inspection).
Final (scheduled after mechanical, electrical and plumbing have passed final inspection).

DRAWING INDEX

0-TS	TITLE SHEET
1	SITE PLAN
2	FLOOR PLAN
3	CEILING + DEMO PLAN
4	INTERIOR ELEVATIONS
P1	PLUMBING
M1	HVAC
E1	ELECTRICAL PLAN
E2	ELECTRICAL PANELS

VERIFY ALL CONDITIONS & DIMENSIONS IN THE FIELD

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RENOVATIONS
Blank Slate Creamery
7879 JACKSON ROAD, SCIO TOWNSHIP, MICHIGAN

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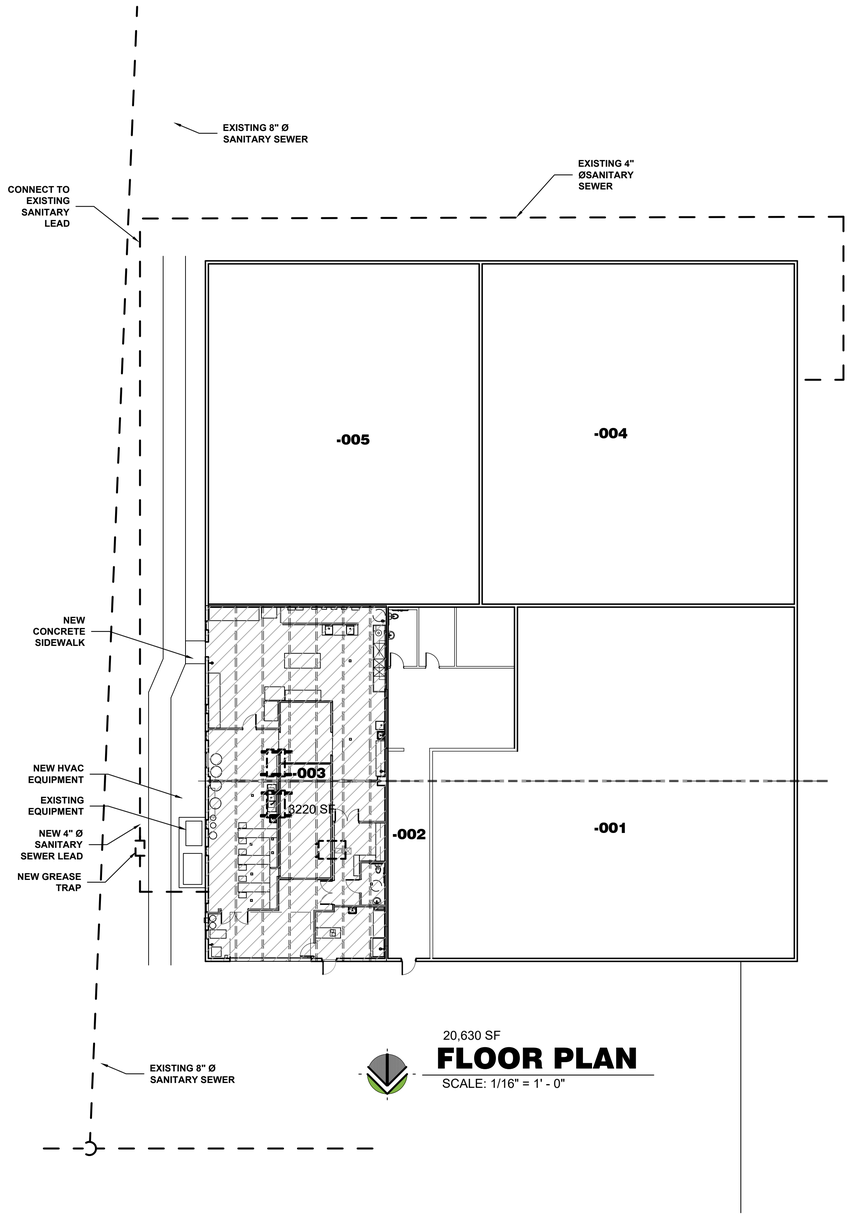
TITLE SHEET

0-T**S**

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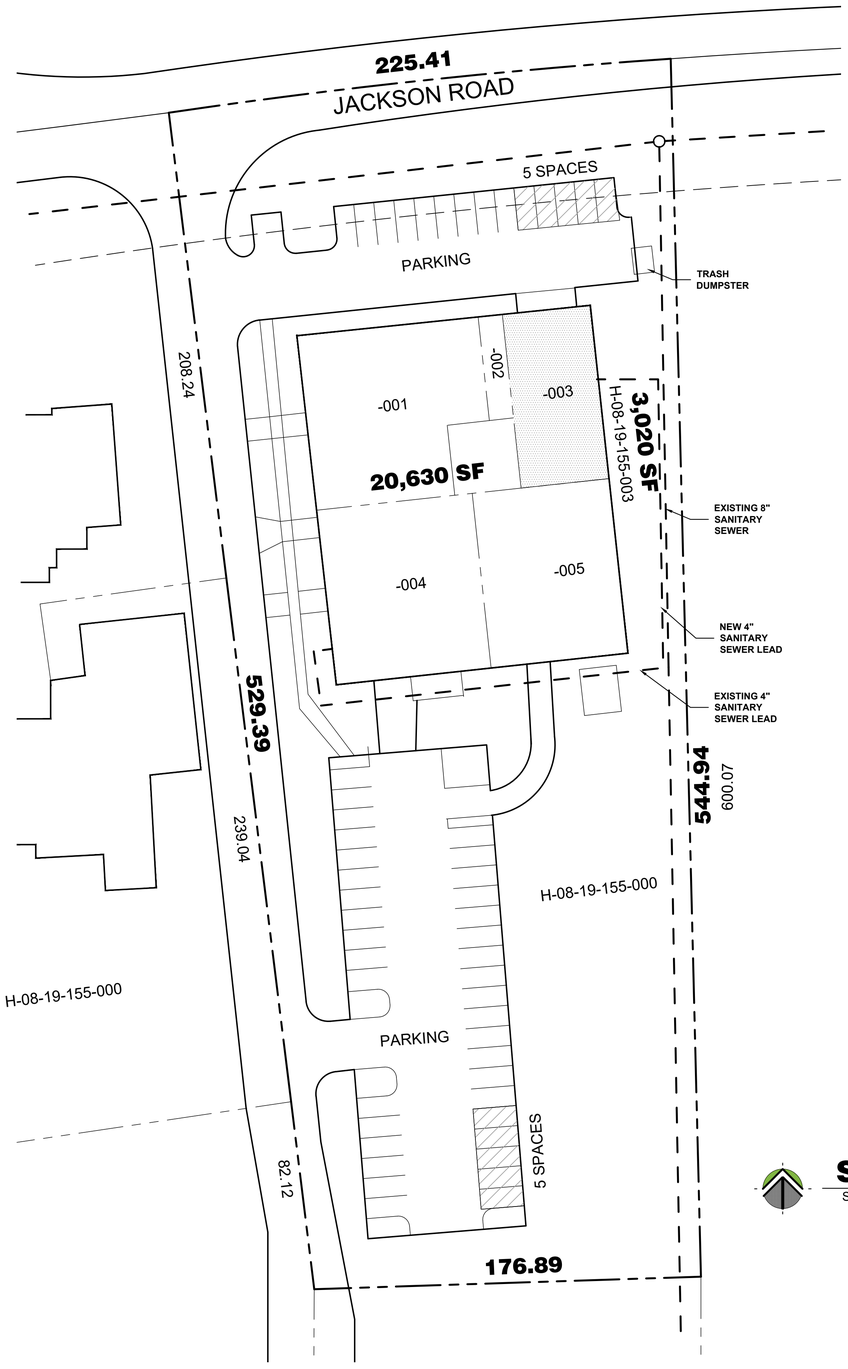
DO NOT SCALE DRAWINGS



20,630 SF

FLOOR PLAN

SCALE: 1/16" = 1' - 0"



SITE PLAN

SCALE: 1/32"= 1' - 0"

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Blank Slate creamery

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SITE PLAN

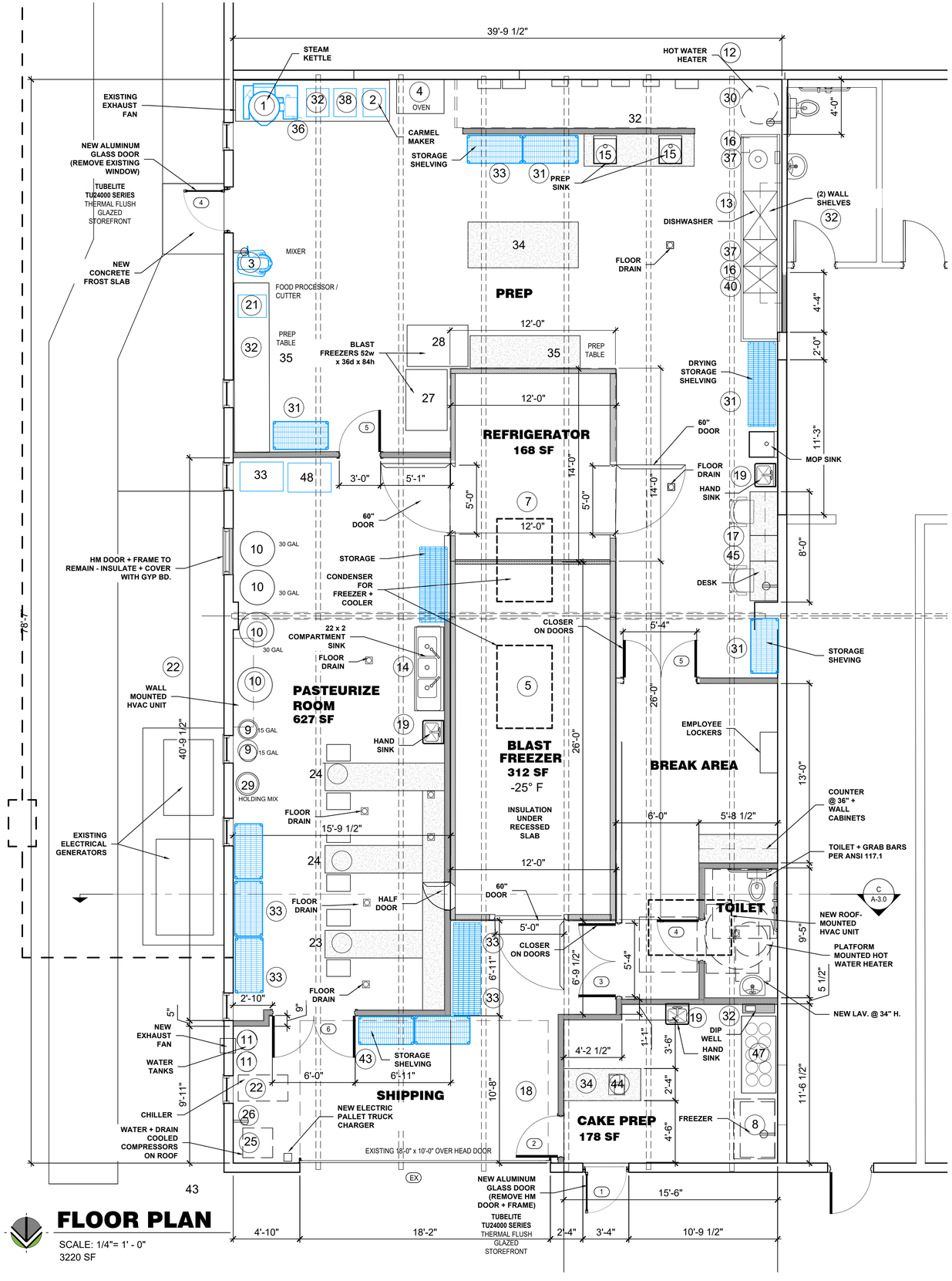
1

PROJECT NUMBER:
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EQUIPMENT LIST

	Equipment	Purch Qty	Size	Brand	Model	Electrical	Contact	Spec Sheet
1	20 Gallon Electric Tilting Countertop Kettle	1	35 3/4" x 25 3/4 x 53 1/2"	Vulcan	K20ETT	208/60-50/3	Hobart Service	https://www.vulcanequipment.com/sites/default/files/webdam_assets/85893044.pdf
2	Caramel Maker	0	29.6" L x 21.7" D x 27" H	Savage Brothers	FM-14	208-240V 1 Phase 14 Amp		https://scpcclient.blob.core.windows.net/savagebrosconv/uploads/media/pdfs/FM-[illegible]
3	Floor mixer	0	47.125" x 26.5" x 26.563"	Vollrath	Vollrath 40759	12 amp, single phase, 208-240 v		
4	convection oven	1	401/4"w x 411/6"d (includes motor & door handles) 373/4"d (includes motor only) x 70"h on 8" legs	Vulcan	VC44ED	208 or 240 volt, 60 Hz, 1 or 3 phase	Hobart Service	https://www.vulcanequipment.com/sites/default/files/webdam_assets/85620879.pdf
5	Blast Freezer walk in	1						
6	HVAC	1						
7	Walk-in refrigerator (door for skid)	1						
8	1 double glass door freezer	1	54.13" x 29.88" x 78.38"	TRUE	TS-49FG-HC~FGD01	115V/60Hz/1-ph		https://static.restaurantsupply.com/media/docu
9	2 - 15 gal Pasteurizer - 1 future	0	19 ½" Diameter Tank, • 43" High					
10	2 - 30 Gal Pasteurizer + 1 buy now + 1 future	1	• 25" Diameter Tank, 43" high	Jaybee	30 gal	220 single phase	http://www.thevatpasteurizer.com/product_specs.php	http://www.thevatpasteurizer.com/store.php#!/The-Vat-Pasteurizer/p/39617018
11	2 - Water storage tank + 2 Future		1=22" diameter, 2=24" diameter	Triangle Tube = 22", Bradford White 75 gal = 24"	smart 40 =22", RTV-75-L=24"	24"=24,120,240		
12	Water heater	1						
13	Automatic dishwasher	1	20.75" wide x 27" high	Jackson WWS	Tempstar HH-E VER	208/230V, 1 or 3 phase		https://cdnimg.webstaurantstore.com/documents/specsheets/490temsthhv_spec_sheet.pdf
14	1 - 3 bay sink	1	79" L x 19.5" d x 43.75" H -Past rm		600S315215X - Past rm			
15	2 - prep sinks, one left sink, one right	2	30" x 48"	Regency	600STCB3048L			
16	2 Grease Traps 100 gal	2	23 1/2"wx231/2"hx31"L - 3" inlet/outlet	Canplas				https://s3.amazonaws.com/s3.supplyhouse.com/product_files/3950A03-Install.pdf
17	Desk	1	46.06 L x 22.44 d x 29.13 h	GangMei				
18	Employee locker	1	17.7"D x 35.4"W x 70.9"H	WooDlan Storage Cabinet				https://www.amazon.com/WooDlan-Storage-Cabinet-Employee-Compartments/dp/B089K8D8H3/ref=sr_1_15?crid=32B7HX1FBNBJ5&keywords=employee+lockers&qid=1640716650&sprefix=employee+locker%2Caps%2C257&sr=8-15
47	Chest freezer for pints/dipping	1	82"L x 30" W x 33"H	C.Nelson	BD12	115/220 v. 8/4 amp		
19	3 hand sinks	3	17"L x 15 3/4 "W x 18 1/2" H	Regency	600HS17KOSP			https://cdnimg.webstaurantstore.com/documen
20	Computer	1	14"	Apple	14-inch MacBook Pro			
21	Food Processor/cutter	0	24 11/16" d x 27" w x 28 5/16" H	Hobart	FP250-1	1 Phase, 120 volts, 8 amps		https://www.webstaurantstore.com/documents/s
22	1 chiller existing + 1 buy one now	1	28"L x 38"W x 36"H	Fluid Chillers Inc	AIR2000			
23	24 quart Batch freezer	0	23 1/2" w x 37" d x 49" h	Emery Thompson	24LA (Air Cooled)	1-PHASE, 208-220 VOLT, 60		
24	1 - 44 quart Batch Freezer + 1 future	0	27" W x 54" D x 49" H	Emery Thompson	44BLT-IOC	3 phase, 220v		
25	3 - Pumps + 1 future			Taco	Part no - VT2218-HY1-FC1AO1	**115v**		
26	1 in line pump	0		Grundfos	Part No -59896155P1	**115v**		
27	Blast 1	0	52"w x 83 3/4"h x 36 1/8 d	Global Refrigeration	T50HSQHP	**220 v, 9 amps**		https://globalref.com/wp-content/uploads/Ice-Cream-hardening-cabinets.pdf
28	Blast 2	0	52"w x 83 3/4"h x 36 1/8 d	Global Refrigeration	T50HSQHP	**221 v, 9 amps**		https://globalref.com/wp-content/uploads/Ice-Cream-hardening-cabinets.pdf
29	Milk Holding Tank	1	43"W x 64"L x 52" h	Milk Plan	MPFT170	230 volts - 60 HZ - Single Phase voltage.		
30	Mop sink	1	24"L x 24"W x 12"h	Regency	600SM242412			https://www.webstaurantstore.com/documents/s[illegible]
31	8 - Dish Drying racks/shelving	8	24"w x 72"	Regency	Item: 460EG2472KTC			https://www.webstaurantstore.com/documents/specsheets/regency_nsf_green_epoxy_shelving.pdf
32	7 wall shelves	7	12"d x 72"	Regency	600WS1272		https://www.webstaurantstore.com/regency-18-gauge-stainless-steel-12-x-72-solid-wall-shelf/600WS1272.html	https://www.webstaurantstore.com/documents/specsheets/600ps1236.pdf
33	7 Dunnage racks	7	60" Lx 24"w x 8"H	Regency				https://cdnimg.webstaurantstore.com/documents/specsheets/600dun24_specsheet.pdf
34	2 Prep tables no backsplash	2	30"x 72"	Regency	600WT30X72SS			https://www.webstaurantstore.com/regency-30-x-72-16-gauge-304-stainless-steel-commercial-open-base-work-table/600WT30X72SS.html
35	5 Prep tables w/backsplash	5	30" x 72"	Regency	600WT30X72BS			https://www.webstaurantstore.com/regency-30-x-72-16-gauge-304-stainless-steel-commercial-open-base-work-table-with-4-backsplash/600WT30X72BS.html
36	6 Gallon Electric Tilting Countertop Kettle	0	21 3/4" x 15 1/2" x 33"	Vulcan	K6ETT	208/60-50/3	Hobart Service	
37	Dish table package with sprayer	1	Two 4' dish tables, 10 3/4" high backsplash	Regency	600DTP10 RL			
38	kettle stand for both kettles	1	64"L x24"D x 21"H	Vulcan	KT64 - Table			https://www.webstaurantstore.com/vulcan-kt64-table-64-x-24-x-21-kettle-table-with-sliding-drain-pan/901KT64TABLE.html
39	Caramel Maker Equipment Stand	1	30" W x 18" H x 24" D	Vulcan	VUL-STANDVSKT30		https://www.hotelrestaurantsupply.com/VUL-STANDVSKT30.html	https://www.hotelrestaurantsupply.com/pdfspecs/VUL0138.pdf
40	Channel GRR-83 4 Shelf Glass Rack Cart with 8" Spacing	1		Channel	240GRR83			
41	2 Warmers	2	14 5/8" w x 23 7/8"D x 9" H	Nemco	6055A	120 Volts, single phase, 10 amps		https://www.webstaurantstore.com/documents/specsheets/nemco6055_specsheet.pdf
42	Service Cart - Stainless	1	38.5" L x 21.75" W x 34" H	Regency	Item: 600CT2239WD8			https://cdnimg.webstaurantstore.com/documents/pdf/diagram/regency_600ct2239wd8_diagram.pdf
43	Pallet	2	48"Lx 40"W	Uline	H-6096			
44	iPad	1	10.2"	Apple	10.2", Wifi 64GB	**110v**		
45	Wireless Router	1		Orbi	RBK752	110v		
46	2 wireless Speakers (set)	1		Sonos	One	**110v**		



FLOOR PLAN

SCALE: 1/4"= 1' - 0"

3220 SF

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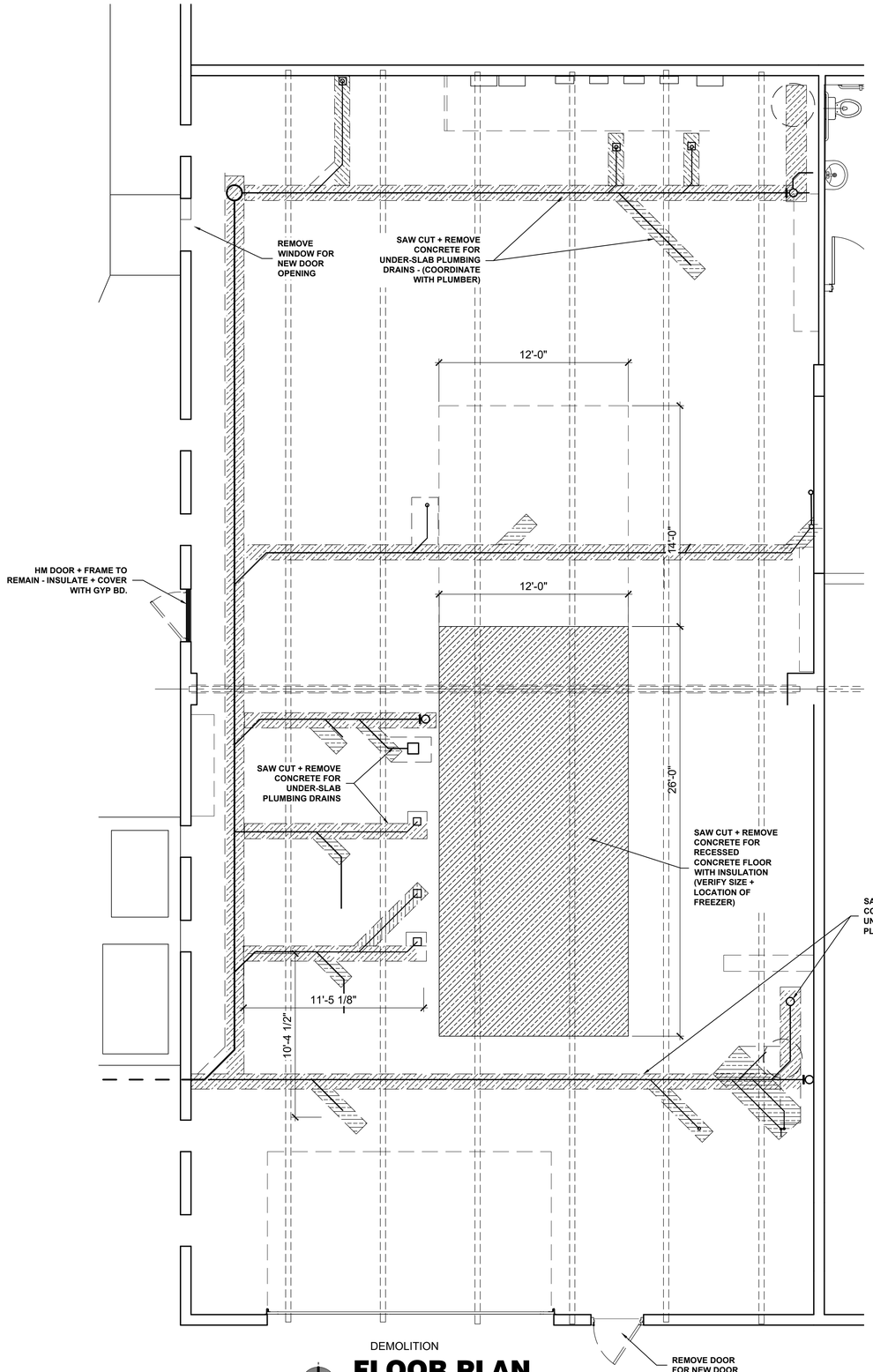
FIRST FLOOR PLAN

2

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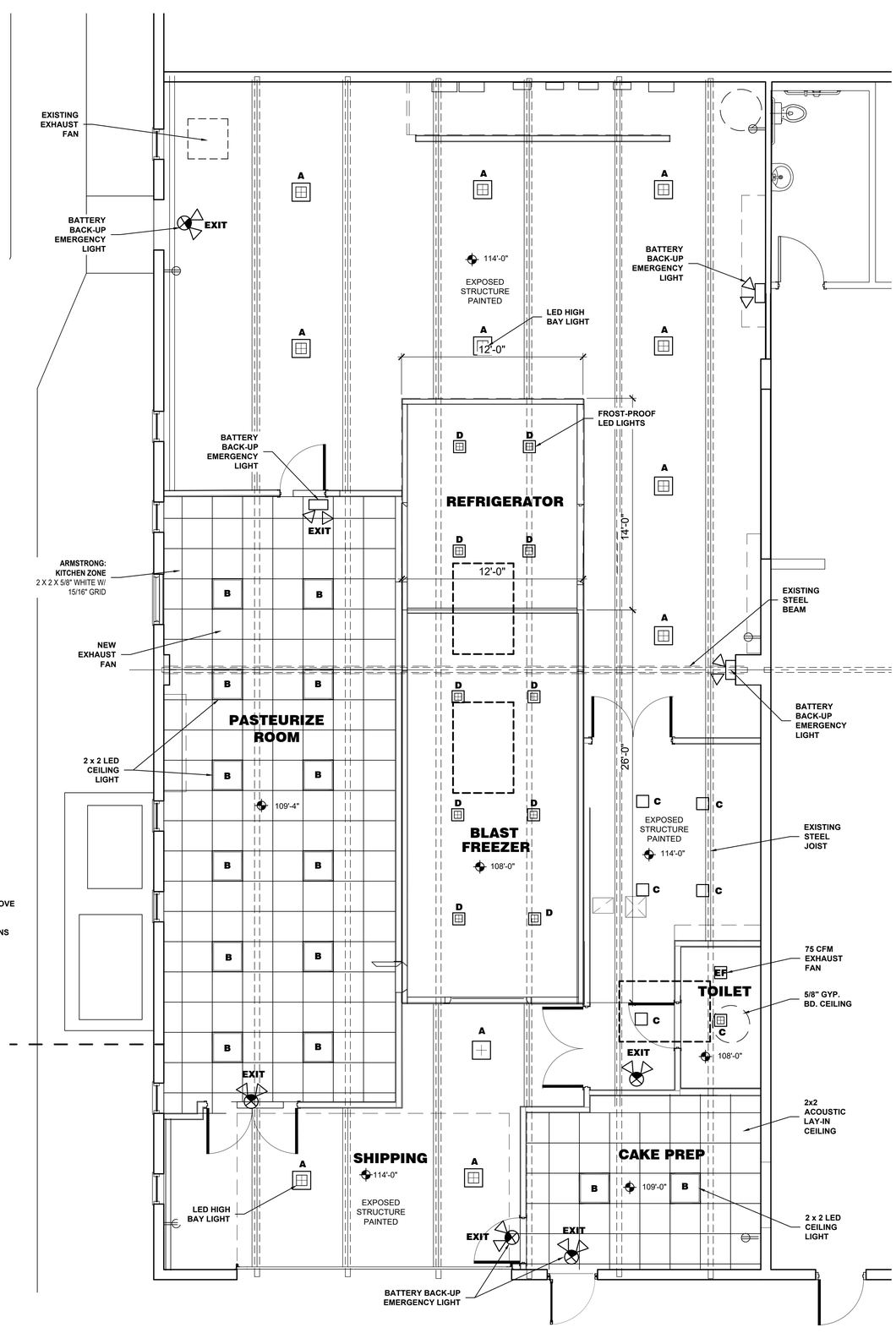
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DEMOLITION

FLOOR PLAN

SCALE: 1/4"= 1' - 0"



PROVIDE EMERGENCY LIGHTING PER CODE LIGHT LEVELS

CEILING PLAN

SCALE: 1/4"= 1' - 0"

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Blank Slate Creamery

RENOVATIONS

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PERMITS	11-11-2022
PERMITS	11-01-2022
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REVIEW	09-12-2022
REVIEW	06-17-2022
REVIEW	06-07-2022
REVIEW	01-19-2022
REVIEW	12-31-2021

ISSUED FOR: DATE:

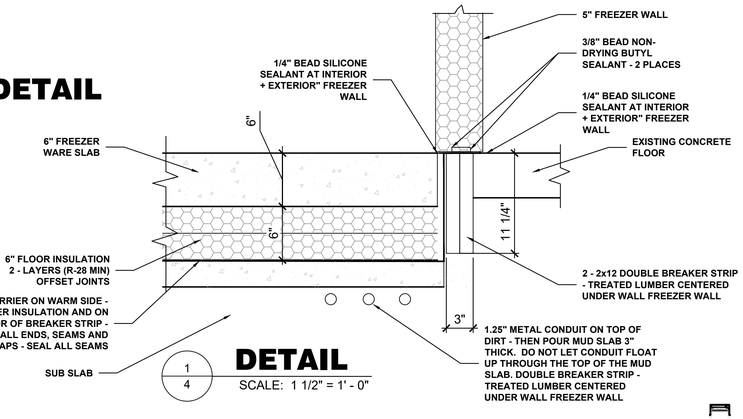
CEILING PLAN
DEMOLITION PLAN

3

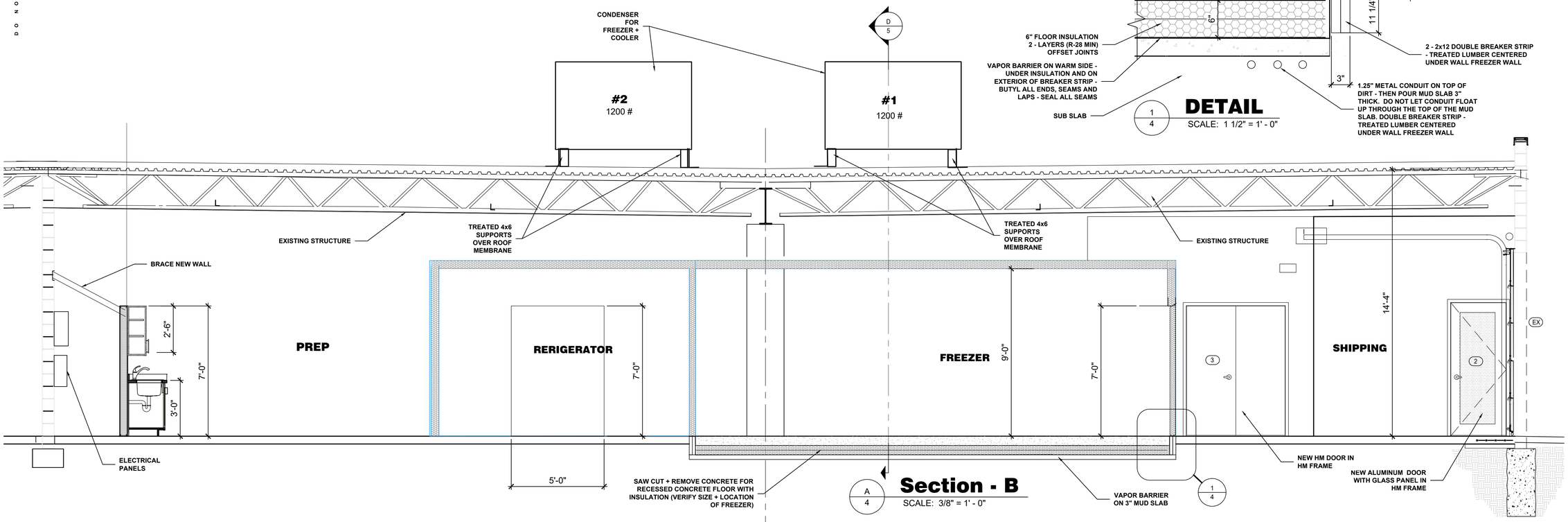
PROJECT NUMBER:
89 - 2021

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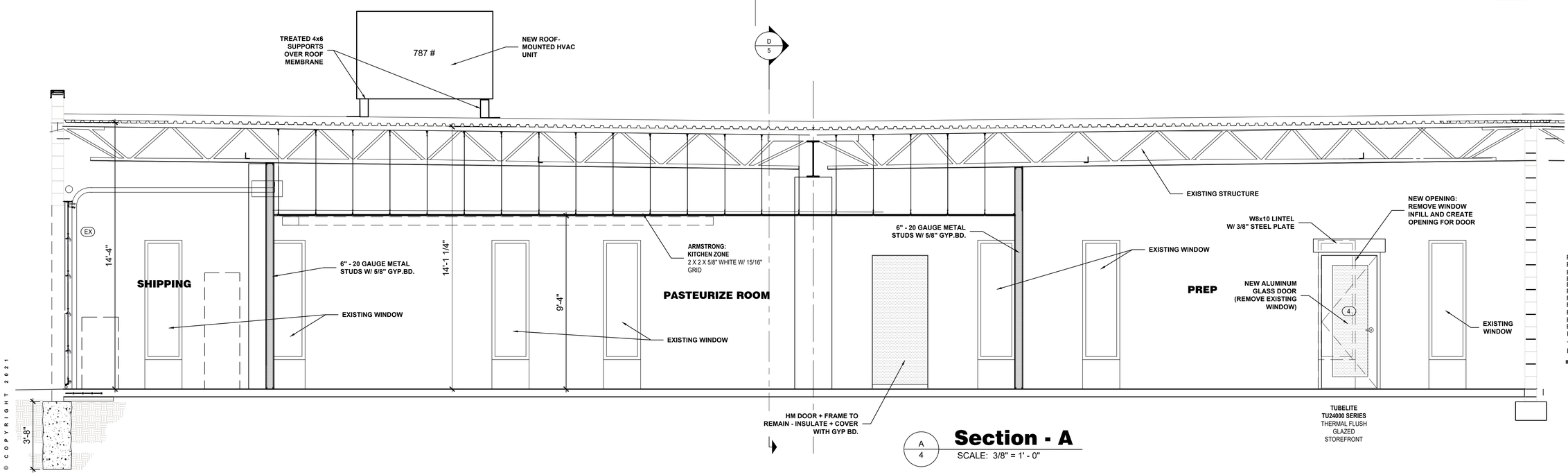
INSULATED SLAB DETAIL



1/4 **DETAIL**
SCALE: 1 1/2" = 1' - 0"



A/4 **Section - B**
SCALE: 3/8" = 1' - 0"



A/4 **Section - A**
SCALE: 3/8" = 1' - 0"

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ARCHITECT
No. 1301029899
LICENSED ARCHITECT

OWNER

CONTACT
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SIGLERJANICE@GMAIL.COM

Blank Slate Creamery

RENOVATIONS
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7879 JACKSON ROAD, SCIO TOWNSHIP, MICHIGAN

PERMITS	02-**21**-2023
PERMITS	02-**20**-2023
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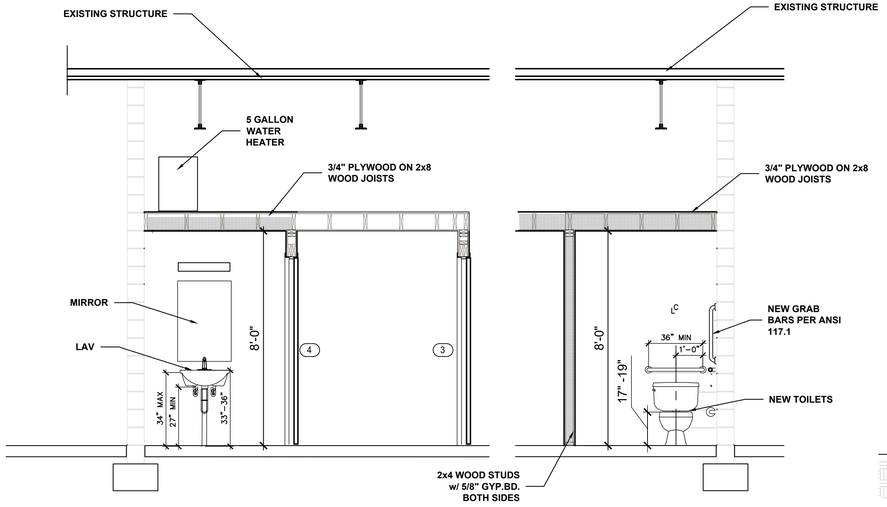
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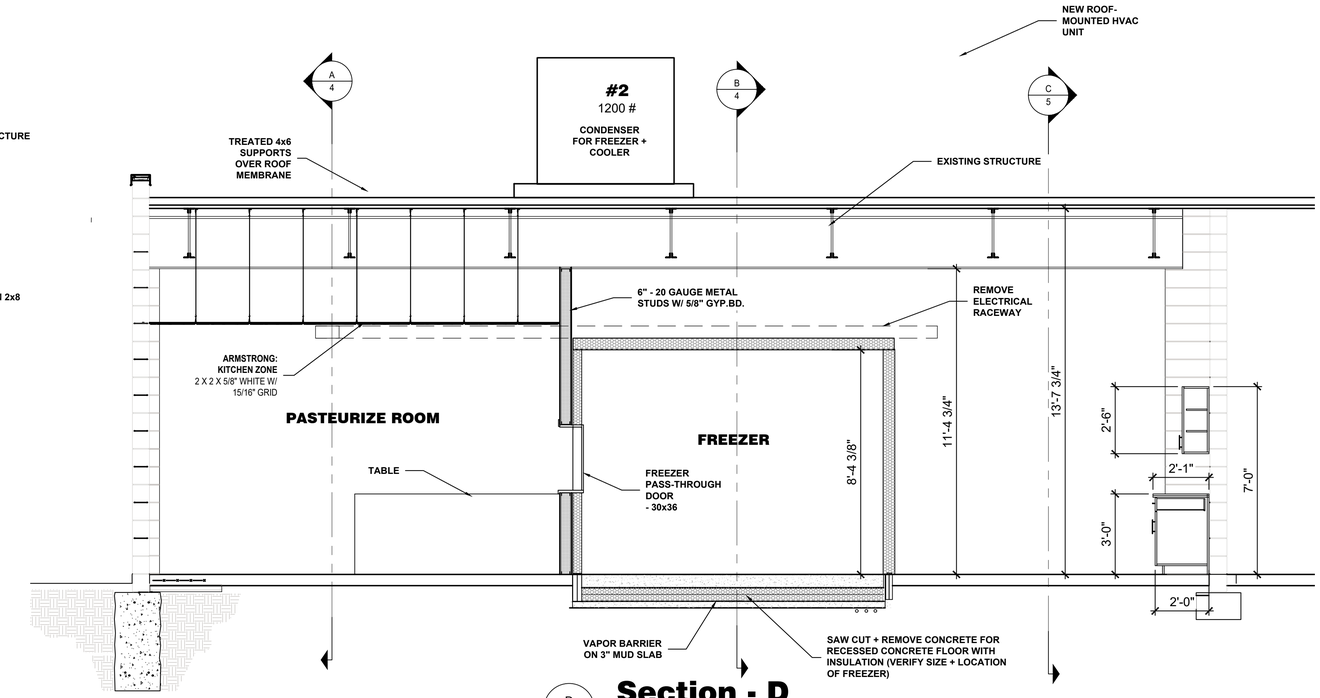
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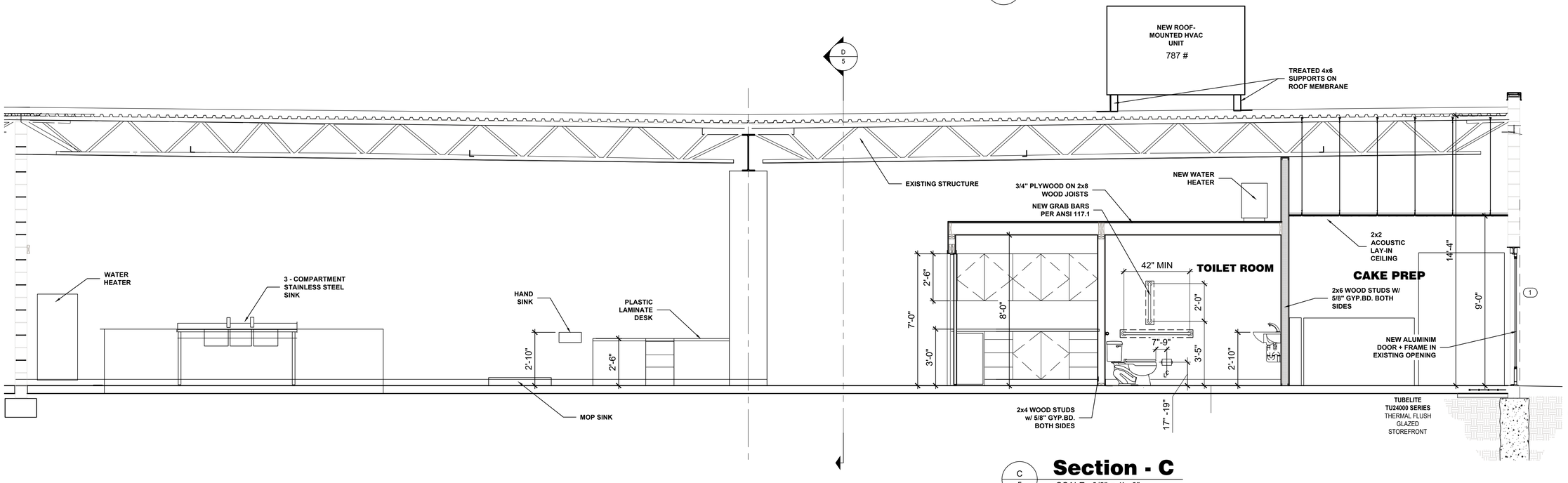


F 5 **Section - F**
SCALE: 3/8" = 1' - 0"

E 5 **Section - E**
SCALE: 3/8" = 1' - 0"



D 5 **Section - D**
SCALE: 3/8" = 1' - 0"



C 5 **Section - C**
SCALE: 3/8" = 1' - 0"

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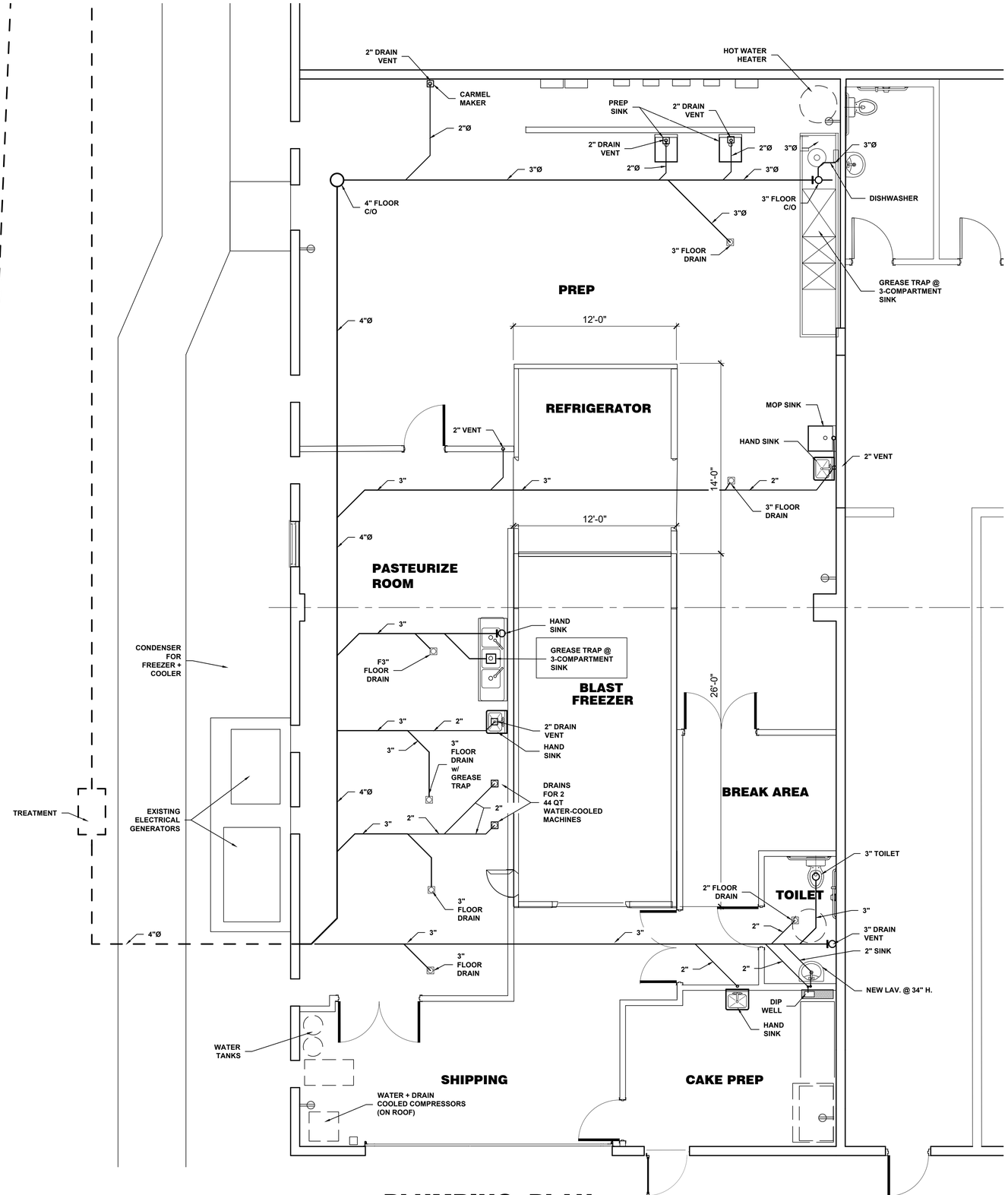
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5

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PLUMBING PLAN

SCALE: 1/4"= 1' - 0"

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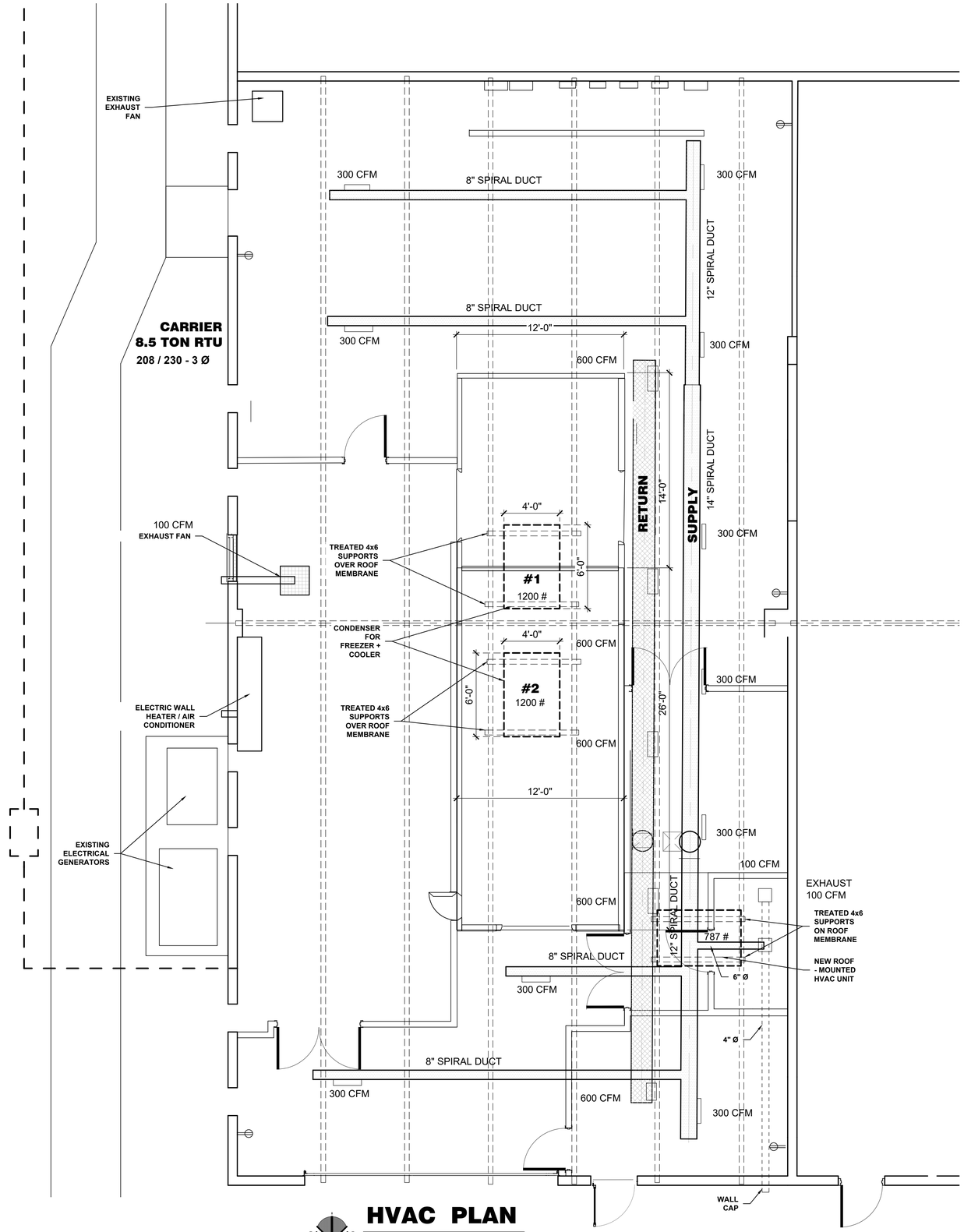
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PLUMBING PLAN

P1

PROJECT NUMBER:
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HVAC PLAN

SCALE: 1/4"= 1' - 0"

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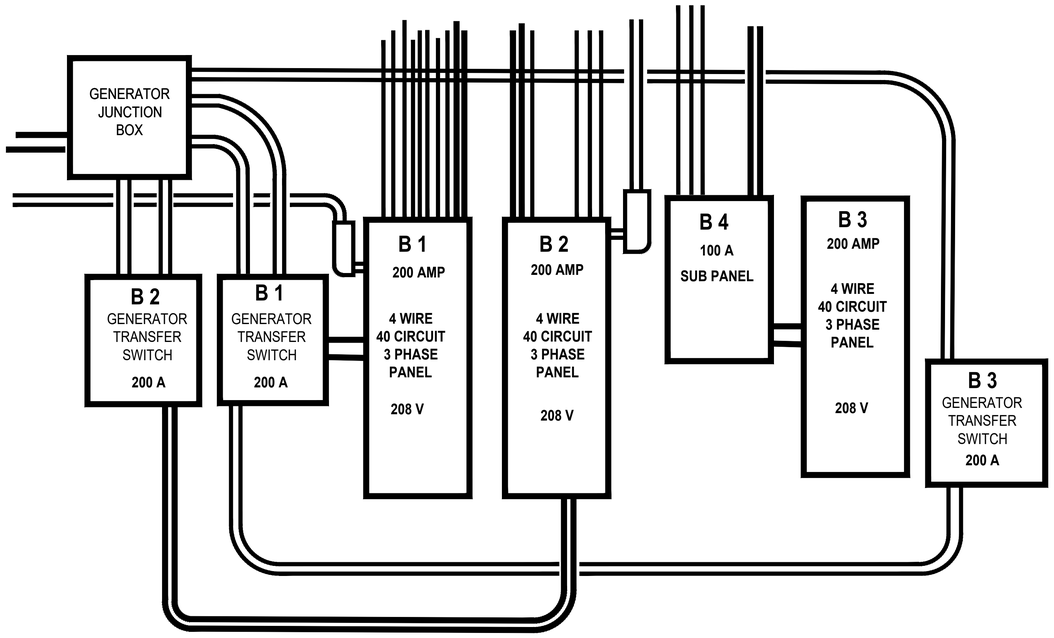
HVAC PLAN

M1

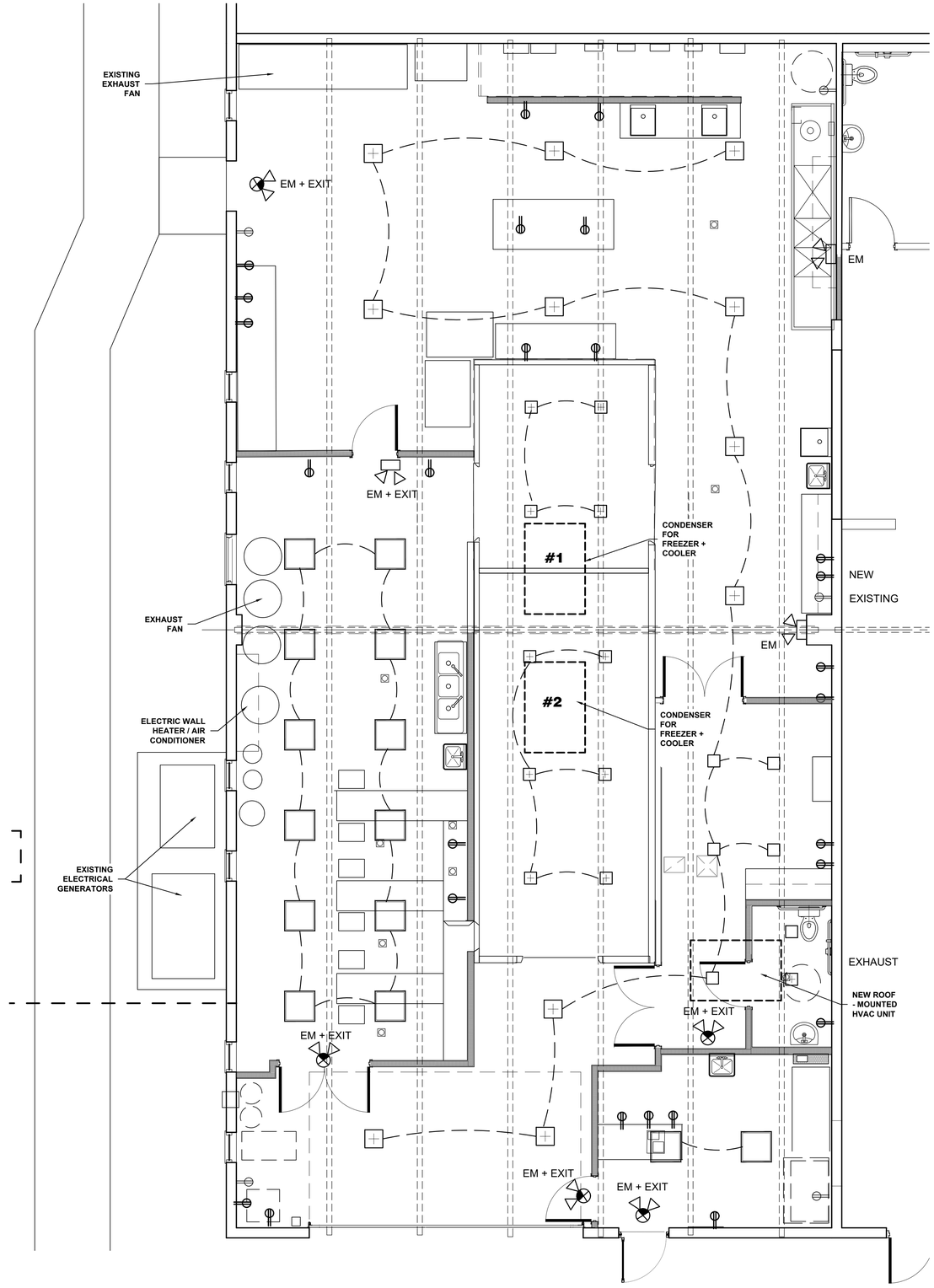
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METER EQIPMENT 1200 AMP SERVICE



ELECTRICAL PLAN

SCALE: 1/4"= 1' - 0"

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ELECTRICAL PLAN

E1

PROJECT NUMBER:
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Electrical Panel B-1					
		Amps		Amps	
1	30 gal pasteurizer 3	60.0	6 gallon kettle	22.0	2
3					4
5	Water storage tank	5.2	Warmer 1	10.0	6
7	Water heater	5.2	Warmer 2	10.0	8
9	44 quart Batch Freezer	50.0	Chiller 2	22.0	10
11					12
13	Pumps X4	0.7	Lights/garage dc	25.0	14
15	Blast 1	9.0			16
17	Blast 2	9.0	Plugs	60	18
19	Prep table outlets	20			20
21	Break area outlets	20			22
23	Bathroom outlet	20			24
25					26
27					28
29					30
31					32
33					34
35					36
37					38
39					40
41					42

Electrical Panel B-2					
		Amps		Amps	
1	30 gal pasteurizer 2	60.0	20 gal kettle	33.0	2
3					4
5	Caramel Maker	14.0	Blast Freezer Compressor 2	46.0	6
7	Floor mixer	12.0			8
9	Oven	39.0	Blast Freezer walk-in evaporatc	23.0	10
11					12
13	HVAC	30.0	Refrigerator Walk-in evaporato	2.9	14
15	Cake prep counter outlet 1	20	Refrigerator Walk-in compressc	9.6	16
17	Cake prep counter outlet 2	20	Chest freezer for pints/dipping	8.0	18
19	Cake prep counter outlet 3	20	Hand Truck charger	10.0	20
21			1 double glass door freezer	11.0	22
23			Pasteurizer Room outlets 1	20	24
25			Paseurizer Room outlets 2	20	26
27					28
29					30
31					32
33					34
35					36
37					38
39					40
41					42

Electrical Panel B-3					
		Amps		Amps	
1	15 gal pasteurizer	40.0	24 quart Batch freezer	40.0	2
3					4
5	30 gal Pasteurizer 1	60.0	Blast Freezer Compress	46.0	6
7					8
9	Automatic dishwasher	55.0	Blast Freezer walk-in ev	23.0	10
11					12
13	Food Processor/cutter	8.0	Exhaust fan	3	14
15	Shipping outlets	20	Chiller 1	22.0	16
17					18
19					20
21					22
23					24
25					26
27					28
29					30
31					32

ELECTRICAL PANELS

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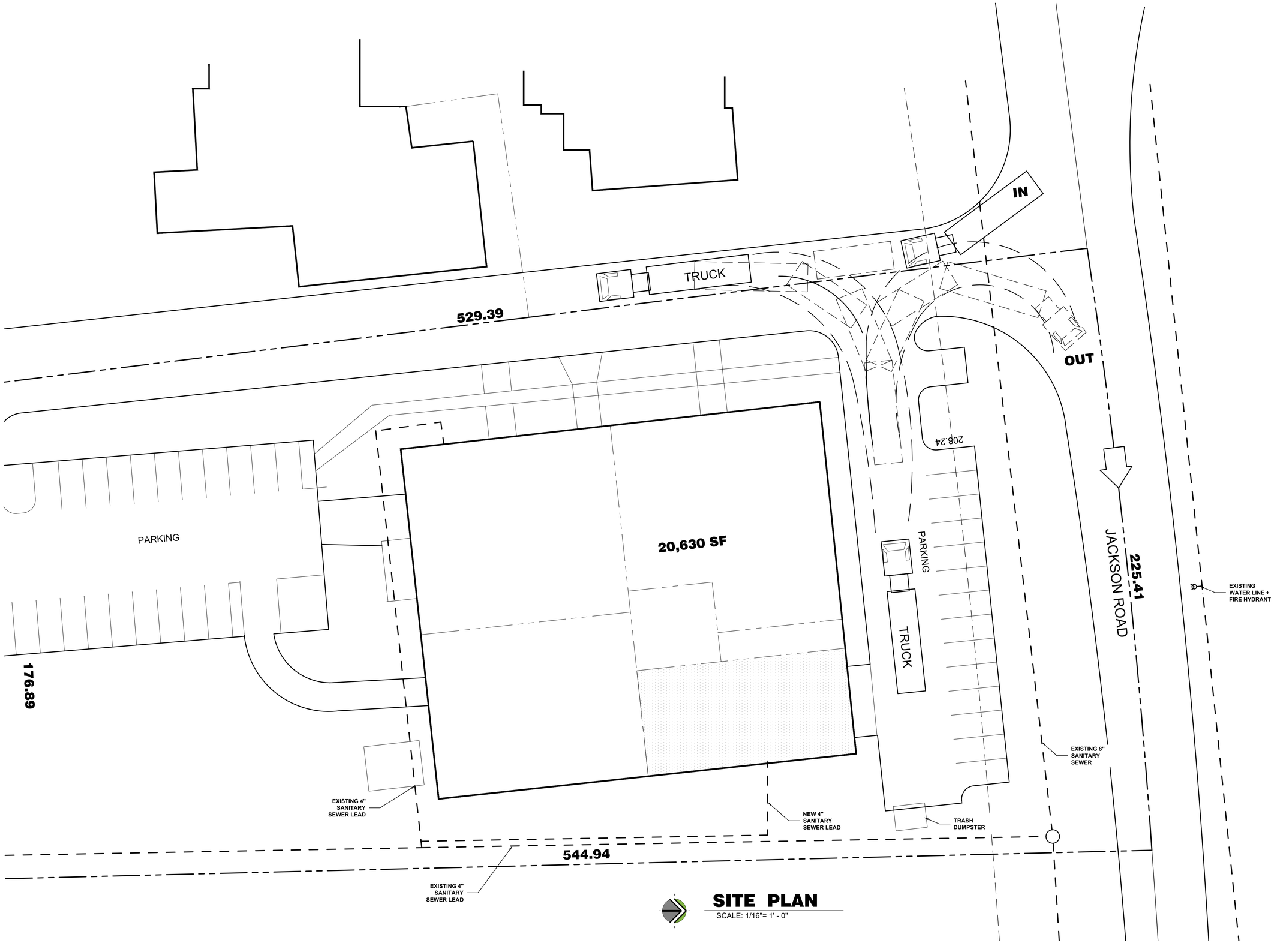
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REVIEW	06-**17**-2022
REVIEW	06-**07**-2022
REVIEW	01-19-2022
REVIEW	12-31-2021
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ELECTRICAL DIAGRAMS

E2

PROJECT NUMBER:
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SITE PLAN

SCALE: 1/16"= 1' - 0"

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SITE PLAN	05-**25**-2023
PERMITS	02-**21**-2023
PERMITS	02-**20**-2023
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REVIEW	01-19-2022
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ISSUED FOR: DATE:

SITE PLAN

SP1

PROJECT NUMBER:
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AGENDA # 1
Scio Township Planning Commission
CU# 23007 Best Friends Pet Care, commercial kennel,

FOR MEETING DATE OF: July 10, 2023
PREPARED ON: 20230706
PREPARED BY: Fran Szuma
SUBMITTED BY: Planning

ITEM TYPE: Possible Action

ATTACHMENTS:
BFPC CU23007 application
BFPC CU23007 public hearing notice
BFPC CU23007 reviews
BFPC LOA State Permit
BFPC updated info
BFPC plans

Township of Scio

827 N. Zeeb Road · Ann Arbor, MI 48103
734/369-9400 · 734/665-0825 Fax
www.ScioTownship.org

Applications will not be processed until deemed complete. Incomplete applications will be destroyed after 90 days.

CONDITIONAL USE 23007

PROPERTY ID NO. H-08-21-400-043

ZONING DISTRICT C2

APPLICATION DATE 2023-04-20

APPLICANT: BEST FRIENDS PET CARE INC. Keith Moreau
AGENT/DEVELOPER
535 CT AVE, SUITE 305
STREET, NUMBER
NORWALK, CT 06854
CITY, STATE, ZIP
860-803-2678
PHONE NUMBER
kmoreau@bestfriends.net
E-MAIL ADDRESS

OWNER: MEIJER INC 2023
AGENT/DEVELOPER
2929 WALKER AVE NW
STREET, NUMBER
GRAND RAPIDS, MI, 49544-9428
CITY, STATE, ZIP
PHONE NUMBER
E-MAIL ADDRESS

PROPERTY ADDRESS: 5645 JACKSON RD Ann Arbor, MI 48103

SIZE OF PROPERTY (AREA):

LEGAL DESCRIPTION: ☑ ATTACHED

DEED RESTRICTIONS: ☐ NONE ☐ ATTACHED

AREA DESCRIPTION: ATTACH SEPARATE INFORMATION PURSUANT TO SECTION 36-220 OF THE SCIO TOWNSHIP ZONING ORDINANCE.

PURPOSE OF APPLICATION (INCLUDE ALL ANTICIPATED ACTIVITIES): GROOMING AND DOGGY DAYCARE

I AGREE TO GIVE PERMISSION FOR OFFICIALS OF SCIO TOWNSHIP TO ENTER THE PROPERTY SUBJECT TO THIS APPLICATION FOR PURPOSES OF INSPECTION.

☐ *Property owner authorization letter attached.*

Keith Moreau — SIGNATURE OF AGENT/DEVELOPER — 4-18-2023 — DATE

Lynn Richardson — SIGNATURE OF OWNER — 4/19/23 — DATE

KEITH MOREAU — PRINT NAME

LYNN RICHARDSON - PROPERTY LEASING MANAGER — PRINT NAME/TITLE

20230420# 1481 $650.00 (1/3) FEES $300 FOR OFFICE USE ONLY (2/3) 400.00 (3/3) Record Fee

THIS APPLICATION HAS BEEN REVIEWED FOR COMPLIANCE WITH THE TOWNSHIP ZONING ORDINANCE, AND FOR ACCURACY OF PROPERTY DESCRIPTION:

ORDINANCE ADMINISTRATOR — DATE

PUBLIC HEARING NOTICE:
PUBLIC HEARING:
PLANNING COMM. RECOMMENDATION:
☐ APPROVAL, DATE
☐ DENIAL, DATE

TOWNSHIP BOARD OF TRUSTEES:
☐ APPROVED, DATE
☐ DENIED, DATE

APPLICATION RECEIVED:

TOWNSHIP CLERK — DATE

FEE RECEIVED — DATE

SCIO TOWNSHIP
PLANNING COMMISSION

The Township Planning Commission will meet in Meeting Hall at Township Hall at 827 N. Zeeb Road. Members of the public may join either in person, or via Zoom at https://us02web.zoom.us/j/86123952496 or http://zoom.us and entering Meeting ID 861 2395 2496 or by calling 1 312 626 6799 and entering Meeting ID 861 2395 2496. Persons with disabilities requiring any accommodation for participation in this meeting should contact the Township Clerk at (734) 369-9400 or clerk@sciotownship.org.

NOTICE IS HEREBY GIVEN that a public meeting of the Scio Township Planning Commission will be (held at the Scio Township Hall, 827 N. Zeeb Road, Ann Arbor, Michigan, via zoom,) on **MONDAY, May 22, 2023 at 7:00 PM.** During this meeting the Planning Commission will hold a public hearing on the following matter:

Conditional Use Application #23007, Meijer Inc, as Best Friends Pet Care, to allow a commercial kennel. Pursuant to Section 36-74(12)(c)2. The subject site is zoned C-2 (General Commercial.) (CU#23007)

Property Code:	H -08-21-400-043
Property Address:	5645 Jackson
Owner:	Meijer Inc.

Details concerning the aforementioned matters may be examined at the Township Offices at 827 N. Zeeb Road by interested persons during office hours, weekdays between 8:00 AM and 4:00 PM.

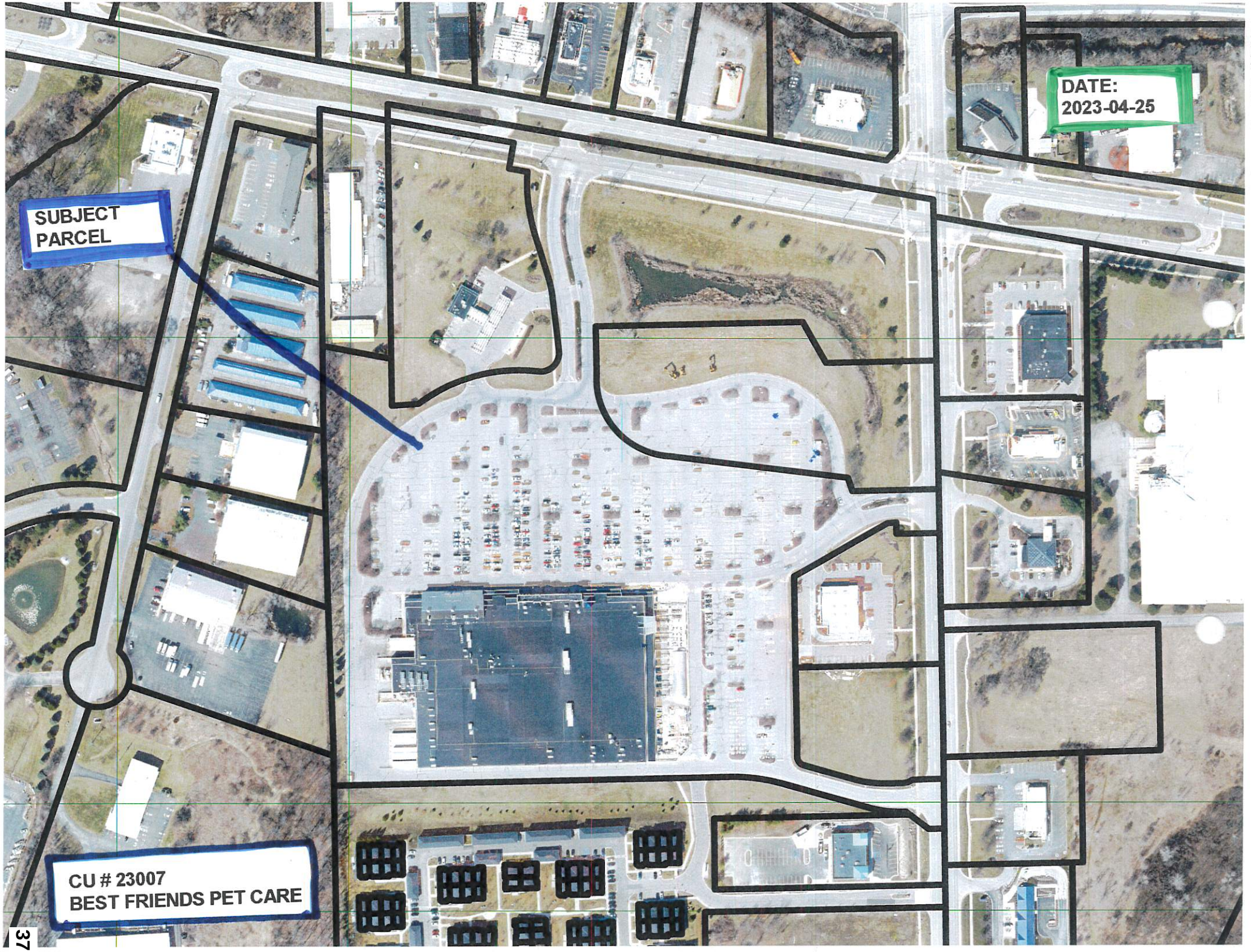
Any person having interest in said Township or their duly appointed representatives shall there and then be heard at the above described meetings or adjournment thereat relative to any matters that should come before the Planning Commission.

Scio Township will provide necessary reasonable auxiliary aids and services, such as signers for the hearing impaired and audio tapes of printed materials being considered at the meeting, to individuals with disabilities at the meeting/hearing 10 days notice to Scio Township. Individuals with disabilities requiring auxiliary aids or services should contact Scio Township.

Scio Township Clerk

SunTimes 2023-05-03
Washtenaw Legal News 2023-05-04


SUBJECT PARCEL
DATE: 2023-04-25
CU # 23007
BEST FRIENDS PET CARE
NOTIFICATION PARCELS


DATE:
2023-04-25
SUBJECT
PARCEL
CU # 23007
BEST FRIENDS PET CARE

Carlisle | Wortman
ASSOCIATES, INC.
117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

Date: May 18, 2023

Conditional Land Use
For
Scio Township, Michigan

File No.:	CU 23007
Applicant:	Best Friends Pet Care
Project Name:	Best Friends Pet Care
Plan Date:	March 29, 2023
Revision Date:	April 10, 2023
Date Stamped:	April 20, 2023
Location:	5645 Jackson Road / Meijer Store
Zoning:	C-2, General Commercial / JROD, Jackson Road Overlay
Action Requested:	Conditional land use approval for pet grooming/doggy day care.
Required Information:	Deficiencies are noted in the following sections of this review.

PROJECT AND SITE DESCRIPTION

The applicant is requesting conditional use approval to occupy a tenant space within the existing Meijer store located at the southwest corner of Jackson and Zeeb Roads (5645 Jackson Road) for a pet grooming/doggy day care use.

A project narrative/description of the use was not included with the submittal. We infer from the site plan provided; the use will incorporate an internal tenant space with their own exterior entry within the existing Meijer store. No operation information is noted such as hours of operation, number of employees, etc. The plans presented do not include any dimensions; the area of the space to be utilized by the tenant will need to be provided.

Dog grooming is not a use listed in the Zoning Ordinance; however, commercial kennels would be the most similar use are listed as a conditional use in the C-2 zoning district.



Items to be Addressed: *Provide project narrative including operational information such as hours of operation, number of employees, waste disposal plan, area of tenant space, etc.*

LAND USE AND ZONING

Site: The subject site is zoned C-2, General Commercial and is developed as a Meijer retail store.

North: The site is bordered to the north by existing commercial uses. This area is zoned C-2, General Commercial.

South: South of the subject site are existing commercial uses. This area is zoned C-2, General Commercial.

East: East of the subject site across Zeeb Road are existing commercial uses that are zoned C-2, General Commercial. There is a vacant parcel of land directly across Zeeb Road that is zoned I-2, General Industrial.

West: West of the subject site are various commercial / industrial uses along Jackson Plaza zoned C-2, General Commercial along the Jackson Road corridor and I-1, Limited Industrial along Jackson Plaza.

Items to be Addressed: *None.*

MASTER PLAN

The Township's Master Land Use Plan designates the subject site as Mixed-Use Commercial. The intent of this designation is to provide areas where a mix of commercial, office, industrial and high-density residential land uses are encouraged. Desirable uses in this future land use category include general commercial uses; high-density residential (as part of a mixed-use development); more Intensive commercial operations; parks, open spaces, and conservation areas; office uses; office/research uses; and light industrial uses.

The Mixed-Use Commercial future land use classification coincides most closely with the C-2, General Commercial zoning district. As such, commercial kennels and similar uses are allowed in C-2, General Commercial District as a conditional land use.

Items to be Addressed: *None.*

NATURAL RESOURCES

There are no significant natural resources or features located on the subject site as the site has been previously graded for development.

Items to be Addressed: *None.*

ESSENTIAL FACILITIES AND SERVICES

The site Is located In the Township's water and sewer district, and connections will be reviewed as part of the site plan process.

Items to be Addressed: *None.*

TRAFFIC / ACCESS

The site will be accessed via the existing Meijer drives from Zeeb and Jackson Roads. Additional traffic will be minimal as the use will be a small tenant within the existing Meijer retail center.

Items to be Addressed: *None.*

CONDITIONAL USE STANDARDS

As part of a conditional use application, the following information is required and has not been provided:

- Legal description
- A scaled and accurate survey drawing, correlated with the legal description, and showing all existing buildings, drives, and other improvements.
- A detailed written description of the proposed use, addressing the standards set forth in Section 36-224.
- A site plan consisting of an overall plan for the entire development.
- Zoning classification and land use of the subject property and adjacent properties.

The Zoning Ordinance identifies six (6) standards and findings that must be met (Section 36-224 1-6). We note that most of these issues are addressed in the body of this analysis; however, we will provide the following brief commentary for reference.

(1) Will be harmonious, and in accordance, with the objectives and regulations of this Ordinance.

The proposed dog grooming / doggy day care use is compatible with the uses allowed in the C-2, General Commercial zoning district. The applicant will need to provide additional information regarding hours of operation, number of employees, waste disposal plan, etc. related to business operations on the site.

(2) Will be compatible with the natural environment and existing and future land uses in the vicinity.

The site has been previously graded for development and the site has no significant natural features. The site and the surrounding area have been developed as commercial uses.

(3) That the proposed use will be served adequately by essential public facilities and services such as highways, streets, police and fire protection, drainage ways, refuse disposal, or that the persons or agencies responsible for the establishment of the proposed use shall be able to provide adequately any such service.

The subject site currently maintains water and sewer facilities on-site. No site improvements are proposed. Only interior remodeling within the existing Meijer store for interior tenant space.

(4) That the proposed use will not be detrimental, hazardous, or disturbing to the existing or future neighboring uses, persons, property or the public welfare.

The surrounding uses are zoned C-2 containing commercial uses. The proposed dog grooming / doggy day care use would not be considered to be detrimental, hazardous, or disturbing to the existing future neighboring uses or persons.

(5) That the proposed use will not create additional requirements at public cost for public facilities and services that will be detrimental to the economic welfare of the community.

No additional public facilities and services are anticipated.

(6) Will be compatible with the Township's adopted Master Plan.

As noted above the use is in conformance with the Township's Master Land Use Plan.

Items to be Addressed: *Provide information required for conditional use review as outlined in Section 36-220.*

VARIANCES

No variances are needed.

SITE PLAN REVIEW

A full site plan review is not required since the applicant is not proposing a new development (Section 36-220).

Items to be Addressed: *None.*

SPECIFIC USE STANDARDS

Section 36-135 outlines the following specific use standards for commercial kennels.

1. A minimum lot size of 5 acres.
2. Any building or fenced area where animals are kept shall be located a minimum of 200 feet from any public right-of-way, 100 feet from any property line, and 150 feet from any residential dwelling located off of the premises.

3. The kennel shall be established and maintained in accordance with all applicable state, county, and township sanitation regulations.

Based on the information presented, we note the minimum lot size and dimensional requirements outlined have been met. As noted previously, the applicant will need to outline waste disposal and sanitation practices associated with the use.

Items to be Addressed: *Provide waste disposal plan and outline sanitation practices associated with the grooming/doggy day care use.*

RECOMMENDATIONS

Based upon the information provided by the applicant and the comments of this analysis, the following items will need to be addressed to the satisfaction of the Planning Commission prior to making a recommendation on the Best Friends Pet Care conditional use at 5645 Jackson Road (H-08-21-400-043) to the Township Board:

1. Provide project narrative including operational information such as hours of operation, number of employees, waste disposal plan, area of tenant space, etc.
2. Provide information required for conditional use review as outlined in Section 36-220.
3. Provide waste disposal plan and outline sanitation practices associated with the grooming/doggy day care use.

CARLISLE/WORTMAN ASSOC., INC.
Douglas J. Lewan, AICP
Executive Vice President

CARLISLE/WORTMAN ASSOC., INC.
Laura K. Kreps, AICP
Senior Associate

#124-2313

cc: Best Friends Pet Care via kmoreau@bestfriends.net

Scio Township Fire Department

From: Assistant Chief Sears

Date: May 3, 2023

RE: CU#23007 Best Friends Pet Care

The fire department has no objections to the site plan dated 03/29/2023.

Brandon Sears, Assistant Chief/Fire Marshal

Scio Township Fire Department

1055 N. Zeeb Rd., Ann Arbor, MI 48103-1472.
(734) 665-6001
(734) 665-0825 (fax)

April 14, 2023

RE: Letter of Authorization for State Permits Inc. to submit our drawings for permit

To Whom It May Concern,

This letter of authorization (LOA) authorizes State Permits Inc, 319 Elaines CT, Dodgeville, WI 53533, phone # is 608-407-9084 to submit our drawings on our behalf for permit as an agent to:

Meijer's

5645 Jackson Road

Ann Arbor, MI 48103

As indicated by my signature below, I am authorized to provide this LOA on behalf of Best Friends Pet Care, Inc, and my full name, title, address, email address, and telephone number, are set out below for verification.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Keith Moreau
Vice President of Construction
Best Friends Pet Care
520 Main Ave
Norwalk, CT 06851
535 Connecticut Ave, Suite 305
Norwalk, CT 06854
P: 860-803-2678

Best Friends
PET HOTEL

Dear Inspector,

In answer to your questions from the Carlisle/Wortman Associates, Inc. document in regards the Conditional Land Use for Scio Township, Michigan below you will see the replies.

1.) The project will include a grooming salon and a doggy daycare facility. The hours of operation will be 8 AM to 6 PM seven days a week. The total number of employees will be 6-8 with 3-4 employees being on site at any one time. The waste gets bagged and put into the trash dumpster on-site. Additionally, we install an exterior pet relief station. Please see the tenant space layout below.
2.) Per Section 36-220, the following minimum information required for all conditional use applications:

a. The applicant's name, address, and telephone number.
Response: Keith Moreau, 535 CT Ave, Suite 305 , 860-803-2678

b. The names and addresses of all owners of record and other parties of interest.
Response: Lynn Richardson – Meijers Property Leasing Manager – Meijers Inc 2023 2929 Walker Ave NW, Grand Rapids MI, 49544-9428

c. The applicant's interest in the property, and if the applicant is not the fee simple owner, the owner's signed authorization for the application.
Response: Interest in property is for business purposes, dog grooming and day care only. No overnight. Owner signed the conditional use permit application, so a separate authorization letter is not needed.
d. Recorded legal description, address, and tax parcel number of the property.
Response: Interior improvement to existing building, 5645 Jackson Road, Ann Arbor 48103.
Parcel Number H-08-21-400-043, Township of Scio,
School District number & name: 81010 & Ann Arbor Public Schools
Property Classification: 201 commercials
See attached property card
e. A scaled and accurate survey drawing, correlated with the recorded legal description, and showing all existing buildings, drives, and other improvements.
Response: N/A- Interior alteration to existing commercial space. No exterior changes
f. A detailed written description of the proposed use, addressing the standards set forth in section 36-224.
Response: Refer to response 1.

g. A site plan consisting of an overall plan for the entire development. The sheet size shall be at least 24 inches by 36 inches with a maximum scale of one inch equals 50 feet.
Response: N/A- Interior alteration to existing commercial space. No exterior changes

h. The shape, size and location of existing and proposed buildings, parking areas and service drives, loading zones, location of existing and proposed public streets serving the property, and natural features such as topography, soils, woodlands, wetland, floodplain, and drainage courses which affect the property
Response: Project keyplan/site plan shows building outline and location. No exterior work is done is this necessary for our interior fitout. N/A- Interior alteration to existing commercial space. No exterior changes.

i. The location of all existing and proposed water and sewage treatment systems serving the property.
Response: mark N/A- Interior alteration to existing commercial space. No exterior changes. New service to tap into existing.

j. Zoning classification and land use of the petitioner's property as well as all adjacent properties.
Response: N/A

k. Change to any interior plumbing fixtures or additions or deletions therein.
Response: Refer to plumbing drawings submitted.

l. Any other information deemed necessary to properly illustrate the development concept to the planning commission
Response: N/A

m. Conditional use with full site plan review. In those cases where a conditional use is proposed as a part of a new development, or which propose the expansion of an existing structure of over 1,000 square feet, or where a conditional land use requires the provision of new parking to accommodate the use, full site plan review pursuant to section 36-179 shall be required after the conditional use is approved by the township board of trustees. This shall be considered a second step to this process.
Response: Project area is 731 sq ft, not new expansion, or development

3.) The waste gets bagged and put into the trash dumpster on-site. Additionally, we install an exterior pet relief station. The grooming salon has tile floors with floor drains and the salon gets sanitized daily. The grooming tables and tub gets sanitized after each use. The doggy daycare has rubber welded seam flooring and integral cove base with floor drains and gets sanitized between use.

Let me know you if I can provide any additional information to clear this up.

Sincerely,

Keith Moreau

VP Construction

Best Friends Pet Care, Inc.

kmoreau@bestfriends.net

860-803-2678

eCentral Washtenaw County EMPLOYEE INTRANET

Washtenaw County Parcel Summary

This information is received from local cities, villages, and townships. For additional information or verification, please contact your local city, village, or township assessor or access their individual Online Assessment and Property Tax web pages here.

Information herein deemed reliable but **not** guaranteed.

Parcel Identification	
Parcel Number:	H -08-21-400-043
City, Village, or Township:	TOWNSHIP OF SCIO
Parcel Status:	ACTIVE
Property Address Street Number, Name & Direction	5645 JACKSON RD
Property City, State, Zip Code:	ANN ARBOR, MI, 48103
School District Number & Name:	81010 & ANN ARBOR PUBLIC SCHOOLS
Property Classification:	201 COMMERCIAL
Taxpayer Identification -- Year 2023	
Taxpayer Name 1:	MEIJER INC 2023
Taxpayer Name 2:	
Taxpayer Mailing Address:	2929 WALKER AVE NW
Taxpayer City, State, Zip Code:	GRAND RAPIDS, MI, 49544

Assessment

Year	State Equalized Value	Taxable Value	Principal Residence Exemption %
2022	5,450,200.00	4,804,388.00	0
2021	5,403,200.00	4,650,909.00	0

Sales

Washtenaw County Legal Description

This data is received from local cities, villages, and townships. For additional information or verification, please contact your local city, village or township assessor, the Washtenaw County Clerk/Register of Deeds at (734)222-6710 or the Washtenaw County Department of Equalization at (734)222-6662.

Parcel Identification	
Parcel Number:	H -08-21-400-043
Property Address Street Number,	5645 JACKSON RD

Name & Direction	
City, Village, or Township:	TOWNSHIP OF SCIO
Legal Description:	COM AT SE COR SEC 21; TH N 01-18-09 W 327.15 FT ALG CENTERLINE OF ZEEB RD TO POB; TH S 88-41-51 W 34 FT; TH N 52-58-08 W 62.46 FT; TH SD 88-50-12 W 7.99 FT; TH 75.27 FT ALG ARC OF 260 FT RAD CRV TO RIGHT, CENT ANG 16-35-13, CHD N 82-52-12 W 75.01 FT; TH N 74-33-36 W 194.13 FT; TH 115.73 FT ALG ARC OF 400 FT RAD CRV TO LEFT, CENT ANG 16-34-41, CHD N 82-51-57 W 115.33 FT; TH S 88-50-42 W 857.13 FT; TH N 01-13-20 W 944.99 FT; TH S 79-52-19 E 150 FT; TH S 01-13-20 E 100.57 FT; TH N 88-46-41 E 65.10 FT; TH 230.97 FT ALG ARC OF 360 FT RAD CRV TO RIGHT, CENT ANG 36-45-39, CHD N 77-38-31 E 227.03 FT; TH S 83-58-39 E 29.54 FT; TH 67.84 FT ALG ARC OF 40 FT RAD CRV TO LEFT, CENT ANG 97-11-11, CHD N 47-25-45 E 60 FT; TH N 01-09-50 W 106.88 FT; TH 49.06 FT ALG ARC OF 254 FT RAD CRV TO LEFT, CENT ANG 11-03-54, CHD N 06-41-47 W 48.98 FT; TH N 12-13-44 W 84.01 FT; TH 130.16 FT ALG ARC OF 346 FT RAD CRV TO RIGHT, CENT ANG 21-33-09, CHD N 01-27-09 W 129.39 FT; TH N 79-56-41 W 41.36 FT; TH N 10-03-18 E 55 FT; TH N 79-56-42 W 277.36 FT; TH 40.06 FT ALG ARC OF 9315.185 FT RAD CRV TO RIGHT, CENT ANG 00-14-47, CHD N 79-49-19 W 40.06 FT; TH N 01-13-20 W 88.15 FT TO CENTERLINE OF JACKSON RD; TH S 79-52-19 E 844.49 FT & 352.19 FT ALG ARC OF 57295.79 FT RAD CRV TO RIGHT, CENT ANG 00-21-08, CHD S 80-02-53 E 352.19 FT TO CENTERLINE OF ZEEB RD; TH S 01-18-09 E 347.96 FT; TH S 88-41-51 W 237.77 FT; TH N 29-44-59 W 101.60 FT; TH S 88-41-51 W 446.05 FT; TH S 01-18-09 E 101.89 FT; TH 242.69 FT ALG ARC OF 170 FT RAD CRV TO LEFT, CENT ANG 81-47-43, CHD S 42-12-01 E 222.60 FT; TH S 83-05-52 E 382.10 FT; TH S 18-17-52 E 30.80 FT; TH N 88-41-51 E 199.29 FT TO CENTERLINE OF ZEEB RD; TH S 01-18-09 E 111.24 FT; TH S 88-41-51 W 93.01 FT; TH N 01-18-09 W 25.07 FT; TH S 83-54-52 W 19.50 FT; TH S 59-51-32 W 231.18 FT; TH S 01-29-30 E 387.85 FT; TH 24.25 FT ALG ARC OF 19 FT RAD CRV TO LEFT, CENT ANG 73-08-37, CHD S 38-03-49 E 22.64 FT; TH S 74-38-07 E 114.89 FT; TH 75.01 FT ALG ARC OF 259 FT RAD CRV TO LEFT, CENT ANG 16-35-13 CHD S 82-53-34 E 74.75 FT; TH N 88-46-40 E 34.07 FT; TH 23.42 FT ALG ARC OF 39 FT RAD CRV TO LEFT, CENT ANG 34-24-25 , CHD N 71-34-27 E 23.07 FT; TH N 88-41-51 E 60 FT; TH S 01-18-09 E 107.79 FT TO POB. T2S, R5E, 28.14 AC. SPLIT ON 05/28/2019 FROM H -08-21-400-038 INTO H-08-21-400-042 & -043

Washtenaw County Sales History

This data is received from local cities, villages, and townships. For additional information or verification, please contact your local city, village or township assessor, the Washtenaw County Clerk/Register of Deeds at (734)222-6710 or the Washtenaw County Department of Equalization at (734)222-6662.

Parcel Identification			
Parcel Number:	H -08-21-400-043		
Property Address Street Number, Name & Direction	5645 JACKSON RD		
City, Village, or Township:	TOWNSHIP OF SCIO		
Liber-Page	Sale Date	Instrument	Sale Price

BFM001 - BEST FRIENDS PET
Ann Arbor, MI

STORE LOCATION NUMBER - #173
INTERIOR IMPROVEMENTS

PROJECT LOCATION:
5645 Jackson Road, Ann Arbor, MI 48103

CODE AND BUILDING DATA

PROJECT SCOPE

THIS PROJECT IS THE CONSTRUCTION OF MINOR FIT OUT INTERIOR IMPROVEMENTS. THE WORK CONSISTS OF INTERIOR WALL PARTITIONS WITH DOOR, INTERIOR FINISHES, EXTERIOR DOORS, ELECTRICAL, PLUMBING, MINOR MODIFICATIONS TO EXISTING HVAC AND SERVICES, AND MINOR SLAB INFILL. ALL WORK INCLUDES THE FURNISHING OF ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR AND REASONABLY INCIDENTAL TO THE COMPLETION IN PLACE, OF ALL WORK AS ILLUSTRATED AND DESCRIBED IN DRAWINGS AND/OR SPECIFICATIONS. ALL SUCH WORK IS TO BE DONE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.

APPLICABLE CODES

BUILDING CODE:	2015 MICHIGAN BUILDING CODE - EFFECTIVE APRIL 20, 2017
RESIDENTIAL CODE:	2015 MICHIGAN RESIDENTIAL CODE - EFFECTIVE FEBRUARY 8, 2016
REHABILITATION CODE:	2015 MICHIGAN REHABILITATION CODE - EFFECTIVE DECEMBER 13, 2016
MECHANICAL CODE:	2015 MICHIGAN MECHANICAL CODE - EFFECTIVE APRIL 12, 2017
PLUMBING CODE:	2018 MICHIGAN PLUMBING CODE - EFFECTIVE SEPTEMBER 15, 2021
ENERGY CODE:	2015 MICHIGAN ENERGY CODE - EFFECTIVE SEPTEMBER 20, 2017
ELECTRICAL CODE:	2017 NATIONAL ELECTRICAL CODE (NEC) - EFFECTIVE JANUARY 4, 2019

USE AND OCCUPANCY CLASSIFICATION

NO CHANGE IN USE, ACCESSORY BUSINESS USE WITHIN OPERATING WAL-MART, NO SEPARATION REQUIRED BETWEEN MAIN USE AND ACCESSORY USE

CONSTRUCTION CLASSIFICATION TYPE

EXISTING TYPE II - B , NO CHANGE - FULLY SPRINKLERED

EGRESS REQUIREMENTS:

SEE LIFE SAFETY PLAN FOR EGRESS CAPACITY AND EXIT ACCESS TRAVEL COMPLIANCE.
MINIMUM NUMBER OF EXITS: 1 EXITS
PROVIDED NUMBER OF EXITS: 1 EXITS

OCCUPANT LOAD

SCOPE OF WORK AREA WITHIN EXISTING BUILDING: 727 SQ. FT.
SEE EGRESS FLOOR AND DOOR CAPACITY TABLE FOR COMPLIANCE

PLUMBING FIXTURE REQUIREMENTS:

PLUMBING FIXTURE REQUIREMENTS TO BE MET BY EXISTING WAL-MART TOILET ROOMS, NO CHANGE IN QUANTITY REQUIRED

BUILDING ENVELOPE ENERGY COMPLIANCE

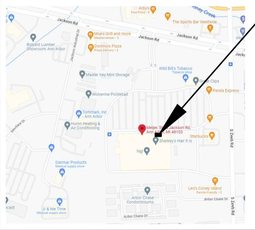
PER 2015 MICHIGAN ENERGY CODE, SECTION C501 AND C503 EXCEPTIONS, ASHRAE 90.1-2013 SECTION 4.2.1.3 AND SECTION 5.1.3 THE PROPOSED AREA OF WORK DOES NOT INCREASE THE ENERGY USE OF THE BUILDING. THEREFORE, EXISTING BUILDING DOES NOT NEED TO COMPLY WITH THE REQUIREMENTS FOR NEW CONSTRUCTION.

DRAWING LIST

● ISSUED FOR APPROVAL / CONSTRUCTION
○ ISSUED FOR REFERENCE ONLY

		04/10/23 - ISSUED FOR PERMIT/OWNER REVIEW	
ARCHITECTURAL			
A000	COVER / INDEX SHEET	●	
A001	**ABBREVIATIONS, ACCESSIBILITY COMPLIANCE, PARTITION & DOOR SCHEDULE**	●	
A002	SPECIFICATIONS	●	
A003	COMCHECK	●	
A004	COMCHECK	●	
DM101	1ST FLOOR DEMOLITION PLAN	●	
A101	1ST FLOOR CONSTRUCTION PLAN	●	
A211	INTERIOR ELEVATIONS	●	
A212	INTERIOR ELEVATIONS/BLOCKING DETAILS	●	
A213	DETAILS	●	
ENGINEERING			
M101	MECHANICAL PLAN	●	
M102	MECHANICAL SPECIFICATIONS	●	
E101	ELECTRICAL PLAN	●	
E102	ELECTRICAL SPECIFICATIONS	●	
P101	PLUMBING PLAN	●	
P201	PLUMBING SPECIFICATIONS	●	

LOCATION MAP



GENERAL NOTES

1. THE CONTRACTOR SHALL CAREFULLY REVIEW THE DRAWINGS, SPECIFICATIONS AND SITE TO VERIFY ALL SITE CONDITIONS PRIOR TO BEGINNING WORK. THE CONTRACTOR SHALL REPORT ANY INCONSISTENCIES TO THE ARCHITECT IMMEDIATELY FOR RESOLUTION BEFORE BEGINNING CONSTRUCTION. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE, DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS, IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
2. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE TO MAKE SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS BY ALL OF THE PERMITTING AUTHORITIES.
3. ALL PHASES OF WORK SHALL CONFORM TO THE APPLICABLE BUILDING CODE AND ACCESSIBILITY REQUIREMENTS CURRENTLY USED BY THE CITY, STATE, FEDERAL AND LOCAL ORDINANCES HAVING JURISDICTION OVER THE PROJECT. HOWEVER, WHERE THE DRAWINGS AND/OR SPECIFICATIONS ARE MORE STRINGENT, THEY SHALL GOVERN. THE CONTRACTOR SHALL INFORM THE ARCHITECT OF ANY CODE DISCREPANCY, PRIOR TO CONSTRUCTION.
4. THE MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS ARE SUPPLEMENTARY TO THE ARCHITECTURAL DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK AND COORDINATE ALL TRADES TO WORK WITH ALL DRAWINGS PRIOR TO INSTALLATION. ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT, FOR CLARIFICATION, PRIOR TO INSTALLATION OF WORK.
5. THE CONTRACTOR SHALL PROVIDE ALL LIGHTING, WALKWAY, SHORING AND BRACING REQUIRED TO ADEQUATELY PROTECT PERSONNEL & ADJACENT PROPERTY AND ALSO TO ENSURE THE SAFETY OF THE PUBLIC & STRUCTURE THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL MATERIALS AND EQUIPMENT SHALL BE NON-COMBUSTIBLE AND OF THE HIGHEST QUALITY AND CONFORM TO ACCEPTABLE INDUSTRY/TRADE STANDARDS. ALL WOOD TO BE USED IN TEMPORARY AND PERMANENT CONSTRUCTION MUST BE FIRE RESISTANT AND LABELED AS SUCH. ALL LUMBER AND CONCEALED WOOD BLOCKING SHALL BE FIRE-RETARDANT .
7. ALL DEBRIS AND/OR UNSUITABLE MATERIAL, RESULTING FROM EXCAVATION, DEMOLITION AND/OR NEW WORK IS THE PROPERTY OF THE CONTRACTOR, AND SHALL BE DISPOSED OF, OFF SITE, IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS. MAINTAIN BUILDING AREAS CLEAN AND FREE OF DEBRIS ON A DAILY BASIS.
8. CONTRACTOR SHALL PROTECT AND BE RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING STRUCTURES OR ITEMS, AND NEWLY INSTALLED MATERIALS, DURING CONSTRUCTION.
9. ALL CONTRACTORS, SUB CONTRACTORS, SUPPLIERS AND ALL OTHER TRADES INVOLVED IN THE WORK OR PORTION THEREOF SHALL REVIEW THE COMPLETE CONSTRUCTION DOCUMENTS AND HAVE KNOWLEDGE OF ALL THE WORK TO BE PERFORMED BY ALL THE TRADES THAT AFFECTS SAID WORK AND SHALL COORDINATE THEIR WORK WITH SAID CONTRACTORS, SUB CONTRACTORS AND TRADES.
10. THE CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE WITH THE BUILDING OWNER AND USERS OF ADJACENT TENANT SPACES, AS NEEDED.
11. CONTRACTOR SHALL KEEP A RECORD SET OF CONSTRUCTION DOCUMENTS ON SITE AT ALL TIMES AND SHALL RECORD ALL ALTERATIONS FROM THE CONSTRUCTION DOCUMENTS.
12. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE SITE.
13. ALL INTERIOR DIMENSIONS ARE TO FACE OF GYPSUM BOARD, UNLESS OTHERWISE NOTED.
14. COORDINATION OF ALL WORK UNDER THIS CONTRACT SHALL BE MAINTAINED TO ENSURE THE QUALITY AND TIMELY COMPLETION OF THE WORK/PROJECT.
15. THE CONTRACTOR SHALL COORDINATE WITH ALL TRADES, THE LOCATION AND SIZE OF OPENINGS IN WALLS, SLABS, CEILINGS AND/OR ROOFS. PROVIDE FLASHING, GRATINGS AND/OR SEALING, AS REQUIRED.
16. THE CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING REQUIRED FOR WORK COMPLETION, WITHOUT COMPROMISING THE QUALITY OF THE WORK AND OR SURROUNDING AREAS.
17. PROVIDE CONCRETE BASES, PADS, CURBS, INERTIA BLOCKS, ETC., AS REQUIRED TO SUPPORT HVAC, ELECTRICAL, PLUMBING AND EQUIPMENT, WHERE APPLICABLE. FINAL LOCATIONS AND SIZES MUST BE COORDINATED WITH THE EQUIPMENT MANUFACTURER AND IS SUBJECT TO APPROVAL WITH THE EQUIPMENT SHOP DRAWINGS.
18. EQUIPMENT ROUGHING LOCATIONS SHALL BE CONFIRMED BY THE CONTRACTOR WITH ALLOWANCE MADE FOR TRAPS, ELLS, TEES, ETC., AS REQUIRED. IN ALL SPACES OTHER THAN MECHANICAL AREAS, PIPES AND CONDUITS SHALL BE LOCATED WITHIN WALLS OR OTHERWISE CONCEALED, UNLESS EXPOSING THEM IS SPECIFICALLY APPROVED/ INDICATED BY THE ARCHITECT AND/OR THE CONTRACT DOCUMENTS.
19. IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS, INCLUDING THE NOTES CONTAINED THEREON, WITHOUT FIRST OBTAINING PRIOR WRITTEN AUTHORIZATION FOR SUCH DEVIATIONS FROM THE OWNER AND ARCHITECT/ ENGINEER, IT SHALL BE RESPONSIBLE FOR THE PAYMENT OF ALL COSTS TO CORRECT ANY WORK DONE, ALL FINES OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM AND IT SHALL INDEMNIFY AND HOLD THE OWNER AND ARCHITECT/ENGINEER HARMLESS FROM ALL SUCH COSTS TO CONNECT ANY SUCH WORK AND FROM ALL SUCH FINES AND PENALTIES, COMPENSATION AND PUNITIVE DAMAGES AND COSTS OF ANY NATURE RESULTING THEREFROM.
20. ALL MATERIALS AND EQUIPMENT INCORPORATED INTO THE WORK SHALL BE NEW AND FREE OF DEFECTS.
21. ALL MATERIALS USED FOR THE CONSTRUCTION OF THIS PROJECT, WHETHER BUILDING MATERIALS OR APPURTENANCES, SHALL BE NON-ASBESTOS CONTAINING MATERIAL/S.
22. ALL MATERIALS AND CONSTRUCTION TO BE INCORPORATED IN THE WORK SHALL BE IN STRICT ACCORDANCE WITH THE LATEST EDITION OF THE ASTM SPECIFICATIONS APPLICABLE, AND TO CONFORM WITH THE CURRENT STANDARDS AND RECOMMENDATIONS OF THE VARIOUS TRADE INSTITUTIONS, WHERE APPLICABLE.
23. WHERE APPLICABLE, MATERIAL USED FOR FIRE RESISTANCE RATING SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE CITY BUILDING CODE.
24. ALL EXISTING FIREPROOFING AND CONCRETE ENCASEMENT DISTURBED OR REMOVED DURING WORK SHALL BE REPLACED WITH EQUIVALENT AND APPROVED FIREPROOFING MATERIAL.
25. ALL EXITS SHALL BE KEPT READILY ACCESSIBLE AND UNOBSTRUCTED AT ALL TIMES. MEANS OF EGRESS ILLUMINATION AND EXIT SIGNS SHALL COMPLY WITH CURRENT APPLICABLE AHJ (AUTHORITY HAVING JURISDICTION) BUILDING CODE SECTIONS, FOR LOCATION AND ILLUMINATION.

TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT:
USE OF SPACE TO BE FOR PET DAYCARE ONLY.
FURNITURE AND FIXTURES ARE AS SHOWN ON DRAWINGS.
FIRE SPRINKLER/FIRE ALARM ALTERATIONS TO BE FILED UNDER SEPARATE APPLICATIONS.

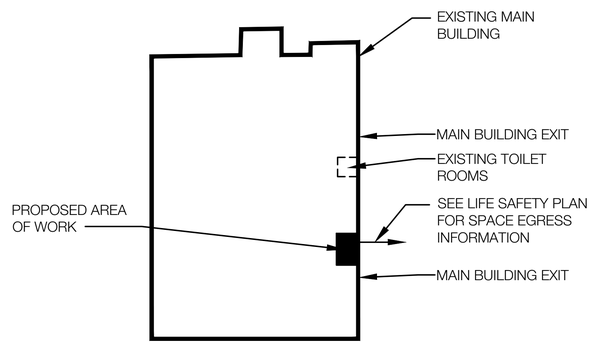
INTERPRETATIONS AND CONFLICTS

CONTRACTOR SHALL VISIT THE SITE, EXAMINE CAREFULLY THE AREAS AFFECTED BY THIS WORK TO BECOME FAMILIAR WITH EXISTING CONDITIONS, COMPLY WITH LANDLORD'S REQUIREMENTS AND WITH DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF WORK.

SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT ABOVE HAS BEEN INCLUDED IN BIDS AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS BECAUSE OF DIFFICULTIES, ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION AND/OR CAREFUL INVESTIGATION BEEN MADE.

1. BRING ANY DISCREPANCIES BETWEEN DIFFERENT DRAWINGS, BETWEEN THE DRAWINGS AND FIELD CONDITIONS AND/OR BETWEEN THE DRAWINGS AND SPECIFICATIONS, OR ANY APPARENT OMISSIONS, TO THE ATTENTION OF THE ARCHITECT/ENGINEER PRIOR TO SUBMISSION OF ANY BID. AFTER AWARD OF CONTRACT, THE INTERPRETATION OF ANY CONFLICT WILL BE MADE BY THE ARCHITECT AND SHALL BE ACCEPTED AS FINAL, AT NO ADDITIONAL COST.
2. SUBMIT DETAILS OF ANY DESIRED DEPARTURES FROM THE CONTRACT DOCUMENTS AS MAY BE DEEMED NECESSARY, AND THE REASONS THEREFORE, WITHIN 15 DAYS AFTER AWARD OF THE CONTRACT. MAKE NO DEPARTURES WITHOUT WRITTEN APPROVAL.
3. IF MENTION HAS BEEN OMITTED PERTAINING TO DETAILS, ITEMS OR RELATED ACCESSORIES REQUIRED FOR THE COMPLETION OF ANY ELECTRICAL, PLUMBING, HVAC OR OTHER ENGINEERING SYSTEM, INCLUDE SUCH ITEMS AND ACCESSORIES IN THE CONTRACT WITHOUT ADDITIONAL CHARGE.
4. AFTER THE CONTRACT IS AWARDED, CLAIMS BASED ON INSUFFICIENT DATA, INCORRECTLY ASSUMED CONDITIONS AND/OR CLAIMS BASED ON MISUNDERSTANDING, THE NATURE OR CHARACTER OF THE WORK, OR THE CONDITIONS UNDER WHICH IT MUST BE PERFORMED, WILL NOT BE RECOGNIZED.
5. THE CONTRACTOR SHALL NOT INTERPRET THIS PROJECT TO BE A "MINIMUM CODE DESIGN", OR AN "INDUSTRY STANDARD DESIGN", WHERE MATERIALS OR METHODS SHOWN ON THE DRAWINGS, OR SPECIFIED HEREIN, INDICATE A PREMIUM MATERIAL OR METHOD. THE CONTRACTOR IS EXPECTED TO PROVIDE SAME, AND PROPOSE ALTERNATE METHODS OR MATERIALS AS A SIDE ITEM. EXCUSES SUCH AS "IT MEETS NEC REQUIREMENTS" OR "THIS IS THE INDUSTRY STANDARD" WILL NOT BE RECOGNIZED AS JUSTIFICATION FOR ACCEPTANCE OF ITEMS NOT CONFORMING TO THE INTENDED DESIGN.
6. THE PURPOSE OF THE CONSTRUCTION DRAWINGS ARE TO CONVEY DESIGN INTENT. NOT EVERY ASPECT OF THE WORK IS DEPICTED IN DETAIL. CONTRACTOR BIDS ARE DEEMED TO BE INCLUSIVE OF A COMPLETE AND FINISHED PROJECT, READY FOR OCCUPANCY AND INTENDED USE, AND IN COMPLIANCE WITH DESIGN INTENT, UNLESS OTHERWISE SPECIFICALLY QUALIFIED.

AREA OF SCOPE OF WORK - EXISTING BUILDING



LEGEND

XXX	DOOR CAPACITY	XXX	CORRIDOR CAPACITY
	WALL/CEILING-MOUNTED EXIT SIGN, ILLUMINATED, DIRECTIONAL		PATH OF EGRESS PRIMARY TRAVEL PATH

FLOOR OCCUPANCY

BC 1004.1 TABLE 1004.5
MEANS OF EGRESS SIZING

FLOOR	OCC. GROUP	AREA [SF]	# OF OCC.	NOTES
FIRST	B-BUSINESS	727	4	641 SF/ 150 GROSS
TOTAL OCCUPANCY		727 SF	4 PPL	

DOOR EXIT CAPACITY

BC 1005.1, BC 1010.1
MEANS OF EGRESS SIZING

EXIT NO.	DOOR CLEAR WIDTH	UNIT WIDTH FACTOR	DOOR CAPACITY	NOTES
EXIT E1	34"	0.2	170	EGRESS TO EXTERIOR, ON GRADE
TOTAL DOOR EXIT CAPACITY			170 > 4 PPL, COMPLIES	

TRAVEL DISTANCE

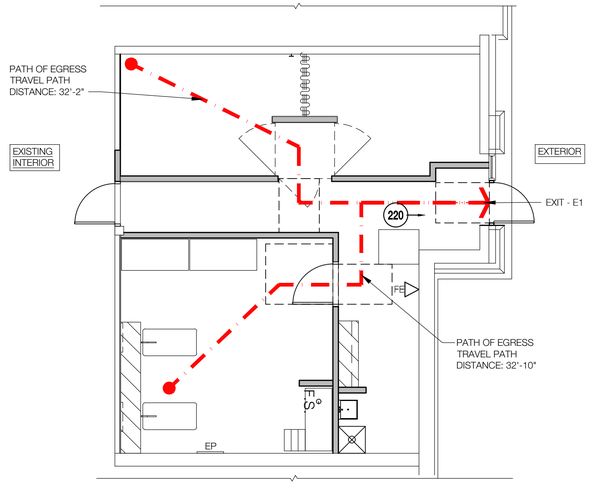
BC 1017.1 TABLE 1017.2
EXIT ACCESS TRAVEL DISTANCE

FLOOR/ LOCATION	OCCUPANCY GROUP	MAX. TRAVEL DISTANCE	MAX. PROPOSED TRAVEL DISTANCE	NOTES
FIRST	B-BUSINESS	300 LF	< 300 LF	SPRINKLERED, COMPLIES

CORRIDOR WIDTH

BC 1020.1 TABLE 1020.2
MINIMUM CORRIDOR WIDTH

FLOOR/ LOCATION	OCCUPANCY GROUP	MIN CORRIDOR WIDTH. REQ'D	MIN CORRIDOR WIDTH	NOTES
FIRST	B-BUSINESS	44 INCHES	> 44 INCHES	COMPLIES



1 LIFE SAFETY PLAN
SCALE: 3/16" = 1'-0"

SBLM

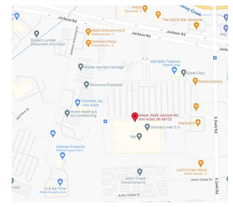
Owner
Best Friends Pet Care Inc.
535 CT AVE, SUITE 305
NORWALK, CT 06854
T: 860.803.2678
www.bestfriendspetcare.com

Architect
SBLM
33 Walt Whitman Rd. Suite 300A
Huntington Station, NY 11746
T: 631.683.5588 F: 631.683.5591
www.sblm.com

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Acertus Consulting Group, LLC
14817 West 95th Street
Lenexa, Kansas 66215
T: 913.322.5150 F: 913.322.5155
www.acertusgroup.com

Revisions
04/10/23 ISSUED FOR PERMIT/OWNER REVIEW

Key Plan



Seal & Signature



Project
BFM001 - Best Friends Pet - Ann Arbor
Store Location Number - #173
5645 Jackson Road, Ann Arbor, MI 48103

Drawing Date: 03/29/2023 *Project No. : BFM001*
Drawn By : WK *Checked By : NG*

Drawing Title
COVER SHEET

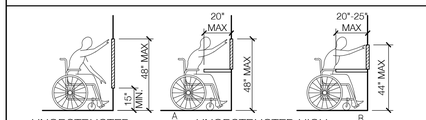
Drawing Number
A000

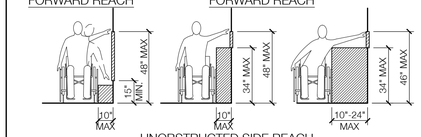
FILENAME:\\sblm.local\Data\Projects\2022\BFM001\Drawings\Current Set\BFM001_A000 - Cover Sheet.dwg | PLOTTED BY:Kwok, William | DATE: April 11, 2023

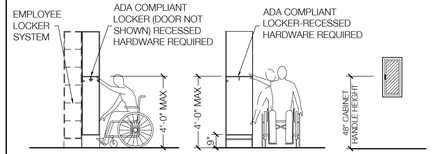
ARCH. DWG. ABBREVIATIONS AND SYMBOLS

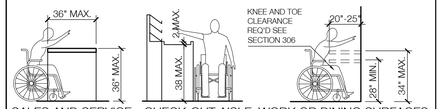
&	AND
L	ANGLE
@	AT
℄	CENTERLINE
#	POUND OR NUMBER
ABV	ABOVE
ACT.	ACOUSTICAL CEILING TILE
ADJ.	ADJUSTABLE
AHJ	AUTHORITY HAVING JURISDICTION
AL.	ALUMINUM
APPROX.	APPROXIMATE
ARCH.	ARCHITECTURAL
BD.	BOARD
BITUM.	BITUMINOUS
BLDG.	BUILDING
BLK.	BLOCK
BM.	BEAM
B.O.	BOTTOM OF
CAB.	CABINET
CEM.	CEMENT
CER.	CERAMIC
C.G.	CORNER GUARD
C.J.	CONTROL JOINT
CLG.	CEILING
CLR.	CLEAR
CMU	CONCRETE MASONRY UNIT
C.O.	CASED OPENING
COL.	COLUMN
CONC.	CONCRETE
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
COORD.	COORDINATE
CORR.	CORRIDOR
CNTR.	COUNTER
C.T.	CERAMIC TILE
CTR.	CENTER
D	DEPTH
DBL.	DOUBLE
DEPT.	DEPARTMENT
D.F.	DRINKING FOUNTAIN
DET.	DETAIL
DIA.	DIAMETER
DIM.	DIMENSION
DISP.	DISPENSER
DN.	DOWN
D.O.	DOOR OPENING
DR.	DOOR
DWG.	DRAWING
EA.	EACH
E.I.F.S.	EXTERIOR INSUL. & FINISH SYSTEM
E.J.	EXPANSION JOINT
EL.	ELEVATION
ELEC.	ELECTRICAL
EMER.	EMERGENCY
EQ.	EQUAL
EQMT.	EQUIPMENT
E.W.C.	ELECTRIC WATER COOLER
ETR	EXISTING TO REMAIN
EXST.	EXISTING
EXPO.	EXPOSED
EXP.	EXPANSION
EXT.	EXTERIOR
EXTR.	EXTRUDED
FABR.	FABRICATOR/ FABRICATED
F.C.	FURRING CHANNEL
F.D.	FLOOR DRAIN
FDN.	FOUNDATION
F.S.	FLOOR SINK
F.E.	FIRE EXTINGUISHER
F.E.C.	FIRE EXTINGUISHER CABINET
FIN.	FINISH
FIXT.	FIXTURE
FL.	FLOOR
FLASH.	FLASHING
FLUOR.	FLUORESCENT
F.O.C.	FACE OF CONCRETE
F.O.F.	FACE OF FINISH
F.O.M.	FACE OF MASONRY
F.O.S.	FACE OF STUDS
FRMG.	FRAMING
FRP.	FIBER GLASS REINFORCED POLYESTER
F.R.T.	FIRE RETARDANT TREATED
FT.	FOOT OR FEET
FTG.	FOOTING
FURR.	FURRING
GA.	GAUGE
GALV.	GALVANIZED
GL.	GLASS
GR.	GRADE
GYP.	GYPSUM
GYP BD.	GYPSUM WALLBOARD
H.B.	HOSE BIBB
H.C.	HOLLOW CORE
H.D.	HEAVY DUTY
HDWD	HARDWOOD
H.M.	HOLLOW METAL
HORIZ.	HORIZONTAL
HGT.	HEIGHT
HSS	HOLLOW STEEL SECTION
I.D.	INSIDE DIMENSION
I.G.	INSULATING, GLASS
INSUL.	INSULATION
INT.	INTERIOR
JAN.	JANITOR
JT.	JOINT
JHA	JURISDICTION HAVING AUTHORITY
LAM.	LAMINATE
LAV.	LAVATORY
LT.	LIGHT
MAX.	MAXIMUM
MDF	MEDIUM DENSITY FIBERBOARD
MECH.	MECHANICAL
MEMB.	MEMBRANE
MET.	METAL
MFR.	MANUFACTURER
MIN.	MINIMUM
MISC.	MISCELLANEOUS
M.O.	MASONRY OPENING
M.R.	MOISTURE RESISTANT
MTD.	MOUNTED
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
NOM.	NOMINAL
N.T.S.	NOT TO SCALE
O.A.	OVERALL
O.C.	ON CENTER
O.D.	OUTSIDE DIMENSION
O.H.	OVERHANG
OPP.	OPPOSITE
OTS	OPEN TO STRUCTURE
PL.	PLATE
P. LAM.	PLASTIC LAMINATE
PLAS.	PLASTER
PLUMB.	PLUMBING
PLYWD.	PLYWOOD
P.O.C.	POINT OF CONNECTION
PR.	PAIR
PR. TR.	PRESSURE TREATED
PT.	POINT
PTD.	PAINTED
Q.T.	QUARRY TILE
R.	RISER
RAD.	RADIUS
R.D.	ROOF DRAIN
REF.	REFERENCE
REFR.	REFRIGERATOR
REINF	REINFORCED
REQD	REQUIRED
RM.	ROOM
R.O.	ROUGH OPENING
R.T.U.	ROOF TOP UNIT (HVAC)
RWC	RAINWATER CONDUCTOR
S.C.	SOLID CORE
SCHED.	SCHEDULED
SHT.	SHEET
S.J.	SAWCUT JOINT
SIM.	SIMILAR
SPEC.	SPECIFICATION
SPECD.	SPECIFIED (SECTION)
S.ST.	STAINLESS STEEL
STD.	STANDARD
STL.	STEEL
STOR.	STORAGE
STRUC.	STRUCTURAL
SUSP.	SUSPENDED
TEL.	TELEPHONE
T&G	TONGUE AND GROOVE
T.G.	TEMPERED GLASS
T.G.P.	TEMPERED PRIVACY GLASS
T.G./SP.	TEMPERED SPANDREL GLASS
T.I.G.	TEMPERED INSULATING GLASS
THK.	THICK
T.O.	TOP OF
T.P.	TOP OF PAVEMENT
TS	TUBE STEEL
T.W.	TOP OF WALL
TYP.	TYPICAL
U.G.	UNDERGROUND
U.O.N.	UNLESS OTHERWISE NOTED
VCT	VINYL COMPOSITION TILE
VERT.	VERTICAL
VEST.	VESTIBULE
W/	WITH
WD	WOOD
W/O	WITHOUT
WP	WATERPROOF
WSCT.	WAINSCOT
A	COLUMN LINE IDENTIFICATION
## / A#.#	DETAIL/DWG.
## / A#.#	ELEVATION/DWG. BLDG. SECTION/DWG.
+0'-0" FIN FL	ELEVATION

ACCESSIBILITY STANDARDS

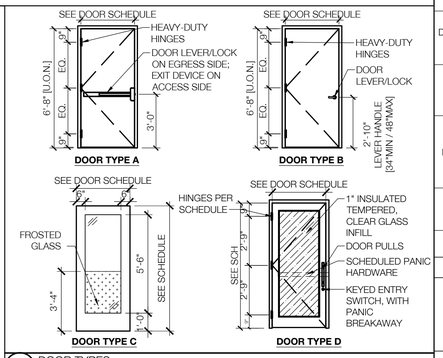








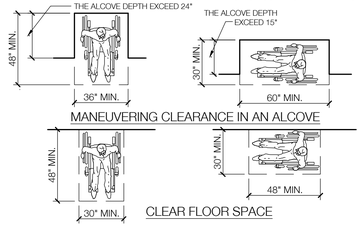
REACH RANGES & KNEE AND TOE CLEARANCES
N.T.S.



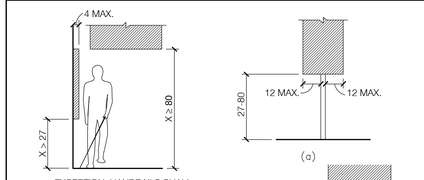
DOOR TYPES
1/4" = 1'-0"

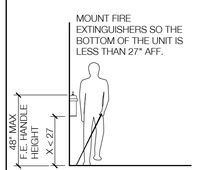
GENERAL ACCESSIBILITY NOTES:

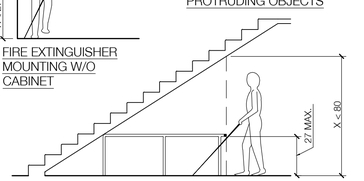
1. THE CONTRACTOR IS RESPONSIBLE TO CONSTRUCT AND INSTALL ALL ITEMS TO MEET THE ADA *2010 STANDARDS FOR ACCESSIBLE DESIGN*. THE CONTRACTOR SHALL ADVISE THE ARCHITECT AND OWNER'S SITE REPRESENTATIVE OF ALL LOCATIONS WHERE THERE IS A BARRIER TO COMPLETING THE WORK DIRECTED AND MEET THESE REQUIREMENTS.
2. ALL OPERABLE PARTS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE OPERABLE PARTS SHALL BE 5.0 POUNDS MAXIMUM.
3. ALL DIMENSIONS ARE MEASURED FROM FINISHED FACE OF SURFACE MATERIALS.



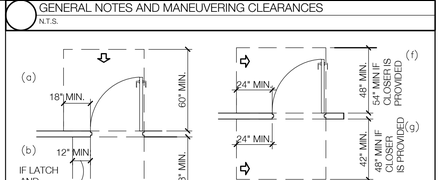
GENERAL NOTES AND MANEUVERING CLEARANCES
N.T.S.

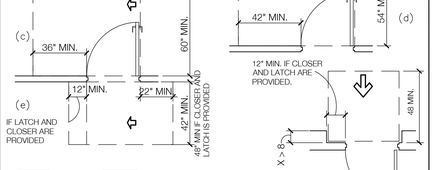




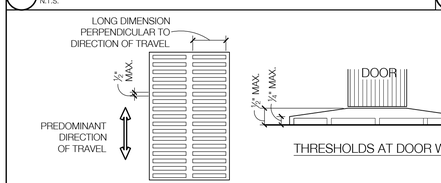


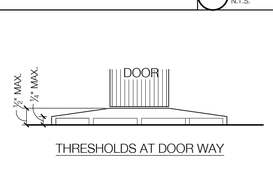
PROTRUDING OBJECTS
N.T.S.

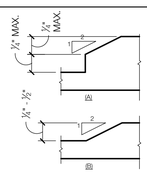


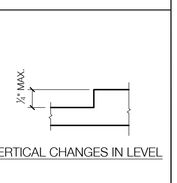


CLEARANCES AT HINGED DOORS
N.T.S.









FLOOR OR GROUND SURFACES
N.T.S.

DOOR & FRAME SCHEDULE

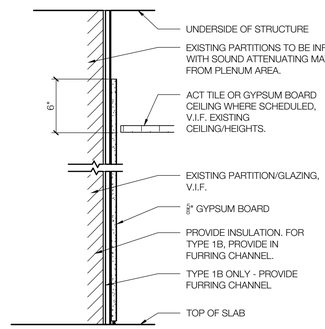
DOOR #	NAME	SIZE (W x H x THK)	TYPE	MAT.	FRAME MAT.	FRAME DETAIL HEAD	FRAME DETAIL JAMB	FRAME DETAIL TRESHOLD	HARDWARE SET NO.	NOTES
100	RECEPTION	3'-0" X 7'-0"	D	-	-	-	-	-	1, 2	PROVIDE STOREFRONT ADJACENT. SEE SCHEDULE. PROVIDE VON DUPRIN 360L DT CONTROL AND 33A-35A(F) SERIES RIM DEVICES (SCHOOLHOUSE FUNCTION) FOR LATCHING.
EX01	-	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	EXISTING SALVAGED DOOR, FRAME, AND HARDWARE TO BE REINSTALLED IN ITS ENTIRETY. PROVIDE THUMBTURN SCHLAGE B60626, PREP DOOR AND FRAME TO RECEIVE SCHEDULED THUMBTURN. COORDINATE WITH OWNER/BUILDING ON KEYING
101	GROOMING	3'-0" x 6'-8" x 1-3/4"	C	-	-	-	-	-	3	STOREFRONT DOOR W/ FROSTED GLASS. REFER TO MFR SPECIFICATION AND INSTALLATION. PROVIDE ALL HARDWARE.

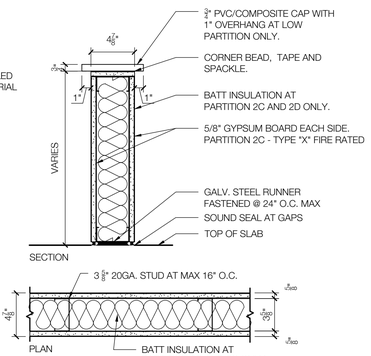
HARDWARE/STOREFRONT SCHEDULE

1	ENTRY W/ SIDELITE	YKK 35D ALUMINUM MEDIUM STILE DOOR SYSTEM	ALL DOOR HARDWARE TO BE SUPPLIED BY ALUMINUM STOREFRONT OPENING SUPPLIER AND CONTRACTOR. CONTRACTOR TO COORDINATE AND INSTALL IN ITS ENTIRETY. CONTRACTOR TO COORDINATE WITH OWNER FOR HARDWARE APPROVAL PRIOR TO ORDERING AND INSTALLATION. PROVIDE VON DUPRIN 360L DT CONTROL AND 33A-35A(F) SERIES RIM DEVICES (SCHOOLHOUSE FUNCTION) FOR LATCHING. PROVIDE SURFACE MOUNTED CLOSER UNI7500, 689, NO.	-
2	STOREFRONT	YKK YES 45 FI	ALUMINUM STOREFRONT FRAMING SYSTEM. CONTRACTOR TO COORDINATE WITH SITE CONDITIONS AND DIMENSIONS. CONTRACTOR TO COORDINATE AND INSTALL IN IS ENTIRETY PROVIDING ALL HARDWARE REQUIRED FOR INSTALLATION.	-
3	GROOMING	-	ALL DOOR HARDWARE TO BE SUPPLIED BY ALUMINUM STOREFRONT OPENING SUPPLIER AND CONTRACTOR. CONTRACTOR TO COORDINATE AND INSTALL IN ITS ENTIRETY. CONTRACTOR TO COORDINATE WITH OWNER FOR HARDWARE APPROVAL PRIOR TO ORDERING AND INSTALLATION.	-

DOOR CONSTRUCTION
1. DOOR WIDTHS AND HEIGHTS ARE INDICATED IN THE DOOR SCHEDULE, MEASURED INSIDE OF FRAME.
2. SEE DOOR HARDWARE SPECIFICATIONS SECTIONS FOR ADDITIONAL INFORMATION.
3. ALL DOOR PANEL ASSEMBLIES TO BE 18GA GALVANIZED, INSULATED INTERIOR, 16GA GALVANIZED, INSULATED EXTERIOR. ALL DOOR FRAMES TO BE 18GA GALVANIZED INTERIOR, 16GA GALVANIZED EXTERIOR UNLESS OTHERWISE NOTED. COLOR: PER ELEVATIONS AND FINISH SCHEDULE, UNLESS OTHERWISE NOTED.
5. IDENTIFY EACH DOOR AND FRAME WITH METAL UL, OR WARNOCK HERSEY INC. LABELS INDICATING APPLICABLE FIRE CLASS OF THE UNIT, WHERE REQUIRED.
6. PROVIDE STEEL REINFORCEMENT AT JAMBS, AS REQUIRED.
7. ALL STAINLESS STEEL DOORS TO HAVE DIRECTIONAL VERTICAL FINISH.
8. ALL DOORS AND FRAMES TO BE PAINTED, PT-1, AS SCHEDULED, U.O.N. CONTRACTOR TO COORDINATE AND CONFIRM WITH OWNER/LANDLORD FOR APPROVAL.

DOOR ASSEMBLY
1. ALL EGRESS DOORS SHALL BE READILY OPERABLE AT ALL TIMES, FROM SIDE FROM WHICH EGRESS IS TO BE MADE, WITHOUT THE USE OF KEY, SPECIAL KNOWLEDGE OR EFFORT.
2. OPENING FORCE FOR DOORS MAY NOT EXCEED 5 PSF, AS PER ACCESSIBILITY CODE REQUIREMENTS AND ENFORCED CODES.
3. ALL FIRE RATED DOORS SHALL BE SELF-CLOSING.
4. ALL DOORS LEADING TO A CORRIDOR/COMMON AREA SHALL BE SELF-CLOSING AS PER ENFORCED CODE OF AHJ. REFER TO DOOR SCHEDULE, HARDWARE SCHEDULE AND SPECIFICATIONS FOR SELF-CLOSING MECHANISM.
5. PROVIDE DOORS WITH 3/8" UNDERCUT/BOTTOM CLEARANCE, TO FINISH FLOOR, AS PER HVAC REQUIREMENTS. TYPICAL.
6. DOOR CLOSERS TO BE MOUNTED ON INTERIOR SIDE OF SPACE. ATTACH DOOR CLOSER TO DOOR FRAME AND ATTACH ARM ASSEMBLY TO DOOR, TYPICAL. ALL DOOR CLOSERS SHALL HAVE A MAXIMUM 5-LB PULL PER A.D.A.
7. KICK PLATES SHALL BE STAINLESS STEEL WITH US32D FINISH, 2" LESS THAN DOOR WIDTH, HEIGHT, AS INDICATED IN DOOR TYPES. MANUFACTURED BY ROCKWOOD OR APPROVED EQUAL, INSTALLED ON BOTH SIDES OF DOOR, UNLESS OTHERWISE NOTED.
8. COORDINATE ALL DOOR HARDWARE WITH ACOUSTICAL SEALS, SMOKE SEALS, WEATHER-STRIPPING, SILLS, AND ASTRAGALS, WHERE REQUIRED.
9. ALL HARDWARE MOUNTING SHALL MEET APPLICABLE ENFORCED HANDICAPPED ACCESSIBILITY CODES.
10. LOCKING HARDWARE TO USE STANDARD KEYWAYS AND CYLINDERS, UNLESS OTHERWISE NOTED.
11. ALL DOOR HARDWARE SHALL BE KEYED TO COORDINATE WITH EXISTING KEYING SYSTEM AND/OR AS PER DIRECTION OF OWNER'S REPRESENTATIVE.
12. ALL UTILITY AND EGRESS DOORS TO HAVE 3" X12" LATCH GUARD CENTERED VERTICALLY ON LATCH/STRIKE SIDE ON OUTSIDE OF DOOR, FINISH TO MATCH LOCKSET







1 FURRING PARTITION

1A FURRING PARTITION
SIMILAR TO FURRING PARTITION TYPE 1, EXCEPT WITH MOISTURE RESISTANT MOLD TOUGH CEMENT BOARD TO FIN. CEILING.

1B FURRING PARTITION
SIMILAR TO FURRING PARTITION TYPE 1, EXCEPT WITH FURRING CHANNEL.

2 NON-RATED PARTIAL HEIGHT PARTITION
PARTITION HEIGHT - 5'-6" A.F.F., NO INSULATION, SEE DETAIL W1/A213.

2A NON-RATED PARTIAL HEIGHT PARTITION
SIMILAR TO PARTITION TYPE 2D - EXCEPT 5'-6" A.F.F. COORDINATE WITH TILE HEIGHTS, SEE ELEVATIONS

2B NON-RATED FINISHED CEILING HEIGHT PARTITION
PARTITION HEIGHT - TO BOTTOM OF FINISHED CEILING HEIGHT, VERIFY PARTITION THICKNESS.

2C 1 HR-RATED FULL HEIGHT PARTITION-UL U419, V.I.F.
PARTITION HEIGHT, V.I.F. - BOTTOM OF EXISTING FIRE RATED ASSEMBLY & EXISTING RATING, SCHEDULED PARTITION TO MATCH. 4-7/8" PARTITION THICKNESS, V.I.F.

2D NON-RATED FINISHED CEILING HEIGHT PARTITION
PARTITION HEIGHT - TO BOTTOM OF FINISHED CEILING HEIGHT, VERIFY PARTITION THICKNESS. PROVIDE MOISTURE RESISTANT MOLD TOUGH CEMENT BOARD IN LIEU OF GYP. BD. ON GROOMING SIDE

PARTITION SCHEDULE
1-1/2" = 1'-0"

SBLM

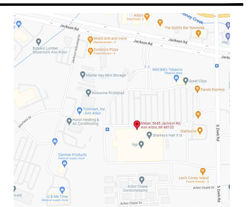
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Revisions
04/10/23 ISSUED FOR PERMIT/OWNER REVIEW

Key Plan



Seal & Signature



Project
BFM001 - Best Friends Pet - Ann Arbor
Store Location Number - #173
5645 Jackson Road, Ann Arbor, MI 48103

Drawing Date: 03/29/2023 *Project No. : BFM001*
Drawn By : WK *Checked By : NG*

Drawing Title
ABBREVIATIONS, ACCESSIBILITY COMPLIANCE, PARTITION & DOOR SCHEDULE

Drawing Number
A001

FILENAME:\\stm-bos-fil\Data\Projects\2022\BFA0001\Drawings\Current Set\BFM001_A001 - ACCESSIBILITY COMPLIANCE.dwg | PLOTTED BY:Kwok, William | DATE: April 11, 2023

BIDDING REQUIREMENTS

- THE BID SHALL BE MADE ON THE FORM OF PROPOSAL FURNISHED BY THE OWNER. SUBMIT BIDS VIA EMAIL CLEARLY MARKED WITH THE STORE NUMBER, CITY, AND STATE. BID PROPOSALS SHALL BE E-MAILED TO THE ATTENTION OF THE PROJECT'S CONSTRUCTION PROJECT ASSOCIATE.
- THE PROPOSAL SHALL BE SUBMITTED ON A STIPULATED SUM BASIS, PRESENTED BY ASSIGNING THE PREDETERMINED DIVISIONS LISTED ON THE BID FORM SHEET; SUMMATION OF THE STIPULATED SUM. THE BIDDER IS REQUIRED TO BID ON THE BASE BID ALL AND ALTERNATES. EACH ALTERNATE PRICE SHALL INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, AND SALES TAX.
- THE CONTRACTOR ACKNOWLEDGES THAT HE HAS SATISFIED HIMSELF AS TO THE NATURE, LOCATION, GENERAL CONDITIONS, PARTICULARLY THOSE BEARING UPON TRANSPORTATION, CODES, AND ORDINANCES, DISPOSAL HANDLING AND STORAGE OF MATERIALS. AVAILABILITY OF LABOR, TYPE OF PAYMENT AND FACILITIES REQUIRED TO DO SO PROPERLY ESTIMATING THE DIFFICULTY OF COST THERE OF. THE OWNER ASSUMES NO RESPONSIBILITY FOR ANY REPRESENTATIONS MADE BY ANY OF ITS AGENTS OR REPRESENTATIVES TO CONTRACTOR DURING OR PRIOR TO EXECUTION OF AGREEMENT, UNLESS SUCH REPRESENTATION AND OWNERS RESPONSIBILITY IS EXPRESSLY STATED IN AGREEMENT. NO ADDITION TO THE CONTRACT BID CAN BE ACCEPTED FOR CONDITIONS INCREASING THE COST IF SUCH CONDITIONS COULD HAVE BEEN OBSERVED BY THOROUGH SITE INSPECTION.
- ALL RFI'S REGARDING INTERPRETATIONS OR CLARIFICATIONS OF REQUIREMENTS SHALL BE DIRECTED TO THE PROJECT ARCHITECT/OWNER IN WRITING. WHEN DISCREPANCIES ARE DISCOVERED BETWEEN THE ARCHITECTURAL PLANS AND THE MEP PLANS, THE CONTRACTOR IS TO IMMEDIATELY SUBMIT A RFI TO THE ARCHITECT/OWNER FOR INTERPRETATION OF THE DOCUMENT'S INTENT.
- THE CONTRACT WILL BE AWARDED AS SOON AS POSSIBLE TO THE SELECTED BIDDER, AS DETERMINED BY THE OWNER AND AT HIS/HER SOLE DISCRETION. THE OWNER RESERVED THE RIGHT TO WAIVE ANY INFORMATION IN BIDS RECEIVED WHEN SUCH WAIVER IS IN THE INTEREST OF THE OWNER.
- THE PRICE FOR EXTRAS SHALL BE CALCULATED AT THE CONTRACTOR'S COST PLUS OVERHEAD AND PROFIT AT THE PERCENTAGE LIMITED BY THE OWNER.

SUBSTITUTIONS

- WHENEVER POSSIBLE THROUGH THE CONTRACT DOCUMENTS, THE MINIMUM ACCEPTABLE QUALITY OF WORKMANSHIP AND MATERIALS HAS BEEN DEFINED EITHER BY MANUFACTURER'S NAME AND CATALOG NUMBER OR BY REFERENCE TO RECOGNIZED INDUSTRY STANDARDS.
- UNLESS THE PRECISE COLOR AND PATTERN IS SPECIFICALLY DESCRIBED IN THE CONTRACT DOCUMENTS, WHENEVER A CHOICE OF COLOR OR PATTERN IS AVAILABLE IN A SPECIFIED PRODUCT, SUBMIT ACCURATE COLOR CHARTS AND PATTERN CHARTS TO THE PROJECT ARCHITECT/OWNER FOR HIS/HER REVIEW AND SELECTION. VERIFY PRIOR TO BIDDING, THAT ALL SPECIFIED ITEMS WILL BE AVAILABLE IN THE TIME FOR INSTALLATION DURING ORDERLY AND TIMELY PROGRESS OF THE WORK. IN THE EVENT THAT A SPECIFIED ITEM WILL NOT BE AVAILABLE, NOTIFY THE ARCHITECT/OWNER PRIOR TO SUBMITTING BID.
- THE ARCHITECT/OWNER WILL CONSIDER PROPOSALS FOR SUBSTITUTION OF MATERIALS, EQUIPMENT AND METHODS ONLY WHEN SUCH SPECIFIED MATERIALS ARE UNAVAILABLE OR METHODS ARE INAPPROPRIATE AS SPECIFIED.
- DO NOT SUBSTITUTE MATERIALS OR EQUIPMENT, UNLESS SUCH SUBSTITUTION HAS BEEN SPECIFICALLY APPROVED FOR THIS WORK BY THE ARCHITECT/OWNER.

SUBSTITUTION PROCEDURE

CONTRACTORS REQUESTING SUBSTITUTES OR "EQUALS" TO ITEMS ON PLANS OR IN SPECIFICATIONS MUST FOLLOW THE PROCEDURES SET FORTH BELOW:

1. REQUESTS FOR SUBSTITUTIONS MUST BE SUBMITTED TO THE ARCHITECT/OWNER BY THE CONTRACTOR. SUBCONTRACTORS ARE NOT TO SUBMIT TO THE ARCHITECT/OWNER DIRECTLY.
2. THE REQUEST FOR SUBSTITUTION MUST BE ACCOMPANIED BY A COMPLETE DESCRIPTION OF THE PROPOSED EQUIPMENT AND/OR MATERIAL SUCH AS CUT SHEETS OR SAMPLES TO ENABLE THE ARCHITECT/OWNER TO MAKE A THOROUGH COMPARISON WITH THE SPECIFIED ITEM.
3. THE ARCHITECT/OWNER WILL, UPON SUCH REQUEST, EVALUATE THE PROPOSED SUBSTITUTION ON THE BASIS OF ADVERTISED TECHNICAL PERFORMANCE, SUITABILITY, SIZE, OR OTHER CONSIDERATIONS AND INFORM THE CONTRACTOR OF HIS/HER DECISION.
4. IN ORDER TO FACILITATE THE EVALUATION PROCESS, THE CONTRACTOR SHOULD SUBMIT DOCUMENTATION TO SUPPORT THE PROPOSED SUBSTITUTION ON THE BASIS OF WARRANTIES, COST DIFFERENCE, AND EXPECTED SERVICE LIFE AS COMPARED TO THE SPECIFIED EQUIPMENT. PROCUREMENT TIME WILL NOT NORMALLY BE CONSIDERED AS JUSTIFICATION FOR SUBSTITUTION REQUESTS. IN THE EVENT OF PROCUREMENT TIME BEING THE FACTOR, THE CONTRACTOR SHALL PROVIDE THE ARCHITECT/OWNER WITH THE SPECIFIC INFORMATION ALLOWING THE ARCHITECT/OWNER TO EXPLORE THE DELAY AND TO ATTEMPT TO RESOLVE THE PROBLEM WITH A SUBSTITUTION.
5. ONLY AFTER THE ARCHITECT/OWNER ACCEPTS AND PROVIDES WRITTEN APPROVAL, WILL THE CONTRACTOR ASSUME AUTHORITY TO PROCEED WITH THE PROPOSED SUBSTITUTION.

GENERAL CONDITIONS

AGREEMENT

- THE DRAWINGS, SPECIFICATIONS, AND OTHER DOCUMENTS PREPARED BY THE DESIGN TEAM (ARCHITECT AND ENGINEER) ARE INSTRUMENTS OF THE DESIGN TEAM'S SERVICE THROUGH WHICH THE WORK TO BE EXECUTED BY THE CONTRACTOR IS DESCRIBED. NEITHER THE CONTRACTOR, SUBCONTRACTOR, SUB-SUBCONTRACTOR, MATERIAL OR EQUIPMENT SUPPLIER SHALL OWN OR CLAIM A COPYRIGHT IN THE DRAWINGS, SPECIFICATIONS, AND OTHER DOCUMENTS PREPARED BY THE ARCHITECT UNLESS OTHERWISE INDICATED, THE DESIGN TEAM SHALL BE DEEMED THE AUTHOR OF THEM AND WILL RETAIN ALL COMMON LAW, STATUTORY, AND OTHER RESERVED RIGHTS, IN ADDITION TO THE COPYRIGHT. THE DRAWINGS, SPECIFICATIONS, AND OTHER DOCUMENTS PREPARED BY THE ARCHITECT, AND COPIES THEREOF FURNISHED TO THE CONTRACTOR ARE FOR USE SOLELY WITH RESPECT TO THIS PROJECT.
- SHOULD THE DRAWINGS AND SPECIFICATIONS BE CONTRADICTORY, OR SHOULD THERE BE ERRORS IN EITHER, THE CONTRACTOR SHALL REFER THE MATTER TO THE ARCHITECT/OWNER FOR EXPLANATION AND SHALL ABIDE BY THEIR DECISION.
- THE CONTRACTOR SHALL TAKE FIELD MEASUREMENTS, VERIFY FIELD CONDITIONS, AND SHALL CAREFULLY COMPARE SUCH FIELD MEASUREMENTS AND CONDITIONS AND OTHER INFORMATION KNOWN TO THE CONTRACTOR WITH THE CONTRACT DOCUMENTS BEFORE COMMENCING ACTIVITIES. ERRORS, INCONSISTENCIES OR OMISSIONS DISCOVERED SHALL BE REPORTED TO THE ARCHITECT/OWNER AT ONCE.

PERMITS, FEES, AND NOTICES

- UNLESS OTHERWISE PROVIDED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL SECURE AND PAY FOR THE BUILDING PERMIT AND OTHER PERMITS AND GOVERNMENTAL FEES, LICENSES AND INSPECTIONS NECESSARY FOR PROPER EXECUTION AND COMPLETION OF THE WORK WHICH ARE CUSTOMARILY SECURED AFTER EXECUTION OF THE CONTRACT AND WHICH ARE LEGALLY ACQUIRED WHEN BIDS ARE RECEIVED OR NEGOTIATIONS CONCLUDED. A COPY OF SUCH SHALL BE FURNISHED TO OWNER.
- THE CONTRACTOR SHALL COMPLY WITH AND GIVE NOTICE AS REQUIRED BY LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF PUBLIC AUTHORITIES BEARING ON PERFORMANCE OF THE WORK.
- ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH ALL GOVERNING CODES, ORDINANCES, AND AUTHORITIES HAVING JURISDICTION INCLUDING BUT NOT LIMITED TO ACCESSIBILITY CODES.

WARRANTY

- THE CONTRACTOR WARRANTS TO OWNER THAT MATERIALS AND EQUIPMENT FURNISHED UNDER THE CONTRACT WILL BE OF GOOD QUALITY AND NEW UNLESS OTHERWISE REQUIRED OR PERMITTED BY THE CONTRACT DOCUMENTS, THAT THE WORK WILL BE FREE FROM DEFECTS NOT INHERENT IN THE QUALITY REQUIRED OR PERMITTED, AND THAT THE WORK WILL CONFORM WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. WORK NOT CONFORMING TO THESE REQUIREMENTS, INCLUDING SUBSTITUTIONS NOT PROPERLY APPROVED AND AUTHORIZED MAY BE CONSIDERED DEFECTIVE. WARRANTY SHALL COMMENCE UPON PROVIDING USE AND OCCUPANCY PERMITS TO OWNER AND SHALL BE IN EFFECT FOR THE PERIOD DESCRIBED IN THE CONTRACT BUT NO LESS THAN ONE YEAR.

INSURANCE

- THE CONTRACTOR SHALL PURCHASE AND MAINTAIN ALL FORMS OF INSURANCE SET FOR IN THE CONTACT AND REQUIRED BY THE CITY AND LANDLORD. A COPY OF THE INSURANCE CERTIFICATE IS TO BE PROVIDED TO OWNER FOR THEIR RECORDS.

DIVISION 1 -GENERAL REQUIREMENTS

- THE SCOPE OF WORK INCLUDES, BUT IS NOT LIMITED TO: CONSTRUCT A TEMPORARY ENCLOSURE AT THE INTERIOR ENTRY, REMOVING AND STORING OR DISPOSING OF EXISTING EQUIPMENT AS DIRECTED BY THE PLANS AND/OR THE ARCHITECT/OWNER., DEMOLISHING EXISTING STORE TO ORIGINAL DEMISING WALLS AND NEUTRAL LINES OF STOREFRONT (UNLESS DIRECTED OTHERWISE), CONSTRUCTION A NEW STORE BASED UPON THE WORK DESCRIBED IN THESE DOCUMENTS, REINSTALLING ORIGINAL AND NEW EQUIPMENT AND COMPLETE PROJECT CLOSEOUT, REMOVE TEMPORARY ENCLOSURES.

DIVISION 1 - GENERAL REQUIREMENTS (CONTINUED)

- PRIOR TO MAKING ANY VARIATIONS FROM THE DRAWINGS AND/OR SPECIFICATIONS THAT MAY BE DEEMED NECESSARY, THE CONTRACTOR SHALL GIVE THE ARCHITECT/OWNER WRITTEN NOTICE SPECIFYING THE VARIATION PROPOSED AND REQUESTING APPROVAL.
- CHANGES IN THE WORK MAY BE ACCOMPLISHED AFTER EXECUTION OF THE CONTRACT, AND WITHOUT INVALIDATING THE CONTRACT, BY CHANGE ORDER, CONSTRUCTION CHANGE DIRECTIVE OR ORDER FOR A MINOR CHANGE IN THE WORK.
- EACH CONTRACTOR OR SUB CONTRACTOR SHALL REVIEW THE EQUIPMENT SCHEDULE FOR ITEMS AFFECTING HIS PORTION OF THE WORK. HE SHALL INCLUDE IN HIS PROPOSAL ANY AND ALL LABOR OR MATERIAL AS REQUIRED TO PROVIDE THE COMPLETE PROJECT.
- THE CONTRACTOR IS TO BE FAMILIAR WITH ALL LANDLORD CRITERIA, SPECIAL WORKING CONDITIONS PERTAINING TO BARRICADES, NOISE, DUST, TRASH REMOVAL ETC. COORDINATE WITH THE LANDLORD. ANY WORK WHICH IS REQUIRED TO TAKE PLACE AT NIGHT OR DURING OFF HOURS SHALL BE VERIFIED WITH THE LANDLORD, AND ITS COST TO BE INCLUDED IN THE BID. THE CONTRACTOR IS TO PROVIDE SECURITY GUARD DURING OFF HOURS WORK FOR REMODELS ONLY.
- WITHIN FIVE (5) DAYS OF THE AWARD OF THE CONTRACT THE CONTRACTOR SHALL PROVIDE THE ARCHITECT/OWNER WITH A PROPOSED SCHEDULE INDICATING THE START AND COMPLETION DATES OF EACH STAGE OF THE WORK BY TRADE. AT THE SAME TIME THE CONTRACTOR SHALL ALSO SUBMIT TO THE ARCHITECT/OWNER DOCUMENTATION INDICATING ORDERING AND DELIVERY DATES OF CRITICAL ITEMS. ANY REQUESTS FOR ADDITIONAL TIME MUST BE SUBMITTED IN WRITING AND HAVE THE ARCHITECT/OWNER'S WRITTEN AUTHORIZATION
- THE CONTRACTOR SHALL MAINTAIN AT THE SITE A SET OF REPRODUCIBLE AND SPECIFICATIONS THAT SHALL BE UPDATED AS WORK PROGRESSES, INDICATING ANY CHANGES, DEVIATION OR ALTERATIONS AND SHALL BECOME "RECORD" DRAWINGS TO BE TURNED OVER TO OWNER AT THE COMPLETION OF THE WORK.
- THE CONTRACTOR SHALL DILIGENTLY PROSECUTE THE WORK TO COMPLETION AND SHALL AT ALL TIME GIVE HIS PERSONAL SUPERVISION AND ATTENTION THERE TO AND MAINTAIN A COMPETENT SUPERINTENDENT AND NECESSARY FOREMAN TO ACT FOR HIM. PROVIDE SUFFICIENT AND SATISFACTORY FORCES REQUIRED TO WORK TO ENSURE THE PROSECUTION OF THE WORK IN COMPLETION TO MEET AGREED UPON TURN OVER DATE, NEGLECT OR FAILURE TO FURNISH SUCH FORCES OR MEET REQUIRED DATES SHALL BE GROUNDS OF TERMINATION OF THE AGREEMENT, THE ARCHITECT/OWNER AT HISHER OPTION MAY FURNISH ADDITIONAL FORCE AT THE CONTRACTORS EXPENSE TO MEET THE SCHEDULE AND COMPLETION DATE AND/OR WITH LEGAL NOTICE RECOVER DAMAGES ARISING FROM SUCH DELAYS, INCLUDING BUT NOT LIMITED TO RENT CHARGES.
- THE WORK SHALL BE LAID OUT FROM DIMENSIONS SHOWN ON THE DRAWINGS ONLY. DO NOT SCALE THE DRAWINGS. THE CONTRACTOR SHALL WORK FROM THE MOST RECENT DRAWINGS SUPPLIED BY THE DESIGN DEPARTMENT. WORK SHALL BE PERFORMED BASED UPON LANDLORD AND CITY APPROVED PLANS ONLY AFTER WRITTEN DIRECTION BY THE ARCHITECT/OWNER.
- VERIFY ALL LINES, LEVELS, INTERFERENCES, FIELD DIMENSIONS AND CONDITIONS WITH THE DRAWINGS AND REPORT ANY ERRORS, OMISSIONS OR DISCREPANCIES TO THE ARCHITECT/OWNER PRIOR TO COMMENCING WORK. THE CONTRACTOR IS TO REPORT TO THE ARCHITECT/OWNER ANY VARIANCES OR FIELD CONDITIONS THAT MAY CAUSE CONSTRUCTION PROBLEMS PRIOR TO COMMENCING WORK. FAILURE TO REPORT TO THE ARCHITECT/OWNER FOR INTERPRETATION SUCH CONDITIONS OR COVERING OVER A CONDITION WHICH SUBSEQUENTLY CAUSES ANY DELAY OR ADDITIONAL COST SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, WHO SHALL BE HELD FOR ANY DAMAGES RESULTING THERE FROM.
- ANY CONFLICT BETWEEN DETAIL, DIMENSION, MATERIAL OR SPECIFICATION IS TO BE ADDRESSED TO THE ARCHITECT/OWNER FOR INTERPRETATION. ANY SUCH CONFLICT NOT SO RESOLVED AND CORRECTION IS LATER REQUIRED SHALL BE AT THE CONTRACTORS EXPENSE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS LAYOUT AND FOR THAT OF HIS SUB-TRADES. ALL DIMENSIONS INDICATED AS HOLD DIMENSIONS SHALL BE MAINTAINED. ANY VARIANCES FROM THESE WILL BE AT THE RISK OF THAT TRADE OR CONTRACTOR. VERIFY ANY EQUIPMENT CLEARANCES PRIOR TO LAYOUT, HE SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE TO OR ADDITIONAL COST FOR FAILURE TO DO SUCH LAYOUT. PRIOR TO COMMENCEMENT OF CONSTRUCTION THE CONTRACTOR SHALL VERIFY ALL OVERALL DIMENSIONS, COLUMN LOCATIONS AND REPORT THESE TO THE ARCHITECT/OWNER. THE CONTRACTOR SHALL COORDINATE THE WORK OF HIS FORCES WITH SUB-TRADES, LANDLORD AND OWNER. ANY FAILURE TO PROPERLY COORDINATE WHICH RESULTS IN ADDITIONAL COST INCLUDING ANY DEMOLITION OF CONSTRUCTION IN PLACE SHALL BE BOURNE BY THE CONTRACTOR.
- ALL MATERIALS SPECIFIED IS TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURES INSTRUCTIONS AND SPECIFICATIONS. CONTRACTOR IS TO CONSTRUCT THE PROJECT IN ACCORDANCE WITH THE DOCUMENTS. OWNER AND IT'S REPRESENTATIVES ARE THE SOLE INTERPRETER, ARBITER OF THE DOCUMENTS. ANY DEVIATION FROM THE INTENT OF THE DOCUMENTS, WITHOUT THE ARCHITECT/OWNER'S APPROVAL IS AT THE CONTRACTOR'S OWN RISK AND MAY RESULT IN CORRECTION AT THE CONTRACTOR'S EXPENSE (MATERIALS AND LABOR).

WORK BY OWNER

- AT THE OWNER'S REQUEST, SOME OR ALL OF THE EXISTING EQUIPMENT OR FIXTURES MAY BE SAVED AND REUSED AT THIS LOCATION. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE DE-INSTALL AND RE-INSTALL OF ALL ITEMS THAT ARE TO BE REUSED.
- ALL ELECTRICAL OUTLETS (IN FURNITURE), POS SYSTEM, AND TELEPHONE SYSTEM WILL BE SUPPLIED BY CONTRACTOR, COORDINATE WITH OWNER. THE CONTRACTOR IS TO BE ON SITE ON DATE OF DELIVERY TO INSTALL ALL FIXTURES AND FURNITURE UNLESS OTHER WISE INSTRUCTED BY THE ARCHITECT/OWNER.
- THE CONTRACTOR SHALL REVIEW WITH THE OWNER ALL ITEMS TO BE REUSED FROM AN EXISTING STORE AND/OR SUPPLIED BY OWNER. THE CONTRACTOR AGREES TO INSTALL OR REINSTALL SAME.
- THE CONTRACTOR SHALL REVIEW DOCUMENTS TO DETERMINE THE EXTENT OF ITEMS SUPPLIED BY THE OWNER.

TEMPORARY CONSTRUCTION ENCLOSURES

- THE CONTRACTOR SHALL ERECT AND MAINTAIN TEMPORARY ENCLOSURES (BARRICADES, SHROUDS, VISQUENE, ETC.) OVER OPENINGS AND SURROUNDING THE DEMISED TENANT SPACE. TEMPORARY ENCLOSURES SHALL BE DUST-PROOF PARTITIONS AS REQUIRED TO PREVENT SPREAD OF DUST, FUMES, AND SMOKE TO OTHER PARTS OF THE BUILDING. THE CONTRACTOR SHALL MEET WITH THE LANDLORD'S REPRESENTATIVE AND/OR THE ARCHITECT/OWNER TO DETERMINE THE EXTENT OF THE TEMPORARY ENCLOSURE. COSTS FOR SUCH TEMPORARY ENCLOSURES, MATERIAL AND/OR LABOR SHALL BE PAID FOR BY THE CONTRACTOR.
- IF THE LANDLORD PROVIDES CONSTRUCTION OF THE BARRICADE THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/OWNER ON HIS BID. IF THE CONTRACTOR FAILS TO INFORM THE ARCHITECT/OWNER IN WRITING THEN THE CONTRACTOR SHALL BE HELD TO HAVE INCLUDED THE BARRICADE IN HIS BID.
- UPON COMPLETION OF WORK AND FOLLOWING THE ARCHITECT/OWNER'S APPROVAL, THE CONTRACTOR SHALL DISMANTLE THE TEMPORARY ENCLOSURES AND DISPOSE OF AS REQUIRED. PATCH AND REPAINT AREAS (MATCHING ADJACENT MATERIALS) WHICH WERE DAMAGED BY TEMPORARY ENCLOSURE.

TEMPORARY FACILITIES

- ELECTRIC, WATER, TOILET, TELEPHONE, HEAT, AND ANY OTHER SERVICE REQUIRED IN THE PERFORMANCE OF THE CONTRACT SHALL BE FURNISHED AND PAID FOR BY THE CONTRACTOR UNLESS INDICATED OTHERWISE BY THE ARCHITECT/OWNER.

CLEANING

- THROUGHOUT THE PERIOD OF THEIR ON-SITE ACTIVITY, EACH CONTRACTOR AND SUBCONTRACTOR SHARES THE RESPONSIBILITY TO MAINTAIN THE BUILDING AND SITE IN AN ORDERLY AND CLEAN CONDITION.
- EACH CONTRACTOR SHALL PICK UP AND REMOVE ALL DEBRIS RESULTING FROM HIS/HER WORK AND SHALL SWEEP AND CLEAN HIS/HER SHARE OF THE GENERAL DUST AND DIRT CREATED BY WORKMEN AND GENERAL ACTIVITY. TRASH AND CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE CONSTRUCTION SITE ON A DAILY BASIS IN A MANNER APPROVED BY THE LANDLORD.
- THE CONTRACTOR SHALL MAKE PROVISIONS FOR THE STORAGE AND REMOVAL OF CONSTRUCTION DEBRIS AND SHALL PAY ALL COSTS AS THEY ARISE FOR SUCH PROVISIONS.
- THE CONTRACTOR SHALL SCHEDULE FINAL CLEANING TO ENABLE OWNER'S OPERATION TEAM TO ACCEPT A COMPLETELY CLEAN PROJECT.
- "CLEAN," FOR THE PURPOSE OF THIS ARTICLE, AND EXCEPT AS MAY BE SPECIFICALLY PROVIDED OTHERWISE, SHALL BE INTERPRETED MEANING THE LEVEL OF CLEANLINESS GENERALLY PROVIDED BY SKILLED CLEANERS USING COMMERCIAL QUALITY BUILDING MAINTENANCE EQUIPMENT AND MATERIALS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING ALL INTERIOR AND EXTERIOR SURFACES OF THE FIXTURES INCLUDING THE GLASS.
- DO NOT USE ANY SOLVENT OR ABRASIVES OF ANY TYPE TO CLEAN FIXTURES, PANELING, MOLDINGS OR TRIM WITHOUT FIRST OBTAINING APPROVAL OF THE ARCHITECT/OWNER. USE NO SCENTED CLEANING AGENTS.
- VISUALLY INSPECT INTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES, AND OTHER FOREIGN MATTER.
- REMOVE ALL TRACES OF SPLASHED MATERIAL FROM ADJACENT SURFACES.
- REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM FINISHED SURFACES. CLEAN GLASS INSIDE AND OUTSIDE.

DIVISION 1 - GENERAL REQUIREMENTS (CONTINUED)

PROJECT CLOSEOUT

- THE CONTRACTOR WILL COMPLY WITH PROCEDURES STATED IN THE AGREEMENT FOR ISSUANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION.
- A PUNCH LIST SHALL BE COMPLETED BY THE ARCHITECT/OWNER AND PRESENTED TO THE CONTRACTOR AS NECESSARY. UPON RECEIPT, THE CONTRACTOR SHALL HAVE FIFTEEN (15) DAYS TO COMPLETE THE LIST. THE PUNCH LIST IN NO WAY LIMITS THE WARRANTY.
- UPON COMPLETION OF THE PROJECT THE CONTRACTOR SHALL SUPPLY ALL CLOSE OUT DOCUMENTS TO OWNER WITH A TRANSMITTAL A TRANSMITTAL LETTER CONTAINING THE DATE, PROJECT NAME AND NUMBER, THE CONTRACTOR'S NAME AND ADDRESS, AND A LIST OF DOCUMENTS ENCLOSED. CLOSE OUT DOCUMENTS ARE TO BE MAILED/OVERNIGHT TO OWNER.

CLOSE OUT DOCUMENTS ARE TO INCLUDE:

- COPY OF CERTIFICATE OF OCCUPANCY, AS BUILDS, CERTIFICATE OF SUBSTANTIAL COMPLETION (AIA G704), FINAL LIEN WAIVER RELEASE FOR CONTRACTOR (AIA F706A), CONTRACTOR'S AFFIDAVIT MUST BE FILLED OUT AND NOTARIZED, FINAL LIEN WAIVER RELEASES FOR ALL SUBS AND SUPPLIERS, AIR BALANCE TEST REPORT, OWNER'S MANUALS FOR ALL EQUIPMENT INSTALLED BY CONTRACTOR, MAINTENANCE MANUALS FOR ALL EQUIPMENT INSTALLED BY CONTRACTOR, ALL WARRANTIES FOR EQUIPMENT INSTALLED BY THE CONTRACTOR, A LIST OF SUBCONTRACTORS AND SUPPLIERS, CERTIFICATE OF INSURANCE, PUNCH LIST SIGNED OFF BY THE ARCHITECT/OWNER.

ALL CLOSE OUT DOCUMENTS MUST BE SUPPLIED TO OWNER PRIOR TO REQUEST FOR FINAL PAYMENT.

DIVISION 2 - SELECTIVE DEMOLITION

- REFER TO DIVISION 1 REGARDING STORAGE OF OWNER'S EXISTING ITEMS.
- REFER TO DIVISION 1 REGARDING SCOPE OF WORK.
- REFER TO DIVISION 1 REGARDING TEMPORARY CONSTRUCTION ENCLOSURES.
- REFER TO DIVISION 1 REGARDING CLEANING.
- DO NOT INTERFERE WITH USE OF ADJACENT AREAS. MAINTAIN FREE AND SAFE PASSAGE TO AND FROM. CARRY OUT DEMOLITION WORK TO CAUSE AS LITTLE INCONVENIENCE TO ADJACENT OCCUPIED BUILDING AREAS AS POSSIBLE.

SELECTIVE DEMOLITION CONTINUED

- CEASE OPERATIONS AND NOTIFY ARCHITECT/OWNER IMMEDIATELY IF SAFETY OF STRUCTURE APPEARS TO BE ENDANGERED. TAKE PRECAUTIONS TO PROPERLY SUPPORT THE STRUCTURE. DO NOT RESUME OPERATIONS UNTIL SAFETY IS RESTORED.
- PROVIDE, ERECT, AND MAINTAIN BARRICADES, LIGHTING, GUARDRAILS, AND WARNING SIGNS AS REQUIRED BY APPLICABLE REGULATORY ADVISOR TO PROTECT OCCUPANTS OF BUILDINGS AND WORKERS.
- PLACE MARKERS TO INDICATE LOCATION OF DISCONNECTED SERVICES. IDENTIFY SERVICE LINES AND CAPPING LOCATIONS ON PROJECT RECORD DOCUMENTS.
- REMOVE SALVAGE AND DEBRIS FROM THE DEMISED SPACE AS IT ACCUMULATES. DO NOT SELL, BURN, OR OTHERWISE DISPOSE OF SALVAGE AND DEBRIS ON THE SITE UNLESS DIRECTED OTHERWISE BY OWNER.
- MAINTAIN EXITING REQUIREMENTS AT ALL TIMES.
- MAINTAIN SECURITY OF EXISTING BUILDINGS WITH TEMPORARY DOORS, CLOSER, AND LOCKSET. WHERE AN OPENING IS MADE IN A RATED WALL, PROVIDE TEMPORARY DOOR, FRAME, AND HARDWARE WITH APPROPRIATE RATING FOR WALL CONSTRUCTION.
- EXECUTE DEMOLITION WORK TO ENSURE SAFETY OF PERSONS, AND ADJACENT PROPERTY AGAINST DAMAGE BY SETTLEMENT, FALLING DEBRIS OR OTHER CAUSES IN CONNECTION WITH THIS WORK.
- DEMOLISH CONCRETE AND MASONRY IN SMALL SECTIONS.
- REPAIR ALL DEMOLITION PERFORMED IN EXCESS OF THAT REQUIRED.
- REMOVE DEMOLISHED MATERIALS, TOOLS, AND EQUIPMENT FROM SITE UPON COMPLETION OF WORK. LEAVE SITE IN AN ACCEPTABLE CONDITION.

DIVISION 3 - CONCRETE

- INSTALL CAST-IN-PLACE CONCRETE SLAB LEVEL WITH ADJACENT CONCRETE SURFACES UNLESS DIRECTED OTHERWISE. ALL CONCRETE SLABS SHALL BE PLANE WITH A MAXIMUM TOLERANCE OF 1/8" IN 10" AND SHALL NOT VARY AT ANY POINT MORE THAN 1/8" ABOVE OR BELOW THE PLANE SURFACE.
- PROTECT FRESHLY DEPOSITED CONCRETE FROM PREMATURE DRYING AND EXCESSIVELY HOT OR COLD TEMPERATURES AND MAINTAIN WITH MINIMAL MOISTURE LOSS AT A RELATIVELY CONSTANT TEMPERATURE FOR A PERIOD OF TIME NECESSARY FOR THE EARLY HYDRATION OF THE CEMENT AND PROPER HARDENING OF THE CONCRETE.
- THE CONTRACTOR WILL COORDINATE WITH THE LANDLORD ANY AND ALL REQUIREMENTS FOR CONCRETE FILL INS AND ENSURE THAT THEY ARE MET.

DIVISION 4 - MASONRY

- WHERE MASONRY WORK IS REQUIRED THE CONTRACTOR WILL ENSURE THAT ALL NEW MASONRY AND MORTAR MATCHES THE EXISTING STRUCTURE. COORDINATE WITH THE ARCHITECT/OWNER AND LANDLORD TO ENSURE THAT ALL MATERIALS MATCH.

DIVISION 5 - METALS

- ALL METAL STUDS ARE TO BE COLD FORMED 18 GAUGE METAL UNLESS OTHER WISE NOTED.
- PROVIDE AND INSTALL ALL FABRICATED METAL COMPONENTS REQUIRED FOR ALL SECTIONS OF WORK.
- ALL HVAC STRUCTURAL SUPPORT IS TO BE DESIGNED BY A STRUCTURAL ENGINEER (COMMISSIONED BY OWNER). CONTRACTOR WILL SUPPLY SHOP DRAWINGS FROM STEEL MANUFACTURER TO ARCHITECT/OWNER FOR HIS/HER FILES.

DIVISION 6 - WOOD AND PLASTICS

ROUGH CARPENTRY

- PROVIDE AND INSTALL ALL ROUGH CARPENTRY ITEMS AS REQUIRED FOR A COMPLETE AND PROPER INSTALLATION AND AS REQUIRED BY CODE. PROVIDE FIRE RETARDANT TREATED WOOD WHEN REQUIRED BY CODE AND AT ALL CONCEALED LOCATIONS.
- TREATED MATERIAL SHALL BE LABELED TO INDICATE PRESSURE TREATMENT. TREATMENT SHALL BE FOR CLASS "A" FLAME SPREAD RATING.

FINISH CARPENTRY

- FURNISH AND INSTALL ALL ITEMS NOT INDICATED IN THE OWNER'S FIXTURE PACKAGE, INCLUDING BUT NOT LIMITED TO STORAGE SHELVING, WALL CAPS, SOLID CORE WOOD DOORS, AND ALL ACCESSORIES FOR A COMPLETE AND PROPER INSTALLATION.

FIXTURES

- INSTALL OWNER FURNISHED FIXTURE PACKAGE FROM FIXTURE MANUFACTURER. COORDINATE WITH THE ARCHITECT/OWNER FOR A COMPLETE LIST OF ALL ITEMS DELIVERED ON THE TRUCK.

DIVISION 7 - THERMAL AND MOISTURE

BUILDING INSULATION

- PROVIDE AND INSTALL BUILDING INSULATION AT ALL EXTERIOR AND DEMISING WALLS WHERE NOT ALREADY PROVIDED, U.O.N. PROVIDE INJECTED FOAM INSULATION TO 6" ABOVE CEILING INSULATION AT ALL EXISTING PARTITIONS BETWEEN AREA OF WORK AND OTHER TENANTS. TAPE AND SEALER AS RECOMMENDED BY MANUFACTURER OF INSULATION WITH FIRE RESISTIVE AND PERM RATING EQUAL TO INSULATION. INSULATION IS TO HAVE AN R VALUE OF 19, A UL FLAME SPREAD OF 25, AND A SMOKE-DEVELOPED INDEX OF 450.
- SOUND BATT INSULATION IS TO BE INSTALLED IN ALL NEW PERIMETER WALLS AND ABOVE CEILING. INSULATION IS TO HAVE AN R VALUE OF 13, A UL FLAME SPREAD OF 25, AND A SMOKE-DEVELOPED INDEX OF 450.

ROOFING REPAIR

- COORDINATE WITH LANDLORD'S ROOFER ANY REPAIRS NEEDED TO BE MADE TO EXISTING ROOF DUE TO INSTALLATION OF NEW HVAC UNITS.

SEALANTS AND CAULKING

- PROVIDE AND INSTALL ALL REQUIRED SEALANTS, CAULKS AND ACCESSORIES FOR ALL COMPONENTS OF WORK TO BE PERFORMED. CONTRACTOR IS TO ENSURE THAT ALL ITEMS MEET THE REQUIREMENTS SET FORTH IN THE LOCAL CODES.
- WHEN NECESSARY THE CONTRACTOR IS TO ENSURE THAT APPROVED FIRE CAULKS, SEALANTS, OR FOAMS ARE USED FOR ALL PENETRATIONS IN DEMISING WALLS.

DIVISION 8 - DOORS, FRAMES, WINDOWS, AND HARDWARE

METAL DOORS AND FRAMES

- PROVIDE LABELED AND/OR NON-LABELED FRAMES IN THE DIMENSIONS SHOWN ON DRAWINGS. INTERIOR FRAMES ARE TO BE 18 GAUGE AND EXTERIOR FRAMES ARE TO BE 16 GAUGE GALVANIZED.
- FRAMES SHALL BE FACTORY SHOP PRIMED.

DIVISION 8 - DOORS, FRAMES, WINDOWS, AND HARDWAR

COMcheck Software Version 4.1.5.5

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2015 IECC
Project Title:
Project Type: New Construction

Construction Site: Owner/Agent: Designer/Contractor:

Additional Efficiency Package(s)

Credits: 1.0 Required 1.0 Proposed
Reduced Lighting Power, 1.0 credit

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-Leased Space (Retail)	721	1.13	818
		Total Allowed Watts =	818

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
1-Leased Space (Retail)				
LED 1: Other:	1	8	40	320
			Total Proposed Watts =	320

Interior Lighting PASSES: Design 61% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2015 IECC requirements in COM*check* Version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Jeffrey Kramer - Electrical Designer — Name - Title
Signature
04/06/2023 — Date

COMcheck Software Version 4.1.5.5

Mechanical Compliance Certificate

Project Information

Energy Code: 2015 IECC
Project Title:
Location: Ann Arbor, Michigan
Climate Zone: 5a
Project Type: New Construction

Construction Site: Owner/Agent: Designer/Contractor:

Additional Efficiency Package(s)

Credits: 1.0 Required 1.0 Proposed
Reduced Lighting Power, 1.0 credit

Mechanical Systems List

Quantity	System Type & Description
1	AHU/ACC-1 (Single Zone): Split System Heat Pump Heating Mode: Capacity = 12 kBtu/h, Proposed Efficiency = 12.00 HSPF, Required Efficiency = 8.20 HSPF Cooling Mode: Capacity = 12 kBtu/h, Proposed Efficiency = 22.50 SEER, Required Efficiency: 14.00 SEER Fan System: AHU-1 -- Compliance (Motor nameplate HP method) : Passes Fans: FAN 1 Supply, Constant Volume, 380 CFM, 1.0 motor nameplate hp, 0.0 fan efficiency grade

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2015 IECC requirements in COM*check* Version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Cameron Shanks - Mechanical Designer — Name - Title
Signature
04/06/2023 — Date

COMcheck Software Version 4.1.5.5

Inspection Checklist

Energy Code: 2015 IECC

Requirements: 0.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C103.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C406 [PR9][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C403.2.4.5; C403.2.4.6 [FO9][3]	Snow/ice melting system sensors for future connection to controls. Freeze protection systems have automatic controls installed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6][3]	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C404.6.3 [PL7][3]	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C404.7 [PL8][3]	Water distribution system that pumps water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe is a demand recirculation water system. Pumps within this system have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41][3]	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.13 [ME71][2]	Unenclosed spaces that are heated use only radiant heat.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.3 [ME55][2]	HVAC equipment efficiency verified.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Mechanical Systems list for values.*
C403.2.6.1 [ME59][1]	Demand control ventilation provided for spaces >500 ft2 and >25 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.6.2 [ME115][3]	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.7 [ME57][1]	Exhaust air energy recovery on systems meeting Table C403.2.7(1) and C403.2.7(2).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.8 [ME116][3]	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.9 [ME60][2]	HVAC ducts and plenums insulated. Where ducts or plenums are installed in or under a slab, verification may need to occur during Foundation Inspection.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.9 [ME10][2]	Ducts and plenums sealed based on static pressure and location.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.9.1.3 [ME11][3]	Ductwork operating >3 in. water column requires air leakage testing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.4.2.3.2.2 [ME122][3]	Open- or closed circuit cooling towers have a separate heat exchanger to isolate the cooling tower from the heat pump loop, and heat loss is controlled by shutting down the circulation pump on the cooling tower loop.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.4.4.6 [ME110][3]	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Mechanical Systems list for values.*

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

SBLM

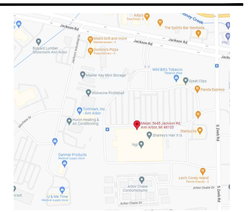
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Revisions
04/10/23 ISSUED FOR PERMIT/OWNER REVIEW

Key Plan


Jackson Rd
Maple Rd
Dixboro Rd
Arbor Hills Shopping Center
Arbor Hills Blvd
Arbor Hills Dr
Stadium Blvd
Plymouth Rd
Ann Arbor Municipal Golf Course
Ann Arbor Municipal Golf Course Clubhouse
Ann Arbor Municipal Golf Course Pro Shop
Ann Arbor Municipal Golf Course Practice Area
Ann Arbor Municipal Golf Course Practice Area Clubhouse
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Ann Arbor Municipal Golf Course Practice Area

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C408.2.2.1 [ME53][3]	Air outlets and zone terminal devices have means for air balancing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.5, C403.5.1, C403.5.2 [ME123][3]	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2..	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.1 [EL15][1]	Lighting controls installed to uniformly reduce the lighting load by at least 50%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1 [EL18][1]	Occupancy sensors installed in required spaces.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1, C405.2.2.3 [EL23][2]	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.2.1 [EL22][2]	Automatic controls to shut off all building lighting installed in all buildings.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.3 [EL16][2]	Daylight zones provided with individual controls that control the lights independent of general area lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.3, C405.2.3.1, C405.2.3.2 [EL20][1]	Primary sidelighted areas are equipped with required lighting controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.3, C405.2.3.1, C405.2.3.3 [EL21][1]	Enclosed spaces with daylight area under skylights and rooftop monitors are equipped with required lighting controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.4 [EL4][1]	Separate lighting control devices for specific uses installed per approved lighting plans.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.4 [EL8][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.3 [EL6][1]	Exit signs do not exceed 5 watts per face.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C303.3, C408.2.5.3 [FI8][3]	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.2 [FI27][3]	HVAC systems and equipment capacity does not exceed calculated loads.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.4.1 [FI47][3]	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.4.1.1 [FI42][3]	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.4.1.2 [FI38][3]	Thermostatic controls have a 5 °F deadband.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.4.1.3 [FI20][3]	Temperature controls have setpoint overlap restrictions.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.4.2 [FI39][3]	Each zone equipped with setback controls using automatic time clock or programmable control system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.4.2.1, C403.2.4.2.2 [FI40][3]	Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.4.2.3 [FI41][3]	Systems include optimum start controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.4.1 [FI18][1]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*
C408.2.1 [FI28][1]	Commissioning plan developed by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.2.3.1 [FI31][1]	HVAC equipment has been tested to ensure proper operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.3.2 [FI10][1]	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.4 [FI29][1]	Preliminary commissioning report completed and certified by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.5.1 [FI7][3]	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.5.1 [FI16][3]	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.5.3 [FI43][1]	An air and/or hydronic system balancing report is provided for HVAC systems.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.5.4 [FI30][1]	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.3 [FI33][1]	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

FILENAME:K:\Projects\2022\BFM001\Drawings\Current Set\BFM001 A004 - Comcheck.dwg | PLOTTED BY:Kwok, William | DATE: April 11, 2023

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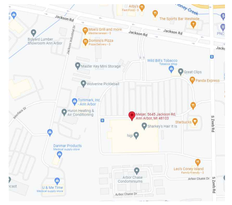
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Best Friends Pet Care Inc.
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NORWALK, CT 06854
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www.bestfriendspetcare.com

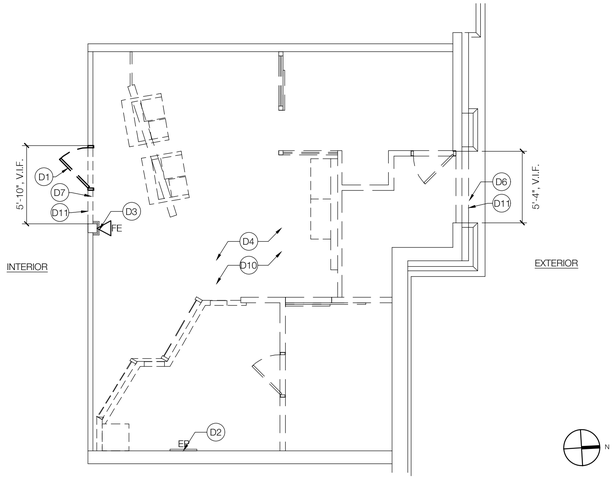
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Revisions
04/10/23 ISSUED FOR PERMIT/OWNER REVIEW

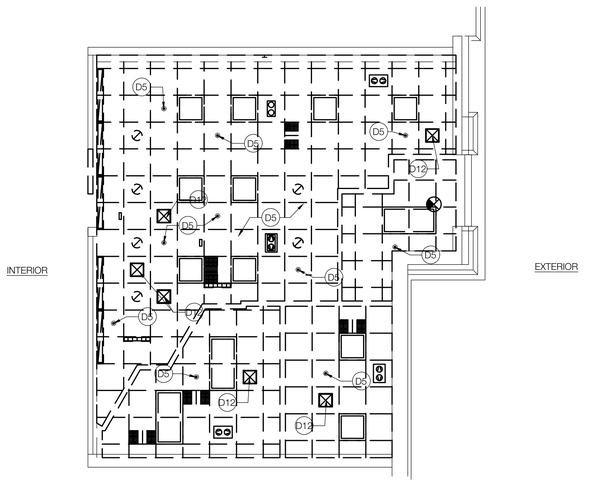
Key Plan


Jackson Rd
Jackson Rd
Jackson Rd
Jackson Rd
Maple Rd
Maple Rd
Wagner Rd
Wagner Rd
Zeeb Rd
Zeeb Rd
Dixboro Rd
Dixboro Rd
Arbor Hills Shopping Center
The Sports Bar Ann Arbor
Dunkin'
Arbor Hills Nursery & Landscaping
Arbor Hills Storage
Arbor Hills Tennis Club
Arbor Hills Crossing
Petco
Pet Supplies Plus
Ann Arbor Nursery & Landscaping
Ann Arbor Dodge
Ann Arbor Chrysler Jeep
Ann Arbor Hyundai
Ann Arbor Kia
Ann Arbor Subaru
Ann Arbor Toyota
Ann Arbor Volkswagen
Ann Arbor Honda
Ann Arbor Acura
Ann Arbor Buick GMC
Ann Arbor Chevrolet
Ann Arbor Ford
Ann Arbor Lincoln
Ann Arbor Mazda
Ann Arbor Mitsubishi
Ann Arbor Nissan
Ann Arbor Volvo
Ann Arbor Cadillac
Ann Arbor Chrysler
Ann Arbor Jeep
Ann Arbor Dodge
Ann Arbor RAM



1 DEMOLITION PLAN

SCALE: 3/16" = 1'-0"



3 DEMOLITION RCP

SCALE: 3/16" = 1'-0"



3 DEMOLITION RCP

SCALE: 3/16" = 1'-0"

SYMBOL	DESCRIPTION
	EXISTING PARTITION TO BE REMOVED
	EXISTING PARTITION TO REMAIN
	EXISTING DOOR, FRAME, AND ASSOCIATING HARDWARE TO BE REMOVED
	EXISTING DOOR TO REMAIN
FE	FIRE EXTINGUISHER
XX	KEY NOTE
	AREA NOT IN SCOPE
D1	EXISTING DOOR, FRAME, AND HARDWARE TO BE REMOVED AND SALVAGED FOR FUTURE REINSTALLATION. CONTRACTOR TO PREP AND COORDINATE NEW OPENING/LOCATION. PATCH AND REPAIR TO MATCH ADJACENT.
D2	EXISTING ELECTRICAL PANEL TO REMAIN AND PROTECTED. REFER TO ENGINEERING DRAWINGS.
D3	STRIP DOWN TO EXISTING COLUMN. PREP SURFACE TO BE PAINTED.
D4	ALL EXISTING UNUSED OUTLETS AND COVER PLATES TO BE REMOVED. PATCH, REPAIR, AND PREP SURFACE FOR SCHEDULED FINISH. V.I.F. ALL SITE CONDITIONS.
D5	EXISTING SPRINKLER HEADS TO REMAIN AND PROTECTED, TYP. THOUGHOUT. V.I.F. ALL SITE CONDITION, LOCATION, AND QUANTITIES.
D6	EXISTING STOREFRONT AND EXTERIOR PARTITION TO BE REMOVED IN ITS ENTIRETY. EXISTING EXTERIOR SILL TO BE PARTIALLY REMOVED. PATCH AND REPAIR TO MATCH EXISTING CONSTRUCTION ASSEMBLY AND PREP FOR SCHEDULED DOOR AND STOREFRONT. SEE 3/DM101 DEMO ELEVATION.
D7	EXISTING PARTITION TO BE PARTIALLY DEMO'D FOR REINSTALLATION OF SALVAGED DOOR, FRAME, AND HARDWARE. CONTRACTOR TO COORDINATE, PATCH AND REPAIR TO MATCH EXISTING.
D8	EXISTING FIRE EXTINGUISHER TO BE REMOVED AND RELOCATED. REFER TO CONSTRUCTION PLAN. EXISTING COLUMN TO BE PREPPED TO RECEIVED SCHEDULED FINISH.
D9	EXISTING CURB TO BE PARTIALLY REMOVED. PATCH AND REPAIR TO MATCH EXISTING ADJACENT/EXISTING CONSTRUCTION ASSEMBLY. V.I.F. EXISTING SITE CONDITIONS AND LOCATIONS.
D10	EXISTING FLOOR AND WALL BASE FINISH TO BE REMOVED IN ITS ENTIRETY. PATCH, REPAIR, AND PREP SURFACES TO RECEIVE SCHEDULED FINISH.
D11	ENSURE TRANSITION BETWEEN EXISTING FLOOR FINISH AND PROPOSED SCHEDULE FLOOR FINISH ARE LEVEL. PROVIDE TRANSITION STRIPS AS REQUIRED. COORDINATE THRESHOLDS AT DOORS.
D12	EXISTING HVAC SUPPLY TO BE REMOVED AND RELOCATED. SEE ENGINEERING DRAWINGS. COORDINATE WITH ALL CEILING ITEMS, SITE CONDITIONS, LOCATIONS, ETC.

- DEMOLITION LEGEND & KEY NOTE

1. THE STRUCTURAL SYSTEMS AND BUILDING ENVELOPE COMPONENTS OF THIS EXISTING STRUCTURE SHALL REMAIN INTACT EXCEPT IN LIMITED CASES AS NOTED ON THE DRAWINGS ANY MODIFICATIONS TO SUCH SYSTEM AND COMPONENTS NOT NOTED ON THE DRAWINGS SHALL BE APPROVED BY THE ARCHITECT AND THE OWNER PRIOR TO COMMENCING THE WORK.
2. CONTRACTOR SHALL VISIT THE SITE AND BECOME GENERALLY FAMILIAR WITH THE EXISTING CONDITIONS PRIOR TO COMMENCING THE WORK.
3. CONTRACTOR SHALL NOTIFY THE OWNER OF ANY AND ALL DISCREPANCIES BETWEEN THE DEMOLITION DRAWING AND THE SPECIFICATION AND ACTUAL CONDITIONS PRIOR THE TO PROCEEDING WITH THE WORK.
4. REMOVE ALL EXISTING CONSTRUCTION, EQUIPMENT, AND FINISHES NECESSARY FOR COMPLETION OF THE WORK AS DEPICTED ON THE DRAWINGS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR DEMOLITION OF EXISTING MECHANICAL, ELECTRICAL, AND PLUMBING WORK FOR THE PROJECT NOT SHOWN TO BE REUSED IN NEW WORK.
6. PROVIDE TEMPORARY DUSTPROOF PARTITIONS TO PROTECT ALL EXISTING AREAS FROM DAMAGE DUE TO DEMOLITION OR NEW CONSTRUCTION.
7. PATCH AND REPAIR ALL SURFACES TO MATCH EXISTING SURFACES WHERE ITEMS ARE REMOVES OR ALTERED. FIELD VERIFY EXTENT OF REQUIRED REPAIRS.
8. CONTRACTOR SHALL PATCH, REPAIR AND PAINT/REFINISH SURFACES AND BUILDING ELEMENTS DAMAGED BY ADDITION OR REMOVAL OF MECHANICAL.
9. DISPOSAL OF DEMOLISHED MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR. COORDINATE ITEMS TO BE SALVAGED BY OWNER.
10. PROTECT ALL ITEMS NOT NOTED TO BE DEMOLISHED .FIELD TO BE VERIFY ALL CONDITIONS AND COORDINATE ALL WORK WITH OWNER TO MINIMIZE, DISRUPTION TO EXISTING FACILITIES OPERATIONS .
11. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITIES PRIOR TO START OF DEMOLITION PROJECT, UTILITIES TO REMAIN SERVICES.
12. ALL STRUCTURAL COLUMNS TO REMAIN. CONTRACTOR TO CONFIRM AND VERIFY EXISTING CONDITIONS.
13. CONTRACTOR SHALL REMOVE ALL EXISTING LIGHTING FIXTURES, POWER DEVICES, WIRING, FIRE PROTECTION PLUMBING FIXTURES,PIPING, HVAC UNITS, REFRIGERANT RECAPTURE, EXHAUST FANS, DUCTWORK, ETC., NOT USED ON THIS PROJECT, U.O.N. CONTRACTOR MUST VERIFY WITH THE OWNER ALL PRESUMED ABANDONED EQUIPMENT, PIPE, DUCTWORK AND EQUIPMENT PRIOR TO REMOVAL. PENETRATION THRU ROOF SHALL BE REMOVED AND THE ROOF PATCHED UNLESS NOTED FOR REUSE OR RECONFIGURATION PLANS. ALL EXTRANEOUS ITEMS IN THE BUILDING OR ON THE ROOF NOT APPLICABLE TO THE NEW WORK OR PART OF AN ACTIVE/SYSTEM MUST BE REMOVED AND ROOF/ WALL/ FLOOR PATCHED/REPAIRED TO MATCH THE EXISTING STRUCTURE. EXISTING ABANDONED PIPES, DUCTS OR EQUIPMENT IN THE FLOOR EMBEDDED IN CONCRETE OR OTHERWISE INACCESSIBLE ARE TO BE CUT OFF AND SEALED BELOW OR WITHIN FLOOR OR WALL LEVEL WHEN THEY ARE NOT REFUSED IN THE PROJECT.
14. REMOVE HANGERS AND SUPPORTS WHERE CEILING, DUCTWORK, PIPING AND /OR EQUIPMENT ARE REMOVED AND ARE NOT BEING REUSED FOR THE NEW INSTALLATION.
15. INSPECT EXISTING EQUIPMENT TO REMAIN TO VERIFY THAT EQUIPMENT IS OPERATING PROPERLY. NOTIFY OWNER OF DAMAGED AND/OR MALFUNCTIONING COMPONENTS.
16. THE EXISTING CONDITIONS INDICATED ON THE DRAWINGS ARE TAKEN FROM THE BEST INFORMATION AVAILABLE FROM VISUAL SITE INSPECTION AND ARE NOT TO BE CONSIDERED "AS BUILT" CONDITIONS. CONTRACTOR TO VERIFY ALL ACTUAL EXISTING CONDITIONS AT THE PROJECT SITE AND PERFORM WORK AS REQUIRED TO MEET THE EXTENT OF THE WORK INDICATED.
17. DISCONNECT AND REMOVE ALL DUCTWORK, PIPING, WIRING, AND CONDUIT THAT BECOMES UNNECESSARY AS A RESULT OF REMOVAL OF EQUIPMENT.
18. LABEL ALL CIRCUIT BREAKERS IN EXISTING PANELBOARDS NO LONGER IN USE AS SPARE. CAP ALL UNUSED CONDUIT AND WIRING BEYOND THE FLOOR LINE OR WALL LINE TO FACILITATE RESTORATION OF FINISH.
19. VERIFY AND RESTORE CONTINUITY OF ALL EXISTING CIRCUITRY INDICATED TO REMAIN IN USE. WHERE REMOVAL OF EXISTING WIRING INTERRUPTS ELECTRICAL CONTINUITY OF CIRCUITS WHICH ARE TO REMAIN. FURNISH AND INSTALL ALL REQUIRED CIRCUITRY, CONDUIT, JUNCTION BOXES, ETC. TO INSURE CONTINUED ELECTRICAL CONTINUITY.
20. ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL BLANK JUNCTION BOX COVERS ON ALL EXISTING JUNCTION BOXES WITHIN THE CONSTRUCTION AREA THAT ARE NOT BEING DEMOLISHED.
21. WHERE DEMOLITION WORK INCLUDES REMOVAL OF THE EXISTING CEILING, REMOVE ALL LIGHT FIXTURES, SPEAKERS, SMOKE DETECTORS, DIFFUSERS, DUCTWORK, PIPES AND ANY OTHER EQUIPMENT IN THE CEILING SPACE THE OWNER DESIGNATED TO BE REMOVED, UNLESS NOTED OTHERWISE.
22. SEAL ALL PENETRATIONS THROUGH FLOORS, WALLS, CEILINGS, AND ROOF WHERE ELECTRICAL COMPONENTS ARE REMOVED AND WHERE THE EXISTING PENETRATION IS NOT USED FOR NEW INSTALLATIONS. REPAIR DAMAGED SURFACES TO MATCH ADJACENT AREAS.
23. CAP ALL CONDUITS AND PIPING AT BOTH ENDS FOR ALL UNDER SLAB CONDUITS FOR ALL CIRCUITS BEING REMOVED.
24. NO ABANDONED CONDUITS ARE TO BE LEFT IN PLACE, U.ON. REMOVE ALL EQUIPMENT TO BE DEMOLISHED COMPLETELY BACK TO PANEL BOARD.
25. EXISTING CEILING, LIGHT FIXTURE, AND PLUMBING FIXTURES TO REMAIN, U.O.N.
26. ALL WALLS TO RECEIVE NEW FINISHES SHALL BE STRIPPED OF PRIOR FINISHES AND PREPARED TO RECEIVED NEW FINISH.
27. CONTRACTOR SHALL CAREFULLY REVIEW DRAWINGS, SITE AND VERIFY ALL SITE CONDITIONS PRIOR TO START OF WORK. CONTRACTOR SHALL REPORT ANY DISCREPANCIES AND INCONSISTENCIES TO THE ARCHITECT IMMEDIATELY PRIOR DEMOLITION. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON DRAWINGS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
28. PRIOR TO START OF WORK, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED PERMITS AND APPROVALS.
29. EXISTING FLOOR TO BE PREPPED AS NECESSARY TO RECEIVE SCHEDULED FINISH. REFER TO MANUFACTURER'S INSTALLATION. ALL VINYL/RESILIENT FLOORING TO BE REMOVED IN ITS ENTIRETY. PATCH AND REPAIR WHERE POSSIBLE, V.I.F.
30. CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND PREP ALL SURFACES TO RECEIVE SCHEDULED FINISH, DOOR, STOREFRONT, EQUIPMENT, ETC. REFER TO MANUFACTURER'S SPECIFICATIONS AND INSTALLATIONS.

- DEMOLITION GENERAL NOTES

SBLM

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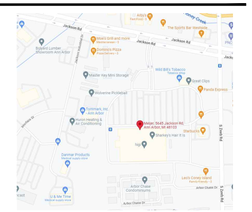
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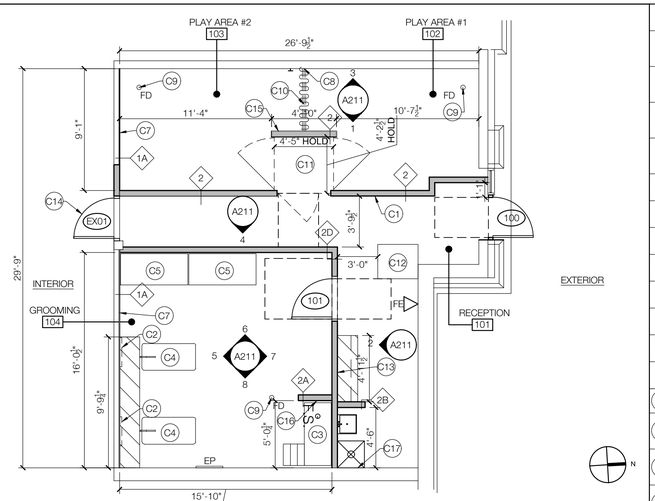
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Revisions

04/10/23	ISSUED FOR PERMIT/OWNER REVIEW

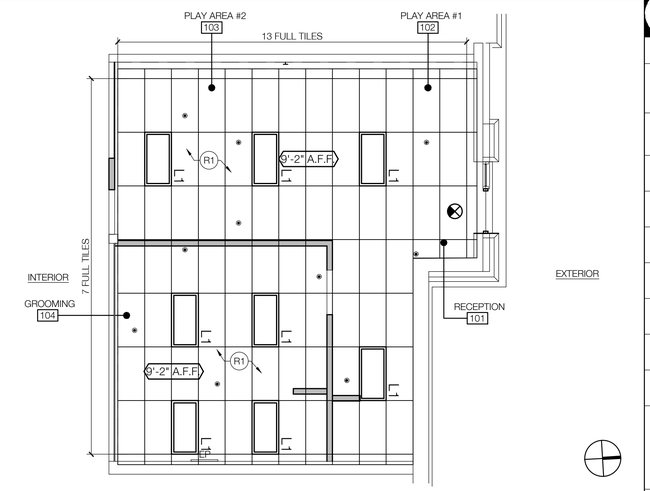
Key Plan


Jackson Rd
Jackson Rd
Jackson Rd
Arbor Walk Jackson Rd and Arbor Walk Blvd
Arbor Walk Blvd
Arbor Walk Blvd
Arbor Walk Blvd
Arbor Walk Blvd
Arbor Walk Blvd
Arbor Walk Blvd
S Main St
S Main St
S Main St
Jackson Rd
Jackson Rd
Jackson Rd



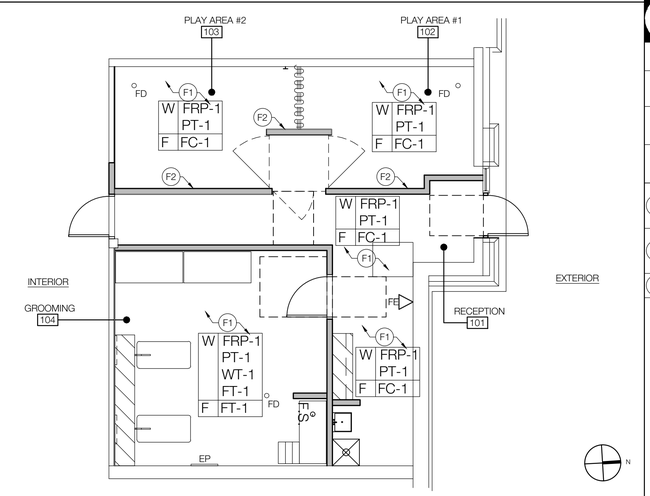
1 CONSTRUCTION PLAN

SCALE: 3/16" = 1'-0"



2 REFLECTED CEILING PLAN

SCALE: 3/16" = 1'-0"



3 FINISH PLAN

SCALE: 3/16" = 1'-0"

SYMBOL	DESCRIPTION
	PARTITION, SEE SCHEDULE FOR MORE INFORMATION.
	EXISTING PARTITION
	DOOR, SEE SCHEDULE FOR MORE INFORMATION.
	EXISTING DOOR
FE	FIRE EXTINGUISHER
###	DOOR IDENTIFICATION TAG
X	STOREFRONT/WINDOW IDENTIFICATION TAG
##	KEY NOTE
	ALIGN
#	PARTITION TAG
	AREA NOT IN SCOPE

C1	INTERIOR PARTITION WITH STEEL POST. SEE DETAIL 5/A211.
C2	MIRROR, FURNISH AND INSTALL IN ITS ENTIRETY, COORDINATE WITH OWNER FINAL SPECIFICATION, DIMENSION, AND LOCATION.
C3	TUB BY OWNER, COORDINATE WITH OWNER. SEE SPECIFICATIONS AND ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION.
C4	TABLE BY OWNER, COORDINATE WITH OWNER. PROVIDE QUAD GFI OUTLET AT 18" A.F.F. SEE SPECIFICATIONS AND ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION.
C5	KENNELS BY OWNER, COORDINATE WITH OWNER.
C6	PROVIDE IN-WALL BLOCKING FOR T.V. BY OWNER. COORDINATE WITH OWNER FINAL LOCATION. PROVIDE POWER AND LOW VOLTAGE BOX WITH PULLSTRING IN CEILING, COORDINATE WITH OWNER AND SITE CONDITIONS, SEE ENGINEERING DRAWINGS. V.I.F.
C7	PROVIDE (1) LAYER MOISTURE RESISTANT MOLD TOUGH CEMENT BOARD IN LIEU OF GYP. BD. TO FINISH CEILING. COORDINATE IN-WALL BLOCKING.
C8	HOSE BIB FOR FUTURE HOSE REEL, PROVIDE BLOCKING, SEE ELEVATION FOR ADDITIONAL INFORMATION.
C9	FLOOR DRAIN, FURNISH AND INSTALL IN ITS ENTIRETY, SEE ENGINEERING DRAWINGS.
C10	MOVEABLE PARTIAL HEIGHT FOLDABLE FENCE GATE PARTITION PROVIDED BY OWNERS VENDOR. CONTRACTOR TO COORDINATE WITH OWNER FINAL LOCATION AND PROVIDE BLOCKING FOR MOUNTING EQUIPMENT.
C11	GATE SYSTEM AND ACCESSORIES PROVIDED BY OWNERS VENDOR AND INSTALLED BY CONTRACTOR. CONTRACTOR TO COORDINATE AND INSTALL ALL GATES IN ITS ENTIRETY, COORDINATE FINAL LOCATIONS AND QUANTITIES WITH OWNER.
C12	POS STATION PROVIDED BY OWNERS VENDOR. OWNER TO FURNISH, CONTRACTOR TO COORDINATE AND INSTALL IN ITS ENTIRETY.
C13	PROVIDE UNDER-COUNTER POWER FOR FUTURE EQUIPMENT. PROVIDE POWER AT 5'-6" A.F.F. FOR FUTURE I.T. EQUIPMENT. PROVIDE FIRE RATED PLYWOOD. SEE ELEVATIONS.
C14	EXISTING SALVAGED DOOR, FRAME, AND HARDWARE TO BE REINSTALLED AT NEW LOCATION IN ITS ENTIRETY. PREP OPENING AND ALL PERTINENT ITEMS FOR REINSTALLATION.
C15	PROVIDE STEEL POST AT ENDS OF LOW WALL. REFER TO DETAIL W1/A213.
C16	PROVIDE IN-WALL BLOCKING FOR HITCHING RING, REFER TO DETAIL ON D1/A213.
C17	PROVIDE BRACKETS, ANGLE, HANGIN SHELF, AND IN-WALL BLOCKING FOR EHWH, REFER TO DETAIL ON A213. SEE MEP DRAWINGS.
C18	PROVIDE 3" PVC COMPOSITE CAP AT LOW PARTITION. SEE DETAIL ON A213.

CONSTRUCTION LEGEND & KEY NOTE

SYMBOL	DESCRIPTION
	ACOUSTICAL TILE CEILING SYSTEM, USG 56644 RADAR CERAMIC ACOUSTICAL PANELS, .5 NRC, 2'X4', SQUARE EDGE, WHITE.
	INDICATED EXISTING SPRINKLERS TO REMAIN.
	SUPPLY, SEE ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION.
	RETURN, SEE ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION.
EM	EMERGENCY LIGHT
	EXIT SIGN, "EX" INDICATES EXISTING TO REMAIN.
XXX- A.F.F	DENOTES FINISHED CEILING HEIGHT
XX	KEY NOTE
	AREA NOT IN SCOPE
L1	L1 FIXTURE: 2X4 RECESSED, COLUMBIA LIGHTING, CFP24-4135, PLD10M FIELD INSTALLED, 4100 LUMENS, 3500K, 40W, UNV, 2X4 RECESSED EDGE - LIT FLAT LED PANEL WITH 0-10V DIMMING DRIVER AND MATTE WHITE FINISH. COORDINATE WITH CEILING.
R1	CONTRACTOR TO V.I.F. ALL EXISTING CONDITIONS, HEIGHTS, DIMENSIONS, EQUIPMENTS, AND ALL OTHER PERTINENT ITEMS WITHIN AREA OF SCOPE OF WORK. CONTRACTOR TO COORDINATE ALL SCHEDULED CEILING AND ENSURE IT IS FLUSH WITH CEILING. SEE ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION.

RCP LEGEND & KEY NOTE/SCHEDULE

SYMBOL	DESCRIPTION
W WALL-FINISH B BASE-FINISH F FLOOR-FINISH	FINISH TAG/EQUIPMENT TAG. SEE A211 FOR ADDITIONAL INFO.
	AREA NOT IN SCOPE
##	KEY NOTES
F1	FRP-1 TO 5'-0" A.F.F. TYP. THROUGHOUT. PROVIDE PT-1 ON ALL WALL AND CEILING. SEE A 211 FOR TYPICAL FLOOR BASE DETAIL THROUGHOUT AREA OF WORK, U.O.N. REFER TO FINISH SCHEDULE.
F2	FRP-1 AT PARTIAL HEIGHT PARTITION TO BE ON ALL FACES. PROVIDE TRIM MOLDING 1" FRP ANGLE AT OUTSIDE CORNERS. REFER TO MFR INSTALLATION. PROVIDE SEALANT TO ENSURE WATERTIGHT SEAL.
F3	EXISTING EXTERIOR DOOR TO BE PAINTED. SEE FINISH SCHEDULE/NOTES AND DOOR SCHEDULE/NOTES.

FINISH LEGEND & KEY NOTE

CONSTRUCTION GENERAL NOTES

1. DIMENSIONS ARE TAKEN FROM FACE OF GYPSUM WALLBOARD PARTITION TO FACE OF GYPSUM WALLBOARD PARTITION IN NEW CONSTRUCTION U.O.N. EXISTING WALLS AND EXTERIOR/INTERIOR COLUMNS ARE FROM FACE OF GYPSUM WALLBOARD.
2. CUTTING & PATCHING: CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING IN EXISTING CONSTRUCTION WHERE REQUIRED FOR NEW CONSTRUCTION.
3. GENERAL CONTRACTOR SHALL REMOVE ALL RUBBISH AND WASTE FROM THE JOB SITE WEEKLY IN A MANNER ACCEPTABLE TO LOCAL REGULATIONS AT THE COMPLETION OF WORK, LEAVE THE SITE FREE OF ALL MATERIALS AND BROOM CLEAN.
4. A COPY OF THE MOST RECENT SET OF APPROVED DRAWINGS SHALL BE KEPT AT JOB SITE FOR USE BY GENERAL CONTRACTOR AND SUBCONTRACTORS. CONTRACTOR TO WORK ONLY WITH THE LATEST ISSUED DRAWINGS.
5. CONTRACTOR SHALL SUBMIT CUTS, SAMPLES, SHOP DWGS., AND FINISHES FOR ALL SPECS FOR ARCHITECT'S WRITTEN APPROVAL PRIOR TO CONSTRUCTION.
6. ALL WOOD FRAMING, BLOCKING, ETC TO BE FIRE RETARDANT TREATED LUMBER AS REQUIRED BY CODE.
7. CONFIRM ALL KEYING OF LOCKS WITH OWNER.
8. CONTRACTOR TO PRODUCE MATERIALS SO AS TO NOT DELAY SUBSTANTIAL COMPLETION. NOTIFY OWNER IMMEDIATELY OF ANY MATERIAL DELAY WHICH WOULD DELAY COMPLETION OF CONTRACT AS SCHEDULED.
9. ANY DIMENSIONS IN CONFLICT ON THE PLAN PROVIDED ARE TO BE SUBMITTED TO ARCHITECT FOR CLARIFICATION PRIOR TO INSTALLATION OF ANY WORK IN QUESTION.
10. CONTRACTOR TO COORDINATE CONSTRUCTION PLAN WITH ELEVATIONS AND DETAILS FOR ALL DIMENSIONS, LOCATIONS, ETC.
11. CONTRACTOR TO PROVIDE "ABC" RATED FIRE EXTINGUISHERS. CONTRACTOR RESPONSIBLE TO COMPLY WITH ALL LOCAL FIRE CODES.
12. CONTRACTOR SHALL COMPLY WITH ALL OWNER REGULATIONS PRIOR TO COMMENCEMENT OF WORK.
13. DRAWINGS ARE NOT TO BE SCALED FOR INFORMATION.
14. CONTRACTOR IS TO PROVIDE FIRE STOPPING/FIRE SEALANT AT ALL PIPES AND OTHER PENETRATIONS IN FIRE RATED ASSEMBLIES.
15. PRIOR TO ANY SAW CUTTING, OR CORE DRILLING CONTRACTOR SHALL NOTIFY OWNER FOR COORDINATION AND APPROVAL.
16. EXISTING SPRINKLER RISER TO REMAIN ACCESSIBLE AND OPERABLE AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR TO PROTECT ALL EXISTING FIRE PROTECTION DEVICES DURING CONSTRUCTION. REFER TO FIRE PROTECTION DRAWINGS FOR ADDITIONAL INFORMATION.
17. EXISTING WALLS TO REMAIN; PATCH, REPAIR AND PRIME TO RECEIVE NEW FINISH. MAINTAIN ALL RATED WALLS.
18. EXISTING FIREPROOFING REMOVED OR DISTURBED DURING DEMOLITION SHALL BE REPLACED IN KIND TO ACHIEVE EXISTING RATING BEFORE DEMOLITION.
19. COORDINATE SPRINKLER REQUIREMENTS FOR CONCEALED SPACE WITH FIRE PROTECTION ENGINEER (CONTRACTOR'S SUBS).
20. WHERE TRENCHING HAS OCCURRED, INFILL THE SLAB TO MATCH EXISTING ADJACENT, SEE DETAIL ON TYPICAL SLAB DETAIL ON A211 FOR REFERENCE.
21. ALL EXISTING PARTITIONS BETWEEN BFP TENANT SPACE AND OTHER TENANTS TO BE FULLY FILLED WITH INJECTED FOAM INSULATION TO 6" ABOVE CEILING INSULATION, TYP. THROUGHOUT, U.O.N.

RCP GENERAL NOTES

1. VERIFY MEASUREMENTS WITH CORRESPONDING CONSTRUCTED OR EXISTING CONDITIONS PRIOR TO PROCEEDING WITH WORK, AND NOTIFY ARCHITECT IMMEDIATELY OF SIGNIFICANT DISCREPANCIES.
2. LIGHTING FIXTURE SCHEDULE IDENTIFIES FIXTURE TYPE. SEE ELECTRICAL DRAWINGS FOR FULL LIGHTING DESCRIPTION, SWITCHING, CONTROL AND POWER REQUIREMENTS.
3. CONSTRUCTION SHALL PROVIDE THE REQUIRED INSULATION VALUE. CEILING LIGHTS ARE TO BE WIRED TO BAR JOIST MEMBERS AT THE DIAGONAL CORNERS. DO NOT ATTACH CEILING COMPONENTS TO ROOF DECK.
4. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION ON: CONTROLS, DETECTORS AND DEVICES REQUIREMENTS.
5. SEE MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION ON HVAC SYSTEMS REQUIREMENTS.
6. SEE PLUMBING AND SPRINKLER DRAWINGS FOR ADDITIONAL INFORMATION ON PIPE SIZING, CLEARANCE REQUIREMENTS AND TOLERANCES.
7. ALL DEVICES SHALL BE RECESSED AND CONDUITS CONCEALED, UNLESS OTHERWISE NOTED.
8. VERIFY LOCATION AND QUANTITY OF CEILING MOUNTED I.V. TRACK STEMS WITH OWNER.
9. ALL ACOUSTIC WALLS TO EXTEND TO STRUCTURE ABOVE AND TO BE SEALED AROUND PERIMETER.
10. ALL LIGHTS TO BE MOUNTED FLUSH WITH CEILING UNLESS OTHERWISE NOTED.
11. ALL EMERGENCY & EXIT LIGHTS ARE SHOWN ON ELECTRICAL LIGHTING PLANS.
12. REUSE EXISTING CEILING GRIDS UNLESS GRIDS ARE DETERMINED TO BE UNSOUND.
13. IN AREAS WHERE EQUIPMENT IS NOT READILY VISIBLE. MOVE EQUIPMENT IN ORDER TO SATISFY THE CEILING HEIGHTS ON THIS PAGE.
14. CONTRACTOR TO REMOVE, CLEAN, RE-LAMP, AND RE-INSTALL ALL EXISTING LIGHT FIXTURES U.O.N.
15. CONTRACTOR TO PROVIDE 6" UN-FACED BATT INSULATION TO BE LAID OVER FULL CEILING FOR SOUND ATTENUATION, TYP. THROUGHOUT.
16. REFER TO SHEET A101 FOR ALL GENERAL NOTES, SCOPE OF WORK, ADDITIONAL INFORMATION, TYP.
17. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS, DIMENSIONS, CEILING HEIGHTS, FIXTURES, DEVICES, EQUIPMENT, AND ALL OTHER PERTINENT ITEMS.

FINISH GENERAL NOTES

1. THE GENERAL CONTRACTOR IS 100% RESPONSIBLE FOR COORDINATION AND VERIFICATION BETWEEN ALL TRADES, BUILDING ENGINEER, BUILDING MANAGEMENT, ARCHITECT OF RECORD AND TENANT PRIOR TO THE START OF ALL WORK (INCLUDING BUT NOT LIMITED TO HVAC, ELECTRICAL, SPRINKLER, FIRE ALARMS, PLUMBING, CARPENTRY, INSULATION, DOORS, WINDOWS, HARDWARE, WALLS, CEILING, FLOORING, MISCELLANEOUS EQUIPMENT, ETC.] ANY DISCREPANCIES MUST BE ADDRESSED/APPROVED BY THE ARCHITECT OF RECORD PRIOR TO INSTALLATION.
2. ALL WORK TO BE ATTRIBUTED TO TENANT SCOPE OF WORK UNLESS OTHERWISE NOTED. ANY DISCREPANCIES MUST BE ADDRESSED AND APPROVED BY THE ARCHITECT OF RECORD PRIOR TO INSTALLATION.
3. ALL PAINTED FINISHES OF METAL PARTS OF FRAME, DOORS, PERIMETER ENCLOSURES, SHALL BE OIL SEMI-GLOSS, U.O.N. SEE FINISH SCHEDULE AND PLANS FOR ADDITIONAL INFORMATION.
4. ALL DOORS WHEN PAINTED, TO BE COLOR ON BOTH SIDES U.O.N.
5. ALL PAINT AND WALL COVERING SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS FOR THE PARTICULAR SURFACE. EXAMINE ALL FINISH MATERIAL FOR DEFECTS AND COLOR VARIATION PRIOR TO INSTALLATION.
6. THE FINISH CONTRACTOR IS TO VERIFY THAT JOINTS ARE SATISFACTORILY FINISHED TO RECEIVE WALL COVERING OR PAINT, OTHERWISE IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE SURE THAT ALL SURFACES ARE FINISHED SMOOTH.
7. CONTRACTOR SHALL FLASH PATCH AREAS WHERE FLOOR IS ROUGH OR CRACKED PRIOR TO INSTALLATION OF FLOORING. REMOVE ALL OBSTRUCTIONS & PROVIDE AN EVEN FLOOR IN TIME FOR SCHEDULED INSTALLATION.
8. THE PAINT CONTRACTOR SHALL APPLY ONE PRIMER COAT AND TWO FINISH COATS TYPICAL.
9. ALL PAINT SHALL BE APPLIED CAREFULLY WITH GOOD CLEAN BRUSHES OR APPROVED ROLLERS. PAINT SHALL BE EVENLY SPREAD AND THOROUGHLY BRUSHED OUT. THE WORK SHALL BE PERFORMED AS TO AVOID DAMAGE TO OTHER SURFACES. ANY DAMAGE TO ADJACENT SURFACES SHALL BE REPAIRED IN A MANNER SATISFACTORY. FINISH COATS SHALL BE SMOOTH AND FREE FROM SAGS, RUNS, CRAWLS, BRUSH MARKS, SKIPS, OR OTHER DEFECTS. FINISH SURFACES SHALL BE UNIFORM IN SHEEN, COLOR AND TEXTURE. EACH COAT OF PAINT SHALL BE OF SUFFICIENT THICKNESS TO COVER COMPLETELY THE PREVIOUS COAT OR SURFACE.
10. UNLESS REQUIRED TO PAINT THE ENTIRE AREA, CONTRACTOR SHALL PAINT EXISTING WALLS THAT ARE CUT AND/OR PATCHED. THE ENTIRE WALL SHALL BE PAINTED UP TO THE NEAREST EXTERNAL OR INTERNAL CORNER OR DOOR FRAME. COLOR SHALL MATCH EXISTING.
11. WALL BASE SHALL BE APPLIED AGAINST THE WALL WITH APPROVED TYPE CEMENT ADHESIVE, KEEPING CEMENT 1/4" BELOW THE TOP OF THE BASE, ADHESIVE FOR INSTALLATION OF BASE SHALL BE FURNISHED BY CONTRACTOR. VERTICAL JOINTS SHALL BE HELD TO A MINIMUM WITH A MINIMUM DISTANCE FROM A JOINT TO A CORNER EQUAL TO 1'-0".
12. ALL WOOD WORK, BLOCKING, GROUNDS, ROUGH BLOCKS AND MISCELLANEOUS BLOCKING TO BE FIRE RETARDANT TREATED AND IN ACCORDANCE WITH BUILDING DEPT. STANDARDS.
13. THE CABINET CONTRACTOR SHALL PROVIDE AND COORDINATE THE SETTING OF ALL NECESSARY WOOD BLOCKING SUPPORTS, BRACING AND GROUNDS IN CONJUNCTION WITH HIS WORK.
14. TILE INSTALLATION SHALL COMPLY WITH MANUFACTURER'S RECOMMENDED INSTALLATION SPECIFICATIONS PRIOR TO CONTRACTING W/ TILE CONTRACTOR. THE GENERAL CONTRACTOR SHALL REVIEW TILES SPECIFICATIONS WITH SAMPLE, JOINTS, EDGES, START POINTS & CHALK LINE THAT WILL BE SNAPPED ON THE NEW MORTAR SETTING BED, IN ORDER TO COMPLY AS CLOSE AS POSSIBLE W/ THE PROPOSED FIN. PLAN STONE SLABS FOR WET AREAS, COUNTERS AND CABINETS SHALL ALSO BE REVIEWED FOR SIMILAR CRITERIA. ALL WET AREAS TO RECEIVE A WATER PROOF MEMBRANE, TYPICAL.
15. CONTRACTOR HAS FINAL RESPONSIBILITY FOR THE STRENGTH AND STABILITY OF THE MOUNTING STRUCTURE. THE MOUNTING STRUCTURE MUST BE APPROPRIATELY ATTACHED TO THE STRUCTURAL CEILING AND BE BRACED IN A MANNER THAT WILL NOT ALLOWED ANY TWISTING OR LATERAL MOTION. SEE APPROPRIATE MODEL DATA SHEET FOR FIXTURE WEIGHT AND MOMENT LOAD INFORMATION.
16. THE PAINT & FLOOR CONTRACTOR SHALL PROVIDE 4'x4' PAINTED MOCK-UP WALLS AND 4'x4' FLOOR FINISH MOCK-UP FOR REVIEW WITH ARCHITECT.
17. PROVIDE 3 CONTROL SAMPLES OF EACH FINISH SPECIFICATIONS FOR ARCHITECTS REVIEW/ACCEPTANCE. 1 ACCEPTED CONTROL SAMPLE WILL BE RETAINED BY THE ARCHITECT AND THE REMAINING 2 WILL BE RETURNED TO THE CONTRACTOR 1 COPY OF EACH SHALL BE MAINTAINED AT THE SITE ALONG WITH THE APPROVED SET OF DOCUMENTS.
18. CONTRACTOR HAS FINAL RESPONSIBILITY TO COVER AND PROTECT EXISTING LOBBY FLOOR DURING CONSTRUCTION.
19. PROVIDE AND INSTALL FIRE TREATED BLOCKING FOR ALL EQUIPMENTS, FIXTURES, MILLWORK, FURNITURE, CASEWORK, ETC. TYP. THROUGHOUT, U.O.N.
20. PROVIDE TRANSITIONS AT ALL CHANGES OF FLOORING MATERIAL. SEE SHEET A211 FOR FLOOR TRANSITION DETAILS.
21. FINISHES TO WRAP WINDOW SILLS AND SOFFITS (TYP)

SBLM

Owner
Best Friends Pet Care Inc.
535 CT AVE, SUITE 305
NORWALK, CT 06854
T: 860.803.2678
www.bestfriendspetcare.com

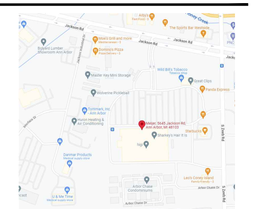
Architect
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www.acertusgroup.com

Revisions

04/10/23	ISSUED FOR PERMIT/OWNER REVIEW

Key Plan



Seal & Signature

STATE OF MICHIGAN
GEORGE FAHOUM
ARCHITECT
No. 1301072224
04-19-2023
REGISTERED ARCHITECT

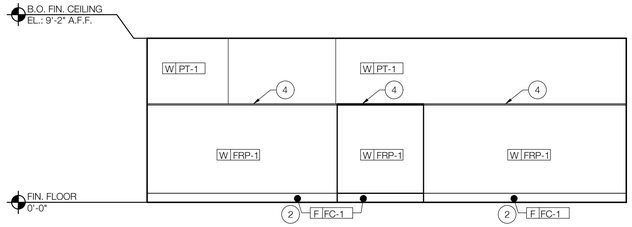
Project
BFM001 - Best Friends Pet - Ann Arbor
Store Location Number - #173
5645 Jackson Road, Ann Arbor, MI 48103

Drawing Date: 03/29/2023 *Project No. : BFM001*
Drawn By : WK *Checked By : NG*

Drawing Title
FIRST FLOOR CONSTRUCTION PLANS

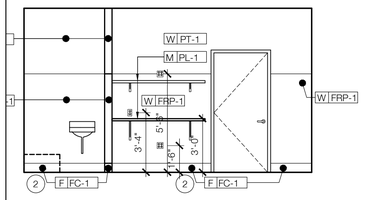
Drawing Number
A101

FILENAME:\\sbln.local\UData\Projects\2022\BFM001\Drawings\Current Set\BFM001 A101 - 1st Floor Construction Plan.dwg | PLOTTED BY:Kwok, William | DATE: April 11, 2023



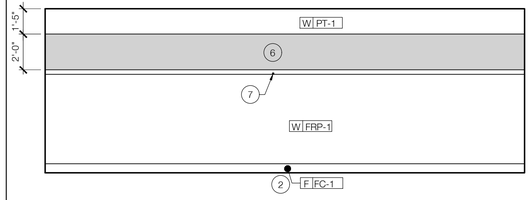
1 ELEVATION @ PLAY AREA LOW PARTITION

SCALE: 1/4" = 1'-0"



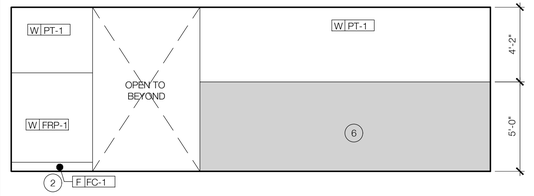
2 ELEVATION @ STORAGE AREA

SCALE: 1/4" = 1'-0"



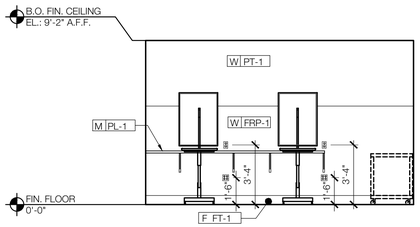
3 ELEVATION @ PLAY AREA

SCALE: 1/4" = 1'-0"



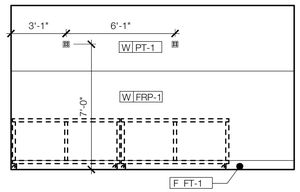
4 ELEVATION @ PLAY AREA

SCALE: 1/4" = 1'-0"



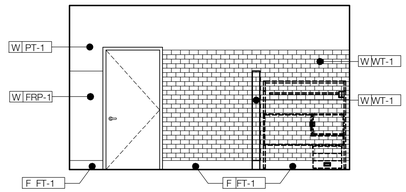
5 ELEVATION @ GROOMING

SCALE: 1/4" = 1'-0"



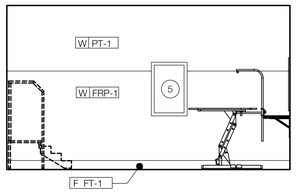
6 ELEVATION @ GROOMING

SCALE: 1/4" = 1'-0"



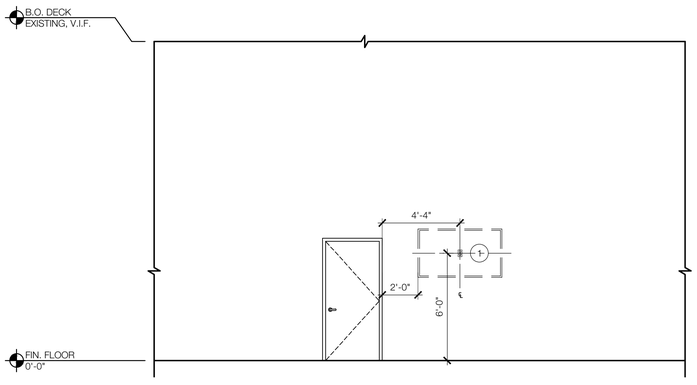
7 ELEVATION @ GROOMING

SCALE: 1/4" = 1'-0"



8 ELEVATION @ GROOMING

SCALE: 1/4" = 1'-0"



9 ELEVATION @ INTERIOR MAIN BUILDING

SCALE: 1/4" = 1'-0"

1	T.V. PROVIDE BY OWNER, COORDINATE FINAL LOCATION WITH OWNER/PM SEE ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION. CONTRACTOR TO V.I.F. ALL HEIGHTS PRIOR TO INSTALLATION. PROVIDE IN-WALL BLOCKING.
2	SCHEDULED FLOORING TO WRAP UP. SEE TYP. FLOOR BASE DETAILS ON A213.
3	CONTRACTOR TO COORDINATE WITH OWNER/OWNER'S SIGNAGE VENDOR WITH GRAPHICS ON PARTITION. CONTRACTOR TO PREP ALL SURFACES AS REQUIRED FOR GRAPHICS INSTALLATION. CONTRACTOR TO VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS.
4	PROVIDE 3/4" THICK PVC COMPOSITE CAP AT PARTIAL HEIGHT WALL, SEE DETAILS ON A213.
5	EXISTING ELECTRICAL PANEL TO REMAIN AND PROTECTED.
6	G.C. TO PROVIDE AND APPLY 2 COATS OF BULLSEYE 1-2-3 PRIMER, NO SUBSTITUTION. COORDINATE FINAL LOCATIONS WITH OWNER.
7	SCHEDULED HOSE BIB. REFER TO ENGINEERING DRAWINGS. PROVIDE HOSE REEL, PROVIDE IN-WALL BLOCKING FOR HOSE REEL BRACKET. COORDINATE FINAL LOCATION WITH OWNER.
	NOTE: CONTRACTOR TO VERIFY ALL DIMENSIONS IN FIELD AND NOTIFY ARCHITECT/OWNER OF ANY DISCREPANCIES PRIOR TO START OF WORK. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ALL WORK AND CHANGES NEEDED FOR COMPLETION OF WORK IF DISCREPANCIES ARE NOT REPORTED TO ARCHITECT/OWNER OR WORK IS DONE WITHOUT ARCHITECT/OWNER'S APPROVAL.

- ELEVATION KEY NOTES

SCALE: -

SYMBOL	DESCRIPTION	MANUF.	MODEL/SPEC/ID	COMMENT/NOTE
			WALL	
PT-1	PAINT	SHERWIN-WILLIAMS	SW 7073 - NETWORK GRAY	EGGSHELL @ WALL, FLAT @ CEILING
FRP-1	FIBERGLASS REINFORCED PANELS	-	-	CONTRACTOR TO FURNISH AND INSTALL. MATCH EXISTING IN KIND AND COLOR. PROVIDE TRIM @ OUTSIDE CORNERS/EDGES.
WT-1	CERAMIC WALL TILE	DALTILE	COLOR WHEEL CLASSIC, 3X6 SUBWAY TILE - MATTE BISCUIT K775	SEE ELEVATIONS FOR LOCATION. PROVIDE STAIN AND CHEMICAL RESISTANCE GROUT MAPEI FLEX COLOR CQ - 38 AVALANCHE
			BASE	
			FLOOR	
FC-1	RESILIENT FLOORING	PROTECT ALL FLOORING	PROTECT ALL FLOORING - GREEN - 09666	PROTECT ALL FLOORING APPLICATION THROUGHOUT, U.O.N. SEE TYPICAL FLOOR BASE DETAIL ON A213. PROVIDE 1" FRP ANGLE.
FT-1	CERAMIC FLOOR TILE	DALTILE	VOLUME 1.0, 12X12 FLOOR TILE - SONIC WHITE VL75 - PROVIDE WALL BASE @ GROOMING	SEE ELEVATIONS/PLANS FOR LOCATION. PROVIDE STAIN AND CHEMICAL RESISTANCE GROUT MAPEI FLEX COLOR CQ - 38 AVALANCHE - PROVIDE WALL BASE @ GROOMING.
			MILLWORK	
PL-1	PLASTIC LAMINATE	WILSONART	GRAPHITE NEBULA 4623-60 MATTE FINISH	IN GROOMING COUNTER, SEE ELEVATIONS/MILLWORK DETAIL.

- FINISH SCHEDULE

SCALE: -

SBLM

Owner
Best Friends Pet Care Inc.
535 CT AVE, SUITE 305
NORWALK, CT 06854
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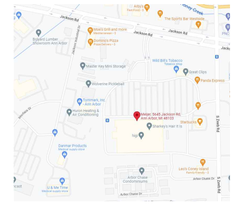
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Revisions

04/10/23 ISSUED FOR PERMIT/OWNER REVIEW

Key Plan



Seal & Signature



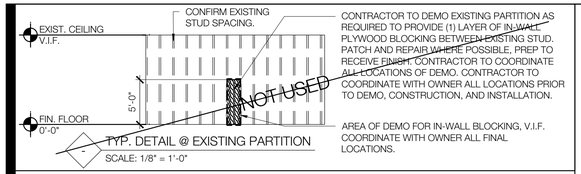
Project
BFM001 - Best Friends Pet - Ann Arbor
Store Location Number - #173
5645 Jackson Road, Ann Arbor, MI 48103

Drawing Date: 03/29/2023 *Project No. : BFM001*
Drawn By : WK *Checked By : NG*

Drawing Title
INTERIOR ELEVATIONS

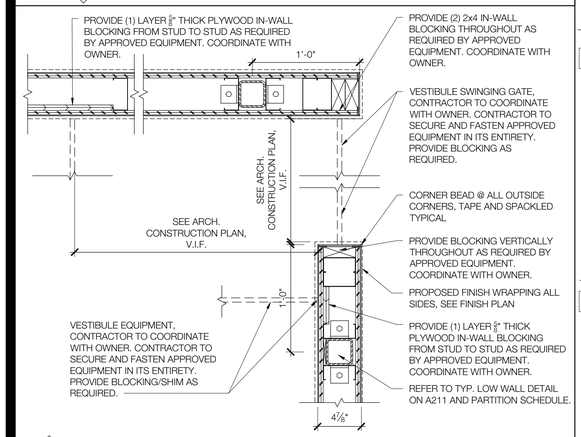
Drawing Number
A211

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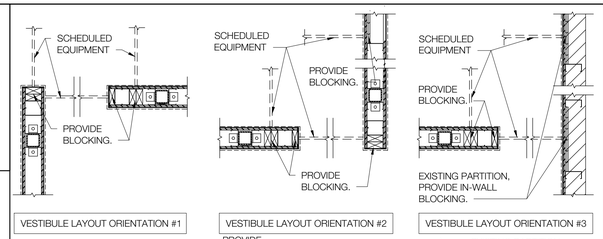
TYP. DETAIL @ EXISTING PARTITION

SCALE: 1/8" = 1'-0"



TYP. BLOCKING DETAIL @ EQUIPMENT (SCHEDULED PARTITION)

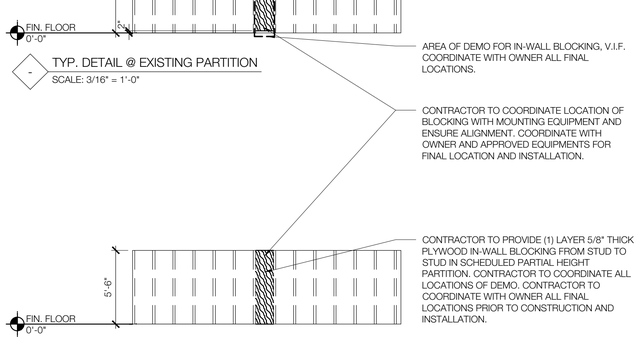
SCALE: 1-1/2" = 1'-0"



REFER TO 1/ASK-02.1 FOR TYP. IN-WALL BLOCKING NOTES. REFER TO VESTIBULE LAYOUTS FOR IN-WALL BLOCKING LOCATIONS. CONTRACTOR TO PATCH AND REPAIR WHERE POSSIBLE. CONTRACTOR TO PARTIALLY DEMO EXISTING PARTITION AS REQUIRED TO PROVIDE IN-WALL BLOCKING, PATCH AND REPAIR WHERE POSSIBLE AND PREP TO RECEIVE SCHEDULED FINISH. CONTRACTOR TO COORDINATE AND FINALIZE WITH OWNER FOR APPROVED LOCATIONS PRIOR TO ANY DEMOLITION/CONSTRUCTION, V.I.F. ALL DIMENSIONS AND CONDITIONS.

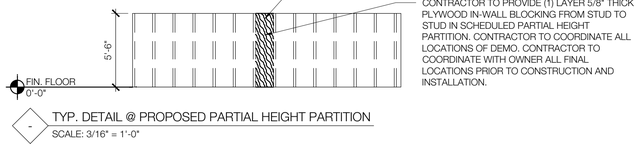
TYP. VESTIBULE LAYOUT ORIENTATIONS

SCALE: N.T.S.



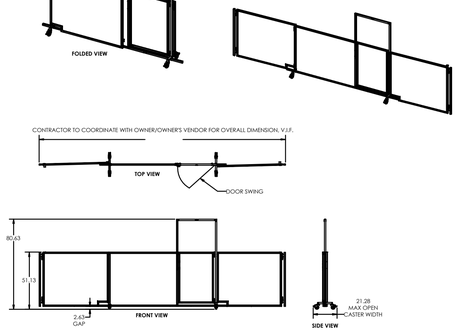
TYP. DETAIL @ EXISTING PARTITION

SCALE: 3/16" = 1'-0"



TYP. DETAIL @ PROPOSED PARTIAL HEIGHT PARTITION

SCALE: 3/16" = 1'-0"



CONTRACTOR TO COORDINATE WITH OWNER/OWNER'S VENDOR FOR ALL DIMENSIONS AND CONDITIONS, V.I.F. EACH PROJECT LOCATION VARIES. CONTRACTOR TO ENSURE AND CONFIRM WITH OWNER AND OBTAIN OWNERS' APPROVAL PRIOR ANY DEMOLITION, CONSTRUCTION, AND INSTALLATION. DIMENSIONS SHOWN ARE PROVIDED BY OWNER'S VENDOR AND ARE FOR REFERENCE ONLY TO SHOW DESIGN INTENT. ALL DIMENSIONS AND CONDITIONS ARE TO BE FIELD VERIFIED AND APPROVED BY OWNER.

1. ALL MILLWORK TO HAVE PLASTIC LAMINATE FINISH, U.N.O.
2. ALL FURNITURE, FIXTURE, AND EQUIPMENT DIMENSIONS TO BE COORDINATED AND VERIFIED WITH OWNER PRIOR INSTALLATION.
3. PROVIDE BLOCKING IN WALL FOR ALL WALL MOUNTED EQUIPMENT AND MILLWORK.
4. INSTALL SCHLUTER STRIPS JOLLY A100AT ON EXPOSED EDGES/CORNERS OF TILES.
5. ALL WALLS AND CEILINGS TO BE PAINTED SCHEDULE PAINT, U.N.O. SEE FINISH SCHEDULE.
6. PROVIDE TRIM FOR ALL EXPOSED AND OUTSIDE EDGES FOR FRP.

GENERAL NOTES

SCALE: N.T.S.

SBLM

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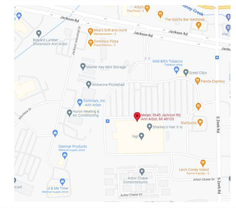
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Key Plan



Seal & Signature



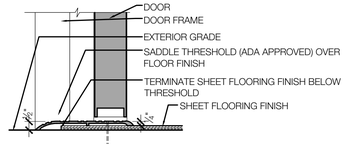
Project
BFM001 - Best Friends Pet - Ann Arbor
Store Location Number - #173
5645 Jackson Road, Ann Arbor, MI 48103

Drawing Date: 03/29/2023 *Project No. : BFM001*
Drawn By : WK *Checked By : NG*

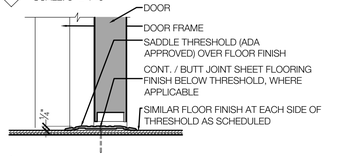
Drawing Title
INTERIOR ELEVATIONS/BLOCKING DETAILS

Drawing Number
A212

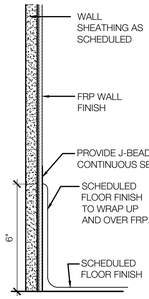
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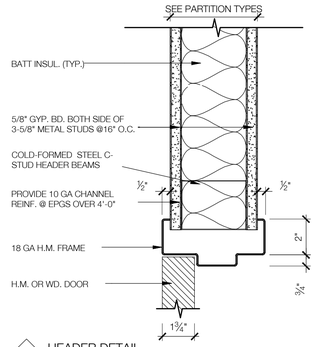
T1 TYP. TRANSITION DETAIL - RESILIENT FLOOR TO EXT.
SCALE: 3" = 1'-0"



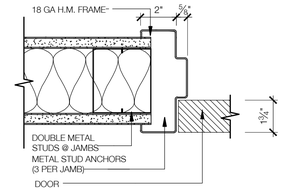
T2 TYP. TRANSITION DETAIL - RESILIENT FLOOR TO INT.
SCALE: 3" = 1'-0"



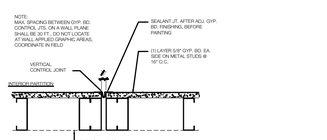
B1 TYP. FLOOR BASE DETAIL
SCALE: 3" = 1'-0"



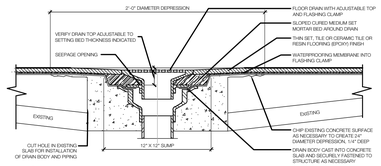
H1 HEADER DETAIL
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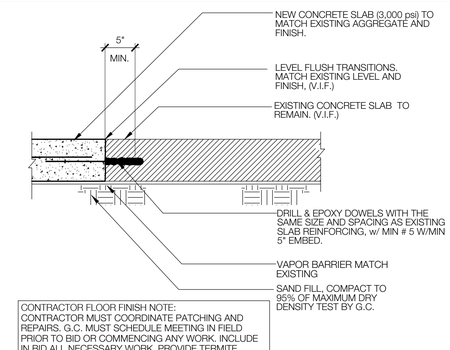
J1 JAMB DETAIL
SCALE: 3" = 1'-0"



- TYP. DETAIL - GYP. BD. CONTROL JOINT
SCALE: 3" = 1'-0"

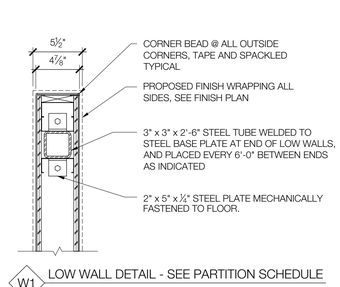


- TYP. DETAIL - FLOOR DRAIN
SCALE: 3" = 1'-0"

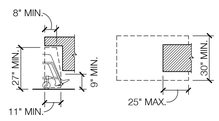


CONTRACTOR FLOOR FINISH NOTE:
CONTRACTOR MUST COORDINATE PATCHING AND REPAIRS. G.C. MUST SCHEDULE MEETING IN FIELD PRIOR TO BID OR COMMENCING ANY WORK. INCLUDE IN BID ALL NECESSARY WORK. PROVIDE TERMITE TREATMENT AT ALL NEW CONCRETE WORK.

S1 TYP. SLAB INFILL DETAIL
SCALE: 1" = 1'-0"



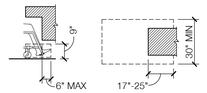
W1 LOW WALL DETAIL - SEE PARTITION SCHEDULE
SCALE: 1-1/2" = 1'-0"



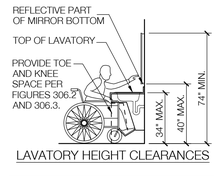
KNEE CLEARANCE



LAVATORY FLOOR CLEARANCES



TOE CLEARANCE



LAVATORY HEIGHT CLEARANCES

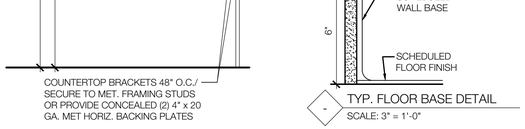
EXPOSED PIPES AND SURFACES:
WATER SUPPLY AND DRAINPIPES UNDER LAVATORIES AND SINKS SHALL BE INSULATED OR OTHERWISE CONFIGURED TO PROTECT AGAINST CONTACT. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES AND SINKS.

- TOE AND KNEE CLEARANCES
SCALE: N.T.S.

TOE AND KNEE CLEARANCES
N.T.S.

- LAVATORY/SINK CLEARANCES
SCALE: N.T.S.

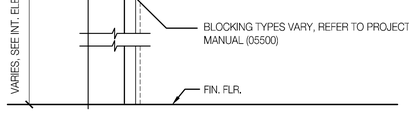
LAVATORY/ SINK CLEARANCES
N.T.S.



M1 MILLWORK DETAIL
SCALE: 1" = 1'-0"

- TYP. FLOOR BASE DETAIL
SCALE: 3" = 1'-0"

B2 TYP. COVE BASE DETAIL @ TILE
SCALE: 1" = 1'-0"



D1 TYP. COVE BASE DETAIL @ TILE
SCALE: 1" = 1'-0"

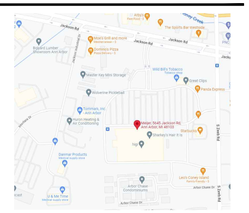
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Revisions
04/10/23 ISSUED FOR PERMIT/OWNER REVIEW

Key Plan



Seal & Signature



Project
BFM001 - Best Friends Pet - Ann Arbor
Store Location Number - #173
5645 Jackson Road, Ann Arbor, MI 48103

Drawing Date: 03/29/2023 *Project No. : BFM001*
Drawn By : WK *Checked By : NG*

Drawing Title
DETAILS

Drawing Number
A213

FILENAME:X:\Projects\2023\BFM001\Drawings\Current Set\BFM001_A213 - Details.dwg | PLOTTED BY:Kwok, William | DATE: April 10, 2023

HVAC TREATMENT SCHEDULE

SPACE SERVED	SEASON	INDOOR DESIGN TEMP (°F DB)	OUTDOOR AIR REQUIREMENTS (CFM / PERSON)	OUTDOOR AIR REQUIREMENTS (CFM / SF)
RETAIL	SUMMER	75 (OR AS REQUIRED BY CODE)	7.5	0.12
	WINTER	70 (OR AS REQUIRED BY CODE)	7.5	0.12
PET AREAS	SUMMER	75 (OR AS REQUIRED BY CODE)	7.5	0.18
	WINTER	70 (OR AS REQUIRED BY CODE)	7.5	0.18
OFFICES	SUMMER	75 (OR AS REQUIRED BY CODE)	5	0.06
	WINTER	70 (OR AS REQUIRED BY CODE)	5	0.06
PRE-SALES	SUMMER	75 (OR AS REQUIRED BY CODE)	0.06	--
	WINTER	70 (OR AS REQUIRED BY CODE)	0.06	--

AIR BALANCE SCHEDULE

EQUIPMENT	SUPPLY (CFM)	OUTDOOR (CFM)	EXHAUST AIR (CFM)	TOTAL (CFM)	NOTES
RTU-1	900	240	0	+900	
EF-1	0	0	1000	-1000	
TOTAL BALANCE:				-100	

NOTES
* REBALANCE ALL ROOFTOP UNIT DAMPERS TO PROVIDE ALL REQUIRED CFM'S.

FAN SCHEDULE

MARK	MANUFACTURER	MODEL	CFM	HP	ESP (IN)	MOTOR	FAN RPM	ELECTRICAL V / ø	NOTES
EF-1	GREENHECK	GB-100	1000	1/4	0.50	BELT	1491	115/1	A-D

NOTES:
A. EQUIPMENT FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR
B. PROVIDE WITH 14" ROOF CURB, BACKDRAFT DAMPER AND BIRD SCREEN.
C. PROVIDE WITH FACTORY MOUNTED DISCONNECT.
D. PROVIDE WITH TIMECLOCK AND COORDINATED TO RUN SIMULTANIOUSLY WITH LANDLORDS RTU HOURS OF OPERATION.

SPLIT TYPE AC UNIT SCHEDULE

TAG NO.	INDOOR UNIT			OUTDOOR UNIT				ELECTRIC			ACCESSORIES	NOTES
	MODEL #	CAPACITY (BTUH)	WEIGHT (LBS)	MODEL #	WEIGHT (LBS)	MCA	MOCP	VOLT/ø/HZ	SEER2	HSPF2		
AHU-1/ACC-1	40MAQB12B--3	12000	19	38MAQB12R--3	82	9	15	208/1/60	19.9	9.1	1	1,2,3,4

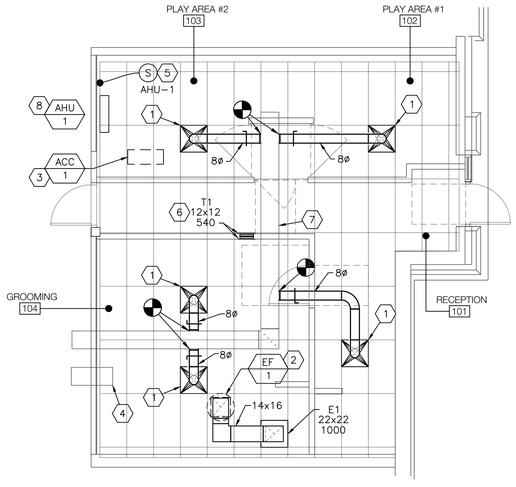
NOTES:
1. UNIT SELECTION BASED ON CARRIER/TOSHIBA.
2. ALL REMOTE CONDENSING UNITS SHALL BE SECURELY MOUNTED ON EQUIPMENT CURBS FLASHED TO ROOF.
3. ALL REFRIGERANT PIPING SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
4. AIR CONDITIONING UNITS ACC-1 AND AHU-1 SHALL BE OF THE SAME MANUFACTURER.

ACCESSORIES:
1. REMOTE MOUNTED TEMPERATURE CONTROLLER.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

MARK	MANUFACTURER	MODEL	FACE TYPE	MOUNTING LOCATION	FACE SIZE (IN)	NOTE
T1	TITUS	350FL	LOUVERED	WALL	NECK + 1-3/4"	A,B,C,D,E,F
E1	TITUS	350FLF1	LOUVERED	CEILING	NECK + 1-3/4"	A,B,C,D,E,F,G

NOTES:
A. NECK SIZE SHOWN ON DRAWINGS.
B. COORDINATE FINISH WITH ARCHITECT.
C. PROVIDE NECK FOR DUCT CONNECTION.
D. FRAME TYPE TO MATCH CONSTRUCTION OF MOUNTING LOCATION, COORDINATE WITH ARCHITECTURAL PLANS.
E. ALUMINUM CONSTRUCTION.
F. FRONT BLADES PARALLEL TO LONG DIMENSION.
G. PROVIDE WITH SMITH FILTERS HOG HAIR FILTER PART #PH20.20.1. CONTACT SMITH FILTERS AT (800) 447-4009.



1 MECHANICAL PLAN
SCALE: 3/16" = 1'-0"

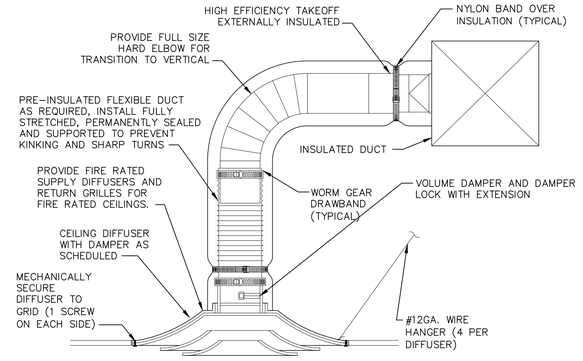
MECHANICAL KEYNOTES: (1),(2),(X)

1. EXISTING CEILING SUPPLY DIFFUSERS TO BE RELOCATED TO LOCATIONS SHWON. BALANCE DIFFUSERS TO 180 CFM OF SUPPLY AIR. CLEAN AND REFURBISH ALL EXISTING TO REMAIN EQUIPMENT TO LIKE NEW CONDITION. REFER TO AIR BALANCE SCHEDULE FOR SYSTEM BALANCING INFORMATION.
2. CONNECT 14"x16" EXHAUST DUCT TO EXHAUST GRILLE AND ROUTE UP THROUGH ROOF TO EF-1. EXHAUST FAN IS TO BE LOCATED A MINIMUM OF 10'-0" FROM ALL FRESH AIR INTAKES. SEE DETAIL 3/M101. CONTRACTOR TO COORDINATE WITH OWNER, ARCHITECT, AND FIRE PROTECTION TO VERIFY EXACT LOCATION.
3. PROVIDE AIR COOLED CONDENSING UNIT ON ROOF WITH EQUIPMENT RAILS MOUNTED PER MANUFACTURER'S RECOMMENDATIONS. UNIT LOCATION SHOWN FOR REFERENCE ONLY, FIELD COORDINATE EXACT LOCATION.
4. CAP LANDLORD'S EXISTING RETURN DUCT TO ROOFTOP UNIT.
5. PROVIDE REMOTE MOUNTED 7-DAY PROGRAMMABLE THERMOSTAT FOR AHU-1 WITH AUTO CHANGE-OVER FOR HEATING/COOLING. ALL WIRING, ETC. SHALL BE COORDINATED WITH ELECTRICAL CONTRACTOR AND ARCHITECT PRIOR TO INSTALLATION. FINAL CONNECTION SHALL BE MADE BY THE MECHANICAL CONTRACTOR.
6. PROVIDE TRANSFER GRILLE AS HIGH AS POSSIBLE IN WALL BELOW CEILING.
7. EXISTING SUPPLY DUCTWORK IN THIS AREA FROM ROOFTOP UNIT TO REMAIN UNLESS OTHERWISE NOTED. CLEAN AND REFURBISH ALL EXISTING TO REMAIN DUCTWORK TO LIKE NEW CONDITION.
8. MOUNT AHU-1 ON WALL IN LOCATION SHOWN ACCORDING TO MANUFACTURERS INSTALLATION INSTRUCTIONS 1'-0" FROM FINISHED CEILING TO TOP OF UNIT.

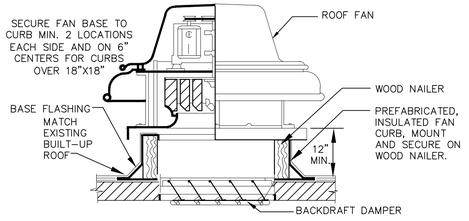
MECHANICAL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	DIFFUSER	X	EQUIPMENT (SEE SCHEDULE)
	RETURN AIR GRILLE	X / X-X	EQUIPMENT NUMBER
	RETURN OR EXHAUST DUCT UP	X / x	INDICATES DETAIL, PLAN, SECTION, AND/OR DIAGRAM(APPLIES ONLY WHERE INDICATED ON DRAWINGS)
	SUPPLY DUCT UP		INDICATES DRAWING ON WHICH DETAIL APPEARS
	SUPPLY DUCT DOWN	TYP / x	INDICATES TYPICAL DETAIL (APPLIES TO ALL CONTRACT DRAWINGS)
	RETURN OR EXHAUST DUCT DOWN		INDICATES DRAWING ON WHICH DETAIL APPEARS
	ROUND DUCT DOWN	X / x	INDICATES SECTION NUMBER
	ROUND DUCT UP		INDICATES ON WHICH DRAWING SECTION APPEARS
	VANED ELBOW	X	INDICATES REVISION & NUMBER
	LOW PRESSURE FLEX DUCT		CONNECT NEW TO EXISTING
	45° TAKEOFF FITTING	X	SHEET NOTE NUMBER
	MANUAL VOLUME DAMPER	CSD 10x10 300	DIFUSER TYPE SIZE CFM
		T	THERMOSTAT
		UC	DOOR UNDERCUT

ABBREVIATIONS	
AFF	ABOVE FINISHED FLOOR
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
COMP	COMPRESSOR
DB	DRY BULB
DN	DOWN
DX	DIRECT EXPANSION
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EFF	EFFICIENCY
ESP	EXTERNAL STATIC PRESSURE
ETC	AND SO FORTH
EX	EXHAUST
°F	DEGREES FAHRENHEIT
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
FT	FEET
GPM	GALLONS PER MINUTE
GRS/LB	GRAINS PER POUND
HP	HORSEPOWER
HZ	HERTZ
IN	INCHES
KW	KILOWATT
MBH	THOUSANDS OF BTU PER HOUR
MIN	MINIMUM
NEG	NEGATIVE
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
PH	PHASE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
RH	RELATIVE HUMIDITY
SA	SUPPLY AIR
SH	SENSIBLE HEAT
SP	STATIC PRESSURE
TEMP	TEMPERATURE
TYP	TYPICAL
VOLT	VOLTAGE
WB	WET BULB
WC	WATER COLUMN



2 DIFFUSER DETAIL
NOT TO SCALE



3 DOWNBLAST ROOF FAN MOUNTING
NOT TO SCALE

MECHANICAL GENERAL NOTES:

1. PRIOR TO SUBMITTING BID, VISIT THE SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW GENERAL NOTES, SPECIFICATIONS AND ALL OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS WHICH MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER AND/OR OWNER OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
2. COORDINATE THE INSTALLATION OF MECHANICAL SYSTEMS WITH OTHER TRADES TO ENSURE A NEAT AND ORDERLY INSTALLATION. DUCTWORK AND PIPING SHALL BE ROUTED TO AVOID CONFLICTS WITH ELECTRICAL PANELS, LIGHTING FIXTURES, ETC.
3. TAKE NECESSARY PRECAUTIONS TO AVOID DAMAGING EXISTING SURFACES AND EQUIPMENT TO REMAIN FOR NEW INSTALLATION DURING WORK. REPAIR ANY DAMAGE CAUSED DURING CONSTRUCTION AT NO COST TO THE OWNER.
4. ALL MECHANICAL EQUIPMENT SHOWN ON THE MECHANICAL PLANS SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR UNLESS OTHERWISE NOTED.
5. NEW MECHANICAL EQUIPMENT, DUCTWORK AND PIPING IS SHOWN AT APPROXIMATE LOCATIONS. FIELD MEASURE FINAL DUCTWORK AND PIPING LOCATIONS PRIOR TO FABRICATION AND SHALL MAKE ADJUSTMENTS AS REQUIRED TO FIT THE DUCTWORK AND PIPING WITHIN THE AVAILABLE SPACE. FIELD VERIFY FINAL LOCATIONS TO INSTALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS REGARDING SERVICE CLEARANCE AND PROPER AIRFLOW CLEARANCE AROUND EQUIPMENT.
6. REFER TO ARCHITECTURAL DRAWINGS FOR ALL RELATED CONSTRUCTION DETAILS AS APPLICABLE TO THE HVAC SYSTEM. CHASE AND PENETRATIONS INTENDED FOR DUCTWORK AND PIPING SHALL BE VERIFIED WITH ARCHITECTURAL DRAWINGS PRIOR TO INSTALLATION.
7. COORDINATE LOCATION OF ROOF PENETRATIONS WITH THE EXISTING CONDITIONS AND ARCHITECTURAL DRAWINGS.
8. SEAL ALL PENETRATIONS THROUGH THE BUILDING COMPONENTS IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS. FIREPROOF ALL PENETRATIONS THROUGH FIRE RATED COMPONENTS IN ACCORDANCE WITH U.L. REQUIREMENTS.
9. COORDINATE THE EXACT MOUNTING SIZE AND FRAME TYPE OF DIFFUSERS, REGISTERS AND GRILLES WITH THE SUPPLIER TO MEET THE CEILING, WALL, AND DUCT INSTALLATION REQUIREMENTS.
10. LOCATION OF CEILING DIFFUSERS, REGISTERS, AND GRILLES SHALL BE ADJUSTED AS REQUIRED TO ACCOMMODATE FINAL CEILING AND LIGHTING LOCATIONS.
11. DUCTWORK CROSSING FIRE RATED WALL OR OTHER FIRE RATED ASSEMBLIES SHALL BE MINIMUM 26 GAUGE SHEET METAL.
12. PROVIDE FIRE AND/OR FIRE/SMOKE DAMPERS IN DUCTWORK AT CEILINGS AND WALLS AS REQUIRED BY BUILDING CODE AUTHORITY HAVING JURISDICTION. FIRE AND FIRE/SMOKE DAMPERS SHALL CONFORM TO NFPA AS APPLICABLE.
13. PROVIDE WALL AND/OR DUCT ACCESS PANELS OR DOORS FOR ACCESS TO ALL FIRE AND/OR FIRE/SMOKE DAMPERS. ACCESS PANEL OR DOOR SHALL BE MINIMUM SIZE OF 6"x6" AND SHALL BE INSTALLED WITH 12" OF DAMPER. PROVIDE A REMOVABLE DUCT SECTION WHERE DUCT SIZE IS TOO SMALL FOR A 6"x6" ACCESS DOOR.
14. SENSORS SHALL BE LOCATED AND SET BY MECHANICAL CONTRACTOR AND WIRED IN CONDUIT BY ELECTRICAL CONTRACTOR. VERIFY EXACT LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION. MOUNTING HEIGHTS SHALL BE 48" AFF TO MEET ADA REQUIREMENTS UNLESS OTHERWISE NOTED ON PLANS.
15. COORDINATE THE LOCATION AND ELEVATION OF WALL-MOUNTED DEVICES WITH ANY WALL MOUNTED ITEMS INDICATED ON THE ARCHITECTURAL DRAWINGS. CONTRACTOR WILL NOT BE REIMBURSED FOR RELOCATION OF ANY WALL-MOUNTED DEVICES CAUSED BY A LACK OF COORDINATION.
16. ALL BRANCH DUCT CONNECTIONS AND TAKE-OFFS TO INDIVIDUAL DIFFUSERS, REGISTERS, AND GRILLES SHALL HAVE A PREFABRICATED 45 DEGREE, HIGH EFFICIENCY RECTANGULAR/ROUND BRANCH DUCT TAKEOFF FITTING WITH MANUAL BALANCING DAMPER AND LOCKING QUADRANT.
17. BRANCH DUCTWORK TO AIR OUTLETS SHALL BE SAME SIZE AS OUTLET NECK SIZE UNLESS OTHERWISE NOTED.
18. RIGID DUCTWORK INSULATION: PROVIDE R-6 MINIMUM INSULATION WRAP ON ALL CONCEALED DUCTWORK. PROVIDE R-6 MINIMUM INTERNAL DUCT LINER ON ALL EXPOSED DUCTWORK. DUCT SIZES ON MECHANICAL PLANS INDICATE CLEAR INSIDE DIMENSIONS, SHEET METAL SIZES SHALL INCREASE ACCORDINGLY. PROVIDE R-12 MINIMUM INSULATION ON ALL DUCTWORK INSTALLED IN UNCONDITIONED SPACES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
19. FLEXIBLE DUCT WORK SHALL BE THERMAFLEX TYPE MKE, FLEXMASTER TYPE 8M, OR APPROVED EQUAL, SHALL BE LISTED UNDER 181 AS CLASS 1 AIR DUCT AND SHALL BE PROVIDED WITH INTEGRAL R-6 MINIMUM FIBERGLASS INSULATION. FLEXIBLE DUCTWORK SHALL NOT EXCEED 5'-0" IN LENGTH AND SHALL BE INSTALLED AND SUPPORT TO AVOID SHARP BENDS AND SAGGING.
20. WALL MOUNTED LOUVERS SHALL BE FURNISHED WITH SUITABLE MOUNTING FRAME TO MATCH WALL CONSTRUCTION. COORDINATE WITH ARCHITECTURAL DRAWINGS.
21. REFER TO ARCHITECTURAL SHEETS FOR FIRE PROTECTION REQUIREMENTS.

NOTE:
ALL ROOF WORK TO BE PERFORMED BY LANDLORD'S APPROVED ROOFING CONTRACTOR AT TENANT'S GC EXPENSE.

SBLM

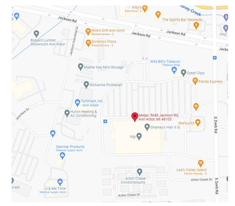
Owner
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Revisions
04/10/23 ISSUED FOR PERMIT/OWNER REVIEW

Key Plan



Seal & Signature



04/11/2023

Project
BFM001 - Best Friends Pet - Ann Arbor
Store Location Number - #173
5645 Jackson Road, Ann Arbor, MI 48103

Drawing Date: 03/29/2023 *Project No. : BFM001*
Drawn By : JK,CS *Checked By : BT*

Drawing Title
MECHANICAL PLAN

Drawing Number
M101

15000 – BASIC MECHANICAL REQUIREMENTS

DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ALL OTHER SPECIFICATION SECTIONS, APPLY TO THIS AND THE OTHER SECTIONS OF DIVISION 15.

READ THE SPECIFICATIONS AND REVIEW DRAWINGS FOR ALL DIVISIONS OF WORK AND COORDINATE AND THE WORK OF SUBCONTRACTORS WITH ALL DIVISIONS OF WORK. PROVIDE SUBCONTRACTORS WITH A COMPLETE SET OF BID DOCUMENTS.

SCHEDULE THE COMPLETION AND INSPECTION OF WORK AND THE WORK OF SUBCONTRACTORS WORK TO COMPLY WITH THE SCHEDULE AND THE PROJECT COMPLETION DATE.

VISIT THE SITE PRIOR TO SUBMITTAL OF BID TO DETERMINE CONDITIONS AFFECTING THE WORK. ANY ITEMS WHICH ARE NOT COVERED IN THE BID DOCUMENTS OR ANY PROPOSED SUBSTITUTIONS SHALL BE LISTED SEPARATELY AND QUALIFIED IN THE BID. SUBMITTAL OF BID SHALL SERVE AS EVIDENCE OF KNOWLEDGE OF EXISTING CONDITIONS AND ANY MODIFICATIONS WHICH ARE REQUIRED TO MEET THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. FAILURE TO VISIT THE SITE DOES NOT RELIEVE RESPONSIBILITY IN PERFORMANCE OF WORK.

READ ALL RELEVANT DOCUMENTS, BECOME FAMILIAR WITH THE JOB, SCOPE OF WORK, TYPE OF GENERAL CONSTRUCTION, AND THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS. ALSO UNDERSTAND THE PURPOSE FOR WHICH THESE DOCUMENTS HAVE BEEN PREPARED AND BECOME COGNIZANT OF ALL THE DETAILS INVOLVED. COORDINATE WORK WITH THAT OF OTHERS.

DEFINITIONS:

FURNISH – PURCHASE AND DELIVER TO PROJECT SITE COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT.
INSTALL – UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY TO ESTABLISH SECURE MOUNTING AND CORRECT OPERATION AT THE PROPER LOCATION IN THE PROJECT.
PROVIDE – FURNISH AND INSTALL

GENERAL REQUIREMENTS

PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE MECHANICAL SYSTEM AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS. ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE OTHERS SHALL BE PROVIDED. CLOSELY COORDINATE THE ENTIRE INSTALLATION WITH THE ARCHITECT–ENGINEER, AS REQUIRED.

THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER AND ANY MATERIAL OR LABOR CALLED FOR IN ONE SHALL BE FURNISHED AND INSTALLED EVEN THOUGH NOT SPETINOLY MENTIONED IN BOTH. ANY MATERIAL OR LABOR WHICH IS NEITHER SHOWN ON THE DRAWINGS NOR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS OBVIOUSLY NECESSARY TO COMPLETE THE WORK, AND WHICH IS USUALLY INCLUDED IN WORK OF SIMILAR CHARACTER, SHALL BE FURNISHED AND INSTALLED AS PART OF CONTRACT.

WHERE THE DRAWINGS OR SPECIFICATIONS CALL FOR ITEMS WHICH EXCEED CODES OR THE OWNERS CRITERIA, PROVIDE THE SYSTEM WITH THE MORE STRINGENT REQUIREMENTS AS DESIGNED AND DESCRIBED ON THESE DRAWINGS, UNLESS SPECIFICALLY NOTED OTHERWISE.

ALL MECHANICAL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING, AND REPAIRING. THIS CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUFFICIENT SERVICE ACCESS TO ALL EQUIPMENT.

ALL WORK SHALL BE PERFORMED IN A NEAT PROFESSIONAL MANNER USING GOOD ENGINEERING PRACTICES.

UNLESS SPECIFICALLY NOTED OTHERWISE, MATERIALS, PRODUCTS, AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW, UNDERWRITERS LABORATORIES LISTED AND LABELED AND SIZED IN CONFORMITY WITH REQUIREMENTS OF STATE AND LOCAL CODES, WHICHEVER IS MORE STRINGENT.

CODES

ALL WORK SHALL CONFORM TO THE OWNER'S CRITERIA, THE STATE'S, COUNTY'S, CITY'S AND LOCAL CODES AND ORDINANCES, SAFETY AND HEALTH CODES, OSHA, NFPA CODES, ENERGY CODES AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS. INCLUDE ANY CHANGES REQUIRED BY CODES IN THE BID AND IF THESE CHANGES ARE NOT INCLUDED IN THE BID, THEY MUST BE QUALIFIED AS A SEPARATE LINE ITEM IN THE BID. AFTER CONTRACT IS ISSUED, NO ADDITIONAL COST DUE TO CODE ISSUES SHALL BE REIMBURSED BY THE OWNER.

LICENSES, PERMITS, COMMISSIONING, INSPECTIONS & FEES

OBTAIN AND PAY FOR ALL LICENSES, PERMITS, COMMISSIONING, INSPECTIONS, AND FEES REQUIRED OR RELATED TO THIS WORK.

PROVIDE TO THE OWNER–ARCHITECT A COMMISSIONING PLAN, PRELIMINARY COMMISSIONING REPORT, FINAL COMMISSIONING REPORT, AND CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT COMPLETION OF PROJECT.

TRADE NAMES, MANUFACTURERS AND SHOP DRAWINGS

WHERE TRADE NAMES AND MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE USED AS A MINIMUM FOR THE BASE BID. MANUFACTURERS CONSIDERED AS AN EQUAL OR BETTER IN ALL ASPECTS TO THAT SPECIFIED WILL BE SUBJECT TO APPROVAL IN WRITING BY ARCHITECT–ENGINEER PRIOR TO BID THROUGH SHOP DRAWING SUBMITTAL PROCESS, FOR ACCEPTANCE PRIOR TO INSTALLATION. ANY CHANGES TO ELECTRICAL SERVICE, STRUCTURAL FRAMING, ETC. OR ANY OTHER MODIFICATION THAT IS REQUIRED BY THE USE OF ALTERNATE EQUIPMENT SHALL BE COORDINATED WITH OTHER TRADES AND SHALL INCLUDE ALL COSTS IN BID FOR THE REQUIRED CHANGES. THE USE THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT NO EXPENSE TO THE OWNER.

GUARANTEE

GUARANTEE ALL MATERIALS AND WORK PROVIDED UNDER THIS CONTRACT AND MAKE GOOD, REPAIR OR REPLACE AT NO EXPENSE TO THE OWNER, ANY DEFECTIVE WORK, MATERIAL, OR EQUIPMENT WHICH MAY BE DISCOVERED WITHIN A PERIOD OF TWELVE (12) MONTHS FROM THE DATE OF ACCEPTANCE (IN WRITING) OF THE INSTALLATION. EXTENDED WARRANTIES ARE AS SPECIFIED WITH INDIVIDUAL EQUIPMENT.

QUALITY ASSURANCE

INDUSTRY STANDARDS AND CODES: UNLESS MODIFIED BY THESE SPECIFICATIONS, THE DESIGN, MANUFACTURER, TESTING AND METHOD OF INSTALLING ALL MATERIALS, APPARATUS AND EQUIPMENT SHALL CONFORM TO THE FOLLOWING:
1. ARI CODE FOR REFRIGERATION APPARATUS
2. ANSI B9.1 SAFETY CODE FOR MECHANICAL REFRIGERATION
3. STANDARDS OF NATIONAL FIRE PROTECTION ASSOCIATION
4. SMACNA
5. ASHRAE

RECORD DRAWINGS

MAINTAIN ONE COPY OF DRAWINGS ON THE JOB SITE TO RECORD DEVIATIONS FROM CONTRACT DRAWINGS, SUCH AS: LOCATION OF CONCEALED PIPING VALVES AND DUCTS, REVISIONS, ADDENDUMS, AND CHANGE ORDERS, AND SIGNIFICANT DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS, AND CONTRACTOR'S COORDINATION WITH OTHER TRADES.

AT COMPLETION OF THE PROJECT AND BEFORE FINAL APPROVAL, MAKE ANY FINAL CORRECTIONS TO DRAWINGS AND CERTIFY THE ACCURACY OF EACH PRINT BY SIGNATURE THEREON. A SET OF REPRODUCIBLE DRAWINGS ALONG WITH ONE SET OF BLULINES OF THE MOST RECENT SET OF DRAWINGS WITH TEMPERATURE CONTROL DRAWINGS INCLUDED SHALL BE DELIVERED TO THE ARCHITECT UPON COMPLETION OF THE WORK AND PRIOR TO FINAL ACCEPTANCE OF THE PROJECT.

DISCREPANCIES IN DOCUMENTS

DRAWINGS (PLANS, SPECIFICATIONS, AND DETAILS) ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE MECHANICAL SYSTEMS. WHERE DRAWINGS, EXISTING SITE CONDITIONS, SPECIFICATIONS OR OTHER TRADES CONFLICT OR ARE UNCLEAR, ADVISE THE ARCHITECT–ENGINEER IN WRITING, OF VARIATIONS TO CONTRACT DOCUMENTS PRIOR TO SUBMISSION OF BID. OTHERWISE, ARCHITECT–ENGINEER'S INTERPRETATION OF CONTRACT DOCUMENTS OR CONDITIONS SHALL BE FINAL WITH NO ADDITIONAL COMPENSATION PERMITTED.

PHASING REQUIREMENTS

INCLUDE IN BID ALL NECESSARY SERVICE REQUIRED TO KEEP THE OPERATING PHASE OF THE PROJECT'S HVAC, PLUMBING AND SPRINKLER SERVICE IN OPERATION. IF APPLICABLE, SCHEDULE IN WRITING WITH ARCHITECT ONE WEEK PRIOR TO ANY SHUT DOWN OF THE HVAC, PLUMBING OR FIRE PROTECTION SYSTEMS.

DEMOLITION

COORDINATE THE DEMOLITION OF EXISTING WORK AND THE DEMOLITION PROVIDED BY OTHER. COORDINATE ANY EXISTING EQUIPMENT REQUIRED TO BE LEFT INTACT.

VERIFY SCOPE OF AND THE REMOVAL OF ALL EXISTING FIRE PROTECTION, PLUMBING FIXTURES, PIPING, HVAC UNITS, REFRIGERANT RECAPTURE, EXHAUST FANS, ETC. AND ASSOCIATED ROOF CURBS NOT TO BE REUSED ON THIS PROJECT, UNLESS SPECIFICALLY NOTED OTHERWISE. VERIFY ALL PRESUMED ABANDONED EQUIPMENT, PIPES, DUCTWORK, AND EQUIPMENT PRIOR TO REMOVAL. ROOF CURBS SHALL BE REMOVED AND THE ROOF PATCHED. ALL EXTRANEOUS ITEMS IN THE SPACE OR ON THE ROOF NOT APPLICABLE TO THE NEW WORK MUST BE REMOVED AND ROOF/WALL/FLOOR PATCHED/REPAIRED TO MATCH EXISTING STRUCTURE. EXISTING ABANDONED PIPES, DUCTS, OR EQUIPMENT IN THE FLOOR, EMBEDDED IN CONCRETE, OR OTHERWISE INACCESSIBLE ARE TO BE CUT OFF AND SEALED BELOW OR WITHIN FLOOR OR WALL LEVEL WHEN THEY ARE NOT TO BE REUSED IN THIS PROJECT. ABANDONED PIPING AND/OR DUCTWORK MUST BE REMOVED TO POINT OF ORIGIN. CONFIRM THE EXTENT OF DEMOLITION PRIOR TO BID AND INCLUDE IN BID PROPOSAL.

CUTTING AND PATCHING

PERFORM ALL CUTTING AND PATCHING AS REQUIRED FOR THE INSTALLATION OF THE WORK UNDER THIS SPECIFICATION. NO CUTTING OF THE STRUCTURE SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER OR ARCHITECT.

PATCHING SHALL BE OF THE SAME WORKMANSHIP, MATERIAL AND FINISH AND SHALL MATCH ACCURATELY ALL SURROUNDING CONSTRUCTION IN A MANNER SATISFACTORY TO THE ARCHITECT.

EXISTING UTILITIES, ETC. THAT ARE DAMAGED DURING THE CONSTRUCTION PERIOD, WHETHER OR NOT DUE TO NEGLIGENCE SHALL BE REPAIRED OR REPLACED AND LEFT IN A CONDITION SUITABLE TO THE ARCHITECT.

SLEEVES

PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH SLEEVE SHALL EXTEND THROUGH ITS RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2" ABOVE THE FLOOR. COORDINATE THROUGH THE ARCHITECT ANY CORE DRILLING OR CUTTING OF OPENINGS IN MASONRY FLOORS OR WALLS.

ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND/OR FLOORS SHALL BE FIRE SEALED WITH CALCIUM SILICATE, SILICONE "RTV" FOAM, "3M" FIRE RATED SEALANTS OR EQUAL, SO AS TO RETAIN THEIR FIRE RATING.

SLEEVES IN BEARING AND MASONRY WALLS, FLOORS, AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILINGS, OR FOR CONCEALED VERTICAL PIPING, SLEEVES SHALL BE NO. 22 U.S.G. GALVANIZED STEEL MINIMUM.

HANGERS

HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL SUCH AS ANGLE IRON, BANDS, C–CLAMPS WITH RETAINING CLIPS, CHANNELS, HANGER RODS, ETC., NECESSARY FOR THE INSTALLATION OF WORK.

HANGERS SHALL BE FASTENED TO BUILDING STEEL, CONCRETE, OR MASONRY, BUT NOT TO PIPING. HANGING FROM METAL DECK IS NOT PERMITTED. HANGERS MUST BE ATTACHED TO UPPER CHORD OF BAR JOIST. WHERE INTERFERENCES OCCUR, AND IN ORDER TO SUPPORT DUCTWORK OR PIPING, INSTALL TRAPEZE TYPE HANGERS OR SUPPORTS WHICH SHALL BE LOCATED WHERE THEY DO NOT INTERFERE WITH ACCESS TO FIRE DAMPERS, VALVES, AND OTHER EQUIPMENT. HANGER TYPES AND INSTALLATION METHODS ARE ALSO SUBJECT TO LANDLORD CRITERIA.

HANGERS FOR ALL INSULATED PIPING SHALL BE SIZED AND INSTALLED FOR THE OUTER DIAMETER OF INSULATION. INSTALL 6" LONG SPLIT CIRCLE GALVANIZED SADDLE BETWEEN THE HANGER AND THE PIPE INSULATION.

HANGERS AND PIPING OF DISSIMILAR METALS SHALL BE DI–ELECTRICALLY SEPARATED.

PROVIDE SWAY AND SEISMIC BRACING WHERE REQUIRED BY CODE.

JOB CONDITIONS
PROTECT MATERIALS, APPARATUS AND EQUIPMENT FROM DAMAGE, MOISTURE, DIRT, DEBRIS AND WORK OF OTHER TRADES.

OPERATION MANUALS AND INSTRUCTIONS

PROVIDE OPERATING AND MAINTENANCE INSTRUCTIONS AT THE COMPLETION OF THE PROJECT. SUBMIT THREE HARD BOUND COPIES TO ARCHITECT.

SCHEDULE A MEETING WITH THE OWNER'S REPRESENTATIVE AT THE SITE TO PROVIDE DETAILED INFORMATION ON THE OPERATING AND MAINTENANCE OF EQUIPMENT.

SUBMITTALS
SUBMIT WITHIN THIRTY (30) DAYS AFTER THE DATE OF NOTICE TO PROCEED AND BEFORE PURCHASING ANY MATERIALS OR EQUIPMENT, SUBMIT TO THE ARCHITECT FOR REVIEW, A COMPLETE LIST, IN SIX (6) COPIES, OF ALL MATERIALS INCORPORATED IN THE WORK. THIS LISTING SHALL BE ARRANGED BY THE ORDER OF OCCURRENCE IN THE SPECIFICATIONS, FOLLOWED BY THE ITEMS ON THE DRAWING NOT SPECIFICALLY INCLUDED IN THE SPECIFICATIONS.

AFTER THE LIST HAS BEEN PROCESSED BY THE ARCHITECT, SUBMIT COMPLETE SHOP DRAWINGS AND PRODUCT DATA OF ALL EQUIPMENT. THESE SUBMITTALS SHALL BE SUBMITTED WITHIN THIRTY (30) DAYS AFTER THE PROCESSING DATE OF THE ORIGINAL SUBMITTAL LIST. SUBMISSIONS SHALL BE MADE EARLY ENOUGH IN PROJECT TO ALLOW FOR (10) WORKING DAYS FOR REVIEW BY ARCHITECT–ENGINEER WITHOUT CAUSING DELAYS OR CONFLICTS IN THE PROJECT'S PROGRESS.

ALL SUBMITTALS SHALL BE COMPLETE AND SHALL BE IN THREE–RING, LOOSE –LEAF BINDERS, NO CONSIDERATION WILL BE GIVEN TO PARTIAL SUBMITTALS, UNLESS NOTED OTHERWISE BY ARCHITECT. EACH ITEM SHALL HAVE A COVER PAGE STATING PROJECT, SPECIFICATION AND PARAGRAPH REFERENCE NUMBER, OR DRAWING REFERENCE NUMBER, AND SCHEDULED EQUIPMENT IDENTIFICATION NUMBER, IF APPLICABLE.

THE REVIEW OF SUBMITTALS DOES NOT RELIEVE RESPONSIBILITY OF SHOP DRAWING ERRORS IN DETAILS, SIZES, QUANTITIES, WIRING DIAGRAM ARRANGEMENTS AND DIMENSIONS WHICH DEVIATE FROM THE SPECIFICATIONS, CONTRACT DRAWINGS AND/OR JOB CONDITIONS AS THEY EXIST.

IF APPARATUS OR MATERIALS ARE SUBSTITUTED FOR THOSE SPECIFIED UNDER THIS SECTION, AND SUCH SUBSTITUTIONS NECESSITATE CHANGES IN OR ADDITIONAL CONNECTIONS, PIPING SUPPORTS OR CONSTRUCTIONS, SAME SHALL BE PROVIDE AT NO ADDITIONAL COST TO THE OWNER. ASSUME COST AND ENTIRE RESPONSIBILITY THEREOF. ARCHITECT'S PERMANGEMENTS TO MAKE SUCH SUBSTITUTION SHALL NOT RELIEVE FULL RESPONSIBILITY FOR WORK.

TEST AND BALANCE REPORT: SUBMIT AT FINAL INSPECTION OPERATION AND MAINTENANCE MANUALS: SUBMIT COPIES IN COMPLIANCE WITH SECTION, OPERATION AND MAINTENANCE MANUALS.

15400 – HEATING VENTILATION AND & AIR CONDITIONING

PRODUCTS:
ALL MATERIALS AND EQUIPMENT SHALL BE NEW. SYSTEMS SHALL FUNCTION CORRECTLY AS A WHOLE, AND IN ALL ITS PARTS UP TO THE SPECIFIED CAPACITY. SYSTEMS OR DEVICES FAILING TO MEET PERFORMANCE REQUIREMENTS SHALL BE REPLACED, ALTERED OR REPAIRED AS REQUIRED TO BRING PERFORMANCE UP TO SPECIFIED REQUIREMENTS. WORK DAMAGED OR MARRED BY SUCH REPLACEMENTS, ALTERATIONS, OR REPAIRS SHALL BE RESTORED TO PRIOR CONDITIONS, AT NO ADDITIONAL COST TO THE OWNER. WHERE MULTIPLE ITEMS OF EQUIPMENT OR MATERIALS ARE REQUIRED, THEY SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER. BEFORE ORDERING EQUIPMENT, THE PHYSICAL DIMENSIONS SHALL BE CHECKED TO VERIFY FIT IN SPACES ALLOTTED ON THE DRAWINGS. INSERTS, PIPE SLEEVES, AND SUPPORTS OF AIR CONDITIONING EQUIPMENT SHALL BE PROVIDED AS SPECIFIED. WHERE SUCH ITEMS ARE TO BE SET OR EMBEDDED IN CONCRETE, MASONRY OR SIMILAR WORK, THE ITEMS SHALL BE FURNISHED AT THE PROPER TIME FOR SETTING OR EMBEDMENT SO AS TO CAUSE NO DELAY. DUCTWORK AND EQUIPMENT ASSEMBLIES SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC. ADDITIONAL DUCTWORK AND APPURTENANCES REQUIRED FOR PROPER OPERATION OF EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST.

MANUFACTURER'S NAMES AND CATALOG NUMBERS
SPECIFIC REFERENCES HAVE BEEN MADE TO ONE OR MORE MANUFACTURER'S NAMES AND MODEL OR CATALOG NUMBERS. THIS DOES NOT INDICATE THAT THE MATERIAL AND EQUIPMENT SPECIFIED IS NECESSARILY AN "OFF THE SHELF" ITEM; REQUIREMENTS FOR SPECIFIC FINISHES, MATERIALS OR OTHER MODIFICATIONS MAY INTRODUCE VARIANCES FROM MANUFACTURER'S STANDARDS. ASCERTAIN THAT SUCH MODIFICATIONS ARE FULLY CONSIDERED.

DIAGRAMS, NAMEPLATES AND LABELS
EACH MAJOR COMPONENT OF EQUIPMENT SHALL HAVE THE MANUFACTURER'S NAME, ADDRESS AND CATALOG NUMBER ON A PLATE SECURELY AFFIXED IN A CONSPICUOUS PLACE. THE NAMEPLATE OF A DISTRIBUTING AGENT WILL NOT BE ACCEPTED. ALL PIECES OF EQUIPMENT, VALVES, STARTERS, DISCONNECTS, AND ALL PNEUMATIC AND ELECTRIC CONTROL INSTRUMENTS AND APPARATUS SHALL BE IDENTIFIED WITH 1/16" THICK BLACK LAMINATED PLASTIC NAMEPLATES, WITH 3/16" HIGH WHITE LAMINATED LETTERS. SIMILAR AND LIKE EQUIPMENT SHALL BE DESIGNATED WITH NUMERICAL SUFFIX (EXAMPLE: THERMOSTAT, T–1). THE NAMEPLATE IDENTIFICATIONS SHALL COINCIDE WITH ITEMS APPEARING ON DIAGRAMS. PROVIDE A LABEL FOR THE MECHANICAL SYSTEM STATING: (NAME, ADDRESS AND PHONE NUMBER OF CONTRACTOR). LETTERS SHALL BE 1/4" HIGH AND LOCATED IN A CONSPICUOUS PLACE NEAR THE HVAC EQUIPMENT.

EXECUTION

INSTALLATION AND WORKMANSHIP
THE WORK SHALL BE PERFORMED BY QUALIFIED MECHANICS. ALL MATERIALS, APPARATUS AND EQUIPMENT SHALL BE INSTALLED IN NEAT, WORKMANLIKE MANNER. MATERIALS, DEVICES OR EQUIPMENT WHICH, IN THE OPINION OF THE ARCHITECT–ENGINEER, IS IMPROPERLY INSTALLED SHALL BE REMOVED AND REINSTALLED IN AN APPROVED MANNER AT NO ADDITIONAL COST TO THE OWNER. THE WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES. WHERE THE WORK IS DEPENDENT UPON WORK OF OTHER TRADES OR WORK ALREADY IN PLACE, SUCH OTHER WORK AND WORK IN PLACE SHALL BE EXAMINED AND SHALL BE IN PROPER CONDITION AND STATE OF COMPLETION BEFORE CONTINUING THE INSTALLATION. THE INSTALLATION OF WORK SHALL, IN GENERAL, BE AS HIGH AS POSSIBLE AND LOCATED IN ACCORDANCE WITH THE DRAWINGS. DUCTWORK INDICATED SHALL BE FOLLOWED AS ACCURATELY AS POSSIBLE. ANY NECESSARY DEVIATIONS SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT–ENGINEER. PROVIDE DRAWINGS SHOWING PROPOSED CHANGES. APPROVAL IS REQUIRED BEFORE CHANGES SHALL TAKE EFFECT.

CUTTING AND PATCHING
LAYOUT OPENINGS FOR CUTTING BY OTHER TRADES AS REQUIRED. CUTTING OF STEEL, CONCRETE OR ANY OTHER STRUCTURAL PART MUST BE APPROVED IN WRITING BY ARCHITECT–ENGINEER PRIOR TO CUTTING.

WATERPROOFING
DO NOT CUT OR PENETRATE WATERPROOFED SURFACES, OR WATERPROOFING MEMBRANES, WITHOUT FIRST MAKING ARRANGEMENTS FOR REPAIR BY A METHOD APPROVED BY ARCHITECT–ENGINEER.

PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.

ELECTRICAL WORK
POWER WIRING FROM PANELS TO MOTOR CONTROLLERS AND FROM CONTROLLERS TO MOTORS IS SPECIFIED IN DIVISION 16. MOTOR STARTERS NOT SPECIFIED TO BE FURNISHED WITH THE MOTORS FROM THE FACTORY ARE SPECIFIED IN DIVISION 16. SUBMIT WIRING DIAGRAMS FOR APPROVAL AND FURNISH APPROVED DIAGRAMS TO THE ELECTRICAL CONTRACTOR FOR COORDINATION. ELECTRICAL CONTROL WIRING FOR INTERLOCKS OF TEMPERATURE CONTROLLERS, PUSH BUTTONS, INTERLOCKS IN MOTOR CONTROLLERS, AND LIKE ITEMS SPECIFIED IN THE CONTROL SECTION(S) IN THIS DIVISION. FURNISH ALL EQUIPMENT WITH COMPLETE INTERNAL CONTROL WIRING. ELECTRICAL WORK SPECIFIED IN THIS DIVISION SHALL CONFORM TO APPLICABLE PROVISIONS OF DIVISION 16. ALL CONTROL WIRING SHALL BE IN CONDUIT. PROVIDE MOTORS CONFORMING TO CHARACTERISTICS SHOWN ON ELECTRICAL DRAWINGS.

ACCESS DOORS (ACCESS PANELS)
PROVIDE ACCESS REQUIRED FOR MAINTENANCE, ADJUSTMENT, REMOVAL AND REPAIR OF VALVES, CONTROLS, DAMPERS, EQUIPMENT AND LIKE ITEMS. PROVIDE ACCESS DOORS (ACCESS PANELS) CONFORMING TO REQUIREMENTS OF DIVISION 8 SPECIFICATIONS. PANELS SHALL BE LOCATED TO MAKE ALL ITEMS EASILY ACCESSIBLE.

CLEAN UP
REFER TO GENERAL CONDITIONS FOR CLEAN–UP. CLEAN ALL MATERIALS AND EQUIPMENT OF DIRT, DUST, PAINT, SPOTS AND STAINS, SOIL MARKS AND OTHER FOREIGN MATTER.

FINAL INSPECTION
GIVE NOTICE TO THE ARCHITECT–ENGINEER THAT THE WORK IS READY FOR FINAL INSPECTION.
1. SUBMIT TEST AND BALANCE REPORT AND COMPLETE REQUIREMENTS AS NOTED.
2. SUBMIT LETTER FROM CONTROL MANUFACTURER CERTIFYING THAT CONTROLS HAVE BEEN CHECKED FOR OPERATION AND CALIBRATION, AND THAT THE SYSTEM IS OPERATING AS INTENDED.

FURNISH NECESSARY MECHANICS TO OPERATE SYSTEM, MAKE NECESSARY ADJUSTMENTS AND ASSIST WITH FINAL INSPECTION.

INSTRUCTION OF OWNER'S OPERATING PERSONNEL
INCLUDE THE COST OF THE SERVICES OF QUALIFIED INSTRUCTOR(S) TO INSTRUCT THE OWNER'S OPERATING PERSONNEL IN THE OPERATION, ADJUSTMENT, CARE AND MAINTENANCE OF ALL HVAC EQUIPMENT AND SYSTEMS. INSTRUCTION SHALL BE PERFORMED AT A TIME APPROVED BY THE OWNER AND AFTER ALL HVAC EQUIPMENT AND SYSTEMS ARE INSTALLED, COMPLETE, ADJUSTED AND OPERATING TO SPECIFIED REQUIREMENTS. NOTIFY THE ARCHITECT–ENGINEER WHEN INSTRUCTIONS WILL BE GIVEN. QUALIFICATIONS OF INSTRUCTORS SHALL BE SUBJECT TO APPROVAL OF THE OWNER AND EQUIPMENT MANUFACTURER. ADDITIONAL REQUIREMENTS CONCERNING OPERATION AND MAINTENANCE OF MECHANICAL EQUIPMENT AND SYSTEMS MAY BE SPECIFIED IN OTHER SECTIONS. TWO COPIES OF ACKNOWLEDGMENT OF ALL REQUIRED INSTRUCTIONS TO OWNER'S OPERATING PERSONNEL, SIGNED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE, SHALL BE SUBMITTED TO THE ARCHITECT–ENGINEER PRIOR TO SUBMITTING APPLICATION FOR FINAL PAYMENT. AN ADDITIONAL COPY OF THIS ACKNOWLEDGMENT IS REQUIRED IN EACH COPY OF OPERATION AND MAINTENANCE MANUALS REQUIRED IN THE SECTION, OPERATION AND MAINTENANCE MANUALS.

OPERATION AND MAINTENANCE MANUALS

FURNISH THREE COPIES OF COMPLETE OPERATION AND MAINTENANCE MANUALS TO THE ARCHITECT–ENGINEER, FOR APPROVAL AND FOR THE OWNER, ON ALL EQUIPMENT AND SYSTEMS. THE MANUALS SHALL BE BOUND IN HARD–BACK, THREE RING LOOSE–LEAF BINDERS. MANUALS SHALL CONTAIN A TITLE SHEET WITH JOB NAME, AND THE NAMES, ADDRESSES AND PHONE NUMBERS OF THE CONTRACTOR, SUBCONTRACTOR, CONTROL SUBCONTRACTOR, RELATED CONTRACTORS AND MATERIAL AND EQUIPMENT SUPPLIERS.

A COPY OF ACKNOWLEDGMENT OF INSTRUCTION TO THE OWNER'S OPERATING PERSONNEL IN THE OPERATION OF ALL MECHANICAL EQUIPMENT AND SYSTEMS, SIGNED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE. TYPEWRITTEN OPERATING INSTRUCTIONS FOR THE OWNER'S PERSONNEL DESCRIBING HOW TO STOP AND START EACH PIECE OF EQUIPMENT; HOW TO SET THE TEMPERATURE CONTROL SYSTEM FOR NORMAL OPERATION AND NORMAL RESTARTING PROCEDURES, CAUTION AND WARNING NOTICES. APPROVED SHOP DRAWINGS, PRODUCT DATA AND PARTS AND MAINTENANCE BOOKLET FOR EACH ITEM OF MATERIAL AND EQUIPMENT FURNISHED UNDER DIVISION 15000. RECORD DRAWINGS OF ALL SYSTEMS INCLUDING ELECTRICAL AND CONTROL DIAGRAMS. TEST AND BALANCE REPORT. COPIES OF CERTIFICATES OF INSPECTION. GUARANTEES, INCLUDING EXTENDED GUARANTEES.

DELIVER THE MANUALS TO THE OWNER PRIOR TO SUBMITTING APPLICATION FOR FINAL PAYMENT.

HVAC/HYDRONIC PIPING

CONDENSATE DRAIN
PROVIDE CONDENSATE DRAINS FOR ALL AIR CONDITIONING UNITS AND PIPE AS DENOTED ON DRAWINGS. CONDENSATE DRAIN PIPING SHALL BE INSTALLED WITH TRAP AT THE COIL CONNECTION AND SHALL HAVE A MINIMUM SEAL DEPTH EQUAL TO THE RESPECTIVE AIR HANDLING UNIT FAN STATIC PRESSURE. DEPTH SHALL BE A MINIMUM OF 2".

HVAC INSULATION

LOW PRESSURE DUCTWORK INSULATION
EXTERNAL INSULATION SHALL BE R–6 MINIMUM SCHULLER TYPE SMALLLITE, FSK SPIN–GLAS OR APPROVED EQUAL WITH AN EMBOSSED ALUMINUM FOIL FACING. INTERNAL INSULATION SHALL BE R–6 MINIMUM LINER WITH A COATED AIR SIDE SURFACE TO PREVENT EROSION. APPLY ADHESIVES AND FASTENERS PER SMACNA AND THE MANUFACTURER. ALL TRANSVERSE EDGES TO BE COATED WITH ADHESIVE. ALL CONCEALED DUCTWORK SHALL HAVE EXTERNAL INSULATION, UNCONCEALED DUCTWORK SHALL BE INTERNALLY LINED. DUCTWORK INSTALLED IN UNCONDITIONED SPACES SHALL BE R–12 MINIMUM SCHULLER TYPE SMALLLITE, FSK SPIN–GLAS OR APPROVED EQUAL WITH AN EMBOSSED ALUMINUM FOIL FACING.

ALL AIR SUPPLY DIFFUSERS BACKS AND NECKS, SHALL BE INSULATED WITH R–6 MINIMUM MANVILLE R–SERIES SMALLITE, OR APPROVED EQUAL FIBERGLASS BLANKET INSULATION.

ADHESIVES, MASTIC, SEALANTS
ADHESIVE SHALL BE FOSTER'S 85–20. STUDWELD PINS SHALL BE SEALED WITH FOSTER'S 30–36 ADHESIVE. ALL JOINTS, SEAMS AND BREAKS IN THE VAPOR BARRIER SHALL BE SEALED WITH FOSTER'S 35–00, REINFORCED WITH 4 INCH WIDE GLASS FABRIC.

TERMINAL HEAT TRANSFER UNITS

DESCRIPTION
INSTALL AIR CONDITIONING UNITS OF THE CAPACITIES INDICATED, COMPLETE WITH GAS–FIRED HEATING SYSTEM, WHERE INDICATED ON THE DRAWINGS. UNIT SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPLICABLE ASME AND ANSI CODES AND SHALL BE LISTED BY UNDERWRITER'S LABORATORIES. UNIT SHALL BE RATED IN ACCORDANCE WITH THE LATEST ARI STANDARD 21. WHERE SPECIFIED OPERATING CONDITIONS ARE OTHER THAN ARI STANDARD CONDITIONS, CAPACITIES SHALL BE INTERPOLATED FROM ARI CONDITIONS.

MANUFACTURER
UNITS SHALL BE TRANE, LENNOX, AAON OR APPROVED EQUAL.

DUCTWORK, LOW PRESSURE, GALVANIZED STEEL

QUALITY ASSURANCE
DUCTS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH "HVAC DUCT CONSTRUCTION STANDARDS" PUBLISHED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. (SMACNA)

JOB CONDIT

LIGHTING CONTROLS SCHEDULE

SYMBOL	MANUFACTURER	MODEL #	DETECTION TYPE	SETTINGS	INSTALLATION	DESCRIPTION
(OS)	WATTSTOPPER	DSW-301-W	DUAL TECHNOLOGY	ON: AUTOMATIC OFF: 20 MIN. DELAY	WALL	LINE VOLTAGE WALL OCCUPANCY SENSOR
(OS)	WATTSTOPPER	DT-355	DUAL TECHNOLOGY	ON: AUTOMATIC OFF: 20 MIN. DELAY	CEILING	LINE VOLTAGE CEILING OCCUPANCY SENSOR

LIGHT FIXTURE SCHEDULE

FIXTURE TAG	MANUFACTURER	MODEL #	LAMP/LED SOURCE	VOLTAGE	INSTALLATION	DESCRIPTION	NOTES
A	COLUMBIA LIGHTING	CFP24-4135	4,100 LUMENS 3,500K / 40W	UNV	RECESSED	2X4 RECESSED EDGE-LIT FLAT LED PANEL WITH 0-10V DIMMING DRIVER AND MATTE WHITE FINISH	2
AE	COLUMBIA LIGHTING	CFP24-4135 PLD10M FIELD INSTALLED	4,100 LUMENS 3,500K / 40W	UNV	RECESSED	2X4 RECESSED EDGE-LIT FLAT LED PANEL WITH 0-10V DIMMING DRIVER MATTE WHITE FINISH AND 90 MINUTE EMERGENCY BATTERY BACK-UP	1,2
EX	COMPASS	CER	LED RED LETTERING	UNV	SURFACE	EXIT SIGN, UNIVERSAL FAVE, RED LETTERING, NICAD BATTERY AND 90 MINUTE EMERGENY BATTERY BACK-UP	1

NOTES:
1. CIRCUIT EMERGENCY BATTERY UNITS/EXIT SIGNS AHEAD OF ANY MEANS OF SWITCHING/CONTROLS FOR PROPER OPERATION.
2. PROVIDE FIXTURE WITH SINGLE FLANGE KIT WHEN INSTALLED IN HARD LID CEILINGS.

NOTE:
ALL ROOF WORK TO BE PERFORMED BY LANDLORD'S APPROVED ROOFING CONTRACTOR AT TENANT'S GC EXPENSE.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION – POWER AND LIGHTING
+xx"	INSTALL DEVICE AT HEIGHT INDICATED (+60" = MOUNT AT 60"AFF)
$	SINGLE POLE WALL SWITCH
2$	WALL SWITCH – DESIGNATION AS FOLLOWS: 2=2 POLE 4=4-WAY 3=3-WAY P=PILOT LIGHT M=MOTOR RATED SWITCH H=LIGHT HANDLE D=DIMMER – REFER TO LIGHTING CONTROLS SCHEDULE T=TIMER OR=LIGHTING OVERRIDE – REFER TO LIGHTING CONTROL SCHEDULE
	SIMPLEX RECEPTACLE – NEMA 5-20R, UNO
	DUPLEX RECEPTACLE – NEMA 5-20R, UNO
	QUAD RECEPTACLE – NEMA 5-20R, UNO
	CEILING MOUNTED RECEPTACLE – NEMA 5-20R, UNO
	SPECIAL PURPOSE RECEPTACLE – REFER TO PLANS FOR MORE INFORMATION
	MULTI-USE FLOOR BOX
GFCI	RECEPTACLE DESIGNATION – REFER TO PLANS FOR MORE INFOMRATION
A-1	CIRCUIT DESIGNATION AS FOLLOWS: A-1 SINGLE PHASE CIRCUIT TO PANELBOARD 'A', CIRCUIT #1 WITH (1) HOT/SWITCH LEG, (1) NEUTRAL AND (1) GROUND A-3,5 SINGLE PHASE CIRCUIT TO PANELBOARD 'A'. CIRCUIT #3,5 WITH (2) HOT CONDUCTORS AND (1) GROUND. PROVIDE NEUTRAL AS REQUIRED PER EQUIPMENT. A-7,9,11 THREE PHASE CIRCUIT TO PANELBOARD 'A'. CIRCUIT #7,9,11 WITH (3) HOT CONDUCTORS AND (1) GROUND. PROVIDE NEUTRAL AS REQUIRED PER EQUIPMENT. REFER TO PANELBOARD SCHEDULE FOR WIRE SIZE. ALL CONDUIT SHALL HAVE EGC.
	MOUNT 6" ABOVE COUNTER
	JUNCTION BOX
	LIGHT FIXTURE – REFER TO LIGHT FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.
a	LOWER CASE LETTERING INDICATES SWITCHING SCHEME (I.E. CONNECT LIGHT FIXTURE TO SWITCH LED "a").
	EXIT SIGN – CEILING/WALL/FLOOR MOUNTED. PROVIDE ARROWS AS INDICATED ON PLAN. REFER TO LIGHT FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.
	ELECTRICAL PANELBOARD – SURFACE AND RECESSED MOUNTED
	DISCONNECT SWITCH 60/3 = 60 AMP SWITCH, 3 POLE 60/3/40 = 60 AMP SWITCH, 3 POLE, 40 AMP FUSE

SYMBOL	DESCRIPTION – DRAFTING SYMBOLS
X/x	INDICATES DETAIL, PLAN, SECTION, AND/OR DIAGRAM (APPLIES ONLY WHERE INDICATED ON DRAWINGS) INDICATES DRAWINGS ON WHICH DETAIL APPEARS
X/x	INDICATES SECTION NUMBER INDICATES DRAWINGS ON WHICH DETAIL APPEARS
X	INDICATES REVISION AND NUMBER
X	SHEET NOTE NUMBER

NOTE: NOT ALL SYMBOLS SHOWN IN THIS LEGEND MAY BE USED IN THESE DRAWINGS.

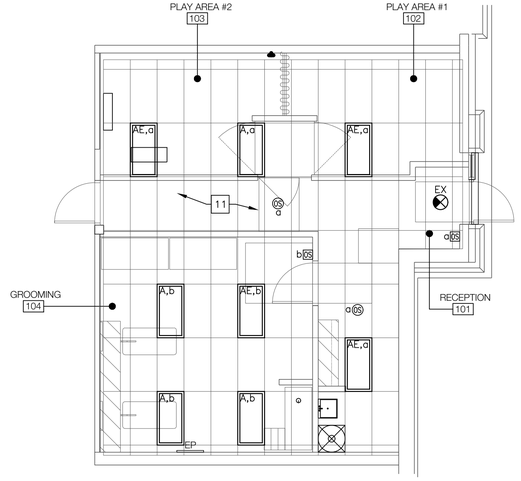
SYMBOL	DESCRIPTION – LOW VOLTAGE DEVICES
	NOTE: LOW VOLTAGE DEVICES TO BE ROUGH-IN ONLY. PROVIDE EACH ROUGH-IN WITH APPROPRIATE SIZE JUNCTION BOX AND 3/4" CONDUIT MINIMUM STUBBED INTO ACCESSIBLE CEILING SPACE ABOVE, UNO ON PLANS.
▼	TELEPHONE OUTLET
▼	TELEPHONE/DATA OUTLET
▽	DATA OUTLET
(B)	BELL
▣	PUSH BUTTON
(TV)	TELEVISION OUTLET

ABBREVIATIONS

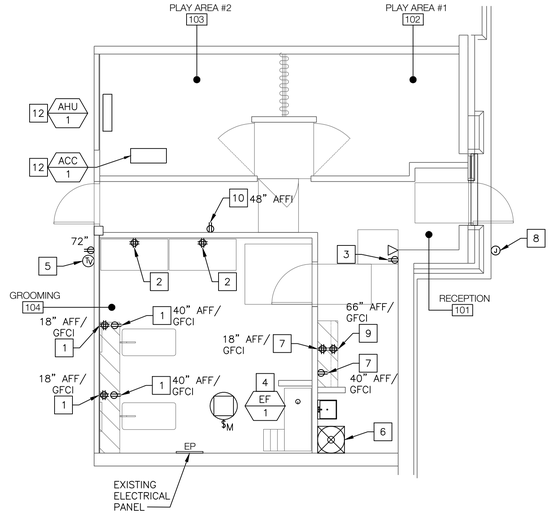
A	AMPERE
AC	ABOVE COUNTER
AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CURRENT
AL	ALUMINUM
AWG	AMERICAN WIRE GAGE
BRKR	BREAKER
C	CONDUIT
CU	COPPER
EC	ELECTRICAL CONTRACTOR
EGC	EQUIPMENT GROUNDING CONDUCTOR
EM/EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENT	ELECTRICAL NONMETALLIC TUBING
EX_EXIST	EXISTING
FLC	FLEXIBLE METAL CONDUIT
G	GROUND
GFCI	GROUND-FAULT CIRCUIT INTERRUPTER
HP	HORSEPOWER
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HZ	HERTZ (CYCLE PER SECOND)
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
KCMIL	ONE THOUSAND CIRCULAR MILS
KVA	KILOVOLT-AMPERES
KW	KILOWATT
LED	LIGHT-EMITTING DIODE
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
NEC	NATIONAL ELECTRICAL CODE (NFPA 70)
NEMA	NATIONAL ELECTRICAL MANUFACTURER ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NL	NIGHTLIGHT
P	POLE
PNLBD	PANELBOARD
RTU	ROOF TOP UNIT
TR	TAMPER-RESISTANT
TS	TIMESWITCH
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VA	VOLT-AMPERE
V AC	VOLTS ALTERNATING CURRENT
W	WATT
WP	WEATHERPROOF
WR	WEATHER RESISTANT
XFMR	TRANSFORMER

ABBREVIATIONS OF CABLES

MC	META-CLAD CABLE
THW	THERMOPLASTIC, HEAT AND MOISTURE RESISTANT CABLE
THHN JACKET	THERMOPLASTIC, HEAT RESISTANT CABLE, NYLON OUTER SHEATH
THHW CABLE	THERMOPLASTIC, HEAT AND MOISTURE RESISTANT
THWN	THERMOPLASTIC, MOISTURE AND HEAT RESISTANT CABLE, NYLON JACKET OUTER SHEATH



2 LIGHTING PLAN
SCALE: 3/16" = 1'-0"



1 POWER PLAN
SCALE: 3/16" = 1'-0"

ELECTRICAL KEYNOTES: ([1],[2],[X])

1. PROVIDE DEDICATED CIRCUIT FROM SPARE 20A, 1P BREAKER IN EXISTING PANEL FOR EACH GROOMING SALON OUTLET. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION.
2. DEDICATED RECEPTACLE FOR DRYER (TYPICAL). 87" AFF TO BOTTOM OF DEVICE.
3. PROVIDE DUPLEX RECEPTACLE AND JUNCTION BOX FOR DATA AT POS STATION. CIRCUIT TO SPARE 20A, 1P CIRCUIT BREAKER IN EXISTING PANELBOARD.
4. PROVIDE MOTOR RATED DISCONNECT FOR EF-1. CIRCUIT TO SPARE 20A, 1P BREAKER IN EXISTING PANELBOARD. IF THERE IS NO CONVENIENCE RECEPTACLE WITHIN 25' OF EF-1, PROVIDE NEW CONVENIENCE RECEPTACLE AND CIRCUIT TO SPARE 20A, 1P CIRCUIT BREAKER IN EXISTING PANEL. PROVIDE TIMER FOR CONTROL OF EXHAUST FAN.
5. PROVIDE DUPLEX RECEPTACLE AND JUNCTION BOX FOR DATA W/ 3/4"C TO ABOVE CEILING FOR TV. CIRCUIT TO SPARE 20A, 1P BREAKER IN EXISTING PANEL.
6. PROVIDE POWER FOR WATER HEATER. PROVIDE 20A 3P BREAKER WITH #12 WIRE IN EXISTING PANELBOARD
7. PROVIDE DEDICATED CIRCUIT FROM SPARE 20A, 1P BREAKER IN EXISTING PANEL FOR FUTURE EQUIPMENT.
8. PROVIDE POWER AND TIMESWITCH FOR EXTERIOR SIGN ON BUILDING EXTERIOR. CIRCUIT TO SPARE 20A, 1P BREAKER IN EXISTING PANEL. COORDINATE LOCATION AND SIGN REQUIREMENTS WITH OWNER, SIGN VENDOR, AND LANDLORD PRIOR TO BID.
9. PROVIDE DEDICATED CIRCUIT FROM 20A, 1P BREAKER IN EXISTING PANEL FOR IT EQUIPMENT.
10. PROVIDE DEDICATED CIRCUIT FROM 20A, 1P BREAKER IN EXISTING PANEL FOR CORRIDOR CONVENIENCE RECEPTACLE.
11. PROVIDE DEDICATED CIRCUIT FOR ALL LIGHTING IN THE SPACE.
12. PROVIDE DEDICATED CIRCUIT FOR SPLIT SYSTEM. CIRCUIT TO EXISTING PANEL PER MANUFACTURER'S RECOMMENDATIONS. COORDINATE ALL REQUIREMENTS WITH MECHANICAL CONTRACTOR. PROVIDE NEW 20A, 2P BREAKER IN EXISTING PANEL FOR SPLIT SYSTEM.

ELECTRICAL GENERAL NOTES:

1. DO NOT SCALE THESE DRAWINGS; REFER TO LARGEST SCALE ARCHITECTURAL PLANS.
2. THESE DRAWINGS ARE DIAGRAMMATIC ONLY AND ARE NOT INTENDED TO SHOW MINOR DETAILS AND EXACT LOCATIONS. DESIGN ADJUSTMENTS SHALL BE ANTICIPATED BY THE CONTRACTOR TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
3. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH NEC/NFPA 70. CONTRACTOR SHALL NOTIFY ENGINEER REGARDING ANY CODE DISCREPANCIES SHOWN ON PLAN. ANY PERMIT OR INSPECTION FEES ARE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
4. CONTRACTOR SHALL INSTALL GROUND AND BOND SYSTEM PER NEC.
5. CONTRACTOR SHALL COORDINATE TELEPHONE AND DATA OUTLETS REQUIRED WITH OWNER PRIOR TO GYP BOARD BEING INSTALLED.
6. CONDUCTORS SHALL BE TYPE THHN, THWN, OR THW. BRANCH CIRCUIT CONDUCTORS SHALL NOT BE SMALLER THAN #12 AWG IN 3/4"C EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE. HOME RUNS ORIGINATING MORE THAN 80' AT 120V FROM PANEL LOCATION SHALL BE #10 AWG MINIMUM. WIRE #10 AWG AND SMALLER SHALL BE SOLID; WIRES #8 AWG AND LARGER SHALL BE STRANDED. PROVISIONS OF WIRE COLOR CODE SECTION OF NEC SHALL BE STRICTLY COMPLIED WITH AND BE CONSISTENT THROUGHOUT ENTIRE SYSTEM.
7. ALL CIRCUITS SHALL BE PROVIDED WITH AN INSULATED EQUIPMENT GROUND CONDUCTOR SIZED IN ACCORDANCE WITH NEC. RACEWAY SHALL NOT BE USED AS EQUIPMENT GROUND.
8. IN ADDITION TO MECHANICAL FASTENING TO CEILING TRACK, SUPPORT LIGHT FIXTURES AT EACH CORNER INDEPENDENTLY OF SUSPENDED CEILING WITH 12 GAUGE WIRE. CONNECT TO STRUCTURAL SYSTEM OF BUILDING. INSTALLATION SHALL MEET OR EXCEED SEISMIC REQUIREMENTS OF LOCAL AND NATIONAL CODES.
9. ALL CONDUIT SHALL BE CONCEALED UNLESS OTHERWISE NOTED. ALL EMPTY CONDUIT SHALL HAVE A PULL WIRE.
10. ALL JUNCTION OR DEVICE BOXES SHALL HAVE A COVER.
11. EACH PIECE OF ELECTRICAL GEAR, EQUIPMENT, ETC., SHALL BEAR A "UL" LABEL.
12. ALL EMERGENCY AND EXIT LIGHTS SHALL BE CONNECTED TO THE CIRCUIT INDICATED IN THE PANEL SCHEDULES AHEAD OF SWITCHING OR CONTACTORS.
13. PROVIDE ENGRAVED PHENOLIC LABELS ON ALL ELECTRICAL GEAR, DISCONNECTS, ETC.
14. EC SHALL INSTALL HEAVY DUTY NEMA-1 DISCONNECTS AT ALL INTERIOR LOCATIONS INDICATED AND HEAVY DUTY NEMA-3R DISCONNECTS AT ALL EXTERIOR LOCATIONS INDICATED ON THESE DRAWINGS.
15. LIGHTING SWITCHES, RECEPTACLES AND/OR DATA OUTLETS SHALL NOT BE MOUNTED BACK TO BACK IN ANY WALL.
16. ELECTRICAL DEVICE MOUNTING HEIGHTS (UNO):

PANELBOARDS	6'-6" AFF TO TOP
TOGGLE SWITCH	4-0" AFF TO TOP
RECEPTACLES	1'-6" CENTERLINE
VOICE/DATA OUTLETS	1'-6" CENTERLINE
EMERGENCY LIGHTS	7'-6" AFF TO BOTTOM

17. PROVIDE TYPE-WRITTEN PANELBOARD SCHEDULES FOR ALL ELECTRICAL PANELBOARDS.
18. ARC FLASH LABELING:
    18.A. ALL NEW PANELBOARDS SHALL HAVE A COMMERCIALLY PRODUCED PERMANENT LABEL APPLIED TO WARN OF POTENTIAL ARC FLASH HAZARDS, IN ACCORDANCE WITH THE NEC AND NFPA 70E.
    18.B. LABELING MAY BE COMPLETED BY EQUIPMENT MANUFACTURER, EQUIPMENT VENDOR/SUPPLIER, OR THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY THAT ALL NEW PANELBOARDS ARE PROPERLY LABELED IN THE FIELD.
19. ALL 120 VOLT OUTDOOR RECEPTACLES TO HAVE "WET LOCATION – IN USE" COVERS.
20. ALL WORK IS ASSUMED TO BE NEW, UNLESS NOTED OTHERWISE.

SBLM

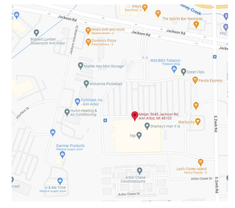
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Revisions
04/10/23 ISSUED FOR PERMIT/OWNER REVIEW

Key Plan



Seal & Signature



04/11/2023

Project
BFM001 - Best Friends Pet - Ann Arbor
Store Location Number - #173
5645 Jackson Road, Ann Arbor, MI 48103

Drawing Date: 03/29/2023 *Project No. : BFM001*
Drawn By : JK,CS *Checked By : BT*

Drawing Title
ELECTRICAL PLAN

Drawing Number
E101

16000 – ELECTRICAL

GENERAL

DESCRIPTION
DIVISION 16 OF THE SPECIFICATIONS COVERS ALL ELECTRICAL WORK FOR THE PROJECT. WORK SHALL INCLUDE LABOR, MATERIAL AND ACCESSORIES NECESSARY TO ACCOMPLISH THE WORK AS SPECIFIED AND SHOWN ON THE DRAWINGS, INCLUDING CONNECTION AND CHECKLISTS OF EQUIPMENT FURNISHED BY OTHERS (OTHER TRADES, THE OWNER AND OTHER CONTRACTORS), AND TO ALL EQUIPMENT ITEMS AND AS INDICATED ON DRAWINGS OR AS REQUIRED.

THE ARCHITECTURAL SPECIFICATIONS AND DRAWINGS INCLUDING THE GENERAL – CONDITIONS, INCLUDING ALL SUPPLEMENTS ISSUED THERETO, INSTRUCTIONS TO BIDDERS, AND OTHERS PERTINENT DOCUMENTS ISSUED BY THE ARCHITECT ARE A PART OF THESE SPECIFICATIONS AND ELECTRICAL DRAWINGS. THIS TRADE SHALL CONSULT THEM FOR INSTRUCTIONS WHICH APPLY. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF THE ELECTRICAL LAYOUT AND WORK INCLUDED. ELECTRICIAN SHALL FIELD DRAWINGS IN LAYOUT THE ELECTRICAL WORK AND CONSULT THE DRAWINGS AND LAYOUTS OF OTHER TRADES TO VERIFY LOCATION AND SPACES IN WHICH WORK WILL BE INSTALLED.

CODES, PERMITS, INSPECTION AND COMMISSIONING
INSTALLATION SHALL COMPLY WITH ALL LAWS APPLYING TO ELECTRICAL WORK IN EFFECT, INCLUDING THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (N.E.C.), THE NATIONAL ELECTRICAL SAFETY CODE, ALL LOCAL GOVERNING CODES AND ORDINANCES, WITH THE REGULATIONS OF THE SERVING ELECTRICAL UTILITY COMPANY. PROVIDE ALL REQUIRED PERMITS AND INCLUDE THE COST OF SAME IN THE COST OF THE PROJECT. OBTAIN AND PAY FOR (WITHOUT ADDITIONAL EXPENSE TO THE OWNER) ALL REQUIRED INSPECTIONS AND REVIEWS. PROVIDE FOR AND PAY ALL EXPENSES (WITHOUT ADDITIONAL EXPENSE TO THE OWNER) ASSOCIATED WITH LIGHTING AND LIGHTING CONTROLS COMMISSIONING. ALL COMMISSIONING DOCUMENTATION SHALL BE CERTIFIED AND GIVEN TO OWNER AND DESIGN PROFESSIONAL.

QUALITY ASSURANCE
THE FOLLOWING INDUSTRY STANDARDS AS APPLICABLE TO ELECTRICAL WORK SHALL APPLY TO THE WORK OF THIS DIVISION EXCEPT THAT, WHERE THE REQUIREMENTS OF THESE SPECIFICATIONS ARE MORE THAN THE LISTED STANDARD, THESE SPECIFICATIONS SHALL TAKE PRECEDENCE:

UL – UNDERWRITERS' LABORATORIES
NEMA – NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION
NECA – NATIONAL ELECTRICAL CONTRACTOR'S ASSOCIATION
ANSI – AMERICAN NATIONAL STANDARDS INSTITUTE
ASTM – AMERICAN SOCIETY OF TESTING MATERIALS.

ALL MATERIALS SHALL BE NEW, UL LISTED AND LABELED WHERE LABELED MATERIALS ARE AVAILABLE, UNDAMAGED AND FREE OF DEFECTS AT TIME OF INSTALLATION. MATERIALS OR EQUIPMENT DAMAGED IN SHIPMENT OR OTHERWISE DAMAGED PRIOR TO OR DURING INSTALLATION SHALL NOT BE REPAIRED AT THE JOB SITE, BUT SHALL BE REPLACED WITH NEW MATERIALS. WHERE THE MANUFACTURER'S NAME APPEARS IN THESE SPECIFICATIONS AND DRAWINGS, IT SHALL BE CONSTRUED THAT THE MANUFACTURER HAS TO MEET THE FULL REQUIREMENTS OF THE SPECIFICATIONS AND DRAWINGS.

SUBMITTALS
SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR EQUIPMENT TO THE ARCHITECT FOR ENGINEER'S REVIEW ELECTRONICALLY OR HARD COPIES. INCLUDE SUFFICIENT INFORMATION TO INDICATE COMPLETE COMPLIANCE WITH SPECIFICATIONS. PROVIDE SUBMITTALS AS EARLY AS POSSIBLE TO SUPPORT THE PROJECT SCHEDULE. ALLOW ONE WEEK FOR ENGINEER REVIEW TIME. THE ENGINEER'S SUBMITTAL REVIEWS WILL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS IN DIMENSIONS, DETAILS, SIZE OF MEMBERS, OR QUANTITIES; OR FOR OMITTING COMPONENTS OR FITTINGS; OR FOR NOT COORDINATING ITEMS WITH ACTUAL BUILDING CONDITIONS AND/OR OTHER TRADES.

OWNER RECORDS
ACCUMULATE DURING THE PROGRESS OF THE JOB, THE FOLLOWING DATA IN DUPLICATE, AND PREPARE IN A NEAT BROCHURE OR PACKET FOLDER TO BE TURNED OVER TO THE OWNER AT SUBSTANTIAL COMPLETION: RECORD DRAWINGS PER ABOVE.

ALL WARRANTIES, GUARANTEES, AND MANUFACTURER'S DIRECTION ON EQUIPMENT & MATERIAL FURNISHED.

COMPLETE PLAIN ENGLISH STEP–BY–STEP OPERATING INSTRUCTIONS FOR THE ELECTRICAL SYSTEM. ONE COPY OF THESE INSTRUCTIONS SHALL BE FRAMED AND POSTED AS DIRECTED ON THE PREMISES.

CERTIFIED LIGHTING AND LIGHTING CONTROLS COMMISSIONING AS REQUIRED BY CURRENTLY ADOPTED ENERGY CODE REQUIREMENTS.

MANUFACTURERS' NAMES AND CATALOG NUMBERS
IN SOME INSTANCES, SPECIFIC REFERENCES HAVE BEEN MADE TO ONE OR MORE MANUFACTURER'S NAME AND MODEL OR CATALOG NUMBERS. USE OF NAMES AND CATALOG NUMBERS DOES NOT INDICATE THAT THE EQUIPMENT SPECIFIED IN NECESSARILY AN "OFF THE SHELF" ITEM. VARIANCES MAY BE DUE TO REQUIREMENT OF DESIRED FINISH, MATERIAL OR OTHER MODIFICATION.

IN THE CASE OF PANELBOARDS, SAFETY SWITCHES AND OTHER EQUIPMENT REQUIRING WIRE AND CABLE TERMINATIONS, ASCERTAIN THAT LUG SIZES AND WIRING GUTTERS OR WIRING SPACE ALLOWED IS PROPER FOR THE WIRES AND CABLES CONTAINED THEREIN.

WHEN APPROVAL IS GIVEN FOR THE USE OF EQUIPMENT DIFFERING FROM THAT SHOWN ON DRAWINGS IN REGARD TO FOUNDATIONS, SPACE FOR PIPING, DUCTWORK, WIRING, INSULATION, ETC. CHANGES REQUIRED TO ACCOMPLISH SUCH DIFFERENCES SHALL BE ACCOMPLISHED AT NO COST TO THE OWNER.

PROTECTION OF EQUIPMENT
ELECTRICAL EQUIPMENT SHALL BE PROTECTED FROM THE WEATHER, IN PARTICULAR, DRIPPING OR SPLASHING WATER, AT ALL TIMES DURING SHIPMENT, STORAGE AND CONSTRUCTION. MANUFACTURER'S RECOMMENDATIONS WITH REGARD TO STORAGE, PROTECTION, AND HANDLING SHALL BE FOLLOWED.

SHOULD ANY APPARATUS BE SUBJECTED TO POSSIBLE INJURY DUE TO WATER, IT SHALL BE THOROUGHLY DRIED AND PUT THROUGH A DIELECTRIC TEST, AT THE EXPENSE OF THE CONTRACTOR, TO ASCERTAIN THE SUITABILITY OF THE APPARATUS OR IT SHALL BE REPLACED WITHOUT ADDITIONAL COST TO THE OWNER.

DAMAGED OR DEFECTIVE EQUIPMENT: INSPECT ALL ELECTRICAL EQUIPMENT AND MATERIALS PRIOR TO INSTALLATION OR PLACEMENT INTO SERVICE OF DAMAGED MATERIALS WITHOUT THE PRIOR WRITTEN CONSENT OF THE OWNER IS PROHIBITED. REPLACE OR REPAIR TO NEW CONDITION, AS CERTIFIED BY THE MANUFACTURER, AND TEST DAMAGED EQUIPMENT IN COMPLIANCE WITH INDUSTRY STANDARDS AT NO ADDITIONAL COST TO THE OWNER. EQUIPMENT REQUIRED FOR THE TESTING SHALL BE PROVIDED BY THE CONTRACTOR.

WORKING CLEARANCE
THE SIZE OF ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS IS BASED ON DIMENSIONS OF A PARTICULAR MANUFACTURER, (GENERALLY THE FIRST NAMED). WHILE OTHER MANUFACTURERS MAY BE ACCEPTABLE, IT IS THE RESPONSIBILITY OF THE TRADE TO DETERMINE IF THE EQUIPMENT PROPOSED WILL FIT IN THE ALLOCATED SPACE.

INSTALL ALL EQUIPMENT IN A MANNER TO PERMIT ACCESS TO ALL SURFACES. MAINTAIN PROPER CLEARANCE TO MEET ALL SAFETY AND OPERATING CODES, PARTICULARLY N.E.C. INCLUDE ALL REQUIREMENTS DICTATED BY OPERATION, CONTROL, ADJUSTMENT, MAINTENANCE AND POSSIBLE REPLACEMENT OF EQUIPMENT IN DETERMINING CLEARANCE.

SHOULD THERE BE APPARENT VIOLATIONS OF N.E.C. CLEARANCE, NOTIFY THE ARCHITECT–ENGINEER BEFORE PROCEEDING WITH CONNECTION OR PLACEMENT OF EQUIPMENT.

COORDINATION
INSTALLATION STUDIES ARE REQUIRED TO COORDINATE THE ELECTRICAL WORK WITH THE WORK OF OTHER TRADES. PREPARE COORDINATION DRAWINGS AT ACCURATE SCALE WHERE SEVERAL ELEMENTS OF ELECTRICAL OR COMBINED MECHANICAL/STRUCTURAL/ELECTRICAL WORK MUST BE SEQUENCED AND POSITIONED WITH PRECISION IN ORDER TO FIT INTO THE AVAILABLE SPACE.

SHOW THE ACTUAL PHYSICAL DIMENSIONS REQUIRED FOR PROPER INTEGRATION OF EQUIPMENT WITH BUILDING SYSTEMS.

PROVIDE APPROVED SHOP DRAWINGS TO ALL REQUIRED DISCIPLINES AND VERIFY FINAL ELECTRICAL CHARACTERISTICS BEFORE ROUGHING POWER FEEDS TO ANY EQUIPMENT. WHEN ELECTRICAL DATA ON APPROVED SHOP DRAWINGS DIFFERS FROM CONTEMPLATED DESIGN, MAKE NECESSARY ADJUSTMENTS TO THE WIRING, DISCONNECTS, AND BRANCH–CIRCUIT PROTECTION FOR THE EQUIPMENT ACTUALLY INSTALLED AT NO ADDITIONAL COST TO THE OWNER.

DAMAGE FROM INTERFERENCE CAUSED BY INADEQUATE COORDINATION SHALL BE RECTIFIED AT NO ADDITIONAL COST TO THE OWNER.

WORKMANSHIP
ALL WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED.

ANY MATERIAL ITEMS OR WORK NOT SHOWN ON THE DRAWINGS, BUT MENTIONED IN THESE SPECIFICATIONS OR VISA–VERSA, OR ANY ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE IN ALL RESPECTS AND READY FOR OPERATION SHALL BE PROVIDED WITHOUT ADDITIONAL COST TO THE OWNER.

THIS TRADE SHALL DO OR HAVE DONE BY COMPETENT TRADESMEN ALL CUTTING AND PATCHING NECESSARY FOR THE INSTALLATION OF THIS WORK. NO CUTTING IN CONSTRUCTIVE PARTS OF THE BUILDING LIKELY TO IMPAIR ITS STRENGTH SHALL BE DONE WITHOUT THE ARCHITECT–ENGINEER'S WRITTEN APPROVAL.

EXCAVATION AND BACKFILL
EXCAVATION, TRENCHING AND BACKFILLING ARE SPECIFIED IN SECTION EXCAVATION TRENCHING AND BACKFILLING FOR UTILITIES. CONDUIT IS TO BE INSTALLED AS SPECIFIED FOR PIPELINES. CONDUIT INSTALLED BENEATH FLOOR SLAB SHALL BE A MINIMUM OF 6" BELOW SLAB. BACKFILL OVER CONDUIT SHALL BE COMPACTED AS FOR SLAB BEDDING MATERIAL. REFER TO STRUCTURAL DRAWINGS FOR DETAILS OF CONDUIT (PIPE) PENETRATION OF EXTERIOR FOOTINGS. COMPLETE INSTALLATION SHALL CONFORM TO N.E.C.

PENETRATIONS
COORDINATE SLEEVE SELECTION AND APPLICATION WITH SELECTION AND APPLICATION OF FIRE–STOPPING SPECIFIED IN ARCHITECTURAL SPECIFICATIONS.

ROOFS: COORDINATE ALL ROOF PENETRATIONS WITH ENGINEER, OWNER, AND AS APPLICABLE, THE ROOFING CONTRACTOR PROVIDING A ROOF WARRANTY. LOCATE ALL RACEWAY PENETRATIONS WITHIN MECHANICAL EQUIPMENT CURBS WHEREVER POSSIBLE. COORDINATE WITH DIVISION 15. FLASH AND COUNTERFLASH ALL OPENINGS THROUGH ROOF, AND/OR PROVIDE FACTORY–FABRICATED MOLDED SEALS COMPATIBLE WITH THE ROOF CONSTRUCTION INSTALLED, OR AS REQUIRED BY THE ENGINEER, OWNER, OR ROOFING CONTRACTOR. ALL ROOF PENETRATIONS SHALL BE LEAKTIGHT AT THE TERMINATING OF THE WORK AND SHALL NOT VOID ANY NEW OR EXISTING ROOF WARRANTIES.

WALLS AND FLOORS – SLEEVES FOR RACEWAYS AND CABLES:
STEEL PIPE SLEEVES: ASTM A 53/A 53M, TYPE E, GRADE B, SCHEDULE 40, GALVANIZED STEEL, PLAIN ENDS AND DRIP RINGS.

CAST IRON PIPE SLEEVES: CAST OR FABRICATED "WALL PIPE", EQUIVALENT TO DUCTILE–IRON PRESSURE PIPE, WITH PLAIN ENDS AND INTEGRAL WATERSTOP, UNLESS OTHERWISE INDICATED.

FIRESTOPPING: FIRE RESISTANT THROUGH PENETRAION SEALANTS – TWO PART, FOAMED–IN–PLACE, SILICONE SEALANT FORMULATED FOR USE IN THROUGH–PENETRAION FIRE–STOPPING AROUND CABLES, RACEWAYS, AND CABLE TRAY PENETRAIONS THROUGH FIRE–RATED WALLS AND FLOORS. SEALANTS AND ACCESSORIES SHALL HAVE FIRE–RESISTANCE RATINGS INDICATED, AS ESTABLISHED BY TESTING IDENTICAL ASSEMBLIES IN ACCORDANCE WITH ASTM E 814, BY UNDERWRITER'S LABORATORIES, INC., OR OTHER NRTL ACCEPTABLE TO AHJ.
ACCEPTABLE MANUFACTURERS – HILTI, INC., 3M CORP, RECTORSEAL, SPECIFY TECHNOLOGY INC., UNITED STATES GYPSUM COMPANY.

PRODUCTS

GENERAL
ALL EQUIPMENT OF A PARTICULAR KIND, SUCH AS WIRING DEVICES AND PANELBOARDS AND ALL LIGHTING FIXTURES OF THE SAME TYPE, SHALL BE THE PRODUCT OF THE SAME MANUFACTURER.

PROVIDE ACCESS PANELS FOR ALL EQUIPMENT AND DEVICES REQUIRING SUCH PANELS. SIZE AS REQUIRED FOR PROPER ACCESS AND MAINTENANCE. MINIMUM SIZE–ACCEPTABLE IS 12 IN BY 12 IN CLEAR OPENING WHERE HAND ACCESS ONLY IS REQUIRED.

PROVIDE LABELS FOR EACH MOTOR CONTROLLER, SAFETY SWITCH, RELAY, PANELBOARD, CONTACTOR, TIMER, CONTROL DEVICE, METER AND CIRCUIT BREAKER. LABELS SHALL BE LAMINATED, PHENOLIC STRIPS 1/16" THICK, AND ENGRAVED TO SHOW BLACK LETTERS ON A WHITE BACKGROUND NOT LESS THAN 1/4" HIGH. SIZE STRIPS TO PROPERLY FIT MANUFACTURER'S BRACKETS AND BE LEGIBLE. WHERE MANUFACTURER'S BRACKETS ARE NOT PROVIDED, MOUNT LABELS WITH PROPER SCREWS, OR AN APPROVED ADHESIVE.

RACEWAYS
CONDUIT, RIGID STEEL; GALVANIZED OR SHERADIZED AND MANUFACTURED IN ACCORDANCE WITH ANSI STANDARD C80.1. FITTINGS SHALL BE PIPE THREADED, MALEABLE IRON. CONNECTORS SHALL BE INSULATED THROAT TYPE.

CONDUIT, PVC: POLYVINYLCHLORIDE SCHEDULE 40 PIPE SPECIFICALLY MANUFACTURED AND LABELED (UL STANDARD 651) FOR USE AS ELECTRICAL CONDUIT. FITTINGS SHALL BE EITHER SOCKET WELDED TYPE OR PIPE THREADED WITH INSULATED THROAT.

CONDUIT, FLEXIBLE METALLIC: GALVANIZED, INTERLOCKED SPIRALLY WOUND STEEL STRIP WITH GALVANIZED OR SHERADIZED FITTINGS. LISTED PER UL–L. FITTINGS SHALL BE OF THE SQUEEZE TYPE WITH INSULATED THROATS.

CONDUIT, LIQUIDTIGHT FLEXIBLE METALLIC: GALVANIZED, INTERLOCKED SPIRALLY WOUND STEEL STRIP WITH OVERALL JACKET OF LIQUID TIGHT PVC, UL LISTED. FITTINGS SHALL BE STEEL OR MALLEABLE IRON INSULATED THROAT, WATERTIGHT.

ELECTRIC METALLIC TUBING: GALVANIZED OR SHERADIZED AND MANUFACTURED IN ACCORDANCE WITH ANSI STANDARD C80.3. FITTINGS 1/2 INCH THROUGH 2 INCH TRADE SIZE SHALL BE COMPRESSION TYPE, MANUFACTURED FROM MALLEABLE IRON OR STEEL, AND RAIN AND/OR CONCRETE–TIGHT AS REQUIRED BY INSTALLATION. POT METAL OR DIE CAST TYPE FITTINGS ARE PROHIBITED. CONNECTORS SHALL BE INSULATED THROAT TYPE.

CONDUCTORS AND CABLES
GENERAL: CONDUCTORS, TERMINALS AND PANELBOARD FEEDERS SHALL BE OF ANNEALED (SOFT) COPPER COMPLYING WITH ICEA S–95–658/NEMA WC70; SOLID CONDUCTOR FOR NO. 10 AWG AND SMALLER; CONCENTRIC, COMPRESSED STRANDED FOR NO. 8 AWG AND LARGER. ALL FEEDER CONDUCTORS NO 8 AWG AND LARGER; STRANDED, TYPE THWN–2 OR XHHW–2 INSULATION.

ALL BRANCH CIRCUITS SHALL BE ANNEALED (SOFT) COPPER COMPLYING WITH ICEA S–95–658/NEMA WC70; SOLID CONDUCTOR FOR NO. 10AWG AND SMALLER; CONCENTRIC, COMPRESSED STRANDED FOR NO. 8 AWG AND LARGER. ALL BRANCH CIRCUIT CONDUCTORS NO 8 AWG AND LARGER; STRANDED, TYPE THWN–2 OR XHHW–2 INSULATION. ALL CONDUCTORS, NO 10 AWG AND SMALLER, USED FOR POWER AND LIGHTING CIRCUITS SHALL BE SOLID COPPER, TYPE THWN–2 INSULATION (WET OR DAMP LOCATIONS, OR IN CONDUIT BELOW GRADE OR SLAB), TYPE THHN INSULATION (DRY LOCATIONS ONLY ABOVE GRADE), OR DUAL RATED TYPE THHN/THWN–2. ALL BRANCH CIRCUIT WIRING SHALL NOT BE SMALLER THAN NO. 12 AWG, IF NO CONDUCTORS ARE SHOWN ON THE DRAWINGS FOR A BRANCH CIRCUIT, PROVIDE CONDUCTORS AND CONDUIT SIZED PER NFPA 70 AND BASED ON THE INDICATED BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE RATING AND NUMBER OF POLES. WHERE NO CIRCUIT SIZE (CONDUCTORS AND OVERCURRENT PROTECTIVE DEVICE) IS INDICATED ON THE DRAWINGS FOR A BRANCH CIRCUIT, PROVIDE THREE NO 12 AWG CONDUCTORS IN 3/4" RACEWAY, AND A 20A SINGLE POLE CIRCUIT BREAKER.

CONDUCTOR INSULATION TYPES; 90–DEGREE C–RATED, TYPE THHN/THWN–2 OR XHHW–2 COMPLYING WITH ICEA S–95–658/NEMA WC70.

COLORS FOR 208/120V CONDUCTORS
PHASE A: BLACK
PHASE B: RED
PHASE C: BLUE
NEUTRAL: WHITE
EQUIPMENT GROUND: GREEN
ISOLATED GROUND: GREEN WITH YELLOW STRIPE

COLORS FOR 480/277V CONDUCTORS
PHASE A: BROWN
PHASE B: ORANGE
PHASE C: YELLOW
NEUTRAL: WHITE
EQUIPMENT GROUND: GREEN

UNLESS NOTED OTHERWISE, SPECIAL PURPOSE CONDUCTORS AND CABLES, SUCH AS LOW VOLTAGE CONTROL AND SHIELDED INSTRUMENT WIRING, SHALL BE AS RECOMMENDED BY THE SYSTEM EQUIPMENT MANUFACTURER.

CONTROL WIRING: STRANDED COPPER CONDUCTORS, 600V INSULATION, OF THE PROPER TYPE, SIZE AND NUMBER AS REQUIRED TO ACCOMPLISH SPECIFIED FUNCTION. MINIMUM SIZE; NO. 14 AWG UNLESS NOTED OTHERWISE.

MC TYPE CABLE CAN BE USED IF ACCEPTED BY LOCAL AUTHORITY AND GOVERNING CODES FOR WHIPS FROM JUNCTION BOX TO LIGHT FIXTURES ONLY. TYPE MC CABLE; 600V, UNJACKETED; ANSI E119 AND E814, UL STANDARDS 44 OR 83 (AS APPLICABLE), AND 1569, NFPA 70 ARTICLE 330; ALUMINUM OR GALVANIZED STEEL INTERLOCKED ARMOR; THHN– OR XHHW–INSULATED CONDUCTORS; COLOR CODE; ICEA METHOD 1, WITH GREEN INSULATED GROUDING CONDUCTOR.

PROVIDE A DEDICATED EQUIPMENT–GROUNDING CONDUCTOR, OR BONDING JUMPER, AS APPLICABLE, IN ALL BRANCH CIRCUITS AND FEEDERS, SIZED IN ACCORDANCE WITH NFPA 70, UNLESS INDICATED AS LARGER ON THE DRAWINGS.

PROVIDE A DEDICATED NEUTRAL (WHERE REQUIRED) AND DEDICATED GROUNDING CONDUCTOR FOR EACH BRANCH CIRCUIT.

VOLTAGE DROP IN BRANCH CIRCUITS SHALL NOT EXCEED 2%.

GFCI CIRCUITS: DO NOT USE MULTI–CONDUCTOR CIRCUITS, WITH A SHARED NEUTRAL FOR ANY GFCI CIRCUIT BREAKER OR RECEPTACLE CIRCUIT. BRANCH CIRCUITS FED FROM GFCI CIRCUIT BREAKERS, LIMIT THE ONE–WAY CONDUCTOR LENGTH TO 100 FEET BETWEEN THE PANELBOARD AND THE MOST REMOTE RECEPTACLE OR LOAD ON THE GFCI CIRCUIT.

BOXES
OUTLET BOXES: GALVANIZED PRESSED STEEL WITH GALVANIZED STEEL EXTENSION RINGS OR PLASTER RINGS OR TILE RINGS TO PROVIDE EXPOSED SURFACE FLUSH WITH WALL OR CEILING FINISH. PROVIDE ALL CEILING OUTLET BOXES WITH "NO–BOLT" OR THROUGH AND LOCKNUTTED TYPE FIXTURE STUDS.

JUNCTION AND PULL BOXES: FABRICATE IN ACCORDANCE WITH NEMA AND N.E.C. STANDARDS AND REQUIREMENTS INSOFAR AS MATERIAL, GAUGES, DIMENSIONS, AND FABRICATION METHODS. BOXES SHALL BEAR THE UL LABEL. WHERE BOXES ARE NOT SIZED ON THE DRAWINGS, THEY SHALL BE SIZED IN ACCORDANCE WITH N.E.C. REQUIREMENTS. FINISH IN STANDARD GRAY ENAMEL, WITH SIDES AND BACK SPOT–WELDED IN POSITION AND THE REMOVABLE SCREW COVER MOUNTED WITH BRASS MACHINE SCREWS.

WIRING DEVICES
SWITCHES: HEAVY DUTY AC, RATED 20 AMPERES, 120/277 VOLTS, SINGLE–POLE, DOUBLE–POLE, THREE–POLE, OR FOUR–WAY AS NOTED ON DRAWINGS OR AS REQUIRED FOR THE SWITCHING ARRANGEMENTS IN EACH SPACE. HUBBELL #HBL1221** OR EQUAL.

RECEPTACLES: THREE WIRE GROUNDING TYPE, 120 VOLT RATED, SPECIFICATION GRADE 20 AMPERES DUPLEX UNLESS NOTED OTHERWISE ON DRAWINGS. HUBBELL #5362 OR EQUAL. COORDINATE RECEPTACLE COLOR WITH COVERPLATE AS DESCRIBED BELOW UNDER "PLATES".
SINGLE RECEPTACLE, 20 AMPERE, 120 VOLT, SPECIFICATION GRADE. HUBBELL #5361 OR EQUAL.

DUST AND MOISTURE RESISTANT, MELAMINE BODY, GRAY NYLON FACE BACKED BY FABRIC REINFORCED NEOPRENE GASKET SLIT TO PROVIDE WIPING ACTION ON CAP BLADES. PASS & SEYMOUR #5307 OR APPROVED EQUAL. GROUND FAULT CIRCUIT INTERRUPTER, DUPLEX FACE CLASS A, NEMA 5–20R, SPECIFICATION GRADE. HUBBELL #GF–5362* OR EQUAL.

CORROSION RESISTANT, SIMILAR AND APPROVED EQUAL TO STANDARD RECEPTACLE, EXCEPT FABRICATED FROM YELLOW MELAMINE PLASTIC WITH YELLOW NYLON FACE AND PROCESSED METAL PARTS FINISHED TO RESIST CORROSION. (NEMA 5–15R = HUBBELL #52CM61).

ISOLATED GROUND, DUPLEX OR SIMPLEX THREE WIRE GROUNDING TYPE, SPECIFICATION GRADE, ORANGE FACE, GROUND CONTACT FULLY ISOLATED FROM STRAP AND EQUIPPED WITH SCREW TERMINAL. HUBBELL #IG–5362* OR EQUAL.

RECEPTACLES, SPECIAL PURPOSE: SPECIAL PURPOSE OUTLETS SHALL BE AS SCHEDULED ON DRAWINGS.

PLATES: PROVIDE PLATES FOR ALL OUTLET BOXES. PLATES SHALL BE OF SUITABLE CONFIGURATION FOR THE NUMBER AND TYPE OF DEVICES SERVED, SHALL BE ONE PIECE, SHALL OVERLAP OUTLET BOX EDGE AND ROOM SURFACES, AND SHALL BE SMOOTH FINISH NYLON TYPE OF SAME MANUFACTURER AS THE WIRING DEVICES. VERIFY DESIRED MATERIALS AND COLORS WITH ARCHITECT PRIOR TO INSTALLATION.

STANDARD INTERIOR: IVORY FINISHED ON LIGHT COLORED WALLS – COORDINATE ALL COLORS WITH ARCHITECT

INTERIOR DAMP LOCATIONS: STAINLESS STEEL.

EXTERIOR LOCATIONS: FOR UNATTENDED WET LOCATIONS, PROVIDE IN–USE NEMA 3R, UL LABELED PLATES MOLDED FROM A CLEAR HIGH IMPACT ULTRAVIOLET STABILIZED POLYCARBONATE MATERIAL FOR EASY VERIFICATION THAT CORDS ARE PLUGGED IN AND THAT THE GFCI IS FUNCTIONING. COVER PLATES SHALL BE BY THE SAME MANUFACTURER AS THE WIRING DEVICES; COMPLYING WITH NFPA 70 406.8 (A) OR (B) REQUIREMENTS FOR ATTENDED OR UNATTENDED USE AS APPLICABLE.

ACCEPTABLE MANUFACTURERS: HUBBELL, PASS & SEYMOUR, LEVITON AND COOPER.

CABINETS AND ENCLOSURES
FURNISH AND INSTALL FLUSH CABINETS AND ENCLOSURES AS SHOWN ON THE PLANS AND AS HEREIN SPECIFIED. UNIT SHALL BE PROVIDED WITH DEAD FRONT SUB PANEL, RECESSED AS REQUIRED, TO HOUSE CONTROLS. DOOR SHALL BE PROVIDED WITH CONCEALED HINGES AND FLUSH KEY OPERATED LOCK AND DOOR CATCH. PRIME PAINTED FOR FIELD PAINTING TO MATCH WALL FINISHES. PROVIDE KNOCK–OUTS, LOUVERS AND IDENTIFICATION ENGRAVING AS REQUIRED TO MEET FIELD CONDITIONS. EXACT ENCLOSURE SIZE TO BE COORDINATED WITH EQUIPMENT SUPPLIER.

CIRCUIT DISCONNECTS
SAFETY SWITCHES: SAFETY SWITCHES SHALL CONSIST OF A BOX, FRONT COVER, AND CIRCUIT PROTECTOR DEVICE ALL MANUFACTURED AND ASSEMBLED IN ACCORDANCE WITH NEMA STANDARDS

THE BOX SHALL BE FABRICATED FROM CODE GAUGE GALVANIZED SHEET STEEL IN ACCORDANCE WITH U.L. LISTING AND LABEL. THE CIRCUIT PROTECTOR DEVICE SHALL BE HEAVY DUTY, QUICK–MAKE, QUICK–BREAK FUSED OR UNFUSED SWITCH RATED FOR MOTOR CIRCUITS AND/OR SERVICE ENTRANCE DUTY, IF REQUIRED. UNITS SHALL BE FURNISHED FOR SURFACE OR FLUSH MOUNTING WITH EITHER GENERAL PURPOSE OR RAINTIGHT ENCLOSURES, AS REQUIRED. FUSED UNITS SHALL BE FURNISHED COMPLETE WITH PROPER FUSES.

PANELBOARDS
SHALL CONSIST OF BOX, INTERIOR, FRONT, AND CIRCUIT PROTECTIVE DEVICES. BOX ASSEMBLY SHALL BE U.L. LABELED AND BE LISTED FOR SERVICE. THE ASSEMBLY SHALL BE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH NEMA STANDARD PB–1. THE LATEST UL STANDARD (UL–50) FOR ENCLOSURES SHALL BE FOLLOWED IN REGARD TO THE FRONT FOR RIGIDITY AND FOR CLAMPING ON FRONT. PROVIDE STANDARD KNOCKOUTS ON REMOVABLE BOX ENDS. FABRICATE FROM SHEET STEEL AND FINISH WITH ROUST–INHIBITING GRAY ENAMEL OVER RUST INHIBITOR. EACH FRONT SHALL HAVE A DOOR MOUNTED ON SEMI–CONCEALED HINGES WITH A CYLINDER LOCK, INDEX CARD CIRCUIT DIRECTORY MOUNTED BEHIND CLEAR PLASTIC WINDOW IN DOOR FRAME, AND CONCEALED TRIM CLAMPS FOR MOUNTING TO THE BOX. ALL LOCKS SHALL BE MASTER KEYED AND ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN.

ALL INTERIORS SHALL BE COMPLETELY FACTORY ASSEMBLED. THE DESIGN OF THE INTERIOR SHALL PERMIT REPLACEMENT OF INDIVIDUAL BRANCH BREAKERS/FUSES WITH DISTURBING ADJACENT UNITS AND WITHOUT MACHINE DRILLING OR TAPPING. BUS BARS FOR PANELS RATED 600 AMPERES OR MORE SHALL BE TIN PLATED 98% CONDUCTIVITY COPPER OR TIN FINISH ALUMINUM. FULL CONTINUOUS OF RECTANGULAR CROSS–SECTION. BUS BARS FOR PANELS RATED LESS THAN 600 AMPERES SHALL BE TIN PLATED 98% CONDUCTIVITY COPPER OF RECTANGULAR CROSS–SECTION. BUS BAR CONNECTIONS TO BRANCH CIRCUIT BREAKERS SHALL BE THE PHASE SEQUENCE TYPE AND ACCEPT BOLT–ON TYPE BREAKERS ONLY. PANELBOARD BUS STRUCTURE AND MAIN BREAKER OR MAIN LUGS SHALL BE RATED FOR THE SHORT CIRCUIT CURRENT RATINGS SHALL BE THE PHASE SEQUENCE TYPE AND ACCEPT BOLT–ON TYPE BREAKERS ONLY. PANELBOARD BUS STRUCTURE AND MAIN BREAKER OR MAIN LUGS SHALL BE RATED FOR THE SHORT CIRCUIT CURRENT RATINGS SHALL BE THE ESTABLISHED BASED ON HEAT RISE TESTS IN ACCORDANCE WITH UL STANDARDS. GROUP INCOMING CABLE LUGS AT ONE END FOR SEPARATION FROM LOAD SIDE CABLES. EQUIPMENT NEUTRAL BUSSING WITH A LUG FOR EACH BRANCH BREAKER POSITION. INTERIOR SHALL MOUNT TO BOX WITHOUT TOOLS.

BREAKERS SHALL BE QUICK–MAKE, QUICK–BREAK, BOLT–ON THERMAL–MAGNETIC MOLDED CASE CIRCUIT BREAKERS ONE, TWO OR THREE POLE WITH COMMON TRIP BAR ON MULTI–POLE BREAKERS, EQUIPPED WITH AN OVERCENTER, TRIP–FREE, TOGGLE–TYPE OPERATING ACTION AND POSITIVE HANDLE INDICATION OF BREAKER STATUS. CIRCUIT BREAKERS SHALL BE UL LISTED IN ACCORDANCE WITH UL STANDARDS.

EACH PANELBOARD, AS A COMPLETE UNIT, SHALL HAVE A SHORT CIRCUIT RATING EQUAL TO OR GREATER THAN THE SHORT CIRCUIT RATING SHOWN ON DRAWINGS. THE RATING SHALL BE ESTABLISHED BY TESTING WITH THE OVERCURRENT DEVICES MOUNTED IN THE PANELBOARD. THE SHORT CIRCUIT TESTS ON THE OVERCURRENT DEVICES ON THE STRUCTURE SHALL BE MADE SIMULTANEOUSLY BY CONNECTING THE FAULT TO EACH OVERCURRENT DEVICE WITH THE PANELBOARD CONNECTED TO ITS RATED SUPPLY VOLTAGE.

REFER TO PANELBOARD SCHEDULES FOR FULLY RATED OR SERIES–RATED REQUIREMENTS. SERIES–RATED SYSTEMS ARE NOT ALLOWED UNLESS SPECIFICALLY INDICATED ON PANELBOARD SCHEDULES. WHERE ALLOWED, SERIES–RATED SYSTEMS SHALL BE PROPERLY LABELLED BY NEC REQUIREMENTS.

METHOD OF TESTING SHALL BE PER UL STANDARDS. PANELBOARDS SHALL BE MARKED WITH THEIR MAXIMUM SHORT CIRCUIT CURRENT RATING AT THE SUPPLY VOLTAGE.

APPROVED MANUFACTURERS: SQUARE–D CO. OR EQUAL BY GE, SIEMENS AND/OR EATON.

OVERCURRENT PROTECTIVE DEVICES
FUSES OF THE PROPER SIZE, RATING AND ELECTRICAL CHARACTERISTICS SHALL BE PROVIDED IN EACH FUSIBLE DEVICE. FUSES OF 600 VOLTS AND BELOW SHALL BE UL CLASS RK–1, CURRENT–LIMITING, TIME–DELAY, DUAL–ELEMENT, 200,000 AMPERE RMS SYMMETRICAL INTERRUPTING CAPACITY ON NON–MOTOR CIRCUITS AND UL CLASS RK–5, TIME–DELAY, DUAL–ELEMENT, 200,000 AMPERES RMS SYMMETRICAL INTERRUPTING CAPACITY ON MOTOR CIRCUITS

PLUMBING LEGEND

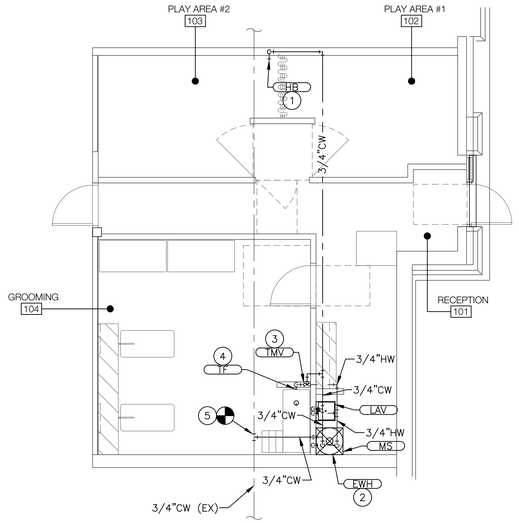
SYMBOL	DESCRIPTION
	GATE VALVE
	CHECK VALVE
	PRESSURE
	GLOBE VALVE (STRAIGHT PATTERN)
	BUTTERFLY VALVE
	BALL VALVE
	PLUG VALVE
FCO	FLOOR CLEAN OUT
WCO	WALL CLEAN OUT
CO	CLEAN OUT
	HOSE BIBB
	ELBOW DOWN
	ELBOW UP
	TEE UP
	TEE DOWN
	STRAINER
	UNION
	REDUCER
	CAP
	FLEX PIPE

SYMBOL	DESCRIPTION
	FLOOR DRAIN / AREA DRAIN
	FLOOR SINK
	HOT WATER RECIRCULATION PUMP
VTR	PLUMBING VEVT THRU ROOF
	POINT OF CONNECTION (CONNECT NEW TO EXISTING)
XXX	PLUMBING EQUIPMENT DESIGNATION
X / x	PLUMBING RISER OR DETAIL DESIGNATION
S	SANITARY SEWER PIPING
V	VENT PIPING
VBF	VENT PIPING (BELOW SLAB)
CW	COLD WATER PIPING
HW	HOT WATER PIPING
HWR	HOT WATER RECIRCULATING PIPING

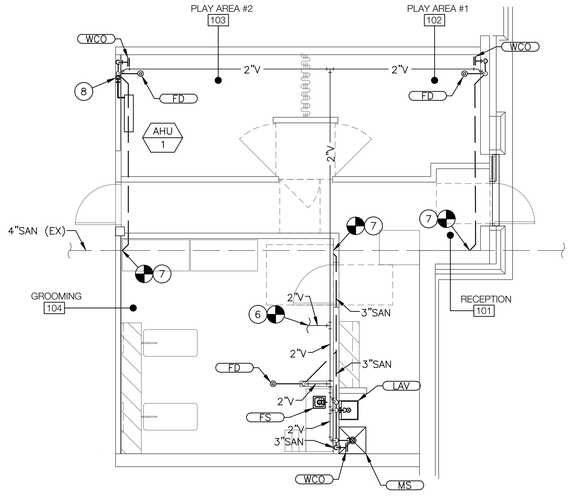
ABBREVIATIONS	
AD	AREA DRAIN, ACCESS DOOR
AFC	ABOVE FINISH CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISH GRADE
AHU	AIR HANDLING UNIT
BFP	BACKFLOW PREVENTER
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STRUCTURE
CD	CONDENSATE
CO	CLEANOUT
CW	DOMESTIC COLD WATER
DN	DOWN
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
FCO	FLOOR CLEANOUT
FFA	FROM FLOOR ABOVE
FS	FLOOR SINK
GPM	GALLONS PER MINUTE
HB	HOSE BIBB
HW	DOMESTIC HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IE	INVERT ELEVATION
N/A	NOT APPLICABLE
PRV	PRESSURE REDUCING VALVE
REV	REVISION
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF TOP UNIT
SAN	SANITARY
V	VENT PIPE
VTR	VENT THROUGH ROOF
WCO	WALL CLEANOUT
WH	WALL HYDRANT

PLUMBING FIXTURE SCHEDULE

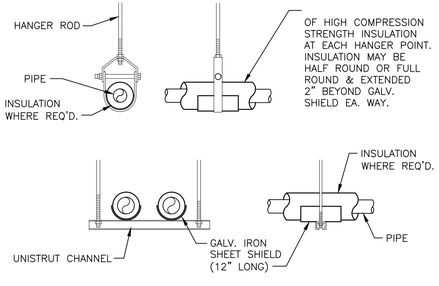
ITEM	MANUFACTURER	MODEL	DRAIN	VENT	COLD WATER	HOT WATER	DESCRIPTION
ET	AMTROL	ST-12	---	---	3/4"	---	THERMAL EXPANSION TANK
EWH	A.O. SMITH	DEL-30	---	---	3/4"	3/4"	36 GALLON GLASS LINED ELECTRIC WATER HEATER, 25 GPH RECOVERY AT 80°F RISE. FACTORY INSTALLED T&P RELIEF VALVE. 3 PHASE 208V 5 KW NON-SIMULATANEOUS OPERATION. 95% EFFIECIENT.
FD	JAY R. SMITH	2005Y-U-A	3"	2"	---	---	DUCO CAST IRON BODY WITH FLASHING COLLAR AND ADJUSTABLE STRAINER HEAD, ROUND TOP, NO-HUB OUTLET. PROVIDE WITH THE FOLLOWING OPTIONS: -U: VANDAL PROOF SCREWS. COORDINATE FINISH AND STRAINER SIZE WITH ARCH. TOP TO BE FLUSH WITH FINISHED FLOOR.
FS	JAY R. SMITH	3141Y-19-SBP	3"	2"	---	---	SQUARE INDRIECT WASTE DRAIN, CAST IRON BODY WITH A.R.E., NO HUB BOTTOWM OUTLET, 1/2 NICKEL BRONZE GRATE, AND SOLID BOTTOM PORTED SEDIMENT BUCKET WITH STAINLESS STEEL MESH SCREEN. INSTALLATION ELAVATION [0' 0"]
HB	WOODFORD	21	---	---	3/4"	---	WALL FAUCET IS DESIGNED FOR IRRIGATION PURPOSES TO BE USED INDOORS.
LAV	AMERICAN STANDARD	355.012	2"	1-1/2"	1/2"	1/2"	PROVIDE WITH CHICAGO FAUCET 116.976.AB.1. WHITE VITREOUS CHINA, 4" CENTERS, OPEN GID DRAIN STRAINER. BELOW DECK THERMOSTATIC MIXING VALVE SET AT 110° AT 0.5GPM.
MS	STERN WILLIAMS	SB-802	3"	2"	3/4"	3/4"	PORTLAND CEMENT WITH MARBLE CHIPS MOP SINK WITH INTEGRAL CAST BRASS DRAIN AND STAINLESS STEEEL STRAINER. PROVIDE WITH T-10-VB FAUCET WITH VACUUM BREAKER AND T-35 HOSE WITH WALL HOOK
TF	EVERBILT	103-054EB	---	---	3/4"	---	1/4-TURN OPERATION WITH 3/4" HOSE THREAD OUTLET.
TMV	SYMMONS	7-230-CK	---	---	3/4"	3/4"	LEAD FREE TEMPERING VALVE FOR 90°F WATER. ASSE 1070 COMPLIANT, +/- 3°F TOLERANCE, INTEGRAL CHECK VALVES.
WCO	JAY R. SMITH	4531S	PER PLAN	---	---	---	CAST IRON CLEANOUT TEE AND COUNTERSUNK PLUG



3 PLUMBING WATER PLAN
SCALE: 3/16" = 1'-0"



4 PLUMBING SANITARY PLAN
SCALE: 3/16" = 1'-0"

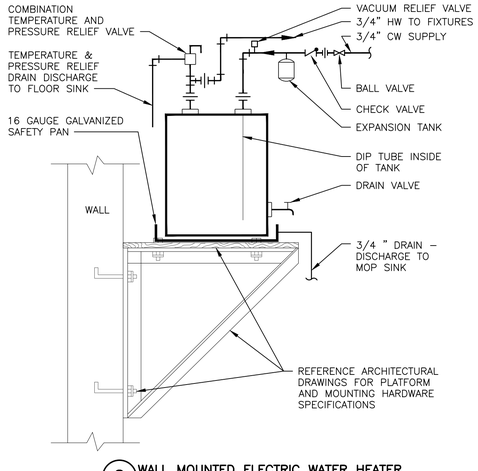


NOTES

1. ATTACH SUPPORTS FOR ALL PIPING SUSPENDED FROM THE STEEL STRUCTURE TO THE TOP CORD OF JOISTS OR BEAMS.

   PROVIDE COPPER OR PLASTIC COATED HANGERS FOR NON-INSULATED COPPER PIPE.

1 PIPE HANGING DETAIL
SCALE: NONE



2 WALL MOUNTED ELECTRIC WATER HEATER
NOT TO SCALE

PLUMBING GENERAL NOTES:

1. ALL WORK PERFORMED UNDER THIS CONTRACT SHALL BE IN CONFORMANCE WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES HAVING JURISDICTION AND INSPECTION.
2. COORDINATE THE COMPLETE INSTALLATION OF SYSTEMS TO AVOID CONFLICT WITH OTHER TRADES.
3. PROVIDE TO OWNER A COPY OF ALL REPORTS AND APPROVAL CERTIFICATES FROM LOCAL AND STATE INSPECTIONS AND ALL PLUMBING SYSTEMS EQUIPMENT MANUALS INCLUDING WARRANTIES.
4. COORDINATE ALL ABOVE SLAB AND UNDER SLAB SANITARY, AND WATER PIPING SYSTEMS TO AVOID CONFLICT WITH ALL OTHER TRADES SYSTEMS, AND COLUMN FOOTINGS. ALL SOIL AND WASTE PIPING SHALL BE GRADED TO A UNIFORM SLOPE OF NOT LESS THAN 1/8" PER FOOT FOR PIPING 4" OR LARGER, AND NOT LESS THAN 1/4" PER FOOT FOR PIPING 3" OR SMALLER. COORDINATE FINAL INVERTS WITH EXISTING PIPING PRIOR TO ROUGH-IN OF UNDER SLAB INSTALLATION.
5. COORDINATE ALL FLOOR DRAINS, CLEANOUTS, AND FLOOR MOUNTED FIXTURES WITH FINISHED FLOOR SLAB ELEVATION TO ENSURE THEY ARE INSTALLED PLUM AND FLUSH WITHOUT CRACKS, RISE IN THE SLAB, OR VOIDS AROUND GRATES OR TOPS. ALL CLEANOUTS SHALL BE INSTALLED ALONG MAINS AT 50'-0" DISTANCE MAXIMUM. ALL FLOOR AND WALL CLEANOUTS SHALL BE ACCESSIBLE FOR MAINTENANCE AND NOT INSTALLED BENEATH EQUIPMENT. ANY DRAIN GRATES THAT ARE DAMAGED AS A RESULT OF OTHER CONSTRUCTION PRIOR TO RELEASE OF THE BUILDING TO THE OWNER SHALL BE REPLACED WITH LIKE GRATE AT NO EXPENSE OF THE OWNER.
6. PROVIDE TRAP AND SEAL PRIMERS ON ALL FLOOR DRAINS IF REQUIRED BY CODE OR OWNER.
7. PLUMBING VENTS THROUGH THE ROOF ARE LOCATED AT A MINIMUM OF 5'-0" FROM BUILDING PARAPETS AND 10'-0" FROM FRESH AIR INTAKES AND AS REQUIRED TO MEET LOCAL CODES.
8. ALL SHUT-OFF OR BALANCING VALVES TO PLUMBING ROUTED IN PIPE CHASES SHALL BE ACCESSIBLE FROM CEILING AREA OR ACCESS DOORS PROVIDED IN WALL.
9. ALL EXPOSED PIPES PENETRATING FINISHED WALLS SHALL BE EQUIPPED WITH WALL ESCUTCHEONS.
10. PROVIDE FINAL CONNECTIONS FOR ALL EQUIPMENT SPECIFIED IN PLUMBING FIXTURES AND EQUIPMENT SCHEDULES ON THESE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. PROVIDE ALL REQUIRED SHUT-OFFS, BACKFLOW PREVENTERS, PRESSSURE REGULATORS, AND CONDENSATE DRAINS INDICATED ON PLUMBING SCHEDULES AND AS REQUIRED BY LOCAL CODES FOR COMPLETE EQUIPMENT INSTALLATION. CONSULT EQUIPMENT SUPPLIER OR OWNER FOR ADDITIONAL FINAL CONNECTION REQUIREMENTS NOT SHOWN ON THESE DRAWINGS.

PLUMBING KEYNOTES: (1),(2),(X)

1. PROVIDE WALL MOUNTED HOSE BIBB AT 65" AFF.
2. PROVIDE NEW ELECTRIC WATER HEATER IN LOCATION SHOWN. REFER TO 2/P101 FOR DETAILS.
3. ROUTE 3/4"DHW AND 3/4"DCW TO TMV MOUNTED ABOVE CEILING. SET TEMPERATURE TO 90°F.
4. ROUTE 3/4" COPPER LINE FROM TMV CONCEALED IN WALL TO TUB FAUCET MOUNTED 51" ABOVE FINISHED FLOOR AND 8" FROM ADJACENT WALL.
5. CONNECT NEW 3/4" DOMESTIC COLD WATER TO EXISTING COLD WATER OF ADEQUATE SIZE IN THIS AREA. FIELD VERIFY EXACT LOCATION, LINE SIZE, ELEVATION, AND MATERIAL OF EXISTING DOMESTIC COLD WATER.
6. CONNECT NEW 2" VENT LINE TO EXISTING VENT LINE IN THIS AREA. FIELD VERIFY EXACT LOCATION, LINE SIZE, ELEVATION, AND MATERIAL OF EXISTING VENT.
7. CONNECT NEW 3" SANITARY TO EXISTING SANITARY IN THIS AREA. FIELD VERIFY EXACT LOCATION, LINE SIZE, INVERT, AND MATERIAL OF EXISTING SANITARY.
8. ROUTE 3/4" CONDENSATE LINE FROM AHU-1 TO A HUB DRAIN IN WALL. PROVIDE AN ACCESS PANEL FOR HUB DRAIN ON WALL. PIPING SHALL NOT BE EXPOSED AND ROUTED THROUGH WALL.

NOTE:
ALL ROOF WORK TO BE PERFORMED BY LANDLORD'S APPROVED ROOFING CONTRACTOR AT TENANT'S GC EXPENSE.

SBLM

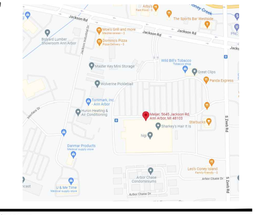
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Revisions
04/10/23 ISSUED FOR PERMIT/OWNER REVIEW

Key Plan



Seal & Signature



04/11/2023

Project
BFM001 - Best Friends Pet - Ann Arbor
Store Location Number - #173
5645 Jackson Road, Ann Arbor, MI 48103

Drawing Date: 03/29/2023 *Project No. : BFM001*
Drawn By : JK,CS *Checked By : BT*

Drawing Title
PLUMBING SANITARY, VENT, AND DOMESTIC WATER PLAN

Drawing Number
P101

15400 – PLUMBING WORK

DESCRIPTION
ALL PLUMBING AND ASSOCIATED WORK IN DIVISION 15 IS GOVERNED BY THIS SECTION. PROVIDE LABOR AND MATERIALS NECESSARY TO PROVIDE THE WORK AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN. REFER TO OTHER DIVISIONS FOR CONTINUATION OF EXTERIOR AND ALLIED WORK.

QUALITY ASSURANCE
OBTAIN AND PAY FOR ALL PERMITS, INSPECTIONS AND CONNECTION FEES REQUIRED BY GOVERNING BODIES IN CONNECTION WITH THE WORK. DELIVER CERTIFICATES OF INSPECTION TO THE OWNER'S REPRESENTATIVE. ALL WORK SHALL COMPLY WITH GOVERNING CODES, ORDINANCES, AND REGULATIONS OF CITY, COUNTY AND STATE.

SUBMITTALS
SHOP DRAWINGS: SUBMIT MATERIALS, PRODUCTS, EQUIPMENT AND SYSTEMS AS SPECIFIED UNDER EACH PLUMBING SECTION IN THIS DIVISION IN ACCORDANCE WITH THE GENERAL CONDITIONS. SHOW PIPE SIZES, LOCATION, SLOPES OF HORIZONTAL RUNS, FITTINGS, VALVES, METERS, GAGES AND CONNECTIONS.

PRODUCT DATA: SUBMIT ON MATERIALS, FIXTURES, AND EQUIPMENT UNLESS OTHERWISE SPECIFIED OR ACKNOWLEDGED IN WRITING.

SAMPLES: SUBMIT WHEN SPECIFIED OR REQUESTED.

RECORD DOCUMENTS
REFER TO GENERAL CONDITIONS FOR REQUIREMENTS CONCERNING RECORD DOCUMENTS. ADDITIONAL REQUIREMENTS MAY BE SPECIFIED IN DIVISION 1. UNLESS SEPIAS OF THE DRAWINGS ARE TO BE FURNISHED BY THE ARCHITECT–ENGINEER FOR PREPARATION OF RECORD DRAWINGS, FURNISH OWNER'S REPRESENTATIVE WITH TWO SETS OF ACCURATELY MARKED COPIES OF THE DRAWINGS, INSTEAD OF ONE SET AS REQUIRED BY THE GENERAL CONDITIONS, INDICATING ALL CHANGES FROM ORIGINAL DRAWINGS AS INSTALLED.

PRODUCT HANDLING
PIPE, FIXTURES AND ACCESSORIES SHALL BE PROTECTED FROM DAMAGE IN SHIPMENT, HANDLING, STORAGE AND INSTALLATION: FROM MOISTURE, DIRT AND DEBRIS. PIPE, CLEANOUT AND FLOOR DRAIN OPENINGS SHALL BE TEMPORARILY PLUGGED WITH TEST PLUGS UNTIL FINAL CONNECTIONS ARE MADE.

GUARANTEE AND SERVICE
REFER TO GENERAL CONDITIONS FOR GUARANTEE. WHERE EXTENDED GUARANTEES ARE CALLED FOR, FURNISH THREE COPIES TO BE INSERTED INTO OPERATION AND MAINTENANCE MANUALS.

GENERAL
PLUMBING SYSTEMS SHALL BE PROVIDED COMPLETE. SHOULD A SYSTEM, OR ANY PART THEREOF FAIL TO MEET PERFORMANCE REQUIREMENTS, NECESSARY REPLACEMENTS, ALTERATIONS OR REPAIRS, AS REQUIRED BY THE OWNER'S REPRESENTATIVE, SHALL BE MADE TO BRING PERFORMANCE UP TO SPECIFIED REQUIREMENTS AND ALL BUILDING CONSTRUCTION AND FINISHES DAMAGED OR MARRED BY SUCH REPLACEMENTS, ALTERATIONS OR REPAIRS SHALL BE RESTORED TO PRIOR CONDITION, AT NO ADDITIONAL COST TO THE OWNER.

WHERE MULTIPLE ITEMS OF EQUIPMENT OR MATERIALS ARE REQUIRED THEY SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER.

INSERTS, PIPE SLEEVES, HANGERS, SUPPORTS, FIXTURES, TRIM DRAINS AND ANCHORAGE OF PLUMBING SHALL BE PROVIDED AS SPECIFIED HEREIN. WHERE SUCH ITEMS ARE TO BE SET OR EMBEDDED IN CONCRETE, MASONRY OR SIMILAR WORK, THE ITEMS SHALL BE FURNISHED AND LAYOUT MADE AT THE PROPER TIME FOR THE SETTING OR EMBEDMENT THEREOF SO AS TO CAUSE NO DELAY IN THE WORK.

MANUFACTURER'S NAMES AND CATALOG NUMBERS
SPECIFIED REFERENCES HAVE BEEN MADE TO ONE OR MORE MANUFACTURER'S NAMES AND MODEL OR CATALOG NUMBERS. THIS DOES NOT NECESSARILY INDICATE THAT THE MATERIAL AND EQUIPMENT SPECIFIED IS AN "OFF THE SHELF" ITEM. REQUIREMENTS FOR SPECIFIC FINISHES, MATERIAL OR OTHER MODIFICATIONS MAY INTRODUCE VARIANCES FROM MANUFACTURERS' STANDARDS. MODIFICATIONS SHALL BE FULLY CONSIDERED.

CHARTS AND TAGS
IN AREAS HAVING VALVES, PROVIDE SINGLE LINE DIAGRAMS FRAMED UNDER GLASS AND MOUNTED ON EQUIPMENT ROOM WALL. THE DIAGRAMS SHALL GIVE NAME, NUMBER DESIGNATION AND LOCATION OF VALVE.

VALVES SHALL BE IDENTIFIED WITH 1/16 INCH THICK WHITE LAMINATED PLASTIC NAMEPLATES WITH 3/16 INCH HIGH BLACK LAMINATED LETTERS. THE NAMEPLATE IDENTIFICATION SHALL COINCIDE WITH ITEMS APPEARING ON DIAGRAMS. ATTACH NAMEPLATES TO VALVES WITH NON–CORROSIVE CHAIN OR WIRE.

ACCESS DOORS
PROVIDE ACCESS DOORS AS INDICATED AND SPECIFIED IN DRAWINGS

INSTALLATION AND WORKMANSHIP
THE WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ANY MATERIAL, APPARATUS OR EQUIPMENT WHICH, IN THE OPINION OF THE OWNER'S REPRESENTATIVE, IS IMPROPERLY INSTALLED SHALL BE REMOVED AND REINSTALLED IN AN APPROVED MANNER AT NO ADDITIONAL COST TO THE OWNER.

THE LOCATION OF PLUMBING PIPING SHALL BE COORDINATED TO ENSURE THAT IT CLEARS OPENINGS AND STRUCTURAL MEMBERS; THAT PIPING INDICATED AS CONCEALED CAN BE PROPERLY CONCEALED IN WALLS OR PARTITIONS AND THAT IT DOES NOT INTERFERE WITH LIGHTS, DUCTWORK OR EQUIPMENT HAVING FIXED LOCATIONS. MAKE NECESSARY HORIZONTAL OR VERTICAL OFFSETS WITH PIPE FITTINGS TO INSTALL THE SYSTEM IN THE AVAILABLE SPACE. CONCEAL OR INSTALL TIGHT TO STRUCTURE (IF EXPOSED) UNLESS OTHERWISE NOTED.

PIPING SHALL BE EXPOSED IN FINISHED AREAS ONLY WHERE INDICATED OR WITH THE APPROVAL OF THE OWNER'S REPRESENTATIVE.

WHERE DRAIN OR WATER CONNECTIONS NECESSARY TO THE OPERATION OF FIXTURES OR EQUIPMENT ARE NOT SPECIFICALLY SHOWN ON DIAGRAMS, EXTEND NECESSARY BRANCHES TO THE CLOSEST INDICATED BRANCH OR MAIN, AT NO ADDITIONAL COST TO THE OWNER.

EACH FIXTURE, EQUIPMENT DRAIN OR FLOOR DRAIN SHALL BE SEPARATELY TRAPPED UNLESS OTHERWISE INDICATED OR SPECIFIED.

PLUMBING PIPING AND EQUIPMENT SHALL NOT BE FIELD PAINTED, OR PRIMED BEYOND THE DEGREE OF APPLICATION FROM THE FACTORY SOURCE, OR EXCEPT AS REQUIRED BY APPLICABLE CODES AND AUTHORITIES HAVING JURISDICATION.

WATERPROOFING
DO NOT CUT OR PENETRATE WATERPROOFED SURFACES OR WATERPROOFING MEMBRANES WITHOUT FIRST MAKING ARRANGEMENTS FOR REPAIR BY A METHOD APPROVED BY THE OWNER'S REPRESENTATIVE.

ACCESS DOORS
INSTALL AS REQUIRED FOR MAINTENANCE, ADJUSTMENT, REMOVAL AND REPAIR OF VALVES, EQUIPMENT AND LIKE ITEMS. DOORS SHALL BE CONVENIENTLY LOCATED AND OF SUFFICIENT SIZE.

PIPING PROVISIONS FOR FIXTURES AND EQUIPMENT SPECIFIED IN OTHER SECTIONS OR FURNISHED BY THE OWNER ROUGH IN LOCATIONS SHALL BE DETERMINED FOR SERVICES. PROVIDE ALL NECESSARY PLUMBING SERVICES, ACCESSIBLE VALVES ON PLUMBING BRANCHES AND MAKE ALL FINAL CONNECTIONS.

PLUMBING OPERATION AND MAINTENANCE MANUALS

DESCRIPTION
FURNISH TWO COPIES OF COMPLETE OPERATION AND MAINTENANCE MANUALS TO THE OWNER'S REPRESENTATIVE, FOR APPROVAL AND FOR THE OWNER, ON PLUMBING EQUIPMENT AND SPECIALTIES. THE MANUAL SHALL BE BOUND IN HARD–BACK, THREE–RING LOOSE–LEAF BINDERS.

MANUAL CONTENTS
TITLE SHEET WITH JOB NAME, AND THE NAMES, ADDRESSES AND PHONE NUMBERS OF THE CONTRACTOR, SUBCONTRACTOR, CONTROL SUBCONTRACTOR, RELATED CONTRACTOR AND MATERIAL AND EQUIPMENT SUPPLIERS.

INDEX OF CONTENTS
TYPEWRITTEN OPERATING INSTRUCTIONS FOR THE OWNER'S PERSONNEL DESCRIBING HOW TO OPERATE EACH PIECE OF EQUIPMENT, AND CAUTION AND WARNING NOTICES.

APPROVED SHOP DRAWINGS, PRODUCT DATA AND PARTS AND MAINTENANCE BOOKLET FOR EACH ITEM OF PLUMBING, EQUIPMENT SPECIFIED IN DIVISION 15.

COPIES OF CERTIFICATES OF INSPECTION, WHERE INSPECTION IS REQUIRED. GUARANTEES, INCLUDING EXTENDED GUARANTEES.

DELIVERY
DELIVER THE MANUALS TO THE OWNER'S REPRESENTATIVE PRIOR TO SUBMITTING APPLICATION FOR FINAL PAYMENT.

PLUMBING PIPING

DESCRIPTION
FURNISH AND INSTALL PLUMBING PIPING WHERE SHOWN ON DRAWINGS AND AS SPECIFIED.

PIPING MATERIALS
OPTIONS
1. CAST IRON HUBLESS SANITARY PIPE AND FITTINGS: CISPI STD. 301.
2. CAST IRON SOIL PIPE AND FITTINGS, SERVICE WEIGHT: ASTM A 74.
3. CAST IRON SOIL PIPE AND FITTINGS, EXTRA HEAVY WEIGHT: ASTM A 74.
4. STEEL PIPE: ASTM A 53.
5. MALLEABLE IRON FITTINGS, 150 LB.: ASTM A 197.
6. PIPE THREADS: ANSI B2.1.
7. NIPPLES, PIPE (THREADED): FED SPEC. WW–N–351.
8. COPPER WATER TUBE: ASTM B 88.
9. WROUGHT COPPER AND BRONZE SOLDER–JOINT PRESSURE FITTINGS: ANSI B16.29.
10. WROUGHT COPPER AND WROUGHT COPPER ALLOY SOLDER–JOINT DRAINAGE FITTINGS: ANSI BL6.29.
11. CAULKING LEAD: FED. SPEC. QQ–C–40 (2).
12. SHEET LEAD: FED. SPEC. QQ–L–201.
13. SHEET COPPER: ASTM B 152.
14. NO–HUB STAINLESS STEEL COUPLING AND GASKETS: CISPI STD. S–301.
15. WHERE ACCEPTABLE BY LOCAL AUTHORITY HAVING JURISDICTION SOLID WALL ABS PIPING MAY BE USED FOR WASTE PIPING.

15.A. PVC/ABS PIPING CANNOT BE USED IN RETURN AIR PLENUM APPLICATION.

JOINTS AND CONNECTIONS
OPTIONS
1. CAST IRON, HUB AND SPIGOT: PACKED WITH OAKUM AND FINISHED WITH LEAD NOT LESS THAN 1 INCH DEEP; WELL CAULKED.
2. CAST IRON, NO–HUB: NEOPRENE GASKET AND CORRUGATED 304 STAINLESS STEEL SHIELD IN CONJUNCTION WITH 4 STAINLESS STEEL CLAMPS FOR 4" AND SMALLER, 6 CLAMPS FOR 5" AND LARGER.
3. BETWEEN LEAD AND BRASS: FERRULES OR SOLDERING NIPPLES WITH WIPED JOINTS 3/8" THICK AND 3/4" EACH SIDE OF JOINTS.
4. SCREWED JOINTS: AMERICAN NATIONAL STANDARD WITH PIPE FREE FROM CUTTING AND BURRS. THREE THREADS EXPOSED MAXIMUM.
5. SOLDERED JOINTS: 95–5 TIN–ANTIMONY SOLDER. SLIP JOINTS: USE FOR PLUMBING TRAP SEALS ON INLET SIDE ONLY.
6. BETWEEN COPPER AND FERROUS MATERIALS: INSULATING DIELECTRIC UNION.
7. FLANGED JOINTS: FURNISH WITH COMPANION FLANGE AND CLOTH INSERTED RUBBER GASKET.
8. FLANGED BOLTS: ASTM A 354, MINIMUM GRADE BD, ALLOY STEEL WITH HEX NUTS IN COMPLIANCE WITH ANSI B18.22 AND STANDARD ROLLED STEEL WASHERS.
9. ASSEMBLY FOR HUBLESS PIPING: AS RECOMMENDED BY THE MANUFACTURER.
10. CHANGES IN PIPE SIZE SHALL BE MADE WITH REDUCERS, INCREASERS OR REDUCING FITTINGS. BUSHINGS WILL NOT BE PERMITTED.

INSTALLATION
BEFORE INSTALLING PIPE IN ANY PART OF THE SYSTEM, THE PIPE SHALL BE CLEANED INSIDE AND MADE FREE OF OIL, DIRT, AND FOREIGN MATTER. PROPERLY ALIGN AND INSTALL IN NEAT ARRANGEMENT, TRUE TO THE LINES OF THE BUILDING. PITCH LINE AT A CONSTANT SLOPE FOR PROPER DRAINAGE.

EXCEPT AS NOTED OTHERWISE ON DRAWINGS, PIPING SHALL BE HELD AS HIGH AS POSSIBLE, BETWEEN STRUCTURES AND THROUGH JOIST WEBBING, WITH DUE REGARD TO CONFLICTS WITH OTHER SYSTEMS AND THEIR REQUIREMENTS FOR SPACE.

PIPING, INCLUDING NO–HUB PIPING, SHALL BE INSTALLED STRAIGHT AND TRUE TO VERTICAL AND HORIZONTAL LINES. DEFLECTION SHALL NOT EXCEED ONE DEGREE. WHEN NECESSARY TO ACHIEVE THIS ALIGNMENT PROVIDE ADDITIONAL HANGERS OR BRACING.

APPLY LUBRICANT TO SCREW JOINT MALE THREADS.

METAL TO BE SOLDERED SHALL BE CLEANED AND FLUXED AS SUITABLE FOR THE SOLDER USED.

NOTCHING OF COPPER TUBING OR PLASTIC PIPING FOR CONNECTIONS WILL NOT BE PERMITTED.

PLUMBING SPECIALITES

PIPE SLEEVES
SCHEDULE 40 BLACK STEEL, GALVANIZED 26 GAGE STEEL, PROVIDE FOR ALL PIPES THROUGH WALLS AND FLOORS.

ESCUTCHEONS
PROVIDE FOR ALL PIPING THROUGH WALLS, FLOORS AND CEILING WERE PIPING IS EXPOSED TO VIEW IN FINISHED AREA. ESCUTCHEONS SHALL BE CHROMIUM PLATED, TWO PIECE, HINGED WITH SET SCREW.

UNIONS
PROVIDE GROUND JOINT BRASS UNIONS OR FLANGES ON EACH PIPING CONNECTION TO EQUIPMENT.

PROVIDE DIELECTRIC UNIONS BETWEEN COPPER AND STEEL PIPING CONNECTION TO EQUIPMENT.

VACUUM BREAKERS
SHALL CONFORM TO THE REQUIREMENTS OF THE REFERENCED PLUMBING CODE AND SHALL BE PROVIDED FOR HOSE BIBBS, FLUSHOMETERS AND ANY FIXTURE OR EQUIPMENT WATER SUPPLY HAVING A THREADED OUTLET.

FLASHING
VENT FLASHING SHALL COMPLY WITH ROOFING MANUFACTURER'S WRITTEN SPECIFICATIONS

CLEANOUTS
CLEANOUTS ON NO–HUB PIPE SHALL BE STANDARD NO–HUB FITTINGS.
CLEANOUTS ON CAST IRON HUB AND SPIGOT PIPING, SHALL BE CADMIUM PLATED.
APPROVED MANUFACTURERS: ZURN, JOSAM OR JONESPEC.

TRAP PRIMERS
PROVIDE WHERE INDICATED ON DRAWINGS. PRECISION PRODUCTS WITH DISTRIBUTION UNIT OR APPROVED EQUAL.

PIPE SLEEVES
1. EXTEND SLEEVE 1/4 INCH BEYOND FINISHED SURFACE.
2. SET SLEEVE BEFORE POURING CONCRETE.
3. PROVIDE CLEARANCE BETWEEN SLEEVE AND PIPE OR BETWEEN SLEEVE AND INSULATION TO ALLOW FOR PIPE MOVEMENT DUE TO EXPANSION AND CONTRACTION.
4. INSULATION SHALL PASS CONTINUOUS THROUGH THE SLEEVE.
5. CAULK BETWEEN SLEEVE AND PIPE OR SLEEVE AND INSULATION. PREFABRICATED, PRE–INSULATED, "PIPE SHIELDS" WILL BE ACCEPTABLE FOR PIPES PASSING THROUGH FLOORS, EXTERIOR WALLS, FIRE WALLS AND FIRE RESISTIVE WALLS AND PARTIITONS.
6. ESCUTCHEONS: FIT AROUND INSULATION WHERE PRESENT. PROVIDE DEEP ESCUTCHEON PLATES WHERE PIPE SLEEVES EXTEND ABOVE FLOORS.
7. WATER HAMMER ARRESTERS: INSTALL WHERE SHOWN ON DRAWINGS.
8. CLEANOUTS: INSTALL WHERE SHOWN ON DRAWINGS AND AT BASE OF ALL RISERS. PROVIDE ADDITIONAL CLEANOUTS WHERE REQUIRED BY LOCAL CODES AND FOR CONVENIENCE OF TESTING AND ERECTION AT CONTRACTOR'S OPTION.
9. FRAMES AND COVERS SHALL BE FLUSH WITH ADJOINING ARCHITECTURAL FINISH.

PLUMBING VALVES

DESCRIPTION
INSTALL IN ACCESSIBLE LOCATION.
VALVES SHALL NOT BE INSTALLED WITH THE STEMS BELOW THE HORIZONTAL POSITION.

VALVES, GATE, 125# UNION BONNET. RISING STEM 3 INCH AND SMALLER:
1. SCREWED: ITT GRINNELL #3080 OR APPROVED EQUAL.
2. SOLDER JOINT: ITT GRINNELL #3080 SJ OR APPROVED EQUAL.

VALVES, BALL (MAY BE USED IN LIEU OF GATE VALVES UP TO 2"): 2" AND SMALLER NIBCO #T580; TWO PIECE BRONZE BODY, WITH SCREEWED ENDS, CHROME PLATED BRONZE BALL WITH CONVENTIONAL PORT, 400 PSI, BLOW OUT PROOF STEM.

VALVES, GLOBE 150# TEFLON DISC. UNION BONNET 3 INCH OR SMALLER:
1. SCREWED: ITT GRINELL #3240 OR APPROVED EQUAL.
2. SOLDER JOINT: ITT GRINELL #3240 SJ OR APPROVED EQUAL.

VALVES, CHECK 125# REMOVABLE REGRINDABLE DISC A. 3 INCH AND SMALLER, HORIZONTAL:
1. SCREWED: ITT GRINELL #3300 OR APPROVED EQUAL.
2. SOLDER JOINT: ITT GRINELL #3300 SJ OR APPROVED EQUAL.

3 INCH AND SMALLER, VERTICAL:
1. FOR SCREWED AND SOLDER JOINT INSTALLATION. SAME AS SECTION A OR APPROVED EQUAL. PROVIDE ADAPTERS FOR SOLDER JOINT CONNECTION. 2.05 HOSE BIBBS A. SEE FIXTURE SCHEDULE ON DRAWINGS. B. PLUG COCKS, 125# BRONZE COCKS. TWO (2) INCH AND SMALLER SHALL BE CRANE NO. 250 OR APPROVED EQUAL.

INSTALLATION
INSTALL VALVES WHERE SHOWN ON DRAWINGS.

PLUMBING HANGERS AND SUPPORTS

DESCRIPTION
PROVIDE HANGERS FOR ALL PIPING NOT INDICATED BELOW GRADE. USE HANGERS CAPABLE OF ADJUSTMENT.

HANGERS AND SUPPORTS
HANGERS FOR BLACK OR GALVANIZED STEEL PIPE SHALL BE GRINNELL, MODEL NO. 65 OR APPROVED EQUAL.

HANGERS FOR CAST IRON PIPE SHALL BE GRINNELL, MODEL NO. 260 OR APPROVED EQUAL.

HANGERS FOR COPPER TUBING SHALL BE GRINNELL, MODEL NO. 97 C OR APPROVED EQUAL.

TRAPEZE HANGERS OF A TYPE APPROVED BY THE OWNER'S REPRESENTATIVE MAY BE USED WHERE PIPES ARE DESIGNED TO RUN PARALLEL AT THE SAME ELEVATION.

PROVIDE ISOLATION HANGER WITH PROTECTIVE SHIELD, GRINNELL, MODEL NO. 300 103 OR APPROVED EQUAL, FOR ALL INSULATED PIPING. AT HANGER POINTS, PROVIDE 6 INCH LONG SECTION OF 1/2 INCH THICK CALCIUM SILICATE SECTIONAL PIPE INSULATION WITH FACTORY LONGITUDINAL LAP. SEAL BUTT JOINTS WITH INSULATING CEMENT.

STRAP HANGERS: NOT PERMITTED.

RISER CLAMPS: PROVIDE RISER CLAMPS FOR VERTICAL PIPING AT EACH LEVEL, GRINNELL MODEL NO. 261

INSERTS: IN CONCRETE, GRINNELL MODEL NO. 285 OR APPROVED EQUAL, HAVING ADJUSTMENT FROM 3/4 INCH THROUGH 1–1/4 INCH. IN METAL DECKS READHEAD SD1 OR APPROVED EQUAL. POWDER PROPELLED PERMITTED IN NEW CONSTRUCTION WHERE TYPE AND LOCATION ARE APPROVED PRIOR TO INSTALLATION. IN EXISTING CONSTRUCTION, START SLUGIN NO. 6800 SERIES OR APPROVED EQUAL.

SIDE BEAM CLAMPS: PROVIDE WHEN SUPPORTING FROM STRUCTURAL STEEL MEMBERS, GRINNELL, MODEL 225 OR APPROVED EQUAL.

OTHER SUPPORTS: OBTAIN OWNER'S REPRENTATIVE APPROVAL FOR OTHER METHODS OF SUPPORT.

SPACING OF HANGERS
PROVIDE HANGER AT EACH CHANGE OF DIRECTION.

SPACE HANGERS AND SUPPORTS TO PREVENT SAGGING AND REDUCE STRAIN ON VALVES AND SPECIALTIES WITH SPACING NO GREATER AND ROD NO SMALLER THAN SHOWN ON THE FOLLOWING TABLE. HANGERS SHALL ALLOW FOR EXPANSION AND CONTRACTION.

FERROUS PIPING AND COPPER TUBING:

DIAMETER OF PIPE	MAXIMUM SPACING	ROD SIZE
1/2" THROUGH 1–1/2"	6 FT.	3/8"
2" THROUGH 3"	10 FT.	1/2"
4" THROUGH 5"	12 FT.	5/8"
6" AND LARGER	16 FT.	3/4" D.

PVC AND CPVC PIPING:

DIAMETER OF PIPE	MAXIMUM SPACING	ROD SIZE
1/2" THROUGH 1"	2.5 FT.	3/8"
1–1/4" THROUGH 2"	3 FT.	1/2"
3"	3.5 FT.	5/8"
4"	4 FT.	3/4"
6" AND LARGER	4.5 FT.	3/4" D.

CAST IRON PIPING:

DIAMETER OF PIPE	MAXIMUM SPACING	ROD SIZE
2" AND 3"	EACH JOINT	3/8"
4" AND 5"	EACH JOINT	1/2"
6" AND 8"	EACH JOINT	3/4"
10" THROUGH 15" (TWO HANGERS)	EACH JOINT	3/4"

RISER CLAMPS
INSTALL AT EACH LEVEL BELOW THE FLOOR. SUSPEND FROM TWO HANGER RODS AND INSERTS WHERE THE INSTALLATION OF ESCUTCHEON PLATES IS REQUIRED.

TESTING OF PLUMBING PIPING

DESCRIPTION
CONDUCT ALL TESTS AFTER PIPING IS INSTALLED AND BEFORE PIPING IS CONCEALED OR COVERED.

PROVIDE ALL NECESSARY TEMPORARY PIPING CLOSURES.

PROVIDE ALL TESTING EQUIPMENT, MATERIALS AND SUPPLIES.

SYSTEMS SHALL REMAIN UNDER TEST FOR SUFFICIENT LENGTH OF TIME TO PROVE TIGHTNESS THEREOF AND FOR ADEQUATE OBSERVATION BY THE ARCHITECT–ENGINEER.

MATERIALS OTHER THAN THOSE SPECIFIED FOR JOINING WILL NOT BE PERMITTED IN THE PIPING SYSTEMS FOR THE PURPOSE OF STOPPING LEAKS.

ALL LEAKS DISCLOSED BY THE TESTING PROCEDURES SHALL BE REPAIRED AND TESTING REPEATED UNTIL THE SYSTEM IS PROVEN TIGHT.

TESTING REQUIREMENTS ARE MINIMUM AND ARE NOT INTENDED TO BE LIMITING WHERE ADDITIONAL TESTING METHODS ARE REQUIRED BY THE AUTHORITY HAVING JURISDICTION.

SUBMITTALS
STERILIZATION: PROVIDE A DATED LETTER TO THE ARCHITECT–ENGINEER'S REPRESENTATIVE STATING THAT PIPING SYSTEM HAS BEEN STERILIZED AND FLUSHED AS SPECIFIED.

PIPING TEST
DOMESTIC HOT AND COLD WATER PIPING SHALL BE FILLED, THEN TESTED TO A HYDROSTATIC PRESSURE OF 150 PSIG. MAINTAIN TEST PRESSURE FOR A MINIMUM OF ONE HOUR.

SANITARY PIPING, PREVIOUS TO CONNECTION OF FIXTURES, SHALL BE FILLED WITH WATER TO THE TOP OF THE SYSTEM AND PROVEN TIGHT. WHEN TESTING THE SYSTEM BY SECTIONS THE MINIMUM HEIGHT OF THE WATER COLUMN SHALL BE 10 FEET. EXAMINE ALL JOINTS FOR LEAKS.

NEW FIRE STANDPIPE SYSTEM SHALL BE TESTED TO A HYDROSTATIC PRESSURE OF 200 PSIG. MAINTAIN TEST PRESSURE FOR A MINIMUM OF TWO HOURS.

GAS PIPING SHALL BE TESTED WITH NITROGEN TO 50 PSIG. PRESSURE SHALL BE MEASURED WITH A MANOMETER. MAINTAIN TEST PRESSURE FOR A MINIMUM OF 30 MINUTES.

STERILIZATION
AFTER TESTS ARE COMPLETED ALL WATER SUPPLY SYSTEMS SHALL BE FILLED WITH A SOLUTION CONTAINING 100 PPM OF AVAILABLE CHLORINE AND ALLOWED TO STAND FOR A PERIOD TO TWO HOURS BEFORE BEING FLUSHED WITH CLEAN WATER.

PLUMBING, FIXTURES, TRIM AND DRAINS

MANUFACTURER
MANUFACTURER SHALL BE AS SCHEDULED OR BY APPROVED EQUAL.

PIPING
PIPING TO SERVE FIXTURES AND EQUIPMENT AND EXPOSED TO VIEW IN FINISHED AREAS SHALL BE BRASS, CHROMIUM PLATED.

SUPPORTS
PROVIDE ALL BRACKETS, PLATES, ANCHORS AND FASTENING DEVICES REQUIRED FOR ANCHORING THE FIXTURES RIGIDLY IN PLACE. RISERS TO SHOWER HEADS SHALL BE ANCHORED TO THE WALL CONSTRUCTION TO PREVENT MOVEMENT.

FIXTURES
PROVIDE PLUMBING FIXTURES AS SCHEDULED ON DRAWINGS, AMERICAN STANDARD, KOHLER, ELJER OR APPROVED EQUAL.

PLUMBING DRAINS
FURNISH WITH SEEPAGE FLANGE WHERE INSTALLED WITH PANS OR FLASHING, FURNISH CLAMPING RING.

ALL DRAINS SHALL BE OF THE SAME MANUFACTURER.

FURNISH FLOOR DRAINS WITH PRIMER CONNECTIONS WHERE INDICATED ON THE DRAWINGS. IN LIEU OF CAST–IN PRIMER CONNECTIONS ON THE DRAIN BODY, A TEE BETWEEN THE DRAIN BODY AND THE TRAP, TO RECEIVE THE PRIMER DISCHARGE WILL BE ACCEPTABLE.

PROVIDE FLOOR DRAINS WITH 4 INCH DEEP SEAL TRAPS.

PROVIDE ALL DRAINS AS SCHEDULED ON DRAWINGS OR APPROVED EQUAL.

INSTALLATION
DRAIN SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS; ACCESSIBLE AND LOCATED TO SUIT EQUIPMENT APPROVED FOR INSTALLATION. WHERE FLUSH VALVES ARE SPECIFIED WITH FIXTURES, THE SUPPLY TO THE VALVE IN EACH ROOM SHALL BE AT THE SAME HEIGHT FOR THE TYPE OF FIXTURE AND THE VALVE SHALL BE SET IN PLACE SO THAT THE CENTER LINE OF THE VALVE DISCHARGE IS DIRECTLY ABOVE THE CENTER LINE OF FIXTURE STUD. BENDING OF NIPPLE BETWEEN THE VALVE AND THE STUD TO ACHIEVE CONNECTION WILL NOT BE PERMITTED.

CHROME PLATED PIPING REQUIRING THE USE OF WRENCH SHALL BE PROTECTED FROM DAMAGE.

BOLT WATER CLOSET CARRIER TO FLOOR.

GAS PIPING

PIPING
SHALL COMPLY WITH THE REQUIREMENTS OF NFPA NO. 54 AND THE LOCAL GAS COMPANY.

PIPE SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH MALLEABLE FITTINGS

INSTALLATION
PIPING SHALL COMPLY WITH THE REQUIREMENTS OF NFPA NO. 54 AND THE LOCAL GAS COMPANY.

INSTALL GAS SHUT–OFF AND GAS MANIFOLDS AS INDICATED OR REQUIRED.

DOMESTIC HOT AND COLD WATER

DESCRIPTION
THE WORK INCLUDES FURNISHING AND INSTALLING HOT AND COLD WATER PIPING AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

PIPING
HOT AND COLD WATER PIPING SHALL BE COPPER WATER TUBE HARD TEMPER, TYPE "L" WITH WROUGHT SOLDER FITTINGS ABOVE FLOOR AND SOFT TEMPER TYPE "K" WITH WROUGHT SOLDER FITTINGS BELOW GRADE.

GATE VALVES
SPECIFIED IN SECTION, PLUMBING VALVES .

INSTALLATION
NOTCHING OF PIPE FOR CONNECTION NOT PERMITTED.

WHERE POSSIBILITY OF BACKFLOW FROM THE DRAIN TO THE SUPPLY FITTING EXISTS, INSTALL VACUUM BREAKERS.

NOT MORE THAN ONE LAVATORY, SINK, OR SIMILAR FIXTURE SHALL BE SUPPLIED BY A 1/2 INCH BRANCH. LINEAR DIMENSIONS NOT TO EXCEED 5 FEET.

MAKE CONNECTION TO EQUIPMENT AND FIXTURES INDICATED ON THE DRAWINGS OR SPECIFIED HEREIN.

HOT WATER BRANCH CONNECTIONS TO DISTRIBUTION MAINS SHALL BE TOP TAKE–OFF, SWING JOINT TYPE.

ALL PIPING INSTALLED BELOW GROUND SHALL RECEIVE TWO COATS OF KOPPERS NO. 50 OR APPROVED EQUAL.

PLUMBING INSULATION

DESCRIPTION
INSULATION SHALL NOT BE INSTALLED UNTIL TESTING PROCEDURES HAVE BEEN COMPLIED WITH AND ALL SURFACES HAVE BEEN CLEANED AND FREE OF DIRT, GREASE AND COMPLETELY DRIED.

MATERIALS SHALL COMPLY WITH UL 723, FLAME SPREAD RATING, HOT SURFACE TEST PERFORMANCE, AND SMOKE DEVELOPED RATING.

SUBMITTALS
SAMPLES AND MANUFACTURER'S PRODUCT DATA: SUBMIT SAMPLES OF INSULATION AND ADHESIVE AND PRODUCT DATA LISTING RECOMMENDATIONS FOR USE AND COMPLIANCE WITH NFPA 90.

INSULATION
INSULATION FOR HOT AND COLD WATER PIPING, SHALL BE SECTIONAL GLASS FIBER AS MANUFACTURED BY OWENS CORNING FIBERGLASS TYPE ASJ/SSLII OR APPROVED EQUAL, WITH FACTORY APPLIED, ALL PURPOSE, FIRE RETARDANT JACKET.

INSULATION FOR EXPOSED HOT AND COLD WATER PIPING SHALL BE SECTIONAL GLASS FIBER AS MANUFACTURED BY OWENS CORNING FIBERGLASS TYPE ASJ/SSLII OR APPROVED EQUAL, WITH FACTORY APPLIED, .016 EMBOSSED ALUMINUM JACKET.

ADHESIVE SHALL BE BENJAMIN FOSTER 30–36, OR APPROVED EQUAL, WHITE INSULATION LAGGING ADHESIVE.

VAPOR BARRIER MASTIC SHALL BE BENJAMIN FOSTER NO. 82–07, WHITE, OR APPROVED EQUAL.

INSTALLATION
HOT AND COLD WATER PIPING: SHALL BE INSULATED WITH 1/2 INCH THICK GLASS FIBER INSULATION HAVING A FACTORY APPLIED, ALL PURPOSE, FIRE RETARDANT JACKET WITH A MINIMUM R–4.0 PER INCH. CONCEALED AND EXPOSED PIPING SHALL HAVE THE INSULATION APPLIED WITH SIDE AND END JOINTS BUTTED TIGHTLY. SEAL JACKET LEGS AND BUTT JOINT STRIPS WITH ADHESIVE.

INSULATE FITTINGS FOR PIPING UP TO 3 INCHES IPS WITH MOLDED GLASS FIBER. INSULATE FITTINGS FOR PIPING LARGER THAN 3 INCHES WITH MOLDED FITTINGS OR SEGMENTED SECTIONS, WIRED IN PLACE TO THE SAME THICKNESS AS ADJACENT INSULATION. EXPOSED INSULATED PIPING AND FITTINGS SHALL BE JACKETED WITH 6 OUNCE CANVAS PIPING INCLUDING THE FITTING CHANGE FROM HORIZONTAL TO VERTICAL. CONCEALED AND EXPOSED PIPING SHALL HAVE THE INSULATION APPLIED WITH SIDE AND END JOINTS BUTTED TIGHTLY. SEAL OFF ENDS OF INSULATION WITH VAPOR BARRIER MASTIC AT EACH FITTING AND AT 21 FOOT INTERVALS ON CONTINUOUS RUNS.

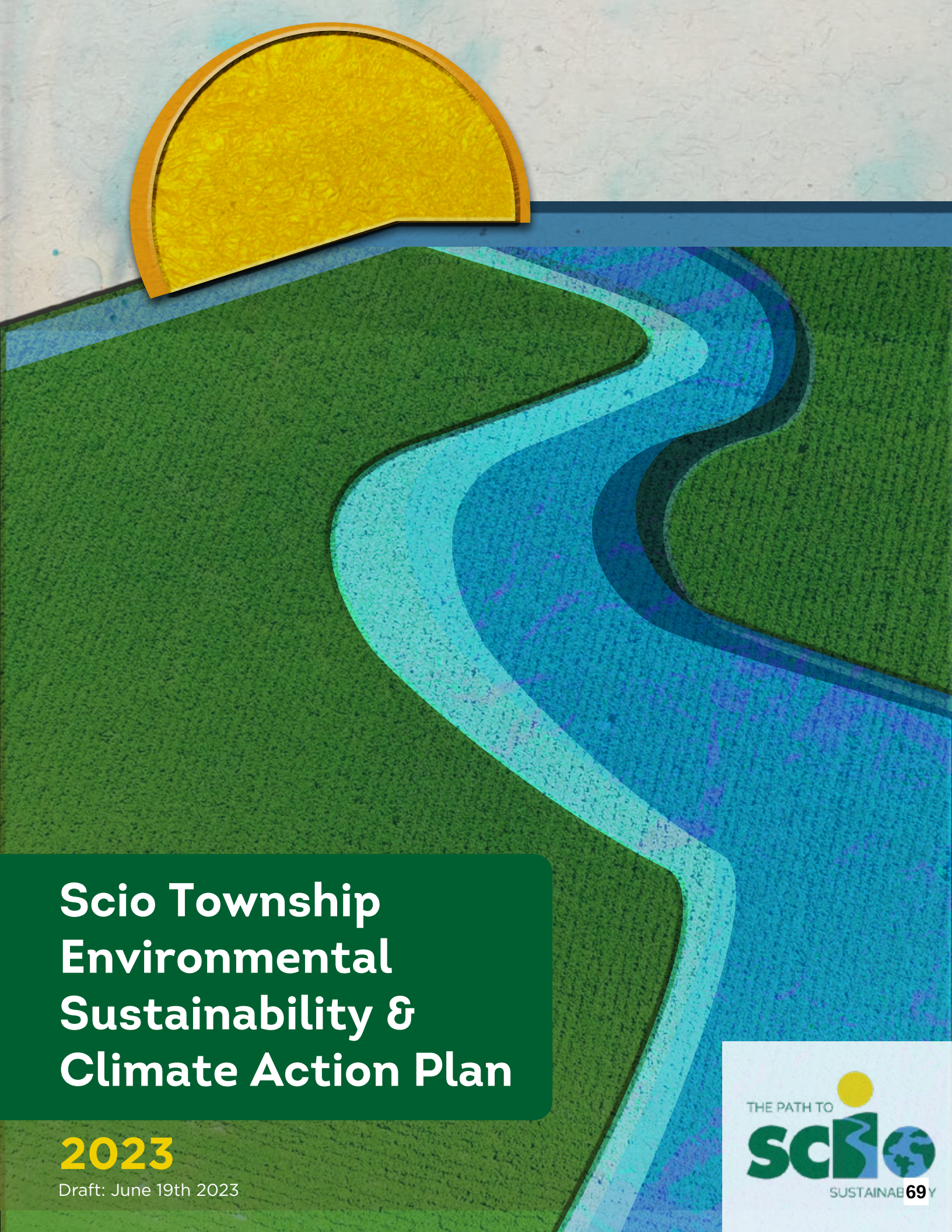
INSTALL THE FACTORY APPLIED FIRE RETARDANT JACKET VAPOR BARRIER SO THAT IT WILL LAP SMOOTHLY AND SECURELY AT THE LONGITUDINAL LAP AND ADHERE IT WITH VAPOR BARRIER MASTIC. ADHERE 3 INCH WIDE BUTT STRIPS X SMOOTHLY OVER ALL END JOINTS WITH THE VAPOR BARRIER MASTIC TO ASSURE A CONTINUOUS VAPOR BARRIER – NO STAPLES ALLOWED. INSULATE DRAIN BODIES AND FITTINGS WITH METERED SEGMENTS OF PIPE INSULATION, OVERSIZED PIPE INSULATION OR MOLDED FITTINGS. COAT WITH TWO, 1/8 INCH COATS OF VAPOR BARRIER MASTIC REINFORCED WITH GLASS FABRIC EXTENDING 2 INCHES ONTO ADJACENT PIPES. EXPOSED INSULATED PIPING AND FITTINGS SHALL BE JACKETED WITH

AGENDA # 2
Scio Township Planning Commission
ESCAP discussion,

FOR MEETING DATE OF: July 10, 2023
PREPARED ON: 20230630
PREPARED BY: Fran Szuma
SUBMITTED BY: Planning

ITEM TYPE: Discussion Only

ATTACHMENTS:
ESCAP discussion



Scio Township Environmental Sustainability & Climate Action Plan

2023

Draft: June 19th 2023

THE PATH TO SCIO SUSTAINABILITY

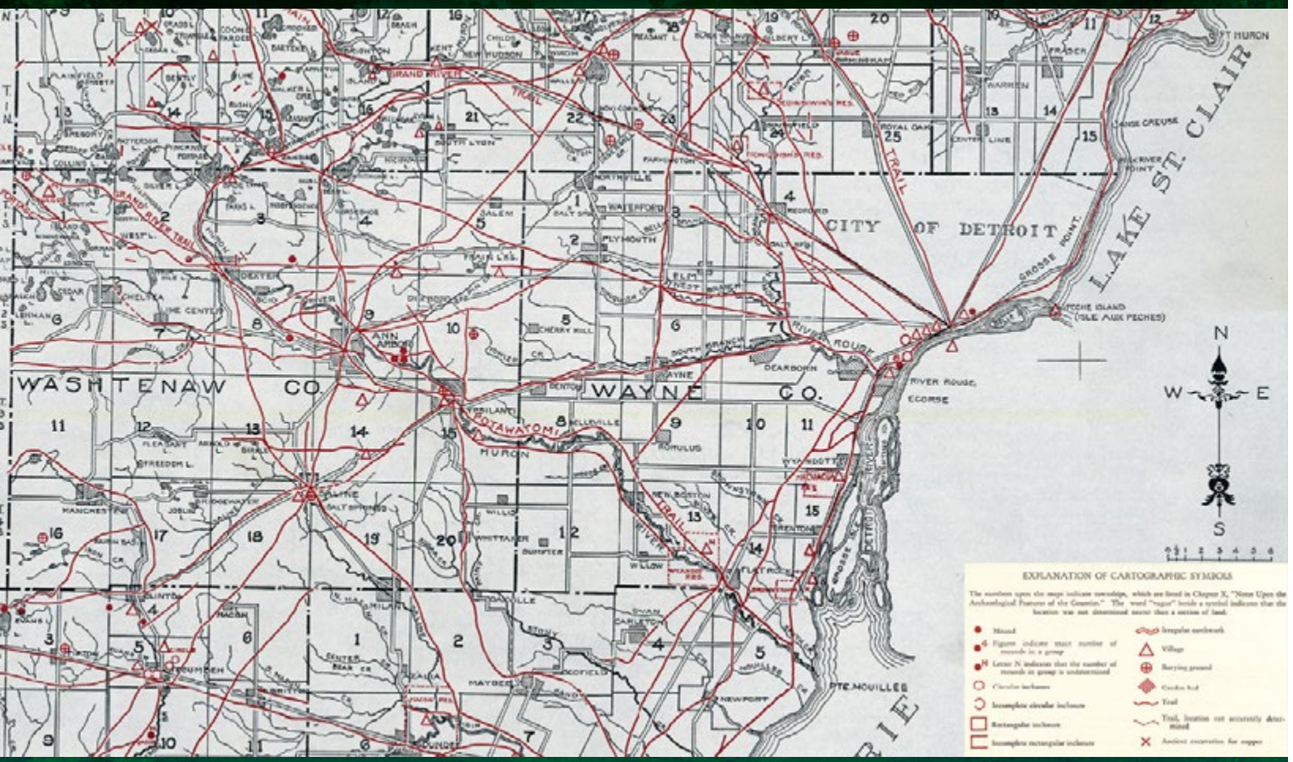
Land Acknowledgement

Adapted from the Washtenaw Community College acknowledgement

We humbly acknowledge that Scio Township occupies the ancestral, traditional, and contemporary lands of diverse native peoples. The taking of this land was formalized, in a process alien to native cultures, by the Treaty of Detroit in 1807, with the Anishinaabe (ä-ni-shi-ˈno-bā), including the Odawa, Ojibwe (ō-ˋjib- wą̇) and Potawatomi (pätəˋwätəmē), and with the Wyandot (wī-ən-ˌdät). Many other native peoples lived on this land at different times including the Fox, Sauk (ˋsok), Shawnee (sho-ˈnē), Kickapoo (ˈkikəˌpü), Miami (mē-ä-mē), Musketoon (ˌməskəˋtün), and Cherokee (ˋcher-ə- ˌkē).

People in Scio Township have benefited from the use of this land and from its life, beauty, and spirit. We recognize our responsibility to understand and care for this land, and we honor, with our deepest gratitude, the native people who have stewarded it for generations.

Acknowledgment by itself is a small gesture. But let this step be an opening to greater public consciousness of Native history, sovereignty and cultural rights, and a step toward equitable relationship and reconciliation.



Excerpt from Archaeological Atlas of Michigan

THE PATH TO SCIO SUSTAINABILITY

"Scio Township commits itself to a just transition to net zero GHG emissions due to township operations no later than 2030 and to the same goal through all sectors of the township by 2035."

From the climate resolution unanimously approved by the Board of Trustees on July 26, 2022

Vision

We envision Scio Township as a welcoming, resilient, carbon neutral, sustainable community that embraces citizen well-being, environmental and economic viability.

The 2023 Scio Township Environmental Sustainability & Climate Action Plan (ESCAP) will guide and integrate with township operations, services, planning, policies, ordinances, and investments to ensure the most sustainable, inclusive, GHG emission reduction options are implemented. The ESCAP will foster regional cooperation and community engagement in meeting climate and sustainability goals. Scio Township will specifically collaborate on the implementation of **Resilient Washtenaw** the county's Climate Action Plan, along with other cities, townships, and villages in Washtenaw County.

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Background

What is Environmental Sustainability?

The widely-accepted definition of sustainability is ***"the ability to meet the needs of the present population without compromising the ability of future generations to meet their needs."*** A sustainability mindset compels a community to make decisions based on economic, environmental, and social impacts in the long-term, rather than just the short-term.

Sustainability efforts in Scio Township need to address not only reduction of GHG emissions and waste, protection of eco-systems, but also equitable distribution of resources and resilience in response to climate-related and other emergencies.

Why is Climate Action Important?

Climate change is affecting our planet from pole to pole. NOAA monitors global climate data and here are some of the changes NOAA has recorded. You can explore more at the Global Climate Dashboard.

- Global temperatures rose about 1.8°F (1°C) from 1901 to 2020.
- Sea level rise has accelerated from 1.7 mm/year throughout most of the twentieth century to 3.2 mm/year since 1993.
- Glaciers are shrinking: average thickness of 30 well-studied glaciers has decreased more than 60 feet since 1980.
- The area covered by sea ice in the Arctic at the end of summer has shrunk by about 40% since 1979.
- The amount of carbon dioxide in the atmosphere has risen by 25% since 1958, and by about 40% since the Industrial Revolution.
- Snow is melting earlier compared to long-term averages

The greenhouse gas emissions from human activities are driving climate change and continue to rise. They are now at their highest levels in history. Without action, the world's average surface temperature is projected to rise over the 21st century and is likely to surpass 3 degrees Celsius this century—with some areas of the world expected to warm even more. The poorest and most vulnerable people are being affected the most.

Climate change is impacting Scio Township through more intense rain events, more frequent days with very high temperatures, and changes in plant growing cycles and wildlife populations.

Introduction

To The Environmental Sustainability Climate Action Plan (ESCAP)



Recognizing the need to act, in July 2021, the Township Planning Commission appointed and charged the Environmental Sustainability Task Force with developing an Environmental Sustainability Plan.

The Scio Township Environmental Sustainability & Climate Action Plan (ESCAP) is referenced in the Scio Township Master Plan and should be reviewed at least every 5 years with the Master Plan. In addition, an annual progress report should be issued to the community.

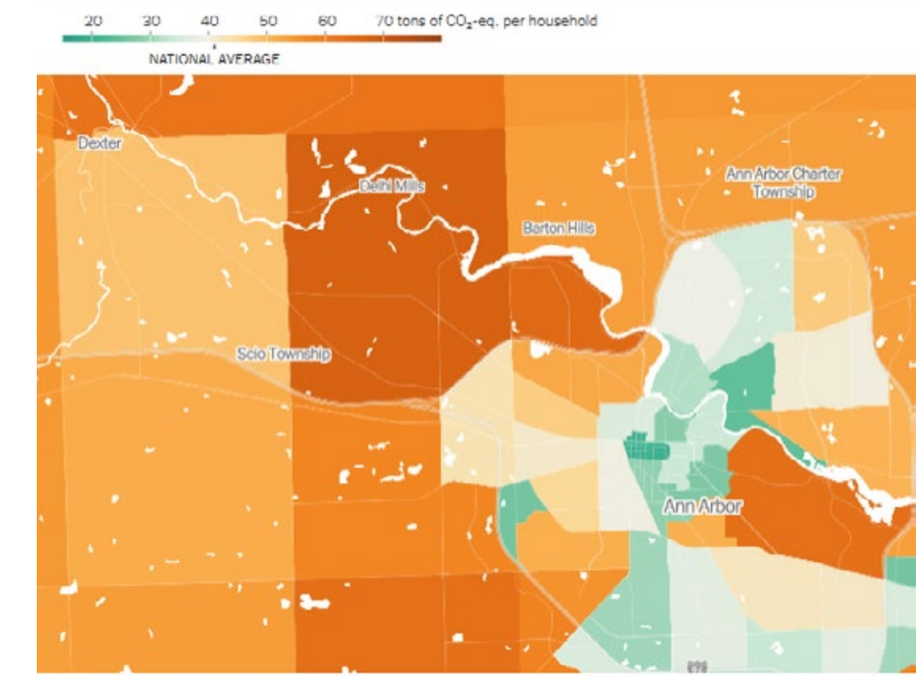
The ESCAP includes a set of aggressive but practical strategies, principles, goals, and actions to help Scio Township reach carbon neutrality, as an organization by 2030, and as a community, by 2035. This plan specifically supports the July 26, 2022 Resolution adopted by the Board of Trustees, and aligns with Resilient Washtenaw goals.

SCIO TOWNSHIP CONSUMPTION BASED EMISSIONS

A map of emissions linked to the way people consume goods and services offers a different way to view what is driving global warming. Usually, greenhouse gases are measured at the source: power plants burning natural gas or coal, cows belching methane or cars and trucks burning gasoline. But a consumption-based analysis assigns those emissions to the households that are ultimately responsible for them: the people who use electricity, drive cars, eat food and buy goods.

The map below is from a NYT article "The Climate Impact of Your Neighborhood, Mapped" and is based on research from the University of California, Berkeley that estimates what are known as consumption-based emissions. The data was produced by EcoDataLab, a consulting firm partnered with the university.

As part of Washtenaw County, Scio Township will rely on the County to track total GreenHouse Gas Emissions:



Emissions here are **higher than** the national average.

Average household emissions by source:

TRANSPORTATION	**Higher** than average
HOUSING	**Higher** than average
FOOD	**Higher** than average
GOODS	**Higher** than average
SERVICES	**Higher** than average

What Goes Into a Household's Emissions Footprint?

TRANSPORTATION	Gasoline, motor oil, air travel, vehicle manufacturing, other transportation
HOUSING	Home electricity, natural gas, fuel oil, housing construction and maintenance, other
SERVICES	Healthcare, education, other services (emissions from electricity, other sources)
FOOD	Meat, dairy, cereals, fruits, vegetables, other food, dining out (production, other sources)
GOODS	Apparel, furniture, appliances, other goods (manufacturing, maintenance, other sources)

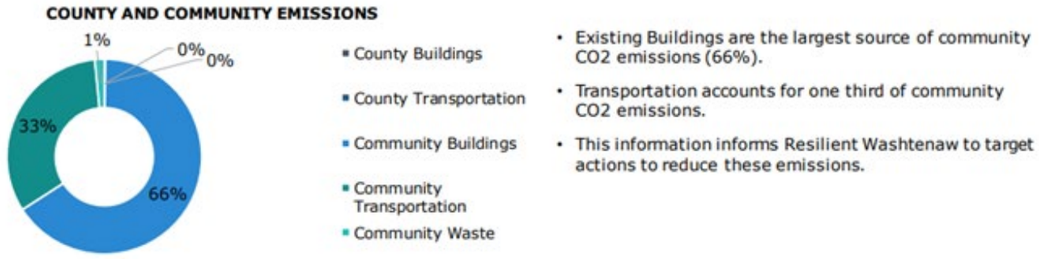
The Problem: County Emissions

In 2019, Washtenaw County emitted 4,490,000 metric tons of carbon dioxide. Of these 4.49 million metric tons, Washtenaw County operations contributed 8,452 metric tons of carbon dioxide emissions in 2019 or 0.17% of total Countywide emissions.

Forecasting future emissions using business as usual assumptions, Countywide emissions would drop to approximately 4.25 million metric tons by 2030 and to 4 million metric tons by 2035. These reductions are largely the result of advances in technology and efforts underway within several municipalities and organizations. The data in this report show us how much work must be done quickly in the next 12 years to achieve carbon neutrality.

Climate change work requires us to reduce emissions, mitigate emissions through actions that either empower emission reduction or offset emissions by reducing them in other sectors, and to adapt to cope with the unavoidable impacts of climate change and become more resilient. The actions in this plan are designed to reduce emissions, increase our community adaptation, and to build resiliency with the County.

Where our Emissions Originate

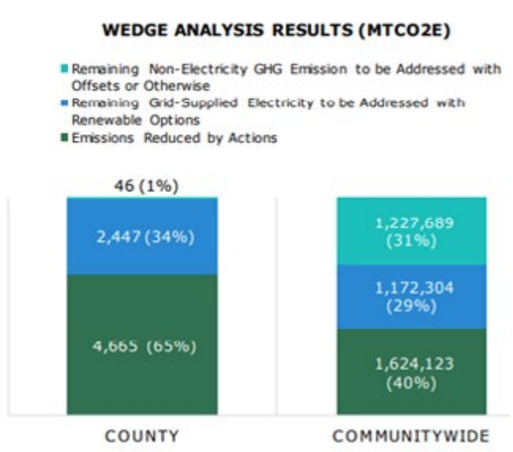


- Existing Buildings are the largest source of community CO2 emissions (66%).
- Transportation accounts for one third of community CO2 emissions.
- This information informs Resilient Washtenaw to target actions to reduce these emissions.

GHGI, BAU, and Wedge Analysis

The Greenhouse Gas Inventory (GHGI) measures the current sources of greenhouse gas emissions for both County operations and communitywide activity. From this, a Business as Usual (BAU) forecast estimates future trends in emissions. Next, we conducted a wedge analysis by estimating the impact of our Actions to reduce emissions to meet our Goals within our timeline. Any remaining emissions will be the result of grid-supplied electricity that continues to be produced, in-part, by fossil fuels by the utilities, continued use of fossil fuels in transportation or onsite in buildings, or emissions from waste and wastewater management.

We estimate that through direct mitigation actions we can reduce greenhouse gas emissions by ~65% for the County's operations and by ~40% for communitywide emissions. The County will still need to offset ~34% of emissions coming from grid-supplied electricity and utilize a very small number of offsets (<1%) to achieve carbon neutrality. Communitywide emissions will require significant offsets, including ~29% for grid supplied electricity and ~31% for all other sources of emissions.



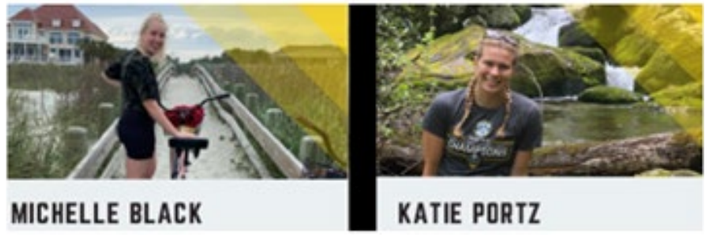
PLAN DEVELOPMENT HISTORY

2020



The Planning Commission conceived of the Environmental Sustainability Task Forces (ESTF) during the 2020 update to the Master Plan, in order to develop a plan that would holistically address environmental sustainability and climate action in the township.

May 2021



This supplemental planning process started in May 2021 with foundational research conducted by two U-M School for Environment and Sustainability (SEAS) Interns.

July 2021

20 months

March 2023

The Planning Commission appointed the Environmental Sustainability Task Force on July 26, 2021. Following a foundational training by the summer SEAS interns, the task force met monthly and developed the ESCAP over the following 20 months Progress working sessions were held with the planning commission on March 15, 2022, November 14, 2022 and March 13, 2023. Scio Board, Commission and committee members were invited to these public meetings.

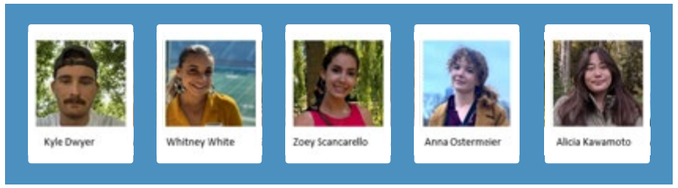
Task Force Members (all 24 members who contributed during the 20-month period)

Rosa Bushkuhl
Hob Calhoun
Anna Cone
Jackie Couteau
Jan Culbertson
Bill Currie
Karen Duff
Dana Dougherty
Margaret Engle
Chris Ferone
Andy Houde
Bob Hyde
Jeff Jackson
Cathy Jaskiewicz
Jeannine LaPrad
Elizabeth LaPorte
Marty Mayo
Charlie Nielsen
Celeste Novak
Norm Roller
Chad Rowe
Tim Redmond
Jane Vogel
Gerd Walter
Steve Wyzgoski

COMMUNITY ENGAGEMENT

INTRODUCTION

Community engagement for the development of the Environmental Sustainability Climate Action Plan (ESCAP) was spearheaded by a team of master's students in partnership with the Scio Township Task Force.



The team was composed of five graduate students from the University of Michigan School of Environment and Sustainability (SEAS). The student team worked with the Working Groups beginning in December 2021 and completed their collaboration in April 2023. Each team member worked directly with a Working Group. The team's primary goal was to ensure community engagement was done effectively. The team determined the engagement strategies most effective for reaching key interest groups in the community to maximize participation and promote greater diversity and inclusion throughout the process. Community feedback played a key role in the creation of the ESCAP and will play a critical role in the plan's implementation. The team's facilitation of community engagement promoted the plan's capacity to address community members' distinctive concerns related to climate change. The team researched other relevant climate action and engagement plans to inform outreach strategies. The two primary forms of engagement undertaken for the creation of the ESCAP were a public input survey and a series of key interest group interviews.



GATHERING INPUT FROM SCIO RESIDENTS

The five Working Groups in the Task Force created a list of initial goals, strategies, and actions for the ESCAP which the student team used to design their public input survey. The purpose of their survey was to gather feedback and information about public knowledge on and support for the Working Group's goals, strategies, and actions.

Once available to the public, via the online survey platform Qualtrics, the survey was shared with Scio Township residents through a variety of methods to encourage greater participation and diversity of perspectives. The survey was distributed broadly through the township newsletter, social media platforms, and website. The Task Force also shared the survey with their friends, family, coworkers, and community members. The student team reached out to homeowners associations and co-housing communities, requesting that they include the survey information in their newsletters and other online communication platforms, such as NextDoor and Facebook. The student team also distributed surveys at a variety of events during the summer, including the Ann Arbor Green Fair. During the 2022 summer elections, the team distributed the survey to residents voting at the two largest polling sites. The team posted yard signs with survey information for the remaining polling locations. This variety of outreach methods supported the team's goal of reaching many Scio community members.

GATHERING INPUT FROM KEY INTEREST GROUPS

In addition to survey input from Scio residents, it was also necessary for the student team to gather feedback from key interest groups within Scio Township. The student research team collaborated closely with Task Force members and interviewees to identify key interest groups and individual interview contacts. Key interest groups included Scio Township operations, the Fire Department, the Parks and Recreation Advisory Board, the Transportation Alternatives Planning Committee (TAP), the Land Preservation Commission (LPC), and local farms. Through interviews during the summer of 2022, students compiled expert insights on the Scio Township Sustainability Task Force's first iteration of goals, strategies, and actions for the ESCAP. Task Force members were involved in the creation of interview questions to ensure interviewees provided useful and actionable information. Through the interview process, the student team also built greater support of the ESCAP.

SURVEY AND INTERVIEW OUTCOMES AND REPORT

In total, 283 residents responded to the survey during the roughly 3 months that it was open. Of those, not all completed the full survey. 209 of the respondents completed 98% or more of the survey, and 10 interviews were conducted. The team analyzed the results of the survey and interviews and compiled the results into a report available to the public via the Task Force Shared Drive (link). Each Working Group was given specific feedback relevant to their initial goals and strategies. The report that was shared with each group gave them information to determine what members of the community thought of their goals and what goals may need to be removed, adjusted, or added.

SURVEY AND INTERVIEW OUTCOMES AND REPORT

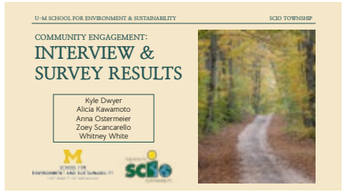
June - September 2022

283 **Residents responded to the survey**

Of those, not all completed the full survey.

209 **of the respondents completed 98% or more of the survey**

10 **interviews were conducted.**



The team analyzed the results of the survey and interviews and compiled the results into a report available to the public **HERE**

Each Working Group was given specific feedback relevant to their initial goals and strategies. The report that was shared with each group gave them information to determine what members of the community thought of their goals and what goals may need to be removed, adjusted, or added.

AREAS OF FOCUS:

- **ENERGY, BUILDINGS, & INFRASTRUCTURE**
- **WATER RESOURCES PROTECTION & HEALTH**
- **TRANSPORTATION & MOBILITY**
- **GREEN INFRASTRUCTURE & NATURAL ECOSYSTEM HEALTH**
- **MATERIALS, WASTE & THE CIRCULAR ECONOMY**
- **RESILIENCE & EMERGENCY PREPAREDNESS**
- **REGENERATIVEAGRICULTURE & LOCAL FOOD SYSTEMS**

COMMUNITY OUTREACH

Many of the recommendations contained in this document involve concepts and activities that may be new to Scio residents. **However, the values and actions that will be necessary to implement the plan will require support from the community. In order to gain this support, it will be important to continue to engage the public:**

1. **on the concepts themselves;**
2. **on the importance of these actions to the health and welfare of the community's future; and**
3. **the need for active participation from Scio residents to achieve success.**

The Sustainability Task Force's success will depend on volunteer labor and communications; the only way to change behavior and raise awareness is to connect with the entire Scio Township community.

Scio needs to establish robust communications and outreach to and with residents – for the sustainability effort itself, but also for the Township in general.

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PLAN OVERVIEW



Person walking paths at Township Hall Park
Image Source: Scio Township

Plan Overview

Scio Township's Environmental Sustainability Climate Action Plan (ESCAP) is based on the Township Board of Trustees Resolution setting the goals of achieving carbon neutrality in township operations by 2030 and communitywide by 2035. It also aligns with and relies on Resilient Washtenaw, the county's climate action plan.

This action plan contains objectives, actions, and strategies for implementation over the 10 years, focusing on the near term. It is laid out six sections.

The next section describes the core of the plan through seven focus topics each with its own vision, objectives, actions, and metrics. This provides the context for "What We're Going to Do" to successfully advance toward the township's sustainability and climate action goals.

The fifth section, Strategies for Accomplishing Desired Outcomes: describes the "How We're Going to Do it," including implementation strategies, roles, partnerships, resources needed, funding and financing, progress tracking, education and outreach, and additional considerations.

Finally, an Appendices section provides a list of acronyms of key partners, descriptions of recognized energy efficiency programs and green building organizations, a glossary, the Climate Emergency Resolution, and direct web links to supplementary resources.

Measurable targets for the next version of the plan will be created based on the baseline data collected during the evaluations of actions implementation by the end of March 2025.

The plan is created to be flexible in nature and will be regularly updated based on new data and information. Note the Township's fiscal year is defined as April 1- March 31.

AREAS OF FOCUS:

- **ENERGY, BUILDINGS & INFRASTRUCTURE**
- **REGENERATIVEAGRICULTURE & LOCAL FOOD SYSTEMS**
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- **GREEN INFRASTRUCTURE & NATURAL ECOSYSTEM HEALTH**
- **MATERIALS, WASTE & THE CIRCULAR ECONOMY**
- **RESILIENCE & EMERGENCY PREPAREDNESS**

STRATEGIES FOR ACCOMPLISHING THE DESIRED OUTCOMES

Critical components for successful implementation of the ESCAP's actions include staff leadership, ongoing ESTF committee work, funding and project financing, resources to support ordinance and policy creation and revision, county-wide collaboration, and significantly improved tools devoted to education, communication, and outreach.

Charge a key staff member, who reports to the BOT or Township Manager, with the responsibility of overseeing the implementation of the ESCAP with the assistance of a permanent ESTF. To be successful, Sustainability and Climate Action needs to be integrated into the leadership and operations of the Township. In addition to a key staff member, we recommend a Leadership Team that will coordinate the implementation of the ESCAP as well as coordinate the paid and voluntary support.

Key components of implementation include:

- Community Outreach, Education and Equity
- Resource Identification: Collaborations/Funding/Grant Writing
- Decarbonization of Township Operations
- Policy and Ordinance creation and updating

Leadership Team		
Community	Planning	Operations
Supervisor/Clerk	PC	Twsp. Manager
Trustee	LPC	Fire
Ambassador Lead	Roads	Utilities & Grounds
	PPP	Administation
	DDA	Facilities
	Transportation	Ambassador lead
Communications	Policy Research	Grant Writer
ESTF Working Groups		

ESTF Working Groups
Implementation/Research
Agriculture & local food systens
Energy/buildings/utilities/water/resilience
Green Infrastructure/Natural Eco systems
Mobility & Transportation
Materials/Waste/Circular Economy
fleets/equipment
Communications/Education/Outreach
ambassadors
recognition
events

Key Collaborators
2030 District
WRMMA/RAA
WCRC
WCWRC
HRWC
WCCD
MSU Extension
WATS
SEMCOG
A2 Zero
Resilient Washtenaw
Other Townships
EGLE
IRA--funding
Ecology Center
BRAG/WCA
reuse businesses

PROPOSED TOWNSHIP SUSTAINABILITY LEADERSHIP STRUCTURE

STRATEGIES FOR ACCOMPLISHING THE DESIRED OUTCOMES

The success of reaching the community goal of carbon neutrality of 2035 relies on the entire Scio community, the ESTF supports implementation of a rigorous and sustained community engagement plan.

The 2022-2023 SEAS Masters Project team developed the following community engagement plan moving forward **CLICK HERE TO READ THE PLAN:**

ENERGY, BUILDINGS & INFRASTRUCTURE

- Solar zoning update
- Engineering spec update
- Fire station energy audit
- Set Renewables goal & Community solar sites
- Facility Transition plan
- Adopt Zero Code for new township facilites
- Plan requirements for water and energy performance targets
- Communicate existing resources
- Education of staff/community

GREEN INFRASTRUCTURE & NATURAL ECOSYSTEM HEALTH

- Tree Canopy baseline, health and expansion planning
- Fill stormwater ordinance & maintenance gaps
- Develop Envir. Overlay for sensitive, natural area protection
- Review all ordinances for environmental updates
- HRWC review of ordinances
- Communicate existing resources
- Education of staff/communitv

WATER RESOURCES PROTECTION & HEALTH

- Groundwater protection--CARD
- Support periodic septic system inspections
- Partner w/ A2 on Source Water Protection Plan
- Communicate existing resources
- Education of staff/community

TRANSPORTATION & MOBILITY

- Identify who is responsible for transportation planning in the Township
- Ev charging/bike infrastructure zoning update
- Fleet/equipment electrification plan
- Public transit millage team
- Communicate existing resources
- Education of staff/community

NEAR TERM ACTIONS

- Purchasing & Contracting requirements
- October event with Fire open house
- Policy & Ordinances Updating and Creation

MATERIALS, WASTE & THE CIRCULAR ECONOMY

- Recycling access for those who don't have it
- Central compost site feasibility
- RAA circular economy industrial park status
- Urban wood reutilization
- Construction demolition recycling requirements
- Communicate existing resources
- Education of staff/community

REGENERATIVEAGRICULTURE & LOCAL FOOD SYSTEMS

- Obtain data on size & production of farms
- Feasibility of farmers market
- Review policies & ordinances for barriers/incentives
- Look into payments for regenerative agriculture proctices
- Communicate existing resources
- Edcuation staff/community

RESILIENCE & EMERGENCY PREPAREDNESS

- Identify Resilent Hub location & budget
- Identify areas susceptable to flooding
- Identify wind event vulnerabilites
- Communicate existing resources
- Education of staff/community

YE 2024 ESCAP related Budget	
Recycling	
Central recycling for those who don't have access	$40,000
Facilities	
HVAC replacement	grant
Fire station energy audit	grant
Temp Staff	
ESTF Summer Interns	$10,000
Planning Budget	
Jackson Rd Corridor Study (my guess)	$10,000
Planning-sustainability	$15,000
Bike parking/ storage review	
EV charging	
Native Landscape/tree canopy	
storm water management--single family	
storm water management-when renovating/change of use	
work with WCWRC to update storm regs	
solar as primary use	
HRWC ordinance/policy review	
solar setback execptions	
update site plan to include energy/water data	
ADUs	
complete current list	
complete PUD	
density height bldg separation review-especially Jackson Rd Corridor	
Mapping: Ag production/Tree canopy	
Environmental overlay of sensitive areas+plume	
Engineering	$10,000
Specifications update including:	
Urban wood use	
low embodied carbon concrete	
review for sustainability	
ESTF October event	
	sponsors
TOTAL FOR Planning Projects line item	$35,000
Support for Communications hire/website listserv use/enews	
We need someone website trained & tech/graphics savy at least part time decicated to township communications	

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FOCUS AREAS

- ENERGY, BUILDINGS & INFRASTRUCTURE
- REGENERATIVEAGRICULTURE & LOCAL FOOD SYSTEMS
- TRANSPORTATION & MOBILITY
- WATER RESOURCES PROTECTION & HEALTH
- GREEN INFRASTRUCTURE & NATURAL ECOSYSTEM HEALTH
- MATERIALS, WASTE & THE CIRCULAR ECONOMY
- RESILIENCE & EMERGENCY PREPAREDNESS



Scio Outside volunteers spreading native seeds

Vision

Scio Township rapidly transforms its built environment from a major contributor of greenhouse gas emissions to a central solution to the climate crisis through energy efficiency, electrification, renewable energy and the use low embodied carbon materials and carbon sequestering. Limited use of natural gas during the transition is offset through local projects, increasing our tree canopy, and supporting regenerative agriculture or other long term, documented means of carbon sequestration. These strategies lead to a healthy, safe, and resilient community.



Scio Fire Station's Solar Panels

Energy, Buildings & Infrastructure

DEFINITION

The Energy, Buildings, and Infrastructure sector includes all residential, commercial, and industrial buildings along with road, sidewalks, and utility infrastructure within the Township. This sector is a significant contributor to Greenhouse Gas (GHG) emissions with estimates of 40% -70% of total GHG emissions. Direct emissions include fossil fuels burned on site for space heating, water heating, and cooking, as well as the manufacture and production of building materials. Indirect sources (60%) primarily result from the use of fossil fuels in the off-site production of utility (DTE) supplied electricity.

Health & Wellness Considerations

Buildings have a big impact on our health and wellbeing. On average we spend about 90% of our time indoors. In Michigan, air pollution from burning fuels in buildings led to an estimated 841 early deaths and $9,419 billion in health impact costs in 2017.

Renewable Energy Considerations

The movement towards the use of renewable energy sources for production of electricity is critical to the goal of reducing GHG emissions. As a rural and suburban township, Scio has the land and roof capacity to meet most residential and single-story building needs. Currently, Scio Township does not allow renewable energy generation as a primary use, so zoning needs updating to allow for community solar. Ultimately, Scio Township's success in transitioning to 100%renewables is contingent on DTE's progress. DTE is currently proposing to increase its renewable energy component from its current 15% to 100% by the year 2050..

Energy Efficiency Considerations

Increasing energy efficiency can help reduce GHG emissions and result in significant cost savings for both homes and businesses. Building design will play a major role in the future efficiency and comfort of constructed facilities.

Circular Economy Considerations

The extraction, manufacturing and production of building materials contributes significantly (11%) to GHG emissions. Recent advances in technology allow us to now measure and potentially reduce embedded carbon in buildings. In addition, buildings, and their associated land development, contribute to land and water related impacts including biodiversity loss and water stress.

Equity Considerations

Families that live in properties that are not energy efficient are also those that can least afford high-cost utility bills. These households may lack the ability to pay for energy efficiency improvements or access renewable energy options. Families with fewer resources must dedicate a disproportionately larger share of their income towards energy costs, which exacerbates other vulnerabilities. Renters of both single-family homes and multi-family housing usually do not have the ability to implement energy efficiency measures to the buildings they live in. Energy efficiency retrofits are often the responsibility of the landlord, while the costs associated with the resulting energy use are usually paid by the occupant.

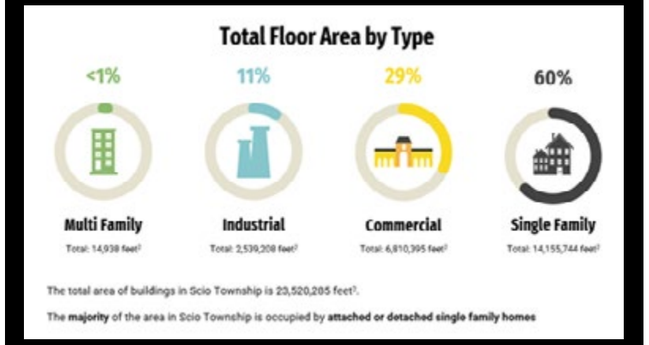
CURRENT STATE

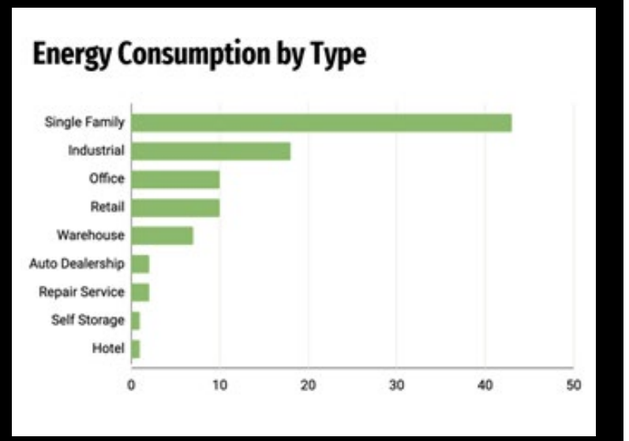
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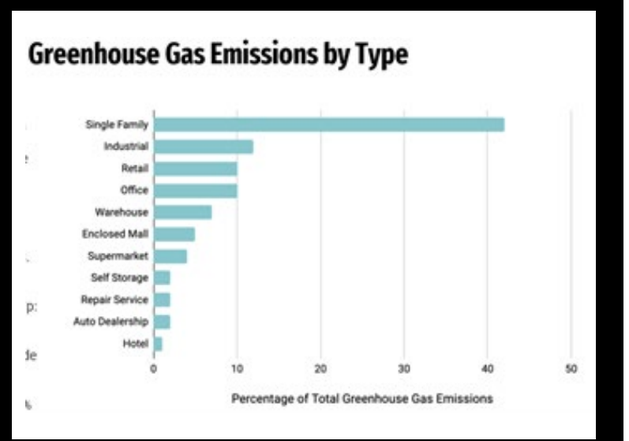
Energy, Buildings & Infrastructure

SCIO BUILDING STOCK

DTE does not break down power use by township boundaries, so the ESTF completed a building stock analysis and applied standard energy use intensity rates to estimate total building energy use and GHG emissions.







TOWNSHIP OPERATIONS

In 2022, the Green House Gas (GHG) Emissions from Scio's buildings and utility services totaled 379 MT CO2e. This is ~12% reduction from 429.7 MT CO2e in 2019. This reduction can be contributed to some efficiency measures and the increase in renewable power generation in the grid. Scio Township has not calculated other sources of GHG emissions from its its operations.

All power serving Scio Township buildings and infrastructure (except for 7 street lights) is enrolled in MI Green Power at 85%, as of March 2023. The DTE grid averages 15% renewable, so the combination totals 100% renewable power. Street lights are not metered and not eligible for enrollment. All except 2 street lights are LED.

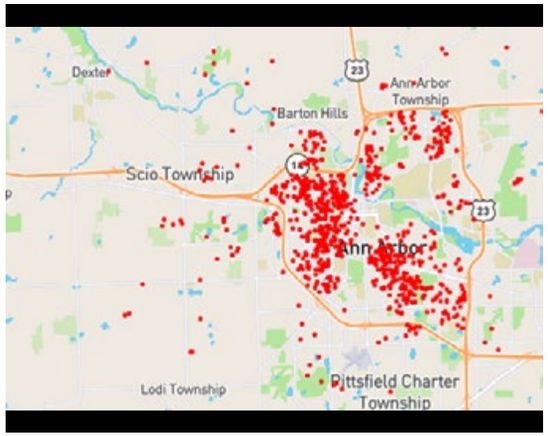
Scio Township Hall and Fire Station are benchmarked by the A2 2030 District. An ASHRAE Level II Audit has been completed on the Township Hall, and a lighting retrofit project is 85% complete. The HVAC systems were also retro-commissioned. A study was completed to replace 3 older rooftop HVAC units with heat pumps.

The fire station has an on-site solar installation in progress that will supply about 76% of the fire department's power and 33% of the sheriff department's power.

The utilities department routinely studies the water and sewer system to minimize leaks and infiltration.

Scio Township buildings emit ~ 95,414 MT CO2e/yr. Single Family homes represent the largest GHG emission sector.

There has been one Solarize Program initiated in Scio Township. Ann Arbor Solarize has tracked their installations on this map. The program has significantly increased rooftop residential solar and is available to Scio Residents:



The Ann Arbor 2030 District has launched a Commercial Solar Program open to any commercial, multifamily or institutional building in Washtenaw County.

The Scio Fire Station is part of this program's pilot. One Scio business has requested technical assistance, since the program launched.



ENERGY AND BUILDINGS	Timeline	Lead/Partners	GHG Reduction	Cost & Funding	Other Values Benefited
KEY:	N: 1-3 years M: 3-5 years L: 5 years +	Who is the lead? Who are key Scio/Community partners?	GHG emission I to III for emission reductions	See Legend Below	
1. Increase Township & Community Energy Efficiency					
1.1 Benchmark township operations and reduce energy & water use	N	Staff, A2230D	I	PR $	
1.2 Connect educational and financial resources with Scio residences and businesses to reduce their energy and municipal water use	N-L	ESTF, Staff	II	PR $	
1.3 Adopt a time of sale reporting of energy use & cost	M	ESTF, BOT	II	PR $	
1.4 Develop a recognition plan to reward progress for residential and business	N	ESTF	-	PR $	
2. Decarbonize the built environment by eliminating, and if needed, offsetting, the use of fossil fuels in building operations & materials					
2.1 Develop "buy clean policies and specifications" for Township procurement by 2024.	N	Staff, BOT, OHM	I	PR $	H&W
2.2 Develop building electrification plans for Township buildings and infrastructure to achieve CN by 2030.	N	Staff, BOT	-	PR $$	
a. Implement those plans	L	Staff, BOT	II	CIP+ $$$$	H&W, IAQ
2.3 Encourage/require all new development to be primarily electric, net zero energy, and use low embodied carbon materials	N	PC, BOT	II	PR $	
a. Update zoning code and township ordinances to require/incentivized carbon neutral projects	N	PC, BOT	II	PR $	
2.4 Connect educational and financial resources with Scio residences and businesses to transition from fossil fuels by 2035	N-L	ESTF, Staff	III	PR $	H&W, IAQ
2.5 Promote home and business electrification, support solar bulk buys	N-L	ESTF	I	PR $	

ENERGY AND BUILDINGS	Timeline	Lead/Partners	GHG Reduction	Cost & Funding	Other Values Benefited
KEY:	N: 1-3 years M: 3-5 years L: 5 years +	Who is the lead? Who are key Scio/Community partners?	GHG emission I to III for emission reductions	See Legend Below	
3. Increase local renewable energy production and decarbonize the power grid					
3.1 Set goal for township renewable energy production (private, township & community)	N	ESTF, PC, BOT	II	PR $	H&W, IAQ
3.2 Expand A2 Zero Solarize program for residential rooftop solar in Scio	N	ESTF, OSI	III	PR $	
a. Facilitate Scio residents & business sharing their solar experiences	N	ESTF	-	PR $	
3.3 Connect educational and financial resources for on-site solar generation for Scio businesses	N-L	ESTF, A22030D	III	PR $	
3.4 Plan and implement Community/Utility Solar in the Township	L	PC, BOT	III	PR $	H&W, IAQ
a. Identify sites for Community solar and partner with DTE or others to develop	N	PC	-	PR $	
b. Coordinate with DTE to upgrade distribution infrastructure	N	BOT	-	PR $	
3.5 Encourage enrollment in MIGreen Power (or similar programs) throughout the Township	N	ESTF	II	PR $	
3.6 Promote A2 Area Commercial Solar Program	N	ESTF, A22030D	I	PR $	
3.7 Advocate for 100% renewable power for all by 2035.	N-L	ESTF	III	PR $	H&W, IAQ
3.8 Reduce local barriers to installing onsite renewable energy	N	PC, BOT	I	PR $	
4 . Develop and promote local, additional, carbon offset programs					
4.1 Collaborate with County initiatives	N-L	WC	II	PR $	
4.2 Investigate creation of Scio Carbon Offset Programs: additional land/canopy preservation; regenerative agriculture, tree planting & preservation	L	ESTF, LPC, PC, BOT, WC	II	PR $$	ILP,INE

PR= Programs/programming, **CIP**= Capital Improvement Projects,
CIP*= Capital projects with an ROI

$=	PR	0-$10K	CIP	0-$75K
$$=	PR	$10K-$30K	CIP	$75K-$200K
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$$$$=	PR	>$120K	CIP	>$500K

GHG Reduction: Favorable= F, Neutral= N, Not Favorable= NF
Values: Equity/Access= EQ/A Health/Wellbeing= H/W
Economy= Econ. Natural Ecosystems= NE Resilience= R







Energy Buildings and infrastructure Metrics

Metric	Baseline	Goal
Scio Building Energy Use Intensity (2019 baseline)	87.7 kBtu/SF/yr	↓
Township building & utility GHG emissions (2019 baseline)	427.7 MT CO2e/yr	↓
County-wide Building GHG emissions		↓
Number of all electric new buildings/developments	0	↑
Number of Net Zero new buildings/devleopment	0	↑
Number of LED Streetlights	5	↑
Use of low embodied concrete in Township projects	0	↑
Number of residential solarize/solar installations	29	↑
Number of commercial solar installations	unknown	↑
Number of community solar installations	0	↑

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Vision

Scio Township envisions the development of a safe, accessible, and comprehensive multi-modal transportation system that provides connections among homes, workplaces, education, shopping, and other amenities while significantly reducing our carbon footprint.



The Wave

Transportation & Mobility

DEFINITION

The Transportation and Mobility sector includes both motorized and non-motorized transportation and all the infrastructure required to create an integrated system. This includes driving cars (electric vehicles or EVs, plug-in electric hybrids, and internal combustion engines), using public transit, riding bicycles (traditional and electric), using other personal mobility devices, and walking. It also includes infrastructure such as EV charging stations; bus routes and schedules, stops, and shelters; bicycle pathways, lanes, and parking; and pedestrian walkways and crosswalks. Finally, this sector will also address the use of outdoor power equipment.

According to the Environmental Protection Agency (EPA), in 2019 the transportation sector of the U.S. economy produced 29% of greenhouse gas emissions, more than any other sector. Of that 29%, more than half of these emissions can be attributed to passenger cars, medium- and heavy-duty trucks, and light-duty trucks, including sport utility vehicles, pickup trucks, and minivans. Transportation emissions also include toxic chemicals (e.g., nitrogen oxides and carbon monoxide) that contribute to air pollution and public health issues. As one of the largest contributors to the township's carbon footprint, transportation planning to reduce carbon emissions will be carefully considered

.

Scio Township is primarily a rural community, located west of the City of Ann Arbor. Residents are proud of its preserves, open spaces, and rural character. But its low-density development has created a heavily car-dependent community, resulting in many vehicle miles traveled (VMT). Washtenaw County residents clocked in at 10,211 VMT per person in 2015, with estimates likely to be higher in 2022. The average Washtenaw County VMT numbers include many more urban residents who do not drive as much as Scio residents. Among Scio households, 98.2% of have cars, and 74.4% drive alone to work, with an average commute time of more than 25 minutes. The majority of residents drive vehicles with internal combustion engines.



FOR SCIO TO REDUCE ITS CARBON FOOTPRINT AND TRANSPORTATION RELATED AIR POLLUTION, RESIDENTS CAN MAKE THREE TYPES OF CHANGES IN THEIR TRANSPORTATION CHOICES.

- For residents traveling longer distances that require driving, an electric vehicle (EV) or plug-in-electric hybrid (PHEV) might be a good option. These vehicles decrease transportation-related carbon emissions, and improve air quality, especially as Detroit Edison (DTE) power generation moves to more renewable sources of energy or as residents solarize their own homes.
- For residents traveling along a transit route (AAATA or WAVE), buses are an easy, cost-effective, and convenient way to reduce both Scio's carbon footprint and VMT. Increased bus travel will result in a reduction in traffic congestion, and an improvement in air quality.
- For residents traveling shorter distances — including getting to a bus stop — riding a bicycle or walking is a healthy and sustainable option.

As Scio implements plans to make all transportation choices safer, more convenient, and enjoyable for everyone, residents are empowered to choose a variety of transportation options that will reduce our carbon footprint while improving safety, public health, and equity in the community.

CURRENT STATE OF TRANSPORTATION & MOBILITY IN SCIO TOWNSHIP

Support for Non-Motorized Transportation

- Washtenaw's Border-to-Border Trail (B2B), when completed, will run east-west across the width of Scio Township. The Zeeb Rd. The Connector, which will create more access to this non-motorized trail system, is also approaching completion.
- Scio recently approved a PROS (Parks, Recreation, and Open Space) Plan to implement a township-wide non-motorized transportation plan, outline the current Trails and Pathways Plan, and establish the development of a continuous pathway system as a goal.
- Scio Township's Zoning Ordinance requires provision for off-street bicycle parking (2 for every 20 automobile parking spaces, with a minimum of two required for all sites).
- According to the ESTF's public input survey in 2022, 47% of residents surveyed supported reducing VMT by up to 25%, supporting the provision of safer, protected bike lanes (45%) and walkways (43%) to help achieve that goal

EV Infrastructure

- Six visible and easily accessible public charger ports are currently available for use at Meijer in Scio Township, including two DC ports . According to the US Dept. of Energy, there are 12 more public charger ports in Scio Township, three of which are DC . Almost all of the EV chargers are located at car dealerships along Jackson Rd. The public may access these EV chargers by contacting the dealerships.

Safety

- According to SEMCOG, Scio Township sustained 506 motor vehicle accidents in 2021, including two fatalities, six involving serious injuries, and 67 involving minor injuries. Five of these crashes involved pedestrians.

Township Fleet

- The township fleet consists of 13 vehicles, none of which are currently electric

Township Policies

- Scio Township's Board of Trustees declared a climate emergency on July 26, 2022. The Board committed the township to a just transition to net zero greenhouse gas emissions due to township operations no later than 2030, and to the same goal through all sectors of the township by 2035.
- Scio's PROS Plan includes a commitment to a non-motorized transportation system that connects neighborhoods, parks, schools, shopping, employment, Township and County facilities, the Village of Dexter, and the City of Ann Arbor. The PROS Plan is interconnected, multimodal, easily accessible, and safe.

Public Transit

- The Ann Arbor Area Transportation Authority (AATA) runs one of its routes from downtown Ann Arbor along Jackson Road to Zeeb Road and back. The route runs every half hour, from 6:00 am to 10:30 pm weekdays, with reduced hours on the weekends. AAATA service allows riders to travel throughout Ann Arbor and Ypsilanti.
- The Western-Washtenaw Area Value Express (WAVE) runs a non-profit bus service along the Township's Jackson Road corridor, from Parkland Plaza to Dexter and Chelsea. WAVE also offers flexible scheduling of shuttles throughout the western part of the county by advance request.
- The Scio DDA recently purchased and installed five bus shelters along the Jackson corridor to accommodate transit users for both AATA and WAVE services.
- According to the ESTF's public input survey in 2022, Scio residents think expanding and connecting public transit is the best way to decrease VMT (46%).

TRANSPORTATION & MOBILITY WORKING GROUP

KEY:	Timeline N: 1-3 years M: 3-5 years L: 5 years +	Lead/Partners Who is the lead? Who are key Scio/Community partners?	GHG Reduction GHG emission I to III for emission reductions	Cost & Funding See Legend	Other Impacts
1: Increase use of EVs and PHEVs					
1.1 Amend zoning ordinance to require public EV charging stations with new non-residential development and EV-ready infrastructure in new residential developments.	N	PC,ESTF, BOT	II	PR $	IAQ
1.2 Educate residents and other stakeholders about EVs and PHEVs and available incentives.	M	ESTF, Staff, WC	II	PR $	IAQ
1.3 Electrify Scio Township's fleet.	N	Fire and Utilities, BOT	II	CIP $$$$	IAQ
1.4 Advocate for residents of multi-family dwellings to have access to charging facilities at home.	N-M	ESTF	II	PR $	IAQ, H&W
1. 5 Advocate for electrification of transit vehicles.	N	ESTF/BOT	II	PR $	IAQ
1.6 Facilitate a conversation among DTE and Scio car dealerships to minimize costs associated with upgrading grid infrastructure for multiple DC fast chargers.	N	ESTF	II	PR $	
2: Reduce vehicle miles traveled (VMT).					
2.1 Advocate for a safe, accessible, comprehensive transit system., including ongoing financing, township planning and oversight	L	ESTF,WC, AAATA, WAVE, SEMCOG	II	PR $$	IAQ, H&W
2.2 Educate residents on existing transit options.	M	ESTF, Staff, 2023 SEAS Team	II	PR $	IAQ, H&W
2.3 Advocate for development of affordable and higher-density housing options near transit corridors.	L	PC, BOT, WC, ESTF	II	PR $$	IAQ, H&W, IE
2.4 Advocate for a network of safe, well-maintained multi-use pathways.	L	ESTF, PPP, WCRC	II	PR $	IAQ, H&W
2.5 Update zoning ordinance to require a full range of bicycle parking infrastructure within new developments, addressing specific use type needs from short-term outdoor parking to covered parking for weather protection to the security of bike lockers or indoor bike rooms.	N	PC, BOT, ESTF, OSI	II	PR $	IAQ
2.6 Investigating bringing EV car sharing to Scio Township in higher density areas.					
3: Reduce carbon emissions from outdoor power equipment.					
3.1 Educate residents about electric power equipment options.	N	ESTF, Staff	I	PR $	IAQ
3.2 Convert township operations' equipment to all-electric, including contractors.	N	ESTF/Utilities, Fire, PPP, BOT	I	CIP $$	IAQ

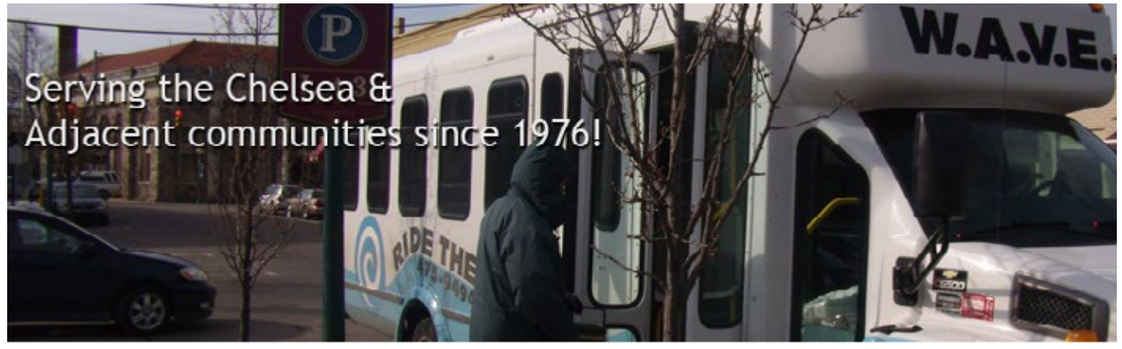
Mobility Metrics

Metric	Baseline	Goal
Vehicle Miles Traveled-gasoline (VMT)*	10,211 per person countywide in 2015 (WATS)	↓
Transportation to Work-Mode Share	74% drove alone 8% carpooled 2% public transit 2% walked <1% biked 1% other 13% worked at home (SEMCOG 2020 Community Profile)	Drove alone ↓ All others ↑
% Electric Fleet Vehicles	0% (2023: 13 vehicles)	↑
# EVs registered	1,409 MT CO2e (GHG Inventory-2018)	↑
Public EV Chargers	6 (at Meijer - 2 are DC)	↑
Annual Motor Vehicle Crashes	506 8 Fatal/Serious Injuries (2021 SEMCOG Community Profile)	↓
Miles of Multi-Use Pathways; total miles and miles of those separated from roadways	4.8 miles (Google Maps)	↑

PR= Programs/programming, **CIP**= Capital Improvement Projects, **CIP***= Capital projects with an ROI

$=	PR	0-$10K	CIP	0-$75K
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GHG Reduction: Favorable= F, Neutral= N, Not Favorable= NF
Values: Equity/Access= EQ/A Health/Wellbeing= H/W Economy= Econ. Natural Ecosystems=NE Resilience= R



Vision

Our environment - air, water, land/ground/soil - is healthy for life to flourish here in Scio Township. Agricultural systems need to be non-polluting and regenerative, continually improving soil health and protecting water purity. A healthy local food program relies on such an agricultural system for nutrient-rich healthy fresh foods. Access to locally produced healthy food is essential to individual and community wellness. A thriving local food system provides strong environmental, economic, and social benefits to our community. Therefore, Scio nurtures local agricultural producers from small-scale home gardeners to small and large commercial farms in a way that supports sustainability for all residents



REGENERATIVE AGRICULTURE & LOCAL FOOD SYSTEMS

DEFINITIONS

Regenerative Agriculture

The long-term sustainability of agriculture and food production, whether food produced directly for people or food that is fed to animals, depends on healthy living soil. Since bacteria and mycelium, among other factors, play a key role in maintaining soil health and the ability of soil to feed the plants that feed people and animals, soil health must be continually respected, observed, and regenerated.

Local Food Systems

Regenerative agriculture is the first and most important step in forming a strong local food program. A local food system includes an expanding network of farms producing food for local consumption. There are many steps from farms to local citizens' plates, including processors, consolidators, direct on-farm and farmers' markets, distributors, and food retailers. And the systems that get fresh food from the farm to the table, must then include the systems that deal with the waste. A strong local food system provides economic benefits in jobs and economic welfare, It also provides increased food supply resilience by not having to rely on food produced far away, often in other distant countries. A local food system also provides the beauty of open space, and environmental benefits that come from a healthy ecosystem.



CURRENT STATE OF REGENERATIVE AGRICULTURE & LOCAL FOOD SYSTEMS

The following statistics need to be developed and maintained:

- Currently, ~52% of Scio Township is in agricultural production.
- There are 2 PA 116 Enrolled Properties
- There are 11 Active Farms under permanent conservation easements within Scio.
- There are X farms on X acres based entirely in Scio Township.
- There are X farms based outside Scio Township but which work seven owned or leased land in Scio Township.
- Of Scio's farms, X of them could be called "small farm" operations, usually 40 or less acres and focusing on a broad range of products often marketed directly
- A review of township ordinances is need to determine which promote or re-strict the production, processing, and marketing of local foods.

Regenerative Agriculture & Local Food System KEY:	Timeline N: 1-3 years M: 3-5 years L: 5 years +	Lead/Partners Who is the lead? Who are key Scio/Community partners?	GHG Reduction GHG emission I to III for emission reductions	Cost & Funding See Legend	Other Impacts
1. Develop Agriculture and Food System Policy					
1.1 Create an inventory of Scio's food system infrastructure, including large and smaller operations, including agricultural, processing and distribution.	N	ESTF, PC, WCCD	-	PR $	
1.2 Review of Scio ordinances to identify restrictions constraining local food production and distribution	N	PC, BOT	-	PR $	
1.3 Review policies for drainage, detention and controls to ensure that best practices in the agricultural sector are followed	N	HRWC	-	PR $	IWQ
1.4 Expand knowledge of local government and institutional resources regarding re-generative agriculture, land and distribution of production	M	U-M, MSU, EMU, WC, SOM	I	PR $	
2. Promote Regenerative Agricultural Practices					
2.1 Identify ecologically unsafe agricultural and production/processing practices within Scio and develop remediation policies and strategies	M-L	WC, MSU EXT, HRWC	I	PR $	IWQ
2.2 Connect farms to sustainable agricultural practices and humane animal husbandry resources	N	WC, MSU EXT, HRWC	I	PR $	ISQ
2.3 Develop local product distribution and food waste programs	L	WC, WCCD, Food Gatherers	II	PR $	
2.4 Review ordinances and update best practices to prevent environmental degradation, and restore and protect freshwater resources	N	PC, LPC, HRWC, WCWRC	-	PR $	IWQ
3. Develop Public Education and Support for local food					
3.1 Strengthen local composting efforts by creating a Scio sustainable composting site	M	ESTF, Project Gow, RAA	I	CIP S	
3.2 Identify and ncourage practices that will address and mitigate food waste in Scio businesses and residences	N	MSU EXT, GFL, RAA	I	PR $	
3.3 Develop a communication program to build resident awareness of the benefits of eating locally produced food, including where to obtain local foods.	N	MSU EXT, GFL, RAA	I	PR $	IHW
3.4 Promote Scio's Buy-Protect-Sell program among communities of potential farm families needing land for farming.	N	LPC	-	PR $	IE, ILP

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GHG Reduction: Favorable= F, Neutral= N, Not Favorable= NF
Values: Equity/Access= EQ/A
Health/Wellbeing= H/W Economy= Econ.
Natural Ecosystems=NE Resilience= R

RESOURCES/COSTS/TIMEFRAME

Resources include information and support systems already in place via federal (USDA, FSA, etc.), state (MDARD, MIFFS, MSU Ext., etc), and county (WCCD, WCEC) pro-grams, local institutional help via Uof M, EMU, WCC, and the wide knowledge that re-sides in Scio's citizens.

Resources needed from Scio Township will be human help needed to gather and monitor information per above and to continually disseminate information and encouragement to citizens that will hasten adoption of sustainable practices.

Regenerative Agriculture And Local Food Systems Metrics

Metric	Goal
Preserved agricultural land	↑
Number of farms practicing regenerative agriculture	↑
Number of farms run by young farmers	↑
Diversity of products farmed	↑
Number of local restaurants procuring locally grown products	↑



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Vision

Scio Township prioritizes the intrinsic value of clean water to the community's health and environment by promoting and achieving high water quality through best management and conservation practices, and resilient infrastructure. Scio has significantly reduced the impacts to our local waters from non-point source pollution, especially agricultural and lawn fertilizers, animal & human waste, sediment, and chemical contaminants specifically 1,4 dioxane and PFAS.



Mill Creek Sloan Preserve

WATER PROTECTION, RESTORATION, & CONSERVATION

DEFINITIONS

Water Protection, **Restoration** and **Conservation** address the quality and availability of our groundwater, surface water and municipal water.

Groundwater is water that exists underground in saturated zones beneath the land surface. The upper surface of the saturated zone is called the water table. Aquifers, hand-dug wells, and artesian wells are different types of groundwater sources.

Aquifers are replenished with water from the surface through a process called "groundwater recharge." This occurs as a part of the hydrologic cycle when water from rainfall percolates into underlying aquifers.

Surface Water is any body of water above ground, including streams, rivers, lakes, wetlands, reservoirs, creeks, and detention ponds.

Municipal Water is centrally treated and distributed through pumping stations. Scio's municipal water is purchased from the City of Ann Arbor. Approximately 85% of this water comes from the Huron River and the remaining 15% from municipal wells. The treatment and conveyance of water is energy intensive.

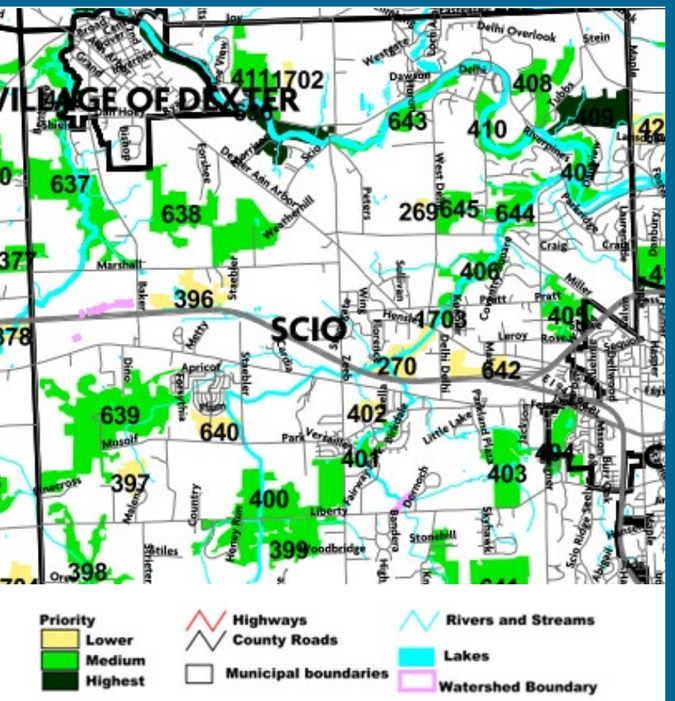
Storm Water is water that falls during rain and snow storms. Storm water is managed with both formal systems and through the natural green infrastructure of the township. This issue will be discussed in the next section.

CURRENT STATE
of
GROUND WATER



GROUND WATER

Huron River Watershed Council has mapped critical ground water recharge areas. There are several highest priority and multiple medium priority areas. These areas should be of highest priority to protect and restore. Washtenaw County Water Resources Commission regulations prioritize techniques that reduce stormwater runoff by preserving natural systems including infiltration.



According to the Huron River Watershed Council, there are **several major sources of groundwater contamination**.

CLICK HERE to see the Bioreserve Map of Scio Township from the HRWC

FAILING SEPTIC SYSTEMS

Inspection of existing septic systems, managed by the Washtenaw County Health Department, is required upon a change of property ownership. Otherwise, there are no requirements that existing septic systems be inspected and maintained. As a result, aging septic systems contribute to both nutrient and bacterial contamination of our surface and groundwater.

The only community waste water facility in the township is the Loch Alpine Sewer Association (LASA) which is monitored by the State of Michigan. A community waste water facility has recently been approved by EGLE for a new senior living development, Heritage Woods, near Baker and I-94. These private facilities are required to have professional operators and have individual operation and monitoring plans reporting to the State of Michigan.

IMPROPER USE & Disposal of Household Chemicals

Household products that can catch fire, react, or explode under certain circumstances, or that are corrosive or toxic to people and animals require special care when you use and dispose of them. This Care prevents their hazardous ingredients from getting into our water, soil, and air where they can threaten public health. CLICK HERE to learn more.

IMPROPER USE & Disposal of De-Icing Salts

Road salt is an important tool for making roads, parking lots, driveways, and sidewalks safer during ice and snowstorms. But as the snow melts and becomes runoff, this salty water washes into our lakes, rivers, and streams. It has an especially quick and easy path to our waterbodies through curbside storm drains, which do not filter or treat runoff.

Increased levels of chloride from road salt and other de-icers in our freshwater systems are harmful or toxic to aquatic organisms. They damage or kill vegetation and makes drinking water unhealthy for people. CLICK HERE to learn more.

IMPROPER USE & Disposal of Garden Fertilizers & Pesticides

Phosphorus contributes to excessive aquatic plant growth, nuisance algal blooms and decreased oxygen levels in our freshwater lakes, rivers, and streams. Runoff from fertilized residential lawns is the primary source of phosphorus contaminants entering the Huron River. In urban settings, storm drains carry runoff to our waterways without filters or treatment. For waterfront properties, runoff can wash directly into the adjacent waterway. CLICK HERE to learn more.

CURRENT STATE of GROUND WATER



MICHIGAN LAW RESTRICTS THE APPLICATION OF FERTILIZERS CONTAINING PHOSPHORUS TO TURF GRASS (with limited ecxeptions).



OTHER SOURCES OF CONTAMINATION

- **Poorly Maintained & Improperly Abandoned Wells...**
  are potential pathways for bacterial and other contaminants entering the groundwater. Wells are permitted by Washtenaw County.
- **Natural Substances.**
  Evidence of contamination from natural substances such as sulfur and iron is found in the bad taste or odor of the well water, and stains on water fixtures.



1,4-DIOXANE

A large 1,4-dioxane plume is spreading beneath western Ann Arbor and Scio Township due to decades of pollution from the Gelman Sciences (now Pall Corp., a division of Danaher Corp.) facility on Wagner Road. A plume is an area underground where the dioxane is moving through soil or water.

The plume exists because dioxane does not stick to soil particles, so it can move from soil into groundwater and eventually reach surface water. The plume likely originated around 1966 when Gelman began using dioxane in their manufacturing process.

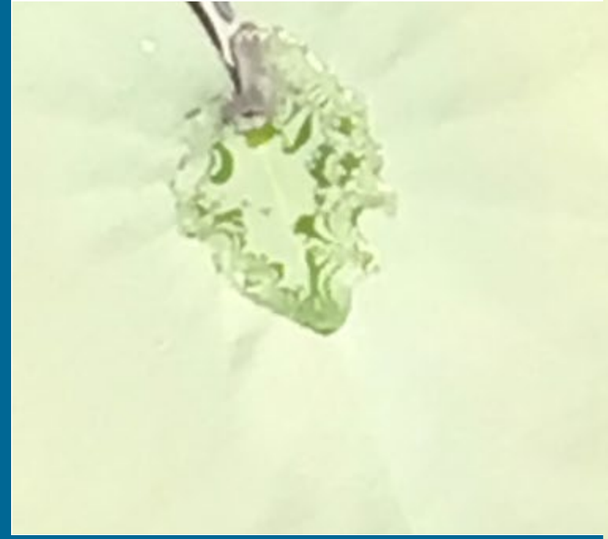
Due to concerns about potential movement of the 1,4-dioxane plume to residential areas located north of M-14, Scio Township has completed three rounds of sampling that expand on the state-funded program and use Method 522, a US Environmental Protection Agency analytical method that detects 1,4-dioxane down to 0.12 ppb.

In 2016, Scio Township, Ann Arbor Township and the Sierra Club petitioned the US Environmental Protection Agency (EPA) to evaluate the site for the National Priorities List.

Scio Township participates in the Coalition for Action on Remediation of Dioxane (CARD) which is a partnership of local governments and citizens that looks at strategies for addressing the groundwater contamination from the industrial solvent 1,4-dioxane, released by Gelman Sciences, Inc. The groundwater contamination has expanded in Washtenaw County to an area over three miles long and one mile wide.

More information and maps can be found HERE.

CURRENT STATE
of
SURFACE WATER



SURFACE WATER

A watershed embodies all the life-sustaining connections and interconnections needed for clean water. First among these is the fundamental and inseparable connection between water and land.

Scio Township is a member of the Upper Middle Huron River Watershed and collaborates with the Huron River Watershed Council (HRWC), which monitors and reports on the health of the entire watershed. Scio Township lies within the Boyden, Honey and Mill Creeksheds.

The overall health of these resources as compiled by the HRWC:

BOYDEN CREEKSHED	HONEY CREEKSHED	MILL CREEKSHED
Overall Score: 53/100	Overall Score: 54/100	Overall Score: 71/100
Report HERE	Report HERE	Report HERE

Scale Key: 75-100: Healthy to Pristine; 50-74: Impacted to Slightly Impacted; 25-49: Highly Impacted; 0-24: Extremely Disturbed

THE HURON RIVER WATERSHED COUNCIL LISTS THE FOLLOWING THREATS TO THE WATERSHED.

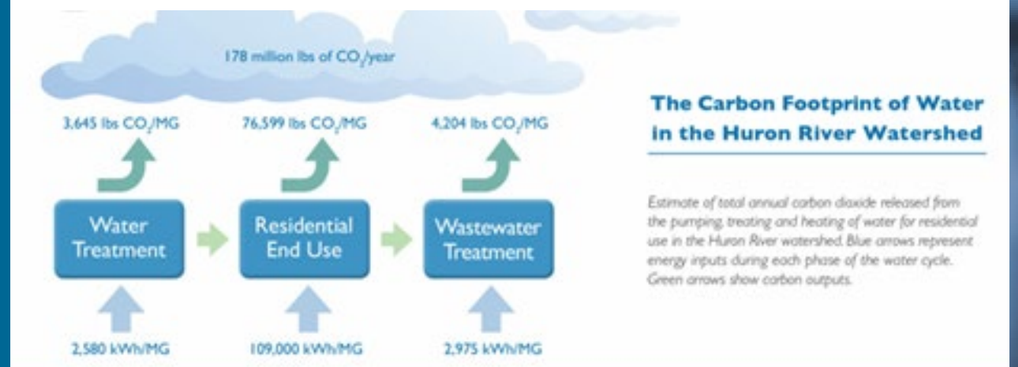
Threats

- Hexavalent Chromium
- PFAS and the Huron River
- Climate Change
- 1,4 Dioxane
- Non-point Source Pollution (Stormwater Runoff)
- Bacterial Contamination
- Soil Erosion and Sedimentation
- Microplastics Pollution in the Huron River
- Dams and Impoundments
- Invasive Species
- Development Impact
- Flooding
- Groundwater Contamination
- Impaired Waterbodies
- Coal Tar



https://www.hrwc.org/pfas-found-in-fish-throughout-huron-and-rouge-river-watersheds/

CURRENT STATE of MUNICIPAL WATER



The Carbon Footprint of Water in the Huron River Watershed

Estimate of total annual carbon dioxide released from the pumping, treating and heating of water for residential use in the Huron River watershed. Blue arrows represent energy inputs during each phase of the water cycle. Green arrows show carbon outputs.

EQUIVALENT TO ANNUAL EMISSIONS OF 17,000 PASSENGER VEHICLES



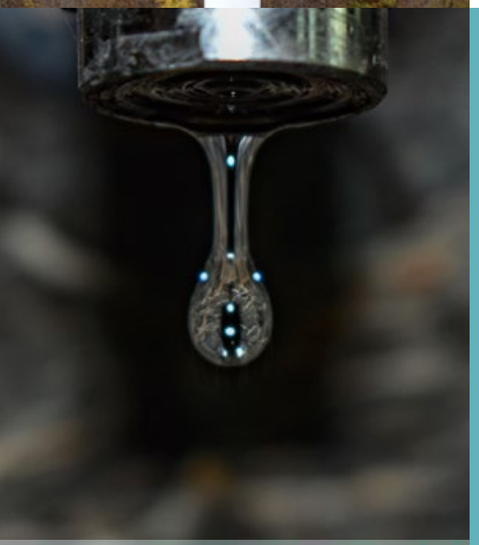
Water/Energy Numbers

- 13% of the nations electricity consumption is associated with water use
- Energy to run faucet for 5 min is equal to that needed for 14 hours of 60-watt light bulb
- 50% of total energy consumed by City of Ann Arbor goes to drinking water and wastewater treatment
- In Michigan 17% of all residential energy use goes to heating water. Third after space heating and cooling.
- 5% of nations overall CO_2 emissions come from energy used to move, treat and use water. Equivalent of CO_2 produced annually by 53 million cars.



MUNICIPAL WATER

Higher density residential and many commercial areas of the township are served by the community's Water and Sewer District. Scio's water system postdates the use of lead pipes, however lead solder was used until banned in 1986. Water is purchased from the City of Ann Arbor an issues an annual quality report: Annual Quality Report.



www.epa.gov/watersense

INDOOR Water Efficiency

The Environmental Policy Act of 1992 mandated maximum water consumption for toilets at 1.6 gallons per flush (gpf), urinals at 1.0 gpf, faucets at 2.5 gallons per minute (gpm) and 2.5 gpm for showerheads. According to a 2011 **study** in the Journal of the American Water Works Association, by 2008 a typical single-family household used 32 fewer gallons of water every day than an identical household in 1978, largely due to more efficient plumbing. However, technology continues to improve and building and home owners are encourage to use WaterSense labeled products to maximize water conservation.



EPA Water Sense | Smart Outdoor Practices

OUTDOOR Water Efficiency

The average American family of 4, uses 320 gallons of water per day, about 30 percent of which is devoted to outdoor uses. More than half of that outdoor water is used for watering lawns and gardens. Nationwide, landscape irrigation is estimated to account for nearly one-third of all residential water use, totaling nearly 9 billion gallons per day.

Outdoor water efficiency starts with the landscape itself. The soil, slopes, plantings, and placement and plant selection can make the difference between a water-smart landscape and irrigation dependency. The best landscape design requires no irrigation after the first year of establishing plantings.

WATER PROTECTION, RESORATION & CONSERVATION	Initial Cost	Department/ Potential Partners	GHG Reduction	Cost & Funding	Other Values Benefited
KEY:	N: 1-3 years M: 3-5 years L: 5 years +	Who is the lead? Who are key Scio/Community partners?	GHG emission I to III for emission reductions	See Legend	
1. Review and expand township ordinances & policies					
1.1 Ensure that best and leading low impact practices are required and being implemented for new developments	N	PC, WCWRC	I	PR $	IWQ, INE
1.2 Consider an ordinance overlay to protect designated recharge areas and ensure development does not extend the Gelman plume.	N	PC, BOT		PR $	IWQ
1.3 Update ordinances to require updating storm water management at the time of building or site renovation.	N	PC, BOT		PR $	IWQ IR
1.4 Update ordinances to require storm water management for single family home construction	N	PC, BOT		PR $	IWQ, IR
1.5 Map current areas of flooding and develop a plan to address the issues and predict future issues	M	WCWRC, PC		PR $	IR
1.6 Obtain 3rd party to advise the township on Community Waste Water Facility proposals and the the long-term health and well-being of the Township and its residents.	N	PC, BOT		PR $	IWQ
1.7 Work with the Road Commission to complete a road capacity analysis, or have the Township conduct one to evaluate capacity and drainage.	M	BOT, CWRC, RAC		PR $	IWQ
2. Engage residents, businesses & HOAs in water protection, restoration & conservation					
2.1 Encourage the installation of Water Sense plumbing fixtures throughout the township	ongoing	ESTF	I	PR $	
2.2 Develop and promote an education program to encourage water conservation for residential, commercial, institutional and municipal sectors.	ongoing	WCWRC, BOT	I	PR $	IWQ, IR
2.3 Promote rain gardens and work with the WCWRC to improve existing storm water management systems across the township.	ongoing	ESTF, WCWRC, WCCD	I	PR $	IWQ, INE
2.4 Reduce the use of potable water on large, open grassy areas such a golf courses and landscaped yards	ongoing	ESTF, HRWC	I	PR $	IWQ
2.5 Educate residents and builders about the locations and sizes of groundwater recharge areas and review zoning ordinances and other land use requirements to ensure that the recharge areas are protected.	ongoing	ESTF, PC		PR $	IWQ

WATER PROTECTION, RESORATION & CONSERVATION	Initial Cost	Department/ Potential Partners	GHG Reduction	Cost & Funding	Other Values Benefited
KEY:	N: 1-3 years M: 3-5 years L: 5 years +	Who is the lead? Who are key Scio/Community partners?	GHG emission I to III for emission reductions	See Legend	
3. Prevent and Clean up Groundwater contaminents					
3.1 Work with and support the Coalition for Action on Remediation of Dioxane (CARD), a partnership of local governments and citizens that look at strategies to address the groundwater contamination from 1,4-dioxane, released by Gelman Sciences, Inc	ongoing	CARD, EPA, EGLE		PR $$	IWQ
3.2 Continue to provide Method 522 testing of private wells within the designated plume area where the Dioxane is spreading. This method detects the presence of Dioxane down to .2ppb.	ongoing	BOT		PR $$	IWQ
3.3 Work closely with HRWC and promote their programs	ongoing	HRWC		PR $	IWQ
3.4 Collaborate with the City of Ann Arbor in implementing their Source Water Protection Plan	ongoing	HRWC, AA		PR $	IWQ

LEGEND

PR= Programs/programming, **CIP**= Capital Improvement Projects, **CIP***= Capital projects with an ROI

$=	PR	0-$10K	CIP	0-$75K
$$=	PR	$10K-$30K	CIP	$75K-$200K
$$$=	PR	$30K-$120K	CIP	$200K-$500K
$$$$=	PR	>$120K	CIP	>$500K

GHG Reduction: Favorable= F, Neutral= N, Not Favorable= NF
Values: Equity/Access= EQ/A Health/Wellbeing= H/W Economy= Econ. Natural Ecosystems= NE Resilience= R

Water Protection, Restoration, And Conservation Metrics
Metric
Implement an existing Septic field inspection program
Contaminant prevention and clean up especially containing and cleaning up the Gelman Plume
Actual REU use by building type reduced by 20% from current calculations
Reduce and ultimately eliminate landscape irrigation

Vision

Scio Township is home to healthy natural ecosystems supporting clean air, water quality, soils, and resident wellness, as well as reducing energy use in buildings, urban heat islands and mitigating the impacts of climate change. Commercial, municipal and residential properties have completed sustainable and resilient land development and restoration projects using nature-based solutions.



Scio Nature Walk

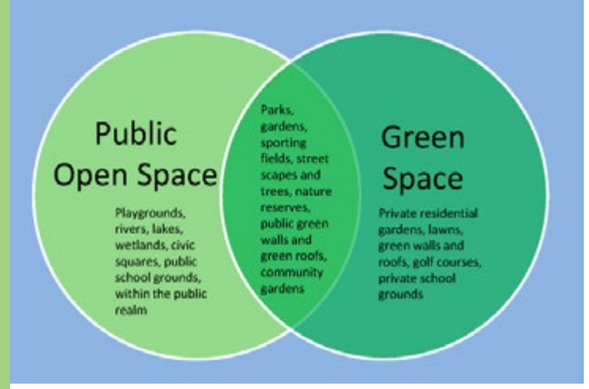
GREEN INFRASTRUCTURE & NATURAL ECOSYSTEM HEALTH

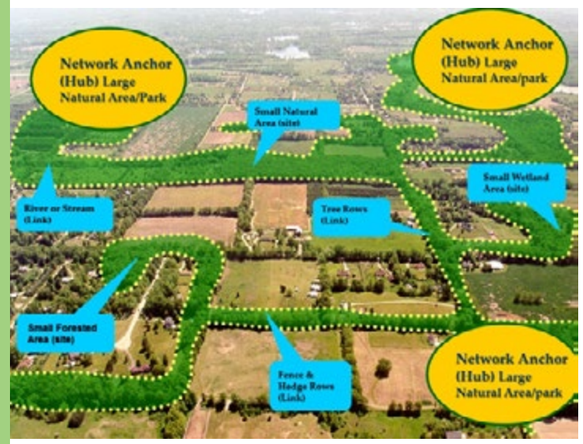
DEFINITIONS

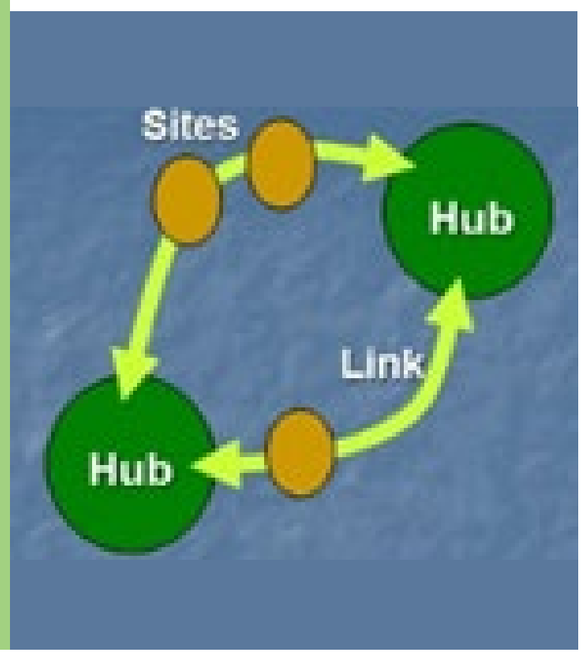
The natural ecosystem is a community of living and non-living organisms, where each component interacts together as a unit through biological, physical, and chemical processes. The distinctiveness of natural ecosystems is that they are purely natural and their formations are not in any way influenced by human activity. The components enabling the interactions that make up the natural ecosystems include soil, plants, sunlight, air, water, microorganisms, and animals. Examples of natural ecosystems are forests, mountains, rivers, etc.

Human-Made or Artificial Ecosystems develop when human beings modify the already existing ecosystem to meet their purpose or create an ecosystem of their own that mimics the natural condition, those are called artificial ecosystems. Examples of this type of ecosystem include aquariums, crop fields, gardens, dams, etc.

One of the main differences between natural and artificial ecosystems is that the latter requires constant attention as they are not self-sustainable.







GREEN SPACES

Green Spaces are any vegetated areas of land or water within or adjoining an urban area. The quality of green space makes a dramatic difference in its environmental benefit. It is also important that these green spaces are linked to a network of natural areas.

GREEN INFRASTRUCTURE

Green infrastructure is designed to manage stormwater and help it infiltrate into the ground instead of directing runoff into the stormwater system. CLICK HERE to learn more.

Traditional stormwater management such as gray infrastructure (also called structural) uses conventional pipe drainage and water treatment systems that are designed to move stormwater away from where it falls as quickly as possible.

Green Infrastructure uses plants, soils, and other elements and practices to manage water and filter pollutants close to where it falls. Infiltration protects surface water quality and reduces flooding downstream.

Stormwater runoff is a major cause of water pollution in our local rivers and lakes. Green infrastructure reduces and treats stormwater at its source while providing economic, environmental, and social benefits.



THE HONEY CREEK WATERSHED IN SCIO TWP. HAS UNDERGONE SIGNIFICANT SUBURBAN DEVELOPMENT.

Over 15% of this watershed incorporates impervious surfaces.

The accumulation of silt (siltation) on the creek bottom tells us that the creek is receiving large amounts fo runoff during heavy rainfall.

Impermeable surfaces such as concrete, asphalt and compacted soils do not allow water to infiltrate. In watersheds with a lot of impermeable surfaces, stormwater races downhill, gathering speed and picking up dirt and debris along the way. If storm drains become clogged with that debris, the stormwater has nowhere to go, and flooding occurs.

Large floods are uncommon in watersheds where open spaces and permeable surfaces like fields and parks allow water to infiltrate, or where there are wetlands that buffer flood effects. Communities that want to reduce flooding know they must slow down the runoff and increase the number of permeable surfaces in their developments. They can do this by incorporating green infrastructure into planning and design of their neighborhoods, business districts, and transportation and drainage systems. In this way, a nuisance – stormwater – becomes valuable resource that nourishes parks and other green spaces.

Why are Green Infrastructure & Natural Ecosystem Health Important?

Green infrastructure is designed to manage stormwater and help it infiltrate into the ground instead of directing runoff into the stormwater system. Traditional stormwater management such as gray infrastructure uses conventional pipe drainage and water treatment systems that are designed to move stormwater away from where it falls as quickly as possible.

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Greenspace, plays a central role in supporting community health, improving air, soil, and water quality, reducing energy use in buildings, and supporting climate-change mitigation. Greenspace includes any permeable vegetated surface, public or private, set apart for recreational, aesthetic, or ecosystem services. It is space set aside for providing life-essential benefits people and other living things obtain from properly-functioning ecosystems.





NATURAL AREAS PROVIDE HABITAT FOR MANY ANIMALS & PLANTS, LIKE THIS LEOPARD FROG.

ENABLE CARBON SEQUESTRATION

Within a greenspace carbon sequestration is sometimes referred to as biological or terrestrial sequestration. Plants convert carbon dioxide into biomass (leaves, stems, etc.) through photosynthesis and with a greater amount of greenspace, the more CO2 will be removed from the atmosphere

MITIGATE STORMWATER INFILTRATION & FLOOD MITIGATION

Greenspace helps protect from flash flooding by absorbing water through roots and slowing down rainwater run-off. Native plants have deep roots that can also mitigate erosion and can filter the water through Phyto filtration.

REDUCE THE URBAN HEAT ISLAND EFFECT

The more vegetated greenspace in a community, the better the cooling effects. High levels of impervious surfaces (a surface that does not allow water to infiltrate such as pavement and buildings) results in an increased urban heat island effect, which elevates the temperature of the near-surface air, buildings, and pavement higher than the surrounding areas. Ideally, a greenspace would contain the vertical architecture, or levels of a natural forest (canopy, understory, and shrub, herbaceous, and ground layers).

ENHANCE SOIL BIOLOGY

Soil is a vital living ecosystem teaming with microorganisms (bacteria, protozoa, fungi) and macroorganisms (worms, beetles, bees) that work symbiotically to break down carbon-rich organic matter and release nutrient-rich waste into the soil (carbon, phosphorus, nitrogen). In fact, it is estimated that soil is home to about one third of all Earth's living organisms! Additionally, just as importantly, soil can absorb and hold rainwater and filter potential pollutants, and the biomass (organic matter) within the soil can sequester CO2.

IMPROVE HUMAN HEALTH

In addition to the countless ecosystem services greenspace provides, it is also good for humans. Actions as ordinary as going outside, looking out a window, or simply looking at one tree can increase our mood and reduce stress. In fact, recently, our understanding of the human value of greenspace has been expanded to include mental and physical health benefits, such that some doctors have even started prescribing parks as a remedy to patients' health issues.

PURIFY & HUMIDIFY THE AIR

Plants purify the air when the plants absorb light, carbon dioxide, and water to manufacture sugar. That chemical process, known as photosynthesis, creates fresh oxygen, which in turn purifies the air for humans and other animals.

SUPPORT POLLINATORS

Animal species that pollinate plants, termed pollinators, carry pollen, either accidentally or intentionally, from the male part of a flower to the female part of the same or another flower. This pollen transfer must occur for the plant to be fertilized and produce seeds, fruits, or young plants. These pollinators are needed to pollinate 90% of flowering plants and one third of our food crops and they also contribute to the intricate web that supports the biological diversity in natural ecosystems

CURRENT STATE of GREEN INFRASTRUCTURE AND NATURAL ECOSYSTEM HEALTH



SCIO TOWNSHIP'S CURRENT LAND USE

Table 1 - Land Use

Land Use	Acres 2020	Percent 2020
Agriculture	5,513	27.8%
Single-family Residential	4,399	22.2%
Multiple-family residential	77	0.4%
Commercial & Office	604	3.0%
Industrial	542	2.7%
Extractive & Barren	133	0.7%
Institutional	241	1.2%
Cultural, Outdoor recreation & Cemetery	541	2.7%
Telecommunications and Utilities	89	0.4%
Under Development	-	0.0%
Grassland & Shrub	910	4.6%
Woodland & Wetland	6,753	34.1%
Water	28	0.1%
Total	19,830	100.0%

Source: SEMCOG 2015 Land Use/Land Cover GIS Data

FUTURE LAND USE (FROM THE 2 21 MATER LAND USE PLAN)
63% TO BE OPEN SPACE, AGRICULTURAL, RECREATION & CONSERVATION.

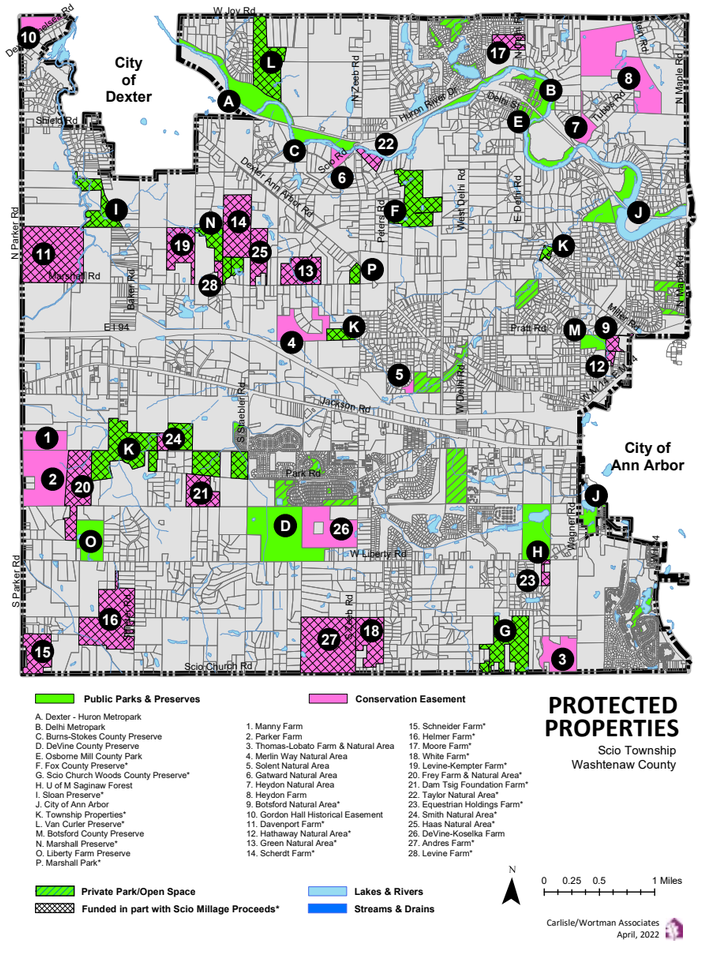
Category	Planned Acreage	Percentage
Open Space, Agricultural and Rural Residential	6,488	35%
Low Density Residential	3,543	19%
Medium Density Residential	364	2%
High Density Residential	834	4%
Recreation/Conservation	5,172	28%
Mixed Use Commercial	495	3%
Composite Commercial	125	1%
Mixed Use Highway Commercial	125	1%
Mixed Use Office/Industrial	598	3%
Office/Industrial	712	4%
General Industrial	66	0%
Unmarked	144	1%
Total	**18,666**	**100%**

LAND USE IN SCIO TOWNSHIP

Human activities coupled with natural variations in the carbon cycle, have resulted in a significant increase in the concentration of carbon dioxide (CO2) and other "greenhouse gases" in the atmosphere, thus causing measurable global warming. Controlling atmospheric CO2 requires deliberate action that combines reducing emissions and increasing storage, while planning for adaptation to the changes that result. Greenspace protection and enhancement is one of the most important avenues for lowering our environmental footprint.

Land Use in Scio Township is planned through the Master Land Use Plan, which is reviewed every 5 years. Scio uses this planning tool and the boundaries of the water and sewer district to direct higher density mixed use development to areas along the Jackson Road Corridor and I-94 highway intersections with arterial roads. The 2021 Master Plan recognized the need for higher density multifamily housing in this area and allowed it as a single use.

LAND PRESERVATION IN SCIO TOWNSHIP



The Scio Township Land Preservation Millage has been acting to preserve critical land and open spaces throughout the community since 2004. The millage was renewed in 2012 through 2024 and is intended to: Permanently preserve farmland, open space, wildlife habitat, scenic views, and protect drinking water sources and the water quality of rivers and streams, and provide new parks, recreational opportunities, and trails by funding the voluntary purchase of land or interests in land throughout the Township (Approved Millage Text Language, www.sciotownship.org).

CURRENT STATE
of
GREEN INFRASTRUCTURE AND NATURAL ECOSYSTEM HEALTH

TRACKING CHANGES IN SCIO TOWNSHIP LAND COVER THAT MAY AFFECT SUSTAINABILITY

Two types of land cover that often influence the sustainability of landscapes are tree canopy cover and impervious surfaces. Moreover, as tree canopy cover decreases impervious surfaces may increase. Detecting and Tree Canopy, as discussed earlier in the plan, are typically very important factors when considering how to mitigate negative changes in climate, as described in other parts of this section of the plan. SEMCOG statistics for nearly this time period (shown in the table below) suggest that the area covered by Impervious Surfaces has not changed much, while the area occupied by Tree Canopy has expanded by 14%. As a result, the area in Tree Canopy after the change is now estimated at over half the total area of the township (see table below).

Scio Township Change in Tree Canopy and Impervious Surfaces

Based on SEMCOG data 2010-2022

2010		2022		CHANGE
Tree Canopy	**37%**	Tree Canopy	**51%**	+ 14%
Impervious Surfaces	**11%**	Impervious Surfaces	**10%**	- 01%

Interestingly, such general and relatively changes do not appear to have occurred the in the covered by tree canopy in google earth photos of the township for about the same time period (see figure below).

2011 and 2022 Natural Color Google Earth Photographs of Scio Township



2010 **2022**

Comparing the Google Earth images side-by-side, it is easy to see that quite a bit of forest has been removed in the central and northeast areas of the township above Jackson Road (dark green (2011) to lighter green (2022)). Closer inspection reveals new roads, driveways and roofs in these areas. Since the latter are impervious surfaces, it seems like a loss of forest replaced to some degree by impervious surfaces has occurred. Because of the importance of knowing the real changes in the Tree Canopy and Impervious Surfaces, we will double check the accuracy of the 2022 SEMCOG land cover map and statistics. We propose to accomplish this by comparing 2022 land cover mapping results generated by processing 2022 Sentinel 2 satellite multispectral data to calculate independent estimates of the Tree Canopy and Impervious Surfaces areas.

CURRENT STATE of GREEN INFRASTRUCTURE AND NATURAL ECOSYSTEM HEALTH

The 2023 - 2027 Scio Township Parks, Recreation, and Open Space Master Plan (aka the PROS Plan) articulates a vision for parks and recreation in Scio Township.

BREAKDOWN OF PARKS AND PRESERVE LAND USE FROM THE PROS PLAN

Type of Park	NRPA Standard (Per 1000 pop.)	Required (Based on 17,552 population)	Existing	Deficiency / Surplus
Close-to-home Parkland	6.25 - 10.5 acres	109.4 - 183.8 acres	405 acres	221.2 acre surplus
Regional Parks	15 - 20 acres	262.5 - 350 ac.	729 acres (within Township)	379 acre surplus
Conservancy Land Holdings	n/a	n/a	2,034.9 acres	n/a
Private Recreation Facilities	n/a	n/a	174 acres	n/a

Scio Township's Zoning Ordinance has served to encourage open space and best storm water management practices, but needs a sustainability lens update to employ current research and in limiting impervious surfaces, canopy protection, invasive species, and landscape planning. All township owned properties should lead by example. Scio Fire will be installing a native landscape in conjunction with its solar installation.

Scio has banned the use of high PAH pavement sealers, including coal tar-based sealers, but more education is needed in the community to curb their use.

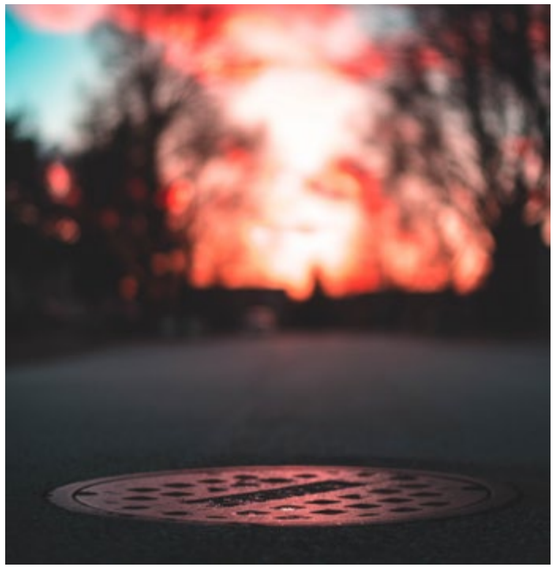
STORMWATER MANAGEMENT GAPS

In the 1970s storm water management shifted from "draining swamps" to focusing on water quality. The 1980s saw more stormwater regulations, mostly focused on detention ponds. Scio Township began working with the Washtenaw County Water Resources Commissioner (WCWRC) to review development proposals in the mid-1990s. Current practice has moved from detention ponds to planted infiltration basins, better known as rain gardens and bioswales, with a goal of water quality and returning more storm water to aquafers.

Several older developments built before the standards went into effect, have recurring flooding. In addition, while there are storm water management requirements for new roads, single family building has no requirements.

Most, but not all, storm water drainage structures along county roads fall under the Washtenaw County Road Commission's (WCRC) jurisdiction. Sediment, salts, oils etc. typically wash off the road and into storm drains or ditches that discharge into creeks and streams.

Private developers and individual property owners have responsibility for private storm water systems. These systems are not always maintained.





Greenspace & Natural Ecosystems		Timeline	Lead/Partners	GHG Reduction	Cost & Funding	Other Values Benefited
	KEY:	N: 1-3 years M: 3-5 years L: 5 years +	Who is the lead? Who are key Scio/ Community partners?	GHG emission I to III for emission reductions	See Legend Below	
1. Expand, restore, and preserve green space and natural ecosystems						
1.1 Prepare and implement a plan to restore natural ecosystems and increase the tree canopy, eliminate evasive speacies, and reduce the amount of unused turf areas on township property.		N	BOT, PPP	II	PR $, CIP $$	INE, IWQ
1.2 Review Scio ordinances to increase protection of existing natural features, especially old growth trees, designated bioreserve areas and remove invasive species		N	PC, BOT	II	PR $	INE
1.3 Update Scio ordinances to reduce turf grass & encourage native plantings		N	PC, BOT		PR $	IWQ, INE
1.4 Acurately measure and improve key metrics (set a 2035 goals)		N	PC	II	PR $	INE
1.5 Develop & implement a tree planting policy for the tree fund		N	PC, PPP	I	PR $	INE
1.6 Increase the number of households with walkable access to parks and preserves		M	LP, PPP			INE
2. Promote Public Education and Support for greenspace and natural ecosytem expansion restoration and preservation						
2.1 Encourage residents, businesses and HOAs to decrease their unused turf grass areas and increase their tree canopy		M	DDA, MSU EXT, WCCD	I	PR $	IWQ, INE
2.2 Develop a communication program to increase awareness of the benefits of native landscaping, including rain gardens and prairies		N	MSU EXT, WCCD		PR $	IWQ, INE
2.3 Promote Scio's Parks and Preserves as living laboratories for natural ecosystems		ongoing	PPP	I	PR $	IWQ, INE

LEGEND

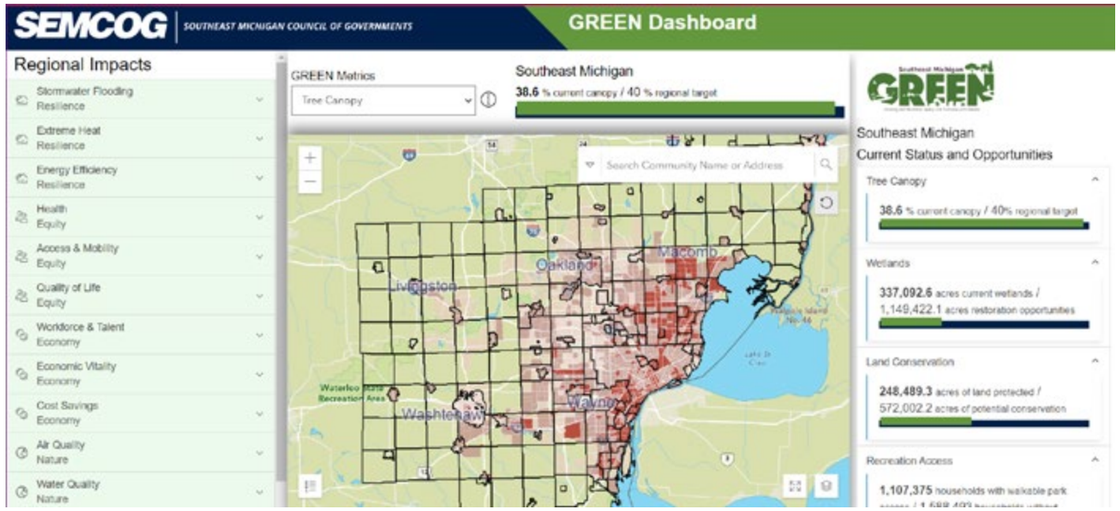
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GHG Reduction: Favorable= F, Neutral= N, Not Favorable= NF
Values: Equity/Access= EQ/A Health/Wellbeing= H/W Economy= Econ. Natural Ecosystems= NE Resilience= R

Green Infrastructure And Natural Ecosystem Health Metrics

Metric	Baseline	Goal
Agricultural land	11,722 acres	Maintain in production/increase regenerative practices
Permanent Conservation (includes ag, parks & preserves)	3,222 acres	Increase by 10-15%
Tree canopy coverage	51.7%	Increase to achieve equity; improve quality
Impervious Surfaces	10%	Any increase managed by green infrastructure
Current Wetlands	1,998 acres	Increase through restoration by 30%
Wetland Restoration Opportunity	4560 acres	Decrease through restoration
Recreation Access (walkable)	907/3753 households	Increase - all R-1 & multifamily areas w/walkable access



SEMCOG GREEN DASHBOARD

Note: Scio should verify SEMCOG data through Satellite Analysis to determine our baselines and change over time more accurately.

Vision

Scio Township's vision includes reducing solid waste sent to landfills through a commitment to composting, a strong emphasis on reusing and recycling used materials, reclaiming cut trees and waste lumber, and making the township a center for reclamation of reusable construction materials. This will reduce the overall carbon footprint of all products involved, as well as enriching Scio's soil and boosting the local economy.



Materials, Waste, & Circular Economy

DEFINITION

The Materials, Waste, and Circular Economy sector focuses on how the community handles its waste streams and all the ways it works to reduce them. Included here are landfill use, recycling opportunities, reuse of materials, composting programs, along with initiatives, programs, and partners to help make the best possible use of municipal solid waste (MSW) rather than sending it to the landfill.

Sending so many of our resources to landfills, rather than being reused or recycled, creates a host of problems. For example, the EPA estimates that landfills emitted over 84 million metric tons of greenhouse gases (GHG) nationally in 2021, fueling climate change. Other issues include all the resources used to make new products, including GHG emitted in the manufacturing process, land used for landfills that could otherwise be preserved or productively developed, and lost soil nutrients when food waste is not composted.

Per a new state law, all Michigan counties will be required to create a plan for improved recycling and composting of solid waste, with the goal of increasing the state's recycling rate from its current 19 percent to 45 percent by 2030. Scio Township has the opportunity to be a pacesetter for this effort by taking the initiative on improving its solid waste management and working with other local organizations to spread improvement practices throughout Washtenaw County.

Scio Township will reduce local waste through increased composting education and opportunities for both residents and businesses, including community composting; filling in the gaps in our current recycling programs so that all recyclable materials are actually recycled; encouragement of a local marketplace for reusable items, with special emphasis on lumber products from trees harvested during land development projects; and establishing an Industrial District of new businesses for processing and re-use of recycled materials.

CURRENT STATE OF MATERIALS, WASTE & CIRCULAR ECONOMY IN SCIO TOWNSHIP

Solid Waste Management

- Scio Township has contracted with GFL for waste-hauling services since 2021, including curbside recycling for single-family homes as well as yard waste collection. Multi-family housing and businesses may not receive recycling services. Over a third of Scio residents surveyed support more access to recycling in the township.
- Washtenaw County's Home Toxics Center, located in Scio, is a county-wide household hazardous waste program accepting many items for reuse, recycling, or safe disposal.
- The Recycle Ann Arbor Recovery Yard, Michigan's only non-profit construction and demolition recycler, is located in Scio Township.

Composting Efforts

- Over a third of Scio residents surveyed currently compost at home, and a similar proportion would support a community composting program.
- Project Grow is a local nonprofit that sets up and manages community gardens. There is an opportunity to partner with them for a similar setup in Scio Township.

Special Considerations for Scio

- Due to Scio's rural character and its relatively fast rate of development, there is a great opportunity to reclaim lumber and other lumber products such as mulch from timber that is cut during the land development process as well as during building construction and demolition. There are also businesses taking the lead in providing the market for these products, such as Urban Ashes.
- Scio is home to a number of businesses and non-profits which create a market to buy, sell, and trade items for reuse.

MATERIALS, WASTE & CIRCULAR ECONOMY

KEY:	Timeline N: 1-3 years M: 3-5 years L: 5 years +	Lead/Partners Who is the lead? Who are key Scio/Community partners?	GHG Reduction GHG emission I to III for emission reductions	Cost & Funding See Legend	Other Impacts
1. Increase Township & Community Composting					
1.1 Increase Township resident awareness of the benefits of composting for personal and community gardens	N	Project Grow, ESTF	I	PR $	H&W
1.2 Encourage local businesses that generate food waste to compost some or all of it instead of sending it to the landfill	N	ESTF		PR $	WR
1.3 Establish community compost collection site(s)	M	ESTF, BOT, PC, RAA	I	PR $S	WR
1.4 Establish community composting site and program	M-L	ESTF, WCCD, Project Grow	I	PR $S	WR
2. Increase Township and Community Recycling and Re Use					
2.1 Identify local groups and businesses that sell or swap used items that have value to others and educate Township residents on this process	N	ESTF, Staff	II	PR $	WR
2.2 Secure a contract with Recycle Ann Arbor to fill in gaps in areas covered, and items collected that are not currently handled by GTL. This includes a separate contract with Scio Farms Estates.	N-L	RAA, BOT, ESTF, WRRMA	II	PR $$	WR
2.3 Identiy small local businesses that are not currently recycling and encourage participation in above program with Rec.AA	N-L	ESTF,DDA, Staff	II	PR $	WR
2.4 Work with Recycle Ann Arbor Recovery Yard on Jackson Rd to establish an Industrial District of new businesses for processing and re-use of materials that would otherwise be headed to the landfill	M-L	RAA, BOT, ESTF, WRRMA	II	PR $	WR
2.5 Work with the BOT and the PC to write Ordinances for mandating recycling of demolition and construction waste in plans that come up for approval	M	ESTF, PC, RAA	II	PR $	WR
2.6 Work with the Township staff to add a search capability to include our reuse and recycle partners so that Scio residents can find used items and determine where to take their used items	M	ESTF, Staff	II	PR $	WR
3. Increase local production of lumber from development & township tree cutting					
3.1 Identify local partners who would perform lumber generation from cut trees	M	ESTF Urban Wood Network	I	PR $	
3.2 Work with the Board of Trustees (BOT) and the Planning Commission (PC) to write Ordinances for mandating harvesting of trees, rather than merely allowing removal, in plans that come up for approval	M-L	ESTF, PC, BOT	I	PR $	
3.3 Set up a marketplace for harvested trees and for reusable construction materials	M	ESTF, Urban Wood Network	I	PR $	

Materials, Waste, & Circular Economy Metrics

Metric	Baseline	Goal
Tree removal usage	Firewood & mulch	Boards. lumber, firewood & mulch
Home & business recycling	65% household + 50% business recycling	80% household + 75% business recycling
Composting	25% household + 15% business composting	75% household and business composting
ReUse	Multiple Thrift Shops. Scio has the largest number of such facilities in the county.	Encourage and educate residents and businesses.

LEGEND

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Vision

Scio Township sees a future in which residents, land, and resources are protected from the worst effects of extreme weather events and other emergencies. This will be accomplished through proactive planning and action to harden utilities, prevent or mitigate flooding, manage open spaces to minimize the risk of wildfire, and create a system of resilience hubs to help cope with the worst effects of emergencies that do occur.



Climate Resilience & Emergency Preparedness

DEFINITION

The Climate Resilience and Emergency Preparedness sector is concerned with the township's vulnerability to and proactive planning for climate change-related emergencies. The goals are to keep Scio residents safe and healthy while minimizing damage to property, infrastructure, and natural resources; as well as the ability to recover quickly from any emergencies. Focus areas are hardening utilities, controlling flooding, developing resilience hubs to protect residents affected by an emergency, encouraging solar power with battery storage as a backup power source during power outages, and managing our parks and open spaces to reduce the risk of wildfire.

Scio is expected to get hotter and slightly wetter with a possibility of more extreme weather events. This means a range of things from temperature extremes of freezing cold (aka polar vortex) to heat waves, strong winter storms, thunderstorms, and tornados. The increase of rainstorms that would have once counted as "100 year rains" cannot be discounted, especially as this is a key standard in flood control designs. But probably the biggest regular source of problems will be high winds. The number of high wind events is expected to increase in Scio. High winds do damage to buildings and structures, knock trees over on roads, blocking them, and, of course, can knock out power lines and other utilities that are mounted on poles. The loss of power will make any already bad situation worse, especially as a high wind event is likely to occur with some other type of weather such as heavy rains. In short, climate change is likely to increase the stress on Scio Township's infrastructure and utilities and, unless we make that infrastructure more resilient, we will see an increased need for emergency services.

Scio and Washtenaw County have good emergency preparedness structures in place to handle any emergencies, but the Township can start working toward increased resiliency.

CURRENT STATE OF RESILIENCE AND EMERGENCY PREPAREDNESS IN SCIO TOWNSHIP

Scio Township Fire Department

- The Scio Township Fire Department currently manages most local emergencies in conjunction with the Washtenaw County Sheriff.

Washtenaw County Sheriff's Office

- The Sheriff's office operates the Washtenaw Emergency Operations Center (EOC) that coordinates responses to larger emergencies along with the American Red Cross. The EOC handles any local coordination in an emergency with the State EOC (managed by the Michigan State Police) and the federal authorities (FEMA).

Infrastructure and Utilities

- DTE provides the electric and gas utilities in Scio Township.
- The Scio Township Utilities Department provides water and sewer services to many of Scio's residents on or near the Jackson corridor. Its water is purchased from the City of Ann Arbor. Loch Alpine has its own separate sanitary authority, providing its own water and sewer system. Many Scio residents get their water from private wells and are on private septic systems.

Management for Wildfire Prevention

- There are several companies and municipal entities (Washtenaw County Parks) that manage prescribed burns of grasslands within the community.

Flood Control

- The Huron River Watershed Council, a nonprofit coalition of residents, businesses, and local governments, monitors runoff levels and contaminants that this brings into the river and works on restoration projects to prepare the watershed for future climate change. Their projects include green infrastructure such as rain gardens, shoreline buffer zones, and consultation about "green street" technology to provide effective stormwater management.
- The Washtenaw County Water Resources Commissioner's Office, as the government agency responsible for the county's drains, has a part in managing flood-related emergencies. It provides assistance with rain gardens and other green infrastructure, even providing controlled burns in these and other green stormwater features.

Resilience Hubs

- The Washtenaw County Emergency Operations Center (EOC), operated through the Sheriff's Office, handles emergency response coordination and communication during emergencies in the county, although there is no direct provision for warming/cooling centers.





Resilience & Emergency Preparedness

KEY:	Timeline N: 1-3 years M: 3-5 years L: 5 years +	Lead/Partners Who is the lead? Who are key Scio/Community partners?	GHG Reduction GHG emission I to III for emission reductions	Cost & Funding See Legend	Other Impacts
1. Coordinate With Washtenaw County to Maintain Emergency Preparedness					
1.1 Washtenaw County Emergency Operations Center (EOC) managed by the Sheriff handles larger emergencies with assistance from the American Red Cross. It also coordinates upwards with the State of Michigan EOC and FEMA	ongoing	Fire, WC, Sheriff		PR $	IR
2. Set Up 1-2 Resilience Centers in the Township					
2.1 Locate Potential Resilience Sites	L	WC, OSI		CIP $$	IR
2.2 Equip 1-2 sites.	M	ESTF, BOT		PR $	IR, IE
3. Harden Township Utilities					
3.1 Work with DTE to harden electric grid	L	BOT, DTE		PR $	IR
3.2 Harden Township Utilities	L	Utilities, BOT		CIP $$	IR
4. Reduce Flooding in the Township					
4.1 Identify areas of flooding	N	WCWRC, BOT		PR $	IR, IWC
4.2 Develop and impement a flood mitigation plan	L	WCWRC, BOT		CIP $$	IR, IWC
4.3 Increae tree canopy, restore wetlands, reduce unused turf grass areas, implement freen infrasturcuture throughout the township	ongoing	PC, PPP, BOT	I	CIP $$	IR, IWC

Climate Resilience & Emergency Preparedness Metrics

Metric	Baseline	Goal
# Resilience Hubs	0	↑

LEGEND

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Appendices

Appendix I Glossary

100-year rainstorm: According to historical data about precipitation and flooding, this term refers to the probability of a hydrologic event of this magnitude occurring in any given year. The common misconception is that an event of this magnitude could only occur once every 100 years.

Accessibility: Refers to the quality of being easy to obtain or use or of being able to be reached or entered.

Age-friendly: A local response to help to identify and address barriers to the well-being and participation of older peopl eand encourage active aging by optimizing opportunities for health, participation and security.

Attainable housing: Unsubsidized market rate housing that is appropriate and suitable for the households living in Scio Township.

Bidirectional flow capability: In a unidirectional (one-way) electric vehicle (EV) charger, electricity flows from the electric grid into the electric vehicle. With a bidirectional (two-way) EV charger, electricity can flow both ways and re-enter the electric grid.

Biodiversity: The variety of life in a habitat or ecosystem. Biodiversity at the genetic, species, and community level is essential for the processes that support life on Earth.

Building life cycle: Refers to the view of a building over the course of its entire life, viewing it not just as an operational building, but taking into account the design, construction, operation, demolition and waste treatment.

Business-as-usual: The level of emissions that would result if future development trends follow those of the past and no changes in policies take place.

Carbon Neutrality: Achieving a state where the net amount of greenhouse gas emissions emitted into the atmosphere is reduced to zero by taking actions to minimize those emissions and/or by purchasing offsets.

Carbon Offset: A project to mitigate GHG emissions that is measurable, additional, and verifiable. Carbon Offset programs recognize the value of new emission reductions and create an opportunity to "offset" carbon use (e.g., jet travel) with carbon reductions elsewhere (e.g., local land preservation, tree planting). Carbon Offsets are one strategy to meet emission reduction goals.

Climate change: Climate change refers to the long-term changes in the average weather patterns that have come to define Earth's local, regional, and global climates. Changes observed in Earth's climate since the early 20th century are primarily driven by human activities, particularly fossil fuel burning, which increases heat-trapping greenhouse gas levels in Earth's atmosphere and raise Earth's average surface temperature. Key indicators of climate change from the data record include: global land and ocean temperature increases; rising sea levels; ice loss at Earth's poles and in mountain glaciers; frequency and severity changes in extreme weather such as hurricanes, heatwaves, wildfires, droughts, floods and precipitation; and cloud and vegetation cover changes.

Climate Impacts: Effects on natural and human systems that result from climate related hazards.

Climate resilience: Climate resilience is defined as the capacity of a community, business, or natural environment to prevent, withstand, respond to, and recover from climate impacts and disruptions.

Complete streets: Roadways that make it safer and easier for users of all ages, abilities, and modes to get around. These streets typically have design elements that include bus lanes, sidewalks, accessible signaling, curb extensions, and street trees or other vegetation.

Ecological buffer: A zone or an area that serves not for any anthropogenic use but as a conserved natural habitat where plants and animals can thrive.

Environmental sustainability: Environmental sustainability refers to fostering practices that reduce pollution, waste, and damages to the natural surroundings. The objective of having a healthy environment is for resources to exist for future generations.

Equity: In this report, equity refers to 1) fairness, 2) distribution of resources to reduce inequalities, and 3) redistribution of resources to level the playing field. Equity and inclusion has been part of the process in developing the plan through seeking to engage community members that typically are not represented in Scio Township's environmental sustainability conversations.

ESCAP: Environmental Sustainability Climate Action Plan

EV: Electric vehicles are vehicles that derive all or part of their power from electricity.

Green Jobs: Jobs in the fields or areas of specialization that eliminate or reduce carbon emissions. Examples are renewable energy-related jobs (production, installation) and building trades focused on electrification.

Green stormwater infrastructure (GSI): A method of storing stormwater using the natural environment, i.e., bioswales, rain gardens, green roofs, etc. rather than "gray infrastructure" such as sewer pipes and basins.

Greenhouse gas (GHG) emissions: Greenhouse gasses (GHGs), such as carbon dioxide, methane, nitrous oxide, and fluorinated gasses, trap heat in the atmosphere and contribute to global warming. GHG emissions and removals associated with human activities can be tracked across sectors, including transportation, industry, electricity, agriculture, and land use.

Heat Island (also referred to as Urban Heat Island): "Urban heat islands" occur when cities replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat. This effect increases energy costs (e.g., for air conditioning), air pollution levels, and heat-related illness and mortality.

Just Transition: A framework for a fair shift to an economy that is ecologically sustainable, equitable, and just for all its members.

LED: Light-emitting diode, which is an energy-efficient mainstream lighting technology.

LID: Low impact development are systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration, or use of stormwater in order to protect water quality and associated aquatic habitat.

Locally-Owned Utility: Also known as a municipal utility, this is a type of utility that is owned and operated by a local government or other local public entity.

Municipal Fleet: Includes a Scio's public works vehicles, administrative vehicles, public safety and emergency services vehicles, and if applicable, maintenance equipment.

Native plants: Plants that have been growing in area prior to European settlement.

No-mow zone: An area with a reduced frequency of mowing that allows native plants and grasses to grow.

Product life cycles: An approach to managing the stages of a product's existence so that any negative impact on the environment is minimized.

Renewable energy: Renewable energy is energy that is derived from non-fossil fuel natural sources or processes that are naturally and constantly replenished. Examples include wind and solar energy.

Ride-sharing: Includes carpooling or vanpooling, an arrangement in which a passenger travels in a private vehicle driven by its owner, free or for a fee, especially as arranged by means of a website or app.

ROI: Return on investment is the methodology for identifying and quantifying the net financial benefits of projects and initiatives.

RPS: Renewable portfolio standards are policies designed to increase energy utility suppliers' use of renewable energy sources for electricity generation.

Safe Routes to Parks: The Safe Routes to Parks action framework was developed to implement environmental, policy, and program strategies to create safe walking and biking access to parks.

Safe Routes to School: The Safe Routes to School programs aim to make it safer for students to walk and bike to school and encourage more walking and biking where safety is not a barrier.

Single-occupancy vehicles: Vehicles designed to accommodate one or more people, but are being used by only one person (the driver).

Tree Canopy: In an urban setting, this refers to the area of a city that is shaded by trees. This shade offers benefits, like by lowering temperatures in the summer, and also provide habitat for wildlife.

Urban Heat Island: See Heat Island.

Water infrastructure: Refers to the extensive network of drinking water, wastewater, and stormwater infrastructure to provide the public with safe and clean drinking water. Gray infrastructure includes water treatment plants, distribution lines, sewer lines, and storage facilities. Green infrastructure includes bioswales, rain gardens, green roofs, and other methods which replicate the natural management of stormwater runoff.

Wayfinding: Environmental signage that encompasses the ways people navigate from place to place in physical space.

Zero waste of resources: Materials of economic value, whether for reuse, resale, or recycling, that won't be thrown away or end up in the landfill

Appendix II Frequently Used Acronyms

AAATA: Ann Arbor Area Transportation Authority (The Ride)

ARPA: American Rescue Plan Act of 2021

BAU: Business as Usual

BOT: Board of Trustees

CBO: Community Based Organization

CDBG: Community Development Block Grant

CVA: Climate Vulnerability Analysis

CVT: Cites, Villages, and Townships

DTE: DTE Energy

EGLE: Michigan Department of Environment, Great Lakes and Energy

EPR: Extended Producer Responsibility

ESCAP: Environmental Sustainability Action Plan

ESTF: Scio Environmental Sustainability Task Force

EV: Electrical Vehicle

FEMA: Federal Emergency Management Administration

GHGI: Greenhouse Gas Inventory

GLISA: Great Lakes Integrated Sciences and Assessment

HOA: Home Owner's Associations

HRWC: Huron River Watershed Council

IRA: Inflation Reduction Act

LPC: Scio Land Preservation Commission

MDARD: Michigan Department of Agriculture and Rural Development

MDNR: Michigan Department of Natural Resources

MDOT: Michigan Department of Transportation

MEDC: Michigan Economic Development Council

MPG: Miles Per Gallon

MPGE: Miles per Gallon Equivalent

MPSC: Michigan Public Service Commission

MWBE: Minority and Women owned Businesses and Enterprises

NGO: Non-Government Organizations

OSI: City of Ann Arbor Office of Sustainability and Innovation

PC: Scio Planning Commission

PPP: Scio Parks Preserves and Pathways Committee

RAA: Recycle Ann Arbor

SEMCOG: Southeast Michigan Council of Governments

VMT: Vehicle Miles Traveled

WATS: Washtenaw Area Transportation Study

WAVE: Western-Washtenaw Area Value Express

WCHD: Washtenaw County Health Department

WCDPW: Washtenaw County Department of Public Works

WCPARC: Washtenaw County Parks and Recreation Commission

WCRC: Washtenaw County Road Commission

WCWRC: Washtenaw County Water Resources Commissioner

WISD: Washtenaw Intermediate School District

WRRMA: Washtenaw Regional Resource Management Authority

Appendix III Climate Emergency Resolution

https://www.sciotownship.org/home/showpublisheddocument/1684/637991795001370000

Appendix IV Scio Vulnerability Assessment

https://drive.google.com/drive/u/0/folders/1tKTt1LDDgCeLoSqhYFBQ09WuCx2sNKfd

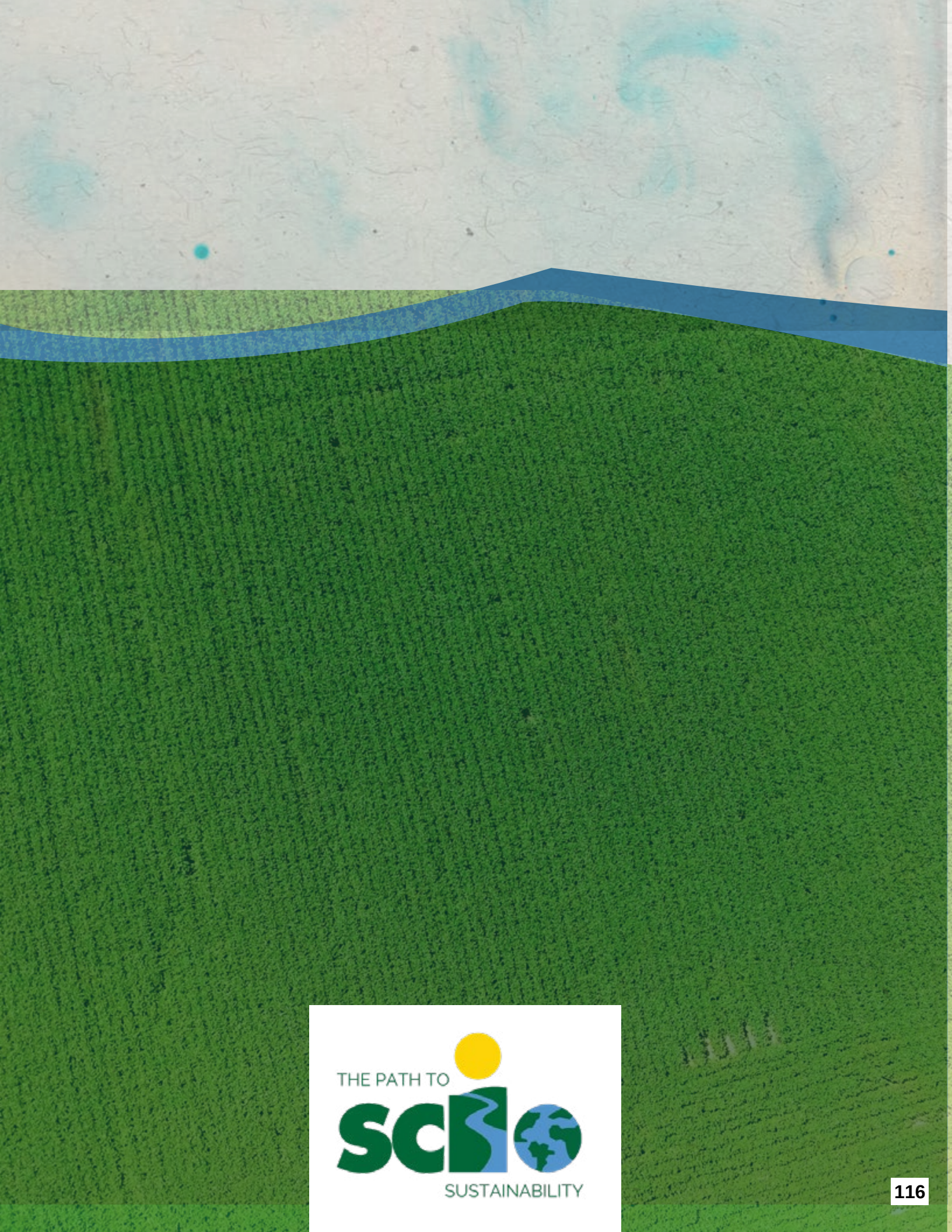
Appendix V Acknowledgements

The Scio Township Environmental Sustainability Task Force would like to thank the following people and organizations for their contributions to the format and content of this document:

- City of Ann Arbor; City of Ann Arbor Parks & Recreation
- City of Royal Oak
- Huron River Watershed Council
- 2022-2023 U-M SEAS Project Team
- Scio Township Planning Commission
- Washtenaw County; Resilient Washtenaw

Scio Township Environmental Sustainability and Climate Action Plan Certificate of Adoption:




THE PATH TO
SUSTAINABILITY

AGENDA # 3
Scio Township Planning Commission
Jackson Rd zoning and overlay district discussion,

FOR MEETING DATE OF: July 10, 2023
PREPARED ON: 20230630
PREPARED BY: Fran Szuma
SUBMITTED BY: Planning

ITEM TYPE: Discussion Only

ATTACHMENTS:
Jackson Road zoning and overlay district

Carlisle | Wortman
ASSOCIATES, INC.
117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

MEMORANDOM

TO: Scio Township Planning Commission

FROM: Douglas J. Lewan, Community Planner
Laura K. Kreps, Community Planner

DATE: June 22, 2023

RE: JROD / Form-Based Mixed-Use Comparison

As part of the Jackson Road Overly District (JROD) Ordinance update discussion, Planning Commission Chairperson Jan Culbertson requested we provide a comparison of the current JROD standards to Pittsfield Township's Form-Based Mixed-Use (FB) standards. The information provided is meant to provide talking points for potential changes to the JROD ordinance.

JROD Intent/Purpose

The intent of the JROD district is to promote mixed uses with an emphasis on retail, office and research uses, along with high density residential uses consistent with the Township Master Plan. It is also the purpose of the district to enhance the streetscape, create pedestrian pathways and outdoor spaces, and promote high quality architecture and provide for vehicular and pedestrian circulation patterns that support the boulevard design for Jackson Road.

Form-Based District – Intent/Purpose

Pittsfield Township's FB Districts are intended to place greater emphasis on regulating urban form, character of development and intensity of use. Within these specific areas, the Township encourages development of a mix of uses, including public open space, in order to provide transit-oriented development in a sustainable way.

The general purposes of the FB district regulations are:

1. Ensure that development is of a human scale, primarily pedestrian-oriented and designed to create attractive streetscapes and nonmotorized spaces.
2. Promote infill development and redevelopment.
3. Promote a compact growth pattern to efficiently use the remaining developable land and to enable the cost-effective extension of utilities, services, streets and transit services.
4. Promote mixed-use development in both a horizontal and vertical form.

Benjamin R. Carlisle, *President* Douglas J. Lewan, *Executive Vice President* John L. Enos, *Vice President*
David Scurto, *Principal* Sally M. Elmiger, *Principal* R. Donald Wortman, *Principal*
Paul Montagno, *Principal,* Megan Masson-Minock, *Principal,* Laura Kreps, *Senior Associate*
Richard K. Carlisle, *Past President/Senior Principal*

5. Ensure reasonable transition between higher-intensity development and adjacent neighborhoods.
6. Improve mobility options and reduce the need for on-site parking by encouraging alternative means of transportation.

Dimensional Standards

All properties within the FB district have a site-type based on property size, configuration, street patterns, location, existing uses, and intensity of use. They are also located on a specific street designation (urban, suburban, neighborhood), and allow for specific building forms that have varying minimum and maximum heights and building placement criteria.

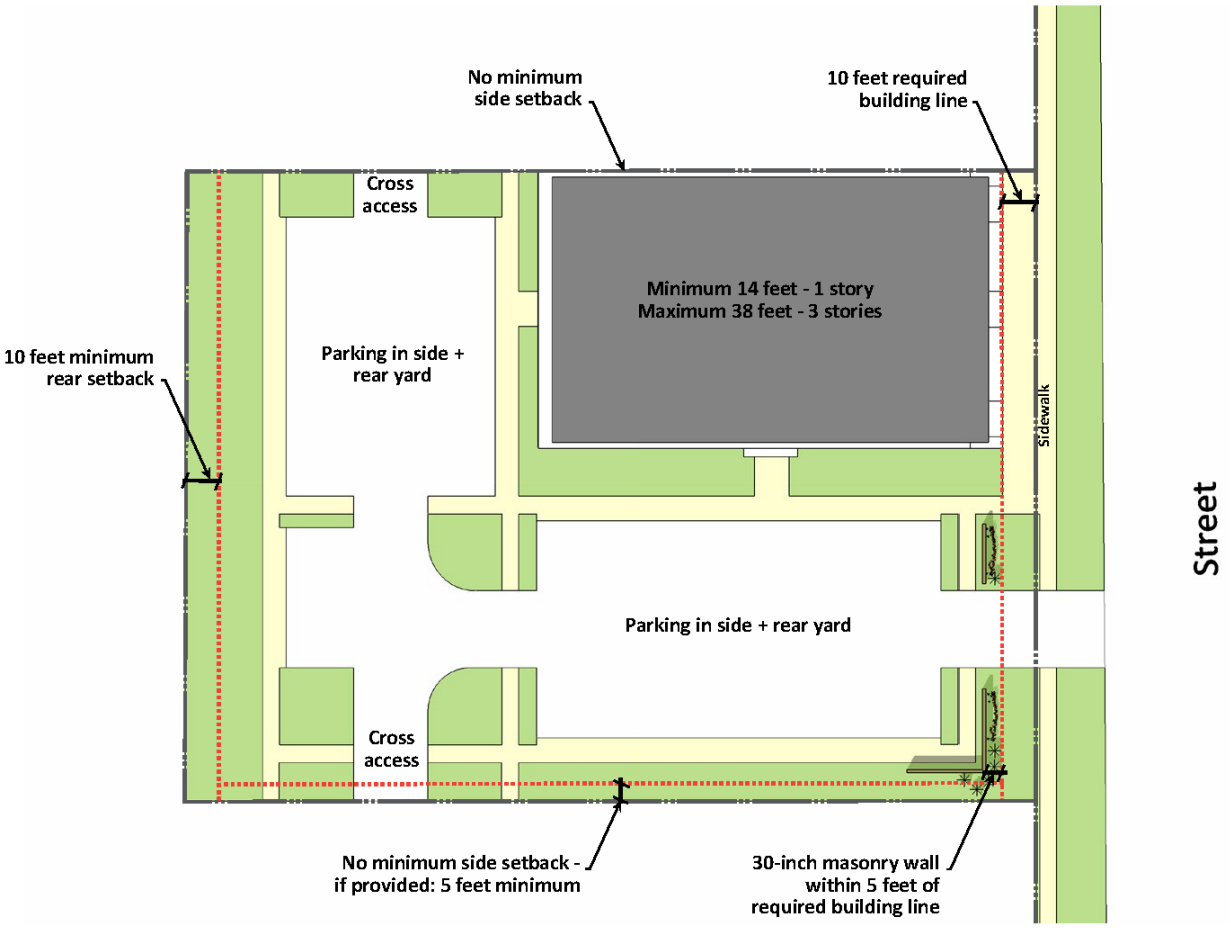
Bulk Requirements

Where the JROD requires greenbelt setbacks depending on the various overlay, the FB district has required build-to lines. See generalized information in the table below:

	JROD (Scio)	FB (Pittsfield)
Front Setbacks	30 feet (East Jackson segment) 50 feet (West Jackson segment) 40 feet (Connector Road) *Can be reduced by half if a knee wall is constructed New principal buildings max. 75 feet from greenbelt line.	10-foot build-to line (75% of the building façade must meet the required build-to line)
Side Setback	20 feet	No minimum setback
Rear Setback	50 feet	Varies by building form 10-40 feet
Building Height	2 stories/30 feet max.	Varies by building form – generally minimum 1 story (14-feet) or 2 story (24-feet) to a maximum of either 3-stories (38-feet) or 4-stories (50 feet)
Impervious Surface	30-40% max. with BMPs	Varies by building form 60%-90%
Parking Location	2 rows parking allowed in front yard	All parking shall be located in the side or rear yard

See example on following page of Building Form A for the layout of a single purpose building:

Building Form A



Uses

The JROD is an overlay district which allows for each property to maintain their underlying zoning – C-1, C-2, OS, I-1, etc. The Ordinance lists different permitted and conditional land uses in each of these zoning districts. However, the FB district is a stand-along zoning category which groups uses by category. Each property is associated with a site type (based on size, location, etc.) and lists appropriate permitted and conditional use groups. See example Carpenter Road FB District Map and Use Group table on the following pages.

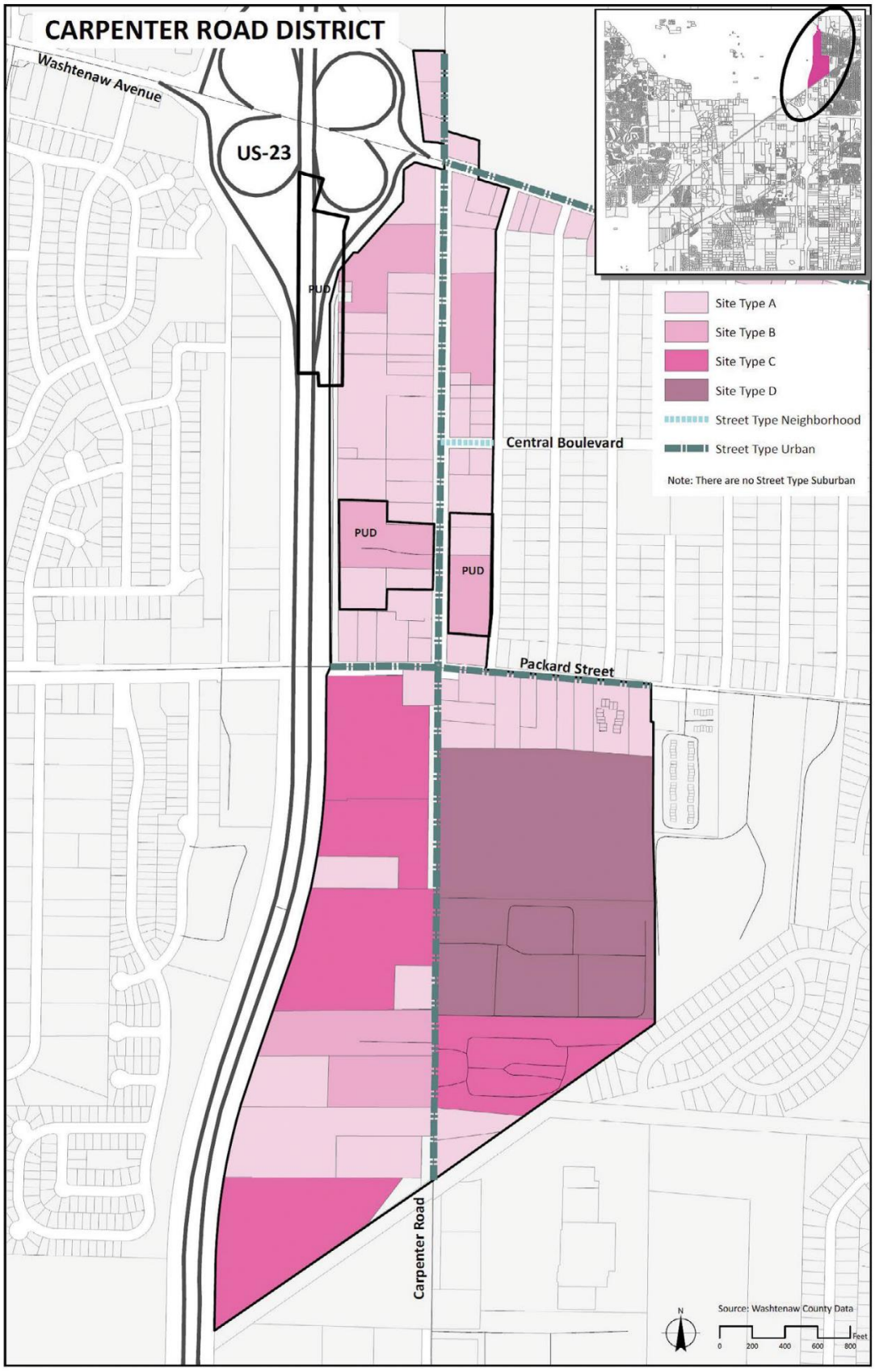

CARPENTER ROAD DISTRICT
Washtenaw Avenue
US-23
PUD
PUD
PUD
Central Boulevard
Packard Street
Carpenter Road
Site Type A
Site Type B
Site Type C
Site Type D
Street Type Neighborhood
Street Type Urban
Note: There are no Street Type Suburban
N
Source: Washtenaw County Data
0
200
400
600
800
Feet

Table 5.03.E.1
Use Groups by Category

PRINCIPAL USE
Use Group 1, Residential Uses
Dwelling, one-family detached and attached
Dwelling, two-family
Use Group 2, Residential/Lodging Uses
Dwelling, one-family attached
Dwelling, multiple-family
Live/work units
Senior assisted/independent living
Group day-care homes
Child-care centers
Use Group 3, Office/Institutional
Civic building
Office, general
Office, medical
Medical clinic
Primary/secondary schools (private or charter)
Post-secondary schools
Places of worship
Data processing and computing centers
Technology centers/office research
Publicly owned/operated office and service facilities
Funeral homes
Veterinary clinics or hospitals
Use Group 4, Automobile/Transportation Uses
Vehicle sales, new
Vehicle service station
Vehicle repair station
Vehicle body repair
Vehicle wash
Automobile/van with 10 or more cars stored on-site, truck, and trailer rental
Use Group 5, Retail, Entertainment, and Service Uses
Artisan food and beverage production (consumption of alcohol on-premises requires a conditional use), less than 10,000 gross square feet
Financial institutions
General retail sales
Art, cultural, or recreation studio
Restaurant

Table 5.03.E.1
Use Groups by Category

Personal services
Business services
Passenger vehicle automobile rental with less than 10 cars stored on-site
Use Group 6, Miscellaneous Commercial Uses
Artisan food and beverage production (consumption of alcohol on-premises requires a conditional use) 10,000 gross square feet or greater
Lodging
Retail sales, large-scale
Shopping centers
Health fitness center/athletic clubs
Theaters, and places of assembly
Hospital
Building and lumber supply
Garden centers, nurseries
Outdoor commercial recreation
Indoor commercial recreation
Self-storage
Commercial kennels/pet day care
Use Group 7, Industrial Uses
Food processing
Outdoor storage, accessory use
Manufacturing and assembly
Printing and publishing
Tool and die, gauge and machine shops
Warehousing/wholesale

Architectural Design

Both the JROD and FB districts provide for additional architectural design elements. The following table compares the similar requirements found in both ordinances.

	JROD (Scio)	FB (Pittsfield)
Façade Variation	Maximum uninterrupted length of façade – 100 feet. Facades greater than 100 feet shall incorporate projections/recesses 20% of the facade	Maximum uninterrupted length of façade – 30 feet (facing public streets and/or parks). Façade variations are required to break up the mass of a single building
Transparency	Ground floor facades that face public streets shall have arcades, windows, entry areas,	First floor facades shall have 50% clear windows facing a ROW and

	awnings, etc. no less than 50% of the horizontal length	30% clear windows facing parking or a side yard.
Material Standards	Predominate exterior building materials shall be high quality materials – brick, stone, architectural steel and glass, and integrally tinted/textured concrete masonry units.	Durable building materials – brick, glass, metal, wood lap, split-faced block or stone. Vinyl or aluminum siding shall only be used for accents. EIFS or similar material is not permitted as a primary building material.

We look forward to discussing this material at the Joint Meeting on Monday, June 26.

Sincerely:

CARLISLE/WORTMAN ASSOC., INC.
Douglas J. Lewan, AICP
Executive Vice President

CARLISLE/WORTMAN ASSOC., INC.
Laura K. Kreps, AICP
Senior Associate

AGENDA # 4
Scio Township Planning Commission
PUD discussion,

FOR MEETING DATE OF: July 10, 2023
PREPARED ON: 20230630
PREPARED BY: Fran Szuma
SUBMITTED BY: Planning

ITEM TYPE: Discussion Only

ATTACHMENTS:
PUD ordinance update-Jackson Road coordination

ARTICLE VIII. - PLANNING AND DEVELOPMENT REGULATIONS FOR PLANNED UNIT DEVELOPMENT (PUD) DISTRICT

Sec. 36-244. - Intent.

The PUD district is intended to permit flexibility in the regulation of land development, encourage innovation in land use and variety in design, layout and type of structures constructed, achieve economy and efficiency in the use of land, natural resources, energy and the provision of public services and utilities, encourage useful open space, and provide better housing, employment and shopping opportunities particularly suited to the needs of residents.

Sec. 36-245. - General provisions.

(a) *Where permitted.* A PUD may be applied for in any zoning district with the following exceptions:

(1) A PUD which contains only residential uses that is located outside of the Township sewer service district shall not qualify for a residential density bonus as outlined in Section 36-247 below,

(2) A PUD which contains non-residential or a mixture of residential and non-residential land uses outside of the Township sewer service district does not qualify as a PUD and may not apply for a PUD.

(b) *Uses permitted.* Any land use authorized in this chapter may be included in a PUD, subject to: 1) the restriction ~~of nonresidential and mixed use developments to the township water and sewer districts~~noted in the previous section; 2) the adequate protection of public health, safety, and welfare; and 3) the compatibility of varied land uses both within and outside the development.

(c) *Qualifications of subject parcel.* The applicant for a PUD must demonstrate through the submission of both written documentation and site development plans that all of the following criteria are met:

(1) The intent of section 36-244 is met.

(2) Approval of the PUD will result in two (2) or more of the following:

a. A recognizable and material benefit to the ultimate users of the project and to the community, where such benefit would otherwise be unfeasible or unlikely to be achieved without application of the PUD regulations. A recognizable and material benefit includes a variety of design features that may include but are not limited to linkages to off-site trails and pathways, improvements and/or upgrades to the Township's utility system and Fire Department Facilities as the improvements relate to the subject project. Improvements to other Township facilities and services as the improvements relate to the subject project;

b. Protection and preservation of natural resources and natural features of a quantity and/or quality that can be clearly demonstrated, where such benefit would otherwise be unfeasible or unlikely to be achieved without application of the PUD regulations. Special attention shall be given to the implementation and preservation of existing ~~native~~ mature non-invasive trees based on the goals stated in the Master Plan; or

c. A nonconforming use shall, to a material extent, be rendered more conforming to, and compatible with, the zoning district in which it is situated.

(3) The proposed type and density of use shall not result in an unreasonable increase in the need for or burden upon public services, facilities, roads, and utilities.

(4) The proposed development shall be consistent with the public health, safety, and welfare of the township.

(5) The proposed development shall minimize any negative environmental impact of the subject site or surrounding land.

(6) The proposed development shall minimize any negative impact upon surrounding properties.

(7) The proposed development shall be consistent with the general goals and policies of the Township Master Plan and the specific PUD goals and policies of the Township Master Plan.

Sec. 36-246. - Design considerations.

A proposed PUD shall take into account the following specific design considerations, as they are necessary to ensure compliance with all applicable regulations and to ensure the compatibility of the project with adjoining properties and the general area in which the property is located.

(1) Perimeter setbacks.

(2) Street drainage and utility design with respect to location, availability, ownership and compatibility.

(3) Underground installation of utilities.

(4) Installation of separate pedestrian ways apart from vehicular streets and ways.

(5) Achievement of integrated and harmonious development with respect to signs, lighting, landscaping and construction materials.

(6) Noise reduction and visual screening features for protection of adjoining residential uses.

(7) Ingress and egress to the property with respect to automotive and pedestrian safety and convenience, traffic flow and control, street capacity, and emergency access.

(8) Off-street parking, loading, refuse and other service areas with respect to ingress and egress and the potential effects of noise, glare, vibration and odor emanating from such facilities on adjoining properties or uses.

(9) Screening and buffering with respect to dimensions and character.

(10) Yard areas and other open space.

(11) Density and intensity of development expressed in terms of percent of gross and net land area coverage and/or gross and net housing units per acre and the height of buildings and other structures.

(12) The preservation of natural resources and natural features.

Sec. 36-247. - Project densities.

(a) *Residential density.*

(1) The total number of dwelling units in a PUD project shall not exceed the number of dwelling units permitted in the underlying zoning districts. With the following exceptions:

The Township Planning Commission may recommend to the Township Board that the density as proposed in the Township Master Plan be considered based in part on the compatibility of the density within the area of the Township in which it is located.

A density bonus of up to 30 percent shall be permitted if all of the following elements are included in the plan and a density bonus of up to 20 percent if no less than three (3) of these elements are included:

a. A high level of clustered development, where at least 60 percent of the PUD is left in open space as defined.

b. Providing perimeter transition areas or greenbelts around all sides of the development that are at least 100 feet in depth.

c. The proposed plan is designed to enhance surface water quality and ground water quality pursuant to section 36-341, stormwater management and addresses at least two BMPs of section 36-75 (note 12).

d. Provide 10% publicly available electrical vehicle (EV) parking based on the total required number of parking spaces for the use in question.

e. Provision of net-zero energy ready buildings (all structures).

f. Provide a minimum of 10% of total dwelling units as affordable based on the current definition of Affordable Housing provided by the Federal Department of Housing and Urban Development (HUD), using Washtenaw County median income as the based for calculating affordability.

(2) For the calculation of the density on the site, including the possible density bonus, the applicant shall be required to follow section 36-151. Base Density Calculation for Open Space and PUD Cluster Projects of this ordinance.

(3) In the case where the applicant proceeds in phases and develops only a portion of the total proposed development at one time, each phase shall consist of land use(s) planned and developed in such a way so that the average density of all completed phases shall not exceed on a cumulative basis, the maximum average density allowed for the entire development. This may be accomplished through the utilization of conservation easements, or other lawful means, which would allow more dense development in an earlier phase, while ensuring appropriate overall density.

(b) *Mixed-use project density.* For projects which contain a residential component, appropriate residential density shall be based upon the current township master plan, existing and planned residential densities in the surrounding area, the availability of utilities and service and the natural features and resource of the subject parcel.

(c) *Non-residential component.* A PUD may incorporate a non-residential component into an exclusively residential development, provided that all of the following are met:

(1) The non-residential component shall be located on a lot of sufficient size to contain all such structures, parking, and landscape buffering. The total area occupied by the non-residential land uses may not exceed ten percent of the gross area of the development.

(2) All non-residential uses shall be compatible with the residential area of the PUD.

(3) The architectural design of the structure(s) is compatible with the balance of the development.

(4) All non-residential structures are connected to a pedestrian access system servicing the project.

(5) All parking and loading areas serving the non-residential uses shall be to the rear or side of the structure and fully screened from view of any approved public or private roadway, except that up to 25 percent of the minimum number of required parking spaces may be located in the front yard. Where the parking lot is visible from residential units or open space, it shall be planted in accordance with section 36-345(4)b.2.

Sec. 36-248. - Design standards.

(a) *Open space preservation.*

(1) When completed, the PUD shall have significant areas, but not less than 30 percent of total land area, devoted to open space, which shall remain in a natural state and/or be restricted for use for active and/or passive outdoor recreational purposes. Priority shall be on preserving the most important natural features on the site, as identified by a site analysis. The amount of open space, including the area and percentage of the site, shall be specified on the site plan. While it is the intention that the required open space be included in the project area, up to 50 percent of

the required open space may be non-contiguous to the project area. Non-contiguous open space must be within Scio Township and must contain important natural features as determined by the planning commission and the township board to be considered.

Preserve mature trees and tree rows where possible within even the built portions of the site, recognizing that protecting existing trees offers more benefits (including carbon sequestration, water absorption and erosion control, air and water quality benefits, noise amelioration, as well as wildlife habitat) than replanting small trees.

(2) In addition to preservation of the most important natural features, additional open space shall be, where possible, located and designed to achieve the following:

a. Provide areas for active recreation;

b. Provide natural greenbelts along roadways to preserve the rural character as viewed from roads; and

c. Preserve an existing natural buffer from adjacent land uses where appropriate.

(3) To ensure that open space is maintained in perpetuity, the following shall apply:

a. No PUD shall be approved by the township board until documents pertaining to maintenance and preservation of common natural open space areas, common landscaped areas and common recreation facilities located within the development plan have been reviewed by the township attorney.

b. The township shall be identified as having the right to enforce the conditions, covenants and restrictions placed on the open space, unless otherwise directed by the township board and the township attorney, with the documentation utilized for such purpose to be in a form approved by the township attorney. Any costs associated with enforcement may be assessed to the property owner and/or homeowners association.

(b) Pathways and Trails.

(1) When proposed, trails and pathways shall be located and designed to connect into adjacent open space, parks. And existing and proposed Township paths and trails.

(2) Pedestrian access shall be provided in accordance with section 36-277, pedestrian and non-motorized access and circulation. The plan shall provide pedestrian/bicycle access to, between or through all open space areas, and to appropriate off-site amenities, and located in accordance with the natural feature information of the site. Informal trails may be constructed of gravel, wood chip or other similar material.

(c) *Setbacks* . All regulations applicable to front, side and rear yard setbacks shall be met in relation to each respective land use in the development based upon zoning district regulations in which the proposed use is listed as a permitted principal or conditional use.

(d) *Buffering from adjacent property.* There shall be a perimeter setback and buffering of a minimum of 50 feet, taking into consideration the use or uses in and adjacent to the development. The township board may reduce the perimeter setback and buffering in cases where the density of the proposed development is compatible with adjacent uses and/or natural features including, but not limited to woodlands and topographical features that provide adequate buffering to protect adjacent uses. If natural features, including, but not limited to woodlands and topographical features do not provide adequate buffering from adjacent property, the perimeter setback shall include noise reduction and visual screening features including, but not limited to landscaping, berms and/or decorative walls.

(e) *Vehicular circulation.*

(1) Vehicular circulation shall be designed in a manner which provides safe and convenient access to all portions of the site, promotes safety, contributes to coherence of site design, and adapts to site topography.

(2) Physical design techniques, known as traffic calming, are encouraged. These techniques are intended to alter driver behavior to reduce speed and cut-through traffic, improve vehicular safety, and improve conditions for non-motorized traffic.

(3) Locations for school bus stops shall also be provided on the site plan.

(f) *Utilities* . There shall be underground installation of utilities, including electricity and telephone, as found necessary by the township.

(g) *Stormwater drainage/erosion control.* All stormwater drainage and erosion control plans shall meet the standards adopted by the township for design and construction pursuant to section 36-341, stormwater management.

Sec. 36-249. - Application and processing procedures.

(a) *Effects* . The granting of a PUD application shall require an amendment of the zoning ordinance and the zoning map constituting a part of this chapter. An approval granted under this article including all aspects of the final PUD plan and conditions imposed shall constitute an inseparable part of the zoning ordinance.

(b) *Concept review meeting.* Prior to the submission of an application for PUD, the applicant shall meet with zoning administrator, a member of the planning commission, and such consultants or staff as deemed appropriate. Additional concept review meetings may be requested by the applicant or township. The applicant shall present at such meeting, or meetings, a sketch plan of the PUD, and the following information:

(1) A legal description of the property in question.

(2) Demonstrate qualification of PUD in written and graphic form pursuant to Section 36-245(c).

(3) The total number of acres to be included in the project.

(3) A statement of the approximate number of residential units and/or the approximate number, type, and square footage of non-residential units.

(4) The approximate number of acres to be occupied and/or devoted to or by each type of use.

(5) Departures from the regulations of the ordinance which may be requested.

(6) The number of acres to be preserved as open space or recreation space.

(7) All known natural resources and natural features.

(8) The location of all existing and proposed water and sewage treatment systems serving the property.

The Planning Commission shall provide comment and ask questions of the applicant regarding the concept PUD as reflected in the minutes of the subject meeting. No formal motion of the Planning Commission shall be taken.

(c) *Preliminary PUD plan application—Submission and content.* Following the above meeting or meetings, 16 copies of the application and all required materials for preliminary PUD plan shall be submitted. The submission shall be made to the township clerk for distribution to the zoning administrator and applicable reviewing parties and agencies. The plan shall be accompanied by an application form and fee as determined by the township board. The preliminary PUD plan shall contain the following information:

(1) Date, north arrow, and scale which shall not be more than 1″ = 100′.

(2) Location sketch of site in relation to surrounding area.

(3) Legal description of property including common street address and tax identification number.

(4) Size of parcel.

(5) All lot or property lines with dimensions.

(6) General location of all buildings within 100 feet of the property lines.

(7) General location and size of all existing structures on the site.

(8) General location and size of all proposed structures on the site. The general size of all buildings shall be within 5,000 square feet or five percent, whatever is smaller of whatever is constructed.

(9) General location and dimensions of all existing and proposed streets, driveways, parking areas, including total number of spaces and typical dimensions.

(10) General size and location of all areas devoted to open space.

(11) Location of existing vegetation and general location and size of proposed landscaped areas and buffer strips.

(12) All areas within the 100-year floodplain, wetland areas or bodies of water.

(13) Generalized topographical information including contours and/or spot elevations which illustrate drainage patterns.

(14) Preliminary phasing lines of PUD if applicable.

(15) A narrative describing:

a. The nature of the project, projected phases and timetable.

b. The proposed density, number, and types of dwelling units if a residential PUD.

c. A statement describing how the proposed project meets the objectives of the PUD District pursuant to section 36-245(c).

d. A statement from a registered professional engineer describing how the proposed project will be served by public water, sanitary sewer, and storm drainage.

e. Proof of ownership or legal interest in property.

(d) *Planning commission review and recommendation—Preliminary PUD plan.* The planning commission shall review the preliminary PUD plan according to the provisions of sections 36-245 through 36-248 herein. Following the public hearing, the planning commission shall recommend to the township board either approval, denial, or approval with conditions. In making its recommendation, the planning commission shall find that the proposed PUD meets the intent of the PUD district and the following standards.

(1) In relation to underlying zoning, the proposed type and density of use shall not result in a material increase in the need for public services, facilities, and utilities, and shall not place a material burden upon the subject or surrounding land or property owners and occupants or the natural environment.

(2) The proposed development shall be compatible with the township master plan and shall be consistent with the intent and spirit of this article.

(3) The PUD shall not change the essential character of the surrounding area.

(4) The proposed PUD shall be under single ownership or control such that there is a single person or entity having responsibility for completing the project in conformity with this article.

This provision shall not prohibit a transfer of ownership or control upon due notice to the zoning administrator.

(e) *Public hearing—Planning commission.* The planning commission shall hold a public hearing and give notice in accordance with the Michigan Zoning Enabling Act. The Planning Commission may or may not take action on the Preliminary PUD on the night of the public hearing. Action may be postponed to a future meeting based on the complexity of the project, and any outstanding issues raised during the hearing at the discretion of the Planning Commission.

If at any time after the public hearing the preliminary PUD becomes inactive (no new information or plans submitted) for a period of six months, the preliminary PUD submittal shall become null and void and a new preliminary PUD application along with a new public hearing that meets the standards of this section shall be required. All null and void preliminary PUD's shall start at the concept review stage outlined in Section 36-249(b).

(f) *Township board review and determination—Preliminary PUD plan.* After receiving the recommendation of the planning commission, the township board shall approve, deny, or approve with conditions the preliminary PUD plan in accordance with the standards for approval and conditions for a PUD as contained herein.

(g) *Effect of approval—Preliminary PUD plan.* Approval of the preliminary PUD plan that is required to accompany a PUD application does not constitute final PUD plan or rezoning approval, but only bestows the right on the applicant to proceed to the final site plan stage. The application for final PUD consideration shall be submitted within 12 months of receiving preliminary PUD approval or the application shall be considered null and void.

(h) *Contents of the final PUD plan.* Following preliminary PUD plan approval, copies of the application for final PUD plan shall be submitted. The submission shall be made to the zoning administrator. The plan shall be accompanied by an application form and fee as determined by the township board. The final PUD plan shall contain the same information required for the preliminary PUD plan pursuant to section 36-249(c) along with the following information and any information specifically requested by the planning commission in its review of the preliminary PUD plan:

(1) All applicable information contained in Appendix 3—Site Plan Review Checklist of the Scio Township Site Plan Process Manual.

(2) All applicable information contained in Appendix 4—Landscape Plan Review Checklist of the Scio Township Site Plan Process Manual.

(3) All applicable information contained in Appendix 5—Detailed Construction and Engineering Plans Checklist of the Scio Township Site Plan Process Manual.

(4) Exterior architectural drawings noting building materials, height and area of buildings and accessory structures.

(5) Proposed phases of project and projected timetable.

(6) Site plan criteria contained in section 36-180.

(i) *Planning commission review and recommendation—Final PUD plan and rezoning.* After receiving approval of the preliminary PUD plan from the township, the planning commission shall review the final PUD plan and rezoning application and shall recommend to the township board either approval, denial, or approval with conditions. In making its recommendation, the planning commission shall find that the proposed final PUD is in substantial compliance with the approved preliminary PUD and still meets the intent of the PUD district along with all development standards outlined in sections 36-245 through 36-248.

(j) *Public hearing—Township Board.* The Township Board shall hold a public hearing and give notice in accordance with the Michigan Zoning Enabling Act. If at any time after the public hearing the final

PUD becomes inactive (no new information or plans submitted) for a period of six months, the final PUD submittal shall become null and void and a new preliminary PUD application along with a new public hearing that meets the standards of this section shall be required. All null and void final PUD's shall start at the concept review stage outlined in Section 36-249(b).

(k) *Township board review and determination—Final PUD plan and rezoning.* After receiving the recommendation of the planning commission and considering the comments of the public, the township board shall prepare a report stating its conclusions, its decision, the basis for its decision, and any conditions imposed on an affirmative decision.

(l) *Effect of approval—Final PUD plan and rezoning.* The final PUD plan, the narrative and all conditions imposed, if any, shall constitute the land use authorization for the property. All uses not specifically specified in the final PUD plan are disallowed and not permitted on the property notwithstanding that the property is zoned PUD. All improvements and uses shall be in conformity with this zoning amendment to PUD. The applicant shall record an affidavit with the Washtenaw County Register of Deeds, which shall contain the following:

(1) Date of approval of the final PUD plan by the township board.

(2) Legal description of the property.

(3) Legal description of the required open space along with a plan stating how the open space is to be maintained.

(4) A statement that the property will be developed in accordance with the approved final PUD plan and any conditions imposed by the township board or planning commission unless an amendment thereto is duly approved by the township upon the request and/or approval of the applicant or applicant's transferee's and/or assigns. This statement shall also include the duration of approval and action for non-compliance.

Sec. 36-250. - Resolution of ambiguities and chapter deviations.

(a) The township board, based upon the recommendation of the planning commission, shall resolve all ambiguities as to applicable regulations using this zoning chapter, the master plan and other township standards or policies as a guide.

(b) Notwithstanding the immediately preceding standards, deviations with respect to such regulations may be granted as part of the overall approval of the PUD provided there are features or elements demonstrated by the applicant and deemed adequate by the township board upon the recommendation of the planning commission designed into the project plan for the purpose of achieving the objectives of this article.

Sec. 36-251. - Conditions.

(a) Reasonable conditions may be required with the approval of a PUD, to the extent authorized by law. Conditions may be included which are deemed necessary to ensure that public services and facilities affected by a proposed land use or activity will be capable of accommodating increased service and facility loads caused by the land use or activity, to protect the natural environment and conserving natural resources and energy, to ensure compatibility with adjacent uses of land, and to promote the use of land in a socially and economically desirable manner.

(b) Conditions imposed shall meet the following requirements: be designed to protect natural resources and the public health, safety, and welfare of individuals in the project and those immediately adjacent, and the community as a whole be reasonably related to the purposes affected by the planned unit development; and be necessary to meet the intent and purpose of this article, and be related to the objective of ensuring compliance with the standards of this article. All conditions imposed shall be made a part of the record of the approved planned unit development.

(c) Conditions imposed with respect to the approval of a land use or activity shall be recorded in the record of the approval action and remain unchanged except upon the mutual consent of the township board and the landowner. The township shall maintain a record of conditions which are changed.

Sec. 36-252. – PUD Development Agreement

(a) A PUD Development Agreement is required for all PUD projects to clarify the rights and obligations of Scio Township and the developer/property owner for all improvements both public and private as reflected on the approved final PUD site plan text, reports, and maps.

(b) A PUD Development Agreement shall be entered into by the Township and the developer/property owner after Final PUD plan and rezoning approval by the Township Board, but before the start of construction of the PUD or any individual phase of the PUD.

(c) A PUD Development Agreement shall include (but not be limited to) the following elements and clarifications to help clarify the rights and obligations of both the Township and the developer/property owner.

- Identification of land included in the project
- Location, acreage, and density of permitted uses
- Effect of PUD approval
- Land Uses
- Phasing of PUD
- Miscellaneous Provisions
- Water and Sanitary Sewer Systems
- Drives and Parking Lots
- Storm Water Drainage and Management
- Safety Paths and Walkways
- Traffic improvement design and management
- Community Benefit
- Completion and Improvements: Financial Assurances
- Deed Restrictions
- Conservation Easements
- Township Enforcement
- Access to Property
- Agreement Jointly Drafted
- Ambiguities and Inconsistencies
- Warranty of Ownership
- Running with the Land
- Single Ownership and/or Control of PUD Property

(d) A sample PUD Development Agreement can be found in Appendix B of this ordinance.

Sec. 36-253. - Phasing and commencement of construction.

(a) *Phasing*. Where a project is proposed for construction in phases, the planning and designing shall be such that, upon completion, each phase shall be capable of standing on its own in terms of the presence of services, facilities, and open space, and shall contain the necessary components to ensure protection of natural resources and the health, safety, and welfare of the users of the planned unit development and the residents of the surrounding area. In addition, in developments which include residential and non-residential uses, the relative mix of uses and the scheduled completion of construction for each phase shall be disclosed and determined to be reasonable in the discretion of the township board after recommendation from the planning commission.

(b) *Commencement and completion of construction.* Construction shall be commenced within one year following final plan approval of a PUD and shall proceed substantially in conformance with the schedule set forth by the applicant, as approved by the township. If construction is not commenced within such time, any approval of a PUD plan shall expire and be null and void, provided, an extension for a specified period may be granted by the township board upon good cause shown if such request is made to the township board prior to the expiration of the initial period. Moreover, in the event a PUD plan has expired, the township board, based on a recommendation from the planning commission, shall be authorized to rezone the property in any reasonable manner, and, if the property remains classified as PUD, a new PUD or zoning application shall be required, and shall be reviewed in light of the existing and applicable law and ordinance provisions prior to any construction

Sec. 36-254. - Performance guarantees.

The planning commission may require a performance bond or similar guarantee in accordance with section 36-37 in order to ensure completion of the required improvements.

Sec. 36-255. - Modifications to an approved PUD plan.

A developer may request a change to an approved preliminary PUD plan, or an approved final PUD plan. A change in an approved preliminary PUD plan or change in an approved final PUD plan which results in a major change, as defined in this section, shall require an amendment to the preliminary PUD and final PUD plan. All amendment shall follow the procedures and conditions herein required for original submittal and review. A change which results in a minor change as defined in this section shall require a revision to the approved final PUD site plans and approval by the township board following review by the planning commission.

(1) The following changes shall be considered major:

a. Change in the concept of the development;

b. Change in use or character of the development;

c. Change in the type of dwelling unit;

d. Change in the number of dwelling units (density);

e. Change in non-residential floor area;

f. Change in lot coverage or floor area ratio of the entire PUD;

g. Change in the character or function of any street;

h. Change in land area set aside for common space or the relocation of such areas;

i. Change in building height.

(2) The following changes shall be considered minor:

a. A change in residential floor space;

b. Minor variations in layout which taken together do not constitute major changes.

(3) The planning commission shall have the authority to determine whether a requested change is major or minor, in accordance with this section. The burden shall be on the applicant to show good cause as to any requested change.

AGENDA # 1
Scio Township Planning Commission
Solar zoning ordinance discussion,

FOR MEETING DATE OF: July 10, 2023
PREPARED ON: 20230630
PREPARED BY: Fran Szuma
SUBMITTED BY: Planning

ITEM TYPE: Discussion Only

ATTACHMENTS:
Planning&Zoning for solar engery systems

MICHIGAN STATE UNIVERSITY | Extension

GRAHAM SUSTAINABILITY INSTITUTE
UNIVERSITY OF MICHIGAN



PLANNING & ZONING FOR SOLAR ENERGY SYSTEMS

A GUIDE FOR MICHIGAN LOCAL GOVERNMENTS

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Cover image: Ground-mounted SES with pollinator garden. Photo by Rob Davis.

BACKGROUND & PURPOSE



Lapeer Solar Park. Photo by Bradley Neumann.

Michigan's diverse energy future is set in motion. Utility companies have bold plans to expand solar options and other forms of renewable energy over the next two decades and beyond. By 2040, DTE Energy[1] expects to have over 10 million solar panels generating power for its customers. Consumers Energy also announced[2] plans to build roughly 8,000MW of solar energy by 2040. Regional electric cooperatives and municipally owned utilities are following suit, with plans to expand solar energy production. Michigan has 65 utilities across two peninsulas.

The shift in the utility sector from centralized power generation (e.g., a large coal plant) to a higher number of accessory and principal use solar energy systems (SES[3]) means Michigan communities should plan for renewable energy development within their jurisdictions. According to a 2019 study of solar ordinances in Michigan, fewer than 20% of Michigan communities have zoning regulations in place to address all scales of SES.[4] These scales are defined further in Section 3 of this guide.

The purpose of this guide is to help Michigan communities meet the challenge of becoming solar-ready by addressing SES within their planning policies and zoning regulations. This document illustrates how various scales and configurations of photovoltaic SES fit into landscape patterns ranging between rural, suburban, and urban.

1 Our Bold Goal for Michigan's Clean Energy Future. DTE. (2020). https://dtecleanenergy.com/

2 Consumers Energy. Consumers Energy Announces Plan to End Coal Use by 2025; Lead Michigan's Clean Energy Transformation. (2021). https://www.consumersenergy.com/news-releases/news-release-details/2021/06/23/consumers-energy-announces-plan-to-end-coal-use-by-2025-lead-michigans-clean-energy-transformation

3 Michigan Office of Climate and Energy. (2019). Michigan Zoning Database. Available at https://www.michigan.gov/climateandenergy/0,4580,7-364-85453_85458-519951--,00.html

4 Ibid.

Planning and Zoning for Solar Energy Systems: A Guide for Local Governments in Michigan was developed by experts within Michigan State University Extension (MSUE) and Michigan State University's School of Planning, Design and Construction in partnership with faculty at the University of Michigan Graham Sustainability Institute. Further review of this document was completed by content experts from local units of government, legal counsel, energy-related non-profits, utility experts, and members of academia. Its intent is to help Michigan communities make public policy decisions related to solar energy development.

This guide is written for use by local planners, officials, legal counsel, and policymakers within the State of Michigan. It first presents the current context for solar in Michigan, describes the various components and configurations of SES, and provides principles for how SES might fit within various land-use patterns across the state. Then, starting on Page 22, the guide presents sample language for including SES into a community's zoning ordinance. The findings and recommendations in this document are based on university peer-reviewed research (whenever available and conclusive) and on the parameters of Michigan law as it relates to the topic(s) in Michigan. The zoning and regulatory rules and concepts discussed here may not apply in other states. This guide will be updated as solar technology evolves and as we learn more from the deployment of existing technology.

Preparing a zoning ordinance and master plan are only two aspects of being solar-ready. More information on how communities can plan for, regulate, and reduce barriers for SES—through meaningful public engagement, clarifying building/electrical permit processes, reducing permit fees, and evaluating placement of SES on or near municipal buildings, to name a few—is available through numerous Michigan agencies, universities, and organizations, and through the SolSmart[5] program. Additional resources on solar energy (and renewable energy) planning and zoning in Michigan are available from MSU Extension[6] and the Michigan Department of Environment, Great Lakes, and Energy[7] in partnership with University of Michigan Graham Sustainability Institute[8] faculty.



Ground-mounted SES, Grand Traverse waterfront. Photo by Mary Reilly.

5 SolSmart. (2021). Program Guide. Available at: https://solsmart.org/resources/solsmart-program-guide/
6 MSU Extension Outreach. Michigan Station University. https://www.canr.msu.edu/outreach/
7 Community Energy Management. Office of Climate and Energy. https://www.michigan.gov/climateandenergy/0,4580,7-364-85453_98214---,00.html
8 Graham Sustainability Institute. University of Michigan. http://graham.umich.edu/

SOLAR ENERGY IN MICHIGAN



O'Shea Solar Park, Detroit. Photo by DTE Energy.

While the solar resources in Michigan and other Midwestern states are not as abundant as in the Southwest,[9] over the course of one year, a solar panel in a typical Michigan location produces approximately 70% of the energy as the same solar panel in Phoenix, Arizona.[10] Furthermore, technology advancements have led to rapid cost reductions at all levels of solar development, making solar an increasingly cost-competitive option, both nationally and in Michigan specifically.[11] As a result, utility companies in Michigan have plans to significantly increase the amount of power generated from solar energy. This shift is evidenced by the amount of utility-scale solar energy development currently under construction or in the development queue,[12] along with expanding installations of smaller on-site solar energy systems.[13]

As the demand for clean energy sources continues to grow, Michigan communities are being approached with development proposals for new SES. It is vital that communities have planning and zoning in place to address these proposals. By doing so, communities have the opportunity to proactively determine how SES can fit into their landscape through master planning and zoning ordinance development.

MASTER PLANNING AND ZONING

Solar energy systems can serve as a method to help reach several different goals that a community may identify, including those focused on resiliency, economic development, farmland preservation, climate action, energy generation, and more.

A community's master plan sets the vision and high-level goals for the community. Local policy related to renewable energy generation is established first in the master plan, with an explanation of how SES could fit into the unique landscapes and character of the jurisdiction. In addition to the master plan, goals related to SES are established in other local plans, which could include district or sub-area plans, resiliency plans, climate action plans, or renewable energy plans. Here, specific geographical areas are designated as ideal for SES development. Including SES in local plans supports the establishment of related zoning regulations, consistent with the requirement of the Michigan Zoning Enabling Act (MZEA).[14] A community-supported vision, followed by the adoption of reasonable zoning standards, together establish a successful framework for SES in a community.

9 Solar Resource Data, Tools, and Maps. National Renewable Energy Laboratory. https://www.nrel.gov/gis/solar.html.

10 Solar Resource Data. NREL PVWatts Calculator. Available at: https://pvwatts.nrel.gov/pvwatts.php.

11 Lazard. (2020). Levelized Cost of Energy and Levelized Cost of Storage – 2020. Available at: https://www.lazard.com/perspective/levelized-cost-of-energy-and-levelized-cost-of-storage-2020/; Solar Technology Cost Analysis. NREL. https://www.nrel.gov/solar/solar-cost-analysis.html.

12 Midcontinent Independent System Operator, Inc. https://www.misoenergy.org/planning/generator-interconnection/GI_Queue/.

13 MPSC. (2020). Distributed Generation Program Report for Calendar Year 2019. https://www.michigan.gov/documents/mpsc/DG_and_LNM_Report_Calendar_Year_2019_711217_7.pdf

14 Michigan Zoning Enabling Act, Public Act (PA) 110 of 2006, as amended. http://legislature.mi.gov/doc.aspx?mcl-Act-110-of-2006.

Incorporating renewable energy into the master plan is a logical place to start before drafting zoning regulations. The MZEA requires that all zoning be based on a plan. The master plan therefore establishes the community's formal policy position on solar energy development. For example, the master plan might set a goal that permits accessory SES throughout the jurisdiction. For principal-use SES, it might define what scale is appropriate as a permitted use (i.e., use by right) or determine appropriateness based on the location of marginal lands, soil types, or steep slopes. It could document community attributes or characteristics that are important to consider and/or protect when siting solar energy development. A master plan ideally includes a spatial analysis of land-use suitability and incorporates community engagement to establish formal guidance for the zoning regulations.



Accessory ground-mounted SES powering remote meteorological and communications equipment. Photo by Bradley Neumann.

COMMENTARY: A request for solar energy development may land on the doorstep of a community that has no mention of solar in the zoning ordinance or master plan. While neither ideal nor recommended, communities sometimes zone first and plan second.[15] Amending the zoning ordinance first without planning for solar is a relatively common course of action, especially when there is a sense of urgency to the permit request. If a community cannot avoid amending the zoning ordinance without first amending the plan, they should work closely with a qualified planner or municipal attorney to perform a master plan review in order to find elements that support or contradict a solar energy zoning amendment. Master plan elements to consider in this review:

- **Vision statement:** How do these broad community statements align with or contradict the contemplated ordinance amendment? Does the vision include renewable energy?
- **Goals and objectives:** If the solar amendment includes multiple scales of SES, then review the goals, objectives, and policies for all relevant land-use classifications on the future land-use map, such as agricultural, residential, commercial, forestry, industrial, etc.
- **Brownfields or grayfields:** Review plans, policies, and maps for recommended zoning approaches.
- **Future land-use map:** Review the map for projected areas of growth (infrastructure extension, type of growth or change in land-use) or areas with goals, objectives, and policies to preserve or maintain a unique community asset.
- **Zoning plan:** While not required as a precursor to a zoning amendment, a statement in the zoning plan[16] affirming the preferred scope and/or location of SES relative to other land-use classifications and zoning districts may be sufficient to show the community anticipated the solar zoning amendment but had not yet taken action to amend the ordinance. [End of commentary]

15 All zoning must be based on a plan. MCL 125.3203(1). http://legislature.mi.gov/doc.aspx?mcl-125-3203

16 Michigan Planning Enabling Act, MCL 125.3833 (2.d)

After a community has incorporated solar development into its master plan, the zoning ordinance can be amended to include regulations for the various configurations and scales of SES. The zoning regulations protect the community's health, safety, and welfare, and are based on policies outlined in the master plan. Zoning regulations define the location, scale, and form or configuration of SES allowed in the community and establish the permits and processes by which solar energy is allowed and even incentivized.

COMMENTARY: According to a review of Michigan zoning ordinances,[17] large-scale solar energy systems (see Section 3) tend to be allowed as principal land uses of property and authorized by special land-use permit in certain zoning districts within a community. Accessory structures, where the electricity generated is used by the principal land use on the property, are generally allowed in more or all zoning districts as accessory uses by right. Furthermore, roof-mounted systems are generally permitted in more zoning districts within a community than ground-mounted systems. In fact, it is quite common to see roof-mounted systems allowed in all zoning districts.

Some communities also permit ground-mounted systems in all districts, though this is less frequently the case than with roof-mounted systems. More specifically, ground-mounted systems tend to be allowed in lower-density districts where there is likely to be larger parcels with larger yards that can accommodate the accessory structure on-site. [End of commentary]

PUBLIC ACT 116—FARMLAND DEVELOPMENT RIGHTS PROGRAM

The Michigan Department of Agriculture and Rural Development (MDARD) administers the Michigan Farmland and Open Space Preservation Program, which includes the Farmland Development Rights Program, commonly referred to as PA 116 (Public Act 116 of 1974). The PA 116 program allows a landowner to voluntarily enter into an agreement with the State to retain their land in agriculture in exchange for certain tax benefits and exemptions from various special assessments.

Prior to 2019, principal-use solar was not permitted on land enrolled in the PA 116 Farmland Preservation Program. The policy has since changed to allow landowners to put their PA 116 agreements on hold to pursue solar development if specified conditions are met.[18] For example, among the conditions in PA 116 are those that require the developer to maintain existing field tile, plant a cover crop that includes pollinator habitat, and post a surety bond or letter of credit with the state to ensure that solar panels will be removed, and the land will be returned to a condition that enables farming at the end of the project life. This allows farmers to take advantage of the economic opportunity presented by solar development while preserving the long-term viability of growing crops or raising livestock on that land. Under the terms of the Farmland Development Rights Agreement, it is the landowner's responsibility to work with the solar energy developer to ensure that all conditions associated with PA 116 are satisfied. Therefore, a landowner will need to address such conditions in the solar energy lease, easement, or other agreement with the developer. In some counties, as much as 80% of farmland is enrolled in PA 116.[19] It is important for municipalities to understand the scope of PA 116 lands within their jurisdiction.

17 Derry, J., & Gilbert, E. (2020). Primary Research on Planning and Zoning for Solar Energy Systems in the State of Michigan. https://www.canr.msu.edu/resources/primary-research-on-planning-zoning-for-solar-energy-systems-in-the-state-of-michigan

18 The Farmland and Open Space Preservation Act, being PA 116 of 1974, now codified in Part 361 of the Natural Resources and Environmental Protection Act, PA 451 of 1994. http://legislature.mi.gov/doc.aspx?mcl-451-1994-III-1-LAND-HABITATS-361. Also see: https://www.michigan.gov/mdard/0,4610,7-125-1599_2558---,00.html

19 MDARD Farmland Preservation Program (PA116) Percentage of Farmland Enrolled by County. https://www.michigan.gov/documents/mdard/PA116_Enrollment_Map_531166_7.pdf



Rooftop SES, Petoskey, Michigan. Photo by Richard Neumann.

PRIVATE RESTRICTIONS

Private restrictions, such as homeowners' association (HOA) rules, deed restrictions, or architectural standards within a subdivision or condominium development, can limit the installation of SES regardless of local government plans and ordinances. Local governments can work with neighborhood associations, sharing sample rules that allow for SES on individual properties and attempting to align the goals of the association with existing local policy. An additional possibility would be to include a requirement in one's zoning ordinance that all new residential developments must allow rooftop solar as a permitted use in the development.

ZONING FEES AND ESCROW POLICY

The local resolution governing permit fees and review costs should be updated to include SES upon adoption of a zoning amendment regulating the use. The Michigan Zoning Enabling Act authorizes the legislative body to adopt reasonable fees for zoning permits.[20] The permit fee amount must be set by the legislative body to cover anticipated actual cost of the application review and not more.

To encourage the adoption of solar energy, some communities waive or reduce zoning fees for some types of systems. Within the SolSmart certification program, for example, communities can earn points toward certification by waiving or exempting fees for residential solar permit applications.

For large utility-scale SES, though, a community might consider using escrow funds deposited by the applicant to recover the expense of hiring outside reviewers, such as an attorney, engineer, or planning consultant. An escrow policy provides a mechanism for the community to anticipate the costs associated with reviewing a complex application. Prior to requiring escrow funds for a zoning application review, the legislative body must first adopt an escrow policy by resolution.[21,22] Among other things, an escrow policy establishes administrative guidelines for spending, replenishing the escrow below a certain balance, and returning remaining funds.

20 Michigan Zoning Enabling Act, Act 110 of 2006, MCL 125.3406, http://legislature.mi.gov/doc.aspx?mcl-125-3406

21 Forner v. Allendale Charter Twp. Court: Michigan Court of Appeals, 2019 Mich. App. LEXIS 576, 2019 WL 1302094 (March 21, 2019, Decided), Unpublished Opinion No. 339072, http://www.michbar.org/file/opinions/appeals/2019/032119/70094.pdf

22 Charter Township Act, PA 359 of 1947. http://legislature.mi.gov/doc.aspx?mcl-Act-359-of-1947. Revised Statutes of 1846. http://legislature.mi.gov/doc.aspx?mcl-R-S-1846-41-1-16



Langeland Farms SES. Photo by M. Charles Gould.

OTHER PERMIT PROCESSES

The planning commission can serve in a coordinating role to ensure additional required permits are obtained before planning commission review and approval. For example, the application may include mitigation measures to minimize potential impacts on the natural environment, including but not limited to wetlands and other fragile ecosystems, historical sites, and cultural sites. In addition to local zoning permits, solar energy developments may require permits from other agencies, including:

- **Department of Environment, Great Lakes, and Energy (EGLE)** if the project affects waters of the state, such as wetlands, streams, or rivers.[23]
- **U.S. Fish and Wildlife Service (USFWS)** for the Endangered Species Act or migratory flyways.[24]
- **Federal Aviation Administration (FAA)** for projects on or within the vicinity of an airport to determine if any safety or navigational problems are present.[25]
- **Municipal or County Soil Erosion Permitting Agency** if the project is one or more acres in size, or is within 500 feet of a lake or stream.[26]
- **Tax Assessor** or zoning administrator for land division approval if leasing less than 40 acres or the equivalent for more than one year.[27]
- **Building Department** for required building, electrical, and mechanical permits.[28]
- **Local Airport Zoning**, for projects within 10-miles of a local airport.[29,30]

23 Parts 301 and 303 of the Natural Resources and Environmental Protection Act, PA 451 of 1994. http://legislature.mi.gov/doc.aspx?mcl-451-1994-III-1-INLAND-WATERS

24 Federal laws administered by the USFWS: Endangered Species Act (ESA); Bald and Golden Eagle Protection Act (BGEPA); Fish and Wildlife Coordination Act (FWCA). See: https://www.fws.gov/ecological-services/energy-development/laws-policies.html

25 Part 77 (Airspace Review) of Title 14 of the Code of Federal Regulations. https://www.faa.gov/airports/environmental/policy_guidance/media/FAA-Airport-Solar-Guide-2018.pdf

26 Soil Erosion and Sedimentation Control. https://www.michigan.gov/egle/0,9429,7-135-3311_4113-8844--,00.html

27 Michigan Land Division Act, PA 288 of 1967, definition of 'Division' – MCL 560.102(d). http://legislature.mi.gov/doc.aspx?mcl-560-102

28 When a project is developed or owned by a private entity, local construction permits are required. If the project is owned by a regulated utility, then local building and electrical permits may not be required but projects are instead regulated by the Michigan Public Service Commission. See Stille-Derossett-Hale Single State Construction Code Act, PA 230 of 1972, MCL 125.1502a(1)(bb), http://legislature.mi.gov/doc.aspx?mcl-125-1502a; and 2015 Michigan Building Code, 1.105.2.3 Public Service Agencies, https://www.michigan.gov/lara/0,4601,7-154-89334_10575_17550-234789--,00.html

29 Airport Zoning Act, Act 23 of 1950. http://www.legislature.mi.gov/documents/mcl/pdf/mcl-act-23-of-1950-ex-sess-.pdf

30 Michigan Zoning Enabling Act, Act 110 of 2006, MCL 125.3203, http://legislature.mi.gov/doc.aspx?mcl-125-3203

SCALES & COMPONENTS



Ground-mounted monopole SES. Photo by Bradley Neumann.

This section discusses SES across a range of sizes, scales, configurations, and related components. SES cannot be treated uniformly by local governments because the scale of installations and energy generation capacity can vary dramatically. For example, a small solar panel powering a streetlight might be exempt from regulation, while a large-scale photovoltaic SES, providing power to the grid through a system of components, likely would require rigorous local review.

TYPES

Solar energy generation for distribution to the grid is a unique land use, at both the large and small scale. As such, these developments should be clearly defined as a separate land use within a zoning ordinance. Treating all scales of SES the same may unnecessarily restrict accessory and small scale installations. In addition, solar developments are scalable and can be sited across many zoning districts. Therefore, in zoning ordinances, SES should be expressly defined as distinct land uses at the different system scales that the community desires (e.g. accessory use vs. principal-use, small SES vs. large SES, ground-mounted SES vs. roof-mounted SES, etc.).

The first distinction to consider for SES is accessory use versus principal use.

Accessory: These SES are accessory to the primary use of a property, such as a residence or a commercial building, and provide electricity that is intended for use by a primary structure located on the same parcel as the SES. Accessory systems can range in size and configuration. They typically range from being small enough to power an exterior light fixture to being large enough to power electricity for multiple buildings, for instance livestock or equipment barns. On-site (or distributed-generation) systems can be affixed to the roof of a building or can be freestanding, ground-mounted structures.

Principal: Principal-use SES developments generate electricity distributed off-site through the grid and exported to a wholesale utility market. These projects occupy single or multiple large parcels of land and are typically the primary use on the site. These SES vary greatly in size, covering as little as an acre to thousands of acres. In addition, SES have two primary configurations: ground-mounted and roof-mounted.

Roof-Mounted: A roof-mounted SES has solar panels affixed to a racking system on the roof of a building, which may be a residential, agricultural, institutional, commercial, or industrial building. Roof-mounted panels can be installed parallel to the roof surface, like a solar shingle, or protrude from the roof at an angle, like an awning. A roof-mounted SES typically has fixed mounts that do not rotate throughout the day to track the sun. By definition, roof-mounted systems are accessory structures relative to the principal use of the building.

Ground-Mounted: A ground-mounted SES has solar panels affixed to a racking system on support posts. These posts are most commonly driven into the ground, without requiring excavation for a concrete foundation. However, in cases where the soil cannot be penetrated, such as with a brownfield or capped landfill, ground-mounted SES can also be designed with ballasted supports that sit atop the ground. A ground-mounted SES may be fixed (i.e., stationary) or have single- or double-axis trackers to follow the sun throughout the day. While nearly all principal-use SES are ground-mounted, some accessory SES may be ground-mounted, too. For example, solar parking canopies are becoming more common in Michigan and present unique characteristics as compared to a typical ground-mounted SES.

These characteristics include unique panel height, vehicle support-post collision mitigation, lighting, and site configurations. Ground-mounted SES can also be distinguished by scale, which we define in this guide to be 'large' or 'small'.

SCALES

As mentioned, even principal-use SES can vary greatly in size, covering as little as an acre to thousands of acres. Because of this variation in the size and impact on a site, many communities may choose to distinguish between small and large principal-use SES in their ordinances. To be sure, there is no established definition of "small" or "large," and for other industry or taxation purposes, large- and small-scale distinctions may differ.

In assisting a community in making a distinction between scales of SES based on size, Table 1 (below) illustrates common SES outputs measured in megawatts (MW) of direct current (DC)[31] and the average acreage of land required to host an SES of that output.[32] Larger projects have a higher variability in land required per megawatt (5-10 acres per MW DC)[33], depending on how many parcels are involved and the layout of solar panels within them.

Table 1. Comparison Chart: Megawatt Outputs to Acreage Needed

Megawatts (DC)	Acres
1 MW*	5-10
2 MW	10-20
20 MW	100-200
100 MW	500-1,000
200 MW	1,000-2,000

*The current national average (through 2018) number of homes powered by 1 MW of solar is 190. Since SEIA began calculating this number in 2012 it has ranged from 150 - 210 homes/MW.[34]

31 Solar output can also be measured in alternating current (AC), often for taxation or regulatory policies. An SES will have a higher MW DC rating than MW AC rating since there are some losses when inverting power from DC to AC to connect to the grid.

32 Ong, S., Campbell, C., Denholm, P., Margolis, R., and Heath, G. 2013. Land-Use Requirements for Solar Power Plants in the United States. National Renewal Energy Laboratory, Technical Report NREL/TP-6A20-56290. Table ES-1, Page v. Source: https://www.nrel.gov/docs/fy13osti/56290.pdf. Retrieved August 27, 2021.

33 Solar Energy Industries Association (SEIA). (2021). Siting, Permitting & Land Use for Utility-Scale Solar. https://www.seia.org/initiatives/siting-permitting-land-use-utility-scale-solar

34 SEIA. (2021). What's in a Megawatt? https://www.seia.org/initiatives/whats-megawatt









(Clockwise from top right) Ground-mounted SES with grazing (sheep) by Mary Reilly.; park outbuilding, rooftop SES in winter, demonstration array, all by Bradley Neumann.

In this guide, the scale threshold between small and large principal-use SES is 2MW (or approximately 20 acres). Currently, there are dozens of SES projects of 2MW and less being developed in the state.[35] These have largely been well-received by local communities, suggesting they fit within the character of the landscapes in which they are proposed. Small systems 2MW or under (or 20 acres) could be permitted by right after an administrative site plan review (see discussion below). Each community, though, should determine what the right demarcation of scale is between small and large principal-use SES given the community's context. In an urban environment, where parcels are smaller, the threshold to classify as a large principal-use SES may be smaller projects of fewer megawatts. In a community abundant with rural land or experience with expansive developments, a larger MW or acreage threshold for large projects may be more appropriate.

35 Most of these small projects are sized so that they can be considered "qualifying facilities" under PURPA, a federal law enacted in 1978, intended to diversify electricity generation. Specific capacity (MW) thresholds to receive the "standard offer tariff" vary from utility to utility. The current standard offer capacity threshold and more about PURPA can be found on the Michigan Public Service Commission's website: https://www.michigan.gov/mpsc/0,9535,7-395-93309_93439_93463_93723_93730-406273--,00.html

COMMON SOLAR COMPONENTS

All SES require equipment to operate properly, although this equipment may differ based on the scale and configuration of the system. Besides the solar array panels/modules themselves, four common types of equipment are included with an SES: an inverter, a battery system (if in use), racking, and wiring. There are also other 'balance of system' components that may or may not be present: combiner boxes, disconnect switches, a weather station, performance monitoring equipment, and transformers.

Solar Panels: Photovoltaic solar panels convert light (photons) to electricity (voltage). The vast majority of today's solar panels are made of silicon solar cells. An individual solar panel is typically assembled on racking to function with other panels as part of an array. Commercial solar panels are constructed with one or more anti-reflective coatings often made of magnesium fluoride (MgF_2). Anti-reflective coatings have been highly improved in the last 20-30 years to ensure that panels maximize how much light reaches the photovoltaic cells. Glare from modern solar panels is insignificant and local regulation, even adjacent to airports, is not always required.

Inverter: Inverters convert direct current (DC) electricity generated by photovoltaic modules into alternating current (AC) electricity that is compatible with batteries and the electrical grid.[36] Some inverters produce sound when in operation, which can often be managed with proper placement based on the sound pressure they produce. Communities may choose to adopt sound regulations to influence the placement and design of inverters within an SES.[37]

Battery: Some homeowners or solar developers include batteries in their solar installations, allowing the solar energy to be stored and used at later times when it is needed (such as at night). These on-site batteries make solar energy more accessible and reliable as an electricity source, and are becoming increasingly common for all scales of SES as per-unit costs of batteries decline. Batteries can vary in size depending on the level of storage needed and may also vary in their location on the site. For accessory systems, the batteries may be within the residence itself.

Racking: As described above, SES may be ground- or roof-mounted. The frames, support posts, foundations (if required), and hardware used to secure solar panels and other SES equipment is often collectively referred to as "racking."

Wiring: Solar panels are wired together to create an electrical circuit that allows current to flow through the component parts. Wiring extends beyond the panels to inverters, batteries, electronic devices, transformers, and/or distribution lines, depending on whether the SES generates electricity for use on-site or export to the electrical grid. Wiring between solar components may be underground.

Other components related to larger SES include transformers and substations for connecting to transmission lines that serve the electrical grid. Often solar developers connect to existing substations, but sometimes developers propose new or upgraded substations or transmission-line extensions as part of the SES. Transformers in substations increase voltage to higher levels for more efficient transmission over long distances. Transformers may produce low audible noise, so they may be subject to local government regulations applying to substations.

36 U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy. Solar Integration: Inverters and Grid Services Basics. https://www.energy.gov/eere/solar/solar-integration-inverters-and-grid-services-basics

37 Kaliski, K., I. Old, and E. Duncan. An overview of sound from commercial photovoltaic facilities. June 29-July 1. NOISE-CON 2020. https://rsginc.com/wp-content/uploads/2021/04/Kaliski-et-al-2020-An-overview-of-sound-from-commercial-photovolteic-facilities.pdf

LAND-USE CONSIDERATIONS



Fig 1. Rural-to-Urban Transect. *Credit: DPZ CoDesign; MSU Extension*

From left to right in **Figure 1**, above, the landscape shifts from a natural zone (T1), which can be wilderness, woodlands, wetlands, or other naturally occurring habitats, gradually transitioning in intensity-of-use to the urban core where we find our large urban centers. The remaining transect zones depicted in Figure 1 include rural farmland and open space areas (T2), suburban developments (T3) and general urban zones (T4, T5, T6), including traditional walkable neighborhoods and smaller historic downtowns. By taking a transect-based view of a community, policymakers can consider SES scales and configurations relative to the development pattern(s) in a community to determine the most appropriate regulation of SES by landscape type (vs. specific individual land use).

Solar energy systems (SES) can be of different scales and configurations within a community. As used in this document, the four basic scales of SES are roof-mounted, accessory ground-mounted, small principal-use, and large principal-use. Ultimately, the compatibility of an SES at a given site depends on its scale relative to the pattern and density of the surrounding physical and built environment. Zoning, as a local regulatory mechanism, can mitigate the impacts of SES if standards are appropriately tailored to the various development patterns of a community.

To better understand how SES can be integrated into existing development patterns in a community, it is helpful to understand and apply the 'transect' to illuminate the multiple intersections of solar configurations and scales possible across a range of natural to urban landscapes. The Rural-to-Urban Transect, depicted in Figure 1, is an urban planning model that defines a series of zones that transition from natural and sparse rural farmhouses to the dense urban core of a large regional city.[38] In the figure, the dark gray boxes are built structures served by light gray roadways and surrounded by green natural open space or trees. There is an elevation or profile view across the top 'horizon' line of each transect and a plan or aerial view of the same landscape just below.

38 For more background on the Rural-to-Urban Transect, visit the Center for Applied Transect Studies website at: https://transect.org/.

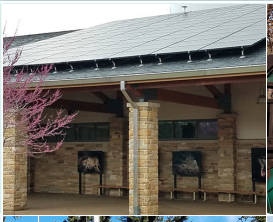
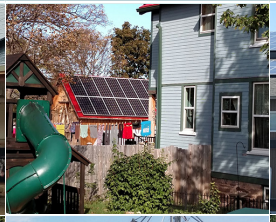
Solar Energy System Type	Natural	Rural	Urban	General Urban
Accessory Roof Mounted				
Accessory Ground Mounted				
Principal Use (Small)				
Principal Use (Large)				

Fig 2. Examples of Solar Energy System Types across the Transect

Figure 2 provides a visual depiction of the type and scale of SES that exhibit predominant factors for compatibility in a given setting. For example, while it's not generally appropriate to develop a large or small principal use SES in a natural wilderness area (T1), it may be more appropriate to allow roof-mounted SES in that transect to serve park structures and accessory equipment within this landscape. Similarly, compatible siting of SES can occur in the suburban transect zone (T3) with a full range of SES types and scales, such as a roof-mounted system on a hotel, an accessory ground-mounted SES carport, or a large or small principal use system at an office park. Regardless of whether a community uses transect-based zoning terminology in the master plan or zoning ordinance, the transect framework is helpful in developing community goals related to the logical placement and installation of SES across varying landscapes of a community.

Table 2 – SES Scale and Type as applied to Example Zoning Districts

Example Zoning District:	Resource Production / Agricultural	Low-Density Residential	Commercial / Office	Industrial	Medium-Density Residential	Mixed Use
Roof-Mounted	P	P	P	P	P	P
Accessory Ground-Mounted	P	P	P	P	P	P
Principal Use (Small)	SPR	SLU	SPR	SPR	SLU	SPR
Principal Use (Large)	SLU	X	SLU	SLU	X	X

P = Permitted Use (zoning standards apply); SPR = Site Plan Review; SLU = Special Land Use; X = Not Permitted

Understanding that various types of SES can exist (or not exist) compatibly within natural, rural, suburban, and urban land-use transects, communities with conventional, use-based zoning ordinances will need to determine the SES type and scale that best fits in each zoning district. This determination must include the approval mechanisms by which the types of SES will be allowed. See Table 2 for one approach to applying SES types and scales across a range of six common zoning districts and the zoning approval processes that might be used. Table 2 suggests permitting processes for the four main SES types. For instance, roof-mounted and accessory ground-mounted systems are likely appropriate across the transect and can be allowed as a use by right in all zoning districts. Small principal-use SES are similarly permitted across the transect, but the approval process varies depending on the context. In zoning districts where there is concern about compatibility with existing land uses, a special land-use (SLU) permit issued after planning commission review provides the most protection for existing and adjacent land uses. However, small principal-use SES might also fit within certain zoning districts without much concern and therefore can also be permitted through site plan review (SPR) performed by the zoning administrator. Lastly, large principal-use SES are permitted by SLU in many, but not all, zoning districts due to compatibility concerns with existing land uses and development patterns. For instance, it could be counter to the master plan and intent of the zoning district for a large principal-use SES to be sited in a walkable, mixed-use district. Each community, though, should tailor the SES type and scale to its own development patterns, transect zones, or zoning districts and assign the appropriate zoning approval process to each.

Overlay zoning is an optional approach to proactively establish the potential location of small or large principal-use SES.[39] Overlay zoning is often used to create a standard set of regulations to address unique needs of one type of land use by placing a second regulatory zoning district on top of the existing zoning map. This approach might be useful if the majority of the land in the community is under the same zoning designation (e.g., agricultural or ag-residential), and the community finds SES are appropriate in some, but not all, areas of that district. For example, the community may determine an SES overall to be most appropriate near existing electrical transmission lines or substations, or in sections of an ag-residential district without substantial residential development. In addition to defining the regulations for the overlay district within the zoning ordinance text, communities who opt to use overlay zoning to regulate SES should also proactively apply the overlay district to their zoning map. The boundaries of the overlay should be supported by the master plan with analysis of the solar resource, location of

39 American Planning Association. Property Topics and Concepts. https://www.planning.org/divisions/planningandlaw/propertytopics.htm

existing energy infrastructure, slopes, unique natural features, capabilities of the land/soil, current development patterns, and more.

COMMENTARY: Ethics and Conflict of Interest: Because large principal-use SES may cover hundreds of acres of land, it is not unusual for local elected officials or planning commission members' properties to be included in a project. The legislative body or planning commission may have existing rules or bylaws on what constitutes a conflict of interest for its members and how a conflict of interest is handled. Planning commissions are required to have bylaws with rules on handling conflict of interest.[40] If no such rules or bylaws are in place, they should be established and would apply to all matters before the board or commission. Involvement of the community's attorney that is experienced in municipal (planning and zoning) law is advised when a conflict of interest issue presents itself for one or more board members or planning commissioners. [End of commentary]

FARMLAND CONSIDERATIONS

When a large principal-use SES is proposed on agricultural land, there are sometimes concerns about whether the operation is a wise use of farmland and whether the land will be able to be farmed during or at the end of the solar project's life. While this question is rarely asked of other land uses in farming communities (for example, residential subdivisions are often allowed in agricultural districts and that land would not be readily farmed again), given the scale of solar projects on the horizon and that prime farmland and other important farmlands are a limited commodity,[41] it is a reasonable concern.

There is nothing inherent in solar development that would make the land unfarmable: the panels and support posts can all be removed. Driving paths between arrays or concrete pads on which the inverters sit will result in soil compaction and should be mitigated upon decommissioning, but these tend to be relatively small percentages of land area for an SES. A bigger concern for returning a solar site to crop production is site design standards, such as the choice of stormwater management practices, the extent and type of landscaping, and the use of berms as a screening mechanism. Movement of topsoil or planting of trees may jeopardize the ability to farm the land in the future. The guidelines outlined in this sample ordinance and also presented in PA 116—to maintain the field tile and plant pollinator habitat—help ensure that the land can be farmed again the future.

Some local governments have proposed going even further, prohibiting solar energy development on particular classes of farmland. The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) uses eight categories to classify the suitability of soils to grow most kinds of field crops. In general, Class I through Class IV are suitable for cropland use while Class V through Class VIII are suitable for permanent vegetation (i.e., no tillage).[42] However, if land is predominantly Class III or higher, it might be considered marginal farmland, and therefore could be considered less valuable for long-term agricultural use—raising fewer concerns about the appropriateness of solar energy development. In communities where prohibitions based on soil classification extend to other land uses (e.g., residential developments, golf courses, airstrips), this may be reasonable based on a master plan that includes farmland preservation goals and recommends farmland protection zoning techniques and other farmland preservation tools, such as Michigan's farmland purchase of development rights program. However, if soil classification-based prohibitions only apply to large principal-use SES, this approach may be vulnerable to legal challenges.

40 MCL125.3815. http://legislature.mi.gov/doc.aspx?mcl-125-3815. Also see MSU Extension Sample Bylaws for a Planning Commission: https://www.canr.msu.edu/resources/sample_1e_bylaws_for_a_planning_commission

41 Other farmland classifications to consider include: farmland of statewide importance, farmland of local importance, unique farmland, and prime farmland if drained. https://websoilsurvey.sc.egov.usda.gov

42 USDA NRCS. Land Capability Class, by State. 1997. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/?cid=nrcs143_014040

AGRICULTURE DUAL USE

"Dual use" is the integration of solar panels in an agricultural system in a way that enhances a productive, multifunctional landscape.[43] Dual use can take many forms in agricultural areas, and while there are numerous examples of successful co-located projects, it isn't the default practice for every solar development, and may not always be possible or desired by property owners. Perhaps the most overt combination of solar and agriculture working together is through an "agrivoltaic" system that combines raising crops for food, fiber, or fuel, and generating electricity within the project area to maximize land use. Careful planning and evaluation is needed when designing the configuration of solar arrays for specialty crop production.

Grazing animals under and around solar arrays is another example of dual use. Grazing sheep is a practice that keeps land in active agricultural production and effectively manages vegetation.[44] A 2018 report from the David R. Atkinson Center for a Sustainable Future at Cornell University concluded that utilizing sheep for site vegetation management resulted in, "2.5 times fewer labor hours than mechanical and pesticide management on site."[45] Tampa Electric reported a 75% cost savings over traditional mowing at its solar sites.[46] However, grazing sheep requires careful site design (to ensure that livestock is compatible with project infrastructure), as well as vegetation planning (so that the right forages are planted and the proper rotational grazing system is implemented).[47,48,49] Done successfully, solar grazing can support the livelihoods of veterinarians, feed suppliers, and other parts of the rural agriculture economy.

Agrivoltaics and grazing are not the only ways that SES can support agricultural landscapes and economies.[50] Another dual use is planting groundcover that is compatible with solar panels and provides a variety of other ecosystem services of value. Examples include planting vegetation that provides food sources for pollinators or selecting plant species that provide ecological services, such as carbon sequestration, increased soil health, habitat preservation, or water quality improvements.[51] Though some existing solar projects may already provide stacked ecological services, research is just now underway to quantify some of these co-benefits. In the interim, SES systems that integrate plant species and practices compatible with conservation-cover standards should be treated as dual use, as they provide the ecological benefits of these farm management practices along with clean energy.

43 Low-Impact Solar Development Basics. Innovative Site Preparation and Impact Reductions on the Environment. https://openei.org/wiki/InSPIRE/Basics

44 Hartman, David. (2021). Sheep Grazing to Maintain Solar Energy Sites in Pennsylvania. Penn State Extension. https://extension.psu.edu/sheep-grazing-to-maintain-solar-energy-sites-in-pennsylvania

45 Kochendoerfer, N., Hain, L., and Thonney, M.L. (2018). The agricultural, economic and environmental potential of co-locating utility scale solar with grazing sheep. David R. Atkinson Center for a Sustainable Future, Cornell University. https://cpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/f/6685/files/2015/09/Atkinson-Center-report-2018_Final-22l3c5n.pdf

46 Utility Dive Does a Deep Dive on Solar Grazing. (2020). ASGA. https://solargrazing.org/utility-dive-does-a-deep-dive-on-solar-grazing/

47 Agricultural Integration Plan: Managed Sheep Grazing & Beekeeping. (2020). https://www.edf-re.com/wp-content/uploads/004C_Appendix-04-B.-Agricultural-Integration-Plan-and-Grazing-Plan.pdf

48 Cassida, K. and Kaatz, P. (2019). Recommended Hay and Pasture Forages for Michigan. Extension Bulletin E-3309. Michigan State University. https://forage.msu.edu/wp-content/uploads/2019/11/E3309-RecommendedHayPastureForagesForMichigan-2019.pdf

49 Undersander, D., Albert, B., Cosgrove, D., Johnson, D., and Peterson, P. (2002). Pastures for Profit: A Guide to Rotational Grazing. Extension bulletin A3529. University of Wisconsin-Extension and Minnesota Extension Service. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1097378.pdf

50 A Guide to Solar Energy in Vermont's Working Landscape. (2020). The University of Vermont Extension. https://www.uvm.edu/sites/default/files/The-Center-for-Sustainable-Agriculture/resources/solar_energy_vt_working_landscape.pdf

51 Steinberger, K. (2021). Native Plant Installation and Maintenance for Solar Sites. The Nature Conservancy. https://www.nature.org/content/dam/tnc/nature/en/documents/Native-Plant-Management-at-Solar-Sites.pdf



Ground-mounted SES with grazing (sheep). Photo by M. Charles Gould.

COMMENTARY: As of January 1, 2021, the sheep and lamb inventory in Michigan was 87,000 head.[52] Of that 87,000 head, 47,000 are ewes.[53] By 2024, there will be a total of 1,188 megawatt (MW) of solar online.[54] Assuming a principal-use SES requires eight acres per MW of generating capacity, 9,504 acres could potentially be grazed.[55] At a stocking rate of three mature ewes per acre, 28,512 ewes would be needed to manage the vegetation of all solar projects currently online or going online through 2024.[56] While there are more than enough ewes to service these solar projects, the sheep inventory in the state is at grazing equilibrium. Solar projects that are suitable for grazing could spur an increase in the sheep and lamb inventory in Michigan. Because ewes can have multiple lambs, the state's sheep industry has the capacity to expand to meet this demand. Furthermore, over half of the lamb and mutton supply is currently imported[57], and with the largest livestock harvesting facility east of the Mississippi in the Detroit area, there are opportunities to replace imported meat with the increased lamb and sheep inventory. [End of commentary]

52 U.S. Department of Agriculture. Sheep and Goat Inventory News Release [NR-21-07]. (February 2021). https://www.nass.usda.gov/Statistics_by_State/Michigan/Publications/Current_News_Release/2021/nr2107mi.pdf

53 USDA NASS Great Lakes Region. 2021. News Release: Sheep and Goat Inventory NR-21-07. Found at https://www.nass.usda.gov/Statistics_by_State/Michigan/Publications/Current_News_Release/2021/nr2107mi.pdf. Retrieved July 28, 2021.

54 Correspondence on March 5, 2021 with Julie Baldwin, Manager, Renewable Energy Section of the Michigan Public Service Commission.

55 SEIA. Siting, Permitting & Land Use for Utility-Scale Solar. https://www.seia.org/initiatives/siting-permitting-land-use-utility-scale-solar.

56 U.S. Department of Agriculture. Grazier's Math, With Apologies. https://app.box.com/s/x9zv3yvili2w0l7xbh8lcl2cgn71meh6

57 USDA Economic Research Service. https://www.ers.usda.gov/topics/animal-products/sheep-lamb-mutton/sector-at-a-glance/. Retrieved July 28, 2021.

SOLAR ON BROWNFIELDS AND GRAYFIELDS

A recommended practice is to use regulation to encourage the siting of SES on land that is difficult to develop or marginal for other uses. Examples of marginal land include brownfield sites, capped landfills, grayfield sites (previously developed property), and required safety buffer areas around industrial sites. On brownfields or capped landfills, solar development can allow productive use of land that might be compromised or have other development challenges. Solar arrays can be designed to avoid penetrating the ground and don't require as much remediation as other kinds of development. In a similar vein, development of solar on grayfield sites can provide an economic development opportunity for land that is otherwise disadvantaged from a redevelopment perspective.

While the use of marginal land for solar energy development is recommended, it is not a common practice, particularly among large SES, for a range of reasons.[58] One reason is that most of these marginal lands are smaller than the preferred 100+ acres for a more typical SES, and these smaller sites typically do not allow for achieving economies of scale. Even when solar developers are building a smaller-scale project, developing on a brownfield site may require using ballasted support structures (rather than driven posts), which can be more expensive, or may require a less-than-ideal panel layout. Communities wanting to attract solar development to marginal lands may need to reduce other costs or barriers to development, such as expediting review and permitting, providing land at low or no cost, decreasing required setbacks, or providing other incentives, including offering property tax incentives where that is allowed. While Michigan has seen modest development of solar on brownfields to date, other states (for example, Massachusetts and New York) are purposely targeting such development as a land-use and local economic development strategy.[59]

CO-LOCATION WITH OTHER LAND USES

When evaluating how SES might fit into a community, one important consideration is how compatible an SES would be with the surrounding landscape and existing land use. Solar co-location is a signature concept for local regulation. The notion of co-location allows for solar energy production to be in parallel with another use.

For example, parking lots may be outfitted with solar carports as accessory structures (see extended commentary for some case studies). Other examples of co-location of SES include siting solar arrays at public school sites or other institutional grounds and in highway rights-of-way and the open space at airports. With the road network, an SES within a highway or freeway right-of-way might be deployed to power a specific piece of equipment, such as a sign, light, or meteorological station. Given their ample landholdings, airports may be ideally poised for solar installation, and have successfully installed SES as both ground-mounted and roof-mounted systems. The three primary issues regulated by the Federal Aviation Administration (FAA) are reflectivity and glare, radar interference, and the physical penetration of panels into airspace. Guidance provided by the FAA helps airport operators understand the considerations they should make in deploying solar, including when glare studies are required.[60]



Coldwater Solar Field Park.
Image courtesy of City of Coldwater, MI.

58 Schaap, B., Dodinval, C., Husak, K., & Sertic, G. (2019). Reducing Barrier to Solar Development on Brownfields. Retrieved from: http://graham.umich.edu/product/reducing-barriers-solar-development-brownfields.

59 See: Solar Massachusetts Smart Target Program. https://www.mass.gov/info-details/solar-massachusetts-renewable-target-smart-program and NYSERDA Solar Guidebook for Local Governments.

60 Federal Aviation Administration. (2018). Technical Guidance for Evaluating Selected Solar Technologies on Airports. https://www.faa.gov/airports/environmental/policy_guidance/media/FAA-Airport-Solar-Guide-2018.pdf

COMMENTARY: The use of parking lots for co-location of solar energy systems is a growing trend around the country. These dual-use situations provide unique opportunities and challenges to local governments interested in encouraging their installation.

In many situations, regulations are silent on co-location opportunities. Communities sometimes struggle to identify the land-use regulations that should apply. The following examples, which come from three different underlying land uses, show how co-location opportunities can be encouraged on surface parking infrastructure for existing uses. These summaries are based on personal interviews related to MSU research.

Case Study—Michigan State University (MSU), East Lansing, MI | Michigan State University (49,000 students) has the largest solar carport development project in the state (2020). Over 5,000 parking spaces across five large commuter parking lots (34 acres total) are fitted with ground-mounted solar carports. These lots provide students, faculty, and visitors with covered space to leave their cars as they walk, bike, or use public transit to traverse the campus.

The project can generate up to 10MW—nearly 20% of total campus electricity generation. It is a key part of the university's Energy Transition Plan, a process by which MSU reduces its dependency on fossil fuels and expands its renewable energy portfolio. According to MSU director of Planning, Design, and Construction John LeFevre, preserving green space was a large selling point for the project.

The solar carports advance land-use and energy goals by increasing the utility of existing developed sites with enough structural repetition to allow for an efficient solar-panel layout. This approach to SES development applies to universities, as well as to other larger commuter parking lots and developed grayfield sites present in many communities.

Case Study—USA Hauling & Recycling, East Windsor, CT | East Windsor, a town in northern Connecticut with 11,375 residents, is home to USA Hauling & Recycling, a local waste management firm. In 2018, the company requested and received permission to enact a site-plan change for their industrial property, whereby they installed two solar carports of 25,000 and 45,000 square feet. They now operate their large compressors and recycling processes through 743kW of solar energy and protect their truck fleet with carport canopies.

The company received a prompt review from the town after amending their site plan, gaining final approval in just months. East Windsor town planner and consultant Mike D'Amato, AICP, CZEO, attributes the town's efficient approval process to how they regulate carports—as a class of accessory structures. Within this framework, solar carports are permitted in all zoning districts that allow accessory structures. A key provision of carports is that they are exempt from setbacks and lot coverage. The net result is an abundance of community locations where solar carports are now permitted.

Case Study—Fairbanks Museum & Planetarium, St. Johnsbury, VT | St. Johnsbury is a town of 5,685 residents in northeastern Vermont, home to the Fairbanks Museum & Planetarium. The museum undertook an energy efficiency campaign in 2015, resulting in the installation of a 27.36kW solar car-port over an auxiliary parking lot, connected to underground batteries, in December of 2020. The project marks the end of their renewable energy transformation. According to museum director Adam Kane, energy costs have decreased from around $15,000 per year in 2010 to $0 in 2020.

Both Kane and St. Johnsbury zoning administrator Paul Berlejung make special mention of the town's flexible solar regulations. There are no "restricted" or specifically permitted zoning districts in the town's section on solar collectors. Instead, solar collectors are defined as accessory uses, with a few clearly defined provisions pertaining to setbacks, build heights, and burial of utility lines. Kane and Berlejung both noted that interactions between solar suppliers and the town are remarkably smooth, concluding that municipalities looking to incentivize solar carport construction should consider reducing the barriers to entry at the local level. [End of commentary]

SOLAR AND HISTORIC OR CULTURALLY SIGNIFICANT SITES

Solar panels can have a variety of impacts on character-defining features of historic or culturally significant structures or sites. Solar collectors can obscure character-defining features of a structure, or be incompatible with a structure's roofline, exterior color, and the texture or shape of building materials. Despite these potential impacts, many Michigan communities allow for and regulate SES in historic districts and on other significant sites. It is important to allow SES on historic sites and structures in a context-sensitive way, granting the use while preserving the integrity of site aspects deemed historic or culturally significant.

Newer photovoltaic systems, including building-integrated SES, may be appropriate on the street-facing side, even in historic districts. New technology such as solar shingles can be designed and mounted to match the shape, materials, and proportions of a structure. For ground-mounted SES at a historic or culturally significant site, placement of the SES should be context-sensitive with respect to significant areas of the property.

Communities with historic district ordinances should update their ordinance to address roof and ground-mounted SES. The cities of Grand Rapids, Ypsilanti, and Manchester are a few examples that provide for regulations that address these issues. For state or federally designated historic structures, applicants should review the U.S. Secretary of the Interior's Standards for Rehabilitation.

DECOMMISSIONING AND REPOWERING

A question that commonly arises when communities are considering solar as a primary land use is what happens at the end of the solar project's life. Most solar panels are designed to operate for 25-40 years, so it is not uncommon for solar developers to have a lease or easement of roughly this length with a landowner. However, many landowner agreements include the option to extend, sometimes because there is still life left in the original panels and sometimes because the developer hopes to repower the project.

It's important to note the distinction between the two primary options at the end of a solar project's life: decommissioning and repowering. Decommissioning is the process of removing the equipment and other infrastructure associated with the project. While decommissioning is commonly a provision in a landowner's agreement with a solar developer, many communities also require review of a decommissioning plan that includes a financial commitment as part of the approval process. The decommissioning plan



Rooftop SES, Petoskey, Michigan. Photo by Richard Neumann.

details how the project equipment will be removed and the land restored when the contract for the SES expires, and the financial commitment guarantees there will be funding to implement the plan.

Before reaching the end of its useful life, sometimes a solar project is repowered. Repowering an SES involves refurbishing or replacing system components to allow the SES to continue operation. The expectation associated with repowering is that much of the original infrastructure (e.g., racking, access roads, wiring, etc.) may still have useful life and may be reused, even if other components have reached the end of their useful life.

COMMENTARY: Fundamentally, zoning approvals and permits are permanent and run with the land. A solar power project could be a temporary land use decommissioned at the end of the solar project's life, or it could be repowered through maintenance and installation of new technology. Generally, maintenance of real property is allowed within the terms of a zoning permit. What constitutes system maintenance versus work that triggers a new permit might vary from community to community. Advances in technology will certainly create circumstances in which the SES owner will be compelled to replace equipment in order to continue to efficiently produce electricity relative to project costs. Therefore, the zoning ordinance should specify if repowering triggers a review. A municipal attorney with experience in planning and zoning can help define a process to repower an SES to extend the life of the project. [End of commentary]

MICHIGAN EXAMPLE: Gaines Charter Township requires the following of a decommissioning plan:

"**Decommissioning:** A decommissioning plan signed by the responsible party and the landowner (if different) addressing the following shall be submitted prior to approval:

1. Defined conditions upon which decommissioning will be initiated (i.e. end of land lease, no power production for 12 months, abandonment, etc.)
2. Removal of all non-utility owned equipment, conduit, structures, fencing, roads, solar panels, and foundations.
3. Restoration of property to condition prior to development of the system.
4. The timeframe for completion of decommissioning activities.
5. Description of any agreement (e.g. lease) with landowner regarding decommissioning, if applicable.
6. The entity or individual responsible for decommissioning.
7. Plans for updating the decommissioning plan.
8. A performance guarantee shall be posted in the form of a bond, letter of credit, cash, or other form acceptable to the township to ensure removal upon abandonment. As a part of the decommissioning plan, the responsible party shall provide at least two (2) cost estimates from qualified contractors for full removal of the equipment, foundations, and structures associated with the facility. These amounts will assist the township when setting the performance guarantee valid throughout the lifetime of the facility. Bonds and letters of credit shall be extended on a bi-annual basis from the date of special use permit approval."

– *Gaines Charter Township Zoning Ordinance (Kent Co.), Section 4.18 [End of example]*

SAMPLE ZONING FOR SOLAR ENERGY SYSTEMS

The proposed sample zoning language is meant to be a starting point for dialogue between officials, staff, and residents before or during a zoning amendment process related to SES. Communities can (and should) work with their municipal attorney and a knowledgeable planner to modify the proposed sample zoning language in this document to further refine and develop regulations that fit identified community goals and are tied to master plan objectives, upon which zoning must be based.[61]

DEFINITIONS

Add to the Definitions article of the ordinance the following terms and definitions, or modify existing related definitions for consistency. Not all ordinances will require all of the following terms. Municipalities should tailor definitions to terms used in their ordinance.

Accessory Ground-Mounted Solar Energy System: A ground-mounted solar energy system with the purpose primarily of generating electricity for the principal use on the site.

Building-Integrated Solar Energy System: A solar energy system that is an integral part of a primary or accessory building or structure (rather than a separate mechanical device), replacing or substituting for an architectural or structural component of the building or structure. Building-integrated systems include, but are not limited to, photovoltaic or hot water solar energy systems that are contained within roofing materials, windows, skylights, and awnings.

Dual Use: A solar energy system that employs one or more of the following land management and conservation practices throughout the project site:

- Pollinator Habitat: Solar sites designed to meet a score of 76 or more on the Michigan Pollinator Habitat Planning Scorecard for Solar Sites.[62]
- Conservation Cover: Solar sites designed in consultation with conservation organizations that focus on restoring native plants, grasses, and prairie with the aim of protecting specific species (e.g., bird habitat) or providing specific ecosystem services (e.g., carbon sequestration, soil health).
- Forage: Solar sites that incorporate rotational livestock grazing and forage production as part of an overall vegetative maintenance plan.
- Agrivoltaics: Solar sites that combine raising crops for food, fiber, or fuel, and generating electricity within the project area to maximize land use.

Ground-Mounted Solar Energy System: A solar energy system mounted on support posts, like a rack or pole, that are attached to or rest on the ground.

Invasive Plant: Non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.[63]

Maximum Tilt: The maximum angle of a solar array (i.e., most vertical position) for capturing solar radiation as compared to the horizon line.

61 MCL 125.3203(1) of the Michigan Zoning Enabling Act, PA 110 of 2006, as amended.

62 Michigan State University Department of Entomology. Michigan Pollinator Habitat Planning Scorecard for Solar Sites. https://www.canr.msu.edu/home_gardening/uploads/files/MSU_Solar_Pollinators_Scorecard_2018_October.pdf

63 USDA U.S. Forest Service. What is an Invasive Plant Species. https://www.fs.fed.us/wildflowers/invasives/index.shtml

Minimum Tilt: The minimal angle of a solar array (i.e., most horizontal position) for capturing solar radiation as compared to the horizon line.

Non-Participating Lot(s): One or more lots for which there is not a signed lease or easement for development of a principal-use SES associated with the applicant project.

Participating Lot(s): One or more lots under a signed lease or easement for development of a principal-use SES associated with the applicant project.

Photovoltaic (PV) System: A semiconductor material that generates electricity from sunlight.

Principal-Use Solar Energy System: A commercial, ground-mounted solar energy system that converts sunlight into electricity for the primary purpose of off-site use through the electrical grid or export to the wholesale market.

Principal-Use (Large) Solar Energy System: A Principal-Use SES generating more than ___ [e.g., 2] MW DC for the primary purpose of off-site use through the electrical grid or export to the wholesale market [see discussion in "Land-Use Considerations" on why this number is suggested, and why it might warrant tailoring to your community's land-use typologies].

Principal-Use (Small) Solar Energy System: A Principal-Use SES generating up to and including ___ [e.g., 2] MW DC for the primary purpose of off-site use through the electrical grid or export to the wholesale market.

Repowering: Reconfiguring, renovating, or replacing an SES to maintain or increase the power rating of the SES within the existing project footprint.

Roof-Mounted Solar Energy System: A solar energy system mounted on racking that is attached to or ballasted on the roof of a building or structure.

Solar Array: A photovoltaic panel, solar thermal collector, or collection of panels or collectors in a solar energy system that collects solar radiation.

Solar Carport: A solar energy system of any size that is installed on a structure that is accessory to a parking area, and which may include electric vehicle supply equipment or energy storage facilities. Solar panels affixed on the roof of an existing carport structure are considered a Roof-Mounted SES.

Solar Energy System (SES): A photovoltaic system or solar thermal system for generating and/or storing electricity or heat, including all above and below ground equipment or components required for the system to operate properly and to be secured to a roof surface or the ground. This includes any necessary operations and maintenance building(s), but does not include any temporary construction offices, substation(s) or other transmission facilities between the SES and the point of interconnection to the electric grid.

Solar Thermal System: A system of equipment that converts sunlight into heat.

Wildlife-Friendly Fencing: A fencing system with openings that allow wildlife to traverse over or through a fenced area.

GENERAL PROVISIONS

Add to the General Provisions article of the ordinance, as a separate section, the following provisions for Roof-Mounted SES, Accessory Ground-Mounted SES, and Building-Integrated SES as permitted by right in all districts and do not require a special use permit.

Roof-Mounted SES, Accessory Ground-Mounted SES, and Building-Integrated SES are permitted in all zoning districts where structures of any sort are allowed, and shall meet the following requirements:

A. ROOF-MOUNTED SES

1. **Height:** Roof-Mounted SES shall not exceed __ [e.g. 5-10] feet above the finished roof and are exempt from any rooftop equipment or mechanical system screening.
2. **Nonconformities:** A Roof-Mounted SES or Building-Integrated SES installed on a nonconforming building, structure, or use shall not be considered an expansion of the nonconformity.
3. **Application:** All SES applications must include ___ plan [e.g., plot or site, whichever is required for a zoning compliance review]. Applications for Roof-Mounted SES must include horizontal and vertical elevation drawings that show the location and height of the SES on the building and dimensions of the SES.

MICHIGAN EXAMPLES:

"**Solar Energy System:** An aggregation of parts including any base, mounts, tower, solar collectors, and accessory equipment such as utility interconnections and solar storage batteries, etc., in such configuration as necessary to convert solar radiation into thermal, chemical or electrical energy."

– *Royal Oak Zoning Ordinance (Oakland Co.), Section 770-8*

"**Solar Energy System (SES):** A system consisting of a device or combination of devices, structures or parts thereof, that collect, transfer or transform solar radiant energy into thermal, chemical or electrical energy. An SES may be mounted on a roof (roof-mounted SES) or be supported by posts or other support structures extending into the ground (ground-mounted SES)."

– *Greater Thompsonville Area Zoning Ordinance (Benzie Co.), Section 18.23*

"**Solar Energy System:** A passive design using natural and architectural components to collect and store solar energy without using any external mechanical power or an active mechanical assembly that may include a solar collector, storage facility, and any other components needed to transform solar energy for thermal, chemical, or electrical energy. Examples include a solar greenhouse, solar panels, solar hot water heater, photovoltaic panels, passive solar panels, and a large, clear south-facing expanse of windows."

– *Bessemer Township Zoning Ordinance (Gogebic Co.), Section 15.22 [End of examples]*

COMMENTARY: Because of concerns over wind load, most roof-mounted systems are not the same dimensions as ground-mounted SES. Given current SES design considerations, 10 feet is sufficient to accommodate most roof-mounted systems.

If a zoning ordinance has height exceptions for other mechanical equipment, it might alternatively just include roof-mounted SES in this exception. In addition to listing this in the section of your ordinance with those exceptions, you could also use the following language in this section of the solar provisions:

A Roof-Mounted SES, other than building-integrated systems, shall be given an equivalent exception to height standards as building- or roof-mounted mechanical devices, chimneys, antennae, or similar equipment, as specified in Section __ [height exceptions] of the ___ [municipality name] Zoning Ordinance. [End of commentary]



Ground-mounted SES feedlot. Photo by M.Charles Gould.

B. ACCESSORY GROUND-MOUNTED SES

1. **Height:** Ground-Mounted SES shall not exceed __ [e.g. 20] feet measured from the ground to the top of the system when oriented at maximum tilt.

COMMENTARY: Height of a Ground-Mounted SES can vary from four to 15 feet, depending on how many rows of panels are installed and the maximum tilt height, if applicable. If the SES is co-located with an active agricultural operation, such as livestock grazing and crop production, it may need as much as eight feet of clearance, which can increase the overall height to up to roughly 20 feet. Similarly, a solar carport would need additional clearance to accommodate vehicle access. The carports at Michigan State University are 14'6" to accommodate snow removal and paving trucks. A relatively straightforward way to regulate the height of SES and account for this range of applications is to apply the same height standard as other accessory buildings or structures within the zoning district. [End of commentary]

2. **Setbacks:** A Ground-Mounted SES must be a minimum of __ [e.g., 5] feet from the property line or __ [e.g., ½] the required setback that would apply to accessory structures in the side or rear yard in the respective zoning district, whichever is greater. Setback distance is measured from the property line to the closest point of the SES at minimum tilt.
3. **Lot Coverage:** The area of the solar array shall not exceed __ [e.g., 50] % of the square footage of the primary building of the property unless it is sited over required parking (i.e. solar carport), in which case there is no maximum lot coverage for the Ground-Mounted SES. A Ground-Mounted SES shall not count towards the maximum number or square footage of accessory structures allowed on site or maximum impervious surface area limits if the ground under the array is pervious.

4. **Visibility** (Residential)**:** A Ground-Mounted SES in residential districts [list districts here] shall be located in the side or rear yard to minimize visual impacts from the public right-of-way(s).
    a. Ground-Mounted SES may be placed in the front yard with administrative approval, where the applicant can demonstrate that placement of the SES in the rear or side yard will:
        i. Decrease the efficiency of the SES due to topography, accessory structures, or vegetative shading from the subject lot or adjoining lots;
        ii. Interfere with septic system, accessory structures, or accessory uses; or
        iii. Require the SES to be placed on the waterfront side of the building housing the primary use [where applicable].

MICHIGAN EXAMPLES: Some communities apply screening standards to Accessory Ground-Mounted SES. Here is an example:

Ground Mounted SES shall be reasonably screened from the view of the surrounding streets and roads to the maximum extent practicable by garden walls, fences, hedges, landscaping, earth berms, or other means, except to the extent that such screening is either impracticable or would result in ineffective solar access on the lot in question. Ground Mounted SES that are visible from a road or adjacent properties shall, to the maximum extent feasible, and without compromising the ability to effectively use solar collectors on the lot in question, use materials, textures, screening, and landscaping that will screen the Ground Mounted SES from view, and blend with the natural setting, existing environment, and neighborhood character. All Ground Mounted SES that rely on landscaping or a vegetative buffer for screening shall maintain a minimum opacity of at least eighty percent (80%), and a mature height of not less than the greater of (x) six (6) feet or (y) sixty percent (60%) of the height of the Ground Mounted Solar Energy System when oriented to maximum tilt.

– *Webster Township Zoning Ordinance (Washtenaw Co.), Section 12.110 [End of example]*

5. **Exemptions:** A SES used to power a single device or specific piece of equipment such as a lawn ornament, lights, weather station, thermometer, clock, well pump or other similar singular device is exempt from Section ____ [Ground-Mounted SES provisions].
6. **Nonconformities:** A Ground-Mounted SES installed on a nonconforming lot or use shall not be considered an expansion of the nonconformity.
7. **Application:** All SES applications must include a ___ plan [e.g., plot or site, whichever is required for a zoning compliance review]. Applications for Ground-Mounted SES must include drawings that show the location of the system on the property, height, tilt features (if applicable), the primary structure, accessory structures, and setbacks to property lines. Accessory use applications that meet the ordinance requirements shall be granted administrative approval.



Off-grid device power. Photo by Bradley Neumann



Dual-use ground-mounted SES and blueberry farm. Photo by Mary Reilly.

MICHIGAN EXAMPLES: Many Michigan communities with both small-scale and large-scale solar regulations have zoned on-site solar energy systems as accessory uses. The City of Bay City (Bay Co.), Lyon Charter Township (Oakland Co.), and Almont Township (Lapeer Co.) all permit roof-mounted systems as an accessory use in all districts. Van Buren Charter Township (Wayne Co.), Albert Township (Montmorency Co.), and Chester Township (Ottawa Co.) all expand this provision (e.g. permitting roof-mounted systems as an accessory use in all districts) by permitting both on-site roof-mounted and ground-mounted systems in all districts as an accessory use. [End of example]

C. BUILDING-INTEGRATED SES

1. Building-Integrated SES are subject only to zoning regulations applicable to the structure or building and not subject to accessory ground or roof-mounted SES permits.

In addition to the General Provisions (above), also add the following standards for Small Principal-Use SES to the General Provisions article of the zoning ordinance. Also add 'Small Principal-Use SES' to the list of permitted uses in all zoning districts (or where desired). A community will need to decide whether a Small Principal-Use SES application is reviewed solely by the zoning administrator, reviewed and approved by the planning commission, or a hybrid, wherein the zoning administrator has the option to review/approve or advance the application to the planning commission for review/approval.

D. SMALL PRINCIPAL-USE SES: A Small Principal-Use SES is a permitted use in ____ [e.g., all, non-residential] zoning districts subject to site plan review and shall meet all of the following requirements:

1. **Height:** Total height shall not exceed __ [e.g. 20] feet measured from the ground to the top of the system when oriented at maximum tilt.
2. **Setbacks:** Setback distance shall be measured from the property line or road right-of-way to the closest point of the solar array at minimum tilt or any SES components and as follows:
   a. A Ground-Mounted SES shall follow the setback distance for primary buildings or structures for the district in which it is sited.
   b. A Ground-Mounted SES is not subject to property line setbacks for common property lines of two or more participating lots, except road right-of-way setbacks shall apply.
3. **Fencing:** A Small Principal-Use SES may [shall] be secured with perimeter fencing to restrict unauthorized access. If installed, perimeter fencing shall be a maximum of __ [e.g. something greater than or equal to 7] feet in height.____ [Barbed wire is prohibited.] Fencing is not subject to setbacks.



Ground-mounted SES in rural setting. Photo by Bradley Neumann.

COMMENTARY: Principal-Use SES may be subject to regulations, such as those of the National Electrical Code (NEC), that require a perimeter fence. The current NEC standards call for a 6-foot fence with three lines of barbed wire, or a 7-foot fence with no barbed wire. A community could ban the use of barbed wire at an SES and still allow for compliance with the NEC, so long as the fencing is allowed to be at least 7 feet. If an SES is not subject to the NEC, wildlife-friendly fencing, commonly made of smooth wiring to prevent injury with openings that allow wildlife to move through, should be used where appropriate. A community may choose to be less prescriptive in fencing requirements so long as the requirements do not conflict with NEC requirements (e.g. by limiting fence height to 5 feet). [End of commentary]

4. **Screening/Landscaping:** A Small Principal-Use SES shall be designed to follow the screening and/or landscaping standards for the zoning district of the project site. Any required screening and landscaping shall be placed outside the perimeter fencing.
   a. In districts that call for screening or landscaping along rear or side property lines, these shall only be required where an adjoining non-participating lot has an existing residential or public use.
   b. When current zoning district screening and landscaping standards are determined to be inadequate based on a legitimate community purpose consistent with local government planning documents, the Zoning Administrator [or Planning Commission] may require substitute screening consisting of native deciduous trees planted __ [e.g. 30] feet on center, and native evergreen trees planted __ [e.g. 15] feet on center along existing non-participating residential uses.
   c. The Zoning Administrator [or Planning Commission] may reduce or waive screening requirements provided that any such adjustment is in keeping with the intent of the Ordinance and is appropriately documented (e.g. abutting participating lots; existing vegetation).
   d. Screening/landscaping detail shall be submitted as part of the site plan that identifies the type and extent of screening for a Small Principal-Use SES, which may include plantings, strategic use of berms, and/or fencing.
5. **Ground Cover:** A Small Principal-Use SES shall include the installation of perennial ground cover vegetation maintained for the duration of operation until the site is decommissioned. The applicant shall include a ground cover vegetation establishment and management plan as part of the site plan.

a. An SES utilizing agrivoltaics is exempt from perennial ground cover requirements for the portion of the site employing the dual-use practice.

b. Project sites with majority existing impervious surface or those that are included in a brownfield plan adopted under the Brownfield Redevelopment Financing Act, PA 381 of 1996, as amended, are exempt from ground cover requirements. These sites must comply with the on-site stormwater requirements of the ordinance.

6. **Lot Coverage:** A Small Principal-Use SES shall not count towards the maximum lot coverage or impervious surface standards for the district.

COMMENTARY: One of the reasons to exempt large and small principle-use SES from maximum lot coverage or impervious surface standards is because there are practical challenges to measuring the overall footprint of principal-use systems, since they may include tilting panels and access drives. Communities who choose not to include this exemption must decide which elements of an SES count/do not count toward lot coverage and make clear how lot coverage should be calculated for co-located systems. If the community's intent is to minimize a development's impervious surface area, consider using the ground cover provisions within this sample language instead. They serve the same purpose and avoid unnecessary limitations and ambiguities. [End of commentary]

7. **Land Clearing:** Land disturbance or clearing shall be limited to what is minimally necessary for the installation and operation of the system and to ensure sufficient all-season access to the solar resource given the topography of the land. Topsoil distributed during site preparation (grading) on the property shall be retained on site.

8. **Access Drives:** New access drives within the SES shall be designed to minimize the extent of soil disturbance, water runoff, and soil compaction on the premises. The use of geotextile fabrics and gravel placed on the surface of the existing soil for temporary roadways during the construction of the SES is permitted, provided that the geotextile fabrics and gravel are removed once the SES is in operation.

9. **Wiring:** SES wiring (including communication lines) may be buried underground. Any above-ground wiring within the footprint of the SES shall not exceed the height of the solar array at maximum tilt.

10. **Lighting:** Lighting shall be limited to inverter and/or substation locations only. Light fixtures shall have downlit shielding and be placed to keep light on-site and glare away from adjacent properties, bodies of water, and adjacent roadways. Flashing or intermittent lights are prohibited.

11. **Signage:** An area up to ___ square feet [should be consistent with the district or sign type standard] may be used for signage at the project site. Any signage shall meet the setback, illumination, and materials/construction requirements of the zoning district for the project site.

12. **Sound:** The sound pressure level of a Small Principal-Use SES and all ancillary solar equipment shall not exceed __ [e.g. 45] dBA (Leq (1-hour)) at the property line of an adjoining non-participating lot. The site plan shall include modeled sound isolines extending from the sound source to the property lines to demonstrate compliance with this standard.

13. **Repowering:** In addition to repairing or replacing SES components to maintain the system, a Small Principal-Use SES may at any time be repowered by reconfiguring, renovating, or replacing the SES to increase the power rating within the existing project footprint.

a. A proposal to change the project footprint of an existing SES shall be considered a new application, subject to the ordinance standards at the time of the request.

COMMENTARY: The goal of the above sample sound regulation for both small and large principal-use SES is to determine compliance with the sound standard during site plan review, as opposed to long-term monitoring or enforcement by staff. Predicting noise levels and mitigating through site design is more efficient and cost-effective than mitigating an issue after the project is complete. During the site plan phase, applicants have more options to reduce noise impacts on adjoining property owners, such as by placing inverters closer to the center of the project or covering axis motors. Sound isolines on a site plan would show predicted sound levels, typically in 5 decibel increments, starting at the sound source and extending to or beyond the property line. Sound isolines are similar to contour lines on a topographical map and provide helpful information to the approving body and adjoining property owners. [End of commentary]

14. **Decommissioning:** Upon application, a decommissioning plan shall be submitted indicating the anticipated manner in which the project will be decommissioned, including a description of which above-grade and below-grade improvements will be removed, retained (e.g. access drive, fencing), or restored for viable reuse of the property consistent with the zoning district.
    a. An SES owner may at any time:
        i. Proceed with the decommissioning plan approved by the Zoning Administrator [or Planning Commission] under Section ___ [of local government ordinance] and remove the system as indicated in the most recent approved plan; or
        ii. Amend the decommissioning plan with Zoning Administrator [or Planning Commission] approval and proceed according to the revised plan.
    b. Decommissioning an SES must commence when the soil is dry to prevent soil compaction[64] and must be complete within __ [e.g., 18 months] after abandonment. An SES that has not produced electrical energy for __ [e.g., 12] consecutive months shall prompt an abandonment hearing.

64 The "ribbon test" is a simple in-field test that can be used to make a rough determination if the soil is too wet to work without a high risk of compaction. Conducting the ribbon test involves digging down four inches into the soil, grasping a handful of soil, and squeezing it tightly in your hand. If the soil forms a "ribbon" when squeezed between the thumb and forefinger, it is in a condition for compaction to occur. See Iowa State University Extension & Outreach article Soil compaction may be cutting into your yield (https://crops.extension.iastate.edu/encyclopedia/soil-compaction-may-be-cutting-your-yield) and Colorado State University Cooperative Extension Bulletin Estimating Soil Texture: Sandy, Loamy or Clayey? (https://culter.colorado.edu/~kittel/SoilChar(&RibbonTest)_handout.pdf).



SPECIAL LAND-USE STANDARDS

Add to the Special Land Uses article of the ordinance, as a separate section, the following provisions for large principal-use SES. Also add 'large principal-use SES' to the list of special land uses in the zoning districts where appropriate. See discussion on the Rural-to-Urban Transect above.

A. LARGE PRINCIPAL-USE SES: A large principal-use SES is a special land use in the zoning districts specified and shall meet the following requirements:

1. **Height:** Total height for a large principal-use SES shall not exceed the maximum allowed height in the district in which the system is located [or a lesser height, such as __ [e.g., 20] feet].
2. **Setbacks:** Setback distance shall be measured from the property line or road right-of-way to the closest point of the solar array at minimum tilt or any SES components and as follows:
   a. In accordance with the setbacks for principal buildings or structures for the zoning district of the project site [or __ [e.g. 50] feet from the property line of a non-participating lot].
   b. __ [e.g., 100] feet from any existing dwelling unit on a non-participating lot.
   c. A Ground-Mounted SES is not subject to property line setbacks for common property lines of two or more participating lots, except road right-of-way setbacks shall apply.
3. **Fencing:** A large principal-use SES may [shall] be secured with perimeter fencing to restrict unauthorized access. If installed, perimeter fencing shall be a maximum of __ [e.g. something greater than or equal to 7] feet in height. [Barbed wire is prohibited.] Fencing is not subject to setbacks.
4. **Screening/Landscaping:** A large principal-use SES shall follow the screening and/or landscaping standards for the zoning district of the project site. Any required screening and landscaping shall be placed outside the perimeter fencing.
   a. In districts that call for screening or landscaping along rear or side property lines, these shall only be required where an adjoining non-participating lot has an existing residential or public use.

Lapeer Solar Park. Photo by Bradley Neumann.



b. When current zoning district screening and landscaping standards are determined to be inadequate based on a legitimate community purpose consistent with local government planning documents, the Planning Commission may require substitute screening consisting of native deciduous trees planted __ [e.g. 30] feet on center, and native evergreen trees planted __ [e.g. 15] feet on center along existing non-participating residential uses.

c. The Planning Commission may reduce or waive screening requirements provided that any such adjustment is in keeping with the intent of the Ordinance.

d. Screening/landscaping detail shall be submitted as part of the site plan that identifies the type and extent of screening for a large principal-use SES, which may include plantings, strategic use of berms, and/or fencing.

COMMENTARY: Zoning requirements may impact the ability for the land to be returned to its original use. For example, required berming, substantial vegetative screening, or on-site stormwater detention/retention (which may be regulated by the Drain Commissioner, for example) may need to be removed or altered in order to return the land to its previous use. In considering whether to reduce, waive, or expand vegetation and screening standards, communities should take landowner considerations relating to reuse into account. [End of commentary]

5. **Ground Cover:** A large principal-use SES shall include the installation of ground cover vegetation maintained for the duration of operation until the site is decommissioned. The applicant shall include a ground cover vegetation establishment and management plan as part of the site plan. Vegetation establishment must include invasive plant species [and noxious weed, if local regulation applies] control. The following standards apply:

   a. Sites bound by a Farmland Development Rights (PA 116) Agreement must follow the Michigan Department of Agriculture and Rural Development's Policy for Allowing Commercial Solar Panel Development on PA 116 Lands.

   b. Ground cover at sites not enrolled in PA 116 must meet one or more of the four types of Dual Use defined in this ordinance.

      i. Pollinator Habitat: Solar sites designed to meet a score of 76 or more on the Michigan Pollinator Habitat Planning Scorecard for Solar Sites.

      ii. Conservation Cover: Solar sites designed in consultation with conservation organizations that focus on restoring native plants, grasses, and prairie with the aim of protecting specific species (e.g., bird habitat) or providing specific ecosystem services (e.g., carbon sequestration, soil health).

      iii. Forage: Solar sites that incorporate rotational livestock grazing and forage production as part of an overall vegetative maintenance plan.

      iv. Agrivoltaics: Solar sites that combine raising crops for food, fiber, or fuel, and generating electricity within the project area to maximize land use.Project sites that are included in a brownfield plan adopted under the Brownfield Redevelopment Financing Act, PA 381 of 1996, as amended, that contain impervious surface at the time of construction or soils that cannot be disturbed, are exempt from ground cover requirements

   c. Project sites that are included in a brownfield plan adopted under the Brownfield Redevelopment Financing Act, PA 381 of 1996, as amended, that contain impervious surface at the time of construction or soils that cannot be disturbed, are exempt from ground cover requirements.

COMMENTARY: The Michigan Department of Agriculture and Rural Development policy for allowing commercial solar energy development on PA 116 lands requires that any portion of the site not included in pollinator plantings must maintain U.S. Department of Agriculture, Natural Resources Conservation Service Conservation Cover Standard 327. Standard 327 reduces erosion, enhances wildlife, pollinator, and beneficial organism habitat, and improves soil health. Standard 327 can be implemented to support grazing animals with the right mix of forage crops. However, if grazing is the primary forage management practice, Prescribed Grazing Standard 528 may be a more useful standard to follow. Standard 528, however, does not apply to solar projects on land enrolled in PA 116 because the policy specifically recommends using Standard 327. There is flexibility within each standard to develop site-specific seed mixes. Private consultants as well as local NRCS staff can help develop a plan to implement these standards in a solar project. [End of commentary]

COMMENTARY: As discussed on Page 15, if a community's existing master plan and ordinance include farmland preservation provisions, it may make sense to extend them to large principal-use SES. In that case, signal your community's desire for development that minimizes impacts to locally important soil classifications through language such as:

Agricultural Protection: For sites where agriculture is a permitted use in a district, a large principal-use SES may be sited to minimize impacts to agricultural production through site design and accommodations including [select those most applicable to your community]:

a. The ground mounting of panels by screw, piling, or a similar system that does not require a footing, concrete, or other permanent mounting in order to minimize soil compaction, [and/or]
b. Siting panels to avoid disturbance and compaction of farmland by siting panels along field edges and in nonproduction areas to the maximum extent practicable and financially feasible, [and/or]
c. Maintaining all drainage infrastructure on site, including drain tile and ditches, during the operation of the SES, [and/or]
d. Siting the SES to avoid isolating areas of the farm operation such that they are no longer viable or efficient for agricultural production, including, but not limited to, restricting the movement of agricultural vehicles/equipment for planting, cultivation, and harvesting of crops, and creating negative impacts on support infrastructure such as irrigation systems or drains, or
e. Voluntarily purchasing agricultural conservation easements from an equivalent number of prime farmland acres consistent with a purchase of development rights ordinance adopted under state law in ____ [local unit of government].

The above list is presented as a menu of sample standards and is neither a comprehensive list nor intended to be adopted in its entirety or verbatim. A local government that wishes to protect agricultural land from future development should work with a qualified planner and attorney to develop a comprehensive approach in the master plan and zoning ordinance that addresses threats to farmland from all types of development pressure. [End of commentary]



Aerial view of Tecumseh solar farm. Photo by Harvest Solar.

MICHIGAN EXAMPLES: Communities in Michigan have differing approaches to the compatibility of solar energy and agriculture. Here are some examples:

"Solar energy equipment shall only be located in an area determined to be "not prime farmland" by the U.S. Department of Agriculture (USDA), per the USDA's Farmland Classification Map as of the date of Special Use Application for a Utility-Scale Solar Energy Collector System."

– *Chester Township Zoning Ordinance (Ottawa Co.), Section 1912*

"All solar arrays greater than ten (10) acres in area must include one or more of the following amongst the panels of the solar array: Crop cultivation; Livestock grazing, with the panels raised to allow an eight (8) foot clearance for animals to pass underneath; or Pollinator fields, including milkweed and other native plantings."

– *Grand Haven Charter Township Zoning Ordinance 2020 (Ottawa Co.), Section 3.03*

"Solar energy systems in Oliver Township are considered a compatible use in the Agricultural Preservation District. The siting of a ground mounted solar energy system is permitted in the Agricultural Preservation District (Chapter 5) and must conform to the front, rear, and side yard setback requirements described in Section 504."

– *Oliver Township Zoning Ordinance (Huron Co.), Section 1305 [End of example]*

COMMENTARY: Some communities require a performance guarantee for small and large principal-use SES for the cost of grading and on-site ground cover establishment in the form of a bond, letter of credit, or establishment of an escrow account. The rationale is that if a site is cleared of vegetation and graded, but the project is not completed, there is a financial guarantee that the site will be stabilized. Such a provision may be redundant with Soil Erosion and Sedimentation Control (SESC) bonding requirements for projects larger than one acre, or for land enrolled in the Michigan Department of Agriculture of Rural Development's (MDARD) PA 116 Farmland and Open Space Preservation Program.

Regarding decommissioning guarantees, MDARD, as mentioned above, requires a surety bond or irrevocable letter of credit for solar development on PA 116 land to cover the cost of the removal of the solar facility and the restoration of the land to agricultural use. A community may wish to tailor the sample standard below based on this requirement by MDARD or provide an exception from the local government decommissioning guarantee for land enrolled in PA 116.

A periodic review (such as every 3-5 years) of the decommissioning guarantee will ensure adequate funds are available to cover decommissioning costs 20-30 years down the road. A review might also be triggered if there is a change of ownership. The ordinance should specify which body is responsible for approving the amount of the performance guarantee; the planning commission could recommend an amount, but the legislative body should make the final decision. When considering this language, a community could review how performance guarantees are handled for other types of developments, such as landscaping guarantees, and discuss how this could be the same or different. The amount of the guarantee for an SES may prompt a different level of review. [End of commentary]

6. **Lot Coverage:** A large principal-use SES shall not count towards the maximum lot coverage or impervious surface standards for the district.
7. **Land Clearing:** Land disturbance or clearing shall be limited to what is minimally necessary for the installation and operation of the system and to ensure sufficient all-season access to the solar resource given the topography of the land. Topsoil distributed during site preparation (grading) on the property shall be retained on site.
8. **Access Drives:** New access drives within the SES shall be designed to minimize the extent of soil disturbance, water runoff, and soil compaction on the premises. The use of geotextile fabrics and gravel placed on the surface of the existing soil for the construction of temporary drives during the construction of the SES is permitted, provided that the geotextile fabrics and gravel are removed once the SES is in operation.
9. **Wiring:** SES wiring (including communication lines) may be buried underground. Any above-ground wiring within the footprint of the SES shall not exceed the height of the solar array at maximum tilt.
10. **Lighting:** Large principal-use SES lighting shall be limited to inverter and/or substation locations only. Light fixtures shall have downlit shielding and be placed to keep light on-site and glare away from adjacent properties, bodies of water, and adjacent roadways. Flashing or intermittent lights are prohibited.
11. **Signage:** An area up to ___ square feet [should be consistent with the district or sign type standard] may be used for signage at the project site. Any signage shall meet the setback, illumination, and materials/construction requirements of the zoning district for the project site.
12. **Sound:** The sound pressure level of a large principal-use SES and all ancillary solar equipment shall not exceed __ [e.g. 45] dBA (Leq (1-hour)) at the property line of an adjoining non-participating lot. The site plan shall include modeled sound isolines extending from the sound source to the property lines to demonstrate compliance with this standard.

13. **Repowering:** In addition to repairing or replacing SES components to maintain the system, a large principal-use SES may at any time be repowered, without the need to apply for a new special land-use permit, by reconfiguring, renovating, or replacing the SES to increase the power rating within the existing project footprint.
    a. A proposal to change the project footprint of an existing SES shall be considered a new application, subject to the ordinance standards at the time of the request. [Expenses for legal services and other studies resulting from an application to modify an SES will be reimbursed to the ____ [local unit of government] by the SES owner in compliance with established escrow policy.]

COMMENTARY: A fundamental zoning concept is that a zoning ordinance must allow for nonconformities—that is, the continuation of a land use or structure that was legally established before a change in zoning that no longer permits the use or structure location. Zoning ordinances have standards for replacement, reconstruction, and expansion of nonconformities. For example, the decision could be centered around the replacement components' monetary value—a new investment of 50% or more of the value of the project is a typical threshold for nonconformities. The zoning board of appeals or the planning commission, whichever is charged with making decisions on nonconformities, would decide the fate of the project based on the nonconforming standards in the ordinance, rather than following the original special land-use permit review process. A proposal to expand the footprint of the system could be at odds with ordinance rules for enlarging nonconformities. In that case, the ordinance may dictate that the proposal must be scaled back to meet the rules for replacing nonconformities, otherwise decommissioning may be the only option. If decommissioning is not the intended or desired outcome, a community has the option to amend the ordinance to allow for SES again, thereby releasing the project from nonconforming status. Communities should work with a municipal attorney to explore preferred options for the SES and how SES will be treated under an application to repower the system. [End of commentary]

14. **Decommissioning:** A decommissioning plan is required at the time of application.
    a. The decommission plan shall include:
        i. The anticipated manner in which the project will be decommissioned, including a description of which above-grade and below-grade improvements will be removed, retained (e.g. access drive, fencing), or restored for viable reuse of the property consistent with the zoning district,
        ii. The projected decommissioning costs for removal of the SES (net of salvage value in current dollars) and soil stabilization, less the amount of the surety bond posted with the State of Michigan for decommissioning of panels installed on PA 116 lands,
        iii. The method of ensuring that funds will be available for site decommissioning and stabilization (in the form of surety bond, irrevocable letter of credit, or cash deposit), and
    b. A review of the amount of the performance guarantee based on inflation, salvage value, and current removal costs shall be completed every __ [e.g., 3 or 5] years, for the life of the project, and approved by the _____ [legislative body] board. An SES owner may at any time:
        i. Proceed with the decommissioning plan approved by the Zoning Administrator [or Planning Commission] under Section ___ [of local government ordinance] and remove the system as indicated in the most recent approved plan; or
        ii. Amend the decommissioning plan with Zoning Administrator [or Planning Commission] approval and proceed according to the revised plan.
    c. Decommissioning an SES must commence when the soil is dry to prevent soil compaction and must be complete within __ [e.g., 18 months] after abandonment. An SES that has not produced electrical energy for __ [e.g., 12] consecutive months shall prompt an abandonment hearing.



Consumers Energy - Western Michigan University, Business Technology and Research Park solar garden. Photo by Mary Reilly.

SITE PLAN REVIEW

Add to the Site Plan Review article of the zoning ordinance, as a separate section (or to the section of the ordinance with site plan requirements), the following provisions for Principal-Use SES. Consider using the following checklist to determine if the application is complete. In this sample, a large principal-use SES is proposed to be reviewed as special land use. A Small Principal-Use SES is proposed to be reviewed as a permitted use with a required site plan. When reviewing a Small Principal-Use SES, a community will need to choose one of the following approaches:

- **Administrative:** *The Zoning Administrator reviews and approves or denies a Small Principal-Use SES when following the site plan review requirements below.*
- **Administrative/Planning Commission:** *The Zoning Administrator could perform site plan review with the option to send the application to the Planning Commission for site plan review. This option could be utilized to provide greater public input and shared responsibility, such as for a high-interest or high-visibility application.*

Site Plans and supporting application materials for a Principal-Use SES shall include a detailed site plan including all applicable requirements found in Article XX, Section XX [the section of the ordinance with general site plan standards] of this ordinance, except that site plans for large principal-use SES shall be submitted at a scale of 1" = ___ [e.g., 200] feet, plus the following site plan requirements:

SITE PLAN REQUIREMENT (X = Required, NA = Not Applicable)	Small Principal-Use	Large Principal-Use
The location of all solar arrays, including setbacks, the width of arrays and distance between arrays plus total height and height to the lowest edge above grade, ancillary structures and electric equipment, utility connections, and dwellings on the property and within __ [e.g. 150] feet of the property lines, participating and non-participating lots, existing and proposed structures, buried or above ground wiring, temporary and permanent access drives, fencing detail, screening/landscape detail, berm detail, and signs.	X	X
Plans for land clearing and/or grading required for the installation and operation of the system, and plans for ground cover establishment and management.	X	X
Sound modeling study including sound isolines extending from the sound source(s) to the property lines of adjoining non-participating lots.	X	X
A Decommissioning Plan as applicable: • For a Small Principal-Use SES, a decommissioning plan including a description of which above-grade and below-grade improvements will be removed, retained, or restored for viable reuse of the property consistent with the zoning district.	X	N/A
• For a large principal-use SES, 1) a decommissioning plan including a description of which above-grade and below-grade improvements will be removed, retained, or restored for viable reuse of the property consistent with the zoning district, 2) the projected decommissioning costs for SES removal (net of salvage value in current dollars) and soil stabilization, less the amount of the surety bond posted with the State of Michigan for decommissioning of panels installed on PA 116 lands, and 3) the method of ensuring that funds will be available for site decommissioning and stabilization (in the form of surety bond, irrevocable letter of credit, cash deposit).	N/A	X
The location of prime farmland [and/or farmland of statewide importance, farmland of local importance, unique farmland, and prime farmland if drained] as defined in the U.S. Department of Agriculture, Natural Resources Conservation Service - Web Soil Survey.	N/A	X [only if Ag Protection is part of the ordinance]
Completed copy of Michigan Pollinator Habitat Planning Scorecard for Solar Sites (when applicable).	N/A	X

SITE PLAN REQUIREMENT (X = Required, NA = Not Applicable)	Small Principal-Use	Large Principal-Use
Additional studies may be required by the Planning Commission if reasonably related to the standards of this ordinance as applied to the application site, including but not limited to [*select those most applicable to your community; these do not directly link to standards in the sample language, but may be helpful in evaluating conformance with other ordinance standards*]: • Visual Impact Assessment: A technical analysis by a third party qualified professional of the visual impacts of the proposed project, including a description of the project, the existing visual landscape, and important scenic resources, plus visual simulations that show what the project will look like (including proposed landscape and other screening measures) a description of potential project impacts, and mitigation measures that would help to reduce the visual impacts created by the project and documented on the site plan. • Environmental Analysis: An analysis by a third-party qualified professional to identify and assess any potential impacts on the natural environment including, but not limited to wetlands and other fragile ecosystems, wildlife, endangered and threatened species, historical and cultural sites, and antiquities. If required, the analysis shall identify all appropriate measures to minimize, eliminate or mitigate adverse impacts identified and show those measures on the site plan, where applicable. • Stormwater Study: An analysis by a third-party qualified professional that takes into account the proposed layout of the SES and how the spacing, row separation, and slope affects stormwater infiltration, including calculations for a 100-year rain event (storm). Percolation tests or site-specific soil information shall be provided to demonstrate infiltration on-site without the use of engineered solutions. • Glare Study: An analysis by a third-party qualified professional to determine if glare from the SES will be visible from nearby residents and roadways. If required, the analysis shall consider the changing position of the sun throughout the day and year, and its influence on the SES.	N/A	X

Dual-use ground-mounted SES with conservation plantings. Photo by M. Charles Gould.

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AGENDA
Scio Township Planning Commission
REPORTS / COMMISSION ACTIVITY

FOR MEETING DATE OF: July 10, 2023
PREPARED ON: 20230706
PREPARED BY: Fran Szuma
SUBMITTED BY: Planning

ITEM TYPE: Information

ATTACHMENTS:
PC REPORTS

1. Engineering Consultant – OHM
2. Planning Consultant – CWA
3. Chair Report - Culbertson
4. BOT Board of Trustees Report - Reiser
5. ZBA Zoning Board of Appeals - Culbertson
6. DDA – Culbertson
7. Road Commission Advisory Committee – Human
8. LPC Land Preservation Commission – Reiser
9. PPP committee – Cheng
10. HRWC – Hyde
11. ESTF – Culbertson
12. Fire Services Guidance Committee – Hyde
13. Western Washtenaw Housing Advisory - Moore

AGENDA # 1
Scio Township Planning Commission
Minutes of 2023-06-26, pending,

FOR MEETING DATE OF: July 10, 2023
PREPARED BY: Fran Szuma
SUBMITTED BY: Planning

ITEM TYPE: Possible Action