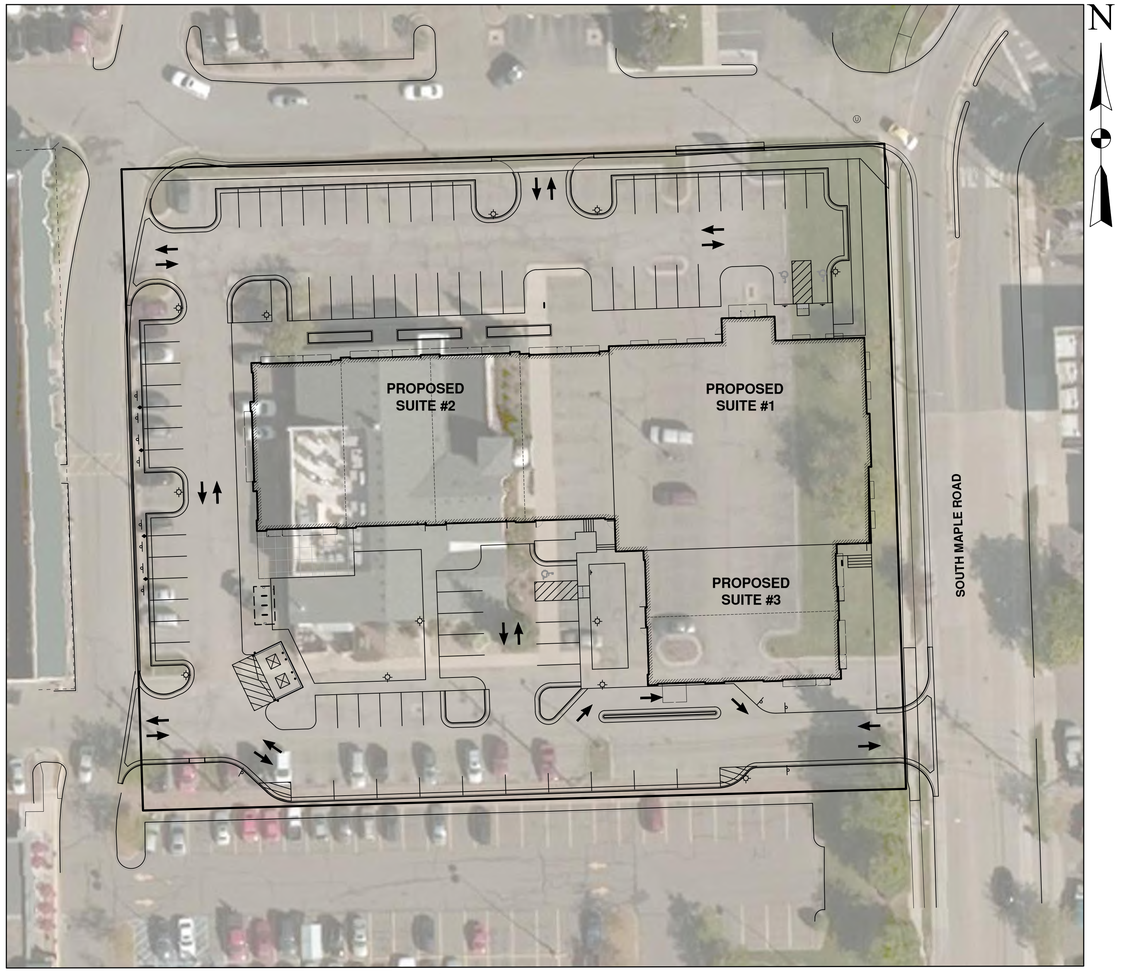
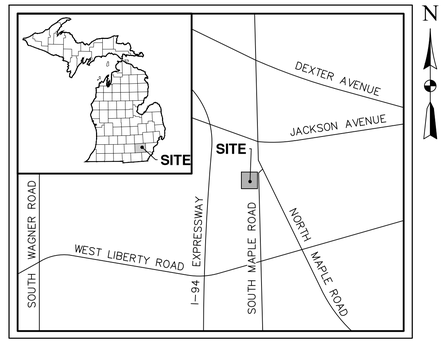
LEWIS JEWELERS SITE PLAN FOR CITY COUNCIL APPROVAL

300 S. MAPLE ROAD, CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN



OVERALL AREA MAP



VICINITY MAP

NOT TO SCALE

SITE ADDRESS: 300 SOUTH MAPLE ROAD / TAX ID#: 09-08-25-103-006

PROJECT CONTACTS

OWNER

DNL HOLDINGS, LLC
2000 WEST STADIUM BLVD.
ANN ARBOR, MI 48107

ARCHITECT

METRO GROUP ARCHITECTS
P.O. BOX 7363
ANN ARBOR, MI 48107
PHONE: 734.747.8999

CONTRACTOR / DEVELOPER

A. R. BROUWER COMPANY.
CONTACT: DAVID NISWONGER
2830 BAKER ROAD, #100
DEXTER, MI 48130
PHONE: 734.426.9980

ENGINEER / SURVEYOR

METRO CONSULTING ASSOCIATES
CONTACT: CHRISTOPHER SUTTON
45345 FIVE MILE ROAD
PLYMOUTH, MI 48170
PHONE: 800.525.6016
EMAIL: CSUTTON@METROCA.NET

MUNICIPALITY

CITY OF ANN ARBOR
301 EAST HURON STREET
ANN ARBOR, MI 48104
PHONE: 734.994.2700 OR 734.794.6320

PROJECT NARRATIVE

LEWIS JEWELERS IS RESPECTFULLY REQUESTING SITE PLAN APPROVAL TO ALLOW FOR REDEVELOPMENT OF THE EXISTING SITE AT 300 S MAPLE ROAD TO BE USED FOR NEW RETAIL BUILDINGS.

THE OVERALL EXISTING PARCEL IS 1.98 ACRES IN SIZE AND IS ZONED C3: FRINGE COMMERCIAL DISTRICT. THE SITE IS CURRENTLY VACANT AND WAS MOST RECENTLY USED AS THE QUARTER BISTRO RESTAURANT. THE EXISTING BUILDING AND SITE IMPROVEMENTS WILL BE DEMOLISHED TO ACCOMMODATE THREE NEW COMMERCIAL BUILDINGS TOTALING 24,529 SF OF FLOOR AREA. SITE WORK WILL INCLUDE NEW PARKING SPACES AND DRIVE AISLES, A SIDEWALK CONNECTION FROM MAPLE ROAD TO THE WESTGATE SHOPPING CENTER, BIORETENTION AREAS, AN UNDERGROUND DETENTION SYSTEM, AND LANDSCAPING.

WATER SERVICE WILL BE PROVIDED TO THE BUILDINGS VIA A NEW 4" FIRE SERVICE AND 2" DOMESTIC SERVICE CONNECTED TO THE EXISTING 12" WATER MAIN ON THE SOUTH SIDE OF THE SITE. SANITARY SEWER SERVICE WILL BE PROVIDED FROM THE EXISTING 6" SANITARY SEWER ON THE NORTH SIDE OF THE SITE. STORMWATER MANAGEMENT WILL BE HANDLED VIA TWO UNDERGROUND DETENTION SYSTEMS ON THE NORTH AND SOUTH SIDES OF THE SITE. ADDITIONALLY, THERE WILL BE SIX BIORETENTION AREAS THROUGHOUT THE SITE. THE WIDTH OF THE EXISTING CURB CUT ONTO S MAPLE ROAD WILL BE REDUCED TO ACCOMMODATE THE PROPOSED BUILDINGS WHILE STILL PROVIDING TWO LANES OF TRAFFIC. THREE ACCESS POINTS TO THE EXISTING DRIVEWAYS FOR THE WESTGATE SHOPPING CENTER WILL ALSO BE MAINTAINED.

CITY OF ANN ARBOR GENERAL NOTES

1) THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO THE CITY OF ANN ARBOR PUBLIC SERVICES STANDARD SPECIFICATIONS WHICH ARE INCLUDED BY REFERENCE.

2) THE OMISSION OF ANY STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTORS OF THEIR OBLIGATION TO CONSTRUCT ITEMS IN COMPLETE ACCORDANCE WITH THE PUBLIC SERVICES STANDARD SPECIFICATIONS.

3) USE OF LINE STOPS IS REQUIRED WHERE EXISTING WATER MAINS CANNOT BE SUFFICIENTLY ISOLATED TO COMPLETE THE WORK. THE COST OF ANY LINE STOP ISOLATION IS THE RESPONSIBILITY OF THE DEVELOPER AND/OR CONTRACTOR.

4) PAVEMENT MARKINGS DISTURBED DUE TO PAVEMENT CUTS OR CONSTRUCTION RELATED ACTIVITIES SHALL BE REPLACED AS DIRECTED BY ENGINEER. REPLACEMENT DURING CONSTRUCTION OF THE PROJECT MAY BE CONSIDERED TEMPORARY, WITH FINAL PAVEMENT MARKING RESTORATION TO OCCUR AT THE END OF THE PROJECT.

OPEN SPACE SUMMARY

EXISTING OPEN SPACE AREA: 18,960 SF (0.435 AC)
PROPOSED OPEN SPACE AREA: 12,263 SF (0.282 AC)

SHEET INDEX

01	COVER SHEET
02	ALTA SURVEY
03	DEMOLITION PLAN
04	LAYOUT PLAN
05	GRADING & SOIL EROSION CONTROL PLAN
06	SOIL EROSION CONTOL NOTES AND DETAILS
07	UTILITY PLAN
08	STORM WATER MANAGEMENT PLAN
09	STORM WATER MANAGEMENT CALCULATIONS – NORTH
10	STORM WATER MANAGEMENT CALCULATIONS – SOUTH
11	STORM WATER MANAGEMENT DETAILS
12	TYPICAL DETAILS
13	TYPICAL DETAILS
14	LANDSCAPE PLAN
15	LANDSCAPE NOTES, CALCULATIONS & NATURAL FEATURES
16	LANDSCAPE DETAILS
A2.0	OVERALL FLOOR PLAN
A5.0	OVERALL EXTERIOR ELEVATIONS
A7.0	OVERALL BUILDING SECTIONS
A8.0	SITE AND BUILDING RENDERINGS
PH-1	PHOTOMETRIC PLAN

LAND DEVELOPMENT SUMMARY

DEVELOPMENT PROGRAM

- THE PROPOSED DEVELOPMENT INCLUDES DEMOLITION OF THE EXISTING BUILDING AND CONSTRUCTION OF THREE NEW COMMERCIAL BUILDINGS.
  - PROPOSED BUILDING #1: +/-9,408 SF JEWELRY STORE (LEWIS JEWELERS)
  - PROPOSED BUILDING #2: +/-10,575 SF RETAIL BUILDING (4 UNITS)
  - PROPOSED BUILDING #3: +/-4,546 SF RETAIL/RESTAURANT BUILDING WITH DRIVE-THRU (2 UNITS)
- ALL EXISTING PAVEMENT WILL BE REMOVED AND REPLACED, AND THE PROPOSED VEHICULAR USE AREA WILL BE APPROXIMATELY 31,987 SF INCLUDING THE PARKING SPACES AND DRIVE AISLES.
- PROPOSED SIDEWALKS AND RAMPS WILL MEET CURRENT ADA STANDARDS.
- THE SITE LANDSCAPING WILL BE BROUGHT UP TO CURRENT CITY REQUIREMENTS AND STANDARDS.
- ALL IMPROVEMENTS ARE PROPOSED TO BE COMPLETED IN ONE PHASE.

COMMUNITY ANALYSIS

- THE PROPOSED PROJECT WILL HAVE NO IMPACT ON PUBLIC SCHOOLS.
- THE PROPOSED PROJECT IS PART OF AN EXISTING RETAIL CENTER AND IS COMPATIBLE WITH THE SURROUNDING USES.
- ADJACENT LAND USES WILL NOT HAVE A SIGNIFICANT IMPACT ON THE PROPOSED PROJECT.
- THE PROPOSED PROJECT WILL HAVE NO SIGNIFICANT IMPACT ON AIR OR WATER QUALITY. THERE ARE NO NATURAL FEATURES ON OR ADJACENT TO THE SITE THAT WILL BE IMPACTED BY THE PROPOSED RENOVATION PROJECT.
- WE ARE NOT AWARE OF ANY HISTORIC SITES OR STRUCTURES LOCATED ON THE SITE.

SITE ANALYSIS

- THE SITE IS PART OF A LARGER COMMERCIAL RETAIL CENTER. IT IS LOCATED AT THE WEST SIDE OF SOUTH MAPLE ROAD. THE SITE IS CURRENTLY VACANT BUT WAS PREVIOUSLY USED AS A RESTAURANT.
- THE SOIL SURVEY OF WASHTENAW COUNTY INDICATES THAT THE PREDOMINANT SOIL TYPES ON SITE ARE URBAN LAND AND WAWASEE LOAM.
- WE DO NOT BELIEVE THERE ARE ANY ENDANGERED SPECIES OR HABITATS LOCATED ON THIS PREVIOUSLY DEVELOPED SITE.
- THIS SITE IS LOCATED IN AN AREA OF MINIMAL FLOOD HAZARD (ZONE X) AND OUTSIDE THE 100-YEAR FLOOD PLAIN PER FEMA COMMUNITY PANEL NUMBER 26161C0244E DATED 04/03/2012.
- TWO LANDMARK TREES ARE LOCATED ON THE SITE. THEY WILL BE REMOVED AND REPLACEMENT TREES PROVIDED.
- THERE ARE NO STEEP SLOPES LOCATED ON SITE AS DEFINED BY THE CITY OF ANN ARBOR ZONING ORDINANCE.
- THERE ARE NO OPEN WATERCOURSES LOCATED ON THIS SITE. THE RECEIVING WATERS FOR THIS SITE IS THE WEST PARK FAIRGROUNDS DRAIN.
- THERE ARE NO WETLANDS LOCATED ON SITE
- THERE ARE NO WOODLANDS LOCATED ON SITE.
- EXISTING BUILDINGS, WITH ASSOCIATED DRIVES AND PARKING AREAS, WILL REMAIN ADJACENT TO THIS SITE.
- THE EXISTING CURB CUT ONTO SOUTH MAPLE ROAD WILL BE MODIFIED TO ACCOMMODATE THE PROPOSED BUILDING, AND THE EXISTING ACCESS POINT TO THE NORTH WILL BE RELOCATED. THE REMAINING CURB CUTS AND ACCESS POINTS SERVING THE SITE WILL NOT BE ALTERED.
- THE SITE IS CURRENTLY SERVED BY EXISTING PUBLIC AND FRANCHISE UTILITIES. EXISTING WATER, SANITARY SEWER AND GAS ARE LOCATED WITHIN THE SOUTH MAPLE ROAD RIGHT-OF-WAY. OVERHEAD ELECTRIC LINES ARE LOCATED ALONG THE EAST SIDE OF THE SITE.
- THE SITE SURFACE GENERALLY DRAINS FROM WEST TO EAST AND MOST LIKELY ULTIMATELY DISCHARGES INTO THE NORTH BRANCH OF FELLOWS CREEK. THIS SITE DOES NOT APPEAR TO RECEIVE DRAINAGE FROM ADJACENT SITES.

TRAFFIC ANALYSIS

- PLEASE REFERENCE THE TRAFFIC IMPACT STUDY PREPARED BY ROWE FOR ADDITIONAL TRAFFIC DATA RELATED TO THE PREVIOUS AND PROPOSED LAND USES.

PUBLIC SIDEWALK MAINTENANCE STATEMENT

- ALL SIDEWALKS SHALL BE KEPT AND MAINTAINED IN GOOD REPAIR BY THE OWNER OF THE LAND ADJACENT TO AND ABUTTING THE SAME. PRIOR TO THE ISSUANCE OF THE FINAL CERTIFICATE OF OCCUPANCY FOR THIS SITE, ALL EXISTING SIDEWALKS IN NEED OF REPAIR MUST BE REPAIRED IN ACCORDANCE WITH CITY STANDARDS.

TRASH AND RECYCLING COLLECTION

- TRASH AND RECYCLING WILL BE REMOVED FROM THE BUILDING AND DEPOSITED IN THE APPROPRIATE DUMPSTERS DAILY. TRASH AND RECYCLING WILL BE COLLECTED FROM THE DUMPSTERS ONCE WEEKLY.

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

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

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

Revisions

1	08.27.2020 SITE PLAN SUBMISSION
2	09.29.2020 REVISED PER SITE PLAN REVIEW #1
3	10.22.2020 REVISED PER SITE PLAN REVIEW #2
4	12.07.20 REVISED PER SITE PLAN REVIEW #3

METROCA.NET
RELATIONSHIPS - REPUTATION - RESULTS
800.525.6016

Project Number 1051-19-9457		Date 08/26/2020	
P.M. CB	Checked by CB	Drawn by KMW	Crew/Book -

Client: AR BROUWER COMPANY

Project: LEWIS JEWELERS

Site Address: 300 S. MAPLE ROAD, ANN ARBOR, MICHIGAN 48103

County WASHTENAW	Community ANN ARBOR	
Township 2S	Range 5E	Section 25

Professional Name: CHRISTOPHER SUTTON, PE — Date: --

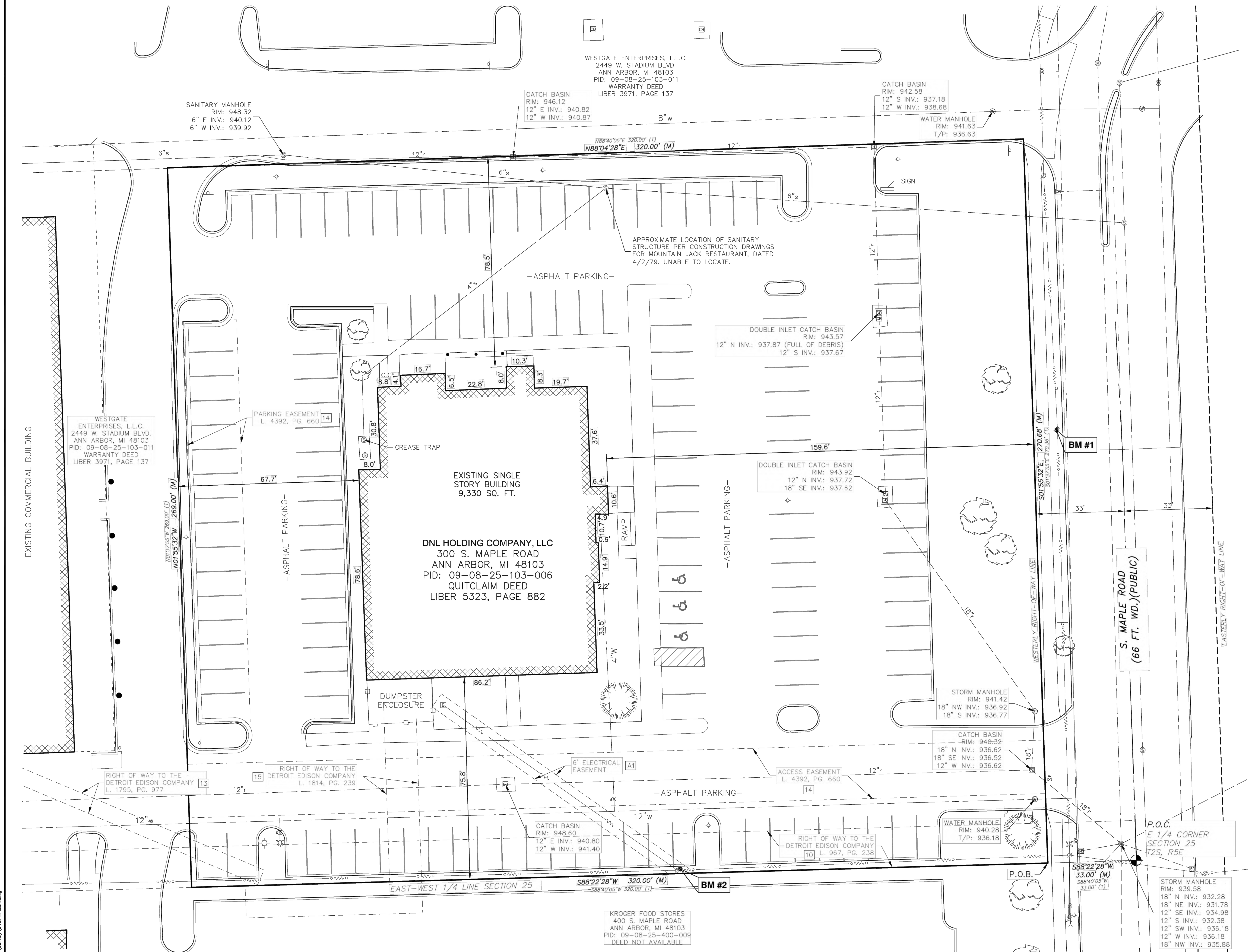
Title: SITE PLAN
COVER SHEET

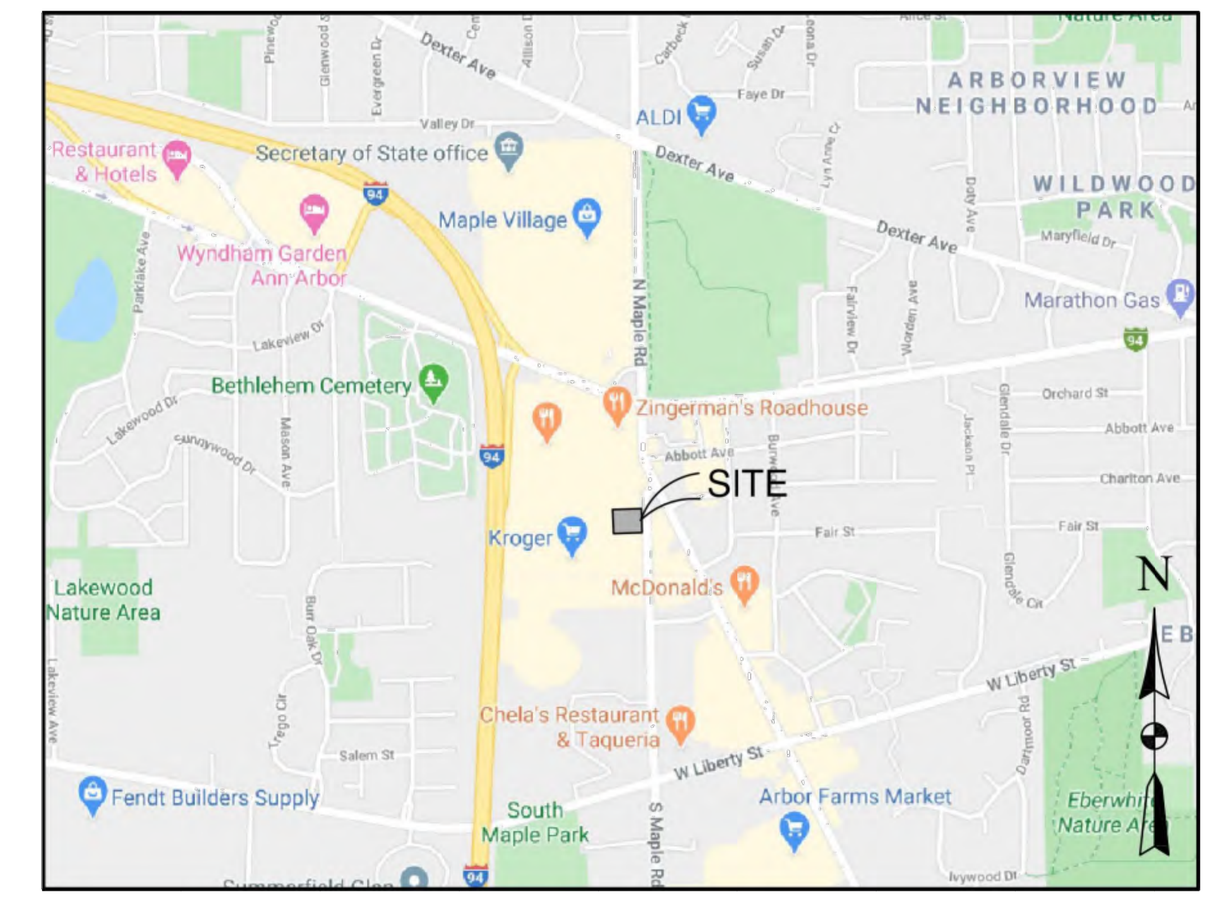
Drawing Scale: 1" = 30'
Sheet Number: 01

K:\2019\1051 JOB FOLDERS\1051-19-9457\Drawings\Plan Sets\Site Plan\9457-CV.dwg

ALTA/NSPS LAND TITLE SURVEY

IN THE NORTHEAST 1/4 OF SECTION 25, TOWN 2 SOUTH, RANGE 5 EAST,
CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN





VICINITY MAP
NOT TO SCALE

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

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

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

DESCRIPTION:

(PER STEWART TITLE GUARANTY COMPANY. COMMITMENT FILE NO. LIB104235 REVISION NO. 2, WITH AN EFFECTIVE DATE OF JULY 19, 2019 AT 8:00 AM)

The land referred to in this Commitment is situated in the City of Ann Arbor, Washtenaw County, State of Michigan described as follows:

PARCEL 1:

Commencing at the East quarter corner of Section 25, Town 2 South, Range 5 East, City of Ann Arbor, Washtenaw County, Michigan, thence South 88° 40' 05" West 33.00 feet along the East–West quarter line of said Section 25 to the **Place of Beginning**; thence continuing South 88° 40' 05" West 320.00 feet along the East–West quarter line of said Section 25; thence North 01° 37' 55" West 269.00 feet; thence North 88° 22' 05" East 320.00 feet; thence South 01° 37' 55" East 270.36 feet along the West right of way line of Maple Road (total width 66.00 feet) to the Place of Beginning. Being part of the Northeast quarter of said Section 25, City of Ann Arbor, Washtenaw County, Michigan.

PARCEL 2:

Lot(s) 45, 46, 47 and the Northwesterly 30 feet of Lot 44, Johnson–Youngs Subdivision, according to the recorded Plat thereof, as recorded in Liber 13 of Plat(s), Page 57, Washtenaw County Records

SCHEDULE B II EXCEPTIONS:

(PER STWEART TITLE GUARANTY COMPANY. COMMITMENT FILE NO. LIB104235 REVISION NO. 2, WITH AN EFFECTIVE DATE OF JULY 19, 2019)

1–2	NOT A SURVEY MATTER
3	Encroachments, overlaps, boundary line disputes, or other matters which would be disclosed by an accurate survey or inspection of the Land. **(AS SHOWN)**
4–9	NOT A SURVEY MATTER
10	Pole Line Permit in favor of The Detroit Edison Company, as recorded in Liber 799, page 454 **(PORTION OF THIS RIGHT–OF–WAY GRANT RELEASED BY LIBER 967, PAGE 238)** and as Modified in Liber 967, page 238, Washtenaw County Records, as to Parcel 1. **(THIS DOCUMENT RELEASES PORTION OF THE RIGHT–OF–WAY GRANT AS DESCRIBED IN ITEM 10A OF THIS SURVEY.) (AFFECTS PARCEL 1 – AS SHOWN)**
11	Mutual Parking Agreement and the terms and provisions contained therein, as recorded in Liber 1176, page 397, Washtenaw County Records, as to Parcel 1. **(MUTUAL PARKING EASEMENT TERMINATED BY ITEM 14 OF THIS SURVEY.)**
12	Building and use Restrictions as recorded in Liber 959, page 375; Liber 961, page 511, Washtenaw County Records, but omitting any covenant or Restriction based on race, color, religion, sex, handicap, familial status, or national origin, as to Parcel 1. **(AFFECTS PARCEL 1) (NOT A SRUVEY MATTER)**
13	Right of Way in favor of The Detroit Edison Company, as recorded in Liber 1795, page 977, Washtenaw County Records, as to Parcel 1. **(AFFECTS PARCEL 1 – AS SHOWN) (LOCATION IS APPROXIMATE AND BASED ON THE FURNISHED DRAWING. NO OBSERVED EVIDENCE OF LOCATION AT THE TIME OF SURVEY.)**
14	Easement Agreement and the terms and provisions contained therein, as recorded in Liber 4392, page 660, Washtenaw County Records, as to Parcel 1. **(THIS DOCUMENT TERMINATES THE MUTUAL PARKING EASEMENT AS DESCRIBED IN ITEM 11 OF THIS SURVEY. DOCUMENT CONTAINS A SCRIVENER'S ERROR IN THE PAGE NUMBER OF THE RECORDED MUTUAL PARKING EASEMENT. THE PAGE NUMBER 398 REPRESENTS THE SECOND PAGE OF SAID DOCUMENT. THE CORRECT PAGE NUMBER SHOULD BE 397.) (AFFECTS PARCEL 1 – AS SHOWN) (THERE IS A 15.1–FOOT GAP BETWEEN THE "SMA PARKING PARCEL" AND "SMA ACCESS PARCEL" AS SHOWN. THERE ALSO NEEDS TO BE AN ADDITIONAL 150.39 FOOT X 20.00 FOOT "SMA ACCESS PARCEL" ALONG THE EASTERLY EDGE OF THE "SMA PARKING PARCEL".) (DOCUMENT ALSO CREATES BENEFITTING NON–EXCLUSIVE EASEMENTS FOR VEHICLE PARKING AND ACCESS, KNOWN AS THE "WE EASEMENT PARCELS". DOCUMENT ALLOWS THEM TO BE RELOCATED FROM TIME TO TIME, WHICH MAKES THEM BLANKET IN NATURE AND NOT PLOTTABLE.)**
15	Right of Way in favor of The Detroit Edison Company, as recorded in Liber 1814, page 239, Washtenaw County Records, as to Parcel 1. **(AFFECTS PARCEL 1 – AS SHOWN) (LOCATION IS APPROXIMATE AND BASED ON THE FURNISHED DRAWING. NO OBSERVED EVIDENCE OF LOCATION AT THE TIME OF SURVEY.)**
16	Easements as shown on the recorded plat, as to Parcel 2. **(AFFECTS PARCEL 2 – NOT PLOTTED) (PARCEL 2 IS NOT PART OF THIS SURVEY.)**
17	Building and use Restrictions as recorded in Liber 832, page 323, Washtenaw County Records, but omitting any covenant or Restriction based on race, color, religion, sex, handicap, familial status, or national origin, as to Parcel 2. **(AFFECTS PARCEL 2 – NOT PLOTTED) (PARCEL 2 IS NOT PART OF THIS SURVEY.)**
18	NOT A SURVEY MATTER

SURVEYORS NOTES:

1. BEARING BASIS: MICHIGAN STATE PLANE COORDINATE SYSTEM NAD83 (2011), SOUTH ZONE, INTERNATIONAL FEET.
2. DATUM OF ELEVATIONS: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)
3. I HEREBY CERTIFY THAT THE PARCEL SHOWN HEREON DOES NOT LIE WITHIN A SPECIAL FLOOD HAZARD ZONE ACCORDING TO THE FLOOD INSURANCE RATE MAP PUBLISHED BY THE FEDERAL INSURANCE ADMINISTRATION FOR THE COUNTY OF WASHTENAW, STATE OF MICHIGAN, COMMUNITY NUMBER – 26013, MAP NUMBER – 26161C0244E, AN EFFECTIVE DATE OF APRIL 3, 2012. THEREFORE, AS NOTED IN SAID DOCUMENT, THE SCALED LOCATION OF THE EASTERLY PORTION OF THE SUBJECT PROPERTY IS IN ZONE X (UNSHADED), TO THE BEST OF MY KNOWLEDGE AND BELIEF. IN ADDITION, I HEREBY CERTIFY THAT THE PARCEL SHOWN HEREON DOES NOT LIE WITHIN A SPECIAL FLOOD HAZARD ZONE ACCORDING TO THE FLOOD INSURANCE RATE MAP INDEX PUBLISHED BY THE FEDERAL INSURANCE ADMINISTRATION FOR THE COUNTY OF WASHTENAW, STATE OF MICHIGAN, MAP NUMBER – 26161CIND0A, AN EFFECTIVE DATE OF APRIL 3, 2012. THEREFORE, AS NOTED (*PANEL NOT PRINTED – NO SPECIAL FLOOD HAZARD AREAS) IN SAID DOCUMENT, THE SCALED LOCATION OF THE WESTERLY PORTION OF THE SUBJECT PROPERTY RESIDES IN PANEL 26161C0243E, TO THE BEST OF MY KNOWLEDGE AND BELIEF.
4. DATE OF SURVEY: APRIL 30, 2020.
5. SOME FEATURES SHOWN ON SURVEY MAY BE OUT OF SCALE FOR CLARITY.
6. DIMENSIONS ON THIS SURVEY ARE EXPRESSED IN FEET AND DECIMAL PARTS THEREOF UNLESS OTHERWISE NOTED.
7. SQUARE FOOTAGE:
   A. EXTERIOR FOOTPRINT OF ALL BUILDINGS AT GROUND LEVEL
      9,330 SQUARE FEET – 1 STORY BUILDING.
   B. GROSS FLOOR AREA OF ALL BUILDINGS.
      9,330 SQUARE FEET – TOTAL.
   C. GROSS LAND AREA OF PARCEL
      1.98 ACRE, (86,348 SQUARE FEET).
   D. NET LAND AREA OF PARCEL (DOES NOT INCLUDE ROAD RIGHT–OF–WAY)
      N/A – NO ROAD RIGHT–OF–WAY LOCATED ON PARCEL
8. AS PERTAINING TO GENERAL REQUIREMENTS, 4. RECORDS RESEARCH – THE CURRENT RECORD DESCRIPTIONS OF ADJOINERS, RECORDS WERE RESEARCHED BY METRO CONSULTING ASSOCIATES (NOT PROVIDED) ON MAY 6, 2020.
9. PARCEL 2 OF THE FURNISHED TITLE COMMITMENT IS NOT PART OF THIS SURVEY.

SURVEYORS CERTIFICATE:

To: (i) DNL Holdings, LLC, a Michigan limited liability company; and (ii) Stewart Title Guarantee 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. The fieldwork as completed on 04/30/2020.

STATE OF MICHIGAN — TREVOR A. MCMANN — PROFESSIONAL SURVEYOR — No. 50442 — LICENSED PROFESSIONAL SURVEYOR

Dated: 05/06/2020

Trevor A. McMann, PS
Professional Surveyor No. 50442
tmcmann@metroca.net

LEGEND

EX. PROPERTY LINE	EX. UTILITY POLE
EX. SECTION LINE	EX. GUY WIRE
EX. EASEMENT LINE	EX. TELEPHONE RISER
EX. CURB/PAVEMENT	EX. BOLLARD
EX. WOOD FENCE	EX. LIGHT POLE
EX. SIGN	EX. DECIDUOUS TREE
FOUND MONUMENTATION AS NOTED	EX. CONIFEROUS TREE
EX. WATER MAIN	1–10 TITLE EXCEPTION PARCEL 1
EX. HYDRANT	SECTION CORNER
EX. WATER VALVE	(T) TITLE DISTANCE
EX. SANITARY SEWER	(M) FIELD MEASURED DISTANCE
EX. SANITARY MANHOLE	P.O.C. POINT OF COMMENCEMENT
EX. STORM INLET/CATCH BASIN	P.O.B. POINT OF BEGINNING
EX. STORM SEWER	
EX. OVERHEAD ELECTRIC	
EX. UNDERGROUND ELECTRIC	
EX. TRANSFORMER	

BENCHMARKS:

BM #1:	BENCH–TIE ON SOUTHWEST FACE OF UTILITY POLE ELEV: 941.37 (NAVD 88)
BM #2:	BENCH–TIE ON NORTHEAST FACE OF UTILITY POLE ELEV: 948.31 (NAVD 88)

ADDITIONAL EXCEPTION :

(NOT PART OF FURNISHED TITLE COMMITMENT)

A1	Six Foot Electrical Easement as per Sheet E–1 of the Mountain Jacks Restaurant prepared by Oolwell Req Hornacek Okinawa Incorporated dated April 2, 1979. **(AFFECTS PARCEL 1–AS SHOWN)**

Revisions
DATE DESCRIPTION

MCA METROCA.NET
RELATIONSHIPS - REPUTATION - RESULTS
800.525.6016

Project Number: 1051-19-9457		Date: 5-4-2020	
P.M.: MT	Checked by: MT/TM	Drawn by: NPA	Crew/Book: BC

Client
A.R. BROUWER CO., LLC

Project
LEWIS JEWLER'S

Site Address
300 S. MAPLE ROAD
ANN ARBOR, MI 48103

County	Community	
WASHTENAW	ANN ARBOR	
Township: 2S	Range: 5E	Section: 25

Professional Name | Date

Title
ALTA/NSPS LAND TITLE SURVEY

Drawing Scale: 1" = 20'
Sheet Number: 02

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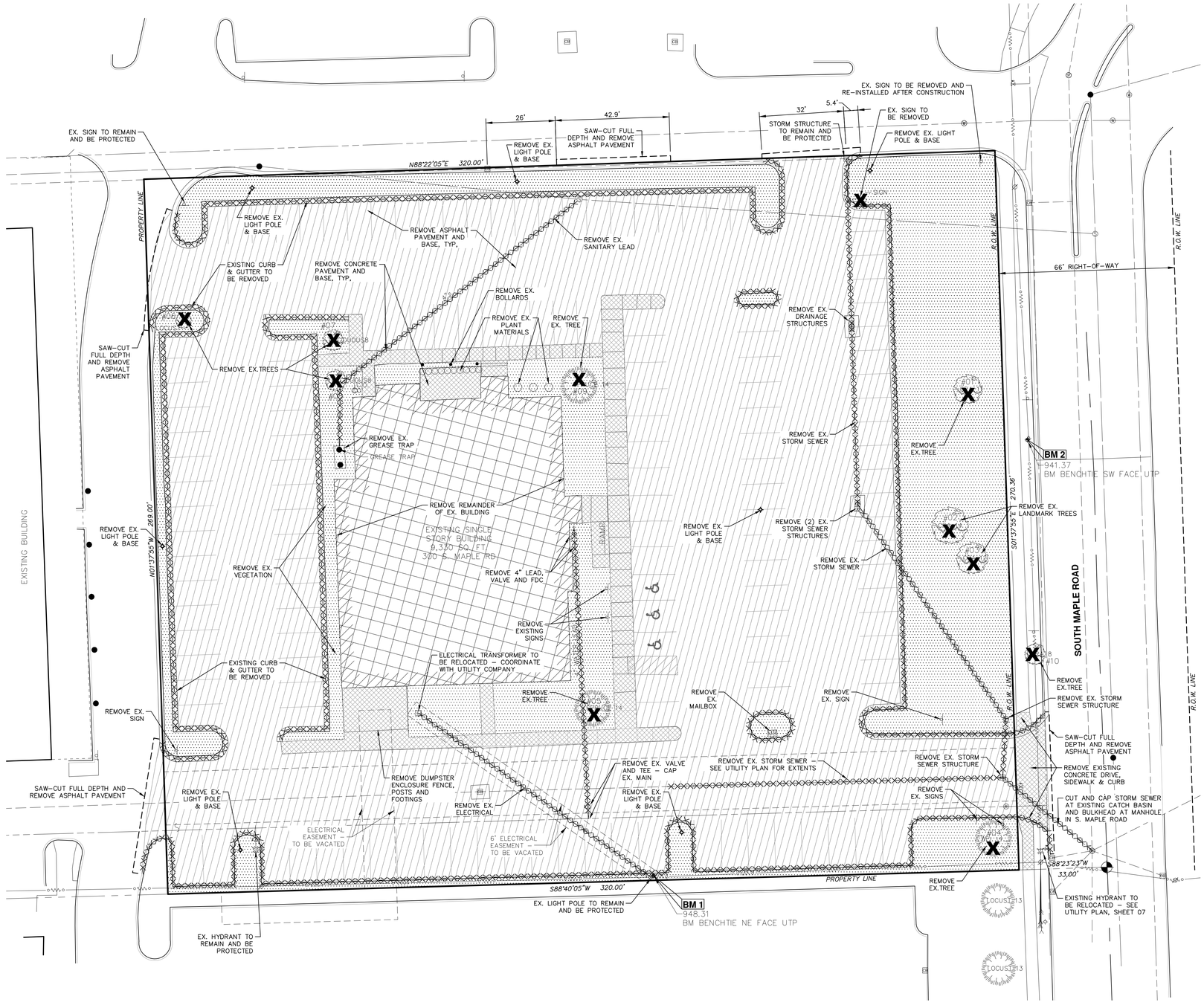

LEGEND

- PROPERTY LINE
- 652 EX. CONTOUR
- EX. STRIPING
- EX. SIGN
- EX. TREE (CONIFEROUS)
- EX. TREE (DECIDUOUS)
- EX. LIGHTPOLE
- TREE PROTECTION FENCE
- REMOVE EXISTING TREE
- EX. BUILDING DEMOLITION
- PR. CONCRETE DEMOLITION
- PR. ASPHALT DEMOLITION
- PR. TURF / STONE SURFACE DEMOLITION

DEMOLITION NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO DEMOLISH OR RELOCATE ANY SITE FEATURES AS ACCORDING TO PLAN OR AS APPROPRIATE TO FACILITATE THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS.
2. ALL WORK SHALL COMPLY WITH THE CITY OF ANN ARBOR STANDARDS AND SPECIFICATIONS.
3. CONTRACTOR IS RESPONSIBLE FOR PRESERVING LANDSCAPED AREAS THROUGHOUT CONSTRUCTION. ANY PLANTINGS, VEGETATION, OR GROUNDCOVER DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW TO MATCH EXISTING AT THE CONTRACTOR'S EXPENSE.
4. THE CONTRACTOR SHALL CALL 811 "MISS DIG" AT LEAST THREE WORKING DAYS PRIOR TO CONSTRUCTION.
5. A SOIL EROSION CONTROL PERMIT FROM THE AUTHORITY HAVING JURISDICTION IS REQUIRED AND SOIL EROSION CONTROL BMP'S SHALL BE IN PLACE PRIOR TO THE COMMENCEMENT OF DEMOLITION ACTIVITIES.
6. THE CONTRACTOR SHALL INDEPENDENTLY VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO DEMOLITION ACTIVITIES.
7. PRIOR TO REMOVING, RELOCATING, OR PERFORMING ANY WORK ON A UTILITY, THE CONTRACTOR SHALL COORDINATE WITH THE RESPECTIVE UTILITY OWNER.
8. ALL DEMOLISHED MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LEGALLY DESIGNATED DISPOSAL AREA. PERMITS AND FEES FOR DISPOSAL OF DEMOLITION MATERIAL SHALL BE OBTAINED AND PAID FOR BY THE CONTRACTOR.
9. PAVEMENTS TO BE REMOVED SHALL BE SAW CUT TO THE FULL DEPTH OF THE PAVEMENT. THE CONTRACTOR SHALL TAKE CARE TO MAINTAIN A CLEAN EDGE OF PAVEMENT.
10. ALL UNUSED SERVICE LEADS SHALL BE PERMANENTLY KILLED AT ITS RESPECTIVE MAIN

EXISTING CONDITIONS NOTES:

1. THIS PLAN IS BASED ON THE TOPOGRAPHIC SURVEY PREPARED BY METRO CONSULTING ASSOCIATES DATED FEBRUARY 13, 2020.
2. ELEVATIONS SHOWN HEREIN ARE BASED ON DATUM – NATIONAL GEODETIC VERTICAL DATUM OF 1988 (NAVD88)
3. THE BEARING BASIS FOR THE SITE IS STATE PLANE, MICHIGAN SOUTH ZONE, INTERNATIONAL FEET.
4. THE PARCEL SHOWN IS WITHIN AN AREA OF MINIMAL FLOOD HAZARD (ZONE X) ACCORDING TO FEMA FLOOD INSURANCE RATE MAP, 26161C0244E
5. EXISTING UTILITIES ARE BASED ON FIELD OBSERVATIONS OF VISIBLE STRUCTURES IN CONJUNCTION WITH UTILITY MAPS OBTAINED AND/OR MARKED IN THE FIELD BY OTHERS. METRO CONSULTING ASSOCIATES (MCA) MAKES NO GUARANTEE AS TO THE ACCURACY OR COMPLETENESS OF THE EXISTING UTILITY INFORMATION SHOWN. ALL UTILITY LOCATIONS AND DEPTHS SHOULD BE INDEPENDENTLY VERIFIED PRIOR TO CONSTRUCTION. ANY DISCREPANCIES WITH THE PLANS SHOULD BE BROUGHT TO THE DESIGN PROFESSIONAL'S ATTENTION IMMEDIATELY.
6. THE EXISTING BUILDING HAS NO BASEMENT.

BENCHMARKS:

BM #1: BENCH TIE IN NORTHEAST FACE OF UTILITY POLE
ELEVATION: 948.31' (NAVD88)

BM #2: BENCH TIE IN SOUTHWEST FACE OF UTILITY POLE
ELEVATION: 941.37' (NAVD88)

EXISTING TREE LIST:

NO.	SIZE	SPECIES	STATUS
01	11" CAL.	CRAB APPLE TREE	TO BE REMOVED
02	14" CAL. (LM)	CRAB APPLE TREE	TO BE REMOVED
03	12" CAL. (LM)	CRAB APPLE TREE	TO BE REMOVED
04	14" CAL.	PINE TREE	TO BE REMOVED
05	14" CAL.	SPRUCE	TO BE REMOVED
06	3" CAL.	LOCUST TREE	TO BE REMOVED
07	8" CAL.	CRAB APPLE TREE	TO BE REMOVED
08	8" CAL.	CRAB APPLE TREE	TO BE REMOVED
09	14" CAL.	SPRUCE	TO BE REMOVED
10	8" CAL.	CRAB APPLE TREE	TO BE REMOVED

(LM) DESIGNATES ANN ARBOR LANDMARK TREE

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Revisions
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2. 09.29.2020 REVISED PER SITE PLAN REVIEW #1
3. 10.22.2020 REVISED PER SITE PLAN REVIEW #2
4. 12.07.20 REVISED PER SITE PLAN REVIEW #3

MCA METROCA.NET
RELATIONSHIPS - REPUTATION - RESULTS
800.525.6016

Project Number	Date
1051-19-9457	08/26/2020

P.M.	Checked by	Drawn by	Crew/Book
CB	CB	KMW	-

Client: AR BROUWER COMPANY

Project: LEWIS JEWELERS

Site Address: 300 S. MAPLE ROAD ANN ARBOR, MICHIGAN 48103

County	Community
WASHTENAW	ANN ARBOR

Township	Range	Section
2S	5E	25

Professional Name: CHRISTOPHER SUTTON, PE | Date: --

Title: SITE PLAN
DEMOLITION PLAN

Drawing Scale: 1" = 20' | Sheet Number: 03

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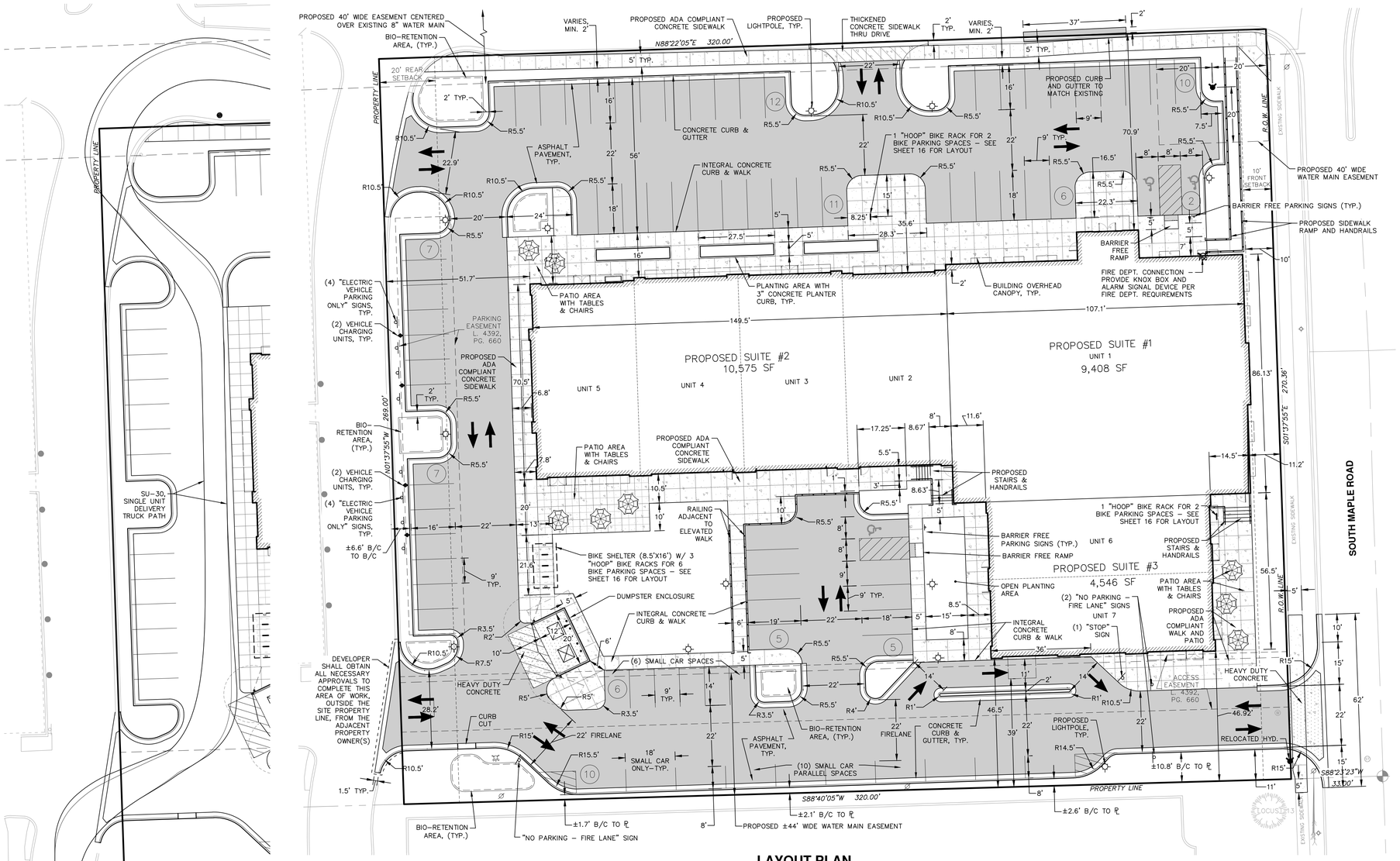
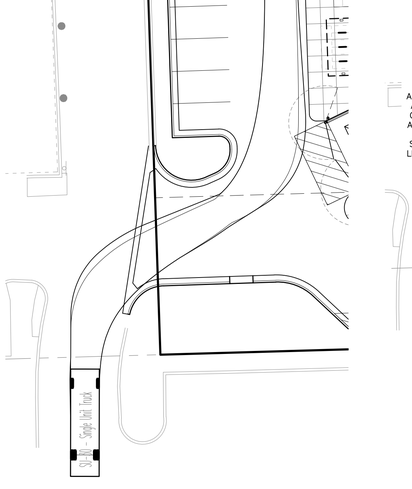


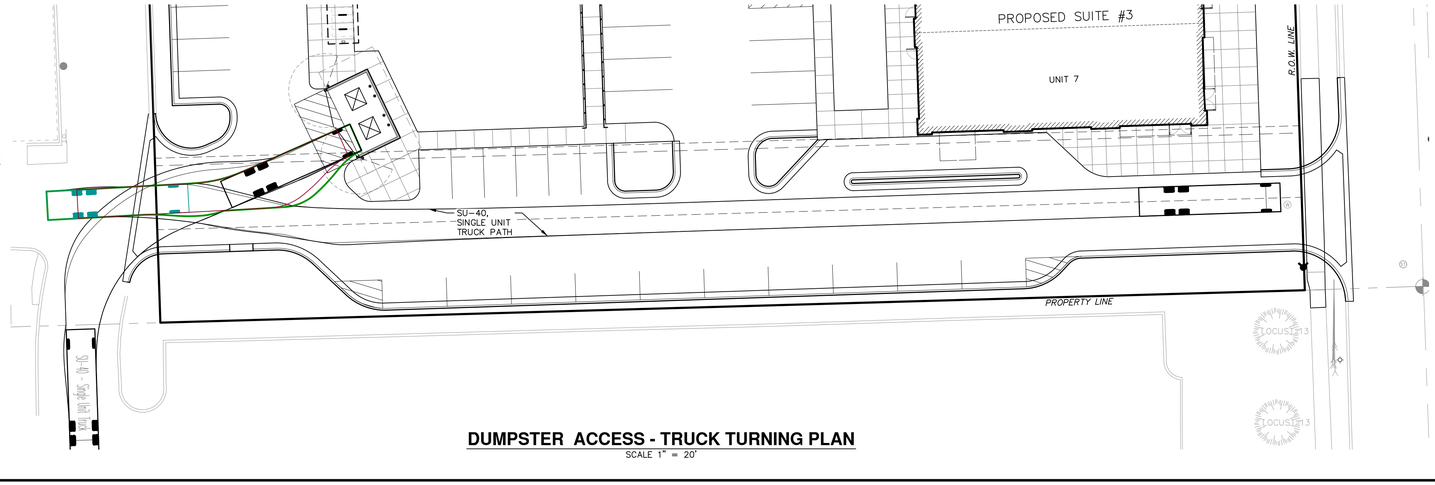
LAYOUT PLAN

SCALE 1" = 20'



DELIVERY ACCESS - TRUCK TURNING PLAN

SCALE 1" = 20'



DUMPSTER ACCESS - TRUCK TURNING PLAN

SCALE 1" = 20'

N

LEGEND

- PROPERTY LINE
- PROPOSED BUILDING
- PR. STRIPING
- PR. CONCRETE
- PR. HEAVY-DUTY CONCRETE
- PR. ASPHALT
- PR. HANDICAP PARKING SYMBOL
- EX. LIGHTPOLE
- PR. LIGHTPOLE

LAYOUT NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CURRENT STANDARDS, SPECIFICATION, AND GENERAL CONDITIONS OF THE JURISDICTION HAVING AUTHORITY.
2. ALL DIMENSIONS ARE MEASURED TO THE PAINT LINE OR FACE OF CURB UNLESS OTHERWISE NOTED.
3. ALL PARKING LOT STRIPING SHALL BE IN ACCORDANCE WITH THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES"
4. ALL ACCESSIBLE PARKING, SIGNAGE AND STRIPING SHALL BE IN ACCORDANCE WITH THE "ADA STANDARDS FOR ACCESSIBLE DESIGN", CURRENT EDITION.
5. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL CONTACT THE OWNER AND/OR ENGINEER SHOULD THERE BE ANY FIELD CONFLICTS WITH THE DESIGN INTENT.
6. REFER TO THE ARCHITECTURAL PLANS FOR COORDINATING THE SCOPE OF WORK RELATING TO THE BUILDING ELEVATIONS, INTERIOR, AND APPURTENANCES.
7. CONTRACTOR IS RESPONSIBLE FOR PRESERVING LANDSCAPED AREAS THROUGHOUT CONSTRUCTION. ANY PLANTINGS, VEGETATION, OR GROUNDCOVER DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW TO MATCH EXISTING AT THE CONTRACTOR'S EXPENSE.
8. ALL SIDEWALKS SHALL BE KEPT AND MAINTAINED IN GOOD REPAIR BY THE OWNER OF THE LAND ADJACENT TO AND ABUTTING THE SAME. PRIOR TO THE ISSUANCE OF THE FINAL CERTIFICATE OF OCCUPANCY FOR THIS SITE, ALL EXISTING SIDEWALKS IN NEED OF REPAIR MUST BE REPAIRED IN ACCORDANCE WITH CITY STANDARDS.
9. STORAGE AREA FOR CONSTRUCTION MATERIALS SHALL NOT INTERFERE WITH FIRE/EMERGENCY SITE ACCESS.
10. ADDRESS SHALL BE CLEARLY VISIBLE WHEN APPROACHING THE BUILDING.
11. THIS PROJECT WILL BE CONSTRUCTED/COMPLETED IN A SINGLE PHASE.
12. THE DEVELOPER IS RESPONSIBLE FOR OBTAINING NECESSARY APPROVALS TO COMPLETE OFF-SITE WORK FROM THE NECESSARY PROPERTY OWNER(S).

SITE DATA

GROSS / NET LOT AREA	1.98 AC
EXISTING LAND USE	VACANT RESTAURANT
PROPOSED LAND USE	COMMERCIAL

SITE DEVELOPMENT DATA		EXISTING	REQUIRED	PROPOSED
ZONING		C3	C3	C3
BUILDING SETBACKS	FRONT	159.64' EAST	10'	10 EAST
	SIDE	78.58' NORTH 75.95' SOUTH	0'	73' NORTH 47' SOUTH
	REAR	67.66' WEST	20'	53' WEST
SUITE #1 INFORMATION (CONTAINING 1 UNIT)	HEIGHT	+/-28'/1-STORY	55 FT/4 STORIES	28'/1-STORY
	FLOOR AREA	+/-9330 SF	6,000 SF	9,408 SF
SUITE #2 INFORMATION (CONTAINING 4 UNITS)	HEIGHT		55 FT/4 STORIES	28'/1-STORY
	FLOOR AREA		6,000 SF	10,575 SF
SUITE #3 INFORMATION (CONTAINING 2 UNITS)	HEIGHT		55 FT/4 STORIES	28'/1-STORY
	FLOOR AREA		6,000 SF	4,546 SF
FLOOR AREA RATIO (% OF LOT AREA)			MAX. 200	28.4%
PARKING INFORMATION (REGULAR CAR)	TOTAL SPACES		*(SEE BELOW)*	65
	LENGTH		16' / 18' (MIN)	16' / 18'
	WIDTH		9' (MIN)	9'
	AISLE		22' (MIN)	22' MIN.
PARKING INFORMATION (SMALL CAR)	TOTAL SPACES		*(SEE BELOW)*	16
	LENGTH (PARALLEL)		18' (MIN)	18'
	LENGTH (90)		14' / 16' (MIN)	14'
	WIDTH		8' (MIN)	8'
	AISLE		20' (MIN)	22'
TOTAL COMBINED PARKING	TOTAL SPACES	142	79 (MIN.)*	81
	TOTAL ADA SPACES	3	3 (MIN.)	3
BICYCLE PARKING SPACES	CLASS B TYPE	0	4.5*	6
	CLASS C TYPE	0	4.5*	4

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Project
LEWIS JEWELERS

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WASHTENAW	ANN ARBOR

Township	Range	Section
2S	5E	25

Professional Name: CHRISTOPHER SUTTON, PE — Date: --

Title
SITE PLAN
LAYOUT PLAN

Drawing Scale: 1" = 20' — Sheet Number: **04**

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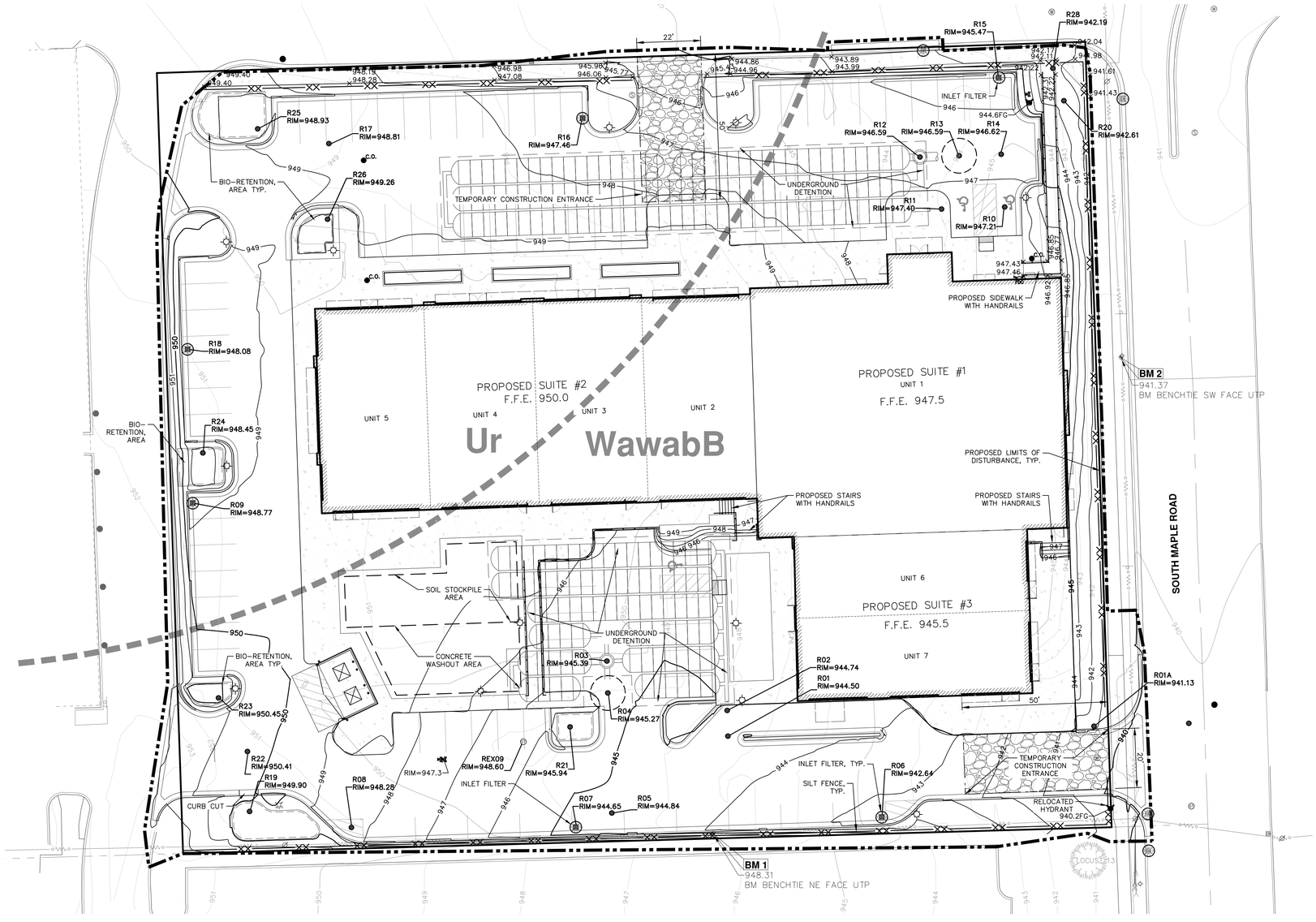

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LEGEND

- EX. SPOT ELEVATION
- EX. CONTOUR
- EX. WETLAND LIMITS
- EX. ADJACENT PROPERTY LINE
- EX. SECTION LINE
- EX. EASEMENT LINE
- EX. CURB/PAVEMENT
- EX. FENCE
- EX. GRAVEL
- EX. ℄ DITCH
- EX. GUARDRAIL
- EX. TREELINE
- EX. TREE (CONIFEROUS)
- EX. TREE (DECIDUOUS)
- EX. SIGN
- EX. MAILBOX
- FOUND IRON PIPE
- FOUND IRON ROD
- FOUND PK NAIL
- FOUND CONC. MONUMENT
- SET IRON ROD
- SET MAG NAIL
- EX. SECTION CORNER
- SOIL BORING
- EX. WATER MAIN
- EX. WATER VALVE
- EX. HYDRANT
- EX. WATER MANHOLE
- EX. WELL
- EX. WATER METER
- EX. STORM SEWER
- EX. STORM INLET/CATCH BASIN
- EX. STORM MANHOLE
- EX. STORM END SECTION
- EX. SANITARY SEWER
- EX. SANITARY MANHOLE
- EX. UNDERGROUND GAS
- EX. GAS VALVE
- EX. OVERHEAD ELECTRIC
- EX. UNDERGROUND ELECTRIC
- EX. UNDERGROUND CABLE
- EX. TELEPHONE MANHOLE
- EX. ELECTRIC MANHOLE
- EX. ELECTRIC METER
- EX. GAS METER
- EX. LIGHT POLE
- EX. TRAFFIC SIGNAL BOX
- EX. UNIDENTIFIED MANHOLE
- EX. TRAFFIC SIGNAL POLE
- EX. UTILITY POLE
- EX. GUY WIRE
- PR. SPOT ELEVATION
- PR. CONTOUR
- PR. DRAINAGE ARROW
- PR. EASEMENT LINE
- PR. SETBACK LINE
- PR. CURB/PAVEMENT
- PR. FENCE
- PR. SIDEWALK RAMP
- PR. ASPHALT PAVEMENT
- PR. CONCRETE
- PR. GUARDRAIL
- PR. SIGN
- PR. WATER MAIN
- PR. WATER VALVE
- PR. HYDRANT
- PR. WATER VALVE IN MANHOLE
- PR. WELL
- PR. REDUCER
- PR. STORM SEWER
- PR. STORM INLET/CATCH BASIN
- PR. STORM MANHOLE
- PR. STORM END SECTION
- PR. SANITARY SEWER
- PR. SANITARY MANHOLE
- PR. CLEANOUT
- PR. UTILITY CROSSING LOCATION
- PR. UNDERGROUND GAS
- PR. GAS VALVE
- PR. LIGHT POLE
- TREE PROTECTION FENCE
- PR. INLET FILTER
- TW TOP OF WALK
- ME MATCH EXISTING
- SILT FABRIC FENCE
- SOIL DISTRICT LIMIT
- WawabB SOIL TYPE DESIGNATION

BENCHMARKS:

BM #1: BENCH TIE IN NORTHEAST FACE OF UTILITY POLE ELEVATION: 948.31' (NAVD88)

BM #2: BENCH TIE IN SOUTHWEST FACE OF UTILITY POLE ELEVATION: 941.37' (NAVD88)

EARTHWORK ESTIMATE:

THE ESTIMATED COST OF EARTHWORK IS $125,000

ESTIMATED CUT = 2,177 CY
ESTIMATED FILL = 973 CY

THE ESTIMATED COST OF SITE STABILIZATION IS $5,300

GRADING NOTES:

1. THE PROPOSED CONTOURS AND SLOPES ARE APPROXIMATE AS SHOWN.
2. ALL PROPOSED SPOT GRADES SHOWN AT THE EDGE OF METAL OR TOP EDGE OF WALK, UNLESS OTHERWISE NOTED. NOTATION CODES ARE AS FOLLOWS: FF=FINISHED FLOOR, FG=FINISHED GRADE, TP=TOP OF PAVEMENT, RIM=TOP OF GRATE OR MANHOLE, TW=TOP OF WALL, BW=BOTTOM OF WALL, TC=TOP OF CURB.
3. ANY SOIL RETAINING SYSTEM OR WALL IF REQUIRED SHALL BE DESIGNED BY A QUALIFIED STRUCTURAL OR GEOTECHNICAL ENGINEER. A DETAIL OF THE RETAINING WALL WITH CALCULATIONS TO BE SUBMITTED TO THE REVIEW AGENCY AS REQUIRED.
4. WHEN PAVED AREAS ARE EXCAVATED, ASPHALT AREAS SHALL BE SAW-CUT AND REMOVED TO A DISTANCE EQUAL TO THE DEPTH OF EXCAVATION. CONCRETE SHALL BE REMOVED TO THE FIRST JOINT PAST THE DISTANCE EQUAL TO THE DEPTH OF EXCAVATION. COMPACTED SAND BACKFILL IS REQUIRED IN ALL EXCAVATIONS WITHIN A 1:1 SLOPE OF EXISTING OR PROPOSED PAVEMENT.
5. CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE POSITIVE DRAINAGE REMAINS DURING AND IN POST CONSTRUCTION CONDITIONS AND NO ADVERSE IMPACTS WILL OCCUR TO NEIGHBORING PROPERTIES DURING AND AFTER COMPLETION OF CONSTRUCTION.
6. ALL SIDEWALK PLANNED TO BE ACCESSIBLE SHALL BE CONSTRUCTED WITH CROSS SLOPES LESS THAN 2%.
7. ALL SIDEWALK CURB RAMPS SHALL BE CONSTRUCTED PER THE LATEST MICHIGAN DEPARTMENT OF TRANSPORTATION DETAILS AND IN COMPLIANCE WITH THE AMERICAN WITH DISABILITIES ACT.
8. CONTRACTOR SHALL ADJUST ALL EXISTING MANHOLE/CATCH BASIN RIM ELEVATIONS AFFECTED BY THE PROPOSED WORK. WHERE NECESSARY, DUE TO EXCESSIVE ELEVATION CHANGE, CONTRACTOR SHALL RECONSTRUCT THE EXISTING STRUCTURE.
9. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR RECOMMENDATIONS ON BACKFILL, TRENCHING, GROUND WATER CONDITIONS, ETC. UNSUITABLE MATERIAL, IF ENCOUNTERED, BENEATH THE BUILDING ADDITION OR PROPOSED PAVEMENT, SHALL BE REMOVED ENTIRELY AND REPLACED WITH ENGINEERED FILL. AREAS REQUIRING SUBSTANTIAL REMEDIATION SHALL BE BROUGHT TO THE OWNER AND THE OWNER'S ENGINEER FOR FURTHER RECOMMENDATION.
10. ALL GRADES ARE TOP OF WALK OR TOP OF PAVEMENT UNLESS OTHERWISE SPECIFIED.
11. PARKING SPACES AND REQUIRED BARRIER FREE SIGNAGE SHALL COMPLY WITH THE MICHIGAN BUILDING CODE.
12. ALL CONSTRUCTION SHALL COMPLY WITH THE CITY OF ANN ARBOR STANDARDS AND SPECIFICATIONS.
13. ALL PROPOSED PAVEMENT MARKINGS TO BE PAINTED TO CURRENT INDUSTRY STANDARDS.
14. ADA PARKING STALLS AND AISLES SHALL NOT EXCEED 2% SLOPE IN ALL DIRECTIONS
15. INTERNAL AND EXTERNAL STREETS SHALL BE CLEANED OF ANY TRACKED MUD IMMEDIATELY FOLLOWING EACH MUD-TRACKING OCCURRENCE.

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300 S. MAPLE ROAD
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WASHTENAW	ANN ARBOR

Township	Range	Section
2S	5E	25

Professional Name	Date
CHRISTOPHER SUTTON, PE	- -

Title
SITE PLAN

GRADING & SOIL EROSION CONTROL PLAN

Drawing Scale: 1" = 20'
Sheet Number: 05

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SOIL EROSION & SEDIMENT CONTROL NOTES:

SITE LOCATION: SECTION 25, TOWNSHIP 2S, RANGE 5E; (ANN ARBOR, WASHTENAW COUNTY, MICHIGAN)

RECEIVING WATER: WEST PARK FAIRGROUNDS DRAIN

SITE SOILS INFORMATION:
Ur: URBAN LAND
WawabB: WAWASEE LOAM, 2 TO 6 PERCENT SLOPE
PER THE NATIONAL RESOURCES CONSERVATION SERVICE (NRCS) SOIL SURVEY

APPROXIMATE AREA OF DISTURBANCE: 2 ± ACRES

PERSON RESPONSIBLE FOR ON-SITE SOIL EROSION CONTROL
CONTRACTOR: TBD
PHONE: TBD
FAX: TBD

APPROXIMATE CONSTRUCTION SCHEDULE IS AS FOLLOWS:

03/2021 PROJECT START DATE
03/2021 TEMPORARY EROSION CONTROL MEASURES INSTALLED
03/2021 GRAVEL CONSTRUCTION ENTRANCE INSTALLED
03/2021 DEMOLITION ACTIVITIES
04/2021 DETENTION FACILITIES INSTALLED
04/2021 UTILITIES / STORM SEWER / INLETS FILTERS INSTALLED
05/2021 FIRST COARSE OF PAVEMENT, CURB AND GUTTER INSTALLED
05/2021 BUILDING CONSTRUCTION
08/2021 FINAL COARSE PAVING INSTALLED
08/2021 FINAL GRADING / SEEDING
09/2021 CATCH BASINS CLEANED
10/2021 PERMANENT EROSION CONTROL MEASURES IN PLACE
11/2021 TEMPORARY EROSION CONTROL MEASURES REMOVED
12/2021 PROJECT END DATE

TEMPORARY STABILIZATION	
AREA REQUIRING TEMPORARY STABILIZATION	**TIME FRAME TO APPLY EROSION CONTROLS**
ANY DISTURBED AREASE WITHIN 50 FEET OF A STREAM AND NOT AT FINAL GRADE	WITHIN TWO DAYS OF THE MOST RECENT DISTURBANCE IF THE AREA WILL REMAIN IDLE FOR MORE THAN 21 DAYS
FOR ALL CONSTRUCTION ACTIVITIES, ANY DISTURBED AREAS THAT WILL BE DORMANT FOR MORE THAN 21 DAYS BUT LESS THAN ONE YEAR, AND NOT WITHIN 50 FEET OF A STREAM	WITHIN SEVEN DAYS OF THE MOST RECENT DISTURBANCE WITHIN THE AREA FOR RESIDENTIAL SUBDIVISIONS, DISTURBED AREAS MUST BE STABILIZED AT LEAST SEVEN DAYS PRIOR TO THE TRANSFER OF PERMIT COVERAGE FOR THE INDIVIDUAL LOT(S)
DISTURBED AREAS THAT WILL BE IDLE OVER THE WINTER	PRIOR TO THE ONSET OF WINTER WEATHER

PERMANENT STABILIZATION	
AREA REQUIRING PERMANENT STABILIZATION	**TIME FRAME TO APPLY EROSION CONTROLS**
ANY AREAS THAT WILL LIE DORMANT FOR ON YEAR OR MORE	WITHIN SEVEN DAYS OF THE MOST RECENT DISTURBANCE
ANY AREAS WITHIN 50 FEET OF A STREAM AND AT FINAL GRADE	WITHIN TWO DAYS OF REACHING FINAL GRADE
ANY OTHER AREAS AT FINAL GRADE	WITHIN SEVEN DAYS OF REACHING FINAL GRADE WITHIN THAT AREA

STABILIZATION SPECIFICATIONS

"TEMPORARY SEEDING" NO AREA FOR WHICH GRADING HAS BEEN COMPLETED SHALL BE LEFT UNSEEDED OR UNMULCHED FOR LONGER THAN 21 DAYS. IF PERMANENT SEED IS NOT APPLIED AT THIS TIME, TEMPORARY SEEDING SHALL BE DONE AT THE FOLLOWING RATES.

MARCH 1 TO AUGUST 15
SEED: OATS 2 LBS./1,000 SQ.FT.
FERTILIZER: (12:12:12) 12 1/2 LBS./1,000 SQ.FT.
MULCH: (STRAW OR HAY) 2 TONS/ACRE

AUGUST 15 TO NOVEMBER 1
SEED: ANNUAL RYE 2 LBS./1,000 SQ.FT.
FERTILIZER: (12:12:12) 12 1/2 LBS./1,000 SQ.FT.
MULCH: (STRAW OR HAY) 2 TONS/ACRE

NOVEMBER 1 TO MARCH 1
MULCH (ONLY): (STRAW OR HAY) 2 TONS/ACRE

"PERMANENT SEEDING" SHALL BE DONE BETWEEN MARCH 15 AND OCTOBER 15. IF SEEDING IS DONE BETWEEN OCTOBER 15 AND MARCH 15, IT SHALL BE CLASSIFIED AS "TEMPORARY SEEDING" PERMANET SEED SHALL BE 40% KENTUCKY BLUEGRASS, 40% CREEPING RED FESCUE, 20% ANNUAL RYEGRASS. PERMANENT SEEDING SHALL CONSIST OF FERTILIZING, WATERING AND SEEDING RATES INDICATED UNDER ITEM 659. SEEDING SHALL BE APPLIED WITHIN TWO DAYS AFTER FINAL GRADING OR FOLLOWING SEED BED PREPARATION.
RATES OF APPLICATION OF ITEM 659:
SEED: 4 LBS./1,000 SQ.FT.
FERTILIZER: (12:12:12) 20 LBS./1,000 SQ.FT.
MULCH: (STRAW OR HAY) 2 TONS/ACRE

ESTIMATED COST OF SITE STABILIZATION: $5,300

SOIL EROSION CONTROL MAINTENANCE TASKS AND SCHEDULE

DURING CONSTRUCTION

TO BE PERFORMED BY CONTRACTOR

TASKS	COMPONENTS: PAVED AREAS	PERVIOUS AREAS	RIP-RAP/SILT FENCE	STORM DRAINAGE SYSTEM	CATCH BASIN FILTERS	CATCH BASIN INLET CASTINGS	OUTLET STRUCTURE	BIO-FILTRATION AREA	DETENTION AREA	SCHEDULE
INSPECT FOR SEDIMENT ACCUMULATION	X		X	X	X		X	X	X	WEEKLY
REMOVAL OF SEDIMENT ACCUMULATION	X		X	X	X		X	X	X	AS NEEDED* AND PRIOR TO TURNOVER
INSPECT FOR FLOATABLES AND DEBRIS				X	X	X	X	X	X	QUARTERLY
CLEANING FOR FLOATABLES AND DEBRIS				X	X	X	X	X	X	QUARTERLY AND AT TURNOVER
INSPECTION FOR EROSION		X	X							WEEKLY
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES		X								AS NEEDED* AND PRIOR TO TURNOVER
CLEAN DRIVES AND PARKING LOTS	X									WEEKLY OR AS DETERMINED BY PERMITTING AGENCY
WATER DISTURBED AREAS TO PROVIDE DUST CONTROL	ALL DISTURBED AREAS OF SITE									AS NEEDED
INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY A PROFESSIONAL ENGINEER REPORTING TO THE OWNER)			X	X			X	X	X	ANNUALLY AND AT TURNOVER
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED			X	X			X	X	X	AS NEEDED

* "AS NEEDED" MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE FOOT DEPTH

LONG TERM STORM WATER MAINTENANCE PLAN & BUDGET

TO BE PERFORMED BY OWNER OR OWNER'S REP.

TASKS	COMPONENTS: PAVED AREAS	PERVIOUS AREAS	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	CATCH BASIN INLET COVER	DETENTION BASIN	OUTLET CONTROL STR	BIO-FILTRATION AREA	DETENTION AREA	SCHEDULE	ANNUAL COST
INSPECT FOR SEDIMENT ACCUMULATION	X		X	X	X	X	X	X	X	SEMI-ANUALLY/AS NEEDED*	$100.00
REMOVAL OF SEDIMENT ACCUMULATION	X		X	X	X	X	X	X	X	5-10 YRS/AS NEEDED*	$200.00
INSPECT FOR FLOATABLES AND DEBRIS			X	X		X	X	X	X	ANNUALLY	$100.00
CLEANING FOR FLOATABLES AND DEBRIS			X	X		X	X	X	X	ANNUALLY	$300.00
INSPECTION FOR EROSION		X				X		X	X	ANNUALLY/AFTER MAJOR STORMS	$100.00
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES		X				X		X	X	AS NEEDED	$300.00
CLEAN DRIVES AND PARKING LOTS	X									ANNUALLY	$500.00
MOWING		X								0-2 TIMES PER YEAR	$400.00
INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY A PROFESSIONAL ENGINEER REPORTING TO THE OWNER)			X			X	X	X	X	ANNUALLY	$100.00
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED BY ANNUAL WET WEATHER INSPECTION			X			X	X	X	X	AS NEEDED	$100.00
KEEP RECORDS OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES AND REPORT TO PROPERTY OWNER										ANNUALLY	$50.00
KEEP RECORDS OF ALL COSTS FOR INSPECTIONS, MAINTENANCE AND REPAIRS. REPORT TO PROPERTY OWNER										ANNUALLY	$50.00
PROPERTY OWNER REVIEWS COST EFFECTIVENESS OF THE PREVENTATIVE MAINTENANCE PROGRAM AND MAKES NECESSARY ADJUSTMENTS										ANNUALLY	$50.00
OWNER TO HAVE A PROFESSIONAL ENGINEER CARRY OUT EMERGENCY INSPECTIONS UPON IDENTIFICATION OF SEVERE PROBLEMS										AS NEEDED	$150.00

* "AS NEEDED" MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE FOOT DEPTH

GENERAL SOIL EROSION CONTROL NOTES:

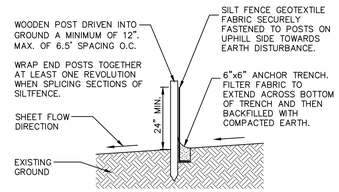
1. THE CONTRACTOR SHALL CONFORM TO PART 91 OF ACT 451 OF THE PUBLIC ACTS OF 1994; EROSION AND SEDIMENT CONTROL OF RUNOFF DURING CONSTRUCTION (AS AMENDED) AND CURRENT LOCAL ORDINANCES FOR EROSION AND SEDIMENTATION CONTROL.
2. PRIOR TO ANY EARTH CHANGE, THE DEVELOPER SHALL SUBMIT A DETAILED EROSION CONTROL PLAN, COMPLETED APPLICATION AND CHECKLIST FORMS, PAY ALL FEES AND POST AN EROSION CONTROL PERFORMANCE BOND, AS REQUESTED.
3. CONSTRUCTION OPERATION SHALL BE SCHEDULED AND PERFORMED SO THAT PREVENTATIVE SOIL EROSION CONTROL MEASURES ARE IN PLACE PRIOR TO EXCAVATION IN CRITICAL AREAS AND TEMPORARY STABILIZATION MEASURES ARE IN PLACE IMMEDIATELY FOLLOWING BACKFILLING OPERATIONS.
4. SPECIAL PRECAUTIONS WILL BE TAKEN IN THE USE OF CONSTRUCTION EQUIPMENT TO PREVENT SITUATIONS THAT PROMOTE EROSION.
5. CLEANUP WILL BE DONE IN A MANNER TO ENSURE THAT EROSION CONTROL MEASURES ARE NOT DISTURBED.
6. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR STORM WATER DISCHARGE FROM THE CONSTRUCTION ACTIVITIES IS REQUIRED PRIOR TO ANY EARTH CHANGE.
7. THE CONTRACTOR IS REQUIRED TO KEEP A COPY OF THE APPROVED SOIL EROSION AND SEDIMENT CONTROL PLAN AND PERMIT AT THE CONSTRUCTION SITE.
8. ALL SOIL EROSION CONTROL PRACTICES TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL SUCH MEASURES ARE PERMANENTLY STABILIZED AS DETERMINED BY THE SOIL EROSION INSPECTOR.
9. DURING CONSTRUCTION, ANY ADDITIONAL CONTROL MEASURES AS DEEMED NECESSARY TO PREVENT EROSION OR CONTROL SEDIMENT BEYOND THOSE MEASURES SHOWN ON THE APPROVED PLANS SHALL BE INSTALLED OR EMPLOYED AT THE DIRECTION OF THE LOCAL JURISDICTION OR THE SOIL EROSION INSPECTOR.
10. TEMPORARY AND PERMANENT STABILIZATION SHALL BE CONDUCTED PER THE TABLE BELOW.
11. TRENCH AND GROUND WATER MUST PASS THROUGH A SEDIMENT POND, FILTER BAG OR OTHER COMPARABLE METHOD PRIOR TO DISCHARGING FROM THE SITE. IF USING A FILTER BAG, IT SHOULD BE PLACED ON FLAT GROUND TO ENSURE EFFICIENCY. THE FILTER BAG SHOULD BE LOCATED A SUFFICIENT DISTANCE FROM THE EXISTING WATERCOURSE OR WETLAND TO ALLOW PROPER SETTLING OR FILTERING THROUGH NATURAL VEGETATION. DEWATERING DISCHARGE SHALL BE MONITORED FOR ANY EROSIVE CONDITIONS. IF EROSION OCCURS, DEWATERING OPERATIONS MUST CEASE AND THE ERODED AREA MUST BE STABILIZED IMMEDIATELY, AND MAY RESUME ONLY AFTER STABILIZATION IS COMPLETE.
12. ANY TEMPORARY SOILS STOCKPILE SHALL OCCUR WITHIN THE LIMITS OF THE SILT FENCE. STOCKPILES TO BE GRADED TO A MAXIMUM OF 3:1 SIDE SLOPE.
13. A CONCRETE WASHOUT AREA SHALL BE DESIGNATED AND UTILIZED AS NECESSARY. CONCRETE TRUCKS ARE NOT PERMITTED TO WASH OUT DIRECTLY INTO STORM SEWERS, STREAMS, OR CHANNELS.
14. GRADING SHALL BE DONE AS TO NOT DISRUPT THE STORM WATER FROM ADJACENT PROPERTIES.
15. NO SOLID OR LIQUID WASTE, INCLUDING BUILDING MATERIALS OR THEIR PACKAGING, SHALL DISCHARGE INTO STORM WATER RUN OFF.
16. CONTAMINATED SOILS WHERE CONSTRUCTION SITE CHEMICALS HAVE BEEN SPILLED MUST BE REMOVED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.

MAINTENANCE REQUIREMENTS:

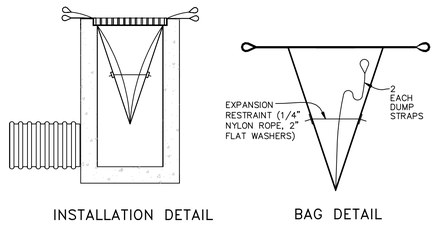
1. ALL BMPS MUST BE MAINTAINED IN A FUNCTIONAL CONDITION UNTIL ALL UPSLOPE AREAS THEY CONTROL ARE PERMANENTLY RESTABILIZED.
2. QUALIFIED PERSONNEL (PROVIDED BY THE DEVELOPER) MUST INSPECT ALL BMPS AT LEAST ONCE EVERY 7 DAYS AND WITHIN 24 HOURS OF A 0.5" OR GREATER RAINFALL WITHIN ANY 24-HOUR PERIOD AND DETERMINE IF THE SWP3 HAS BEEN PROPERLY IMPLEMENTED.
3. WRITTEN REPORTS SUMMARIZING INSPECTION RESULTS MUST BE MADE AVAILABLE UPON REQUEST. REPORTS MUST INCLUDE: DATE OF INSPECTION, NAME AND QUALIFICATIONS OF THE INSPECTOR, WEATHER CONDITIONS, LOCATIONS WHERE IN-STREAM OR OFF-SITE SEDIMENTATION WAS OBSERVED, LOCATION OF BMPS NEEDING MAINTENANCE, LOCATIONS OF BMPS FAILING TO OPERATE CORRECTLY OR PROVIDE ADEQUATE PROTECTION, OR LOCATION OF AREAS IN NEED OF ADDITIONAL BMPS NOT IN PLACE AT THE TIME OF INSPECTION.
4. THE REPORTS MUST IDENTIFY INCIDENTS OF NON-COMPLIANCE WITH THE NPDES PERMIT. WHERE A REPORT DOES NOT IDENTIFY INCIDENTS OF NON-COMPLIANCE, THE REPORT MUST CONTAIN A CERTIFICATION THAT THE SITE IS IN COMPLIANCE AT THE TIME OF INSPECTION.
5. MAINTENANCE OR REPAIR OF BMPS MUST BE COMPLETED WITHIN 3 DAYS OF THE DATE OF THE INSPECTION THAT REVEALED THEY WERE DEFICIENT. FOR SEDIMENT PONDS, REPAIR OR MAINTENANCE IS REQUIRED WITHIN 10 DAYS OF THE INSPECTION.
6. WHEN INSPECTIONS REVEAL THAT A BMP IS NOT EFFECTIVE AND THAT ANOTHER, MORE APPROPRIATE BMP IS REQUIRED, THE SWP3 MUST BE AMENDED AND THE MORE APPROPRIATE BMP MUST BE INSTALLED WITHIN 10 DAYS OF THE INSPECTION THAT REVEALED THE DEFICIENCY.
7. WHEN THE INSPECTION REVEALS THAT A BMP DEPICTED ON THE SWP3 HAS NOT BEEN INSTALLED, BUT IS REQUIRED TO PROVIDE ADEQUATE CONTROL AT THE SITE, IT MUST BE INSTALLED PRIOR TO THE NEXT STORM EVENT, WHICH PRODUCES RUNOFF, BUT IN NO CASE LATER THAN 10 DAYS FROM THE DATE OF INSPECTION, WHICH REVEALED THE DEFICIENCY.
8. THE REPORTS MUST BE MAINTAINED FOR THREE (3) YEARS FOLLOWING THE SUBMITTAL OF A NOTICE OF TERMINATION.

MAINTENANCE NOTES:

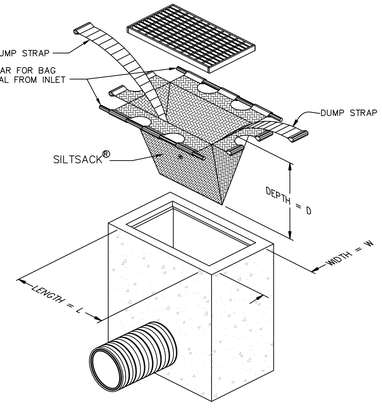
1. ALL DIRT AND MUD TRACKED ONTO ROADS DUE TO CONSTRUCTION SHALL BE REMOVED ON A DAILY BASIS BY THE CONTRACTOR.
2. SHOULD DUST BECOME A PROBLEM AT THE SITE, THE CONTRACTOR SHALL PROVIDE WATERING OR OTHER METHOD OF DUST CONTROL ACCEPTABLE TO THE WASHTENAW COUNTY WATER RESOURCES COMMISSIONER.
3. TEMPORARY STONE ACCESS DRIVE:
   3.1. CRUSHED LIMESTONE BASE SHALL BE PLACED ON A GEOTEXTILE FILTER CLOTH OR APPROVED ALTERNATIVE.
   3.2. ADDITIONAL LAYERS OF STONE OR CRUSHED LIMESTONE BASE SHALL BE ADDED IN LAYERS AND COMPACTED.
   3.3. STEPS SHALL BE TAKEN TO REPAIR IF RUTS OR POOLING WATER APPEAR.
4. SILT FENCE:
   4.1. BUILT UP SEDIMENT SHALL BE REMOVED WHEN SEDIMENT ACCUMULATES TO 1/3 TO 1/2 OF THE HEIGHT OF THE SILT FENCE.
   4.2. IF SILT FABRIC DECOMPOSES OR BECOMES INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USEABLE LIFE, AND THE BARRIER IS STILL REQUIRED, THE FABRIC SHALL BE PROMPTLY REPLACED.
5. INLET FILTERS:
   5.1. INLET FILTERS SHALL BE INSPECTED WEEKLY UNDER NORMAL CONDITIONS, WITHIN 24 HOURS OF RAINFALL AND DAILY DURING PROLONGED RAIN.
   5.2. BUILT-UP SEDIMENT AND DEBRIS SHALL BE REMOVED PROMPTLY.
   5.3. IF FABRIC DECOMPOSES OR BECOMES INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USEABLE LIFE AND THE BARRIER IS STILL REQUIRED, INLET FILTER SHALL BE REPLACED.



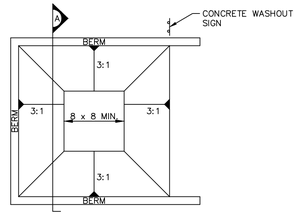
GEOTEXTILE SILT FENCE
NOT TO SCALE



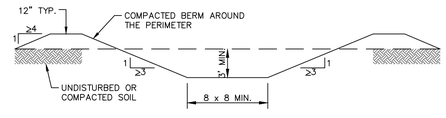
INSTALLATION DETAIL BAG DETAIL



INLET FILTER
NOT TO SCALE



CONCRETE WASHOUT AREA PLAN

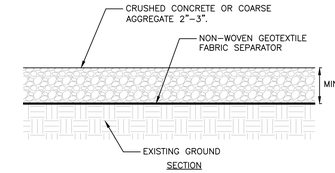


SECTION A

CWA INSTALLATION NOTES

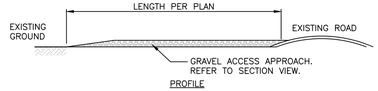
1. SEE PLAN VIEW FOR: INSTALLATION LOCATION.
2. DO NOT LOCATE ANY UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE AREA SHOULD BE USED.
3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8'. SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.
5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE A MINIMUM HEIGHT OF 1'.
6. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
7. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

CONCRETE WASHOUT AREA
NOT TO SCALE



SECTION

INSTALL AT CONSTRUCTION VEHICLE ENTRANCE/EXIT AS SPECIFIED PER PLAN. MINIMUM 15' WIDE X 50' LONG.



PROFILE

NOTES:
1. THE ENTRANCES SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT OF WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. SUPPLY WATER TO WASH TIRES IF NECESSARY. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT OF WAY.
3. WHEN WASHING IS REQUIRED,IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED AGGREGATE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

TEMPORARY CONSTRUCTION ENTRANCE
NOT TO SCALE

Revisions
1 08.27.2020 SITE PLAN SUBMISSION
2 09.29.2020 REVISED PER SITE PLAN REVIEW #1
3 10.22.2020 REVISED PER SITE PLAN REVIEW #2
4 12.07.20 REVISED PER SITE PLAN REVIEW #3

Project Number	Date
1051-19-9457	08/26/2020
P.M. CB	Checked by CB / Drawn by KMW / Crew/Book -

Client
AR BROUWER COMPANY

Project
LEWIS JEWELERS

Site Address
300 S. MAPLE ROAD
ANN ARBOR, MICHIGAN 48103

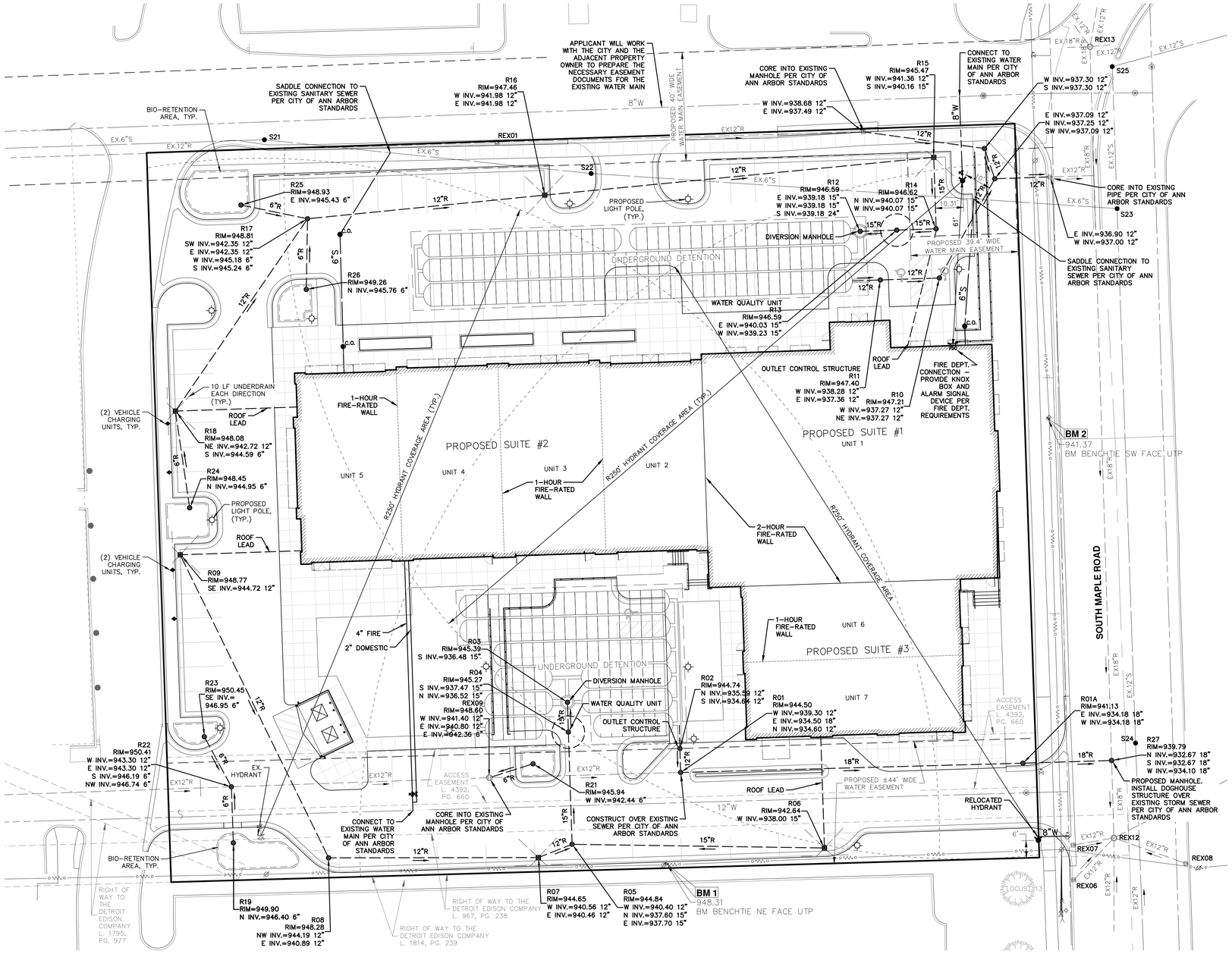
County	Community
WASHTENAW	ANN ARBOR

Township	Range	Section
2S	5E	25

Professional Name: CHRISTOPHER SUTTON, PE
Date: --

Title
SITE PLAN
SOIL EROSION CONTOL NOTES AND DETAILS

Drawing Scale
Sheet Number **06**



LEGEND

- EX. SPOT ELEVATION
- EX. CONTOUR
- EX. WETLAND LIMITS
- EX. ADJACENT PROPERTY LINE
- EX. SECTION LINE
- EX. EASEMENT LINE
- EX. CURB/PAVEMENT
- EX. FENCE
- EX. GRAVEL
- EX. ℄ DITCH
- EX. GUARDRAIL
- EX. TREELINE
- EX. TREE (CONIFEROUS)
- EX. TREE (DECIDUOUS)
- EX. SIGN
- EX. MAILBOX
- FOUND IRON PIPE
- FOUND IRON ROD
- FOUND PK NAIL
- FOUND CONC. MONUMENT
- SET IRON ROD
- SET MAG NAIL
- EX. SECTION CORNER
- SOIL BORING
- EX. WATER MAIN
- EX. WATER VALVE
- EX. HYDRANT
- EX. WATER MANHOLE
- EX. WELL
- EX. WATER METER
- EX. STORM SEWER
- EX. STORM INLET/CATCH BASIN
- EX. STORM MANHOLE
- EX. STORM END SECTION
- EX. SANITARY SEWER
- EX. SANITARY MANHOLE
- EX. UNDERGROUND GAS
- EX. GAS VALVE
- EX. OVERHEAD ELECTRIC
- EX. UNDERGROUND ELECTRIC
- EX. UNDERGROUND CABLE
- EX. TELEPHONE MANHOLE
- EX. ELECTRIC MANHOLE
- EX. ELECTRIC METER
- EX. GAS METER
- EX. LIGHT POLE
- EX. TRAFFIC SIGNAL BOX
- EX. UNIDENTIFIED MANHOLE
- EX. TRAFFIC SIGNAL POLE
- EX. UTILITY POLE
- EX. GUY WIRE
- PR. SPOT ELEVATION
- PR. CONTOUR
- PR. DRAINAGE ARROW
- PR. EASEMENT LINE
- PR. SETBACK LINE
- PR. CURB/PAVEMENT
- PR. FENCE
- PR. SIDEWALK RAMP
- PR. ASPHALT PAVEMENT
- PR. CONCRETE
- PR. GUARDRAIL
- PR. SIGN
- PR. WATER MAIN
- PR. WATER VALVE
- PR. HYDRANT
- PR. WATER VALVE IN MANHOLE
- PR. WELL
- PR. REDUCER
- PR. STORM SEWER
- PR. STORM INLET/CATCH BASIN
- PR. STORM MANHOLE
- PR. STORM END SECTION
- PR. SANITARY SEWER
- PR. SANITARY MANHOLE
- PR. CLEANOUT
- PR. UTILITY CROSSING LOCATION
- PR. UNDERGROUND GAS
- PR. GAS VALVE
- PR. LIGHT POLE

BENCHMARKS:

BM #1: BENCH TIE IN NORTHEAST FACE OF UTILITY POLE
ELEVATION: 948.31' (NAVD88)

BM #2: BENCH TIE IN SOUTHWEST FACE OF UTILITY POLE
ELEVATION: 941.37' (NAVD88)

UTILITY NOTES:

1. PROPOSED ROOF LEADS SHALL BE SDR 23.5 PVC UNLESS OTHERWISE INDICATED AND/OR UNLESS OTHERWISE APPROVED BY THE AUTHORITY HAVING JURISDICTION.
2. ALL EXISTING UNDERDRAINS FROM THE BUILDING SHALL BE DISCONNECTED.
3. THE STORM SYSTEM WILL BE INSPECTED, AND WHEN NEEDED, CLEANED/SERVICED TO ENSURE THE SYSTEM IS 100% FUNCTIONAL
4. HYDRANTS SHALL BE IN SERVICE AND UNOBSTRUCTED DURING CONSTRUCTION.
5. "1-HOUR" RATED FIREWALLS SHALL BE CONSTRUCTED BETWEEN EACH TENANT'S UNIT AND "2-HOUR" RATED FIREWALLS SHALL BE CONSTRUCTED BETWEEN EACH SUITE. SEE PLAN FOR CALLOUTS.
6. THE PUBLIC WATER MAIN EASEMENT SHALL BE CLEAR OF OBSTRUCTIONS SUCH AS BUILDINGS, RETAINING WALL, DUMPSTER ENCLOSURES, OR ANY OTHER OBJECT WITH A FOUNDATION OR FOOTING.
7. THE EXISTING LIGHT POLES LOCATED WITHIN THE PROPOSED WATER MAIN EASEMENT WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER IN THE EVENT OF UTILITY MAIN MAINTENANCE, REPAIR OR REPLACEMENT.
8. THE SANITARY SEWER LEADS FOR 300 S. MAPLE ROAD AND 2449 W. STADIUM BOULEVARD ARE A SHARED SERVICE LEAD, WHICH IS NOT PERMITTED UNDER CURRENT CITY CODE. ADDITIONALLY, WE NOTE THAT THE EXISTING SANITARY SERVICE LEAD FOR THE ADJACENT PARCEL, 2449 W. STADIUM BOULEVARD, CROSSES THE SUBJECT SITE PLAN PARCEL (300 S. MAPLE ROAD). UTILITY SERVICE LEADS SERVING A PARCEL MUST CONNECT TO THE PUBLIC UTILITY FRONTING THAT PARCEL AND MAY NOT CROSS OVER OR IN FRONT OF ANOTHER PARCEL. THIS EXISTING, NON-CONFORMING SITUATION WILL BE ALLOWED TO REMAIN UNTIL THE SERVICE LEAD TO 2449 W. STADIUM BOULEVARD SERVICE LEAD REQUIRES REPLACEMENT, AT WHICH TIME IT MUST BE CONSTRUCTED ON ITS OWN PROPERTY.
9. NO BOOSTER PUMPS ARE PROPOSED FOR THIS PROJECT.

SANITARY SEWER FLOW MITIGATION CALCULATIONS

		# of Seats	Flow Rate For Given Use (gpd/seat)	Avg. Flow (gpd)	Avg. Flow (cfs)
Existing Site					
Uses:	Restaurant	290	30	8,700	0.01346
			Total Existing Flow	**8,700**	**0.01346**

		# of Units or ft² of Building Space	Flow Rate For Given Use (gpd/sf or gpd/unit)	Avg. Flow (gpd)	Avg. Flow (cfs)
Proposed Project					
Uses:	Retail Store	19,982	0.03	599	0.00093
Uses:	Restaurant	25	30	750	0.00116
			Total Proposed Flow	**1,349**	**0.00209**
			Net Change In Flow	**7350.54**	**0.0114**

Design Basis: Use the City of Ann Arbor "Table A" and "Michigan Criteria for Subsurface Sewage Disposal" Michigan Department of Public Health April 1994 & the "Ten States Standards"

NOTE: Net reduction of sanitary flow. No sanitary sewer flow reuction is required on this project.

SANITARY SERVICE LEAD

THE NON-CONFORMING EXISTING SANITARY SERVICE LEAD FOR 2449 W. STADIUM BOULEVARD (WHICH CURRENTLY CROSSES THE PROPERTY OF 300 S. MAPLE ROAD) WILL REMAIN IN ITS EXISTING LOCATION UNTIL THE TIME THAT SERVICE LEAD REQUIRES REPLACEMENT. WHEN THE LEAD FOR 2449 W. STADIUM BOULEVARD REQUIRES REPLACEMENT, IT SHALL BE CONSTRUCTED ON ITS OWN PROPERTY TO COMPLY WITH THE CURRENT CITY CODE.

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

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

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

Revisions
1. 08.27.2020 SITE PLAN SUBMISSION
2. 09.29.2020 REVISED PER SITE PLAN REVIEW #1
3. 10.22.2020 REVISED PER SITE PLAN REVIEW #2
4. 12.07.20 REVISED PER SITE PLAN REVIEW #3

METROCA.NET
RELATIONSHIPS - REPUTATION - RESULTS
800.525.6016

Project Number	Date
1051-19-9457	08/26/2020
P.M. CB	Checked by CB
Drawn by KMW	Crew/Book -

Client: AR BROUWER COMPANY

Project: LEWIS JEWELERS

Site Address: 300 S. MAPLE ROAD, ANN ARBOR, MICHIGAN 48103

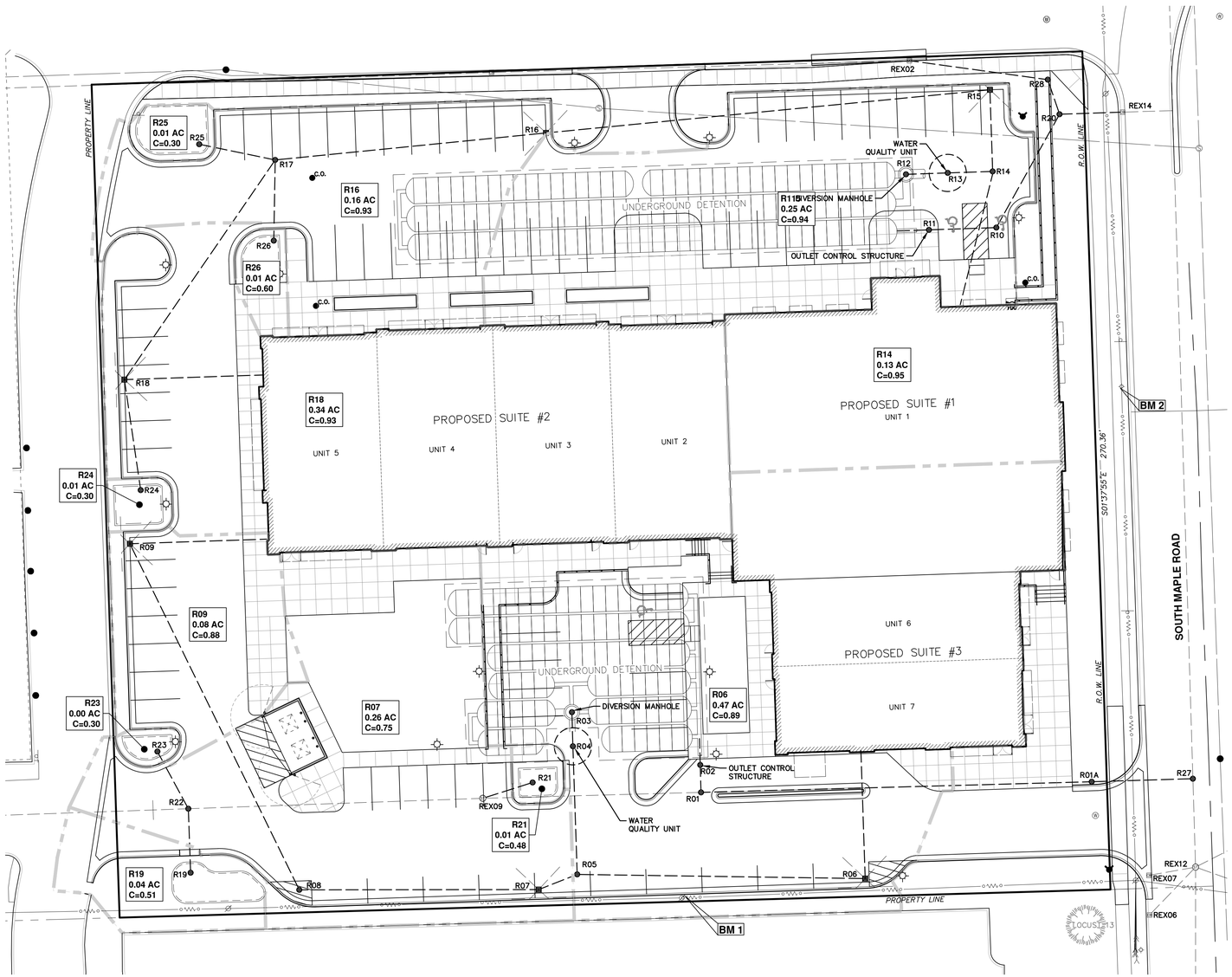
County	Community
WASHTENAW	ANN ARBOR
Township 2S	Range 5E
Section 25	

Professional Name: CHRISTOPHER SUTTON, PE — Date: --

Title: SITE PLAN
UTILITY PLAN

Drawing Scale: 1" = 20' — Sheet Number: 07

K:\2019\1051 JOB FOLDERS\1051-19-9457\Drawings\Plan Sets\Site Plan\9457-07.dwg



DRAINAGE NARRATIVE

THE DEVELOPER IS CONSTRUCTING A BUILDING WITH MULTIPLE SUITES FOR VARIED USE, INCLUDING A JEWELRY STORE ON 0.435 ACRES LOCATED ON THE WEST SIDE OF SOUTH MAPLE ROAD IN ANN ARBOR, WASHTENAW COUNTY, MICHIGAN. THE PROPOSED DEVELOPMENT INCLUDES THE CONSTRUCTION OF A THREE BUILDINGS ALONG WITH ASSOCIATED PARKING, UTILITIES AND STORM WATER MANAGEMENT SYSTEM.

THE EXISTING SITE GENERALLY SLOPES TO THE SOUTH AND TO THE EAST. THE PROPOSED DRAINAGE FROM THE PROJECT AREA WILL BE COLLECTED BY AN ON-SITE STORM SEWER SYSTEM WHICH HAS BEEN DESIGNED TO CONVEY A 10-YEAR STORM. RUNOFF WILL BE TREATED BY A WATER QUALITY UNIT AND TWO UNDERGROUND DETENTION SYSTEMS ON BOTH THE NORTH AND SOUTH SIDES OF THE BUILDINGS. PRIOR TO DISCHARGING TO THE EXISTING MAIN IN SOUTH MAPLE ROAD. THE DISCHARGE FROM THE PROPOSED DETENTION SYSTEMS HAVE BEEN DESIGNED TO CONTROL THE RELEASE OF THE STORM IN ACCORDANCE WITH WASHTENAW COUNTY'S STANDARDS.

Section VIII: Appendix

Part L. ENGINEER'S CERTIFICATE OF OUTLET

Date: 12/7/2020

Development Name: LEWIS JEWELERS

City, Village or Township of ANN ARBOR Section 25

Washtenaw County, Michigan

I hereby certify that the existing drain is the only reasonably achievable stormwater outlet for the proposed stormwater management system and that the existing drain has sufficient capacity to serve as an adequate outlet for the proposed system, without detriment to or diminution of the drainage serve that the existing outlet presently provides.

Signed: _____
Registered Professional Engineer

STATE OF MICHIGAN
CHRISTOPHER W. SUTTON
ENGINEER
No. 6201060997
LICENSED PROFESSIONAL ENGINEER

NOTE: The engineer's certificate must be stamped with the engineer's seal.
The certificate submitted must be the original.
The engineer's certificate should be accompanied by supporting calculations and documentation.

10-YEAR STORM SEWER DESIGN

ON-SITE STORM SEWER CONVEYANCE SYSTEM DESIGN

METRO CONSULTING ASSOCIATES

Project: Lewis Jewelers
Date: 9/24/2020
Revision: 0

Community: City of Ann Arbor
County: Washtenaw

I = I = 151.8/(T+19.9)
C = **varies**
T = **15** (min.)

Q manning = (1.486 A R2/3 S1/2)/n
n concrete = 0.013
n plastic = 0.012

FROM MH INPUT	TO MH	INCRE-MENT ACRES (A)	C	EQUIV. AREA 100% ACRES CA	TOTAL AREA 100% ACRES SUM CA	T TIME (MIN.)	I (IN PER HOUR)	Q=CIA C.F.S. FLOW	CAPAC-ITY OF SEWER (C.F.S.)	DIAM. OF PIPE (IN.)	LENGTH OF LINE (FT.)	SLOPE OF PIPE (%)	MIN HG BASED ON "Q" (%)	HG FOR 2.5 FPS GIVEN "D" (%)	ACTUAL HG (%)	VEL. FLOW FULL (FT./ SEC.)	TIME OF FLOW (MIN.)	H.G.L. ELEV.		GROUND ELEV.		INVERT ELEV.		RIM - H.G.L.	
																		UPPER END	LOWER END	UPPER END	LOWER END	UPPER END	LOWER END	UPPER END	LOWER END
R18	R17	0.34	0.93	0.32	0.32	15.00	4.35	1.39	2.34	12	86	0.43	0.15	0.30	0.30	3.0	0.5	943.42	943.15	948.08	948.81	942.72	942.35	4.66	5.66
R17	R16	0.00	0.00	0.00	0.32	15.50	4.29	1.39	2.34	12	88	0.43	0.15	0.30	0.30	3.0	0.5	943.04	942.78	948.81	947.46	942.35	941.98	5.77	4.68
R16	R15	0.16	0.93	0.15	0.47	16.00	4.23	1.99	2.34	12	144	0.43	0.31	0.30	0.31	3.0	0.8	942.61	942.16	947.46	945.47	941.98	941.36	4.85	3.31
R15	R14	0.25	0.94	0.23	0.70	16.80	4.14	2.91	3.65	15	26	0.32	0.20	0.23	0.23	3.0	0.1	942.13	942.07	945.47	946.62	941.16	941.07	3.34	4.55
R14	R13	0.13	0.95	0.12	0.83	16.90	4.13	3.41	3.65	15	14	0.32	0.28	0.23	0.28	3.0	0.1	942.07	942.03	946.62	946.59	941.07	941.03	4.55	4.56
R13	R12	0.00	0.00	0.00	0.83	17.00	4.11	3.41	3.65	15	13	0.32	0.28	0.23	0.28	3.0	0.1	940.22	940.18	946.59	946.59	939.23	939.18	6.37	6.41
R9	R8	0.08	0.88	0.07	0.07	15.00	4.35	0.32	2.34	12	124	0.43	0.01	0.30	0.30	3.0	0.7	945.37	944.99	948.77	948.27	944.72	944.19	3.40	3.28
R8	R7	0.00	0.00	0.00	0.07	15.70	4.26	0.32	2.34	12	77	0.43	0.01	0.30	0.30	3.0	0.4	941.59	941.36	948.27	944.66	940.89	940.56	6.68	3.30
R7	R5	0.26	0.75	0.19	0.27	16.10	4.22	1.12	2.34	12	13	0.43	0.10	0.30	0.30	3.0	0.1	941.24	941.20	944.66	944.83	940.46	940.40	3.42	3.63
R6	R5	0.47	0.89	0.42	0.42	15.00	4.35	1.82	3.65	15	93	0.32	0.08	0.23	0.23	3.0	0.5	938.91	938.70	942.29	944.83	938.00	937.70	3.38	6.13
R5	R4	0.00	0.00	0.00	0.68	15.50	4.29	2.94	3.65	15	41	0.32	0.21	0.23	0.23	3.0	0.2	938.56	938.47	944.83	945.28	937.60	937.47	6.27	6.81
R4	R3	0.00	0.00	0.00	0.68	15.70	4.26	2.94	3.65	15	11	0.32	0.21	0.23	0.23	3.0	0.1	937.51	937.48	945.28	945.40	936.52	936.48	7.77	7.92

C-FACTOR CALCULATIONS

Storm Structure	Impervious Area (sf)	C-Factor	Pervious Area (sf)	C-Factor	Total Area (sf)	Total Area (ac)	Weighted C-Factor
R01A	0	0.95	0	0.30	0	0.00	0.00
R01	0	0.95	0	0.30	0	0.00	0.00
R02	0	0.95	0	0.30	0	0.00	0.00
R03	0	0.95	0	0.30	0	0.00	0.00
R04	0	0.95	0	0.30	0	0.00	0.00
R05	0	0.95	0	0.30	0	0.00	0.00
R06	18,627	0.95	1,807	0.30	20,434	0.47	0.89
R07	7,747	0.95	3,516	0.30	11,263	0.26	0.75
R08	0	0.95	0	0.30	0	0.00	0.00
R09	3,218	0.95	371	0.30	3,589	0.08	0.88
R10	0	0.95	0	0.30	0	0.00	0.00
R11	0	0.95	0	0.30	0	0.00	0.00
R12	0	0.95	0	0.30	0	0.00	0.00
R13	0	0.95	0	0.30	0	0.00	0.00
R14	5,696	0.95	0	0.30	5,696	0.13	0.95
R15	10,525	0.95	219	0.30	10,744	0.25	0.94
R16	6,920	0.95	193	0.30	7,113	0.16	0.93
R17	0	0.95	0	0.30	0	0.00	0.00
R18	14,457	0.95	563	0.30	15,020	0.34	0.93
R19	580	0.95	1,239	0.30	1,819	0.04	0.51
R20	0	0.95	0	0.30	0	0.00	0.00
R21	86	0.95	218	0.30	304	0.01	0.48
R22	0	0.95	0	0.30	0	0.00	0.00
R23	0	0.95	201	0.30	201	0.00	0.30
R24	0	0.95	341	0.30	341	0.01	0.30
R25	0	0.95	450	0.30	450	0.01	0.30
R26	223	0.95	267	0.30	490	0.01	0.60
R27	0	0.95	0	0.30	0	0.00	0.00
R28	0	0.95	0	0.30	0	0.00	0.00
Total	**68,079**	**0.95**	**9,385**	**0.30**	**77,464**	**1.74**	**0.87**

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

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

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

Revisions
1 08.27.2020 SITE PLAN SUBMISSION
2 09.29.2020 REVISED PER SITE PLAN REVIEW #1
3 10.22.2020 REVISED PER SITE PLAN REVIEW #2
4 12.07.20 REVISED PER SITE PLAN REVIEW #3

Project Number 1051-19-9457 | Date 08/26/2020
P.M. CB | Checked by CB | Drawn by KMW | Crew/Book -

Client: AR BROUWER COMPANY

Project: LEWIS JEWELERS

Site Address: 300 S. MAPLE ROAD, ANN ARBOR, MICHIGAN 48103
County: WASHTENAW | Community: ANN ARBOR
Township: 2S | Range: 5E | Section: 25

Professional Name: CHRISTOPHER SUTTON, PE | Date: --

Title: SITE PLAN
STORM WATER MANAGEMENT PLAN

Drawing Scale: 1" = 20' | Sheet Number: 08

K:\2019\1051 JOB FOLDERS\1051-19-9457\Drawings\Plan Sets\Site Plan\9457-SWP.dwg

W1 SUBSURFACE DETENTION BASIN
DETERMINING POST-DEVELOPMENT COVER TYPES, AREAS, CURVE NUMBERS, AND RUNOFF COEFFIECIENTS

Total Site Area= 39403 sf, = 0.90 acres
Total Site Area Excluding "Self-Crediting" BMPs = 39403 sf, = 0.90 acres[1]

RATIONAL METHOD VARIABLES[2]					
Cover Type	Soil Type	Area (sf)	Area (Ac)	Runoff Coefficient, c	C*A
Grass/Lawn	B, 2% to 6%	1583	0.04	0.3	0.01
Gravel	B, 2% to 6%	0	0.00	0.85	0.00
Pavement/Roof	B, 2% to 6%	37820	0.87	0.95	0.82
Water Surface	B, 2% to 6%		0.00	1	0.00
				Total-∑C*A=	0.84
				Area Total-∑ac =	0.90
				Weighted C - ∑C*A/∑ac =	**0.92**

NRCS VARIABLES[3]					
Pervious Cover Type	Soil Type	Area (sf)	Area (Ac)	Curve Number (CN)	CN*A
Grass/Lawn	B, 2% to 6%	1583	0.04	69	2.51
Gravel	B, 2% to 6%	0	0.00	85	0.00
Pavement/Roof	B, 2% to 6%		0.00	98	0.00
Water Surface	B, 2% to 6%		0.00	98	0.00
				Total-∑CN*A=	2.51
				Area Total-∑ac =	0.04
				Weighted CN - ∑CN*A/∑ac =	**69**

NRCS VARIABLES[3]					
Impervious Cover Type	Soil Type	Area (sf)	Area (Ac)	Curve Number (CN)	CN*A
Grass/Lawn	B, 2% to 6%		0.00	69	0.00
Gravel	B, 2% to 6%		0.00	85	0.00
Pavement/Roof	B, 2% to 6%	37820	0.87	98	85.09
Water Surface	B, 2% to 6%	0	0.00	98	0.00
				Total-∑CN*A=	85.09
				Area Total-∑ac =	0.87
				Weighted CN - ∑CN*A/∑ac =	**98**

[1]Use this area for the remainder of the runoff calculations
[2]Required for first flush calculations
[3]Required for bankfull and 100-year runoff calculations

W2 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

First Flush Runoff Calculations

A= Total Site Areas (ac) Excluding "Self-Crediting" BMPs from Worksheet 1 = 0.90
C= Weighted Runoff Coefficient from Worksheet 1 = 0.92

A.
Vff= (1")(1'/12")(43560sf/1ac)*A*C — Vff (cf) = 3033.66

W3 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Pre-development Bankfull Runoff Calculations (Vbf-pre)

A. 2 year/24 hour storm event (in) — P= 2.35

B. The pre-develoment land cover will be Good Cover Woods or Meadow. Determine the associated soil hydrologic group for the entire site and choose the curve number — CN= 58

C. S=1000/CN-10 — S(in)= 7.24

D. Q=(P-0.2S)^2/(P+0.8S) — Q(in)= 0.10

E. Total Site Area (sf) excluding "Self-Crediting" BMPs — A(sf)= 39403

F. Vbf-pre = Q(1/12)Area — Vbf-pre (cf)= 327.87

W4 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Pervious Cover Post-Development Bankfull Runoff Calculations (Vbf-per-post)

A. 2 year/24 hour storm event (in) — P= 2.35

B. Pervious Cover CN From Worksheet 1 — CN= 69

C. S=1000/CN-10 — S(in)= 4.49

D. Q=(P-0.2S)^2/(P+0.8S) — Q(in)= 0.35

E. Pervious Cover Area from Worksheet 1 — A(sf)= 1583

F. Vbf-per-post = Q(1/12)Area — Vbf-per-post (cf)= 46.75

W5 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Impervious Cover Post-Development Bankfull Runoff Calculations (Vbf-imp-post)

A. 2 year/24 hour storm event (in) — P= 2.35

B. Impervious Cover CN From Worksheet 1 — CN= 98

C. S=1000/CN-10 — S(in)= 0.20

D. Q=(P-0.2S)^2/(P+0.8S) — Q(in)= 2.12

E. Impervious Cover Area from Worksheet 1 — A(sf)= 37820

F. Vbf-imp-post = Q(1/12)Area — Vbf-imp-post (cf)= 6686.81

W6 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Pervious Cover Post-Development100-Year Storm Runoff Calculations (V100-per-post)

A. 100-year storm event (in) — P= 5.11

B. Pervious Cover CN From Worksheet 1 — CN= 69

C. S=1000/CN-10 — S(in)= 4.49

D. Q=(P-0.2S)^2/(P+0.8S) — Q(in)= 2.04

E. Pervious Cover Area from Worksheet 1 — A(sf)= 1583

F. V100-per-post = Q(1/12)Area — V100-per-post (cf)= 268.80

W7 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Impervious Cover Post-Development100-Year Storm Runoff Calculations (V100-imp-post)

A. 100-year storm event (in) — P= 5.11

B. Impervious Cover CN From Worksheet 1 — CN= 98

C. S=1000/CN-10 — S(in)= 0.20

D. Q=(P-0.2S)^2/(P+0.8S) — Q(in)= 4.87

E. Impervious Cover Area from Worksheet 1 — A(sf)= 37820

F. V100-imp-post = Q(1/12)Area — V100-imp-post (cf)= 15358.07

W8 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Determine Time of Concentration for Applicable Flow Types (Tc-hrs)

Flow Type	K	Change in Elevation (ft)	Length (ft)	Slope %	√S	V=K*√S	Tc=L/(V*3600)
Sheet Flow*	0.48			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
						Total Time of Concentration (Tc-hrs)=	**0.25**

*Sheet flow cannot exceed 300 feet. Anything beyond this is considered waterway.

W9 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Runoff Summary & Onsite Infiltration Requirement

A. Runoff Summary from Previous Worksheets

First Flush Volume (Vff) — **3,033.66 cf**
Pre-Development Bankfull Runoff Volume (Vbf-pre) — **327.87 cf**
Pervious Cover Post-Development Bankfull Volume (Vbf-per-post) — 46.75 cf
Impervious Cover Post-Development Bankfull Volume (Vbf-imp-post) — 6,686.81 cf
Total BF Volume (Vbf-post) — **6,733.56 cf**
Pervious Cover Post-Development 100-Year Volume (V100-per-post) — 268.80 cf
Impervious Cover Post-Development 100-Year Volume (V100-imp-post) — 15,358.07 cf
Total 100-Year Volume (V100-post) — **15,626.88 cf**

B. Determine Onsite Infiltration Requirement

Subtract the Per-Development Bankfull from the Post-Development Bankfull Volume.

Total Post-Development Bankfull Volume (Vbf-post) — 6,733.56 cf
Pre-Development Bankfull Runoff Volume (Vbf-pre) — 327.87 cf
Bankfull Volume Difference — 6,405.69 cf

Compare the Bankfull Volume Difference with the First Flush Volume. The **greater** of the two is the On-site Infiltration Requirement.

Onsite Infiltration Requirement (Vinf) — 6,405.69 cf

W10 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Detention/Retention Requirement

Detention

A. Peak of the Unit Hydrograph
Tc From Worksheet 8 — Tc (min) = 0.25
Qp=238.6*Tc^(-0.82) — Qp(cfs/in-mi^2) = 743.63

B. Total Site Area (ac) excluding "Self-Crediting" BMPs — Area (ac) = 0.90

C.
Q100-per from Worksheet 6 — Q100-per (in) = 2.04
Q100-imp from Worksheet 7 — Q100-imp (in) = 4.87
Q100 = Q100-per + Q100-imp — Q100 (in) = 6.91

D. Peak Flow (PF) = (Qp*Q100*A)/640 — PF (cfs) = 7.26

E. Δ = PF - 0.15*A — Δ (cfs) = 7.13

F. Vdet = Required Detention*1.2
Vdet = (Δ/PF)*V100*1.2 — Vdet (cf) = 18,401.95

Retention

A. Vret = 2*V100 — Vret (cf) = 31,253.75

W11 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Determine Applicable BMPs and Associated Volume Credits

Proposed BMP[1]	Area (sf)	Storage Volume[2] (cf)	Ave. Design Infiltration Rate (in/hr)	Infiltration Volume During Storm[3] (cf)	Total Volume Reduction[4] (cf)
Porous Pavement w/ Infiltration Bed					
Infiltration Basin					
Subsurface Infiltration Bed					
Infiltration Trench					
Rain Garden/Bioretention					
Dry Well					
Vegitated Filter Strip					
Green Roof					

Total Volume Reduction Credit by Proposed Structural BMPs (cf) = 0.00
Runoff Volume Infiltration Requirement (Vinf) from Worksheet 9 = 6,405.69
Total Volume Reduction Credit by Proposed Structural BMPs (cf) = -6,405.69

[1]Complete checklist from Chapter VI for each Structural BMP type
[2]Storage volume as defined in individual BMP write-ups
[3]Approximated as the average design infiltration rate over 6 hours multiplied by the BMP area:
Infiltration Rate x 6 hours x BMP Area x Unit Conversions = Infiltration Volume (cf)
[4]Total Volume Reduction Credit is the sum of the Storage Volume and the Infiltration Volume During Storm

Project: Lewis Jewelers - North UG

StormTech

Chamber Model -	MC-4500	
Units -	Imperial	Click Here for Metric
Number of Chambers -	112	
Number of End Caps -	8	
Voids in the stone (porosity) -	25	%
Base of STORAGE Elevation -	938.32	ft
Amount of Stone Above Chambers -	43	in
Amount of Stone Below Chambers -	0	in
Area of system -	4878	sf Min. Area - 4353 sf min. area

☑ Include Perimeter Stone in Calculations

StormTech requires a minimum of 9 inches of stone below the chambers. This table is for modeling purposes only. Please see the engineer's drawings for the actual amount of stone under the chambers.

StormTech MC-4500 Cumulative Storage Volumes

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Single End Cap (cubic feet)	Incremental Chambers (cubic feet)	Incremental End Cap (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch, EC and Stone (cubic feet)	Cumulative System (cubic feet)	Elevation (feet)
103	0.00	0.00	0.00	0.00	101.63	101.63	19628.18	946.90
102	0.00	0.00	0.00	0.00	101.63	101.63	19526.56	946.82
101	0.00	0.00	0.00	0.00	101.63	101.63	19424.93	946.74
100	0.00	0.00	0.00	0.00	101.63	101.63	19323.31	946.65
99	0.00	0.00	0.00	0.00	101.63	101.63	19221.68	946.57
98	0.00	0.00	0.00	0.00	101.63	101.63	19120.06	946.49
97	0.00	0.00	0.00	0.00	101.63	101.63	19018.43	946.40
96	0.00	0.00	0.00	0.00	101.63	101.63	18916.81	946.32
95	0.00	0.00	0.00	0.00	101.63	101.63	18815.18	946.24
94	0.00	0.00	0.00	0.00	101.63	101.63	18713.56	946.15
93	0.00	0.00	0.00	0.00	101.63	101.63	18611.93	946.07
92	0.00	0.00	0.00	0.00	101.63	101.63	18510.31	945.99
91	0.00	0.00	0.00	0.00	101.63	101.63	18408.68	945.90
90	0.00	0.00	0.00	0.00	101.63	101.63	18307.06	945.82
89	0.00	0.00	0.00	0.00	101.63	101.63	18205.43	945.74
88	0.00	0.00	0.00	0.00	101.63	101.63	18103.81	945.65
87	0.00	0.00	0.00	0.00	101.63	101.63	18002.18	945.57
86	0.00	0.00	0.00	0.00	101.63	101.63	17900.56	945.49
85	0.00	0.00	0.00	0.00	101.63	101.63	17798.93	945.40
84	0.00	0.00	0.00	0.00	101.63	101.63	17697.31	945.32
83	0.00	0.00	0.00	0.00	101.63	101.63	17595.68	945.24
82	0.00	0.00	0.00	0.00	101.63	101.63	17494.06	945.15
81	0.00	0.00	0.00	0.00	101.63	101.63	17392.43	945.07
80	0.00	0.00	0.00	0.00	101.63	101.63	17290.81	944.99
79	0.00	0.00	0.00	0.00	101.63	101.63	17189.18	944.90
78	0.00	0.00	0.00	0.00	101.63	101.63	17087.56	944.82
77	0.00	0.00	0.00	0.00	101.63	101.63	16985.93	944.74
76	0.00	0.00	0.00	0.00	101.63	101.63	16884.31	944.65
75	0.00	0.00	0.00	0.00	101.63	101.63	16782.68	944.57
74	0.00	0.00	0.00	0.00	101.63	101.63	16681.06	944.49
73	0.00	0.00	0.00	0.00	101.63	101.63	16579.43	944.40
72	0.00	0.00	0.00	0.00	101.63	101.63	16477.81	944.32
71	0.00	0.00	0.00	0.00	101.63	101.63	16376.18	944.24
70	0.00	0.00	0.00	0.00	101.63	101.63	16274.56	944.15
69	0.00	0.00	0.00	0.00	101.63	101.63	16172.93	944.07
68	0.00	0.00	0.00	0.00	101.63	101.63	16071.31	943.99
67	0.00	0.00	0.00	0.00	101.63	101.63	15969.68	943.90
66	0.00	0.00	0.00	0.00	101.63	101.63	15868.06	943.82
65	0.00	0.00	0.00	0.00	101.63	101.63	15766.43	943.74
64	0.00	0.00	0.00	0.00	101.63	101.63	15664.81	943.65
63	0.00	0.00	0.00	0.00	101.63	101.63	15563.18	943.57
62	0.00	0.00	0.00	0.00	101.63	101.63	15461.56	943.49
61	0.00	0.00	0.00	0.00	101.63	101.63	15359.93	943.40
60	0.04	0.00	4.59	0.00	100.48	105.07	15258.31	943.32
59	0.12	0.01	13.00	0.08	98.35	111.44	15153.24	943.24
58	0.16	0.03	18.45	0.21	96.96	115.62	15041.80	943.15
57	0.21	0.05	23.38	0.38	95.69	119.44	14926.18	943.07
56	0.27	0.07	30.05	0.54	93.98	124.57	14806.74	942.99
55	0.45	0.09	50.71	0.70	88.77	140.19	14682.17	942.90
54	0.67	0.11	74.51	0.90	82.77	158.18	14541.98	942.82
53	0.80	0.14	89.49	1.13	78.97	169.59	14383.80	942.74
52	0.91	0.17	101.71	1.34	75.86	178.91	14214.21	942.65
51	1.00	0.19	112.33	1.53	73.16	187.02	14035.29	942.57
50	1.09	0.22	121.78	1.72	70.75	194.25	13848.27	942.49
49	1.16	0.24	130.31	1.93	68.56	200.81	13654.02	942.40
48	1.23	0.27	138.21	2.16	66.53	206.90	13453.22	942.32
47	1.30	0.30	145.56	2.38	64.64	212.58	13246.31	942.24
46	1.36	0.32	152.44	2.59	62.87	217.89	13033.73	942.15
45	1.42	0.35	158.90	2.78	61.21	222.88	12815.84	942.07
44	1.47	0.37	165.01	2.97	59.63	227.61	12592.95	941.99
43	1.53	0.39	170.82	3.15	58.13	232.10	12365.34	941.90
42	1.57	0.42	176.34	3.34	56.70	236.39	12133.24	941.82
41	1.62	0.44	181.60	3.52	55.35	240.46	11896.85	941.74
40	1.67	0.46	186.62	3.70	54.05	244.36	11656.39	941.65
39	1.71	0.48	191.42	3.87	52.80	248.09	11412.03	941.57
38	1.75	0.50	196.01	4.04	51.61	251.66	11163.93	941.49
37	1.79	0.53	200.40	4.20	50.47	255.08	10912.27	941.40
36	1.83	0.55	204.65	4.36	49.37	258.38	10657.19	941.32
35	1.86	0.56	208.71	4.52	48.32	261.54	10398.81	941.24
34	1.90	0.58	212.61	4.67	47.31	264.58	10137.27	941.15
33	1.93	0.60	216.37	4.81	46.33	267.51	9872.69	941.07
32	1.96	0.62	219.98	4.96	45.39	270.33	9605.18	940.99
31	2.00	0.64	223.45	5.10	44.49	273.04	9334.85	940.90
30	2.03	0.66	226.80	5.25	43.61	275.66	9061.81	940.82
29	2.05	0.67	230.02	5.39	42.77	278.18	8786.15	940.74
28	2.08	0.69	233.13	5.52	41.96	280.61	8507.97	940.65
27	2.11	0.71	236.10	5.66	41.18	282.95	8227.35	940.57
26	2.13	0.72	238.99	5.79	40.43	285.21	7944.41	940.49
25	2.16	0.74	241.77	5.92	39.70	287.39	7659.20	940.40
24	2.18	0.76	244.44	6.05	39.00	289.49	7371.80	940.32
23	2.21	0.77	247.02	6.17	38.33	291.52	7082.31	940.24
22	2.23	0.79	249.50	6.30	37.68	293.47	6790.79	940.15
21	2.25	0.80	251.87	6.41	37.05	295.34	6497.32	940.07
20	2.27	0.82	254.17	6.57	36.44	297.17	6201.98	939.99
19	2.29	0.84	256.37	6.73	35.85	298.94	5904.80	939.90
18	2.31	0.85	258.48	6.77	35.31	300.56	5605.86	939.82
17	2.33	0.86	260.51	6.87	34.78	302.16	5305.30	939.74
16	2.34	0.87	262.45	6.98	34.27	303.69	5003.14	939.65
15	2.36	0.89	264.31	7.08	33.78	305.17	4699.45	939.57
14	2.38	0.90	266.09	7.18	33.31	306.58	4394.28	939.49
13	2.39	0.91	267.79	7.28	32.86	307.93	4087.70	939.40
12	2.41	0.92	269.41	7.38	32.43	309.22	3779.77	939.32
11	2.42	0.93	270.96	7.47	32.02	310.45	3470.55	939.24
10	2.43	0.95	272.43	7.56	31.63	311.62	3160.10	939.15
9	2.44	0.96	273.82	7.65	31.26	312.73	2848.49	939.07
8	2.46	0.97	275.14	7.74	30.90	313.79	2535.75	938.99
7	2.47	0.98	276.39	7.82	30.57	314.79	2221.97	938.90
6	2.48	0.99	277.57	7.90	30.26	315.73	1907.18	938.82
5	2.49	1.00	278.68	7.98	29.96	316.62	1591.45	938.74
4	2.50	1.01	279.74	8.06	29.68	317.47	1274.83	938.65
3	2.51	1.02	280.73	8.13	29.41	318.27	957.36	938.57
2	2.51	1.02	281.65	8.20	29.16	319.01	639.09	938.49
1	2.53	1.03	283.02	8.26	28.81	320.08	320.08	938.40

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

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

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

Revisions
1 — 08.27.2020 SITE PLAN SUBMISSION
2 — 09.29.2020 REVISED PER SITE PLAN REVIEW #1
3 — 10.22.2020 REVISED PER SITE PLAN REVIEW #2
4 — 12.07.20 REVISED PER SITE PLAN REVIEW #3

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Project Number	Date		
1051–19–9457	08/26/2020		
P.M.	Checked by	Drawn by	Crew/Book
CB	CB	KMW	.

Client: **AR BROUWER COMPANY**

Project: **LEWIS JEWELERS**

Site Address: 300 S. MAPLE ROAD, ANN ARBOR, MICHIGAN 48103

County: WASHTENAW — Community: ANN ARBOR

Township: 2S — Range: 5E — Section: 25

Professional Name: CHRISTOPHER SUTTON, PE — Date: ——

Title: **SITE PLAN**
STORM WATER MANAGEMENT CALCULATIONS - NORTH

Drawing Scale — Sheet Number: **09**

K:\2019\1051 JOB FOLDERS\1051-19-9457\Drawings\Plan Sets\Site Plan\9457-SWMP-07.dwg

W1 SUBSURFACE DETENTION BASIN
DETERMINING POST-DEVELOPMENT COVER TYPES, AREAS, CURVE NUMBERS, AND RUNOFF COEFFIECIENTS

Total Site Area= 35902 sf, = 0.82 acres
Total Site Area Excluding "Self-Crediting" BMPs = 34939 sf, = 0.80 acres[1]

RATIONAL METHOD VARIABLES[2]					
Cover Type	Soil Type	Area (sf)	Area (Ac)	Runoff Coefficient, c	C*A
Grass/Lawn	B, 2% to 6%	6225	0.14	0.3	0.04
Gravel	B, 2% to 6%	0	0.00	0.85	0.00
Pavement/Roof	B, 2% to 6%	29677	0.68	0.95	0.65
Water Surface	B, 2% to 6%		0.00	1	0.00
				Total-∑C*A=	0.69
				Area Total-∑ac =	0.82
				Weighted C - ∑C*A/∑ac =	**0.84**

NRCS VARIABLES[3]					
Pervious Cover Type	Soil Type	Area (sf)	Area (Ac)	Curve Number (CN)	CN*A
Grass/Lawn	B, 2% to 6%	6225	0.14	69	9.86
Gravel	B, 2% to 6%	0	0.00	85	0.00
Pavement/Roof	B, 2% to 6%		0.00	98	0.00
Water Surface	B, 2% to 6%		0.00	98	0.00
				Total-∑CN*A=	9.86
				Area Total-∑ac =	0.14
				Weighted CN - ∑CN*A/∑ac =	**69**

NRCS VARIABLES[3]					
Impervious Cover Type	Soil Type	Area (sf)	Area (Ac)	Curve Number (CN)	CN*A
Grass/Lawn	B, 2% to 6%		0.00	69	0.00
Gravel	B, 2% to 6%		0.00	85	0.00
Pavement/Roof	B, 2% to 6%	29677	0.68	98	66.77
Water Surface	B, 2% to 6%	0	0.00	98	0.00
				Total-∑CN*A=	66.77
				Area Total-∑ac =	0.68
				Weighted CN - ∑CN*A/∑ac =	**98**

[1]Use this area for the remainder of the runoff calculations
[2]Required for first flush calculations
[3]Required for bankfull and 100-year runoff calculations

W2 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

First Flush Runoff Calculations

A= Total Site Areas (ac) Excluding "Self-Crediting" BMPs from Worksheet 1 = 0.80
C= Weighted Runoff Coefficient from Worksheet 1 = 0.84

A.
Vff= (1")(1'/12")(43560sf/1ac)*A*C — Vff (cf) = 2437.86

W3 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Pre-development Bankfull Runoff Calculations (Vbf-pre)

A. 2 year/24 hour storm event (in) — P= 2.35

B. The pre-develoment land cover will be Good Cover Woods or Meadow. Determine the associated soil hydrologic group for the entire site and choose the curve number — CN= 58

C. S=1000/CN-10 — S(in)= 7.24

D. Q=(P-0.2S)^2/(P+0.8S) — Q(in)= 0.10

E. Total Site Area (sf) excluding "Self-Crediting" BMPs — A(sf)= 34939

F. Vbf-pre = Q(1/12)Area — Vbf-pre (cf)= 290.73

W4 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Pervious Cover Post-Development Bankfull Runoff Calculations (Vbf-per-post)

A. 2 year/24 hour storm event (in) — P= 2.35

B. Pervious Cover CN From Worksheet 1 — CN= 69

C. S=1000/CN-10 — S(in)= 4.49

D. Q=(P-0.2S)^2/(P+0.8S) — Q(in)= 0.35

E. Pervious Cover Area from Worksheet 1 — A(sf)= 6225

F. Vbf-per-post = Q(1/12)Area — Vbf-per-post (cf)= 183.85

W5 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Impervious Cover Post-Development Bankfull Runoff Calculations (Vbf-imp-post)

A. 2 year/24 hour storm event (in) — P= 2.35

B. Impervious Cover CN From Worksheet 1 — CN= 98

C. S=1000/CN-10 — S(in)= 0.20

D. Q=(P-0.2S)^2/(P+0.8S) — Q(in)= 2.12

E. Impervious Cover Area from Worksheet 1 — A(sf)= 29677

F. Vbf-imp-post = Q(1/12)Area — Vbf-imp-post (cf)= 5247.08

W6 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Pervious Cover Post-Development100-Year Storm Runoff Calculations (V100-per-post)

A. 100-year storm event (in) — P= 5.11

B. Pervious Cover CN From Worksheet 1 — CN= 69

C. S=1000/CN-10 — S(in)= 4.49

D. Q=(P-0.2S)^2/(P+0.8S) — Q(in)= 2.04

E. Pervious Cover Area from Worksheet 1 — A(sf)= 6225

F. V100-per-post = Q(1/12)Area — V100-per-post (cf)= 1057.04

W7 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Impervious Cover Post-Development100-Year Storm Runoff Calculations (V100-imp-post)

A. 100-year storm event (in) — P= 5.11

B. Impervious Cover CN From Worksheet 1 — CN= 98

C. S=1000/CN-10 — S(in)= 0.20

D. Q=(P-0.2S)^2/(P+0.8S) — Q(in)= 4.87

E. Impervious Cover Area from Worksheet 1 — A(sf)= 29677

F. V100-imp-post = Q(1/12)Area — V100-imp-post (cf)= 12051.34

W8 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Determine Time of Concentration for Applicable Flow Types (Tc-hrs)

Flow Type	K	Change in Elevation (ft)	Length (ft)	Slope %	√S	V=K*√S	Tc=L/(V*3600)
Sheet Flow*	0.48			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Waterway	1.2			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00
Small Tributary	2.1			0.00	0.00	0.00	0.00

*Sheet flow cannot exceed 300 feet. Anything beyond this is considered waterway.

Total Time of Concentration (Tc-hrs)= 0.25

W9 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Runoff Summary & Onsite Infiltration Requirement

A. Runoff Summary from Previous Worksheets

First Flush Volume (Vff)	**2,437.86 cf**
Pre-Development Bankfull Runoff Volume (Vbf-pre)	**290.73 cf**
Pervious Cover Post-Development Bankfull Volume (Vbf-per-post)	183.85 cf
Impervious Cover Post-Development Bankfull Volume (Vbf-imp-post)	5,247.08 cf
Total BF Volume (Vbf-post)	**5,430.93 cf**
Pervious Cover Post-Development 100-Year Volume (V100-per-post)	1,057.04 cf
Impervious Cover Post-Development 100-Year Volume (V100-imp-post)	12,051.34 cf
Total 100-Year Volume (V100-post)	**13,108.38 cf**

B. Determine Onsite Infiltration Requirement

Subtract the Per-Development Bankfull from the Post-Development Bankfull Volume.

Total Post-Development Bankfull Volume (Vbf-post)	5,430.93 cf
Pre-Development Bankfull Runoff Volume (Vbf-pre)	290.73 cf
Bankfull Volume Difference	5,140.20 cf

Compare the Bankfull Volume Difference with the First Flush Volume. The **greater** of the two is the On-site Infiltration Requirement.

Onsite Infiltration Requirement (Vinf) — 5,140.20 cf

W10 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Detention/Retention Requirement

Detention

A. Peak of the Unit Hydrograph
Tc From Worksheet 8 — Tc (min) = 0.25
Qp=238.6*Tc^(-0.82) — Qp(cfs/in-mi^2) = 743.63

B. Total Site Area (ac) excluding "Self-Crediting" BMPs — Area (ac) = 0.80

C.
Q100-per from Worksheet 6 — Q100-per (in) = 2.04
Q100-imp from Worksheet 7 — Q100-imp (in) = 4.87
Q100 = Q100-per + Q100-imp — Q100 (in) = 6.91

D. Peak Flow (PF) = (Qp*Q100*A)/640 — PF (cfs) = 6.44

E. Δ = PF - 0.15*A — Δ (cfs) = 6.32

F. Vdet = Required Detention*1.2
Vdet = (Δ/PF)*V100*1.2 — Vdet (cf) = 15,436.21

Retention

A. Vret = 2*V100 — Vret (cf) = 26,216.76

W11 SUBSURFACE DETENTION BASIN
STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Determine Applicable BMPs and Associated Volume Credits

Proposed BMP[1]	Area (sf)	Storage Volume[2] (cf)	Ave. Design Infiltration Rate (in/hr)	Infiltration Volume During Storm[3] (cf)	Total Volume Reduction[4] (cf)
Porous Pavement w/ Infiltration Bed					
Infiltration Basin					
Subsurface Infiltration Bed					
Infiltration Trench					
Rain Garden/Bioretention	2280		0.5	570.00	570.00
Dry Well					
Vegitated Filter Strip					
Green Roof					

Total Volume Reduction Credit by Proposed Structural BMPs (cf) = 570.00
Runoff Volume Infiltration Requirement (Vinf) from Worksheet 9 = 5,140.20
Total Volume Reduction Credit by Proposed Structural BMPs (cf) = -4,570.20

[1]Complete checklist from Chapter VI for each Structural BMP type
[2]Storage volume as defined in individual BMP write-ups
[3]Approximated as the average design infiltration rate over 6 hours multiplied by the BMP area:
Infiltration Rate x 6 hours x BMP Area x Unit Conversions = Infiltration Volume (cf)
[4]Total Volume Reduction Credit is the sum of the Storage Volume and the Infiltration Volume During Storm

Project: Lewis Jewelers - South UG

StormTech

Chamber Model -	MC-4500	
Units -	Imperial	Click Here for Metric
Number of Chambers -	84	
Number of End Caps -	20	
Voids in the stone (porosity) -	25	%
Base of STORAGE Elevation -	935.62	ft
Amount of Stone Above Chambers -	42	in
Amount of Stone Below Chambers -	0	in
Area of system -	4367	sf Min. Area - 3718 sf min. area

☑ Include Perimeter Stone in Calculations

StormTech requires a minimum of 9 inches of stone below the chambers. This table is for modeling purposes only. Please see the engineer's drawings for the actual amount of stone under the chambers.

StormTech MC-4500 Cumulative Storage Volumes

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Single End Cap (cubic feet)	Incremental Chambers (cubic feet)	Incremental End Cap (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch, EC and Stone (cubic feet)	Cumulative System (cubic feet)	Elevation (feet)
102	0.00	0.00	0.00	0.00	90.98	90.98	16525.42	944.12
101	0.00	0.00	0.00	0.00	90.98	90.98	16434.44	944.04
100	0.00	0.00	0.00	0.00	90.98	90.98	16343.46	943.95
99	0.00	0.00	0.00	0.00	90.98	90.98	16252.48	943.87
98	0.00	0.00	0.00	0.00	90.98	90.98	16161.50	943.79
97	0.00	0.00	0.00	0.00	90.98	90.98	16070.52	943.70
96	0.00	0.00	0.00	0.00	90.98	90.98	15979.54	943.62
95	0.00	0.00	0.00	0.00	90.98	90.98	15888.56	943.54
94	0.00	0.00	0.00	0.00	90.98	90.98	15797.58	943.45
93	0.00	0.00	0.00	0.00	90.98	90.98	15706.60	943.37
92	0.00	0.00	0.00	0.00	90.98	90.98	15615.63	943.29
91	0.00	0.00	0.00	0.00	90.98	90.98	15524.65	943.20
90	0.00	0.00	0.00	0.00	90.98	90.98	15433.67	943.12
89	0.00	0.00	0.00	0.00	90.98	90.98	15342.69	943.04
88	0.00	0.00	0.00	0.00	90.98	90.98	15251.71	942.95
87	0.00	0.00	0.00	0.00	90.98	90.98	15160.73	942.87
86	0.00	0.00	0.00	0.00	90.98	90.98	15069.75	942.79
85	0.00	0.00	0.00	0.00	90.98	90.98	14978.77	942.70
84	0.00	0.00	0.00	0.00	90.98	90.98	14887.79	942.62
83	0.00	0.00	0.00	0.00	90.98	90.98	14796.81	942.54
82	0.00	0.00	0.00	0.00	90.98	90.98	14705.83	942.45
81	0.00	0.00	0.00	0.00	90.98	90.98	14614.85	942.37
80	0.00	0.00	0.00	0.00	90.98	90.98	14523.88	942.29
79	0.00	0.00	0.00	0.00	90.98	90.98	14432.90	942.20
78	0.00	0.00	0.00	0.00	90.98	90.98	14341.92	942.12
77	0.00	0.00	0.00	0.00	90.98	90.98	14250.94	942.04
76	0.00	0.00	0.00	0.00	90.98	90.98	14159.96	941.95
75	0.00	0.00	0.00	0.00	90.98	90.98	14068.98	941.87
74	0.00	0.00	0.00	0.00	90.98	90.98	13978.00	941.79
73	0.00	0.00	0.00	0.00	90.98	90.98	13887.02	941.70
72	0.00	0.00	0.00	0.00	90.98	90.98	13796.04	941.62
71	0.00	0.00	0.00	0.00	90.98	90.98	13705.06	941.54
70	0.00	0.00	0.00	0.00	90.98	90.98	13614.08	941.45
69	0.00	0.00	0.00	0.00	90.98	90.98	13523.10	941.37
68	0.00	0.00	0.00	0.00	90.98	90.98	13432.13	941.29
67	0.00	0.00	0.00	0.00	90.98	90.98	13341.15	941.20
66	0.00	0.00	0.00	0.00	90.98	90.98	13250.17	941.12
65	0.00	0.00	0.00	0.00	90.98	90.98	13159.19	941.04
64	0.00	0.00	0.00	0.00	90.98	90.98	13068.21	940.95
63	0.00	0.00	0.00	0.00	90.98	90.98	12977.23	940.87
62	0.00	0.00	0.00	0.00	90.98	90.98	12886.25	940.79
61	0.00	0.00	0.00	0.00	90.98	90.98	12795.27	940.70
60	0.04	0.00	3.44	0.00	90.12	93.56	12704.29	940.62
59	0.12	0.01	9.75	0.20	88.49	98.44	12610.73	940.54
58	0.16	0.03	13.84	0.53	87.39	101.75	12512.29	940.45
57	0.21	0.05	17.53	0.95	86.36	104.84	12410.53	940.37
56	0.27	0.07	22.54	1.35	85.01	108.90	12305.69	940.29
55	0.45	0.09	38.03	1.75	81.03	120.82	12196.79	940.20
54	0.67	0.11	55.88	2.26	76.44	134.58	12075.97	940.12
53	0.80	0.14	67.12	2.83	73.49	143.44	11941.39	940.04
52	0.91	0.17	76.28	3.35	71.07	150.70	11797.95	939.95
51	1.00	0.19	84.24	3.83	68.96	157.04	11647.25	939.87
50	1.09	0.22	91.34	4.30	67.07	162.71	11490.21	939.79
49	1.16	0.24	97.73	4.83	65.34	167.90	11327.50	939.70
48	1.23	0.27	103.66	5.40	63.71	172.77	11159.60	939.62
47	1.30	0.30	109.17	5.95	62.20	177.32	10986.83	939.54
46	1.36	0.32	114.33	6.47	60.78	181.58	10809.50	939.45
45	1.42	0.35	119.17	6.96	59.45	185.57	10627.93	939.37
44	1.47	0.37	123.76	7.42	58.18	189.37	10442.35	939.29
43	1.53	0.39	128.11	7.88	56.98	192.98	10252.99	939.20
42	1.57	0.42	132.26	8.35	55.83	196.43	10060.01	939.12
41	1.62	0.44	136.20	8.81	54.73	199.73	9863.58	939.04
40	1.67	0.46	139.96	9.25	53.68	202.89	9663.85	938.95
39	1.71	0.48	143.57	9.68	52.67	205.91	9460.96	938.87
38	1.75	0.50	147.01	10.10	51.70	208.81	9255.04	938.79
37	1.79	0.53	150.30	10.50	50.78	211.58	9046.24	938.70
36	1.83	0.55	153.48	10.90	49.88	214.27	8834.65	938.62
35	1.86	0.56	156.53	11.29	49.02	216.84	8620.38	938.54
34	1.90	0.58	159.46	11.67	48.20	219.32	8403.54	938.45
33	1.93	0.60	162.27	12.03	47.40	221.71	8184.22	938.37
32	1.96	0.62	164.98	12.40	46.63	224.02	7962.51	938.29
31	2.00	0.64	167.59	12.76	45.89	226.24	7738.49	938.20
30	2.03	0.66	170.10	13.12	45.18	228.39	7512.25	938.12
29	2.05	0.67	172.52	13.46	44.48	230.47	7283.86	938.04
28	2.08	0.69	174.85	13.81	43.82	232.47	7053.39	937.95
27	2.11	0.71	177.08	14.14	43.17	234.40	6820.93	937.87
26	2.13	0.72	179.24	14.48	42.55	236.27	6586.53	937.79
25	2.16	0.74	181.33	14.80	41.95	238.08	6350.26	937.70
24	2.18	0.76	183.33	15.12	41.37	239.82	6112.18	937.62
23	2.21	0.77	185.26	15.43	40.81	241.50	5872.36	937.54
22	2.23	0.79	187.12	15.74	40.26	243.12	5630.86	937.45
21	2.25	0.80	188.91	16.04	39.74	244.69	5387.74	937.37
20	2.27	0.82	190.63	16.41	39.22	246.26	5143.05	937.29
19	2.29	0.84	192.27	16.82	38.71	247.80	4896.79	937.20
18	2.31	0.85	193.86	16.92	38.29	249.06	4649.00	937.12
17	2.33	0.86	195.38	17.17	37.84	250.39	4399.93	937.04
16	2.34	0.87	196.84	17.44	37.41	251.69	4149.54	936.95
15	2.36	0.89	198.23	17.70	37.00	252.93	3897.85	936.87
14	2.38	0.90	199.57	17.96	36.60	254.12	3644.92	936.79
13	2.39	0.91	200.84	18.21	36.22	255.27	3390.80	936.70
12	2.41	0.92	202.06	18.45	35.85	256.36	3135.53	936.62
11	2.42	0.93	203.22	18.68	35.50	257.41	2879.17	936.54
10	2.43	0.95	204.32	18.91	35.17	258.40	2621.77	936.45
9	2.44	0.96	205.37	19.13	34.85	259.36	2363.36	936.37
8	2.46	0.97	206.36	19.35	34.55	260.26	2104.01	936.29
7	2.47	0.98	207.29	19.56	34.27	261.12	1843.75	936.20
6	2.48	0.99	208.18	19.76	34.00	261.93	1582.63	936.12
5	2.49	1.00	209.01	19.95	33.74	262.70	1320.70	936.04
4	2.50	1.01	209.81	20.14	33.49	263.44	1058.00	935.95
3	2.51	1.02	210.55	20.32	33.26	264.13	794.56	935.87
2	2.51	1.02	211.24	20.49	33.05	264.77	530.44	935.79
1	2.53	1.03	212.26	20.65	32.75	265.66	265.66	935.70

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Revisions

1	08.27.2020 SITE PLAN SUBMISSION
2	09.29.2020 REVISED PER SITE PLAN REVIEW #1
3	10.22.2020 REVISED PER SITE PLAN REVIEW #2
4	12.07.20 REVISED PER SITE PLAN REVIEW #3

MCA METROCA.NET
RELATIONSHIPS - REPUTATION - RESULTS
800.525.6016

Project Number: 1051–19–9457		Date: 08/26/2020	
P.M.: CB	Checked by: CB	Drawn by: KMW	Crew/Book: .

Client: **AR BROUWER COMPANY**

Project: **LEWIS JEWELERS**

Site Address: 300 S. MAPLE ROAD, ANN ARBOR, MICHIGAN 48103

County: WASHTENAW — Community: ANN ARBOR

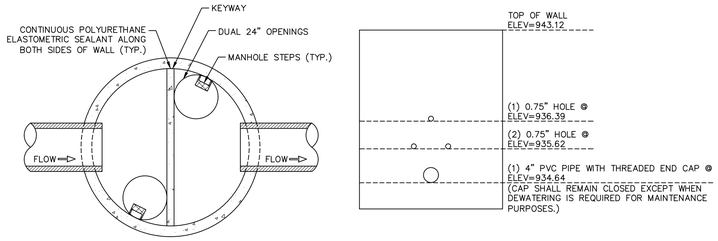
Township: 2S — Range: 5E — Section: 25

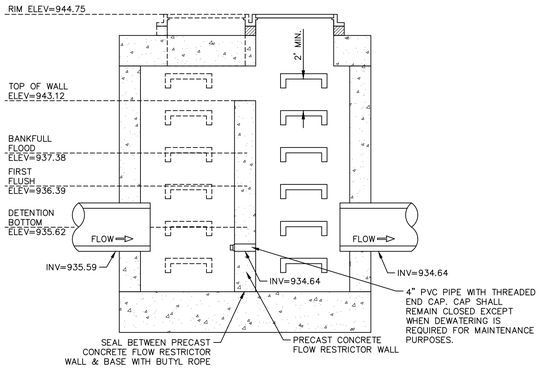
Professional Name: CHRISTOPHER SUTTON, PE — Date: ——

Title: **SITE PLAN**
STORM WATER MANAGEMENT CALCULATIONS - SOUTH

Drawing Scale — Sheet Number: **10**

K:\2019\1051 JOB FOLDERS\1051-19-9457\Drawings\Plan Sets\Site Plan\9457-SWMP-07.dwg





SECTION "A-A"

1. THIS TYPE OF FLOW RESTRICTOR STRUCTURE TO BE USED ONLY WITH UNDERGROUND DETENTION SYSTEMS..
2. THE PRECAST REINFORCED FLOW RESTRICTOR STRUCTURE SHALL BE MANUFACTURED PER ASTM C-478 SPECIFICATIONS AND MEETING HS20 LOADING REQUIREMENTS
3. CONTRACTOR TO PROVIDE SHOP DRAWING, INCLUDING REINFORCEMENT, PRIOR TO CONSTRUCTION.

OUTLET CONTROL STRUCTURE (R02)

NOT TO SCALE

Storage Elevations					
	Xo =	935.62	Xff=	936.39	
	Xbf=	937.37	X100 =	942.99	

Outlet Control Structure

1. outlet holes sizing - "first flush" runoff

First Flush must be released in a minimum of 24 hours

Qff= Vff / 24 hrs / 3600 sec	Qff=	0.0280	cfs
h = 2/3 x (Xff - Xo)	h =	0.51	ft
A = Qff / .62 x sqrt(2*32.2*h)	A =	0.0079	sf
The area of a 0.75" orifice		0.0031	sf
Number of orifice holes	=	2	holes at elev. 935.62
Qact = 0.62 x #orif x Aorif x sqrt(2x32.2xh) =	Qact =	0.022	cfs
Tff= Vff / Qact	Tff=	30.7	hrs

2. outlet holes sizing - "Bankfull flood" discharge

Bankfull must be detained between 36 to 48 hours

h = 2/3 x (Xbf - Xo)	h =	1.17	ft
Qbf= 0.62 x #orif x Aorif x sqrt(2x32.2xh) =	Qbf=	0.033	cfs
Tbf= Vbf / Qbf (with first flush holes only)	Tbf=	45.4	hrs
Add holes at to decrease storage time			
The first flush volume will discharge in	Tff=	30.7	hrs
The volume between the Bankfull elevation and the First Flush Elevation			
Vrem = Vbf - Vff	Vrem =	2,983	cf
Trem = should discharge (target 48 hour discharge time) in	Trem =	17.3	hrs
Hff= 2/3 x (Xbf - Xff) + (Xff - Xo)	Hff=	1.43	ft
Qff+bf= 0.62 x #orif x Aorif x sqrt(2x32.2xh)	Qff+bf=	0.036	cfs
Vff+bf= Trem x Qff+bf	Vff+bf=	2,263	cf
Vbf= Vrem - Vff+bf	Vbf=	720	cf
Qbf= Vbf/Trem	Qbf=	0.012	cfs
Hbf= 2/3 x (Xbf - Xff)	Hbf=	0.66	ft
Abf= Qbf / 0.62 x sqrt(2*32.2*Hbf)	Abf=	0.0029	sf
The area of a 0.75" orifice		0.0031	sf
Number of orifice holes	=	1	holes at elev 936.39
Qact = 0.62 x #orif x Aorif x sqrt(2x32.2xh) =	Qact =	0.012	cfs
Tbf= Tff + Vrem / (Qff + Qbf)*(3600/1)	Tbf=	47.7	hrs

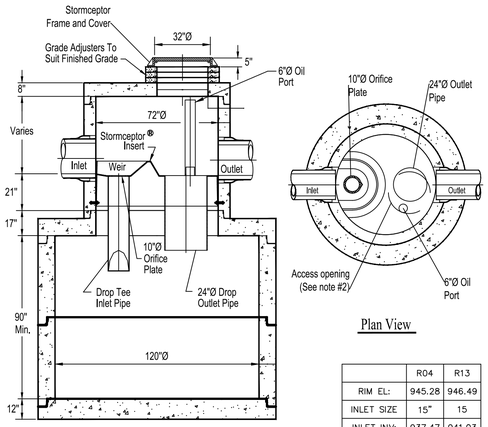
3. outlet holes sizing - "100-yr flood" discharge

Area, a =	A =	0.81	ac
Qa = 0.15 x A	Qa =	0.122	cfs
Qff+Qbf = 0.62 x #florif x Aflorif x sqrt(64.4 (X100 - Xo)) + 0.62 x #bforif x Abforif x sqrt(64.4 (X100 - Xff))	Qff+Qbf=	0.122	cfs
Q100 = Qa - (Qff + Qbf)	Q100 =	-0.001	cfs
A100 = Q100 / (0.62 x sqrt(2*32.2 x (X100 - Xbf)	A100 =	0.0000	sf
The area of a 0.75" orifice		0.0031	sf
Number of orifice holes	=	0	holes at elev 937.37
Qff + Qbf + 0.62 x #orif x A100 x sqrt(2*32.2*h100) < Qa		0.122	< Qa
Hall = 2/3 x (X100 - Xbf) + (Xbf - Xo)	Hall =	5.50	ft
Qall = 0.62 x #florif x Aflorif x sqrt(2*32.2*Hall)	Qall =	0.072	cfs
Hbf= 2/3 x (X100 - Xbf) + (Xbf - Xff)	Hbf=	4.73	ft
Qbf+100 = 0.62 x #bforif x Abforif x sqrt(2*32.2*Hbf)	Qbf+100 =	0.033	cfs
H100 = 2/3 x (X100 - Xbf)	H100 =	3.74	ft
Q100avg = 0.62 x #100orif x A100orif x sqrt(2+32.2*H100)	Q100avg =	0.000	cfs
Vrem = V100 - Vbf	Vrem =	9,889	cf
T100 = Tbf + Vrem / (Qall + Qbf+100 + Qall)	T100 =	71.7	hrs

Rinker MATERIALS

Concrete Pipe Division

STC 4800 Precast Concrete Stormceptor®
(4800 U.S. Gallon Capacity)



	R04	R13
RIM EL:	945.28	946.49
INLET SIZE	15"	15
INLET INV:	937.47	941.03
OUTLET SIZE	15"	15
OUTLET INV:	936.52	939.23

Notes:

1. The Use Of Flexible Connection is Recommended at The Inlet and Outlet Where Applicable.
2. The Cover Should be Positioned Over The Outlet Drop Pipe and The Oil Port.
3. The Stormceptor System is protected by one or more of the following U.S. Patents: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
4. Contact a Concrete Pipe Division representative for further details not listed on this drawing.

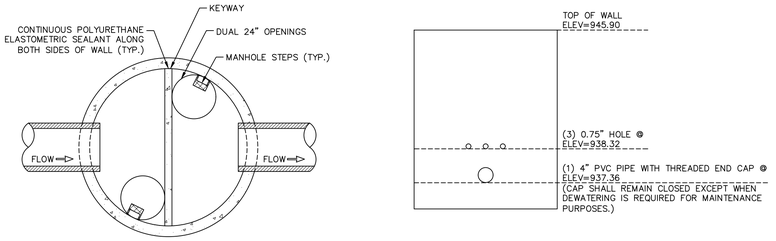
Rinker 033

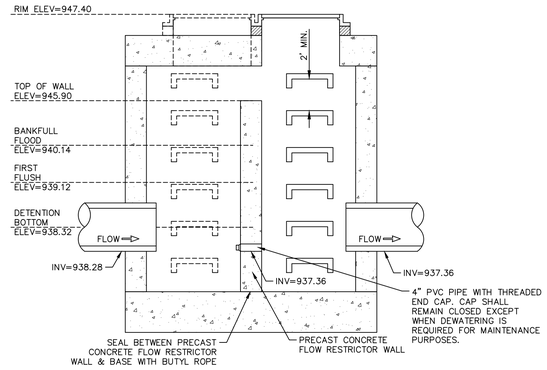
WAYNE COUNTY NOTE:

THE STORMCEPTOR STRUCTURE MUST BE FABRICATED AS PER SHOP DRAWINGS THAT HAVE BEEN APPROVED BY WAYNE COUNTY. THE MANUFACTURER MUST CONTACT WAYNE COUNTY TESTING OFFICE AT (734) 595-6504 x2015 AT LEAST 3 WORKING DAYS PRIOR TO FABRICATION TO SCHEDULE INSPECTION DURING FABRICATION.

WATER QUALITY CONTROL STRUCTURE (R04, R13)

NOT TO SCALE





SECTION "A-A"

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OUTLET CONTROL STRUCTURE (R11)

NOT TO SCALE

Storage Elevations					
	Xo =	938.32	Xff=	939.12	
	Xbf=	940.14	X100 =	945.90	

Outlet Control Structure

1. outlet holes sizing - "first flush" runoff

First Flush must be released in a minimum of 24 hours

Qff= Vff / 24 hrs / 3600 sec	Qff=	0.035	cfs
h = 2/3 x (Xff - Xo)	h =	0.53	ft
A = Qff / .62 x sqrt(2*32.2*h)	A =	0.010	sf
The area of a 0.75" orifice		0.0031	sf
Number of orifice holes	=	3	holes at elev. 938.32
Qact = 0.62 x #orif x Aorif x sqrt(2x32.2xh) =	Qact =	0.033	cfs
Tff= Vff / Qact	Tff=	25.2	hrs

2. outlet holes sizing - "Bankfull flood" discharge

Bankfull must be detained between 36 to 48 hours

h = 2/3 x (Xbf - Xo)	h =	1.21	ft
Qbf= 0.62 x #orif x Aorif x sqrt(2x32.2xh) =	Qbf=	0.050	cfs
Tbf= Vbf / Qbf (with first flush holes only)	Tbf=	37.1	hrs

3. outlet holes sizing - "100-yr flood" discharge

Area, a =	A =	0.90	ac
Qa = 0.15 x A	Qa =	0.136	cfs
Qff+Qbf = 0.62 x #florif x Aflorif x sqrt(64.4 (X100 - Xo)) + 0.62 x #bforif x Abforif x sqrt(64.4 (X100 - Xff))	Qff+Qbf=	0.126	cfs
Q100 = Qa - (Qff + Qbf)	Q100 =	0.010	cfs
A100 = Q100 / (0.62 x sqrt(2*32.2 x (X100 - Xbf)	A100 =	0.0008	sf
The area of a 0.75" orifice		0.0031	sf
Number of orifice holes	=	0	holes at elev 940.14
Qff + Qbf + 0.62 x #orif x A100 x sqrt(2*32.2*h100) < Qa		0.126	< Qa
Hall = 2/3 x (X100 - Xbf) + (Xbf - Xo)	Hall =	5.66	ft
Qall = 0.62 x #florif x Aflorif x sqrt(2*32.2*Hall)	Qall =	0.109	cfs
Hbf= 2/3 x (X100 - Xbf) + (Xbf - Xff)	Hbf=	4.86	ft
Qbf+100 = 0.62 x #bforif x Abforif x sqrt(2*32.2*Hbf)	Qbf+100 =	0.000	cfs
H100 = 2/3 x (X100 - Xbf)	H100 =	3.84	ft
Q100avg = 0.62 x #100orif x A100orif x sqrt(2+32.2*H100)	Q100avg =	0.000	cfs
Vrem = V100 - Vbf	Vrem =	11,668	cf
T100 = Tbf + Vrem / (Qall + Qbf+100 + Qall)	T100 =	66.9	hrs

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2. 09.29.2020 REVISED PER SITE PLAN REVIEW #1
3. 10.22.2020 REVISED PER SITE PLAN REVIEW #2
4. 12.07.20 REVISED PER SITE PLAN REVIEW #3

MCA METROCA.NET
RELATIONSHIPS - REPUTATION - RESULTS
800.525.6016

Project Number	Date
1051-19-9457	08/26/2020
P.M. CB	Checked by CB / Drawn by KMW / Crew/Book -

Client: AR BROUWER COMPANY

Project: LEWIS JEWELERS

Site Address: 300 S. MAPLE ROAD, ANN ARBOR, MICHIGAN 48103

County	Community
WASHTENAW	ANN ARBOR

Township	Range	Section
2S	5E	25

Professional Name: CHRISTOPHER SUTTON, PE
Date:

Title: SITE PLAN
STORM WATER MANAGEMENT DETAILS

Drawing Scale:

Sheet Number: 11

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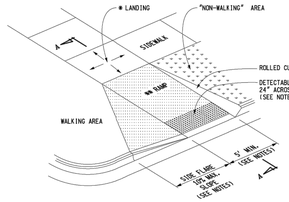
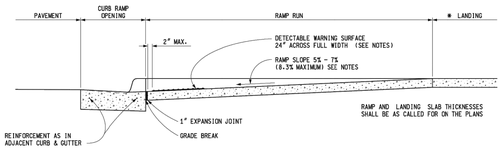
* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



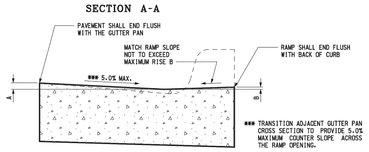
SIDEWALK RAMP TYPE RF
(ROLLED / FLARED SIDES)



CURB TYPE	MAXIMUM RISE (INCHES) A	B
B1	3/4	1
B2	3/4	1
B3	3/4	1
D1	3/4	1
D2	3/4	1
D3	3/4	1
C1	1/2	1/2
C2	1/2	1/2
C3	3/4	1/2
C4	3/2	1/2
C5	1	1/2
C6	1	1/2
F1	1/2	1/2
F2	1/2	1/2
F3	3/4	1/2
F4	3/4	1/2
F5	1	1/2
F6	1	1/2

FOR CURB TYPES SEE STANDARD PLAN R-30-SERIES

SECTION A-A



SECTION THROUGH CURB RAMP OPENING
(TYPICAL ALL RAMP TYPES)

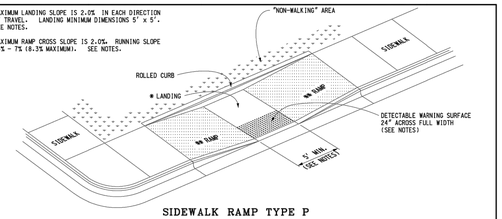
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

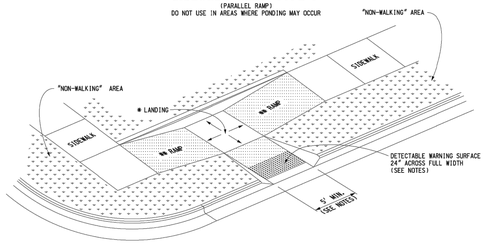
F.H.W.A. APPROVAL	12-11-2017 PLAN DATE	R-28-J	SHEET 2 OF 7

* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

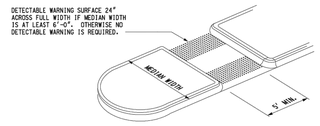
** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



SIDEWALK RAMP TYPE P
(PARALLEL RAMP)
DO NOT USE IN AREAS WHERE PONDING MAY OCCUR



SIDEWALK RAMP TYPE C
(COMBINATION RAMP)

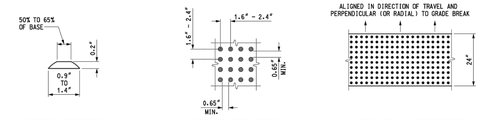


SIDEWALK RAMP TYPE M
(MEDIAN ISLAND)

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	12-11-2017 PLAN DATE	R-28-J	SHEET 3 OF 7



DOME SECTION | DOME SPACING | DOME ALIGNMENT

DETECTABLE WARNING DETAILS

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP. WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

WHEN 5' MINIMUM WIDTHS ARE NOT PRACTICABLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND LANDINGS TO NOT LESS THAN 4' x 4'.

CURB RAMPS WITH A RUNNING SLOPE ≤5% DO NOT REQUIRE A TOP LANDING. HOWEVER, ANY CONTINUOUS SIDEWALK OR PEDESTRIAN ROUTE CROSSING THROUGH OR INTERSECTING THE CURB RAMP MUST INDEPENDENTLY MAINTAIN A CROSS SLOPE NOT GREATER THAN 2% PERPENDICULAR TO ITS OWN DIRECTION(S) OF TRAVEL.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 12" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH NOT INCLUDING LANDINGS OR TRANSITIONS.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN ½". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

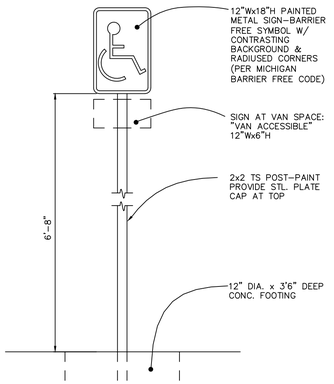
FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS. WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

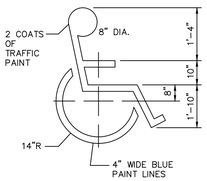
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	12-11-2017 PLAN DATE	R-28-J	SHEET 7 OF 7

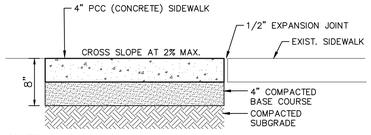


(PER MICHIGAN BARRIER FREE CODE)

BARRIER FREE SIGN
NOT TO SCALE



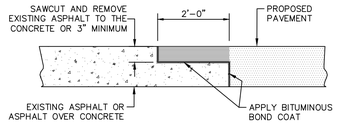
HANDICAP PARKING SYMBOL
NOT TO SCALE



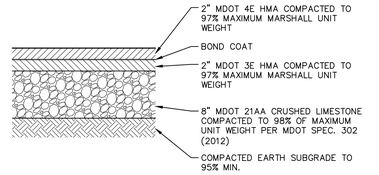
NOTES:

1. SET 1/2" EXPANSION JOINTS AT POINTS ABUTTING CURB OR PAVEMENT.
2. CONTROL JOINTS SHALL BE 1/8" WIDE AND 1/4 OF THE SIDEWALK THICKNESS DEEP. CONTROL JOINTS SHALL BE SAWED OR TOOLED TO MATCH THE EXISTING CONTROL JOINTS ON SITE.

NEW SIDEWALK TO EXISTING SIDEWALK CONNECTION DETAIL
NOT TO SCALE



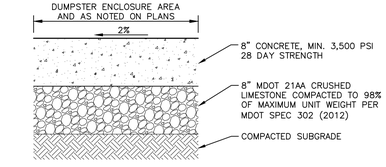
BUTT JOINT
NOT TO SCALE



ASPHALT PAVEMENT SECTIOIN
NOT TO SCALE

TYPE OF JOINT	USE DESCRIPTION	DETAIL
A. CONTROL JOINT. SAWED JOINT SEALED WITH HOT-POURED RUBBER-ASPHALT JOINT SEALING COMPOUND	PLACE JOINT SO AS TO UNIFORMLY DIVIDE SLAB AS SHOWN ON DETAIL	JOINT SEALANT 3/4" DEEP (MIN.) HELD 1/4" BELOW SURFACE; D; D/2; 1/4"
B. EXPANSION JOINT	PLACE AGAINST EXISTING CONCRETE PAVEMENTS, STRUCTURES (BUILDINGS, CANOPY COLUMNS, TRENCH DRAINS, ETC.)	JOINT SEALANT 3/4" DEEP (MIN.) HELD 1/4" BELOW SURFACE; D; NEW WORK; EXISTING CONCRETE PAVEMENTS OR STRUCTURES; 1/2" EXPANSION MATERIAL
C. CONSTRUCTION JOINT	CONSTRUCTION JOINTS MUST BE PLACED WHEN CONTINUOUS POUR OPERATIONS ARE SUSPENDED FOR MORE THAN 30 MINUTES.	3/4" MIN.; D; NEW WORK; 1:3 SLOPE; 1 1/4"

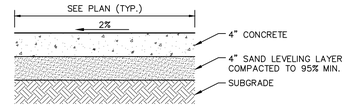
CONCRETE JOINT DETAILS
NOT TO SCALE



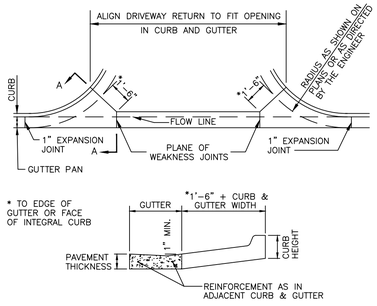
HEAVY DUTY CONCRETE PAVEMENT
NOT TO SCALE

NOTES:

1. SIDEWALK SHALL BE INCREASED TO 6" THICK THROUGH DRIVEWAYS
2. CONCRETE SHALL HAVE A MIN. 3,500 PSI 28 DAY STRENGTH

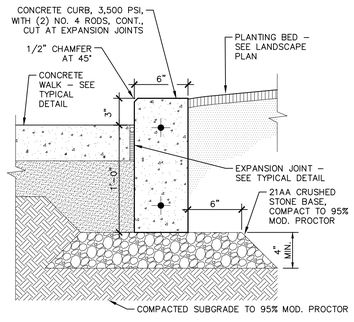


CONCRETE SIDEWALK DETAIL
NOT TO SCALE



SECTION A-A

TYPE 'M' DRIVEWAY OPENING AND APPROACH
NOT TO SCALE



PLANTER CURB
NOT TO SCALE

Revisions
1. 08.27.2020 SITE PLAN SUBMISSION
2. 09.29.2020 REVISED PER SITE PLAN REVIEW #1
3. 10.22.2020 REVISED PER SITE PLAN REVIEW #2
4. 12.07.20 REVISED PER SITE PLAN REVIEW #3

METROCA.NET
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Project Number	Date
1051-19-9457	08/26/2020

P.M.	Checked by	Drawn by	Crew/Book
CB	CB	KMW	-

Client: AR BROUWER COMPANY

Project: LEWIS JEWELERS

Site Address: 300 S. MAPLE ROAD, ANN ARBOR, MICHIGAN 48103

County	Community
WASHTENAW	ANN ARBOR

Township	Range	Section
2S	5E	25

Professional Name	Date
CHRISTOPHER SUTTON, PE	- -

Title: SITE PLAN
TYPICAL DETAILS

Drawing Scale:

Sheet Number: 12

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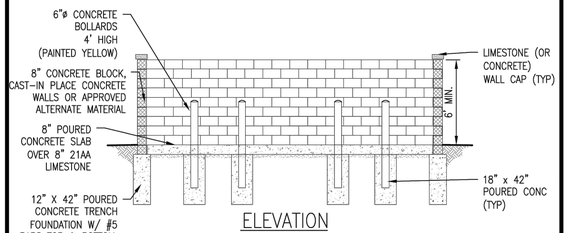
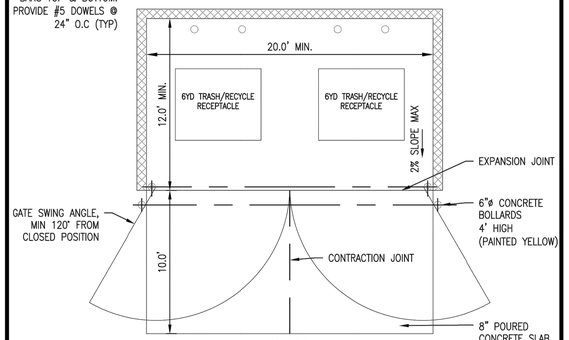


ELEVATION



PLAN

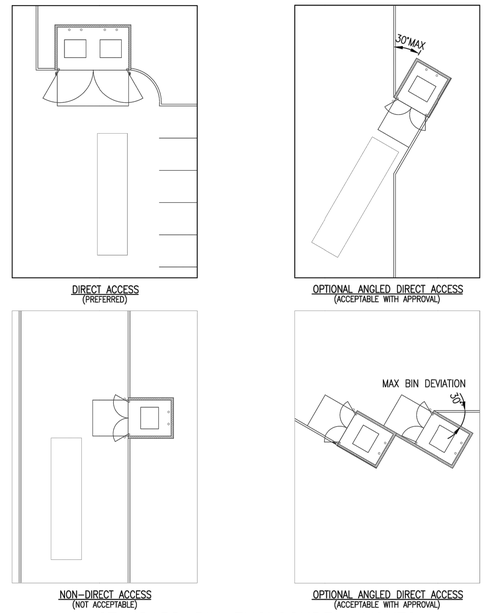
DOUBLE BIN ENCLOSURE DETAIL

CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
734-794-6410
www.a2gov.org

REV. NO.	DATE	DRAWN BY	CHECKED BY

SOLID WASTE STANDARD DETAILS

DR. OHM	CH. CJE	DRAWING NO.
SCALE N.T.S.	DATE 12/29/15	**PAGE 2**



DIRECT ACCESS (PREFERRED)

OPTIONAL ANGLED DIRECT ACCESS (ACCEPTABLE WITH APPROVAL)

NON-DIRECT ACCESS (NOT ACCEPTABLE)

OPTIONAL ANGLED DIRECT ACCESS (ACCEPTABLE WITH APPROVAL)

STANDARD BIN ENCLOSURE LAYOUTS

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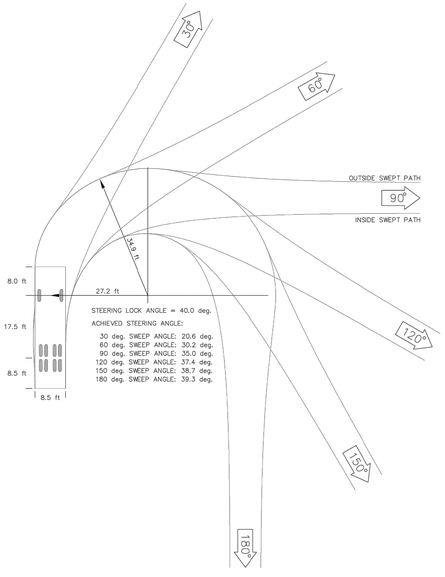
SOLID WASTE STANDARD DETAILS

DR. OHM	CH. CJE	DRAWING NO.
SCALE N.T.S.	DATE 12/29/15	**PAGE 3**



CLEARANCE REQUIREMENTS FOR FRONT LOAD SOLID WASTE VEHICLE

CITY OF ANN ARBOR
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301 EAST HURON STREET
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SOLID WASTE STANDARD DETAILS

DR. OHM	CH. CJE	DRAWING NO.
SCALE N.T.S.	DATE 12/08/15	**PAGE 4**

GENERAL NOTES:

1. A CLEAR SPACE MUST BE MAINTAINED DIRECTLY IN FRONT OF THE SOLID WASTE ENCLOSURE. THE CLEAR SPACE SHALL BE A MINIMUM OF FIFTY (50) FEET LONG BY THE WIDTH OF THE INSIDE DIMENSION OF THE ENCLOSURE PLUS FOUR (4) FEET ON BOTH SIDES. A MINIMUM VERTICAL CLEARANCE OF AT LEAST TWENTY-FIVE (25) FEET MUST BE PROVIDED ABOVE THIS AREA.
2. INGRESS AND EGRESS ROUTES MUST BE DEVELOPED BASED ON SOLID WASTE SWEPT PATH REQUIREMENTS. A MINIMUM HORIZONTAL CLEARANCE OF TWO (2) FEET FROM THE EDGE OF THE SWEPT PATH AND A MINIMUM VERTICAL CLEARANCE OF AT LEAST FIFTEEN (15) FEET MUST BE PROVIDED ALONG THE ENTIRE ROUTE.
3. GATES ON ENCLOSURES MUST BE DESIGNED TO OPEN A MINIMUM OF 120 DEGREES FROM THE CLOSED POSITION. THE GATES MUST NOT REDUCE THE REQUIRED ENCLOSURE OPENING WIDTH, BLOCK ADJACENT PARKING SPOTS, OR BE IMPEDED BY ADJACENT CURBS OR LANDSCAPING.
4. GATES SHALL BE DESIGNED TO BE FREE STANDING WITHOUT A CENTER POLE. IF A CENTER POLE DESIGN IS NECESSARY, 12-INCHES SHALL BE ADDED TO THE OVERALL WIDTH OF THE ENCLOSURE.
5. GATE DESIGN SHALL INCLUDE A RELIABLE MEANS TO SECURE THE DOOR IN BOTH THE OPEN AND CLOSED POSITIONS.
6. THE CONCRETE SLAB IN FRONT OF THE BIN ENCLOSURE SHALL HAVE PAVEMENT MARKINGS TO INDICATE "NO PARKING", AS APPROVED BY CITY.
7. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF NO PARKING SIGNS ALONG THE SOLID WASTE INGRESS/EGRESS ROUTE TO ENSURE THE ROUTE REMAINS FREE OF OBSTRUCTIONS.
8. REFER TO ASSOCIATED STANDARD DETAILS FOR REQUIREMENTS ON SINGLE AND DOUBLE WIDE SOLID WASTE BIN ENCLOSURE LAYOUT AND DESIGN CRITERIA. THE CITY SHALL HAVE THE ABILITY TO MODIFY OR INTERPRET THESE DETAILS AS NECESSARY, TO ACCOMMODATE THE CITY OR CITY CONTRACTOR NEEDS IN REGARDS TO SOLID WASTE PICK-UP.
9. SOLID WASTE ACCESS ROADS AND SERVICE AREA SURFACES SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF COLLECTION TRUCKS WEIGHING UP TO 66,000 LBS GROSS VEHICLE WEIGHT (GVW) AND SHALL BE PROVIDED WITH AN APPROVED SURFACE SO AS TO PROVIDE ALL WEATHER DRIVING CAPABILITIES. PROPERTY OWNER SHALL BE RESPONSIBLE FOR ALL SNOW AND ICE REMOVAL REQUIRED FOR SAFE ACCESS OF SOLID WASTE VEHICLES.
10. THE SOLID WASTE COLLECTION LOCATION SHALL BE LOCATED A MINIMUM OF TEN (10) FEET AWAY FROM MAJOR ELECTRICAL EQUIPMENT, ABOVE GROUND UTILITY SERVICES, TREE BRANCHES, BALCONIES OR OTHER OVERHEAD OBSTRUCTIONS.

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00	06/05/18	OHM	CJE
REV. NO.	DATE	DRAWN BY	CHECKED BY

SOLID WASTE STANDARD DETAILS

DR. OHM	CH. CJE	DRAWING NO.
SCALE N.T.S.	DATE 02/01/16	**PAGE 5**

GENERAL NOTES CONTINUED:

11. IF FORWARD ACCESS TO THE PUBLIC STREET IS NOT AVAILABLE FOR THE SOLID WASTE TRUCK, THE SITE DEVELOPMENT LAYOUT MUST ACCOMMODATE A TURN-AROUND LOCATION.
12. FOR SITES THAT CANNOT ACCOMMODATE A TURN-AROUND, THE FOLLOWING REQUIREMENTS MUST BE MET:
    - 12.1. SOLID WASTE TRUCKS MUST BE ABLE TO SERVICE DUMPSTERS WITHOUT IMPEDING THE PUBLIC STREET OR SIDEWALK.
    - 12.2. THE DUMPSTER COLLECTION LOCATION SHALL BE CLEARLY DELINEATED AND NOT HAVE A SLOPE GREATER THAN 2% IN ANY DIRECTION.
    - 12.3. BOLLARDS OR ADEQUATE CLEAR SPACE MUST BE PROVIDED BEHIND THE LIFT POINT SO THE DUMPSTERS ARE NOT POTENTIALLY PUSHED INTO ANY BUILDING OR ACCESS ROUTE.
    - 12.4. ALL SWEPT-PATH CLEARANCE REQUIREMENTS PREVIOUSLY IDENTIFIED SHALL BE PROVIDED.
    - 12.5. A VERTICAL CLEARANCE OF 25 FEET SHALL BE PROVIDED ABOVE THE COLLECTION LOCATION.
13. FOR SITES THAT CANNOT ACCOMMODATE A STANDARD DUMPSTER ENCLOSURE, THE DUMPSTERS MAY BE ROLLED OUT OF A BUILDING OR ALTERNATE ENCLOSURE BY THE PROPERTY OWNER TO A PROPOSED COLLECTION LOCATION. A COLLECTION SCHEDULE FOR RECYCLING AND TRASH COLLECTION SHALL BE PROVIDED ON THE SITE PLAN.
14. FOR SITES ADJACENT TO A PUBLIC ALLEY, SOLID WASTE TRUCKS ARE PERMITTED TO ACCESS THE PROPERTY THROUGH THE ALLEY IF SWEPT-PATH CLEARANCE REQUIREMENTS CAN BE PROVIDED.
15. SOLID WASTE COLLECTION LOCATIONS MUST BE LOCATED WITHIN THE BOUNDARIES OF THE PROPERTY.

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PUBLIC SERVICES
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ANN ARBOR, MI 48107-8647
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00	06/05/18	OHM	CJE
REV. NO.	DATE	DRAWN BY	CHECKED BY

SOLID WASTE STANDARD DETAILS

DR. OHM	CH. CJE	DRAWING NO.
SCALE N.T.S.	DATE 02/01/16	**PAGE 6**

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

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

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

Revisions
- 08.27.2020 SITE PLAN SUBMISSION
- 09.29.2020 REVISED PER SITE PLAN REVIEW #1
- 10.22.2020 REVISED PER SITE PLAN REVIEW #2
- 12.07.20 REVISED PER SITE PLAN REVIEW #3

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Project Number	Date
1051-19-9457	08/26/2020

P.M.	Checked by	Drawn by	Crew/Book
CB	CB	KMW	-

Client
AR BROUWER COMPANY

Project
LEWIS JEWELERS

Site Address
300 S. MAPLE ROAD
ANN ARBOR, MICHIGAN 48103

County	Community
WASHTENAW	ANN ARBOR

Township	Range	Section
2S	5E	25

Professional Name: CHRISTOPHER SUTTON, PE | Date: - -

Title
SITE PLAN
TYPICAL DETAILS

Drawing Scale

Sheet Number
13

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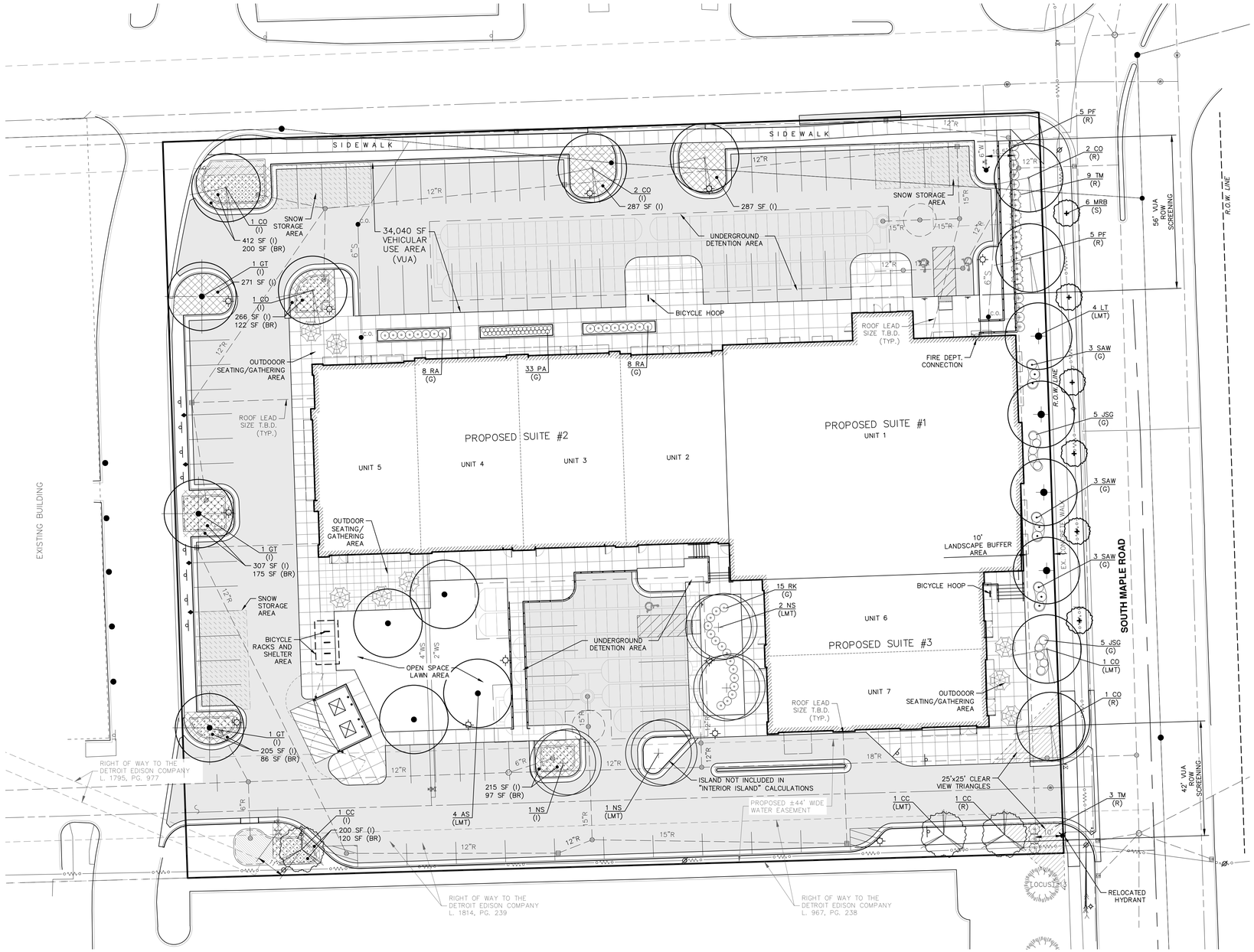

LANDSCAPE NOTES:

SEE SHEET 15 FOR LANDSCAPE NOTES AND DETAILS

BIO-RETENTION AREAS (BR):

EACH BIO-RETENTION AREA TO RECEIVE "WETLAND BUFFER & UPLAND AREAS SEED MIX." SEE SHEET 16 FOR SEED MIX DETAILS

STREET TREE ESCROW CALCULATIONS

THE CURRENT STREET TREE ESCROW RATE IS $1.30 PER LINEAL FOOT OF STREET FRONTAGE. BASED ON THE 270.36 LINEAL FEET OF SOUTH MAPLE ROAD FRONTAGE ON THIS PROJECT, THE REQUIRED STREET TREE ESCROW FOR THIS SITE IS $351.47

THIS AMOUNT MUST BE PAID PRIOR TO ISSUING THE BUILDING PERMIT. THE DEVELOPER HAS PROVIDED THE REQUIRED STREET TREES FOR THIS SITE. THEREFORE THE ESCROW AMOUNT SHALL BE REFUNDED AFTER THE CITY FORESTRY DIVISION HAS APPROVED THE STREET TREE PLANTINGS.

LEGEND

- EX. SPOT ELEVATION
- EX. CONTOUR
- EX. ADJACENT PROPERTY LINE
- EX. SECTION LINE
- EX. EASEMENT LINE
- EX. CURB/PAVEMENT
- EX. TREELINE
- EX. TREE (CONIFEROUS)
- EX. TREE (DECIDUOUS)
- EX. SIGN
- EX. WATER MAIN
- EX. WATER VALVE
- EX. HYDRANT
- EX. WATER MANHOLE
- EX. WELL
- EX. WATER METER
- EX. STORM SEWER
- EX. STORM INLET/CATCH BASIN
- EX. STORM MANHOLE
- EX. STORM END SECTION
- EX. SANITARY SEWER
- EX. SANITARY MANHOLE
- EX. UNDERGROUND GAS
- EX. GAS VALVE
- EX. OVERHEAD ELECTRIC
- EX. UNDERGROUND ELECTRIC
- EX. UNDERGROUND CABLE
- EX. TELEPHONE MANHOLE
- EX. ELECTRIC MANHOLE
- EX. ELECTRIC METER
- EX. GAS METER
- EX. LIGHT POLE
- EX. TRAFFIC SIGNAL BOX
- EX. UNIDENTIFIED MANHOLE
- EX. TRAFFIC SIGNAL POLE
- EX. UTILITY POLE
- EX. GUY WIRE
- PROPOSED BUILDING
- INTERIOR LANDSCAPE ISLAND AREA
- PORTION OF BIO-RETENTION AREA APPLYING TO REQUIREMENTS
- PORTION OF BIO-RETENTION AREA NOT APPLYING TO REQUIREMENTS
- SNOW STORAGE AREA

PLANT LIST

RIGHT-OF-WAY SCREENING (R)

KEY	QTY.	SPECIES	MIN. SIZE	SPEC.
CO	3	CELTIS OCCIDENTALIS HACKBERRY	2" Cal.	B&B
CC	1	CARPINUS CAROLINIANA AMERICAN HOP HORNBEAM	2" Cal.	B&B
	4	***PROVIDED***		
TM	12	TAXUS X MEDIA 'DENSIFORMIS' DENSE YEW	30" Ht.	B&B
PF	10	POTENTILLA FRUTICOSA SHUBBY CINQUEFOIL	30" Ht.	CONT.

INTERIOR LANDSCAPE ISLANDS (I)

KEY	QTY.	SPECIES	MIN. SIZE	SPEC.
GT	3	GLEDITSIA TRIACANTHOS VAR INERMI THORNLESS HONEY LOCUST	2" Cal.	B&B
CO	4	CELTIS OCCIDENTALIS HACKBERRY	2" Cal.	B&B
CC	1	CARPINUS CAROLINIANA AMERICAN HOP HORNBEAM	2" Cal.	B&B
NS	1	NYSSA SYLVATICA BLACKGUM	2" Cal.	B&B
	9	***PROVIDED***		

STREET TREES IN PUBLIC RIGHT-OF-WAY (S)

KEY	QTY.	SPECIES	MIN. SIZE	SPEC.
MRB	6	MALUS 'RED BARRON' RED BARRON CRABAPPLE	2" Cal.	B&B
	6	***PROVIDED***		

LANDMARK MITIGATION TREES (LMT)

KEY	QTY.	SPECIES	MIN. SIZE	SPEC.
AS	4	ACER SACCHARUM SUGAR MAPLE	2" Cal.	B&B
CC	1	CARPINUS CAROLINIANA AMERICAN HOP HORNBEAM	2" Cal.	B&B
CO	1	CELTIS OCCIDENTALIS HACKBERRY	2" Cal.	B&B
NS	3	NYSSA SYLVATICA BLACKGUM	2" Cal.	B&B
LT	4	LIRIODENDRON TULIPIFERA TULIP TREE	2" Cal.	B&B
	13	***PROVIDED***		

GENERAL PLANTINGS (G)

KEY	QTY.	SPECIES	MIN. SIZE	SPEC.
JSG	10	JUNIPERUS 'SEA GREEN' SEA GREEN JUNIPER	24" HT. & SPR.	CONT.
PA	33	PENNISETUM A. 'HAMELN' DWARF FOUNTAIN GRASS	1 GAL.	CONT.
RA	31	RHUS AROMATICA 'GRO-LOW' GRO-LOW FRAGRANT SUMAC	24" HT. & SPR.	CONT.
SAW	9	SPIRAEA X BUMALDA ANTHONY WATERER SPIREA	24" HT. & SPR.	CONT.

MULCH

AREAS OF INDIVIDUAL TREES AND LANDSCAPE BEDS ARE TO BE MULCHED WITH A MINIMUM OF 4 INCHES OF SHREDDED HARDWOOD BARK.

NO GROUND WOOD PALETTE MULCH PERMITTED

LANDSCAPE REQUIREMENT CALCULATIONS

	REQUIRED		PROVIDED	
5.20.3.A. VEHICULAR USE - RIGHT-OF-WAY SCREENING (R)				
VUA R.O.W. SCREENING LENGTH = 56 + 42 = 98 LF	|		|	
1 TREE / 30 LF REQUIRED	|		|	
98 LF \ 30 LF = 3.3 = 4 TREES REQUIRED	4		**4**	
5.20.3.B VEHICULAR USE / INTERIOR LANDSCAPE ISLANDS (I)	REQUIRED		PROVIDED	
VEHICULAR USE AREA = 31,987 SF	|		|	
INTERIOR LANDSCAPE AREA REQUIRED	|		|	
3,300 - 49,999 SF = 1:20 SF	|		|	
31,987 SF \ 20 SF = **1,702** SF	|		|	
INTERIOR LANDSCAPE AREA REQUIRED	1,599	SF	**2,450**	**SF**
1 TREE REQUIRED / 250 SF OF AREA	|		|	
1,599 SF \ 250 SF = 6.4 = 7 TREES REQUIRED	7	EA	**9**	**EA**
DEPRESSED BIORETENTION AREA REQUIRED	|		|	
1,599 SF > 750 SF	|		|	
1,599 SF X 50% =	800	SF	**800**	**SF**
5.20.4 CONFLICTING LAND USE BUFFERS	NOT APPLICABLE			
5.20.5 PRIVATE STREETS AND SHARED DRIVEWAY BUFFERS	NOT APPLICABLE			
5.20.10. STREET TREES IN THE PUBLIC RIGHT-OF-WAY (S)	REQUIRED		PROVIDED	
R.O.W. WAY LENGTH = 270.36 LF	|		|	
1 TREE / 45 LF REQUIRED	|		|	
270.36 LF \ 45 LF = 6 TREES REQUIRED	6		**6**	
5.29.6.F.4 NATURAL FEATURE MITIGATION (LMR)	REQUIRED		PROVIDED	
LANDMARK TREE REPLACEMENT REQUIREMENT:	|		|	
50% CAL. INCH OF LANDMARK TREE REMOVED	|		|	
12" & 14" LANDMARK CRABAPPLE TO BE REMOVED	|		|	
26" LANDMARK TREE REMOVED X 50% =	13 TREES		**13 TREES**	
STREET TREE ESCROW	REQUIRED		PROVIDED	
$1.30 / LF OF STREET FRONTAGE	|		|	
270.36 LF SOUTH MAPLE ROAD STREET FRONTAGE	|		|	
$1.30 X 270.36 LF = $351.47	$351.47		**$351.47**	

Revisions
1. 08.27.2020 SITE PLAN SUBMISSION
2. 09.29.2020 REVISED PER SITE PLAN REVIEW #1
3. 10.22.2020 REVISED PER SITE PLAN REVIEW #2
4. 12.07.20 REVISED PER SITE PLAN REVIEW #3

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800.525.6016

Project Number 1051-19-9457 | Date 08/26/2020
P.M. CB | Checked by CB | Drawn by KMW | Crew/Book -

Client: AR BROUWER COMPANY

Project: LEWIS JEWELERS

Site Address: 300 S. MAPLE ROAD, ANN ARBOR, MICHIGAN 48103

County WASHTENAW | Community ANN ARBOR
Township 2S | Range 5E | Section 25

Professional Name: CHRISTOPHER SUTTON, PE | Date --

Title: SITE PLAN
LANDSCAPE PLAN

Drawing Scale 1" = 20' | Sheet Number 14

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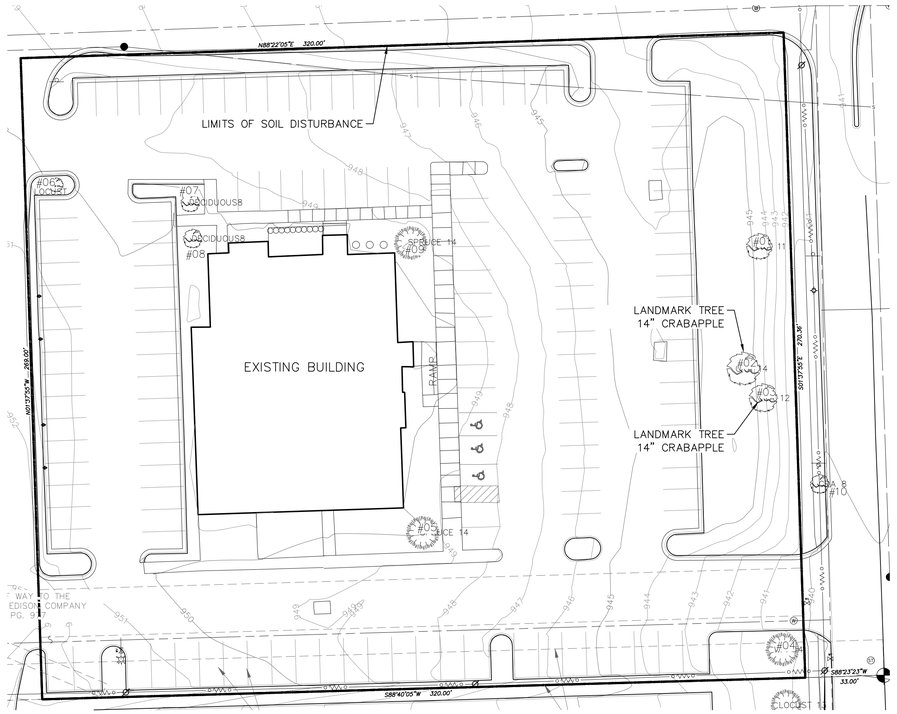


NATURAL FEATURES PLAN

SCALE 1" = 30'

NATURAL FEATURES PLAN NOTES

1. LIMITS OF DISTURBANCE ARE SHOWN ON THE PLAN
2. NO ENDANGERED SPECIES HABITAT EXIST ON THIS SITE.
3. PER THE ALTA SURVEY: THE PARCEL DOES NOT LIE WITHIN A SPECIAL FLOOD HAZARD ZONE ACCORDING TO THE FLOOD INSURANCE RATE MAP PUBLISHED BY THE FEDERAL INSURANCE ADMINISTRATION FOR THE COUNTY OF WASHTENAW, STATE OF MICHIGAN, COMMUNITY NUMBER – 26013, MAP NUMBER – 26161C0244E, AN EFFECTIVE DATE OF APRIL 3, 2012. THEREFORE, AS NOTED IN SAID DOCUMENT, THE SCALED LOCATION OF THE EASTERLY PORTION OF THE SUBJECT PROPERTY IS IN ZONE X (UNSHADED).

   THE PARCEL DOES NOT LIE WITHIN A SPECIAL FLOOD HAZARD ZONE ACCORDING TO THE FLOOD INSURANCE RATE MAP INDEX PUBLISHED BY THE FEDERAL INSURANCE ADMINISTRATION FOR THE COUNTY OF WASHTENAW, STATE OF MICHIGAN, MAP NUMBER – 26161CIND0A, AN EFFECTIVE DATE OF APRIL 3, 2012. THEREFORE, AS NOTED (*PANEL NOT PRINTED – NO SPECIAL FLOOD HAZARD AREAS) IN SAID DOCUMENT, THE SCALED LOCATION OF THE WESTERLY PORTION OF THE SUBJECT PROPERTY RESIDES IN PANEL 26161C0243E.
4. TWO LANDMARK TREES EXIST ON THIS SITE AND WILL BE REMOVED. THEIR LOCATION AND CONDITION IS NOTED ON THE PLAN.
5. NO STEEP SLOPES EXIST ON THIS SITE.
6. NO EXISTING OR PROPOSED WATER COURSE ARE ON THIS SITE.
7. NO WETLANDS EXIST ON THIS SITE.

NATURAL FEATURES - STATEMENT OF IMPACT

THE PROPOSED PROJECT INCLUDES THREE COMMERCIAL BUILDINGS WITH A MAXIMUM POTENTIAL CAPACITY OF 6 BUSINESSES.

THE EXISTING NATURAL FEATURES ON THE SITE ARE LIMITED TO TWO LANDMARK TREES AS FOLLOWS:

TREE #02 14" CAL. CRABAPPLE TREE, GOOD CONDITION
TREE HEALTH / CONDITION FACTOR SCORE = 21

TREE #03 12" CAL. CRABAPPLE TREE, GOOD CONDITION
TREE HEALTH / CONDITION FACTOR SCORE = 21

SUMMARY:

TREE #02 14" CAL. CRABAPPLE TREE – REMOVE DUE TO EXISTING LOCATION ONSITE FALLING WITH PROPOSED BUILDING – BUILDING LOCATION AS REQUIRED BY ORDINANCE FOR FRONT SETBACK

TREE #03 12" CAL. CRABAPPLE TREE – REMOVE DUE TO EXISTING LOCATION ONSITE FALLING WITH PROPOSED BUILDING – BUILDING LOCATION AS REQUIRED BY ORDINANCE FOR FRONT SETBACK

EXISTING TREE LIST:

NO.	SIZE	SPECIES	STATUS
01	11" CAL.	CRAB APPLE TREE	TO BE REMOVED
02	14" CAL. (LM)	CRAB APPLE TREE	TO BE REMOVED
03	12" CAL. (LM)	CRAB APPLE TREE	TO BE REMOVED
04	14" CAL.	PINE TREE	TO BE REMOVED
05	14" CAL.	SPRUCE	TO BE REMOVED
06	3" CAL.	LOCUST TREE	TO BE REMOVED
07	8" CAL.	CRAB APPLE TREE	TO BE REMOVED
08	8" CAL.	CRAB APPLE TREE	TO BE REMOVED
09	14" CAL.	SPRUCE	TO BE REMOVED
10	8" CAL.	CRAB APPLE TREE	TO BE REMOVED

(LM) DESIGNATES ANN ARBOR LANDMARK TREE

LANDSCAPE NOTES:

1. THIS PLAN IS FOR PLANTING LOCATIONS ONLY.
2. SIZES SPECIFIED ARE MINIMUM SIZES TO BE INSTALLED.
3. IN THE EVENT THE PLANT LIST DOES NOT MATCH THE PLAN, THE PLAN SHALL TAKE PRECEDENCE.
4. ALL EXISTING TREES TO REMAIN THAT ARE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED BY THE END OF THE FOLLOWING PLANTING SEASON.
5. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES. PLANT MATERIAL IS TO BE LOCATED SUCH THAT IT WILL NOT INTERFERE WITH ANY UNDERGROUND OR OVERHEAD UTILITIES. PLANTINGS WITHIN 15 FEET OF A FIRE HYDRANT SHALL NOT EXCEED 6 INCHES IN HEIGHT.
6. PLANT TREES AND SHRUBS AT THE SAME GRADE LEVEL AT WHICH THEY WERE GROWN IN THE NURSERY. IF HEAVY CLAY SOILS ARE EVIDENT, PLANT TREES AND SHRUBS IN LEVEL AREAS HIGHER, APPROXIMATELY 1/4 OF THE ROOT BALL ABOVE THE GRADE.
7. REMOVE ALL TWINE, WIRE, NURSERY TREE GUARDS, TAGS AND INORGANIC MATERIAL FROM ROOT BALLS. PEEL BACK THE TOP 1/3 OF BURLAP FROM EARTH BALLS AND REMOVE ANY BURLAP AROUND TREE TRUNKS.
8. ALL LANDSCAPE AREAS SHALL BE EXCAVATED OF ALL BUILDING / CONSTRUCTION MATERIAL AND POOR SOILS TO A DEPTH OF 18"–24" AND BACKFILLED WITH GOOD, MEDIUM TEXTURED PLANTING SOIL.
9. ALL DISTURBED UNPAVED AREAS ARE TO BE SPREAD WITH A MINIMUM 4 INCHES OF TOPSOIL AND SODDED.
10. AREAS OF INDIVIDUAL TREES AND LANDSCAPE BEDS ARE TO BE MULCHED WITH A MINIMUM OF 4 INCHES OF SHREDDED HARDWOOD BARK. (NO GROUND WOOD PALETTE MULCH PERMITTED) MULCH SHALL BE SPREAD IN A 5–FOOT DIAMETER CIRCLE AROUND THE BASE OF EACH TREE, LEAVING A 6–INCH RADIUS CIRCLE OF BARE SOIL AROUND THE TRUNK OF THE TREE. ALL AREAS OUTSIDE OF THE MULCH RINGS SHALL BE SODDED. MULCH TO BE DOUBLE SHREDDED HARDWOOD BARK MULCH
11. IF AN APPROVED SPECIES IS NO LONGER ACCEPTABLE DUE TO SUCH THINGS AS INFESTATION OR DISEASE, A SUITABLE SIMILAR SPECIES SHALL BE USED AS REPLACEMENT. ANY PLANT SUBSTITUTIONS SHALL HAVE CITY OF ANN ARBOR APPROVAL PRIOR TO INSTALLATION.
12. RECOMMENDED PLANTING DATES ARE MARCH 1 TO MAY 15 FOR ALL MATERIALS AND OCTOBER 15 TO DECEMBER 15 FOR DECIDUOUS MATERIALS. PLANTINGS OUTSIDE THESE DATES SHALL HAVE PRIOR CITY OF ANN ARBOR APPROVAL, AND MAY REQUIRE SPECIAL TREATMENT, SUCH AS EXTRA WATERING OR MULCHING, TO INCREASE SURVIVAL POTENTIAL.
13. TREE "BALLED AND BURLAPPED" ROOT BALL SIZE SHALL BE A MINIMUM OF AT LEAST TEN TIMES THE TREE CALIPER SIZE.
14. ANY SPECIES DEVIATIONS FROM THE APPROVED SITE PLAN MUST BE APPROVED IN WRITING BY THE CITY OF ANN ARBOR PRIOR TO INSTALLATION.

LANDSCAPE MAINTENANCE PLAN

LANDSCAPING REQUIRED BY THE CITY OF ANN ARBOR SHALL BE MAINTAINED IN A HEALTHY, NEAT AND ORDERLY APPEARANCE, FREE FROM REFUSE AND DEBRIS. SPECIFIC LANDSCAPE MAINTENANCE INCLUDES, BUT IS NOT LIMITED TO, CUTTING, PRUNING, AND MOWING OF REQUIRED LANDSCAPE AREAS AND REMOVAL OF TRIMMINGS.

APPLICATIONS OF FERTILIZERS, BEYOND THE INITIAL TOPSOIL AND SEEDING, SHALL BE A FERTILIZER WITH CONTAINING NO PHOSPHORUS.

ALL DISEASED, DAMAGED, OR DEAD PLANT MATERIAL SHALL BE REPLACED, IN ACCORDANCE WITH THE CITY OF ANN ARBOR'S UNIFIED DEVELOPMENT CODE, BY THE END OF THE FOLLOWING PLANTING SEASON AS A CONTINUING OBLIGATION FOR THE DURATION OF THE SITE PLAN.

THE OWNER SHALL INSURE PERPETUAL AND MANDATORY MAINTENANCE AND/OR REPLACEMENT OF VEGETATIVE PLANTINGS PURSUANT TO THE APPROVED LANDSCAPE PLAN.

IRRIGATION NOTE:

PROVIDE UNDERGROUND AUTOMATIC IRRIGATION SYSTEM. SYSTEM SHALL INCLUDE SEPARATE ZONES FOR LAWNS, SHRUBS PERENNIALS AND ANNUAL FLOWERS.

LANDSCAPE EDGING:

ALL LANDSCAPE EDGES ARE SHOVEL CUT.

COMPACTED SOILS

1. NO MACHINERY IS TO BE USED OR PARKED WITHIN THE DRIPLINE OF EXISTING TREES.
2. PROPOSED PLANT BEDS FOUND TO HAVE COMPACTED SOILS SHALL BE FULLY EXCAVATED TO DEPTH SHOWN ON DETAILS. THESE AREAS (NOT INDIVIDUAL PLANT HOLES) ARE TO RECEIVE CONTINUOUS PLANT MIX AS SPECIFIED BELOW :

   A MIXTURE OF 70% LOAM TOPSOIL, 10% COMPOST, 20% SAND BACKFILLED IN THE PLANT BED.

   ADDITIONALLY – HAND TILL TO A MINIMUM DEPTH OF 12", INTO EVERY 150 SQ. FT. BED AREA:

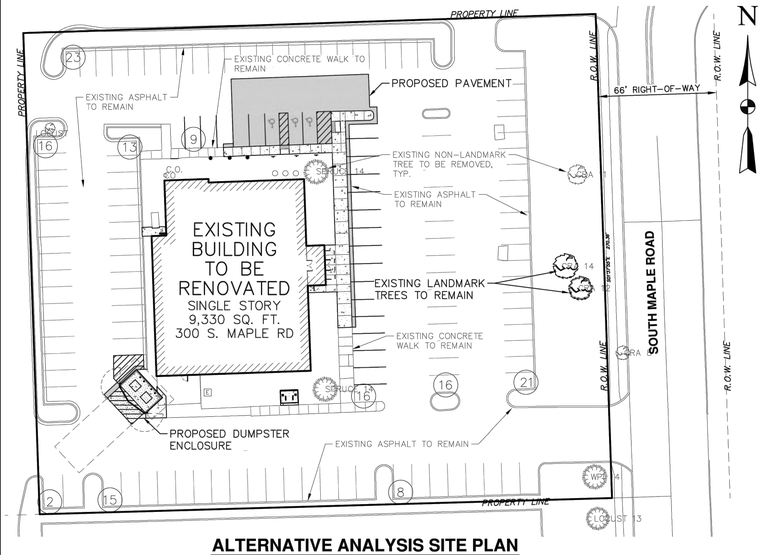
   (1) 6 CU. FT. BALE ORGANIC COMPOST

   (1) 40 LB BAG COMPOSTED POULTRY MANURE "CHICK MAGIC" 5–3–2 WWW.CHICKMAGIC.NET (262)495–6220

   (1) 5 LB BAG 13–13–13 MULTI–PURPOSE FERTILIZER

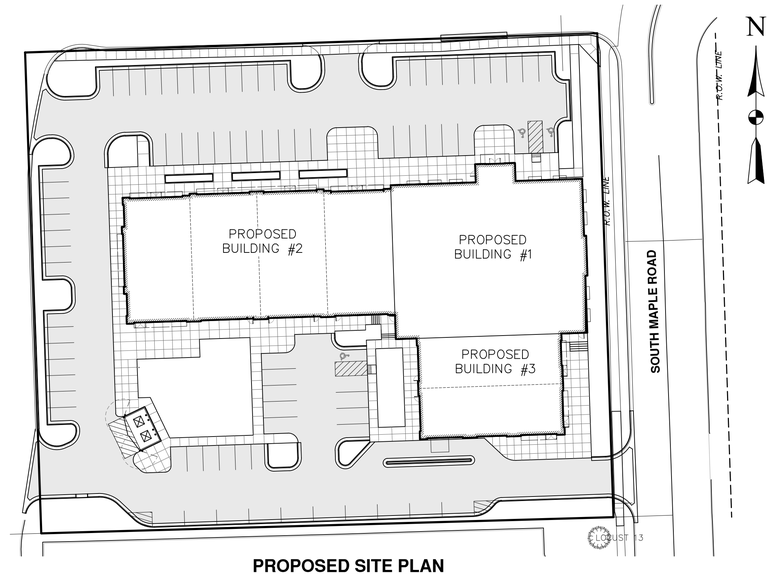
SNOW STORAGE NOTE:

SNOW SHALL NOT BE PUSHED ON TO INTERIOR LANDSCAPE ISLANDS UNLESS THOSE AREAS HAVE BEEN DESIGNATED FOR SNOW STORAGE.



ALTERNATIVE ANALYSIS SITE PLAN

SCALE 1" = 40'



PROPOSED SITE PLAN

SCALE 1" = 40'

GROSS / NET LOT AREA		0.435 AC		
SITE DEVELOPMENT DATA		REQUIRED	EXISTING	PROPOSED
ZONING		C3	C3	C3
BUILDING SETBACKS	FRONT	10'	159.64' EAST	155.93 EAST
	SIDE	0'	78.58' NORTH 75.95' SOUTH	84.89' NORTH 75.95' SOUTH
	REAR	20'	67.66' WEST	67.66' WEST
BUILDING INFORMATION	HEIGHT	55 FT./4 Stories	+/–28'/1-STORY	28'/1-STORY
	FLOOR AREA	6,000 SF	+/–9330 SF	9,330 SF
PARKING INFORMATION	TOTAL SPACES	30 MIN.	142	139
	ADA SPACES	3 (MIN)	3	3
BICYCLE PARKING		4	0	4

ALTERNATIVE ANALYSIS NARRATIVE

THE ALTERNATE PLAN IS THE ORIGINALLY PROPOSED RENOVATION OF THIS PROJECT. DUE TO THE CONDITION OF THE EXISTING BUILDING, TOTAL DEMOLITION OF THAT BUILDING WAS NECESSARY.

IN COMPARISON OF THE ALTERNATIVE AND THE PROPOSED PROJECTS, THE ALTERNATIVE PROPOSAL LIMITED THE USE AND AESTHETICS OF THE PROPERTY.

THE CITY'S CURRENT UNIFIED DEVELOPMENT CODE REQUIRES A 10–FOOT FRONT SETBACK FOR ALL PROPOSED BUILDINGS. CONSTRUCTING A BUILDING IN THE LOCATION OF THE PREVIOUS RESTAURANT WOULD REQUIRE A SETBACK VARIANCE FROM THE ZONING BOARD OF APPEALS.

ALTERNATIVE SITE PLAN PROS & CONS

- PRO – ALLOWED FOR THE MAINTENANCE OF THE LANDMARK TREES
- CON – PLAN MAINTAINED PAVEMENT, WALKS, AND LANDSCAPE WHICH EXIST IN POOR CONDITION.
- CON – THE EXTERIOR OF THE BUILDING REQUIRED NUMEROUS IMPROVEMENTS FOR THE HEALTH AND SAFETY OF THE EMPLOYEES AND CUSTOMERS
- CON – DID NOT FULLY UTILIZE THE COMMERCIAL/TAXABLE
- CON – PROVIDED SUBSTANTIALLY MORE PARKING THAN NECESSARY FOR PROPOSED USE

PROPOSED SITE PLAN PROS & CONS

- PRO – PROVIDES SAFE AND HEALTHY ENVIRONMENT FOR EMPLOYEES AND CUSTOMERS
- PRO – OVERALL ENHANCED AESTHETICS AND FUNCTIONALITY FOR THE COMMUNITY
- PRO – FULLY UTILIZES THE POTENTIAL COMMERCIAL/TAXABLE REVENUE OF THE PROPERTY
- PRO – PROVIDES ADEQUATE RATHER THAN EXCESSIVE PARKING FOR PROPOSED USE
- PRO – INCLUDES NEW SIDEWALK FOR PEDESTRIAN CONNECTIVITY AND SAFETY IN ACCESSING EXISTING COMMERCIAL USES WEST OF THIS SITE
- PRO – PROVIDES FOR BOTH SHELTERED AND UN–SHELTERED BICYCLE PARKING
- PRO – PROVIDES NEW AREAS FOR OUTDOOR SEATING AND GATHERING
- PRO – PROVIDES AREA FOR NATURAL BIO–RETENTION AREA
- PRO – MEETS CITY DEVELOPMENT CODE FOR 10–FOOT BUILDING FRONT SETBACK.
- CON – LOSE OF TWO LANDMARK TREES

GROSS / NET LOT AREA		0.435 AC	
SITE DEVELOPMENT DATA		REQUIRED	PROPOSED
BUILDING SETBACKS	FRONT	10'	10 EAST
	SIDE	0'	73' NORTH 47' SOUTH
	REAR	20'	53' WEST
BUILDING #1 INFORMATION	HEIGHT	55 FT/4 STORIES	28'/1-STORY
	FLOOR AREA	6,000 SF	9,408 SF
BUILDING #2 INFORMATION	HEIGHT	55 FT/4 STORIES	
	FLOOR AREA	6,000 SF	10,575 SF
BUILDING #3 INFORMATION	HEIGHT	55 FT/4 STORIES	
	FLOOR AREA	6,000 SF	4,546 SF
PARKING INFORMATION	TOTAL SPACES	30 MIN.	81
	ADA SPACES	3 (MIN)	3
BICYCLE PARKING	WITH SHELTER	4.5	6
	W/O SHELTER	4.5	4

Revisions

1. 08.27.2020 SITE PLAN SUBMISSION
2. 09.29.2020 REVISED PER SITE PLAN REVIEW #1
3. 10.22.2020 REVISED PER SITE PLAN REVIEW #2
4. 12.07.20 REVISED PER SITE PLAN REVIEW #3

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RELATIONSHIPS - REPUTATION - RESULTS
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Project Number 1051–19–9457 | Date 08/26/2020
P.M. CB | Checked by CB | Drawn by KMW | Crew/Book -

Client: AR BROUWER COMPANY

Project: LEWIS JEWELERS

Site Address: 300 S. MAPLE ROAD, ANN ARBOR, MICHIGAN 48103

County: WASHTENAW | Community: ANN ARBOR
Township: 2S | Range: 5E | Section: 25

Professional Name: CHRISTOPHER SUTTON, PE | Date: – –

Title: SITE PLAN

LANDSCAPE NOTES, CALCULATIONS & NATURAL FEATURES

Drawing Scale | Sheet Number: 15

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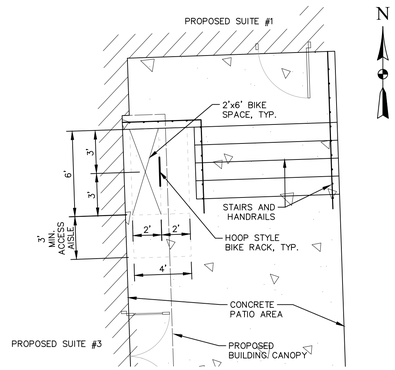
WETLAND BUFFER & UPLAND AREAS SEED MIX

THE SEED MIX BELOW IS A CUSTOMIZED VERSION OF THE GENESIS NURSERY'S STANDARD "LO PRO PRAIRIE FOR CLAY SOILS" MIX

Metro Consulting Quote 19323
no job name
Salt Tolerant Sedge Ghetto Mix
Genesis Nursery, Inc. Tampico, Il
Illinois Permit # 3669 (877) 817-5325 www.GenesisNurseryInc.com
PLS where applicable acre

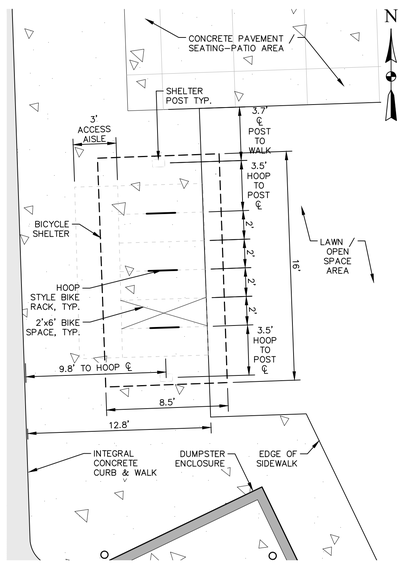
16-Jan-2020

Species	Common Name	lb/ac	seeds per pound	permanent matrix seeds per acre	seeds per sq. ft.	% by sd ct
Agrostis stolonifera (A alba palustris)	Bent Grass	0.063	7,442,623	468,885	10.76	6.41%
Alisma subcordatum	Common Water Plantain	0.125	1,212,834	151,604	3.48	2.07%
Ammannia robusta	Scarlet Loosestrife	0.016	27,315,151	440,242	10.11	6.02%
Amorpha fruticosa	Indigo Bush	0.063	62,968	3,967	0.09	0.05%
Asclepias incarnata	Swamp Milkweed	0.125	63,148	7,894	0.18	0.11%
Bidens cernua	Nodding Burmarigold	0.063	305,660	19,257	0.44	0.26%
Bidens frondosa	Common Beggarstick	0.031	194,511	6,030	0.14	0.08%
Boltonia asteroides	False Aster	0.063	4,450,980	280,412	6.44	3.83%
Bulboschoenus fluviatilis (Scirpus f)	River Bulrush	0.125	123,571	15,446	0.35	0.21%
Bulboschoenus maritimus (Scirpus paludosus)	Alkali Bulrush	0.063	222,000	13,986	0.32	0.19%
Carex Bebbii	Bebbs Sedge	0.063	2,203,883	138,845	3.19	1.90%
Carex lupuliformis	Knobbed Hop Sedge	0.125	97,758	12,220	0.28	0.17%
Carex nebrascensis	Nebraska Sedge	0.063	425,891	26,831	0.62	0.37%
Carex praegracilis	Expressway Sedge	0.125	637,640	79,705	1.83	1.09%
Carex scoparia	Pointed Broom Sedge	0.063	1,254,144	79,011	1.81	1.08%
Carex stipata	Awlfruited Sedge	0.063	650,430	40,977	0.94	0.56%
Carex vulpinoidea	Fox Sedge	0.500	1,964,030	982,015	22.54	13.43%
Cephalanthus occidentalis	Button Bush	0.125	112,043	14,005	0.32	0.19%
Distichlis spicata	Salt Grass	0.500	560,000	280,000	6.43	3.83%
Echinochloa crusgalli	Barnyard Grass	2.000	135,482	270,964	6.22	3.70%
Eleocharis obtusa	Blunt Spikerush	0.031	2,508,287	77,757	1.79	1.06%
Eleocharis palustris	Marsh Spikerush	0.063	1,181,250	74,419	1.71	1.02%
Elymus virginicus	Virginia Rye	5.000	117,252	586,260	13.46	8.02%
Eutrochium maculatum (Eupatorium m)	Spotted Joepyeweed	0.031	1,586,013	49,166	1.13	0.67%
Glyceria striata	Fowl Manna Grass	0.031	2,043,243	63,341	1.45	0.87%
Helenium autumnale	Sneezeweed	0.063	3,310,948	208,590	4.79	2.85%
Juncus arcticus balticus (J b littoralis)	Lake Shore Rush	0.016	9,659,574	154,553	3.55	2.11%
Juncus effusus	Soft Rush	0.016	22,700,000	363,200	8.34	4.97%
Juncus nodosus	Joint Rush	0.016	26,705,882	427,294	9.81	5.84%
Juncus torreyi	Torrey's Rush	0.016	23,402,062	374,433	8.60	5.12%
Leersia oryzoides	Rice Cut Grass	0.125	354,688	44,336	1.02	0.61%
Mimulus ringens	Monkey Flower	0.031	2,579,545	79,966	1.84	1.09%
Penthorum sedoides	Ditch Stonecrop	0.008	43,283,095	346,265	7.95	4.73%
Persicaria pensylvanica (Polygonum p)	Giant Smartweed	2.000	69,810	139,620	3.21	1.91%
Rudbeckia laciniata	Green Conelower	0.063	219,536	13,831	0.32	0.19%
Sagittaria latifolia	Duck Potato	0.031	2,025,000	62,775	1.44	0.86%
Schoenoplectus acutus (Scirpus a)	Hardstem Bulrush	0.063	879,545	55,411	1.27	0.76%
Schoenoplectus pungens (Scirpus p)	Chairmakers Rush	0.125	189,246	23,656	0.54	0.32%
Schoenoplectus tabernaemontani (Scirpus val	Great Bulrush	0.125	530,374	66,297	1.52	0.91%
Scirpus atrovirens	Dark Green Rush	0.031	7,827,586	242,655	5.57	3.32%



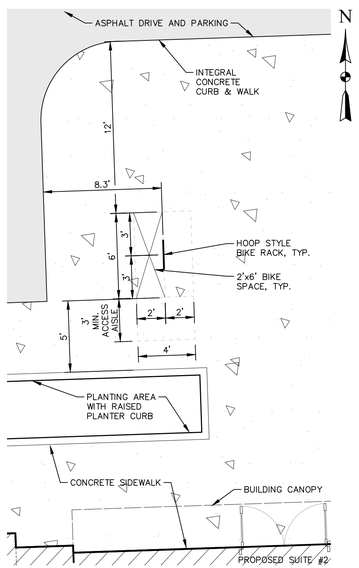
2 BICYCLE SPACE LAYOUT - EAST

SCALE: 1" = 5'



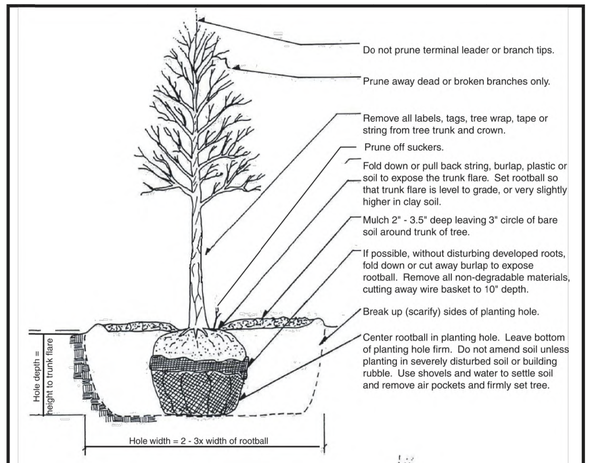
6 BICYCLE SPACE WITH SHELTER LAYOUT

SCALE: 1" = 5'



2 BICYCLE SPACE LAYOUT - NORTH

SCALE: 1" = 5'



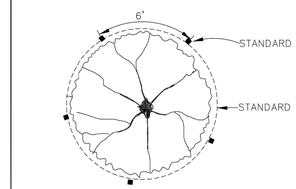
Do not stake unless in heavy clay soil, windy conditions, 3" or greater diameter tree trunk or large crown. If staking is needed due to these conditions:

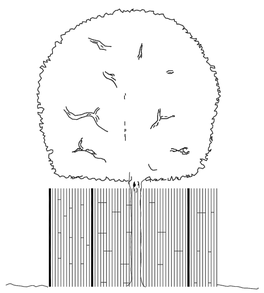
- Stake with 2 x 2 hardwood stakes, or approved equal, driven 6" - 8" outside of rootball.
- Loosely stake tree trunk to allow for trunk flexing.
- Stake trees just *below* first branch with 2" - 3" wide belt-like, nylon or plastic straps (2 per tree on opposite sides of tree, connect from tree to stake horizontally. *Do not* use rope or wire through a hose.)
- Remove all staking materials after 1 year.

TREE PLANTING DETAIL

SCALE: NO SCALE

Original: Dr. Bonnie Appleton, Virginia Polytechnic Institute and State University, modified by the Michigan Department of Natural Resources, Forest Management Division, and the City of Ann Arbor.





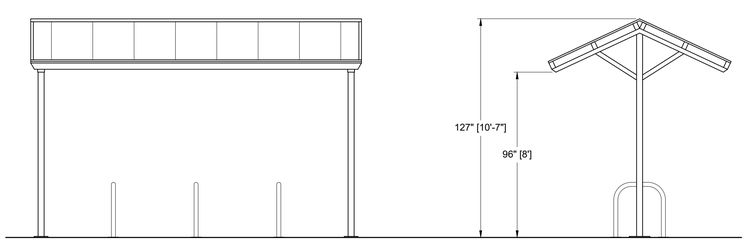
FENCE SHALL BE LOCATED AT THE OUTER PERIMETER OF THE CRITICAL ROOT ZONE, UNLESS OTHERWISE SHOWN ON THE APPROVED LANDSCAPE PLAN

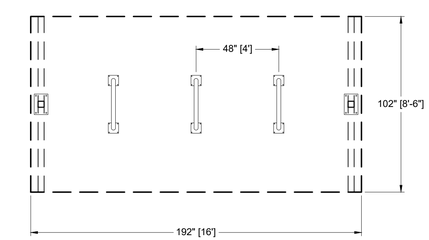
REVISIONS	REV. NO.	DR.BY	CH. BY	DATE

PUBLIC SERVICES DEPARTMENT
CITY OF ANN ARBOR

TREE PROTECTION

DR. BY	DF/SMJ	CH. BY	CSS	DRAWING NO.	
SCALE	NONE	DATE	11-6-92		SD-M-1
INCH	0 1"			SHEET NO. ____ OF ____	





PLAN VIEW
48" RACK SPACING)

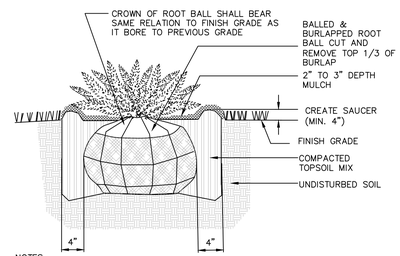
8.5"x16' APEX' BICYCLE SHELTER

NOT TO SCALE

BIKE RACK SHELTER TO BE AS SHOWN, OR AN APPROVED EQUAL

NOTES:

- FRAMEWORK TO BE WELDED AND MECHANICALLY FASTENED STEEL
- ALL FASTENERS TO BE STAINLESS STEEL
- ROOF GLAZING TO BE: 8MM POLYCARBONATE STRUCTURED SHEET, TONGUE AND GROOVE SYSTEM, IN ALUMINUM TRIM. TINT: _____
- STEEL FINISHING:
  - MEDIA BLAST PREP
  - TNEMEC TNEME ZINC 90-97 PRIMER
  - TNEMEC SERIES N69 HI-BUILD EPOXOLINE 2-PART EPOXY MIDCOAT;
  - TNEMEC SERIES 73 ENDURA-SHIELD TOPCOAT.
  - ALUMINUM TRIM TO HAVE SAME TOP TWO COATS (OR IN MATCHING ANODIZED). COLOR: _____
- ALL DIMENSIONS TO BE FIELD VERIFIED
- DESIGN IS PRELIMINARY, AND CONCEPTUAL, AND SUBJECT TO CHANGE BASED ON FINAL ENGINEERING PHASE AND CUSTOMER APPROVAL.



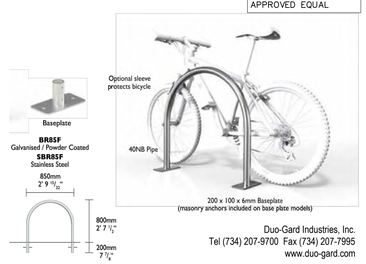
NOTES:

1. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2. WATER SHRUB THOROUGHLY SUBSEQUENT TO INSTALLATION

SHRUB PLANTING DETAIL

NOT TO SCALE

BIKE HOOP RACK TO BE AS SHOWN, OR AN APPROVED EQUAL



Duo-Gard Industries, Inc.
Tel (734) 207-9700 Fax (734) 207-7995
www.duo-gard.com

BIKE RACK DETAIL

NOT TO SCALE

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

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

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

Revisions
1 08.27.2020 SITE PLAN SUBMISSION
2 09.29.2020 REVISED PER SITE PLAN REVIEW #1
3 10.22.2020 REVISED PER SITE PLAN REVIEW #2
4 12.07.20 REVISED PER SITE PLAN REVIEW #3

METROCA.NET
RELATIONSHIPS - REPUTATION - RESULTS
800.525.6016

Project Number	Date
1051-19-9457	08/26/2020

P.M.	Checked by	Drawn by	Crew/Book
CB	CB	KMW	-

Client
AR BROUWER COMPANY

Project
LEWIS JEWELERS

Site Address
300 S. MAPLE ROAD
ANN ARBOR, MICHIGAN 48103

County	Community
WASHTENAW	ANN ARBOR

Township	Range	Section
2S	5E	25

Professional Name	Date
CHRISTOPHER SUTTON, PE	--

Title
SITE PLAN
LANDSCAPE DETAILS

Drawing Scale	Sheet Number
	16

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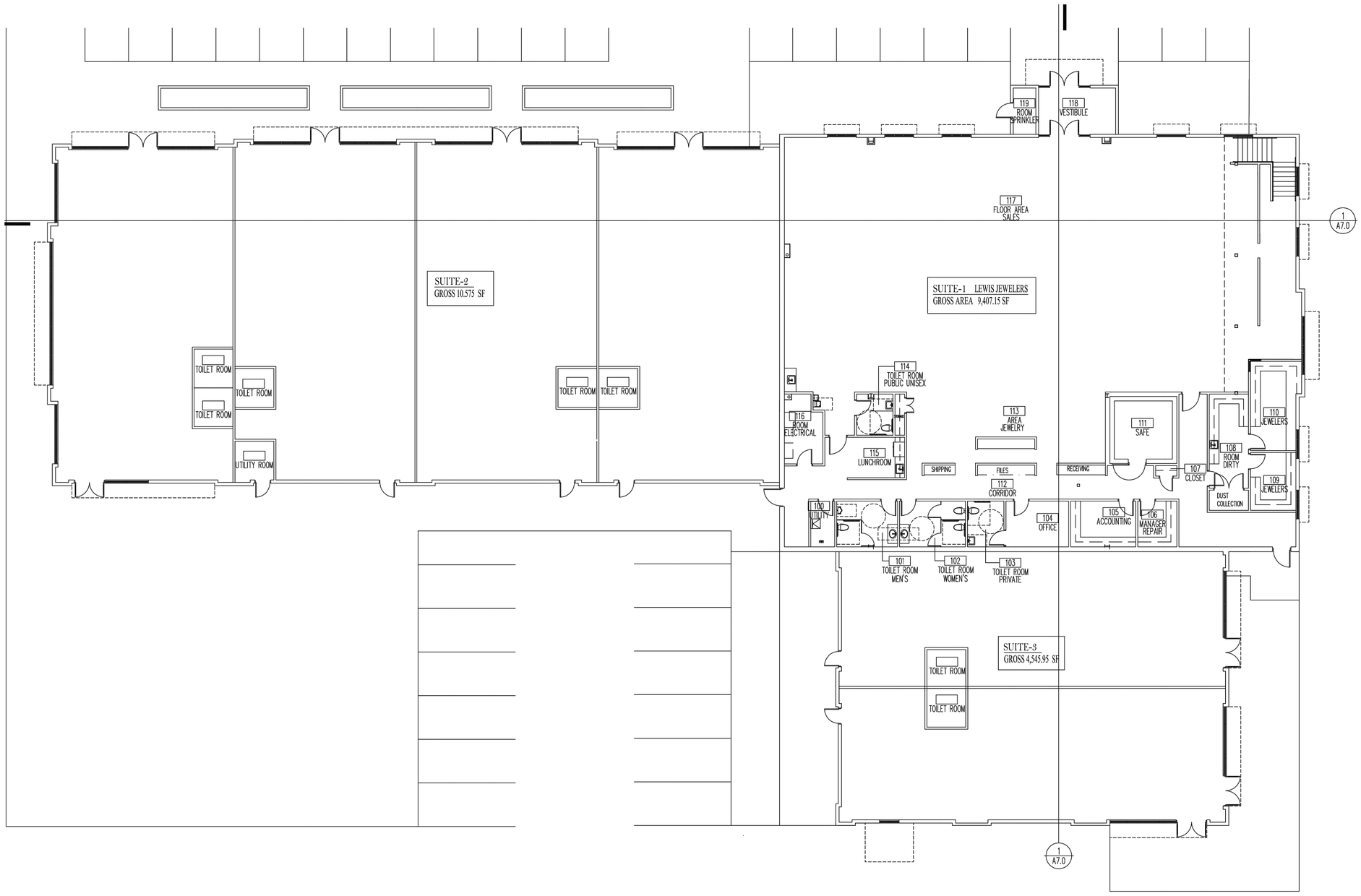

Overall Floor Plan

3/32"=1'-0"
LewJewelR--pl01

1

METRO GROUP ARCHITECTS
P.O. Box 7363
Ann Arbor, Michigan 48107
Phone: (734) 747-8999

Lewis Jewelers

New Construction

300 South Maple
Ann Arbor, Michigan

9/28/20 Plan Review Response
8/27/20 Site Plan Sub. #1
8/20/20 Pre-Submission
Revisions

Drawn: MMH Checked: RDK

Reference North

200722

Overall Floor Plan

A2.0

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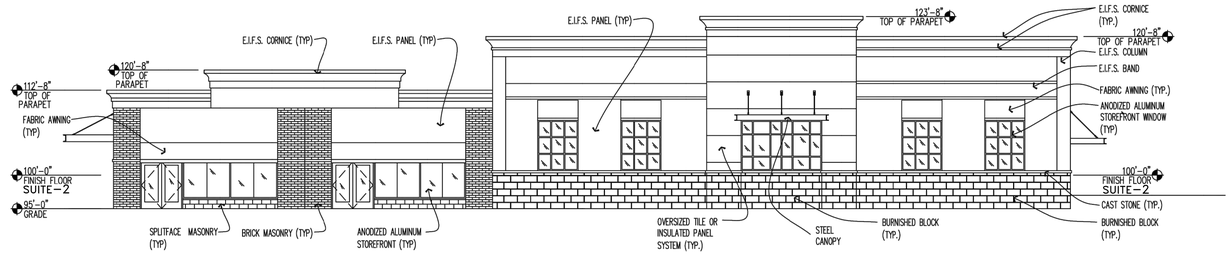
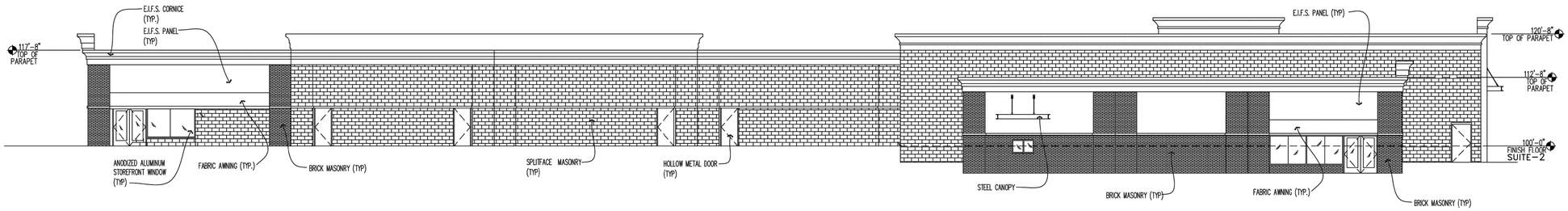


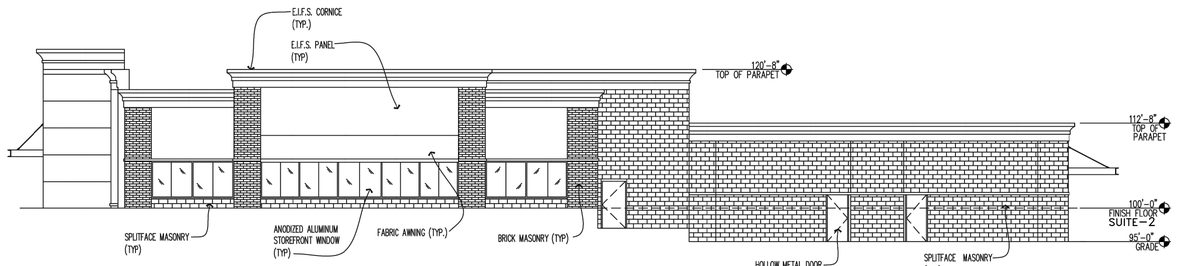
East Elevation

3/32"=1'-0" LewJewelR--ee04 13



South Elevation

3/32"=1'-0" LqwJewelR--ee03 9



West Elevation

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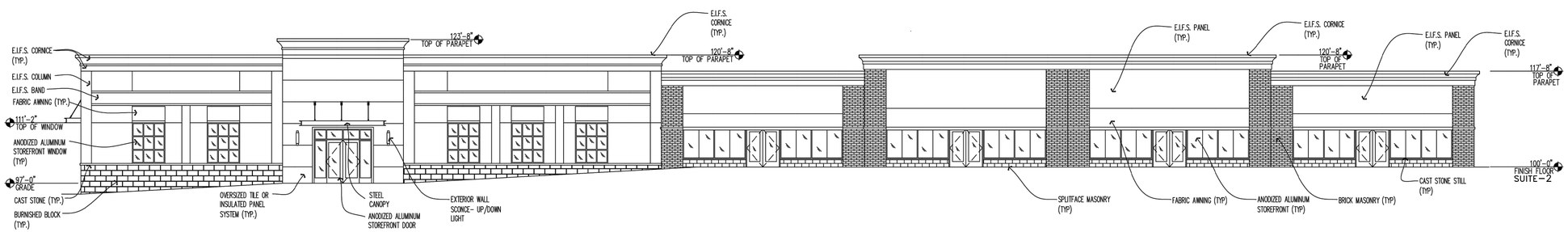

North Elevation

3/32"=1'-0" LqwJewelR--ee01 1

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Lewis Jewelers

New Construction

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Ann Arbor, Michigan

9/28/20 Plan Review Response
8/27/20 Site Plan Sub. #1
8/20/20 Pre-Submission

Revisions

Drawn: MMH Checked: RDK

200722

Overall Exterior Elevations

A5.0

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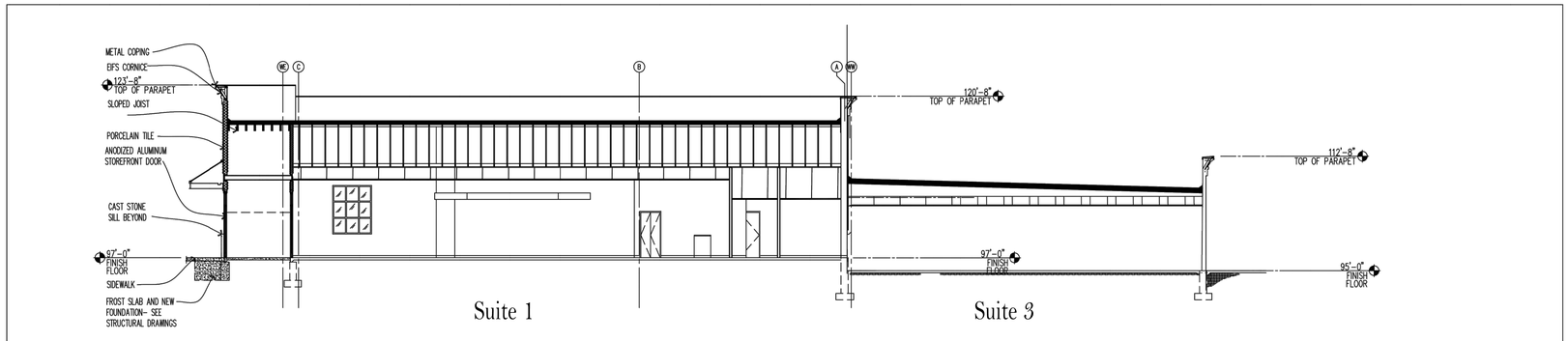
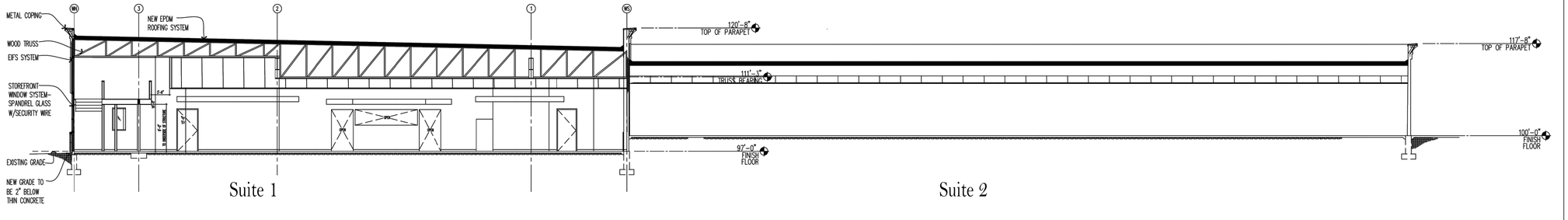


Building Section- East to West @ Entry

3/32"=1'-0" | LewJewelR--bs02 | 5



Building Section- North to South @ Mezzanine

3/32"=1'-0" | LewJewelR--bs01 | 1

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Lewis Jewelers

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8/27/20 Site Plan Sub. #1
8/20/20 Pre-Submission
Revisions

Drawn: MMH Checked: RDK

200722

Overall Building Sections

A7.0

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NORTH ELEVATION

WEST ELEVATION

SOUTH ELEVATION

EAST ELEVATION

SITE PLAN

OVERALL VIEW TO SOUTH WEST

OVERALL VIEW TO NORTH EAST

AREA PLAN

METRO GROUP ARCHITECTS
P.O. Box 7363
Ann Arbor, Michigan 48107
Phone: (734) 747-8999

Lewis Jewelers

New Construction

300 South Maple
Ann Arbor, Michigan

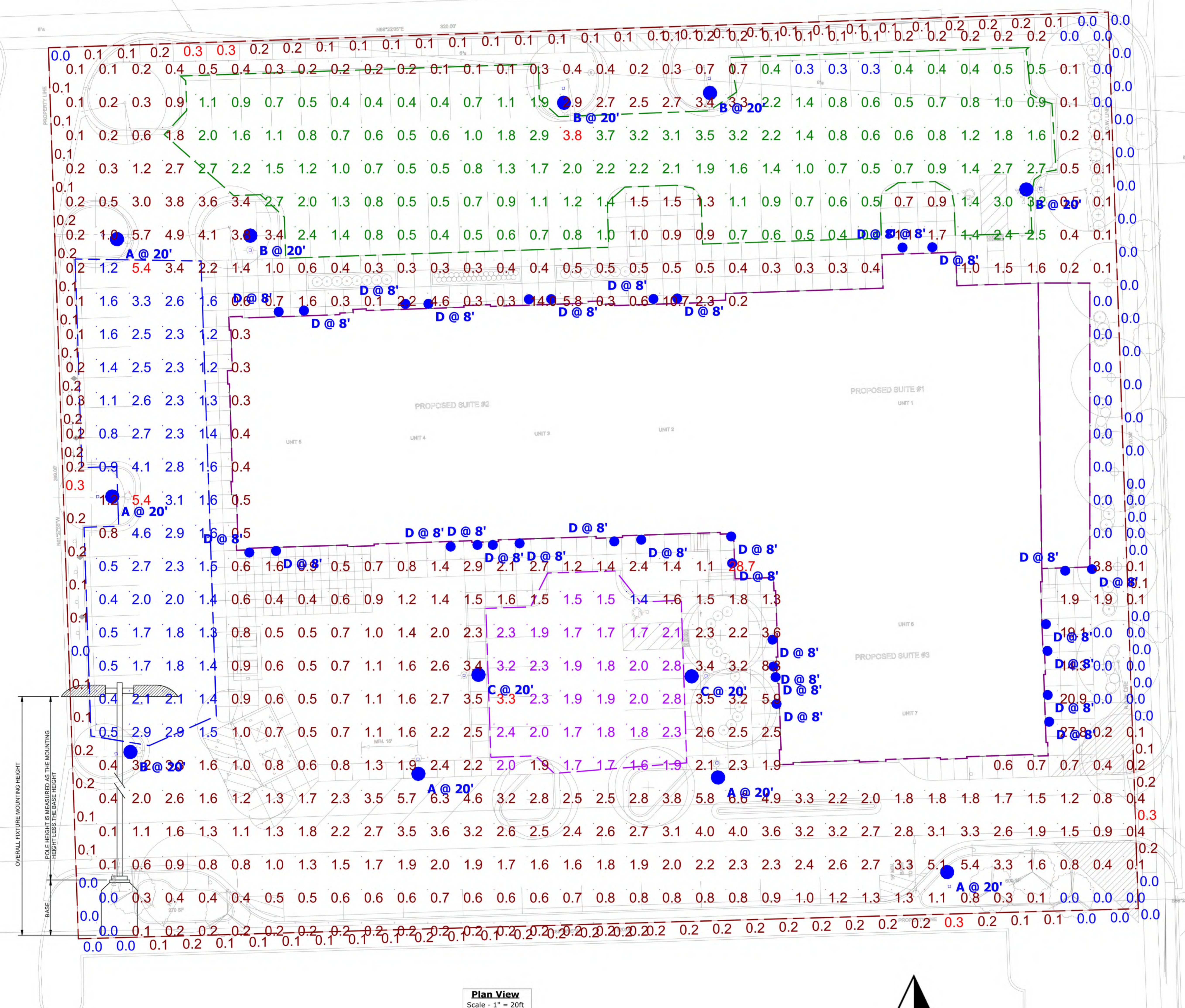
9/28/2020 Site Plan Sub #2
8/27/20 Site Plan Sub. #1
Revisions

Drawn: MMH Checked: RDK

200722

Site and Building Renderings

A8.0



Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min	Avg/Max
Back Lot	✳	2.0 fc	3.3 fc	1.4 fc	2.4:1	1.4:1	0.6:1
Grade	+	1.6 fc	28.7 fc	0.0 fc	N/A	N/A	0.1:1
North Lot	✳	1.2 fc	3.8 fc	0.3 fc	12.7:1	4.0:1	0.3:1
Property Line	+	0.1 fc	0.3 fc	0.0 fc	N/A	N/A	0.3:1
West Lot	✳	2.0 fc	5.4 fc	0.4 fc	13.5:1	5.0:1	0.4:1

Schedule

Symbol	Label	QTY	Manufacturer	Catalog Number	Description	Number Lamps	Filename	Lumens per Lamp	LLF	Wattage	Lamp
○	A	5	Lumenpulse	LIAM-120_277-CSL-M150-40K-CRI 80-3 BLS	Lumenicon Medium	1	LIAM-120_277-CSL-M150-40K-CRI 80-3 BLS.ies	7951	0.9	132	LED
○	B	5	Lumenpulse	LIAM-120_277-CSL-M150-40K-CRI 80-4 BLS	Lumenicon Medium	1	LIAM-120_277-CSL-M150-40K-CRI 80-4 BLS.ies	6519	0.9	132	LED
○	C	2	Lumenpulse	LIAM-120_277-CSL-M150-40K-CRI 80-5S	Lumenicon Medium	1	LIAM-120_277-CSL-M150-40K-CRI 80-5S.ies	13565	0.9	132	LED
⊛	D	30	Generation Brands	700OWTEG18UDWWC UNV830Y	LED Wall-Mount Luminaire	1	102171228CHI-046 GB 700OWTEG18UDWWC UNV830Y.ies	2420	0.9	30	LED

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General Note

1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
2. SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR.
3. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: GRADE

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

GBA GASSER BUSH ASSOCIATES

LEWIS JEWELERS - CITY OF ANN ARBOR
PHOTOMETRIC SITE PLAN
PREPARED FOR: A. R. BROUWER CO, LLC.
GASSER BUSH ASSOCIATES
WWW.GASSERBUSH.COM

Designer	DB
Date	9/28/2020
Scale	Not to Scale
Drawing No.	#20-48479-V5

PH-1