PUBLIC NOTICE

CITY OF BERKLEY, MICHIGAN
REGULAR MEETING OF THE CITY PLANNING COMMISSION

Tuesday, May 24, 2022
7:00PM – City Hall Council Chambers
Information: 248-658-3320

CALL TO ORDER
PLEDGE OF ALLEGIANCE
ROLL CALL
APPROVAL OF AGENDA
APPROVAL OF MINUTES – *Meeting minutes of April 26, 2022*
COMMUNICATIONS
CITIZEN COMMENTS

OLD BUSINESS

NONE

NEW BUSINESS

1. **PSP-03-22: 1949 Twelve Mile – Lume:** Christopher Enright, on behalf of Attitude Wellness LLC and Monarch Acquisitions LLC, 1949 Twelve Mile Rd., Parcels #25-17-126-002 and #25-17-126-003, is requesting site plan approval for the conversion of 6,764 square feet of the existing building to a retail marihuana dispensary and office use for the remaining 17,677 square feet.

2. **PSP-09-22: 3916 W. Eleven Mile – Quality Roots:** John Vitale, on behalf of L & L Development LLC, 3916 W. Eleven Mile Rd., Parcels #25-18-353-030 and #25-18-353-027, is requesting site plan approval for the renovation of the existing building to a retail marihuana dispensary and office tenant space.

LIAISON REPORTS
COMMISSIONER / STAFF COMMENTS
ADJOURN

Notice: Official Minutes of the City Planning Commission are stored and available for review at the office of the City Clerk. The City of Berkley 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 upon four working days notice to the city. Individuals with disabilities requiring auxiliary aids or services should contact the city by writing or calling: City Clerk, ADA Contact, Berkley City Hall, 3338 Coolidge, Berkley, Michigan 48072, (248) 658-3300.

You can watch the meeting on Channel 10 for both Comcast and WOW, at http://www.youtube.com/CityofBerkley or http://www.berkleymich.org/livestream.

THE REGULAR MEETING OF THE BERKLEY CITY PLANNING COMMISSION WAS CALLED TO ORDER AT 7:00 PM, APRIL 26, 2022 AT BERKLEY CITY HALL BY CHAIR KRISTEN KAPELANSKI.

The minutes from this meeting are in summary form capturing the actions taken on each agenda item. To view the meeting discussions in their entirety, this meeting is broadcasted on the city's government access channel, WBRK, every day at 9AM and 9PM. The video can also be seen, on-demand, on the city's YouTube channel: https://www.youtube.com/user/cityofberkley.

PRESENT:	Kristen Kapelanski	Martin Smith
	Joe Bartus	Lisa Kempner
	Greg Patterson	Julie Stearn
	Mark Richardson	Shiloh Dahlin

ABSENT: Daniel Petrosky (Excused)

ALSO, PRESENT: Megan Masson-Minock, Interim Community Development Director
Matthew Baumgarten, City Manager

Motion by Commissioner Patterson to excuse the absence of Commissioner Petrosky. Motion supported by Commissioner Stearn.

Voice Vote to approve the absence of Commissioner Petrosky.

AYES: 8
NAYS: 0
ABSENT: Petrosky

MOTION CARRIED

* * * * * * * * *

APPROVAL OF AGENDA

Motion by Commissioner Kempner to approve the agenda supported by Commissioner Bartus.

Voice vote to approve the agenda

AYES: 8
NAYS: 0
ABSENT: Petrosky

MOTION CARRIED

* * * * * * * * *

APPROVAL OF THE MINUTES

Motion by Commission Kempner to approve the minutes from the regular Planning Commission meeting on March 22, 2022 and supported by Commissioner Patterson.

Voice vote to approve the meeting minutes on March 22, 2022.

AYES: 8
NAYS: 0
ABSENT: Petrosky

MOTION CARRIED

* * * * * * * * *

COMMUNICATIONS
Community Development Department Report
Emails on Marihuana used in packet
Email from Chuck Tyrell on Lot 53 on Oxford Road
Notification from Huntington Woods with their Master Plan process

* * * * * * * * *

CITIZEN COMMENTS

NONE

* * * * * * * * *

OLD BUSINESS

1. **DDA Guidelines:** Review of ordinance language to implement the DDA guidelines, based on March 1, 2022 Work Session.

Interim Community Development Director Masson-Minock reviewed each item with context for the Planning Commission

The Planning Commission discussed various questions and suggestions. They felt comfortable with some of the items moving forward for a public hearing and other items needed to be discussed further at a future work session.

2. **Capital Improvements Plan:** Presentation and discussion of the proposed Berkley Capital Improvement Plan by City Manager Matt Baumgarten.

City Manager Matt Baumgarten discussed with the Planning Commission that the CIP requires approval from both the Planning Commission and the City Council to get adopted into the fiscal year budget.

City Manager Matt Baumgarten presented the draft Capital Improvement Plan with the changes from the last discussion and Commissioners asked questions related to the proposed CIP

Motion by Commissioner Richardson to approve the City of Berkley 2022-2029 Capital Improvement Plan. Motion supported by Commissioner Kempner.

AYES: Bartus, Dahlin, Kempner, Patterson, Stearn, Richardson, Smith, Kapelanski
NAYS: NONE
ABSENT: Petrosky

MOTION CARRIED

* * * * * * * * *

NEW BUSINESS

1. **PSP-04-21: Lot 53 on Oxford Road - The Ivy:** Site Plan for Phase II of the approved project at 2219 Coolidge for the removal of the existing parking lot and construction of two multiple family buildings with a total of 24 dwelling units and a parking lot.

Interim Community Development Director Masson-Minock gave a presentation and overview of the Phase I and highlighted points of information to look at for Phase II and the four terms recommended as conditions for approval.

APPLICANT PRESENTATION

Brad Freeman
Project Manager

John DePorre
DePorre Building, LLC

Mr. Freeman, addressed the overall concerns that were recommended to them by staff in the staff review.

Mr. DePorre stated that he spoke with former Community Development Director Erin Schlutow about design and keeping it within the ordinances. Mr. DePorre also asked for clarification from the Carlisle Wortman letter.

Michael Gold
Stonefield Engineering
Civil Engineer

Mr. Gold explained the decision on parking spaces on this site. The applicants discussed green space and pavement with Chair Kapelanski.

PUBLIC COMMENT

Eric Wheeler, 2679 Oxford - Stated that his concern here is having a big impact on residents on that street with traffic and noise. He stated that people divert and travel on Kipling which tends to upset those residents. He suggested that the Commission wait and see what the finished development with the school is going to be. If the result is detrimental, it will result in unhappy residents.

Chair Kapelanski stated that this is a permitted use, and provided that the applicant meets all the requirements the Commission as a body has to approve them, taking in and working with them on tweaks and alterations to address resident and city concerns.

Chris Lattin, 2735 Oxford - Stated that his concern is the increased volume of traffic. This is all being funneled on one access point on Oxford, causing traffic in the neighborhood. He also stated the infrastructure is a dated combined sewage and storm system and will it be able to handle the additional volume getting added to it. Also, will there be a traffic study done on this site?

John Paradise, 2750 Oxford - Stated that he has concerns on the traffic standpoint and knowing where the playground area is with no stop sign. Cars are going through that area at higher rates of speed and can see people cutting through that area.

Pat Meslowsky, 1829 Kipling - Questioned if there is not an exit for those cars to leave on Harvard. She also stated that traffic goes fast on Kipling and if there was an exit on Harvard it would seem that traffic would turn left and go to the light.

Email correspondence from Chuck Tyrell - concerns were centered around how this proposal differs from previous proposals that were talked about for this site, parking was a concern, access by emergency vehicles, context with surrounding neighborhood, and storm and waste drainage.

Chair Kapelanski addressed the questions that were mentioned in public comment and offered a suggestion of an easement to the applicants.

There was discussion with the Commission and applicants on traffic, infrastructure on the storm water detention, access points, additional green space, and parking spaces.

The Commission discussed pedestrian circulation and how to make it less awkward with the sidewalk connections and parking spaces with the applicant.

The Commission discussed the dumpsters that are proposed for this site with the applicant, and suggested the moving of dumpsters or having one dumpster instead of two.

Interim Community Development Director Masson-Minock reiterated to the Commission that they have the authority to grant or deny the requested modification based on finding factors she stated.

The Commission stated to the applicants that they can lose five parking spaces and add bike racks from the current plan and specific areas to add greenery.

There was more discussion amongst the Commission and applicants about designs of the building, open stairwells, sidewalks, and the storm water detention system.

Motion to postpone PSP-04-21 by Commissioner Kempner supported by Commissioner Richardson

AYES: Bartus, Dahlin, Kempner, Patterson, Stearn, Richardson, Smith, Kapelanski
NAYS: NONE
ABSENT: Petrosky

* * * * * * * * *

2. **PSP-05-22: 2576 Coolidge Highway - BP America:** Site Plan for a new canopy, parking reconfiguration, pump island reconfiguration, new landscaping and building facade improvements of the existing gasoline station.

Interim Community Development Director Masson-Minock provided an overview for the application and details for a non-conforming use. The applicant is not increasing the intensity of the use or increasing any dimensional non-conformity. If the Planning Commission grants site plan approval there are seven items in the staff review that would need to be included as conditions.

APPLICANT PRESENTATION

Jason Yaldoo
Owner of the BP gas station

Catie Schmitz
JSN Architecture

Mr. Yaldoo stated that the goal of this is to make the gas station a nice place for the community. With the development of the plaza in front of the gas station, this upgrade hopes to bring back business.

Ms. Schmitz stated that there is agreement on everything in the review letter except for the extending or adding of a stone base to the canopies. Ms. Schmitz stated that it would be a waste of money the way the poles are designed and provided an overview of how the canopies are designed for the space.

PUBLIC COMMENT

NONE

The Commissioners provided feedback on the base of the canopy, agreeing that adding masonry on the bottom should not be required.

The Commissioners asked specific questions pertaining to the placement of pumps, canopies, and drives of this site. The Commissioners also discussed with the applicant about the separation between sidewalk and road, for safety concerns of pedestrians and cars, suggesting an easement or a mountable curb. There was also discussion on other landscaping options for this site and retaining the landscape island along Coolidge.

Motion by Commissioner Patterson to approve PSP-05-22 with support from Commissioner Kempner with conditions that:

1. Items 1-7 noted in the staff letter dated April 21, 2022
2. Retain the landscape island on Coolidge
3. Define sidewalks on Catalpa with clear demarcation, such as a mountable curb with distinguishing concrete or a rock garden with perennials
4. Provide planters as can be maintained by the gas station staff
5. Dimensions of the canopy are specified on revised plans
6. Decorative block matching the building on the outside of the dumpster enclosure

AYES: Bartus, Dahlin, Kempner, Patterson, Stearn, Richardson, Smith, Kapelanski
NAYS: NONE
ABSENT: Petrosky

* * * * * * * * *

LIAISON REPORT

Commissioner Patterson stated that Parks and Recreation is hosting a fundraiser for Jaycee park, for an all-inclusive park. If the city raises 50,000 the State of Michigan will match that. Commissioner Patterson thanked the businesses that donated to the cause already.

* * * * * * * * *

COMMISSIONER COMMENTS

Commissioner Richardson thanked Carlisle Wortman for the proposed ordinance amendment language and was impressed with the body of work it presented.

Commissioner Smith stated that he will be resigning after the end of this meeting. After 22 years, he will be resigning from the board. The Commissioners gave their appreciation to Commissioner Smith and all the work he did on the board for 22 years.

* * * * * * * * *

STAFF COMMENTS

Interim Community Development Director Masson-Minock discussed with Commissioners and asked for their input on the next two meetings, what the agenda would look like, and changing a work session into a meeting with the amount of agenda items that were submitted on Tuesday, April 26th.

* * * * * * * * *

ADJOURNMENT

Motion to adjourn by Commissioner Kempner supported by Commissioner Stearn.

Voice vote for adjournment

AYES: 8
NAYS: 0
ABSENT: Petrosky

With no further business, the meeting was adjourned at 10:45 p.m.

DRAFT

DocuSign Envelope ID: 18894905-B8AF-4529-AB60-D5EBDC91D9EE

CITY OF BERKLEY
COMMUNITY DEVELOPMENT
3338 COOLIDGE HWY, BERKLEY, MICHIGAN 48072

APPLICATION FOR SITE PLAN REVIEW

NOTICE TO APPLICANT: Applications for Site Plan review by the Planning Commission must be submitted to the City of Berkley Building Department in ***substantially complete form*** at least 30 days prior to the Planning Commission's meeting at which the application will be considered. The application must be accompanied by the data specified in the Zoning Ordinance, including fully dimensioned site plans, plus the required review fees.

The Planning Commission meets the fourth Tuesday of the month at 7:00pm in the Council Chambers at the City of Berkley City Hall, 3338 Coolidge Hwy, Berkley, MI 48072.

TO BE COMPLETED BY APPLICANT:

I (We), the undersigned, do hereby respectfully request Site Plan Review and provide the following information to assist in the review:

Project Name: Lume Berkley Provisioning Center

Applicant: Christopher Enright

Mailing Address: [redacted]

Telephone: [redacted]

Email: [redacted]

Property Owner(s), if different from Applicant: David Farbman

Mailing Address: [redacted]

Telephone: [redacted]

Email: [redacted]

Applicant's Legal Interest in Property: _____

LOCATION OF PROPERTY:

Street Address: 1949 Twelve Mile Road

Nearest Cross Streets: Woodward Ave. / Rosemont Road

Sidwell Number(s): 25-17-126-002. 25-17-126-003

DocuSign Envelope ID: 18894905-B8AF-4529-AB60-D5EBDC91D9EE

PLEASE COMPLETE THE FOLLOWING CHART:

Type of Development	Number of Units	Gross Floor Area	Number of Parking Spaces On Site	Number of Employees on Largest Shift
Attached Residential				
Office	3	17,677 SF	87	
Commercial	1	6,764 SF	30	APPROX. 9
Industrial				
Other				

PROFESSIONALS WHO PREPARED PLANS:

A. Name: Stucky Vitale Architects

Mailing Address: [redacted]

Telephone: [redacted]

Email: [redacted]

Design Responsibility (engineer, surveyor, architect, etc.): Architect

B. Name: PEA GROUP

Mailing Address: [redacted]

Telephone: [redacted]

Email: [redacted]

Design Responsibility: Surveyor Civil Engineer

SUBMIT THE FOLLOWING:

1. Fifteen (15) individually folded copies of the site plans, measuring 24" x 36", sealed by a registered architect, engineer, or surveyor.
2. A pdf file of the site plans, submitted to the Community Development Director.
3. Proof of property ownership (title insurance policy or registered deed with County stamp).
4. Review comments or approval received from County, State or Federal agencies that have jurisdiction over the project, including, but not limited to:

- ☐ Road Commission for Oakland County
- ☐ MI Dept. of Transportation
- ☐ Oakland County Health Division
- ☐ MI Dept. of Environment, Great Lakes & Energy

DocuSign Envelope ID: 18894905-B8AF-4529-AB60-D5EBDC91D9EE

PLEASE NOTE: The applicant, or a designated representative, **MUST BE PRESENT** at all scheduled meetings, or the Site Plan may be tabled due to lack of representation.

Failure to provide true and accurate information on this application shall provide sufficient grounds to deny approval of a Site Plan Application or to revoke any permits granted subsequent to the site plan approval.

We encourage applicants to make a presentation of the proposed project to the Planning Commission and City Council, as appropriate. To assist in this effort, we have available for your use at meetings a projector, laptop computer and screen. This will allow the Planning Commission and audience to be fully engaged so they can give your project the attention it deserves. Planning Commission meetings are recorded and televised.

PROPERTY OWNER'S APPROVAL: ***(Initial each line)***

DS

_____ I hereby authorize the employees and representatives of the City of Berkley to enter upon and conduct an inspection and investigation of the above-referenced property.

APPLICANT'S ENDORSEMENT: ***(Initial each line)***

CVE All information contained therein is true and accurate to the best of my knowledge.

CVE I acknowledge that the Planning Commission will not review my application unless all information in this application and the Zoning Ordinance has been submitted. I further acknowledge that the City and its employees shall not be held liable for any claims that may arise as a result of acceptance, processing or approval of this site plan application.

CVE I hereby acknowledge that if engineering or other reviews are required, additional fees must be submitted. Should the review fees be greater than the required minimum, sufficient additional charges will be imposed to satisfy the additional review fees. All fee obligations must be satisfied prior to permit approval.

If an application is withdrawn more than three (3) weeks prior to the meeting date, 90% of the fee will be refunded. If the application is withdrawn less than three (3) weeks prior to the meeting, no refund will be given.

DocuSign Envelope ID: 18894905-B8AF-4529-AB60-D5EBDC91D9EE

7/15/21

Signature of Applicant — Date

CHRISTOPHER ENRIGHT

Applicant Name (Print)

Signature of Applicant — Date

Applicant Name (Print)

DocuSigned by:

7-14-21

BA31CA96F015422...

Signature of Property Owner Authorizing this Application — Date

David Farbman, Manager of Monarch Acquisitions LLC

Property Owner Name (Print)

OFFICE USE ONLY

Received _____ Receipt # _____ Meeting Date _____ Case # _____

Fees: Site Plan Review $350 Façade Change: $200 Revision: $100

Engineering TBD

CITY OF BERKLEY
COMMUNITY DEVELOPMENT
3338 COOLIDGE HWY, BERKLEY, MICHIGAN 48072

MEMORANDUM

To: Planning Commission

From: Megan A. Masson-Minock, Interim Community Development Director

Subject: **PSP-03-22: 1949 Twelve Mile Road – Lume Provisioning Center**
Site Plan Approval
Plan Date: April 25, 2022

Date: May 19, 2022

Attached are the following reviews for the site plan submitted:

Planning Review from Carlisle Wortman Associates (CWA) dated April 26, 2022

In their review, CWA noted that the Planning Commission should review the landscaping and make a finding as to whether the plans presented meet the standard in Section 130-37.

CWA recommended preliminary site plan approval with the condition that the Shared Parking Agreement be reviewed by the City Attorney.

Review from City of Berkley Department of Public Works (DPW) dated May 9, 2022

DPW had the following comments:

1. In lieu of a parcel combination, the applicant is working with the City Attorney on a perpetual easement to address drainage and stormwater detention, which must be approved by the City Attorney, signed by all parties and recorded with the County, prior to the preconstruction meeting.
2. The replacement of the existing fire hydrant within the Twelve Mile right-of-way must be coordinated with the Department of Public Works, Department of Public Safety and the Road Commission for Oakland County (RCOC).
3. HRC will review the updated Geotechnical Report and revised stormwater detention calculations.
4. Twelve Mile Road is under the jurisdiction of the RCOC. The applicant must share with the Department of Public Works feedback from the RCOC and the approved RCOC plan.
5. A stormwater maintenance agreement and exhibits shall be signed and finalized.

Please note that a copy of the draft easement and water management agreement are included in your packet but have not been approved the City Attorney as of yet.

Review from Hubbell, Roth & Clark (HRC) dated May 9, 2022

HRC recommended approval of the proposed site plan, subject to the applicant submitting the full traffic control plan with sequence of construction, the stormwater maintenance agreement, and any required permits to the City of Berkley. The Planning Commission should note the following requested plan revisions and permits:

1. A permit will be required from the RCOC for proposed work within the12-Mile Road right-of-way as well as for construction signage.
2. A sequence of construction with lane closure estimates must be submitted prior to construction.
3. The developer will be required to prepare and enter into a perpetuity maintenance agreement with the City for the proposed private stormwater systems. The applicant must contact the City DPW regarding this item prior to commencing construction.

Review from City of Berkley Fire Inspector dated February 3, 2022

Fire Inspector Pete Kelly approved the plans with the following conditions:

1. Sprinkler system modifications are not shown and must be submitted for review.
2. Existing/new fire extinguishers are not shown and must be shown.
3. No processing of marijuana is permitted in the City in buildings within 300 feet of residential property.

Summary and Recommendation

The Planning Commission needs to make the following determination:

1. **Standards for Site Plan Approval – Landscaping:** CWA stated in their review that the applicant was proposing a robust plan with building planting, ROW planting, parking lot planting, and a green roof. The Planning Commission must determine whether the landscaping, as presented, meets the standards for Site Plan approval, per Section 138-678.

If the Planning Commission chooses to grant site plan approval, we recommend that the following items be conditions of approval:

1. The Shared Parking Agreement is reviewed and approved by the City Attorney.
2. A pre-construction meeting is required. Before scheduling of that meeting, all items listed the City's DPW review letter, dated May 9, 2022, must be received by the City.

3. Approval from the City's Engineer that the full traffic control plan with sequence of construction, the stormwater maintenance agreement, and any required permits to the City of Berkley, as noted in their review letter dated May 9, 2022, have been submitted and/or met.
4. Approval from the Fire Inspector that the conditions in his letter dated February 3, 2022 have been met.
5. All signs and mural must be approved under a separate permit and meet the requirements of Chapter 94 – Signs of the City of Berkley's Code of Ordinances.

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

Date: February 7, 2022
March 29, 2022
April 26, 2022

Site Plan Review
For
City of Berkley, Michigan

Applicant: Monarch Acquisitions LLC

Project Name: Lume Berkley Provisions

Plan Date: July 14, 2021

Location: 1949 Twelve Mile Road

Zoning: Local Business District

Action Requested: Site Plan Approval

SITE DESCRIPTION

The subject site is on the south side of Tweleve Mile, south of Roseland Park Cemetary, between Henley Avenue and Brookline Street. The building includes a basement and two stories above grade. The applicant proposes to remodel the existing 24,000 sq/ft and two small staircase, and vestibule additions to the existing office building.

One small addition is located at the northwest corner (adjacent to Twelve Mile) of the building and at the southeast corner of the building. The propose uses include a mix of uses including a

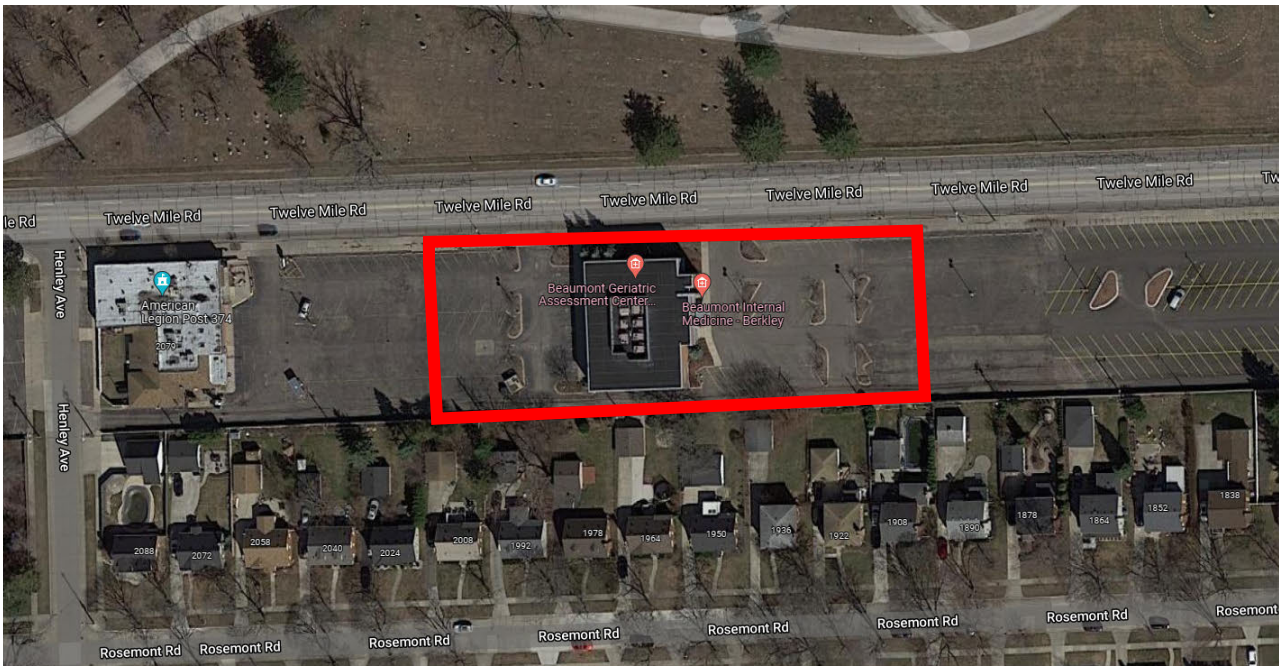
Richard K. Carlisle, *President* Douglas J. Lewan, *Executive Vice President* John L. Enos, *Principal*
David Scurto, *Principal* Benjamin R. Carlisle, *Principal* Sally M. Elmiger, *Principal* Craig Strong, *Principal* R. Donald Wortman, *Principal*
Laura K. Kreps, *Associate* Paul Montagno, *Associate*

marihuana provisioning center. There are no proposed changes or enlargement to the existing building. Site improvements include:

- Removal of existing asphalt and replacement with pervious pavers
- Installation of rain gardens, and rain cisterns
- Decorative bike rake
- Installation of benches
- Increased landscaping
- Quality architecture improvements
- Green roof:
    - Solar system
    - Wind system
    - Rain capture

The site is zoned Local Business District. Marihuana use is a permitted use but must meet the zoning requirements set forth in Section 138-528 Marihuana Business Regulations.

Site Location:



Proposed Use of Subject Parcel:

24,000 sq/ft mixed tenant commercial building including a marihuana provisioning use.

Current Use of Subject Property:

24,000 sq/ft mixed tenant commercial building

Surrounding Property Details:

Direction	Zoning	Use
North	Cemetery District	Roseland Park Cemetery
South	R1-C, Single Family Residential	Single Family Residential
East	Office District	Medical Office
West	Local Business District	Institutional (Legions Club)

Items to be addressed: *None.*

[redacted]

The site has been graded for an office building and parking lot. There are no existing natural resources.

[redacted]

The site and building layout will remain in its current configuration. The square foot arrangement of the building is as follows:

Floor	**Tenant/Use (square feet)**			**Total Square Footage**
Lower Level	Lume: 1,075	Vacant: 6,506	Utility Area: 475	8,056
First	Lume: 581	Beaumont Health: 7,357	Utility Area: 475	8,413
Second	Lume: 5,108	Vacant: 2,977		8,085
Total				**24,554**

Items to be addressed: *None*

Sec. 138-526. - Schedule of regulations of the Zoning Ordinance establishes the dimensional requirements for the Local Commercial District.

	Required / Allowed	Provided	Compliance
Front (Twelve Mile) Front yard setbacks shall be ten feet or equal to the setback of the adjacent buildings, whichever is less.	0-feet setback based upon adjacent building to east	5-feet	Complies
Side (east and west)	0-feet	Greater than 0 feet	Complies
Rear (South)	10-foot minimum setback	20 feet	Complies
Building Height	40-feet maximum height	35-8 feet	Complies

Items to be addressed: *None*

PARKING

The applicant has provided a parking table on Sheet SP-01. This is a multiple tenant building. The parking required is a total of all uses combined in the building:

	Required	Provided
LUME (Retail) 1 space per 225 usable square feet	3,721 usable sq.ft / 225 = 17 spaces	124 spaces
BEAUMONT (Medical office) 1 per 100 usable square feet	5, 177 usable sq.ft / 100 = 52	
Vacant +/- 10,000	TBD	
Barrier Free	2	4
Total	**69 spaces + future parking for vacant space (see**	**124 spaces**

	discussion below)	

Though only required 17 spaces based on the retail parking calculations, Lume from other locations notes an anticipated need of a maximum of 34 spaces. There are a total of 124 spaces at 1949 Twelve Mile Road. Of those 124, 30 spaces are shared with the adjacent American Legion though a shared parking agreement. The remaining 94 spaces are unencumbered for use solely of tenants of 1949 Twelve Mile Road. Based on anticipated need, Beaumont and Lume will need a total of 86 spaces.

Parking is sufficient for the Beaumont and Lume use at this site. However it should be noted that the future use of the vacant space in the building may be limited to uses that do not need a large amount of parking.

The shared parking agreement should be reviewed by the City Attorney to ensure it allows for shared parking in perpetuity.

Items to be Addressed: *Shared Parking Agreement to be reviewed by the City Attorney.*

SITE ACCESS AND CIRCULATION

Site access and circulation remain as currently situated. There are two points of access off Twelve Mile, and cross-access with adjacent parcels. Furthermore, there is 20-foot alley that runs behind the building. There is an existing 10-foot sidewalk on Twelve Mile and there is direct pedestrian access from Twelve Mile to front entrances.

Items to be Addressed: *None*

LANDSCAPING AND SITE AMENITIES

A landscaping plan has been provided on sheet L-1.1 and L-1.2. The applicant is proposing a robust plan which includes building planting, ROW planting, parking lot planting, and a green roof. As set forth in section 130-37, when the development of any property requiring site plan approval occurs, the City Planning Commission shall review landscaping plans and may require additional landscaping to be planted on or near the site consistent with the elements of the adopted city master plan.

Trash Enclosure:

The existing trash enclosure to remain.

Items to be Addressed*: Planning Commission to review landscaping.*

The applicant is proposing a green roof, which includes

- Solar panels
- Wind turbines
- Water collection

We support the sustainable and creative use of the green roof. Wind turbines are regulated by Section 138-99. Requirements include:

Maximum Height from Roof	**Setback**	**Other Regulations**
10 feet	No portion of the system's blades, rotor or other exposed moving part shall extend beyond the edge of the building line to which it is attached	Wind energy systems with a rated capacity of up to 2 kilowatts (2 kW) and solar energy systems shall be allowed as an accessory use subject to the required standards of this section; provided they are incidental and subordinate to a use on the same parcel, and shall supply electrical power exclusively for on-site consumption

The roof top wind system has been redesigned to comply with all provisions of Section 138-99

Items to be Addressed: *None*

PHOTOMETRICS

The applicant is proposing four 20-foot-tall parking lot poles, each with two lights attached. Applicant notes that they are not providing any external building lighting. Exterior of the building will be lit by the parking lot lights.

Items to be Addressed: *None*

EXTERIOR APPLIANCES

Applicant has shown exterior appliances (air conditioners, generators, etc.) on site plan to ensure that they are in compliance with Sec. 138-73.

Items to be Addressed: *None*

Floor plans and elevations have been provided. The applicant is making significant elevation improvements to the existing building including stairwell addition, new stain existing brick, new

sign lettering (reviewed under separate sign permit), green roof, public art mural, landscape growing cable system, and architectural accent fins.

Items to be Addressed: *None*

MARIHUANA BUSINESS REGULATIONS

Section 138-528 Marihuana Business Regulations, the site plan shall be reviewed and approved by the Planning Commission upon finding that:

a) **A marihuana business must front on a major thoroughfare with the primary ingress/egress onto a major thoroughfare.**

CWA Response: The marihuana business fronts on Twelve Mile Road, with ingress/egress onto a major throughfare.

b) **The marihuana business must have all applicable state and local licenses and approvals to operate.**

CWA Response: The marihuana business will be required to obtain all applicable state license prior to any final approvals.

c) **The property where the marihuana business will be located must be entirely within the boundaries of the city and must not be within 1,000 feet of a pre-existing public or private school providing education in kindergarten or any of grades 1 through 12.**

CWA Response: The marihuana business will not be located with 1,000 feet of any pre-existing public or private school.

d) **Notwithstanding any other provision in the zoning ordinance, a marihuana business must operate within a fully enclosed building.**

CWA Response: The marihuana business will operation within a fully enclosed building.

e) **Pursuant to article XV of chapter 30 of the Berkley City Code, all marihuana business license approvals are subject to the following:**
   i. **Public notice requirements as outlined in section 30-806; and**
   ii. **Site plan approval from the planning commission must be obtained prior to receiving license approval from the city council. Failure to do so will result in license denial as outlined in section 30-813.**

CWA Response: 1). Public notice requirement was met; and 2). The applicant is seeking site plan approval from the Planning Commission. If granted site plan approval, the applicant would then seek license approval from the City Council.

Items to be Addressed: *None*

RECOMMENDATION

Overall the applicant is making a significant investment into the site as noted in our report. We recommend preliminary site plan approval with the condition that the Shared Parking Agreement be reviewed by the City Attorney.

Sincerely,

Benjamin R. Carlisle

CARLISLE/WORTMAN ASSOC., INC.
Benjamin R. Carlisle, LEED AP, AICP

CITY OF BERKLEY
DEPARTMENT OF PUBLIC WORKS
3238 BACON AVE, BERKLEY, MICHIGAN 48072

Transmittal Memo

To:	Megan Masson-Minock, Interim Community Development Director (via email)
Cc:	Kim Anderson, Community Development Department (via email) Ric Chalmers, Assistant DPW Director (via email) Eddie Zmich, HRC (via email)
From:	Shawn Young, DPW Director
Date:	May 9th, 2022
Subject:	Lume Provisioning Center 1949 Twelve Mile Road

We have reviewed the revised site plans provided by the Community Development Department on April 25th, 2022. Please find below our comments:

1. In leu of a parcel combination, we understand the applicant is working with the City Attorney on a perpetual easement to address drainage and stormwater detention. This easement shall be approved, signed and recorded with the County prior to the preconstruction meeting.
2. The revised site plans indicate the removal of the existing fire hydrant near the southwest corner of the building. A new fire hydrant is proposed within the 12 Mile right-of-way. This work will need to be coordinated with the Department of Public Works, the Department of Public Safety, and the Road Commission for Oakland County.
3. The eastern parking lot has now been added to the detention calculations. City's engineering consultant, Hubbell, Roth & Clark (HRC), will review the recently updated Geotechnical Report and revised stormwater detention calculations.
4. 12 Mile is under the jurisdiction of the Road Commission for Oakland County. The applicant shall share feedback received from the County and/or an approved RCOC plan.
5. A stormwater maintenance agreement shall be signed and finalized. An agreement template, as approved by the City Attorney, was previously provided to the applicant and shall be merged with the Exhibits. Note the porous pavement recommendations from the Geotechnical Report shall be incorporated into the agreement (vacuum sweeping should be performed three to four times per year to remove sediment and fines from the porous pavement).

A response letter from the applicant to the comments noted above would be helpful in subsequent reviews.

Feel free to call with any questions or concerns. Thank you.

Shawn Young
Director of Public Works

City of Berkley

3338 Coolidge Highway, Berkley, MI 48072

"We Care"

Fire Inspector
Office: 248-658-3326
Fax: 248-658-3301
Email: pkelly@berkleymich.net

TO: John Vitale, Architect
John Lipchick, Building Official
Monarch Acquisitions, Owner

RE: 1949 W. Twelve Mile Rd.

Dear Interested Parties: 2/3/2022

I have received and reviewed the site plan/conceptual design package for the above address, and approved them subject to the following:

1) Sprinkler system modifications not shown, must be submitted for review.
2) Existing/new fire extinguishers not shown.
3) Note that no processing of marijuana is permitted in the City in buildings within 300' of residential property.

Please contact me if you have any questions regarding this communication.

Respectfully,

P. Kelly

Pete Kelly
Fire Inspector

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

MAILING: PO Box 824
Bloomfield Hills, MI 48303-0824
SHIPPING: 555 Hulet Drive
Bloomfield Hills, MI 48302-0360
PHONE: 248-454-6300
WEBSITE: hrcengr.com

May 9, 2022

City of Berkley
3338 Coolidge Highway
Berkley, Michigan 48072

Attention: Ms. Megan Masson-Minock, Community Development Director
Mr. Matthew Baumgarten, City Manager

Re: Lume
1949 Twelve Mile Road
Engineering Site Plan – Review No. 3
City of Berkley, MI

HRC Job No. 20200908.02

Dear Ms. Masson-Minock and Mr. Baumgarten:

As Consulting Engineers for the City of Berkley, and in accordance with your request, we have completed the Engineering Site Plan review of the proposed subject development located at 1949 Twelve Mile Road for compliance with the City of Berkley's engineering and site plan requirements. The plans were prepared by Stucky-Vitale Architects of Royal Oak, Michigan with the engineering site plan created by PEA Group of Brighton, Michigan. The plans have a revision date of April 15, 2022. The proposed project scope includes the renovation of the existing building and replacement of the existing parking lot and other site features. We hereby offer the following comments:

General:

1. A Road Commission for Oakland County (RCOC) permit will be required for proposed work within the 12-Mile Road right-of-way as well as for construction signage. **This item is still Applicable.**

2. A traffic control, or Maintenance of Traffic (MOT), plan and sequence of construction must be added to the plans, including an estimated duration for any lane closures that may be required. *A traffic control plan has been added to the plans.* **A sequence of construction with lane closure estimates must be submitted prior to construction.**

3. A separate demolition sheet must be provided in the plan set that shows all site demolition work including any exterior building work which may impact the site. *A demolition sheet has been provided. This item has been satisfactorily addressed.*

4. The extent of curb, sidewalk, and pavement removal and replacement must be clearly shown on the plans. In addition, the City may require additional sections of existing curb and gutter and sidewalks along 12 Mile Road to be removed and replaced as part of the proposed project in order to address the current deteriorated conditions and will defer comment to the City. *A demolition sheet has been provided as well as further detail on the proposed sheets to clarify the extent of pavement work. This item has been satisfactorily addressed.*

Water and Fire Protection Services:

1. The proposed 8" water main has a note stating "connect to existing water service into building". It appears that this connection would be to the existing 8" main for the south hydrant, not for the building service, and the note must be updated to reflect this. *The connection note has been revised. This item has been satisfactorily addressed.*

2. The relocation of the 8" water main will require a new connection with a new tapping sleeve, valve and well. *This type of connection has been shown for the relocated hydrant. This item has been satisfactorily addressed.*

Storm Drainage and Detention/Sanitary Sewer:

1. Stormwater runoff calculations are provided using a 100-year, 24-hour storm event and show the required storage volume for the proposed site. Calculations and details must also be added to the plans demonstrating that the storage volume provided by the proposed stormwater management system meets or exceeds this requirement. Further, sources for the values of the runoff coefficients must be cited on the plans for the proposed permeable pavement areas. ***Stormwater calculations have been provided; however, the construction limits have been expanded from the previous submittal to include the remainder of the parking lots to the west and east of what was previously shown for replacement. These areas also must included in the stormwater calculations and must have stormwater detention provided for them.*** **The stormwater calculations have been updated to include the eastern lot, and additional stormwater detention measures have been proposed to detain the required storage for the full site. This item has been satisfactorily addressed.**

2. A geotechnical investigation must be performed to evaluate the feasibility of the proposed stormwater management system. The report and soil logs must be submitted along with the plans, including the elevation of the groundwater table, soil types encountered, and the design recommendations or comments on the proposed stormwater collection system. ***The geotechnical report has been submitted which states that the proposed stormwater system and cross sections are feasible in the site soils. Any further changes made to the detention system or site stormwater management as stated in the previous comment must be made in accordance with the recommendations provided in the soils report.*** **An addendum to the geotechnical report has been submitted for the additional site areas. This item has been satisfactorily addressed.**

3. Grades must be provided for inverts of proposed storm sewer and structures. *Rim and invert grades of structures have been provided. This item has been satisfactorily addressed.*

4. Details of the proposed outlet control structure and diversion manholes must be shown on the plans. *Details have been shown on the plans. This item has been satisfactorily addressed.*

5. Cross-sectional details and proposed composition of the rain gardens must be shown on the plans. *These have been provided on the plans. This item has been satisfactorily addressed.*

6. The types of pre-treatment proposed for each area of collection must be specified. *These have been provided on the plans. This item has been satisfactorily addressed.*

7. The developer will be required to prepare and enter into a perpetuity maintenance agreement with the City for the proposed private stormwater systems. The Applicant must contact the City DPW regarding this item prior to commencing construction. **This item is still applicable.**

8. A note indicates the existing building sanitary lead will remain in place and be re-utilized. The applicant must have the sanitary lead inspected by a licensed contractor/plumber and the video footage submitted to the City verifying the lead is suitable for re-use prior to construction. **The inspection video and report have been submitted and show that the existing lead is in suitable condition for re-use. This item has been satisfactorily addressed.**

Recommendation:

Based on our aforementioned comments, we recommend approval of the proposed Site Plan subject to the Applicant submitting the full traffic control plan with sequence of construction, the stormwater maintenance agreement, and any required permits to the City of Berkley.

If you have any questions or require any additional information, please contact the undersigned.

Very truly yours,

HUBBELL, ROTH & CLARK, INC.

Edward D. Zmich
Project Manager

Mitch Stark
Review Engineer

EDZ/MAS/mas
pc: City of Berkley; Mr. Derrick Schueller, Mr. Shawn Young
HRC; R. Alix, File
PEA Group; S. Peruski
Stucky-Vitale; M. Dragan

LUME | BERKLEY | PROVISIONING CENTER

1949 12 MILE RD., BERKLEY, MI 48237

OWNER:
MONARCH ACQUISITIONS LLC

LESSEE:
ATTITUDE WELLNESS LLC D/B/A LUME
CANNABIS CO.

ARCHITECT:
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067
(248) 546-6700

CIVIL ENGINEER:
PEA GROUP
7927 NEMCO WAY, SUITE 115
BRIGHTON, MICHIGAN, 48116
(517) 546-8583

PROJECT DATA:

BUILDING CODE AUTHORITY:
CITY OF BERKLEY

TYPE OF CONSTRUCTION:
II-B

USE GROUP:
M - MERCANTILE

PROJECT AREA:
EXISTING BUILDING BASEMENT +2 STORY ABOVE GROUND

EXISTING GROSS FLOOR AREA :	+/- 22,650 SF
GROSS FLOOR AREA AFTER REMODEL :	+/- 22,956 SF
LOWER LEVEL	7,666 SF
FIRST FLOOR :	7,826 SF
SECOND FLOOR:	7,464 SF
	+/- 22,956 SF
ROOF AREA TOTAL :	8,607 SF
(LIVE ROOF + SOLAR PANELS :	4,544 SF)

PROPOSED LUME TENANT REMODEL

LUME PROVISIONING CENTER:	
LOWER LEVEL AREA:	0SF
FIRST FLOOR AREA +ELEVATOR LOBBY AND STAIR:	430 SF
SECOND FLOOR AREA :	4,887 SF
TOTAL GROSS FLOOR AREA	5,317 SF

EXISTING TENANTS

LOWER LEVEL:	
VACANT TENANT SPACE :	7,666 SF (APPROX.)
GROUND FLOOR:	
WILLIAM BEAUMONT HOSPITAL	
NORTHPOINTE HEALTH CENTER	
INTERNAL MEDICINE AND GERIATRICS SUITE:	7,246 SF
ACCESS TO LOWER LEVEL	150 SF
SECOND FLOOR:	
VACANT TENANT SUITE:	2,577 SF (APPROX.)



CONCEPTUAL DESIGN RENDERING

PROJECT AREA:
REFER TO ENLARGED SITE PLAN
ON SHEET SP1.1



N
AERIAL MAP
SCALE: NTS

SHEET INDEX

DRAWING INDEX KEY:
- NOT ISSUED
- PREVIOUSLY ISSUED
- ISSUED
- REFERENCE

		ISSUED FOR: 06.24.21 SPA	07.14.21 SPA	03.26.22 SPA REV.	04.25.22 SPA REV.PER CITY
GENERAL					
TS1.1	TITLE SHEET AND SHEET INDEX AND OVERALL SITE PLAN	○	○	●	
CIVIL					
	COVER PAGE	○	○	○	●
C-1.0	TOPOGRAPHIC SURVEY	○	○	○	●
C-1.1	DEMOLITION PLAN				●
C-2.0	DIMENSION AND PAVING PLAN (WEST)	○	○	○	●
C-2.1	DIMENSION AND PAVING PLAN (EAST)				●
C-3.0	GRADING PLAN (WEST)	○	○	○	●
C-3.1	GRADING PLAN (EAST)				●
C-4.0	UTILITY PLAN (WEST)	○	○	○	●
C-4.1	UTILITY PLAN (EAST)				●
C-5.0	STORM WATER MANAGEMENT PLAN (WEST)	○	○	○	●
C-5.1	STORM WATER MANAGEMENT PLAN (EAST)	○	○	○	●
C-5.2	STORM WATER SYSTEM CALCULATIONS (WEST)				●
C-5.3	STORM WATER SYSTEM CALCULATIONS (EAST)				●
C-6.0	NOTES AND DETAILS	○	○	○	●
C-7.0	MAINTENANCE OF TRAFFIC CONTROL PLAN				●
L-1.0	OVERALL SITE AMENITIES PLAN	○	○	○	●
L-1.1	LANDSCAPE PLAN	○	○	○	●
L-1.2	LANDSCAPE DETAILS	○	○	○	●
1OF1	PHOTOMETRIC SITE PLAN				●
ARCHITECTURAL					
EC1.1	EXISTING CONDITIONS	○	○	○	●
SP0.1	PARKING ALLOCATION DIAGRAM			○	●
SP1.0	SITE VICINITY	○	○	○	●
A1.0	LOWER LEVEL FLOOR PLAN	○	○	☒	☒
A1.1	FIRST FLOOR PLAN	○	○	○	●
A1.2	SECOND FLOOR PLAN	○	○	○	●
A1.3	ARCHITECTURAL ROOF PLAN	○	○	○	●
A1.4	SECURITY PLAN			○	●
A3.1	EXTERIOR ELEVATIONS	○	○	○	●
A3.2	EXTERIOR ELEVATIONS - COLORED	○	○	○	●
A3.3	CONCEPTUAL RENDERINGS	○	○	○	●

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No.
1301029086
LICENSED ARCHITECT

© 2022 STUCKY VITALE ARCHITECTS

LUME - BERKLEY - PROVISIONING CENTER

SVA
STUCKY VITALE ARCHITECTS

2020.154

LUME - BERKLEY - PROVISIONING CENTER
1949 12 MILE ROAD,
BERKLEY, MI

CONCEPTUAL DESIGN PACKAGE

SITE PLAN APPROVAL

APRIL 25, 2022

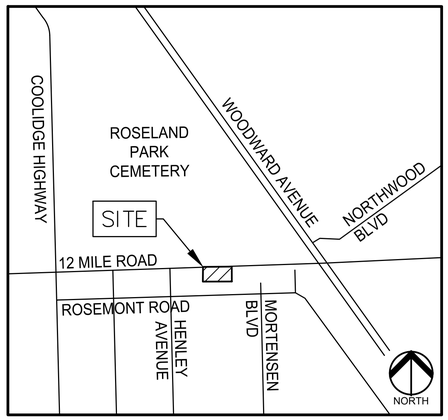
SHEET:
TS1.1

SITE PLANS

LUME - BERKLEY

1949 12 MILE ROAD

CITY OF BERKLEY, OAKLAND COUNTY, MICHIGAN



LOCATION MAP
NO SCALE

INDEX OF DRAWINGS	
NUMBER	TITLE
	COVER SHEET
C-1.0	TOPOGRAPHIC SURVEY
C-1.1	DEMOLITION PLAN
C-2.0	DIMENSION AND PAVING PLAN (WEST)
C-2.1	DIMENSION AND PAVING PLAN (EAST)
C-3.0	GRADING PLAN (WEST)
C-3.1	GRADING PLAN (EAST)
C-4.0	UTILITY PLAN (WEST)
C-4.1	UTILITY PLAN (EAST)
C-5.0	STORM WATER MANAGEMENT PLAN (WEST)
C-5.1	STORM WATER MANAGEMENT PLAN (EAST)
C-5.2	STORM WATER SYSTEM CALCULATIONS (WEST)
C-5.3	STORM WATER SYSTEM CALCULATIONS (EAST)
C-6.0	NOTES AND DETAILS
C-7.0	MAINTENANCE OF TRAFFIC CONTROL PLAN
L-1.0	OVERALL SITE AMENITIES PLAN
L-1.1	LANDSCAPE PLAN
L-1.2	LANDSCAPE DETAILS
1 of 1	PHOTOMETRIC SITE PLAN

DESIGN TEAM

OWNER

MONARCH ACQUISITIONS LLC
28400 NORTHWESTERN HIGHWAY
SOUTHFIELD, MI 48034

ARCHITECT

STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MI 48067
CONTACT: MONICA DRAGAN
PHONE: 248.546.6700
EMAIL: MDRAGAN@STUCKYVITALE.COM

LANDSCAPE ARCHITECT

PEA GROUP
7927 NEMCO WAY, STE. 115
BRIGHTON, MI 48116
CONTACT: JANET EVANS
PHONE: 844.813.2949
EMAIL: JEVANS@PEAGROUP.COM

APPLICANT/LESSEE

ATTITUDE WELLNESS LLC D/B/A LUME CANNABIS CO.
769 CHICAGO ROAD
TROY, MI 48083
CONTACT: JOHN ABBO
PHONE: 248.877.2336
EMAIL: JOHN.ABBO@LUME.COM

CIVIL ENGINEER

PEA GROUP
7927 NEMCO WAY, STE. 115
BRIGHTON, MI 48116
CONTACT: SCOTT A. PERUSKI, PE
PHONE: 844.813.2949
EMAIL: SPERUSKI@PEAGROUP.COM

REVISIONS	
DESCRIPTION	DATE
ORIGINAL ISSUE DATE	3/4/2022
REVISE PER CITY	3/26/2022
PROGRESS SET	4/15/2022
REVISE PER CITY	4/25/2022

STATE OF MICHIGAN
SCOTT A. PERUSKI
ENGINEER
No. 60666
LICENSED PROFESSIONAL ENGINEER

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #300
GEAR PIN IN THE SOUTH SIDE OF A 10" TREE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 200'± EAST FROM THE CENTERLINE OF HENLEY AVENUE.
ELEV. 378.86

BM #301
RR SPIKE IN THE SOUTH SIDE OF A POWER POLE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 175'± SOUTHWEST FROM THE CORNER OF THE MAUSOLEUM.
ELEV. – 673.39

BM #302
FOUND MAG NAIL IN THE NORTH SIDE OF A POWER POLE LOCATED APPROX. 30'± SOUTHEAST FROM THE SOUTHWEST BUILDING CORNER, AND APPROX. 50'± SOUTHWEST FROM THE SOUTHEAST BUILDING CORNER OF 1949 12 MILE ROAD.
ELEV. – 676.24

LEGAL DESCRIPTION

PARCEL 25–17–126–002
T1N, R11E, SEC 17 STEPHENSON–BARBERS ROSELAND SUB LOTS 44 TO 55 INCL, ALSO ALL OF VAC ALLEY ADJ TO SAME 1–5–01 CORR

PARCEL 25–17–126–003
T1N, R11E, SEC 17 STEPHENSON–BARBERS ROSELAND SUB LOTS 32 TO 43 INCL, ALSO ALL OF VAC ALLEY ADJ TO SAME 1–5–01 CORR

MISS DIG NOTE:
MISS DIG TICKET NUMBER: A03020279 DATED 10/28/2020

LEGEND

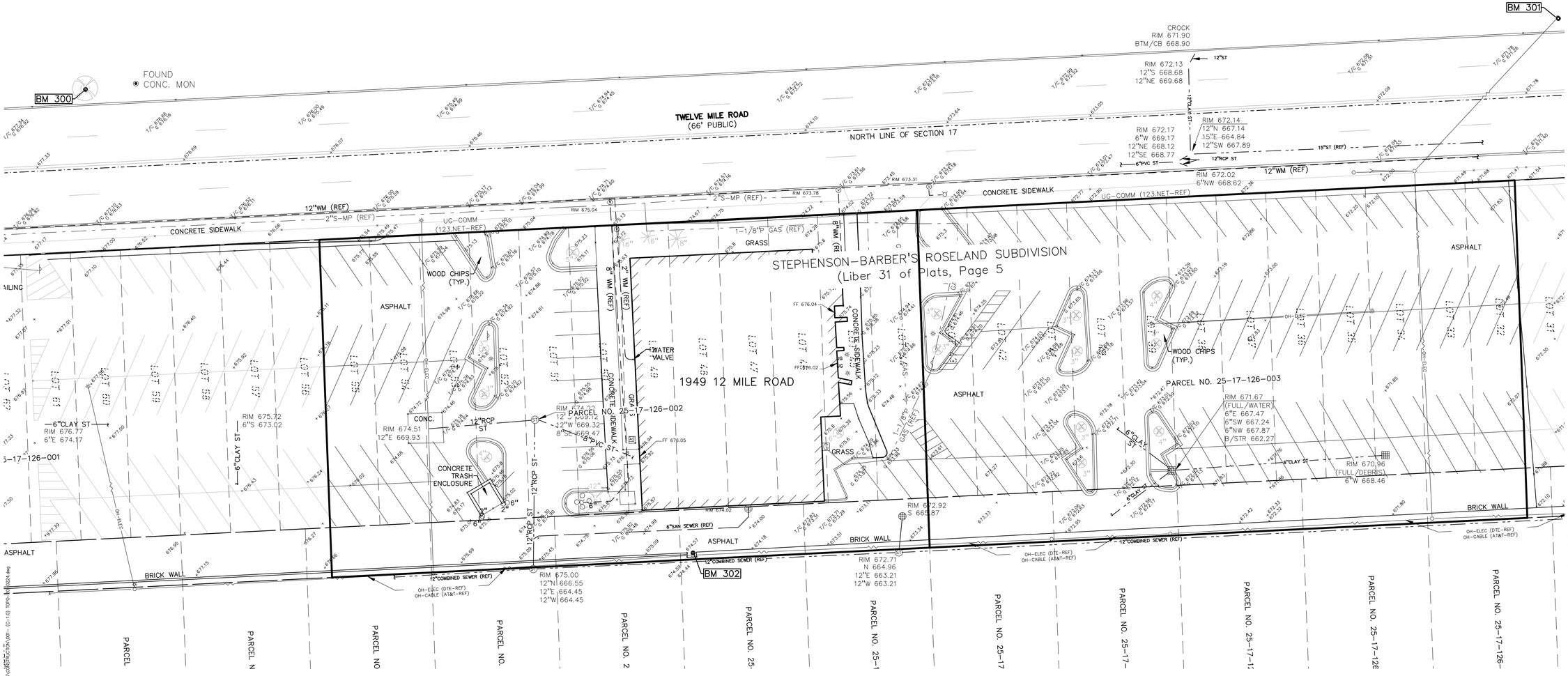
IRON FOUND
IRON SET
NAIL FOUND
NAIL & CAP SET
BRASS PLUG SET
MONUMENT FOUND
MONUMENT SET
SEC. CORNER FOUND
R RECORDED
M MEASURED
C CALCULATED

EXISTING

ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
UNDERGROUND CABLE TV, CATV PEDESTAL
TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
GAS MAIN, VALVE & GAS LINE MARKER
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
SANITARY SEWER, CLEANOUT & MANHOLE
STORM SEWER, CLEANOUT & MANHOLE
COMBINED SEWER & MANHOLE
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
POST INDICATOR VALVE
WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
UNIDENTIFIED STRUCTURE
SPOT ELEVATION
CONTOUR LINE
FENCE
GUARD RAIL
STREET LIGHT
SIGN
CONCRETE
ASPHALT
GRAVEL SHOULDER

REFERENCE DRAWINGS

CABLE	AT&T MAP A1, DATED 10/29/2020
	123.NET MAP, EMAIL DATE 10/8/2020
ELECTRIC	DTE ELECTRIC FACILITY MAP #310-366, DATED 11/3/2020
GAS	CONSUMERS QUARTER SECTION MAP 01-61-17-2M DATED 02-22-2019
STORM SEWER	CITY OF BERKLEY GIS MAPS, EMAIL DATED 10/29/2020
WATER MAIN	CITY OF BERKLEY GIS MAPS & SKETCHES, EMAIL DATED 10/29/2020



PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

NORTH
0 10 20 40
SCALE: 1" = 20'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS	
FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
TOPOGRAPHIC SURVEY

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-1.0

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 - LUME - BERKLEY, MI\CAD\TOPO\2020-0224 TOPO.dwg (C-1.0) Apr 15, 2022 - 1:01pm

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #300
GEAR PIN IN THE SOUTH SIDE OF A 10" TREE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 200'± EAST FROM THE CENTERLINE OF HENLEY AVENUE.
ELEV. 378.86

BM #301
RR SPIKE IN THE SOUTH SIDE OF A POWER POLE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 175'± SOUTHWEST FROM THE CORNER OF THE MAUSOLEUM.
ELEV. – 673.39

BM #302
FOUND MAG NAIL IN THE NORTH SIDE OF A POWER POLE LOCATED APPROX. 30'± SOUTHEAST FROM THE SOUTHWEST BUILDING CORNER, AND APPROX. 50'± SOUTHWEST FROM THE SOUTHEAST BUILDING CORNER OF 1949 12 MILE ROAD.
ELEV. – 676.24

DEMOLITION LEGEND:

- ITEM TO BE PROTECTED (S1)
- ITEM TO BE REMOVED
- CURB AND GUTTER REMOVAL
- CONCRETE PAVEMENT AND SIDEWALK REMOVAL
- UTILITY REMOVAL
- ASPHALT REMOVAL
- TREE REMOVAL
- SAWCUT LINE

GENERAL DEMOLITION NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:

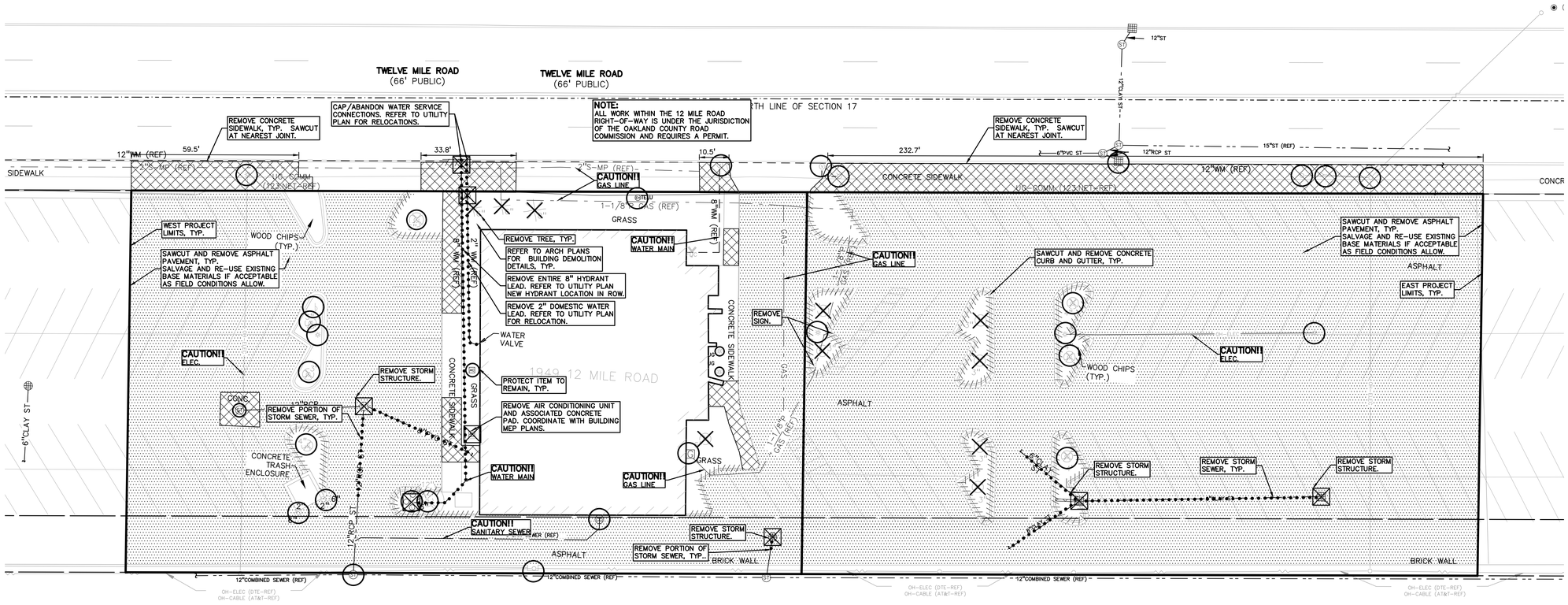
1. ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF–SITE IN A LEGAL MANNER. NO ON–SITE BURY OR BURN PITS SHALL BE ALLOWED.
2. ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
3. STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
4. SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
5. REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
6. REFER TO SHEET LANDSCAPE PLANS FOR TREE PROTECTION DETAILS.
7. THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
9. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
10. THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
11. ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
12. REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
13. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
14. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

LEGEND

- IRON FOUND
- IRON SET
- NAIL FOUND
- NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND
- MONUMENT SET
- SEC. CORNER FOUND
- R RECORDED
- M MEASURED
- C CALCULATED

EXISTING

- OVERHEAD ELECTRIC, POWER POLE, GUY ANCHOR
- FIBER OPTIC
- TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
- GAS MAIN, VALVE & GAS LINE MARKER
- WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
- POST INDICATOR VALVE
- WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
- MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE
- SPOT ELEVATION
- 670 CONTOUR LINE
- FENCE
- GUARD RAIL
- STREET LIGHT
- SIGN
- CONC. CONCRETE
- ASPH. ASPHALT
- PERVIOUS PAVERS



PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

NORTH

0 10 20 40
SCALE: 1" = 20'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS

FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
DEMOLITION PLAN

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-1.1

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 JOB LUME – BERKLEY\CAD\CONSTRUCTION\2020-0224 (C-1.1) DEMO-2D-0224.dwg

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #300
GEAR PIN IN THE SOUTH SIDE OF A 10" TREE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 200'± EAST FROM THE CENTERLINE OF HENLEY AVENUE.
ELEV. 378.86

BM #301
RR SPIKE IN THE SOUTH SIDE OF A POWER POLE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 175'± SOUTHWEST FROM THE CORNER OF THE MAUSOLEUM.
ELEV. – 673.39

BM #302
FOUND MAG NAIL IN THE NORTH SIDE OF A POWER POLE LOCATED APPROX. 30'± SOUTHEAST FROM THE SOUTHWEST BUILDING CORNER, AND APPROX. 50'± SOUTHWEST FROM THE SOUTHEAST BUILDING CORNER OF 1949 12 MILE ROAD.
ELEV. – 676.24

LEGAL DESCRIPTION

PARCEL 25–17–126–002
T1N, R11E, SEC 17 STEPHENSON–BARBERS ROSELAND SUB LOTS 44 TO 55 INCL, ALSO ALL OF VAC ALLEY ADJ TO SAME 1–5–01 CORR

PARCEL 25–17–126–003
T1N, R11E, SEC 17 STEPHENSON–BARBERS ROSELAND SUB LOTS 32 TO 43 INCL, ALSO ALL OF VAC ALLEY ADJ TO SAME 1–5–01 CORR

SIGN LEGEND:

'BARRIER FREE PARKING' SIGN	[1]
'VAN ACCESSIBLE' SIGN	[2]
'DO NOT ENTER' SIGN	[3]
'CURBSIDE PICK–UP' SIGN	[4]

REFER TO DETAIL SHEET FOR SIGN DETAILS

GENERAL NOTES:

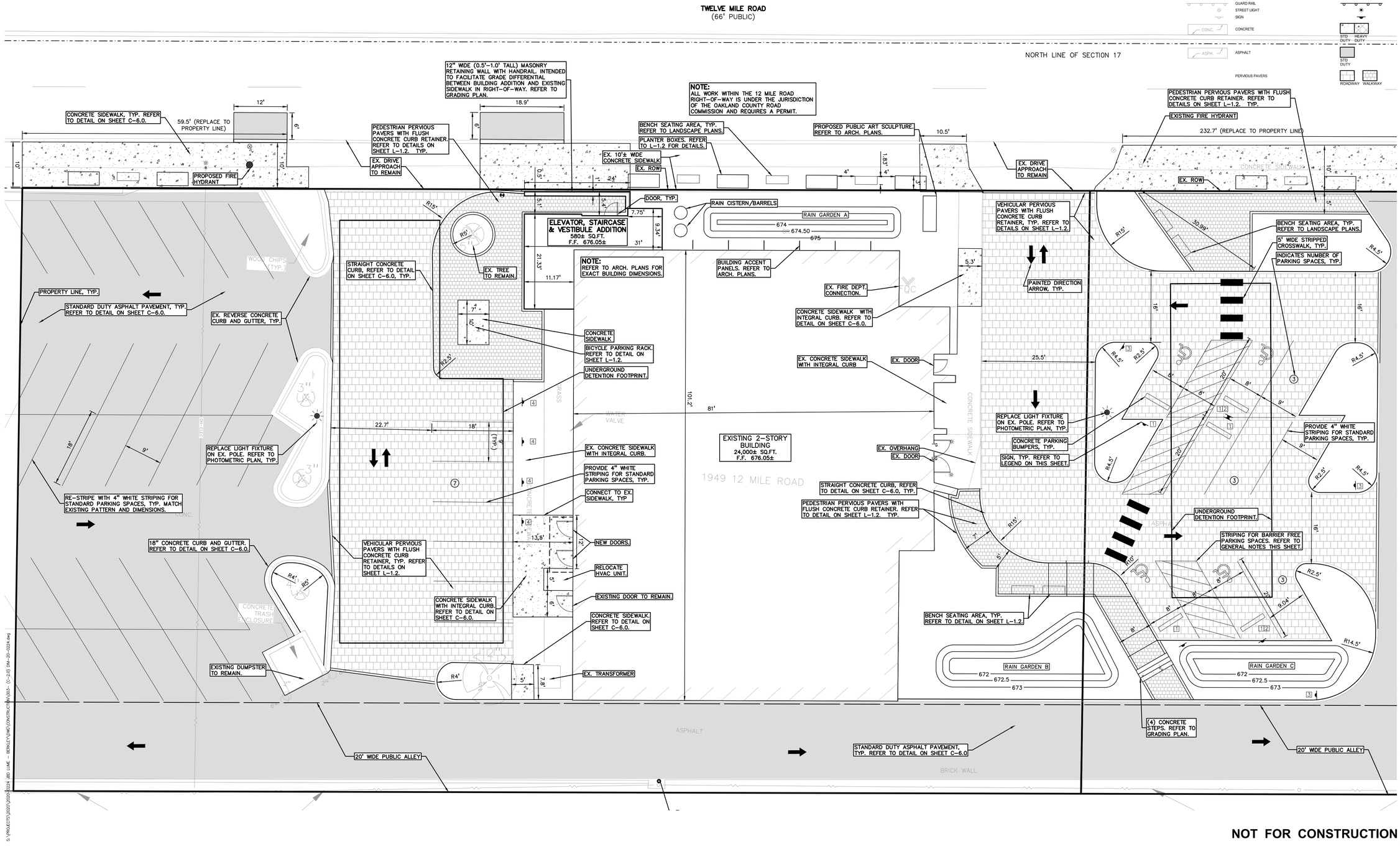
THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
2. 'NO PARKING–FIRE LANE' SIGNS SHALL BE POSTED ALONG ALL FIRE LANES AS DIRECTED BY THE FIRE OFFICIAL.
3. REFER TO DETAILS SHEET FOR ON–SITE PAVING DETAILS.
4. REFER TO DETAILS SHEET FOR ON–SITE SIDEWALK RAMP DETAILS

LEGEND

IRON FOUND · IRON SET · NAIL FOUND · NAIL & CAP SET · BRASS PLUG SET · MONUMENT FOUND · MONUMENT SET · SEC. CORNER FOUND · R RECORDED · M MEASURED · C CALCULATED

EXISTING		PROPOSED
	OVERHEAD ELECTRIC, POWER POLE, GUY ANCHOR	
	FIBER OPTIC	
	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE	
UG–ELEC–E	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
	GAS MAIN, VALVE & GAS LINE MARKER	
	WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
	SANITARY SEWER, CLEANOUT & MANHOLE	
	STORM SEWER, CLEANOUT & MANHOLE	
	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
	POST INDICATOR VALVE	
	WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF	
	MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE	
	UNIDENTIFIED STRUCTURE	
	SPOT ELEVATION	671.21
670	CONTOUR LINE	671
	FENCE	
	GUARD RAIL	
	STREET LIGHT	
	SIGN	
CONC.	CONCRETE	STD DUTY · HEAVY DUTY
ASPH.	ASPHALT	STD DUTY
	PERVIOUS PAVERS	ROADWAY · WALKWAY



NOT FOR CONSTRUCTION

PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

NORTH

0 5 10 20
SCALE: 1" = 10'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS

FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
DIMENSION AND PAVING PLAN (WEST)

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-2.0

S:\PROJECTS\2020\2020-0224 LEO LUME – BERKLEY,MI\CONSTRUCTION\2020-0224 - (C-2.0)(Wed–Apr–20–2022).dwg

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #300
GEAR PIN IN THE SOUTH SIDE OF A 10" TREE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 200'± EAST FROM THE CENTERLINE OF HENLEY AVENUE.
ELEV. 378.86

BM #301
RR SPIKE IN THE SOUTH SIDE OF A POWER POLE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 175'± SOUTHWEST FROM THE CORNER OF THE MAUSOLEUM.
ELEV. – 673.39

BM #302
FOUND MAG NAIL IN THE NORTH SIDE OF A POWER POLE LOCATED APPROX. 30'± SOUTHEAST FROM THE SOUTHWEST BUILDING CORNER, AND APPROX. 50'± SOUTHWEST FROM THE SOUTHEAST BUILDING CORNER OF 1949 12 MILE ROAD.
ELEV. – 676.24

LEGAL DESCRIPTION

PARCEL 25-17-126-002
T1N, R11E, SEC 17 STEPHENSON-BARBERS ROSELAND SUB LOTS 44 TO 55 INCL, ALSO ALL OF VAC ALLEY ADJ TO SAME 1-5-01 CORR

PARCEL 25-17-126-003
T1N, R11E, SEC 17 STEPHENSON-BARBERS ROSELAND SUB LOTS 32 TO 43 INCL, ALSO ALL OF VAC ALLEY ADJ TO SAME 1-5-01 CORR

SIGN LEGEND:

'BARRIER FREE PARKING' SIGN	[1]
'VAN ACCESSIBLE' SIGN	[2]
'DO NOT ENTER' SIGN	[3]

REFER TO DETAIL SHEET FOR SIGN DETAILS

GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
2. 'NO PARKING-FIRE LANE' SIGNS SHALL BE POSTED ALONG ALL FIRE LANES AS DIRECTED BY THE FIRE OFFICIAL.
3. REFER TO DETAILS SHEET FOR ON-SITE PAVING DETAILS.
4. REFER TO DETAILS SHEET FOR ON-SITE SIDEWALK RAMP DETAILS

LEGEND

IRON FOUND
IRON SET
NAIL FOUND
NAIL & CAP SET
BRASS PLUG SET
MONUMENT FOUND
MONUMENT SET
SEC. CORNER FOUND
R RECORDED
M MEASURED
C CALCULATED

EXISTING	PROPOSED
OVERHEAD ELECTRIC, POWER POLE, GUY ANCHOR	
FIBER OPTIC	
TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	
STORM SEWER, CLEANOUT & MANHOLE	
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
POST INDICATOR VALVE	
WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF	
MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE	
UNIDENTIFIED STRUCTURE	
SPOT ELEVATION	671.21
CONTOUR LINE	671
FENCE	
GUARD RAIL	
STREET LIGHT	
SIGN	
CONCRETE	STD DUTY / HEAVY DUTY
ASPHALT	STD DUTY
PERVIOUS PAVERS	ROADWAY / WALKWAY

17

PEDESTRIAN PERVIOUS PAVERS WITH FLUSH CONCRETE CURB RETAINER. REFER TO DETAILS ON SHEET L-1.2. TYP.
EXISTING FIRE HYDRANT
232.7' (REPLACE TO PROPERTY LINE)
CONCRETE SIDEWALK
EX. ROW
CONCRETE SIDEWALK, TYP. REFER TO DETAIL ON SHEET C-6.0.
EX. 10'± WIDE CONCRETE SIDEWALK
CONCRETE S
BENCH SEATING AREA, TYP. REFER TO LANDSCAPE PLANS.
5' WIDE STRIPPED CROSSWALK, TYP.
INDICATES NUMBER OF PARKING SPACES, TYP.
R15'
30.99'
R14.5'
16'
PROVIDE 4" WHITE STRIPING FOR STANDARD PARKING SPACES, TYP.
R2.5'
R4.5'
UNDERGROUND DETENTION FOOTPRINT.
STRIPING FOR BARRIER FREE PARKING SPACES. REFER TO GENERAL NOTES THIS SHEET.
R10'
9.04'
RAIN GARDEN C
672
672.5
673
(4) CONCRETE STEPS. REFER TO GRADING PLAN.
20' WIDE PUBLIC ALLEY
STANDARD DUTY ASPHALT PAVEMENT, TYP. REFER TO DETAIL ON SHEET C-6.0.
RE-STRIPE WITH 4" WHITE STRIPING FOR STANDARD PARKING SPACES, TYP. MATCH EXISTING PATTERN AND DIMENSIONS.
9' TYP.
18' TYP.
ASPHALT
PROPERTY LINE, TYP.
R2'
R10'
REPLACE LIGHT FIXTURE ON EX. POLE. REFER TO PHOTOMETRIC PLAN.
REPLACE LIGHT FIXTURE ON EX. POLE. REFER TO PHOTOMETRIC PLAN.
UNDERGROUND DETENTION FOOTPRINT.
18" CONCRETE CURB AND GUTTER. REFER TO DETAIL ON SHEET C-6.0.
R7'
BRICK WALL

NORTH
0 5 10 20
SCALE: 1" = 10'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS	
FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
DIMENSION AND PAVING PLAN (EAST)

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-2.1

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 4BD LUME – BERKLEY\DWG\CONSTRUCTION\(03)- (C-2.0) DIM-20-0224.dwg

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #300
GEAR PIN IN THE SOUTH SIDE OF A 10" TREE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 200'± EAST FROM THE CENTERLINE OF HENLEY AVENUE.
ELEV. 378.86

BM #301
RR SPIKE IN THE SOUTH SIDE OF A POWER POLE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 175'± SOUTHWEST FROM THE CORNER OF THE MAUSOLEUM.
ELEV. – 673.39

BM #302
FOUND MAG NAIL IN THE NORTH SIDE OF A POWER POLE LOCATED APPROX. 30'± SOUTHEAST FROM THE SOUTHWEST BUILDING CORNER, AND APPROX. 50'± SOUTHWEST FROM THE SOUTHEAST BUILDING CORNER OF 1949 12 MILE ROAD.
ELEV. – 676.24

LEGEND

IRON FOUND
IRON SET
NAIL FOUND
NAIL & CAP SET
BRASS PLUG SET
MONUMENT FOUND
MONUMENT SET
SEC. CORNER FOUND
R RECORDED
M MEASURED
C CALCULATED

EXISTING	PROPOSED
OVERHEAD ELECTRIC, POWER POLE, GUY ANCHOR	
FIBER OPTIC	
TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	
STORM SEWER, CLEANOUT & MANHOLE	
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
POST INDICATOR VALVE	
WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF	
MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE	
UNIDENTIFIED STRUCTURE	
SPOT ELEVATION	671.21
670 CONTOUR LINE	671
FENCE	
GUARD RAIL	
STREET LIGHT	
SIGN	
CONCRETE	STD DUTY / HEAVY DUTY
ASPHALT	STD DUTY
PERVIOUS PAVERS	ROADWAY / WALKWAY

TWELVE MILE ROAD
(66' PUBLIC)

NORTH LINE OF SECTION 17

TRANSITION TO EXISTING SIDEWALK PATTERNS IN FINAL PANEL(S).
CROSS-SLOPE NOT TO EXCEED 2% ON ALL SIDEWALKS, TYP.
MATCH EXISTING GRADES AT REPAIR LIMITS, TYP.
MATCH EXISTING GRADES AT PROPERTY LINE, TYP.
CAUTION!! WATER MAIN
CAUTION!! UG-PHONE
CAUTION!! GAS LINE
CAUTION!! UG-COMM
NOTE: ALL WORK WITHIN THE 12 MILE ROAD RIGHT-OF-WAY IS UNDER THE JURISDICTION OF THE OAKLAND COUNTY ROAD COMMISSION AND REQUIRES A PERMIT.
NOTE: HEAVY DASHED LINE INDICATES LIMITS OF EARTH DISRUPTION. AREA = ±1.6 ACRES
ELEVATOR & VESTIBULE
152± SQ.FT. 676.05±
RAIN GARDEN A
RAIN GARDEN B
RAIN GARDEN C
EXISTING 2-STORY BUILDING
24,000± SQ.FT.
F.F. 676.05±
1949 12 MILE ROAD
DO NOT EXCEED 2% SLOPE WITHIN BARRIER FREE PARKING AREAS.
RIDGE (REF)
RIDGE
BREAK
FLUSH
6"CURB
EX. 6"CURB
EX. 6"SAN SEWER (REF)
12"WM (REF)
2"S-MP (REF)
UG-COMM (123.NET-REF)
1"G (REF)
8"WM (REF)
RIM 674.51 12"E 669.93

PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

NORTH
0 5 10 20
SCALE: 1" = 10'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS	
FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
GRADING PLAN (WEST)

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-3.0

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 (BERKLEY, LUME – BERKLEY)\CAD\CONSTRUCTION\224-(C-3.0) GRADE-05-20-22.DWG

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #300
GEAR PIN IN THE SOUTH SIDE OF A 10" TREE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 200'± EAST FROM THE CENTERLINE OF HENLEY AVENUE.
ELEV. 378.86

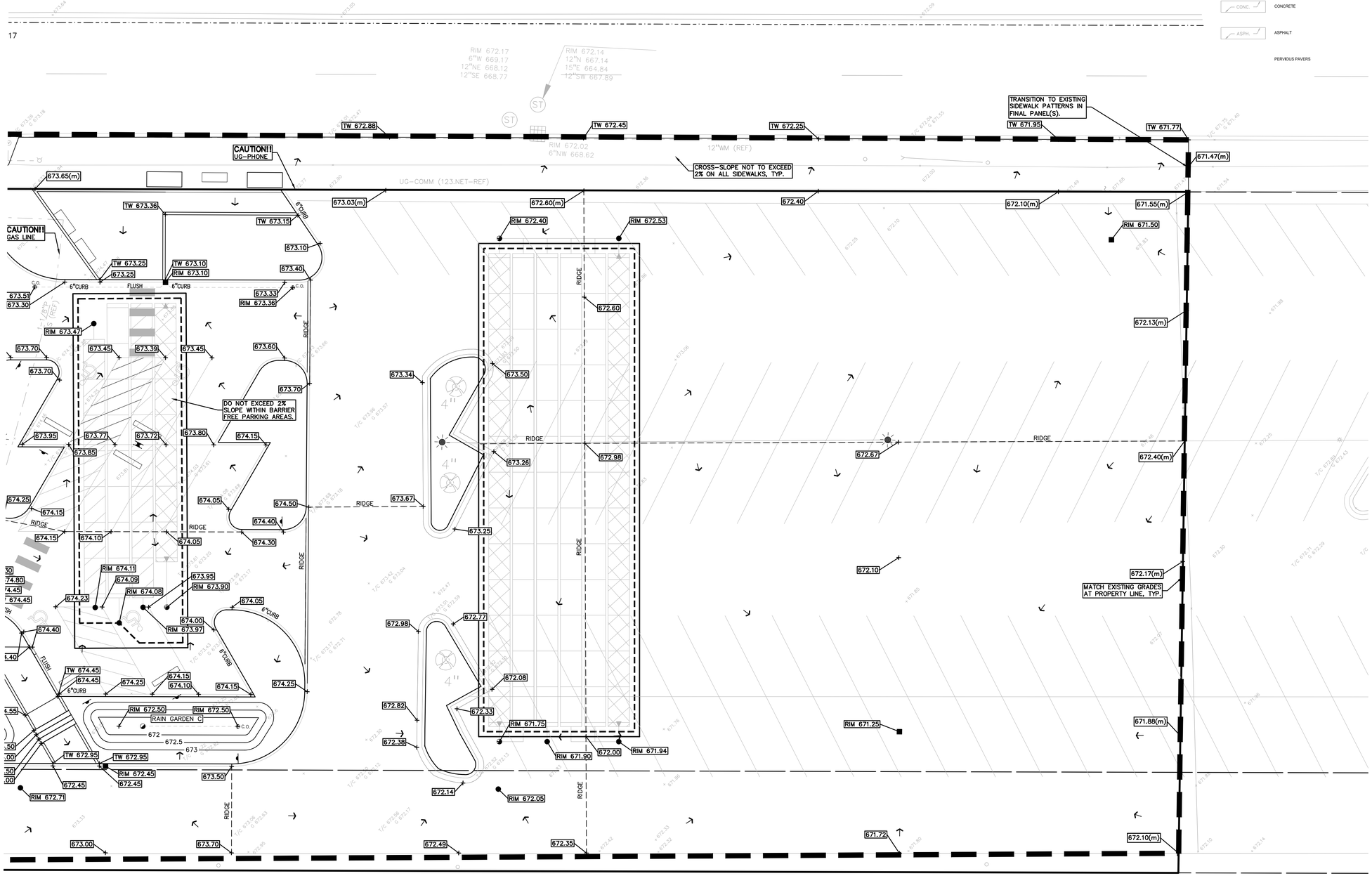
BM #301
RR SPIKE IN THE SOUTH SIDE OF A POWER POLE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 175'± SOUTHWEST FROM THE CORNER OF THE MAUSOLEUM.
ELEV. – 673.39

BM #302
FOUND MAG NAIL IN THE NORTH SIDE OF A POWER POLE LOCATED APPROX. 30'± SOUTHEAST FROM THE SOUTHWEST BUILDING CORNER, AND APPROX. 50'± SOUTHWEST FROM THE SOUTHEAST BUILDING CORNER OF 1949 12 MILE ROAD.
ELEV. – 676.24

LEGEND

IRON FOUND
IRON SET
NAIL FOUND
NAIL & CAP SET
BRASS PLUG SET
MONUMENT FOUND
MONUMENT SET
SEC. CORNER FOUND
R RECORDED
M MEASURED
C CALCULATED

EXISTING		PROPOSED
	OVERHEAD ELECTRIC, POWER POLE, GUY ANCHOR	
	FIBER OPTIC	
	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE	
UG-ELEC-(DE)(E)	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
	GAS MAIN, VALVE & GAS LINE MARKER	
	WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
	SANITARY SEWER, CLEANOUT & MANHOLE	
	STORM SEWER, CLEANOUT & MANHOLE	
	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
	POST INDICATOR VALVE	
	WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF	
M T E	MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE	
	UNIDENTIFIED STRUCTURE	
	SPOT ELEVATION	671.21
670	CONTOUR LINE	671
	FENCE	
	GUARD RAIL	
	STREET LIGHT	
	SIGN	
CONC.	CONCRETE	STD DUTY / HEAVY DUTY
ASPH.	ASPHALT	STD DUTY
	PERVIOUS PAVERS	ROADWAY / WALKWAY



NORTH
0 5 10 20
SCALE: 1" = 10'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS	
FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
GRADING PLAN (EAST)

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-3.1

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 - LUME – BERKLEY\DWG\CONSTRUCTION\03A – (C-3.0) GRADE-20-0224.DWG

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #300
GEAR PIN IN THE SOUTH SIDE OF A 10" TREE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 200'± EAST FROM THE CENTERLINE OF HENLEY AVENUE.
ELEV. 378.86

BM #301
RR SPIKE IN THE SOUTH SIDE OF A POWER POLE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 175'± SOUTHWEST FROM THE CORNER OF THE MAUSOLEUM.
ELEV. – 673.39

BM #302
FOUND MAG NAIL IN THE NORTH SIDE OF A POWER POLE LOCATED APPROX. 30'± SOUTHEAST FROM THE SOUTHWEST BUILDING CORNER, AND APPROX. 50'± SOUTHWEST FROM THE SOUTHEAST BUILDING CORNER OF 1949 12 MILE ROAD.
ELEV. – 676.24

LEGEND

IRON FOUND	BRASS PLUG SET
IRON SET	MONUMENT FOUND
NAIL FOUND	MONUMENT SET
NAIL & CAP SET	SEC. CORNER FOUND
	R RECORDED
	M MEASURED
	C CALCULATED

EXISTING		PROPOSED
	OVERHEAD ELECTRIC, POWER POLE, GUY ANCHOR	
	FIBER OPTIC	
	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE	
UG-ELEC-DE	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
	GAS MAIN, VALVE & GAS LINE MARKER	
	WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
	SANITARY SEWER, CLEANOUT & MANHOLE	
	STORM SEWER, CLEANOUT & MANHOLE	
	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
	POST INDICATOR VALVE	
	WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF	
	MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE	
	UNIDENTIFIED STRUCTURE	
	SPOT ELEVATION	671.21
670	CONTOUR LINE	671
	FENCE	
	GUARD RAIL	
	STREET LIGHT	
	SIGN	
CONC.	CONCRETE	STD DUTY / HEAVY DUTY
ASPH.	ASPHALT	STD DUTY
	PERVIOUS PAVERS	ROADWAY / WALKWAY

TWELVE MILE ROAD
(66' PUBLIC)

NORTH LINE OF SECTION 17

CONNECT TO EXISTING 12" WATER MAIN USING A 12"x6" TAPPING SLEEVE VALVE AND BOX PER CITY REQUIREMENTS.
5'-6" D.I.W.M. (TAP TO HYD.)
RELOCATED FIRE HYDRANT
CONNECT TO EXISTING 12" WATER MAIN FOR 2" DOMESTIC WATER LEAD PER CITY STANDARDS.
2" CURB STOP AND BOX.
RELOCATE GAS, UC ELEC, AND UG PHONE SERVICES TO FACILITATE BUILDING ADDITION, RAIN GARDEN AND PUBLIC ART SCULPTURE CONSTRUCTION. COORDINATE WITH SERVICE PROVIDERS.
ADJUST/RE-ROUTE GAS SERVICES TO REMAIN (IF PRESENT)
EX. HYDRANT
RIM 674.50
6" W INV. 670.78
12" N INV. 670.78
C.O. AND BOX
RIM 673.94
6" INV. 671.64
22'-6" PERFORATED CORRUGATED SINGLE-WALL HDPE PIPE at 1.00%
C.O. AND BOX
RIM 673.44
6" INV. 671.14
ADJUST/RE-ROUTE GAS SERVICES TO REMAIN (IF PRESENT)
26'-6" PERFORATED CORRUGATED SINGLE-WALL HDPE PIPE at 1.00%
C.O. AND BOX
RIM 673.25
6" INV. 670.95
RIM 673.10
6" S INV. 667.26
6" E INV. 670.69
6" W. INV. 670.88
32'-6" PERFORATED CORRUGATED SINGLE-WALL HDPE PIPE at 1.00%
C.O. AND BOX
RIM 674.50
6" INV. 671.10
75'-2" COPPER 'K' (TAP TO BLDG.)
RAIN CISTERN/BARREL, TYP. REFER TO LANDSCAPE PLANS
EX. 8" WATER MAIN AND FDC TO REMAIN
52'-12" HDPE N-12 at 1.00%
6" INV. 671.42
22'-12" HDPE N-12 at 1.00%
26'-6" PERFORATED CORRUGATED SINGLE-WALL HDPE PIPE at 1.00%
24" TO ISO. PLUS ROW INV. 667.26
ISOLATOR PLUS ROW
ISOLATOR ROW
6" ADS N-12 DUAL WALL PERFORATED UNDERDRAIN INV 666.75
RIM 673.10
12" NW INV. 670.26
6" W INV. 671.22
6" S INV. 671.88
12" E INV. 667.48
RIM 673.10
12" W INV. 667.26
6" S INV. 667.26
24" TO ISO. ROW INV. 667.26
C.O. AND BOX
RIM 674.75
6" INV. 672.45
3'-6" PERFORATED CORRUGATED SINGLE-WALL HDPE PIPE at 1.00%
20'-6" PERFORATED CORRUGATED SINGLE-WALL HDPE PIPE at 1.00%
40'-6" PERFORATED CORRUGATED SINGLE-WALL HDPE PIPE at 1.00%
41'-6" PERFORATED CORRUGATED SINGLE-WALL HDPE PIPE at 1.00%
C.O. AND BOX
RIM 675.13
6" INV. 672.83
C.O. AND BOX
RIM 674.58
6" INV. 672.28
CENTRAL DETENTION SYSTEM:
(30) STORMTECH SC-740 CHAMBERS.
LOWEST PVMT. ELEV = 673.35
TOP OF 12" STONE = 670.75
TOP OF CHAMBER ELEV = 669.75
BOT OF CHAMBER = 667.25
BOT. OF 6" STONE BED = 666.75
12" OUTLET CONNECTION IE= 667.35
ISOLATOR PLUS ROW
RIM 674.02
24" TO ISO ROW INV. 667.26
RIM 673.90
24" TO ISO. PLUS ROW INV= 667.26
RIM 674.17
24" TO ISO. ROW INV. 667.26
12" SW INV. 668.49
RIM 674.12
12" N IE= 667.35
6" UNDERDRAIN IE= 666.75
12" SW IE= 666.75
35'-12" HDPE N-12 at 1.00%
24'-12" HDPE N-12 at 1.00%
19'-6" PERFORATED CORRUGATED SINGLE-WALL HDPE PIPE at 1.00%
38'-12" HDPE N-12 at 1.70%
26'-6" PERFORATED CORRUGATED SINGLE-WALL HDPE PIPE at 1.00%
C.O. AND BOX
RIM 672.50
6" INV. 669.10
RIM 672.50
6" W INV. 668.84
12" NE INV. 668.84
24'-12" HDPE N-12 at 1.00%
RIM 672.50
6" E INV. 668.90
12" N INV. 668.90
C.O. AND BOX
RIM 672.50
6" INV. 669.10
RIM 672.71
12" N INV. 666.10
12" N INV. 666.10
12" E INV. 666.10
17'-12" HDPE N-12 at 0.59%
EX. 6" BUILDING SANITARY SEWER SERVICE TO REMAIN. CONTRACTOR TO VERIFY LOCATION AND CONDITION PRIOR TO CONSTRUCTION.
CONSTRUCT OUTLET CONTROL STRUCTURE OVER EXISTING 12" STORM SEWER. MH RIM 672.95 AND 672.90 PR. 12" INV. ELEV. 666.00 EX. 12" INV. ELEV. 665.87
ISOLATOR PLUS ROW
RIM 674.50
24" TO ISO. PLUS ROWS INV. 668.26
RIM 674.50
24" TO ISO. PLUS ROWS INV. 668.26
CONNECT TO EXISTING 2" WATER METER
WEST DETENTION SYSTEM:
(66) STORMTECH SC-740 CHAMBERS.
LOWEST PVMT. ELEV = 674.35
TOP OF 12" STONE = 671.75
TOP OF CHAMBER ELEV = 670.75
BOT OF CHAMBER = 668.25
BOT. OF 6" STONE BED = 667.75
6" ADS N-12 DUAL WALL PERFORATED UNDERDRAIN INV 667.75
RIM 674.50
24" TO ISO. PLUS ROWS INV. 668.26
EX. 12" W INV. 669.4±
ISOLATOR PLUS ROW
RIM 675.18
24" TO ISO. PLUS ROW INV. 668.26
8" E INV. 668.26
EX. 8" INV. UNKNOWN. FIELD VERIFY.
15'-12" HDPE N-12 at 1.00%
7'-12" HDPE N-12 at 0.00%
CONSTRUCT OUTLET CONTROL STRUCTURE OVER EXISTING 12" STORM SEWER RIM 674.85 (BOTH) PR. 12" INV. ELEV. 667.75 EX. 12" INV. ELEV. 667.70
RIM 674.88
12" N INV. 668.35
6" UNDERDRAIN INV. 667.75
12" SW INV. 667.75
1949 12 MILE ROAD
WOOD CHIPS (TYP.)
ASPHALT
CONCRETE SIDEWALK
CONCRETE TRASH ENCLOSURE
GRASS
WATER VALVE
CONC.
RIM 674.51
12"E 669.93
12"WM (REF)
2"S-MP (REF)
UG-COMM (123.NET-REF)
1 1/8"MP GAS (REF)
8"WM (REF)
6"SAN SEWER (REF)
12"COMBINED SEWER (REF)
12"RCP ST
CB 106
CB 105
CB 104
MH 101
MH 102
MH 3
MH 4
MH 11
MH 8
MH 2
MH 1A
IN 5
IN 6
IN 12
IN 9
IN 10
STUB 103
OCS 100
OCS 1
C.O.
672
672.5
673
674
674.50
675

PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

NORTH
0 5 10 20
SCALE: 1" = 10'

Know what's below. Call before you dig. 811

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS	
FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
UTILITY PLAN WEST

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-4.0

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 (BD LUME - BERKLEY)\CONSTRUCTION\[2020- (C-4.0) UTIL-20-0224.dwg]

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #300
GEAR PIN IN THE SOUTH SIDE OF A 10" TREE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 200'± EAST FROM THE CENTERLINE OF HENLEY AVENUE.
ELEV. 378.86

BM #301
RR SPIKE IN THE SOUTH SIDE OF A POWER POLE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 175'± SOUTHWEST FROM THE CORNER OF THE MAUSOLEUM.
ELEV. – 673.39

BM #302
FOUND MAG NAIL IN THE NORTH SIDE OF A POWER POLE LOCATED APPROX. 30'± SOUTHEAST FROM THE SOUTHWEST BUILDING CORNER, AND APPROX. 50'± SOUTHWEST FROM THE SOUTHEAST BUILDING CORNER OF 1949 12 MILE ROAD.
ELEV. – 676.24

LEGEND

IRON FOUND
IRON SET
NAIL FOUND
NAIL & CAP SET
BRASS PLUG SET
MONUMENT FOUND
MONUMENT SET
SEC. CORNER FOUND
R RECORDED
M MEASURED
C CALCULATED

EXISTING / PROPOSED

OVERHEAD ELECTRIC, POWER POLE, GUY ANCHOR
FIBER OPTIC
TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
GAS MAIN, VALVE & GAS LINE MARKER
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
SANITARY SEWER, CLEANOUT & MANHOLE
STORM SEWER, CLEANOUT & MANHOLE
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
POST INDICATOR VALVE
WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
UNIDENTIFIED STRUCTURE
SPOT ELEVATION
CONTOUR LINE
FENCE
GUARD RAIL
STREET LIGHT
SIGN
CONCRETE
ASPHALT
PERVIOUS PAVERS
STD DUTY
HEAVY DUTY
ROADWAY
WALKWAY

17

RIM 672.13
12"S 668.68
12"NE 669.68

RIM 672.17
6"W 669.17
12"NE 668.12
12"SE 668.77

RIM 672.14
12"N 667.14
15"E 664.84
12"SW 667.89

RIM 672.02
6"NW 668.62

EX. HYDRANT
CONCRETE SIDEWALK
UG–COMM (123.NET–REF)
12"WM (REF)
6"PVC ST
12"RCP ST
15"ST (REF)
CONCRETE S

ADJUST/RE–ROUTE GAS SERVICES TO REMAIN (IF PRESENT)
26'–6" PERFORATED CORRUGATED SINGLE–WALL HDPE PIPE at 1.00%
C.O. AND BOX
RIM 673.25
6" INV. 670.95
IN 6
RIM 673.10
6" S INV. 667.26
6" E INV. 670.69
6" W. INV. 670.88
MH 3
26'–6" PERFORATED CORRUGATED SINGLE–WALL HDPE PIPE at 1.00%
24" TO ISO. PLUS ROW INV. 667.26
ISOLATOR PLUS ROW
ISOLATOR ROW
6" ADS N–12 DUAL WALL PERFORATED UNDERDRAIN INV 666.75
22'–12" HDPE N–12 at 1.00%
ISOLATOR ROW
CENTRAL DETENTION SYSTEM:
(30) STORMTECH SC–740 CHAMBERS.
LOWEST PVMT. ELEV = 673.35
TOP OF 12" STONE = 670.75
TOP OF CHAMBER ELEV = 669.75
BOT OF CHAMBER = 667.25
BOT. OF 6" STONE BED = 666.75
ISOLATOR PLUS ROW
12" OUTLET CONNECTION IE= 667.35
RIM 674.02
24" TO ISO ROW INV. 667.26
RIM 673.90
24" TO ISO. PLUS ROW INV= 667.26
MH 11
MH 8
CB 7
MH 2
RIM 674.12
12" N IE= 667.35
6" UNDERDRAIN IE= 666.75
12" SW IE= 666.75
24'–12" HDPE N–12 at 1.00%
19'–6" PERFORATED CORRUGATED SINGLE–WALL HDPE PIPE at 1.00%
38'–12" HDPE N–12 at 1.70%
IN 9
C.O.
24'–12" HDPE N–12 at 1.00%
672
672.5
673
C.O. AND BOX
RIM 672.50
6" INV. 669.10
RIM 672.50
6" E INV. 668.90
12" N INV. 668.90
IN 10
RIM 672.71
12" W INV. 666.10
12" N INV. 666.10
12" E INV. 666.10
117'–12" HDPE N–12 at 0.59%

RIM 672.40
12" E INV. 668.29
24" TO ISO. PLUS ROW INV= 667.26
CB 205
MH 206
RIM 672.53
12" E INV. 667.26
12" W INV. 668.29
24" TO ISO. PLUS ROW INV= 667.26
98'–12" HDPE N–12 at 0.50%
RIM 671.25
12" W. INV. 667.75
IN 207
6" ADS N–12 DUAL WALL PERFORATED UNDERDRAIN INV 666.75
OH–ELEC
EAST DETENTION SYSTEM:
(78) STORMTECH SC–740 CHAMBERS.
LOWEST PVMT. ELEV = 671.25
TOP OF 6" STONE = 670.25
TOP OF CHAMBER ELEV = 669.75
BOT OF CHAMBER = 667.25
BOT. OF 6" STONE BED = 666.75
ISOLATOR PLUS ROW
ISOLATOR PLUS ROW
ASPHALT
12" OUTLET CONNECTION IE= 667.35
56'–12" HDPE N–12 at 1.00%
RIM 671.25
12" W. INV. 667.82
RIM 671.75
24" TO ISO. PLUS ROW INV= 667.26
12" E INV. 668.29
CB 204
MH 201
MH 202
RIM 671.94
12" E INV. 667.26
24" TO ISO. PLUS ROW INV= 667.26
12" W INV. 668.29
CB 203
MH 200
RIM 671.90
12" N IE= 667.35
6" UNDERDRAIN IE= 666.75
12" SW IE= 666.75
95'–12" HDPE N–12 at 0.59%
RIM 672.05
12" W INV. 666.65
12" NE INV. 666.65
14'–12" HDPE N–12 at 0.59%
BRICK WALL
STORMWATER SEWER (REF)

PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

NORTH
0 5 10 20
SCALE: 1" = 10'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS

FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
UTILITY PLAN EAST

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-4.1

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 JOB LUME – BERKLEY\CIVIL\CONSTRUCTION\20B– (C-4.0) UTIL–2D–0224.dwg

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #300
GEAR PIN IN THE SOUTH SIDE OF A 10" TREE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 200'± EAST FROM THE CENTERLINE OF HENLEY AVENUE.
ELEV. 378.86

BM #301
RR SPIKE IN THE SOUTH SIDE OF A POWER POLE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 175'± SOUTHWEST FROM THE CORNER OF THE MAUSOLEUM.
ELEV. – 673.39

BM #302
FOUND MAG NAIL IN THE NORTH SIDE OF A POWER POLE LOCATED APPROX. 30'± SOUTHEAST FROM THE SOUTHWEST BUILDING CORNER, AND APPROX. 50'± SOUTHWEST FROM THE SOUTHEAST BUILDING CORNER OF 1949 12 MILE ROAD.
ELEV. – 676.24

STORM WATER SUMMARY

REFERENCE PLANS SHOW BOTH EXISTING EAST AND WEST PARKING LOTS PROVIDE 10-YEAR STORM WATER DETENTION STORAGE ON THE PAVEMENT SURFACE AND WITHIN THE PIPES AND STRUCTURES.

TWO NEW UNDERGROUND STORMTECH CHAMBER SYSTEMS ARE PROPOSED TO PROVIDE 100-YEAR STORM WATER DETENTION STORAGE AND WILL REPLACE THE EXISTING CONFIGURATIONS.

BOTH EXISTING OUTLET CONTROL STRUCTURES WILL BE REPLACED AND SIZED TO DISCHARGE THE STORMTECH SYSTEMS AT A RATE NOT TO EXCEED 0.2 CFS/ACRE PRIOR TO DISCHARGING INTO THE CITY COMBINED SEWER.

LEGEND

IRON FOUND · IRON SET · NAIL FOUND · NAIL & CAP SET · BRASS PLUG SET · MONUMENT FOUND · MONUMENT SET · SEC. CORNER FOUND · R RECORDED · M MEASURED · C CALCULATED

EXISTING		PROPOSED
	OVERHEAD ELECTRIC, POWER POLE, GUY ANCHOR	
	FIBER OPTIC	
	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE	
UG-ELEC	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
	GAS MAIN, VALVE & GAS LINE MARKER	
FH	WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
	SANITARY SEWER, CLEANOUT & MANHOLE	
	STORM SEWER, CLEANOUT & MANHOLE	
	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
	POST INDICATOR VALVE	
	WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF	
	MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE	
	UNIDENTIFIED STRUCTURE	
	SPOT ELEVATION	671.21
670	CONTOUR LINE	671
	FENCE	
	GUARD RAIL	
	STREET LIGHT	
	SIGN	
CONC.	CONCRETE	STD DUTY / HEAVY DUTY
ASPH.	ASPHALT	STD DUTY
	PERVIOUS PAVERS	ROADWAY / WALKWAY

TWELVE MILE ROAD
(66' PUBLIC)

NORTH LINE OF SECTION 17

NOTE:
HEAVY DASHED LINE INDICATES LIMITS OF EARTH DISRUPTION.
AREA = ±1.6 ACRES

MATCH EXISTING GRADES AT REPAIR LIMITS, TYP.

PLANTER BOXES. REFER TO SHEET L-1.2.

MATCH EXISTING GRADES AT PROPERTY LINE, TYP.

PRETREATMENT IN PERVIOUS PAVER AREA BY ISOLATOR PLUS ROWS.

ROOF AREA TO RAIN BARRELS (OVERFLOWS TO RAIN GARDEN A)
0.01 Ac

RAIN GARDEN A
RAIN GARDEN A
0.02 Ac

RAIN CISTERN/BARREL, TYP. REFER TO LANDSCAPE PLANS

PRETREATMENT IN OPEN SPACE AREAS PROVIDED BY RAIN GARDENS AND ISOLATOR PLUS ROWS.

WEST DETENTION SYSTEM:
(66) STORMTECH SC-740 CHAMBERS.
LOWEST PVMT. ELEV = 674.35
TOP OF 12" STONE = 671.75
TOP OF CHAMBER ELEV = 670.75
BOT OF CHAMBER = 668.25
BOT. OF 6" STONE BED = 667.75

WEST AREA 2
0.23 Ac

WEST AREA 1
0.18 Ac

EX. ROOF AREA
0.18 Ac

1949 12 MILE ROAD

CONNECT EXISTING STORM SEWER TO UNDERGROUND SYSTEM. PRETREATMENT BY ISOLATOR PLUS ROW

RE-ROUTE EXISTING ROOF DRAIN CONNECTION TO UNDERGROUND SYSTEM. PRETREATMENT BY GREEN ROOF

PORTION OF EXISTING STORM SEWER TO REMAIN.

EXISTING STORM SEWER CONNECTION TO COMBINED SEWER

CENTRAL AREA A
0.06 Ac

EXISTING STORM SEWER TO REMAIN.

EXISTING STORM SEWER CONNECTION TO COMBINED SEWER

CENTRAL AREA 2
0.21 Ac

CENTRAL DETENTION SYSTEM:
(30) STORMTECH SC-740 CHAMBERS.
LOWEST PVMT. ELEV = 673.35
TOP OF 12" STONE = 670.75
TOP OF CHAMBER ELEV = 669.75
BOT OF CHAMBER = 667.25
BOT. OF 6" STONE BED = 666.75

PRETREATMENT IN PERVIOUS PAVER AREA BY ISOLATOR PLUS ROWS.

PRETREATMENT IN OPEN SPACE AREAS PROVIDED BY RAIN GARDENS AND ISOLATOR PLUS ROWS.

RAIN GARDEN AREA B
0.03 Ac

RAIN GARDEN AREA C
0.02 Ac

PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

NORTH
0 5 10 20
SCALE: 1" = 10'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS	
FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
STORM WATER MANAGEMENT PLAN (WEST)

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-5.0

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 (BD, LUME - BERKLEY)\CAD\CONSTRUCTION\2020-0224 (C-5.0) STRM WSHT (SP-22).dwg

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #300
GEAR PIN IN THE SOUTH SIDE OF A 10" TREE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 200'± EAST FROM THE CENTERLINE OF HENLEY AVENUE.
ELEV. 378.86

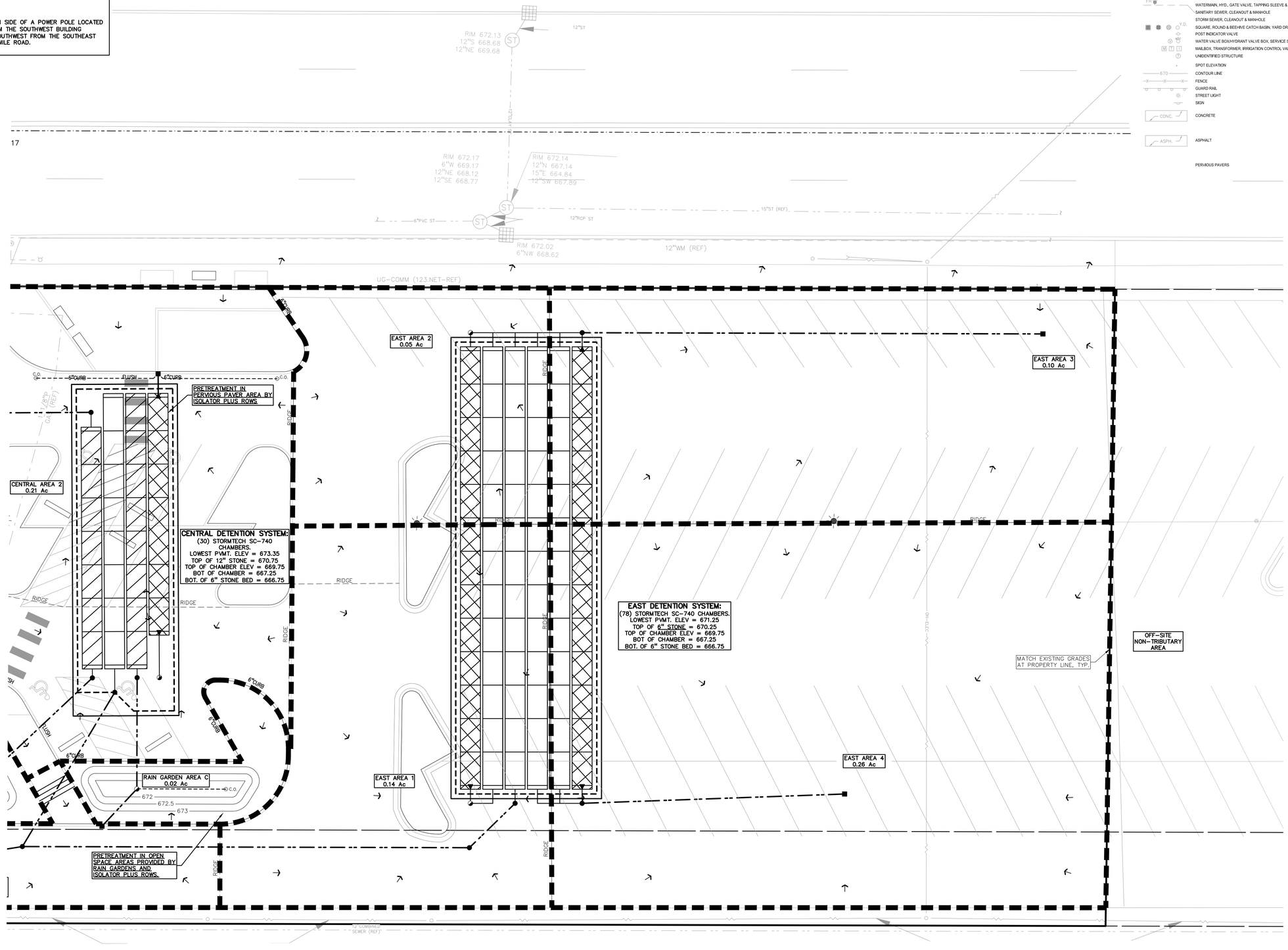
BM #301
RR SPIKE IN THE SOUTH SIDE OF A POWER POLE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 175'± SOUTHWEST FROM THE CORNER OF THE MAUSOLEUM.
ELEV. – 673.39

BM #302
FOUND MAG NAIL IN THE NORTH SIDE OF A POWER POLE LOCATED APPROX. 30'± SOUTHEAST FROM THE SOUTHWEST BUILDING CORNER, AND APPROX. 50'± SOUTHWEST FROM THE SOUTHEAST BUILDING CORNER OF 1949 12 MILE ROAD.
ELEV. – 676.24

LEGEND

IRON FOUND
IRON SET
NAIL FOUND
NAIL & CAP SET
BRASS PLUG SET
MONUMENT FOUND
MONUMENT SET
SEC. CORNER FOUND
R RECORDED
M MEASURED
C CALCULATED

EXISTING	PROPOSED
OVERHEAD ELECTRIC, POWER POLE, GUY ANCHOR	
FIBER OPTIC	
TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE	
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
GAS MAIN, VALVE & GAS LINE MARKER	
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	
SANITARY SEWER, CLEANOUT & MANHOLE	
STORM SEWER, CLEANOUT & MANHOLE	
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
POST INDICATOR VALVE	
WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF	
MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE	
UNIDENTIFIED STRUCTURE	
SPOT ELEVATION	671.21
CONTOUR LINE	671
FENCE	
GUARD RAIL	
STREET LIGHT	
SIGN	
CONCRETE	STD DUTY / HEAVY DUTY
ASPHALT	STD DUTY
PERVIOUS PAVERS	ROADWAY / WALKWAY



PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

NORTH
0 5 10 20
SCALE: 1" = 10'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR PRECISELY LOCATING ALL UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS	
FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/28/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
STORM WATER MANAGEMENT PLAN (EAST)

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-5.1

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224_450 LUME – BERKLEY\DWG\CONSTRUCTION\208– (C-5.0) STRM MGMT–20-0224.dwg

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #300
GEAR PIN IN THE SOUTH SIDE OF A 10" TREE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 200'± EAST FROM THE CENTERLINE OF HENLEY AVENUE.
ELEV. 378.86

BM #301
RR SPIKE IN THE SOUTH SIDE OF A POWER POLE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 175'± SOUTHWEST FROM THE CORNER OF THE MAUSOLEUM.
ELEV. – 673.39

BM #302
FOUND MAG NAIL IN THE NORTH SIDE OF A POWER POLE LOCATED APPROX. 30'± SOUTHEAST FROM THE SOUTHWEST BUILDING CORNER, AND APPROX, 50'± SOUTHWEST FROM THE SOUTHEAST BUILDING CORNER OF 1949 12 MILE ROAD.
ELEV. – 676.24

Project: Lume Berkley- West System (03-28-22)

StormTech Detention • Retention • Water Quality — A division of ADS

Chamber Model -	SC-740	
Units -	Imperial	Click Here for Metric
Number of chambers -	66	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	667.75	ft
Amount of Stone Above Chambers -	12	in
Amount of Stone Below Chambers -	6	in
Area of system -	2984	sf Min. Area - 2231 sf min. area

☑ Include Perimeter Stone in Calculations

StormTech SC-740 Cumulative Storage Volumes

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Total Chamber (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch & St (cubic feet)	Cumulative Chamber (cubic feet)	Elevation (feet)
48	0.00	0.00	99.47	99.47	6594.05	671.75
47	0.00	0.00	99.47	99.47	6494.59	671.67
46	0.00	0.00	99.47	99.47	6395.12	671.58
45	0.00	0.00	99.47	99.47	6295.65	671.50
44	0.00	0.00	99.47	99.47	6196.19	671.42
43	0.00	0.00	99.47	99.47	6096.72	671.33
42	0.00	0.00	99.47	99.47	5997.25	671.25
41	0.00	0.00	99.47	99.47	5897.79	671.17
40	0.00	0.00	99.47	99.47	5798.32	671.08
39	0.00	0.00	99.47	99.47	5698.85	671.00
38	0.00	0.00	99.47	99.47	5599.39	670.92
37	0.00	0.00	99.47	99.47	5499.92	670.83
36	0.05	3.63	98.01	101.64	5400.45	670.75
35	0.16	10.75	95.17	105.92	5298.81	670.67
34	0.28	18.61	92.02	110.63	5192.89	670.58
33	0.60	39.86	83.52	123.38	5082.26	670.50
32	0.80	52.91	78.30	131.21	4958.88	670.42
31	0.95	62.74	74.37	137.11	4827.66	670.33
30	1.07	70.92	71.10	142.02	4690.55	670.25
29	1.18	77.91	68.30	146.21	4548.53	670.17
28	1.27	83.53	66.05	149.59	4402.32	670.08
27	1.36	89.43	63.69	153.13	4252.73	670.00
26	1.45	95.97	61.08	157.05	4099.60	669.92
25	1.52	100.63	59.21	159.85	3942.56	669.83
24	1.58	104.43	57.69	162.13	3782.71	669.75
23	1.64	108.39	56.11	164.50	3620.58	669.67
22	1.70	112.17	54.60	166.77	3456.08	669.58
21	1.75	115.69	53.19	168.88	3289.31	669.50
20	1.80	118.99	51.87	170.86	3120.43	669.42
19	1.85	122.43	50.49	172.92	2949.57	669.33
18	1.89	124.94	49.49	174.43	2776.65	669.25
17	1.93	127.64	48.41	176.05	2602.22	669.17
16	1.97	130.35	47.33	177.68	2426.16	669.08
15	2.01	132.65	46.40	179.06	2248.49	669.00
14	2.04	134.97	45.48	180.45	2069.43	668.92
13	2.07	136.95	44.69	181.64	1888.98	668.83
12	2.10	138.92	43.90	182.82	1707.34	668.75
11	2.13	140.70	43.19	183.89	1524.52	668.67
10	2.15	142.15	42.60	184.76	1340.64	668.58
9	2.18	143.69	41.99	185.68	1155.88	668.50
8	2.20	145.09	41.43	186.52	970.20	668.42
7	2.21	145.68	41.19	186.88	783.68	668.33
6	0.00	0.00	99.47	99.47	596.80	668.25
5	0.00	0.00	99.47	99.47	497.33	668.17
4	0.00	0.00	99.47	99.47	397.87	668.08
3	0.00	0.00	99.47	99.47	298.40	668.00
2	0.00	0.00	99.47	99.47	198.93	667.92
1	0.00	0.00	99.47	99.47	99.47	667.83

WEST AREA	A	C	AxC
Green Roof	0.18	0.80	0.144
Grass	0.03	0.30	0.008
Asphalt/Pavers	0.38	0.90	0.342
	0.59		0.494
		Composite C =	**0.84**

100 YEAR STORM DETENTION DESIGN
(OAKLAND COUNTY DESIGN METHOD)

Site Drainage Data

Contributing Area (A):	0.59 acre
Allowable Discharge (Qa)	0.12 cfs (0.2*area)
Coefficient of Runoff (Cr):	0.84

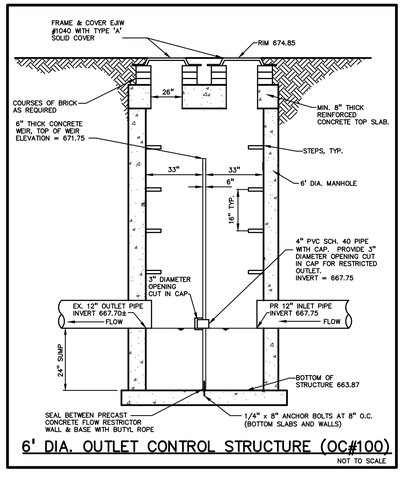
100-yr Design Storm Calculations

Qo = ((Qa)/(A)(Cr):	0.24 cfs/acre impervious
T = -25 + ((10312.5/Qo))^0.5:	182.29 minutes
Vs = (16500(T)/(T+25)) - 40Qo(T):	12,760 cf/acre impervious
Vt = (Vs)(A)(Cr):	**6,303 cft**

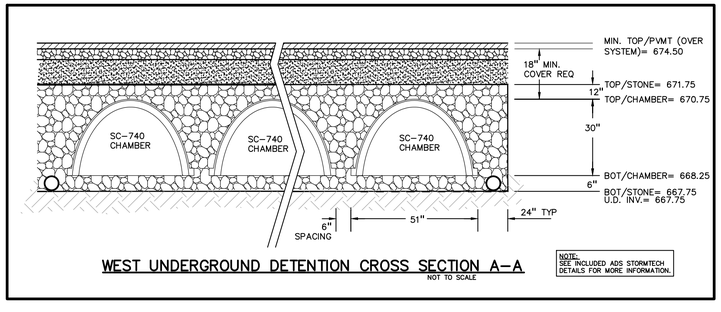
T = -25 + ((2700/Qo))^0.5:	81.07 minutes
Vs = (16500(T)/(T+25)) - 40Qo(T):	2,524 cf/acre impervious
Vt = (Vs)(A)(Cr):	**1,247 cft**

Outlet Control Restriction Calculations

Detention System Invert:	667.75 ft
Maximum Storage Elevation:	671.75 ft
Restriction Hole Invert:	667.75 ft
Max. Head (H):	4.00 ft



6' DIA. OUTLET CONTROL STRUCTURE (OC#100)
NOT TO SCALE



WEST UNDERGROUND DETENTION CROSS SECTION A–A
NOT TO SCALE

NOTE:
SEE INCLUDED ADS STORMTECH DETAILS FOR MORE INFORMATION.

PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

NORTH

0 5 10 20
SCALE: 1" = 10'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS

FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
STORM WATER SYSTEM CALCULATIONS (WEST)

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-5.2

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 LUME – BERKLEY\DWG\CONSTRUCTION\[2020- (C-5.0) STRM WQMT- 20-0224.dwg

BENCHMARKS
(GPS DERIVED – NAVD88)

BM #300
GEAR PIN IN THE SOUTH SIDE OF A 10" TREE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 200'± EAST FROM THE CENTERLINE OF HENLEY AVENUE.
ELEV. 378.86

BM #301
RR SPIKE IN THE SOUTH SIDE OF A POWER POLE LOCATED ON THE NORTH SIDE OF 12 MILE ROAD, APPROX. 175'± SOUTHWEST FROM THE CORNER OF THE MAUSOLEUM.
ELEV. – 673.39

BM #302
FOUND MAG NAIL IN THE NORTH SIDE OF A POWER POLE LOCATED APPROX. 30'± SOUTHEAST FROM THE SOUTHWEST BUILDING CORNER, AND APPROX. 50'± SOUTHWEST FROM THE SOUTHEAST BUILDING CORNER OF 1949 12 MILE ROAD.
ELEV. – 676.24

Project: Lume Berkley- Central Syst. (4-14-22)

StormTech — Detention • Retention • Water Quality — A division of ADS

Chamber Model -	SC-740	
Units -	Imperial	Click Here for Metric
Number of chambers -	30	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	666.75	ft
Amount of Stone Above Chambers -	12	in
Amount of Stone Below Chambers -	6	in
Area of system -	1587	sf Min. Area - 1014 sf min. area

☑ Include Perimeter Stone in Calculations

StormTech SC-740 Cumulative Storage Volumes

Height of System *(inches)*	Incremental Single Chamber *(cubic feet)*	Incremental Total Chamber *(cubic feet)*	Incremental Stone *(cubic feet)*	Incremental Ch & St *(cubic feet)*	Cumulative Chamber *(cubic feet)*	Elevation *(feet)*
48	0.00	0.00	52.90	52.90	3366.32	670.75
47	0.00	0.00	52.90	52.90	3313.42	670.67
46	0.00	0.00	52.90	52.90	3260.52	670.58
45	0.00	0.00	52.90	52.90	3207.62	670.50
44	0.00	0.00	52.90	52.90	3154.72	670.42
43	0.00	0.00	52.90	52.90	3101.82	670.33
42	0.00	0.00	52.90	52.90	3048.92	670.25
41	0.00	0.00	52.90	52.90	2996.02	670.17
40	0.00	0.00	52.90	52.90	2943.12	670.08
39	0.00	0.00	52.90	52.90	2890.22	670.00
38	0.00	0.00	52.90	52.90	2837.32	669.92
37	0.00	0.00	52.90	52.90	2784.42	669.83
36	0.05	1.65	52.24	53.89	2731.52	669.75
35	0.16	4.89	50.94	55.83	2677.63	669.67
34	0.28	8.46	49.52	57.97	2621.79	669.58
33	0.60	18.12	45.65	63.77	2563.82	669.50
32	0.80	24.05	43.28	67.33	2500.05	669.42
31	0.95	28.52	41.49	70.01	2432.72	669.33
30	1.07	32.24	40.01	72.24	2362.70	669.25
29	1.18	35.41	38.73	74.15	2290.46	669.17
28	1.27	37.97	37.71	75.68	2216.31	669.08
27	1.36	40.65	36.64	77.29	2140.63	669.00
26	1.45	43.62	35.45	79.07	2063.34	668.92
25	1.52	45.74	34.60	80.35	1984.27	668.83
24	1.58	47.47	33.91	81.38	1903.92	668.75
23	1.64	49.27	33.19	82.46	1822.54	668.67
22	1.70	50.99	32.51	83.49	1740.08	668.58
21	1.75	52.59	31.86	84.45	1656.59	668.50
20	1.80	54.08	31.27	85.35	1572.14	668.42
19	1.85	55.65	30.64	86.29	1486.78	668.33
18	1.89	56.79	30.18	86.98	1400.49	668.25
17	1.93	58.02	29.69	87.71	1313.52	668.17
16	1.97	59.25	29.20	88.45	1225.81	668.08
15	2.01	60.30	28.78	89.08	1137.36	668.00
14	2.04	61.35	28.36	89.71	1048.28	667.92
13	2.07	62.25	28.00	90.25	958.57	667.83
12	2.10	63.15	27.64	90.79	868.32	667.75
11	2.13	63.95	27.32	91.27	777.53	667.67
10	2.15	64.62	27.05	91.67	686.26	667.58
9	2.18	65.31	26.78	92.09	594.59	667.50
8	2.20	65.95	26.52	92.47	502.50	667.42
7	2.21	66.22	26.41	92.63	410.03	667.33
6	0.00	0.00	52.90	52.90	317.40	667.25
5	0.00	0.00	52.90	52.90	264.50	667.17
4	0.00	0.00	52.90	52.90	211.60	667.08
3	0.00	0.00	52.90	52.90	158.70	667.00
2	0.00	0.00	52.90	52.90	105.80	666.92
1	0.00	0.00	52.90	52.90	52.90	666.83

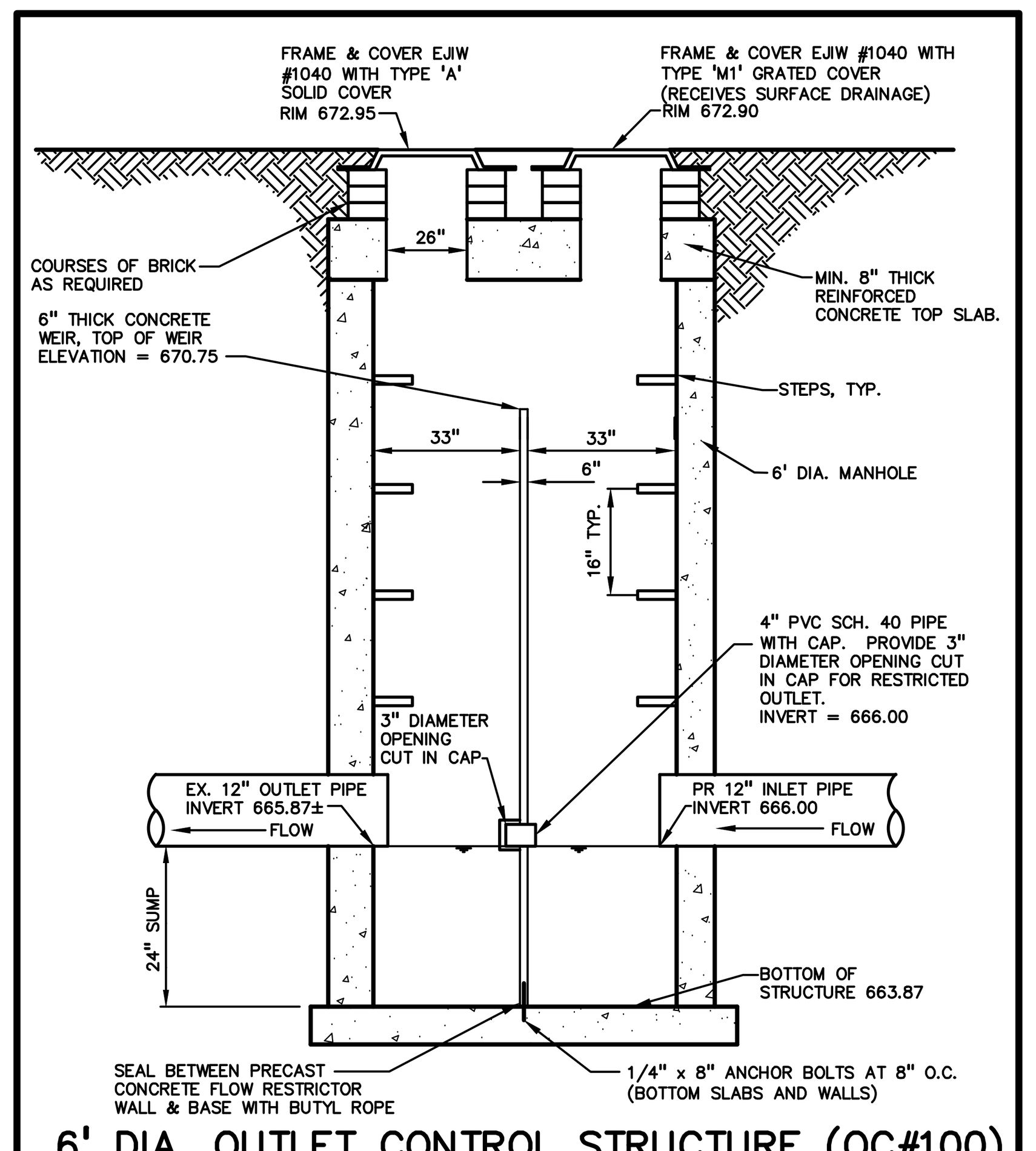
CENTRAL AREA	A	C	AxC
Asphalt/Pavers	0.26	0.90	0.234
Rain Garden/Grass	0.09	0.30	0.027
	0.35		0.261
		Composite C =	**0.75**

100 YEAR STORM DETENTION DESIGN
(OAKLAND COUNTY DESIGN METHOD)

Site Drainage Data		
Contributing Area (A):	0.35	acre
Allowable Discharge (Qa)	0.07	cfs (0.2*area)
Coefficient of Runoff (Cr):	0.75	
(Represents Future Developed Conditions)		
100-yr Design Storm Calculations		
Qo = ((Qa)/(A)(Cr):	0.27	cfs/acre impervious
T = -25 + ((10312.5/Qo))^0.5:	170.43	minutes
Vs = (16500(T)/(T+25)) - 40Qo(T):	12,549	cf/acre impervious
Vt = (Vs)(A)(Cr):	3,275	cft
1-yr Design Storm Calculations		
Qo = ((Qa)/(A)(Cr):	0.27	cfs/acre impervious
T = -25 + ((2700/Qo))^0.5:	75.00	minutes
Vs = (16500(T)/(T+25)) - 40Qo(T):	2,430	cf/acre impervious
Vt = (Vs)(A)(Cr):	**634**	**cft**

Outlet Control Restriction Calculations (Central & East Systems Combined)

Detention System Invert:	666.00	ft
Maximum Storage Elevation:	670.75	ft
Restriction Hole Invert:	667.75	ft
Max Head (H):	4.75	ft
Restriction Hole Dia.:	**3.00**	in (Minimum Size per OCWRC)
Restriction Hole Area:	0.04909	sft
Average Flow thru Restriction Hole:	**0.53**	**cfs**



6' DIA. OUTLET CONTROL STRUCTURE (OC#100)
NOT TO SCALE

Project: Lume Berkley- East Sys. (4-14-22)

StormTech — Detention • Retention • Water Quality — A division of ADS

Chamber Model -	SC-740	
Units -	Imperial	Click Here for Metric
Number of chambers -	78	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	666.75	ft
Amount of Stone Above Chambers -	6	in
Amount of Stone Below Chambers -	6	in
Area of system -	3238	sf Min. Area - 2637 sf min. area

☑ Include Perimeter Stone in Calculations

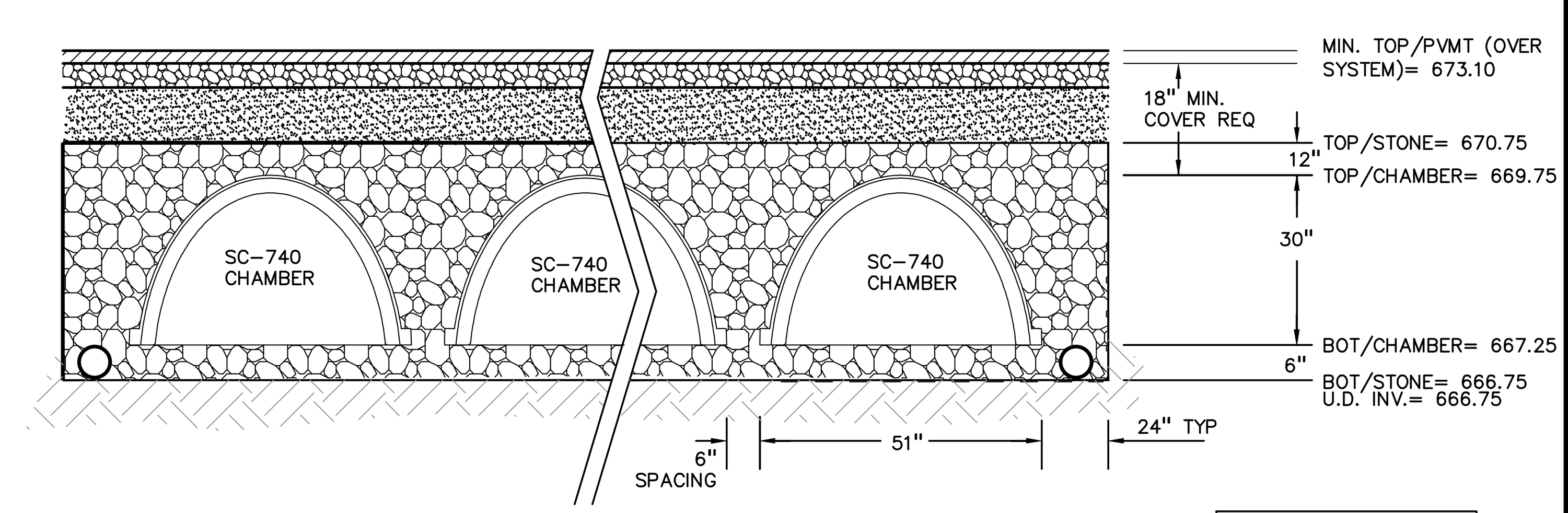
StormTech SC-740 Cumulative Storage Volumes

Height of System *(inches)*	Incremental Single Chamber *(cubic feet)*	Incremental Total Chamber *(cubic feet)*	Incremental Stone *(cubic feet)*	Incremental Ch & St *(cubic feet)*	Cumulative Chamber *(cubic feet)*	Elevation *(feet)*
42	0.00	0.00	107.93	107.93	6683.70	670.25
41	0.00	0.00	107.93	107.93	6575.77	670.17
40	0.00	0.00	107.93	107.93	6467.83	670.08
39	0.00	0.00	107.93	107.93	6359.90	670.00
38	0.00	0.00	107.93	107.93	6251.97	669.92
37	0.00	0.00	107.93	107.93	6144.03	669.83
36	0.05	4.29	106.22	110.51	6036.10	669.75
35	0.16	12.71	102.85	115.56	5925.59	669.67
34	0.28	21.99	99.14	121.13	5810.03	669.58
33	0.60	47.11	89.09	136.20	5688.91	669.50
32	0.80	62.53	82.92	145.45	5552.71	669.42
31	0.95	74.15	78.27	152.42	5407.25	669.33
30	1.07	83.81	74.41	158.22	5254.83	669.25
29	1.18	92.08	71.10	163.18	5096.61	669.17
28	1.27	98.72	68.44	167.17	4933.43	669.08
27	1.36	105.69	65.66	171.35	4766.26	669.00
26	1.45	113.42	62.57	175.99	4594.91	668.92
25	1.52	118.93	60.36	179.29	4418.93	668.83
24	1.58	123.42	58.56	181.99	4239.64	668.75
23	1.64	128.10	56.69	184.79	4057.65	668.67
22	1.70	132.56	54.91	187.47	3872.86	668.58
21	1.75	136.73	53.24	189.97	3685.39	668.50
20	1.80	140.62	51.69	192.30	3495.42	668.42
19	1.85	144.69	50.06	194.75	3303.11	668.33
18	1.89	147.66	48.87	196.53	3108.37	668.25
17	1.93	150.85	47.59	198.44	2911.84	668.17
16	1.97	154.05	46.31	200.36	2713.39	668.08
15	2.01	156.77	45.22	202.00	2513.03	668.00
14	2.04	159.51	44.13	203.64	2311.03	667.92
13	2.07	161.85	43.19	205.04	2107.39	667.83
12	2.10	164.18	42.26	206.44	1902.35	667.75
11	2.13	166.28	41.42	207.70	1695.91	667.67
10	2.15	168.00	40.73	208.73	1488.21	667.58
9	2.18	169.81	40.01	209.82	1279.47	667.50
8	2.20	171.47	39.34	210.82	1069.65	667.42
7	2.21	172.17	39.06	211.24	858.84	667.33
6	0.00	0.00	107.93	107.93	647.60	667.25
5	0.00	0.00	107.93	107.93	539.67	667.17
4	0.00	0.00	107.93	107.93	431.73	667.08
3	0.00	0.00	107.93	107.93	323.80	667.00
2	0.00	0.00	107.93	107.93	215.87	666.92
1	0.00	0.00	107.93	107.93	107.93	666.83

EAST AREA	A	C	AxC
Asphalt/Pavers	0.54	0.90	0.486
Grass	0.01	0.30	0.003
	0.55		0.489
		Composite C =	**0.89**

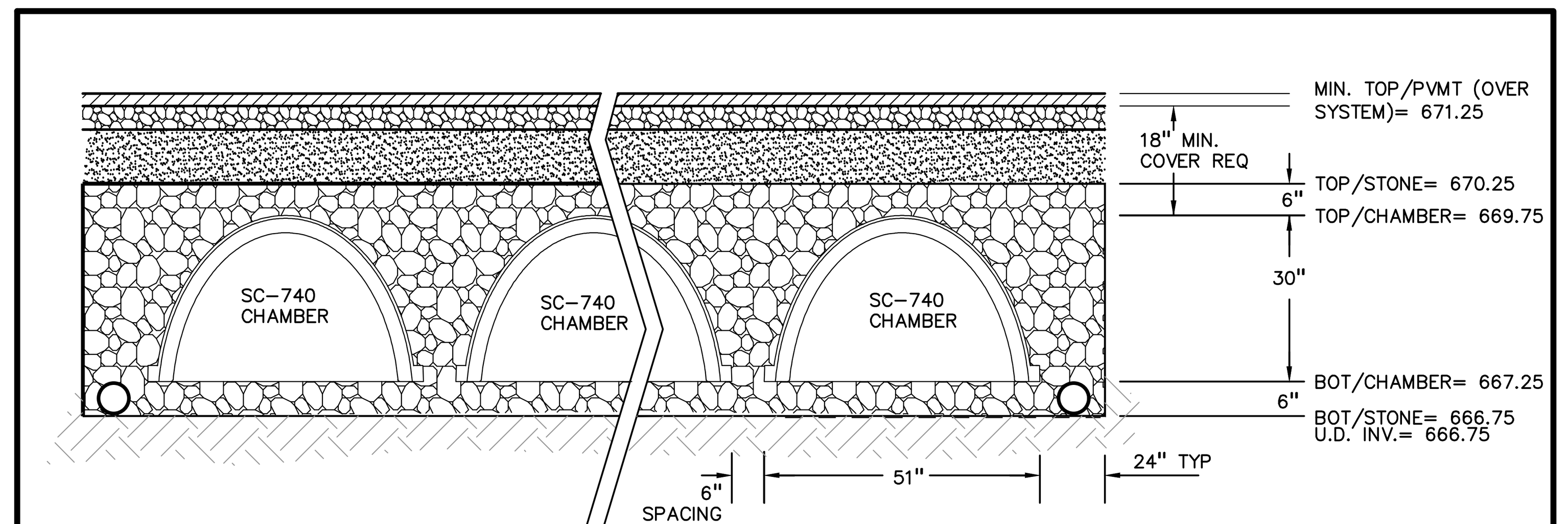
100 YEAR STORM DETENTION DESIGN
(OAKLAND COUNTY DESIGN METHOD)

Site Drainage Data		
Contributing Area (A):	0.55	acre
Allowable Discharge (Qa)	0.11	cfs (0.2*area)
Coefficient of Runoff (Cr):	0.89	
(Represents Future Developed Conditions)		
100-yr Design Storm Calculations		
Qo = ((Qa)/(A)(Cr):	0.22	cfs/acre impervious
T = -25 + ((10312.5/Qo))^0.5:	191.51	minutes
Vs = (16500(T)/(T+25)) - 40Qo(T):	12,909	cf/acre impervious
Vt = (Vs)(A)(Cr):	6,314	cft
1-yr Design Storm Calculations		
Qo = ((Qa)/(A)(Cr):	0.22	cfs/acre impervious
T = -25 + ((2700/Qo))^0.5:	85.78	minutes
Vs = (16500(T)/(T+25)) - 40Qo(T):	2,590	cf/acre impervious
Vt = (Vs)(A)(Cr):	**1,267**	**cft**



CENTRAL UNDERGROUND DETENTION CROSS SECTION B–B
NOT TO SCALE

NOTE: SEE INCLUDED ADS STORMTECH DETAILS FOR MORE INFORMATION.



EAST UNDERGROUND DETENTION CROSS SECTION B–B
NOT TO SCALE

NOTE: SEE INCLUDED ADS STORMTECH DETAILS FOR MORE INFORMATION.

PEA GROUP
TROY ▪ WASHINGTON TWP
BRIGHTON ▪ DETROIT
t: 844.813.2949
www.peainc.com

NORTH

0 5 10 20
SCALE: 1" = 10'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS	
FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

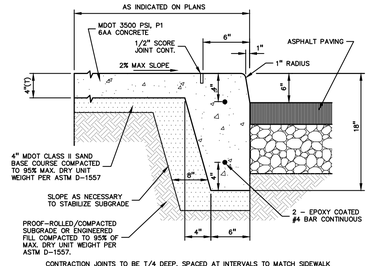
DRAWING TITLE
STORM WATER SYSTEM CALCULATIONS (EAST)

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-5.3

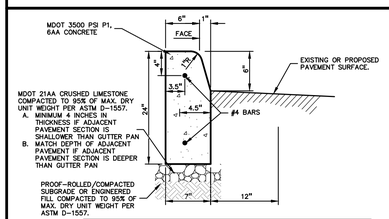
NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 JBD LUME - BERKLEY\DWG\CONSTRUCTION\008- (C-5.0) STRM MGMT-20-0224.dwg



CONTRACTION JOINTS TO BE T/4 DEEP, SPACED AT INTERVALS TO MATCH SIDEWALK WIDTH (SAWCUT). 1/2-INCH PRE-MOLDED FILLER EXPANSION JOINTS WITH JOINT SEALANT SHALL BE PLACED ONLY WHERE SIDEWALK ABUTS A STRUCTURE.

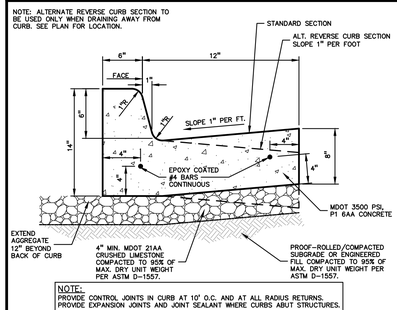
INTEGRAL CURB AND SIDEWALK
NOT TO SCALE



NOTE:
PROVIDE CONTROL JOINTS IN CURB AT 10' O.C. AND AT ALL RADIUS RETURNS. PROVIDE EXPANSION JOINTS AND JOINT SEALANT WHERE CURBS ABUT STRUCTURES.

CONCRETE STRAIGHT CURB
NOT TO SCALE

NOTE: ALTERNATE REVERSE CURB SECTION TO BE USED ONLY WHEN DRAINING AWAY FROM CURB. SEE PLAN FOR LOCATION.

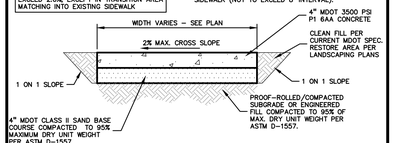


NOTE:
PROVIDE CONTROL JOINTS IN CURB AT 10' O.C. AND AT ALL RADIUS RETURNS. PROVIDE EXPANSION JOINTS AND JOINT SEALANT WHERE CURBS ABUT STRUCTURES.

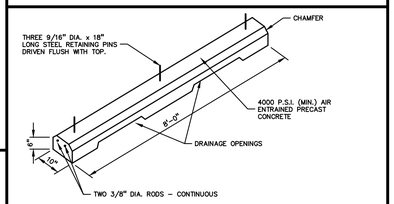
18"x6" STANDARD CONCRETE CURB AND GUTTER
NOT TO SCALE

NOTE:
CROSS-SLOPE OF SIDEWALK MUST NOT EXCEED 2.0% EXCEPT IN TRANSITION AREA MATCHING INTO EXISTING SIDEWALK

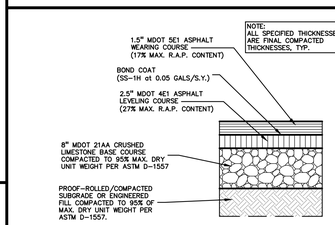
PROVIDE 1" DEPTH SAWCUT CONTROL JOINTS AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK (NOT TO EXCEED 8' INTERVAL).



CONCRETE SIDEWALK
NOT TO SCALE



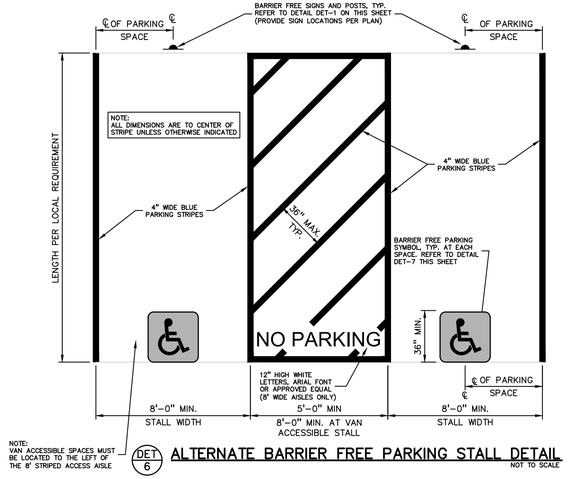
CONCRETE PARKING BUMPER
NOT TO SCALE



STANDARD DUTY ASPHALT DETAIL
(NOT FOR USE IN THE RIGHT-OF-WAY)
NOT TO SCALE

AGGREGATE BASE NOTE:
THIS PAVEMENT SECTION DESIGN ASSUMES THE USE OF MDOT 21AA CRUSHED LIMESTONE BASE MATERIAL THAT MEETS THE REQUIREMENTS OF MDOT STANDARD SPECIFICATION SECTION 902 FOR AGGREGATES. IF CRUSHED CONCRETE AGGREGATE BASE IS PROPOSED IN LIEU OF THE SPECIFIED CRUSHED LIMESTONE MATERIAL, PEA GROUP WILL REQUIRE A MINIMUM 25% INCREASE IN BASE THICKNESS. HOWEVER, IF TESTING DOCUMENTATION IS PROVIDED TO PEA GROUP THAT SHOWS THAT THE CRUSHED CONCRETE MATERIAL MEETS ALL REQUIREMENTS OF MDOT SPECIFICATION SECTION 902, THEN THE 25% INCREASE IN THICKNESS MAY BE REEVALUATED.

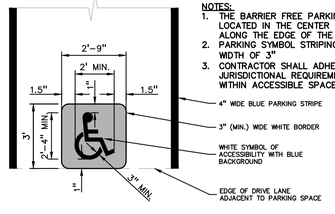
ASPHALT MATERIAL NOTES:
HOT-MIX ASPHALT MIXTURES UTILIZING RECYCLED ASPHALT PAVEMENT (RAP) MUST MEET MDOT SPECIAL PROVISION 12SP501(E). THE BINDER GRADE FOR THIS WORK IS PG64-28. IF ASPHALT MIXES CONTAINING RAP ARE TO BE SUPPLIED FOR THIS PROJECT, THE ASPHALT BINDER MUST BE REVISED PER MDOT "TIER 1" OR "TIER 2" REQUIREMENTS (RAP CONTENT UP TO 27% MAXIMUM). TIER 3 MIXES ARE NOT ACCEPTABLE ON THIS PROJECT. AN ASPHALT MIX DESIGN FOR ALL SPECIFIED MIXES SHOULD BE FORWARDED TO PEA GROUP FOR REVIEW PRIOR TO CONSTRUCTION



NOTE:
VAN ACCESSIBLE SPACES MUST BE LOCATED TO THE LEFT OF THE 8' STRIPED ACCESS AISLE

DET 6 ALTERNATE BARRIER FREE PARKING STALL DETAIL
NOT TO SCALE

NOTE:
REFER TO PRELIMINARY SITE PLAN FOR ANGLED PARKING SPACE GEOMETRY AS IT RELATES TO THIS DETAIL.

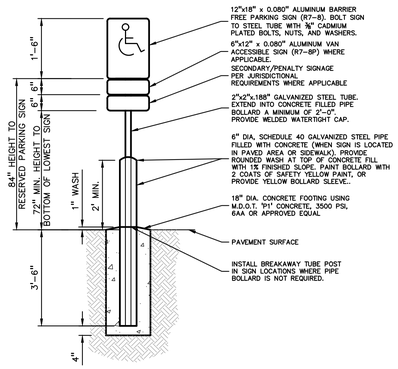


NOTES:
1. THE BARRIER FREE PARKING SYMBOL SHALL BE LOCATED IN THE CENTER OF THE PARKING SPACE AND ALONG THE EDGE OF THE ADJACENT DRIVE AISLE, TYP.
2. PARKING SYMBOL STRIPING SHALL HAVE A MINIMUM WIDTH OF 3"
3. CONTRACTOR SHALL ADHERE TO LOCAL/STATE JURISDICTIONAL REQUIREMENTS FOR ALL PAINTING WITHIN ACCESSIBLE SPACES.

DET 7 BARRIER FREE PARKING SYMBOL DETAIL (INTERNATIONAL SYMBOL OF ACCESSIBILITY)
NOT TO SCALE

BARRIER FREE SIGN NOTES:

1. ONE SIGN IS REQUIRED AT EACH BARRIER FREE PARKING SPACE.
2. ALL SIGNS SHALL COMPLY WITH THE LATEST STANDARDS OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).
3. WHEN TWO BARRIER FREE PARKING SPACES ARE ADJACENT AND FACING EACH OTHER, TWO SIGNS ARE REQUIRED, BUT CAN BE MOUNTED ON THE SAME POST.
4. SIGN POSTS SHALL BE 2" NOM. SQUARE 14-GAUGE GALVANIZED STEEL TUBE WITH 7/16" HOLES AT 1" CENTERS. POSTS SHALL TELESCOPE INSIDE ANCHOR POSTS A MINIMUM OF 12".
5. ANCHOR POSTS SHALL BE 2.25" NOM. SQUARE 12-GAUGE GALVANIZED STEEL POST, A MINIMUM OF 3 FEET LONG.
6. IF THESE NOTES AND DETAILS CONFLICT WITH LOCAL CODES AND ORDINANCES, THE STRICTER REQUIREMENT SHOULD BE USED.
7. ALTERNATE MATERIALS MAY BE USED IF IN COMPLIANCE WITH A.D.A. GUIDELINES AND LOCAL REQUIREMENTS.



DET 1 BARRIER FREE SIGN AND POST DETAIL
NOT TO SCALE



12" x 18" (R7-8)
GREEN BORDER AND LEGEND
WHITE SYMBOL, BLUE BACKGROUND.
REFLECTORIZED

DET 2 BARRIER FREE PARKING SIGN DETAIL
NOT TO SCALE

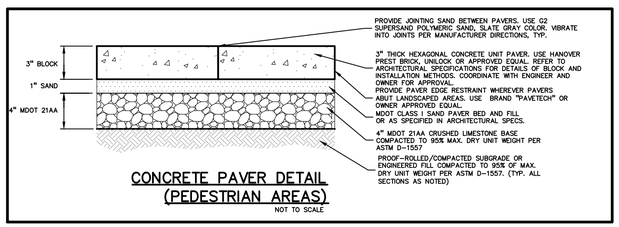


12" x 18" (R7-8)
GREEN BORDER AND
LEGEND
WHITE SYMBOL, BLUE
BACKGROUND,
REFLECTORIZED

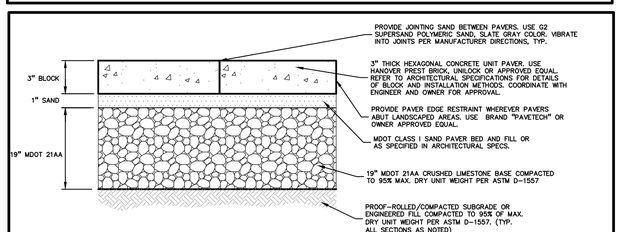
NOTE:
MAY ONLY BE USED AT
11' WIDE SPACES LOCATED
ON THE LEFT SIDE OF A
5' WIDE AISLE, OR 8' WIDE
SPACES LOCATED TO THE
LEFT OF 8' WIDE AISLES

6" x 12" (R7-8P)
GREEN BORDER AND
LEGEND
REFLECTORIZED

DET 3 VAN ACCESSIBLE PARKING SIGN DETAIL
NOT TO SCALE



CONCRETE PAVER DETAIL (PEDESTRIAN AREAS)
NOT TO SCALE



CONCRETE PAVER DETAIL (HEAVY DUTY TRAFFIC AREAS)
NOT TO SCALE

PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

NORTH

0 5 10 20
SCALE: 1" = 10'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR PRECISELY DETERMINING THE LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS	
FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
NOTES AND DETAILS

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-6.0

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 JBD LUME - BERKLEY\CIVIL\CONSTRUCTION\03- (C-6.0) DETAILS-20-0224.dwg

NOTES

1. REASONABLE ACCESS, AS DETERMINED BY THE ENGINEER, TO ALL DRIVES AND CROSS STREETS MUST BE MAINTAINED AT ALL TIMES.
2. FIELD ADJUSTMENT TO SIGNS AND TRAFFIC CONTROL DEVICES MAY BE NECESSARY TO FIT FIELD CONDITIONS. CONFIRM WITH ENGINEER OR FIELD REPRESENTATIVE PRIOR TO MAKING ANY ADJUSTMENTS.
3. COVER OR REMOVE ALL NON-APPLICABLE SIGNING.
4. FIELD ADJUSTMENT OF LANE CLOSURE TAPERS SHOWN ON THE PLANS MAY BE NECESSARY TO PROVIDE MAXIMUM VISIBILITY OF LIGHTED ARROW. CONFIRM WITH ENGINEER OR FIELD REPRESENTATIVE PRIOR TO MAKING ANY ADJUSTMENTS.
5. WHEN SPECIFIED, WOOD POSTS MUST BE INSTALLED IN ACCORDANCE WITH MDOT WORK ZONE SPECIAL DETAIL WZD-1000-A (GROUND DRIVEN SIGN SUPPORTS FOR TEMPORARY SIGNS).
6. DISTANCES SHOWN ON THE PLANS SHALL BE CONSIDERED MINIMUM DISTANCES.
7. CONTRACTOR SHALL TEMPORARILY COVER/REMOVE ANY SIGNS, MARKINGS, OR SIGNALS THAT CONFLICT WITH THE PROPOSED TEMPORARY TRAFFIC CONTROL PLANS.
8. CONTRACTOR SHALL IMMEDIATELY REPLACE/REINSTALL/UNCOVER ANY AND ALL EXISTING TRAFFIC CONTROL DEVICES AFFECTED BY THE CONSTRUCTION AND TEMPORARY TRAFFIC CONTROL ACTIVITIES UPON REMOVAL OF THE TEMPORARY TRAFFIC CONTROL DEVICES.
9. ANY MODIFICATION TO THE PROPOSED MAINTENANCE OF TRAFFIC PLANS, AND ALL PROPOSED TRAFFIC CONTROL MUST BE DONE IN ACCORDANCE WITH THE LATEST VERSION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

MINIMUM MERGING TAPER LENGTH "L" (FEET)

OFFSET FEET	25	30	35	40	45	50	55	60	65	70
	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
1	10	15	20	27	45	50	55	60	65	70
2	21	30	41	53	90	100	110	120	130	140
3	31	45	61	80	135	150	165	180	195	210
4	42	60	82	107	180	200	220	240	260	280
5	52	75	102	133	225	250	275	300	325	350
6	63	90	123	160	270	300	330	360	390	420
7	73	105	143	187	315	350	385	420	455	490
8	83	120	163	213	360	400	440	480	520	560
9	94	135	184	240	405	450	495	540	585	630
10	104	150	204	267	450	500	550	600	650	700
11	115	165	225	293	495	550	605	660	715	770
12	125	180	245	320	540	600	660	720	780	840
13	135	195	266	347	585	650	715	780	845	910
14	146	210	286	374	630	700	770	840	910	980
15	157	225	307	400	675	750	825	900	975	1050

TAPER LENGTH "L" IN FEET

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

$"L" = \frac{W \times S^2}{60}$ WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

"L" = S x W WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

L = MINIMUM LENGTH OF MERGING TAPER
S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
W = WIDTH OF OFFSET

TYPES OF TAPERS	TAPER LENGTH
UPSTREAM TAPERS	
MERGING TAPER	L - MINIMUM
SHIFTING TAPER	1/2 L - MINIMUM
SHOULDER TAPER	1/3 L - MINIMUM
TWO-WAY TRAFFIC TAPER	100 ' - MAXIMUM
DOWNSTREAM TAPERS (USE IS OPTIONAL)	100 ' - MINIMUM (PER LANE)

MDOT — Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL — TABLES FOR "L", "D" AND "B" VALUES
DRAWN BY: CON:AE:djf | CHECKED BY: BMM | JUNE 2006 PLAN DATE: | M0020a | SHEET 1 OF 2
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn REV. 08/21/2006

DISTANCE BETWEEN TRAFFIC CONTROL DEVICES "D" AND LENGTH OF LONGITUDINAL BUFFER SPACE ON "WHERE WORKERS PRESENT" SEQUENCES

"D" DISTANCES	25	30	35	40	45	50	55	60	65	70
	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
D (FEET)	250	300	350	400	450	500	550	600	650	700

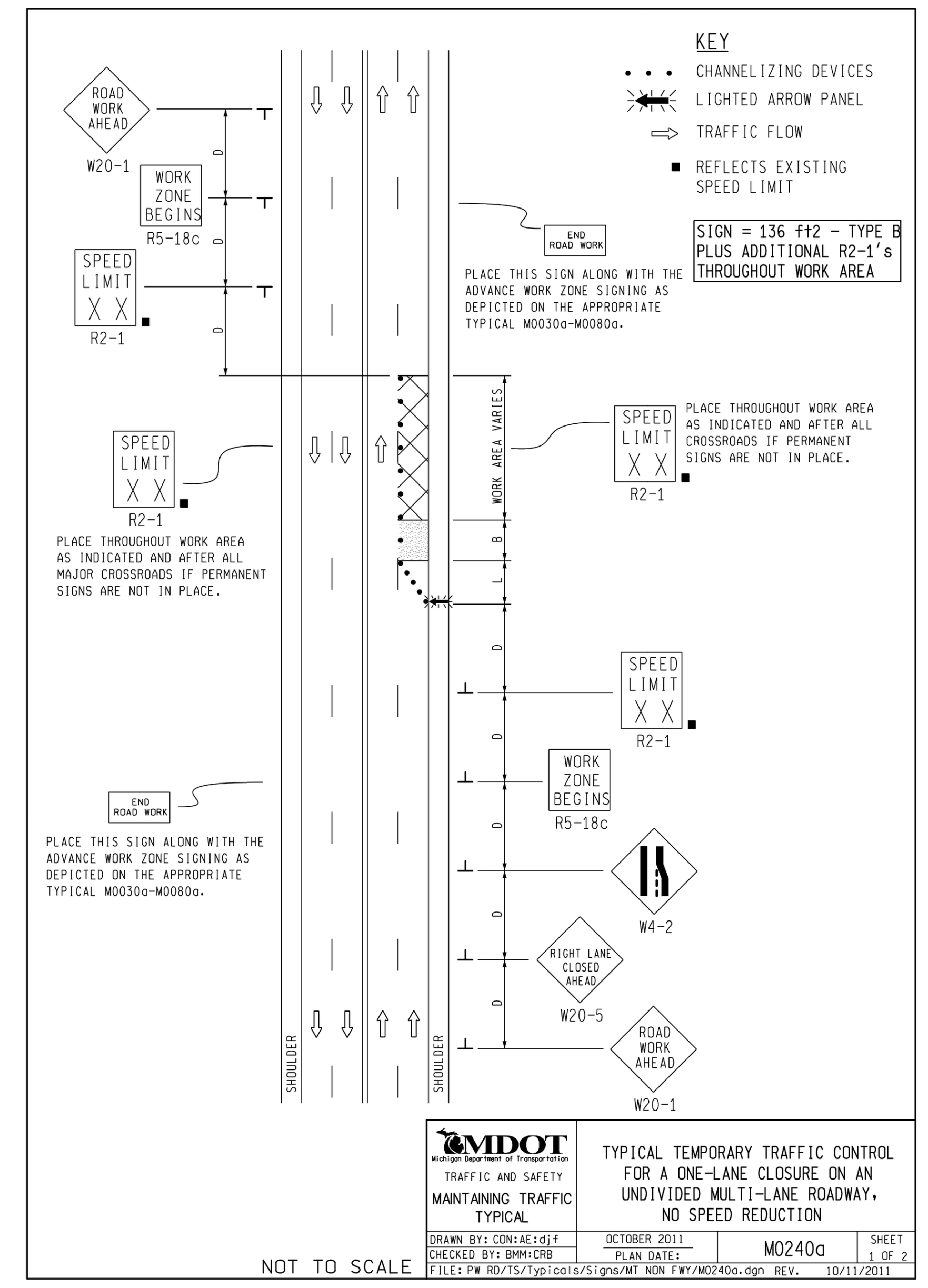
GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE "B"

SPEED* MPH	LENGTH FEET
20	33
25	50
30	83
35	132
40	181
45	230
50	279
55	329
60	411
65	476
70	542

* POSTED SPEED, OFF PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

1 BASED UPON AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) BRAKING DISTANCE PORTION OF STOPPING SIGHT DISTANCE FOR WET AND LEVEL PAVEMENTS (A POLICY ON GEOMETRIC DESIGN OF HIGHWAY AND STREETS), AASHTO. THIS AASHTO DOCUMENT ALSO RECOMMENDS ADJUSTMENTS FOR THE EFFECT OF GRADE ON STOPPING AND VARIATION FOR TRUCKS.

MDOT — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL — TABLES FOR "L", "D" AND "B" VALUES
DRAWN BY: CON:AE:djf | CHECKED BY: BMM | JUNE 2006 PLAN DATE: | M0020a | SHEET 2 OF 2
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn REV. 08/21/2006



NOTES

1B. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
SEE M0020a FOR "D," "L," AND "B" VALUES

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

21. ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS, SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR DAYTIME-ONLY TRAFFIC PATTERNS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

26. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE TAPER AS POSSIBLE.

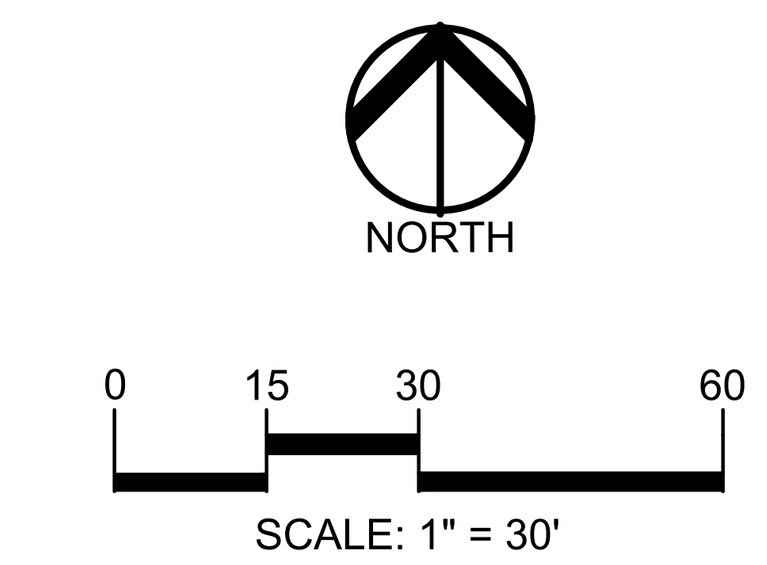
SIGN SIZES

DIAMOND WARNING - 48" x 48"
R2-1 REGULATORY - 48" x 60"
R5-18c REGULATORY - 48" x 48"

NOT TO SCALE

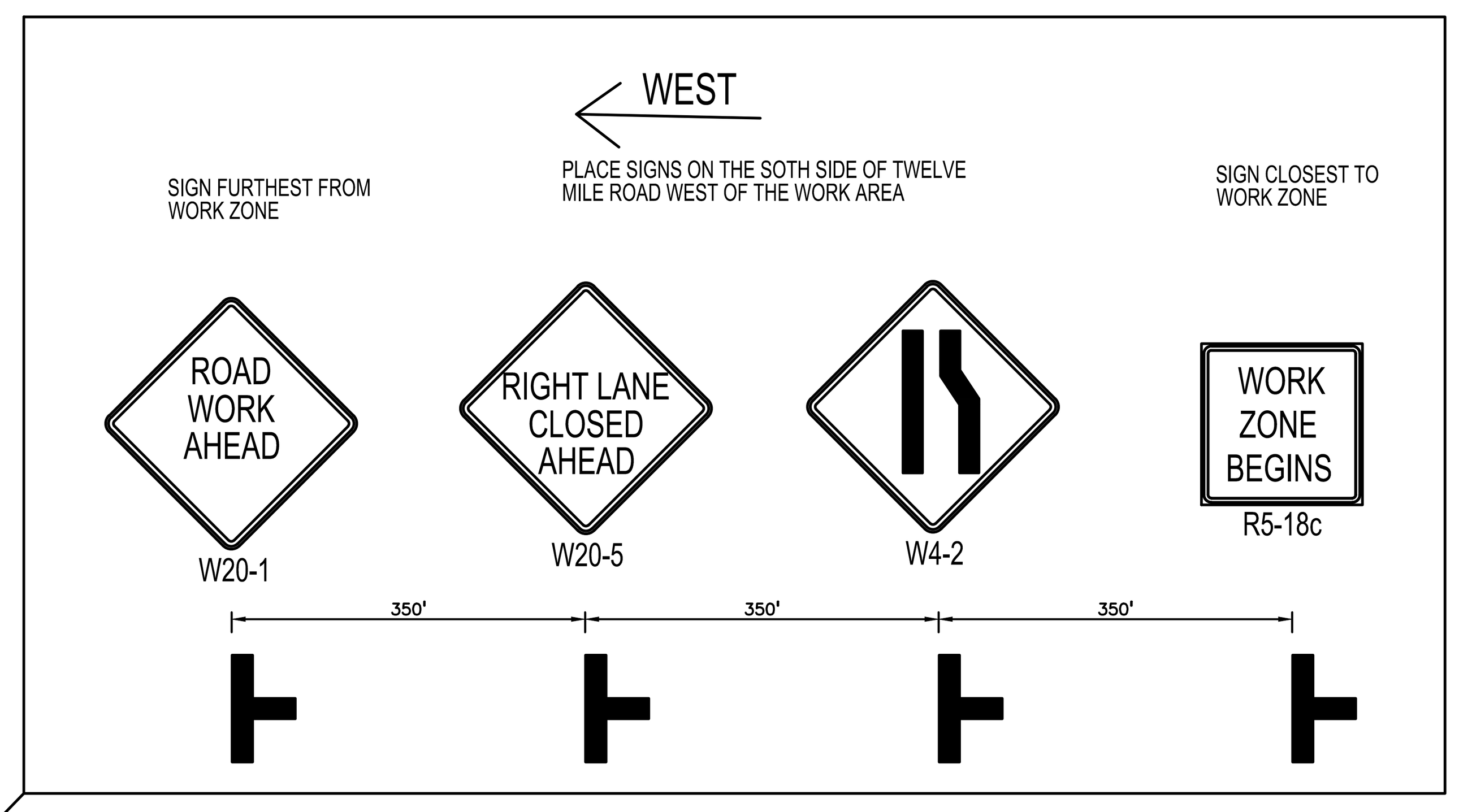
MDOT — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL — TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON AN UNDIVIDED MULTI-LANE ROADWAY, NO SPEED REDUCTION
DRAWN BY: CON:AE:djf | CHECKED BY: BMM:CRB | OCTOBER 2011 PLAN DATE: | M0240a | SHEET 2 OF 2
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0240a.dgn REV. 10/11/2011

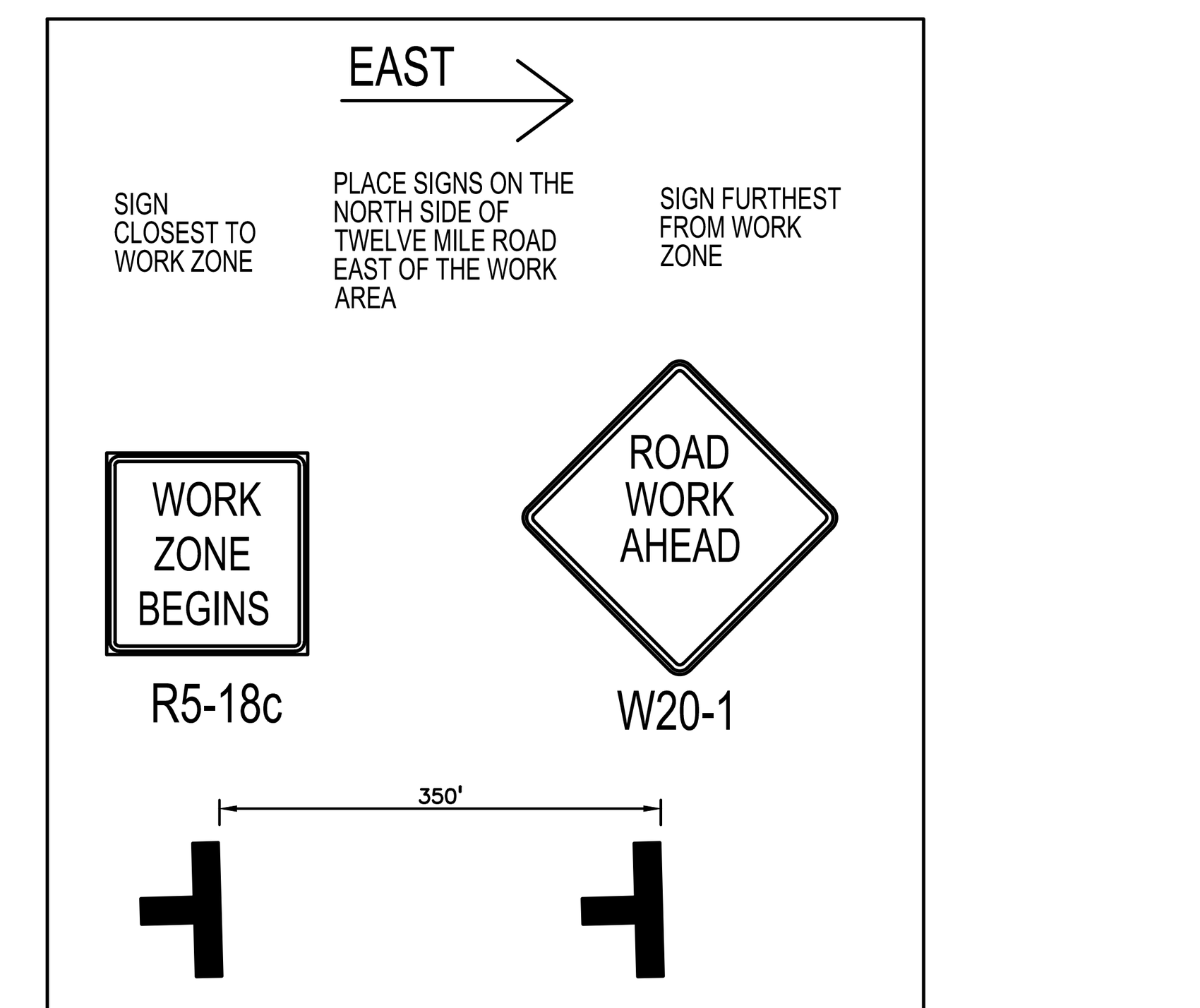
PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

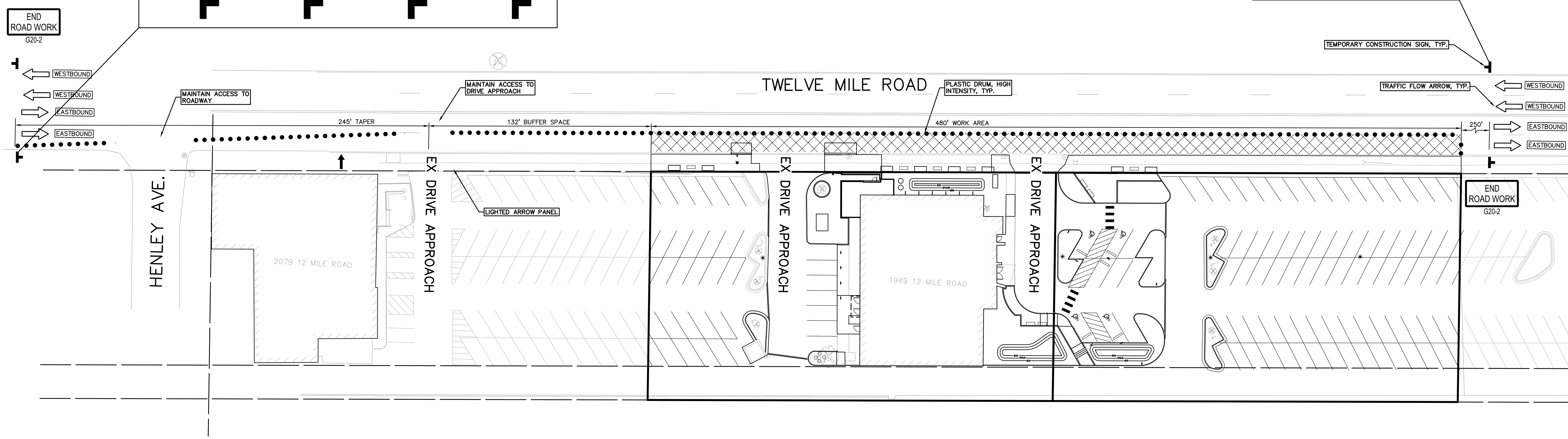


811. Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.







CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS	
FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
MAINTENANCE OF TRAFFIC CONTROL PLAN

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	SAP
DES.	SAP

DRAWING NUMBER:
C-7.0

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 JBD LUME - BERKLEY\DWG\CONSTRUCTION\010- (C-7.0) TRAFFIC CONTROL-20-0224.dwg

LANDSCAPE CALCULATIONS:
PER CITY OF BERKLEY ZONING ORDINANCE

GREENBELT @ 12 MILE RD.

REQUIRED: 1 TREE ALONG GREENBELT

PROVIDED: 1 DEC. TREE

TREE REPLACEMENT

REQUIRED: 8-11" DBH REPLACEMENT AT 1:1
REMOVING 1, 8" TREE

PROVIDED: 1, 2.5" CAL DEC TREE

RAIN GARDENS

PROVIDED: SHRUBS AND PERENNIALS SEE SHEET L-1.1

GENERAL SITE TREES

PROVIDED: 5 DEC. TREES

KEY:

= GREENBELT TREE

= REPLACEMENT TREE

= GENERAL TREES

= EXISTING TREES TO REMAIN WITH TREE PROTECTION FENCE

= SHRUBS

= ORNAMENTAL GRASS

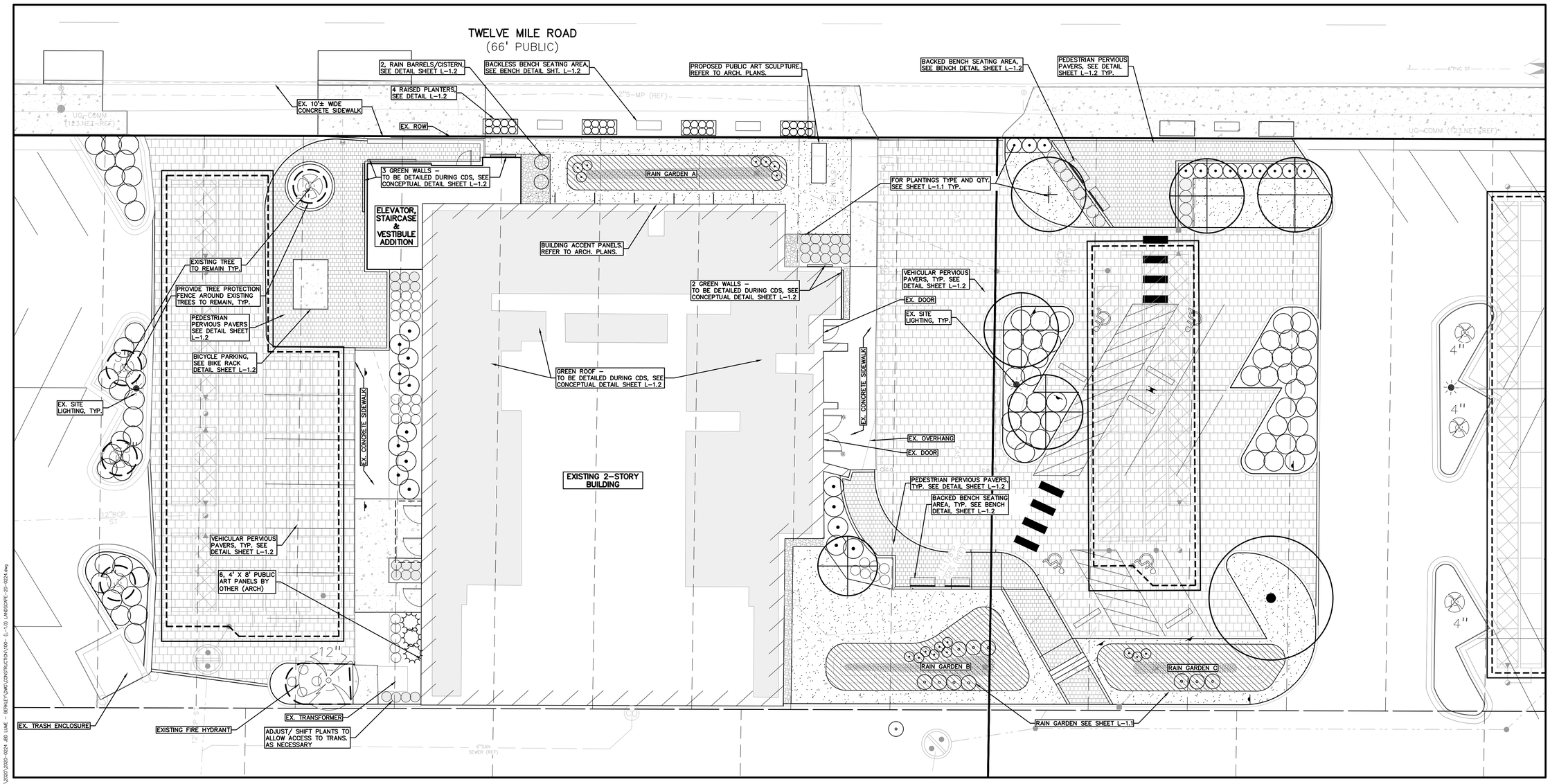
= PERENNIALS

= RAIN GARDEN PLANTINGS SEE SHEET L-1.1

= IRRIGATED SOD LAWN

= ROCK MAINTENANCE EDGE SEE DETAIL SHEET L-1.2

NOTE:
GREEN ROOF AND 5 GREEN WALLS TO BE DETAILED DURING CONSTRUCTION DWGS. SEE SHEET L-1.2 FOR CONCEPTUAL DETAILS.



PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

STATE OF MICHIGAN
JANET L. EVANS
LANDSCAPE ARCHITECT
No. 1320
REGISTERED

NORTH

0 5 10 20
SCALE: 1" = 10'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR THE DETERMINATION OF CONSTRUCTION LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS

FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
OVERALL SITE AMENITIES PLAN

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	BG
DES.	JE

DRAWING NUMBER:
L-1.0

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 LUME - BERKLEY\DWG\CONSTRUCTION\100 - L-1.0 LANDSCAPE - 20-0224.dwg

DECIDUOUS TREE PLANT LIST:

QUANTITY	KEY SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC
3	AF2.5	Freeman Maple	*Acer x freemanii 'Armstrong'*	2.5" Cal.	B&B
1	AL8	Allegheny Serviceberry	*Amelanchier laevis*	8-10' Ht.	B&B
1	BN10	Heritage River Birch	*Betula nigra 'Cully' (HERITAGE)*	8-10' Ht.	B&B
2	GT2.5	Skyline Honeylocust	*Gleditsia triacanthos f. inermis 'Skycole'*	2.5" Cal.	B&B
7	TOTAL DEC.				

SHRUB PLANT LIST:

QUANTITY	KEY SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC
12	DG24	Slender Deutzia	*Deutzia gracilis*	24" Ht.	Cont.
75	RA24	Gro-Lo Fragrant Sumac	*Ribes alpinum 'Gro-Lo'*	24" Ht.	Cont.
3	TM24	Dense Yew	*Taxus x media 'Densiformis'*	24" Ht.	Cont.
10	VC36	Blue Muffin Viburnum	*Viburnum dentatum 'Christom'*	36" Ht.	Cont.
100	TOTAL SHRUB				

PERENNIAL PLANT LIST:

QUANTITY	KEY SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC
31	CA	Feather Reed Grass	*Calamagrostis x acutiflora 'Karl Foerster'*	1 Gal.	Cont.
12	HM	Japanese Forest Grass	*Hakonechloa macra*	1 Gal.	Cont.
18	NF	Walker's Low Catmint	*Nepeta x faassenii 'Walker's Low'*	1 Gal.	Cont.
12	PV	*Panicum virgatum 'Shenandoah'*	*Panicum virgatum*	1 Gal.	Cont.
12	PO	Karley Rose Fountain Grass	*Pennisetum orientale 'Karley Rose'*	1 Gal.	Cont.
32	PE	Dwf. Russian Sage	*Perovskia atriplicifolia 'Little Spire'*	1 Gal.	Cont.
117	TOTAL PER.				

RAIN GARDEN PLANT LIST:

QUANTITY	KEY SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	SPEC
104	AC	Nodding Onion	*Allium Cernuum*	1 Gal.	Cont.
83	CP	Prairie Coreopsis	*Coreopsis palmata*	1 Gal.	Cont.
10	CS24	Kelseyi Dwarf Dogwood	*Cornus sericea 'Kelseyi'*	24" Ht.	Cont.
81	EP	Pale Purple Coneflower	*Echinacea pallida*	1 Gal.	Cont.
83	GT	Prairie Smoke	*Geum triflorum*	1 Gal.	Cont.
72	LS	Great Blue Lobelia	*Lobelia siphilitica*	1 Gal.	Cont.
34	PD	Foxglove Beardtongue	*Penstemon Digitalis*	1 Gal.	Cont.
17	SH	Prairie Dropseed	*Sporobolus heterolepis*	1 Gal.	Cont.
52	SL	Smooth Blue Aster	*Symphyotrichum laeve*	1 Gal.	Cont.
536	TOTAL PLANTS				

KEY:

= GREENBELT TREE

= REPLACEMENT TREE

= GENERAL TREES

= EXISTING TREES TO REMAIN WITH TREE PROTECTION FENCE

= SHRUBS

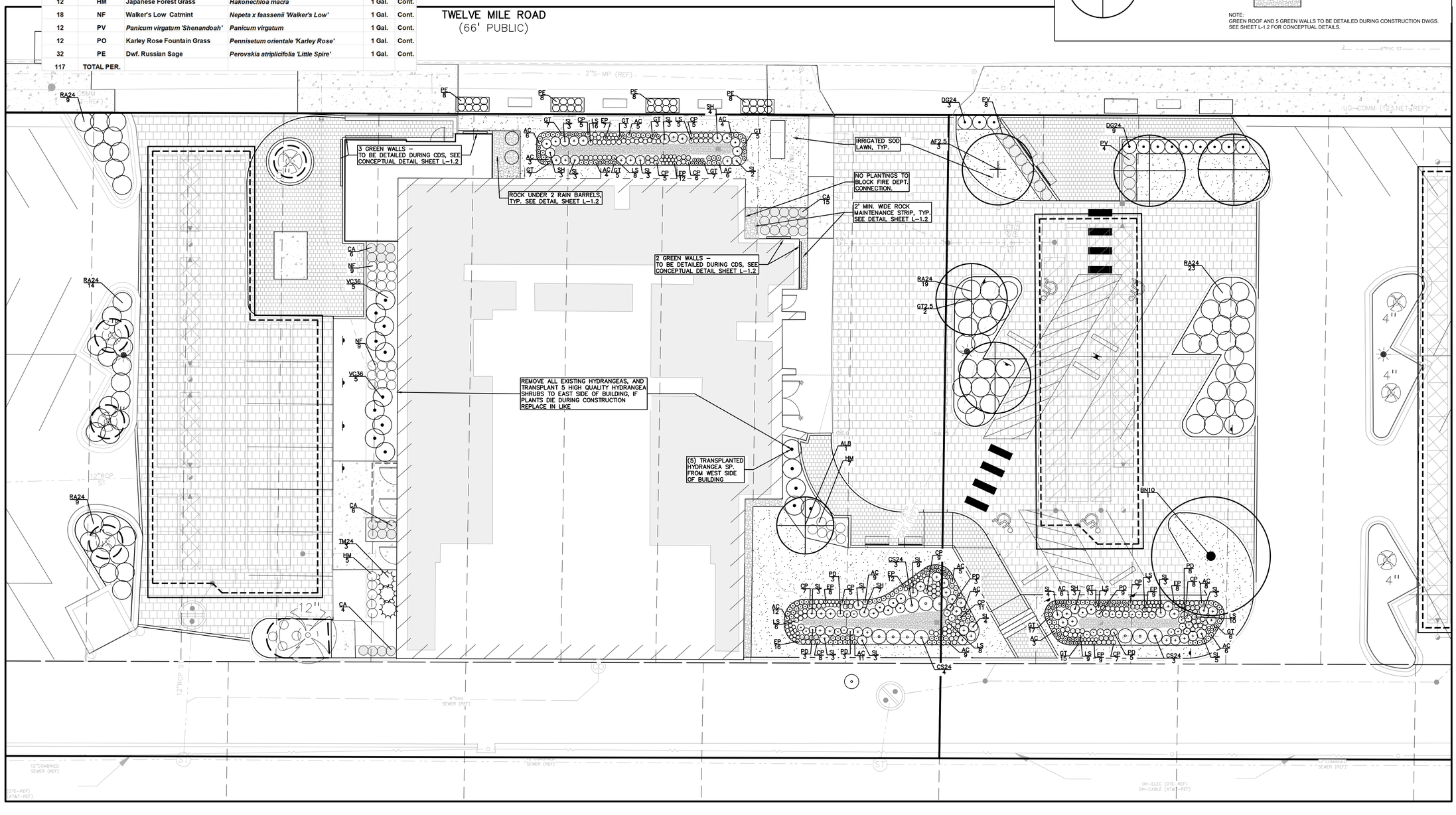
= ORNAMENTAL GRASS

= PERENNIALS

= IRRIGATED SOD LAWN

= ROCK MAINTENANCE EDGE SEE DETAIL SHEET L-1.2

NOTE:
GREEN ROOF AND 5 GREEN WALLS TO BE DETAILED DURING CONSTRUCTION DWGS. SEE SHEET L-1.2 FOR CONCEPTUAL DETAILS.



PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

STATE OF MICHIGAN — JANET L. EVANS — LANDSCAPE ARCHITECT — No. 3901 — REGISTERED

NORTH

0 5 10 20
SCALE: 1" = 10'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067

PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

REVISIONS	
FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

ORIGINAL ISSUE DATE:
MARCH 4, 2022

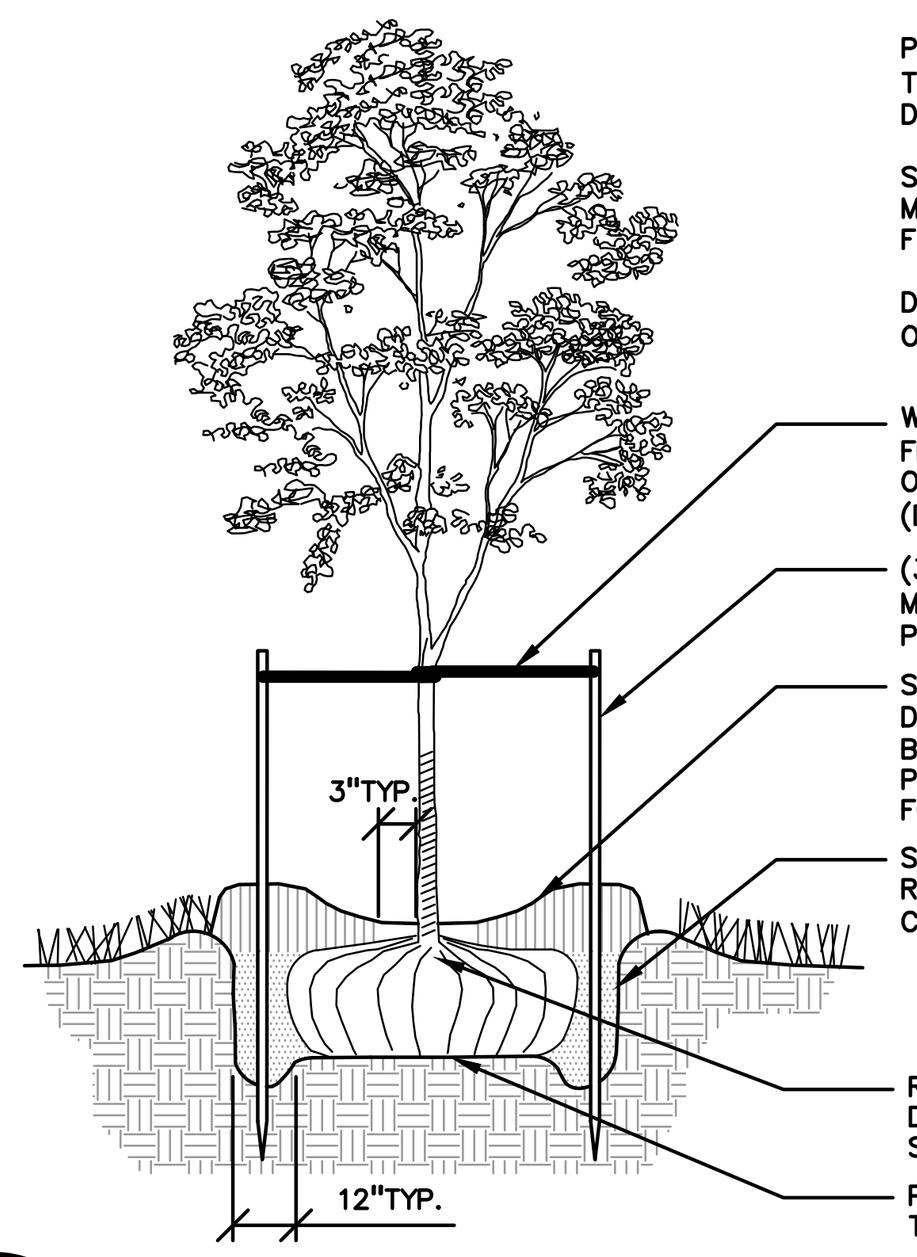
DRAWING TITLE
LANDSCAPE PLAN

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	BG
DES.	JE

DRAWING NUMBER:
L-1.1

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020-0224 - LUME - BERKLEY\DWG\CONSTRUCTION\120- (L-1.0) LANDSCAPE - 20--0224.dwg



PLANT SO THAT TOP OF ROOT BALL IS FLUSH TO GRADE OR 1–2" HIGHER IF IN POORLY DRAINED SOILS.

SECURE TREE WRAP WITH BIODEGRADABLE MATERIAL AT TOP & BOTTOM, REMOVE AFTER FIRST WINTER.

DO NOT PRUNE TERMINAL LEADER PRUNE ONLY DEAD BROKEN BRANCHES.

WITH 2"–3" WIDE FABRIC STRAPS, CONNECT FROM TREE TO STATE. REMOVE AFTER (1) ONE YEAR, ALLOW FOR FLEXIBILITY. (DO NOT USE WIRE & HOSE)

(3) THREE 2"x2" HARDWOOD STAKES DRIVEN A MIN. OF 18" DEEP FIRMLY INTO SUBGRADE PRIOR TO BACKFILLING.

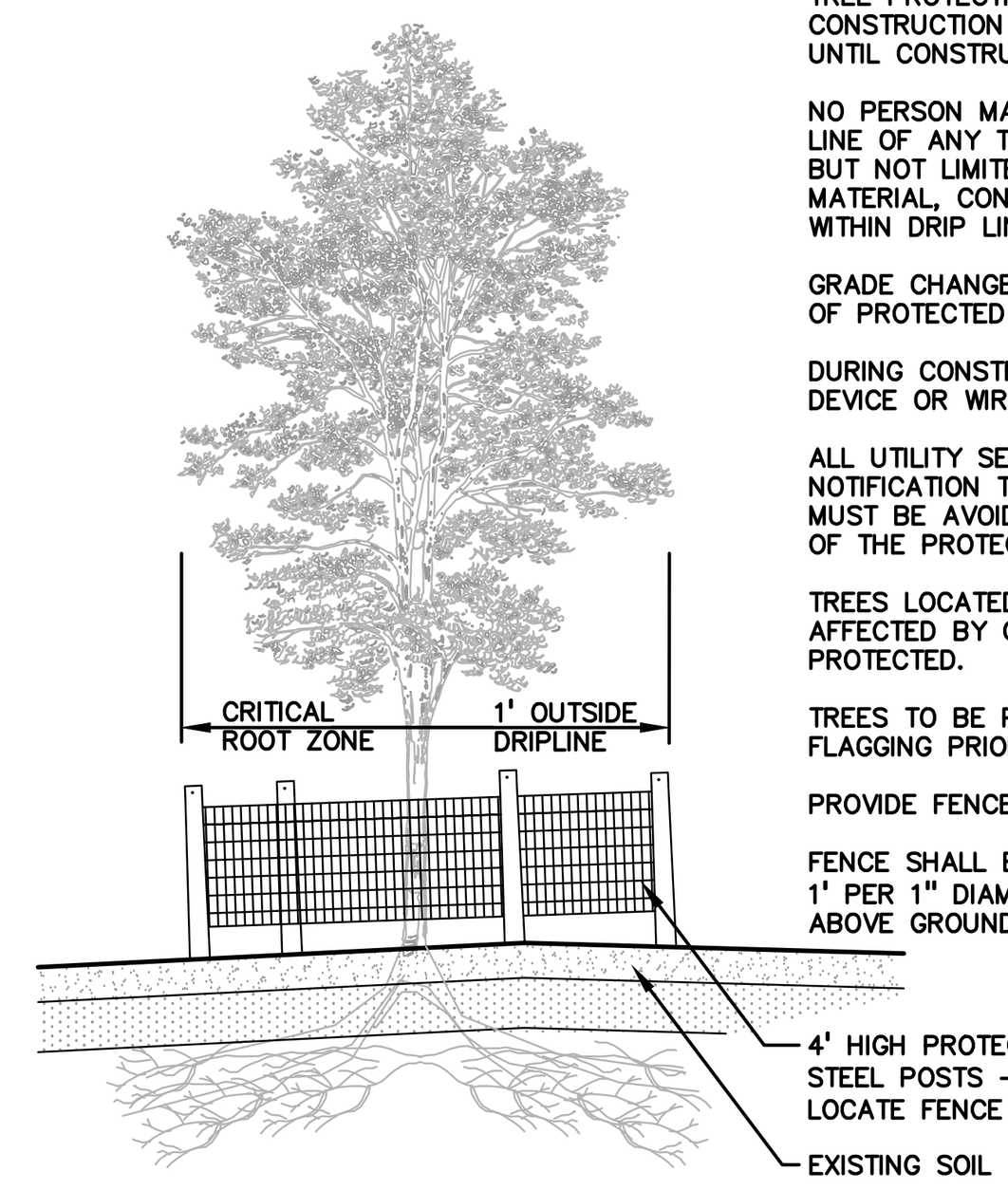
SHREDDED HARDWOOD BARK MULCH TO DRIPLINE. 3" DEEP AND LEAVE 3" CIRCLE OF BARE SOIL AROUND TREE TRUNK. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK. FORM SAUCER AROUND PLANT PIT.

SPECIFIED PLANTING MIX, WATER & TAMP TO REMOVE AIR POCKETS AMEND SOIL PER SITE CONDITIONS & TREE REQUIREMENTS.

REMOVE ALL BURLAP FROM TOP ⅓ OF ROOTBALL. DISCARD ALL NON–BIODEGRADABLE MATERIAL OFF SITE.

PLACE ROOTBALL ON UNEXCAVATED OR TAMPED SOIL.

15 DECIDUOUS TREE PLANTING DETAIL
NOT TO SCALE



TREE PROTECTION WILL BE ERECTED PRIOR TO START OF CONSTRUCTION ACTIVITIES AND SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.

NO PERSON MAY CONDUCT ANY ACTIVITY WITHIN THE DRIP LINE OF ANY TREE DESIGNATED TO REMAIN;INCLUDING, BUT NOT LIMITED TO PLACING SOLVENTS, BUILDING MATERIAL, CONSTRUCTION EQUIPMENT OR SOIL DEPOSITS WITHIN DRIP LINES.

GRADE CHANGES MAY NOT OCCUR WITHIN THE DRIP LINE OF PROTECTED TREES.

DURING CONSTRUCTION, NO PERSON SHALL ATTACH ANY DEVICE OR WIRE TO ANY REMAINING TREE.

ALL UTILITY SERVICE REQUESTS MUST INCLUDE NOTIFICATION TO THE INSTALLER THAT PROTECTED TREES MUST BE AVOIDED. ALL TRENCHING SHALL OCCUR OUTSIDE OF THE PROTECTIVE FENCING.

TREES LOCATED ON ADJACENT PROPERTY THAT MAY BE AFFECTED BY CONSTRUCTION ACTIVITIES MUST BE PROTECTED.

TREES TO BE PRESERVED SHALL BE IDENTIFIED WITH FLAGGING PRIOR TO THE TREE CLEARING OPERATIONS.

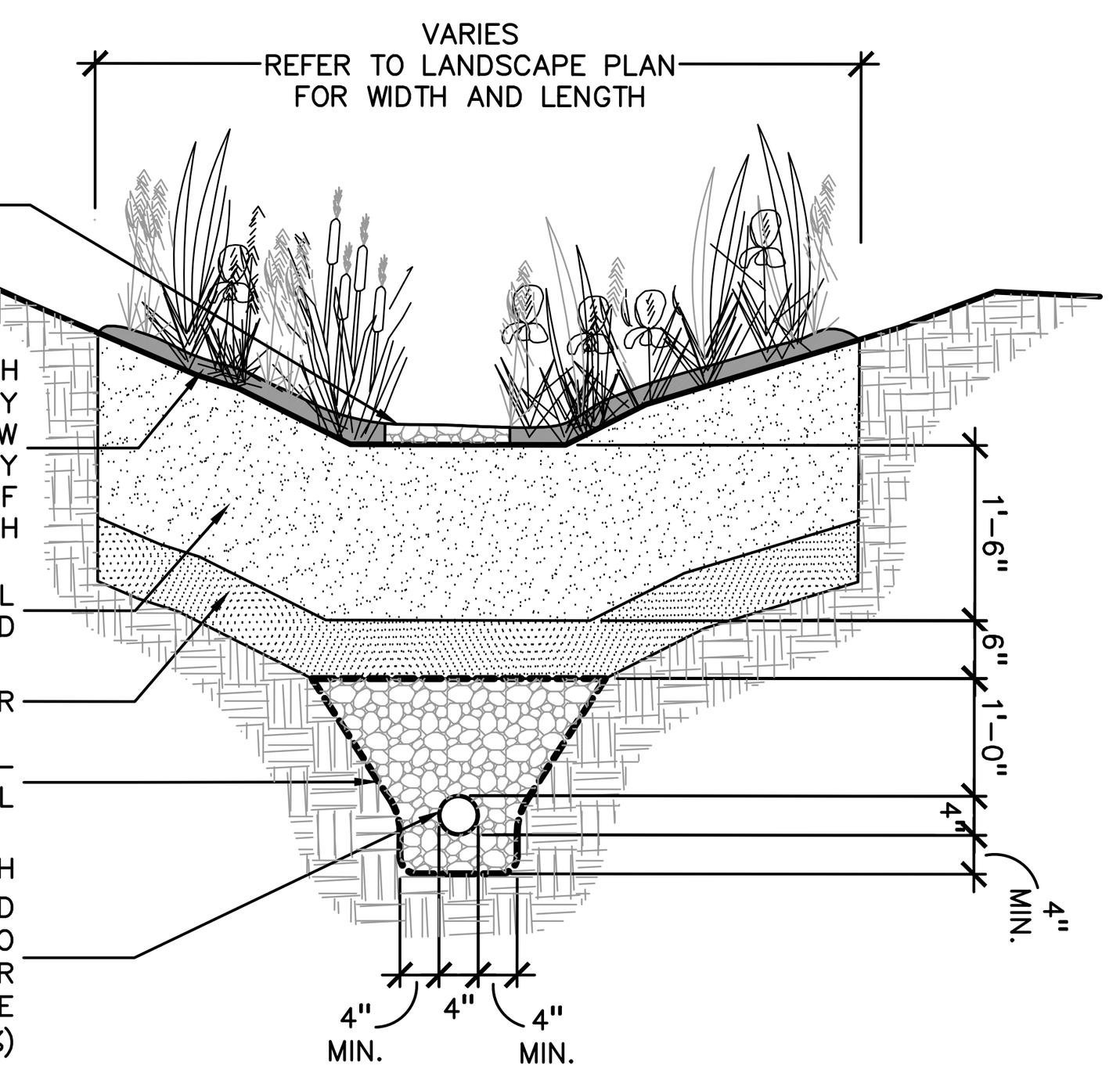
PROVIDE FENCE AROUND CRITICAL ROOT ZONE OF TREE.

FENCE SHALL BE PLACED IN A CIRCLE WITH A RADIUS OF 1' PER 1" DIAMETER OF THE TREE MEASURED AT 4.5' ABOVE GROUND.

4' HIGH PROTECTIVE FENCING WITH STEEL POSTS – 10' O.C. LOCATE FENCE 1' OUTSIDE DRIPLINE.

EXISTING SOIL

16 TREE PROTECTION DETAIL
NOT TO SCALE



3–4" DIA RIVER ROCK

3" SHREDDED HARDWOOD MULCH WITH PLANTS ONLY
NOTE: USE BIODEGRADABLE STRAW EROSION CONTROL BLANKET BY AMERICAN EXCELSIOR IN SWALE IF SEED IS USED – NO MULCH

25% TOPSOIL
75% SAND

SAND DRAINAGE LAYER

NON–WOVEN GEOTEXTILE FABRIC – MIRAFI 160N OR APPROVED EQUAL

4" PERFORATED UNDERDRAIN WITH ¾" CRUSHED NATURAL WASHED STONE (MDOT 61) COMPACTED TO 98% MOD. PROCTOR (MIN. SLOPE ON PIPE SHALL BE 0.5%)

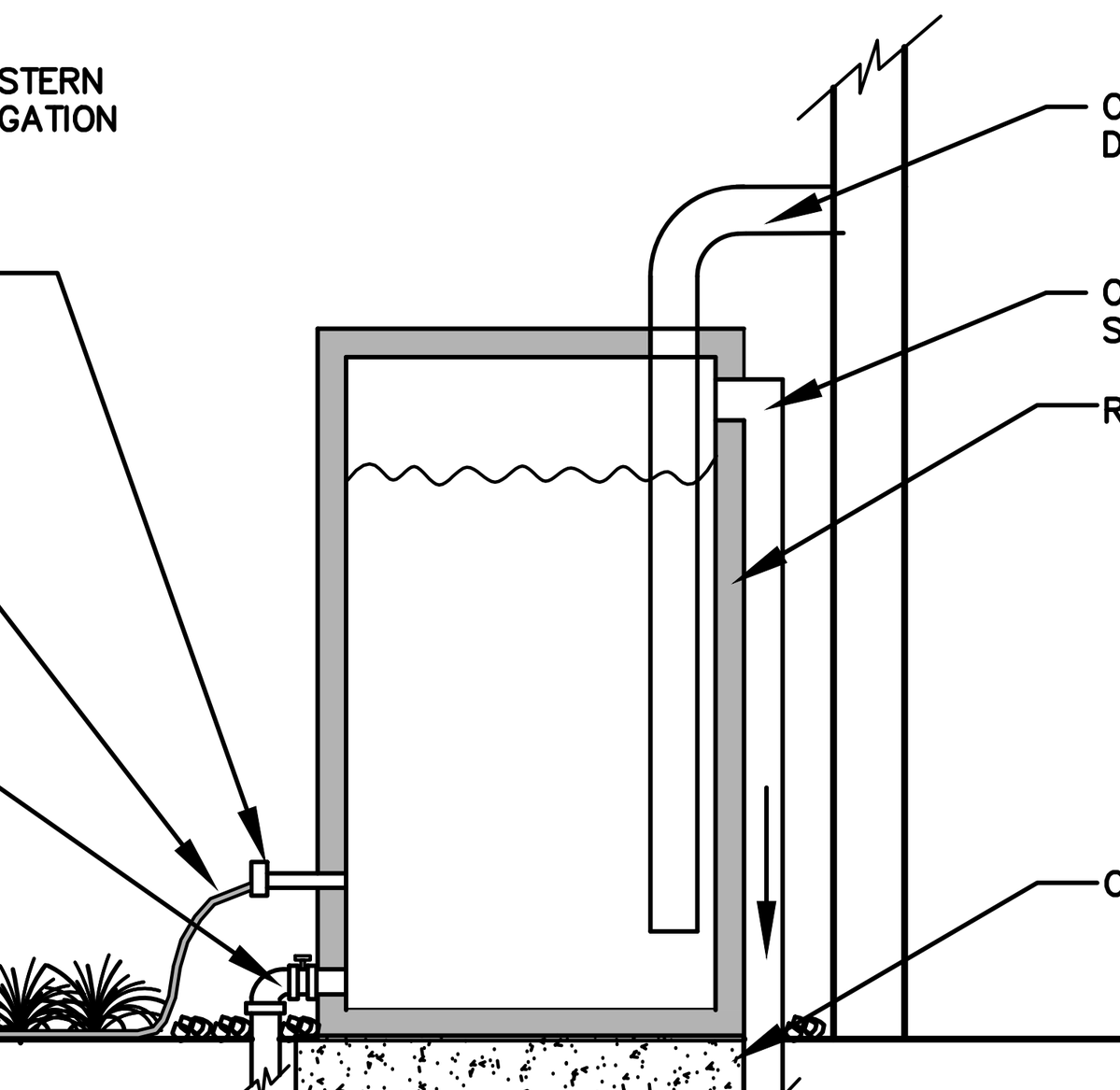
8 RAINGARDEN – TYPICAL CROSS SECTION
SCALE: 1" = 2'–0"

NOTE: FOR ADDITIONAL BARELL/CISTERN AND IRRIGATION DETAILS, SEE IRRIGATION PLANS BY OTHERS DURING CONSTRUCTION DRAWINGS

VALVE CONNECTED TO IRRIGATION CONTROLLER WILL PROVIDE GRAVITY FLOW TO SOAKER HOSE OR DRIP IRRIGATION SYSTEM IN PLANTING BEDS SURROUNDING CISTERN

DRIP IRRIGATION LINE OR SOAKER HOSE FED BY GRAVITY (PUMPS WILL NOT BE USED)

VALVE SHALL BE OPENED IN WINTER SO WATER CAN PASS THROUGH TANK INTO STORM SEWER SYSTEM



CONNECTION TO ROOF DRAINS

OVERFLOW – CONNECT STORM SEWER SYSTEM

RAIN BARELL/CISTERN

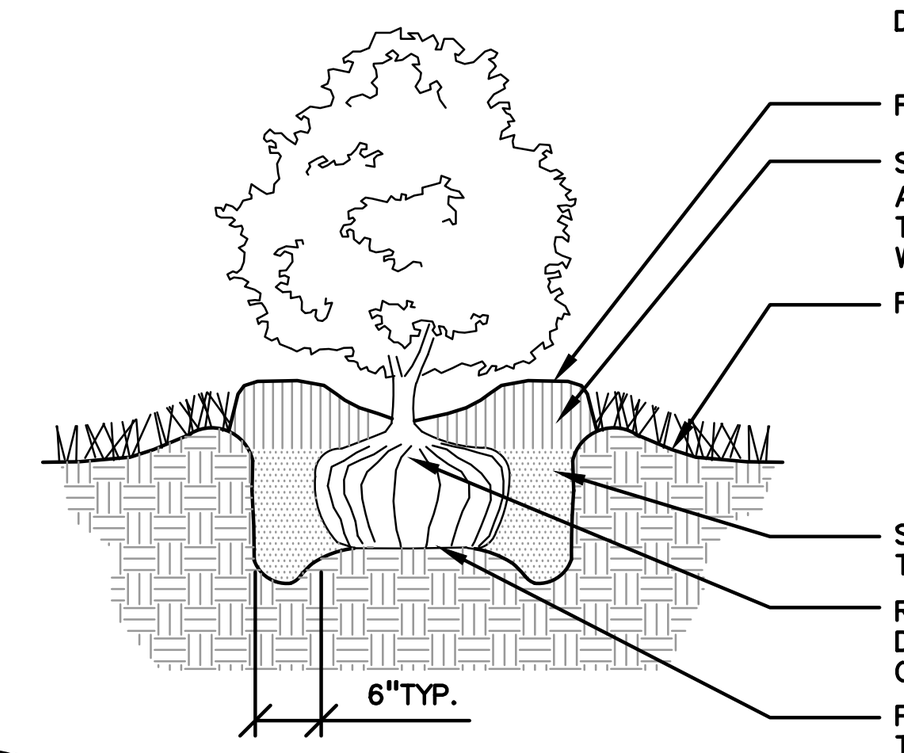
CONCRETE PAD FOR CISTERN

QTY. 2
SEE PLAN FOR LOCATIONS

4 RAINWATER BARELL/CISTERN
NOT TO SCALE

PEA GROUP
TROY ■ WASHINGTON TWP
BRIGHTON ■ DETROIT
t: 844.813.2949
www.peainc.com

STATE OF MICHIGAN ★ JANET L. EVANS LANDSCAPE ARCHITECT NO. 1390 REGISTERED LANDSCAPE ARCHITECT



PLANT SO THAT TOP OF ROOT BALL IS FLUSH TO GRADE OR 1–2" HIGHER IF IN POORLY DRAINED SOILS.

DO NOT COVER TOP OF ROOTBALL WITH SOIL.

FORM SAUCER WITH 4" CONTINUOUS RIM.

SHREDDED HARDWOOD BARK MULCH 3" DEEP AND LEAVE 3" CIRCLE OF BARE SOIL AROUND TRUNK. DO NOT PLACE MULCH IN CONTACT WITH TRUNK.

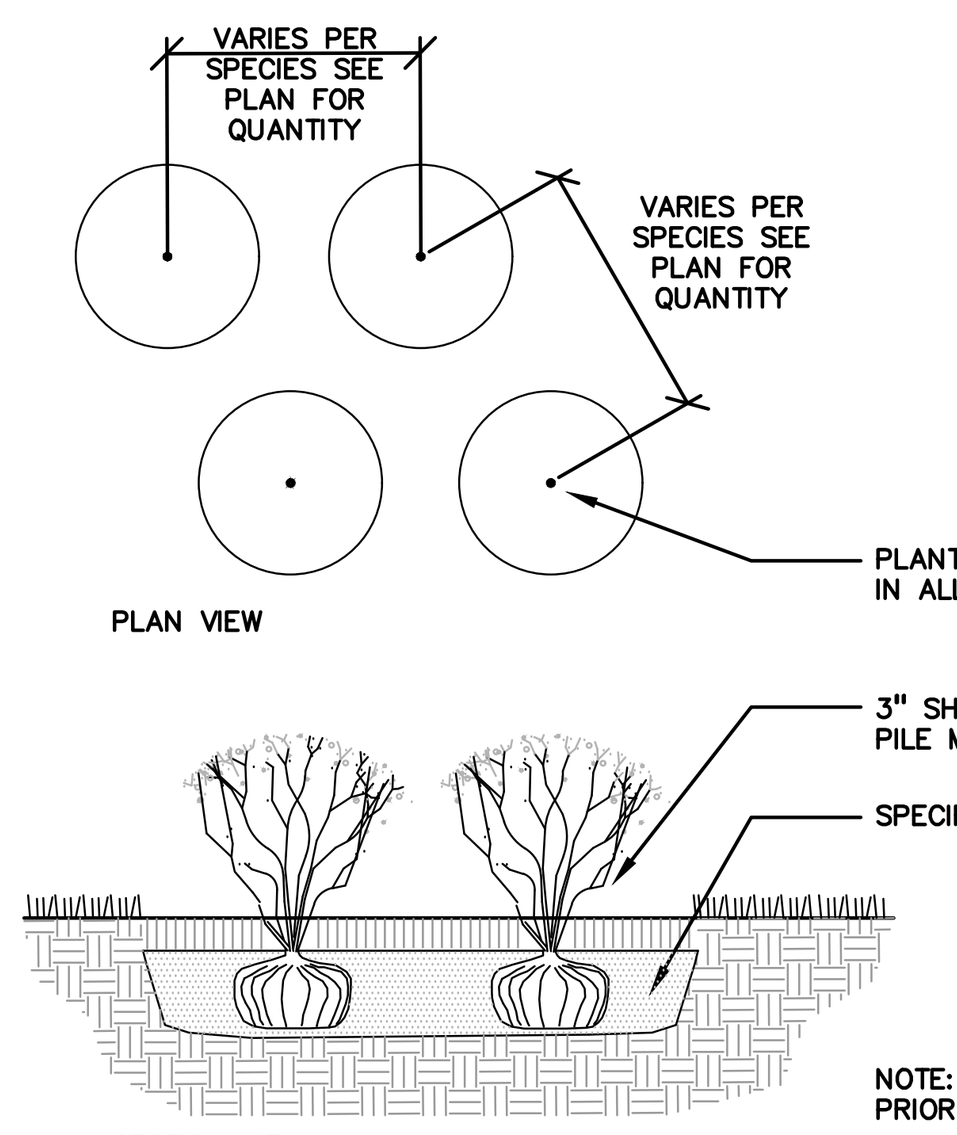
FINISH GRADE.

SPECIFIED PLANTING MIX. WATER AND TAMP TO REMOVE AIR POCKETS.

REMOVE ALL BURLAP FROM TOP ⅓ OF ROOTBALL. DISCARD ALL NON–BIODEGRADABLE MATERIAL OFF SITE.

PLACE ROOTBALL ON UNEXCAVATED OR TAMPED SOIL.

13 SHRUB PLANTING DETAIL
NOT TO SCALE



PLANT PERENNIALS EQUAL DISTANCE IN ALL DIRECTION

3" SHREDDED BARK MULCH. DO NOT PILE MULCH AGAINST PLANT STEMS

SPECIFIED PLANTING MIX

NOTE: REMOVE ALL CONTAINERS PRIOR TO PLANTING.

14 PERENNIAL PLANTING DETAIL
NOT TO SCALE

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

COMPANY: UNILOCK OR APPROVED EQUAL
PRODUCT: ECO–PROMENADE PERVIOUS PEDESTRIAN PAVERS W/ FINE STONE CHIP (OR APPROVED EQUAL)
COLOR: NATURAL
FINISH: SMOOTH



COLORS TO BLEND WITH BUILDING COORDINATE WITH ARCHITECT

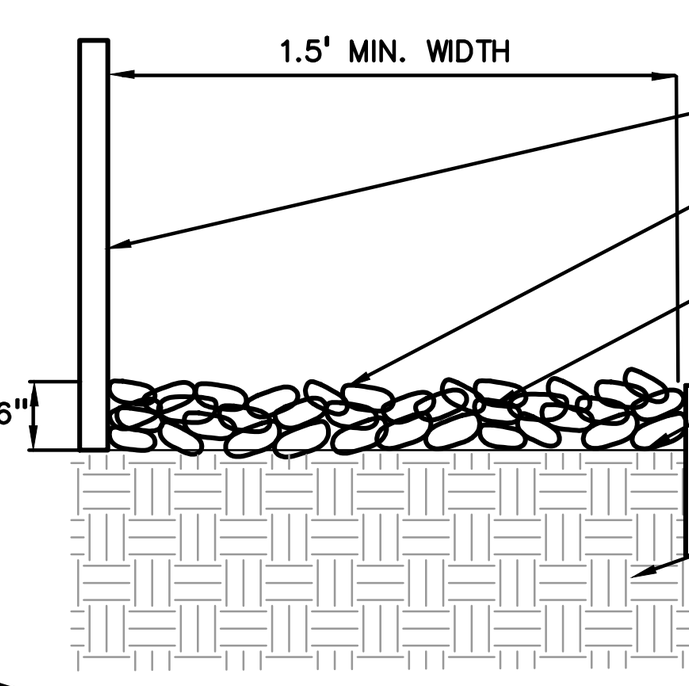
10 PEDESTRIAN PERVIOUS PAVERS
NOT TO SCALE

COMPANY: UNILOCK OR APPROVED EQUAL
PRODUCT: ECO–PRIORA PERVIOUS VEHICULAR PAVERS W/ CLEAR STONE CHIP (OR APPROVED EQUAL)
COLOR: NATURAL



COLORS TO BLEND WITH BUILDING COORDINATE WITH ARCHITECT

11 VEHICULAR PERVIOUS PAVERS
NOT TO SCALE



FACE OF BUILDING

1–3" DIA. RIVER ROCK, AT 6" DEPTH

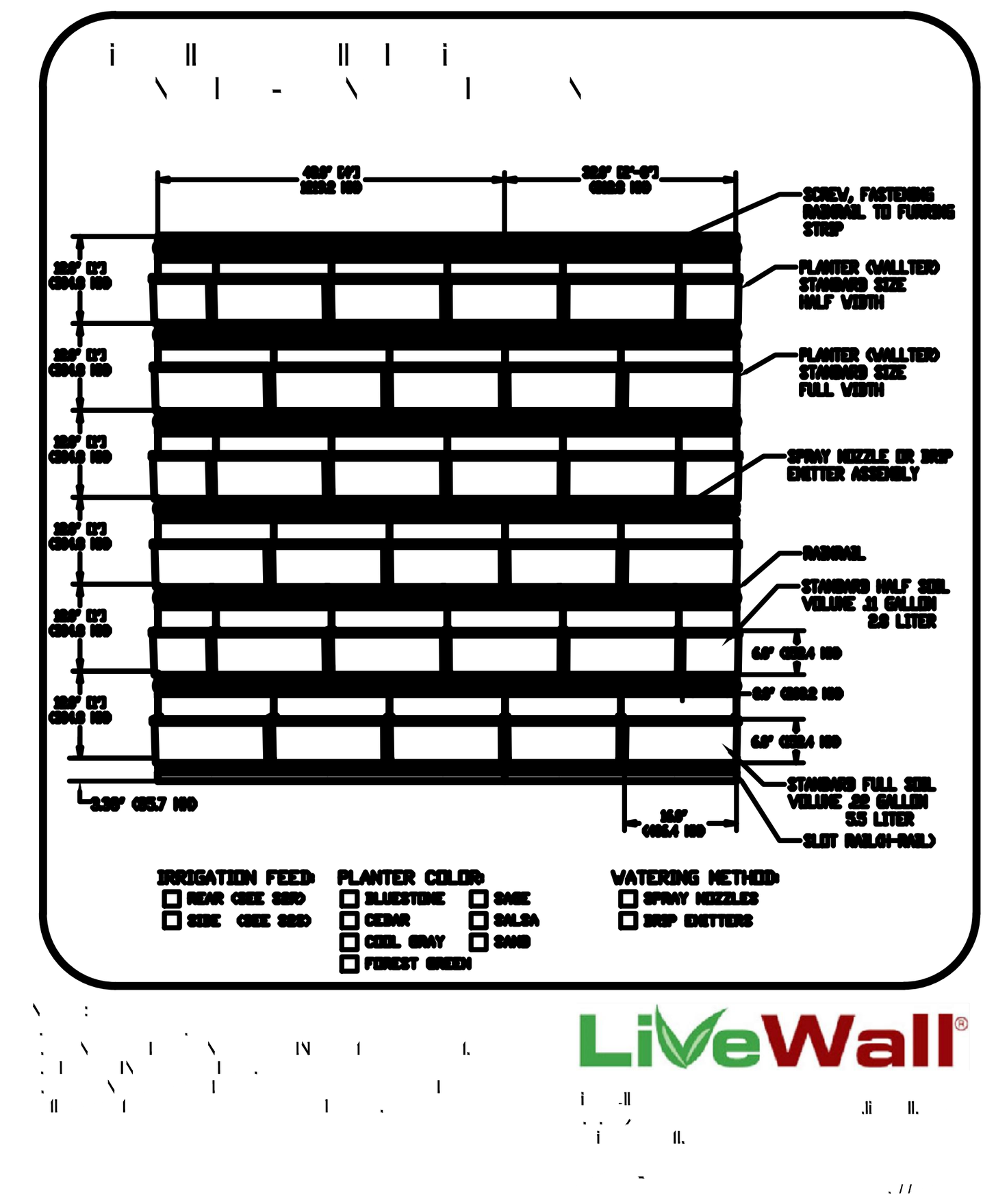
FILTER FABRIC TO BE COMPLETELY CONCEALED WITH STONE

GRAY FILTER FABRIC

CURB OR HEAVY DUTY ALUMINUM EDGING – BLACK

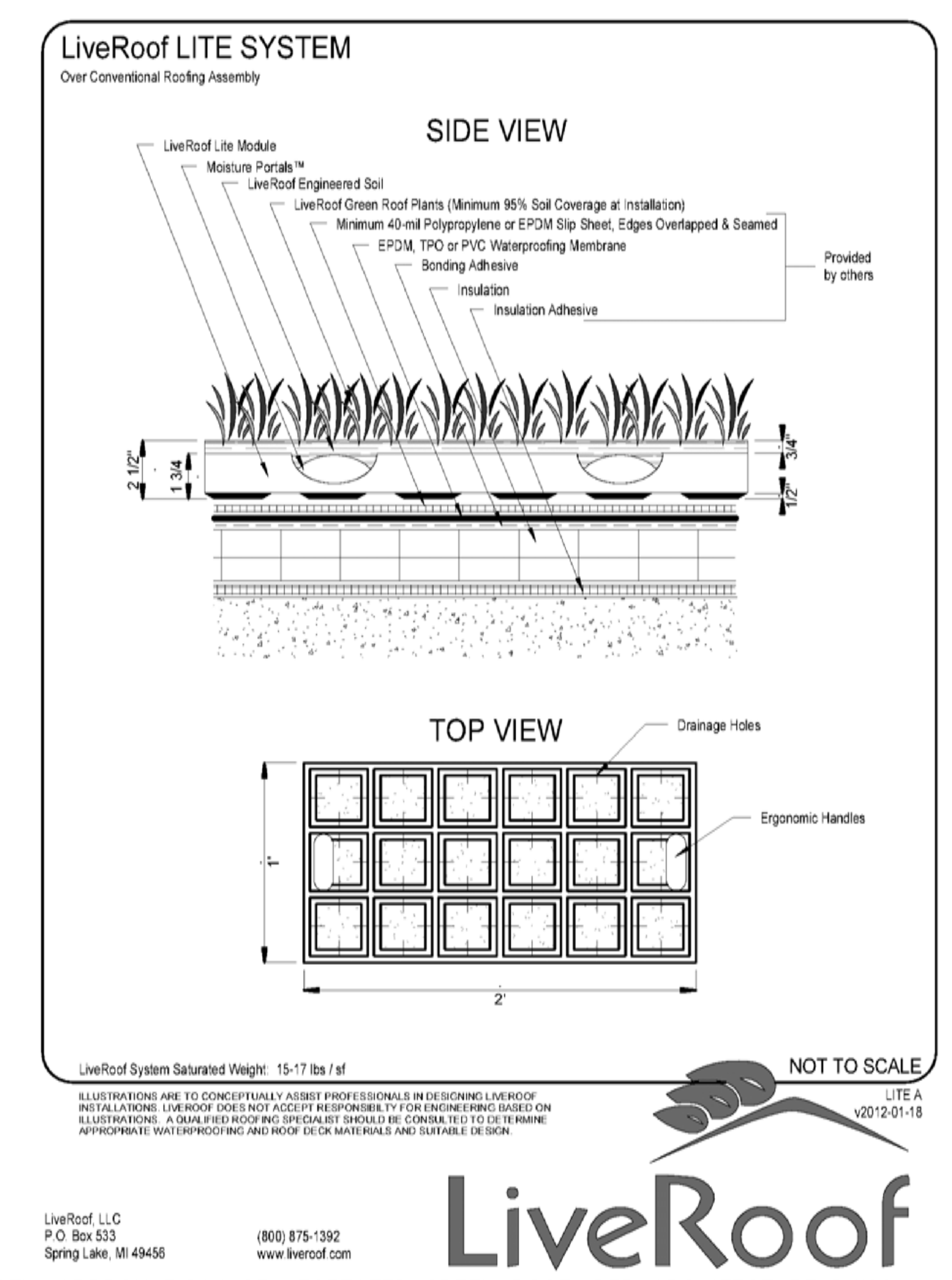
SUBGRADE, COMPACT TO 95% MAX. DRY UNIT DENSITY (PER ASTM D–1557)

12 ROCK MAINTENANCE EDGE DETAIL
NOT TO SCALE



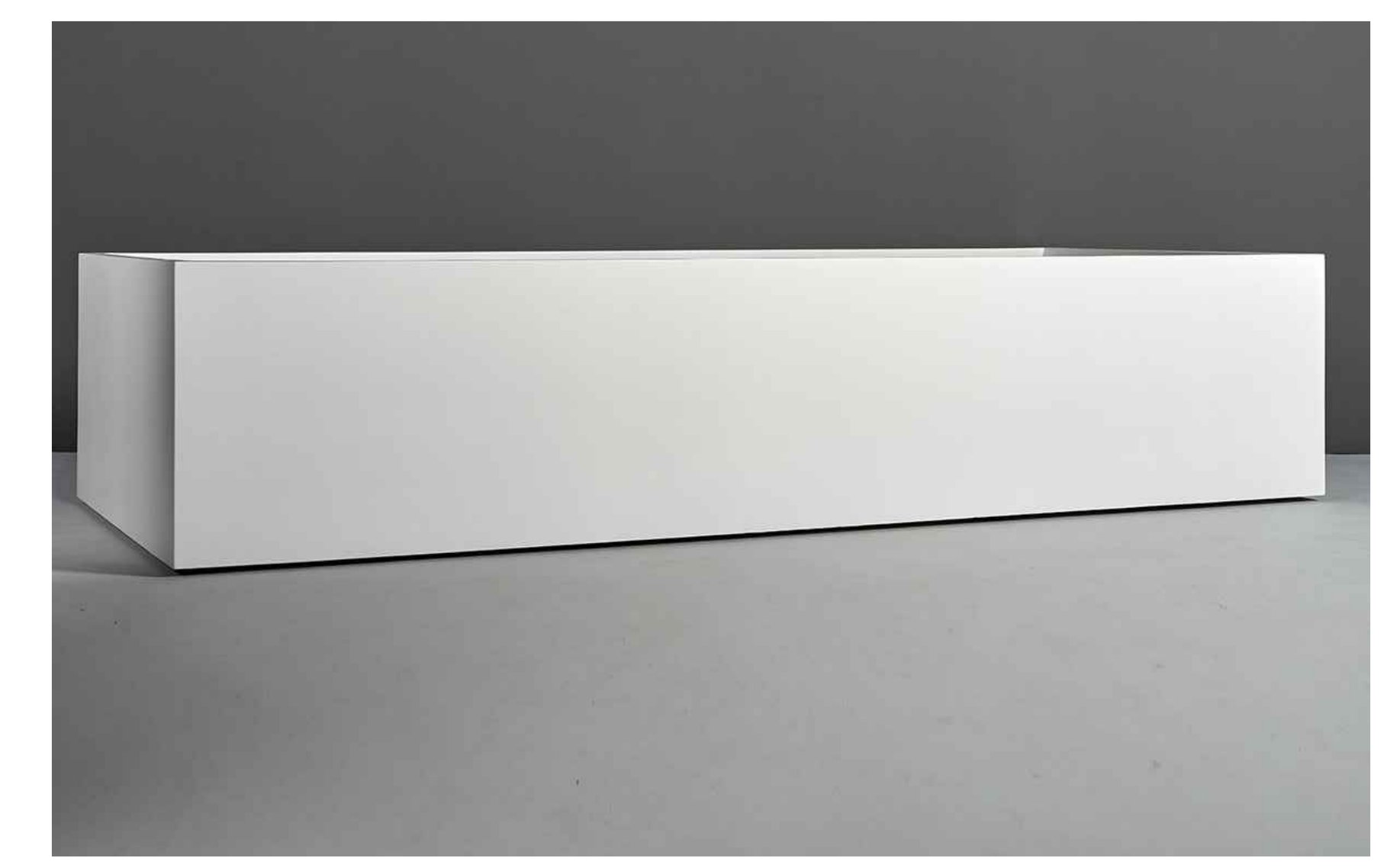
QTY. 5 WALLS, PER ARCHITECTURE DRAWINGS, SEE LANDSCAPE PLAN FOR LOCATION
COMPANY: LIVEWALL
PRODUCT: LIVEWALL STANDARD PLANTERS OUTDOOR APPLICATION
DIMENSIONS: 12"X16" PLANTER
IRRIGATION: DRIP

6 LIVEWALL SECTION
NOT TO SCALE
LIVEWALL PLANS TO BE DETAILED AT CONSTRUCTION



QTY. APPROX 3,864 SF VEGETATED GREEN ROOF, PER ARCHITECTURE DWGS.
COMPANY: LIVEROOF
PRODUCT: LIVEROOF LITE SYSTEM, 15–17 LBS/SF
DIMENSIONS: 2'X1' PLANT CELLS
IRRIGATION: TBD, HIGHLY RECOMMENDED
REFER TO ARCHITECT DRAWINGS FOR ROOF STRUCTURE + GREEN ROOF LAYOUT

7 LIVEROOF SECTION
NOT TO SCALE
LIVEROOF PLANS TO BE DETAILED AT CONSTRUCTION



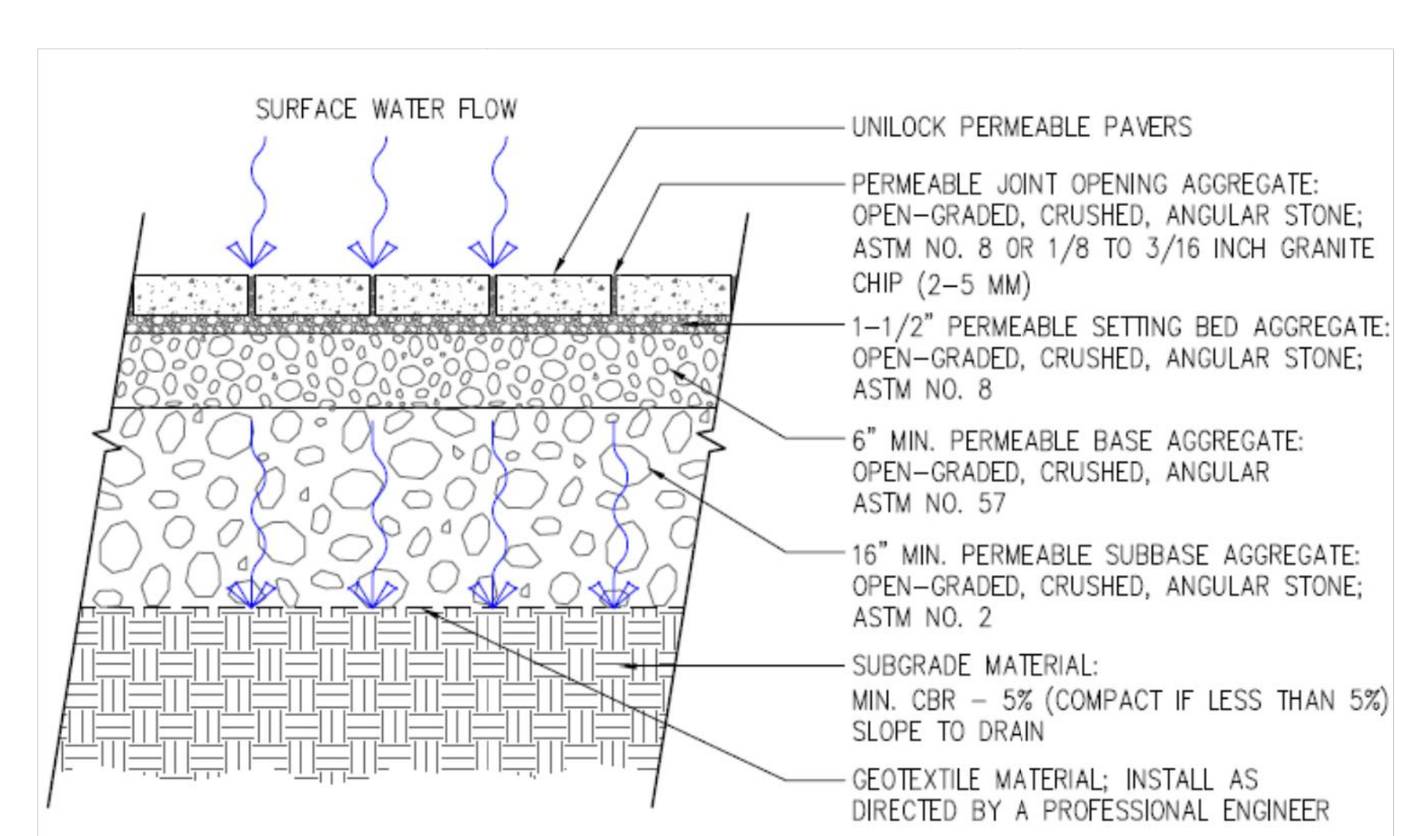
QTY. 4
COMPANY: JAY SCOTTS OR APPROVED EQUAL
PRODUCT: SELENGE EXTRA WIDE LARGE RECTANGLE PLANTER
DIMENSIONS: 18" HT X 36" WIDTH X 84" LENGTH

COLOR FINISH: MGM MATTE GUNMETAL
COLOR TO BLEND WITH BUILDING COORDINATE WITH ARCHITECT

MGM Matte Gunmetal

3 PLANTER BOX DETAIL
NOT TO SCALE

CLIENT
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067



5 PERVIOUS PAVERS – TYPICAL CROSS SECTION
NOT TO SCALE

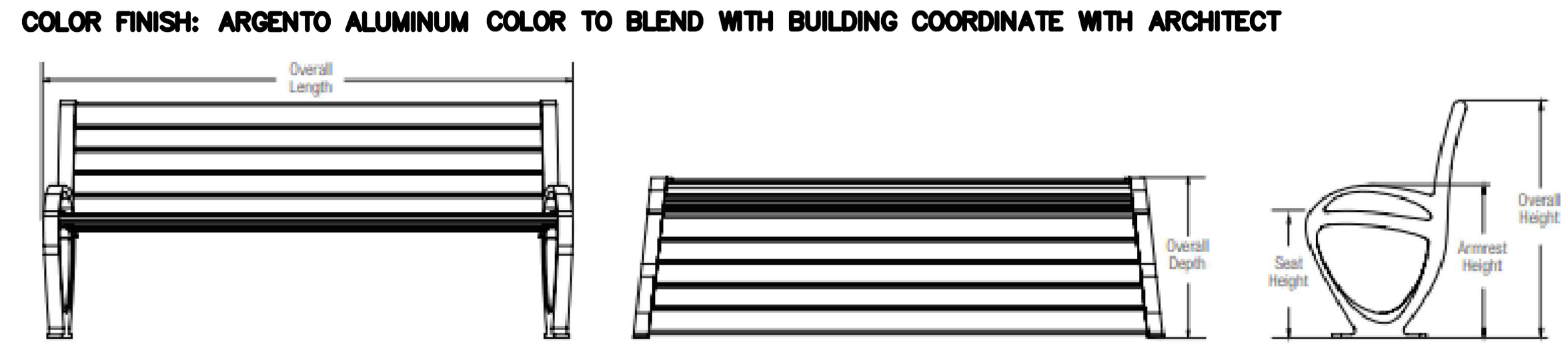
PROJECT TITLE
LUME DEVELOPMENT
1949 12 MILE ROAD
BERKLEY, MICHIGAN

Lume. CANNABIS CO.

QTY. 4
COMPANY: FORMS + SURFACES OR APPROVED EQUAL
PRODUCT: TRIO BENCH, 6' W/ BACK, WOOD–SLATTED
DIMENSIONS: 17.6" HT X 17.4" WIDTH X 75.0" LENGTH

COLOR FINISH: ARGENTO ALUMINUM COLOR TO BLEND WITH BUILDING COORDINATE WITH ARCHITECT





MODEL	OVERALL LENGTH	OVERALL DEPTH	SEAT DEPTH	OVERALL HEIGHT	SEAT HEIGHT	ARMREST HEIGHT	WEIGHT
SBTRO-72BA	75.0" (1905 mm)	22.7" (577 mm)	17.4" (441 mm)	33.6" (853 mm)	17.6" (447 mm)	21.6" (549 mm)	166.7 lbs (75.6 kg)
SBTRO-72BW	75.0" (1905 mm)	22.7" (577 mm)	17.4" (441 mm)	33.6" (853 mm)	17.6" (447 mm)	21.6" (549 mm)	166.7 lbs (75.6 kg)
SBTRO-96BA	98.7" (2506 mm)	22.7" (577 mm)	17.4" (441 mm)	33.6" (853 mm)	17.6" (447 mm)	21.6" (549 mm)	203.4 lbs (92.3 kg)

2 BACKED BENCH
NOT TO SCALE

REVISIONS

FOR OWNER REVIEW	03/04/22
REVISE PER CITY	03/26/22
PROGRESS SET	04/15/22

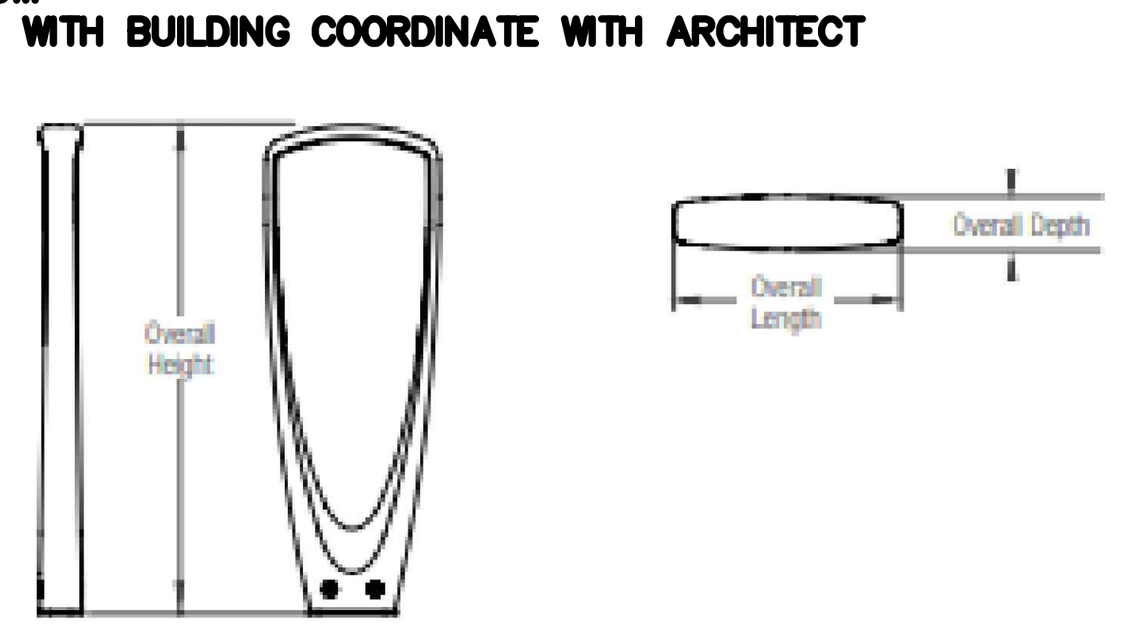
ORIGINAL ISSUE DATE:
MARCH 4, 2022

DRAWING TITLE
LANDSCAPE DETAILS



QTY. 4
COMPANY: FORMS + SURFACES OR APPROVED EQUAL
PRODUCT: TRIO BIKE RACK, ALUMINUM
COLOR: ARGENTO COLOR TO BLEND WITH BUILDING COORDINATE WITH ARCHITECT

NOMINAL DIMENSIONS



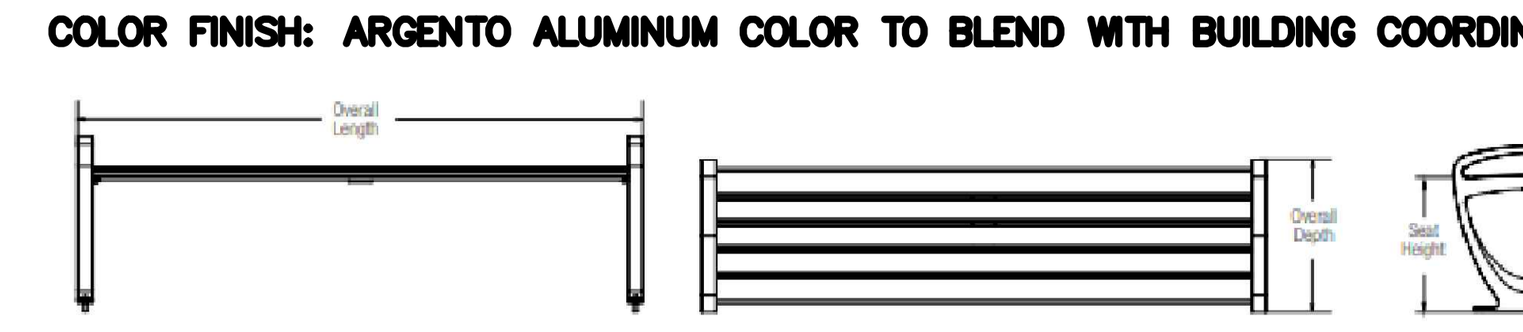
OVERALL LENGTH	OVERALL DEPTH	OVERALL HEIGHT	WEIGHT
12" (305 mm)	2.75" (70 mm)	33.5" (851 mm)	25 lbs (11.3 kg)

9 BIKE RACK DETAIL
NOT TO SCALE



QTY. 3
COMPANY: FORMS + SURFACES OR APPROVED EQUAL
PRODUCT: TRIO BENCH, 6' BACKLESS WOOD–SLATTED
DIMENSIONS: 17.7" HT X 18" WIDTH X 74.8" LENGTH

COLOR FINISH: ARGENTO ALUMINUM COLOR TO BLEND WITH BUILDING COORDINATE WITH ARCHITECT



MODEL	OVERALL LENGTH	OVERALL DEPTH	SEAT DEPTH	OVERALL HEIGHT	SEAT HEIGHT	ARMREST HEIGHT	WEIGHT
SBTRO-72NA	74.8" (1900 mm)	20.1" (511 mm)	18" (457 mm)	21.9" (556 mm)	17.7" (450 mm)	21.9" (556 mm)	109.6 lbs (49.7 kg)
SBTRO-72NW	74.8" (1900 mm)	20.1" (511 mm)	18" (457 mm)	21.9" (556 mm)	17.7" (450 mm)	21.9" (556 mm)	109.0 lbs (49.4 kg)
SBTRO-96NA	98.6" (2505 mm)	20.1" (511 mm)	18" (457 mm)	21.9" (556 mm)	17.7" (450 mm)	21.9" (556 mm)	128.4 lbs (58.3 kg)

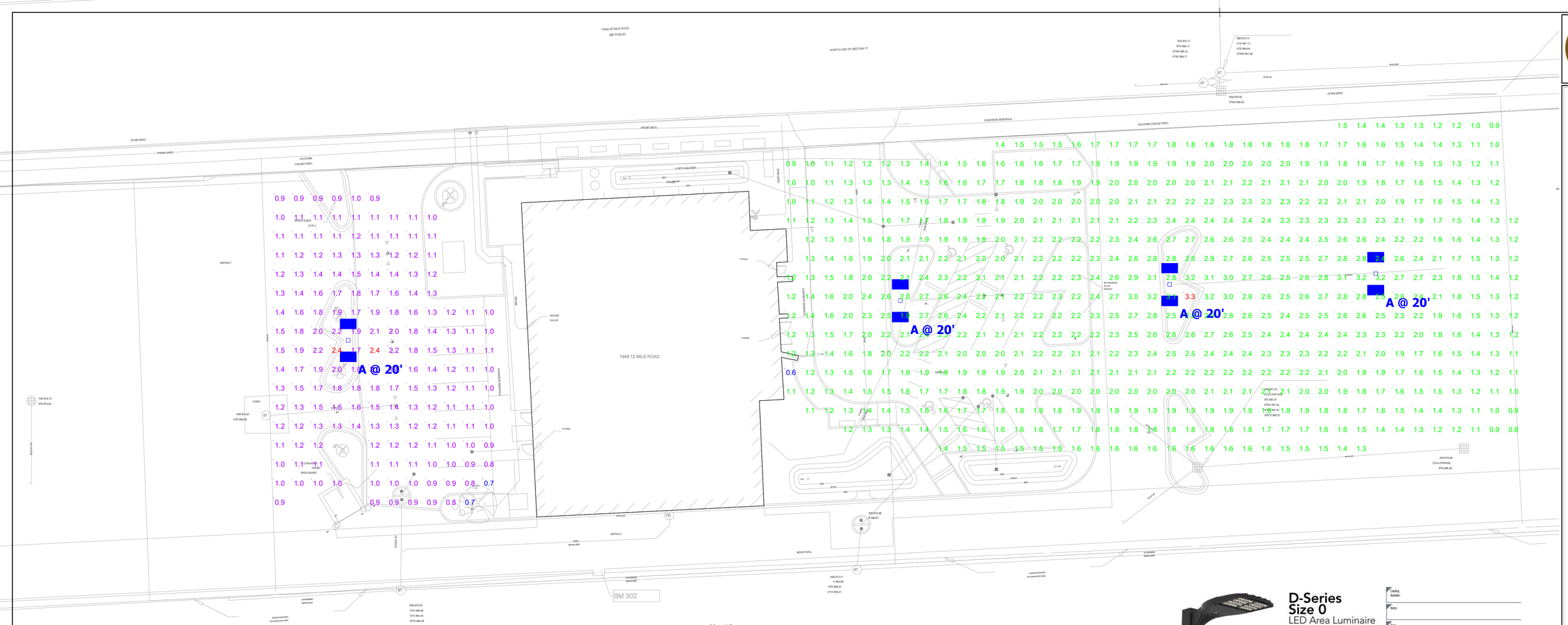
1 BACKLESS BENCH
NOT TO SCALE

PEA JOB NO.	2020-0224
P.M.	SAP
DN.	BG
DES.	JE

DRAWING NUMBER:
L-1.2

NOT FOR CONSTRUCTION

S:\PROJECTS\2020\2020–0224 JBD LUME – BERKLEY\DWG\CONSTRUCTION\100– (L–1.0) LANDSCAPE DETAILS–20–0224.dwg



Plan View
Scale - 1" = 12ft

General Note

1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
2. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0"
3. LIGHTING ALTERNATES REQUIRE NEW PHOTOMETRIC CALCULATION AND RESUBMISSION TO CITY FOR APPROVAL.

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIRMENTS DEFINED IN ASHRAE 90.1 2013. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT ASG@GASSERBUSH.COM OR 734-266-6705.

FOR ORDERING INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.

MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE. POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT LESS BASE HEIGHT.

Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Lumens Per Lamp	Light Loss Factor	Wattage
▭ ▫ ▭	A	4	Lithonia Lighting	DSX0 LED P4 40K T5W MVOLT	DSX0 LED P4 40K T5W MVOLT	LED	10889	0.9	184

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min	Avg/Max
East Lot	+	1.9 fc	3.3 fc	0.6 fc	5.5:1	3.2:1	0.6:1
West Lot	+	1.3 fc	2.4 fc	0.7 fc	3.4:1	1.9:1	0.5:1



D-Series
Size 0
LED Area Luminaire

Catalog Number
Notes
Type

Fill the fab box at least over the page to see all selected fixtures.

Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

Specifications

EPA: 0.95 ft² (.09 m²)
Length: 26" (66.0 cm)
Width: 13" (33.0 cm)
Height: 7" (17.8 cm)
Weight (max): 16 lbs (7.25 kg)

A+ Capable options indicated by this color background.

Ordering Information **EXAMPLE:** DSX0 LED P6 40K T3M MVOLT SPA DDBXD

DSX0 LED

Series	LEDs	Color temperature	Distribution	Voltage	Mounting
DSX0 LED	**Forward optics** P1 P4 P7 P2 P5 P3 P6 **Rotated optics** P10° P12° P11° P13°	30K 3000 K 40K 4000 K 50K 5000 K AMBPC Amber phosphor converted[2]	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide BLC Backlight control[22] LCCO Left corner cutoff[22] RCCO Right corner cutoff[22]	MVOLT[4,5] 120[1] 208[1,4] 240[1,4] 277[1] 347[1,4,6] 480[1,6,6]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor[7] RPUMBA Round pole universal mounting adaptor[7] **Shipped separately** KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[8]

Control options			Other options		Finish (required)	
Shipped installed NLTAIR2 nLight AIR generation 2 enabled[9] PER NEMA twist-lock receptacle only (control ordered separate)[10] PER5 Five-wire receptacle only (control ordered separate)[11,12] PER7 Seven-wire receptacle only (control ordered separate)[11,12] DMG 0-10V dimming extend out back of housing for external control (control ordered separate) PIR Bi-level, motion/ambient sensor, 8–15' mounting height, ambient sensor enabled at 5fc[13,14] PIRH Bi-level, motion/ambient sensor, 15–30' mounting height, ambient sensor enabled at 5fc[13,14] PIR0N Network, Bi-Level motion/ambient sensor[9] PIR1FC3V Bi-level, motion/ambient sensor, 8–15' mounting height, ambient sensor enabled at 1fc[13,14,15]	PIRH1FC3V Bi-level, motion/ambient sensor, 15–30' mounting height, ambient sensor enabled at 1fc[13,14,15] BL30 Bi-level switched dimming, 30%[3,16,17] BL50 Bi-level switched dimming, 50%[3,16,17] PNMTD03 Part night, dim till dawn[3,18] PNMT5D3 Part night, dim 5 hrs[3,19] PNMT6D3 Part night, dim 6 hrs[3,19] PNMT7D3 Part night, dim 7 hrs[3,19] FAO Field adjustable output[20]	**Shipped installed** HS House-side shield[21] SF Single fuse (120, 277, 347V)[1] DF Double fuse (208, 240, 480V)[1] L90 Left rotated optics[1] R90 Right rotated optics[1] DDL Diffused drop lens[28] **Shipped separately** BS Bird spikes[29] EGS External glare shield[21]	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white	

LITHONIA LIGHTING
One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.279.8041 • www.lithonia.com
© 2011-2018 Acuity Brands Lighting, Inc. All rights reserved.
DSX0 LED
Rev. 03/27/18
Page 1 of 7

LUME BERKLEY
PHOTOMETRIC SITE PLAN
GASSER BUSH ASSOCIATES
WWW.GASSERBUSH.COM

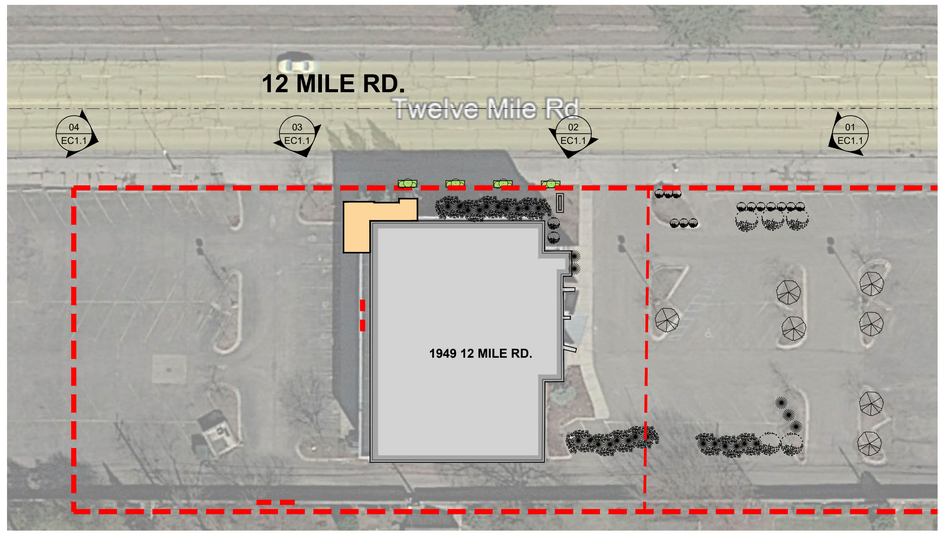
Designer	DB
Date	03/28/2022 04/18/2022
Scale	Not to Scale
Drawing No.	QUICK CALC V2
	1 of 1











KEY PLAN
SCALE: NOT TO SCALE

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No.
1301029086
LICENSED ARCHITECT

© 2022 STUCKY VITALE ARCHITECTS

LUME - BERKLEY - PROVISIONING CENTER

SVA
STUCKY VITALE ARCHITECTS

2020.154

LUME - BERKLEY - PROVISIONING CENTER
1949 12 MILE ROAD,
BERKLEY, MI

CONCEPTUAL DESIGN PACKAGE

SITE PLAN APPROVAL

APRIL25, 2022

SHEET:
EC1.1

2070 12 MILE RD. PARKING:

BARRIER FREE:	5
STANDARD:	53
TOTAL	58

1949 12 MILE RD. PARKING

BARRIER FREE:	5
CURBSIDE SERVICE	4
STANDARD:	115
TOTAL	124

1695 12 MILE RD. PARKING: 119

BARRIER FREE:	6
STANDARD:	113
TOTAL	119

TOTAL PARKING AVAILABLE 301

REQUIRED PARKING

BEAUMONT
- ACCESS TO LOWER LEVEL 150SF.
- MAIN FLOOR 7,246SF
  - 7,396SF X 70% = 5177.2SF USABLE
  - 5,177.2SF /100 = 52 CARS

LUME (REQUIRED)

FIRST FLOOR	430SF
SECOND FLOOR	4,887SF
TOTAL	5,317SF

- 5,317SFX 70% = 3,721.9SF USABLE
- 3,721.9SF / 225 = 17 SPACES

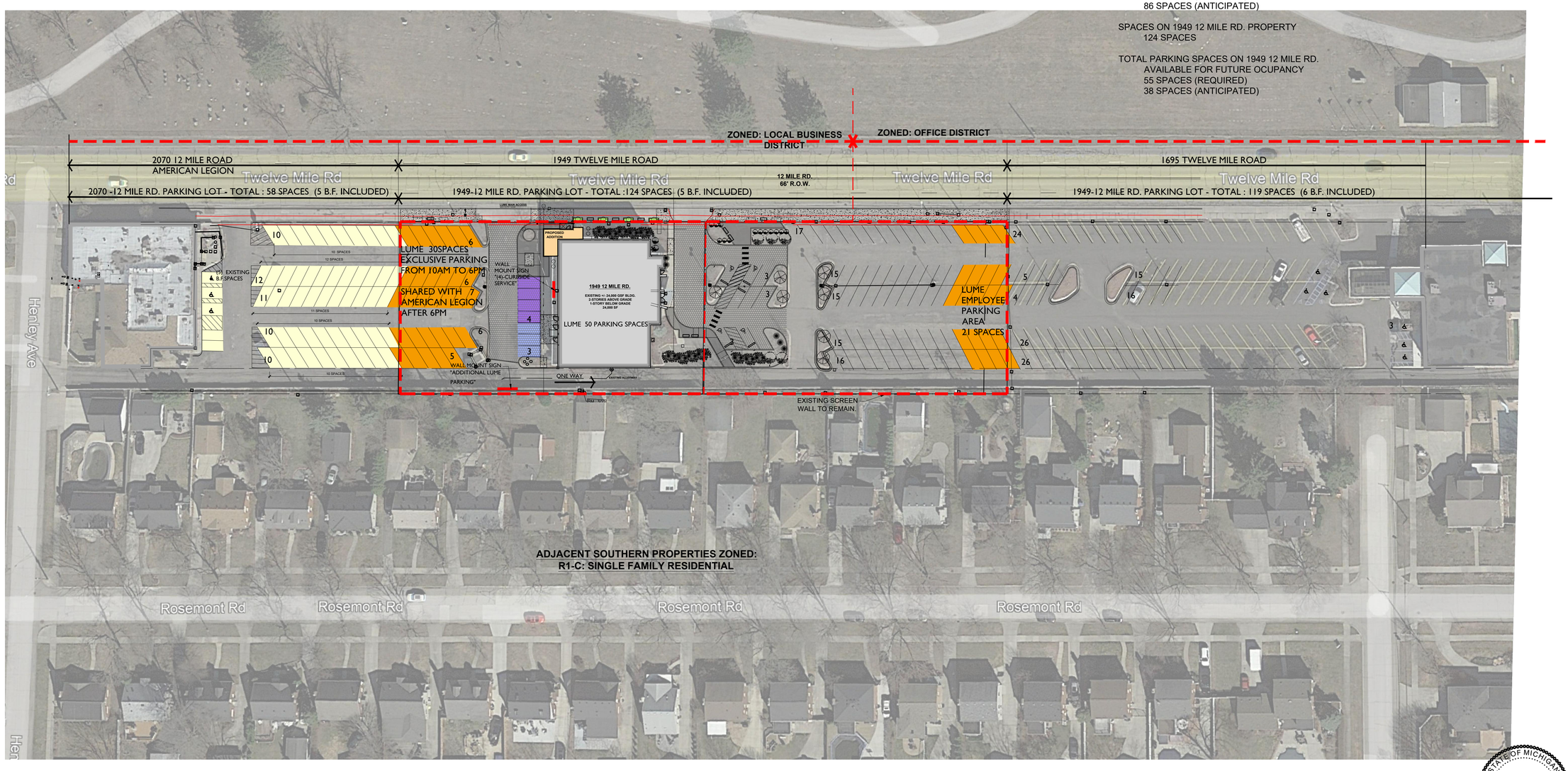
LUME (ANTICIPATED)

EMPLOYEES - MAX. SHIFT	20
IN-STORE CUSTOMERS	10
CURB-SIDE	4
TOTAL	34

TOTAL REQUIRED PARKING 1949 12 MILE RD. TENANTS
- 69 SPACES (REQUIRED)
- 86 SPACES (ANTICIPATED)

SPACES ON 1949 12 MILE RD. PROPERTY
- 124 SPACES

TOTAL PARKING SPACES ON 1949 12 MILE RD.
AVAILABLE FOR FUTURE OCUPANCY
- 55 SPACES (REQUIRED)
- 38 SPACES (ANTICIPATED)



N

EXISTING PARKING AND TENANT SPACES ALLOCATION DIAGRAM

SCALE: 1" = 40'

TOTAL PARKING EAST AND WEST SIDE 301

© 2022 STUCKY VITALE ARCHITECTS

LUME - BERKLEY - PROVISIONING CENTER

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No.
1301029086
LICENSED ARCHITECT

SVA
STUCKY VITALE ARCHITECTS

2020.154

LUME - BERKLEY - PROVISIONING CENTER
1949 12 MILE ROAD,
BERKLEY, MI

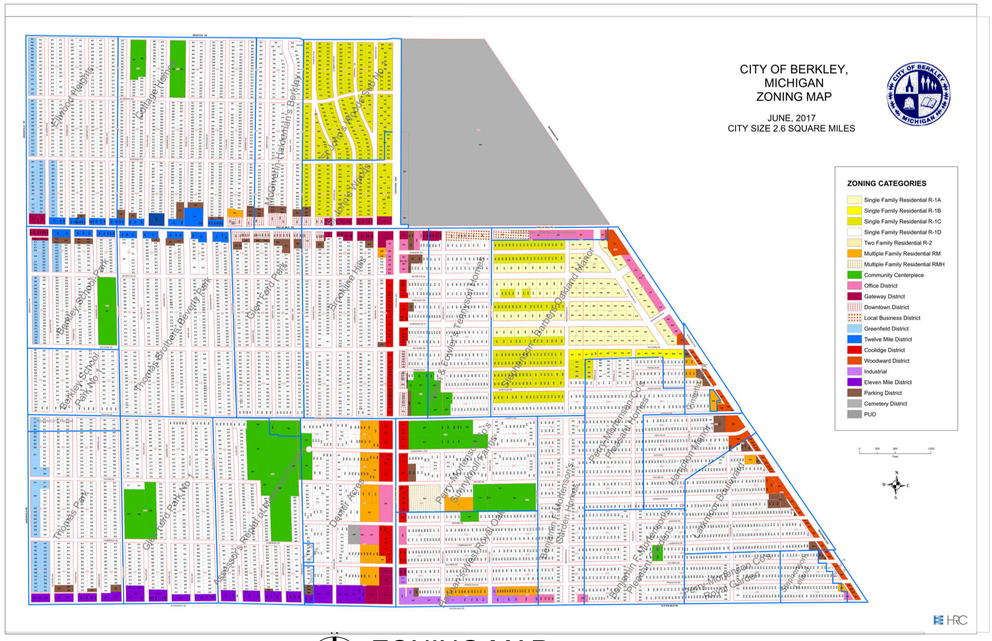
CONCEPTUAL DESIGN PACKAGE

SITE PLAN APPROVAL

APRIL 25,2022

SHEET:

SP01

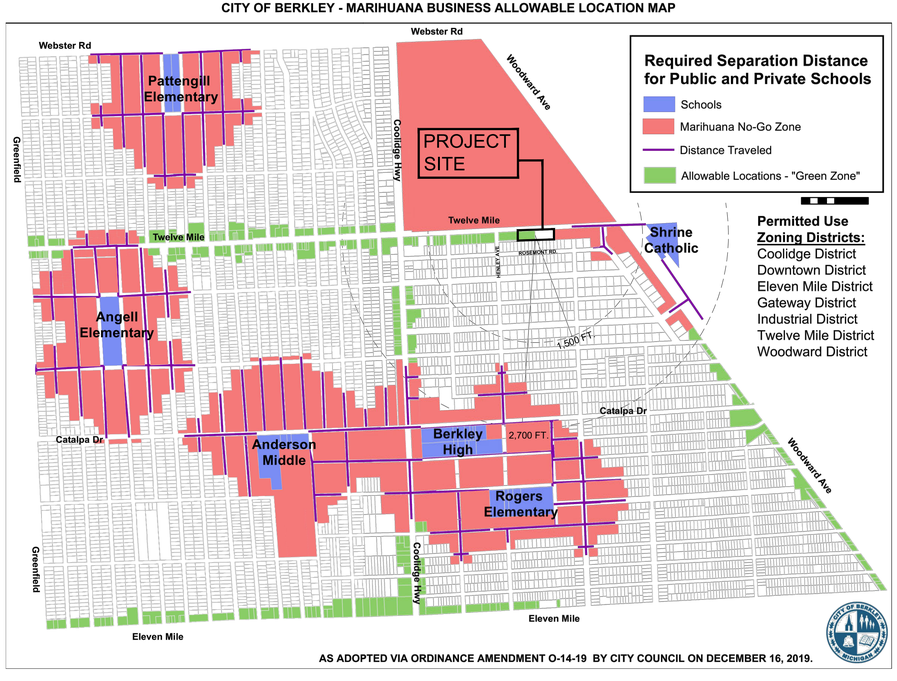


ZONING MAP

SCALE: 1" = 1000'

* THE PROPOSED USE DOES NOT REQUIRE ANY ZONING MAP AMENDMENTS OR VARIANCES AT THE TIME OF APPLICATION

CITY OF BERKLEY - MARIHUANA BUSINESS ALLOWABLE LOCATION MAP



PROXIMITY MAP

SCALE: 1" = 1000'

CITY OF BERKLEY
MARIHUANA BUSINESS LICENSE APPLICATION
EVALUATION MERIT POINT SYSTEM

Key Terms Defined:

Common Control:
For purposes of these criteria, *under common control* means having the power to direct or cause the direction of management, operations, and policies of a person, organization, or entity, whether by stock ownership, voting rights, contract, or otherwise.

Managing Stakeholder:
For purposes of these criteria, *Managing stakeholder* refers to any stakeholder or employee involved in managing the business or making management decisions.

Redevelopment:
For purposes of these criteria, *redevelopment* means any proposed expansion, addition, or major facade change to an existing building, structure, or parking facility. Site redevelopment includes equal or greater stormwater control than the previous development

Scientifically backed:
As included in point value 12, scientifically backed shall refer to stormwater management systems that are supported and "green infrastructure" by the U.S. Environment Protection Agency.

Stakeholder:
As outlined within the Licensing ordinance (Chapter 30 Article XV), *stakeholder* means, with respect to a trust, the trustee and beneficiaries; with respect to a limited liability company, all members and managers; with respect to a corporation, whether profit or non-profit, all stockholders, directors, corporate officers or persons with equivalent titles; and with respect to a partnership or limited liability partnership, all partners and investors.

Requirements*	Pass/Fail
Application submitted has all required materials	P/F
Subject Parcel falls outside of designated proximity to a school	P/F
Cannabis business complies with Existing Zoning	P/F
Off-street parking requirements for retail use has been met, per Section 138-219 of the Zoning Ordinance.	P/F
Odor control system preventing dispersion in neighborhood	P/F
All disclosed stakeholders are clear of recorded detrimental acts to public good	P/F
***These items must all be satisfied to be considered for the point evaluation.**	

Adopted by City Council Resolution R-01-20 on February 3, 2020

Merit Based Criteria	Point Value**
Applicant can demonstrate the ability to successfully operate a marihuana business by means of: •Has a supply with a State licensed cultivation facility. (Sub score: 16) •At least one Managing Stakeholder demonstrates at least 1 year of experience operating a licensed marihuana business (caregiver, provisioning, grower, etc.) in Michigan. (sub score: 5) •At least one Managing Stakeholder demonstrates at least 1 year of experience operating a licensed marihuana business (caregiver, provisioning, grower, etc.) in other legal jurisdictions. (sub score: 5)	26 (Total dependent on satisfaction of sub scoring)
Application Proposes the Redevelopment of Vacant or Underused building or property. (Defined as a structure or property that has been at least 50% vacant for a period of 4 months or longer)	25
Proposed redevelopment is comprised of a multi-tenant building or buildings, on the same or contiguous parcels. Separate tenant spaces within a single building must have separate means of public ingress/egress from the exterior or from a common lobby area.	24
All Managing Stakeholders can demonstrate a history of lawfully operating a business compliant with applicable federal, state, and local regulations.	23
Proposed development does not displace existing operational business in Berkley	22
The marihuana business and property are under common ownership or control	21
Proposed development demonstrates and provides physical improvements to the area around the property or other areas contiguous to the property: -Trees; noninvasive species (Sub score: 5) -Public art; e.g. murals, sculptures, installations as approved by appropriate body (Sub score: 5) -Green Space (Sub score: 5) -Public areas such as alleyways, parking areas, sidewalks, plazas, etc. (Sub score: 5)	20 (Total dependent on satisfaction of sub scoring)
Proposed Site is located in the following areas, as permitted by the Zoning Ordinance: Eleven Mile Road, Woodward Ave, Twelve Mile Road (Coolidge to Woodward)	19
Proposed redevelopment is projected to add 15 or more new jobs (includes cannabis and non-cannabis uses) The majority of the jobs must be full time.	18
At least one Stakeholder is either a current property owner in Berkley or is a current majority owner or stakeholder of an existing Berkley Business. (Purchase agreements or similar mechanisms do not count towards the majority ownership criteria.)	17
Proposed marihuana business property does not immediately abut or share a common boundary line with one-family residential zoned property. (For purposes of this criterion, parcels of property that are separated by a public or private street or alley are not considered to abut or to share a common boundary).	16
Application has disclosed 100% of owners and stakeholders, including those with less than 10% stake.	15
Proposed development eliminates or brings into compliance an existing nonconforming use or structure	14
Sustainable building materials and energy efficient elements will be used during construction and/or renovation of the structure.	13
Proposed development incorporates Green Infrastructure into Stormwater management plan: -Pervious Parking; e.g. pervious concrete or pavement, pavers, infiltration systems, etc. (Sub score: 4) -Green Roof (Sub score: 4) -Rain Garden, Bioswales, or Stormwater Planters (Sub score: 2) -Other scientifically backed stormwater infrastructure systems (Sub score: 2)	12 (Total dependent on satisfaction of sub scoring)
Application demonstrates benefits to the community other than an increase in taxable value	11
Proposed development adds streetscape elements to the publicly owned right-of-way, including but not limited to benches, bike racks, planters, etc.	10
The proposed uses do not require any zoning map amendments or variances at the time of application.	9

****For each criterion met by the applicant, the applicant shall receive the entire assigned point value or associated sub scores.**

Maximum Points Available: 315 [70% Requirement: 221]

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No.
1301029086
LICENSED ARCHITECT

© 2022 STUCKY VITALE ARCHITECTS

LUME - BERKLEY - PROVISIONING CENTER

SVA
STUCKY VITALE ARCHITECTS

2020.154

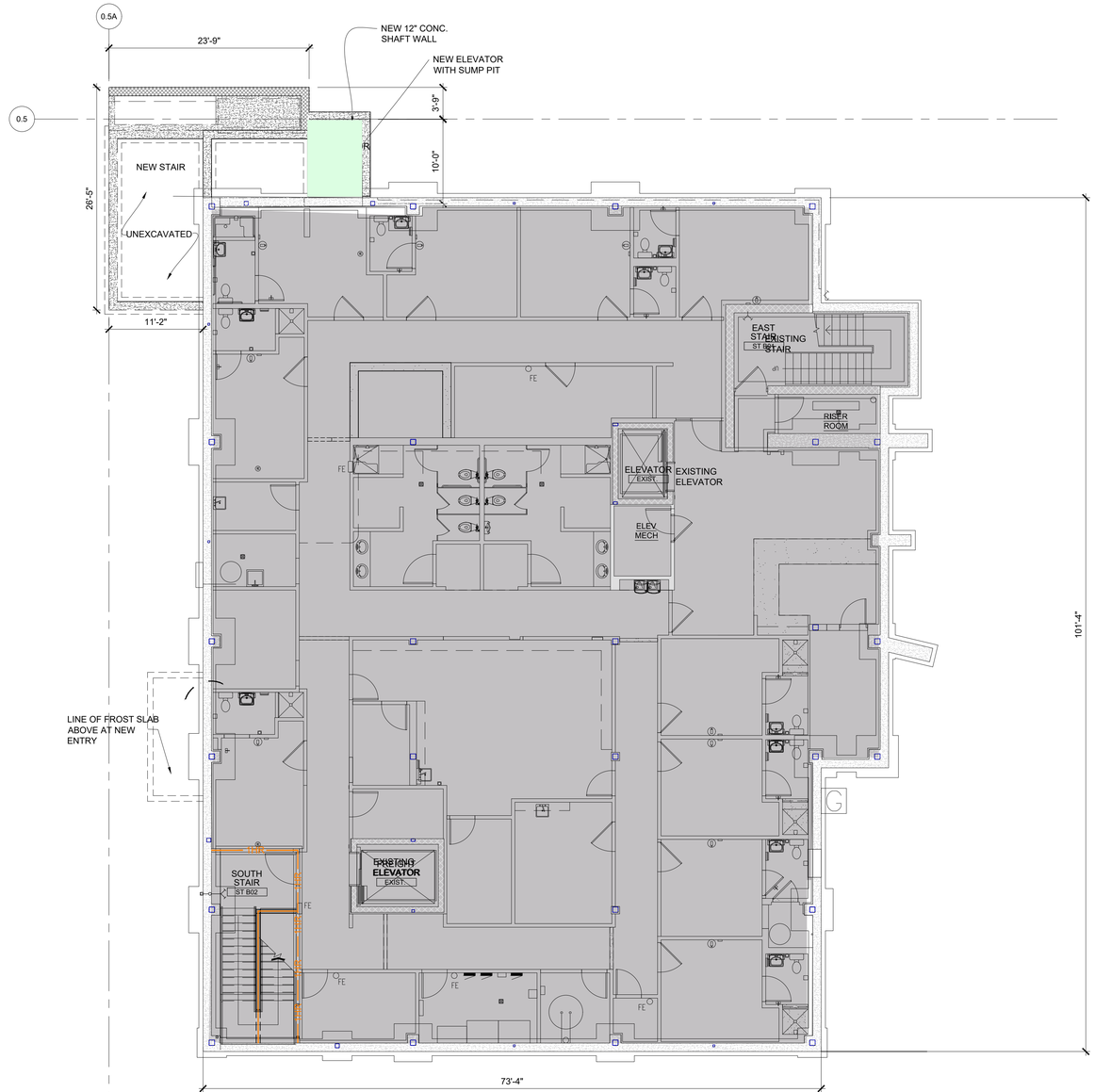
LUME - BERKLEY - PROVISIONING CENTER
1949 12 MILE ROAD,
BERKLEY, MI

CONCEPTUAL DESIGN PACKAGE

SITE PLAN APPROVAL

APRIL 25, 2022

SHEET:
SP1.0



	LUME TENANT SPACE	ØSF
	VACANT TENANT SPACE :	7,666 SF
	TOTAL GROSS AREA	7,666 SF

© 2022 STUCKY VITALE ARCHITECTS

LUME - BERKLEY - PROVISIONING CENTER

N

LOWER LEVEL FLOOR PLAN

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

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No.
1301029086
LICENSED ARCHITECT

SVA
STUCKY VITALE ARCHITECTS

2020.154

LUME - BERKLEY - PROVISIONING CENTER
1949 12 MILE ROAD,
BERKLEY, MI

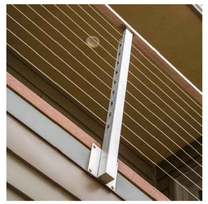
CONCEPTUAL DESIGN PACKAGE

SITE PLAN APPROVAL

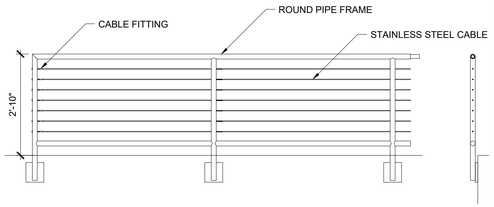
APRIL 25, 2022

SHEET:
A1.0

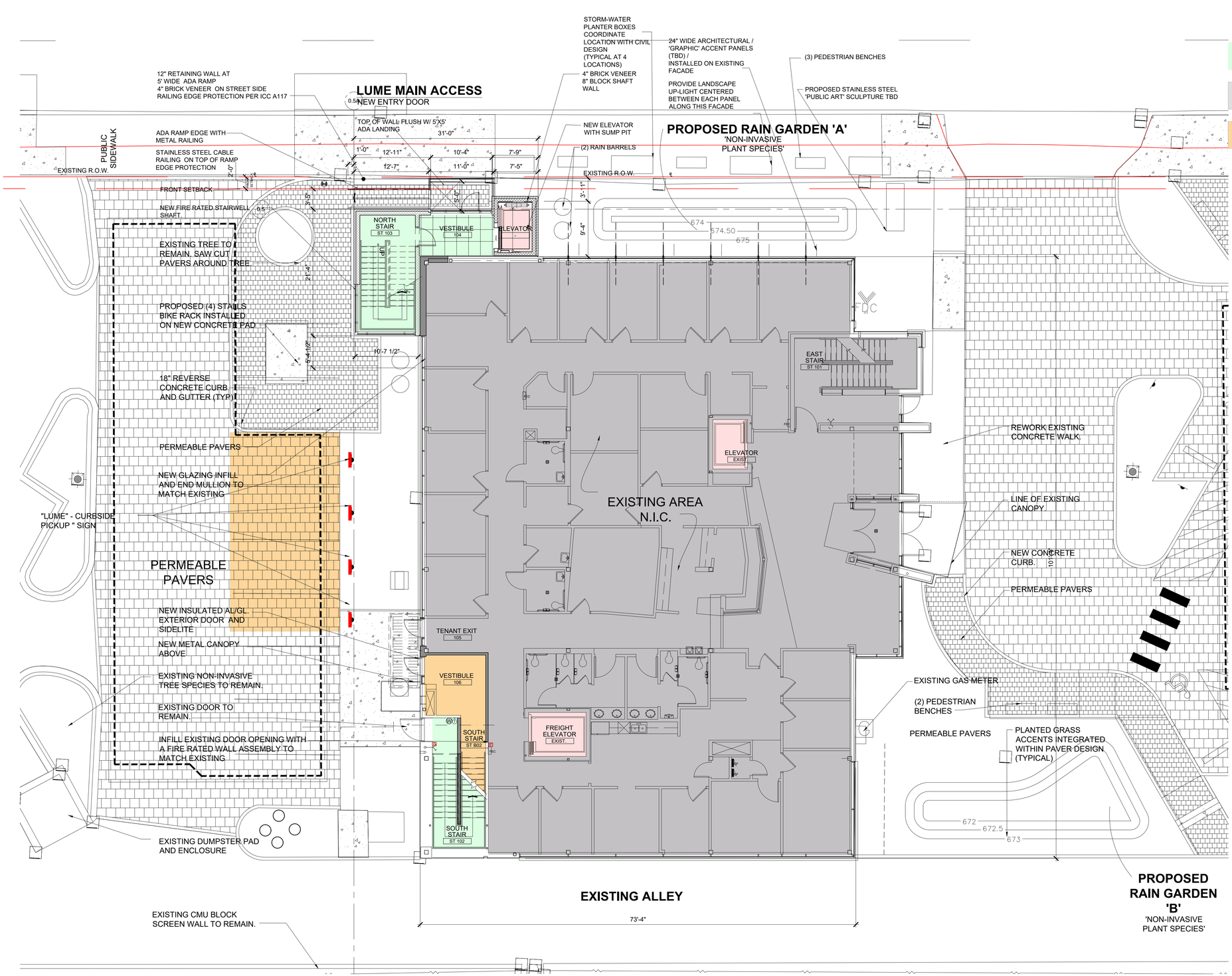
	LUME TENANT SPACE	430 SF
	BEAUMONT HEALTH :	7,246 SF
	LOWER LEVEL TENANT ACCESS:	150 SF
	TOTAL GROSS FLOOR AREA	7,826 SF







STAINLESS STEEL CABLE RAILING FASCIA MOUNT TO NEW ADA RAMP
TREX/ COMMERCIAL - CASINO CABLE RAILING



N

FIRST FLOOR PLAN
SCALE: 1/8"+1'-0"

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No. 1301029086
LICENSED ARCHITECT

LUME - BERKLEY - PROVISIONING CENTER

© 2022 STUCKY VITALE ARCHITECTS

SVA
STUCKY VITALE ARCHITECTS

2020.154

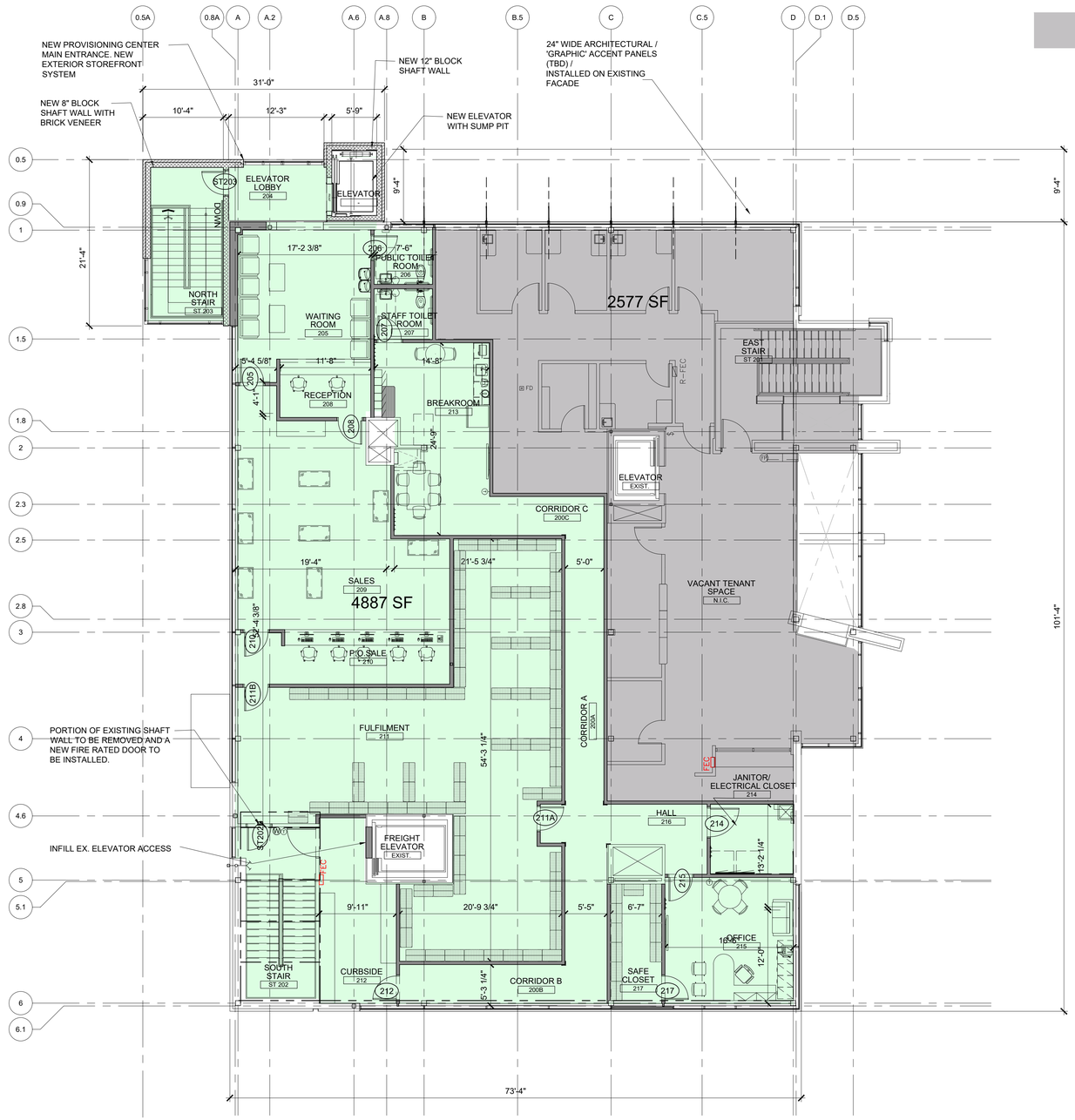
LUME - BERKLEY - PROVISIONING CENTER
1949 12 MILE ROAD,
BERKLEY, MI

CONCEPTUAL DESIGN PACKAGE

SITE PLAN APPROVAL

APRIL 25, 2022

SHEET:
A1.1



PORTION OF EXISTING SHAFT WALL TO BE REMOVED AND A NEW FIRE RATED DOOR TO BE INSTALLED.

INFILL EX. ELEVATOR ACCESS

LUME TENANT SPACE	4,887 SF
VACANT SPACE :	2,577 SF
TOTAL GROSS FLOOR AREA	7,464 SF

N

SECOND FLOOR PLAN

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

© 2022 STUCKY VITALE ARCHITECTS

LUME - BERKLEY - PROVISIONING CENTER

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No. 1301029086
LICENSED ARCHITECT

SVA
STUCKY VITALE ARCHITECTS

2020.154

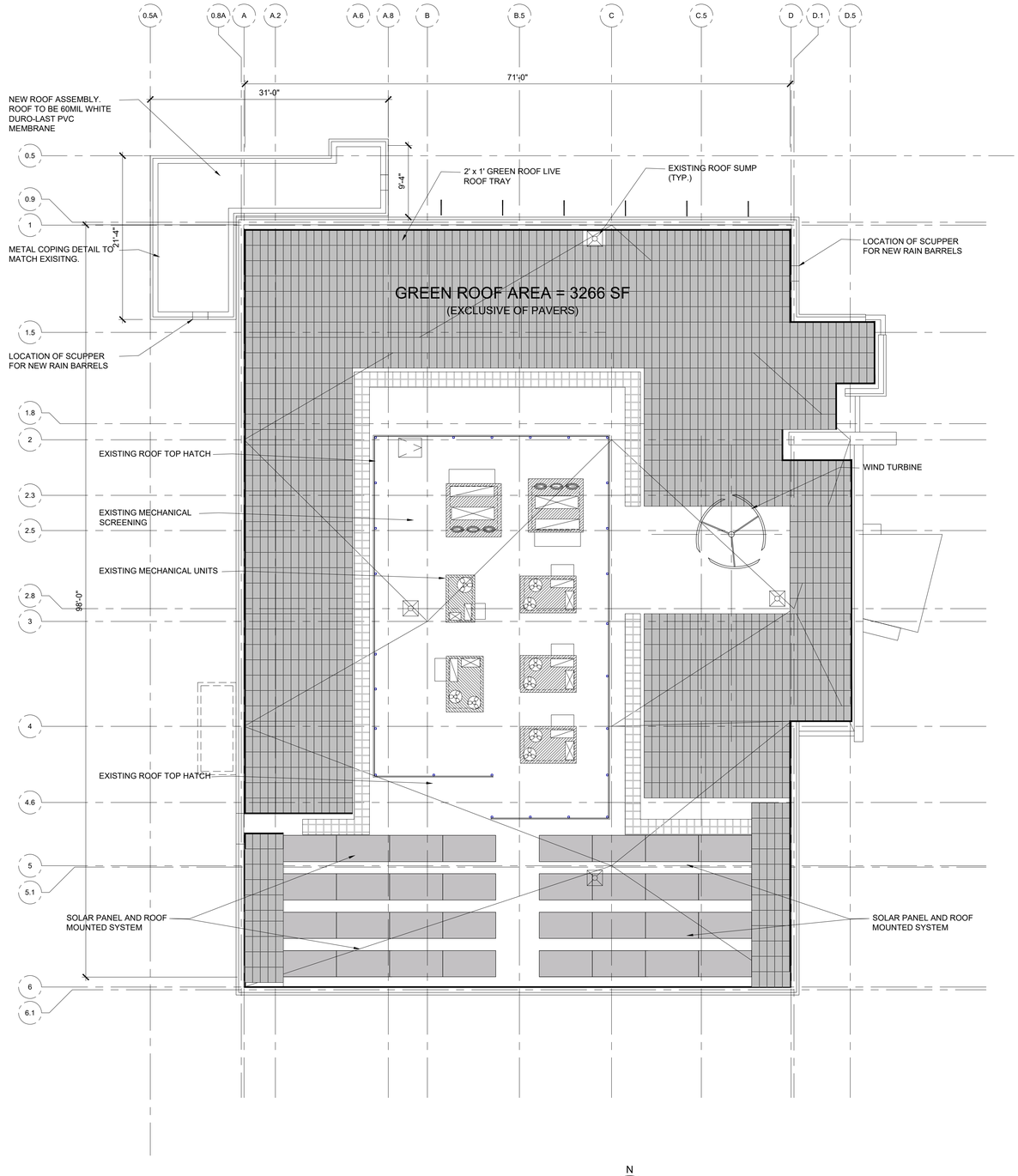
LUME - BERKLEY - PROVISIONING CENTER
1949 12 MILE ROAD,
BERKLEY, MI

CONCEPTUAL DESIGN PACKAGE

SITE PLAN APPROVAL

APRIL 25, 2022

SHEET:
A1.2



N

ARCHITECTURAL ROOF PLAN

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

© 2022 STUCKY VITALE ARCHITECTS

LUME - BERKLEY - PROVISIONING CENTER

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No.
1301029086
LICENSED ARCHITECT

SVA
STUCKY VITALE ARCHITECTS

2020.154

LUME - BERKLEY - PROVISIONING CENTER
1949 12 MILE ROAD,
BERKLEY, MI

CONCEPTUAL DESIGN PACKAGE

SITE PLAN APPROVAL

APRIL25, 2022

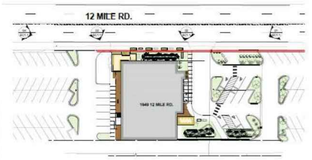
SHEET:
A1.3







ACRIAL MAP





DEVICE LEGEND

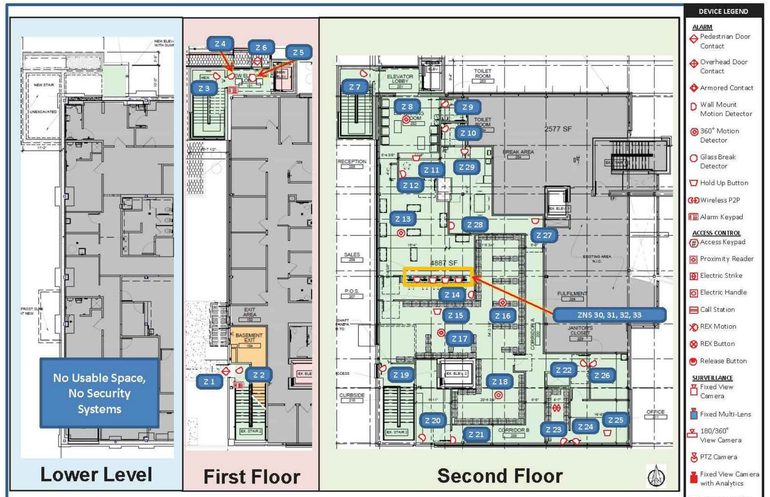
ALARM
- Pedestrian Door Contact
- Overhead Door Contact
- Armored Contact
- Wall Mount Motion Detector
- 360° Motion Detector
- Glass Break Detector
- Hold Up Button
- Wireless P2P
- Alarm Keypad

ACCESS CONTROL
- Access Keypad
- Proximity Reader
- Electric Strike
- Electric Handle
- Call Station
- REX Motion
- REX Button
- Release Button

SURVEILLANCE
- Fixed View Camera
- Fixed Multi-Lens
- 180/360° View Camera
- PTZ Camera
- Fixed View Camera with Analytics
- Exterior Speaker
- Head End

SITE PLAN

Date:	Representative:	Project: 1949 12 Mile Rd., Berkley, MI	
March 28, 2022	Emil Magro | 248-885-6947	LUME – BERKLEY	GUARDIAN ALARM



DEVICE LEGEND

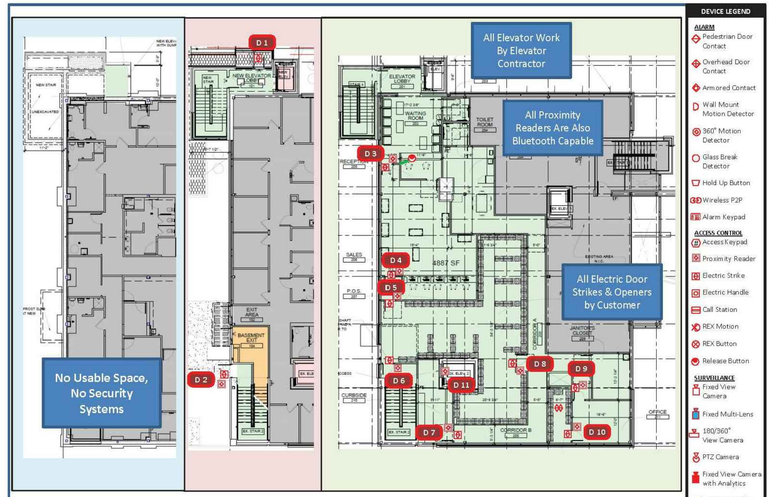
ALARM
- Pedestrian Door Contact
- Overhead Door Contact
- Armored Contact
- Wall Mount Motion Detector
- 360° Motion Detector
- Glass Break Detector
- Hold Up Button
- Wireless P2P
- Alarm Keypad

ACCESS CONTROL
- Access Keypad
- Proximity Reader
- Electric Strike
- Electric Handle
- Call Station
- REX Motion
- REX Button
- Release Button

SURVEILLANCE
- Fixed View Camera
- Fixed Multi-Lens
- 180/360° View Camera
- PTZ Camera
- Fixed View Camera with Analytics
- Exterior Speaker
- Head End

BURGLAR ALARM SYSTEM

Date:	Representative:	Project: 1949 12 Mile Rd., Berkley, MI	
March 28, 2022	Emil Magro | 248-885-6947	LUME – BERKLEY	GUARDIAN ALARM



DEVICE LEGEND

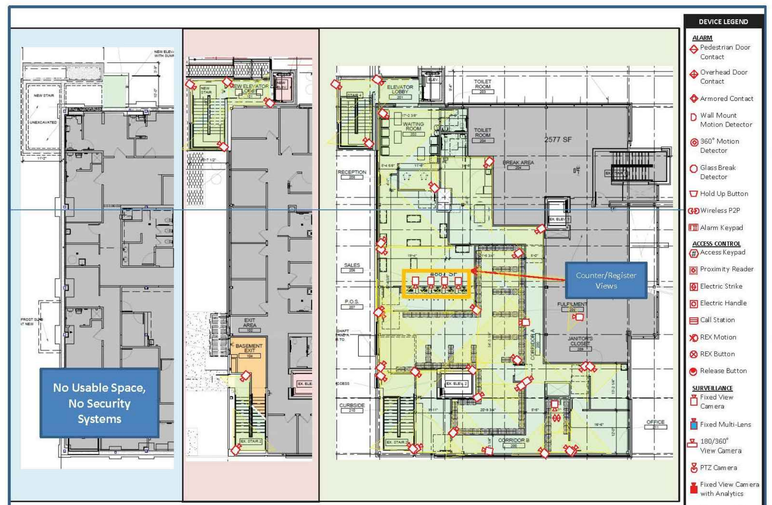
ALARM
- Pedestrian Door Contact
- Overhead Door Contact
- Armored Contact
- Wall Mount Motion Detector
- 360° Motion Detector
- Glass Break Detector
- Hold Up Button
- Wireless P2P
- Alarm Keypad

ACCESS CONTROL
- Access Keypad
- Proximity Reader
- Electric Strike
- Electric Handle
- Call Station
- REX Motion
- REX Button
- Release Button

SURVEILLANCE
- Fixed View Camera
- Fixed Multi-Lens
- 180/360° View Camera
- PTZ Camera
- Fixed View Camera with Analytics
- Exterior Speaker
- Head End

ACCESS CONTROL SYSTEM

Date:	Representative:	Project: 1949 12 Mile Rd., Berkley, MI	
March 28, 2022	Emil Magro | 248-885-6947	LUME – BERKLEY	GUARDIAN ALARM



DEVICE LEGEND

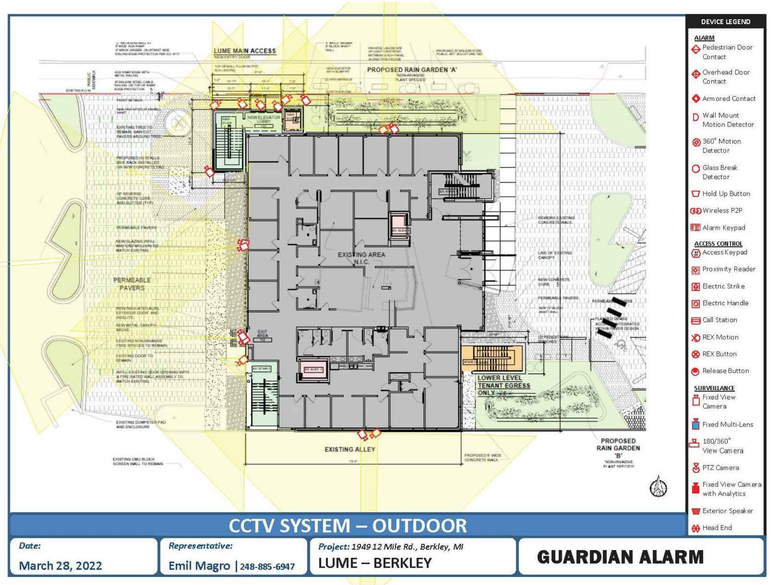
ALARM
- Pedestrian Door Contact
- Overhead Door Contact
- Armored Contact
- Wall Mount Motion Detector
- 360° Motion Detector
- Glass Break Detector
- Hold Up Button
- Wireless P2P
- Alarm Keypad

ACCESS CONTROL
- Access Keypad
- Proximity Reader
- Electric Strike
- Electric Handle
- Call Station
- REX Motion
- REX Button
- Release Button

SURVEILLANCE
- Fixed View Camera
- Fixed Multi-Lens
- 180/360° View Camera
- PTZ Camera
- Fixed View Camera with Analytics
- Exterior Speaker
- Head End

CCTV SYSTEM – INDOOR

Date:	Representative:	Project: 1949 12 Mile Rd., Berkley, MI	
March 28, 2022	Emil Magro | 248-885-6947	LUME – BERKLEY	GUARDIAN ALARM



DEVICE LEGEND

ALARM
- Pedestrian Door Contact
- Overhead Door Contact
- Armored Contact
- Wall Mount Motion Detector
- 360° Motion Detector
- Glass Break Detector
- Hold Up Button
- Wireless P2P
- Alarm Keypad

ACCESS CONTROL
- Access Keypad
- Proximity Reader
- Electric Strike
- Electric Handle
- Call Station
- REX Motion
- REX Button
- Release Button

SURVEILLANCE
- Fixed View Camera
- Fixed Multi-Lens
- 180/360° View Camera
- PTZ Camera
- Fixed View Camera with Analytics
- Exterior Speaker
- Head End

CCTV SYSTEM – OUTDOOR

Date:	Representative:	Project: 1949 12 Mile Rd., Berkley, MI	
March 28, 2022	Emil Magro | 248-885-6947	LUME – BERKLEY	GUARDIAN ALARM

© 2022 STUCKY VITALE ARCHITECTS

LUME - BERKLEY - PROVISIONING CENTER

SVA
STUCKY VITALE ARCHITECTS

2020.154

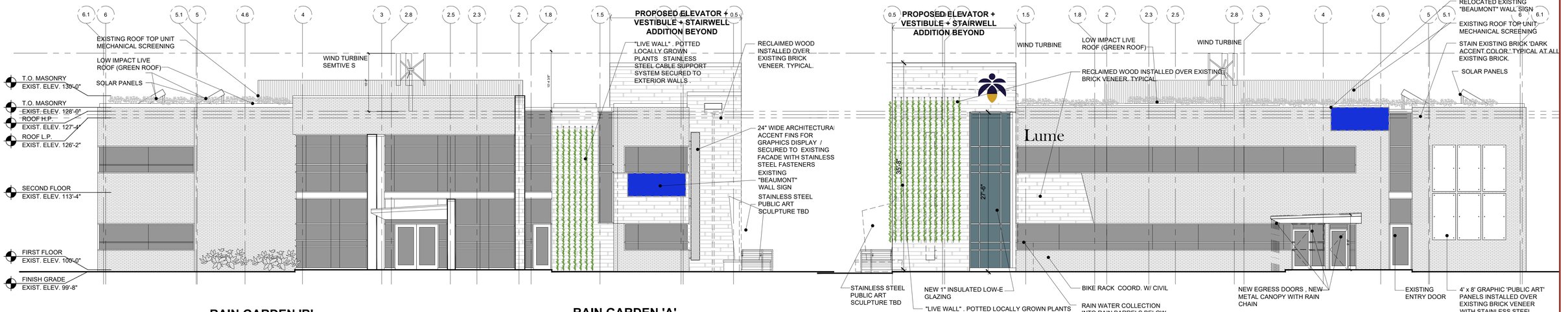
LUME - BERKLEY - PROVISIONING CENTER
1949 12 MILE ROAD,
BERKLEY, MI

CONCEPTUAL DESIGN PACKAGE

SITE PLAN APPROVAL

APRIL 25, 2022

SHEET:
A1.4

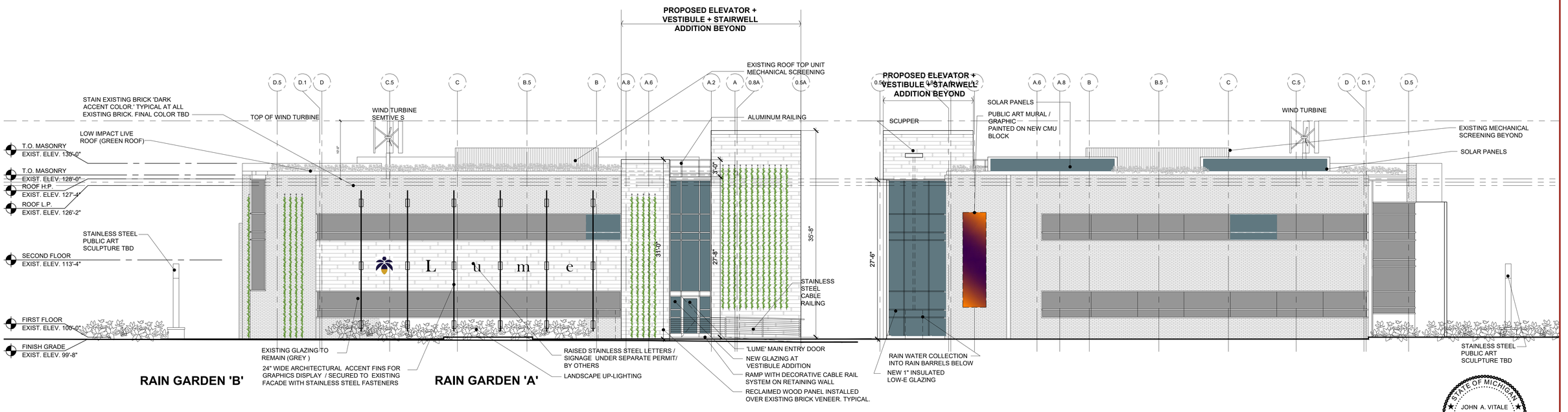


EAST ELEVATION

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

WEST ELEVATION

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



NORTH ELEVATION (12 MILE ROAD)

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

SOUTH ELEVATION

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

© 2022 STUCKY VITALE ARCHITECTS

LUME - BERKLEY - PROVISIONING CENTER

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No.
1301029086
LICENSED ARCHITECT

SVA
STUCKY VITALE ARCHITECTS

2020.154

LUME - BERKLEY - PROVISIONING CENTER
1949 12 MILE ROAD,
BERKLEY, MI

CONCEPTUAL DESIGN PACKAGE

SITE PLAN APPROVAL

APRIL25, 2022

SHEET:
A3.1



EAST ELEVATION

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

WEST ELEVATION

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



NORTH ELEVATION (12 MILE ROAD)

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

SOUTH ELEVATION

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

© 2022 STUCKY VITALE ARCHITECTS

LUME - BERKLEY - PROVISIONING CENTER

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No. 1301029086
LICENSED ARCHITECT

SVA
STUCKY VITALE ARCHITECTS

2020.154

LUME - BERKLEY - PROVISIONING CENTER
1949 12 MILE ROAD,
BERKLEY, MI

CONCEPTUAL DESIGN PACKAGE

SITE PLAN APPROVAL

APRIL25, 2022

SHEET:
A3.2

NOTE:

THE IMAGERY ON THIS SHEET IS STRICTLY FOR GRAPHICAL REPRESENTATION & MEANT TO CONVEY OVERALL DESIGN INTENT.

REFER TO SHEET A3.2 FOR FURTHER INFORMATION ON EXTERIOR ELEVATIONS AND EXTERIOR MATERIALS



01 - CONCEPTUAL STREETVIEW PERSPECTIVE



PROJECT AREA:
REFER TO ENLARGED SITE PLAN
SHEET SP1.1



02 - CONCEPTUAL BIRDSEYE AERIAL

N

KEY PLAN
SCALE: NOT TO SCALE

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No. 1301029086
REGISTERED ARCHITECT

SVA
STUCKY VITALE ARCHITECTS

2020.154

LUME - BERKLEY - PROVISIONING CENTER
1949 12 MILE ROAD,
BERKLEY, MI

CONCEPTUAL DESIGN PACKAGE

SITE PLAN APPROVAL

APRIL25, 2022

SHEET:
A3.3

© 2022 STUCKY VITALE ARCHITECTS

LUME - BERKLEY - PROVISIONING CENTER

Triton Plumbing LLC

33717 Woodward Ave #180

Birmingham, MI 48009

[redacted]

Re: Sewer Camera Inspection Report

1949 Twelve Mile Rd

Berkley, MI 48072

To whom it may concern:

We arrived on site April 1, 2022 and accessed the main sewer drain through a 4" cleanout in the alley on the south side of the building. We started the recording at the main sewer tap. The tap appeared to be intact and free of shifting or damage. As the camera was pulled back the entire length of the sewer to the cleanout, we found no major issues, standing water, or causes for concern. The length from the 4" clean out to the sewer main is roughly 80'. The composition of the sewer is believed to be 6" PVC. It is our professional opinion, at the time of the inspection, that the sewer in is good working condition and free of any imperfections. Please contact us with any questions or concerns.

Thank you,

Nicholas Argyris

Master Plumber/Owner

Triton Plumbing LLC

Master Plumber Lic # - 8113234

168512

LIBER 21555 PAGE 815
$29.00 MISC RECORDING
$2.00 REMONUMENTATION
06/30/2000 02:10:01 P.M. RECEIPT# 47803
PAID RECORDED - OAKLAND COUNTY
G. WILLIAM CADDELL, CLERK/REGISTER OF DEEDS

RECIPROCAL EASEMENT AGREEMENT

THIS RECIPROCAL EASEMENT AGREEMENT ("Agreement") is entered into this 26th day of June 2000, by **BERKLEY TWELVE ASSOCIATES II, L.L.C.**, a Michigan limited liability company, whose address is 28400 Northwestern Highway, Fourth Floor, Southfield, Michigan 48034 ("Berkley Twelve") and **BERKLEY POST 374, AMERICAN LEGION, INC.**, a Michigan nonprofit corporation, whose address is 2079 West Twelve Mile Road, Berkley, Michigan 48072 ("American Legion").

RECITALS:

A. Berkley Twelve owns certain real property and improvements thereon located in the City of Berkley, County of Oakland, State of Michigan, commonly known as 1949 West Twelve Mile Road, which is more particularly described on Exhibit A attached hereto ("Berkley Twelve Property").

B. American Legion owns certain real property and improvements thereon adjacent to and west of the Berkley Twelve Property, located in the City of Berkley, County of Oakland, State of Michigan, commonly known as 2079 West Twelve Mile Road, which is more particularly described on Exhibit B attached hereto ("American Legion Property").

C. The parties desire to grant each other the perpetual, non-exclusive reciprocal easements described herein, for the purpose of: (i) providing common vehicular and pedestrian ingress and egress to and from the Berkley Twelve Property, American Legion Property and Twelve Mile Road; and (ii) providing Berkley Twelve, American Legion and their respective invitees, licensees and guests, with a common parking facility on the Berkley Twelve Property and the American Legion Property.

NOW, THEREFORE, in consideration of the mutual covenants, promises and agreements, the adequacy of which is acknowledged, and subject to the terms and conditions contained herein, the parties agree as follows:

1. **Reciprocal Access and Parking Easement.** O.K. - KE

   a. American Legion acknowledges and agrees that approximately forty-six (46) vehicular parking spaces presently exist on the American Legion Property and when repaved pursuant to Paragraph 2.a.i. hereof, there will exist at least sixty-four (64) spaces on the American Legion Property as shown on the site plan attached hereto as Exhibit C. American Legion hereby grants to Berkley Twelve, its tenants,

Description: Oakland,MI Document-Book.Page 21555.815 Page: 1 of 12
Order: 53641-T Comment:

agents, employees, invitees, business guests, licensees, successors and assigns, a perpetual, non-exclusive easement over the roads, driveways, entranceway, sidewalks and parking areas located and to be located on the American Legion Property for parking, passage, circulation, access, delivery and ingress and egress of vehicular and pedestrian traffic to and from the Berkley Twelve Property to Twelve Mile Road; provided, however, American Legion reserves twenty-five (25) vehicular parking spaces east of the existing building on the American Legion Property for American Legion's exclusive use. Berkley Twelve will, at its expense, provide signage which identifies the parking spaces reserved for American Legion's exclusive use.

Notwithstanding anything to the contrary contained in this Agreement, American Legion covenants and agrees that it shall not reduce the number of parking spaces located on the American Legion Property to less than sixty-four (64) vehicular parking spaces.

b. Berkley Twelve acknowledges that there presently exists at least one hundred forty (140) vehicular parking spaces on that portion of the Berkley Twelve Property, which is adjacent to the American Legion Property and is depicted on the site plan attached hereto as Exhibit C ("Berkley Easement Area"). Berkley Twelve hereby grants to American Legion, its tenants, agents, employees, invitees, business guests, licensees, successors and assigns, a limited, non-exclusive easement over the roads, driveways, entranceway, sidewalks and parking areas located and to be located on the Berkley Easement Area for parking, passage, circulation, access, delivery and ingress and egress of vehicular and pedestrian traffic to and from the American Legion Property to Twelve Mile Road, which easement may only be utilized after 6:00 p.m. Monday through Sunday. Notwithstanding anything to the contrary contained in this Agreement, Berkley Twelve covenants and agrees that it shall not reduce the number of parking spaces located on the Berkley Easement Area to less than one hundred forty (140) vehicular parking spaces.

2. **Repaving and Landscape and Maintenance.**

a. Berkley Twelve, at its cost and expense, shall:

i. repave all existing parking areas located on the American Legion Property in accordance with the following specifications:

(1) Existing pavement will be pulverized or removed and any aggregate base will be repaired as necessary;

Description: Oakland,MI Document-Book.Page 21555.815 Page: 2 of 12
Order: 53641-T Comment:

(2) All parking areas will be: (a) repaved with a three inch (3") asphalt coat applied in two (2) courses; and (b) restriped for approximately sixty (60) parking spaces; and

ii. landscape the parking area on the American Legion Property in a manner consistent with any landscaping installed by Berkley Twelve on the Berkley Twelve Easement Area.

The layout of the repaving required by this Paragraph 2.a. will substantially conform to the site plan attached hereto as Exhibit C (with respect to location of paving, traffic aisles, curb cuts, and other related matters).

b. Berkley Twelve shall perform the work set forth in Paragraphs 2.a.i. and 2.a.ii. above prior to or simultaneously with its proposed development of the Berkley Twelve Property, subject to inclement weather, war, civil insurrection, or the acts or omissions of others beyond the reasonable control of Berkley Twelve. Subject to the force majeure provision set forth in the proceeding sentence, in the event such development does not commence on the Berkley Twelve Property within two (2) years from the date this Agreement has been signed by both parties hereto, American Legion shall have the option, for a period of thirty (30) days following expiration of such two (2) year period, to terminate this Agreement by giving written notice of termination to Berkley Twelve.

c. During the time period Berkley Twelve performs the work identified in Paragraphs 2.a.i. and 2.a.ii. hereinabove, Berkley Twelve also shall pave an area adjoining the west perimeter line of the existing building on the American Legion Property, which area contains approximately nine hundred square feet (900± sq. ft.). Paving of such area (the "West Paving") will be done in manner consistent with Berkley Twelve's other paving on the American Legion Property and at Berkley Twelve's expense.

3. **Maintenance.** Berkley Twelve, at its cost and expense, shall keep and maintain the entire parking area located on the American Legion Property in reasonable order and repair.

4. **Term.** Subject to the provisions of Paragraph 3.b. hereinabove, the term of this Agreement shall be perpetual.

5. **Rights of Berkley Twelve and American Legion.** Each party reserves the following rights with respect to the easements granted to the other party under this Agreement (collectively, the "Easements"):

Description: Oakland,MI Document-Book.Page 21555.815 Page: 3 of 12
Order: 53641-T Comment:

a. the right to locate and grant other non-exclusive easements and rights-of-way across, over, under and through the portion of such party's property that is subject to one or more of the Easements, provided that such action does not adversely affect the rights granted to the other party under this Agreement;

b. the right to install across, over, under and through the portion of such party's property that is subject to one or more of the Easements, public and private utilities and all equipment and facilities related to such utilities, provided that such action does not adversely affect the rights granted to the other party under this Agreement; and,

c. the right to construct or install landscaping, shrubbery, trees, irrigation improvements, signs, permanent fencing, berms, curbs, paving, driveways and sidewalks on, over and across the portion of such party's property that is subject to one or more of the Easements, provided that such action does not adversely affect the rights granted to the other party under this Agreement.

6. **Insurance and Indemnifications.**

a. From and after the date hereof, each party shall, at its own cost and expense, keep in full force and effect with respect to the portion of the Easements located within such party's property, occurrence form comprehensive public liability and property damage insurance with a minimum single limit of One Million and 00/100 Dollars ($1,000,000.00) per occurrence. All policies of insurance that are required to be maintained by a party shall name the other party, its successors, and assigns, as loss payee and additional insureds, as appropriate, as their respective interests may appear, and shall contain a provision that the insurer will not cancel, change or fail to renew the insurance without first giving the other party thirty (30) days prior written notice. Each party shall furnish the other party with such evidence as the other party may reasonably require that the insurance referred to above is in full force and effect and that the applicable premiums have been paid.

b. Each party agrees that they will request their insurance carriers to include in their policies a clause or endorsement whereby the insurer waives its right of subrogation as to any claims against Berkley Twelve or American Legion, as applicable, and, if so available, such clause shall be included only so long as it is includable without additional cost, or if additional cost is chargeable therefor, only so long as the other party pays such additional cost. Each party will notify the other of any such additional cost, and such other party at its election may pay the same, but shall not be obligated to do so.

Description: Oakland,MI Document-Book.Page 21555.815 Page: 4 of 12
Order: 53641-T Comment:

c. To the extent not covered by insurance required in Paragraph 6.a. hereof, Berkley Twelve hereby indemnifies and holds American Legion harmless from and against any cost, liability, damage, action, cause of action, or expense American Legion may suffer or incur as consequence of harm to person or damage to a person's property using the parking easement granted to American Legion on the Berkley Twelve Property, which harm to person or damage to property is caused by the negligent act or omission of Berkley Twelve or its agents, employees, independent contractors, invitees, or licensees.

d. To the extent not covered by insurance required in Paragraph 6.a. hereof, American Legion hereby indemnifies and holds Berkley Twelve harmless from and against any cost, liability, damage, action, cause of action, or expense Berkley Twelve may suffer or incur as consequence of harm to person or damage to a person's property using the parking easement granted to Berkley Twelve on the American Legion Property, which harm to person or damage to property is caused by the negligent act or omission of American Legion or its agents, employees, independent contractors, invitees, members, or licensees.

7. **Enforcement.** If any party fails to observe, fulfill or perform any covenant, term or condition of this Agreement, upon its part to be performed, then the aggrieved party may, upon fifteen (15) days advance written notice (or sooner in the event of exigent circumstances) undertake such obligation, but in no event shall it have the duty to undertake such obligations. The cost of curing such default shall be due from the defaulting party on demand, plus interest at the rate of two percent (2%) over the announced prime rate of the largest national bank in Metropolitan Detroit. As a consequence of such default, the aggrieved party may seek injunctive relief against the defaulting party or to recover a money judgment against such defaulting party. The prevailing party in any action between the parties hereto shall be entitled to be reimbursed for its actual attorney fees and all out-of-pocket costs and expenses and such amount shall be included in any judgment rendered by the Court. Such judgment may be a lien on the defaulting party's parcel and the aggrieved party may satisfy such judgment out of the proceeds of sale received upon execution of such judgment and levy thereon against the right, title and interest of such defaulting party in its respective parcel, and out of the rents issues or profits and other payments received from its respective parcel and/or out of the consideration received from sale or other disposition of all or any party of such defaulting party's rights, title and interest in its respective parcel, and other assets of such defaulting party. The rights granted under this paragraph shall be in addition to all rights and remedies at law or equity.

Description: Oakland,MI Document-Book.Page 21555.815 Page: 5 of 12
Order: 53641-T Comment:

8. **Successors and Assigns.** Every obligation, agreement and covenant in this Agreement shall run with the land and shall be binding upon the party making or assuming such obligation and such party's successors and assigns and shall inure to the benefit of all other parties hereto and their successors and assigns.

9. **Amendments.** This Agreement shall not be modified or amended other than by written agreement of the parties hereto.

10. **Arbitration.** Any controversy or claim arising out of or related to this Agreement will be settled by binding arbitration before one arbitrator in accordance with the Commercial Arbitration rules of the American Arbitration Association. The arbitration award may be entered as a final judgment in any court of competent jurisdiction. Notwithstanding the applicability of other law to any other provision of this Agreement, the Federal Arbitration Act, 9 USC 1 et seq., will apply to the construction and interpretation of this arbitration provisions.

The arbitrator's decision shall be made in no event later than ten (10) calendar days after the commencement of the arbitration hearing. The award shall be final and judgment may be entered in any court having jurisdiction thereover.

The arbitrator may award specific performance of this Agreement. The arbitrator may also require remedial measures as part of any award. The arbitrator in his/her discretion may award reasonable attorneys' fees and costs to the more prevailing party. Notwithstanding anything to the contrary contained in this Agreement, the arbitrator shall not have the right or power to terminate this Agreement.

11. **Notices.** Every notice or demand desired or required to be given or served upon any of the parties hereto shall be in writing and shall be sent by certified mail, postage prepaid, return receipt requested or by any recognized overnight delivery service, or by personal delivery, addressed to the party at the address stated above or at the last changed address given by the party to be notified.

12. **Governing Law.** This Agreement shall be governed by and construed in accordance with the laws of the State of Michigan. If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nonetheless continue in full force and effect without being impaired or invalidated in any way.

13. **Counterparts.** This Agreement may be executed in multiple counterparts, each of which shall be deemed an original and all of which, together, shall constitute one Agreement. The signature of any party to any counterpart shall be deemed to be a signature to, and may be appended to, any other counterpart.

Description: Oakland,MI Document-Book.Page 21555.815 Page: 6 of 12
Order: 53641-T Comment:

14. **Entire Agreement**. This document together with all of the instruments herein described constitutes the entire understanding and agreement of the parties with respect to the subject matter of this Agreement, and any and all prior agreements, understandings or representations, written or oral, are hereby terminated and canceled in their entirety and are of no further force or effect.

(Signatures Contained On Next Page)

Description: Oakland,MI Document-Book.Page 21555.815 Page: 7 of 12
Order: 53641-T Comment:

THIS RECIPROCAL EASEMENT AGREEMENT has been executed as of the date and year set forth above.

WITNESSES:

"Berkley Twelve"

BERKLEY TWELVE ASSOCIATES II, L.L.C.,
a Michigan limited liability company

By: Real Ventures Berkley, L.L.C., a Michigan limited liability company, its Member

Robert E. Cohn

Karen R. Rosmarin

By: _____
William Eisenberg, Trustee of the William Eisenberg Revocable Trust u/a/d 4/24/98
Its Member

Robert E. Cohn

Karen R. Rosmarin

By: _____
Jeffrey L. Howard, Trustee of the Jeffrey L. Howard Revocable Trust u/a/d 9/25/89
Its Member

"American Legion"

BERKLEY POST 374, AMERICAN LEGION, INC.
a Michigan nonprofit corporation

Robert D. Pigtown

Robert E. Cohn

By: _____
Keith LaPointe
Its: Post Commander

(Acknowledgments Contained on Next Page)

Description: Oakland,MI Document-Book.Page 21555.815 Page: 8 of 12
Order: 53641-T Comment:

STATE OF MICHIGAN)
) SS
COUNTY OF OAKLAND)

The foregoing instrument was acknowledged before me this 26th day of June 2000, by William Eisenberg, Trustee of the William Eisenberg Revocable Trust u/a/d 4/24/98, Member of Real Ventures Berkley, L.L.C., Member of Berkley Twelve Associates II, L.L.C., a Michigan limited liability company, on behalf of said company.

Notary Public

JUDITH CLAIRE O'CONNOR
Notary Public, Wayne County, MI
My Commission Expires Nov 14, 2004

STATE OF MICHIGAN)
) SS
COUNTY OF OAKLAND)

The foregoing instrument was acknowledged before me this 26th day of June 2000, by Jeffrey L. Howard, Trustee of the Jeffrey L. Howard Revocable Trust u/a/d 9/25/89, Member of Real Ventures Berkley, L.L.C., Member of Berkley Twelve Associates II, L.L.C., a Michigan limited liability company, on behalf of said company.

Notary Public

KAREN R KOSMATIN
NOTARY PUBLIC STATE OF MICHIGAN
MACOMB COUNTY
MY COMMISSION EXP. AUG. 7,2001
Acting in Oakland Co. MI

STATE OF MICHIGAN)
) SS
COUNTY OF OAKLAND)

The foregoing instrument was acknowledged before me this 26th day of June 2000, by Keith LaPointe, as Post Commander of Berkley Post 374, American Legion, Inc., a Michigan nonprofit corporation, on behalf of said corporation.

Notary Public

JUDITH CLAIRE O'CONNOR
Notary Public, Wayne County, MI
My Commission Expires Nov 14, 2004

DRAFTED BY AND
WHEN RECORDED RETURN TO:
Joseph W. Lash, Esq.
Seyburn, Kahn, Ginn, Bess and Serlin, P.C.
2000 Town Center, Suite 1500
Southfield, Michigan 48075
(248) 353-7620

00JLH:JWL/ms:kk(7191)=R:\B010195\REA.007

Description: Oakland,MI Document-Book.Page 21555.815 Page: 9 of 12
Order: 53641-T Comment:

Exhibit A

Legal Description of Berkley Twelve Property

Land situated in the City of Berkley, Oakland County, State of Michigan, described as:

Lots 32 to 43, inclusive, Lots 44 to 55 inclusive, Stephenson-Barbers Roseland Subdivision, as recorded in Liber 31, Page 5 of Plats, Oakland County Records

Tax Item No. **25-17-126-002 (Lots 44-55)**
25-17-156-003 (Lots 32-43)

31005

Commonly Known as: **1949 West Twelve Mile Road**

Description: Oakland,MI Document-Book.Page 21555.815 Page: 10 of 12
Order: 53641-T Comment:

Exhibit B

Legal Description of American Legion Property

Land situated in the City of Berkley, Oakland County, State of Michigan, described as:

Lots 56 to 67, inclusive, and the East 20 feet of the street adjacent to Lot 67, Stephenson-Barbers Roseland Subdivision.

31005

Tax Item No. **25-17-126-001**

Cmmonly Known as: **2079 West Twelve Mile Road**

Description: Oakland,MI Document-Book.Page 21555.815 Page: 11 of 12
Order: 53641-T Comment:

Exhibit C

Site Plan - Berkley Easement Area

Drawing prepared by: Vantine/Guthrie Studio of Architecture
114 S. Main Street,
Northville, Michigan 48167

Project Title: Berkley Nutrition Center

Project Number: 1002-00

Sheet Title	Sheet Number	Last Revised
Site Plan	SP-1	04/17/00

Description: Oakland,MI Document-Book.Page 21555.815 Page: 12 of 12
Order: 53641-T Comment:

LIBER 22233 PG 706

LIBER 22233 PAGE 706
$29.00 MISC RECORDING
$2.00 REMONUMENTATION
01/19/2001 02:59:04 P.M. RECEIPT# 4103
PAID RECORDED - OAKLAND COUNTY
G. WILLIAM CADDELL, CLERK/REGISTER OF DEEDS

AMENDED AND RESTATED
RECIPROCAL EASEMENT AGREEMENT

THIS AMENDED AND RESTATED RECIPROCAL EASEMENT AGREEMENT ("Agreement") is entered into this 18th day of January, 2001, by **BERKLEY TWELVE ASSOCIATES, L.L.C.**, a Michigan limited liability company,whose address is 28400 Northwestern Highway, Fourth Floor, Southfield, Michigan 48034 ("Berkley Twelve LLC"), and **BERKLEY TWELVE ASSOCIATES II, L.L.C.**, a Michigan limited liability company, whose address is 28400 Northwestern Highway, Fourth Floor, Southfield, Michigan 48034 ("Berkley Twelve II").

RECITALS:

A. Berkley Twelve LLC owns certain real property and improvements thereon located in the City of Berkley, County of Oakland, State of Michigan, commonly known as 1695 West Twelve Mile Road, which is more particularly described on Exhibit A attached hereto ("Berkley Twelve LLC Property").

B. Berkley Twelve II owns certain real property and improvements thereon located in the City of Berkley, County of Oakland, State of Michigan, commonly known as 1949 West Twelve Mile Road, which is more particularly described on Exhibit B attached hereto ("Berkley Twelve II Property").

C. On June 14, 1989, Griswold Holding Company, Berkley Twelve Associates, a Michigan co-partnership ("Berkley Twelve Associates"), and Carpenters Union Local 998 ("Carpenters Union") entered into a Reciprocal Easement Agreement ("**REA**"), concerning certain real property located at 1695 West Twelve Mile Road, Berkley, Oakland County, Michigan, more particularly described on attached Exhibit "A" ("**Parcel I**"), and certain real property located at 1949 West Twelve Mile Road in Berkley, Oakland County, Michigan, more particularly described on attached Exhibit "B" ("**Parcel II**"). The REA was recorded in Liber 10944, Page 508, Oakland County Records on June 16, 1989.

D. Berkley Twelve LLC is Successor-in-Interest (pursuant to a Warranty Deed dated June 14, 1989, and also pursuant to a Quit Claim Deed dated June 19, 1990, and recorded in Liber 11429, Page 749 on June 20, 1990, and Articles of Organization and Certificate of Conversion dated December 2, 1998 and filed with the Michigan Department of Consumer and Industry Services - Corporation, Securities and Land Development Bureau on December 3, 1998) to **Griswold Holding Company** and **Berkley Twelve Associates**, to all rights under the REA.

O.K. - KB

E. Berkley Twelve II is Successor-in-Interest to **Michigan Regional Council of Carpenters**, as Successor-in-Interest to the **Carpenters Union** (pursuant to an Assignment And Assumption of Purchase Agreement dated May 17, 1999, whereby Berkley Twelve Associates assigned all rights, title, and interest in the Purchase Agreement to Berkley Twelve II, and a Warranty Deed dated May 18, 1999 (and recorded in Liber 20267, Page 570 on July 15, 1999), from Michigan Regional Council of Carpenters, Grantor, to Berkley Twelve II, Grantee), to all rights under the REA.

F. At this time, the parties desire to amend and restate the REA in order to grant each other the perpetual, non-exclusive reciprocal easements described herein, for the purpose of: (i) providing common vehicular and pedestrian ingress and egress to and from the Berkley Twelve LLC Property and the Berkley Twelve II Property, and (ii) providing Berkley Twelve, Berkley Twelve II and their respective invitees, licensees and guests, with a common parking facility on the Berkley Twelve LLC Property and the Berkley Twelve II Property.

NOW, THEREFORE, in consideration of the mutual covenants, promises and agreements, and for other good and valuable consideration, the adequacy and receipt of which is acknowledged, and subject to the terms and conditions contained herein, the parties agree as follows:

1. **Reciprocal Access and Parking Easement.**

A. Berkley Twelve II acknowledges that there presently exists at least one hundred and one (101) vehicular parking spaces located on the Berkley Twelve II Property. Berkley Twelve II hereby conveys and grants to Berkley Twelve LLC, its agents, employees, tenants, invitees, and licensees, a non-exclusive, perpetual easement for access, ingress, egress, and parking over and across all areas which constitute the east parking area and the south parking area of the Berkley Twelve II Property, and all access ways serving both such parking areas, which are depicted on the site plan attached hereto as **Exhibit "C"** and made a part hereof. Berkley Twelve LLC shall not have the right to use the nine (9) parking spaces adjacent to the east face of the existing building located on the Berkley Twelve II Property, as depicted on Exhibit "C" attached hereto, nor shall Berkley Twelve LLC have the right to use any parking area west of the west face of the aforesaid building.

Notwithstanding anything to the contrary contained in this Agreement, Berkley Twelve II covenants and agrees that it shall not reduce the number of parking spaces located on the east parking area and the south parking area of the Berkley Twelve II Property specified hereinabove to less than one hundred one (101) vehicular parking spaces.

Description: Oakland,MI Document-Book.Page 22233.706 Page: 2 of 15
Order: 53641-T Comment:

B. Berkley Twelve LLC acknowledges that there presently exists approximately one hundred five (105) vehicular parking spaces on the portion of the Berkley Twelve LLC Property which is located adjacent to the Berkley Twelve II Property. Berkley Twelve LLC hereby conveys and grants to Berkley Twelve II, and its agents, employees, tenants, invitees, and licensees, a non-exclusive, perpetual easement for access, ingress, egress, and parking over and across all vehicular parking areas, and vehicular exits and driveways which are located on the portion of the Berkley Twelve LLC Property which is adjacent to the Berkley Twelve II Property, as depicted on Exhibit "C" attached hereto.

2. **Maintenance.** Berkley Twelve LLC and Berkley Twelve II, shall, at their own cost and expense, each keep and maintain the entire parking area located on their respective properties as herein described.

3. **Term.** The term of this Agreement shall be perpetual. Notwithstanding anything to the contrary contained in this Agreement, the Easements referenced in Paragraphs 1.A and 1.B shall survive the termination of this Agreement.

4. **Rights of Berkley Twelve LLC and Berkley Twelve II.** Each party reserves the following rights with respect to the easements granted to the other party under this Agreement (collectively, the "Easements"):

a. the right to locate and grant other non-exclusive easements and rights-of-way across, over, under and through the portion of such party's property that is subject to one or more of the Easements, provided that such action does not adversely affect the rights granted to the other party under this Agreement;

b. the right to install across, over, under and through the portion of such party's property that is subject to one or more of the Easements, public and private utilities and all equipment and facilities related to such utilities, provided that such action does not adversely affect the rights granted to the other party under this Agreement; and,

c. the right to construct or install landscaping, shrubbery, trees, irrigation improvements, signs, permanent fencing, berms, curbs, paving, driveways and sidewalks on, over and across the portion of such party's property that is subject to one or more of the Easements, provided that such action does not adversely affect the rights granted to the other party under this Agreement.

Description: Oakland,MI Document-Book.Page 22233.706 Page: 3 of 15
Order: 53641-T Comment:

5. **Insurance and Indemnifications.**

a. From and after the date hereof, each party shall, at its own cost and expense, keep in full force and effect with respect to the portion of the Easements located within such party's property, comprehensive, combined single limit public liability and property damage insurance, in the amount of Two Million and 00/100 Dollars ($2,000,000.00). All policies of insurance that are required to be maintained by a party shall name the other party, its successors, and assigns, as loss payee and additional insureds, as appropriate, as their respective interests may appear, and shall contain a provision that the insurer will not cancel, change or fail to renew the insurance without first giving the other party thirty (30) days prior written notice. Each year, each party shall furnish the other party with such evidence as the other party may reasonably require that the insurance referred to above is in full force and effect and that the applicable premiums have been paid.

b. To the extent not covered by Berkley Twelve LLC's insurance, Berkley Twelve II hereby indemnifies and holds harmless the Berkley Twelve LLC from and against any and all claims, costs, expenses (including reasonable attorneys fees), damages, liabilities or obligations arising out of any damage to property or harm to any person incurred as a consequence of any negligent or wrongful act or omission of Berkley Twelve II, any of its, managers, agents or employees, in connection with its use of the easement areas on the Berkley Twelve LLC Property granted to Berkley Twelve II.

c. To the extent not covered by Berkley Twelve II's insurance, Berkley Twelve LLC hereby indemnifies and holds harmless Berkley Twelve II from and against any and all claims, costs, expenses (including reasonable attorneys' fees), damages, liabilities or obligations arising out of any damage to property or harm to any person incurred as a consequence of any negligent or wrongful act or omission of Berkley Twelve LLC, any of its, managers, agents or employees, in connection with its use of the easement areas on the Berkley Twelve II Property granted to Berkley Twelve LLC.

6. **Enforcement.** If any party fails to observe, fulfill or perform any covenant, term or condition of this Agreement, upon its part to be performed, then the aggrieved party may, upon fifteen (15) days advance written notice (or sooner in the event of exigent circumstances) undertake such obligation, but in no event shall it have the duty to undertake such obligations. The cost of curing such default shall be due from the defaulting party on demand, plus interest at the rate of two percent (2%) over the announced prime rate of the largest national bank in Metropolitan Detroit. As a consequence of such default, the aggrieved party may seek injunctive relief against the

Description: Oakland,MI Document-Book.Page 22233.706 Page: 4 of 15
Order: 53641-T Comment:

defaulting party or to recover a money judgment against such defaulting party. The prevailing party in any action between the parties hereto shall be entitled to be reimbursed for its actual attorney fees and all out-of-pocket costs and expenses and such amount shall be included in any judgment rendered by the Court. The rights granted under this paragraph shall be in addition to all rights and remedies at law or equity.

7. **Successors and Assigns**. Every obligation, agreement and covenant in this Agreement shall run with the land and shall be binding upon the party making or assuming such obligation and such party's successors and assigns and shall inure to the benefit of all other parties hereto and their successors and assigns.

8. **Partial Invalidity.** If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable in any manner, the remaining provisions of this Agreement shall nonetheless continue in full force and effect without being impaired or invalidated in any way. In addition, if any provision of this Agreement may be modified by a court of competent jurisdiction such that it may be enforced, then said provision shall be so modified and as modified shall be fully enforce.

9. **Amendments**. This Agreement shall not be modified or amended other than by written agreement of the parties hereto.

10. **Arbitration**. Any controversy or claim arising out of or related to this Agreement will be settled by binding arbitration before one arbitrator in accordance with the Commercial Arbitration rules of the American Arbitration Association. The arbitrator shall be reasonably qualified to hear matters which are the subject of this Agreement. The arbitration award may be entered as a final judgment in any court of competent jurisdiction. Notwithstanding the applicability of other law to any other provision of this Agreement, the Federal Arbitration Act, 9 USC 1 et seq., will apply to the construction and interpretation of this arbitration provisions.

In the event the arbitrator's decision shall be made in no event later than ten (10) calendar days after the commencement of the arbitration hearing. The award shall be final and judgment may be entered in any court having jurisdiction thereover.

The arbitrator may award specific performance of this Agreement. The arbitrator may also require remedial measures as part of any award. The arbitrator in his/her discretion may award reasonable attorneys' fees and costs to the more prevailing party. Notwithstanding anything to the contrary contained in this Agreement, the arbitrator shall not have the right or power to terminate this Agreement.

11. **Notices**. Unless specifically stated to the contrary in this Agreement, all notices, demands, requests, consents, approvals, or other communications which are required or desired to be given or made or sent, by either party hereto to the other, shall be in writing and may be hand delivered or may be delivered by depositing the same in an United States mail receptacle, via first class, certified, registered or equivalent, return

Description: Oakland,MI Document-Book.Page 22233.706 Page: 5 of 15
Order: 53641-T Comment:

receipt requested, postage prepaid, or by recognized overnight courier (provided that such service is able to provide evidence of receipt or refusal of delivery) addressed to the appropriate party at its address set forth below, or at such other address as such party shall have last designated by notice to the other. Notices, demands, requests, consents, approvals, or other communications shall be deemed given when delivered (or refusal to receive) or three (3) days after mailing; provided, however, that if any such notice, demand, request, consent, approval, or other communication is sent by telecopy or fax machine, then such notice, demand, request, consent, approval, or other communication shall be deemed given at the time and on the date of the machine transmittal if the sending party receives a written send verification on its machine and forwards a copy thereof with its mailed, overnight, or courier delivered communication.

To Berkley Twelve LLC Manager:

Real Ventures-Berkley Associates
28400 Northwestern Highway
Fourth Floor
Southfield, Michigan 48034
Attention: Burton D. Farbman, Partner
Fax No.: (248) 353-0502

To Berkley Twelve II Member:

Real Ventures Berkley, L.L.C.
28400 Northwestern Highway
Fourth Floor
Southfield, Michigan 48034
Attention: Burton D. Farbman
Fax No.: (248) 353-0502

With a copy to:

Jeffrey L. Howard, Esq.
Seyburn, Kahn, Ginn, Bess and Serlin, P.C.
2000 Town Center, Suite 1500
Southfield, Michigan 48075-1195
Fax No.: (248) 353-3727

And

William Eisenberg
Grand Sakwa Properties, L.L.C.
32000 Northwestern Hwy., Suite 125
Farmington Hills, Michigan 48334
Fax No. (248) 855-0915

12. **Governing Law**. This Agreement shall be governed by and construed in accordance with the laws of the State of Michigan. If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nonetheless continue in full force and effect without being impaired or invalidated in any way.

Description: Oakland,MI Document-Book.Page 22233.706 Page: 6 of 15
Order: 53641-T Comment:

13. **Counterparts.** This Agreement may be executed in multiple counterparts, each of which shall be deemed an original and all of which, together, shall constitute one Agreement. The signature of any party to any counterpart shall be deemed to be a signature to, and may be appended to, any other counterpart.

14. **Entire Agreement.** This document together with all of the instruments herein described constitutes the entire understanding and agreement of the parties with respect to the subject matter of this Agreement, and any and all prior agreements, understandings or representations, written or oral, are hereby amended and restated in their entirety and are of no further force or effect.

THIS AGREEMENT has been executed as of the date and year set forth above.

WITNESSES:

ANDY GUTTMAN

MICHELE C. WALKER

"Berkley Twelve LLC"

BERKLEY TWELVE ASSOCIATES, L.L.C.,
a Michigan limited liability company

By: **REAL VENTURES-BERKLEY ASSOCIATES,**
a Michigan co-partnership
Manager

By: _____
Burton D. Farbman, Managing Partner

AND

METRO BERKLEY, LLC,
a Michigan limited liability company
Manager

By: JEFFREY L. HOWARD REVOCABLE TRUST u/a/d September 25, 1999

Its: Sole Member

By: _____
Jeffrey L. Howard, Trustee

MICHELE C. WALKER

COLLEEN H. FITZPATRICK

(Jurats on following page)

Description: Oakland,MI Document-Book.Page 22233.706 Page: 7 of 15
Order: 53641-T Comment:

STATE OF MICHIGAN)
) SS
COUNTY OF OAKLAND)

The foregoing instrument was acknowledged before me this 18th day of January, 2001, by Burton D. Farbman, Managing Partner of Real Ventures-Berkley Associates, a Michigan co-partnership, a Manager of Berkley Twelve Associates, L.L.C., a Michigan limited liability company, on behalf of said company.

Notary Public Judith M. Smith
My Commission Expires: 6-23-05

JUDITH M. SMITH
NOTARY PUBLIC, OAKLAND CO., MI
MY COMMISSION EXPIRES Jun 23, 2005

STATE OF MICHIGAN)
) SS
COUNTY OF OAKLAND)

The foregoing instrument was acknowledged before me this 18th day of January, 2001, by Jeffrey L. Howard, Trustee of the Jeffrey L. Howard Revocable Trust u/a/d September 25, 1999, Sole Member of Metro Berkley, LLC, a Michigan limited liability company, a Manager of Berkley Twelve Associates, L.L.C., a Michigan limited liability company, on behalf of said company.

Notary Public Michele C. Walker
My Commission Expires: MICHELE C. WALKER
Notary Public, Oakland County, MI
My Commission Expires June 10, 2001

WITNESSES:

"Berkley Twelve II"

BERKLEY TWELVE ASSOCIATES II, L.L.C.,
a Michigan limited liability company

By: **Real Ventures Berkley, L.L.C.,**
a Michigan limited liability company
Member and Manager

ANDY GUTTMAN

By: _____
Burton D. Farbman, Manager

Michele C. Walker
MICHELE C. WALKER

AND

Description: Oakland,MI Document-Book.Page 22233.706 Page: 8 of 15
Order: 53641-T Comment:

METRO BERKLEY, LLC,
a Michigan limited liability company
Manager

By: JEFFREY L. HOWARD REVOCABLE TRUST u/a/d September 25, 1999

Its: Sole Member

By: _____
Jeffrey L. Howard, Trustee

_____
MICHELE C. WALKER

_____
COLLEEN H. FITZPATRICK

STATE OF MICHIGAN)
) SS
COUNTY OF OAKLAND)

The foregoing instrument was acknowledged before me this 18th day of January, 2001, by Burton D. Farbman, Manager of Real Ventures Berkley, L.L.C., a Manager of Berkley Twelve Associates II, L.L.C., a Michigan limited liability company, on behalf of said company.

Notary Public _____
My Commission Expires: 6-23-05

STATE OF MICHIGAN)
) SS
COUNTY OF OAKLAND)

NOTARY PUBLIC, OAKLAND CO., MI
MY COMMISSION EXPIRES Jun 23, 2005

The foregoing instrument was acknowledged before me this 18th day of January, 2001, by Jeffrey L. Howard, Trustee of the Jeffrey L. Howard Revocable Trust u/a/d September 25, 1999, Sole Member of Metro Berkley, LLC, a Michigan limited liability company, a Manager of Berkley Twelve Associates, L.L.C., a Michigan limited liability company, on behalf of said company.

Notary Public _____
My Commission Expires: _____

MICHELE C. WALKER
Notary Public, Oakland County, MI
My Commission Expires June 10, 2001

DRAFTED BY AND
WHEN RECORDED RETURN TO:
Jeffrey L. Howard, Esq.
Seyburn, Kahn, Ginn, Bess & Serlin, P.C.
2000 Town Center, Suite 1500
Southfield, Michigan 48075

Description: Oakland,MI Document-Book.Page 22233.706 Page: 9 of 15
Order: 53641-T Comment:

Exhibit A

Legal Description of Berkley Twelve LLC Property

Land situated in the City of Berkley, Oakland County, State of Michigan, described as:

Lots 6 through 31, as platted, and Easterly 15 feet of vacated Mortenson Boulevard adjacent to and West of Lot 19, as plated and public alley abutting Lots 6 through 19 on the South thereof; Westerly 20 feet of vacated Mortenson Boulevard adjacent to and East of Lot 20 and Westerly 20 feet of Brookline Street adjacent to and East of Lot 6, as platted, Stephenson-Barber's Roseland Subdivision as recorded in Liber 31, Page 5 of Plats, Oakland County Records.

Tax Item No. **25-17-127-001 (Lots 6-19)**
25-17-126-004 (Lots 20-31)

Commonly Known as: **1695 West Twelve Mile Road**

31005

Description: Oakland,MI Document-Book.Page 22233.706 Page: 10 of 15
Order: 53641-T Comment:

Exhibit B

Legal Description of Berkley Twelve II Property

Land situated in the City of Berkley, Oakland County, State of Michigan, described as:

Lots 32 to 43, inclusive, Lots 44 to 55 inclusive, Stephenson-Barbers Roseland Subdivision, as recorded in Liber 31, Page 5 of Plats, Oakland County Records

Tax Item No. **25-17-126-002 (Lots 44-55)**
25-17-126-003 (Lots 32-43)

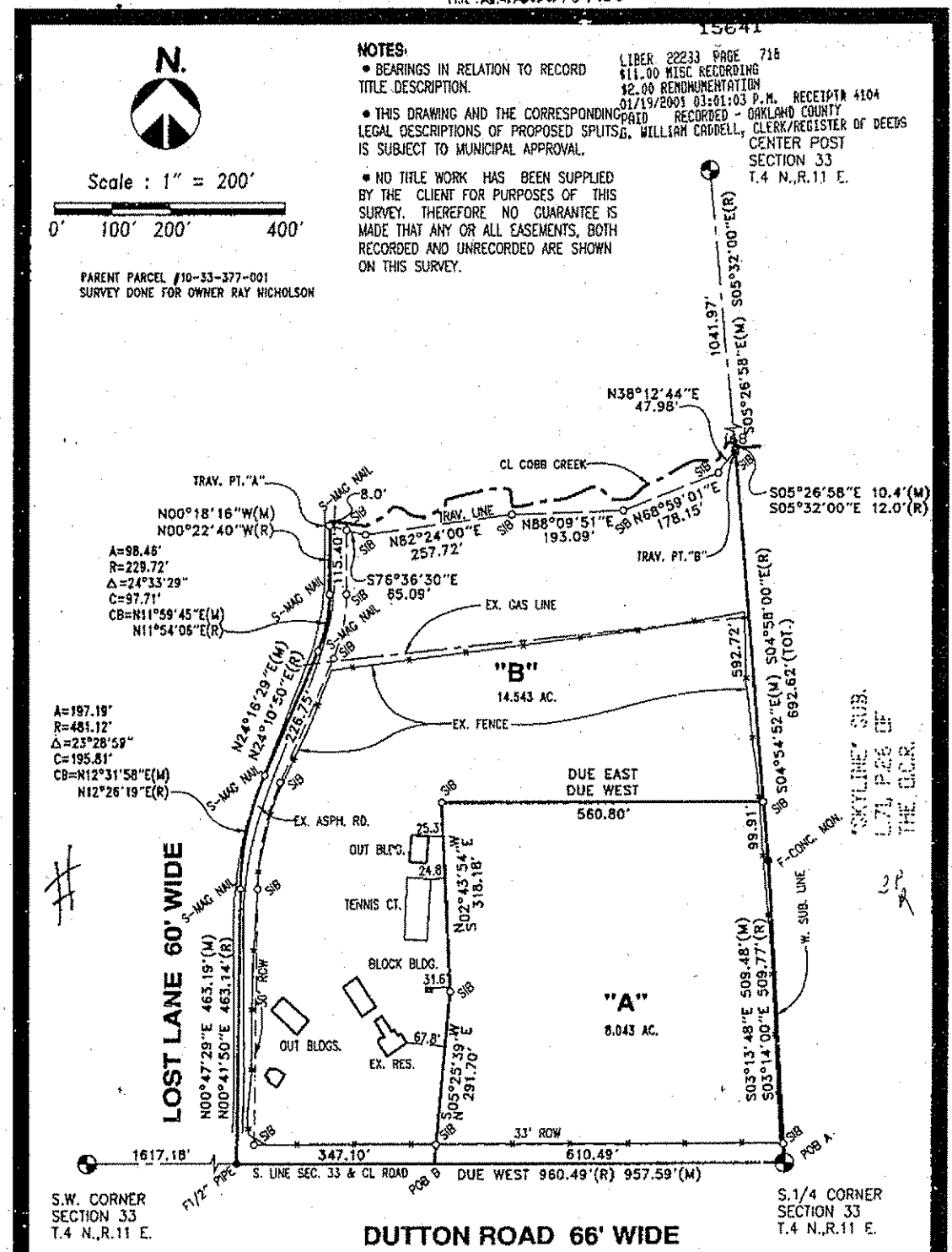
Commonly Known as: **1949 West Twelve Mile Road**

Description: Oakland,MI Document-Book.Page 22233.706 Page: 11 of 15
Order: 53641-T Comment:

EXHIBIT "C"

EXHIBIT "C"
SITE STATISTICS: PROPOSED BUILDING
SITE STATISTICS: EXISTING BUILDING
OVERALL PARKING REQUIREMENTS
OVERALL SITE PLAN
ENLARGED SITE DETAIL
ENLARGED SITE DETAIL
FIRE LANE SIGN
HANDICAP SIGN DETAIL
GENERAL SITE NOTES
LEGAL DESCRIPTION
LOCATION MAP
SITE
BERKLEY MEDICAL CENTER 2
BERKLEY TWELVE ASSOCIATES II, LLC
OVERALL SITE PLAN
1002-99
SP-1

15641



Surveyor's Certificate

O.K. - LG

I hereby certify that I have surveyed and mapped the land above platted and/or described on December 21, 2000 and that the ratio of closure on the unadjusted field observations of such survey was 1/96,950 and that all of the requirements of P.A. 132 1970 as amended have been complied with.

REV 1-03-01
REV 7-19-00

RETURN TO:

URBAN LAND CONSULTANTS ®
PHONE 810 731-5030
FAX 810 731-2605
CIVIL ENGINEERS PLANNERS LAND SURVEYORS
8800 23 MILE ROAD SHELBY TWP., MI 48316-4616

LEGEND
FIB = Found Iron Bar ●
FIP = Found Iron Pipe ●
SIB = Set Iron Bar/Cap ○
R = Record Distance
M = Measured Distance
C = Calculated

WARREN C. AVERY
LICENSED LAND SURVEYOR
No. 30076

Date 6-16-00
Drawn C.N.R.
Check W.C.A.
Sheet 1 of 3
Fld. Bk.
Job No. 970945-5346

\SC\LEGAL\DE970945ALTERNATE.DWG

Description: Oakland,MI Document-Book.Page 22233.706 Page: 13 of 15
Order: 53641-T Comment:

Parcel "A"

Part of the Southwest 1/4 of Section 33, T.4N., R.11E., Oakland Township, Oakland County, Michigan is described as: Beginning at the South 1/4 Corner of Section 33; thence along the South line of Section 33 and centerline Dutton Road Due West, 610.49 feet; thence N.05°25'39"E., 291.70 feet; thence N.02°43'54"W., 318.18 feet; thence Due East, 560.80 feet to a point on the West line of "Skyline" subdivision as recorded in Liber 71, Page 26 of the Oakland County Records; thence along said line S.04°54'52"E. measured, (S.04°58'00"E. record), 99.91 feet; thence continuing S.03°13'48"E., 509.48 feet measured, (S.03°14'00"E., 509.77 feet record) to the Point of Beginning and containing 8.043 acres.

Subject to the rights of the public for highway purposes along Dutton Road and to all easements both recorded and unrecorded.

Parcel "B" pt 10-33-377-001

Part of the Southwest 1/4 of Section 33, T.4N., R.11E., Oakland Township, Oakland County, Michigan is described as: Commencing at the South 1/4 Corner of Section 33; thence along the South line of Section 33 and centerline Dutton Road Due West, 610.49 feet to the Point of Beginning; thence continuing along said line Due West, 347.10 feet to a point on the centerline of Lost Lane; thence along said line the following five courses N.00°47'29"E., 463.19 feet measured, (N.00°41'50"E., 463.14 record); thence along a curve concave to the East of radius 481.12 feet, a central angle of 23°28'59", whose chord bears N.1°°31'58"E. measured, (N.12°26'19"E. record), 195.81 feet, an arc distance of 197.19 feet; thence N.24°16'29"E. measured, (N.24°10'50"E. record), 226.75 feet; thence along a curve concave to the West of radius 229.72 feet, a central angle of 24°33'29", whose chord bears N.11°59'45"E. measured, (N.11°54'06"E. record), 97.71 feet, an arc distance of 98.46 feet; thence N.00°18'16"W. measured, (N.00°22'40"W. record) 115.40 feet to a point on an intermediate traverse line said point being traverse point "A"; thence continuing N.00°18'16"W. measured, (N.00°22'40"W. record) 8.0 feet to a point on the centerline of Cobb Creek; thence Northeasterly along the centerline of Cobb Creek to a point on the West line of "Skyline" subdivision as recorded in Liber 71, Page 26 of the Oakland County Records, all witnessed by and described along a traverse line running from traverse point "A" the following five courses; thence S.76°36'30"E., 65.09 feet; thence N.82°24'00"E., 257.72 feet; thence N.88°09'51"E., 193.09 feet; thence N.68°59'01"E., 178.15 feet; thence N.38°12'44"E., 47.98 feet to traverse point "B" said point being S.05°26'58"E., 10.4 feet measured, (S.05°32'00"E., 12.0 feet record) along the West line of said "Skyline" subdivision from the centerline of Cobb Creek; thence along said line S.04°54'52"E. measured, (S.04°58'00"E. record), 592.72 feet; thence Due West, 560.80 feet, thence S.02°43'54"E., 318.18 feet; S.05°25'39"W., 291.70 feet to the Point of Beginning and containing 14.543 acres.

Subject to the rights of the public for highway purposes along Dutton Road and Lost Lane and to all easements both recorded and unrecorded.

pt 10-33-377-001

REV 1-03-01
REV 7-19-00

PHONE 810 731-8030
FAX 810 731-2805
URBAN LAND CONSULTANTS ©
CIVIL ENGINEERS PLANNERS LAND SURVEYORS
6800 23 MILE ROAD SHELBY TWP., MI 48316-4516

LEGEND
FIB = Found Iron Bar ●
FIP = Found Iron Pipe ●
SIB = Set Iron Bar/Cap ○
R = Record Distance
M = Measured Distance
C = Calculated

WARREN C. AVEY
LICENSED LAND SURVEYOR
No. 30076

Date 6-16-00
Drawn C.N.R.
Check W.C.A.
Sheet 2 of 3
Fld. Bk.
Job No. 970945-5346

\SC\LEGAL\DE970945ALTERNATE.DWG

Description: Oakland,MI Document-Book.Page 22233.706 Page: 14 of 15
Order: 53641-T Comment:

Witnesses:

S.W. Corner Section 33 f- 3/4" bar w/remon. cap
NE-33.69' to PK nail in brass disc #22445 in 6" Locust.
SE-61.41' to PK nail in brass disc #22445 in 16" Locust.
S-59.47' to PK nail in brass disc #22445 in U. Pole.
NNW-35.50' to PK nail in brass disc #22445 in U. Pole.

S.1/4 Corner Section 33 f- 5/8" bar w/remon. cap #22445
N05°W-15.16' to PK nail in brass disc #22445 in S. face of 10" Maple.
N20°W-29.82' to PK nail in brass disc #22445 in S.W. face of 20" Cherry.
S10°E-21.22' to PK nail in brass disc #22445 in W. face of 14" Maple.
S45°W-33.88' to PK nail in brass disc #22445 in S. face of 20" Maple.

Center Post Section 33 f- concrete monument
SW-30.11' to PK nail in washer tag #21563 in NW face 30" Oak.
WNW-17.00' to Mag nail in S. face 18" Cherry.
N-45.93' to Mag nail in W. face 14" Cherry.
E-32.11' to Mag nail in S. face 12" Oak.

REV 1-03-01
REV 7-19-00

PHONE 810 731-5030
FAX 810 731-2605
URBAN LAND CONSULTANTS ©
CIVIL ENGINEERS PLANNERS LAND SURVEYORS
8800 23 MILE ROAD SHELBY TWP., MI 48316-4516

LEGEND
FIB = Found Iron Bar ●
FIP = Found Iron Pipe ●
SIB = Set Iron Bar/Cap ○
R = Record Distance
M = Measured Distance
C = Calculated

PROFESSIONAL ENGINEER
WARREN C. TAVET
LICENSED LAND SURVEYOR
No. 30076

Date 6-16-00
Drawn C.N.R
Check W.C.A.
Sheet 3 of 3
Fld. Bk.
Job No. 970945-5346

C:\LEGAL\DE9B70945ATERNATE.DWG

Description: Oakland,MI Document-Book.Page 22233.706 Page: 15 of 15
Order: 53641-T Comment:

MATERIALS TESTING CONSULTANTS

ADDENDUM TO GEOTECHNICAL REPORT

LUME DEVELOPMENT – 1949 12 MILE ROAD

BERKLEY, MICHIGAN

Prepared For:

LUME CANNABIS CO.

Troy, Michigan

Prepared By:

MATERIALS TESTING CONSULTANTS, INC.

April 2022

MTC Project No. 211705

April 22, 2022
Project No. 211705

Lume Cannabis Co.
769 Chicago Road
Troy, Michigan 48083

Attention: Mathew Burbary
Construction Manager

Reference: Addendum to Report of Geotechnical Investigation
Lume Development – 1949 12 Mile Road
Berkley, Michigan

Dear Mr. Burbary:

We have completed a supplemental geotechnical investigation for the above-referenced project. The purpose of this investigation has been to identify the general subsurface soil conditions in the vicinity of additional stormwater management features onsite, analyze the conditions relative to the planned construction and to provide recommendations related to pavement and stormwater management. This work has been performed as described in our proposal No. 16261.1 and dated April 19, 2022.

MTC completed a geotechnical investigation for the proposed Lume Cannabis development at 1949 12 Mile Road in Berkley, Michigan on March 16th and 17th, 2022 and submitted a geotechnical report (MTC Project Number 211705) dated March 22, 2022. MTC was subsequently contacted by Lume Cannabis Co. on April 15, 2022 who requested additional soil borings east of the previous investigation area for additional stormwater features.

Presented herein are descriptions of the supplemental geotechnical investigation, encountered conditions and engineering recommendations. The Appendix contains the addendum limitations and data collected during this investigation. This addendum letter should be reviewed in conjunction with our geotechnical report (MTC Project Number 211705) dated March 22, 2022.

DESIGN CONSIDERATIONS

Available Information

We have been provided the following documents and information for use in this investigation:

- A marked-up Topographic Survey plan, Sheet C-1.0, prepared by PEA Group, dated March 26, 2022 and received from Lume Cannabis Co. through email on April 15, 2022 which specified the requested supplemental boring locations.
- Email correspondence with Mr. Mathew Burbary of Lume Cannabis Co. and Mr. Scott Peruski, P.E. of PEA Group regarding the geotechnical scope of work, desired boring locations and depths, project authorization, and coordinating the field investigation.

Location and Proposed Design

The proposed construction will be located in plan as shown on Figure No. 1. The site is located at 1949 12 Mile Road in the City of Berkley, immediately south of the Roseland Park Cemetery.

The area of investigation was an HMA surface parking lot located east of the existing Beaumont Health medical facility. Site grades were relatively flat within the investigation area with grades generally ranging from el 672 to 673.

We understand additional underground stormwater management features are proposed east of the existing building, in the general area where the supplemental soil borings were requested (Borings B-101 to B-104). The specific type of stormwater management feature proposed in this area was not specified; however, we anticipate the design will utilize a rain garden, underground Stormtech detention system, or porous pavement in this area utilizing retention features and ultimately directing stormwater offsite, similar to the stormwater management features proposed near the building. We have considered any underground structures will bear within 5 ft of the existing ground surface on clay subgrade.

Porous and non-porous asphalt pavement areas may be constructed onsite. Traffic is expected to consist of relatively light passenger vehicles with only occasional heavier axle wheel loadings from trucks for deliveries, refuse pickup, etc.

We should be informed of any changes between the actual design conditions and those described herein as this information may affect our recommendations.

INVESTIGATION METHODOLOGY

Conventional soil test borings and sampling along with field engineering reconnaissance were used to investigate the subsurface conditions. Boring locations are shown on Figure No. 1. Investigation procedures, soil classification information and boring logs are provided in the Appendix. Ground penetrating radar (GPR) and electro-magnetic (EM) locating equipment was utilized as an added safety precaution to scan the boring locations for potential unmarked underground utilities or anomalies.

Number of Borings	4
Boring Depth, ft.	10

Borings were drilled and other sampling was conducted solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.

INVESTIGATION RESULTS

Site Conditions

At the time of our field work, the area of investigation was covered with asphalt (HMA) pavement and located east of the existing Beaumont Medical facility. The area, in general, was relatively flat with elevations ranging from approximately 672 to 673. Stormwater appears to currently be managed onsite through inverse crown drainage to interior catch basins located in HMA drive areas, with a catch basin observed southeast of the building.

The asphalt pavement east of the existing building was observed to be in very poor to poor condition with severe block cracking progressing to alligator cracking throughout the pavement as well as edge cracking at the pavement edges and around the perimeter of the catch basin southeast of the building. Cracking appeared to be more severe in drive areas, and several potholes were observed in the drive paths. Overhead electrical lines were located east of the investigation area, and interior parking lot lighting with underground electrical lines was located within the investigation area.



Investigation Area – Looking Northwest



Boring B-101 – Looking Southeast



Alligator Cracking – Looking East



Potholes in the Drive Path – Looking West

Subsurface Conditions

The soil borings generally encountered 3 inches of HMA over approximately 1 to 4 inches of gravel base. The investigation, in general, encountered loose to medium dense granular fill, visually classified as clayey sand (SC) and clayey sand with gravel (SC) with occasional clay lenses, to a depth of approximately 2.5 ft, over stiff to very stiff lean clay (CL) which grades to a hard consistency below a depth of approximately 5.5 ft.

The relative density of granular soil is based on recorded SPT N-values while the consistency of cohesive soil is based on both recorded SPT N-values and on estimates of the unconfined compressive strength obtained with a calibrated penetrometer.

Calibrated penetrometer readings in the cohesive soil ranged from 1.75 tsf to 4.5 tsf at the 3.5-ft sample interval and exceeded 4.5 tsf at the 6-ft and 8.5-ft sample intervals in each boring.

Poor sample recovery was noted at the 0.5-ft sample interval in Boring B-101 within the clayey sand (SC) fill, possibly indicating the presence of coarse gravel, cobble or deleterious fill obstructions.

Groundwater was not encountered in the soil borings during the drilling activities. Groundwater levels may fluctuate due to seasonal variations such as precipitation, snowmelt, nearby river or lake levels and other factors that may not be evident at the time of measurement. Groundwater levels may be different at the time of construction.

This section has provided a generalized description of the encountered subsurface soil conditions. The boring logs located in the Appendix should be reviewed for detailed soil descriptions. Some variation between boring locations may be expected.

CONCLUSIONS AND RECOMMENDATIONS

Borings B-101 through B-104 encountered granular fill in the upper 2 to 3 ft over stiff/very stiff grading to hard cohesive soil which was consistent with the borings performed as part of our previous investigation in March 2022 (Borings B-1 to B-9). No groundwater was encountered in Borings B-101 to B-104 to the explored depths of 10 ft, which is also consistent with our previous investigation to the west. Due to the consistency in soil and groundwater conditions throughout this area relative to our previous investigation, the conclusions and recommendations presented in our geotechnical report (MTC Project Number 211705) dated March 22, 2022 are also applicable for this supplemental investigation area.

CLOSURE

In this addendum letter, the encountered subsurface conditions and geotechnical recommendations for this supplemental investigation area have been presented. The limitations of this study are described in the Appendix.

The recommendations presented in this addendum are based upon a limited number of subsurface samples obtained from various sampling locations. The samples may not fully indicate the nature and extent of the variations that actually exist between sampling locations. For that reason, among others, we strongly recommend that a qualified geotechnical firm be retained to observe earthwork construction. If variations or other latent conditions become evident during construction, it will be necessary for us to review these conditions and our recommendations as appropriate.

We appreciate the opportunity to provide this service to you on this project. Should you have any questions or require further assistance, please contact our office.

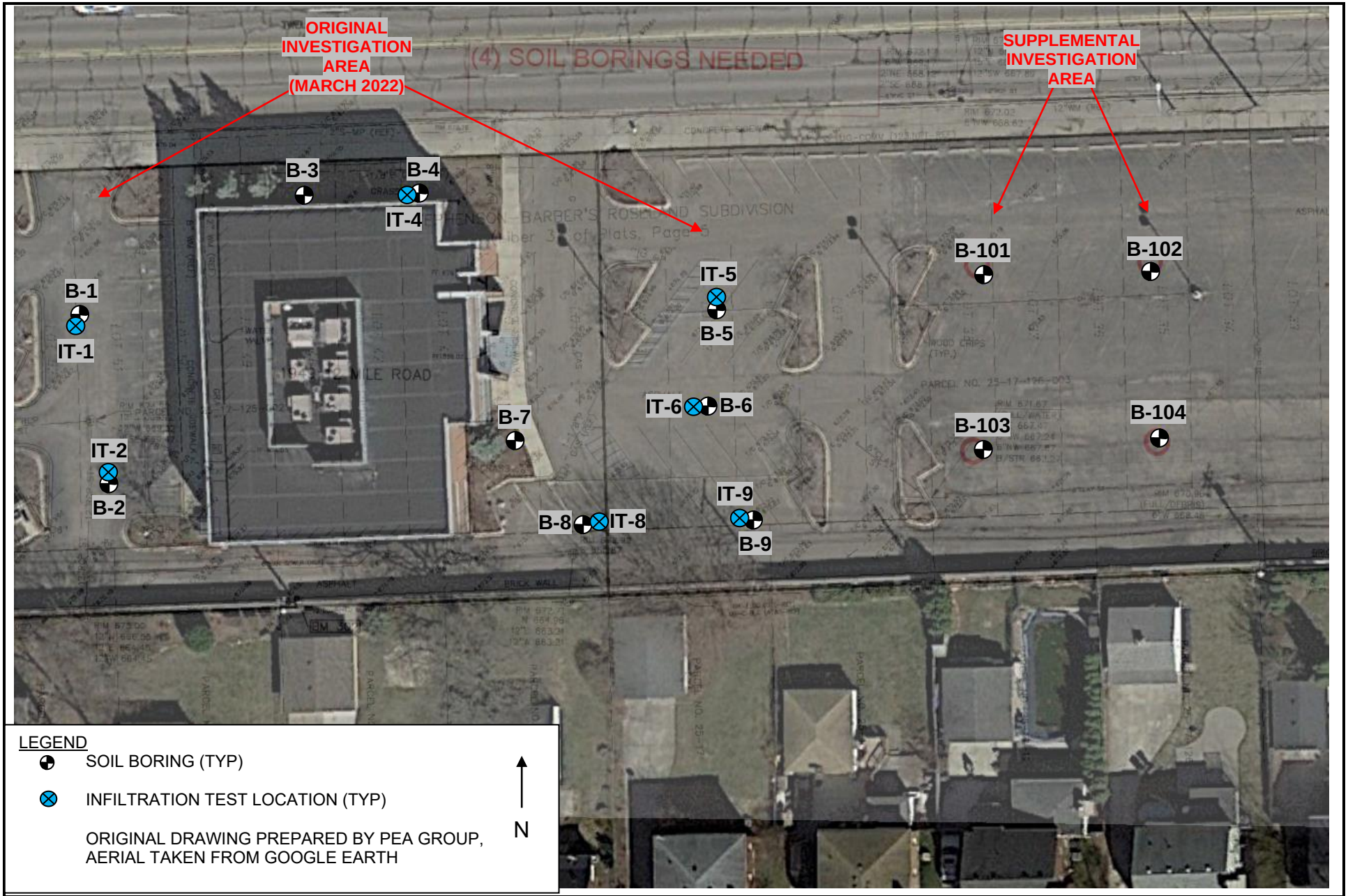
Sincerely,

MATERIALS TESTING CONSULTANTS, INC

Adam L. DePoy, P.E.
Project Manager

Robert J. Warren, P.E.
Project Manager

Attachments: Figure No. 1 - Boring Location Plan
Appendix
- Limitations
- Test Drilling and Sampling Procedures
- Boring Log Terminology and Classification Outline
- Boring Logs



TITLE: BORING LOCATION PLAN – SUPPLEMENTAL INVESTIGATION		PROJECT: PROPOSED LUME DEVELOPMENT – 1949 12 MILE ROAD, BERKLEY	
SCALE: NTS	DATE: 04/22/2022	PROJECT NO.: 211705	MTC MATERIALS TESTING CONSULTANTS
FIG. NO.: 1	DR. BY: AD	REV. BY: RW	

APPENDIX

- Limitations
- Test Drilling and Sampling Procedures
- Boring Log Terminology and Classification Outline
- Boring Logs

LIMITATIONS

Soil Variations

The recommendations in this report are based upon the data obtained from the soil borings. This report does not reflect variations which may occur between these borings, and which would not become evident until construction. If variations then become evident, it would be necessary for a re-evaluation of recommendations of this report, after performing on-site observations.

Warranties

We have prepared this report in accordance with generally accepted soil and foundation engineering practices. We make no other warranties, either expressed or implied, as to the professional advice provided under the terms of our agreement and included in this report. This report is prepared exclusively for our client and may not be relied upon by other parties without written consent from our office.

Boring Logs

In the process of obtaining and testing samples and preparing this report, we follow reasonable and accepted practice in the field of soil engineering. Field logs maintained during drilling describe field occurrences, sampling locations, and other information. The samples obtained in the field are subjected to additional testing in the laboratory and differences may exist between the field logs and the final logs. The engineer reviews the field logs and laboratory test data, and then prepares the final boring logs. Our recommendations are based on the contents of the final logs.

Review of Design Plans and Specifications

In the event that any changes in the design of the building or the location, however slight, are planned, our recommendations shall not be considered valid unless modified or approved in writing by our office. We recommend that we be provided the opportunity to review the final design and specifications in order to determine whether changes in the original concept may have affected the validity of our recommendations, and whether our recommendations have, in fact, been implemented in the design and specifications.

TEST DRILLING AND SAMPLING PROCEDURES

Test Drilling Methods:

- [X] Hollow stem auger, ASTM D6151
- [ ] Mud rotary, ASTM D5783
- [ ] Casing advancer, ASTM D5872
- [ ] Rock coring, ASTM D2113
- [ ] Core/Hand Auger

Note: Cone penetration test data can be used to interpret subsurface stratigraphy and can provide data on engineering properties of soils. The ASTM procedure does not include a procedure for determining soil classification from CPT testing. Soil classifications shown on CPT logs are based on published procedures and are not based on physical ASTM soil classification tests.

Sampling Methods:

- [X] SPT, ASTM D1586, Auto hammer (140 lb., 30" drop, 2" OD split spoon sampler)
- [ ] Thin-walled tube sampler (Shelby), ASTM D1587

Note: The number of hammer blows required to drive the SPT sampler 12 inches, after seating 6 inches, is termed the soil N-value and provides an indication of the soil's relative density and strength parameters at the sample location. SPT blow counts in 6 inch increments are recorded on the boring logs.

Drill Rig:

- [X] CME 55 LC (ATV)
- [ ] Acker Renegade (ATV)
- [ ] CME 45 Truck
- [ ] Geoprobe 7822 (ATV)
- [ ] Geoprobe Rotary Sonic

Boreholes Backfilled With:

- [X] Excavated soil
- [ ] Cement bentonite grout
- [ ] Piezometer or Monitoring Well (see notes on logs)
- [X] Concrete or asphalt patch where appropriate

Sample Handling and Disposition:

- [X] Samples labeled, placed in jars, returned to MTC Laboratory
- [X] Discard after 60 days

BORING LOG TERMINOLOGY AND ASTM D 2488 CLASSIFICATION OUTLINE

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests.

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 5
Loose	15 to 35 %	5 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

Per ASTM D2487, the following conditions must be met based on laboratory testing to justify the label 'well graded' in a soil description.

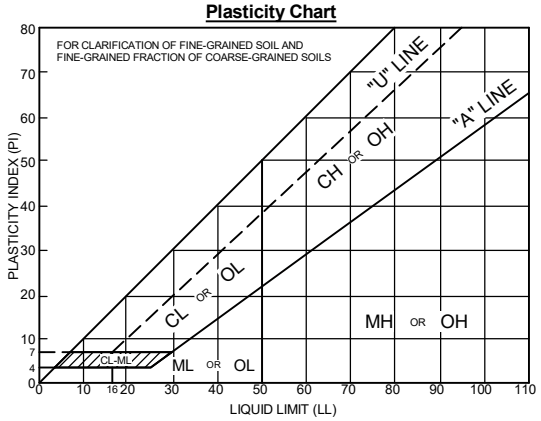
Gravel: $C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3

Sand: $C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3

FINE-GRAINED SOILS (major portions passing on No. 200 sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests.

Descriptive Terms	Unconfined Compressive Strength TSF	SPT Blow Count
Very soft	< 0.25	< 2
Soft	0.25 to 0.5	2 to 4
Medium stiff	0.5 to 1.0	4 to 8
Stiff	1.0 to 2.0	8 to 15
Very stiff	2.0 to 4.0	15 to 30
Hard	> 4.0	> 30

Plasticity Chart



MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LESS THAN 15% FINES	GW		WELL-GRADED GRAVELS WITH OR WITHOUT SAND
			GP		POORLY-GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GM		SILTY GRAVELS WITH OR WITHOUT SAND
			GC		CLAYEY GRAVELS WITH OR WITHOUT SAND
	SANDS MORE THAN HALF COARSE FRACTION IS FINER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 15% FINES	SW		WELL-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP		POORLY-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP-SM		POORLY-GRADED SANDS WITH SILT WITH OR WITHOUT GRAVEL
		SANDS WITH 15% OR MORE FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OL		ORGANIC SILTS OR CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CH		INORGANIC CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OH		ORGANIC SILTS OR CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
HIGHLY ORGANIC SOILS			PT/OL		PEAT AND OTHER HIGHLY ORGANIC SOILS

GENERAL NOTES

1. Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.

2. "Grades with" or "Grades without" may be used to describe soil when characteristics vary within a stratum.

3. Preserved soil samples will be discarded after 60 days unless alternate arrangements have been made.

GROUNDWATER OBSERVATIONS:

During - indicates water level encountered during the boring
End- indicates water level immediately after drilling
Date and Depth - Measurements at indicated date

SAMPLE TYPES AND NUMBERING

S	SPT, split barrel sample, ASTM D1586
U	Shelby tube sample, ASTM D1587
R	Rock core run
*S	Other than 2" split barrel sample
L	SPT with liner, ASTM D1586
A	Auger cuttings
G	Geoprobe liner

MINOR COMPONENT QUANTIFYING TERMS

Less than 5%	TRACE
5 to 10%	FEW
15 to 25%	LITTLE
30 to 40%	SOME
50 to 100%	MOSTLY

GRAIN SIZE

BOULDER	>12"
COBBLE	12" to 3"
COARSE GRAVEL	3" to 0.75"
FINE GRAVEL	0.75" to No. 4
COARSE SAND	No. 4 to No. 10
MEDIUM SAND	No. 10 to No.40
FINE SAND	No. 40 to No. 200

LOG OF BORING

Project No.: 211705
Boring No.: B-101
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 55
Crew Chief: JC Field Eng.: JS Rev. By: AD
Coordinates: N=367869.5 E=13444252.4 (MI South ift)
Elevation: 673.1 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 5.0 ft.

Date Begin: 04/21/2022 Date End: 04/21/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	4 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 10.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
672.1	1					3" HMA, 4" Gravel Base (0.6)				Fill: 0.0 to 2.5' +/-
671.1	2	S-1	0.5	3-5-3 N=8	SC	Brown gray clayey SAND with gravel; mostly coarse to fine sand, little coarse to fine gravel, little clayey fines, moist, Fill with clay lenses (2.5)				S-1: Poor recovery; possible coarse gravel / COBBLE
670.1	3									
669.1	4	S-2	1.5	3-4-4 N=8		Gray lean CLAY; mostly clayey fines, few medium to fine sand, moist	2.25			
668.1	5									
667.1	6				CL					
666.1	7	S-3	1.5	4-8-12 N=20		Grades brown	4.5+			
665.1	8									
664.1	9	S-4	1.5	10-15-21 N=36			4.5+			
663.1	10					(10.0)				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-102
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 55
Crew Chief: JC Field Eng.: JS Rev. By: AD
Coordinates: N=367871.6 E=13444303.2 (MI South ift)
Elevation: 672.7 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 4.0 ft.

Date Begin: 04/21/2022 Date End: 04/21/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	4 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 10.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
671.7	1					3" HMA, 4" Gravel Base (0.6)				Fill: 0.0 to 2.5' +/-
670.7	2	S-1	1.5	5-4-3 N=7	SC	Brown clayey SAND with gravel; mostly coarse to fine sand, little coarse to fine gravel, little clayey fines, moist, Fill with clay lenses (2.5)				
669.7	3									
668.7	4	S-2	1.5	2-3-3 N=6	CL	Green gray lean CLAY; mostly clayey fines, few medium to fine sand, moist with occasional sand seams	1.75			
667.7	5									
666.7	6									
665.7	7	S-3	1.5	4-9-13 N=22		Grades brown without sand seams	4.5+			
664.7	8									
663.7	9	S-4	1.5	12-14-17 N=31		Grades with trace medium to fine gravel (10.0)	4.5+			
662.7	10					End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-103
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 55
Crew Chief: JC Field Eng.: JS Rev. By: AD
Coordinates: N=367816.6 E=13444253.6 (MI South ift)
Elevation: 672.0 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 3.0 ft.

Date Begin: 04/21/2022 Date End: 04/21/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	4 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 10.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
671.0	1					3" HMA, 1" Gravel Base (0.3)				Fill: 0.0 to 2.5' +/-
670.0	2	S-1	1.5	4-5-4 N=9	SC	Dark brown clayey SAND; mostly coarse to fine sand, some clayey fines, few coarse to fine gravel, moist, Fill with clay lenses (2.5)				
669.0	3									
668.0	4					Green gray lean CLAY; mostly clayey fines, few medium to fine sand, moist	3.5			
667.0	5	S-2	1.5	3-3-5 N=8		Grades brown at 4.5'				
666.0	6									
665.0	7	S-3	1.5	5-10-15 N=25	Ccl	Grades with trace coarse to fine gravel	4.5+			
664.0	8									
663.0	9						4.5+			
662.0	10	S-4	1.5	13-18-21 N=39		(10.0)				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-104
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 55
Crew Chief: JC Field Eng.: JS Rev. By: AD
Coordinates: N=367821.3 E=13444306.8 (MI South ift)
Elevation: 671.6 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 2.2 ft.

Date Begin: 04/21/2022 Date End: 04/21/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	4 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 10.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
670.6	1					3" HMA, 4" Gravel Base 0.6				Fill: 0.0 to 2.5' +/-
669.6	2	S-1	1.5	7-8-4 N=12	SC	Dark brown clayey SAND with gravel; mostly coarse to fine sand, little coarse to fine gravel, little clayey fines, moist, Fill 3.0				
668.6	3									
667.6	4					Brown lean CLAY; mostly clayey fines, few medium to fine sand, trace medium to fine gravel, moist	4.5			
666.6	5	S-2	1.5	3-5-7 N=12						
665.6	6									
664.6	7	S-3	1.5	7-12-16 N=28	CL		4.5+			
663.6	8									
662.6	9					Grades gray at 9.6'	4.5+			
661.6	10	S-4	1.5	11-12-13 N=25		10.0				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-1
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367853 E=13443979.5 (MI South ift)
Elevation: 674.6 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 10.0 ft.

Date Begin: 03/16/2022 Date End: 03/16/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
673.6	1					4" HMA, 6" Gravel Base 0.8				Fill: 0.0 to 2.5'±
672.6	2	S-1	1.5	5-4-4 N=8	CL	Gray sandy lean CLAY; mostly clayey fines, some coarse to fine sand, few coarse to fine gravel, moist, Fill, with organic silt lenses 2.5	4.25			
671.6	3									
670.6	4	S-2	1.5	2-2-3 N=5		Gray brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	3.25			
669.6	5									
668.6	6									
667.6	7	S-3	1.5	12-16-18 N=34		Grades brown	4.5+			
666.6	8									
665.6	9	S-4	1.5	6-11-17 N=28		Grades gray	4.5+			
664.6	10									
663.6	11									
662.6	12									
661.6	13									
660.6	14	S-5	1.5	6-8-11 N=19	CL		4.5+			
659.6	15									
658.6	16									
657.6	17									
656.6	18									
655.6	19	S-6	1.5	5-9-12 N=21			4.5			
654.6	20									
653.6	21									
652.6	22									
651.6	23									
650.6	24	S-7	1.5	5-8-12 N=20			4.25			
649.6	25					25.0				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-2
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367803.3 E=13443989.3 (MI South ift)
Elevation: 674.5 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 12.0 ft.

Date Begin: 03/16/2022 Date End: 03/16/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
673.5	1					4" HMA, 6" Gravel Base 0.8				Fill: 0.0 to 5.5'±
672.5	2	S-1	1.5	4-3-3 N=6	CL	Brown lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist, Fill 1.8	1.25			
671.5	3				OL	2.5				
670.5	4					Black organic SILT; mostly silty fines, little organic fines, moist, Fill				
669.5	5	S-2	1.5	3-2-2 N=4	CL	Brown lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist, Fill 5.5				
668.5	6									
667.5	7	S-3	1.5	7-11-15 N=26		Brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	4.5+			
666.5	8									
665.5	9									
664.5	10	S-4	1.5	8-10-12 N=22		Grades gray with trace fine gravel	4.5			
663.5	11									
662.5	12									
661.5	13									
660.5	14									
659.5	15	S-5	1.5	7-15-16 N=31			4.5			
658.5	16				CL					
657.5	17									
656.5	18									
655.5	19									
654.5	20	S-6	1.5	5-8-12 N=20			4.5			
653.5	21									
652.5	22									
651.5	23									
650.5	24									
649.5	25	S-7	1.5	7-11-13 N=24		25.0	4.25			
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-3
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367890.2 E=13444049.2 (MI South ift)
Elevation: 675.3 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 13.0 ft.

Date Begin: 03/17/2022 Date End: 03/17/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
674.3	1	S-1	1.5	3-1-10 N=11		8" Clayey Topsoil 0.7				Fill: 0.0 to 5.5'±
673.3	2				CL	Brown sandy lean CLAY; mostly clayey fines, some coarse to fine sand, moist, Fill with concrete debris 2.5	1.0			
672.3	3									
671.3	4	S-2	0.2	2-2-2 N=4	SM	Brown silty SAND; mostly fine sand, little silty fines, moist, Fill 5.5				S-2: Poor recovery; possible coarse gravel / COBBLE
670.3	5									
669.3	6									
668.3	7	S-3	1.5	5-6-7 N=13		Brown lean CLAY; mostly clayey fines, few coarse to fine sand, trace coarse to fine gravel, moist	4.5+			
667.3	8									
666.3	9	S-4	1.5	3-4-9 N=13			4.5+			
665.3	10									
664.3	11									
663.3	12									
662.3	13									
661.3	14	S-5	1.5	8-11-14 N=25	CL	Grades gray	4.5			
660.3	15									
659.3	16									
658.3	17									
657.3	18									
656.3	19	S-6	1.5	5-8-9 N=17		Grades with few coarse to fine gravel	4.5			
655.3	20									
654.3	21									
653.3	22									
652.3	23									
651.3	24	S-7	1.5	11-8-8 N=16		25.0	4.25			
650.3	25									
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-4
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367891 E=13444080.9 (MI South ift)
Elevation: 675.5 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 14.0 ft.

Date Begin: 03/17/2022 Date End: 03/17/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
674.5	1	S-1	1.5	2-3-4 N=7	CL	6" Clayey Topsoil (0.5) Gray sandy lean CLAY; mostly clayey fines, some coarse to fine sand, moist, Fill	3.0			Fill: 0.0 to 5.5'±
673.5	2									
672.5	3									
671.5	4	S-2	1.5	2-1-2 N=3						
670.5	5				SC	(4.5) Brown clayey SAND; mostly coarse to fine sand, some clayey fines, moist, Fill (5.5)				
669.5	6									
668.5	7	S-3	1.5	4-7-11 N=18		Brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	4.5+			
667.5	8									
666.5	9	S-4	1.5	4-9-13 N=22			4.5+			
665.5	10									
664.5	11									
663.5	12									
662.5	13									
661.5	14	S-5	1.5	4-8-11 N=19	CL	Grades gray with few coarse to fine gravel	4.5			
660.5	15									
659.5	16									
658.5	17									
657.5	18									
656.5	19	S-6	1.5	9-9-10 N=19		Grades with a silt seam at 19'±	4.25			
655.5	20									
654.5	21									
653.5	22									
652.5	23									
651.5	24	S-7	1.5	5-8-10 N=18			4.0			
650.5	25					(25.0)				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-5
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367858.7 E=13444172.1 (MI South ift)
Elevation: 673.8 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 13.5 ft.

Date Begin: 03/17/2022 Date End: 03/17/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
672.8	1					4" HMA, 6" Gravel Base 0.8				Fill: 0.0 to 2.5'±
671.8	2	S-1	1.5	8-6-5 N=11	SM	Brown silty SAND; mostly fine sand, little silty fines, moist, Fill 2.5				
670.8	3									
669.8	4				CL	Gray lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist	2.0			
668.8	5	S-2	1.5	2-2-3 N=5		5.5				
667.8	6									
666.8	7	S-3	1.5	3-6-9 N=15		Brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	4.25			
665.8	8									
664.8	9									
663.8	10	S-4	1.5	4-7-10 N=17		Grades with few fine gravel	4.5+			
662.8	11									
661.8	12									
660.8	13									
659.8	14									
658.8	15	S-5	1.5	4-7-10 N=17		Grades gray	4.5+			
657.8	16				CL					
656.8	17									
655.8	18									
654.8	19									
653.8	20	S-6	1.5	4-6-10 N=16		Grades with few coarse to fine gravel	4.5			
652.8	21									
651.8	22									
650.8	23									
649.8	24									
648.8	25	S-7	1.5	5-8-12 N=20		25.0	4.5+			
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-6
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367828.7 E=13444169.1 (MI South ift)
Elevation: 673.4 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 13.0 ft.

Date Begin: 03/17/2022 Date End: 03/17/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
672.4	1					4" HMA, 6" Gravel Base 0.8				Fill: 0.0 to 2.5'±
671.4	2	S-1	1.5	12-8-8 N=16	SP-SM	Brown poorly graded SAND with silt; mostly coarse to fine sand, few fine gravel, few silty fines, moist, Fill 2.5				
670.4	3									
669.4	4				CL	Gray lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist	1.75			
668.4	5	S-2	1.5	3-2-4 N=6						
667.4	6					5.5				
666.4	7	S-3	1.5	3-6-10 N=16		Brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	4.5+			
665.4	8									
664.4	9									
663.4	10	S-4	1.5	4-10-18 N=28			4.5+			
662.4	11					Grades with a silt lens from 9.8' to 11'±				
661.4	12									
660.4	13									
659.4	14									
658.4	15	S-5	1.5	4-7-8 N=15		Grades gray with few coarse to fine gravel	4.5			
657.4	16				CL					
656.4	17									
655.4	18									
654.4	19									
653.4	20	S-6	1.5	10-9-9 N=18			4.5			
652.4	21									
651.4	22									
650.4	23									
649.4	24									
648.4	25	S-7	1.5	10-10-9 N=19		25.0	4.5			
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-7
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367817.7 E=13444111.8 (MI South ift)
Elevation: 675.3 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings.

Date Begin: 03/16/2022 Date End: 03/16/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
674.3	1	S-1	1.5	5-5-4 N=9		6" Sandy Topsoil with Gravel 0.5				Fill: 0.0 to 12'±
673.3	2				SP-SM	Brown poorly graded SAND with silt; mostly coarse to fine sand, few silty fines, few fine gravel, moist, Fill 2.5				
672.3	3									
671.3	4	S-2	1.5	3-3-2 N=5	SP	Brown poorly graded SAND; mostly fine sand, trace silty fines, moist, Fill 5.5				
670.3	5									
669.3	6									
668.3	7	S-3	0.4	5-4-4 N=8	SM	Brown silty SAND; mostly medium to fine sand, little silty fines, moist 8.0				S-3: Poor recovery; possible coarse gravel / COBBLE
667.3	8									
666.3	9	S-4	1.5	2-3-4 N=7	CL	Brown sandy lean CLAY; mostly clayey fines, some coarse to fine sand, moist, Fill with asphalt fragments 12.0	2.0			
665.3	10									
664.3	11									
663.3	12									
662.3	13					Gray lean CLAY; mostly clayey fines, few coarse to fine sand, moist				
661.3	14	S-5	1.5	9-8-9 N=17			4.5+			
660.3	15									
659.3	16									
658.3	17									
657.3	18									
656.3	19	S-6	1.5	5-5-9 N=14	CL		4.5+			
655.3	20									
654.3	21									
653.3	22									
652.3	23									
651.3	24	S-7	1.5	12-13-13 N=26			4.5+			
650.3	25					25.0				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-8
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367793 E=13444132.7 (MI South ift)
Elevation: 673.4 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 13.5 ft.

Date Begin: 03/16/2022 Date End: 03/16/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
672.4	1					4" HMA, 4" Gravel Base 0.7				Fill: 0.0 to 2.5'±
671.4	2	S-1	1.5	3-4-5 N=9	CL	Gray lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist, Fill 2.5	4.5			
670.4	3									
669.4	4				CL	Gray lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist				
668.4	5	S-2	1.0	4-2-3 N=5		5.5	2.75			S-2, S-7: Poor recovery; possible coarse gravel / COBBLE
667.4	6									
666.4	7	S-3	1.5	4-6-10 N=16		Brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	4.5+			
665.4	8									
664.4	9									
663.4	10	S-4	1.5	5-10-15 N=25			4.5+			
662.4	11									
661.4	12									
660.4	13									
659.4	14									
658.4	15	S-5	1.5	4-6-11 N=17	CL	Grades gray	4.5			
657.4	16									
656.4	17									
655.4	18									
654.4	19									
653.4	20	S-6	1.5	5-8-9 N=17			4.5			
652.4	21									
651.4	22									
650.4	23									
649.4	24									
648.4	25	S-7	0.8	5-7-10 N=17		25.0	4.0			
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-9
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367794.6 E=13444183.4 (MI South ift)
Elevation: 672.9 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 12.0 ft.

Date Begin: 03/16/2022 Date End: 03/16/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
671.9	1					3 1/2" HMA, 8" Gravel Base 1.0				Fill: 0.0 to 1.5'±
670.9	2	S-1	0.4	3-2-4 N=6	SP-SC	Brown poorly graded SAND with clay; mostly coarse to fine sand, few clayey fines, moist, Fill, with wood fragments 1.5				
669.9	3									
668.9	4					Gray lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist	3.5			S-1, S-3, S-7: Poor recovery; possible coarse gravel / COBBLE
667.9	5	S-2	1.5	6-4-4 N=8	CL					
666.9	6									
665.9	7	S-3	0.5	16-20-24 N=44			3.5			
664.9	8					8.0				
663.9	9					Brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	4.5+			
662.9	10	S-4	1.5	8-8-14 N=22						
661.9	11									
660.9	12									
659.9	13									
658.9	14									
657.9	15	S-5	1.5	7-7-9 N=16		Grades gray with trace coarse to fine gravel	4.5+			
656.9	16									
655.9	17				CL					
654.9	18									
653.9	19									
652.9	20	S-6	1.5	6-7-10 N=17			4.5			
651.9	21									
650.9	22									
649.9	23									
648.9	24									
647.9	25	S-7	0.4	9-10-11 N=21		25.0	4.5			
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

March 22, 2022
Project No. 211705

Lume Cannabis Co.
769 Chicago Road
Troy, Michigan 48083

Attention: Mathew Burbary
Construction Manager

Reference: Report of Geotechnical Investigation
Lume Development – 1949 12 Mile Road
Berkley, Michigan

Dear Mr. Burbary:

MATERIALS TESTING CONSULTANTS, INC. has completed a geotechnical investigation for the above-referenced project. The findings of the study along with recommendations for the design of foundations and pavement are presented in the attached report.

We appreciate this opportunity to provide foundation engineering services and express our interest in providing continuing services in the areas of subgrade verification, special inspections and quality testing on various construction materials. Please contact our office should you have any questions or require further assistance.

Sincerely,

MATERIALS TESTING CONSULTANTS, INC.

Adam L. DePoy, P.E.
Project Manager

Todd D. Munger, P.E.
Senior Project Manager

att: Report

MATERIALS TESTING CONSULTANTS

GEOTECHNICAL REPORT

LUME DEVELOPMENT – 1949 12 MILE ROAD
BERKLEY, MICHIGAN

Prepared For:

LUME CANNABIS CO.
Troy, Michigan

Prepared By:

MATERIALS TESTING CONSULTANTS, INC.

March 2022
MTC Project No. 211705

TABLE OF CONTENTS

SECTION		PAGE
1.0	INTRODUCTION	1
2.0	DESIGN CONSIDERATIONS	1
2.1	Available Information	1
2.2	Location and Type of Structure	2
3.0	INVESTIGATION METHODOLOGY	4
3.1	Field Investigation	4
4.0	INVESTIGATION RESULTS	6
4.1	Regional Geology	6
4.2	Site Conditions	6
4.3	Subsurface Conditions	7
5.0	CONCLUSIONS AND RECOMMENDATIONS	10
5.1	Foundations	10
5.2	Site and Subgrade Preparation	11
5.3	Groundwater	13
5.4	Slopes and Temporary Excavations	13
5.5	Stormwater Management Considerations	14
5.6	Porous Pavement	14
5.7	Below-Grade Walls	17
5.8	Flexible Pavement	18
5.9	MBC Seismic Considerations	20
6.0	CLOSURE	20

FIGURE	BORING LOCATION PLAN
APPENDIX	LIMITATIONS
	TEST DRILLING AND SAMPLING PROCEDURES
	BORING LOG TERMINOLOGY AND CLASSIFICATION OUTLINE
	BORING LOGS
	INFILTRATION TEST RESULTS

REPORT OF GEOTECHNICAL INVESTIGATION
LUME DEVELOPMENT – 1949 12 MILE ROAD

1.0 INTRODUCTION

MATERIALS TESTING CONSULTANTS, INC. (MTC) has completed a geotechnical investigation for the proposed Lume Development at 1949 12 Mile Road in the City of Berkley, Michigan. This work has been performed as described in our proposal, number 16261 and dated March 7, 2022. Authorization to proceed was received from Mr. Mathew Burbary of Lume Cannabis Co. through email on March 7, 2022.

The scope of this study in general includes the following:

- performance of a field investigation including soil test borings, infiltration testing and field engineering reconnaissance;
- review of recovered samples by one of our engineers and assignment of technical soil classifications;
- engineering evaluation of encountered conditions with respect to the proposed construction; and
- preparation of this report.

Presented herein are descriptions of our understanding of the design considerations, the investigation program, encountered conditions and engineering recommendations. The Appendix contains the report limitations, boring log terminology, soil classification chart, boring logs and infiltration test results.

2.0 DESIGN CONSIDERATIONS

2.1 Available Information

We have been provided the following documents and information for use in this investigation:

- A Report of Engineering Site Plan Review, prepared by Hubbell, Roth and Clark, Inc., dated February 16, 2022 and received through email from Mr. Christopher Enright of Enright

Architects on March 2, 2022 which specified the need for a geotechnical investigation to evaluate the feasibility of the proposed stormwater management system.

- A Topographic Survey plan of the project site, Drawing No. 1, prepared by PEA Group, dated February 24, 2022 and received through email from Mr. Scott Peruski, P.E. of PEA Group on March 10, 2022 which also included existing underground utility information and proposed boring and infiltration test locations.
- A proposed stormwater management plan, Sheet C-8.0, undated and received through email from Mr. Scott Peruski, P.E. of PEA Group on March 10, 2022 which provided information and locations of the proposed detention systems, rain gardens and underground drains.
- Telephone and email correspondence with Mr. Mathew Burbary of Lume Cannabis Co. and Mr. Scott Peruski, P.E. of PEA Group regarding the proposed development, the geotechnical scope of work, Oakland County requirements for design of stormwater management features, project authorization and coordinating the field investigation.
- An onsite meeting with Mr. Stan Stachowicz, Property Manager of the project site, who assisted with private utility clearance and provided access into the existing building structure to review existing conditions.

2.2 Location and Type of Structure

The proposed construction will be located in plan as shown on the attached Boring Location Plan, Figure No. 1. The site is located at 1949 12 Mile Road in the City of Berkley, immediately south of the Roseland Park Cemetary. The project site has an existing multi-story building structure onsite which is currently functioning as a Beaumont Health medical facility. The existing building is approximately 80 ft by 115 ft in plan (9,200 sq-ft), has two above-grade levels and a basement level which extends approximately 10 to 12 ft below existing exterior grades. We understand the existing structure has its main level finish floor at el 676.0 and we have considered the structure's basement level bears near el 664. Asphalt surface parking lots are located east and west of the building and an asphalt drive is located south of the building. Existing surface grades generally range from el 674 to 675.5 in the west parking lot and generally range from el 672.5 to 675 in the east parking lot within the proposed development areas.

The proposed construction will involve interior renovations to the existing building structure, two new exterior stairwells constructed near the southeast and northwest corners of the building, a new elevator and elevator pit constructed near the northwest corner of the building, as well as the installation of new stormwater management features to be located east, west and north of the building. Through correspondence with the design team, we understand structural loading for the existing building is expected to remain approximately the same as a a result of the proposed interior renovations, as no heavy machinery or equipment installations are proposed within the building interior. We have considered the proposed stairwells and elevator pit will bear on mat foundations with a maximum applied static load to the mat slab of 250 kips and an applied mat bearing pressure of approximately 2500 psf.

We understand the design is anticipating predominately cohesive soil conditions onsite and therefore is expected to utilize a stormwater management system which utilizes retention features and ultimately directs collected stormwater offsite. The proposed stormwater management system indicates the following proposed features to be installed:

- Rain Garden A – a 0.03-acre rain garden to be located north of the existing building in the existing grass landscaping area with a bottom of pond elevation at 674.
- Two rain gardens to be located east of the building's southeast corner (Rain Gardens B and C) – both rain gardens will be 0.02 acres with a bottom of pond elevation at 672.
- West Detention System – a 0.23-acre underground Stormtech system will be installed which will include Isolator Plus SC-740 chambers and occupy an area of approximately 36 ft by 94 ft. The detention system will be located in the existing asphalt drive and parking area west of the existing building. The bottom of the chambers will be at el 669.25 which we understand will be installed on 18 inches of stone bedding.
- East Detention System – a 0.21-acre underground Stormtech system will also be installed east of the existing building in an existing pavement area. Design information for the East Detention System was not provided; however, we have considered the system will include SC-740 chambers which will bear approximately 5 ft below the lowest existing pavement elevation on 18 inches of stone bedding. We have considered the SC-740 chambers will bear at approximately el 668.0.
- Porous pavement will be constructed in the east and west parking areas near the proposed East and West Detention systems. We understand the porous pavement section will consist of an open-graded HMA surface layer overlying a thin stabilizing choker course

layer and a stone recharge bed layer, underlain by a non-woven geotextile fabric, resting on compacted or proof-rolled subgrade.

Porous asphalt pavement areas are planned, and non-porous asphalt pavement may also be constructed onsite. Traffic is expected to consist of relatively light passenger vehicles with only occasional heavier axle wheel loadings from trucks for deliveries, refuse pickup, etc.

We should be informed of any changes between the actual design conditions and those described herein as this information may affect our recommendations.

3.0 INVESTIGATION METHODOLOGY

3.1 Field Investigation

Subsurface conditions were investigated by nine (9) conventional soil test borings. Borings were performed to a depth of 25 ft below the existing ground surface in areas of proposed stormwater management features. Boring locations are shown on the attached plan, Figure No. 1.

Seven (7) double-ring infiltration tests were performed onsite within the footprint of the proposed detention systems and rain gardens to evaluate the drainage properties of the subgrade soil. The infiltration tests were performed in accordance with the Southeast Michigan Council of Governments (SEMCOG) Low Impact Development (LID) Manual of Michigan. The locations of the infiltration tests are shown on Figure No. 1. The SEMCOG double-ring infiltration tests were performed at depths which correspond to the approximate bottom elevation of the proposed stormwater management features. The results of the infiltration tests are discussed in Section 4.3, and the field test logs with infiltration test results are provided in the Appendix.

One of our engineers staked the approximate boring locations in the field. Boring elevations were approximated using a survey grade GPS unit. The elevations used in this report are given in feet and are based on the NAVD 88 datum. If more precise location and elevation data are desired, a registered professional land surveyor should be retained to locate the borings and

determine their ground elevations. Ground penetrating radar (GPR) and electro-magnetic (EM) locating equipment were utilized as an added safety precaution to scan the boring locations prior to drilling for potential underground anomalies and unmarked private and public utilities.

The drilling was performed using conventional hollow-stem auger methods to advance the boreholes. The boreholes were backfilled to the original ground surface after drilling completion and sealed with cold patch in areas of existing pavement.

Soil samples were recovered on regular intervals by means of the Standard Penetration Test (SPT), ASTM D1586. The SPT test involves the use of a 140-lb hammer with a 30-inch drop to drive a standard 2.0-inch O.D. split spoon sampler. The number of hammer blows required to drive the sampler 12 inches, after seating 6 inches, is termed the soil N-value and provides an indication of the soil's relative density and strength parameters at the sample location. SPT blow counts in 6-inch increments are recorded on the boring logs. The drill rig was equipped with an automatic hammer system which delivers a more consistent driving energy to the sampler compared to the rope and cathead system.

Recovered samples were sealed, labeled and transported to our laboratory. All soil samples will be discarded after sixty days unless a longer hold time is specifically requested.

The recovered soil samples were reviewed by an engineer and technically classified according to the methods of ASTM D2488 "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)". Estimates of the unconfined compressive strength of the cohesive samples were made using a calibrated penetrometer. A copy of the test boring logs along with a description of the terminology used on the logs and a chart of the ASTM D2488 group symbol names are provided in the Appendix.

Borings were drilled and other sampling was conducted solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.

4.0 INVESTIGATION RESULTS

4.1 Regional Geology

The *Map of the Surface Formations of the Southern Peninsula of Michigan*, published by the State of Michigan, indicates the site is in an area of waterlaid moraines, bordered by clay lake beds to the northeast. Soil conditions encountered in moraine formations typically consist of a mixture of sand, silt and clay transported and deposited through glacial processes while soil conditions in clay lake bed areas are predominately cohesive, consistent with the soils encountered during our field investigation.

The *Map of Bedrock Topography of the Southern Peninsula of Michigan* indicates bedrock to be at approximately el 500 to 550, approximately 120 ft or deeper below existing site grades.

4.2 Site Conditions

At the time of our field work, the areas of investigation were asphalt pavement and grass landscaping areas surrounding the existing Beaumont Medical facility. The site, in general, was relatively flat with elevations ranging from approximately 673 to 676. Stormwater appears to be managed onsite through inverse crown drainage to interior catch basins located in HMA drive areas west and southeast of the building. A cluster of trees was located near the northwest corner of the building which required offsetting Boring B-3 to the east.

The asphalt pavement west of the existing building was in poor condition with moderate to severe block cracking observed in the drive lanes, possibly a result of limited surface grading to promote drainage to the stormwater catch basin. The asphalt pavement east of the existing building was in poor condition with edge, transverse and meander cracking observed throughout the pavement, as well as cracking around the perimeter of the southeast catch basin.

The existing two-story brick building onsite appeared to be in fair condition, and there were no obvious signs of structural distress, such as readily-visible settlement or cracking, on the exterior of the existing building.

Miss Dig markings of underground utilities observed while onsite include a watermain below the west concrete sidewalk, a storm sewer located west of the building in the asphalt drive, fiber optic and gas utilities in the north landscaping area near the south edge of the sidewalk, a fire suppression water line running into the building near the building's northeast corner, and gas utilities located east of the building in the asphalt drive.



West Asphalt Drive – Looking South



East Parking Area – Looking Northwest



North Landscaping Area – Looking East



Existing Building – Looking West

4.3 Subsurface Conditions

The investigation, in general, encountered stiff to hard cohesive uncontrolled fill and very loose to medium dense granular uncontrolled fill with occasional deleterious material (including buried organics and concrete and asphalt debris) in the upper approximately 1.5 to

5.5 ft over predominately very stiff to hard cohesive soil (CL) to the explored depths of 25 ft with exception to Boring B-7 where uncontrolled fill was encountered to a depth of 12 ft. Borings performed in existing pavement areas encountered 3½ to 4 inches of HMA at the ground surface over 4 to 8 inches of gravel base. Borings performed in existing grass landscaping areas encountered 6 to 8 inches of topsoil.

The relative density of granular soil is based on recorded SPT N-values while the consistency of cohesive soil is based on both recorded SPT N-values and on estimates of the unconfined compressive strength obtained with a calibrated penetrometer.

The encountered cohesive fill generally consisted of stiff to hard lean clay with sand (CL) and sandy lean clay (CL). Calibrated penetrometer readings in the cohesive fill generally ranged from 1.0 tsf to 3.0 tsf with occasional readings on the order of 4.0 tsf or greater. The encountered granular fill generally consisted of loose to medium dense poorly graded sand (SP), poorly graded sand with silt (SP-SM), poorly graded sand with clay (SP-SC), silty sand (SM) and clayey sand (SC). Deleterious material including organics as well as concrete and asphalt debris were occasionally encountered in the fill. Boring B-1 encountered sandy lean clay (CL) fill with organic silt lenses to a depth of 2.5 ft. Boring B-2 encountered a lens of black organic silt (OL) from 1.8 to 2.5 ft. Boring B-3 encountered sandy lean clay (CL) fill with concrete debris to a depth of 2.5 ft. Boring B-7 encountered sandy lean clay (CL) fill with asphalt fragments from 8 to 12 ft and was the area of deepest encountered fill amongst our soil borings. Boring B-9 encountered poorly graded sand with clay (SP-SC) fill with wood fragments to a depth of 1.5 ft. Due to the variability of the fill and presence of organics and debris, the fill is anticipated to be “uncontrolled” in nature.

The native cohesive soil generally had a very stiff to hard consistency based on calibrated penetrometer readings. Calibrated penetrometer readings in the cohesive soil generally ranged from 4.0 tsf to in excess of 4.5 tsf. Occasional silt seams and lenses, as well as few fine to coarse gravel were noted in the cohesive soil.

Poor sample recovery was occasionally noted in the granular fill, cohesive fill and cohesive soil and may indicate the presence of coarse gravel or cobble obstructions. Boulder should be anticipated whenever cobble is noted.

Groundwater was not encountered in the soil borings during the drilling activities. Groundwater levels may fluctuate due to seasonal variations such as precipitation, snowmelt, nearby river or lake levels and other factors that may not be evident at the time of measurement. Groundwater levels may be different at the time of construction.

Infiltration Tests:

Seven (7) in situ infiltration tests were performed onsite in accordance with the SEMCOG Low Impact Development (LID) Manual for Michigan. The locations of the infiltration tests are shown on Figure No. 1.

Infiltration tests were performed at depths of approximately 1 to 7 ft which corresponds with approximately the bottom elevation of the proposed stormwater management features. The subgrade soil at the test depths consisted of cohesive soil classified as lean clay, lean clay with sand and sandy lean clay (CL). The test area was allowed to pre-soak for 60 minutes prior to testing. No infiltration into the cohesive soil was measured during the 3-hour course of the test at each of the test locations. A summary of the infiltration tests is provided in Table 4.3.1:

Table 4.3.1 – Infiltration Test Results

Infiltration Test Location	Proposed Stormwater Management Feature	Bottom of Feature Elevation	Infiltration Test Depth (Elevation)	Soil at Test Depth	Average Measured Rate of Infiltration
IT-1	West Detention System	667.75	667.7	Brown lean CLAY (CL)	Zero
IT-2	West Detention System	667.75	667.7	Brown lean CLAY (CL)	Zero
IT-4	Rain Garden A	674.0	674.0	Gray sandy lean CLAY (CL)	Zero
IT-5	East Detention System	666.5	666.7	Brown lean CLAY (CL)	Zero
IT-6	East Detention System	666.5	666.7	Brown lean CLAY (CL)	Zero
IT-8	Rain Garden B	672.0	672.0	Gray lean CLAY with sand (CL)	Zero
IT-9	Rain Garden C	672.0	671.2	Gray lean CLAY with sand (CL)	Zero

The field test logs with results of the double ring infiltration tests are provided in the Appendix.

This section has provided a generalized description of the encountered subsurface soil conditions. The boring logs located in the Appendix should be reviewed for detailed soil descriptions. Some variation between boring and infiltration test locations may be expected.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Foundations

A mat foundation is recommended for support of the proposed stairwells and elevator pit. It is important that the recommendations of this report, in particular those pertaining to subgrade preparation, construction observation and testing, be implemented during design and construction.

The following parameters are recommended for foundation design:

Table 5.1.1 - Foundation Design Parameters

Average bearing pressure for mat foundations, maximum gross allowable, psf	2500
Vertical modulus of subgrade reaction, K_{30}, pci	100
Minimum embedment depth for frost protection, inches	42

Mat foundations are expected to bear near el 664 on the very stiff to hard lean clay (CL) as encountered in the borings or on approved engineered fill. Subgrade preparation recommendations are contained in the following section.

Foundation recommendations presented herein are based on a safety factor to resist bearing capacity failure of at least 3.0 and a maximum anticipated total foundation settlement of 1 inch or less. Differential settlement of the mat foundations will be a function of the mat rigidity to be evaluated and designed by the project Structural Engineer. Considering subgrade preparation is performed as described herein, a modulus of subgrade reaction value, K_{30}, of 100 psi/inch may be considered for structural design to evaluate deferential movement

across the mat based on concentrated loading and structural requirements. New foundations placed adjacent to the existing structure should bear at the same elevation as the existing foundations to prevent undermining. If new foundations will extend below the level of existing foundations, precautions to prevent undermining of the existing foundations should be taken. If new loads will be transferred to the existing foundations, the stability of the foundations (i.e., bearing capacity safety factor and predicted settlement) should be evaluated as part of the design.

5.2 Site and Subgrade Preparation

All topsoil, vegetation, roots, HMA pavement, concrete sidewalk, and any other miscellaneous debris should be removed from within the proposed construction areas. The limits of the proposed construction area, prior to the placement of any structures or engineered fill material, should be proof-rolled and compacted in the upper 12 inches using suitable compaction equipment to at least 95 percent of the soil's maximum ASTM D1557 dry density by the contractor. Proof-rolling is defined as the passing of relatively heavy construction equipment over the soil subgrade under observation by the Geotechnical Engineer. The response of the soil, when subjected to the applied load, is subjectively evaluated by our staff with respect to its ability to support the overlying soil or structure. In areas where excessive deflection is observed, special subgrade preparation measures may be recommended to provide an acceptable subgrade condition. These measures may consist of compaction of the subgrade at moisture contents close to the optimum value, undercutting affected areas and replacing with engineered fill, use of a geotextile separation fabric or some combination of these measures.

Due to the presence of uncontrolled fill with occasional deleterious material (concrete debris, asphalt and wood fragments, buried organics) encountered in the upper approximately 1.5 to 5.5 ft of most borings and to a depth of 12 ft at Boring B-7 during our field investigation and due to variations that may exist between borings, it is expected that some form of subgrade improvement will be required over portions of the development area to provide suitable foundation bearing conditions, particularly near the northwest and southeast corners of the building where new stairwell and elevator construction are proposed. Subgrade improvement may include, but not be necessarily limited to, densification of existing soil in-place or excavation of all unsuitable material to an approved subgrade and replacement with

engineered fill. If overexcavation is selected, it should encompass soil within the stress influence region of the foundation, defined as a region bordered by 2V:1H planes extending down and away from the bottom edge of the foundation to the approved bearing stratum.

The foundation subgrade should be inspected and tested by qualified geotechnical personnel. As part of the inspection and testing, the subgrade at each individual bearing element should be verified to be consistent with the conditions encountered in this investigation and the indicated recommended allowable bearing pressures. This testing should include the verification of acceptable unconfined compressive strengths in cohesive soil and a dynamic cone penetrometer (ASTM STP 399) to verify minimum relative densities and equivalent N-values in granular soil. Care should be taken to maintain the natural moisture content of clayey subgrade soil which may become soft when saturated from rainfall, etc.

Engineered fill is approved on-site or imported soil placed in uniform layers and compacted to a minimum required density. Generally, on-site soil with group symbols of SP or SP-SM are expected to be suitable for engineered fill. Imported engineered fill should meet the requirements for MDOT Class II granular material. MDOT Class II soil or approved on-site soil meeting the requirements of SP or SP-SM should be used as backfill against foundations.

Granular engineered fill and backfill should be compacted to at least 95 percent of the soil's maximum dry density as determined by the Modified Proctor test (ASTM D1557). Vibratory compaction methods are typically found to be most effective in granular soils; however, relatively light equipment should be used adjacent to basement walls to avoid overstressing the walls.

The fill should be placed and compacted in horizontal layers not exceeding 9 inches. Field density tests should be taken on each lift, as the fill is being placed, to verify compliance with compaction specifications. If the earthwork takes place during winter months, fill must not be placed on frozen ground and fill with frozen conglomerations of soil must not be used.

Because the site has been previously developed, there may be buried items not encountered in our borings, such as a septic tank, well, or utility conduit, which may cause settlement problems. The contract documents should reflect that it is necessary to remove or relocate such structures and to fill the excavation with engineered fill.

5.3 Groundwater

Groundwater was not encountered in the soil borings. Because groundwater was not encountered within the investigation depth of 25 ft, the control of groundwater for foundation construction and stormwater management installation is not expected to be of concern on this project.

A perimeter footing drain is recommended in all areas where the proposed stairwell and elevator floor slabs are at or below the adjacent exterior elevation.

5.4 Slopes and Temporary Excavations

The owner and the contractor should make themselves aware of and become familiar with applicable local, state, and federal safety regulations, including current OSHA excavation and trench safety standards. Construction site safety generally is the sole responsibility of the contractor. The contractor shall also be solely responsible for the means, methods, techniques, sequences and operations of construction operations. We are providing the following information solely as a service on this project and, under no circumstances, should our provision of the following information be construed to mean that we are assuming responsibility for construction site safety or the contractor's activities; such responsibility is not implied and should not be inferred.

The contractor should be aware that slope height, slope inclination, and excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulations; e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations. For this site, the overburden soil encountered in our exploratory program is a combination of cohesive soil and granular fill. We anticipate that OSHA will classify these materials as Types A and C, respectively. OSHA recommends a maximum slope inclination of ¾H:1V for Type A and 1½H:1V for Type C soil under ideal conditions. If excavations within the Type A soil are open less than 24 hours and are 12 ft or less in depth then OSHA allows the maximum slope inclination to be ½H:1V under ideal conditions.

Excavations on the order of 7 ft or less will be needed to construct below-grade stormwater management features. Excavations on the order of 12 ft will be needed to construct the proposed stairwells and elevator which are expected to bear at the same elevation as the existing structure's basement level. As an alternative to temporary slopes, vertical excavations can be temporarily shored. The contractor or the specialty subcontractor should be responsible for the design of the temporary shoring in accordance with applicable regulatory requirements.

5.5 Stormwater Management Considerations

The infiltration tests performed onsite were performed in primarily cohesive soil and measured no infiltration over the 3-hour length of the tests. We understand the design is planning to utilize a stormwater management system which utilizes retention features and directs collected stormwater offsite. The proposed stormwater management features, including the proposed rain gardens, underground Stormtech chambers and porous pavement, appear feasible to manage stormwater onsite considering stormwater is appropriately collected and transported to the proposed stormwater management features. Appropriate pavement surface slopes should be provided to facilitate drainage. New pavement grades should be developed where possible to establish a minimum 2 percent slope.

5.6 Porous Pavement

Industry best practices suggest utilizing flat or gently sloping areas for porous pavement construction and maintaining a flat bottom to the porous pavement section in order to maximize the infiltration surface area. The surface slope of the parking lot should be limited to 5% in order to promote surface infiltration through the pavement. A minimum subgrade infiltration rate of 0.5 inches per hour is current industry practice for porous pavement design. The existing cohesive soil is expected to have an infiltration rate less than 0.5 inches per hour, and therefore, we recommend the installation of an underground retention system. The underground retention chambers should be designed to manage both surface runoff and subsurface infiltration from the porous pavement section. The presence of an underground retention system would minimize the required storage capacity of the porous pavement and would allow for a smaller porous pavement section.

The porous pavement section should be designed and constructed in accordance with all local and county specifications. A porous pavement section consists of an open-graded HMA surface layer, overlying a thin stabilizing choker course layer, over a stone recharge bed layer, underlain by a non-woven geotextile fabric, resting on approved subgrade. The geotextile fabric prevents the migration of subgrade fines into the pavement section. The stone recharge bed provides temporary storage of stormwater while the infiltrated groundwater slowly discharges into the underground retention system. The choker course layer stabilizes the surface of the stone recharge bed in preparation for laying the asphalt pavement. The open-graded HMA surface layer provides both structural support and allows for stormwater to infiltrate into the pavement section.

Industry best practices for porous pavement construction should be followed in order to optimize long-term pavement performance. It is essential to protect porous pavement from construction debris and sediment-rich water both during and after construction.

An approximately 1 to 2 ft stone overflow edge should be placed around the perimeter of the porous pavement to catch any surface runoff that may leave the perimeter. The stone recharge bed layer should extend out to the edge of the stone overflow edge. Ravelling of the HMA surface layer is expected to occur in drive lanes, so if catch basins are planned, they should be located in parking spaces.

Porous Pavement Construction:

Prior to porous pavement construction, the project site should be protected from uncontrolled runoff from any nearby construction projects. Particulates in washwater can clog the void spaces of the HMA surface layer and stone recharge bed, reducing their permeability and storage capacity. Temporary storm water control systems should be utilitized to prevent surface runoff from breaching the project site.

Site and subgrade preparation in proposed porous pavement areas should be performed as described in Section 5.2.

Porous pavement construction should involve excavating to 24 inches below the finish HMA elevation. Following subgrade excavation, the exposed subgrade should be inspected and

proof-rolled, and any soft or yielding areas should be undercut to an approved depth and backfilled with engineered fill. A Mirafi 160N or approved equivalent nonwoven geotextile should be placed on top of the proof-rolled subgrade (or Class II soil if over-excavation was performed). Adjacent strips of geotextile should overlap a minimum of 16 inches to ensure complete coverage of the exposed subgrade. The geotextile should also extend a minimum 4 ft beyond the limits of the pavement area in all directions to prevent outside sediment from infiltrating the pavement section.

Following placement of the geotextile, the stone recharge bed should be placed on the geotextile to 6 inches below the finish HMA elevation, taking care not to damage the geotextile during placement. The stone recharge bed should be composed of clean uniformly-graded AASHTO #2 size crushed aggregate (1.5- to 2.5-inch diameter). The stone recharge bed aggregate should be placed in lifts of 8 to 12 inches using lightweight track equipment.

Each lift should be compacted with a single pass of a steel-wheeled static roller weighing between 4 and 12 tons. Pneumatic-tired rollers are not permitted for use, as these machines risk over-compacting the stone recharge bed and subgrade. Six-inch perforated socked underdrains should be installed directly on the nonwoven geotextile and overlaid with the stone recharge bed. The underdrains will serve to transfer subsurface infiltration from the stone recharge bed to the underground retention system. Following placement of the stone recharge bed, the stabilized choker course layer should be placed. The choker course should be composed of AASHTO #57 size aggregate, placed in a single 2-inch lift, and compacted using a steel-wheeled static roller. Once the choker course has been compacted, the open-graded HMA surface layer should be placed.

The open-graded HMA surface layer should be a minimum of 4 inches thick and constructed following a Contractor-approved mix design conforming to all local and county specifications for porous HMA paving considering the desired life span of the pavement and design pavement loading. The mix design should satisfy gradation requirements established by the Asphalt Pavement Association of Michigan (APAM) with a minimum 18 percent air voids. The HMA surface layer should be placed in two lifts, with the first lift not exceeding 3.0 inches. No bond coat should be used between the asphalt pavement lifts. Each lift should be compacted after placement using one to two passes with a steel-wheeled static roller.

Table 5.6.1 – Recommended Porous Pavement Section

Traffic Condition	Standard Duty
Nonwoven Geotextile	Mirafi 160N or approved equivalent
Stone Recharge Bed, inches	18
Stabilizing Choker Course, inches	2
Open-Graded Asphalt Surface Course, inches (minimum)	4

Post-Construction and Maintenance:

Routine maintenance of the porous pavement surface will be critical to monitor and preserve its stormwater infiltration capabilities. The surface lots should be regularly cleaned of trash and debris. Vacuum sweeping should be performed three to four times per year to remove sediment and fines from the porous pavement. Porous pavement areas should be inspected following storm events to verify the surface is draining properly.

Signs should be posted throughout the parking lots indicating the presence of porous pavement. The inclusion of a stone overflow edge serves as a backup infiltration route to the stone recharge bed should the pavement surface temporarily clog.

Any onsite or uphill landscaping should be stabilized to ensure their drainage areas do not direct onto the porous pavement. Areas of bare soil should be seeded to prevent sediment migration.

5.7 Below-Grade Walls

The lateral earth pressure against below-grade walls is a function of the rigidity of the wall, the nature of the backfill material, the slope of the top surface of the retained soil and surcharge loads.

For design of below-grade walls, the following soil parameters may be used:

Table 5.7.1 - Rigid Wall Lateral Earth Pressures

Coefficient of at-rest earth pressure	0.47
Coefficient of passive earth pressure	1.5
Friction angle of backfill	32 degrees
Total unit weight of backfill	120 pcf
Friction angle between smooth concrete and backfill	20 degrees
Friction angle between rough concrete and subgrade	18 degrees

The at-rest pressure is recommended for relatively rigid walls, such as basement walls, due to the lack of minor movement that is necessary to reduce the applied pressure from the at-rest to the active condition. Any possible surcharge loads should be included in the design of all earth-retaining structures.

5.8 Flexible Pavement

The following recommendations are provided should conventional HMA pavement be desired onsite. Subgrade preparation in pavement areas should be as described in the "Site and Subgrade Preparation" section of this report. The pavement sections recommended in this section are based on procedures contained in the 1993 AASHTO Guide for Design of Pavement Structures.

The design recommendations provided are based on the following:

Table 5.8.1 - Flexible Pavement Basis of Design

AASHTO design method	Low volume roads
Level of reliability	75 percent
Analysis period	15 to 25 years
Low traffic level, no. 18-kip ESAL	50,000 to 300,000
Number of rehabilitation periods during analysis period	1

The following flexible pavement sections are recommended:

Table 5.8.2 - Flexible Pavement Section

Traffic Condition	Standard Duty	Heavy Duty
Sand subbase thickness, inches	10	12
Aggregate base thickness, inches	6	8
Bituminous leveling course thickness, inches	2.0	2.5
Bituminous wearing course thickness, inches	1.5	2.0

The following materials are recommended:

Table 5.8.3 - Flexible Pavement Materials

Sand subbase	MDOT Class II granular
Aggregate base	MDOT 21AA
Bituminous leveling	MDOT 13A
Bituminous wearing	MDOT 36A

Sand subbase material should be laboratory tested to confirm MDOT Class II grading requirements. MDOT standard specifications for materials and placement should be observed. The binder grade should be a minimum PG 58-22.

Because of the tendency of a clayey subgrade to soften with an increase in moisture, even though it may be relatively stiff in a dry state, it is recommended that cracks that may develop in the pavement be quickly and properly sealed through a regular maintenance program. Also, the subgrade should be sufficiently sloped to provide drainage within the sand subbase and underdrains should be provided within the subbase, at catch basins and pavement edges, to facilitate drainage. At each catch basin, four underdrains with a watertight connection should extend out radially at least 20 ft. A suitable rubberized asphalt sealant should be placed between all concrete curb/HMA joints immediately after paving.

5.9 MBC Seismic Considerations

The seismic design category can be determined with noted exceptions following Section 1613 of the 2015 Michigan Building Code. The Risk Category under Section 1613.3.5 shall be determined by a licensed structural engineer. Based on the subsurface conditions identified in the soil borings, our experience with the geological conditions in the site vicinity and the procedures outlined in Section 1613 of the 2015 Michigan Building Code and Chapter 20, Table 20.3-1 of ASCE 7, we recommend assigning a Site Class D to this site. A Site Class D designates a stiff soil profile in the upper 100 ft with average SPT uncorrected N-values between 15 and 50 in granular soil and average undrained shear strengths, s_u, between 1,000 and 2,000 psf in cohesive soil. Recommended seismic ground motion values are provided in Table 5.9.1.

Table 5.9.1 - Recommended Seismic Ground Motion Values

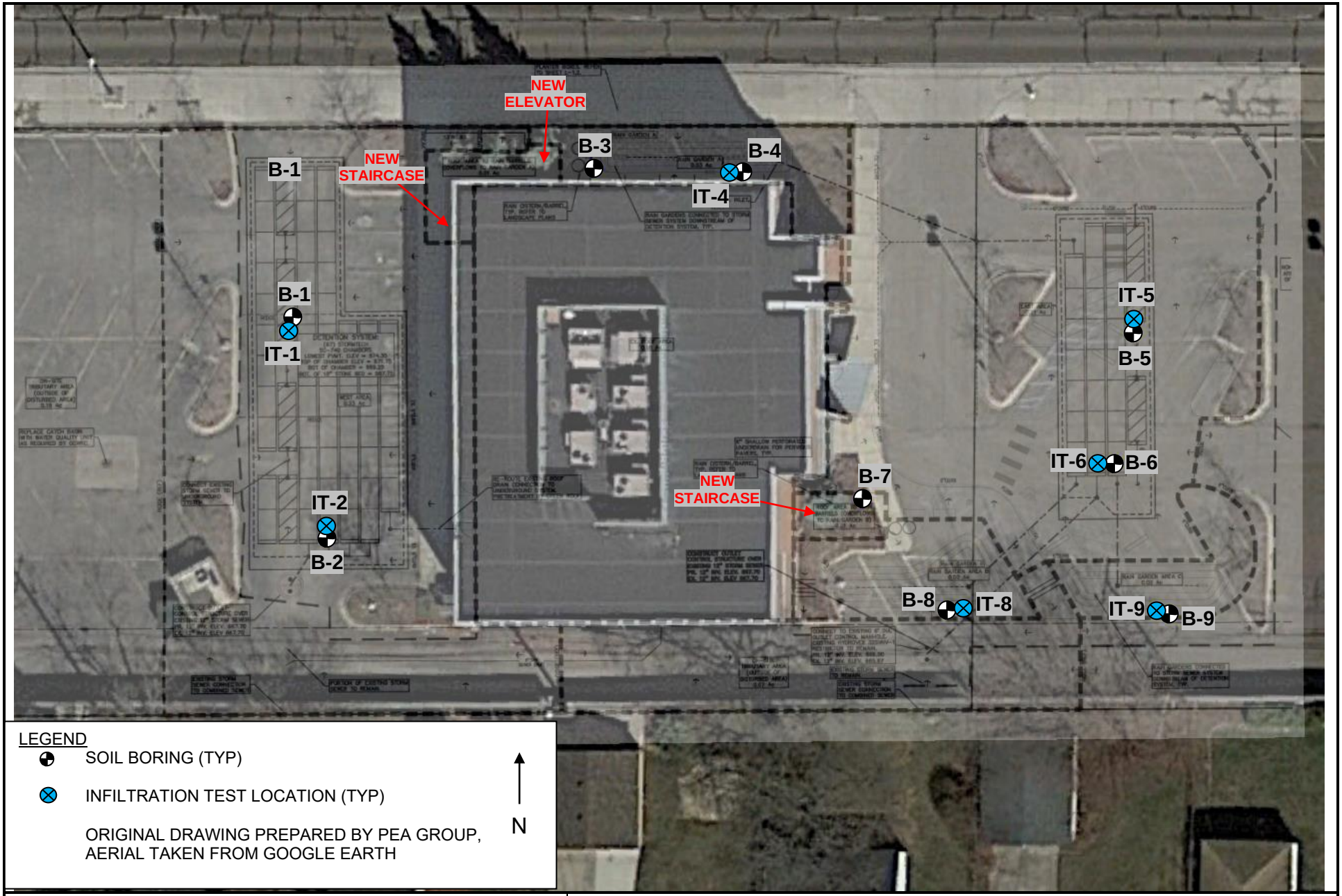
2015 Michigan Building Code Values	Short Period (0.2 sec)	Long Period (1 sec)
Spectral Response Acceleration, Figure 1613.3.1 (1 and 2), %g	S_s = 9	S_l = 4.6
Seismic Site Coefficient, Table 1613.3.3 (1 and 2)	F_a = 1.6	F_v = 2.4
Maximum Considered Spectral Response Acceleration, Equations 16-37 and 16-38	S_{MS} = 0.144g	S_{Ml} = 0.111g
5% Damped Spectral Response Acceleration, Equations 16-39 and 16-40	S_{DS} = 0.096g	S_{Dl} = 0.074g

6.0 CLOSURE

In this report, descriptions of the geotechnical investigation, encountered conditions and recommendations for the design of foundations and pavement have been provided. The limitations of this study are described in the Appendix.

The recommendations presented in this report are based upon a limited number of subsurface samples obtained from various sampling locations. The samples may not fully indicate the nature and extent of the variations that actually exist between sampling locations. For that reason, among others, we strongly recommend that a qualified geotechnical firm be retained to observe earthwork construction. If variations or other latent conditions become

evident during construction, it will be necessary for us to review these conditions and our recommendations as appropriate.



LEGEND

- SOIL BORING (TYP)
- INFILTRATION TEST LOCATION (TYP)

ORIGINAL DRAWING PREPARED BY PEA GROUP,
AERIAL TAKEN FROM GOOGLE EARTH

TITLE: BORING LOCATION PLAN		PROJECT: PROPOSED LUME DEVELOPMENT – 1949 12 MILE ROAD, BERKLEY	
SCALE: NTS	DATE: 03/22/2022	PROJECT NO.: 211705	MTC MATERIALS TESTING CONSULTANTS
FIG. NO.: 1	DR. BY: AD	REV. BY: TM	

APPENDIX

- Limitations
- Test Drilling and Sampling Procedures
- Boring Log Terminology and Classification Outline
- Boring Logs
- Infiltration Test Results

LIMITATIONS

Soil Variations

The recommendations in this report are based upon the data obtained from the soil borings. This report does not reflect variations which may occur between these borings, and which would not become evident until construction. If variations then become evident, it would be necessary for a re-evaluation of recommendations of this report, after performing on-site observations.

Warranties

We have prepared this report in accordance with generally accepted soil and foundation engineering practices. We make no other warranties, either expressed or implied, as to the professional advice provided under the terms of our agreement and included in this report. This report is prepared exclusively for our client and may not be relied upon by other parties without written consent from our office.

Boring Logs

In the process of obtaining and testing samples and preparing this report, we follow reasonable and accepted practice in the field of soil engineering. Field logs maintained during drilling describe field occurrences, sampling locations, and other information. The samples obtained in the field are subjected to additional testing in the laboratory and differences may exist between the field logs and the final logs. The engineer reviews the field logs and laboratory test data, and then prepares the final boring logs. Our recommendations are based on the contents of the final logs.

Review of Design Plans and Specifications

In the event that any changes in the design of the building or the location, however slight, are planned, our recommendations shall not be considered valid unless modified or approved in writing by our office. We recommend that we be provided the opportunity to review the final design and specifications in order to determine whether changes in the original concept may have affected the validity of our recommendations, and whether our recommendations have, in fact, been implemented in the design and specifications.

TEST DRILLING AND SAMPLING PROCEDURES

Test Drilling Methods:

- [X] Hollow stem auger, ASTM D6151
- [ ] Mud rotary, ASTM D5783
- [ ] Casing advancer, ASTM D5872
- [ ] Rock coring, ASTM D2113
- [ ] Core/Hand Auger

Note: Cone penetration test data can be used to interpret subsurface stratigraphy and can provide data on engineering properties of soils. The ASTM procedure does not include a procedure for determining soil classification from CPT testing. Soil classifications shown on CPT logs are based on published procedures and are not based on physical ASTM soil classification tests.

Sampling Methods:

- [X] SPT, ASTM D1586, Auto hammer (140 lb., 30" drop, 2" OD split spoon sampler)
- [ ] Thin-walled tube sampler (Shelby), ASTM D1587

Note: The number of hammer blows required to drive the SPT sampler 12 inches, after seating 6 inches, is termed the soil N-value and provides an indication of the soil's relative density and strength parameters at the sample location. SPT blow counts in 6 inch increments are recorded on the boring logs.

Drill Rig:

- [ ] CME 55 LC (ATV)
- [ ] Acker Renegade (ATV)
- [X] CME 45 Truck
- [ ] Geoprobe 7822 (ATV)
- [ ] Geoprobe Rotary Sonic

Boreholes Backfilled With:

- [X] Excavated soil
- [ ] Cement bentonite grout
- [ ] Piezometer or Monitoring Well (see notes on logs)
- [X] Concrete or asphalt patch where appropriate

Sample Handling and Disposition:

- [X] Samples labeled, placed in jars, returned to MTC Laboratory
- [X] Discard after 60 days

BORING LOG TERMINOLOGY AND ASTM D 2488 CLASSIFICATION OUTLINE

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests.

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 5
Loose	15 to 35 %	5 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

Per ASTM D2487, the following conditions must be met based on laboratory testing to justify the label 'well graded' in a soil description.

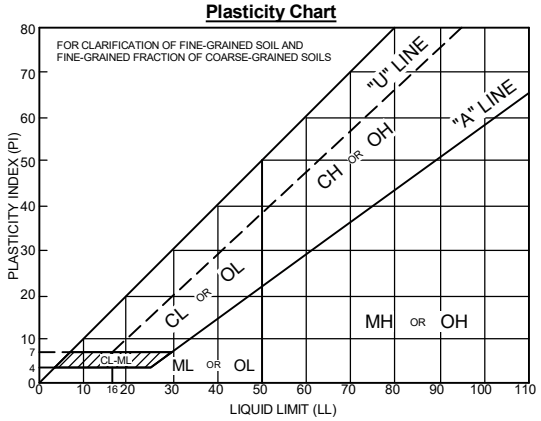
Gravel: $C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3

Sand: $C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3

FINE-GRAINED SOILS (major portions passing on No. 200 sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests.

Descriptive Terms	Unconfined Compressive Strength TSF	SPT Blow Count
Very soft	< 0.25	< 2
Soft	0.25 to 0.5	2 to 4
Medium stiff	0.5 to 1.0	4 to 8
Stiff	1.0 to 2.0	8 to 15
Very stiff	2.0 to 4.0	15 to 30
Hard	> 4.0	> 30

Plasticity Chart



MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LESS THAN 15% FINES	GW		WELL-GRADED GRAVELS WITH OR WITHOUT SAND
			GP		POORLY-GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GM		SILTY GRAVELS WITH OR WITHOUT SAND
			GC		CLAYEY GRAVELS WITH OR WITHOUT SAND
	SANDS MORE THAN HALF COARSE FRACTION IS FINER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 15% FINES	SW		WELL-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP		POORLY-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP-SM		POORLY-GRADED SANDS WITH SILT WITH OR WITHOUT GRAVEL
		SANDS WITH 15% OR MORE FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OL		ORGANIC SILTS OR CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CH		INORGANIC CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OH		ORGANIC SILTS OR CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
HIGHLY ORGANIC SOILS			PT/OL		PEAT AND OTHER HIGHLY ORGANIC SOILS

GENERAL NOTES

1. Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.

2. "Grades with" or "Grades without" may be used to describe soil when characteristics vary within a stratum.

3. Preserved soil samples will be discarded after 60 days unless alternate arrangements have been made.

GROUNDWATER OBSERVATIONS:

During - indicates water level encountered during the boring
End- indicates water level immediately after drilling
Date and Depth - Measurements at indicated date

SAMPLE TYPES AND NUMBERING

S	SPT, split barrel sample, ASTM D1586
U	Shelby tube sample, ASTM D1587
R	Rock core run
*S	Other than 2" split barrel sample
L	SPT with liner, ASTM D1586
A	Auger cuttings
G	Geoprobe liner

MINOR COMPONENT QUANTIFYING TERMS

Less than 5%	TRACE
5 to 10%	FEW
15 to 25%	LITTLE
30 to 40%	SOME
50 to 100%	MOSTLY

GRAIN SIZE

BOULDER	>12"
COBBLE	12" to 3"
COARSE GRAVEL	3" to 0.75"
FINE GRAVEL	0.75" to No. 4
COARSE SAND	No. 4 to No. 10
MEDIUM SAND	No. 10 to No.40
FINE SAND	No. 40 to No. 200

LOG OF BORING

Project No.: 211705
Boring No.: B-1
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367853.0 E=13443979.5 (MI South ift)
Elevation: 674.6 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 10.0 ft.

Date Begin: 03/16/2022 Date End: 03/16/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
673.6	1					4" HMA, 6" Gravel Base 0.8				Fill: 0.0 to 2.5'±
672.6	2	S-1	1.5	5-4-4 N=8	CL	Gray sandy lean CLAY; mostly clayey fines, some coarse to fine sand, few coarse to fine gravel, moist, Fill, with organic silt lenses 2.5	4.25			
671.6	3									
670.6	4	S-2	1.5	2-2-3 N=5		Gray brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	3.25			
669.6	5									
668.6	6									
667.6	7	S-3	1.5	12-16-18 N=34		Grades brown	4.5+			
666.6	8									
665.6	9	S-4	1.5	6-11-17 N=28		Grades gray	4.5+			
664.6	10									
663.6	11									
662.6	12									
661.6	13									
660.6	14	S-5	1.5	6-8-11 N=19	CL		4.5+			
659.6	15									
658.6	16									
657.6	17									
656.6	18									
655.6	19	S-6	1.5	5-9-12 N=21			4.5			
654.6	20									
653.6	21									
652.6	22									
651.6	23									
650.6	24	S-7	1.5	5-8-12 N=20			4.25			
649.6	25					25.0				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-2
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367803.3 E=13443989.3 (MI South ift)
Elevation: 674.5 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 12.0 ft.

Date Begin: 03/16/2022 Date End: 03/16/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
673.5	1					4" HMA, 6" Gravel Base 0.8				Fill: 0.0 to 5.5'±
672.5	2	S-1	1.5	4-3-3 N=6	CL	Brown lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist, Fill 1.8	1.25			
671.5	3				OL	2.5				
670.5	4					Black organic SILT; mostly silty fines, little organic fines, moist, Fill				
669.5	5	S-2	1.5	3-2-2 N=4	CL	Brown lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist, Fill 5.5				
668.5	6									
667.5	7	S-3	1.5	7-11-15 N=26		Brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	4.5+			
666.5	8									
665.5	9									
664.5	10	S-4	1.5	8-10-12 N=22		Grades gray with trace fine gravel	4.5			
663.5	11									
662.5	12									
661.5	13									
660.5	14									
659.5	15	S-5	1.5	7-15-16 N=31			4.5			
658.5	16				CL					
657.5	17									
656.5	18									
655.5	19									
654.5	20	S-6	1.5	5-8-12 N=20			4.5			
653.5	21									
652.5	22									
651.5	23									
650.5	24									
649.5	25	S-7	1.5	7-11-13 N=24		25.0	4.25			
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-3
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367890.2 E=13444049.2 (MI South ift)
Elevation: 675.3 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 13.0 ft.

Date Begin: 03/17/2022 Date End: 03/17/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
674.3	1	S-1	1.5	3-1-10 N=11		8" Clayey Topsoil 0.7				Fill: 0.0 to 5.5'±
673.3	2				CL	Brown sandy lean CLAY; mostly clayey fines, some coarse to fine sand, moist, Fill with concrete debris 2.5	1.0			
672.3	3									
671.3	4	S-2	0.2	2-2-2 N=4	SM	Brown silty SAND; mostly fine sand, little silty fines, moist, Fill 5.5				S-2: Poor recovery; possible coarse gravel / COBBLE
670.3	5									
669.3	6									
668.3	7	S-3	1.5	5-6-7 N=13		Brown lean CLAY; mostly clayey fines, few coarse to fine sand, trace coarse to fine gravel, moist	4.5+			
667.3	8									
666.3	9	S-4	1.5	3-4-9 N=13			4.5+			
665.3	10									
664.3	11									
663.3	12									
662.3	13									
661.3	14	S-5	1.5	8-11-14 N=25	CL	Grades gray	4.5			
660.3	15									
659.3	16									
658.3	17									
657.3	18									
656.3	19	S-6	1.5	5-8-9 N=17		Grades with few coarse to fine gravel	4.5			
655.3	20									
654.3	21									
653.3	22									
652.3	23									
651.3	24	S-7	1.5	11-8-8 N=16		25.0	4.25			
650.3	25									
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-4
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367891.0 E=13444080.9 (MI South ift)
Elevation: 675.5 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 14.0 ft.

Date Begin: 03/17/2022 Date End: 03/17/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
674.5	1	S-1	1.5	2-3-4 N=7	CL	6" Clayey Topsoil (0.5) Gray sandy lean CLAY; mostly clayey fines, some coarse to fine sand, moist, Fill	3.0			Fill: 0.0 to 5.5'±
673.5	2									
672.5	3									
671.5	4	S-2	1.5	2-1-2 N=3						
670.5	5				SC	(4.5) Brown clayey SAND; mostly coarse to fine sand, some clayey fines, moist, Fill (5.5)				
669.5	6									
668.5	7	S-3	1.5	4-7-11 N=18		Brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	4.5+			
667.5	8									
666.5	9	S-4	1.5	4-9-13 N=22			4.5+			
665.5	10									
664.5	11									
663.5	12									
662.5	13									
661.5	14	S-5	1.5	4-8-11 N=19		Grades gray with few coarse to fine gravel	4.5			
660.5	15				CL					
659.5	16									
658.5	17									
657.5	18									
656.5	19	S-6	1.5	9-9-10 N=19		Grades with a silt seam at 19'±	4.25			
655.5	20									
654.5	21									
653.5	22									
652.5	23									
651.5	24	S-7	1.5	5-8-10 N=18		(25.0)	4.0			
650.5	25					End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-5
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367858.7 E=13444172.1 (MI South ift)
Elevation: 673.8 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 13.5 ft.

Date Begin: 03/17/2022 Date End: 03/17/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
672.8	1					4" HMA, 6" Gravel Base 0.8				Fill: 0.0 to 2.5'±
671.8	2	S-1	1.5	8-6-5 N=11	SM	Brown silty SAND; mostly fine sand, little silty fines, moist, Fill 2.5				
670.8	3									
669.8	4				CL	Gray lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist	2.0			
668.8	5	S-2	1.5	2-2-3 N=5		5.5				
667.8	6									
666.8	7	S-3	1.5	3-6-9 N=15		Brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	4.25			
665.8	8									
664.8	9									
663.8	10	S-4	1.5	4-7-10 N=17		Grades with few fine gravel	4.5+			
662.8	11									
661.8	12									
660.8	13									
659.8	14									
658.8	15	S-5	1.5	4-7-10 N=17		Grades gray	4.5+			
657.8	16				CL					
656.8	17									
655.8	18									
654.8	19									
653.8	20	S-6	1.5	4-6-10 N=16		Grades with few coarse to fine gravel	4.5			
652.8	21									
651.8	22									
650.8	23									
649.8	24									
648.8	25	S-7	1.5	5-8-12 N=20		25.0	4.5+			
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-6
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367828.7 E=13444169.1 (MI South ift)
Elevation: 673.4 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 13.0 ft.

Date Begin: 03/17/2022 Date End: 03/17/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
672.4	1					4" HMA, 6" Gravel Base 0.8				Fill: 0.0 to 2.5'±
671.4	2	S-1	1.5	12-8-8 N=16	SP-SM	Brown poorly graded SAND with silt; mostly coarse to fine sand, few fine gravel, few silty fines, moist, Fill 2.5				
670.4	3									
669.4	4				CL	Gray lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist	1.75			
668.4	5	S-2	1.5	3-2-4 N=6						
667.4	6					5.5				
666.4	7	S-3	1.5	3-6-10 N=16		Brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	4.5+			
665.4	8									
664.4	9									
663.4	10	S-4	1.5	4-10-18 N=28			4.5+			
662.4	11					Grades with a silt lens from 9.8' to 11'±				
661.4	12									
660.4	13									
659.4	14									
658.4	15	S-5	1.5	4-7-8 N=15		Grades gray with few coarse to fine gravel	4.5			
657.4	16				CL					
656.4	17									
655.4	18									
654.4	19									
653.4	20	S-6	1.5	10-9-9 N=18			4.5			
652.4	21									
651.4	22									
650.4	23									
649.4	24									
648.4	25	S-7	1.5	10-10-9 N=19		25.0	4.5			
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-7
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367817.7 E=13444111.8 (MI South ift)
Elevation: 675.3 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings.

Date Begin: 03/16/2022 Date End: 03/16/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
674.3	1	S-1	1.5	5-5-4 N=9		6" Sandy Topsoil with Gravel 0.5				Fill: 0.0 to 12'±
673.3	2				SP-SM	Brown poorly graded SAND with silt; mostly coarse to fine sand, few silty fines, few fine gravel, moist, Fill 2.5				
672.3	3									
671.3	4	S-2	1.5	3-3-2 N=5	SP	Brown poorly graded SAND; mostly fine sand, trace silty fines, moist, Fill 5.5				
670.3	5									
669.3	6									
668.3	7	S-3	0.4	5-4-4 N=8	SM	Brown silty SAND; mostly medium to fine sand, little silty fines, moist 8.0				S-3: Poor recovery; possible coarse gravel / COBBLE
667.3	8									
666.3	9	S-4	1.5	2-3-4 N=7	CL	Brown sandy lean CLAY; mostly clayey fines, some coarse to fine sand, moist, Fill with asphalt fragments 12.0	2.0			
665.3	10									
664.3	11									
663.3	12									
662.3	13					Gray lean CLAY; mostly clayey fines, few coarse to fine sand, moist				
661.3	14	S-5	1.5	9-8-9 N=17			4.5+			
660.3	15									
659.3	16									
658.3	17									
657.3	18									
656.3	19	S-6	1.5	5-5-9 N=14	CL		4.5+			
655.3	20									
654.3	21									
653.3	22									
652.3	23									
651.3	24	S-7	1.5	12-13-13 N=26			4.5+			
650.3	25					25.0				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-8
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367793.0 E=13444132.7 (MI South ift)
Elevation: 673.4 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 13.5 ft.

Date Begin: 03/16/2022 Date End: 03/16/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
672.4	1					4" HMA, 4" Gravel Base 0.7				Fill: 0.0 to 2.5'±
671.4	2	S-1	1.5	3-4-5 N=9	CL	Gray lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist, Fill 2.5	4.5			
670.4	3									
669.4	4				CL	Gray lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist				
668.4	5	S-2	1.0	4-2-3 N=5		5.5	2.75			S-2, S-7: Poor recovery; possible coarse gravel / COBBLE
667.4	6									
666.4	7	S-3	1.5	4-6-10 N=16		Brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	4.5+			
665.4	8									
664.4	9									
663.4	10	S-4	1.5	5-10-15 N=25			4.5+			
662.4	11									
661.4	12									
660.4	13									
659.4	14									
658.4	15	S-5	1.5	4-6-11 N=17		Grades gray	4.5			
657.4	16				CL					
656.4	17									
655.4	18									
654.4	19									
653.4	20	S-6	1.5	5-8-9 N=17			4.5			
652.4	21									
651.4	22									
650.4	23									
649.4	24									
648.4	25	S-7	0.8	5-7-10 N=17		25.0	4.0			
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 211705
Boring No.: B-9
Sheet: 1 of 1

Project: Lume Development - 1949 12 Mile Road
Client: Lume Cannabis Co.
Location: Berkley, Michigan
Drill Type: CME 45
Crew Chief: ZM Field Eng.: JS Rev. By: AD
Coordinates: N=367794.6 E=13444183.4 (MI South ift)
Elevation: 672.9 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 12.0 ft.

Date Begin: 03/16/2022 Date End: 03/16/2022

Tooling	Type	Dia.	Groundwater, ft.	
Casing	HSA	3 1/4"	During	None
Sampler	SPT	2"	End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer	Auto			

Depth Drilled: 25.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
671.9	1					3 1/2" HMA, 8" Gravel Base 1.0				Fill: 0.0 to 1.5'±
670.9	2	S-1	0.4	3-2-4 N=6	SP-SC	Brown poorly graded SAND with clay; mostly coarse to fine sand, few clayey fines, moist, Fill, with wood fragments 1.5				
669.9	3									
668.9	4					Gray lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist	3.5			S-1, S-3, S-7: Poor recovery; possible coarse gravel / COBBLE
667.9	5	S-2	1.5	6-4-4 N=8	CL					
666.9	6									
665.9	7	S-3	0.5	16-20-24 N=44			3.5			
664.9	8					8.0				
663.9	9					Brown lean CLAY; mostly clayey fines, few coarse to fine sand, moist	4.5+			
662.9	10	S-4	1.5	8-8-14 N=22						
661.9	11									
660.9	12									
659.9	13									
658.9	14									
657.9	15	S-5	1.5	7-7-9 N=16		Grades gray with trace coarse to fine gravel	4.5+			
656.9	16									
655.9	17				CL					
654.9	18									
653.9	19									
652.9	20	S-6	1.5	6-7-10 N=17			4.5			
651.9	21									
650.9	22									
649.9	23									
648.9	24									
647.9	25	S-7	0.4	9-10-11 N=21		25.0	4.5			
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

mtc-test.com 800.968.8378

Double Ring Infiltration Test

Client:	**Project:**
Lume Cannabis Co. 769 Chicago Road Troy, MI 48083	211705 Lume Development - 1949 12 Mile Rd, Berkley 1949 12 Mile Road

Activity Information

Weather: Partly Cloudy

Low / High Temp, °F: 41 / 63

Activity Date: 03/16/2022

Test No.: IT-1

Tested By: Schaap, Jonathan

DOUBLE RING INFILTRATION TEST - SEMCOG METHOD

Pre-Test Soaking Duration (min): 60

Water Level Drop in Last 30 Minutes of Presoak (in): 0

Inner Diameter (in): 4

Outer Diamter (in): 6

Ground Surface Elev. (ft): 674.6

Test Elev. (ft): 667.7

Groundwater Elev. (ft): NA

Soil Description: Brown lean CLAY (CL)

Test Data

Time (min:sec)	Water Drop (in)	Time Interval (min)	Infiltration Rate (inches per hour)
30:00	0	30	0
60:00	0	30	0
90:00	0	30	0
120:00	0	30	0

Note: This test method provides a measure of infiltration rate, not hydraulic conductivity. Although the units of infiltration rate, and hydraulic conductivity are similar, there is a distinct difference between these two quantities. They cannot be directly related unless the hydraulic boundary conditions, such as hydraulic gradient and the extent of lateral flow of water are known or can be reliably estimated. Test results apply only to the specific test location, depth/elevation, and in-situ moisture content and density at time of test. An appropriate factor of safety should be applied to these results.

Remarks: NA

Testing was performed by qualified personnel in accordance with generally accepted industry practice, Materials Testing Consultant's procedures and the above referenced standards. This report is applicable only to the items listed herein. The tests performed and this report are not intended to be considered as any guarantee or warranty of suitability for service or fitness of use of items tested and it should not be relied on as such. This report has been prepared for the exclusive use of the client and any partial or whole reproduction without consent of the client is prohibited.

mtc-test.com 800.968.8378

Double Ring Infiltration Test

Client:	**Project:**
Lume Cannabis Co. 769 Chicago Road Troy, MI 48083	211705 Lume Development - 1949 12 Mile Rd, Berkley 1949 12 Mile Road

Activity Information

Weather: Partly Cloudy

Low / High Temp, °F: 41 / 63

Activity Date: 03/16/2022

Test No.: IT-2

Tested By: Schaap, Jonathan

DOUBLE RING INFILTRATION TEST - SEMCOG METHOD

Pre-Test Soaking Duration (min): 60

Water Level Drop in Last 30 Minutes of Presoak (in): 0

Inner Diameter (in): 4

Outer Diamter (in): 6

Ground Surface Elev. (ft): 674.4

Test Elev. (ft): 667.7

Groundwater Elev. (ft): NA

Soil Description: Brown lean CLAY (CL)

Test Data

Time (min:sec)	Water Drop (in)	Time Interval (min)	Infiltration Rate (inches per hour)
30:00	0	30	0
60:00	0	30	0
90:00	0	30	0
120:00	0	30	0

Note: This test method provides a measure of infiltration rate, not hydraulic conductivity. Although the units of infiltration rate, and hydraulic conductivity are similar, there is a distinct difference between these two quantities. They cannot be directly related unless the hydraulic boundary conditions, such as hydraulic gradient and the extent of lateral flow of water are known or can be reliably estimated. Test results apply only to the specific test location, depth/elevation, and in-situ moisture content and density at time of test. An appropriate factor of safety should be applied to these results.

Remarks: NA

Testing was performed by qualified personnel in accordance with generally accepted industry practice, Materials Testing Consultant's procedures and the above referenced standards. This report is applicable only to the items listed herein. The tests performed and this report are not intended to be considered as any guarantee or warranty of suitability for service or fitness of use of items tested and it should not be relied on as such. This report has been prepared for the exclusive use of the client and any partial or whole reproduction without consent of the client is prohibited.

mtc-test.com 800.968.8378

Double Ring Infiltration Test

Client:	**Project:**
Lume Cannabis Co. 769 Chicago Road Troy, MI 48083	211705 Lume Development - 1949 12 Mile Rd, Berkley 1949 12 Mile Road

Activity Information

Weather: Partly Cloudy

Low / High Temp, °F: 40 / 71

Activity Date: 03/17/2022

Test No.: IT-4

Tested By: Schaap, Jonathan

DOUBLE RING INFILTRATION TEST - SEMCOG METHOD

Pre-Test Soaking Duration (min): 60

Water Level Drop in Last 30 Minutes of Presoak (in): 0

Inner Diameter (in): 4

Outer Diamter (in): 6

Ground Surface Elev. (ft): 675.2

Test Elev. (ft): 674.0

Groundwater Elev. (ft): NA

Soil Description: Gray sandy lean CLAY (CL)

Test Data

Time (min:sec)	Water Drop (in)	Time Interval (min)	Infiltration Rate (inches per hour)
30:00	0	30	0
60:00	0	30	0
90:00	0	30	0
120:00	0	30	0

Note: This test method provides a measure of infiltration rate, not hydraulic conductivity. Although the units of infiltration rate, and hydraulic conductivity are similar, there is a distinct difference between these two quantities. They cannot be directly related unless the hydraulic boundary conditions, such as hydraulic gradient and the extent of lateral flow of water are known or can be reliably estimated. Test results apply only to the specific test location, depth/elevation, and in-situ moisture content and density at time of test. An appropriate factor of safety should be applied to these results.

Remarks: NA

Testing was performed by qualified personnel in accordance with generally accepted industry practice, Materials Testing Consultant's procedures and the above referenced standards. This report is applicable only to the items listed herein. The tests performed and this report are not intended to be considered as any guarantee or warranty of suitability for service or fitness of use of items tested and it should not be relied on as such. This report has been prepared for the exclusive use of the client and any partial or whole reproduction without consent of the client is prohibited.

mtc-test.com 800.968.8378

Double Ring Infiltration Test

Client:	**Project:**
Lume Cannabis Co. 769 Chicago Road Troy, MI 48083	211705 Lume Development - 1949 12 Mile Rd, Berkley 1949 12 Mile Road

Activity Information

Weather: Partly Cloudy

Low / High Temp, °F: 40 / 71

Activity Date: 03/17/2022

Test No.: IT-5

Tested By: Schaap, Jonathan

DOUBLE RING INFILTRATION TEST - SEMCOG METHOD

Pre-Test Soaking Duration (min): 60

Water Level Drop in Last 30 Minutes of Presoak (in): 0

Inner Diameter (in): 4

Outer Diamter (in): 6

Ground Surface Elev. (ft): 673.7

Test Elev. (ft): 666.7

Groundwater Elev. (ft): NA

Soil Description: Brown lean CLAY (CL)

Test Data

Time (min:sec)	Water Drop (in)	Time Interval (min)	Infiltration Rate (inches per hour)
30:00	0	30	0
60:00	0	30	0
90:00	0	30	0
120:00	0	30	0

Note: This test method provides a measure of infiltration rate, not hydraulic conductivity. Although the units of infiltration rate, and hydraulic conductivity are similar, there is a distinct difference between these two quantities. They cannot be directly related unless the hydraulic boundary conditions, such as hydraulic gradient and the extent of lateral flow of water are known or can be reliably estimated. Test results apply only to the specific test location, depth/elevation, and in-situ moisture content and density at time of test. An appropriate factor of safety should be applied to these results.

Remarks: NA

Testing was performed by qualified personnel in accordance with generally accepted industry practice, Materials Testing Consultant's procedures and the above referenced standards. This report is applicable only to the items listed herein. The tests performed and this report are not intended to be considered as any guarantee or warranty of suitability for service or fitness of use of items tested and it should not be relied on as such. This report has been prepared for the exclusive use of the client and any partial or whole reproduction without consent of the client is prohibited.

mtc-test.com 800.968.8378

Double Ring Infiltration Test

Client:
Lume Cannabis Co.
769 Chicago Road
Troy, MI 48083

Project:
211705
Lume Development - 1949 12 Mile Rd, Berkley
1949 12 Mile Road

Activity Information

Weather: Partly Cloudy
Low / High Temp, °F: 40 / 71
Activity Date: 03/17/2022
Test No.: IT-6
Tested By: Schaap, Jonathan

DOUBLE RING INFILTRATION TEST - SEMCOG METHOD

Pre-Test Soaking Duration (min): 60
Water Level Drop in Last 30 Minutes of Presoak (in): 0
Inner Diameter (in): 4
Outer Diamter (in): 6

Ground Surface Elev. (ft): 673.5
Test Elev. (ft): 666.7
Groundwater Elev. (ft): NA

Soil Description: Brown lean CLAY (CL)

Test Data

Time (min:sec)	Water Drop (in)	Time Interval (min)	Infiltration Rate (inches per hour)
30:00	0	30	0
60:00	0	30	0
90:00	0	30	0
120:00	0	30	0

Note: This test method provides a measure of infiltration rate, not hydraulic conductivity. Although the units of infiltration rate, and hydraulic conductivity are similar, there is a distinct difference between these two quantities. They cannot be directly related unless the hydraulic boundary conditions, such as hydraulic gradient and the extent of lateral flow of water are known or can be reliably estimated. Test results apply only to the specific test location, depth/elevation, and in-situ moisture content and density at time of test. An appropriate factor of safety should be applied to these results.

Remarks: NA

Testing was performed by qualified personnel in accordance with generally accepted industry practice, Materials Testing Consultant's procedures and the above referenced standards. This report is applicable only to the items listed herein. The tests performed and this report are not intended to be considered as any guarantee or warranty of suitability for service or fitness of use of items tested and it should not be relied on as such. This report has been prepared for the exclusive use of the client and any partial or whole reproduction without consent of the client is prohibited.

mtc-test.com 800.968.8378

Double Ring Infiltration Test

Client:	**Project:**
Lume Cannabis Co. 769 Chicago Road Troy, MI 48083	211705 Lume Development - 1949 12 Mile Rd, Berkley 1949 12 Mile Road

Activity Information

Weather: Partly Cloudy

Low / High Temp, °F: 41 / 63

Activity Date: 03/16/2022

Test No.: IT-8

Tested By: Schaap, Jonathan

DOUBLE RING INFILTRATION TEST - SEMCOG METHOD

Pre-Test Soaking Duration (min): 60

Water Level Drop in Last 30 Minutes of Presoak (in): 0

Inner Diameter (in): 4

Outer Diamter (in): 6

Ground Surface Elev. (ft): 673.4

Test Elev. (ft): 672

Groundwater Elev. (ft): NA

Soil Description: Gray lean CLAY with sand (CL)

Test Data

Time (min:sec)	Water Drop (in)	Time Interval (min)	Infiltration Rate (inches per hour)
30:00	0	30	0
60:00	0	30	0
90:00	0	30	0
120:00	0	30	0

Note: This test method provides a measure of infiltration rate, not hydraulic conductivity. Although the units of infiltration rate, and hydraulic conductivity are similar, there is a distinct difference between these two quantities. They cannot be directly related unless the hydraulic boundary conditions, such as hydraulic gradient and the extent of lateral flow of water are known or can be reliably estimated. Test results apply only to the specific test location, depth/elevation, and in-situ moisture content and density at time of test. An appropriate factor of safety should be applied to these results.

Remarks: NA

Testing was performed by qualified personnel in accordance with generally accepted industry practice, Materials Testing Consultant's procedures and the above referenced standards. This report is applicable only to the items listed herein. The tests performed and this report are not intended to be considered as any guarantee or warranty of suitability for service or fitness of use of items tested and it should not be relied on as such. This report has been prepared for the exclusive use of the client and any partial or whole reproduction without consent of the client is prohibited.

mtc-test.com 800.968.8378

Double Ring Infiltration Test

Client:
Lume Cannabis Co.
769 Chicago Road
Troy, MI 48083

Project:
211705
Lume Development - 1949 12 Mile Rd, Berkley
1949 12 Mile Road

Activity Information

Weather: Partly Cloudy
Low / High Temp, °F: 41 / 63
Activity Date: 03/16/2022
Test No.: IT-9
Tested By: Schaap, Jonathan

DOUBLE RING INFILTRATION TEST - SEMCOG METHOD

Pre-Test Soaking Duration (min): 60
Water Level Drop in Last 30 Minutes of Presoak (in): 0
Inner Diameter (in): 4
Outer Diamter (in): 6

Ground Surface Elev. (ft): 673.0
Test Elev. (ft): 671.2
Groundwater Elev. (ft): NA

Soil Description: Gray lean CLAY with sand (CL)

Test Data

Time (min:sec)	Water Drop (in)	Time Interval (min)	Infiltration Rate (inches per hour)
30:00	0	30	0
60:00	0	30	0
90:00	0	30	0
120:00	0	30	0

Note: This test method provides a measure of infiltration rate, not hydraulic conductivity. Although the units of infiltration rate, and hydraulic conductivity are similar, there is a distinct difference between these two quantities. They cannot be directly related unless the hydraulic boundary conditions, such as hydraulic gradient and the extent of lateral flow of water are known or can be reliably estimated. Test results apply only to the specific test location, depth/elevation, and in-situ moisture content and density at time of test. An appropriate factor of safety should be applied to these results.

Remarks: NA

Testing was performed by qualified personnel in accordance with generally accepted industry practice, Materials Testing Consultant's procedures and the above referenced standards. This report is applicable only to the items listed herein. The tests performed and this report are not intended to be considered as any guarantee or warranty of suitability for service or fitness of use of items tested and it should not be relied on as such. This report has been prepared for the exclusive use of the client and any partial or whole reproduction without consent of the client is prohibited.

DECLARATION OF EASEMENTS

THIS DECLARATION OF EASEMENTS ("**Declaration**") is made this ___ day of _____, 2022 (the "**Effective Date**"), by MONARCH ACQUISITIONS, LLC, a Michigan limited liability company, whose mailing address is _____, Michigan _____ ("**Declarant**").

Background

Declarant is the owner of (i) the parcel of land described on Exhibit "A" ("**Burdened Parcel**") and the parcel of land described on Exhibit "B" (the "**Benefitted Parcel**"). The Burdened Parcel and the Benefitted Parcel are collectively referred to as the "**Parcels**".

Declarant is in the process of developing the Parcels (the "**Project**") in accordance with and subject to the terms of certain approvals and permits that have been granted by the City of Berkley (the "**City**"). In connection with development of the Project, and as contemplated by the approvals, Declarant wishes to establish parking and a storm water drainage system, for use and benefit of the Burdened Parcel and the Benefitted Parcel.

Declarant hereby declares, grants and establishes the parking and storm water drainage easements in accordance with, and subject to, the terms and conditions set forth herein.

Easements

NOW, THEREFORE, for and in consideration of the sum of $10.00, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Declarant hereby declares as follows:

1. **DEFINITIONS**. In addition to other terms defined herein, when used in this Declaration, the capitalized term:

a. "**Owner**" means the record owner from time to time (whether one or more persons) of title to a Parcel, or portion thereof, but excluding those holding title solely as security for the performance of an obligation.

b. "**Permitted Users**" means, as to a Parcel, the Owner and the tenants and occupants of that Parcel, and the respective employees, agents, contractors, customers, guests, invitees and licensees of (a) the Owner of a Parcel, and (b) the tenants and occupants of that Parcel.

2. **STORM WATER DRAINAGE EASEMENT AND AGREEMENT FOR STORM WATER SYSTEM MAINTENANCE**. Declarant hereby declares, establishes and grants to all current and future Owners of the Benefitted Parcel and its respective Permitted Users, a permanent and nonexclusive easement for establishment of, and use of, a storm water drainage system that shall be located on, over, across and upon the Burdened Parcel (collectively the "**Storm Water Drainage Easement**"). For clarity, the Burdened Parcel shall also be connected to and shall utilize the storm water drainage system. The storm water drainage system shall be established, installed and constructed on the Parcels by the Declarant, at its sole cost and

expense, in accordance with and subject to the terms and conditions of the approvals, including the site plan approval, granted by the City. The Owner of the Benefitted Parcel shall be solely and exclusively responsible for repairs, maintenance and replacement of the storm water drainage system, which shall include without limitation, maintaining the storm water system in strict compliance with the Agreement for Storm Water System Maintenance which is attached hereto as Exhibit "C". The Owner of the Burdened Parcel shall not change or modify the storm water drainage system without the approval of the City and the Owner of the Benefitted Parcel.

3. **PARKING EASEMENT**. Declarant hereby declares, establishes and grants to all current and future Owners of the Benefitted Parcel and its respective Permitted Users, a permanent and nonexclusive easement for parking, pedestrian and vehicular passage over, across and upon the Burdened Parcel (collectively the "**Parking Easement**"). The parking areas, drives, walks and connections shall be established, installed and constructed on the Burdened Parcel by the Declarant in accordance with and subject to the terms and conditions of the approvals, including the site plan approval, granted by the City. The Owner of the Benefitted Parcel shall be responsible for snow and ice removal, and for repairs, maintenance and replacement of improvements established on the Burdened Parcel. The Owner of the Burdened Parcel shall not materially change or modify the improvements established on the Burdened Parcel without the approval of the City and the Owner of the Benefitted Parcel and shall not obstruct or unreasonably prevent use of the easement by the Permitted Users.

4. **INDEMNITY**. Each Owner ("**Indemnitor Owner**") shall protect, defend, indemnify and hold the other Owners (each an "**Indemnitee Owner**" and collectively the "**Indemnitee Owners**") harmless from and against all claims, demands, injuries, liabilities, losses, damages, costs and expenses (including reasonable attorneys' fees and costs) arising from or relating to (A) injuries to persons or property arising out of or in connection with this Declaration to the extent caused by the negligence or willful misconduct of the Indemnitor Owner or its employees, agents, contractors or Permitted Users, and/or (B) such Indemnitor Owner's failure to perform its obligations under this Declaration.

5. **INSURANCE**. Each Owner shall procure and at all times maintain general and/or comprehensive public liability and property damage insurance against claims for personal injury, death or property damage occurring upon such Owner's Parcel as may be required by Declarant, with single limit coverage of not less than an aggregate of Two Million Dollars ($2,000,000) subject to any increases required by Declarant from time to time. The Owners shall deliver a certificate evidencing the coverage required hereunder to Declarant upon the request of Declarant from time to time.

6. **RUN WITH THE LAND**. The rights, easements and covenants established herein for the benefit of each Parcel shall be appurtenant to title to each Parcel, shall be burdened upon and shall run with the title to each Parcel and shall be perpetual and shall continue in full force and effect forever, and shall be binding upon and inure to the benefit of Declarant, its grantees, successors and assigns.

7. **SUCCESSORS AND ASSIGNS**. The agreements contained herein and the rights granted hereby shall bind and inure to the benefit of the parties hereto and their respective successors, assigns, heirs, and personal representatives.

8. **COMPLIANCE WITH LAW**. Each Owner, in exercising their privileges granted by this Declaration, shall comply with all applicable federal, state, county and municipal laws, ordinances and regulations.

9. **NOTICE**. All notices given or made pursuant to this Declaration shall be made in writing and shall be deemed given upon: (i) upon receipt if given by personal delivery; (ii) upon receipt, if given by United States certified mail, return receipt requested, with postage prepaid; or (iii) one (1) day after the sender's deposit of the notice with a recognized overnight carrier (such as Federal Express or United Parcel Service), charges prepaid. Notices shall be addressed to an Owner at its last known mailing address.

10. **GOVERNING LAW**. This Declaration shall be governed by, interpreted in accordance with, and enforceable under, the laws of the State of Michigan.

11. **ENTIRE AGREEMENT**. This document constitutes the entire agreement between any Owner, regarding the subject matter hereof and it shall not be amended, altered or changed except by a written agreement signed by all persons who are Owners at the time of such.

12. **NON-MERGER**. So long as Declarant, or any other Owner, is the Owner of the Parcel or any part thereof, now or in the future, this Declaration shall not be subject to the doctrine of merger.

13. **MISCELLANEOUS**. The headings of the paragraphs contained herein are inserted only as a matter of convenience and for reference and in no way define, limit or describe the scope or intent of this document nor in any way affect the terms and provisions hereof, and shall not be used to interpret the agreements contained herein or the rights granted hereby. Time is of the essence in this Declaration. All pronouns and any variation thereof shall be deemed to include and refer to the masculine, feminine, neuter, singular or plural form of the word used, as the identity of the party or parties, or their personal representatives, successors, or assigns may require. If any provision of this Declaration, or the application thereof to any person or circumstances, shall for any reason and to any extent be invalid or unenforceable, the remainder of this Declaration and the application of such provision to other persons or circumstances shall not be affected thereby but rather shall be enforced to the greatest extent permitted by law.

<Signature Page Follows>

IN WITNESS WHEREOF, the parties have executed this Declaration the day and year first above written.

DECLARANT:

Monarch Acquisitions, LLC,
a Michigan limited liability company

By:_____
Name: _____
Title: _____

STATE OF MICHIGAN)
)
COUNTY OF OAKLAND)

Acknowledged before me this _____ day of _____, 2022, by _____, as _____ of Monarch Acquisitions LLC, a Michigan limited liability company, on behalf of the limited liability company.

My commission expires: _____

_____
Notary Public, State of Michigan
[seal] Notary ID #: _____
Print Notary Name: _____

THIS INSTRUMENT PREPARED BY
AND WHEN RECORDED RETURN TO:

J. Patrick Lennon
Honigman LLP
650 Trade Centre Way
Suite 200
Kalamazoo, Michigan 49002

EXHIBIT "A"

BURDENED PARCEL

Land located in the City of Berkley, County of Oakland and State of Michigan being more particularly described as follows:

Lot numbers 44 through 55, inclusive, Stephenson-Barbers Roseland Subdivision as recorded in Liber 31 of Plats, Page 5 Oakland County records. Also, all of the east-west 20 foot wide public alley abutting the south side of said lots.

Parcel No. 25-17-126-002

EXHIBIT "B"

BENEFITTED PARCEL

Land located in the City of Berkley, County of Oakland and State of Michigan being more particularly described as follows:

Lot numbers 32 through 43, inclusive, Stephenson-Barbers Roseland Subdivision as recorded in Liber 31 of Plats, Page 5 Oakland County records. Also, all of the east-west 20 foot wide public alley abutting the south side of said lots.

Parcel No. 25-17-126-003

EXHIBIT "C"

AGREEMENT OF STORM WATER SYSTEM MAINTENANCE

AGREEMENT FOR
STORM WATER SYSTEM MAINTENANCE

This Agreement is made on _____, by _____, ("Developer"), a (corporation, limited liability company, partnership) whose address is _____; and the CITY OF BERKLEY (the "City"), whose address is 3888 Coolidge Hwy, Berkley, MI 48879.

WHEREAS, Developer owns and proposes to develop the Property described in attached **Exhibit A**; and

WHEREAS, the proposed development of the Property will alter the natural flow of surface and storm water drainage; and

WHEREAS, Developer has proposed, and the City has approved, a storm water management system (the "System") as described and depicted in the plan attached as **Exhibit B**; and

WHEREAS, the parties will benefit from the proper operation, use, and maintenance of the System and enter into this agreement to provide for the same.

THEREFORE, the parties agree:

1. **Use of the System:**

Components of the System, including any and all water conveyance, detention and water quality treatment facilities and devices, pumping system, storm sewer pipe, catch basins, manholes, end-sections, ditches, swales, open water courses and rip-rap, shall be used solely for the purpose of conveying, detaining and treating storm and surface drainage on the property until such time as: (i) The City determines and notifies Developer or Developer's successors, grantees or assigns, in writing, that it is no longer necessary to convey, detain or treat the storm and surface drainage; and (ii) An adequate alternative for conveying, detaining and treating storm and surface drainage has been provided which is acceptable to the City and which includes the granting of any easements to the City or third parties as may be required or necessary for the alternative drainage system.

2. **Maintenance:**

A. Developer shall be responsible for the proper maintenance, repair and replacement of the System and all parts thereof as detailed in the Maintenance Plan attached as **Exhibit C.**

B. Proper maintenance of the System shall include, but is not limited to: (i) Removing accumulated sediment, trash and debris from the detention basin and at inlet pipes; (ii) Managing deleterious vegetative growth; (iii) Maintaining storm sewer, structures, end-sections and safety features; (iv) Controlling the effects of erosion; (v) Inspection and cleaning of the water quality treatment device; (vi) Inspection of inlet and outlet pipes for structural integrity; (vii) Inspection and replacement of riprap at inlet pipes; (viii) Inspection and cleaning of the storm sewer and catch basins upstream from the detention basin; (ix) Inspection and replacement of stone around the outlet pipe; and (vi) Any other maintenance that is reasonable and necessary to facilitate and continue the proper operation and use of the System.

3. **Action by City:**

If, at any time, Developer or Developer's successors, grantees or assigns neglect or fail to properly maintain the System or any part thereof, the City may notify Developer or Developer's successors, grantees or assigns. The notice shall be in writing and shall list and describe maintenance deficiencies and demand that they be corrected within thirty (30) days.

The notice shall further specify a date and place for a hearing to be held at least fourteen (14) days after the date of the notice before the City Council, or such other board or official as the City Council may designate. At the hearing, the City Council (or other designated board or official) may affirm or modify the list and description of maintenance deficiencies and, for good cause shown, may extend the time for the deficiencies to be corrected.

Thereafter, if the maintenance deficiencies are not corrected within the time allowed, the City may undertake the necessary corrective actions, and the City may maintain the System for up to one (1) year. Such maintenance of the System by the City shall not be construed to be a trespass or a taking of the Property, nor shall the City's actions vest in the public any right to enter or use the Property. Thereafter, if Developer or Developer's successors, grantees or assigns do not properly maintain the System, the City may, after providing similar written notice, schedule and hold another hearing to determine whether the City should maintain the System for another year, and subject to a similar notice, hearing and determination, in subsequent years.

In the event the City determines an emergency or public nuisance condition caused by or relating to the System threatens the public health, safety or general welfare, the City shall have the right to immediately and without notice enter the Property and undertake appropriate corrective action.

4. **Charges:**

The City shall charge to the current owner of the Property the cost of maintenance or other corrective action undertaken by the City under this agreement, plus a ten percent (10%) administrative fee. If not timely paid, the City may place the charges on the City's tax roll, which charges shall be a lien on the Property and shall be collectable and enforceable in the same manner general property taxes are collected and enforced.

5. **Notice:**

Any notices required under this agreement shall be sent by certified mail to the address for each party set forth below, or to such other addresses as such party may notify the other parties in writing:

To _____: _____

_____

To the City:

City Manager
City of Berkley
3888 Coolidge Hwy
Berkley, MI 48879

6. **Successors and Assigns:**

This agreement shall bind and inure to the benefit of the parties and their respective successors, grantees and assigns. The benefits, burdens, rights, obligations and responsibilities hereunder shall run with the land and shall bind all current and future owners of the Property and any divisions thereof.

7. **Recording of Agreement:**

This agreement shall be recorded at the Oakland County Register of Deeds.

By: _____

Its: _____

CITY OF BERKLEY

By: _____
Matthew Baumgarten, City Manager

STATE OF MICHIGAN
:ss
COUNTY OF _____

This agreement was acknowledged before me on _____, by _____
_____ of _____ on behalf of the _____.

_____
_____ Notary public
_____ County, Michigan
My commission expires: _____

STATE OF MICHIGAN
:ss
COUNTY OF OAKLAND

This agreement was acknowledged before me on _____, by Matthew Baumgarten, City Manager, of the City of Berkley, on behalf of the City.

_____
_____ Notary public
_____ County, Michigan
My commission expires: _____

Drafted by:
John D. Staran, Esq.
2055 Orchard Lake Road
Sylvan Lake, MI 48320

When Recorded Return to:
City Clerk
City of Berkley
3888 Coolidge Hwy.
Berkley, MI 48879

THE CITY OF BERKLEY
Building Department
3338 Coolidge, Berkley, Michigan 48072
(248) 658-3320

NOTICE OF PUBLIC MEETING
BERKLEY PLANNING COMMISSION

NOTICE IS HEREBY GIVEN, in accordance with Section 138-528 and Section 30-806 of the Berkley City Code, that there will be a meeting of the Berkley Planning Commission to be held at the City of Berkley in the Council Chambers, 3338 Coolidge Hwy, Berkley Michigan, on **Tuesday, May 24, 2022** at 7:10 pm, or as near thereto as the matter may be reached.

APPLICATION PSP-03-22

Christopher Enright, on behalf of David Farbman, 1949 Twelve Mile Rd., Parcels #25-17-126-002 and #25-17-126-003, is requesting site plan approval for the conversion of 6,764 square feet of the existing building to a retail marihuana dispensary and office use for the remaining 17,677 square feet.

Complete application information is available for review at www.berkleymich.org/urbanplanning.

Comments regarding the request may be made in person on the night of the meeting or may be made in writing. All written comments must be submitted to the Building Department or email to comdirector@berkleymich.net before 5:00p.m on the date of the Planning Commission meeting.

You can watch the meeting: https://www.berkleymich.org/livestream/index.php

MEGAN MASSON-MINOCK
INTERIM COMMUNITY DEVELOPMENT DIRECTOR

THE CITY OF BERKLEY
Building Department
3338 Coolidge, Berkley, Michigan 48072
(248) 658-3320

NOTICE OF PUBLIC MEETING
BERKLEY PLANNING COMMISSION

NOTICE IS HEREBY GIVEN, in accordance with Section 138-528 and Section 30-806 of the Berkley City Code, that there will be a meeting of the Berkley Planning Commission to be held at the City of Berkley in the Council Chambers, 3338 Coolidge Hwy, Berkley Michigan, on **Tuesday, May 24, 2022** at 7:10 pm, or as near thereto as the matter may be reached.

APPLICATION PSP-03-22

Christopher Enright, on behalf of David Farbman, 1949 Twelve Mile Rd., Parcels #25-17-126-002 and #25-17-126-003, is requesting site plan approval for the conversion of 6,764 square feet of the existing building to a retail marihuana dispensary and office use for the remaining 17,677 square feet.

Complete application information is available for review at www.berkleymich.org/urbanplanning.

Comments regarding the request may be made in person on the night of the meeting or may be made in writing. All written comments must be submitted to the Building Department or email to comdirector@berkleymich.net before 5:00p.m on the date of the Planning Commission meeting.

You can watch the meeting: https://www.berkleymich.org/livestream/index.php

MEGAN MASSON-MINOCK
INTERIM COMMUNITY DEVELOPMENT DIRECTOR

Publish Once:
Royal Oak Tribune
Friday, May 6, 2022

DOROTHY ROY
ROBERT ROY
1950 ROSEMONT RD
BERKLEY MI 48072 3305

LARRY FONS
TERESA FONS
1908 ROSEMONT RD
BERKLEY MI 48072 3305

KURT SCHLAU
MARYBETH SCHLAU
1907 ROSEMONT RD
BERKLEY MI 48072 3307

JASON NABER
2008 ROSEMONT RD
BERKLEY MI 48072 3306

MARK ROEDER
REBECCA KENNEDY
1992 ROSEMONT RD
BERKLEY MI 48072 3305

CHRISTINE GAIL APEL
1864 ROSEMONT RD
BERKLEY MI 48072 1846

ANDREW LOCKMAN
2023 ROSEMONT RD
BERKLEY MI 48072 3308

WILLIAM BOTENS
ROCHELLE BOTENS
2088 ROSEMONT RD
BERKLEY MI 48072 3306

JAMES SKAGGS
1978 ROSEMONT RD
BERKLEY MI 48072 3305

BRENDA DUNLOP
2057 ROSEMONT RD
BERKLEY MI 48072 3308

JOSHUA STAPP
2040 ROSEMONT RD
BERKLEY MI 48072 3306

Occupant
1964 ROSEMONT RD
BERKLEY MI 48072 3305

PAUL LAURENCELLE
1963 ROSEMONT RD
BERKLEY MI 48072 3307

GILBERT TECKER
1877 ROSEMONT RD
BERKLEY MI 48072 1845

1964 ROSEMONT LLC
3532 HALLA LN
BLOOMFIELD HILLS MI 48301 2127

JO ANNE RODDY
2071 ROSEMONT RD
BERKLEY MI 48072 3308

JORDAN D PATERRA
2007 ROSEMONT RD
BERKLEY MI 48072 3308

TIMOTHY SWEENEY-DUCHENE
CHELSEA SWEENEY-DUCHENE
1936 ROSEMONT RD
BERKLEY MI 48072 3305

Occupant
29001 WOODWARD AVE
BERKLEY MI 48072 0917

Occupant
2087 ROSEMONT RD
BERKLEY MI 48072 3308

GAMAL ELBIALY
1949 ROSEMONT RD
BERKLEY MI 48072 3307

MIDWEST MEMORIAL GROUP LLC
31300 SOUTHFIELD RD STE 1
BEVERLY HILLS MI 48025 5456

JOHN S SPARLING JOINT TRUST
MARY LYNN SPARLING JOINT TRUST
2111 ROSEMONT RD
BERKLEY MI 48072 1847

MICHAEL A COLLING
1889 ROSEMONT RD
BERKLEY MI 48072 1845

Occupant
1949 12 MILE RD
BERKLEY MI 48072 1853

JASON J FULKS
AKEMI FULKS
1921 ROSEMONT RD
BERKLEY MI 48072 3307

LAWRENCE SERMO
1890 ROSEMONT RD
BERKLEY MI 48072 1846

MONARCH ACQUISITION LLC
28400 NORTHWESTERN HWY FL 4
SOUTHFIELD MI 48034 8349

MATTHEW D DEFEVER
SHERRI A DEFEVER
1991 ROSEMONT RD
BERKLEY MI 48072 3307

RICHARD IORIO
TAMARA ROBEY
2024 ROSEMONT RD
BERKLEY MI 48072 3306

CHARLES DALY IV
2072 ROSEMONT RD
BERKLEY MI 48072 3306

MONARCH ACQUISITION LLC
28400 NORTHWESTERN HWY FL 4
SOUTHFIELD MI 48034 8349

DIANE WINTERS
1935 ROSEMONT RD
BERKLEY MI 48072 3307

DOTTIE PAYNE
1922 ROSEMONT RD
BERKLEY MI 48072 3305

DAN R UHLEY
2039 ROSEMONT RD
BERKLEY MI 48072 3308

ELIZABETH A MORRISON
2058 ROSEMONT RD
BERKLEY MI 48072 3306

ZACHARY TYLER
GLYNIS TYLER
1977 ROSEMONT RD
BERKLEY MI 48072 3307

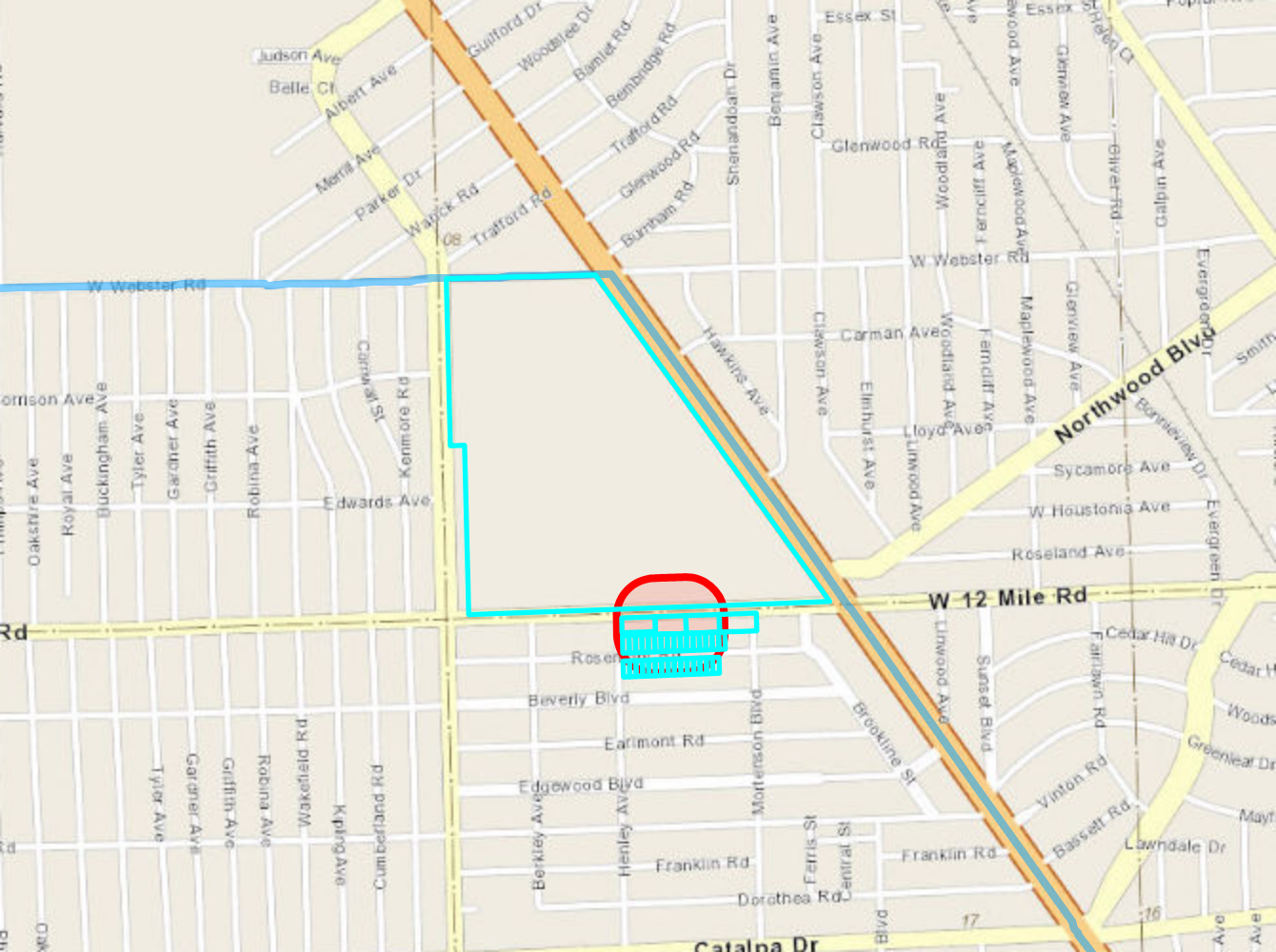
Occupant
1695 12 MILE RD
BERKLEY MI 48072 2182

814 BERKLEY LLC
3221 W BIG BEAVER RD STE 111
TROY MI 48084 2810

WILLIAM SCARMEAS
JACQUELINE SCARMEAS
1878 ROSEMONT RD
BERKLEY MI 48072 1846

AMERICAN LEGION
2079 12 MILE RD
BERKLEY MI 48072 1854

Occupant
1949 12 MILE RD
BERKLEY MI 48072 1853



Judson Ave
Belle Ct
Albert Ave
Merrill Ave
Parker Dr
Wapick Rd
Trafford Rd
Guilford Dr
Woodslee Dr
Bamlet Rd
Bembridge Rd
Trafford Rd
Glenwood Rd
Burnham Rd
Shenandoah Dr
Benjamin Ave
Clawson Ave
Essex St
Glenwood Rd
Woodland Ave
Ferncliff Ave
Maplewood Ave
Glenview Ave
Oliver Rd
Galpin Ave
W Webster Rd
W Webster Rd
Carman Ave
Hawkins Ave
Clawson Ave
Elmhurst Ave
Woodland Ave
Ferncliff Ave
Maplewood Ave
Glenview Ave
Northwood Blvd
Lloyd Ave
Linwood Ave
Sycamore Ave
W Houstonia Ave
Roseland Ave
Bonnieview Dr
Evergreen Dr
Carnwall St
Kenmore Rd
Edwards Ave
Oakshire Ave
Royal Ave
Buckingham Ave
Tyler Ave
Gardner Ave
Griffith Ave
Robina Ave
W 12 Mile Rd
Rd
Beverly Blvd
Earlmont Rd
Edgewood Blvd
Berkley Ave
Henley Ave
Mortenson Blvd
Brookline St
Linwood Ave
Sunset Blvd
Fairlawn Rd
Cedar Hill Dr
Greenleaf Dr
Vinton Rd
Bassett Rd
Lawndale Dr
Franklin Rd
Franklin Rd
Ferris St
Central St
Dorothea Rd
Tyler Ave
Gardner Ave
Griffith Ave
Robina Ave
Wakefield Rd
Kipling Ave
Cumberland Rd
Catalpa Dr
17
16

DocuSign Envelope ID: 18559CE5-1906-4AF5-9270-BD4BBFAC4138

CITY OF BERKLEY
COMMUNITY DEVELOPMENT
3338 COOLIDGE HWY, BERKLEY, MICHIGAN 48072

APPLICATION FOR SITE PLAN REVIEW

NOTICE TO APPLICANT: Applications for Site Plan review by the Planning Commission must be submitted to the City of Berkley Building Department in ***substantially complete form*** at least 30 days prior to the Planning Commission's meeting at which the application will be considered. The application must be accompanied by the data specified in the Zoning Ordinance, including fully dimensioned site plans, plus the required review fees.

The Planning Commission meets the fourth Tuesday of the month at 7:00pm in the Council Chambers at the City of Berkley City Hall, 3338 Coolidge Hwy, Berkley, MI 48072.

TO BE COMPLETED BY APPLICANT:

I (We), the undersigned, do hereby respectfully request Site Plan Review and provide the following information to assist in the review:

Project Name: Quality Roots

Applicant: Michael Klar

Mailing Address: [redacted]

Telephone: [redacted]

Email: [redacted]

Property Owner(s), if different from Applicant: L & L Developments

Mailing Address: [redacted]

Telephone: [redacted]

Email: [redacted]

Applicant's Legal Interest in Property: Future Tenant

LOCATION OF PROPERTY:

Street Address: 3916 Eleven Mile Road, Berkley, MI 48237

Nearest Cross Streets: Cummings

Sidwell Number(s): 25-18-353-030 and 25-18-353-027

PLEASE COMPLETE THE FOLLOWING CHART:

Type of Development	Number of Units	Gross Floor Area	Number of Parking Spaces On Site	Number of Employees on Largest Shift
Attached Residential				
Office		686 G, 481 U		1
Commercial				
Industrial				
Other Retail		5724 G, 2837 U	19	11

PROFESSIONALS WHO PREPARED PLANS:

A. Name: Stucky Vitale Architects

Mailing Address: [redacted]

Telephone: [redacted]

Email: [redacted]

Design Responsibility (engineer, surveyor, architect, etc.): Architect

B. Name: Nowak and Fraus

Mailing Address: [redacted]

Telephone: [redacted]

Email: [redacted]

Design Responsibility: Civil Engineer

SUBMIT THE FOLLOWING:

1. Fifteen (15) individually folded copies of the site plans, measuring 24" x 36", sealed by a registered architect, engineer, or surveyor.
2. A pdf file of the site plans, submitted to the Community Development Director.
3. Proof of property ownership (title insurance policy or registered deed with County stamp).
4. Review comments or approval received from County, State or Federal agencies that have jurisdiction over the project, including, but not limited to:

- ☐ Road Commission for Oakland County
- ☐ MI Dept. of Transportation
- ☐ Oakland County Health Division
- ☐ MI Dept. of Environment, Great Lakes & Energy

DocuSign Envelope ID: 18559CE5-1906-4AF5-9270-BD4BBFAC4138

PLEASE NOTE: The applicant, or a designated representative, **MUST BE PRESENT** at all scheduled meetings, or the Site Plan may be tabled due to lack of representation.

Failure to provide true and accurate information on this application shall provide sufficient grounds to deny approval of a Site Plan Application or to revoke any permits granted subsequent to the site plan approval.

We encourage applicants to make a presentation of the proposed project to the Planning Commission and City Council, as appropriate. To assist in this effort, we have available for your use at meetings a projector, laptop computer and screen. This will allow the Planning Commission and audience to be fully engaged so they can give your project the attention it deserves. Planning Commission meetings are recorded and televised.

PROPERTY OWNER'S APPROVAL: ***(Initial each line)***

DS
UD I hereby authorize the employees and representatives of the City of Berkley to enter upon and conduct an inspection and investigation of the above-referenced property.

APPLICANT'S ENDORSEMENT: ***(Initial each line)***

MV All information contained therein is true and accurate to the best of my knowledge.

MV I acknowledge that the Planning Commission will not review my application unless all information in this application and the Zoning Ordinance has been submitted. I further acknowledge that the City and its employees shall not be held liable for any claims that may arise as a result of acceptance, processing or approval of this site plan application.

MV I hereby acknowledge that if engineering or other reviews are required, additional fees must be submitted. Should the review fees be greater than the required minimum, sufficient additional charges will be imposed to satisfy the additional review fees. All fee obligations must be satisfied prior to permit approval.

If an application is withdrawn more than three (3) weeks prior to the meeting date, 90% of the fee will be refunded. If the application is withdrawn less than three (3) weeks prior to the meeting, no refund will be given.

Michael Klar — 03.25.2022

Signature of Applicant — Date

Michael Klar

Applicant Name (Print)

Signature of Applicant — Date

Applicant Name (Print)

DocuSigned by: Linus Drogs — 3/25/2022 | 07:48:49 PDT

Signature of Property Owner Authorizing this Application — Date

Linus Drogs

Property Owner Name (Print)

OFFICE USE ONLY

Received 3/28/22 Receipt # 0009704 Meeting Date _____ Case # PSP-09-22

Fees: Site Plan Review $600 — Façade Change: $200 — Revision: $300

Extension $200 — Engineering: Multi-family $1,500 + $30/unit; Commercial $1,000

Escrow (New construction) $1,000

CITY OF BERKLEY
COMMUNITY DEVELOPMENT
3338 COOLIDGE HWY, BERKLEY, MICHIGAN 48072

MEMORANDUM

To: Planning Commission

From: Megan A. Masson-Minock, Interim Community Development Director

Subject: **PSP-09-22: 3916 Eleven Mile Road – Quality Roots Provisioning Center**
Site Plan Approval
Plan Date: April 19, 2022

Date: May 19, 2022

Attached are the following reviews for the site plan submitted:

Planning Review from Carlisle Wortman Associates (CWA) dated May 3, 2022

In their review, CWA flagged inconsistencies between the site rendering and the landscape plan as to plantings proposed in the right-of-way of Eleven Mile Road. They also asked for clarification on trash storage and removal. After clarification of what is proposed, CWA noted that the Planning Commission should review the landscaping and make a finding as to whether the plans presented meet the standard in Section 130-37.

CWA also noted that a flexible lighting tube is proposed on the Eleven Mile façade, but the color had not been included nor had it been shown on the renderings. They requested that color rendering with the lighting tube color at night be shared with the Planning Commission to understand the effect of the proposed colored tubes. The Planning Commission and applicant should note that unshielded lighting tubes have not been allowed in Berkley, since they are illuminated signs with blank faces and shine light directly onto traffic or adjacent property, prohibited signs under Section 94-6 of the Sign Ordinance. Tube lighting covered by an awning, eave or soffit has been allowed.

CWA recommended preliminary site plan approval with the following conditions:

1. Clarification of the planting proposed along Eleven Mile.
2. Indication of the method of trash storage and removal.
3. Inclusion on revised plans of any additional landscaping based on Planning Commission review.
4. Confirmation that the roof top wind system has been designed to comply with all provisions of Section 138-99 at time of building permit review.

Review from City of Berkley Department of Public Works (DPW) dated May 6, 2022

DPW had the following comments:

1. HRC will review the geotechnical report, storm water detention calculations and grading.
2. The proposed stormwater management system will be a private system under the maintenance of the property owner. A stormwater management agreement with exhibits, which includes vacuum requirements for the permeable pavers, must be approved by the City Attorney.
3. More details on the new permanent and temporary easements are required with the adjacent parcel (25-18-353-029) shown on Sheet C1 are needed. The permanent easement shall be included in storm water detention calculations.
4. The applicant shall verify the new development will not negatively impact the adjacent properties and existing drainage conditions.
5. More information is needed regarding the adjacent properties broken sanitary sewer during excavation on Sheet C-4.
6. The Community Development Department will review the striping plan for verification of number of stalls required, sizing, handicap considerations and general site circulation.
7. A Storm Water Service Fixed Charge will be assessed upon completion of construction. This charge will be reflected on the regular utility bill and is based on an Equivalent Residential Units (impervious area).

Review from Hubbell, Roth & Clark (HRC) dated May 9, 2022

HRC recommended approval of the proposed site plan, subject to the applicant revising the permeable paver cross section on the plans as stated in their letter and submitting the maintenance agreement as well as any required permits to the City of Berkley. The Planning Commission should note the following requested plan revisions and permits:

1. The geotechnical report submitted by the applicant states that the proposed stormwater system is feasible provided a geotextile separator followed by a minimum of 12” of 6A stone under a 3” layer of 17A stone is used under the permeable pavers. The proposed permeable paver cross section on the plan set must reflect the recommended cross section.
2. The developer will be required to prepare and enter into a perpetuity maintenance agreement with the City for the proposed private stormwater systems. The applicant must contact the City DPW regarding this item prior to commencing construction.

Review from City of Berkley Fire Inspector

Fire Inspector Pete Kelly stamped the plan set dated as revised on March 24, 2022 as approved on April 1, 2022.

Summary and Recommendation

The applicant should provide clarification on the of following:

1. The planting proposed along Eleven Mile.
2. Trash storage and removal.
3. The color and mounting location of the proposed light tubing on the Eleven Mile façade.

The Planning Commission needs to make the following determination:

1. **Standards for Site Plan Approval – Landscaping and Trash Enclosure:** CWA stated in their review that the applicant was providing landscaping on the side elevation, Eleven Mile frontage and in the bioswale stormwater management system. The Planning Commission must determine whether the landscaping, as presented, meets the standards for Site Plan approval, per Section 138-678.

If the Planning Commission chooses to grant site plan approval, we recommend that the following items be conditions of approval:

1. Revisions of the site plan to reflect any changes to the site plan required by the Planning Commission to meet the standards of Section 138-678. The required changes should be specifically stated in the motion.
2. At time of building permit review, confirmation that the roof top wind system has been designed to comply with all provisions of Section 138-99.
3. A pre-construction meeting is required. Before scheduling of that meeting, all items and information listed the City's DPW review letter, dated May 6, 2022, must be received by the City.
4. Approval from the City's Engineer that the permeable paver cross section on the plans meets the requirements of their review letter dated May 9, 2022, the maintenance agreement, and any required permits to the City of Berkley, as noted in their review letter dated May 9, 2022, have been submitted and/or met.
5. All signs and mural must be approved under a separate permit and meet the requirements of Chapter 94 – Signs of the City of Berkley's Code of Ordinances.

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

Date: March 31, 2022
May 3, 2022

Site Plan Review
For
City of Berkley, Michigan

Applicant: Aric Klar, Quality Roots

Project Name: Quality Roots

Plan Date: April 19, 2022

Location: 3916 Eleven Mile Road

Zoning: Eleven Mile District

Action Requested: Site Plan Approval

SITE DESCRIPTION

The subject site is two parcels. One parcel is located on the north side of Eleven Mile, between Cummings Avenue and Thomas Avenue. The second parcel is direclty north, across a public alley, and fronts on Cummings Avenue. Currently the +/-6,400 sq.ft building is located on the Eleven Mile parcel, and small garage and parking area is located on the Cummings Avenue parcel.

The applicant proposes to remodel the existing +/-6,400 sq. ft. building for a marihuana provisioning center on the first floor and a small accounting office on the second floor. An accounting firm currently utilizes the second story and the applicant is renovating that space for their continued use in the future. In addition, the applicant proposes to remove the existing

garage on the Cummings Avenue parcel and convert that parcel in to parking and stormwater management.

Other than façade improvements there are no proposed changes or enlargement to the existing building. Site improvements include:

- Wall art mural
- Sun shade
- Benches along Eleven Mile
- Permeable parking pavers
- Increased landscaping
- Quality architecture improvements
- Green stormwater management in the form of a bioswale
- Roof amenities:
    - Solar panels
    - Wind turbines
    - Stormwater runoff water collection
    - Green roof
    - PVC Roof

The site is zoned Eleven Mile District. Marihuana use is a permitted use but must meet the zoning requirements in Section 138-528 Marihuana Business Regulations.

<u>Site Location:</u>



Proposed Use of Subject Parcel:

6,400 sq. ft. building for marihuana provisioning use and small accounting office.

Surrounding Property Details:

Direction	Zoning	Use
North	Single Family Residential R-1D	Single Family Residential
South	Oak Park / NA	Vacant/Light Industrial
East	Eleven Mile District	Commercial
West	Eleven Mile District	Office

Items to be addressed: *None.*

NATURAL FEATURES

The site has been graded for a building and parking lot. There are no existing natural resources.

BUILDING ARRANGEMENT AND SITE DESIGN

The site and building layout will remain in its current configuration. The square foot arrangement of the building is as follows:

Floor	Tenant/Use	Total Square Footage
First	Quality Roots	5,724
Second	Accounting Office	686
Total		**6,410**

Items to be addressed: *None*

AREA, WIDTH, HEIGHT, SETBACKS

Sec. 138-526. - Schedule of regulations of the Zoning Ordinance establishes the dimensional requirements for the Local Commercial District.

	Required / Allowed	Provided	Compliance
Front (Eleven Mile) Front yard setbacks shall be ten feet or equal to the setback	0-feet setback based upon adjacent building to east	0-feet	Complies

	Required / Allowed	Provided	Compliance
of the adjacent buildings, whichever is less.			
Side (east and west)	0-feet (east) 25-feet (west)	Greater than 0 feet	Complies
Rear (north)	10-foot minimum setback	25 feet	Complies
Building Height	40-feet maximum height	9'8" to canopy 18'2" to top of parapet	Complies

Items to be addressed: *None*

PARKING

The applicant has provided a parking table on Sheet TS1.1. This is a multiple tenant building. The parking required is a total of all uses combined in the building:

	Required	Provided
Quality Roots (Retail) 1 space per 225 usable square feet	2,837 usable sq. ft. / 225 = 13 spaces	19 spaces
Accounting Office 1 per 300 usable square feet	481 usable sq. ft. / 300 = 2 spaces	
Barrier Free	1	1
Bicycle Parking Credit	Reduces parking requirement by two	
Total	**13 spaces**	**19 spaces**

The applicant has provided sufficient parking.

Items to be Addressed: *None*

SITE ACCESS AND CIRCULATION

Site access and circulation remain as currently situated. There is one point of access off Eleven Mile and access via the alley. There is an existing sidewalk on Eleven Mile that will remain as is.

Items to be Addressed: *None*

LANDSCAPING

A landscaping plan has been provided on sheet L-1. The site is limited with regards to plantable area; however, the applicant is adding landscaping where they can, including along the side elevation to the east and in the bioswale stormwater management system. One of the site rendering shows planting along and in the right-of-way of Eleven Mile. However, this planting is not indicated on the landscape plan. Applicant should clarify planting along Eleven Mile.

As set forth in section 130-37, when the development of any property requiring site plan approval occurs, the City Planning Commission shall review landscaping plans and may require additional landscaping to be planted on or near the site consistent with the elements of the adopted city master plan.

Trash Enclosure:

There is not an outside trash enclosure shown on the site plan. There is an internal waste room, and it is assumed that a truck will come to the back of the site to pick up trash. The applicant shall clarify trash storage and removal.

***Items to be Addressed**: 1). Clarify Planting along Eleven Mile; 2). Planning Commission to review landscaping; and 3). Indicate trash storage and removal.*

SITE AMENTIES

The applicant is proposing a number of site amenities including:

- Wall art mural
- Sun shade
- Benches along Eleven Mile
- Permeable parking pavers
- Green stormwater management in the form of a bioswale
- Roof amenities:
    - Solar panels
    - Wind turbines
    - Stormwater runoff water collection
    - Green roof
    - PVC Roof

We support the sustainable and creative use of the green roof. Wind turbines are regulated by Section 138-99. Requirements include:

Maximum Height from Roof	Setback	Other Regulations
10 feet	No portion of the system's blades, rotor or other exposed moving part shall extend beyond the edge of the building line to which it is attached	Wind energy systems with a rated capacity of up to 2 kilowatts (2 kW) and solar energy systems shall be allowed as an accessory use subject to the required standards of this section; provided they are incidental and subordinate to a use on the same parcel, and shall supply electrical power exclusively for on-site consumption

No details of the rooftop system were provided; however, the applicant has added a note that the roof top wind system will be designed to comply with all provisions of Section 138-99.

Items to be Addressed: *Confirm that the roof top wind system has been designed to comply with all provisions of Section 138-99 with building permit review.*

PHOTOMETRICS

The applicant is proposing three (3) pole mounted lights in between the bioswale and the rear parking. As requested, due to the proximity of the adjacent single-family home, the pole height has been reduced to 12-feet. In addition, the applicant is proposing various forms of building lighting.

Along 11-Mile the applicant is proposing a flexible lighting "tube" that can be various colors. The applicant should confirm color. The renderings don't show the lighting. In order to better understand the effect of the tubes the applicant should show a color rendering at night.

Items to be Addressed: *1). Indicate color tubes; and 2). Show a color rendering at night.*

EXTERIOR APPLIANCES

Applicant has shown exterior appliances (air conditioners, generators, etc.) on site plan to ensure that they are in compliance with Sec. 138-73.

Items to be Addressed: *None.*

FLOOR PLAN AND ELEVATIONS

Floor plans and elevations have been provided. The applicant is making significant elevation improvements to the existing building including wood siding veneer parapet, metal paneling, storefront glass, aluminum canopy, new sign lettering (reviewed under separate sign permit), green roof, and public art mural.

Items to be Addressed: *None*

MARIHUANA BUSINESS REGULATIONS

Section 138-528 Marihuana Business Regulations, the site plan shall be reviewed and approved by the Planning Commission upon finding that:

a) A marihuana business must front on a major thoroughfare with the primary ingress/egress onto a major thoroughfare.

CWA Response: The marihuana business fronts on Eleven Mile Road, with ingress/egress onto a major throughfare.

b) The marihuana business must have all applicable state and local licenses and approvals to operate.

CWA Response: The marihuana business will be required to obtain all applicable state license prior to any final approvals.

c) The property where the marihuana business will be located must be entirely within the boundaries of the city and must not be within 1,000 feet of a pre-existing public or private school providing education in kindergarten or any of grades 1 through 12.

CWA Response: The marihuana business will not be located with 1,000 feet of any pre-existing public or private school.

d) Notwithstanding any other provision in the zoning ordinance, a marihuana business must operate within a fully enclosed building.

CWA Response: The marihuana business will operation within a fully enclosed building.

e) Pursuant to article XV of chapter 30 of the Berkley City Code, all marihuana business license approvals are subject to the following:

i. Public notice requirements as outlined in section 30-806; and

ii. Site plan approval from the planning commission must be obtained prior to receiving license approval from the city council. Failure to do so will result in license denial as outlined in section 30-813.

CWA Response: 1). Public notice requirements are expected to be met; and 2). The applicant is seeking site plan approval from the Planning Commission. If granted

site plan approval, the applicant would then seek license approval from the City Council.

Items to be Addressed: *None*

RECOMMENDATION

Overall, the applicant is making a significant investment into the site as noted in our report. As part of their discussion, the Planning Commission should consider the use of the flexible light tubes on the 11-Mile elevation. The applicant should indicate color and show rendering to assist in this evaluation.

Based on that discussion, we recommend preliminary site plan approval with the following conditions:

1. *Clarify Planting along Eleven Mile.*
2. *Indicate trash storage and removal.*
3. *Any additional landscaping based on Planning Commission review.*
4. *Confirmation that the roof top wind system has been designed to comply with all provisions of Section 138-99 at time of building permit review.*

Sincerely,

Benjamin R. Carlisle

CARLISLE/WORTMAN ASSOC., INC.
Benjamin R. Carlisle, LEED AP, AICP

CITY OF BERKLEY
DEPARTMENT OF PUBLIC WORKS
3238 BACON AVE, BERKLEY, MICHIGAN 48072

Transmittal Memo

To: Megan Masson-Minock, Interim Community Development Director (via email)

Cc: Kim Anderson, Community Development Department (via email)
Ric Chalmers, Assistant DPW Director (via email)
Eddie Zmich, HRC (via email)

From: Shawn Young, DPW Director

Date: May 6th, 2022

Subject: Quality Roots Provisioning Center
3916 11 Mile Rd Site Plan Review #2

We have reviewed the site plans provided by the Community Development Department on March 28 and prepared by Stucky Vitale Architects and Nowak & Fraus Engineers. Please find below our initial comments:

1. The site plans will be reviewed by the City's engineering consultant, Hubbell, Roth & Clark (HRC). Among other things, HRC will review the geotechnical report, storm water detention calculations and grading.

2. Please note the proposed stormwater management system will be a private system under the maintenance of the property owner. A template approved by the City Attorney is attached for use and should also include vacuum requirements for the permeable pavers. Exhibits will also need to be prepared by the applicant and included with the document.

3. Sheet C1 notes new permanent and temporary easements are required with the adjacent parcel (25-18-353-029). Please provide more details on these proposed easements. The permanent easement shall be included in storm water detention calculations.

4. The applicant shall verify the new development will not negatively impact the adjacent properties and existing drainage conditions.

5. Sheet C-4 mentions addressing the adjacent properties broken sanitary sewer during excavation. Please provide more information regarding this issue.

6. Note the Community Development Department will review the striping plan for verification of number of stalls required, sizing, handicap considerations and general site circulation.

7. A Storm Water Service Fixed Charge will be assessed upon completion of construction. This charge will be reflected on the regular utility bill and is based on an Equivalent Residential Units (impervious area). Note the two parcels will be combined from an ERU perspective.

A response letter from the applicant to the comments noted above would be helpful in subsequent reviews.

Feel free to call with any questions or concerns. Thank you.

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

MAILING: PO Box 824
Bloomfield Hills, MI 48303-0824

SHIPPING: 555 Hulet Drive
Bloomfield Hills, MI 48302-0360

PHONE: 248-454-6300
WEBSITE: hrcengr.com

May 9, 2022

City of Berkley
3338 Coolidge Highway
Berkley, Michigan 48072

Attention: Ms. Megan Masson-Minock, Community Development Director
Mr. Matthew Baumgarten, City Manager

Re: uality Roots HRC Job No. 20200910.02
3916 Eleven Mile Road
Engineering Site Plan – Review No. 2
City of Berkley, MI

Dear Ms. Masson-Minock and Mr. Baumgarten:

As Consulting Engineers for the City of Berkley, and in accordance with your request, we have completed the Engineering Site Plan review of the proposed subject development located at 3916 Eleven Mile Road for compliance with the City of Berkley's engineering and site plan requirements. The plans were prepared by Stucky-Vitale Architects of Royal Oak, Michigan with the engineering site plan created by Nowak & Fraus Engineers of Pontiac, Michigan. The plans have a revision date of April 19, 2022. The proposed project scope includes the renovation of the existing building and replacement of the existing parking lot and other site features. We hereby offer the following comments:

Water and Fire Protection Services:

1. A note indicates the existing water service lead will remain in place and be re-utilized. The applicant must have the lead inspected by a licensed contractor/plumber and the video footage submitted to the City verifying the lead is suitable for re-use prior to construction. **The plans have been revised to include removal and replacement of the water service lead. This item is no longer applicable.**

2. The plans must include REU value calculations demonstrating that the existing water lead is sufficiently sized to be reused for the proposed new establishment. **calculations have been shown on the plans. This item has been satisfactorily addressed.**

Storm Drainage and Detention/Sanitary Sewer:

1. Stormwater runoff calculations have been provided using a 100-year, 24-hour storm event and appear to show that the proposed pavement section and detention system will provide adequate storage for the site. **The provided storage calculations have been updated to reflect the recommended porosity values for the proposed section in the geotechnical report. This item has been satisfactorily addressed.**

2. A geotechnical investigation must be performed to evaluate the feasibility of the proposed stormwater management system. The report and soil logs must be submitted along with the plans, including the elevation of the groundwater table, soil types encountered, and the design recommendations or comments on the proposed stormwater collection system. **The geotechnical report has been submitted along with the revised plans. The report recommends that the proposed stormwater system is feasible provided**

that the recommended cross section be used under the permeable pavers. The geotechnical report recommends a geotextile separator followed by a minimum of of A stone under a layer of A stone. The layer of A stone must be reflected in the proposed permeable paver cross section on the plan set.

3. The developer will be required to prepare and enter into a perpetuity maintenance agreement with the City for the proposed private stormwater systems. The Applicant must contact the City DPW regarding this item prior to commencing construction. **This item is still applicable.**

4. A new sanitary connection must be made rather than reusing the existing connection. The connection must be a TwisTee sewer saddle, as per the City DPW, or approved equal. The Applicant is responsible for any roadwork and restoration associated with the new utility connections which must be shown on the submitted plans. The DPW must be contacted prior to the commencement of work within the right-of-way (ROW). **This connection and note have been shown on the plans. This item has been satisfactorily addressed.**

5. The existing sanitary sewer lead must be properly abandoned via a spot liner or another DPW approved method. The DPW must be contacted prior to the commencement of work within the right-of-way (ROW). **The sewer lead abandonment has been shown on the plans. This item has been satisfactorily addressed.**

Recommendation:

Based on our aforementioned comments, we recommend approval of the proposed Site Plan subject to the applicant revising the permeable paver cross section on the plans as stated above and submitting the maintenance agreement as well as any required permits to the City of Berkley.

If you have any questions or require any additional information, please contact the undersigned.
Very truly yours,

HUBBELL, ROTH & CLARK, INC.





Edward D. Zmich
Project Manager

Mitch Stark
Review Engineer

EDZ/MAS/mas
pc: City of Berkley; Mr. Derrick Schueller, Mr. Shawn Young
HRC; R. Alix, File
Nowak & Fraus; P. Tulikangas
Stucky-Vitale; A. Danaher

QUALITY ROOTS

MICHIGAN'S PREMIER CANNABIS COMPANY

QUALITY ROOTS | BERKLEY PROVISIONING CENTER

3916 ELEVEN MILE ROAD
BERKLEY, MI 48237



CONCEPTUAL RENDERING
SCALE: N.T.S.

APPLICABLE CODES: (COMMERCIAL):
BUILDING CODE:
2015 MICHIGAN REHABILITATION FOR EXISTING BUILDING

MECHANICAL CODE:
2015 MICHIGAN MECHANICAL CODE AS AMENDED

PLUMBING CODE:
2015 MICHIGAN PLUMBING CODE AS AMENDED

ELECTRICAL CODE:
2017 NATIONAL ELECTRIC CODE (NEC) AS AMENDED & MICHIGAN AMENDMENTS PART 8.

FIRE CODE:
2015 INTERNATIONAL FIRE CODE REFERENCED IN 2015 MICHIGAN BUILDING CODE

BARRIER FREE REQUIREMENTS:
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN (DOJ)
MBC-2012 (CHAPTER 11)
ICC / ANSI 117.1 - 2009, EXCEPT SECTION 611 & 707

LIFE SAFETY CODES:
2015 NFPA 101 LIFE SAFETY CODE
2013 NFPA 13 STANDARD FOR INSTALLATION OF SPRINKLER SYSTEMS
2013 NFPA 72 NATIONAL FIRE ALARM CODE

SHEET INDEX

DRAWING INDEX KEY:
- ☐ NOT ISSUED
- ○ PREVIOUSLY ISSUED
- ● ISSUED
- ☒ REFERENCE

		ISSUED FOR	
		03.24.22: SITE PLAN REVIEW	04.19.22: SPA RESUBMITTAL #1
GENERAL			
TS1.1	TITLE SHEET AND SHEET INDEX AND LOCATOR PLAN	○	●
CIVIL			
C-0	CIVIL / LANDSCAPE COVER SHEET	○	●
1 of 1	ALTA SURVEY	○	●
C-1	OVERALL SITE PLAN	○	●
C-2	DEMOLITION PLAN	○	●
C-3	PAVING & GRADING PLAN	○	●
C-4	UTILITY AND STORM WATER MANAGEMENT PLAN	○	●
C-5	SOIL EROSION CONTROL PLAN	○	●
C-6	NOTES & DETAILS PLAN	○	●
L-1	LANDSCAPE PLAN	○	●
SITE			
1 of 1	PHOTOMETRIC PLAN	○	●
SP1.3	SITE PLAN RENDERINGS	○	
SP1.4	SITE PLAN RENDERINGS	○	
ARCHITECTURAL			
A1.1	ARCHITECTURAL FLOOR PLAN	○	●
A1.4	SECURITY PLAN PLAN	○	●
A3.0	EXISTING EXTERIOR ELEVATIONS - DEMO NOTES	○	●
A3.1	EXTERIOR ELEVATIONS - NEW WORK	○	●
A3.2	EXTERIOR RENDERINGS	○	●
A3.3	EXTERIOR RENDERINGS	○	
A4.1	INTERIOR RENDERINGS	○	●

PROJECT DATA:

BUILDING CODE AUTHORITY:
CITY OF BERKLEY, MI

TYPE OF CONSTRUCTION:
5-B (EXISTING - UNCHANGED)

USE GROUP:
M - MERCANTILE & B - OFFICE (LEVEL 2)

PROJECT AREA:
EXISTING
FIRST FLOOR = 5,724 SF
QUALITY ROOTS - RETAIL

SECOND FLOOR = 686 SF
EXISTING (TENANT B) - BUSINESS

OFF STREET PARKING REQUIREMENTS (USEABLE FLOOR AREA) :
SEC. 138-217 BERKLEY ORDINANCE

FIRST FLOOR = 2,837 SF
- OFFICE: 102 SF
- RECEIVING ROOM: 236 SF
- TRANSACTION AREA: 394 SF
- SHOWROOM: 1,672 SF
- WAITING ROOM: 375 SF
- CHECK IN: 58 SF

2,837/ 225 = 12.61 = 13 PARKING STALLS

SECOND FLOOR = 481 SF
- OFFICE: 300 USF

481/225 = 2.14 = 3 PARKING STALLS
13 + 3 = 16 PARKING STALLS

SEC. 138-268 BERKLEY ORDINANCE: PARKING CREDIT
Bicycle parking may be used to reduce the number of required off-street parking spaces. Existing developments may elect to reduce the required off-street parking by two car parking spaces by providing four bicycle parking spaces (i.e., by installing two inverted U, loop style, or other approved style of bicycle rack).

REQUIRED PARKING = 16 - 2 = 14 SPACES
PROVIDED PARKING = 19 SPACES

PROJECT TEAM:

OWNER:
QUALITY ROOTS
2075 E. 14 MILE RD
BIRMINGHAM, MI 58009
248.912.7173
CONTACT: ARIC KLAR

DEVELOPEMENT:
SHOSTAK BROTHERS & COMPANY
17800 LAUREL PARK DR. NORTH
LIVONIA, MI 48152
248.357.6272
CONTACT: STEVE DUCZYNSKI

CONSTRUCTION MANAGER:
PCI CONSTRUCTION
21717 REPUBLIC ST
OAK PARK, MI 48237
248.255.3316
CONTACT: KYLE KNOLL

ARCHITECT:
STUCKY VITALE ARCHITECTS
27172 WOODWARD AVENUE
ROYAL OAK, MICHIGAN 48067
248.546.6700
CONTACT: ANDREW DANAHER

CIVIL ENGINEER:
NOWAK AND FRAUS
46777 WOODWARD AVENUE
PONTIAC, MI 48342
248.332.7931
CONTACT: PAUL TULIKANGAS

MECHANICAL / ELECTRICAL ENGINEER:
STRATEGIC ENERGY SOLUTIONS
400 W. ELEVEN MILE RD
BERKLEY, MI 48072
248.399.1900
CONTACT: TROY FOSTER

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No. 1301029086
LICENSED ARCHITECT

© 2022 STUCKY VITALE ARCHITECTS

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY

2020.153

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY
3916 ELEVEN MILE RD.
BERKLEY, MI

SITE PLAN REVIEW PACKAGE

APRIL 18, 2022

SHEET:
TS1.1

OWNER
Quality Roots

CONTACT:
Michael Klar
Tel. (248) 914-2183
Email. michael@getqualityroots.com

DEVELOPER
Schostak Brothers & Company Inc.

CONTACT:
Stephen E. Duczynski
Tel. (248) 262-1000 (Office)
Tel. (248) 357-6272 (Direct)

ARCHITECT
Stucky Vitale Architects

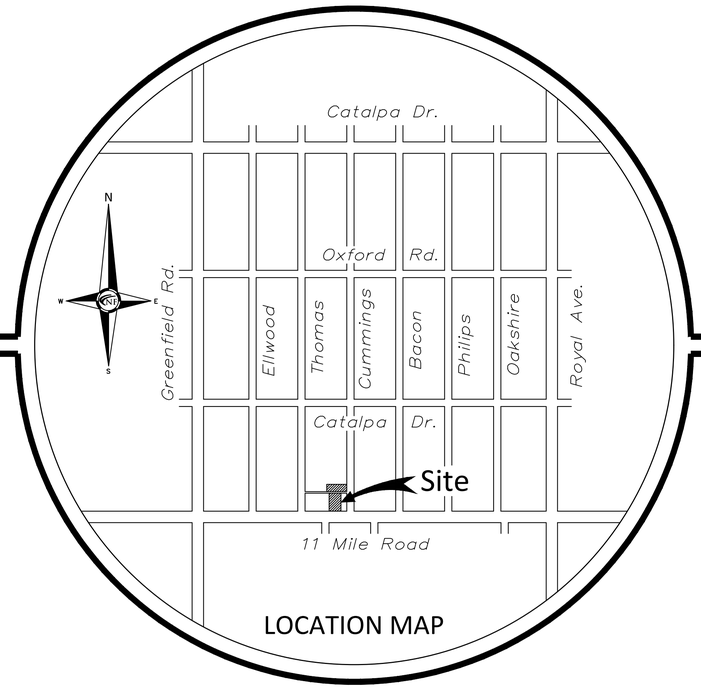
CONTACT:
Andrew J. Danaher
P. (248) 546-6700
C. (248) 227-5860

CIVIL ENGINEER / LANDSCAPE ARCHITECT
NOWAK & FRAUS ENGINEERS
46777 Woodward Ave.
Pontiac, MI 48342-5032
Tel. (248) 332-7931
Fax. (248) 332-8257

CONTACT:
Paul Tulikangas, PE
Tel. (248) 332-7931
Fax. (248) 332-8257

City of Berkley, Oakland County, Michigan SITE PLAN DOCUMENTS Prepared For Quality Roots

PART OF THE SW 1/4 OF SECTION 18,
CITY OF BERKLEY,
OAKLAND COUNTY, MICHIGAN



LOCATION MAP

LEGAL DESCRIPTION - PER TITLE COMMITMENT
LAND SITUATED IN THE CITY OF BERKLEY, COUNTY OF OAKLAND, STATE OF MICHIGAN, DESCRIBED AS FOLLOWS:

LOTS 274, 275, 276, 277 AND 279, THOMAS PARK, ACCORDING TO THE PLAT THEREOF, AS RECORDED IN LIBER 29 OF PLATS, PAGE 19, OAKLAND COUNTY RECORDS.

ADDRESS: 3916 W 11 MILE ROAD, BERKLEY, MI 48072
TAX ID NUMBER: 25-18-353-030 (LOTS 274-277)
25-18-353-027 (LOT 279)

CIVIL/LANDSCAPE SHEET INDEX

C0	Cover Sheet
1 of 1	ALTA/NSPS Land Title / Topographic Survey
C1	Overall Site Plan
C2	Demolition Plan
C3	Paving & Grading Plan
C4	Utility and Storm Water Management Plan
C5	Soil Erosion Control Plan
C6	Notes & Details Plan
L1	Landscape Plan

REVISIONS:
03-04-22 CLIENT REVIEW
03-25-22 SITE PLAN SUBMITTAL
04-19-22 SITE PLAN RESUBMITTAL #1

Project Name

Quality Roots Berkley

Know what's below Call before you dig.

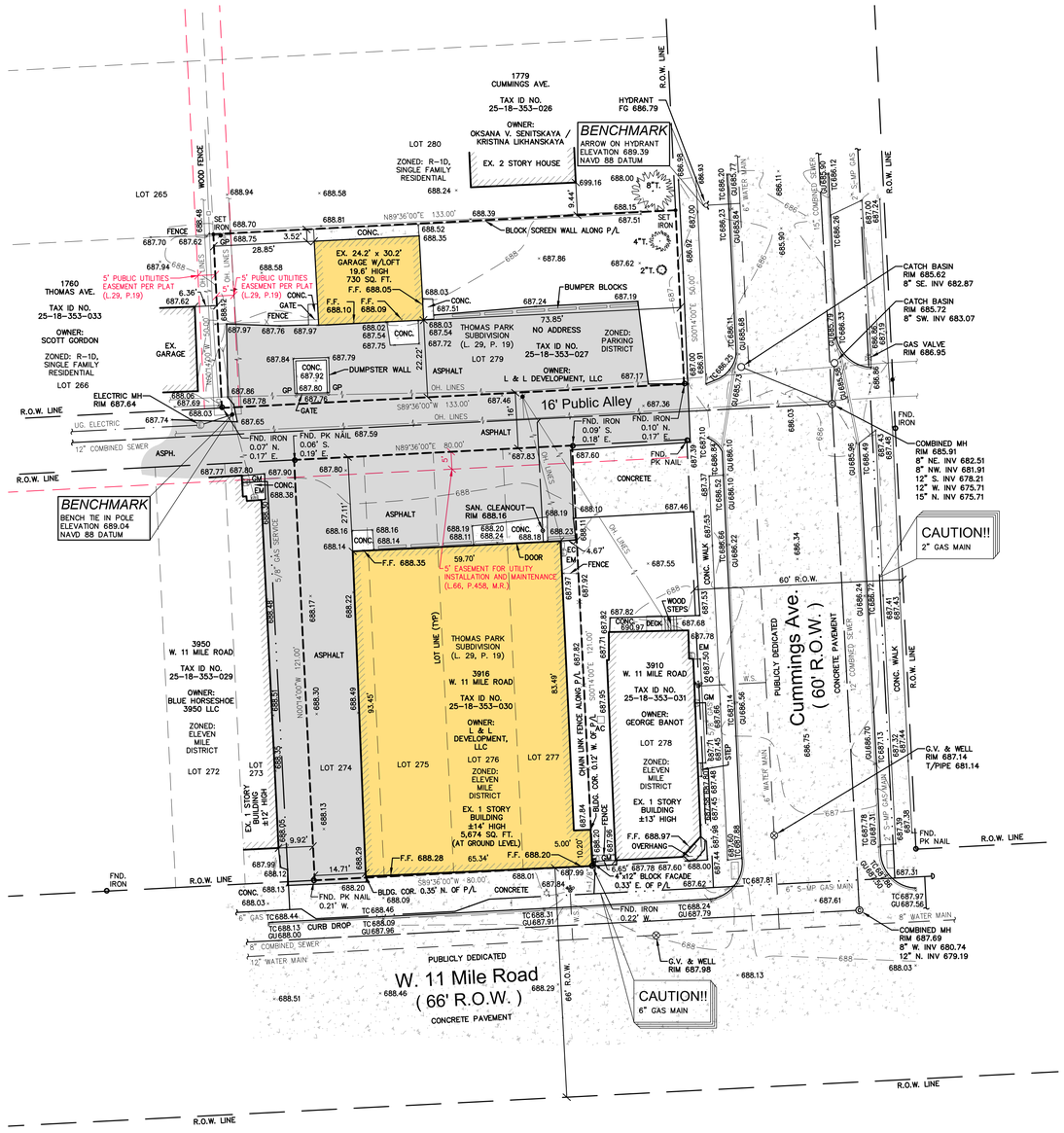
N & F JOB #C360-02

STATE OF MICHIGAN
PAUL TULIKANGAS
ENGINEER NO. 057929
LICENSED PROFESSIONAL ENGINEER

50 NF ENGINEERS 1969 – 2019

CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257
WWW.NOWAKFRAUS.COM



TITLE REPORT NOTES

REFERENCE TITLE CONNECT (AGENT FOR: NORTH AMERICAN TITLE INSURANCE COMPANY) COMMITMENT NUMBER: TC13-89984C, COMMITMENT DATE: DECEMBER 11, 2019.

SCHEDULE B, PART II – EXCEPTIONS:

EXCEPTIONS: 1, 2, 5, 6, 12, 13, 14 AND 15 REFER TO THE OWNERSHIP OF THE PROPERTY AND/OR ARE NOT PLOTTABLE.

3. RIGHTS OR CLAIMS OF PARTIES IN POSSESSION NOT RECORDED IN THE PUBLIC RECORDS.

4. EASEMENTS, OR CLAIMS OF EASEMENTS, NOT RECORDED IN THE PUBLIC RECORDS.

7. RIGHTS OF THE PUBLIC AND ANY GOVERNMENTAL UNIT IN ANY PART OF THE LAND TAKEN, DEEDED OR USED FOR STREET, ROAD OR HIGHWAY PURPOSES.

8. COVENANTS, CONDITIONS AND RESTRICTIONS AND OTHER PROVISIONS BUT OMITTING RESTRICTIONS, IF ANY, BASED ON RACE, COLOR, RELIGION, SEX, HANDICAP, FAMILIAL STATUS OR NATIONAL ORIGIN AS CONTAINED IN INSTRUMENT RECORDED IN LIBER 66MR, PAGE 458, OAKLAND COUNTY RECORDS. (RESTRICTIONS:
C) NO BUILDING SHALL BE ERECTED ON ANY RESIDENTIAL BUILDING PLOT NEARER THAN 30 FEET TO THE FRONT LOT LINE, NOR NEARER THAN 5 FEET TO ANY SIDE STREET LINE. NO BUILDING, EXCEPT A GARAGE OR OTHER OUTBUILDING LOCATED 100 FEET OR MORE FROM THE FRONT LOT LINE, SHALL BE LOCATED NEARER THAN 5 FEET TO ANY SIDE LOT LINE.
D) NO RESIDENTIAL STRUCTURE SHALL BE ERECTED OR PLACED ON ANY BUILDING PLOT, WHICH PLOT HAS AN AREA OF LESS THAN 6600 SQUARE FEET NOR A WIDTH OF LESS THAN 50 FEET AT THE FRONT BUILDING SET BACK LINE, EXCEPT THAT A RESIDENCE MAY BE ERECTED OR PLACED ON LOTS 236, 293, 309, 322, 335, 349, 365, 403 AND 421 AS SHOWN ON THE RECORDED PLAT.
I) AN EASEMENT IS RESERVED OVER THE REAR FIVE FEET OF EACH LOT FOR UTILITY INSTALLATION AND MAINTENANCE. (PLOTTED HEREON)
J) NO BUILDING SHALL BE ERECTED ON ANY LOT FRONTING ON NORTH AND SOUTH STREETS NEARER THAN 10 FEET TO THE SOUTH SIDE LOT LINE NOR NEARER THAN 5 FEET TO THE NORTH SIDE LOT LINE; AND NO BUILDING SHALL BE ERECTED ON ANY LOT FRONTING ON EAST AND WEST STREETS NEARER THEN 10 FEET TO THE WEST SIDE LOT LINE NOR NEARER THAN 5 FEET TO THE EAST SIDE LOT LINE.

9. SUBJECT TO THE EASEMENTS, RESTRICTIONS AND RESERVATIONS CONTAINED IN THE THOMAS PARK PLAT RECORDED AT LIBER 29, PAGE(S) 19, OAKLAND COUNTY RECORDS. (PLOTTED HEREON)

10. INTEREST OF OTHERS IN OIL, GAS AND MINERAL RIGHTS, IF ANY, WHETHER OR NOT RECORDED IN THE PUBLIC RECORDS.

11. INTEREST, IF ANY, OF THE UNITED STATES, STATE OF MICHIGAN, OR ANY POLITICAL SUBDIVISION THEREOF, IN THE OIL, GAS AND MINERALS IN AND UNDER AND THAT MAY BE PRODUCED FROM THE CAPTIONED LAND.

16. RIGHTS OF TENANTS UNDER ANY UNRECORDED LEASES, AS TO TENANTS ONLY.

FLOOD HAZARD NOTE

THE PROPERTY DESCRIBED ON THIS SURVEY IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA AS DEFINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY AND NO MAP HAS BEEN PUBLISHED FOR THIS COMMUNITY ACCORDING TO THE MAP INDEX FOR OAKLAND COUNTY, INDICATING MAP NUMBER 26125C0677F, PANEL NOT PRINTED.

MISS DIG / UTILITY DISCLAIMER NOTE

A MISS DIG TICKET NUMBER A000520244, PURSUANT TO MICHIGAN PUBLIC ACT 174 WAS ENTERED FOR THE SURVEYED PROPERTY. DUE TO THE EXTENDED REPORTING PERIOD FOR UNDERGROUND FACILITY OWNERS TO PROVIDE THEIR RECORDS, THE SURVEY MAY NOT REFLECT ALL THE UTILITIES AT THE TIME THE SURVEY WAS ISSUED ON FEBROARY 21, 2020. THE SURVEY ONLY REFLECTS THOSE UTILITIES WHICH COULD BE OBSERVED BY THE SURVEYOR IN THE FIELD OR AS DEPICTED BY THE UTILITY COMPANY RECORDS FURNISH PRIOR TO THE DATE THIS SURVEY WAS ISSUED. THE CLIENT AND/OR THEIR AUTHORIZED AGENT SHALL VERIFY WITH THE FACILITY OWNERS AND/OR THEIR AUTHORIZED AGENTS, THE COMPLETENESS AND EXACTNESS OF THE UTILITIES LOCATION.

TOPOGRAPHIC SURVEY NOTES

ALL ELEVATIONS ARE EXISTING ELEVATIONS, UNLESS OTHERWISE NOTED.

UTILITY LOCATIONS WERE OBTAINED FROM MUNICIPAL OFFICIALS AND RECORDS OF UTILITY COMPANIES, AND NO GUARANTEE CAN BE MADE TO THE COMPLETENESS, OR EXACTNESS OF LOCATION.

THIS SURVEY MAY NOT SHOW ALL EASEMENTS OF RECORD UNLESS AN UPDATED TITLE POLICY IS FURNISHED TO THE SURVEYOR BY THE OWNER.

DTE DISCLAIMER NOTE

PLEASE NOTE THAT DTE HAS NEW REGULATIONS THAT MAY IMPACT DEVELOPMENT OUTSIDE THEIR EASEMENT OR THE PUBLIC RIGHT OF WAY. CLIENT SHALL CONTACT DTE TO DETERMINE THE "NEW STRUCTURES AND POWER LINE" REQUIREMENTS AS THEY MAY APPLY TO ANY FUTURE BUILDING OR RENOVATION OF A STRUCTURE. DTE ENERGY CAN BE CONTACTED AT 800-477-4747

CERTIFICATE OF SURVEY

CERTIFIED TO:

-KLAR FAMILY INVESTMENTS, LLC
-L & L DEVELOPMENT, LLC, A MICHIGAN LIMITED LIABILITY COMPANY
-TITLE CONNECT
-NORTH AMERICAN TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDE ITEMS 1, 2, 3, 4, 6(a), 6(b), 7(a), 7(b)(1), 7(c), 8, 9, 11, 13, 14, 16, 17, 18 AND 20 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON FEBROARY 17, 2020.

STATE OF MICHIGAN
KEVIN NAVAROLI
PROFESSIONAL SURVEYOR
NO. 53503
LICENSED PROFESSIONAL SURVEYOR

4-14-2020
KEVIN NAVAROLI, P.S. NO. 53503 DATE



LEGAL DESCRIPTION - PER TITLE COMMITMENT

LAND SITUATED IN THE CITY OF BERKLEY, COUNTY OF OAKLAND, STATE OF MICHIGAN, DESCRIBED AS FOLLOWS:

LOTS 274, 275, 276, 277 AND 279, THOMAS PARK, ACCORDING TO THE PLAT THEREOF, AS RECORDED IN LIBER 29 OF PLATS, PAGE 19, OAKLAND COUNTY RECORDS.

ADDRESS: 3916 W 11 MILE ROAD, BERKLEY, MI 48072
TAX ID NUMBER: 25-18-353-030 (LOTS 274-277)
25-18-353-027 (LOT 279)

SURVEY DATA

SITE AREA:
LOTS 274-277: 9,679.96 SQUARE FEET OR 0.222 ACRES
LOT 279: 6,649.97 SQUARE FEET OR 0.153 ACRES
TOTAL: 16,329.93 SQUARE FEET OR 0.375 ACRES

ZONED:
LOTS 274-277: ELEVEN MILE DISTRICT
LOT 279: PARKING DISTRICT

PARKING SPACES:
LOTS 274-277: NO STRIPED PARKING SPACES
LOT 279: NO STRIPED PARKING SPACES

MAXIMUM BUILDING HEIGHT:
ELEVEN MILE DISTRICT: 40 FEET
PARKING DISTRICT: 15 FEET

BUILDING SETBACKS:

	FRONT:	SIDE:	REAR:
ELEVEN MILE DISTRICT:	10 FEET (J, K)	(M)	10 FEET
PARKING DISTRICT:	10 FEET (J, K)	(M)	10 FEET

(J): PARKING SHALL BE PERMITTED IN THE FRONT YARD AFTER APPROVAL OF THE PARKING PLAN LAYOUT AND POINTS OF ACCESS BY THE PLANNING COMMISSION. THE SETBACK SHALL BE MEASURED FROM THE NEAREST SIDE OF EXISTING AND/OR PROPOSED RIGHT-OF-WAY LINES.

(K): FRONT YARD SETBACKS SHALL BE TEN FEET OR EQUAL TO THE SETBACK OF THE ADJACENT BUILDINGS, WHICHEVER IS LESS.

(M): NO SIDE YARDS ARE REQUIRED ALONG THE INTERIOR SIDE LOT LINES EXCEPT AS OTHERWISE SPECIFIED IN THE BUILDING CODE. ON THE EXTERIOR SIDE YARD THAT BORDERS ON A RESIDENTIAL DISTRICT, THERE SHALL BE PROVIDED A SETBACK OF AT LEAST TEN FEET ON THE SIDE OR RESIDENTIAL STREET.

A SURVEYOR CANNOT MAKE A CERTIFICATION ON THE BASIS OF AN INTERPRETATION OR OPINION OF ANOTHER PARTY. A ZONING ENDORSEMENT LETTER SHOULD BE OBTAINED FROM THE CITY OF BERKLEY TO INSURE CONFORMITY AS WELL AS MAKE A FINAL DETERMINATION OF THE REQUIRED BUILDING SETBACK REQUIREMENTS.

ALTA SURVEY NOTES

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

THERE IS NO PROPOSED CHANGES IN STREET RIGHT OF WAY LINES AND THERE IS NO EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIR.

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

THERE IS NO VISIBLE EVIDENCE OF ANY WETLAND AREAS.

LOCATION OF UTILITIES EXISTING ON OR SERVING THE PROPERTY AS DETERMINED BY: OBSERVED EVIDENCE OR EVIDENCE FROM PLANS REQUESTED BY THE SURVEYOR AND OBTAINED FROM UTILITY COMPANIES.

THE SUBJECT PROPERTY HAS ACCESS TO 11 MILE ROAD, BEING A PUBLICLY DEDICATED ROAD AND ACCESS TO CUMMINGS AVENUE, BEING A PUBLICLY DEDICATED ROAD THROUGH A PUBLIC ALLEY.

BASIS OF BEARING NOTE

ALL BEARINGS ARE IN RELATION TO THE PREVIOUSLY ESTABLISHED WEST RIGHT-OF-WAY LINE OF CUMMINGS AVENUE (60' WIDE) OF THOMAS PARK SUBDIVISION AS RECORDED IN LIBER 29 OF PLATS, PAGE 19, OAKLAND COUNTY RECORDS. (N.0°14'W.)

LEGEND

MANHOLE(MH)	EXISTING SANITARY SEWER
CO	EXISTING SAN. CLEAN OUT
HYDRANT(HYD)	EXISTING WATER MAIN
GATE VALVE(GVW)	EXISTING STORM SEWER
MANHOLE(MH) CATCH BASIN(CB)	EX. BEEHIVE CATCH BASIN
CBB	EX. UNDERGROUND (UG.) CABLE
UTILITY POLE GUY POLE	OVERHEAD (OH.) LINES
UP GUY WIRE	LIGHT POLE
LP	SIGN
	EXISTING GAS MAIN
ASPH.	ASPHALT
CONC.	CONCRETE
FD. / FND.	FOUND
RET. WALL	RETAINING WALL
R.O.W.	RIGHT-OF-WAY
SPK	SET PK NAIL
(TYP)	TYPICAL
(R)	RECORD
(M)	MEASURED
P/L	PROPERTY LINE
SO	SHUT OFF
GM	GAS METER
EM	ELECTRIC METER
EC	ELECTRIC CABINET
AC	AIR CONDITIONING UNIT
GP	GUARD POST

NOWAK & FRAUS ENGINEERS
CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257
WWW.NOWAKFRAUS.COM

SEAL

PROJECT
Quality Roots Berkley
3916 11 Mile Road
Berkley, MI 48072-1005

CLIENT
Quality Roots

PROJECT LOCATION
Part of the SW 1/4
of Section 18
T.1N., R.11E.,
City of Berkley,
Oakland County, Michigan

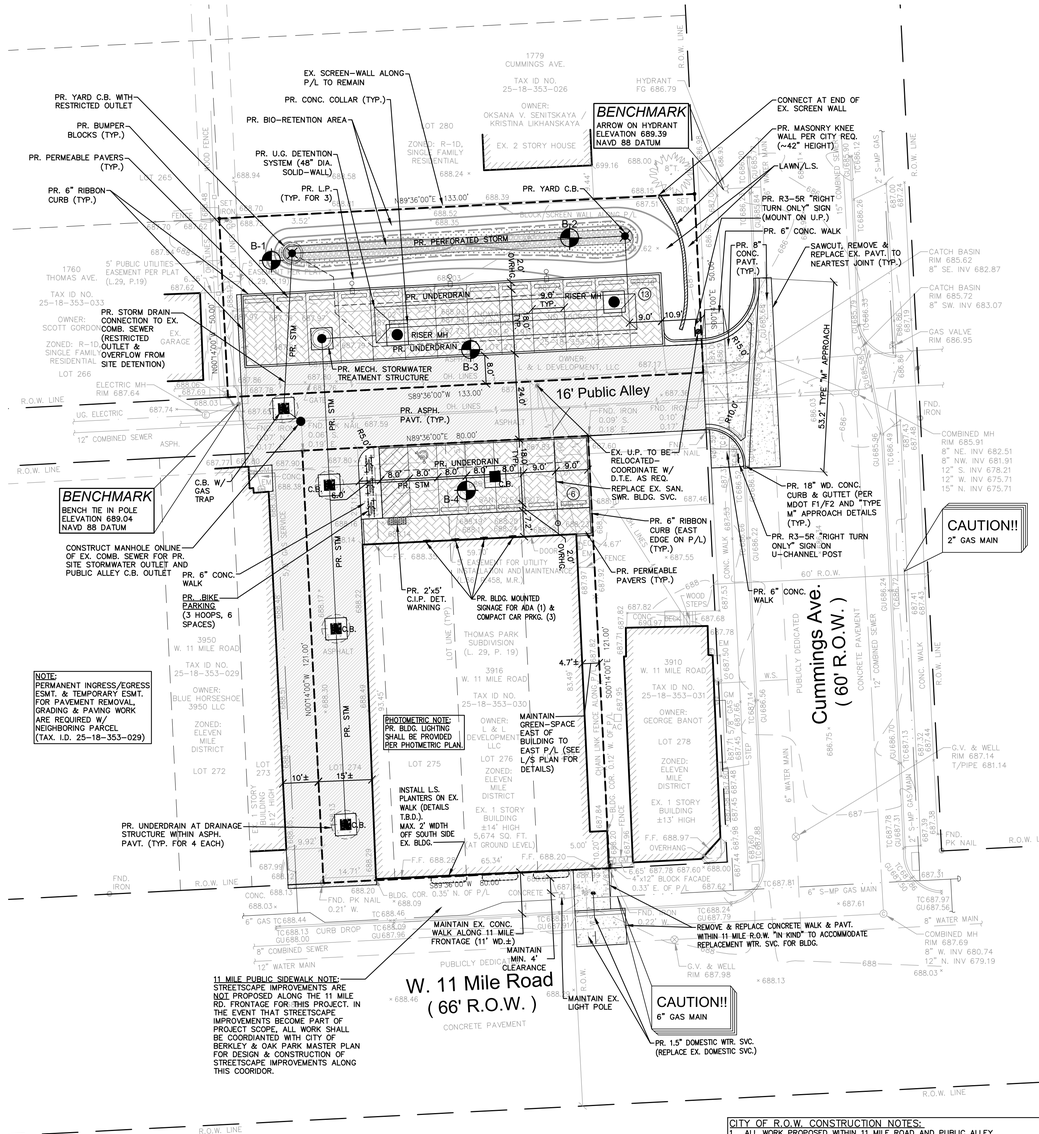
SHEET
ALTA/NSPS Land Title /
Topographic Survey

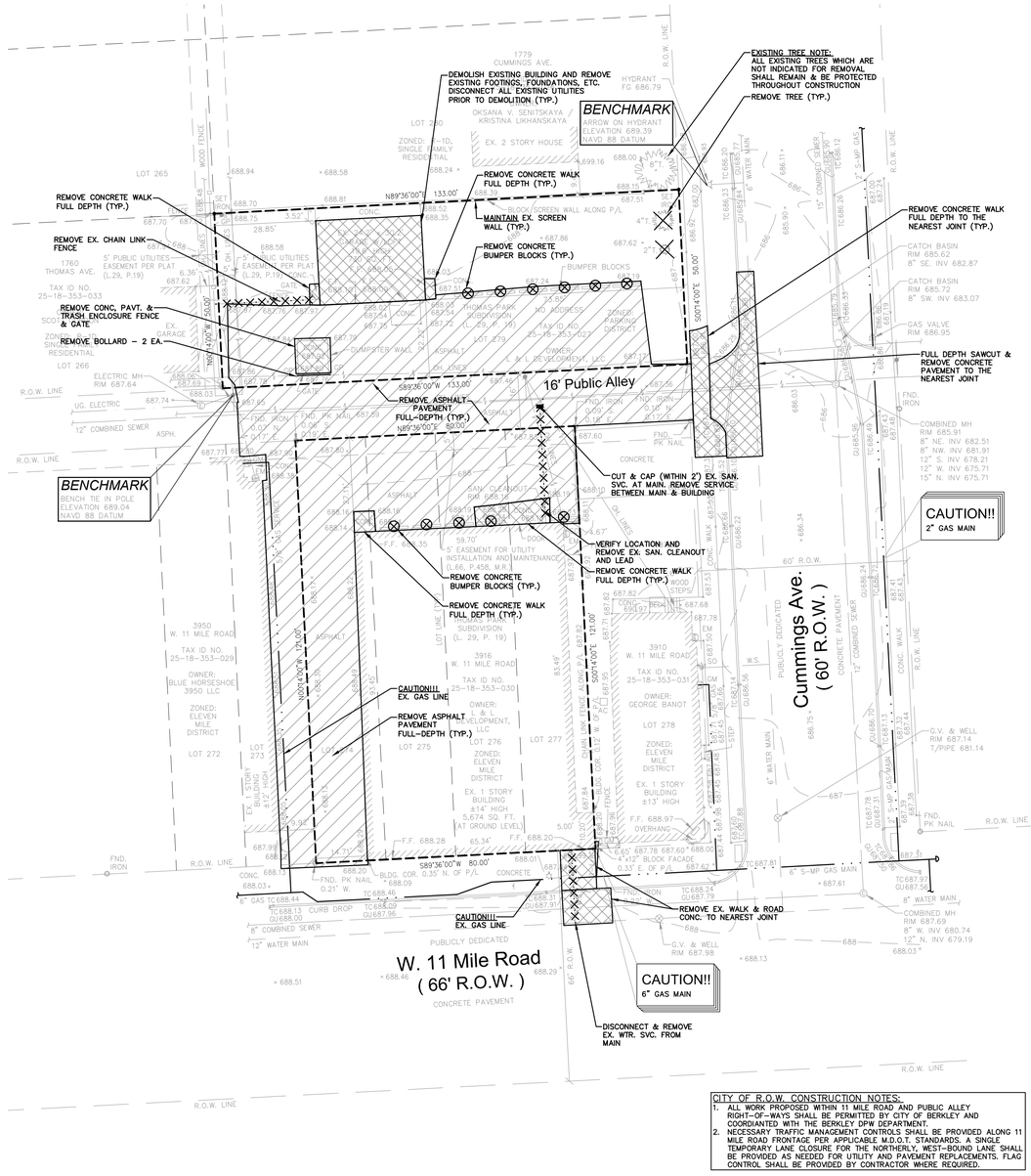
Know what's below
Call before you dig.

DATE	ISSUED/REVISED
03-04-22	CLIENT REVIEW
03-25-22	SITE PLAN SUBMITTAL
04-19-22	SITE PLAN RESUBMITTAL 1

DRAWN BY:
M. Carnaghi
DESIGNED BY:
APPROVED BY:
K. Navaroli
DATE:
February 25, 2020
SCALE: 1" = 20'
20 10 0 10 20 30

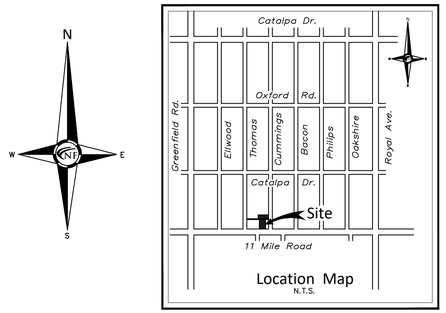
NFE JOB NO. C360-02
SHEET NO. 1 of 1


BENCHMARK
ARROW ON HYDRANT
ELEVATION 689.39
NAVD 88 DATUM
BENCHMARK
BENCH TIE IN POLE
ELEVATION 689.04
NAVD 88 DATUM
EX. SCREEN-WALL ALONG P/L TO REMAIN
PR. CONC. COLLAR (TYP.)
PR. BIO-RETENTION AREA
PR. U.G. DETENTION SYSTEM (48" DIA. SOLID-WALL)
PR. L.P. (TYP. FOR 3)
PR. YARD C.B. WITH RESTRICTED OUTLET
PR. BUMPER BLOCKS (TYP.)
PR. PERMEABLE PAVERS (TYP.)
PR. 6" RIBBON CURB (TYP.)
PR. PERFORATED STORM
PR. UNDERDRAIN
PR. STORM DRAIN CONNECTION TO EX. COMB. SEWER (RESTRICTED OUTLET & OVERFLOW FROM SITE DETENTION)
PR. MECH. STORMWATER TREATMENT STRUCTURE
PR. ASPH. PAVT. (TYP.)
16' Public Alley
CONSTRUCT MANHOLE ONLINE OF EX. COMB. SEWER FOR PR. SITE STORMWATER OUTLET AND PUBLIC ALLEY C.B. OUTLET
PR. BIKE PARKING (3 HOOPS, 6 SPACES)
PR. 2'x5' C.I.P. DET. WARNING
PR. BLDG. MOUNTED SIGNAGE FOR ADA (1) & COMPACT CAR PRKG. (3)
PR. 6" CONC. WALK
PR. 6" RIBBON CURB (EAST EDGE ON P/L) (TYP.)
PR. PERMEABLE PAVERS (TYP.)
EX. U.P. TO BE RELOCATED-COORDINATE W/ D.T.E. AS REQ.
REPLACE EX. SAN. SWR. BLDG. SVC.
PR. 18" WD. CONC. CURB & GUTTET (PER MDOT F1/F2 AND "TYPE M" APPROACH DETAILS (TYP.)
PR. R3-5R "RIGHT TURN ONLY" SIGN ON U-CHANNEL POST
CONNECT AT END OF EX. SCREEN WALL
PR. MASONRY KNEE WALL PER CITY REQ. (~42" HEIGHT)
LAWN/L.S.
PR. R3-5R "RIGHT TURN ONLY" SIGN (MOUNT ON U.P.)
PR. 6" CONC. WALK
PR. 8" CONC. PAVT. (TYP.)
SAWCUT, REMOVE & REPLACE EX. PAVT. TO NEARTEST JOINT (TYP.)
CAUTION!! 2" GAS MAIN
PR. 1.5" DOMESTIC WTR. SVC. (REPLACE EX. DOMESTIC SVC.)
PHOTOMETRIC NOTE: PR. BLDG. LIGHTING SHALL BE PROVIDED PER PHOTOMETRIC PLAN.
INSTALL L.S. PLANTERS ON EX. WALK (DETAILS T.B.D.). MAX. 2' WIDTH OFF SOUTH SIDE EX. BLDG.
MAINTAIN GREEN-SPACE EAST OF BUILDING TO EAST P/L (SEE L/S PLAN FOR DETAILS)
PR. UNDERDRAIN AT DRAINAGE STRUCTURE WITHIN ASPH. PAVT. (TYP. FOR 4 EACH)
NOTE: PERMANENT INGRESS/EGRESS ESMT. & TEMPORARY ESMT. FOR PAVEMENT REMOVAL, GRADING & PAVING WORK ARE REQUIRED W/ NEIGHBORING PARCEL (TAX. I.D. 25-18-353-029)
11 MILE PUBLIC SIDEWALK NOTE: STREETSCAPE IMPROVEMENTS ARE NOT PROPOSED ALONG THE 11 MILE RD. FRONTAGE FOR THIS PROJECT. IN THE EVENT THAT STREETSCAPE IMPROVEMENTS BECOME PART OF PROJECT SCOPE, ALL WORK SHALL BE COORDIANTED WITH CITY OF BERKLEY & OAK PARK MASTER PLAN FOR DESIGN & CONSTRUCTION OF STREETSCAPE IMPROVEMENTS ALONG THIS COORIDOR.
MAINTAIN EX. CONC. WALK ALONG 11 MILE FRONTAGE (11' WD.±)
MAINTAIN MIN. 4' CLEARANCE
REMOVE & REPLACE CONCRETE WALK & PAVT. WITHIN 11 MILE R.O.W. "IN KIND" TO ACCOMMODATE REPLACEMENT WTR. SVC. FOR BLDG.
MAINTAIN EX. LIGHT POLE
CAUTION!! 6" GAS MAIN
W. 11 Mile Road (66' R.O.W.)
Cummings Ave. (60' R.O.W.)
1779 CUMMINGS AVE.
TAX ID NO. 25-18-353-026
OWNER: OKSANA V. SENITSKAYA / KRISTINA LIKHANSKAYA
EX. 2 STORY HOUSE
1760 THOMAS AVE.
TAX ID NO. 25-18-353-033
OWNER: SCOTT GORDON
ZONED: R-1D, SINGLE FAMILY RESIDENTIAL
3950 W. 11 MILE ROAD
TAX ID NO. 25-18-353-029
OWNER: BLUE HORSESHOE 3950 LLC
ZONED: ELEVEN MILE DISTRICT
3916 W. 11 MILE ROAD
TAX ID NO. 25-18-353-030
OWNER: L & L DEVELOPMENT, LLC
ZONED: ELEVEN MILE DISTRICT
3910 W. 11 MILE ROAD
TAX ID NO. 25-18-353-031
OWNER: GEORGE BANOT
ZONED: ELEVEN MILE DISTRICT
THOMAS PARK SUBDIVISION (L. 29, P. 19)
LOT 280
LOT 265
LOT 266
LOT 272
LOT 273
LOT 275
LOT 276
LOT 277
LOT 278
EX. 1 STORY BUILDING ±13' HIGH
EX. 1 STORY BUILDING ±14' HIGH 5,674 SQ. FT. (AT GROUND LEVEL)
EX. 1 STORY BUILDING
EX. GARAGE
B-1
B-2
B-3
B-4
C.B.
R.O.W. LINE
CONCRETE PAVEMENT
ASPHALT
CONCRETE
12" COMBINED SEWER
6" GAS
8" WATER MAIN
6" S-MP GAS MAIN
G.V. & WELL RIM 687.14 T/PIPE 681.14
G.V. & WELL RIM 687.98
CATCH BASIN RIM 685.62 8" SE. INV 682.87
CATCH BASIN RIM 685.72 8" SW. INV 683.07
GAS VALVE RIM 686.95
COMBINED MH RIM 685.91 8" NE. INV 682.51 8" NW. INV 681.91 12" S. INV 678.21 12" W. INV 675.71 15" N. INV 675.71
COMBINED MH RIM 687.69 8" W. INV 680.74 12" N. INV 679.19
8" WATER MAIN
FND. PK NAIL 0.21' W.
FND. IRON 0.09' S. 0.10' W.
FND. PK NAIL
FND. IRON
FND. PK NAIL
FND. IRON
BLDG. COR. 0.35" N. OF P/L
BLDG. COR. 0.12" E. OF P/L
4"x12" BLOCK FACADE 0.37 E. OF P/L
CONC. BEAM
WOOD STEPS
CONC. WALK
OVERHANG
F.F. 688.97
F.F. 688.20
F.F. 688.23
F.F. 687.78
F.F. 687.60
F.F. 686.06
TC687.97 GU687.56
TC687.81
TC687.61
TC688.24 GU687.79
TC688.46
TC688.13 CURB DROP GU688.00
TC688.09 GU687.96
TC688.44
TC688.03
TC688.09
TC687.97 GU687.56
TC686.49 GU685.86
TC686.70 GU685.86
TC686.88 GU685.24
TC686.24 GU685.24
TC686.22 GU685.22
TC687.15 GU687.15
TC687.24 GU687.24
TC687.39 GU687.39
TC687.71 GU687.71
TC687.82 GU687.82
TC687.98 GU687.98
TC687.68 GU687.68
TC687.55 GU687.55
TC687.45 GU687.45
TC687.35 GU687.35
TC687.25 GU687.25
TC687.15 GU687.15
TC687.05 GU687.05
TC686.95 GU686.95
TC686.85 GU686.85
TC686.75 GU686.75
TC686.65 GU686.65
TC686.55 GU686.55
TC686.45 GU686.45
TC686.35 GU686.35
TC686.25 GU686.25
TC686.15 GU686.15
TC686.05 GU686.05
TC685.95 GU685.95
TC685.85 GU685.85
TC685.75 GU685.75
TC685.65 GU685.65



CITY OF R.O.W. CONSTRUCTION NOTES:

1. ALL WORK PROPOSED WITHIN 11 MILE ROAD AND PUBLIC ALLEY RIGHT-OF-WAYS SHALL BE PERMITTED BY CITY OF BERKLEY AND COORDIANTED WITH THE BERKLEY DPW DEPARTMENT.
2. NECESSARY TRAFFIC MANAGEMENT CONTROLS SHALL BE PROVIDED ALONG 11 MILE ROAD FRONTAGE PER APPLICABLE M.D.O.T. STANDARDS. A SINGLE TEMPORARY LANE CLOSURE FOR THE NORTHERLY, WEST-BOUND LANE SHALL BE PROVIDED AS NEEDED FOR UTILITY AND PAVEMENT REPLACEMENTS. FLAG CONTROL SHALL BE PROVIDED BY CONTRACTOR WHERE REQUIRED.



DEMOLITION NOTES

DEMOLITION OF SITE IMPROVEMENTS SHALL BE ALLOWED ONLY AFTER AN APPROVED PERMIT HAS BEEN SECURED FROM THE PUBLIC AGENCY HAVING JURISDICTION OVER SAID DEMOLITION.

FOR ANY DEMOLITION WITHIN PUBLIC RIGHT-OF-WAY, THE CONTRACTOR SHALL PAY FOR, AND SECURE, ALL NECESSARY PERMITS AND LIKEWISE SHALL ARRANGE FOR ALL SITE INSPECTIONS.

SITE DEMOLITION INCLUDES THE COMPLETE REMOVAL OF SITE IMPROVEMENTS AND OFF-SITE DISPOSAL DEBRIS SHALL BE TRANSPORTED TO AN APPROPRIATE DISPOSAL FACILITY THAT IS LICENSED FOR THAT TYPE OF DEBRIS.

THE CONTRACTOR SHALL COORDINATE TRUCK ROUTES WITH THE MUNICIPALITY PRIOR TO COMMENCEMENT OF SITE DEMOLITION. ALL TRUCKS SHALL BE TARPED OR PROPERLY SECURED TO CONTAIN DEMOLITION DEBRIS PRIOR TO LEAVING SITE.

EXISTING ON-SITE UNDERGROUND UTILITIES AND BUILDING SERVICES HAVE BEEN INDICATED BASED UPON THE BEST AVAILABLE UTILITY RECORDS AND/OR ON-SITE INSPECTION. NO GUARANTEE IS MADE BY THE DESIGN ENGINEER, AS TO THE COMPLETENESS OR ACCURACY OF UTILITY DATA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF UTILITY INFORMATION (THE DESIGN ENGINEER MAKES NO GUARANTEE NOR ASSUMES ANY LIABILITY AS TO THE COMPLETENESS AND/OR ACCURACY OF UTILITY DATA).

PRIOR TO THE REMOVAL OR ABANDONMENT OF ANY EXISTING UNDERGROUND UTILITY OR BUILDING SERVICE LINES CALLED FOR IN THE PLANS OR DISCOVERED DURING EXCAVATION, THE CONTRACTOR MUST DETERMINE IF THE UTILITY LINE OR BUILDING SERVICE IS STILL IN USE. IF THE UTILITY LINE OR BUILDING SERVICE IS STILL IN USE/ACTIVE THE CONTRACTOR MUST TAKE ALL THE NECESSARY STEPS TO GUARANTEE THAT THE UTILITY LINE OR BUILDING SERVICE IS RECONNECTED WITHOUT AN INTERRUPTION IN SERVICE. THE RECONNECTION OF THE UTILITY LINE OR BUILDING SERVICE MUST BE IN ACCORDANCE WITH THE STANDARDS AND REQUIREMENTS OF THE APPROPRIATE GOVERNMENTAL AGENCY OR PRIVATE UTILITY COMPANY.

SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED BY THE CONTRACTOR PRIOR TO SITE DEMOLITION.

* THE CONTRACTOR SHALL NOTIFY MISS DIG (1-800-482-7171) A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO THE START OF THE SITE DEMOLITION.

THE CONTRACTOR SHALL COORDINATE THE REMOVAL AND/OR RELOCATION OF EXISTING UTILITY POLES AND BUILDING SERVICES WITH THE DETROIT EDISON COMPANY. REMOVAL OF DETROIT EDISON ELECTRICAL SERVICES SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND REQUIREMENTS OF DETROIT EDISON.

THE CONTRACTOR SHALL COORDINATE THE REMOVAL AND/OR RELOCATION OF EXISTING UTILITY POLES AND BUILDING SERVICES WITH CONSUMERS ENERGY/MICHCON. REMOVAL OF CONSUMERS ENERGY/ MICHCON GAS SERVICES SHALL BE IN ACCORDANCE WITH THE STANDARDS AND REQUIREMENTS OF CONSUMERS ENERGY/MICHCON.

THE CONTRACTOR SHALL COORDINATE THE REMOVAL AND/OR RELOCATION OF EXISTING UTILITY POLES AND BUILDING SERVICES WITH AMERITECH. REMOVAL OF AMERITECH COMMUNICATION SERVICES SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND REQUIREMENTS OF AMERITECH.

THE CONTRACTOR SHALL COORDINATE THE REMOVAL AND/OR RELOCATION OF EXISTING UTILITY POLES AND BUILDING SERVICES WITH THE APPROPRIATE CABLE MEDIA COMPANY. REMOVAL OF CABLE SERVICES SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND REQUIREMENTS OF THE CABLE COMPANY.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFICATION OF PRIVATE UTILITY COMPANIES AND COORDINATE UTILITY SERVICE SHUT OFF/DISCONNECT, PRIOR TO DEMOLITION OF EXISTING STRUCTURES OR PROPERTIES.

ALL UTILITY METERS SHALL BE REMOVED BY THE APPROPRIATE UTILITY COMPANY.

ANY ON-SITE STORM SEWER FACILITIES LOCATED DURING DEMOLITION SHALL BE REMOVED AND BULK HEADED AT THE PROPERTY LINE IF INDICATED FOR REMOVAL ON THE PLANS.

PRIOR TO BUILDING DEMOLITION, ALL HAZARDOUS MATERIAL SHALL BE REMOVED BY OTHERS. THE DEMOLITION CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER SHOULD ANY SUSPICIOUS MATERIAL BE FOUND.

WATER SERVICES AND/OR STOP-BOX SHALL BE PRESERVED AND BULK HEADED AT THE PROPERTY LINE OR AS DIRECTED BY THE OWNER'S REPRESENTATION.

WHERE EXISTING BUILDINGS PLANED FOR DEMOLITION FALL WITHIN PROPOSED BUILDING FOOT PRINTS, BASEMENT FLOOR SLABS, FOUNDATION WALLS AND FOOTINGS SHALL BE COMPLETELY REMOVED AND BACK FILLED WITH MDOT CLASS II GRANULAR MATERIAL AND BE MACHINE COMPACTED TO A MINIMUM OF 98% OF MATERIALS MAXIMUM DENSITY.

TOPOGRAPHIC SURVEY NOTES

ALL ELEVATIONS ARE EXISTING ELEVATIONS, UNLESS OTHERWISE NOTED.

UTILITY LOCATIONS WERE OBTAINED FROM MUNICIPAL OFFICIALS AND RECORDS OF UTILITY COMPANIES, AND NO GUARANTEE CAN BE MADE TO THE COMPLETENESS, OR EXACTNESS OF LOCATION.

THIS SURVEY MAY NOT SHOW ALL EASEMENTS OF RECORD UNLESS AN UPDATED TITLE POLICY IS FURNISHED TO THE SURVEYOR BY THE OWNER

LEGEND

- MANHOLE
- HYDRANT
- GATE VALVE
- MANHOLE CATCH BASIN
- UTILITY POLE
- GUY POLE
- GUY WIRE
- 12" MAPLE
- EXISTING SANITARY SEWER
- EXISTING SAN. CLEAN OUT
- EXISTING WATER MAIN
- EXISTING STORM SEWER
- EX. R. Y. CATCH BASIN
- EXISTING BURIED CABLES
- OVERHEAD LINES
- LIGHT POLE
- SIGN
- EXISTING GAS MAIN
- EXISTING UTILITY TO BE REMOVED
- EXISTING UTILITY TO BE ABANDONED
- INDICATES EXISTING TREE TO BE REMOVED
- INDICATES AREAS OF PAVEMENT, BUILDINGS, ETC. TO BE REMOVED

NOWAK & FRAUS ENGINEERS

CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257
WWW.NOWAKFRAUS.COM

SEAL

STATE OF MICHIGAN
PAUL TULIKANGAS
ENGINEER NO. 057929
LICENSED PROFESSIONAL ENGINEER

PROJECT

Quality Roots Berkley
3916 11 Mile Road
Berkley, MI 48072-1005

CLIENT

Quality Roots

PROJECT LOCATION

Part of the SW 1/4
of Section 18
T.1N., R.11E.,
City of Berkley,
Oakland County, Michigan

SHEET

Demolition Plan

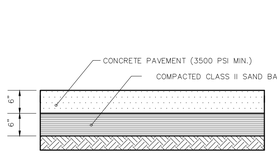
Know what's below Call before you dig.

DATE	ISSUED/REVISED
03-04-22	CLIENT REVIEW
03-25-22	SITE PLAN SUBMITTAL
04-19-22	SITE PLAN RESUBMITTAL 1

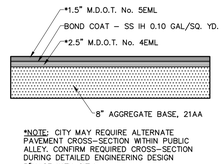
DRAWN BY: M. Carter
DESIGNED BY: M. Carter
APPROVED BY: P. Tulikangas
DATE: February 25, 2020
SCALE: 1" = 20'

20 10 0 10 20 30

NFE JOB NO. C360-02
SHEET NO. C2

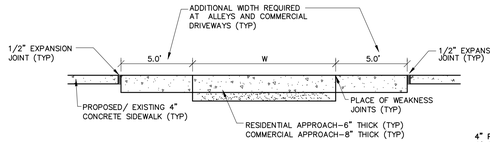


6" CONCRETE SIDEWALK

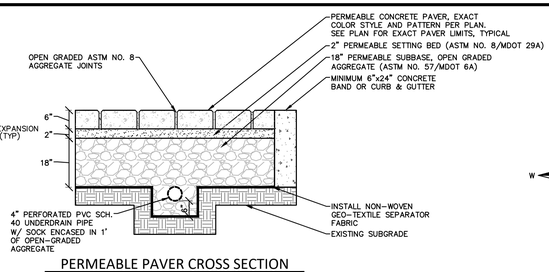


*NOTE: CITY MAY REQUIRE ALTERNATE PAVEMENT CROSS-SECTION WITHIN PUBLIC ALLEY. CONFIRM REQUIRED CROSS-SECTION DURING DETAILED ENGINEERING DESIGN P[HASE WITH CITY.

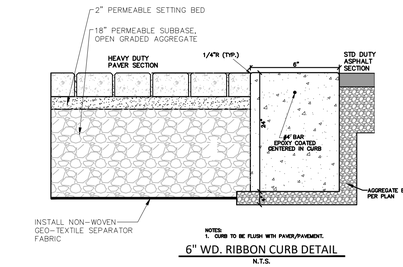
ASPHALT PAVEMENT SECTION
(DRIVE AND PARKING)



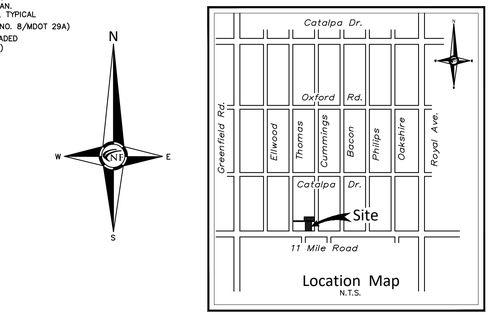
COMMERCIAL CONCRETE SIDEWALK DETAIL
N.T.S.



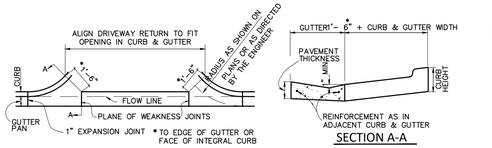
PERMEABLE PAVER CROSS SECTION
N.T.S.



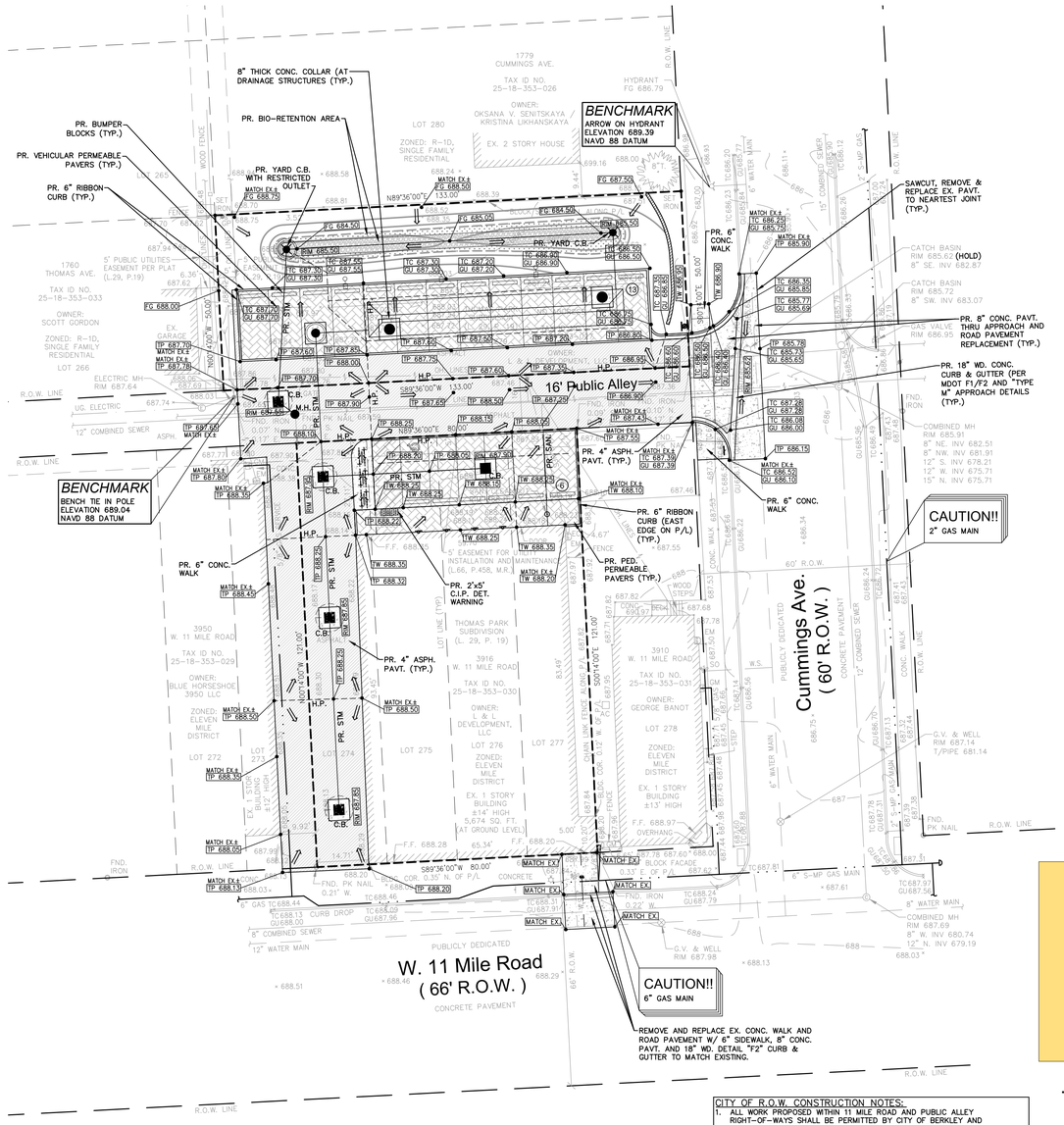
6" WD. RIBBON CURB DETAIL
N.T.S.



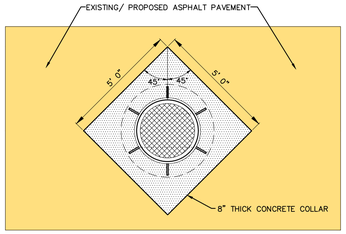
Location Map
N.T.S.



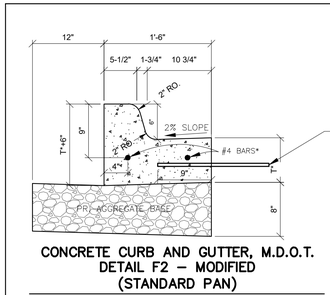
MDOT DRIVEWAY OPENING DETAIL 'M'
N.T.S.



CITY OF R.O.W. CONSTRUCTION NOTES:
1. ALL WORK PROPOSED WITHIN 11 MILE ROAD AND PUBLIC ALLEY RIGHT-OF-WAYS SHALL BE PERMITTED BY CITY OF BERKLEY AND COORDIANTED WITH THE BERKLEY DPW DEPARTMENT.
2. NECESSARY TRAFFIC MANAGEMENT CONTROLS SHALL BE PROVIDED ALONG 11 MILE ROAD FRONTAGE PER APPLICABLE M.D.O.T. STANDARDS. A SINGLE TEMPORARY LANE CLOSURE FOR THE NORTHERLY, WEST-BOUND LANE SHALL BE PROVIDED AS NEEDED FOR UTILITY AND PAVEMENT REPLACEMENTS. FLAG CONTROL SHALL BE PROVIDED BY CONTRACTOR WHERE REQUIRED.

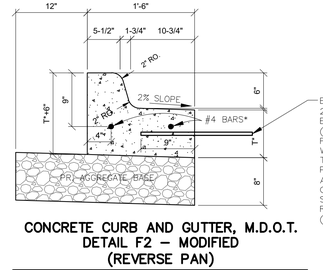


DRAINAGE STRUCTURE BOXOUT DETAIL II
N.T.S.



EPOXY-ANCHOR 24" LONG, #4 BARS (EPOXY-COATED) FOR LANE TIES WHEN ADJACENT TO EX. CONC. PAVEMENT IN ACCORDANCE W/ CURRENT MDOT STANDARD DETAILS R-30 AND R-41 (INCIDENTAL)*

CONCRETE CURB AND GUTTER, M.D.O.T. DETAIL F2 – MODIFIED (STANDARD PAN)
N.T.S.



EPOXY-ANCHOR 24" LONG, #4 BARS (EPOXY-COATED) FOR LANE TIES WHEN ADJACENT TO EX. CONC. PAVEMENT IN ACCORDANCE W/ CURRENT MDOT STANDARD DETAILS R-30 AND R-41 (INCIDENTAL)*

CONCRETE CURB AND GUTTER, M.D.O.T. DETAIL F2 – MODIFIED (REVERSE PAN)
N.T.S.

*NOTES:
1. "T" IS EQUAL TO THE THICKNESS & SLOPE IS EQUAL TO THE CROSS-SLOPE OF THE CONCRETE PAVEMENT WHEN CURB & GUTTER IS POURED INTEGRAL TO THE PAVEMENT.
2. OMIT #4 LONGITUDINAL EPOXY COATED BARS WHEN CURB & GUTTER IS POURED INTEGRAL OR TIED TO A NON-REINFORCED CONCRETE PAVEMENT.
3. PROPOSED CURB HEIGHTS INDICATED ARE TYPICAL, AND VARY WHERE INDICATED ON PLAN. CURB HEIGHTS SHALL MATCH EXISTING AT REPAIR LIMITS.
4. PROVIDE COMPACTED 21AA CRUSHED LIMESTONE AGGREGATE BASE UNDER CURB & GUTTER AND WITHIN 12" MINIMUM BEYOND BACK OF CURB; THICKNESS TO MATCH AGGREGATE BASE LAYER THICKNESS OF ADJACENT PROPOSED PAVEMENT
5. OMIT 24" LONG #4 EPOXY COATED BARS WHEN CURB & GUTTER IS POURED INTREGRAL OR TIED TO A NON-REINFORCED CONCRETE PAVEMENT.

GENERAL PAVING NOTES

PAVEMENT SHALL BE OF THE TYPE, THICKNESS AND CROSS SECTION AS INDICATED ON THE PLANS AND AS FOLLOWS:

CONCRETE: PORTLAND CEMENT TYPE IA (AIR-ENTRAINED) WITH A MINIMUM CEMENT CONTENT OF SIX SACKS PER CUBIC YARD, MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,500 PSI AND A SLUMP OF 1 1/2 TO 3 INCHES.

ASPHALT: LEVELING COURSE – MDOT BITUMINOUS MIXTURE NO4EML; SURFACE COURSE – MDOT BITUMINOUS MIXTURE NO. 5EML; ASPHALT CEMENT PERFORMANCE GRADE PG 64-22, BOND COAT – MDOT SS-1H EMULSION AT 0.10 GALLON PER SQUARE YARD; MAXIMUM 2 INCH LIFT.

PAVEMENT BASE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT. EXISTING SUB-BASE SHALL BE PROOF-ROLLED IN THE PRESENCE OF THE ENGINEER TO DETERMINE STABILITY.

ALL CONCRETE PAVEMENT, DRIVEWAYS, CURB & GUTTER, ETC., SHALL BE SPRAY CURED WITH WHITE MEMBRANE CURING COMPOUND IMMEDIATELY FOLLOWING FINISHING OPERATION.

ALL CONCRETE PAVEMENT JOINTS SHALL BE FILLED WITH HOT POURED RUBBERIZED ASPHALT JOINT SEALING COMPOUND IMMEDIATELY AFTER SAWCUT OPERATION. FEDERAL SPECIFICATION SS-S164.

ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE MUNICIPALITY AND THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, CURRENT EDITION.

ALL TOP OF CURB ELEVATIONS, AS SHOWN ON THE PLANS, ARE CALCULATED FOR A 6" CONCRETE CURB UNLESS OTHERWISE NOTED.

ALL SIDEWALK RAMPS, CONFORMING TO PUBLIC ACT NO. 8, 1993, SHALL BE INSTALLED AS INDICATED ON THE PLANS.

CONSTRUCTION OF A NEW OR RECONSTRUCTED DRIVE APPROACH CONNECTING TO AN EXISTING STATE OR COUNTY ROADWAY SHALL BE ALLOWED ONLY AFTER AN APPROVED PERMIT HAS BEEN SECURED FROM THE AGENCY HAVING JURISDICTION OVER SAID ROADWAY.

FOR ANY WORK WITHIN THE PUBLIC RIGHT-OF-WAY, THE CONTRACTOR SHALL PAY FOR AND SECURE ALL NECESSARY PERMITS AND LIKEWISE ARRANGE FOR ALL INSPECTION.

EXISTING TOPSOIL, VEGETATION AND ORGANIC MATERIALS SHALL BE STRIPPED AND REMOVED FROM PROPOSED PAVEMENT AREA PRIOR TO PLACEMENT OF BASE MATERIALS.

EXPANSION JOINTS SHOULD BE INSTALLED AT THE END OF ALL INTERSECTION RADII.

SIDEWALK RAMPS, CONFORMING TO PUBLIC ACT NO. 8, 1973, SHALL BE INSTALLED AS SHOWN AT ALL STREET INTERSECTIONS AND AT ALL BARRIER FREE PARKING AREAS AS INDICATED ON THE PLANS.

ALL PAVEMENT AREAS SHALL BE PROOF-ROLLED UNDER THE SUPERVISION OF A GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF BASE MATERIALS AND PAVING MATERIALS.

FILL AREAS SHALL BE MACHINE COMPACTED IN UNIFORM LIFTS NOT EXCEEDING 9 INCHES THICK TO 98% OF THE MAXIMUM DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT.

ESTIMATED QUANTITIES

PAVING

DESCRIPTION	QUANTITY	UNITS
4" ASPHALT ON 8" 21AA BASE	695	S.Y.
6" CONCRETE SIDEWALK	40	S.Y.
8" NON-REINFORCED CONCRETE & APPROACH	72	S.Y.
8" NON-REINFORCED CONCRETE	14	S.Y.
8" CONC. COLLAR (5'x5')	4	EA.
MDOT "TYPE M" APPROACH	53	L.F.
6" RIBBON CURB	353	L.F.
18" WD. CURB & GUTTER (MDOT DETAIL "F")	70	L.F.
PERMEABLE PAVERS	3,740	S.F.

PAVING LEGEND

- PROPOSED CONCRETE PAVT./WALK
- PROPOSED ASPHALT PAVEMENT
- PROPOSED PERMEABLE PAVERS

LEGEND

- EXISTING SANITARY SEWER
- SAN. CLEAN OUT
- EXISTING WATERMAIN
- EXISTING STORM SEWER
- EX. R. Y. CATCH BASIN
- EXISTING BURIED CABLES
- OVERHEAD LINES
- LIGHT POLE
- SIGN
- EXISTING GAS MAIN
- PR. SANITARY SEWER
- PR. WATER MAIN
- PR. STORM SEWER
- PR. R. Y. CATCH BASIN
- PROPOSED LIGHT POLE
- TC 600.00 — PR. TOP OF CURB ELEVATION
- GU 600.00 — PR. GUTTER ELEVATION
- TW 600.00 — PR. TOP OF WALK ELEVATION
- TP 600.00 — PR. TOP OF PVMT. ELEVATION
- FG 600.00 — FINISH GRADE ELEVATION

NOWAK & FRAUS ENGINEERS

CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257
WWW.NOWAKFRAUS.COM

SEAL

STATE OF MICHIGAN
PAUL TULIKANGAS
ENGINEER NO. 057929
LICENSED PROFESSIONAL ENGINEER

PROJECT
Quality Roots Berkley
3916 11 Mile Road
Berkley, MI 48072-1005

CLIENT
Quality Roots

PROJECT LOCATION
Part of the SW 1/4 of Section 18 T.1N., R.11E., City of Berkley, Oakland County, Michigan

SHEET
Paving & Grading Plan

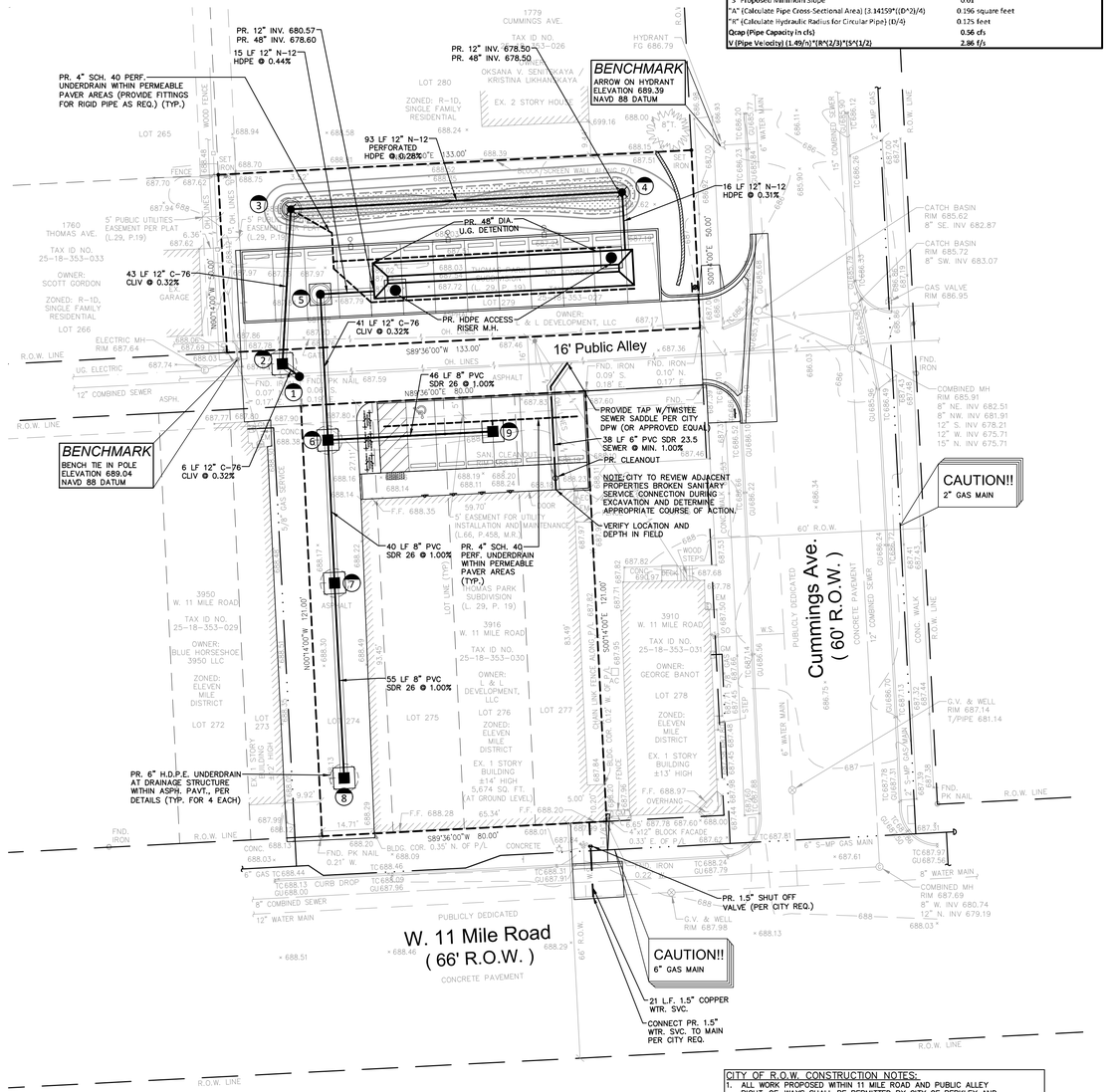
Know what's below Call before you dig.

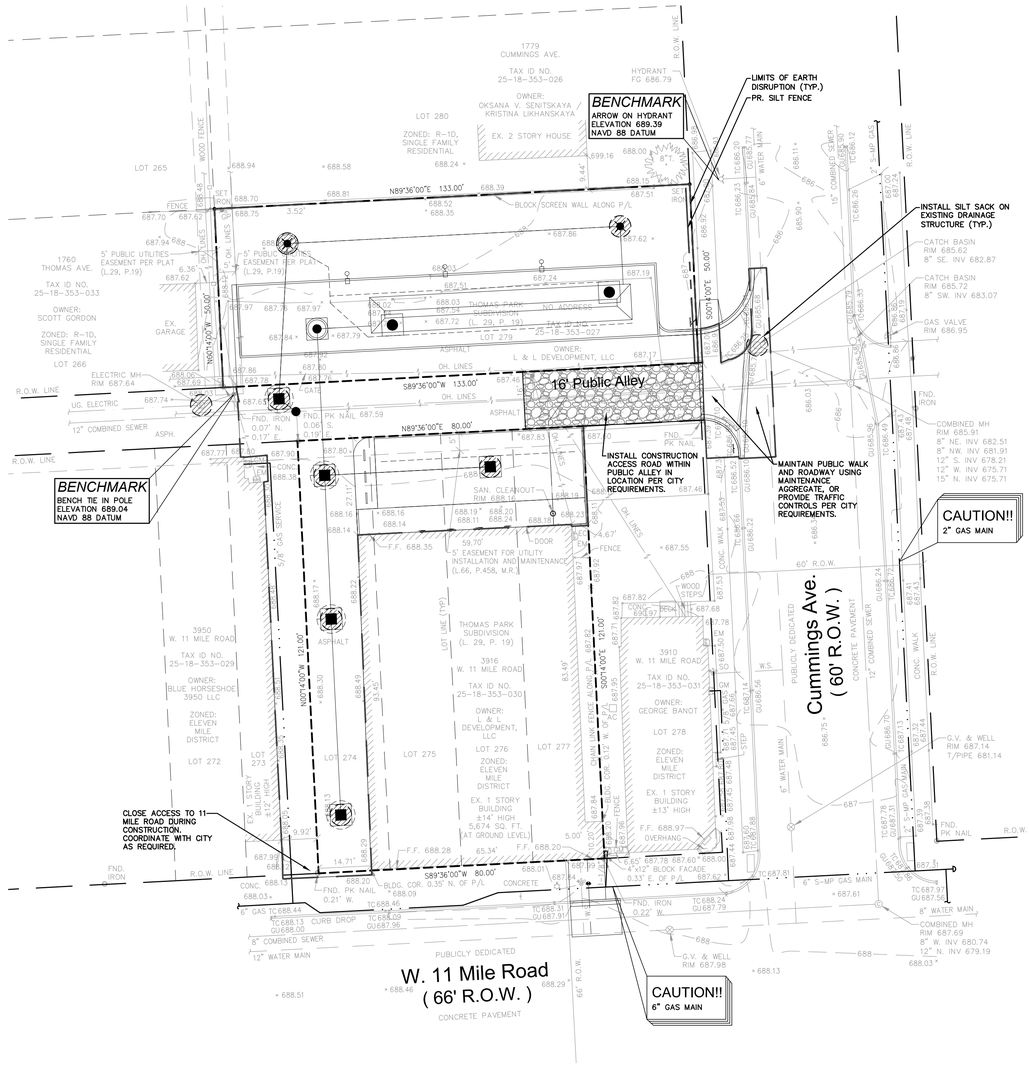
DATE	ISSUED/REVISED
03-04-22	CLIENT REVIEW
03-25-22	SITE PLAN SUBMITTAL
04-19-22	SITE PLAN RESUBMITTAL 1

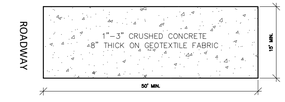
DRAWN BY: M. Carter
DESIGNED BY: P. Tulikangas
APPROVED BY: P. Tulikangas
DATE: February 25, 2020
SCALE: 1" = 20'

20 10 0 10 20 30

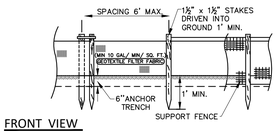
NFE JOB NO. C360-02
SHEET NO. C3


PR. 12" INV. 680.57
PR. 48" INV. 678.60
15 LF 12" N-12 HDPE @ 0.44%
PR. 4" SCH. 40 PERF. UNDERDRAIN WITHIN PERMEABLE PAVER AREAS (PROVIDE FITTINGS FOR RIGID PIPE AS REQ.) (TYP.)
PR. 12" INV. 678.50
PR. 48" INV. 678.50
BENCHMARK
ARROW ON HYDRANT
ELEVATION 689.39
NAVD 88 DATUM
93 LF 12" N-12 PERFORMED HDPE @ 0.28%
16 LF 12" N-12 HDPE @ 0.31%
PR. 48" DIA. U.G. DETENTION
43 LF 12" C-76 CLIV @ 0.32%
41 LF 12" C-76 CLIV @ 0.32%
PR. HDPE ACCESS RISER M.H.
16' Public Alley
46 LF 8" PVC SDR 26 @ 1.00%
PROVIDE TAP W/TWISTEE SEWER SADDLE PER CITY DPW (OR APPROVED EQUAL)
38 LF 6" PVC SDR 23.5 SEWER @ MIN. 1.00%
PR. CLEANOUT
NOTE: CITY TO REVIEW ADJACENT PROPERTIES BROKEN SANITARY SERVICE CONNECTION DURING EXCAVATION AND DETERMINE APPROPRIATE COURSE OF ACTION.
VERIFY LOCATION AND DEPTH IN FIELD
CAUTION!! 2" GAS MAIN
BENCHMARK
BENCH TIE IN POLE
ELEVATION 689.04
NAVD 88 DATUM
6 LF 12" C-76 CLIV @ 0.32%
40 LF 8" PVC SDR 26 @ 1.00%
PR. 4" SCH. 40 PERF. UNDERDRAIN WITHIN PERMEABLE PAVER AREAS (TYP.)
55 LF 8" PVC SDR 26 @ 1.00%
PR. 6" H.D.P.E. UNDERDRAIN AT DRAINAGE STRUCTURE WITHIN ASPH. PAVT., PER DETAILS (TYP. FOR 4 EACH)
PR. 1.5" SHUT OFF VALVE (PER CITY REQ.)
CAUTION!! 6" GAS MAIN
21 L.F. 1.5" COPPER WTR. SVC.
CONNECT PR. 1.5" WTR. SVC. TO MAIN PER CITY REQ.
W. 11 Mile Road (66' R.O.W.)
Cummings Ave. (60' R.O.W.)
1779 CUMMINGS AVE.
1760 THOMAS AVE.
3950 W. 11 MILE ROAD
3916 W. 11 MILE ROAD
3910 W. 11 MILE ROAD
OKSANA V. SENKEVSKAYA KRISTINA LIKHANSKAYA
BLUE HORSESHOE 3950 LLC
G & L DEVELOPMENT, LLC
GEORGE BANOT
YIDDAS PARK SUBDIVISION (L. 29, P. 19)
ZONED: R-1D, SINGLE FAMILY RESIDENTIAL
ZONED: ELEVEN MILE DISTRICT
EX. 2 STORY HOUSE
EX. 1 STORY BUILDING ±14' HIGH 5,674 SQ. FT. (AT GROUND LEVEL)
EX. 1 STORY BUILDING ±13' HIGH
LOT 265
LOT 266
LOT 272
LOT 273
LOT 274
LOT 275
LOT 276
LOT 277
LOT 278
LOT 279
LOT 280
TAX ID NO. 25-18-353-033
TAX ID NO. 25-18-353-029
TAX ID NO. 25-18-353-031
TAX ID NO. 25-18-353-030
OWNER: SCOTT GORDON
OWNER: BLUE HORSESHOE 3950 LLC
OWNER: G & L DEVELOPMENT, LLC
OWNER: GEORGE BANOT
5' PUBLIC UTILITIES EASEMENT PER PLAT (L.29, P.19)
5' PUBLIC UTILITIES EASEMENT (L.29, P.19)
S89°36'00"W 133.00'
S89°36'00"W 80.00'
N00°14'00"W 121.00'
S00°14'00"E 121.00'
N89°36'00"E 80.00'
S89°36'00"W 133.00'
R.O.W. LINE
CONCRETE PAVEMENT
ASPHALT
PUBLICLY DEDICATED
66' R.O.W.
60' R.O.W.
F.F. 688.28
F.F. 688.20
F.F. 688.35
F.F. 688.97
F.F. 687.86
F.F. 687.97
F.F. 687.79
F.F. 687.46
F.F. 687.36
F.F. 687.17
F.F. 687.07
F.F. 686.97
F.F. 686.87
F.F. 686.77
F.F. 686.67
F.F. 686.57
F.F. 686.47
F.F. 686.37
F.F. 686.27
F.F. 686.17
F.F. 686.07
F.F. 685.97
F.F. 685.87
F.F. 685.77
F.F. 685.67
F.F. 685.57
F.F. 685.47
F.F. 685.37
F.F. 685.27
F.F.

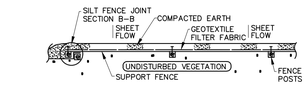




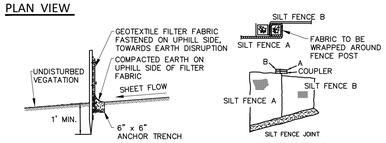
TEMPORARY CRUSHED CONCRETE CONSTRUCTION ACCESS ROAD



FRONT VIEW

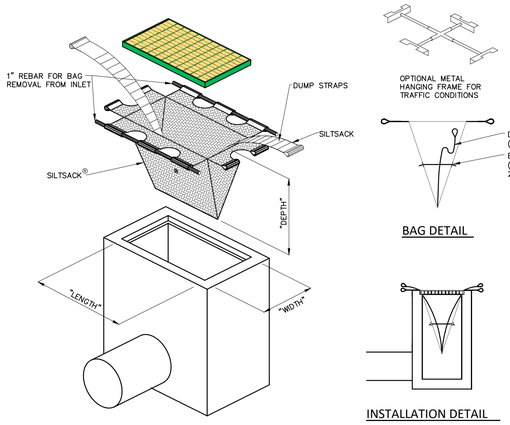


PLAN VIEW



SECTION A-A SECTION B-B

SILTFENCE DETAIL
NTS

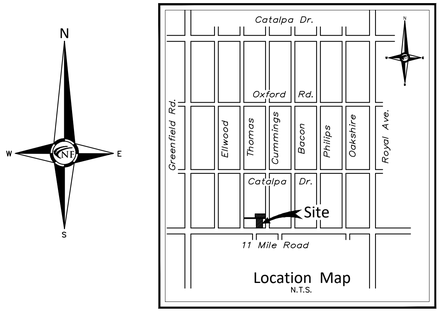


BAG DETAIL

INSTALLATION DETAIL

SILT SACK FILTER DETAIL

CONSTRUCTION SEQUENCE / TIMING SCHEDULE		
1.	INSTALL PERIMETER FILTER FABRIC FENCING AND STONE FILTER WHERE REQUIRED.	JUNE 2022
2.	MASS GRADE SITE.	JUNE 2022
3.	COMMENCE UNDERGROUND UTILITY WORK.	JULY 2022
4.	INSTALL INLET FILTERS ON PROPOSED DRAINAGE STRUCTURES.	JULY 2022
5.	FILL IN SEDIMENTATION TRAPS AND PAVE SITE.	AUGUST 2022
6.	COMPLETE ALL BUILDINGS AND LANDSCAPE ACTIVITY.	SEPTEMBER 2022
7.	JET VAC NEW STORM SEWER SYSTEM AS REQUIRED.	SEPTEMBER 2022
8.	REMOVE ALL TEMPORARY SOIL EROSION MEASURES.	NOVEMBER 2022



SOIL EROSION CONTROL

CUTTING, FILLING AND GRADING SHALL BE MINIMIZED AND THE NATURAL TOPOGRAPHY OF THE SITE SHALL BE PRESERVED TO THE MAXIMUM POSSIBLE EXTENT, EXCEPT WHERE SPECIFIC FINDINGS DEMONSTRATE THAT MAJOR ALTERATIONS WILL STILL MEET THE PURPOSES AND REQUIREMENTS OF THIS ORDINANCE.

DEVELOPMENT SHALL BE STAGED TO KEEP THE EXPOSED AREAS OF SOIL AS SMALL AS PRACTICABLE.

SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED BETWEEN THE DISTURBED AREA AND ANY WATERCOURSES, INCLUDING RIVERS, STREAMS, CREEKS, LAKES, PONDS AND OTHER WATERCOURSES; WETLANDS; OR ROADWAYS ON OR NEAR THE SITE.

SEDIMENT RESULTING FROM ACCELERATED SOIL EROSION SHALL BE REMOVES FROM RUNOFF WATER BEFORE THAT WATER LEAVES THE SITE.

TEMPORARY AND PERMANENT SOIL EROSION CONTROL MEASURES DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF WATER AROUND, THROUGH, OR AWAY FROM THE SITE SHALL BE DESIGNED TO LIMIT THE WATER FLOW TO A NON-EROSIVE VELOCITY.

TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE REMOVED AFTER PERMANENT SOIL EROSION CONTROL MEASURES HAVE BEEN IMPLEMENTED. ALL SITES SHALL BE STABILIZED WITH PERMANENT SOIL EROSION CONTROL MEASURES.

IF LAKES, PONDS, CREEKS, STREAMS, OR WETLANDS ARE LOCATED ON OR NEAR THE SITE, EROSION CONTROL MEASURES WHICH DIVERT RUNOFF AND TRAP SEDIMENT MUST BE PROVIDED AT STRATEGIC LOCATIONS. STRAW BALE BERMS MAY BE USED AS TEMPORARY STORMWATER DIVERSION STRUCTURES, BUT WILL NOT BE CONSIDERED SUFFICIENT FOR TRAPPING SEDIMENT. THE USE OF SEDIMENT BASINS, FILTER FABRIC, VEGETATED BUFFER STRIPS, AND ROCK FILTERS IN LIEU OF STRAW BALE BERMS SHALL BE STRONGLY ENCOURAGED. OTHER MEASURES MAY BE REQUIRED IF REASONABLY DETERMINED TO BE NECESSARY TO PROTECT A WATERCOURSE OR WETLAND.

WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHEN SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED.

PERMANENT EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 15 (FIFTEEN) CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH CHANGE HAS BEEN COMPLETED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED.

VEGETATED BUFFER STRIPS SHALL BE CREATED OR RETAINED ALONG THE EDGES OF ALL LAKES, PONDS, CREEKS, STREAMS, OTHER WATERCOURSES, OR WETLANDS.

EROSION AND SEDIMENTATION CONTROL MEASURES SHALL RECEIVE REGULAR MAINTENANCE TO ASSURE PROPER FUNCTIONING.

ALL GRADING PLANS AND SPECIFICATIONS, INCLUDING EXTENSIONS OF PREVIOUSLY APPROVED PLANS, SHALL INCLUDE PROVISIONS FOR EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH, BUT NOT LIMITED TO, THE STANDARDS CONTAINED IN THE "STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", PUBLISHED BY THE OAKLAND SOIL CONSERVATION DISTRICT.

NOTES

REFER TO THE WRC SOIL EROSION AND SEDIMENTATION CONTROL DETAIL SHEET FOR ALL ADDITIONAL NOTES & DETAILS (TYP.)

A DISTANCE OF 1.95 MILES TO THE NEAREST BODY OF WATER RIVER ROUGE.

THE TOTAL AREA OF EARTH DISRUPTION IS 0.33 ACRES.

THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY THE CONTRACTOR.

A SOIL EROSION PERMIT MAY BE REQUIRED FROM OAKLAND COUNTY.

SOIL DATA

THIS SITE CONSISTS OF URBAN LAND–BLOUNT–LENAWEE COMPLEX, 0 TO 3 PERCENT SLOPES AND UNDORTHENTS AND UNDIPSAMMENTS, NEARLY LEVEL TO HILLY. BASED ON DATA PROVIDED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE.

ESTIMATED QUANTITIES

SOIL EROSION

DESCRIPTION	QUANTITY	UNITS
SILT FABRIC FENCING	50	L.F.
SILT SACK OR EQUAL	9	EA.
CONSTRUCTION ACCESS ROAD	90	SYD.

LEGEND

- INDICATES LIMITS OF SILT FABRIC FENCE
- INDICATES LIMITS OF DRAINAGE DISTRICT AREA
- INDICATES LIMITS OF SOIL DISRUPTION
- INDICATES SILT SACK OR EQUAL ON EXISTING & PROPOSED DRAINAGE STRUCTURES
- AREA A 0.00 AC — INDICATES DRAINAGE DISTRICT AREA

NOWAK & FRAUS ENGINEERS

CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257
WWW.NOWAKFRAUS.COM

SEAL

STATE OF MICHIGAN
PAUL TULIKANGAS
ENGINEER NO. 057929
LICENSED PROFESSIONAL ENGINEER

PROJECT
Quality Roots Berkley
3916 11 Mile Road
Berkley, MI 48072-1005

CLIENT
Quality Roots

PROJECT LOCATION
Part of the SW 1/4 of Section 18 T.1N., R.11E., City of Berkley, Oakland County, Michigan

SHEET
Soil Erosion Control Plan

Know what's below Call before you dig.

DATE	ISSUED/REVISED
03-04-22	CLIENT REVIEW
03-25-22	SITE PLAN SUBMITTAL
04-19-22	SITE PLAN RESUBMITTAL 1

DRAWN BY: M. Carter
DESIGNED BY: M. Carter
APPROVED BY: P. Tulikangas
DATE: February 25, 2020
SCALE: 1" = 20'
20 10 0 10 20 30

NFE JOB NO. C360-02
SHEET NO. C5

UTILITIES

AT LEAST 72 HOURS (3 WORKING DAYS) PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY MISS DIG AND THE LOCAL COMMUNITY (WHERE APPLICABLE) TO STAKE LOCATIONS OF EXISTING UTILITIES.

THE CONTRACTOR SHALL EXPOSE AND VERIFY EXISTING UTILITIES FOR LOCATION, SIZE, DEPTH, MATERIAL AND CONFIGURATION PRIOR TO CONSTRUCTION. COSTS FOR EXPLORATORY EXCAVATION IS AN INCIDENTAL COST AND SHALL NOT BE CONSIDERED AN EXTRA TO THE CONTRACT.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY EXISTING UTILITIES WHICH DO NOT MATCH THE PLANS AND SPECIFICATIONS PRIOR TO COMMENCING WORK. ANY FIELD CHANGES OF THE PROPOSED UTILITIES SHALL BE APPROVED BY THE OWNER AND ENGINEER BEFORE THE WORK IS DONE.

THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES FROM DAMAGE. ANY SERVICE OR UTILITY DAMAGED OR REMOVED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT THE EXPENSE OF THE CONTRACTOR, IN CONFORMANCE WITH THE REQUIREMENTS OF THE UTILITY COMPANY PROVIDER.

DAMAGE TO PRIVATE PROPERTY

ALL SIDEWALKS, DRIVEWAYS, LAWNS, FENCING, TREES, SHRUBS, SPRINKLERS, LANDSCAPING, ETC., THAT ARE DAMAGED DURING CONSTRUCTION MUST BE REPAIRED OR REPLACED, IN KIND OR BETTER, BY THE CONTRACTOR. ALL STREET SIGNS, MAIL BOXES, ETC., REMOVED SHALL BE REPLACED IN KIND OR BETTER, BY THE CONTRACTOR. ALL THE REPAIRS OR REPLACEMENTS DUE TO THE CONTRACTOR'S WORK ARE TO BE INCLUDED IN THE CONTRACT PRICE(S) AND SHALL NOT BE AN EXTRA TO THE CONTRACT.

THE CONTRACTOR SHALL SECURE PERMISSION IN WRITING FROM ADJACENT PROPERTY OWNERS PRIOR TO ENTERING UPON ANY ADJOINING PROPERTIES, UNLESS OFFSITE PERMITS HAVE ALREADY BEEN OBTAINED BY THE OWNER AND ARE PART OF THE CONTRACT DOCUMENTS.

DEWATERING OF TRENCH AND EXCAVATIONS

IF NOT SPECIFICALLY PROVIDED FOR IN THE CONSTRUCTION DESIGN DOCUMENTS, THE DESIGN OR QUALITATIVE ANALYSIS OF GROUND WATER DEWATERING SYSTEMS IS BEYOND THE SCOPE OF DESIGN FOR THESE DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING AND PROVIDING APPROPRIATE EXCAVATION DEWATERING SYSTEMS FOR USE DURING CONSTRUCTION.

THE DEWATERING METHOD SELECTED BY THE CONTRACTOR WILL NOT ADVERSELY AFFECT ADJACENT PAVEMENTS OR STRUCTURES PRIOR TO BEGINNING DEWATERING CONDITIONS. MEANS AND METHODS OF DEWATERING ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR. THE COST OF DEWATERING WILL BE CONSIDERED INCLUDED IN THE WORK OF CONSTRUCTING THE UNDERGROUND UTILITIES UNLESS SPECIFICALLY INDICATED OTHERWISE.

BY-PASS PUMPING

FROM TIME TO TIME IT MAY BE NECESSARY FOR THE CONTRACTOR TO BY-PASS PUMP TO COMPLETE THE WORK INDICATED ON THE PLANS. THE COST OF BY-PASS PUMPING, THE METHODS, EQUIPMENT AND MEANS OF PROVIDING THAT WORK ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE CONSIDERED PART OF THE WORK WHETHER SPECIFICALLY CALLED OUT ON THE PLANS OR NOT.

MEANS AND METHODS FOR PIPE CONSTRUCTION

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE MEANS AND METHODS FOR CONSTRUCTING THE UNDERGROUND PIPE SYSTEMS PROPOSED ON THE PLANS, INCLUDING BUT NOT LIMITED TO THE NEED FOR SHORING/BRACING OF TRENCHES, DEWATERING OF TRENCHES, SCHEDULING THE WORK AT OFF PEAK HOURS, AND/OR MAINTAINING EXISTING FLOWS THAT MAY BE ENCOUNTERED VIA PUMPING, BY-PASS PIPING OR OTHER MEANS. THE CONTRACTOR SHALL NOT BE PAID ANY ADDITIONAL COMPENSATION TO IMPLEMENT ANY MEANS AND METHODS TO SATISFACTORILY COMPLETE THE CONSTRUCTION.

PAVEMENT REMOVAL

THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE THICKNESS OF THE PAVEMENT REMOVAL. PAVEMENT CORE SAMPLES ARE FOR INFORMATIONAL PURPOSES ONLY AS TO THE THICKNESS OF THE PAVEMENT AT THE LOCATION OF THE SAMPLE. THE OWNER AND ENGINEER MAKE NO REPRESENTATION, WARRANTY OR GUARANTY THAT THE SAMPLES ACCURATELY REFLECT THE PAVEMENT THICKNESS ON THE PROJECT.

MAINTENANCE OF TRAFFIC

DURING THE PROGRESS OF THE WORK THE CONTRACTOR SHALL ACCOMMODATE BOTH VEHICULAR AND PEDESTRIAN TRAFFIC IN THE ROAD RIGHTS OF WAY. THE CONTRACTOR'S EQUIPMENT AND OPERATIONS ON PUBLIC STREETS SHALL BE GOVERNED BY ALL APPLICABLE LOCAL, COUNTY AND STATE ORDINANCES, REGULATIONS AND LAWS. THE CONTRACTOR SHALL OBTAIN AND SATISFY ANY AND ALL PERMIT REQUIREMENTS BY THE LOCAL, COUNTY AND STATE GOVERNMENTAL AGENCIES.

IN ADDITION, WHERE THE WORK REQUIRES THE CLOSURE OF ONE OR MORE LANES OR IS WITHIN THE INFLUENCE OF THE ROAD OR PEDESTRIAN RIGHT OF WAY, THE CONTRACTOR SHALL PROVIDE ALL SIGNS, BARRICADES, FLAG PERSONS AND OTHER TRAFFIC CONTROL MEASURES AS REQUIRED BY MDOT, THE COUNTY, OR THE COMMUNITY HAVING JURISDICTION OF THE ROAD AND IN CONFORMANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

COMPENSATION FOR TRAFFIC CONTROL SHALL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE(S) UNLESS SPECIFIC TRAFFIC CONTROL ITEMS ARE INCLUDED IN THE ACCEPTED BID PROPOSAL.

IRRIGATION

THE CONTRACTOR SHALL MAINTAIN OR REPAIR ANY EXISTING IRRIGATION SYSTEMS WITHIN THE PROJECT AREA UNLESS THE DRAWINGS CALL FOR THE IRRIGATION SYSTEM TO BE REMOVED. THE OWNER AND NFE MAKE NO REPRESENTATIONS, WARRANTY OR GUARANTY AS TO THE LOCATION OF THE IRRIGATION SYSTEM. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PROTECT THE IRRIGATION SYSTEM DURING CONSTRUCTION ACTIVITIES. COMPENSATION FOR MAINTAINING OR REPAIRING EXISTING IRRIGATIONS SYSTEMS SHALL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE(S) UNLESS SPECIFIC IRRIGATION SYSTEM REPAIR ITEMS ARE INCLUDED IN THE ACCEPTED BID PROPOSAL.

SUB-SOIL CONDITIONS

ANY SOIL BORING PROVIDED BY THE OWNER AND/OR ENGINEER IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THIS INFORMATION IS NOT OFFERED AS EVIDENCE OF GROUND CONDITIONS THROUGHOUT THE PROJECT AND ONLY REFLECT THE GROUND CONDITIONS AT THE LOCATION OF THE BORING ON THE DATE THEY WERE TAKEN.

THE ACCURACY AND RELIABILITY OF THE SOIL LOGS AND REPORT ARE NOT WARRANTED OR GUARANTEED IN ANY WAY BY THE OWNER OR ENGINEER AS TO THE SUB-SOIL CONDITIONS FOUND ON THE SITE. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION AND SUB-SOIL INVESTIGATION AND SECURE OTHER SUCH INFORMATION AS THE CONTRACTOR CONSIDERS NECESSARY TO DO THE WORK PROPOSED AND IN PREPARATION OF THEIR BID.

SUBGRADE UNDERCUTTING AND PREPARTION

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE ANY AND ALL SOILS WHICH DO NOT CONFORM TO THE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A SUBGRADE IN CONFORMANCE WITH THE PROJECT PLANS AND/OR SPECIFICATIONS. THE MEANS AND METHODS USED TO ACHIEVE THE REQUIRED RESULT SHALL REST SOLELY WITH THE CONTRACTOR.

ANY AREAS OF UNDERCUTTING THAT RESULT IN ADDITIONAL OR EXTRA WORK BECAUSE THEY COULD NOT BE IDENTIFIED BY THE CONTRACTOR'S PRE-BID SITE OBSERVATION OR ARE NOT SET FORTH IN THE PLANS AND SPECIFICATIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER BEFORE ANY EXTRA WORK IS PERFORMED. THE CONTRACTOR SHALL MAKE A REQUEST FOR ANY ADDITIONAL COMPENSATION FOR THE UNDERCUTTING IN WRITING AND THE REQUEST SHALL CONFORM TO THE CONTRACT'S CHANGE ORDER PROVISIONS.

STRUCTURE BACKFILL

STRUCTURAL BACKFILL SHALL BE PLACED IN CONFORMANCE WITH THE PROJECT PLANS, SPECIFICATIONS OR AS REQUIRED BY THE COMMUNITY, GOVERNMENT AGENCY OR UTILITY THAT HAS JURISDICTION OVER THE WORK.

TRENCH BACKFILL

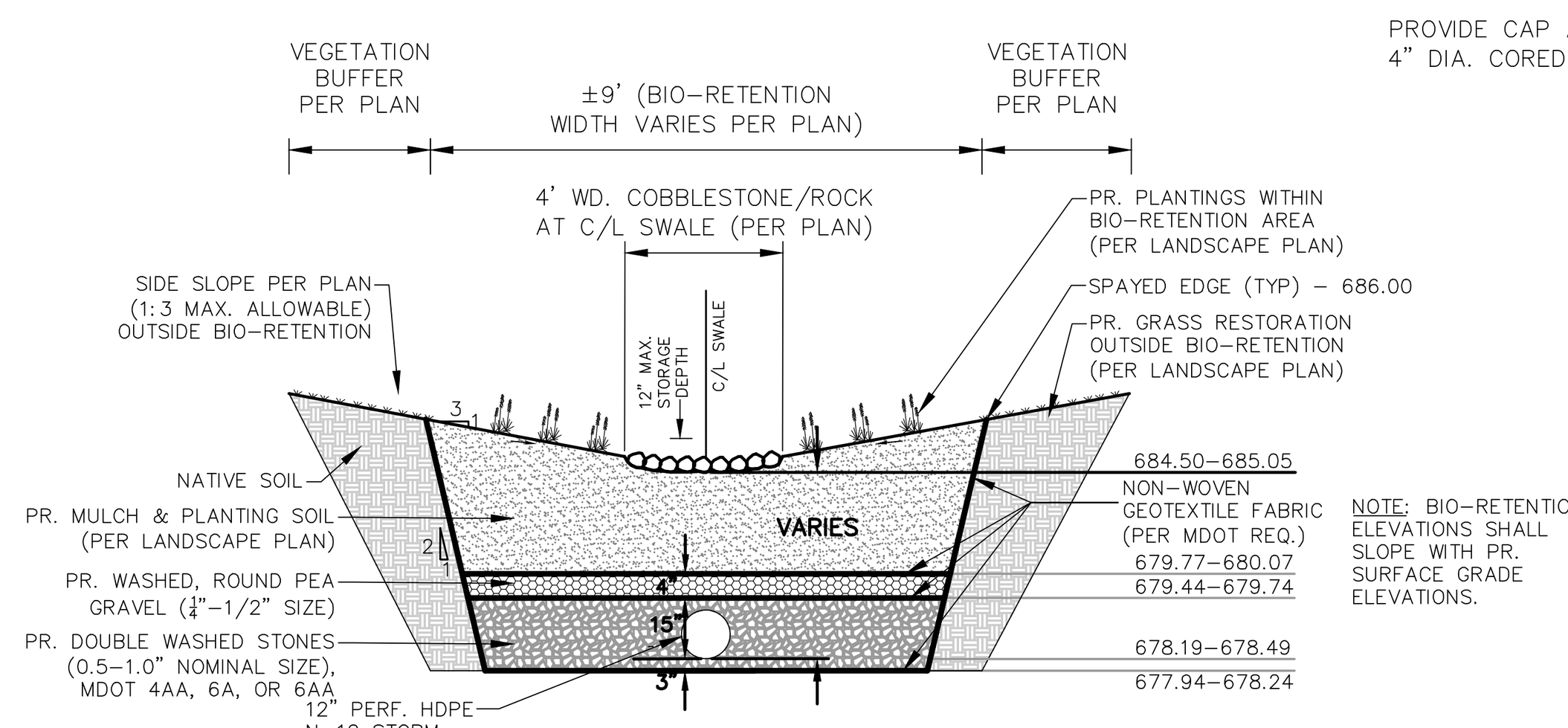
TRENCH BACKFILL SHALL BE PLACED IN CONFORMANCE WITH THE PLANS AND/OR SPECIFICATIONS. TRENCH BACKFILL SHALL ALSO BE INSTALLED IN CONFORMANCE WITH THE COMMUNITY REQUIREMENTS OR AGENCY/UTILITY GOVERNING SAID TRENCH CONSTRUCTION. IN THE CASE OF CONFLICTING REQUIREMENTS, THE MORE STRINGENT SHALL APPLY.

EARTH BALANCE / GRADING

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE WHETHER THE SITE EARTHWORK BALANCES OR NOT. ANY EXCESS CUT MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR. IN A LIKE MANNER, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IMPORT APPROVED FILL MATERIAL AND PLACE IT AS REQUIRED TO ATTAIN THE SITE GRADE AND COMPACTION REQUIREMENTS PER THE ENGINEER'S PLAN AND ALL APPLICABLE GOVERNMENTAL STANDARDS. THE ENGINEER AND OWNER MAKE NO REPRESENTATION AS TO THE QUANTITIES THAT MAY BE NEEDED TO CREATE A BALANCED EARTHWORK CONDITION OR THAT THE SITE EARTHWORK IS BALANCED.

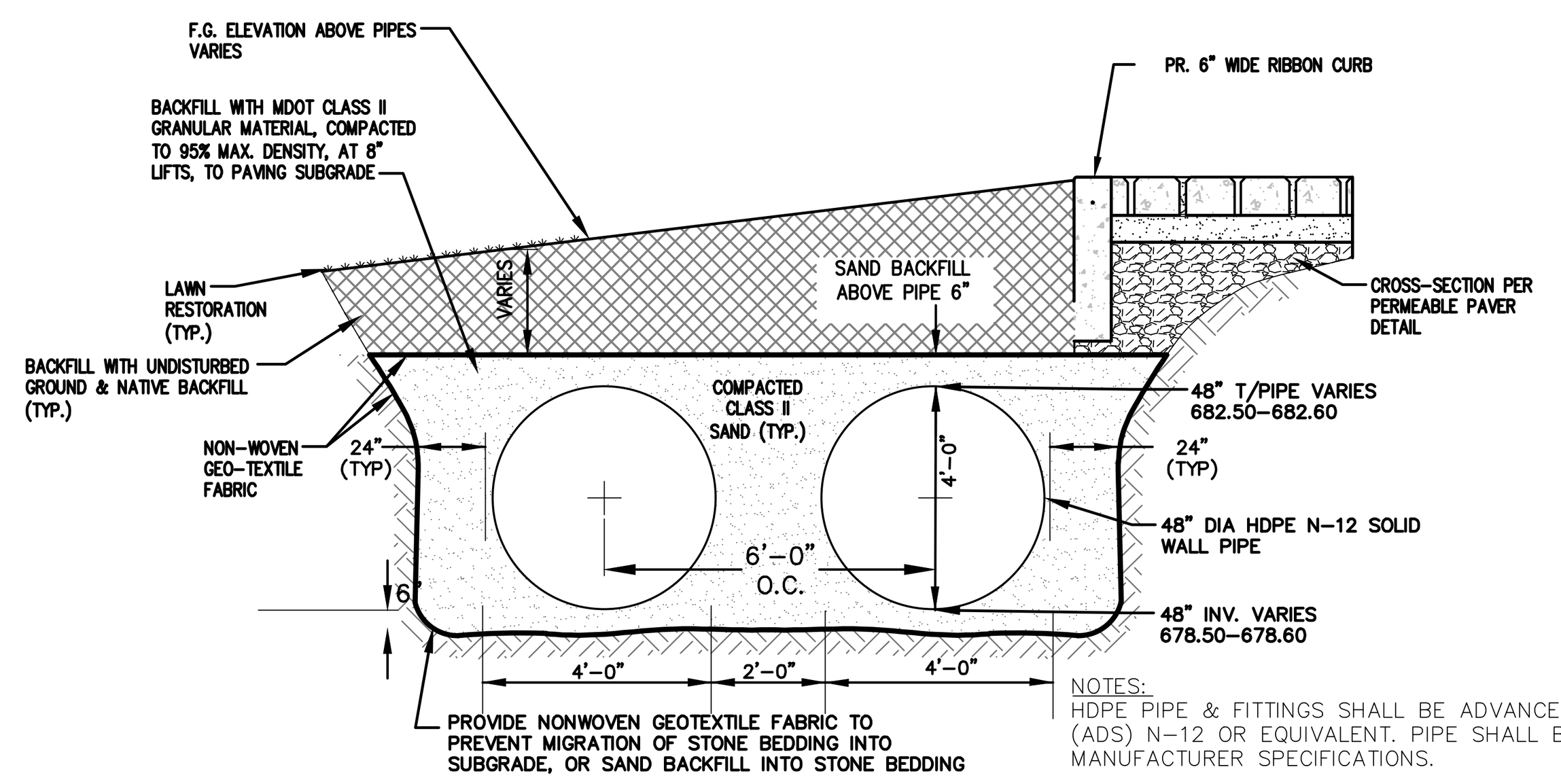
SOIL EROSION / SEDIMENTATION CONTROL

THE CONTRACTOR SHALL OBTAIN THE REQUIRED SOIL EROSION PERMIT AND SATISFY ALL REGULATORY REQUIREMENTS FOR CONTROLLING SOIL EROSION AND SEDIMENT TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS. THE ENGINEER AND OWNER ARE NOT RESPONSIBLE FOR INSPECTION OR APPROVAL OF THE CONTRACTOR'S WORK IN CONNECTION WITH SATISFYING THE SOIL EROSION PERMIT REQUIREMENTS UNLESS SPECIFICALLY STATED IN THE CONTRACT DOCUMENTS.



BIO-RETENTION CROSS-SECTION DETAIL

N.T.S.

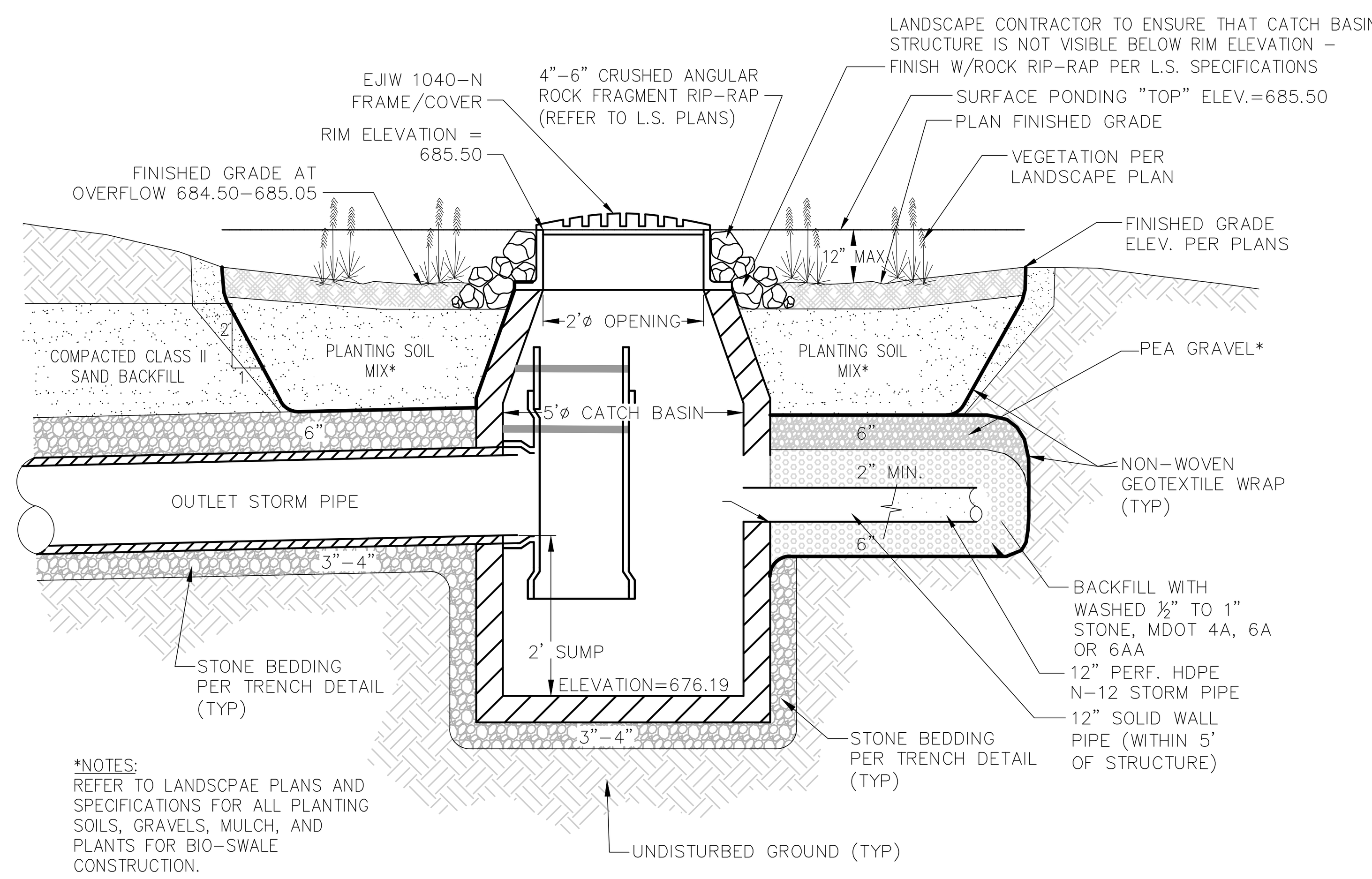


BACKFILL & BEDDING DETAIL FOR HDPE DETENTION SYSTEM

NOTES:
1. NUMBER OF BARRELS SHALL BE PER PLAN VIEW.
2. ALL RETENTION AND DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.
3. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
4. FOR MORE DETAILED INFORMATION, REFER TO MANUFACTURER.

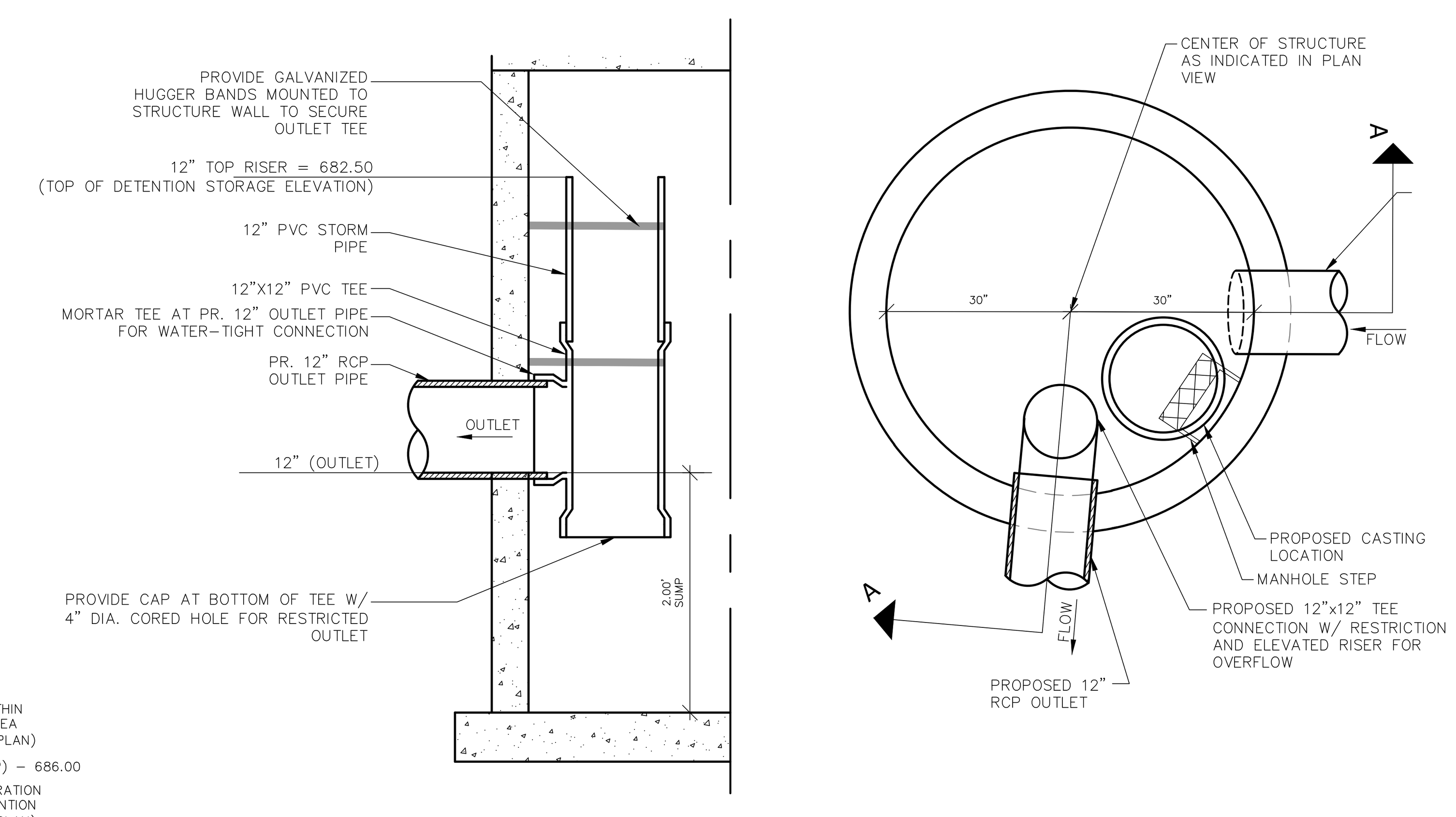
NOTES:
HDPE PIPE & FITTINGS SHALL BE ADVANCED DRAINAGE SYSTEMS, INC. (ADS) N-12 OR EQUIVALENT. PIPE SHALL BE PERFORATED PER MANUFACTURER SPECIFICATIONS.

REFER TO ALL MANUFACTURER/SUPPLIER RECOMMENDED CONSTRUCTION METHODS TO INSTALL HDPE PIPE SYSTEMS. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW FOR COMPLIANCE WITH CIVIL/SITE DRAWINGS.



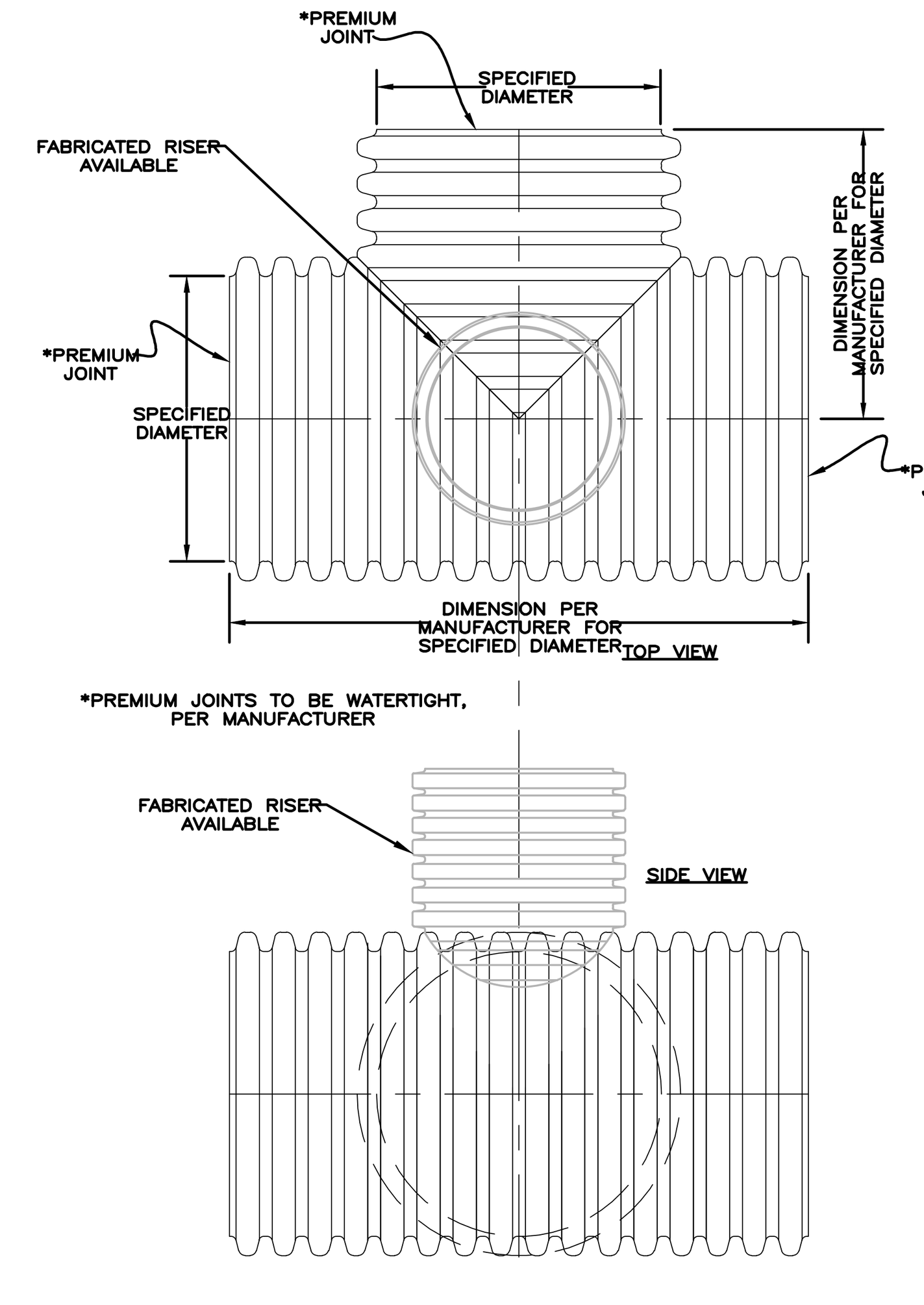
OVERFLOW STRUCTURE DETAIL FOR BIO-RETENTION AREA

N.T.S.

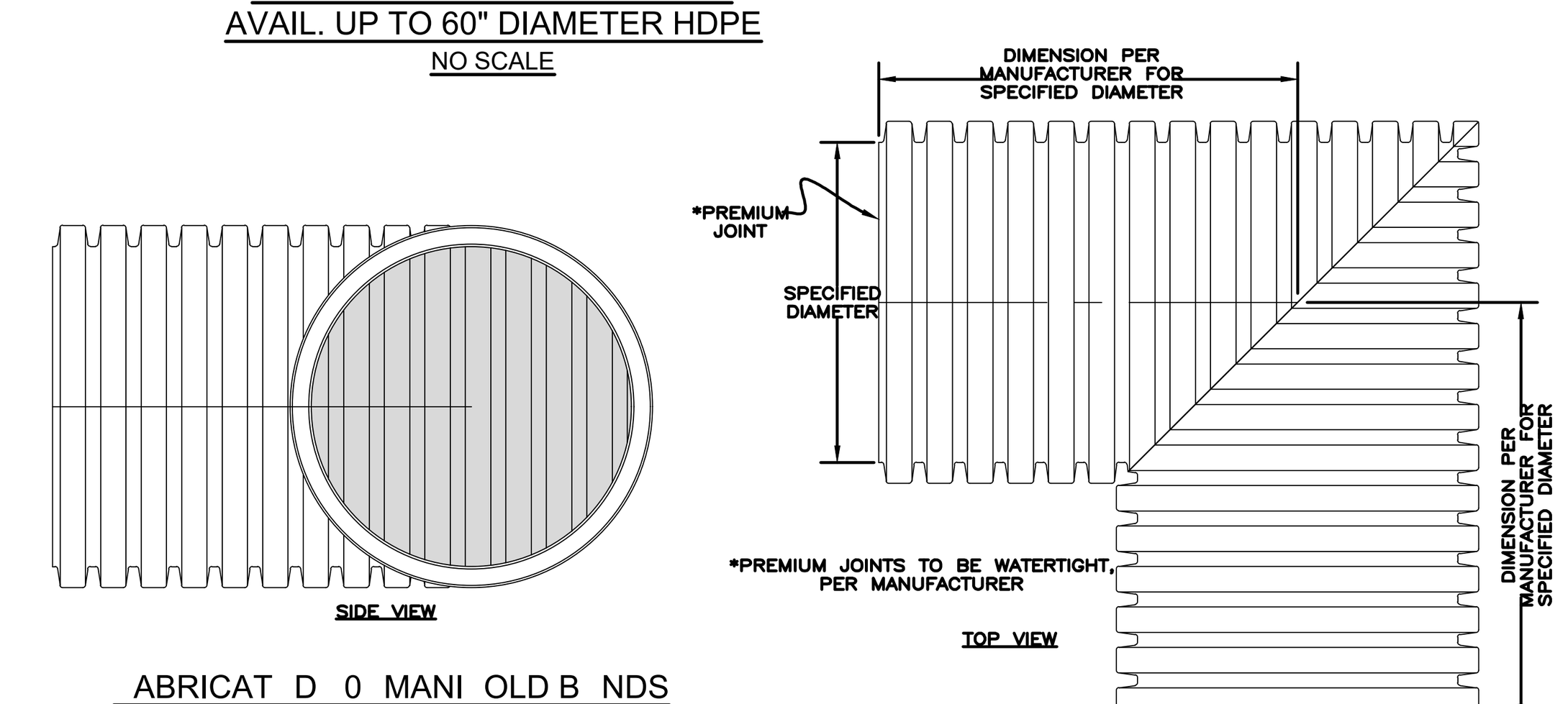


5' DIAMETER OUTLET CONTROL STRUCTURE

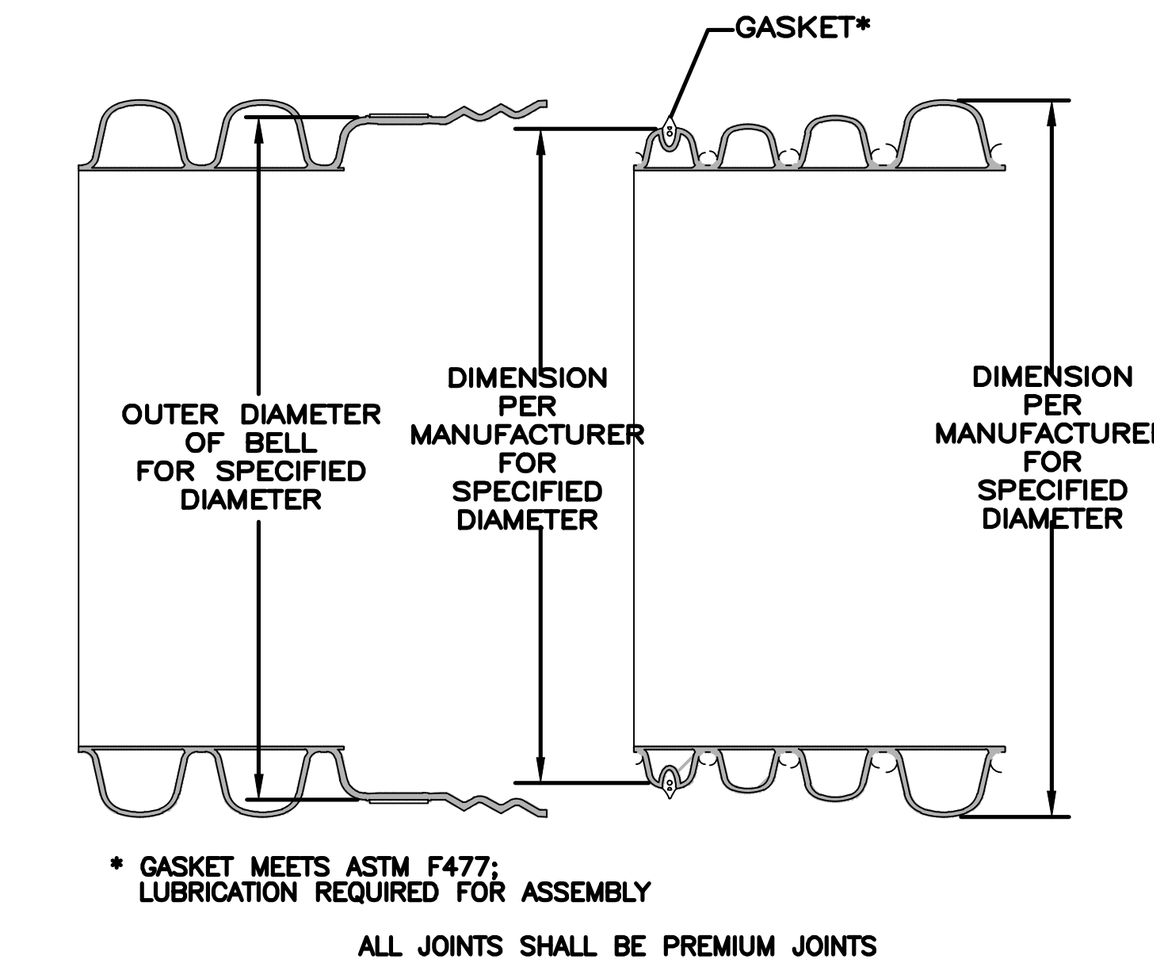
N.T.S.



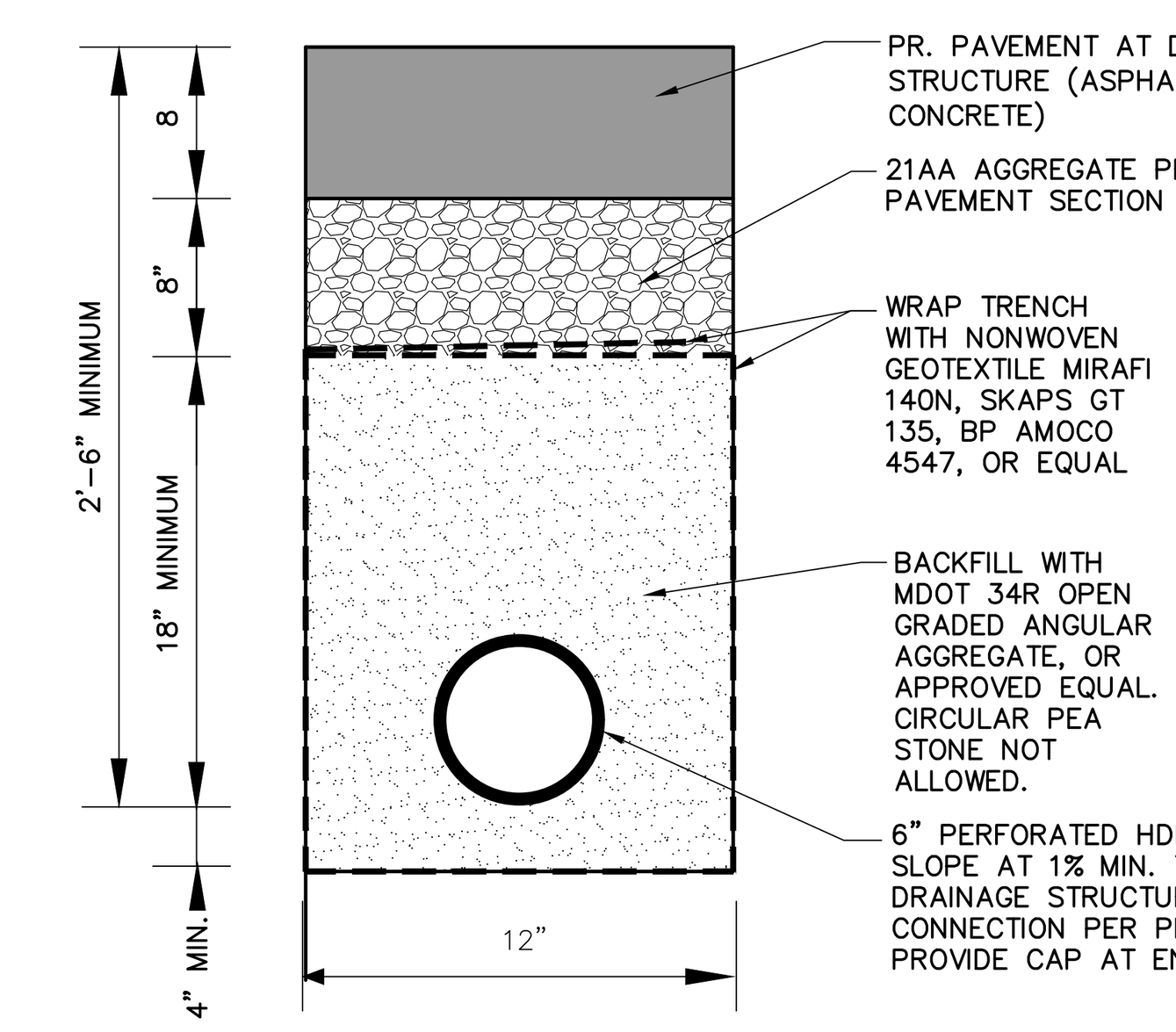
FABRICATED MANIFOLD TEES
AVAIL. UP TO 60" DIAMETER HDPE
NO SCALE



ABRICAT D 0 MANI OLD B NDS
AVAIL. UP TO 60" DIAMETER HDPE
NO SCALE

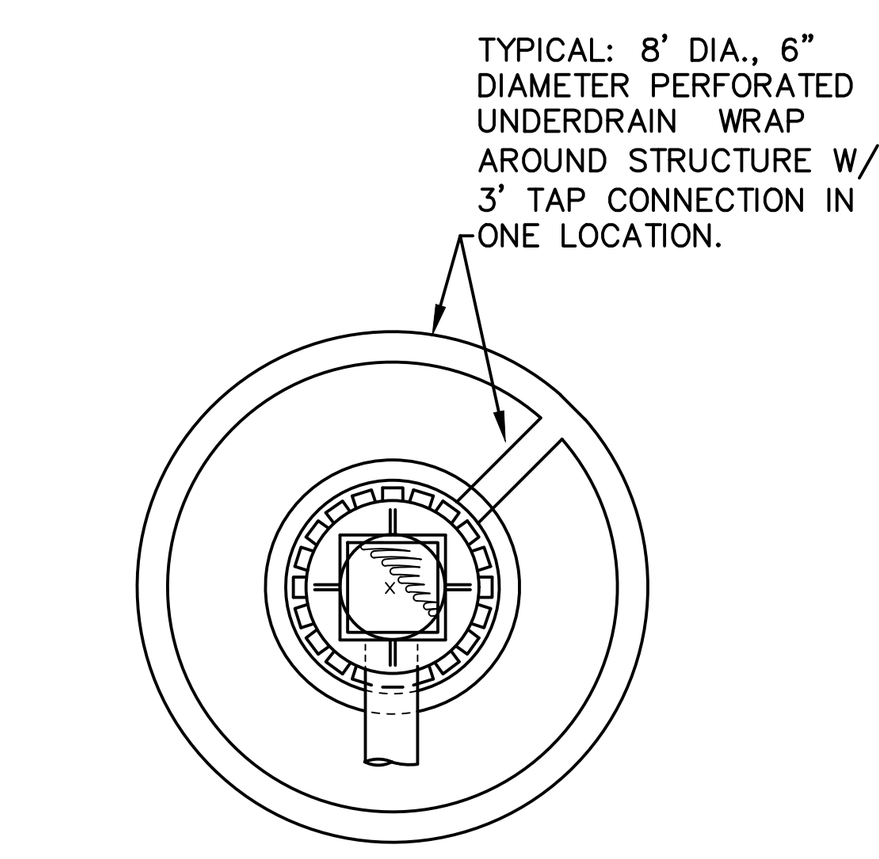


N-12 IB JOINT HDPE
12"-60" DIAMETER
NO SCALE



PERFORATED UNDERDRAIN TRENCH DETAIL

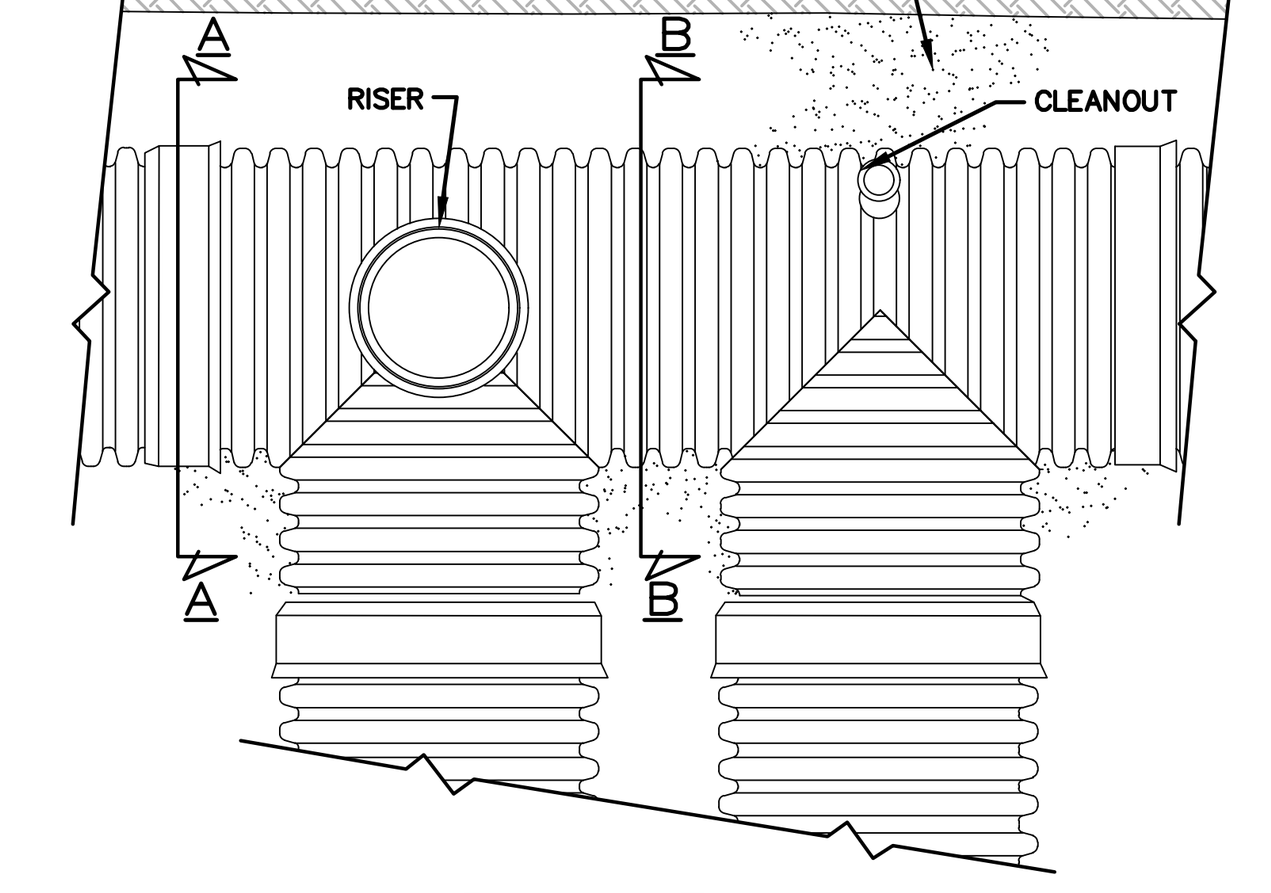
N.T.S.



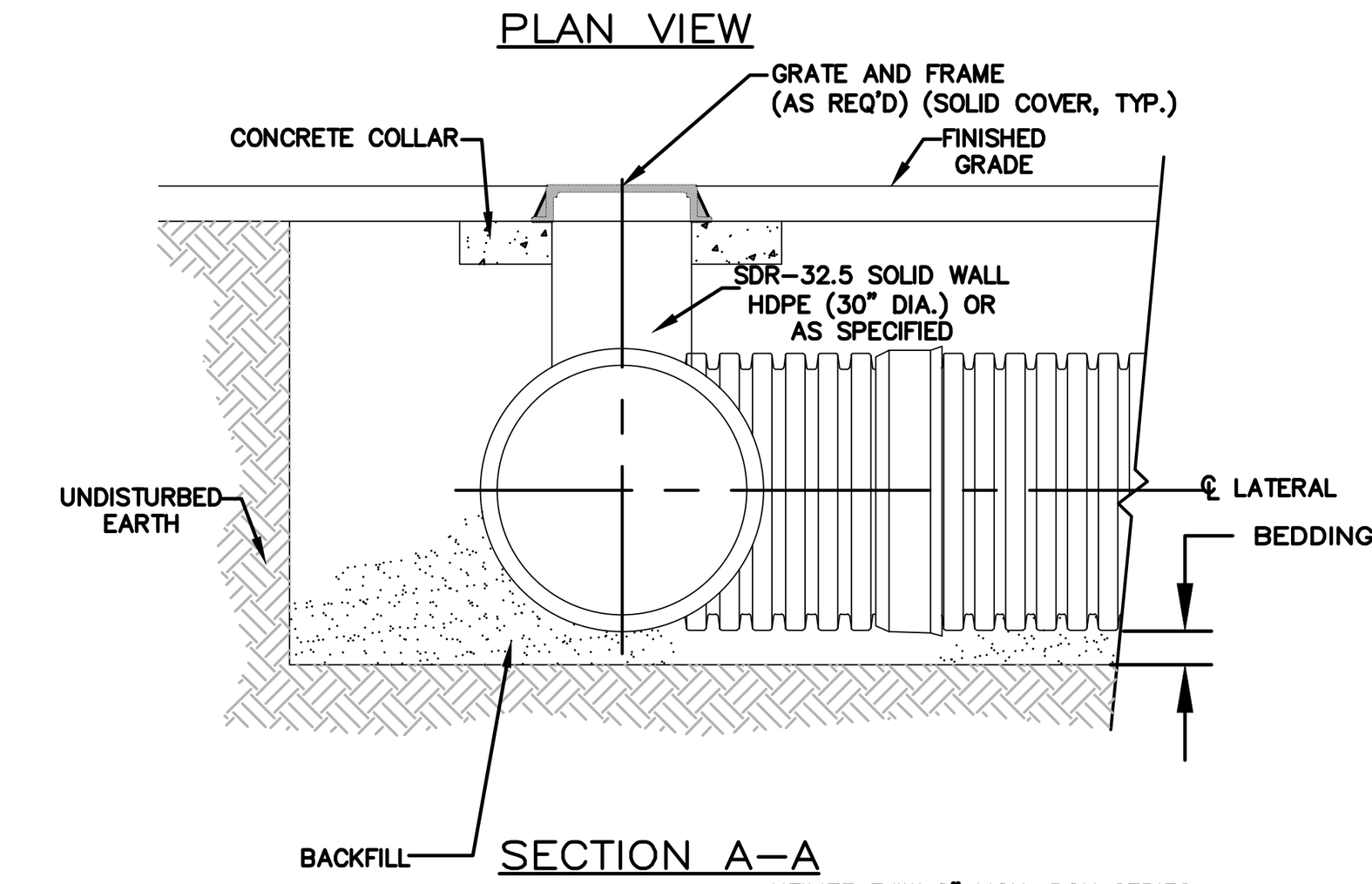
NOTE:
TYPICAL: 6" PERFORATED UNDERDRAIN, SET INVERT 2.5 FT. (MINIMUM) BELOW RIM ELEVATION. BASE QUANTITY EQUALS 30 L.F. PER STRUCTURE.

UNDERDRAIN DETAIL

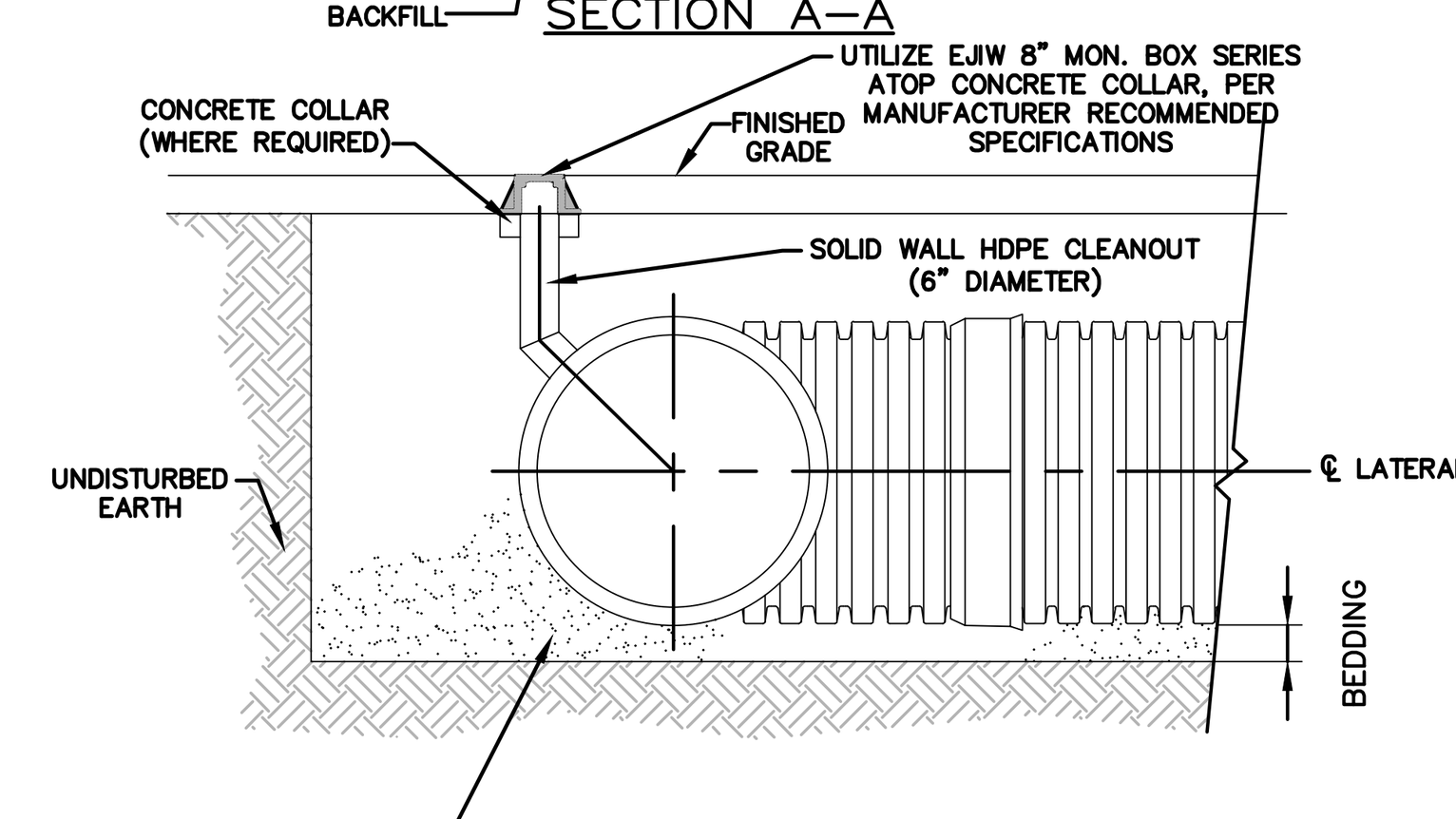
N.T.S.



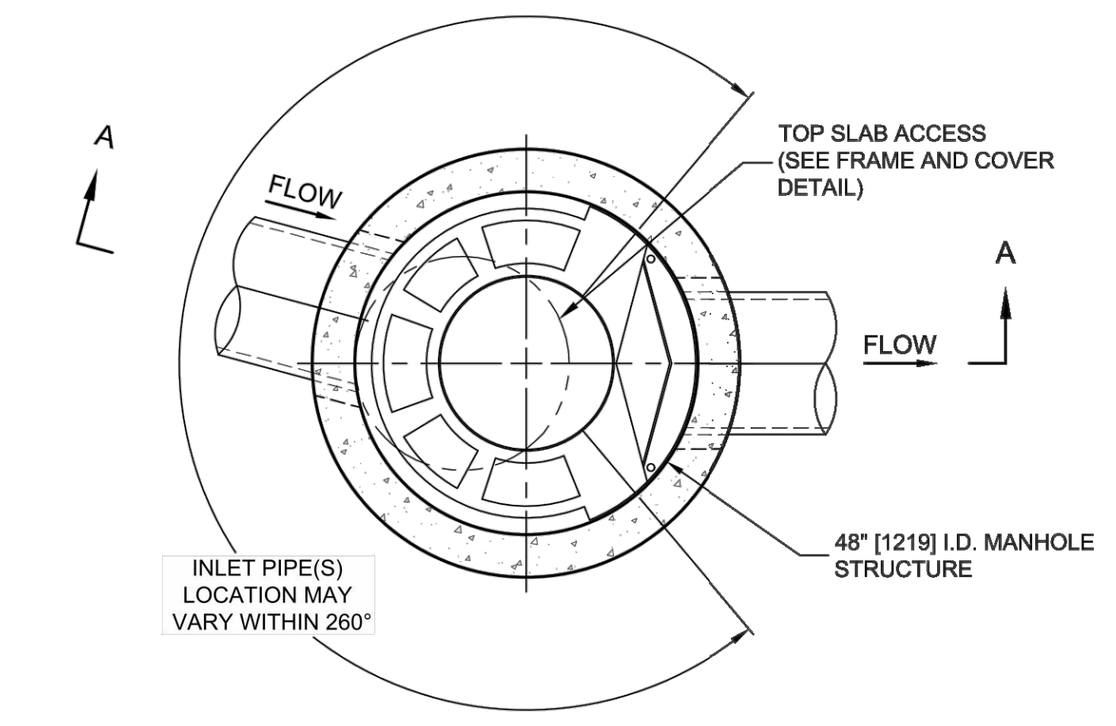
PLAN VIEW



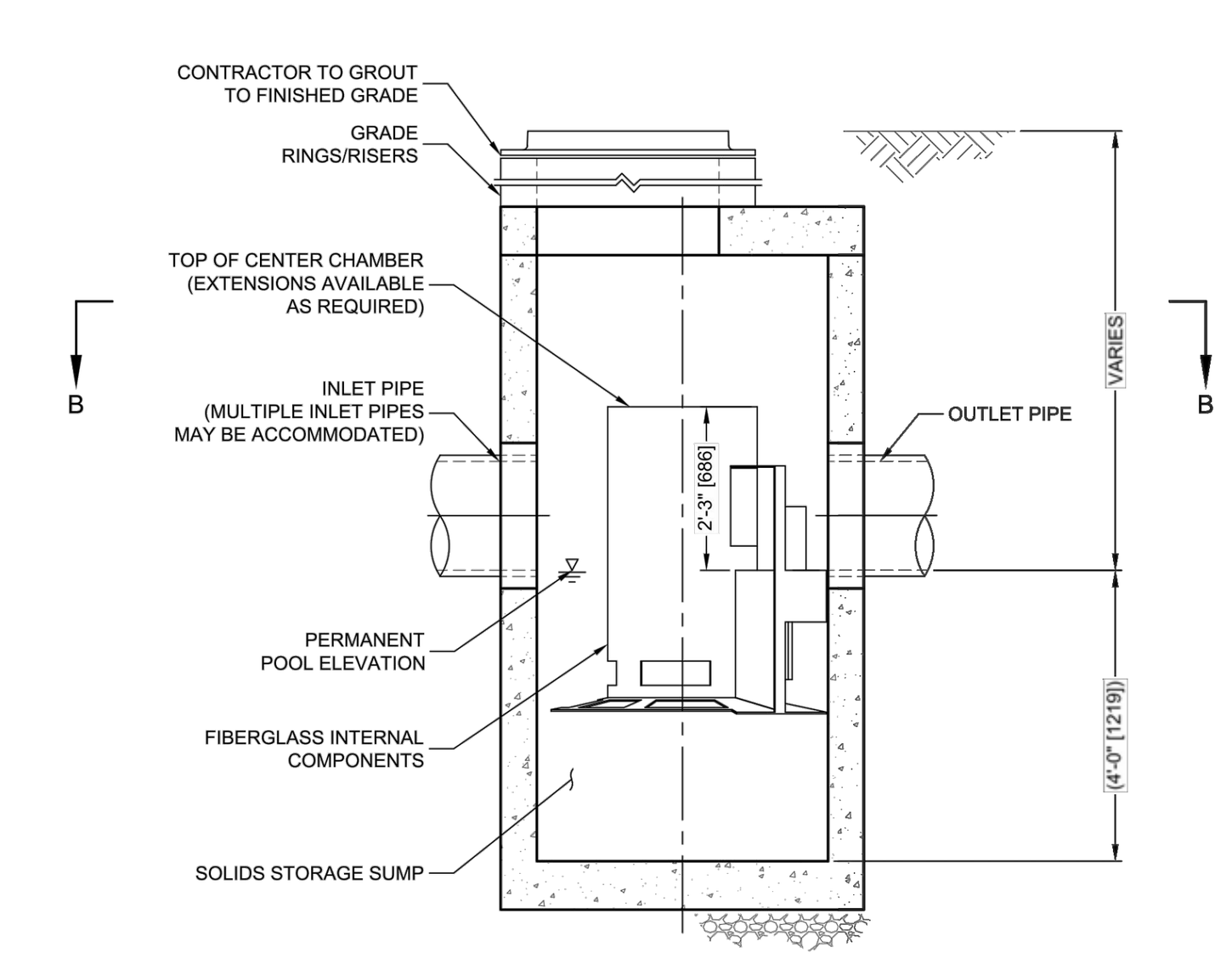
SECTION A-A



SECTION B-B



PLAN VIEW B-B
NOT TO SCALE



ELEVATION A-A
NOT TO SCALE

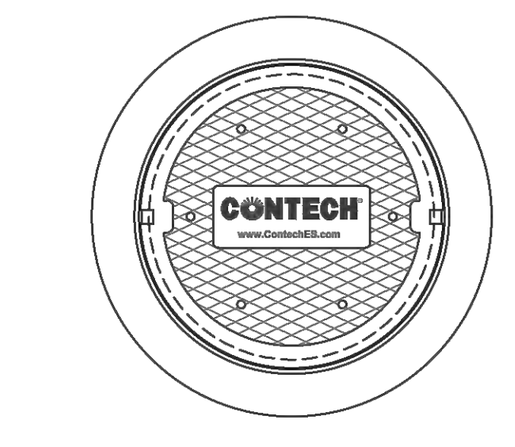
CASCADE separator™

I:\COMMON\CAD\TREATMENT\21 CASCADE\40 STANDARD DRAWINGS\DWG\CS-4-DTL.DWG 1/22/2019 9:34 AM

CASCADE SEPARATOR DESIGN NOTES

THE STANDARD CS-4 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES



FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
WATER QUALITY FLOW RATE (cfs [L/s])			
PEAK FLOW RATE (cfs [L/s])			
RETURN PERIOD OF PEAK FLOW (yrs)			
RIM ELEVATION			
PIPE DATA:	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
NOTES / SPECIAL REQUIREMENTS:			

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. CASCADE SEPARATOR STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2' [610], AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

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

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CS-4
CASCADE SEPARATOR
STANDARD DETAIL

1969 - 2019

NOWAK & FRAUS ENGINEERS

CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257
WWW.NOWAKFRAUS.COM

SEAL

STATE OF MICHIGAN
PAUL TULIKANGAS
ENGINEER NO. 057929
LICENSED PROFESSIONAL ENGINEER

PROJECT
Quality Roots Berkley
3916 11 Mile Road
Berkley, MI 48072-1005

CLIENT
Quality Roots

PROJECT LOCATION
Part of the SW 1/4
of Section 18
T.1N., R.11E.,
City of Berkley,
Oakland County, Michigan

SHEET
Notes & Details

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

DATE	ISSUED/REVISED
03-04-22	CLIENT REVIEW
03-25-22	SITE PLAN SUBMITTAL
04-19-22	SITE PLAN RESUBMITTAL 1

DRAWN BY:
M. Carter

DESIGNED BY:
M. Carter

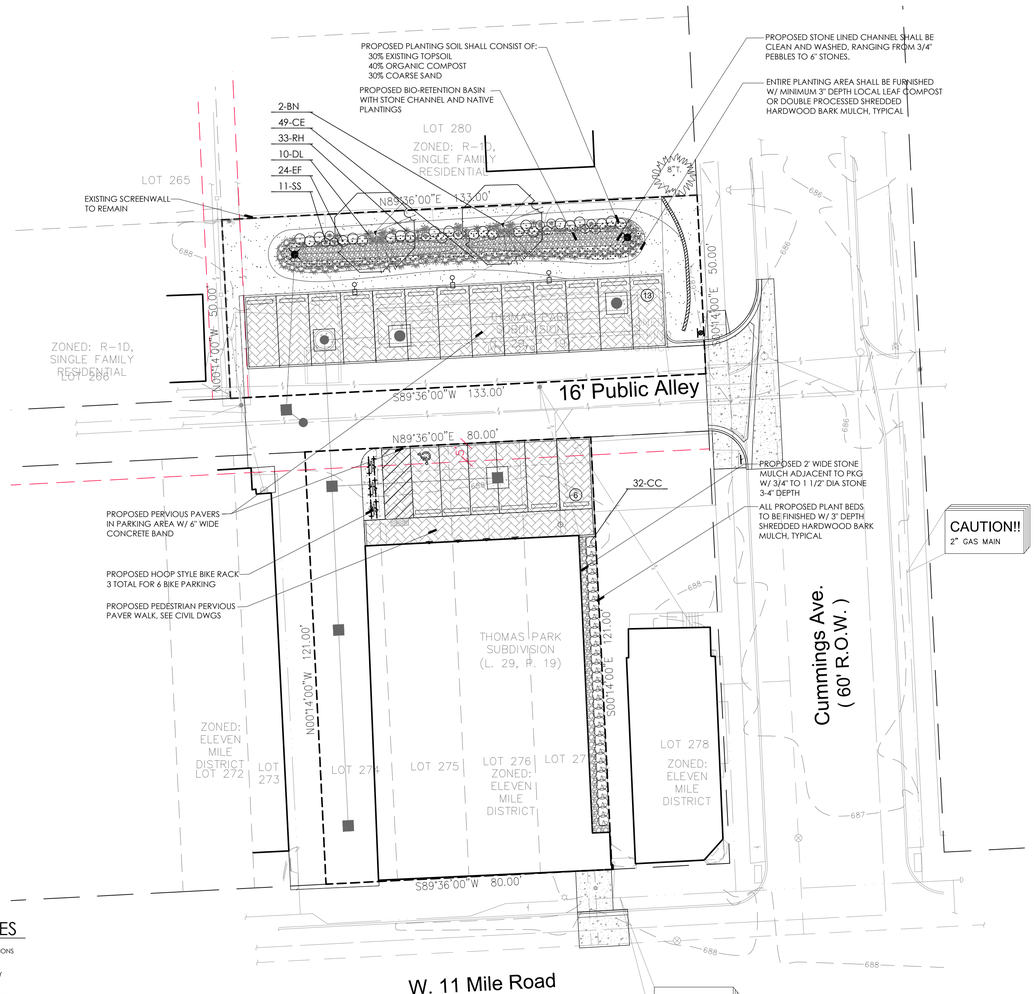
APPROVED BY:
P. Tulikangas

DATE:
February 25, 2020

SCALE: N.T.S.

NFE JOB NO.
C360-02

SHEET NO.
C6



GENERAL LANDSCAPE NOTES

1. LANDSCAPE CONTRACTOR SHALL VISIT SITE, INSPECT EXISTING CONDITIONS AND REVIEW PROPOSED PLANTING AND RELATED WORK, IN CASE OF DISCREPANCY BETWEEN PLAN AND PLANT LIST, THE PLAN SHALL GOVERN QUANTITIES. CONTACT THE LANDSCAPE ARCHITECT WITH ANY CONCERNS.
2. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ON-SITE UTILITIES PRIOR TO BEGINNING CONSTRUCTION ON HIS/HER PHASE OF WORK. ANY DAMAGE OR INTERUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL COORDINATE ALL RELATED ACTIVITIES WITH OTHER TRADES, AND SHALL REPORT ANY UNACCEPTACBLE SITE CONDITIONS TO THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT.
4. PLANTS SHALL BE FULL, WELL-BRANCHED, AND IN HEALTHY VIGOROUS GROWING CONDITION.
5. PLANTS SHALL BE WATERED BEFORE AND AFTER PLANTING IS COMPLETE.
6. ALL TREES MUST BE STAKED, FERTILIZED AND MULCHED AND SHALL BE GUARANTEED TO EXHIBIT A NORMAL GROWTH CYCLE FOR AT LEAST ONE (1) YEAR FOLLOWING PLANTING.
7. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED IN THE MOST RECENT EDITION OF THE "AMERICAN STANDARDS FOR NURSERY STOCK".
8. CONTRACTOR WILL SUPPLY FINISHED GRADE AND EXCAVATE AS NECESSARY TO SUPPLY PLANT MIX DEPTH IN ALL PLANTING BEDS AS INDICATED IN PLANT DETAILS AND A DEPTH OF 4" IN ALL LAWN AREAS.
9. PROVIDE CLEAN BACKFILL SOIL, USING MATERIAL STOCKPILED ON-SITE, SOIL SHALL BE SCREENED AND FREE OF DEBRIS, FOREIGN MATERIAL, AND STONE.
10. SLOW-RELEASE FERTILIZER SHALL BE ADDED TO THE PLANT PITS BEFORE BEING BACKFILLED. APPLICATION SHALL BE AT THE MANUFACTURERS RECOMMENDED RATES.
11. AMENDED PLANT MIX (PREPARED TOPSOIL) SHALL CONSIST OF 1/3 SCREENED TOPSOIL, 1/3 SAND, AND 1/3 "DAIRY DOO" COMPOST. MIXED WELL AND SPREAD TO A DEPTH AS INDICATED IN PLANTING DETAILS.
12. ALL PLANTINGS SHALL BE MULCHED WITH SHREDDED HARDWOOD BARK, SPREAD TO A DEPTH OF 3" FOR TREES AND SHRUBS, AND 2" ON ANNUALS, PERENNIALS, AND GROUNDCOVER PLANTINGS. MULCH SHALL BE FREE FROM DEBRIS AND FOREIGN MATERIAL, AND PIECES ON INCONSISTENT SIZE.
13. NO SUBSTITUTIONS OR CHANGES OF LOCATION, OR PLANT TYPE SHALL BE MADE WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE.
14. THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS PRIOR TO INSTALLATION.
15. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL PLANT MATERIAL IN A VERTICAL CONDITION THROUGHOUT THE GUARANTEED PERIOD.
16. THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE SHALL HAVE THE RIGHT TO REJECT ANY WORK OR MATERIAL THAT DOES NOT MEET THE REQUIREMENTS OF THE PLANS AND/OR SPECIFICATIONS.
17. THE LANDSCAPE CONTRACTOR SHALL SEED AND MULCH OR SOD (AS INDICATED ON PLANS) ALL AREAS DESIGNATED AS SUCH ON THE PLANS, THROUGHOUT THE CONTRACT LIMITS. FURTHER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING AREAS DISTURBED DURING CONSTRUCTION, NOT IN THE CONTRACT LIMITS, TO EQUAL OR GREATER CONDITION.
18. ALL LANDSCAPE AREAS SHALL HAVE PROPER DRAINAGE THAT PREVENTS EXCESSIVE WATER FROM PONDING ON LAWN AREAS OR AROUND TREES AND SHRUBS.
19. ALL LANDSCAPE AREAS SHALL BE IRRIGATED WITH AN AUTOMATIC UNDERGROUND SYSTEM.

GROUNDCOVER KEY

1. HYDRO-SEED LAWN AREAS W/ LOW GROW SEED MIX
2. 3" DEPTH DOUBLE SHREDDED HARDWOOD BARK MULCH
3. 3/4" - 1 1/2" STONE MULCH, 3-4" DEPTH ON WEED BARRIER
4. 4" X 3/16" ALUMINUM EDGING, STAKED PER MANUFACTURER

GENERAL SEED NOTE:

ALL LAWN AREAS DESIGNATED TO BE SEEDED, SHALL BE HYDRO-SEEDED WITH SPECIFIED BLENDS, AND STABILIZED WITH WOOD CELLULOSE FIBER MULCH (2,000 LBS PER ACRE) , IN AREAS SUBJECT TO EROSION, SEEDED LAWN SHALL BE FURTHER STABILIZED WHERE NECESSARY WITH BIODEGRADABLE EROSION BLANKET AND STAKED UNTIL ESTABLISHED. ALL SEED SHALL BE APPLIED OVER A MINIMUM 3" PREPARED TOPSOIL, AND SHALL BE KEPT MOIST AND WATERED DAILY UNTIL ESTABLISHED.
SEEDING INSTALLATION SHALL OCCUR ONLY:
SPRING: APRIL1 TO JUNE1
FALL: AUGUST 15 TO OCTOBER 15

IRRIGATION NOTE:

ALL LANDSCAPE AREAS, INCLUDING THOSE WITHIN THE R.O.W. SHALL BE IRRIGATED WITH AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. THE SYSTEM SHALL OPERATE IN COMPLIANCE WITH LOCAL STANDARDS AND SEASONAL RESTRICTIONS. SEPARATE ZONES SHALL BE PROVIDED FOR LAWN AREAS AND PLANTING BEDS. IRRIGATION SHALL BE DESIGNED IN THE MOST EFFICIENT MANNER NECESSARY TO FULLY IRRIGATE ALL PLANTING AREAS.

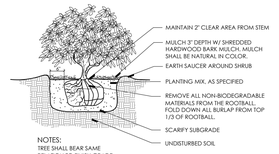




LOCATION MAP
N.T.S.

PLANT SCHEDULE

KEY	QTY	BOTANICAL/COMMON NAME	SIZE	SPACING	ROOT	COMMENT
TREES						
BN	2	Betula nigra River Birch	12-14' HT	SEE PLAN	B&B	CLUMP FORM, 3 CANES
SHRUBS						
CC	32	Caryopteris x clandonensis 'First Choice' First Choice Bluebeard	5 GAL	30" OC	CONT	
GROUNDCOVERS/PERENNIALS						
CE	49	Carex oshimensis 'Everest' Everest Evercolor Sedge	1 GAL	18" OC	CONT	WELL-ROOTED
DL	10	Dierviila lonicera 'Michigan Sunset' Michigan Sunset Bush Honeysuckle	3 GAL	SEE PLAN	CONT	WELL-ROOTED
EF	24	Eupatorium f. 'Phantom' Phantom Joe-Pye Weed	3 GAL	SEE PLAN	CONT	WELL-ROOTED
RH	33	Rudbeckia 'American Gold Rush' American Gold Rush	2 GAL	SEE PLAN	CONT	WELL-ROOTED
SS	11	Schizachyrium s. 'Standing Ovation' Standing Ovation Little Bluestem	3 GAL	SEE PLAN	CONT	WELL-ROOTED



NOTES:
TREE SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE ORIGINALLY.

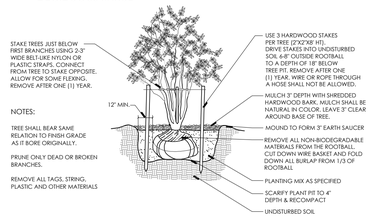
DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES.

REMOVE ALL TAGS, STRING, PLASTIC AND OTHER MATERIALS

SHRUB PLANTING DETAIL

DECIDUOUS SHRUB

NTS



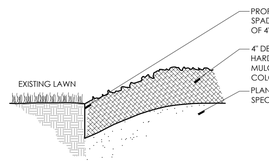
NOTES:
TREE SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE ORIGINALLY.

PRUNE ONLY DEAD OR BROKEN BRANCHES.

REMOVE ALL TAGS, STRING, PLASTIC AND OTHER MATERIALS

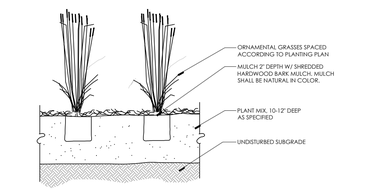
MULTI-STEM TREE PLANTING DETAIL

NTS



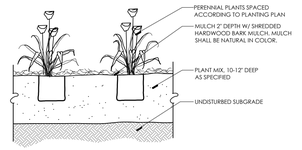
SPADE CUT EDGE DETAIL

NTS



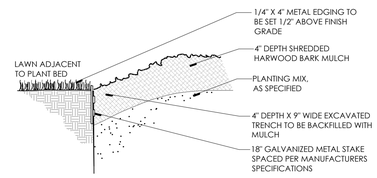
ORNAMENTAL GRASS PLANTING DETAIL

NTS



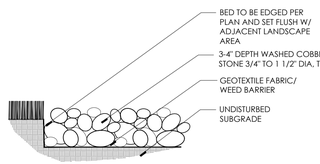
PERENNIAL PLANTING DETAIL

NTS



METAL EDGING DETAIL

NTS



COBBLESTONE MULCH DETAIL

NTS

LOW-GROW LAWN MIX:

ALL LAWN AREAS DESIGNATED TO BE SEEDED, SHALL BE HYDROSEEDED WITH LOW-GROW LAWN SEED MIX, AT A RATE OF 5 LBS/1,000 S.F.
SEED AVAILABLE FROM:

NATIVESCAPES, LLC
(T) 1-517-456-7245
* MIX IS COMPRISED OF
- 22.8% PENNLAWN RED FESCUE
- 22.5% CREEPING RED FESCUE
- 21.7% CHEWINGS FESCUE
- 11.8% VICTORY II CHEWINGS FESCUE
- 9.8% SPARTAN HEAD FESCUE
- 9.9% AZAY SHEEPS FESCUE

NF ENGINEERS
CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257

SEAL



PROJECT
3916 11 Mile Road
Berkley, MI 48072-1005

CLIENT
Quality Roots

PROJECT LOCATION
Part of the SW 1/4 of Section 18 T.1N., R.11E., City of Berkley, Oakland County, Michigan

SHEET
Landscape Plan

811 Know what's below Call before you dig.

REVISIONS
03/25/2022 SITE PLAN SUBMITTAL
04/19/2022 SITE PLAN RESUBMITTAL #1

DRAWN BY: G. Ostrowski
DESIGNED BY: G. Ostrowski
APPROVED BY: G. Ostrowski
DATE: 03-04-20
SCALE: 1" = 20'
20 10 0 10 20 30

NFE JOB NO. C360-02
SHEET NO. L1

General Note

1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
2. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0"
3. LIGHTING ALTERNATES REQUIRE NEW PHOTOMETRIC CALCULATION AND RESUBMISSION TO CITY FOR APPROVAL.

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIRMENTS DEFINED IN ASHRAE 90.1 2013. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT ASG@GASSERBUSH.COM OR 734-266-6705.

FOR ORDERING INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.

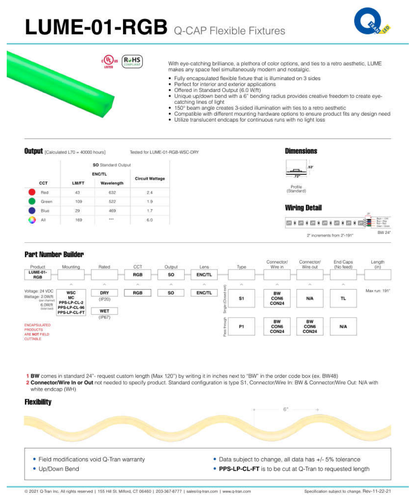
MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE. POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT LESS BASE HEIGHT.

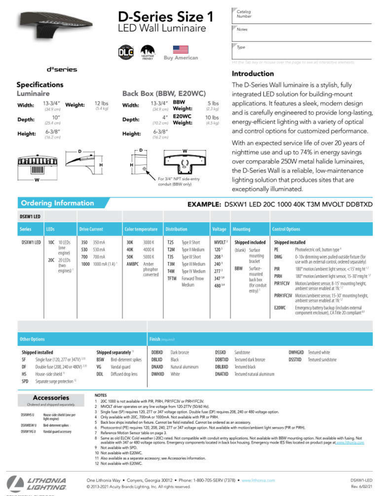
Schedule

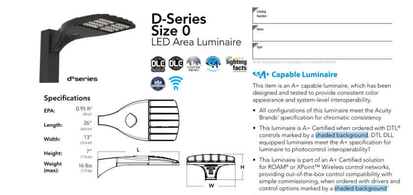
Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Lumens Per Lamp	Light Loss Factor	Wattage
	A	3	Lithonia Lighting	DSX0 LED P6 40K T5W MVOLT HS	DSX0 LED P6 40K T5W MVOLT with houseside shield	LED	10881	0.9	134
	B	7	Lithonia Lighting	DSXW1 LED 20C 1000 40K TFTM MVOLT	DSXW1 LED WITH (2) 10 LED LIGHT ENGINES, TYPE TFTM OPTIC, 4000K, @ 1000mA.	LED	7711	0.9	73.2
	D	13	Q-Tran	LUME	Q-LUME-1-RGB-WSC-DRY-RGB-ALL-SO-ENC-TL	LED	169	0.9	30
	E	2	Q-Tran	LUME	Q-LUME-1-RGB-WSC-DRY-RGB-ALL-SO-ENC-TL	LED	169	0.9	12
	C	2	Lithonia Lighting	LDN4 40/10 LO4AR LD	4IN LDN, 4000K, 1000LM, CLEAR, MATTE DIFFUSE REFLECTOR, 80CRI	LED	936	0.9	10.58

Statistics

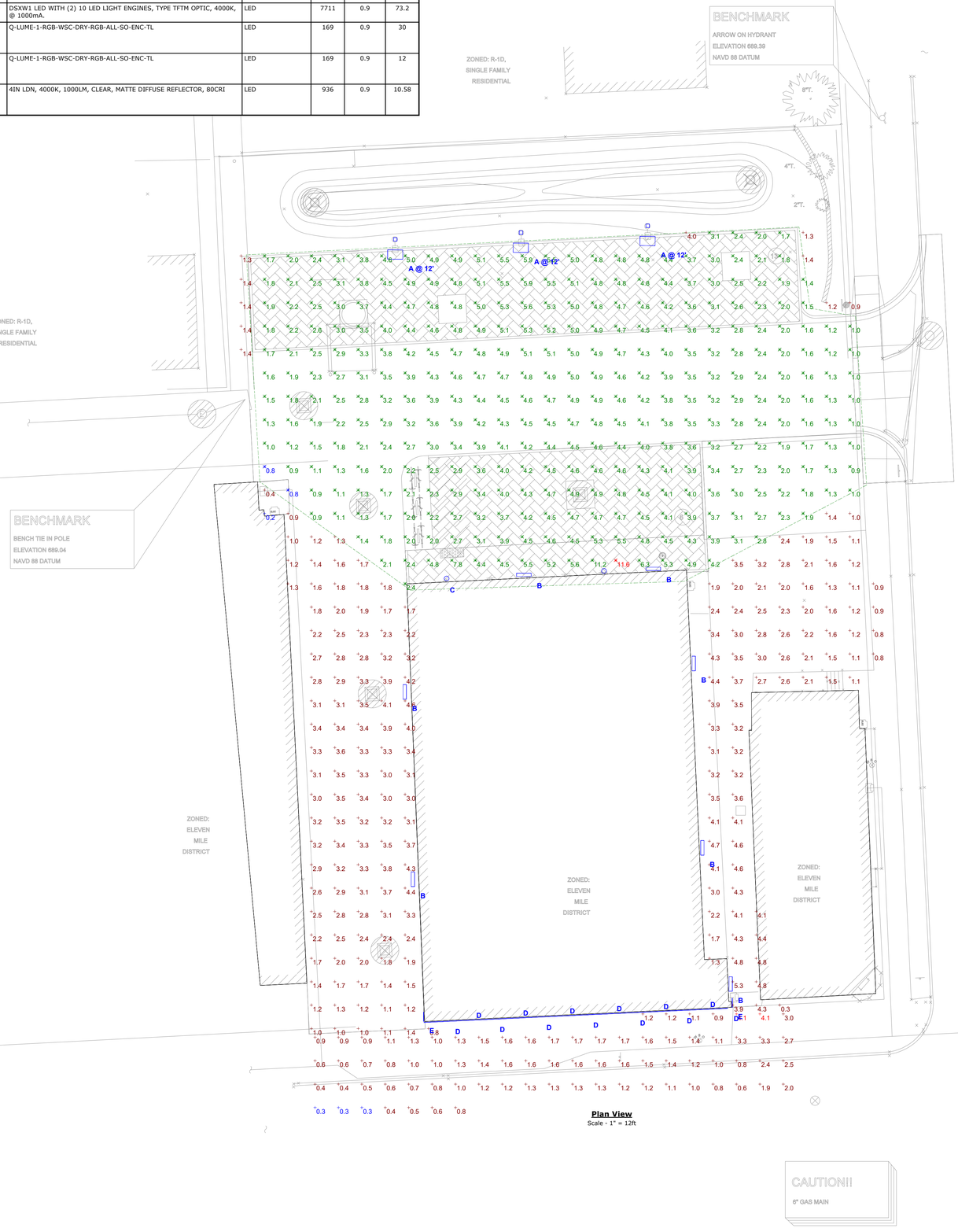
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min	Avg/Max
Grade	+	3.1 fc	11.6 fc	0.2 fc	58.0:1	15.5:1	0.3:1
Parking/Alleyway	X	3.4 fc	11.6 fc	0.8 fc	14.5:1	4.3:1	0.3:1
Grade	+	1.3 fc	4.1 fc	0.3 fc	13.7:1	4.3:1	0.3:1











Plan View
Scale - 1" = 12ft

50 YEARS

QUALITY ROOTS
PHOTOMETRIC SITE PLAN
GASSER BUSH ASSOCIATES
WWW.GASSERBUSH.COM

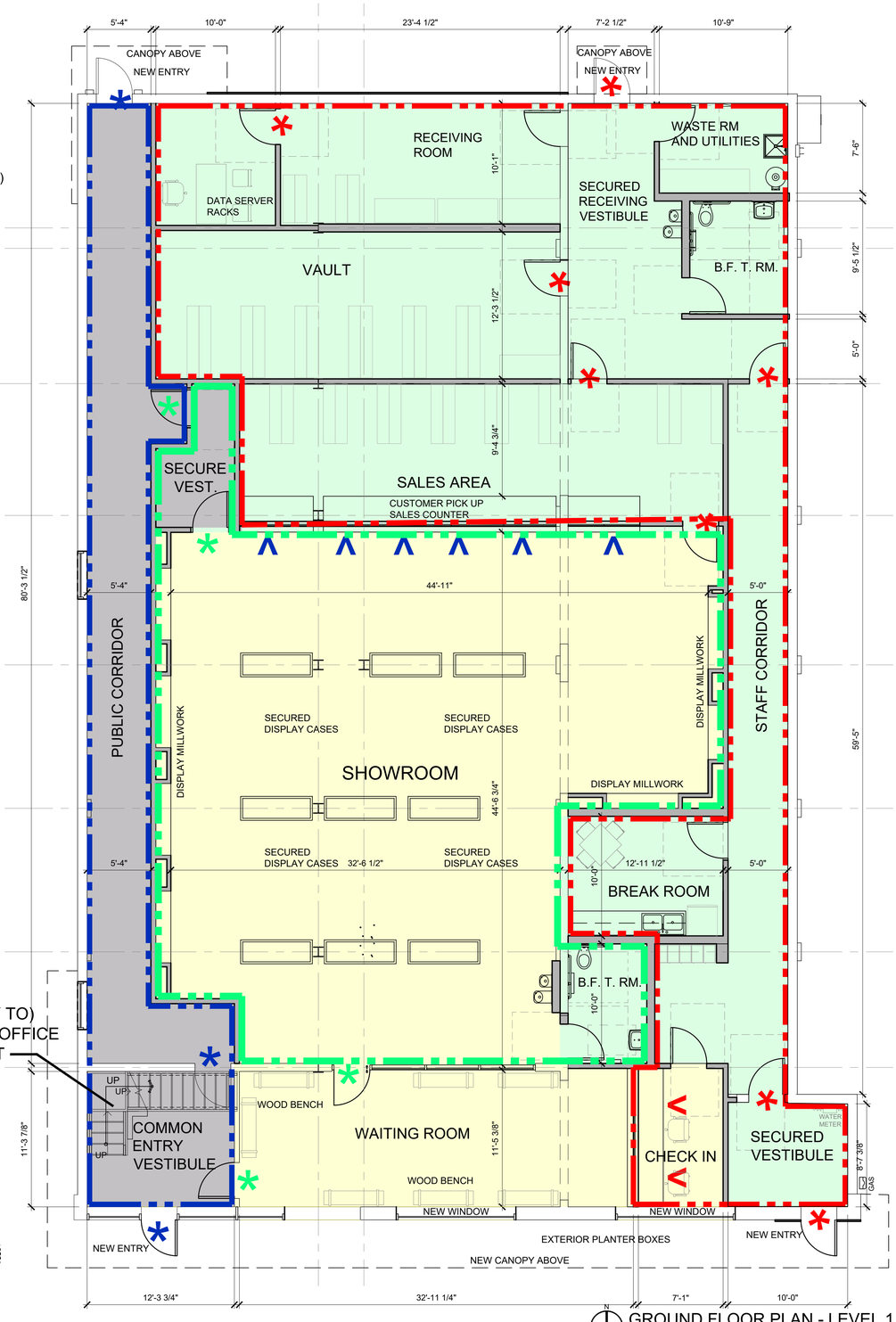
Designer DB
Date 03/23/2022
Scale Not to Scale
Drawing No. #20-48465-V4
1 of 1

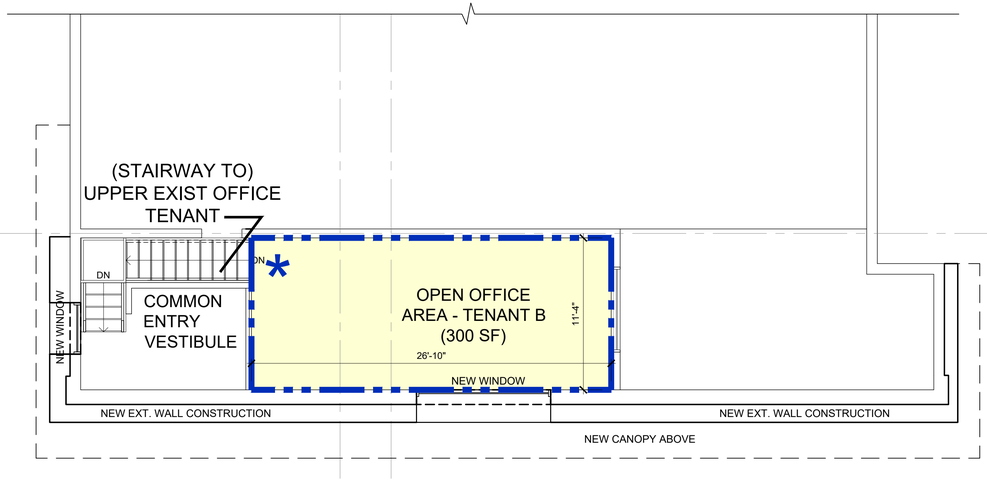
© 2022 STUCKY VITALE ARCHITECTS

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY

LEGEND

- SECURED STAFF ACCESS LIMITED ACCESS
- SECURED CUSTOMER ACCESS (STAFF CONTROLLED | RESTRICTED)
- CUSTOMER ACCESS
- POINT OF CONTACT
- POINT OF SALE
- LIMITED ACCESS AREA
- RESTRICTED ACCESS AREA
- PUBLIC ACCESS AREA





N
UPPER FLOOR PLAN - LEVEL 2
SCALE: 3/16" = 1'-0"

N
GROUND FLOOR PLAN - LEVEL 1
SCALE: 3/16" = 1'-0"

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No. 1301029086
LICENSED ARCHITECT

SVA
STUCKY VITALE ARCHITECTS

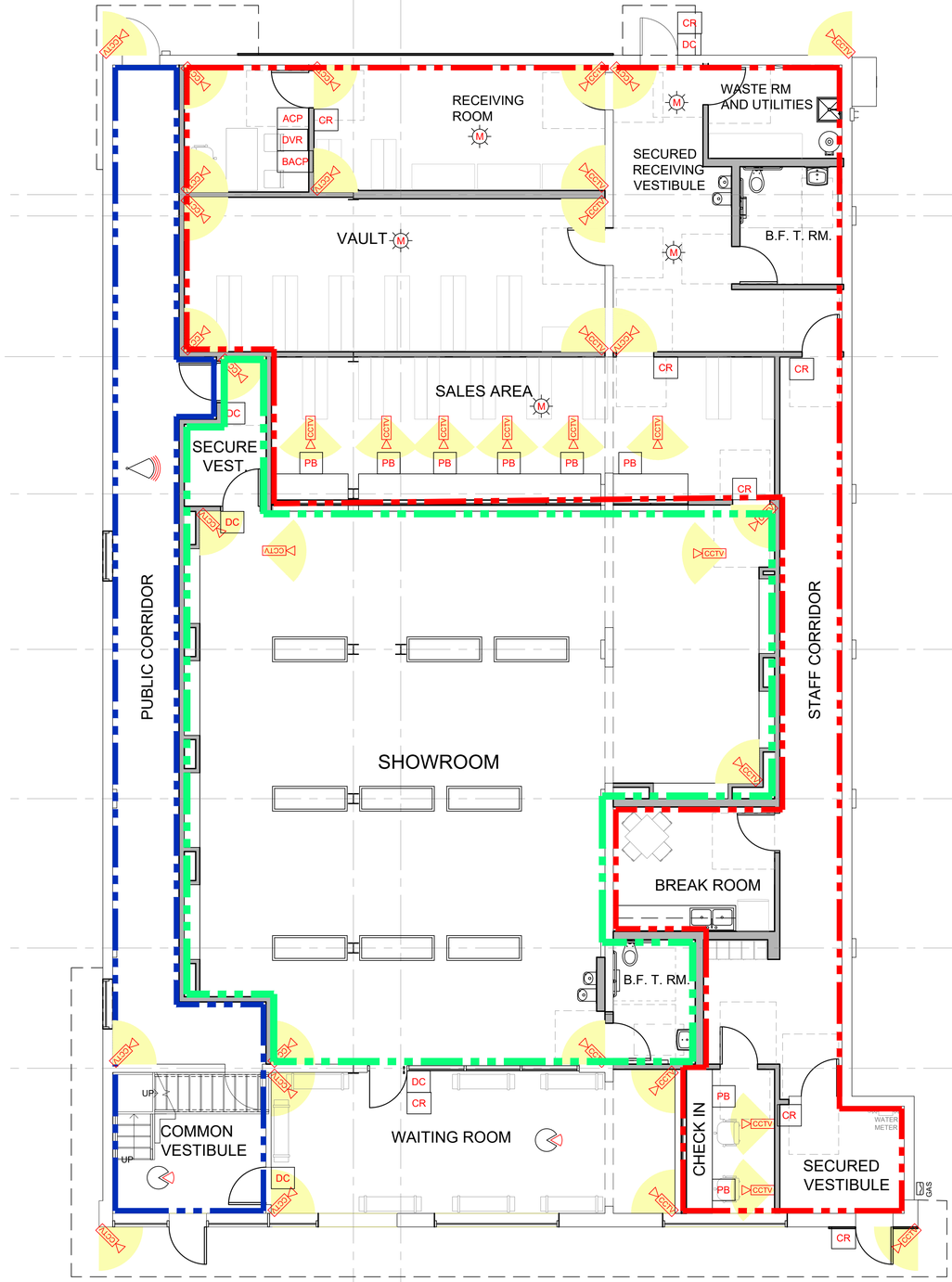
2020.153

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY
3916 ELEVEN MILE RD.
BERKLEY, MI

SITE PLAN REVIEW PACKAGE

APRIL 18, 2022

SHEET:
A1.1



LEGEND

SECURITY DEVICES AND ACCESSORIES

SECURITY SYMBOLS (PANEL EQUIPMENT)

BACP	BURGLAR ALARM CONTROL PANEL
KP	KEY PAD
DC	DOOR CONTACT
PB	PANIC BUTTON
M	MOTION DETECTOR
	SOUNDER/ SIREN
	GLASS BREAK SENSOR

ACCESS SYMBOLS

ACP	ACCESS CONTROL PANEL | PANEL EQUIPMENT
CR	CARD READER - STANDARD | CARD READER
DS	DOOR STRIKE WITH LATCH | DOOR SECURITY
TC	TWO WAY COMMUNICATION SYSTEM CALL STATION | SYSTEM INTERFACE

CCTV SYMBOLS (PANEL EQUIPMENT)

DVR	DIGITAL VIDEO RECORDER
CCTV	SECURITY CAMERA
	LIMITED ACCESS AREA
	RESTRICTED ACCESS AREA
	PUBLIC ACCESS AREA

N

SECURITY GROUND LEVEL FLOOR PLAN

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

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No. 1301029086
LICENSED ARCHITECT

© 2022 STUCKY VITALE ARCHITECTS

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY

2020.153

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY
3916 ELEVEN MILE RD.
BERKLEY, MI

SVA
STUCKY VITALE ARCHITECTS

SITE PLAN REVIEW PACKAGE

APRIL 18, 2022

SHEET:
A1.4



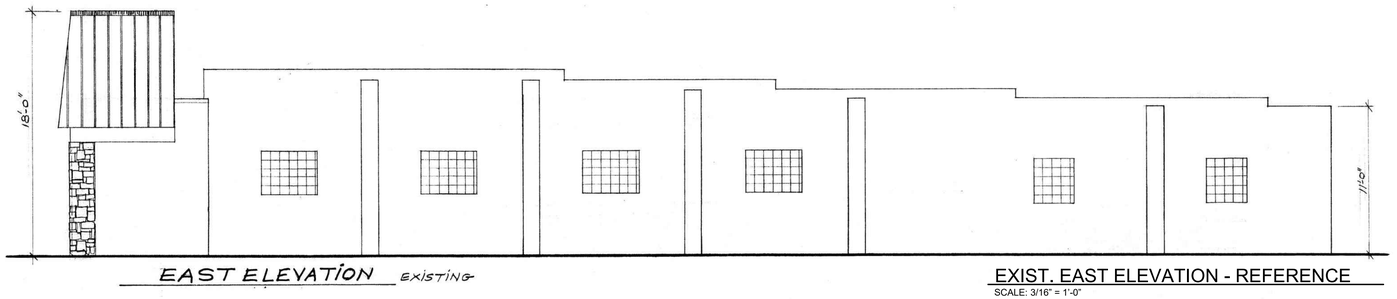
EXIST. PHOTO - REFERENCE
SCALE: 3/16" = 1'-0"



EXIST. PHOTO - REFERENCE
SCALE: 3/16" = 1'-0"

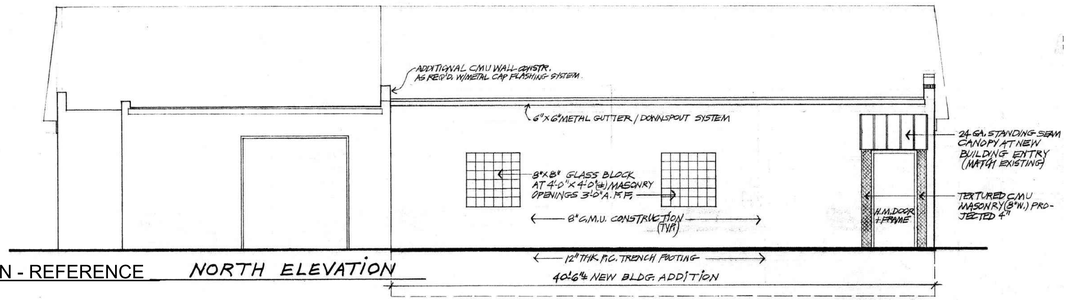


EXIST. PHOTO - REFERENCE
SCALE: 3/16" = 1'-0"



EAST ELEVATION EXISTING

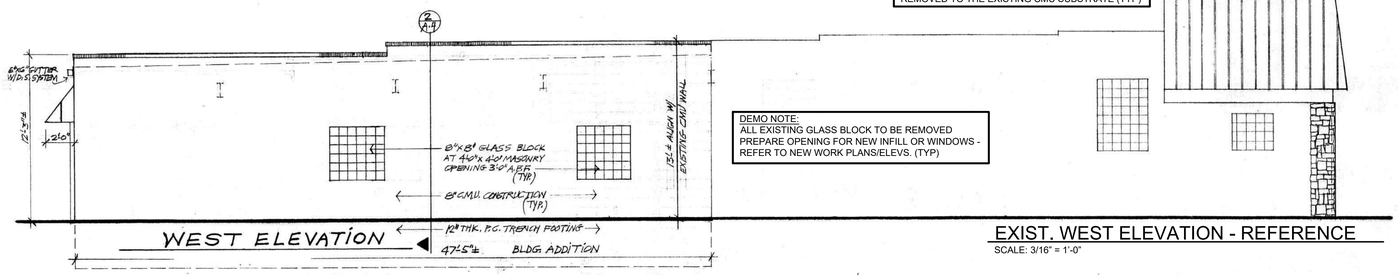
EXIST. EAST ELEVATION - REFERENCE
SCALE: 3/16" = 1'-0"



EXIST. NORTH ELEVATION - REFERENCE
SCALE: 3/16" = 1'-0"

NORTH ELEVATION

DEMO NOTE:
ALL EXISTING MANSARD ROOFS & FINISHES TO BE REMOVED TO THE EXISTING CMU SUBSTRATE (TYP)

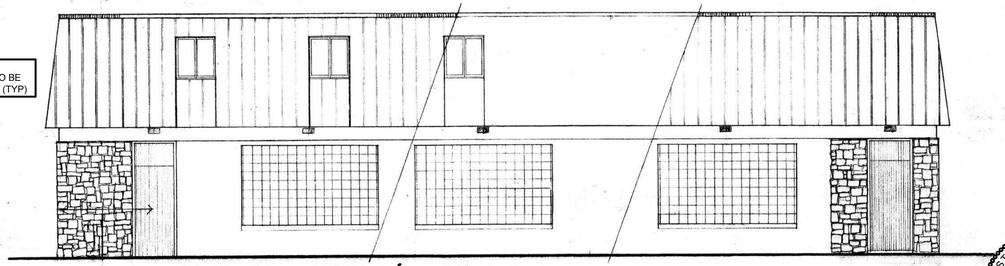


DEMO NOTE:
ALL EXISTING GLASS BLOCK TO BE REMOVED PREPARE OPENING FOR NEW INFILL OR WINDOWS - REFER TO NEW WORK PLANS/ELEVS. (TYP)

WEST ELEVATION

EXIST. WEST ELEVATION - REFERENCE
SCALE: 3/16" = 1'-0"

DEMO NOTE:
ALL EXISTING MANSARD ROOFS & FINISHES TO BE REMOVED TO THE EXISTING CMU SUBSTRATE (TYP)



DEMO NOTE:
ALL EXISTING GLASS BLOCK TO BE REMOVED PREPARE OPENING FOR NEW INFILL OR WINDOWS - REFER TO NEW WORK PLANS/ELEVS. (TYP)

DEMO NOTE:
ALL EXISTING VENEER MATERIALS TO BE COMPLETELY REMOVED TO THE EXISTING CMU SUBSTRATE (TYP)

EXIST. SOUTH ELEVATION - REFERENCE
SCALE: 3/16" = 1'-0"

STATE OF MICHIGAN
JOHN A. VITALE
ARCHITECT
No. 1301029086
LICENSED ARCHITECT

© 2022 STUCKY VITALE ARCHITECTS

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY

SVA
STUCKY VITALE ARCHITECTS

2020.153

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY
3916 ELEVEN MILE RD.
BERKLEY, MI

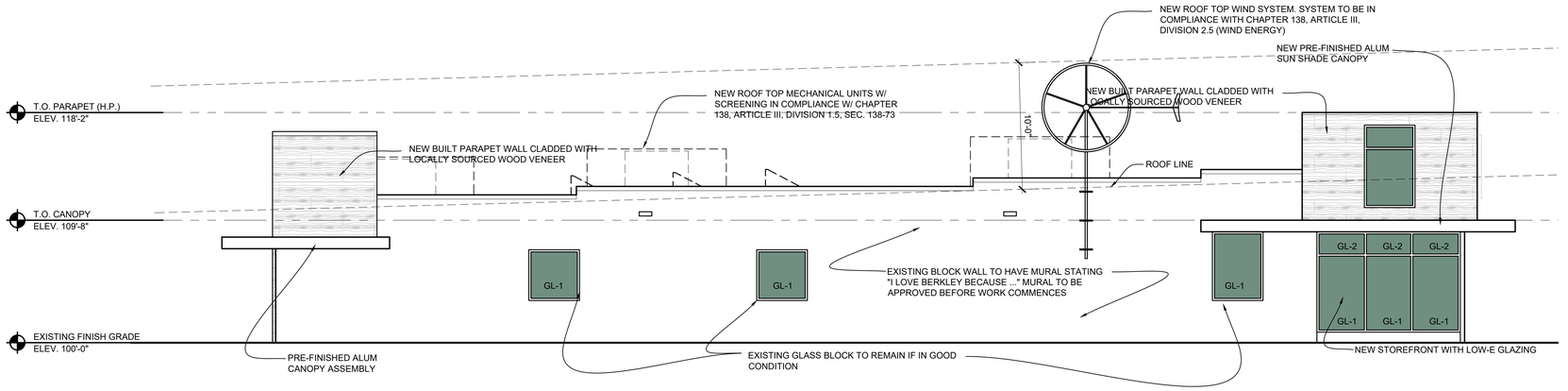
SITE PLAN REVIEW PACKAGE

APRIL 18, 2022

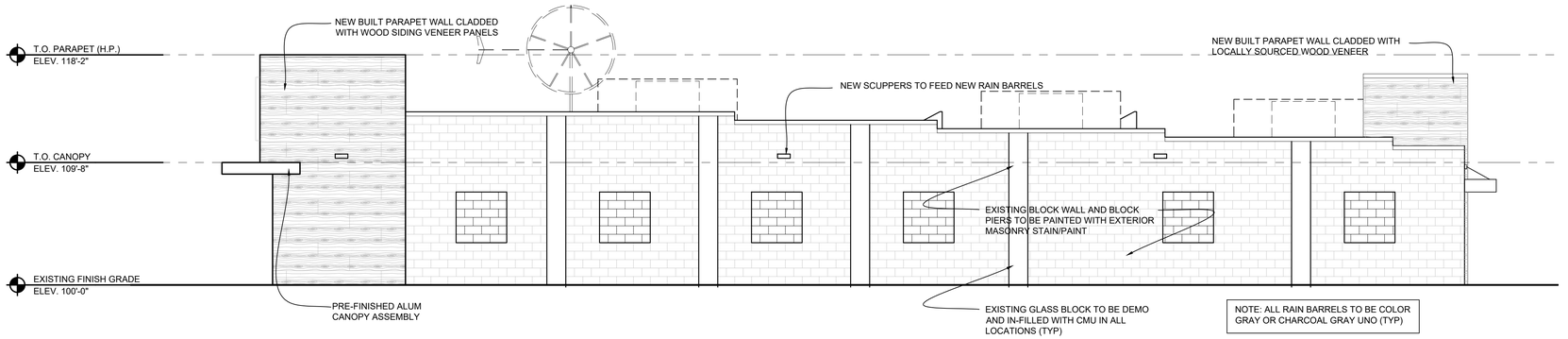
SHEET:
A3.0



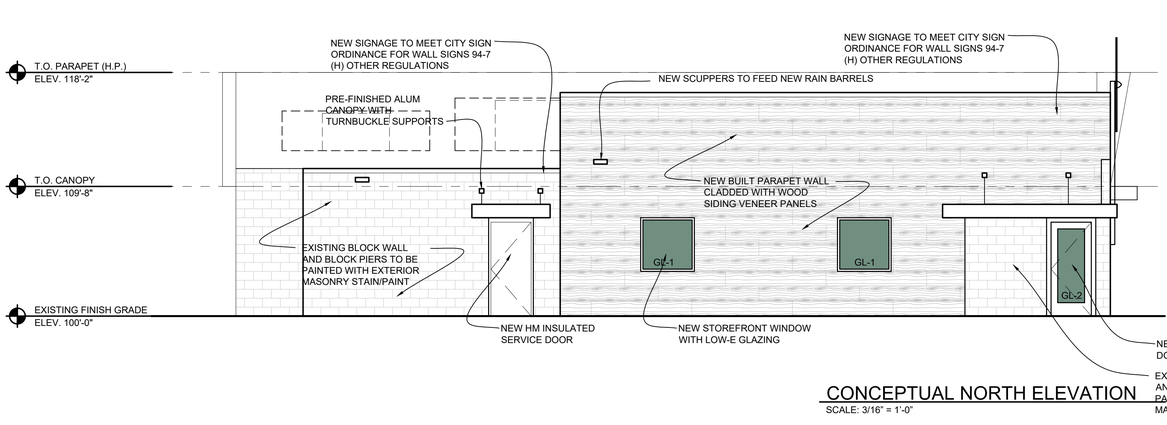
WIND SYSTEM EXAMPLE
SCALE: N.T.S.



CONCEPTUAL WEST ELEVATION
SCALE: 3/16" = 1'-0"



CONCEPTUAL EAST ELEVATION
SCALE: 3/16" = 1'-0"



CONCEPTUAL NORTH ELEVATION
SCALE: 3/16" = 1'-0"



CONCEPTUAL SOUTH ELEVATION
SCALE: 3/16" = 1'-0"

JOHN A. VITALE
ARCHITECT
No. 1301029086
LICENSED ARCHITECT

© 2022 STUCKY VITALE ARCHITECTS

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY

SVA
STUCKY VITALE ARCHITECTS

2020.153

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY
3916 ELEVEN MILE RD.
BERKLEY, MI

SITE PLAN REVIEW PACKAGE

APRIL 18, 2022

SHEET:
A3.1



EXISTING VIEW FROM 11 MILE
SCALE: N.T.S.



CONCEPTUAL RENDERING VIEW FROM 11 MILE (DAY TIME)
SCALE: N.T.S.



EXISTING VIEW FROM REAR PARKING LOT
SCALE: N.T.S.



CONCEPTUAL RENDERING VIEW FROM THE PARKING LOT (DAY TIME)
SCALE: N.T.S.

© 2022 STUCKY VITALE ARCHITECTS

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY

SVA
STUCKY VITALE ARCHITECTS

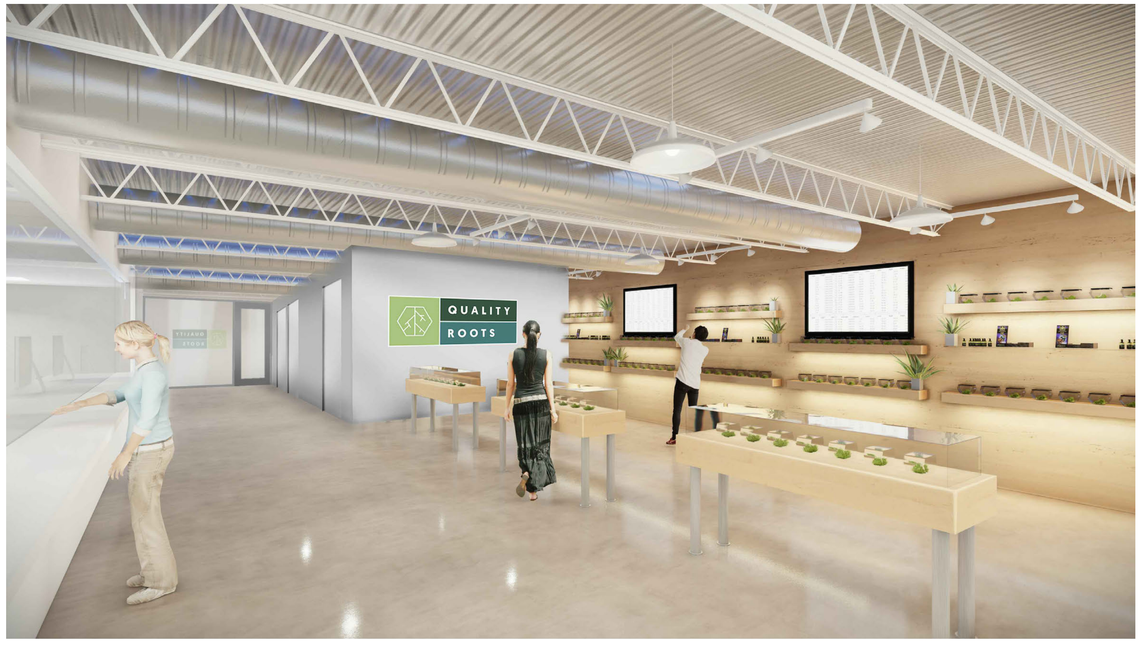
2020.153

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY
3916 ELEVEN MILE RD.
BERKLEY, MI

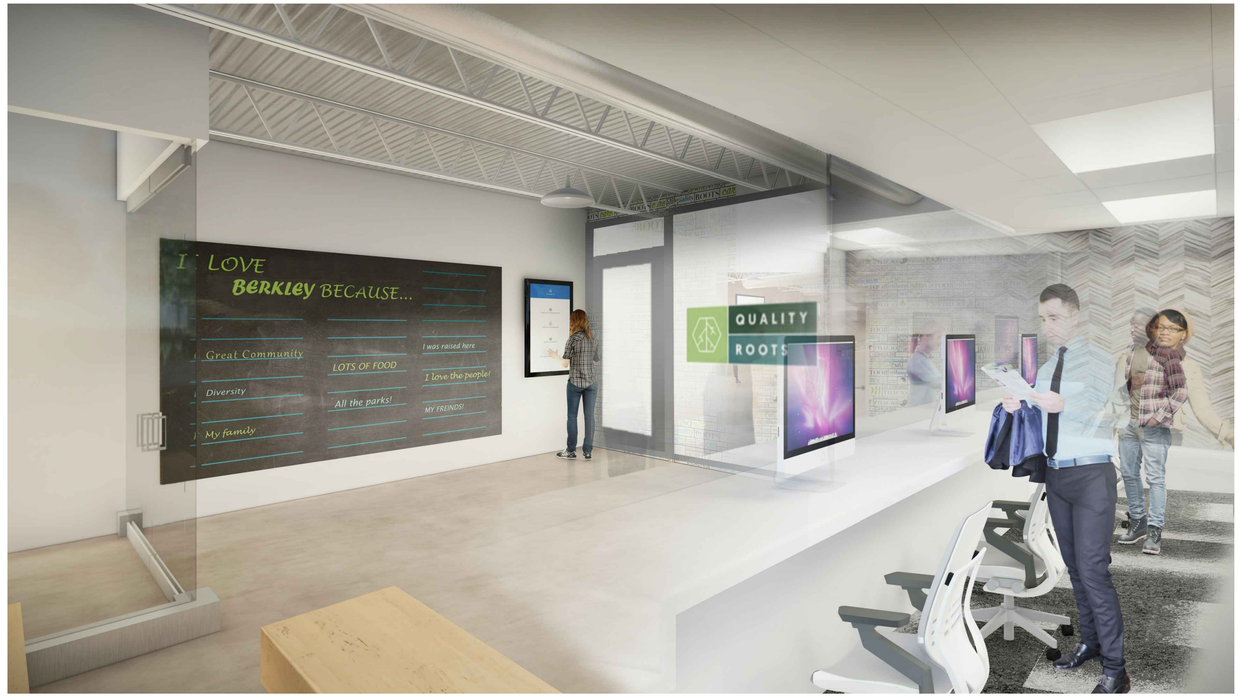
SITE PLAN REVIEW PACKAGE

APRIL 18, 2022

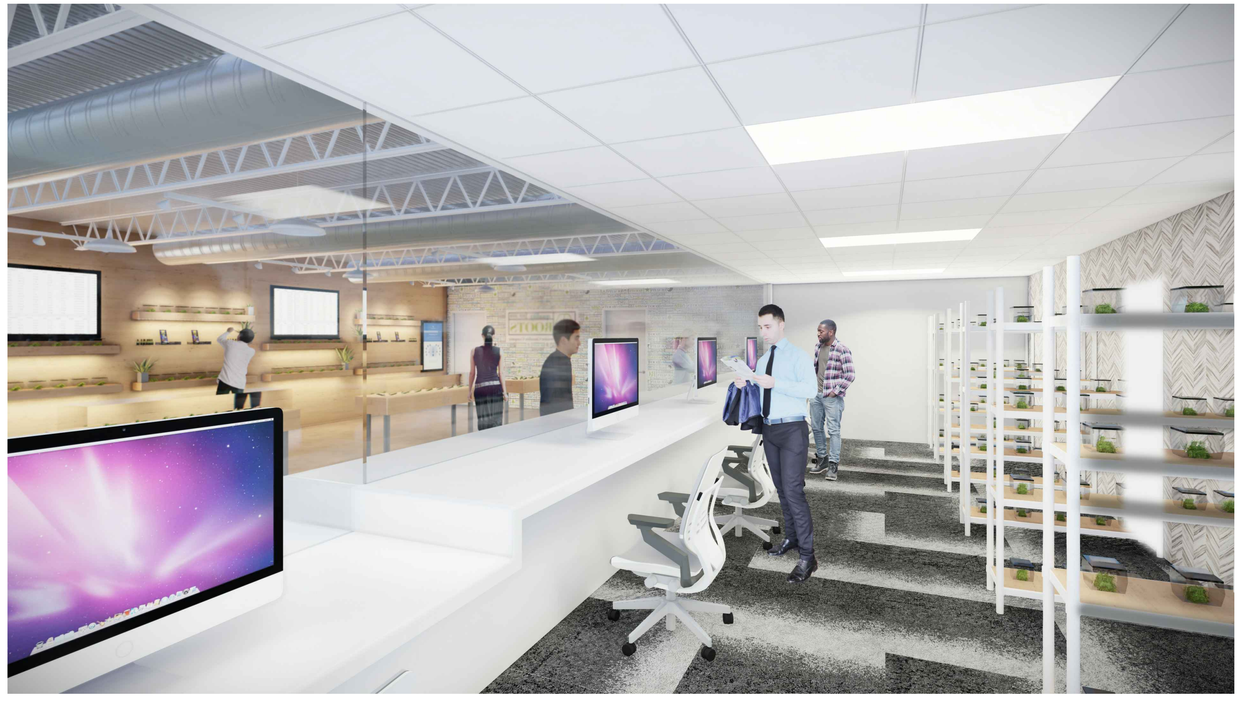
SHEET:
A3.2



INTERIOR RENDERING FROM THE SHOWROOM
SCALE: N.T.S.



INTERIOR RENDERING FROM THE WAITING AREA
SCALE: N.T.S.



INTERIOR RENDERING FROM THE TRANSACTION AREA
SCALE: N.T.S.

© 2022 STUCKY VITALE ARCHITECTS

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY

SVA
STUCKY VITALE ARCHITECTS

2020.153

QUALITY ROOTS | BERKLEY | PROVISIONING CENTER + RETAIL DISPENSARY
3916 ELEVEN MILE RD.
BERKLEY, MI

SITE PLAN REVIEW PACKAGE

APRIL 18, 2022

SHEET:
A4.1

Quality Roots, Inc.
2075 E 14 Mile
Birmingham, MI 48009
249-912-7173
aric@getqualityroots.com

Quality Roots Parking and Transaction Verification
Berkley, MI

During the sketch plan review meeting held on March 22, several Planning Commission members inquired about the use of stadium-style parking spaces. Furthermore, the original submission that was worked on with our team and Erin Schlotow utilized the stadium-style spaces to get extra parking as a great way to maximize the site. We are proposing the use of 6 stadium-style spaces for a total of 25. We would mark those 6 spaces as employees only, which would give us 17 customer spots, which is more than any of the locations we have. While we are okay with our proposal of 19 parking spots, we would appreciate the ability to install the 6 stadium parking spots. We feel it is best to take this approach now, if the Planning Commission is in support of it. If not, we are okay and our business will be more than sufficient with 19 parking spots as currently shown.

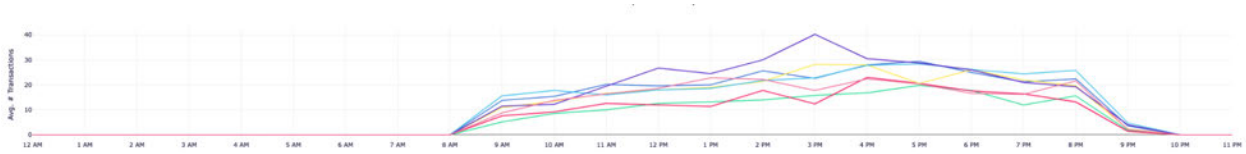
The reason we want to discuss it now is because once we do all of our underground work, it will be tough and costly to add those three additional spots.

We have put together a brief overview of our current stores and also, some other stores around Oakland County that we wanted to share with you. We understand this is new to the City and we want to assure you that our operations inside and the circulation of the proposed site is more than sufficient.

Quality Roots Hamtramck

- Parking Spots = 13 customer spots , 6 employee spots
- Transactions per Day = 300-500
- Transactions per hour = 30-40
- Avg Transaction Time = 7 minutes

Past 60 Day AVG



Quality Roots Battle Creek

- Parking Spots = 10 Customer Spots, 5 Employee Spots
- Transactions per Day = 150-250
- Transactions per hour = 15-30
- Avg Transaction Time = 5 minutes

Past 60 Day AVG



Quality Roots Berkley (Projected)

- Parking Spots = 10 Customer Spots, 6 Employee Spots (3 more additional on site either for staff or customers)
- Transactions per Day = 200-300
- Transactions per hour = 15-30
- Avg Transaction Time = 5 minutes

We also wanted to point out some of the other Marijuana Facilities in Oakland County in regards to parking:

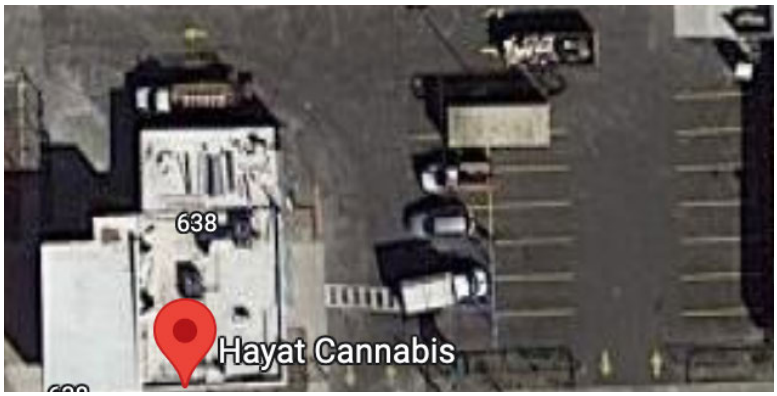
New Standard Hazel Park (Shared Parking with a total of 4 businesses)

- 30 Parking spots for all 4 businesses



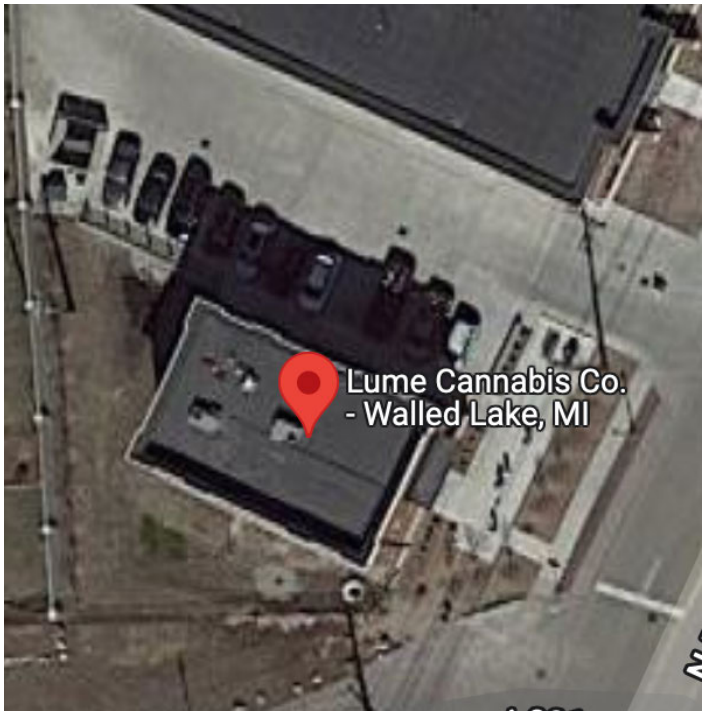
Hyatt Hazel Park

- Total of 19 parking spots



Lume Walled Lake

-12 total parking Spots



SVA
STUCKY VITALE ARCHITECTS

April 18, 2022

Benjamin R. Carlisle, LEED AP, AICP, Principle
Carlisle/ Wortman Associates, Inc.
117 N. First St., Suite 70
Ann Arbor, MI 48104

Re: Site Plan Review for ~~3616~~ 3916 Eleven Mile Road
Architects' Project No.: 2020.153

Mr. Carlisle:

Included in this response letter are the responses of the Site Plan Review letter. This response is intended to provide the requested documents and revisions from response letters dated March 31, 2022. Please let us know if you need any other information.

Below are our team's revisions made in response to the review letters provided.

Attached Documents

- Same sheets submitted as before (please refer to the sheet index)

Permit Submittal Letter dated March 31, 2022 (Design Team's response in *italics*)

1. Clarify Planting along Eleven Mile.
   - *Please refer to landscape plan provided by Nowak and Fraus. We have removed all renderings that may have indicated otherwise for clarification.*

2. Planning Commission to review landscaping.
   - *Please refer to landscape plan provided by Nowak and Fraus. We have removed all renderings that may have indicated otherwise for clarification.*

3. Confirm that the roof top wind system has been designed to comply with all provisions of Section 138-99.
   - *Roof top wind system has been revised. Please refer to sheet A3.1.*

4. Confirm and reduce pole height to 12-feet.
   - *Refer to the revised photometric plan.*

5. Applicant shall either remove up lighting or seek deviation from Planning Commission up lighting.
   - *All up lighting has been removed from the project. Please refer to the photometric plan.*

6. Indicate trash storage and removal.
   - *There shall be no dumpster enclosure on site due to safety concerns. All trash will be located indoors and will be curbside service on a weekly schedule.*

Please let us know if there are any questions, comments or concerns with the documents as submitted. We look forward to working with you and your team on this project and appreciate your help.

Sincerely,

John A. Vitale, AIA, NCARB
President/CEO

NF ENGINEERS

CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

April 19, 2022

City of Berkley
3338 Coolidge Highway
Berkley, MI 48072

Attention: Ms. Megan Masson-Minock, Interim Community Development Director
Mr. Matthew Baumgarten, City Manager

Re: Quality Roots Berkley – 3916 Eleven Mile Road
City of Berkley –Site Plan Review No. 1
NFE Job #C360-02

Ms. Masson-Minock and Mr. Baumgarten,

This letter provides responses specific to the Department of Public Works (DPW) and Hubbell, Roth & Clark, Inc. (HRC) engineering site plan review comments that were included as part of the City of Berkley's first site plan review that was performed for the above-noted project. We have addressed all comments received in these reviews and are re-submitting civil and landscape drawings as part of the revised site plan package for final site plan approval. Below are responses specific to each letter:

Department of Public Works (DPW) Memo (Dated 04/04/22)

1. We have received the site plan review comments from HRC, and have provided separate response comments herein.
2. The topographic survey background has been revised to reflect a 12" water main and 8" combined sewer main in the 11 Mile R.O.W. as noted.
3. The drawings have been revised to reflect requirements noted for connecting the proposed sanitary sewer lead to the existing sanitary main located in the public alley north of the existing building. The demolition plan (sheet C2) notes the existing lead shall be removed and capped within 2 feet of the main. Note that the proposed lead is in the same alignment as the existing lead, and therefore the existing pipe will be removed instead of abandoned. The new connection is shown on the utility plan and noted to be performed using a "TwisTee" sewer saddle per City requirements.
4. Replacement of the existing domestic water service of 11 Mile Road has been included on the revised drawings. The building is proposed to have a replacement 1.5" type "K" copper water service connection from the existing 12" water main, and the existing water service (size & material unknown) will be disconnected from the main and removed within the same trench in accordance with City requirements. Work proposed for the water service also includes removal and replacement of the existing concrete sidewalk and pavement in the 11 Mile R.O.W. as required, which is also reflected in the revised drawings.
5. The complete "Geotechnical Evaluation Report" dated 01/11/20, furnished by S.M.E., is included as an enclosure with the revised site plan submittal package. Approximate soil boring locations (4 each) have been added to plan sheet C1 for reference.
6. Notes pertaining to the maintenance agreement that will be provided for the proposed stormwater management system have been added to the "City of Berkley Stormwater Management System Notes" provided on sheet C4. The owner will complete the maintenance agreement during the final approval process for this project.
7. The ownership team for the proposed Quality Roots development is in the process of securing the noted permanent and temporary easements with the adjacent property owner for parcel 25-18-353-029. A permanent ingress/egress

easement is required in the shared pavement area between the two buildings to allow for two-way traffic to and from 11 Mile Road. A temporary construction easement is required for the proposed grading and pavement replacement on the neighboring parcel.

8. The proposed grading and storm drainage design shown on sheets C3 and C4 will not negatively impact drainage conditions on any adjacent properties. The grading design matches existing elevations at all repair limits, and surface drainage conditions throughout the project impact limits, including within the public alley, will be improved compared to existing conditions.
9. It is acknowledged that the Berkley Community Development Department will review the proposed striping and site circulation plan.
10. Notes pertaining to the stormwater service charge that will be implemented by the City of Berkley have been added to the "City of Berkley Stormwater Management System Notes" provided on sheet C4.

Hubbell, Roth & Clark, Inc. (HRC) Letter (Dated 04/11/22)

Water Service

1. The proposed scope of work for the water service has been changed since the initial site plan submittal, and replacement of the existing domestic water service of 11 Mile Road has been included on the revised drawings. See response comment #4 under the DPW memo heading for additional details.
2. REU calculations have been added to sheet C4. We have confirmed with the M.E.P. engineer on the project that the proposed 1.5" domestic water service is sufficient for the building size and use.

Storm Drainage & Detention / Sanitary Sewer

1. A minor change has been made to the proposed detention system calculations. We have reduced estimated porosity for the permeable paver subbase to 20% from the previous 30%. This change was made to match recommendations from the "Geotechnical Evaluation Report" dated 01/11/20, furnished by S.M.E.
2. The complete "Geotechnical Evaluation Report" dated 01/11/20, furnished by S.M.E., is included as an enclosure with the revised site plan submittal package. Approximate soil boring locations (4 each) have been added to plan sheet C1 for reference. The report includes soils information, logs, and design recommendations associated with the proposed storm water management system.
3. Notes pertaining to the maintenance agreement that will be provided for the proposed stormwater management system have been added to the "City of Berkley Stormwater Management System Notes" provided on sheet C4. The owner will complete the maintenance agreement during the final approval process for this project.
4. Requirements for the proposed sanitary sewer lead replacement have been revised on the drawings to meet applicable requirements. See response comment #3 under the DPW memo heading for additional details. Also, notes have been added to the plans to specify all work within the 11 Mile Road and Public Alley right-of-ways require applicable permitting and coordination with the City DPW department.
5. The existing sanitary sewer lead is noted on the demolition plan (sheet C2) to be cut and capped within 2 feet of the main. The existing service pipe is proposed to be removed, rather than abandoned in place, since the proposed replacement service pipe will be in the same alignment. As shown on sheet C4, the new connection location will be downstream of the existing connection, and the connection is noted to be made per City DPW requirements.

Please review the enclosed revised drawings dated 04/19/22, and feel free to contact myself or Brett Buchholz at our office if you have any questions or comments.

Sincerely,

Paul Tulikangas, P.E., Associate/Engineering Manager

Brett Buchholz, P.E., Principal

Cc: Ms. Kim Anderson, Community Development Department
Mr. Shawn Young, City of Berkley, DPW Department
Mr. Edward Zmich, HRC
Mr. Andrew Danaher, Stuckey-Vitale Architects
Mr. Erik Fix, Schostak Brothers & Company, Inc.
Mr. Michael Klar, Quality Roots, Inc.







GEOTECHNICAL EVALUATION REPORT

QUALITY ROOTS SITE IMPROVEMENTS
BERKLEY, MICHIGAN

SME Project Number: 085599.00
January 11, 2020

SME

The Kramer Building
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-2584

T (734) 454-9900

www.sme-usa.com

January 11, 2020

Mr. Steve E. Duczynski II
Schostak Brothers & Company
17800 Laurel Park Drive North
Suite 200C
Livonia, Michigan 48152

Transmitted via e-mail: duczynskis@schostak.com (PDF File)

RE: Geotechnical Evaluation Report
Quality Roots Site Improvements
3916 Eleven Mile Road
Berkley, Michigan
SME Project 085599.00

Dear Mr. Duczynski:

We have completed the geotechnical evaluation for the Quality Roots Site Improvements project in Berkley, Michigan. This report presents the results of our observations and analyses, and our geotechnical engineering recommendations based on the information disclosed by the borings.

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

Sincerely,

SME

Joel W. Rinkel, PE
Group Leader – Geotechnical Services

© 2021 SME

TABLE OF CONTENTS

1. INTRODUCTION 3
   1.1 SITE CONDITIONS 3
   1.2 PROJECT DESCRIPTION 4
2. EVALUATION PROCEDURES 4
   2.1 FIELD EXPLORATION 4
   2.2 LABORATORY TESTING 4
3. SUBSURFACE CONDITIONS 5
   3.1 SOIL CONDITIONS 5
   3.2 GROUNDWATER CONDITIONS 6
4. ANALYSIS AND RECOMMENDATIONS 6
   4.1 SITE PREPARATION AND EARTHWORK 6
      4.1.1 EXISTING FILL CONSIDERATIONS 6
      4.1.2 SITE SUBGRADE PREPARATION 7
      4.1.3 ENGINEERED FILL REQUIREMENTS 8
   4.2 SHALLOW FOUNDATIONS 9
   4.3 INFILTRATION CONSIDERATIONS 10
   4.4 PERMEABLE PAVER RECOMMENDATIONS 11
   4.5 CONSTRUCTION CONSIDERATIONS 12
5. SIGNATURES 12

APPENDIX A

BORING LOCATION DIAGRAM (FIGURE NO. 1)
BORING LOG TERMINOLOGY
BORING LOGS (B1 THROUGH B4)

APPENDIX B

IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL ENGINEERING REPORT
GENERAL COMMENTS
LABORATORY TESTING PROCEDURES

© 2021 SME

1. INTRODUCTION

This report presents the results of the geotechnical evaluation performed by SME for the Quality Roots Site Improvements project. We performed this evaluation in general accordance with the scope of services outlined in SME Proposal No. P03621.20, dated November 18, 2020. Our services for this evaluation were authorized by Schostak Brothers & Company (Schostak).

To assist with our evaluation and preparation of this report, Schostak provided SME a drawing titled, "ALTA/NSPS Land Title / Topographic Survey," (Sheet No. 1) with latest revision date of April 14, 2020, prepared by NF Engineers, Inc (NFE).

1.1 SITE CONDITIONS

The project site consists of an existing commercial property located at 3916 W. 11 Mile Road in Berkley, Michigan. The approximate location of the site is depicted on the Location Map inset on the Boring Location Diagram (Figure No.1) included in Appendix A.

The site consists of several adjoining land parcels (Lot Nos. 274 – 277 and 279) bisected by a 16-foot wide public alleyway. Included in the site is a commercial building, pavements (drive lane, parking, and dumpster pad), and grass-covered areas. The commercial building is a single-story structure with a footprint area of 5,674 square-feet and finished floor elevation of 688.35 feet. A relatively small shed (under 500 square-feet) is located on the northern portion of the site. An aerial image depicting recent site conditions is provided below, for reference.



FIGURE NO. 1 – SITE AERIAL MARCH 14, 2020

Based on our review of the topographic information illustrated on the referenced topographic survey, existing surface grades vary between approximate elevations 687 and 688 feet across the site.

© 2021 SME

1.2 PROJECT DESCRIPTION

The project consists of repurposing the site for continued commercial usage, including new pavements and dumpster enclosure. We understand a permeable pavement system is desirable. The new enclosure will be a relatively small (under 750 square-feet) single-story slab-on-grade structure. Based on the existing ground surface levels, we anticipate cuts and fills of less than 1 foot will be required to achieve final subgrade levels. Please contact SME if these design assumptions are incorrect.

2. EVALUATION PROCEDURES

2.1 FIELD EXPLORATION

SME completed four hand auger borings (B1 through B4) at the site on November 25, 2020. The borings were advanced to depths of 6 to 10 feet below existing grades. The approximate as-drilled boring locations are shown on Figure No. 1.

NFE determined the planned number and locations of the borings. SME located the planned borings in the field referencing existing site features. SME retained a private underground locating service (GPRS) to review a 10-foot radius around the proposed boring locations using a ground penetrating radar unit as well as an electromagnetic line locator. The final boring locations were adjusted as needed from the planned locations to maintain an appropriate distance from existing utilities. SME estimated the existing surface elevations at the as-drilled boring locations to the nearest 1-foot using available topographic data shown on the referenced drawing.

The hand augers were then advanced using a 2-inch diameter bucket auger in conjunction with Dynamic Cone Penetrometer (DCP) testing. The pavement at the borings B3 and B4 was cored by FMG Concrete Cutting, Inc. prior to advancing the boreholes. The DCP test consisted of dropping a 10-pound slide hammer that falls 24 inches and drives a rod with a 1-1/8 inch conical tip into the subgrade. Portions of the recovered auger cuttings were sealed in glass jars.

Groundwater level observations in the boreholes were recorded during drilling and immediately after completion of drilling. The boreholes were backfilled with auger cuttings after completion and collection of groundwater readings. Therefore, long-term groundwater observations are not available from the borings. Borings located in pavement areas were capped with asphalt cold patch after backfilling.

Soil samples recovered from the field exploration were returned to the SME laboratory for further observation and testing.

2.2 LABORATORY TESTING

The laboratory testing program consisted of visual soil classification on recovered samples in general accordance with ASTM D-2488. Moisture content and hand penetrometer tests were performed on portions of cohesive samples obtained. Loss-On-Ignition (LOI) tests were performed on samples of the existing fill suspected of containing organic material. The Laboratory Testing Procedures in Appendix B provides descriptions of the laboratory tests performed. Based on the laboratory testing, we assigned a group symbol to the various soil strata encountered based on the Unified Soil Classification System (USCS).

Upon completion of the laboratory testing, we prepared boring logs including the soil descriptions, penetration resistances, pertinent field observations, the results of the laboratory testing, and the existing ground surface elevations. The boring logs are included in Appendix A. Explanations of symbols and terms used on the boring logs are provided on the Boring Log Terminology sheet included in Appendix A.

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

© 2021 SME

3. SUBSURFACE CONDITIONS

3.1 SOIL CONDITIONS

The soil conditions encountered at the boring locations generally consisted of surficial materials (pavement or topsoil) overlying existing fill underlain by natural clays extending to the explored depths. A generalized summary of the materials encountered at the boring locations, beginning at the existing ground surface and proceeding downward, is provided below.

STRATUM 1 – SURFICIAL MATERIALS

Topsoil ranging from about 2 to 3 inches in thickness was present at borings B1 and B2 performed at the north end of the site. Asphalt ranging from about 2 to 3-1/2 inches in thickness was present at borings B3 and B4 performed in pavement areas closer to the commercial building.

STRATUM 2 – EXISTING FILL

The existing fill consisted of clay soils containing interbedded sand layers and extended to depths of 2 to 5 feet below existing grades at the boring locations. The existing clay fill exhibited stiff to very stiff consistencies with undrained shear strengths ranging from 1.5 to 3.5 kips-per-square-foot (ksf) and had moisture contents ranging from 13 to 23 percent. Some of the existing fill appeared to contain organics. The existing sand fill was generally encountered in a medium dense to dense condition with DCP values ranging from 18 to greater than 50 blows-per-half-foot. Layers of buried topsoil were encountered within the existing fill. LOI tests performed on obtained samples of the existing fill indicated organic contents of 3.6 and 6.0 percent.

STRATUM 3 – NATURAL CLAYS

Natural clays were encountered underlying the existing fill and extended to the explored depths. Interbedded sand layers were encountered within the overall cohesive soil profile. The natural clays exhibited medium to very stiff consistencies with undrained shear strengths ranging from 1.0 to 3.5 kips-per-square-foot (ksf) and had moisture contents ranging from 14 to 21 percent.

GENERAL NOTES

Consider thickness measurements of surficial materials reported on the boring logs approximate since mixing of the surficial materials with the underlying subgrade can occur while advancing the augers, and it is difficult to measure the thickness of surface materials in small-diameter boreholes. Therefore, if more accurate surficial material thickness measurements are required, we recommend performing additional evaluations such as additional pavement cores and hand auger borings or test pit excavations.

It is sometimes difficult to distinguish between fill and natural soils based on samples and cuttings from small-diameter boreholes, especially when portions of the fill do not contain man-made materials, debris, topsoil or organic layers, and when the fill appears similar in composition to the local natural soils. Therefore, consider the delineation of fill described above and on the appended boring logs approximate only. A more comprehensive evaluation of the extent and composition of the existing fill could be made by reviewing former site topography plans and by observing test pit excavations.

The soil profile described above and included on the boring logs are generalized descriptions of the conditions encountered. The stratification depths described above and shown on the logs are intended to indicate a zone of transition from one soil type to another. They are not intended to show exact depths of change from one soil type to another. The soil descriptions are based on visual classification of the soils encountered. Soil conditions may vary between or away from the boring locations. Please refer to the boring logs for the soil conditions at the specific locations.

© 2021 SME

3.2 GROUNDWATER CONDITIONS

Groundwater was encountered in borings B1 and B4 performed for this evaluation. Groundwater was encountered in boring B1 at about 8 feet below existing grades during drilling and measured at about 9 feet below existing grades upon completion (corresponding to approximate elevation 681 and 680 feet, respectively). Groundwater was encountered in boring B4 at about 1 feet below existing grades during drilling and measured at about 3.5 feet below existing grades upon completion (corresponding to approximate elevation 687 and 684.5 feet, respectively).

The encountered groundwater at boring B1 was present within sand seams interbedded within the natural clay soils. At boring B4 the encountered groundwater is considered perched within the existing fill overlying the less permeable natural clay soils. In cohesive soils (i.e., clays and clayey silts), a long time may be required for the groundwater level in the borehole to reach an equilibrium position. Therefore, the use of groundwater observation wells (piezometers) can be necessary to more accurately determine the hydrostatic groundwater level within soil profiles containing clays.

Expect hydrostatic groundwater levels/elevations to fluctuate throughout the year, based on variations in precipitation, evaporation, run-off, and other factors. The groundwater conditions indicated by the borings represent conditions at the time the readings were taken. The groundwater levels at the time of construction may vary from those conditions noted on the boring logs. If more information regarding groundwater levels at this site is required, then we recommend performing additional subsurface assessment(s).

4. ANALYSIS AND RECOMMENDATIONS

Based on the soil borings, subsurface conditions are favorable for the proposed improvements provided that proper engineering controls, and proper construction methods, are properly incorporated, implemented and completed. The site is predominantly clayey, so stormwater infiltration into the subgrade is not practical. Rather, an engineered system would be required to control water from precipitation, surface runoff, perched groundwater, etc. Soil strength appears generally adequate for support of the proposed improvements, provided the subgrade is properly prepared during construction.

Refer to the following comments and recommendations for the proposed improvements for this project.

4.1 SITE PREPARATION AND EARTHWORK

Site preparation is expected to consist of removal of the existing surficial materials (e.g., pavements, topsoil, etc.), building elements, buried slabs/obstructions, and other site features, compaction of the subgrade using large vibratory rollers, placement of engineered fill, and then the commencement of below-grade construction. Detailed recommendations are provided below.

4.1.1 EXISTING FILL CONSIDERATIONS

We consider the existing fill to be undocumented since we do not have information on the origin of the fill, including data on placement and compaction. For foundation construction, due to the variabilities associated with undocumented existing fill and the depth of the existing fill, we recommend the existing fill be removed (i.e., undercut) to bear directly on suitable natural clay, or be widened and backfilled with engineered fill as needed to re-establish the design foundation bearing elevation. Refer to Section 4.2 of this report for information.

© 2021 SME

Regarding (non-critical) floor slabs and pavements, the existing fill can be considered for support of grade slabs and pavements provided the Owner accepts an elevated risk for poor performance (e.g. settlement, cracking) of slabs/pavements constructed over the existing fill. This risk can be reduced via proper subgrade preparation and evaluation during construction (as described below) and provided site grades are raised no more than one foot above the existing ground surface. We recommend retaining SME to provide construction materials services to verify proper subgrade preparation methods, and to further test the existing subgrade, to mitigate this risk.

Typical construction practice is to construct pavements and non-critical (and lightly-loaded) floor slabs over existing (compacted, relatively inorganic, minimal debris, non-expansive, non-reactive) fill, provided the fill is properly prepared during construction. However, it is the Owner's responsibility to make decisions on how to address existing fill and other soil/groundwater related conditions. For example, if the Owner is not willing to accept the risk for poor performance from the existing fill, then the existing fill must be undercut beneath the entire zone of influence of the proposed improvements and replaced with engineered fill. While this option would be costly, we would be pleased to provide additional recommendations for mass removal and replacement of the existing fill soils if requested. The existing fill had organic contents of 3.6 and 6.0 percent for the tested samples. Organic contents greater than about 4.0 percent are generally considered elevated and at risk for post-construction settlement, particularly if the organic containing soils are near (e.g. within two feet of) design final grades.If the existing fill will remain in-place for support of floor slabs, further evaluation of the existing fill during construction must be conducted by SME. Further evaluation includes observing the condition of the existing fill in hand-auger borings or shallow test pits, testing the existing fill several feet below the subgrade surface using a cone penetrometer, observing the condition of the existing fill in the sides of the foundation excavations, and observing the response of the surface of the existing fill when subjected to a proofroll. Suspect existing fill materials observed during the evaluation and testing need be further evaluated by performing additional hand-auger borings and/or test pits and the contractor need to be prepared to assist SME, as needed. Existing fill to remain in-place must be of sufficient strength and free of deleterious materials such as excessive debris and organics. The risk for additional settlement after construction increases when the poorly compacted fill soils are left in-place and are not sufficiently improved, or when debris-laden fills are left in-place and the debris collapses in on itself (or the surrounding soil migrates into the gaps between the debris) over time. Unsuitable existing fill unable to be improved in-place shall be removed (i.e., undercut) and replaced with engineered fill placed and compacted per the requirements outlined in Section 4.1.4 of this report.

The recommendations provided in the following report sections are based on the assumption existing fill will be undercut beneath foundations, SME will be retained to provide construction materials services, the Owner accepts the risks of poor performance of the floor slab, and suitable existing fill will remain in-place and be used to support floor slabs. Please contact SME if our assumptions are incorrect so we can update our report as necessary.

4.1.2 SITE SUBGRADE PREPARATION

Following demolition of the existing site features, including removal of existing pavements, topsoil, and unsuitable materials, the underlying subgrade is expected to consist of mixed clay and sand fill soils. Completely remove existing buried structural elements associated with previous construction at the site from within the proposed development areas and backfill with engineered fill. Reroute existing utilities outside of the proposed development areas and backfill with engineered fill.

After stripping and removal of unsuitable materials, and making cuts to design subgrade levels, the exposed subgrade needs to be uniformly compacted using large construction equipment, as the fill and natural soil conditions near the surface varied in condition/consistency. Take care during compaction not to damage nearby existing structures and underground utilities. As predominantly silty and clayey soil conditions are expected, we recommend using large, sheepsfoot vibratory rollers for the compaction operations. We recommend at least several passes be made with the compaction equipment. In some areas, moisture conditioning and/or undercutting may be necessary to enhance the effectiveness of the compaction operation.

© 2021 SME

After compaction, we recommend the exposed subgrade be proofrolled in the presence of SME. Proofroll using a fully-loaded, tandem-axle dump truck or other similar pneumatic-tire construction equipment. Improve areas of unsuitable (e.g., loose) subgrade revealed during proofrolling by compacting in-place, if feasible. Soils unable to be suitably improved in-place must be removed (undercut) and replaced with engineered fill.

We recommend performing proofroll test(s) on a regular basis throughout the site earthwork operations. The purpose for the proofroll tests are to verify compaction and subgrade stability prior to placement of additional fill/pavements/slabs, etc. As subgrade conditions can change due to changes in weather, traffic, or other factors, we recommend placing the new fill/pavements/slabs soon after a successful proofroll test. We also recommend evaluating the intensity and type of proofrolling on a case-by-case basis. For example, when proofrolling engineered fill subgrade that has been uniformly placed and properly compacted (and remains in an undisturbed condition), wheel spacing of about 10 to 20 feet is typically acceptable. For proofrolling subgrade where compaction is relatively unknown, wheel spacing of less than one foot (e.g. continuous coverage; and possibly multiple passes) may be necessary to assist with the compaction process while performing the proofroll test.

The subgrade soils are sensitive to disturbance when exposed to water. If the subgrade is exposed to water, it may be necessary to improve the disturbed subgrade or remove and replace the soils with engineered fill, crushed aggregate or crushed concrete. Placement of crushed aggregate or crushed concrete, possibly with a geotextile for separation, is a traditional treatment to protect subgrades.

In the case of more severe subgrade disturbance, particularly if the construction will occur during the winter and early spring months, chemical stabilization of the subgrade could be considered. SME can provide additional information about chemical stabilization using lime or cement, if desired.

After the exposed subgrade is evaluated (as described above) and improved as necessary, engineered fill may be placed on the exposed subgrade to establish final design subgrade levels. See Section 4.1.4 of this report for materials and compaction requirements for engineered fill.

4.1.3 ENGINEERED FILL REQUIREMENTS

Fill placed within structural areas, including utility trench backfill, must be an approved material, free of frozen soil, organics, construction debris, over-sized materials, reactive/expansive materials, or other unsuitable materials. Compact fill placed in structural areas to a minimum of 95 percent of the maximum dry density determined in accordance with the Modified Proctor test. Spread fill in level layers with a loose thickness appropriate for the type of equipment used to obtain compaction. Thinner lifts will be required in confined spaces, when clay/clayey fill is used, and where compaction is achieved with hand-operated equipment. Sand fill can be compacted with a smooth-drum vibratory roller or vibratory plate compactors, including either walk-behind types or plate compactors mounted on a backhoe or excavator (i.e., hoe-pac). Clay fill can be compacted with sheepsfoot rollers, or large pneumatic tire construction equipment (e.g. fully loaded front-end loader) at a moisture content between the optimum and two percent below the optimum.

Based on the information from the borings, portions of the existing fill encountered at the boring locations are considered suitable for reuse as site engineered fill provided the material meets the requirements in the previous paragraph and is at a suitable moisture content for compaction. The on-site clays, and wet sands, will likely require moisture conditioning (i.e., aeration and drying) to achieve suitable moisture levels for proper compaction. We do not recommend reusing asphalt millings as engineered fill directly below new pavements; however, some asphalt millings (e.g. 50/50 mix with inorganic soil) could be reused below the proposed aggregate base level in the proposed pavement areas. Also, we recommend limiting the organic content of any general engineered fill soils to less than 4 percent. Aggregate bases and/or leveling courses must be inorganic.

© 2021 SME

The site clays (with a USCS designation of “CL”) and sands with silt contents in excess of 10 percent (with USCS designations of “SM” and “SP-SM”) will be difficult to compact in confined areas, such as in utility trenches and foundation excavations, where smaller, walk-behind type compaction equipment is used. Do not use clayey and silty soils as engineered fill where drainage is required. Clayey and silty soils can be used as engineered fill in open areas where compaction is achieved with large equipment and where moisture conditioning is feasible. During wetter/colder periods of the year when moisture conditioning of the clayey and silty soils will likely not be feasible, we expect it will be necessary to import granular fill to the site and waste the clayey and silty soils on non-structural areas of the site.

In utility trenches or foundation excavations, and in other areas where compaction is accomplished primarily by smaller plate compaction equipment, we recommend an approved granular material containing relatively low amounts of silt or clay, such as MDOT Class II granular material, be used as backfill. Thinner lift sizes may be required to achieve the required dry density in areas where smaller compaction equipment is used. We also recommend MDOT Class II granular material be used in areas requiring drainage or where the fill will serve as a capillary separation. The soils encountered in the borings, at locations and within depths where cuts are anticipated, are not expected to meet the gradational requirements of MDOT Class II granular material. Therefore, we anticipate soils conforming to MDOT Class II granular material will need to be imported to the site.

Coarse crushed aggregate used to backfill undercuts or to stabilize subgrades must consist of a well-graded crushed natural aggregate or crushed concrete ranging from 1 to 3 inches in nominal size with no more than 7 percent by weight passing the No. 200 sieve. In cases where granular engineered fill will be placed over the crushed aggregate, top the surface of the coarse crushed material with a layer of at least 6 inches of dense-graded aggregate, such as MDOT 21AA, or covered with a suitable non-woven geotextile, to prevent migration of the granular materials into the coarser crushed aggregate.

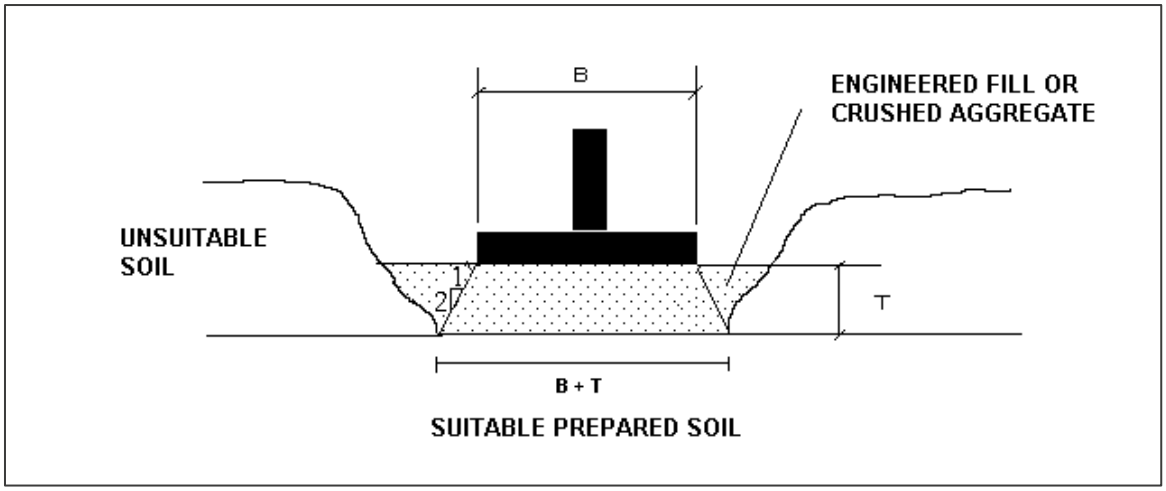
For trenches and other excavations, we recommend the upper 18 inches of backfill consist of soils that are similar with the surrounding subgrade. The purpose for this is to limit mixing of different soil types near final subgrade levels.

4.2 SHALLOW FOUNDATIONS

Support the proposed dumpster enclosure on shallow spread foundations bearing on suitable natural clays, or on engineered fill placed over suitable natural clays. Use a maximum net allowable soil bearing pressure of 2,000 pounds per square-foot (psf) for design of shallow foundations bearing on suitable soils as described above. According to boring B1, suitable natural soils are anticipated to be encountered at/near design foundation bearing levels. The design net allowable soil bearing pressure will achieve a global safety factor of three or more (for general shear failure).

Once each foundation area is exposed, SME must observe and test the foundation subgrades to verify suitable bearing conditions are present. Existing fill was encountered to a depth of about 3 feet below existing grades at boring B1 performed in the enclosure footprint. Assuming foundations will bear at frost depth (i.e., at 3.5-feet below final grades), we anticipate the existing fill will be removed during foundation excavation and undercutting will not be required. If present, undercut unsuitable soils encountered in foundation areas that are not able to be improved in-placed to expose underlying suitable soils. Foundations can then be constructed to bear directly at this lower level where suitable subgrade is encountered, or the design foundation bearing level can be reestablished using engineered fill or crushed aggregate placed as backfill in the undercut excavation. Where backfilling to the design foundation bearing level is performed, extend the undercut excavation to remove unsuitable soils laterally on a two vertical to one horizontal slope from the edge of the foundation. Please refer to the following Typical Foundation Undercutting Diagram.

© 2021 SME



Situate foundations a minimum of 42 inches below final site grade in unheated areas for protection against frost action during normal winters. Protect the foundations and proposed bearing soils from freezing during construction if work occurs in the winter months.

Slope back foundation excavations and form the foundations to maintain vertical foundation sides. Remove caved soils from the foundation bearing surfaces before placing concrete. Place foundation concrete as soon as practical after foundation excavations have been completed and the design bearing pressure verified to reduce the potential for disturbance of the foundation subgrade.

For bearing capacity and settlement considerations, design continuous (wall) foundations with a minimum width of 16 inches and isolated (column) foundations with a minimum dimension of 30 inches. Given the higher anticipated loads for the parking structure, we expect the design bearing pressure may govern the size of the foundation.

We estimate total settlement for shallow spread or continuous foundations using the recommended maximum net allowable bearing pressure and bearing on suitable soils, as described above, to be 1 inch or less and differential settlements to not exceed about one-half the total settlement for similarly loaded foundations. We base the settlement estimates on the available boring information, the estimated structural loads, our experience with similar structures and soil conditions, and field verification of suitable bearing soils by SME.

4.3 INFILTRATION CONSIDERATIONS

The existing fill soils and the underlying natural clays at this site are essentially impermeable with respect to a precipitation event. While there are some granular soils interbedded within the existing clayey fill, the granular soils contained an appreciable amount of soil fines (silt, clay), indicating relatively low infiltration characteristics. In addition, the granular fill soils are likely limited in lateral extent and, accordingly, infiltration rates into the existing fill are anticipated to decrease with time and storm intensity as the void spaces within the granular soils would quickly become saturated. Accordingly, the existing soil profile at this site is judged to have extremely limited infiltration capacity and is considered unreliable for design of a permeable pavement system and/or a stormwater infiltration system.

The use of a permeable pavement at this site will require an engineered system (e.g. open graded aggregate with a storm water outlet). For stormwater runoff, it may be possible to temporarily store some of the stormwater in an engineered system before being discharged into the stormwater collection system. Or, an underground stormwater basin is also an option for stormwater detention.

© 2021 SME

4.4 PERMEABLE PAVER RECOMMENDATIONS

Permeable pavers are being considered for a portion of this project. Based on the relatively impervious existing subgrade, a layer of coarse crushed stone will be required as the aggregate base and leveling course for this site. For separation purposes, a layer of heavy-duty geotextile fabric (e.g. Mirafi 180N, or approved equal) will be required between the crushed stone and the surrounding subgrade.

We recommend aggregate base/leveling course below the permeable pavers consist of at least 12 inches of MDOT 6A crushed (and washed) stone below three inches of MDOT 17A crushed (and washed) stone. Peastone is another option in lieu of the 17A crushed stone, provided the difficulties with properly placing/compacting rounded peastone can be addressed during construction. Prior to placing the 6A crushed stone, it will be critical to properly compact, proofroll, and then fine-grade the existing subgrade so that the existing subgrade surface drains toward the designated low-point(s) at the stormwater collection location(s). This will also help maintain a uniform thickness of crushed stone for added subgrade stability.

It will be important to thoroughly, and uniformly, compact the crushed stone so it is stable under construction traffic. Any disturbed crushed stone will need to be thoroughly recompacted prior to paver placement. We recommend an SME representative be onsite during the compaction operations so that subgrade compaction can be documented and recommendations regarding compaction can be made in the field at the time of the compaction process.

When considering storage capacity of stormwater in the crushed stone layer, we recommend using a porosity value of 0.2. The hydraulic gradient within the crushed stone layer (between stormwater point(s) of entry, and point(s) of discharge) will also need to be considered when designing for stormwater storage capacity. For extreme stormwater events, it may also be practical to temporarily store some stormwater above the paver surface for a short period of time.

It is important to note that, as with any permeable pavement system, any water that freezes below the pavers has the potential to result in undesirable frost-heave on the paver system. In some cases, weather conditions may cause significant frost-heave to occur before the stormwater can travel through the crushed stone and offsite via the stormwater discharge outlet(s). For pavers that experience frost heave, the pavers can be releveled (and the subgrade recompacted) once the frost subsides. In general, the thicker the crushed stone layer, the less likely that frost-heave would be a concern. However, a permanent heat-melt system below the exterior pavements would be required to prevent the subgrade (and overlying pavers/pavements) from freezing.

We recommend using only rigid piping (e.g. schedule 40 PVC, or better) below the proposed pavements at this site. The crushed stone backfill increases the potential for installation damage to piping. Also, we recommend including a filter sock around any perforated rigid piping.

We recommend using pavers that are specifically manufactured for use as an exterior permeable paver system in a northern climate. Permeable pavers will need to be at least three inches thick, and have a design compressive strength of at least 8,000 psi. Permeable pavers will also need to have a functioning permeable joint material. Also, edge restraints will be required to prevent lateral shifting of the pavers. In addition, we recommend pavers be designed for relatively ‘flat’ surfaces (e.g. less than 2 percent slopes) to limit the potential for additional lateral shifting. Expect some lateral shifting of the pavers to occur if the edge(s) of the pavers are also the low spot(s) in the paver surface and are not restrained by a rigid pavement/structure.

Regular maintenance is required for a permeable paver system. It is important to keep drainage pathways open, and abundant, so that stormwater can quickly travel below the pavers and to the stormwater discharge outlet(s).

© 2021 SME

4.5 CONSTRUCTION CONSIDERATIONS

The contractor must take precautions to protect nearby existing buildings, pavements, and utilities during construction. Exercise care during the excavating and compacting operations so excessive vibrations do not cause settlement of nearby existing buildings, pavements, and utilities, and to avoid undermining existing utilities, floor slabs, or foundations when performing excavations for the proposed construction.

Significant groundwater seepage is not expected to be encountered in site excavations. However, seepage from precipitation, surface runoff, perched groundwater sources, or other events could be encountered above this elevation. Control water accumulations in excavations above the groundwater level using standard sump pit and pumping procedures. Utilize a working surface of either crushed aggregate or crushed concrete to protect the exposed subgrade where seepage is encountered.

Remove ponded surface water and prevent run-off from reaching foundation excavations and areas of prepared subgrade. Establish positive surface drainage at the onset of construction to mitigate the potential for subgrade disturbance.

The existing fill at this site will be sensitive to disturbance when trafficked, especially when these soils become wet. If the subgrade is disturbed, it will be necessary to disc, aerate, and recompact the disturbed existing fill, or to remove and replace the disturbed soils with engineered fill, crushed aggregate, or crushed concrete. To protect areas of prepared subgrade from disturbance and to create dependable haul routes and material laydown areas, placement of crushed aggregate or crushed concrete, possibly with a geotextile for separation, could be required.

The contractor must provide safely sloped excavations or adequately constructed and braced shoring systems in accordance with federal, state and local safety regulations for individuals working in an excavation exposing them to the danger of moving ground. If material is stored or heavy equipment is operated near an excavation, use appropriate shoring to resist the extra pressure due to the superimposed loads.

Handling, transportation and disposal of excavated materials and groundwater need to be performed in accordance with applicable environmental regulatory requirements.

5. SIGNATURES

Report Prepared By:

Jeremy S. Wahlstrom
Project Engineer

Report Reviewed By:

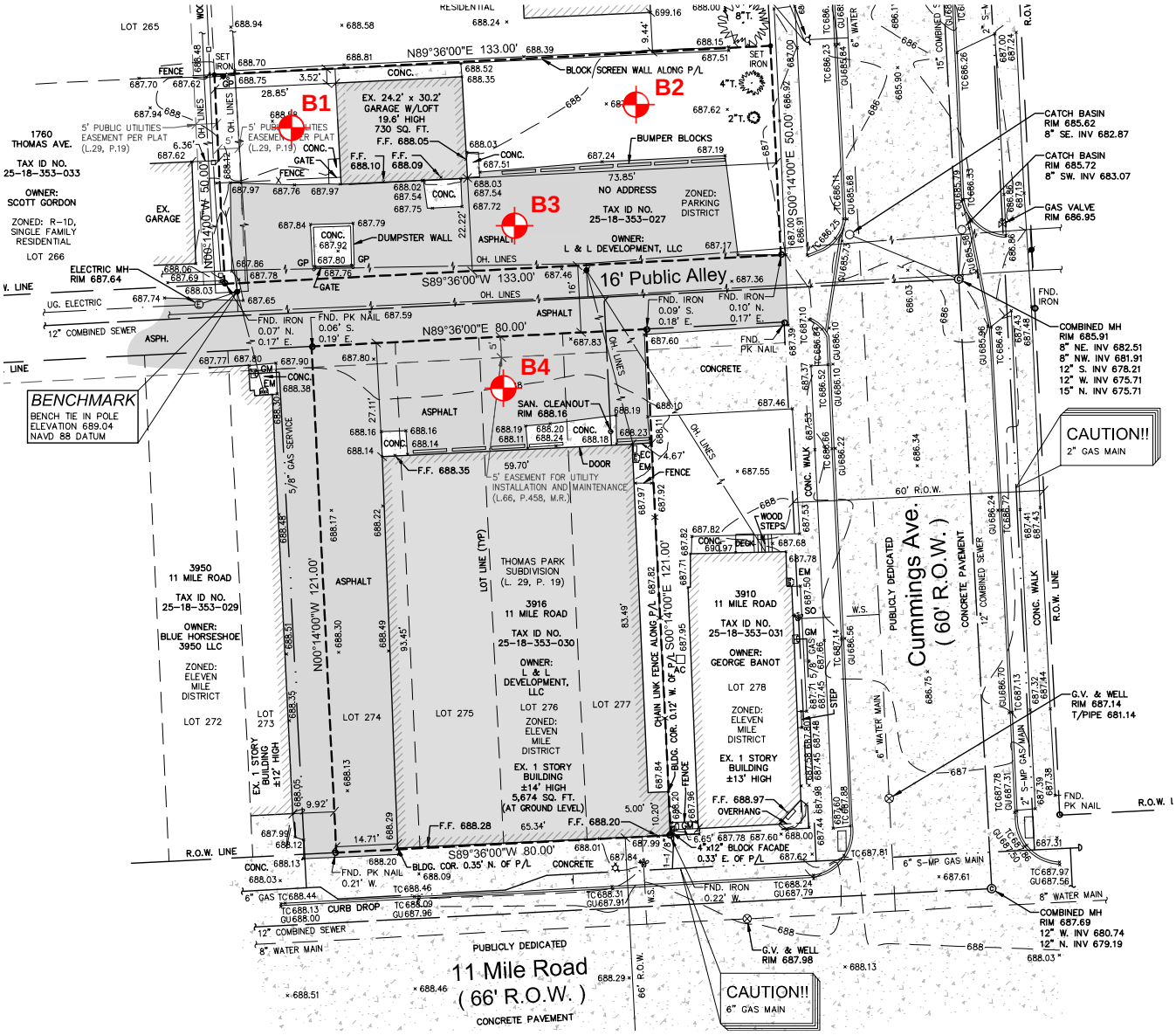
Joel W. Rinkel, PE
Group Leader – Geotechnical Services

© 2021 SME

APPENDIX A

BORING LOCATION DIAGRAM (FIGURE NO. 1)
BORING LOG TERMINOLOGY
BORING LOGS (B1 THROUGH B4)

© 2021 SME



LEGEND

APPROXIMATE BORING LOCATION

NOTE:
DRAWING INFORMATION TAKEN FROM A PDF OF A DRAWING TITLED "ALTA/NSPS LAND TITLE / TOPOGRAPHIC SURVEY," LATEST ISSUE DATE OF 04/14/2020, PREPARED BY NF ENGINEERS, INC.

No.	Revision Date		
		Date	12-04-20
		Drawn By	JSW
		Designed By	JSW
		Scale	1" = 40'
		Project	085599.00

BORING LOCATION DIAGRAM
QUALITY ROOTS SITE IMPROVEMENTS
3916 ELEVEN MILE ROAD
BERKLEY, MI

SME
www.sme-usa.com

Figure No. 1

BORING LOG TERMINOLOGY

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

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

OTHER MATERIAL SYMBOLS

Topsoil, Void, Sandstone, Asphalt Concrete, Glacial Till, Siltstone, Aggregate Base, Coal, Limestone, Portland Cement Concrete, Shale, Fill

LABORATORY CLASSIFICATION CRITERIA

GW	$C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with PI greater than 7	
SW	$C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for SW	
SM	Atterberg limits below "A" line or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols
SC	Atterberg limits above "A" line with PI greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent……GW, GP, SW, SP
More than 12 percent……GM, GC, SM, SC
5 to 12 percent……Cases requiring dual symbols

- SP-SM or SW-SM (SAND with Silt or SAND with Silt and Gravel)
- SP-SC or SW-SC (SAND with Clay or SAND with Clay and Gravel)
- GP-GM or GW-GM (GRAVEL with Silt or GRAVEL with Silt and Sand)
- GP-GC or GW-GC (GRAVEL with Clay or GRAVEL with Clay and Sand)

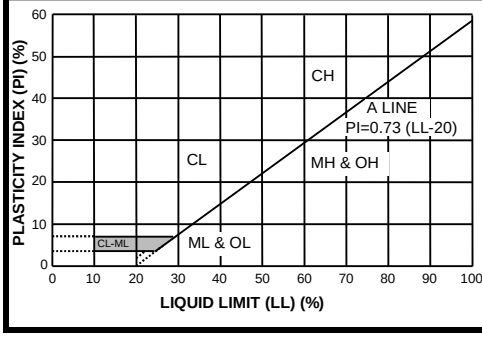
If the fines are CL-ML:

- SC-SM (SILTY CLAYEY SAND or SILTY CLAYEY SAND with Gravel)
- SM-SC (CLAYEY SILTY SAND or CLAYEY SILTY SAND with Gravel)
- GC-GM (SILTY CLAYEY GRAVEL or SILTY CLAYEY GRAVEL with Sand)

PARTICLE SIZES

Boulders	-	Greater than 12 inches
Cobbles	-	3 inches to 12 inches
Gravel- Coarse	-	3/4 inches to 3 inches
Fine	-	No. 4 to 3/4 inches
Sand- Coarse	-	No. 10 to No. 4
Medium	-	No. 40 to No. 10
Fine	-	No. 200 to No. 40
Silt and Clay	-	Less than (0.074 mm)

PLASTICITY CHART



VISUAL MANUAL PROCEDURE

When laboratory tests are not performed to confirm the classification of soils exhibiting borderline classifications, the two possible classifications would be separated with a slash, as follows:

For soils where it is difficult to distinguish if it is a coarse or fine-grained soil:

- SC/CL (CLAYEY SAND to Sandy LEAN CLAY)
- SM/ML (SILTY SAND to SANDY SILT)
- GC/CL (CLAYEY GRAVEL to Gravelly LEAN CLAY)
- GM/ML (SILTY GRAVEL to Gravelly SILT)

For soils where it is difficult to distinguish if it is sand or gravel, poorly or well-graded sand or gravel; silt or clay; or plastic or non-plastic silt or clay:

- SP/GP or SW/GW (SAND with Gravel to GRAVEL with Sand)
- SC/GC (CLAYEY SAND with Gravel to CLAYEY GRAVEL with Sand)
- SM/GM (SILTY SAND with Gravel to SILTY GRAVEL with Sand)
- SW/SP (SAND or SAND with Gravel)
- GP/GW (GRAVEL or GRAVEL with Sand)
- SC/SM (CLAYEY to SILTY SAND)
- GM/GC (SILTY to CLAYEY GRAVEL)
- CL/ML (SILTY CLAY)
- ML/CL (CLAYEY SILT)
- CH/MH (FAT CLAY to ELASTIC SILT)
- CL/CH (LEAN to FAT CLAY)
- MH/ML (ELASTIC SILT to SILT)

DRILLING AND SAMPLING ABBREVIATIONS

2ST	–	Shelby Tube – 2" O.D.
3ST	–	Shelby Tube – 3" O.D.
AS	–	Auger Sample
GS	–	Grab Sample
LS	–	Liner Sample
NR	–	No Recovery
PM	–	Pressuremeter
RC	–	Rock Core diamond bit. NX size, except where noted
SB	–	Split Barrel Sample 1-3/8" I.D., 2" O.D., except where noted
VS	–	Vane Shear
WS	–	Wash Sample

OTHER ABBREVIATIONS

WOH	–	Weight of Hammer
WOR	–	Weight of Rods
SP	–	Soil Probe
PID	–	Photo Ionization Device
FID	–	Flame Ionization Device

DEPOSITIONAL FEATURES

Parting	–	as much as 1/16 inch thick
Seam	–	1/16 inch to 1/2 inch thick
Layer	–	1/2 inch to 12 inches thick
Stratum	–	greater than 12 inches thick
Pocket	–	deposit of limited lateral extent
Lens	–	lenticular deposit
Hardpan/Till	–	an unstratified, consolidated or cemented mixture of clay, silt, sand and/or gravel, the size/shape of the constituents vary widely
Lacustrine	–	soil deposited by lake water
Mottled	–	soil irregularly marked with spots of different colors that vary in number and size
Varved	–	alternating partings or seams of silt and/or clay
Occasional	–	one or less per foot of thickness
Frequent	–	more than one per foot of thickness
Interbedded	–	strata of soil or beds of rock lying between or alternating with other strata of a different nature

DESCRIPTION OF RELATIVE QUANTITIES

The visual-manual procedure uses the following terms to describe the relative quantities of notable foreign materials, gravel, sand or fines:

Trace	–	particles are present but estimated to be less than 5%
Few	–	5 to 10%
Little	–	15 to 25%
Some	–	30 to 45%
Mostly	–	50 to 100%

CLASSIFICATION TERMINOLOGY AND CORRELATIONS

Cohesionless Soils

Relative Density	N_{60} (N-Value) (Blows per foot)
Very Loose	0 to 4
Loose	5 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	51 to 80
Extremely Dense	Over 81

Cohesive Soils

Consistency	N_{60} (N-Value) (Blows per foot)	Undrained Shear Strength (kips/ft^2)
Very Soft	<2	0.25 or less
Soft	2 - 4	> 0.25 to 0.50
Medium	5 - 8	> 0.50 to 1.0
Stiff	9 - 15	> 1.0 to 2.0
Very Stiff	16 - 30	> 2.0 to 4.0
Hard	> 30	> 4.0 or greater

Standard Penetration 'N-Value' = Blows per foot of a 140-pound hammer falling 30 inches on a 2-inch O.D. split barrel sampler, except where noted. N60 values as reported on boring logs represent raw N-values corrected for hammer efficiency only.

1/5/21 11:06:00 AM

BORING B1

BORING DEPTH: 10 FEET

PROJECT NAME: Quality Roots Site Improvements
PROJECT NUMBER: 085599.00
CLIENT: Schostak Brothers & Company
PROJECT LOCATION: Berkley, Michigan

DATE STARTED: 11/25/20 **COMPLETED:** 11/25/20 **BORING METHOD:** Hand Auger

FIELD REPRESENTATIVE: BRB **EQUIPMENT:** Hand Auger **LOGGED BY:** BRB **CHECKED BY:** JSW

ELEVATION: 689± FT

ELEVATION (FEET)	DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	BLOWS PER SIX INCHES
688.8	0.0 – 0.2	2 inches of Clayey TOPSOIL		
687.5	0.2 – 1.5	FILL- Fine to Medium CLAYEY SAND with Gravel- Trace Crushed Concrete & Root Fibers- Dark Brown- Medium Dense to Dense (SC)	AS1	20, 61, 50/3"
687.0	1.5 – 2.0	FILL- LEAN CLAY with Sand-Brown- Very Stiff (CL)	AS2	
686.0	2.0 – 3.0	FILL- TOPSOIL- Fine to Medium SILTY SAND- Occasional Root Fibers- Dark Brown- Moist (SM)	AS3	
684.5	3.0 – 4.5	Sandy LEAN CLAY- Occasional Sand Layers- Brown & Gray- Stiff (CL)	AS4	
679.0	4.5 – 10.0	LEAN CLAY- Occasional Sand Seams- Trace Sand & Gravel- Brown & Gray- Very Stiff (CL)	AS5 AS6 AS7	

END OF BORING AT 10.0 FEET.

DYNAMIC CONE PENETROMETER (DCP) -- ○: 20, 61, 50+

DRY DENSITY (pcf) -- ■ (90 100 110 120)

MOISTURE & ATTERBERG LIMITS (%) (PL MC LL): 17, 17, 19, 18, 21

HAND PENE. ▽ | TORVANE SHEAR ⊠ | UNC. COMP. ● | VANE SHEAR (PK) ⊡ | VANE SHEAR (REM) ✕ | TRIAXIAL (UU) ⊕

SHEAR STRENGTH (KSF) (1 2 3 4)

REMARKS: Sample AS5 was too disturbed to perform shear strength testing.

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (FT)	ELEV (FT)
▽ **DURING BORING:**	8.0	681.0
▼ **AT END OF BORING:**	9.0	680.0

BACKFILL METHOD: Auger Cuttings

NOTES:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

1/5/21 11:06:01 AM

BORING B2

BORING DEPTH: 6 FEET

PROJECT NAME: Quality Roots Site Improvements
PROJECT NUMBER: 085599.00
CLIENT: Schostak Brothers & Company
PROJECT LOCATION: Berkley, Michigan

DATE STARTED: 11/25/20 **COMPLETED:** 11/25/20 **BORING METHOD:** Hand Auger

FIELD REPRESENTATIVE: BRB **EQUIPMENT:** Hand Auger **LOGGED BY:** BRB **CHECKED BY:** JSW

ELEVATION: 688± FT

ELEVATION (FEET)	DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE/NO. INTERVAL	BLOWS PER SIX INCHES
687.8	0.0 – 0.3	3 inches of Sandy TOPSOIL		
687.5	0.3 – 1.5	FILL- Fine to Medium CLAYEY SAND with Gravel- Trace Organics & Occasional Root Fibers- Dark Brown- Moist- Medium Dense to Dense (SC)	AS1	20, 61, 50/3"
686.5	1.5 – 2.7	FILL- TOPSOIL- Fine to Medium SILTY SAND- Occasional to Frequent Root Fibers- Dark Brown- Moist (SM)	AS2	
685.3	2.7 – 4.2	Fine to Medium CLAYEY SAND to Sandy LEAN CLAY- Frequent Sand Seams & Layers- Brown & Gray- Moist- Medium (SC/CL)	AS3	
683.8	4.2 – 6.0	LEAN CLAY- Trace Sand & Gravel- Brown & Gray- Very Stiff (CL)	AS4	
682.0	6.0	END OF BORING AT 6.0 FEET.		

DYNAMIC CONE PENETROMETER (DCP) -- ○ (10 20 30 40): 20, 61, 50+

DRY DENSITY (pcf) -- ■ (90 100 110 120)

MOISTURE & ATTERBERG LIMITS (%) (PL MC LL; 10 20 30 40): 17, 21

SHEAR STRENGTH (KSF) (1 2 3 4)

▽ HAND PENE.
⊠ TORVANE SHEAR
● UNC. COMP.
⊡ VANE SHEAR (PK)
× VANE SHEAR (REM)
◈ TRIAXIAL (UU)

REMARKS: Loss-On-Ignition (LOI) test performed on Sample SB2 indicates an organics content of about 6.0 percent.

GROUNDWATER & BACKFILL INFORMATION

GROUNDWATER WAS NOT ENCOUNTERED

BACKFILL METHOD: Auger Cuttings

NOTES:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

1/5/21 11:06:03 AM

BORING B3

BORING DEPTH: 6 FEET

PROJECT NAME: Quality Roots Site Improvements
PROJECT NUMBER: 085599.00
CLIENT: Schostak Brothers & Company
PROJECT LOCATION: Berkley, Michigan

DATE STARTED: 11/25/20 **COMPLETED:** 11/25/20 **BORING METHOD:** Hand Auger

FIELD REPRESENTATIVE: BRB **EQUIPMENT:** Hand Auger **LOGGED BY:** BRB **CHECKED BY:** JSW

ELEVATION (FEET)	DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE/NO.	BLOWS PER SIX INCHES
687.5	0.0	ELEVATION: 688± FT		
	0.1	2 inches of ASPHALT PAVEMENT		
	0.3	687.7		
		2 inches of AGGREGATE BASE- Sand & Gravel- Brown & Gray- Wet		
		FILL- Sandy LEAN CLAY- Trace Gravel- Occasional Sand Seams- Brown & Gray- Very Stiff (CL)	AS1	34
	1.5	686.5		21
		FILL- TOPSOIL- Fine to Medium SILTY SAND- Occasional Clay Layers- Dark Brown- Moist- Medium Dense (SM)	AS2	18
	2.0	686.0		18
			AS3	18
685.0	2.5	LEAN CLAY- Trace Sand & Gravel- Brown & Gray- Stiff (CL)		19
	3.5	684.5		19
		LEAN CLAY- Trace Sand- Brown & Gray- Very Stiff (CL)		
682.5	5.0		AS4	
	6.0	682.0		
		END OF BORING AT 6.0 FEET.		
680.0	7.5			
	10.0			

DYNAMIC CONE PENETROMETER (DCP) -- ○ : 34, 21, 18, 18, 19, 19

DRY DENSITY (pcf) -- ■ (90 100 110 120)
MOISTURE & ATTERBERG LIMITS (%) (PL MC LL) (10 20 30 40): 13, 22, 17, 21

▽ HAND PENE.
⊠ TORVANE SHEAR
● UNC. COMP.
⊡ VANE SHEAR (PK)
× VANE SHEAR (REM)
⊕ TRIAXIAL (UU)
SHEAR STRENGTH (KSF) (1 2 3 4)

REMARKS: Sample AS1 was too disturbed to perform shear strength testing. Sample AS2 moisture content and shear strength tests were performed on a clay layer.

GROUNDWATER & BACKFILL INFORMATION

GROUNDWATER WAS NOT ENCOUNTERED

BACKFILL METHOD: Auger Cuttings & Cold Patch

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

1/5/21 11:06:04 AM

BORING B4

BORING DEPTH: 6 FEET

PROJECT NAME: Quality Roots Site Improvements
PROJECT NUMBER: 085599.00
CLIENT: Schostak Brothers & Company
PROJECT LOCATION: Berkley, Michigan

DATE STARTED: 11/25/20 **COMPLETED:** 11/25/20 **BORING METHOD:** Hand Auger

FIELD REPRESENTATIVE: BRB **EQUIPMENT:** Hand Auger **LOGGED BY:** BRB **CHECKED BY:** JSW

ELEVATION: 688± FT

ELEVATION (FEET)	DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE/NO.	BLOWS PER SIX INCHES
687.5	0.0	3 1/2 inches of ASPHALT PAVEMENT		
	0.3 / 687.7	FILL- Fine to Medium SAND- Trace Silt & Gravel- Brown- Moist to Wet- Medium Dense (SP)	AS1	30
	1.0 / 687.0		AS2	18
		FILL- TOPSOIL- Fine to Medium SILTY SAND- Occasional Clay Layers- Dark Brown- Moist- Medium Dense (SM)		20
685.0	2.5 / 685.5		AS3	25
		FILL- Moist to Wet- Brown & Gray- Stiff- Medium Dense (SC/CL)		34
682.5	5.0 / 683.0		AS4	50
	6.0 / 682.0	LEAN CLAY- Trace Sand & Gravel- Occasional Sand Seams- Brown & Gray- Very Stiff (CL)		
680.0	10.0	END OF BORING AT 6.0 FEET.		

DYNAMIC CONE PENETROMETER (DCP) -- ○ : 10 20 30 40 — 30, 18, 20, 25, 34, 50

DRY DENSITY (pcf) -- ■ : 90 100 110 120

MOISTURE & ATTERBERG LIMITS (%) : PL MC LL — 10 20 30 40 — 23, 16, 14

SHEAR STRENGTH (KSF) : 1 2 3 4

▽ HAND PENE.
⊠ TORVANE SHEAR
● UNC. COMP.
⊡ VANE SHEAR (PK)
× VANE SHEAR (REM)
⊕ TRIAXIAL (UU)

REMARKS

Loss-On-Ignition (LOI) test performed on Sample SB2 indicates an organics content of about 3.6 percent.

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (FT)	ELEV (FT)
▽ **DURING BORING:**	1.0	687.0
▼ **AT END OF BORING:**	3.5	684.5

BACKFILL METHOD: Auger Cuttings & Cold Patch

NOTES: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.

APPENDIX B

IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL ENGINEERING REPORT
GENERAL COMMENTS
LABORATORY TESTING PROCEDURES

© 2021 SME

Important Information about This

Geotechnical-Engineering Report

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

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

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

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

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

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

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

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

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

This Report's Recommendations Are Confirmation-Dependent

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

This Report Could Be Misinterpreted

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

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

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

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

Copyright 2019 by Geoprofessional Business Association (GBA). Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with GBA's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of GBA, and only for purposes of scholarly research or book review. Only members of GBA may use this document or its wording as a complement to or as an element of a report of any kind. Any other firm, individual, or other entity that so uses this document without being a GBA member could be committing negligent

GENERAL COMMENTS

BASIS OF GEOTECHNICAL REPORT

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

The discussions and recommendations submitted in this report are based on the available project information, described in this report, and the geotechnical data obtained from the field exploration at the locations indicated in the report. Variations in the soil and groundwater conditions commonly occur between or away from sampling locations. The nature and extent of the variations may not become evident until the time of construction. If significant variations are observed during construction, SME should be contacted to reevaluate the recommendations of this report. SME should be retained to continue our services through construction to observe and evaluate the actual subsurface conditions relative to the recommendations made in this report.

In the process of obtaining and testing samples and preparing this report, procedures are followed that represent reasonable and accepted practice in the field of soil and foundation engineering. Specifically, field logs are prepared during the field exploration that describe field occurrences, sampling locations, and other information. Samples obtained in the field are frequently subjected to additional testing and reclassification in the laboratory and differences may exist between the field logs and the report logs. The engineer preparing the report reviews the field logs, laboratory classifications, and test data and then prepares the report logs. Our recommendations are based on the contents of the report logs and the information contained therein.

REVIEW OF DESIGN DETAILS, PLANS, AND SPECIFICATIONS

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

REVIEW OF REPORT INFORMATION WITH PROJECT TEAM

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

FIELD VERIFICATION OF GEOTECHNICAL CONDITIONS

SME should be retained to verify the recommendations of this report are properly implemented during construction. This may avoid misinterpretation of our recommendations by other parties and will allow us to review and modify our recommendations if variations in the site subsurface conditions are encountered.

PROJECT INFORMATION FOR CONTRACTOR

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

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

THIRD PARTY RELIANCE/REUSE OF THIS REPORT

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

© 2009 SME

LABORATORY TESTING PROCEDURES

VISUAL ENGINEERING CLASSIFICATION

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

MOISTURE CONTENT

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

HAND PENETROMETER TESTS

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

TORVANE SHEAR TESTS

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

LOSS-ON-IGNITION (ORGANIC CONTENT) TESTS

Loss-on-ignition (LOI) tests are conducted by first weighing the sample and then heating the sample to dry the moisture from the sample (in the same manner as determining the moisture content of the soil). The sample is then re-weighed to determine the dry weight and then heated for 4 hours in a muffle furnace at a high temperature (approximately 440º C). After cooling, the sample is re-weighed to calculate the amount of ash remaining, which in turn is used to determine the amount of organic matter burned from the original dry sample. The organic matter content of the specimen is expressed as a percent compared to the dry weight of the sample.

ATTERBERG LIMITS TESTS

Atterberg limits tests consist of two components. The plastic limit of a cohesive sample is determined by rolling the sample into a thread and the plastic limit is the moisture content where a 1/8-inch thread begins to crumble. The liquid limit is determined by placing a ½-inch thick soil pat into the liquid limits cup and using a grooving tool to divide the soil pat in half. The cup is then tapped on the base of the liquid limits device using a crank handle. The number of drops of the cup to close the gap formed by the grooving tool ½ inch is recorded along with the corresponding moisture content of the sample. This procedure is repeated several times at different moisture contents and a graph of moisture content and the corresponding number of blows is plotted. The liquid limit is defined as the moisture content at a nominal 25 drops of the cup. From this test, the plasticity index can be determined by subtracting the plastic limit from the liquid limit.

© 2009 SME







Passionate People Building
and Revitalizing our World

SME

THE CITY OF BERKLEY
Building Department
3338 Coolidge, Berkley, Michigan 48072
(248) 658-3320

NOTICE OF PUBLIC MEETING
BERKLEY PLANNING COMMISSION

NOTICE IS HEREBY GIVEN, in accordance with Section 138-528 and Section 30-806 of the Berkley City Code, that there will be a meeting of the Berkley Planning Commission to be held at the City of Berkley in the Council Chambers, 3338 Coolidge Hwy, Berkley Michigan, on **Tuesday, May 24, 2022** at 7:10 pm, or as near thereto as the matter may be reached.

APPLICATION PSP-09-22

John Vitale, on behalf of L & L Development LLC, 3916 W. Eleven Mile Rd., Parcels #25-18-353-030 and #25-18-353-027, is requesting site plan approval for the renovation of the existing building to a retail marihuana dispensary and office tenant space.

Complete application information is available for review at www.berkleymich.org/urbanplanning.

Comments regarding the request may be made in person on the night of the meeting or may be made in writing. All written comments must be submitted to the Building Department or email to comdirector@berkleymich.net before 5:00p.m on the date of the Planning Commission meeting.

You can watch the meeting: https://www.berkleymich.org/livestream/index.php

MEGAN MASSON-MINOCK
INTERIM COMMUNITY DEVELOPMENT DIRECTOR

Publish Once:
Royal Oak Tribune
Friday, May 6, 2022

THE CITY OF BERKLEY
Building Department
3338 Coolidge, Berkley, Michigan 48072
(248) 658-3320

NOTICE OF PUBLIC MEETING
BERKLEY PLANNING COMMISSION

NOTICE IS HEREBY GIVEN, in accordance with Section 138-528 and Section 30-806 of the Berkley City Code, that there will be a meeting of the Berkley Planning Commission to be held at the City of Berkley in the Council Chambers, 3338 Coolidge Hwy, Berkley Michigan, on **Tuesday, May 24, 2022** at 7:10 pm, or as near thereto as the matter may be reached.

APPLICATION PSP-09-22

John Vitale, on behalf of L & L Development LLC, 3916 W. Eleven Mile Rd., Parcels #25-18-353-030 and #25-18-353-027, is requesting site plan approval for the renovation of the existing building to a retail marihuana dispensary and office tenant space.

Complete application information is available for review at www.berkleymich.org/urbanplanning.

Comments regarding the request may be made in person on the night of the meeting or may be made in writing. All written comments must be submitted to the Building Department or email to comdirector@berkleymich.net before 5:00p.m on the date of the Planning Commission meeting.

You can watch the meeting: https://www.berkleymich.org/livestream/index.php

MEGAN MASSON-MINOCK
INTERIM COMMUNITY DEVELOPMENT DIRECTOR

TIM ORAVETZ
1810 CUMMINGS AVE
BERKLEY MI 48072 3249

Occupant
1828 THOMAS AVE
BERKLEY MI 48072 3232

FERSTLE HARDING LLC
26670 HARDING AVE
OAK PARK MI 48237 1043

Occupant
1799 THOMAS AVE
BERKLEY MI 48072 1030

ACER INVESTMENTS LLC
5308 PLEASANT VIEW CT
WEST BLOOMFIELD MI 48323 2222

4000 WEST ELEVEN MILE ROAD II LLC
4000 11 MILE RD
BERKLEY MI 48072 1006

JOAN K BARTH
PAUL F BARTH
2505 TOWNHILL
TROY MI 48084 1029

FERSTLE HARDING LLC
26670 HARDING AVE
OAK PARK MI 48237 1043

Occupant
1800 CUMMINGS AVE
BERKLEY MI 48072 3249

KEVIN KRUEGER
1800 THOMAS AVE
BERKLEY MI 48072 3232

Occupant
15255 W 11 MILE RD
OAK PARK MI 48237 1041

SHAWN P THOMPSON
10501 MORNING LIGHT CT
SOUTH LYON MI 48178 8043

BARRY MCMINN
ANNE MCMINN
1780 CUMMINGS AVE
BERKLEY MI 48072 1015

JOLE LLC
313 E HUDSON AVE
ROYAL OAK MI 48067 3712

4000 WEST ELEVEN MILE ROAD II LLC
4000 11 MILE RD
BERKLEY MI 48072 1006

Occupant
3890 11 MILE RD
BERKLEY MI 48072 1004

4000 WEST ELEVEN MILE ROAD II LLC
4000 11 MILE RD
BERKLEY MI 48072 1006

PHILLIP ZANG
1789 CUMMINGS AVE
BERKLEY MI 48072 1014

BGB INVESTORS LLC
740 WELCH RD
COMMERCE TOWNSHIP MI 48390 3812

BELINDA MIESCH
JOHN MIESCH
1827 CUMMINGS AVE
BERKLEY MI 48072 1076

SARAH M RABE
JASON DREWEK
1828 CUMMINGS AVE
BERKLEY MI 48072 3249

OKSANA SENITSKAYA
1779 CUMMINGS AVE
BERKLEY MI 48072 1014

Occupant
1809 THOMAS AVE
BERKLEY MI 48072 3234

JONATHAN RAWLIK
KATELYN TERBRACK
1780 THOMAS AVE
BERKLEY MI 48072 1031

Occupant
3800 11 MILE RD
BERKLEY MI 48072 1004

RONALD SMITH
SUSAN SMITH
1071 MAYNARD PATH
THE VILLAGES FL 32163 5636

Occupant
1789 BACON AVE
BERKLEY MI 48072 1008

BERKLEY ONE LLC
14790 LORETTA PL
OAK PARK MI 48237 1016

L & L DEVELOPMENT LLC
3916 11 MILE RD
BERKLEY MI 48072 1005

NEIL KASPER
3040 GOODRICH ST
FERNDALE MI 48220 1071

Occupant
3910 11 MILE RD
BERKLEY MI 48072 1005

GEORGE WAMBAUGH
JASON WAMBAUGH
1760 CUMMINGS AVE
BERKLEY MI 48072 1015

AARON W FEYS
1845 CUMMINGS AVE
BERKLEY MI 48072 1076

GEORGE BANOT
18536 HILLCREST ST
LIVONIA MI 48152 3338

Occupant
3966 11 MILE RD
BERKLEY MI 48072 1005

Occupant
15101 W 11 MILE RD
OAK PARK MI 48237 1004

STEPHEN BATSON
JANET BATSON
1809 BACON AVE
BERKLEY MI 48072 1062

DAMICO REAL ESTATE INVESTMENTS LLC
20700 BREEZEWOOD CT
BEVERLY HILLS MI 48025 2822

CORSAUT BUILDING VENTURES LLC
26640 HARDING ST
OAK PARK MI 48237 1043

CORSAUT BUILDING VENTURES LLC
26640 HARDING ST
OAK PARK MI 48237 1043

L & L DEVELOPMENT LLC
3916 11 MILE RD
BERKLEY MI 48072

JAMES OZANICH
1844 CUMMINGS AVE
BERKLEY MI 48072 3249

SCOTT GORDON
1760 THOMAS AVE
BERKLEY MI 48072 1031

SHERRI S SMITH
1846 THOMAS AVE
BERKLEY MI 48072 3232

CORSAUT BUILDING VENTURES LLC
26640 HARDING ST
OAK PARK MI 48237 1043

Occupant
14925 W 11 MILE RD
OAK PARK MI 48237 1013

Occupant
3950 11 MILE RD
BERKLEY MI 48072 1005

RAINE VENTURES LLC
26640 HARDING ST
OAK PARK MI 48237 1043

BLUE HORSESHOE 3950 LLC
18311 W 10 MILE RD STE 200
SOUTHFIELD MI 48075 2623

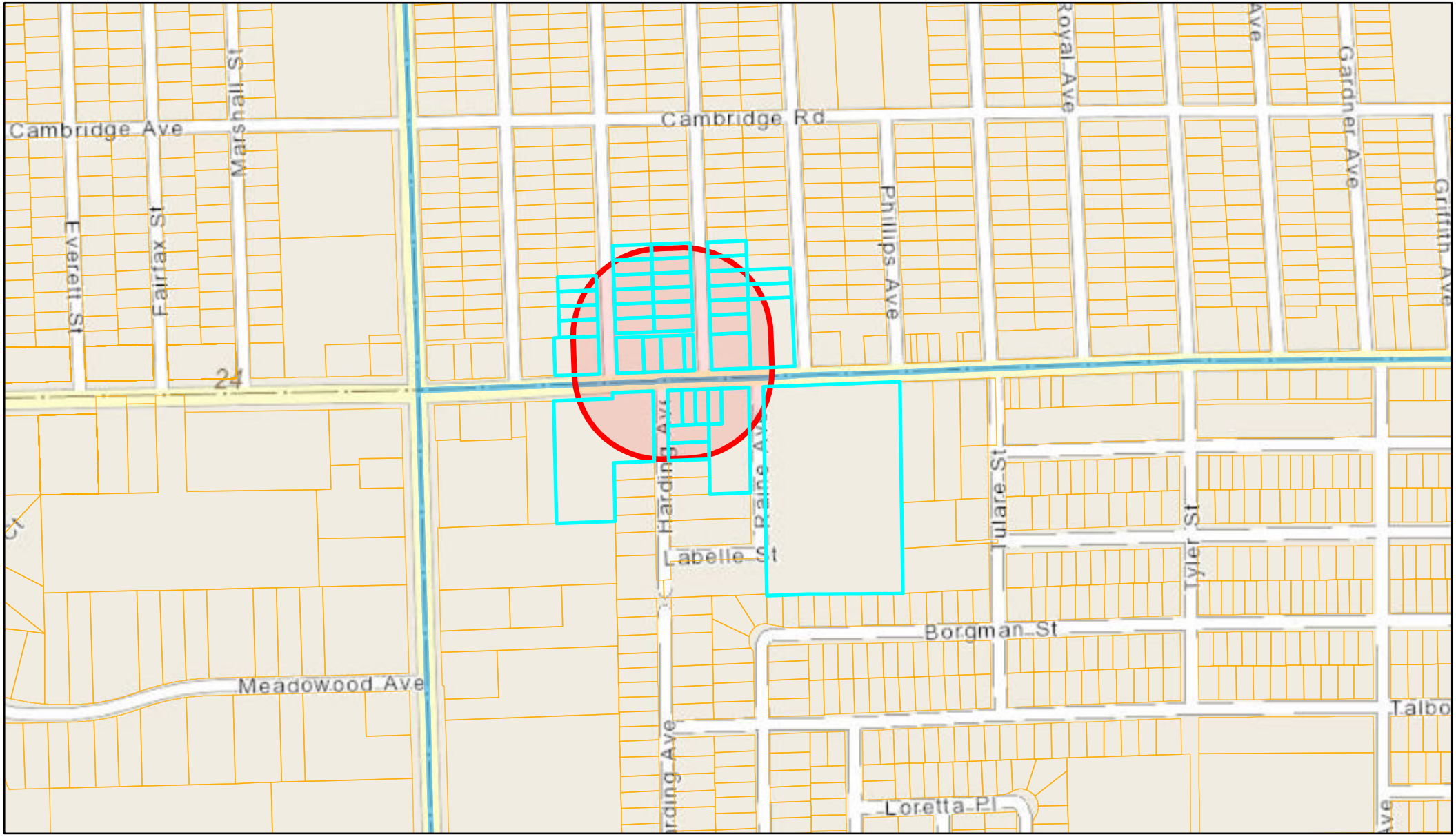
G F BOYCE
1809 CUMMINGS AVE
BERKLEY MI 48072 1076

CORSAUT BUILDING VENTURES LLC
26640 HARDING ST
OAK PARK MI 48237 1043

MARK A NESBITT
1810 THOMAS AVE
BERKLEY MI 48072 3232

CORSAUT BUILDING VENTURES LLC
26640 HARDING ST
OAK PARK MI 48237 1043

3916 11 Mile Mailing



Wed Mar 02 2022

Override 1

Override 1

RCOCAppMapService_5220

1:7,401

0 250 500 1,000 ft

0 75 150 300 m

Oakland County