

#### COMMUNITY DEVELOPMENT DEPARTMENT

45175 Ten Mile Road Novi, MI 48375 (248) 347-0415 Phone (248) 735-5600 Facsimile www.cityofnovi.org

# ZONING BOARD OF APPEALS STAFF REPORT

FOR: City of Novi Zoning Board of Appeals MEETING DATE: February 13, 2023

REGARDING: 46470 Desoto Court, Parcel # 50-22-04-379-002 (PZ24-0001)

BY: Alan Hall, Deputy Director Community Development

#### **GENERAL INFORMATION:**

#### **Applicant**

Trek Inc

#### Variance Type

**Dimensional Variance** 

#### **Property Characteristics**

Zoning District: This property is zoned Light Industrial (I-1)

Location: north of West Road, west of West Park Drive

Parcel #: 50-22-04-379-002

#### Request

The applicant is requesting a variance from the City of Novi Zoning Ordinance Section 5.2.12.E for a reduction in required parking spaces to 66 (90 parking spaces required, a reduction variance of 24 parking spaces). This variance will eliminate the need for additional parking for the proposed warehouse addition.

#### **II. STAFF COMMENTS:**

The applicant is seeking a variance to reduce the amount of calculated required parking spaces for the Trek Building Addition. This is an existing industrial office building. The new addition is to enlarge the warehouse and not intended to increase the number of employees. The request seems reasonable to limit the area of impervious surfaces on the property to help with stormwater management.

Trek Inc Case # PZ24-0001

#### III. RECOMMENDATION:

The Zoning Board of Appeals may take one of the following actions:

1.	I mo	ve					variance , for							sought	-
	becaus	se	Pet	itior	ner	has	show	n	pr	actical		difficu	ulty 	requ	uiring 
	(a)	to u	nout th	e va he p	riance P roperty	etition becaus	er will be se	unre	easona	ably pr	even	ted or li	mited	with re	spect
	(b)		prope	rty i	s unique	e beca	use								
	(c)	Peti:	tioner				condition								
	(d)			_			unreasor					-			
	(e)	The	relief	if	consiste	nt wi	th the s								
	(f)	The			ranted is		ct to:								•
			1.												
			2.												
			3.	,											·
			4.												

Trek Inc Case # PZ24-0001

2.	mo			e <u>deny</u>						PZ24-0001,	_	-
	ecaus	e	Petit	ioner	has	not		showr	<b>1</b>	practical	diffic	culty ——
	(a)	The	circu	mstances		d feati	ures	of	the	property not unique	inclu	ding
		exist g	enerall	y througho								
	(b)		eated l	because _						o the varianc		
	(c)	The fa		grant reli or finan		esult in meturn b				or inability to oners state		_
	(d)					in interfe	renc	e with	the a	adjacent and	surroun	ding
				variance w		e inconsist	ent v	vith the	spirit a	and intent of		

Should you have any further questions with regards to the matter please feel free to contact me at (248) 347-0417.

Alan Hall – Deputy Director Community Development - City of Novi



cityofnovi.org

# ZONING BOARD OF APPEALS APPLICATION

RECEIVED

DEC 28 2023

CITY OF NOVI DEVELOPMENT

#### APPLICATION MUST BE FILLED OUT COMPLETELY

I. PROPERTY INFORMATION (Add	ress of subject ZBA Ca	se)	Application Fee:	330.00	
PROJECT NAME / SUBDIVISION  Trek Building Addition					
ADDRESS		LOT/SIUTE/SPACE #	Meeting Date: 2	15-29	
46470 Desoto Court	Maybaab	Unit 2	ZBA Case #: PZ_2	1000-4	
50-22- <b>04</b> - <b>379</b> - <b>002</b>		tain from Assessing at (248) 347-0485	257. 0400		
CROSS ROADS OF PROPERTY		73 = 7/			
IS THE PROPERTY WITHIN A HOMEOWNER'S ASS	OCIATION JURISDICTION?	REQUEST IS FOR:			
			MMERCIAL   VACANT PR	OPERTY LI SIGNAGE	
DOES YOUR APPEAL RESULT FROM A NOT  II. APPLICANT INFORMATION	ICE OF VIOLATION OR CI	TATION ISSUED?	yes 🗹 no		
	EMAIL ADDRESS		CELL PHONE NO.		
A. APPLICANT	tsinning@trekdirect	.com	248.514.8072		
NAME Timothy M. Sinning			TELEPHONE NO.		
ORGANIZATION/COMPANY			248.668.2114 FAX NO.		
Trek Inc.	1.0	NUTRAL DESCRIPTION OF THE PROPERTY OF THE PROP		T	
46470 Desoto Court		oity Novi	STATE MI	ZIP CODE 46470	
B. PROPERTY OWNER CHECK HE	ERE IF APPLICANT IS ALSO T	THE PROPERTY OWNER	· ·		
Identify the person or organization that	EMAIL ADDRESS		CELL PHONE NO.		
owns the subject property:  NAME	spark@trekdirect.c	om	248.514.4916 TELEPHONE NO.		
Seon Park			248.668.2115		
ORGANIZATION/COMPANY Trek Inc.			FAX NO.		
ADDRESS		CITY	STATE	ZIP CODE	
46470 Desoto Court		Novi	MI	46470	
III. ZONING INFORMATION  A. ZONING DISTRICT					
□ R-A □ R-1 □ R-2	□ R-3 □ R-4	□ RM-1 □ RM-2	□мн		
☑ 1-1 ☐ 1-2 ☐ RC		OTHER			
B. VARIANCE REQUESTED					
INDICATE ORDINANCE SECTION (S) AND					
1. Section <u>5.2.12.E</u>	′ariance requested 🤳	Reduction of required	parking spaces from 90	to 66	
2. SectionV	ariance requested				
3. SectionV	ariance requested				
4. Section	ariance requested				
IV. FEES AND DRAWNINGS					
A. FEES					
Single Family Residential (Existing	ı) \$220 🗌 (With Violati	on) \$275 🗆 Single Far	mily Residential (New) \$3	275	
Multiple/Commercial/Industrial \$330 □ (With Violation) \$440 □ Signs \$330 □ (With Violation) \$440					
☐ House Moves \$330	$\square$ Special Mee	etings (At discretion of	Board) \$660		
<ul><li>B. DRAWINGS 1-COPY &amp; 1 DIGI</li><li>Dimensioned Drawings and Plans</li></ul>	TAL COPY SUBMITTED A		and allahamanan termin	1	
• Site/Plot Plan		<ul> <li>Location of existing</li> </ul>	ed distance to adjacen ng & proposed signs, if		
• Existing or proposed buildings or a	ddition on the propert	ly • Floor plans & elev	rations .		
<ul> <li>Number &amp; location of all on-site per</li> </ul>	arking, it applicable	<ul> <li>Any other information</li> </ul>	ation relevant to the Va	riance application	



### **ZONING BOARD OF APPEALS APPLICATION**

V. VARIANCE					
A. VARIANCE (S) REQUESTED					
$lacksquare$ dimensional $\Box$ use $\Box$ sign					
There is a five-(5) hold period before work/action can be taken on variance approvals.					
B. SIGN CASES (ONLY) Your signature on this application indicates that you agree to install a Mock-Up Sign ten-(10) days before the schedule ZBA meeting. Failure to install a mock-up sign may result in your case not being heard by the Board, postponed to the next schedule ZBA meeting, or cancelled. A mock-up sign is NOT to be actual sign. Upon approval, the mock-up sign must be removed within five-(5) days of the meeting. If the case is denied, the applicant is responsible for all costs involved in the removal of the mock-up or actual sign (if erected under violation) within five-(5) days of the meeting.					
C. ORDINANCE					
City of Novi Ordinance, Section 3107 – Miscellaneous					
No order of the Board permitting the erection of a building shall be valid for a period longer than one-(1) year, unless a building permit for such erection or alteration is obtained within such period and such erection or alteration is started and proceeds to completion in accordance with the terms of such permit.					
No order of the Board permitting a use of a building or premises shall be valid for a period longer than one-hundred and eighty-(180) days unless such use is establish within such a period; provided, however, where such use permitted is dependent upon the erection or alteration or a building such order shall continue in force and effect if a building permit for such erection or alteration is obtained within one-(1) year and such erection or alteration is started and proceeds to completion in accordance with the terms of such permit.					
D. APPEAL THE DETERMINATION OF THE BUILDING OFFICIAL					
PLEASE TAKE NOTICE:					
The undersigned hereby appeals the determination of the Building Official / Inspector or Ordinance made  CONSTRUCT NEW HOME/BUILDING ADDITION TO EXISTING HOME/BUILDING SIGNAGE  ACCESSORY BUILDING USE OTHER					
VI APPOCANT O PROPERTY SIGNATURES					
A. APPLICANT & PROPERTY SIGNATURES					
Appliedni Signature 12-19-23  Date					
B. PROPERTY OWNER					
If the applicant is not the owner, the property owner must read and sign below: The undersigned affirms and acknowledges that he, she or they are the owner(s) of the property described in this application, and is/are aware of the contents of this application and related enclosures.					
Properly-Owner Sland-ure					
VII. FOR OFFICIAL USE ONLY					
DECISION ON APPEAL:					
☐ GRANTED ☐ DENIED					
The Building Inspector is hereby directed to issue a permit to the Applicant upon the following and conditions:					
, and definitions					
Chairperson, Zoning Board of Appeals  Date					



#### **Community Development Department**

45175 Ten Mile Road Novi, MI 48375 (248) 347-0415 Phone (248) 735-5600 Facsimile www.cityofnovi.org

# REVIEW STANDARDS DIMENSIONAL VARIANCE

The Zoning Board of Appeals (ZBA) will review the application package and determine if the proposed Dimensional Variance meets the required standards for approval. In the space below, and on additional paper if necessary, explain how the proposed project meets each of the following standards. (Increased costs associated with complying with the Zoning Ordinance will not be considered a basis for granting a Dimensional Variance.)

### Standard #1. Circumstances or Physical Conditions.

Explain the circumstances or physical conditions that apply to the property that do not apply generally to other properties in the same zoning district or in the general vicinity. Circumstances or physical conditions may include:

-	mistances of physical contamons may include.
a.	<ul> <li>Shape of Lot. Exceptional narrowness, shallowness or shape of a specific property in existence on the effective date of the Zoning Ordinance or amendment.</li> <li>✓ Not Applicable</li></ul>
	and/or
	· ·
b.	<b>Environmental Conditions.</b> Exceptional topographic or environmental conditions of other extraordinary situations on the land, building or structure.
	☐ Not Applicable ☐ Applicable ☐ If applicable, describe below:
	No parking is allowed in the front yard in an industrial zoning per Section 3.6.2.E. There is room on the north side of the building to add additional parking, but not enough to meet the ordinance requirements. Additional parking in this area would also necessitate an emergency vehicle turnaround as the dead end would be longer than the 150' allowed by the IFC. The east side of the property is encumbered with numerous obstructions. This includes multiple easements, a parking setback from residential property (therefor no parking is possible on the east side) and a rise in elevation of between 14' to 18' in elevation.
	and/or
c.	Abutting Property. The use or development of the property immediately adjacent to the subject property would prohibit the literal enforcement of the requirements of the Zoning Ordinance or would involve significant practical difficulties.  ☐ Not Applicable ☐ Applicable ☐ If applicable, describe below:
	There is room on the north side of the building to add additional parking, but not enough to meet the ordinance requirements. There is a parking setback for this zoning of 100' from residential zoning, the proposed building is only 111' from the residential district. This requirement precludes and parking being proposed on the east side of the property.

#### Standard #2. Not Self-Created.

Describe the immediate practical difficulty causing the need for the Dimensional Variance, that the need for the requested variance is not the result of actions of the property owner or previous property owners (i.e., is not self-created).

The site is an existing industrial parcel (I-1) adjacent to residential zoned property to the east. This is an existing condition not created by the owner. I-1 does not allow for parking in the front setback and has a 100' parking setback from any adjoining residential district. The proposed building addition is 111' from the residential district, therefore there is no room to provide parking on the east side of the building.

#### Standard #3. Strict Compliance.

Explain how the Dimensional Variance in strict compliance with regulations governing area, setback, frontage, height, bulk, density or other dimensional requirements will unreasonably prevent the property owner from using the property for a permitted purpose, or will render conformity with those regulations unnecessarily burdensome.

The proposed use of the building and addition is for additional warehouse space only. There are no plans to increase the number of employees with the additional square footage of warehouse space proposed. Strict compliance would not allow the necessary square footage to be constructed. There is limited space for additional parking on the north side of the building which will not meet the ordinance requirements and would create a IFC violation that can't be remedied. There is no parking allowed in the front yard in the I-1 district and there is a 100' parking setback from adjacent residential districts. With the proposed addition being 111' from this district there is no room for additional parking on the east side of the building.

#### Standard #4. Minimum Variance Necessary.

Explain how the Dimensional Variance requested is the minimum variance necessary to do substantial justice to the applicant as well as to other property owners in the district.

The proposed use of the building and addition is for additional warehouse space only. There are no plans to increase the number of employees with the additional square footage of warehouse space proposed. Current parking is adequate for the current and future use of the building. The required parking is 91 spaces with a proposed parking of 66 spaces (existing condition). The addition of any new and unnecessary parking will create unneeded impervious area and additional maintenance, there are provision in the ordinance to allow a reduction in parking based on usage if banked parking can be demonstrated. This site does not allow for a sufficient number of banked parking spaces due to the following: no parking in the front setback.

unable to meet the parking setback from residential district.

not suffient room north of the addition to meet the required parking.

#### Standard #5. Adverse Impact on Surrounding Area.

Explain how the Dimensional Variance will not cause an adverse impact on surrounding property, property values, or the use and enjoyment of property in the neighborhood or zoning district.

The dimensional variance will not cause any adverse impacts on the surrounding properties. The granting of this variance will not preclude the use of the surrounding properties as intended in the ordinance. The reduction in required parking will have a positive effect. There will be less potential traffic, less impervious area improving the quality of storm water runoff. The parcels north, south and west of the property are zoned I-1 and are already developed.



#### MAP INTERPRETATION NOTICE

Map information depicted is not intended to replace or substitute for any official or primary source. This map was intended to meet National Map Accuracy Standards and use the most recent, accurate sources available to the people of the City of Novi.

Boundary measurements and area calculations are approximate and should not be construed as survey measurements performed by a licensed Michigan Surveyor as defined in Michigan Public Act 132 of 1970 as amended. Please contact the City GIS Manager to confirm source and accuracy information related to this map.

0 0.005 0.01

1 inch = 94 feet

Trek Site - 2023



Map Print Date: 12/12/2023

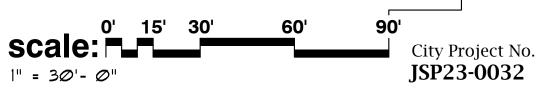


## **City of Novi**

45175 Ten Mile Rd Novi, MI 48375 cityofnovi.org



Trek Building Addition
City of Novi, Michigan





seal:

OF MICHUMAN

OF MICHAEL

FELINO

A. PASCUAL

ARCHIECT

ARCHIECT

ANDSCAPE

ANDS

clien

BRIVAR CONSTRUCTION COMPANY 9325 Maltby Road Brighton

9325 Maltby Road Brighton, Michigan 48116

project:

TREK
BUILDING
ADDITION

project location:

City of Novi, Michigan

46470, 46500, & 46440 Desoto Court

sheet title:

COLORED LANDSCAPE PLAN

job no. / issue / revision date

LS23.115.11 PSP 11-9-2023 LS23.115.11 PSP 12-22-2023

rawn by:

checked **FP** 

date: 11-5-2023

notice:
Copyright

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Do Not scale drawings. Use figured dimensions only



The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contracte shall be exclusively responsible for determining the exact location and

elevation prior to the start of construction

project no:

LS23.115.11

sheet no:

LS-1 of 2

#### LEGAL DESCRIPTION (AS PROVIDED)

(PER TITLE AGENCY: FIRST AMERICAN TITLE INSURANCE COMPANY, TITLE COMMITMENT NO: TC13-109053), EFFECTIVE DATE: 06/30/2023)

#### SCHEDULE C DESCRIPTION:

LAND SITUATED IN THE CITY OF NOVI, COUNTY OF OAKLAND, STATE OF MICHIGAN, DESCRIBED AS FOLLOWS:

UNIT NO. 12, BECK NORTH CORPORATE PARK-NOVI, A (SITE) CONDOMINIUM PROJECT, ACCORDING TO THE CONSOLIDATING MASTER DEED RECORDED IN LIBER 29298, PAGES 637 THROUGH 669 INCLUSIVE, AS AMENDED BY FIRST AMENDMENT TO CONSOLIDATING MASTER DEED RECORDED IN LIBER 31608, PAGES 491 THROUGH 504 INCLUSIVE, AS AMENDED BY SECOND AMENDMENT TO CONSOLIDATING MASTER DEED RECORDED IN LIBER 36625, PAGES 450 THROUGH 460 INCLUSIVE, AS AMENDED BY THIRD AMENDMENT TO CONSOLIDATING MASTER DEED RECORDED IN LIBER 39407, PAGES 518 THROUGH 530 INCLUSIVE, AS AMENDED BY FOURTH AMENDMENT TO CONSOLIDATING MASTER DEED RECORDED IN LIBER 40090, PAGES 777 THROUGH 787 INCLUSIVE, AS AMENDED BY FIFTH AMENDMENT TO CONSOLIDATING MASTER DEED RECORDED IN LIBER 40090, PAGES 777 THROUGH 787 INCLUSIVE, AS AMENDED BY FIFTH AMENDMENT TO CONSOLIDATING MASTER DEED RECORDED IN LIBER 47255, PAGES 841

THROUGH 851 INCLUSIVE, AS AMENDED BY SIXTH AMENDMENT TO CONSOLIDATING MASTER DEED RECORDED IN LIBER 50099, PAGES 58 THROUGH 68 INCLUSIVE, AS AMENDED BY SEVENTH AMENDMENT TO CONSOLIDATING MASTER DEED RECORDED IN LIBER 58226, PAGES 133 THROUGH 144 INCLUSIVE, OAKLAND COUNTY RECORDS AND DESIGNATED AS OAKLAND COUNTY CONDOMINIUM SUBDIVISION PLAN NO. 1264, TOGETHER WITH RIGHTS IN THE GENERAL COMMON ELEMENTS AND LIMITED COMMON ELEMENTS, AS SET FORTH IN THE ABOVE DESCRIBED CONSOLIDATING MASTER DEED AND AS DESCRIBED IN ACT 59 OF THE PUBLIC ACTS OF 1978, AS AMENDED.

#### BEARING REFERENCE

BEARINGS ARE BASED ON PROJECT COORDINATE SYSTEM:
MICHIGAN STATE PLANE COORDINATE SYSTEM, NAD83 (CONUS) (MOL) (GRS80), SOUTH ZONE 2113,
INTERNATIONAL FEET, GROUND
(LAT: 42°30'39.61"N, LON: 83°30'28.63"W, ELEV: 947,
SCALE FACTOR: 1.00011713 ).

#### DESIGN ENGINEER/SURVEYOR

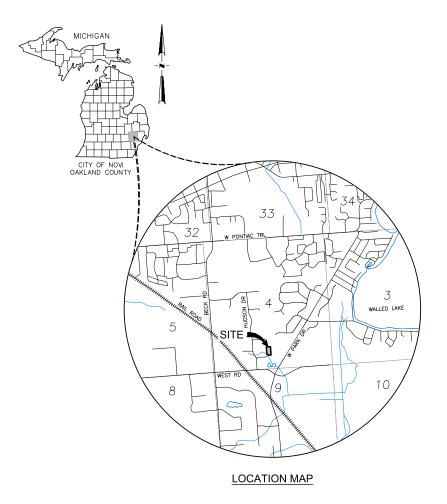


MONUMENT ENGINEERING GROUP ASSOCIATES, INC

INNOVATIVE GEOSPATIAL & ENGINEERING SOLUTIONS

298 VETERANS DRIVE, FOWLERVILLE, MI 48836 PHONE: 517-223-3512 SITE PLAN DRAWING FOR

# TREK BUILDING ADDITION



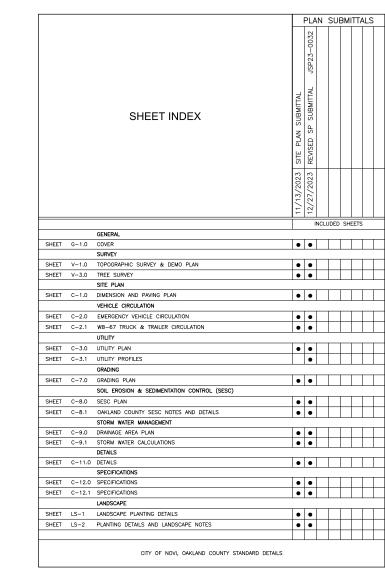
CLIENT



BRIVAR CONST. CO. 9325 MALTBY ROAD BRIGHTON, MI 48116 (248) 446-8000

#### ARCHITECT

FIKA ARCHITECTS LLC 3411 GEDDES ROAD ANN ARBOR, MI 48105 POC: DAVID M. MURPHY PHONE: 248-946-1622



GA Call MISS DIG full working days before you d Utility Notificat Organiza CLIENT **Brivar.** BRIVAR CONST. CO 9325 MALTBY ROAD BRIGTHON, MI 48116 (248) 446-8000 TREK BUILDING ADDITION 46470, 46500, & 46440 DESOTO PART OF THE SW 1/4, SECTION 4, T1 CITY OF NOVI, OAKLAND COUNTY,

ORIGINAL ISSUE DATE:

PROJECT NO: 23-127
SCALE: N/A

FIELD: RZ DRAWN BY: DA DESIGN BY: KC

G-1.0



#### UTILITY/REFERENCE INFO

CITY OF NOVI RECEIVED: 8/4/2023 CITY OF NOVI STORM: CITY OF NOVI RECEIVED: 8/4/2023 CONSUMERS ENERGY RECEIVED: 8/8/2023

RECEIVED: 8/16/2023 PHONE: AT&T

RECEIVED: 8/9/2023

#### **UTILITY NOTES**

- 1. ALL UTILITIES SHOWN ARE BASED ON MISS DIG MARKINGS LOCATED AT TIME OF SURVEY B. UTILITY MAPS PROVIDED TO THE SURVEYOR AT THE TIME OF THE SURVEY.
- THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPOXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

#### STRUCTURE SCHEDULE

EX. SANITARY SEWER						
STRUCTURE	RIM ELEV.	PIPES				
(50418) SMH	946.77	8" W IE= 936.05				
(50499) SMH	946.28	8" N IE= 935.93 8" SE IE= 936.00				
(51422) SMH	945.26	8" E IE= 935.41 10" W IE= 935.31 6" N IE= 939.41				

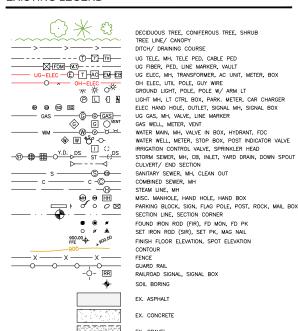
EX. STORM SEWER

STRUCTURE	RIM ELEV.	PIPES
(50145) CBS	947.43	16" W IE= 940.18 16" E IE= 940.13 12" NW IE= 940.18
(50155) STMH	946.95	16" W IE= 940.08 12" SE IE= 938.99 12" N IE= 941.75
(50271) STMH	946.20	N PIPE NOT VISIBLE 60" W IE= 936.40 60" E IE= 936.21
(50281) CBS	944.38	24" N IE= 936.43 24" S IE= 936.38
(50339) CBS	944.37	24" S IE= 936.74 24" N IE= 936.78
(50346) STMH	945.65	24" NW IE= 936.70 24" S IE= 936.65
(50690) CBS	944.76	18" N IE= 937.11 24" SE IE= 937.06
(50844) CBS	945.02	18" S IE= 937.70 8" E IE= 940.47 10" W IE= 940.17 12" N IE= 938.00
(50909) CBS	945.14	12" E IE= 939.02 12" S IE= 939.07
(50966) CBS	944.92	12" S IE= 938.85 12" W IE= 938.90 12" E IE= 938.92
(51065) CBS	945.05	12" W IE= 939.35 12" S IE= 939.55
(51154) CBS	942.78	PIPE NOT VISIBLE
(51172) CBS	942.68	12" N IE= 939.75
(51427) CBB	948.55	16" W IE= 940.53 16" N IE= 939.80
(51428) STMH	953.96	48" N IE= 936.31 48" S IE= 936.21

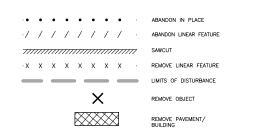
#### **EXISTING PARKING**

REGULAR SPACES:	62
BARRIER FREE SPACES	4
TOTAL PARKING SPACES:	66

#### **EXISTING LEGEND**



#### **DEMOLITION LEGEND**



#### WETLAND NOTE

ACCORDING TO THE DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) WEBSITE (HTTPS://WWW.MCGI.STATE.MI.US/WETLANDS/MCGIMAP.HTML), THERE ARE NO NOTED WETLANDS ON THE SUBJECT PARCEL. WETLAND FLAGGING WAS NOT OBSERVED DURING THE FIELD SURVEY. AN OFFICIAL STUDY FOR

#### FLOOD ZONE

FEMA MAP SCALES DO NOT SUPPLY SUFFICIENT LEVEL OF DETAIL TO PLOT ACCURATELY. ZONES IF PLOTTED HEREIN ARE APPROXIMATE.

BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THE SUBJECT PROPERTY APPEARS TO LIE ENTIRELY IN ZONE (X) AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD PLAIN ACCORDING TO THE FLOOD INSURANCE RATE MAP FOR THE COUNTY OF OAKLAND, COMMUNITY PANEL NO. (26125C0469F), EFFECTIVE DATE SEPTEMBER 29, 2006

#### SOILS INFO

SOIL TYPES ARE ACCORDING TO THE USDA SOIL SURVEY WEB SITE (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm) SOIL TYPE LIMIT AND LABEL

• 17A: WASEPI SANDY LOAM, 0-3% SLOPES

44C: RIDDLES SANDY LOAM, 6-12% SLOPES

#### **BENCHMARKS**

TOP HYDRANT ARROW, 29'± SOUTH OF CENTERLINE OF DESOTO CT & 18'± WEST OF NORTH WALL OF

SOUTHWEST HYDRANT FLANGE BOLT, 16'± NORTH & 74'± EAST OF THE NORTHEAST CORNER OF FLFV = 947.25

LIGHT POLE CONC BASE FMAG , 10'± WEST & 77'± NORTH OF THE NORTHEAST CORNER OF BUILDING #46500 ELEV = 948.74

ME GA °W 🚓

RVICE DISABLED VETERAN OV SMALL BUSINESS (SI



Call MISS DIG full working days before you d Utility Notificati Organizat

CLIENT



BRIVAR CONST. CO 9325 MALTBY ROAD BRIGTHON, MI 48116

(248) 446-8000

₽4≅ ION ESOTO 1 4, T11 UNTY, 1 **eg** SURVEY

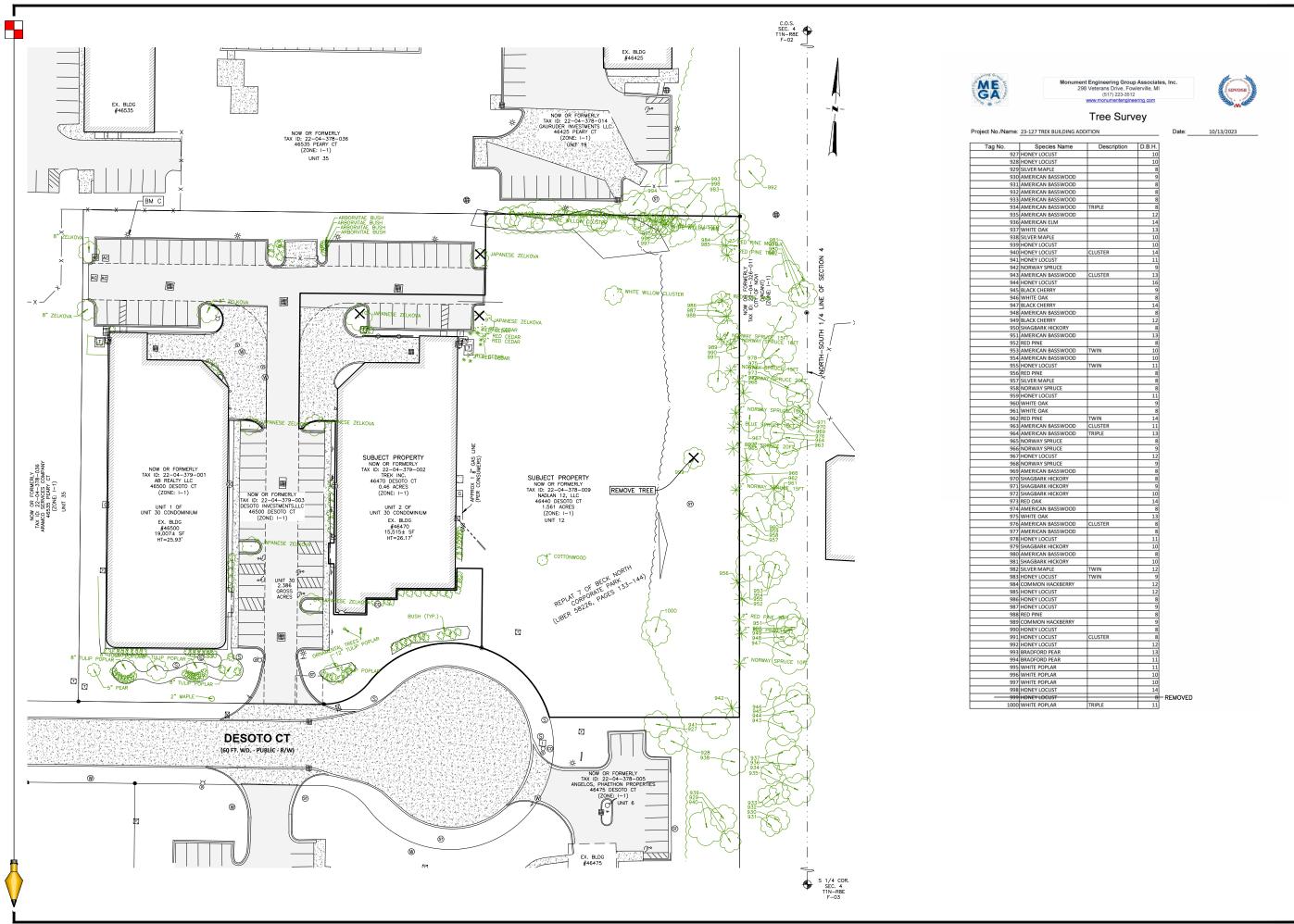
TREK BUII 46470, 46500, 4 PART OF THE SW 1, CITY OF NOVI, C

TOPOGRAPHIC

ORIGINAL ISSUE DATE:

PROJECT NO: 23-127 SCALE: 1" = 30'

DRAWN BY: DAH
DESIGN BY: KCM
CHECK BY: MEB



INNOVATIVE GEOSPATIAL & ENGINEERING SOLUTIONS INB Group ME GA 100 A . 201

298 VETERANS DRIVE FOWLERVILLE, MICHIGAN 48836 (OFFICE) 517-223-3512 ONUMENTENGINEERING.C ERVICE DISABLED VETERAN OWI SMALL BUSINESS (SDVOSB)

ALLAN W. PRUSS ENGINEER NO. 6201043168

Call MISS DIG 3 full working days before you dig

Michigan's Utility
One-Call Organization
1-800-482-7171
Www.missdig.org
Int. Lecanops And Extrarges
One-Call Organization
1-800-482-7171
Www.missdig.org
Int. Lecanops And Extrarges
One-Call Organization
One-Call Organiza

CLIENT :

**Brivar** 

BRIVAR CONST. CO. 9325 MALTBY ROAD BRIGTHON, MI 48116 (248) 446-8000

TREE SURVEY

TREK BUILDING ADDITION
46470, 46500, & 46440 DESOTO CT.
PART OF THE SW 1/4, SECTION 4, T1N-R8E
CITY OF NOVI, OAKLAND COUNTY, MI.

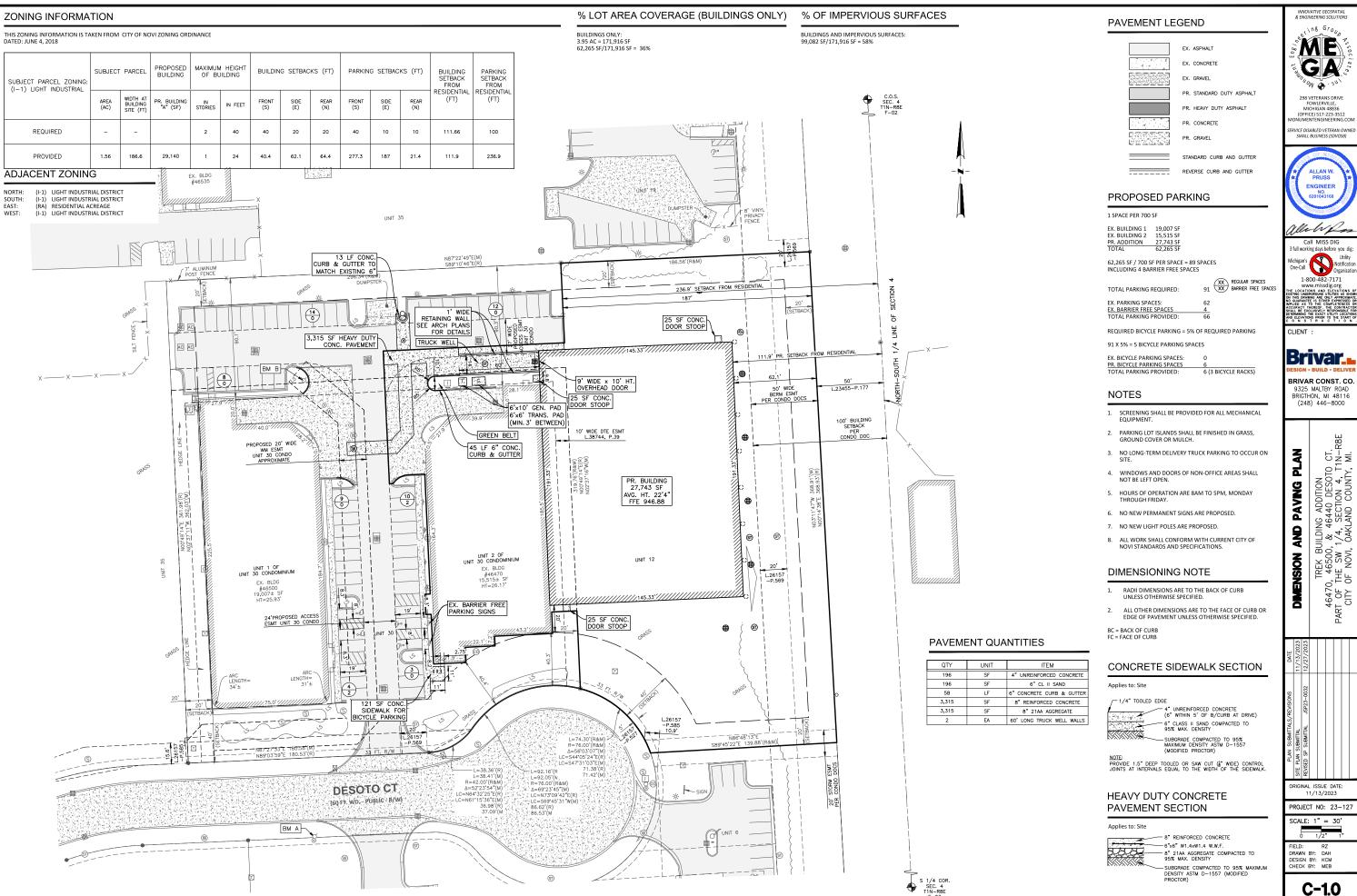
ORIGINAL ISSUE DATE: 11/13/2023

PROJECT NO: 23-127 SCALE: 1" = 30'

FIELD: RZ
DRAWN BY: DAH
DESIGN BY: KCM
CHECK BY: MEB

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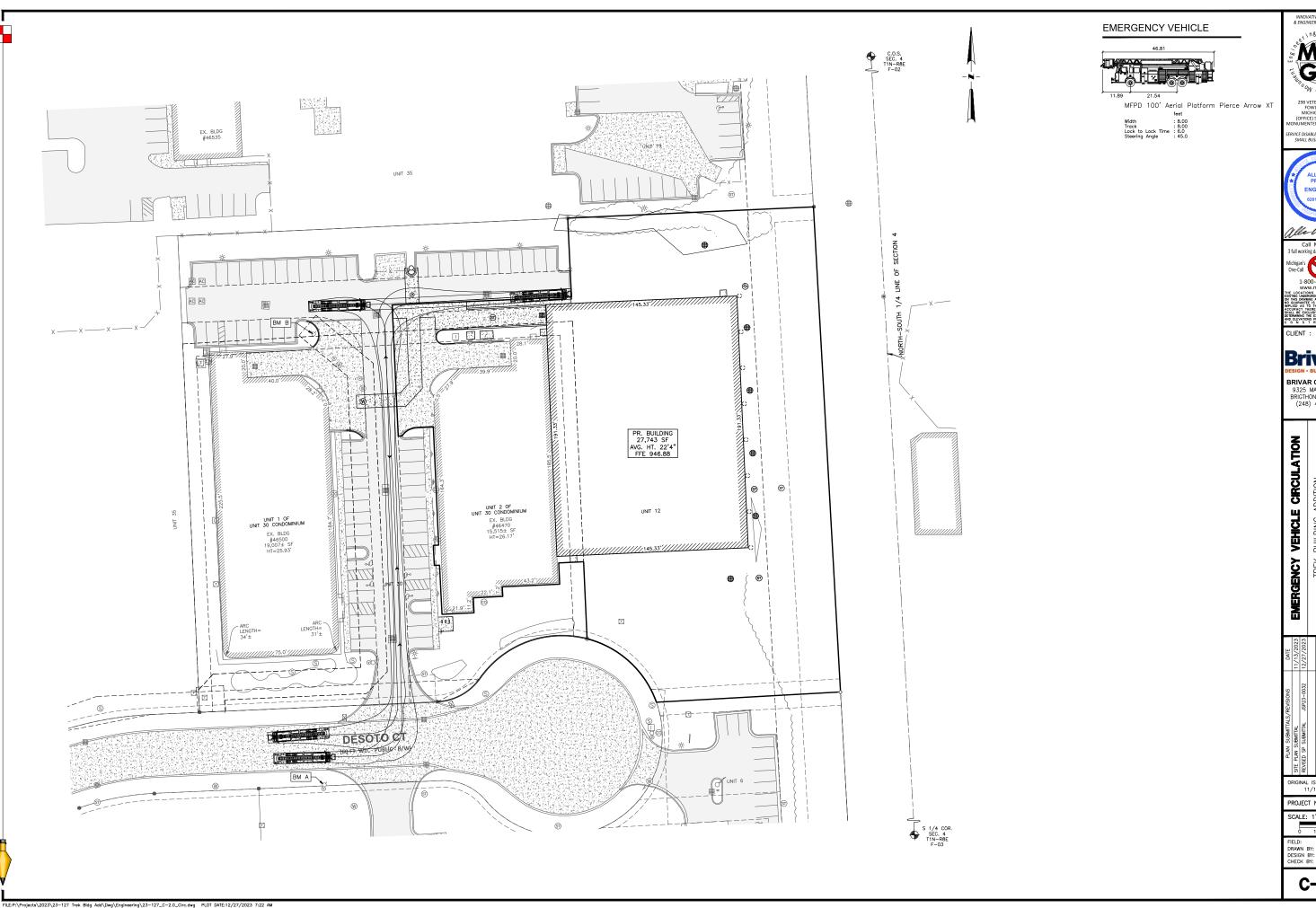
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9325 MALTBY ROAD BRIGTHON, MI 48116

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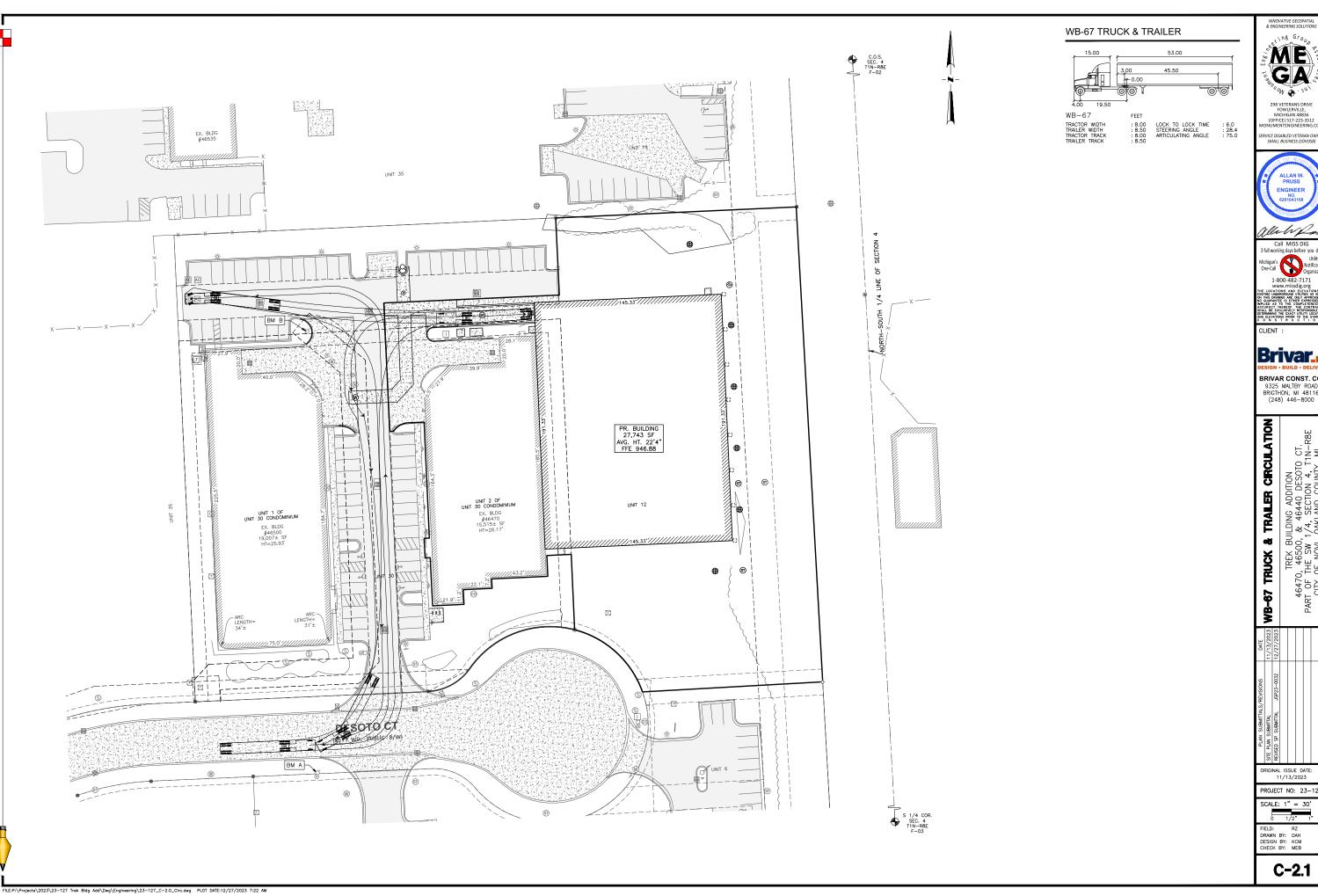
TREK BUILDING ADDITION
46470, 46500, & 46440 DESOTO CT.
PART OF THE SW 1/4, SECTION 4, T1N-R8E
CITY OF NOVI, OAKLAND COUNTY, MI.

ORIGINAL ISSUE DATE: 11/13/2023

PROJECT NO: 23-12 SCALE: 1" = 30'

FIELD: RZ
DRAWN BY: DAH
DESIGN BY: KCM
CHECK BY: MEB

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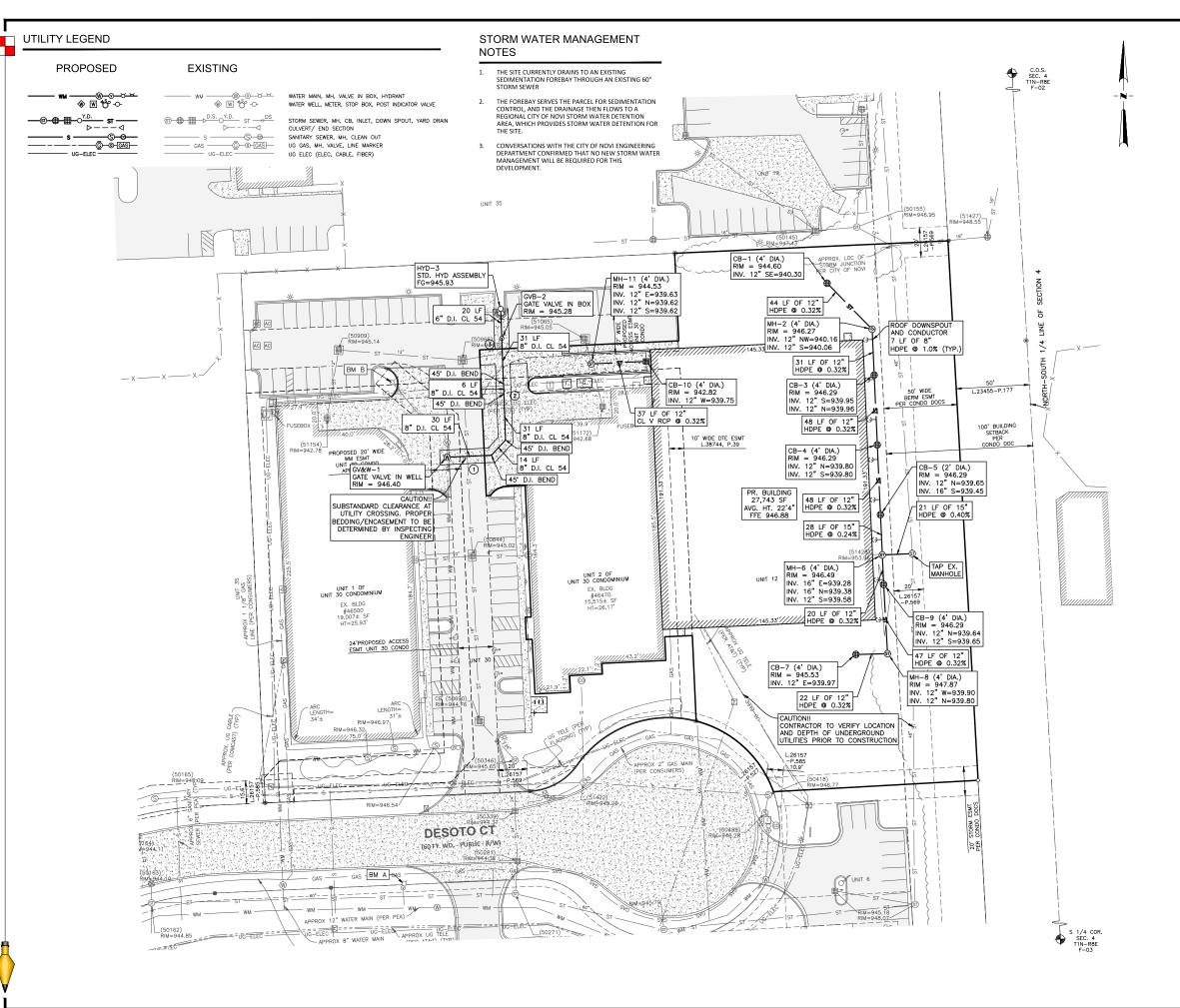
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#### **UTILITY NOTES**

- PROPOSED BUILDING ADDITION TO HAVE SPRINKLED FIRE
- "IN" & "CB" STRUCTURES SHALL HAVE EJIW 1020 FRAME WITH TYPE M1 GRATE.
- CURB "IN" & "CB" STRUCTURES SHALL HAVE EJIW 7010 FRAME WITH TYPE M1 GRATE.
- STORM "MH" STRUCTURES SHALL HAVE EJIW 1040 FRAME WITH A TYPE A PERFORATED COVER.
- MAINTAIN MINIMUM 18" VERTICAL CLEARANCE BETWEEN
- WATER AND SANITARY TO BE PLUMBED THROUGH EXISTING BUILDING.
- COMPACTED SAND BACKFILL (MDOT CL II) SHALL BE PROVIDED FOR ALL UTILITIES WITHIN THE INFLUENCE OF

#### STRUCTURE SCHEDULE

PROP	OSED STOR	M SEWER
STRUCTURE	RIM ELEV.	PIPES
CB-1	944.60	12" SE IE= 9
CB-3	946.29	12" S IE= 93 12" N IE= 93
CB-4	946.29	12" N IE= 9: 12" S IE= 9:
CB-5	946.29	12" N IE= 93 16" S IE= 93
CB-7	945.53	12" E IE= 93
CB-9	946.29	12" N IE= 93 12" S IE= 93
CB-10	942.82	12" W IE= 9
EX MH (51428)	953.32	16" W IE= 9: 48" N IE= 9: 48" S IE= 9:
MH-2	946.27	12" NW IE= 1 12" S IE= 94
MH-6	946.49	16" E IE= 93 16" N IE= 93 12" S IE= 93
MH-8	947.87	12" W IE= 93 12" N IE= 93
MH-11	944.53	12" E IE= 93 12" N IE= 93 12" S IE= 93

#### STORM SEWER QUANTITIES

QTY	UNIT	ITEM
260	LF	12" HDPE
49	LF	15" HDPE
37	LF	CL V RCP
1	EA	TAP EX. 12" STORM SEWER
1	EA	TAP EX. MANHOLE
7	EA	4' DIA. CATCH BASIN
4	EA	4' MANHOLE

#### WATER MAIN QUANTITIES

QTY	UNIT	ITEM			
112	LF	8" DI CL 54 WATER MAIN			
20	LF	6" DI CL 54 WATER MAIN			
4	EA	8" 45" BEND			
1	EA	8"x8" GV&W			
1	EA	6" GVB			
1	EA	STANDARD HYDRANT ASSEMBLY			

#### CROSSING SCHEDULE

NOTE: MAINTAIN MINIMUM 18" VERTICAL CLEARANCE BETWEEN ALL UTILITIES.

ABBREVIATIONS: IE = INVERT ELEVATION TP = TOP OF PIPE

①	12" STORM SEWER TP	-	939.48
	8" WATER MAIN IE	=	940.45
2	UG ELEC IE	=	942.22
	8" WATER MAIN TP	=	938.66
3	12" STORM SEWER IE	=	939.06
	8" WATER MAIN TP	=	937.54

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AKLAND COUNTY, N PLAN UTILITY

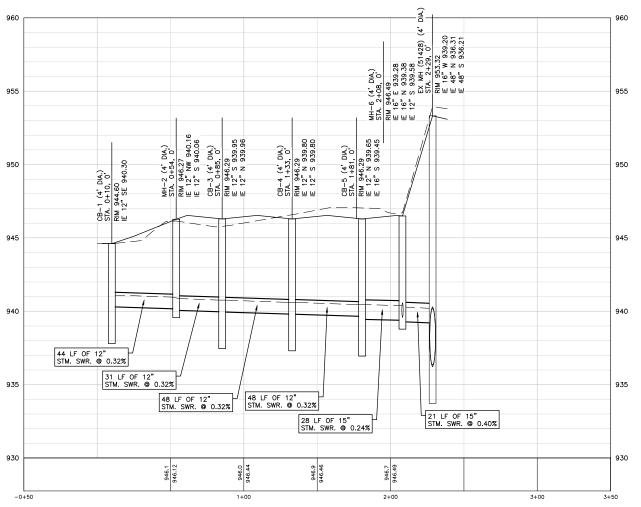
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ORIGINAL ISSUE DATE:

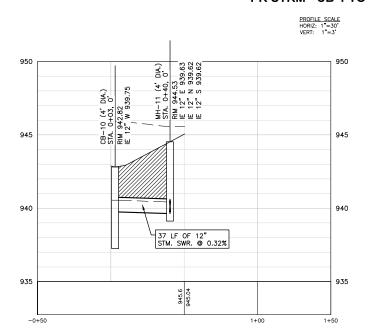
PROJECT NO: 23-12 SCALE: 1" = 30

DRAWN BY: DAH
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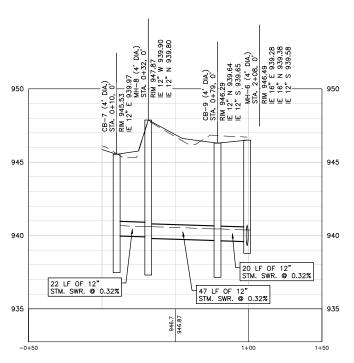
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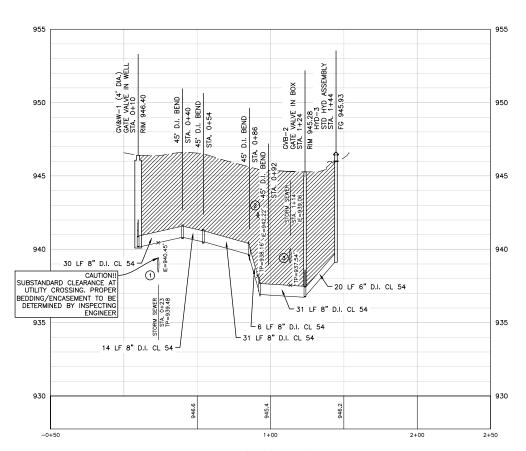
#### PR STRM - CB-1 TO EX MH



PR STRM - CB-10 TO MH-11

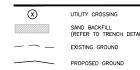


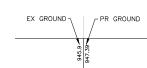
PR STRM - CB-7 TO MH-6



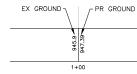
PR WM - GV&W-1 TO HYD-3

#### PROFILE LEGEND





10-YR H.G. LINE



#### NOTES

- 1. SAND BACKFILL AND BEDDING TO BE MDOT CL II.
- 2. MAINTAIN MINIMUM 18" VERTICAL CLEARANCE BETWEEN ALL UTILITIES.

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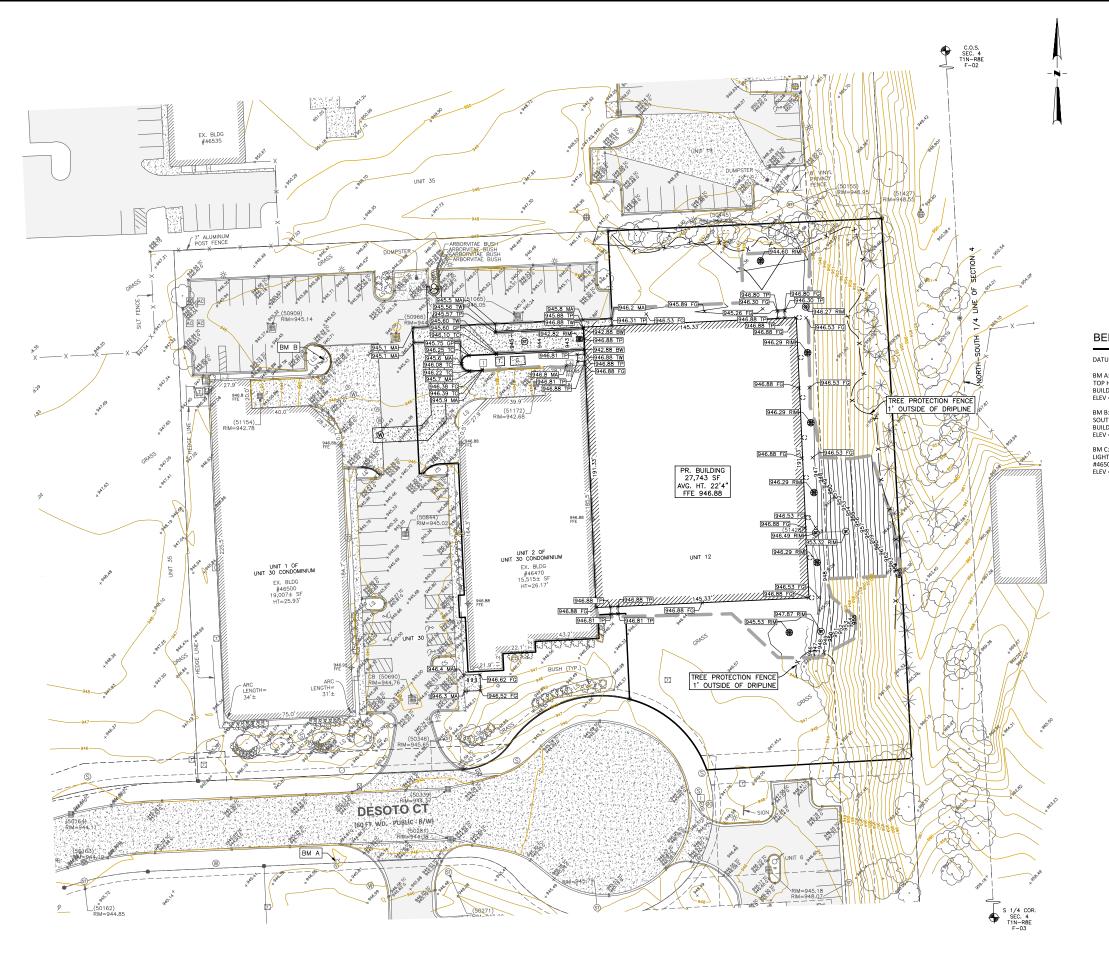
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46470, 46500, & 46440 DESOTO CT.
PART OF THE SW 1/4, SECTION 4, T1N-R8E
CITY OF NOVI, OAKLAND COUNTY, MI.

UTILITY PROFILES

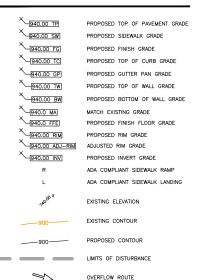
ORIGINAL ISSUE DATE:

PROJECT NO: 23-127 SCALE: N/A

C-3.1



#### GRADING LEGEND



#### BENCHMARKS

DATUM: NAVD88

BM A: TOP HYDRANT ARROW, 29'± SOUTH OF CENTERLINE OF DESOTO CT & 18'± WEST OF NORTH WALL OF BUILDING #46500 ELEV = 947.71

BM B: SOUTHWEST HYDRANT FLANGE BOLT,  $16\pm$  NORTH &  $74\pm$  EAST OF THE NORTHEAST CORNER OF BUILDING #46500 ELEV = 947.25

BM C: LIGHT POLE CONC BASE FMAG , 10'± WEST & 77'± NORTH OF THE NORTHEAST CORNER OF BUILDING #46500 ELEV = 948.74

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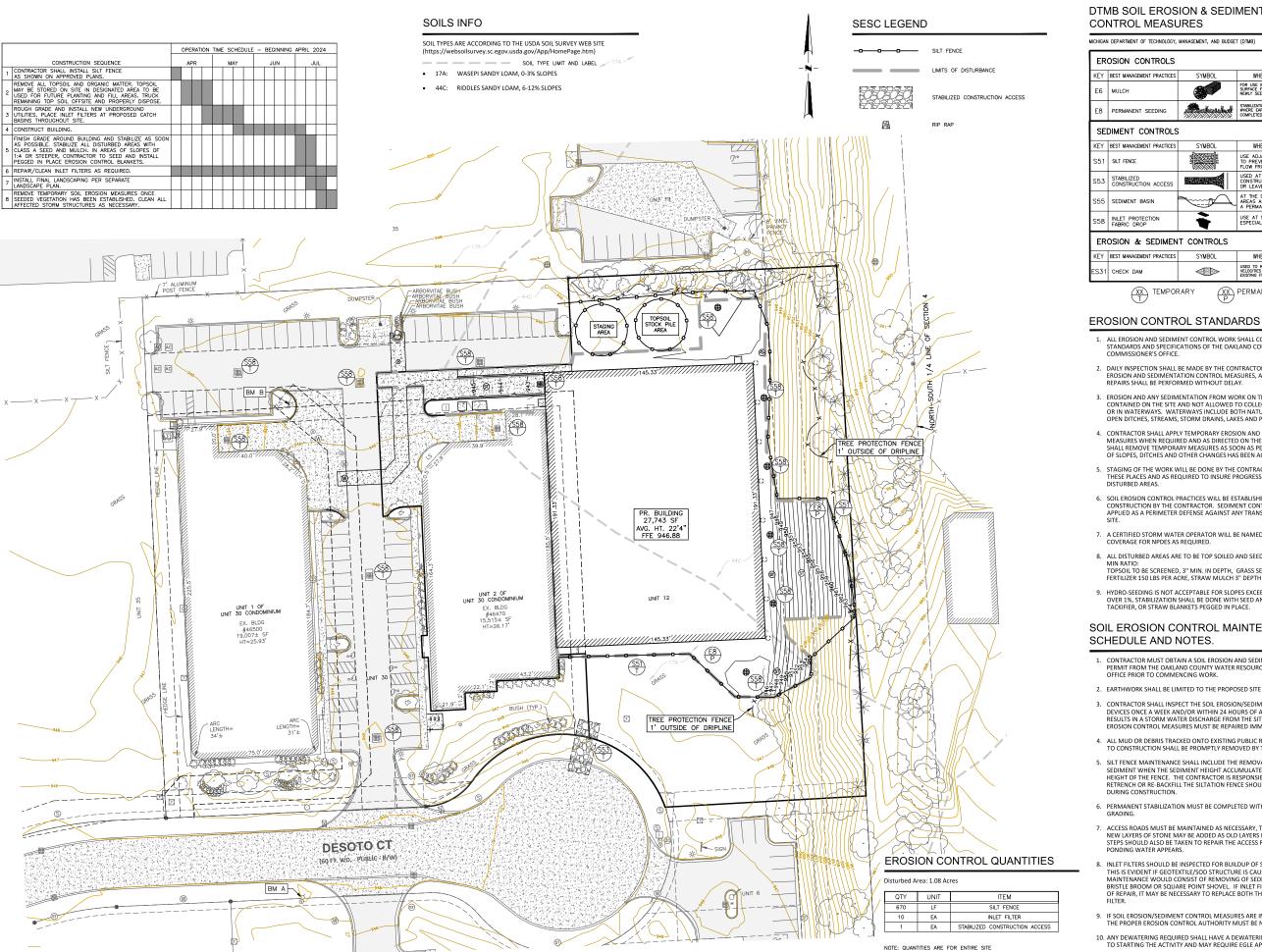
GRADING PLAN

TREK BUILDING ADDITION 46470, 46500, & 46440 DESOTO PART OF THE SW 1/4, SECTION 4, T1 CITY OF NOVI, OAKLAND COUNTY.

ORIGINAL ISSUE DATE: 11/13/2023

PROJECT NO: 23-12

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#### DTMB SOIL EROSION & SEDIMENTATION **CONTROL MEASURES**

MICHIGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET (DTMB)

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED					
E6	MULCH		FOR USE IN AREAS SUBJECT TO EROSI SURFACE FLOWS OR SEVERE WIND OR NEWLY SEEDED AREAS.					
E8	PERMANENT SEEDING		STABILIZATION METHOD UTILIZED ON SIT WHERE EARTH CHANGE HAS BEEN COMPLETED (FINAL GRADING ATTAINED).					
SEDIMENT CONTROLS								
KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED					
S51	SILT FENCE		TO PREVENT SEDIMENT LADEN S					
S51 S53	SILT FENCE  STABILIZED CONSTRUCTION ACCESS		USE ADJACENT TO CRITICAL ARE TO PREVENT SEDIMENT LADEN S FLOW FROM ENTERING THESE AR USED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SI					
	STABILIZED		TO PREVENT SEDIMENT LADEN S FLOW FROM ENTERING THESE AR USED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS					

#### XX TEMPORARY PERMANENT

1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE OAKLAND COUNTY WATER RESOURCE COMMISSIONER'S OFFICE.

USED TO REDUCE SURFACE FLOW VELOCITIES WITHIN CONSTRUCTED AND EXISTING FLOW CORRIDORS

- DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR FOR EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES, AND ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
- 3. EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
- 4. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WHEN REQUIRED AND AS DIRECTED ON THESE PLANS. CONTRACTOR SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES AND OTHER CHANGES HAS BEEN ACCOMPLISHED.
- 5. STAGING OF THE WORK WILL BE DONE BY THE CONTRACTOR AS DIRECTED IN THESE PLACES AND AS REQUIRED TO INSURE PROGRESSIVE STABILIZATION OF DISTURBED AREAS.
- SOIL EROSION CONTROL PRACTICES WILL BE ESTABLISHED IN EARLY STAGES OF CONSTRUCTION BY THE CONTRACTOR. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
- 7. A CERTIFIED STORM WATER OPERATOR WILL BE NAMED ON THE EGLE NOTICE OF COVERAGE FOR NPDES AS REQUIRED.
- 8. ALL DISTURBED AREAS ARE TO BE TOP SOILED AND SEEDED WITH THE FOLLOWING TOPSOIL TO BE SCREENED 3" MIN IN DEPTH. GRASS SEED 218 LBS PER ACRE FERTILIZER 150 LBS PER ACRE, STRAW MULCH 3" DEPTH 1.5 TO 2 TONS PER ACRE.
- 9. HYDRO-SEEDING IS NOT ACCEPTABLE FOR SLOPES EXCEEDING 1%. ON SLOPES OVER 1%, STABILIZATION SHALL BE DONE WITH SEED AND STRAW MULCH WITH A TACKIFIER, OR STRAW BLANKETS PEGGED IN PLACE.

#### SOIL EROSION CONTROL MAINTENANCE SCHEDULE AND NOTES.

- 1 CONTRACTOR MUST OBTAIN A SOIL FROSION AND SEDIMENTATION CONTROL PERMIT FROM THE OAKLAND COUNTY WATER RESOURCE COMMISSIONER'S OFFICE PRIOR TO COMMENCING WORK
- 2. EARTHWORK SHALL BE LIMITED TO THE PROPOSED SITE AS SHOWN ON THE PLAN.
- 3. CONTRACTOR SHALL INSPECT THE SOIL EROSION/SEDIMENTATION CONTROL DEVICES ONCE A WEEK AND/OR WITHIN 24 HOURS OF A RAINFALL EVENT WHICH RESULTS IN A STORM WATER DISCHARGE FROM THE SITE. ANY DAMAGE TO EROSION CONTROL MEASURES MUST BE REPAIRED IMMEDIATELY.
- ALL MUD OR DEBRIS TRACKED ONTO EXISTING PUBLIC ROADS FROM THE SITE DUE TO CONSTRUCTION SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
- 5. SILT FENCE MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY BUILT-UP SEDIMENT WHEN THE SEDIMENT HEIGHT ACCUMULATES TO 1/3 TO 1/2 OF THE HEIGHT OF THE FENCE. THE CONTRACTOR IS RESPONSIBLE TO REMOVE, REPLACE, RETRENCH OR RE-BACKFILL THE SILTATION FENCE SHOULD IT FAIL OR BE DAMAGED
- 6. PERMANENT STABILIZATION MUST BE COMPLETED WITHIN 30 DAYS OF FINAL GRADING.
- 7. ACCESS ROADS MUST BE MAINTAINED AS NECESSARY, TO KEEP THEM EFFECTIVE, NEW LAYERS OF STONE MAY BE ADDED AS OLD LAYERS BECOME COMPACTED. STEPS SHOULD ALSO BE TAKEN TO REPAIR THE ACCESS ROADS IF RUTS OR PONDING WATER APPEARS.
- 8 INLET EILTERS SHOULD BE INSPECTED FOR BUILDUP OF SILT AND OTHER DEBRIS INLET FILERS SHOULD BE INSPECIED FOR BOILDOF OF SICH AND OTHER DESIRES.

  \*\*HIS IS EVIDENT IF GEOTEXTILE/SOD STRUCTURE IS CAUSING FLOODING.

  MAINTENANCE WOULD CONSIST OF REMOVING OF SEDIMENTS WITH A STIFF
  BRISTLE BROOM OR SQUARE POINT SHOVEL. IF INLET FLITER IS BEYOND THIS LEVEL

  OF REPAIR, IT MAY BE NECESSARY TO REPLACE BOTH THE SOD AND GEOTEXTILE
- 9. IF SOIL EROSION/SEDIMENT CONTROL MEASURES ARE INADEQUATE FOR THE SITE. THE PROPER EROSION CONTROL AUTHORITY MUST BE NOTIFIED.
- 10. ANY DEWATERING REQUIRED SHALL HAVE A DEWATERING PLAN SUBMITTED PRIOR TO STARTING THE ACTIVITY AND MAY REQUIRE EGLE APPROVAL.



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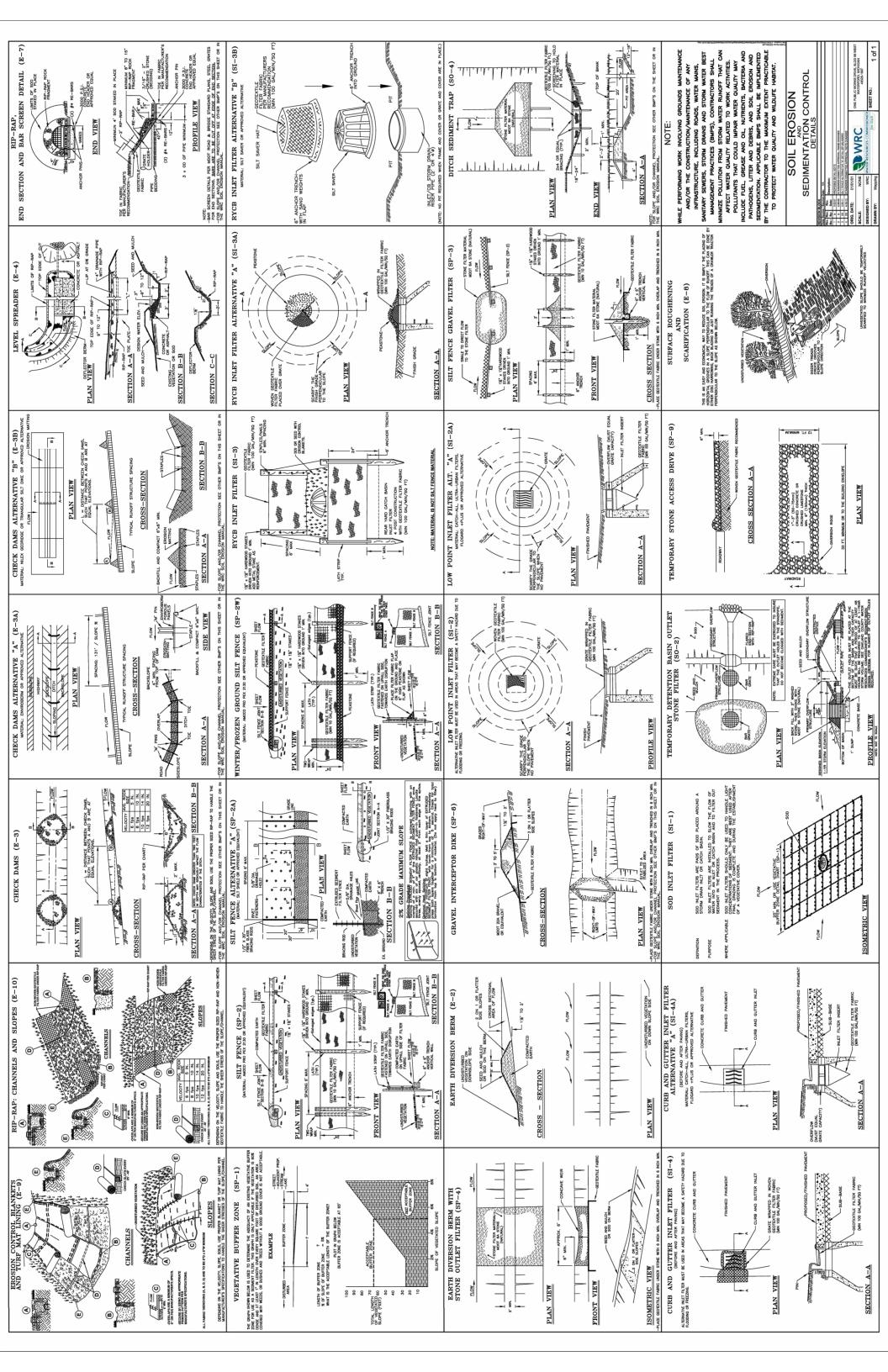
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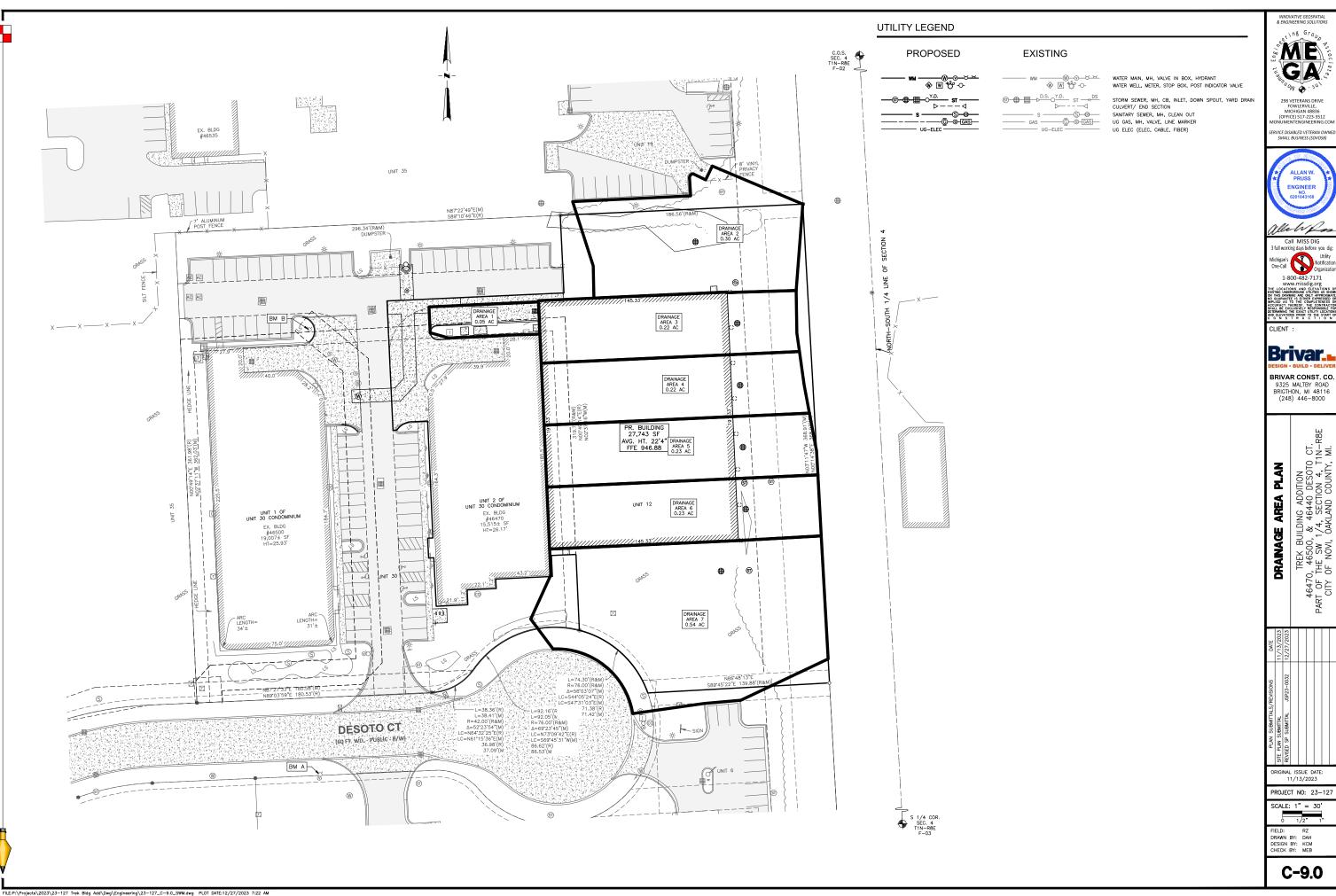
ORIGINAL ISSUE DATE:

PROJECT NO: 23-127 SCALE: 1" = 30'

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DATE	11/13/20	12/27/20					
PLAN SUBMITTALS/REVISIONS	SITE PLAN SUBMITTAL	REVISED SP SUBMITTAL JSP23-0032					
0	RIGI	NAL	. IS	SUE	E D	ATE	:

SCALE: 1" = 30'

Q = Ax	Q = C   A 1.486/n x R^2/3   = 175/(t+25)	x S^1/2			t = n1 = n2 =			vc								298 VETE	ERANS DE	VE	ROUP ASS	OCIATES,	LLC			
	1 - 175/((+25)				112 -	0.013	CONC.												H.G. ELEV	/	INVERTEL	FV	RIM ELEV.	RIM ELEV.
	FROM STR	AREA	COEFF.		AREA	TOTAL	TIME	INT.	FLOW	PIPE	PIPE	PIPE	PIPE	PIPE	MIN PIPE	H.G.	VEL.	TIME	UP	DOWN	UP	DOWN	UP	DOWN
	TOSTR	Α	C	AxC	TOTAL	CXA	t	1	Q	CAP.	AREA	LENGTH	DIA.	SLOPE	SLOPE	SLOPE	FULL	FLOW	STREAM	STREAM	STREAM	STREAM	STREAM	STREAM
					At																			
		ac.			ac.		min.	in/hr	c.f.s.	cfs.	sq.ft.	t.	in.	%		%	ft/sec	min.						-
	OD4 MIIO	0.00	0.05	0.405	0.000	0.405	00.00	0.00	0.44	0.04	0.70	***	40	0.00	0.00	0.00	0.50	0.00	014.40	0.40.00	040.00	040.40	04460	0.40.07
MAIN RUN	CB1-MH2	0.30	0.35	0.105	0.300	0.105	20.00	3.89	0.41	2.01	0.79	44	12	0.32	0.30	0.32	2.56	0.29	941.10	940.96	940.30	940.16	944.60	946.27
	MH2-CB3 CB3-CB4	0.00	0.00	0.000	0.300 0.520	0.105 0.279	20.29	3.86	0.41 1.07	2.01	0.79	31 48	12	0.32	0.30	0.32	2.56 2.56	0.20	940.86 940.76	940.76 940.60	940.06 939.96	939.96 939.80	946.27 946.29	946.29 946.29
	CB3-CB4 CB4-CB5	0.22	0.79	0.174	0.520	0.279	20.49	3.82	1.72	2.01	0.79	48	12	0.32	0.30	0.32	2.56	0.31	940.76	940.60	939.96	939.60	946.29	946.29
	CB5-MH6	0.22	0.76	0.172	0.740	0.450	21.11	3.80	2.38	3.16	1.23	28	15	0.32	0.30	0.32	2.58	0.31	940.60	940.45	939.60	939.65	946.29	946.29
	MH6-EXMH	0.00	0.00	0.000	1.740	1.031	21.11	3.78	3.90	4.08	1.23	21	15	0.40	0.23	0.40	3.33	0.10	940.43	940.30	939.43	939.20	946.49	953.32
	WITTO-EXIVIT	0.00	0.00	0.000	1.740	1.001	21.29	3.70	3.90	4.00	1.23	21	10	0.40	0.23	0.40	3.33	0.11	940.20	940.20	909.20	939.20	940.49	930.32
LATERAL	CB7-MH8	0.54	0.42	0.227	0.540	0.227	20.00	3.89	0.88	2.01	0.79	22	12	0.32	0.30	0.32	2.56	0.14	940.77	940.70	939.97	939.90	945.53	947.87
	MH8-CB9	0.00	0.00	0.000	0.540	0.227	20.14	3.88	0.88	2.01	0.79	47	12	0.32	0.30	0.32	2.56	0.31	940.60	940.45	939.80	939.65	947.87	946.29
	CB9-MH6	0.23	0.77	0.177	0.770	0.404	20.45	3.85	1.56	2.01	0.79	20	12	0.32	0.30	0.32	2.56	0.13	940.45	940.38	939.65	939.58	946.29	946.49
MAIN RUN	CB10-MH11	0.05	0.66	0.033	0.050	0.033	20.00	3.89	0.13	2.01	0.79	37	12	0.32	0.30	0.32	2.56	0.24	940.55	940.43	939.75	939.63	942.82	944.53

COMPOU					
COIVII OO	ND RUNOFF	COEFFICIEN	T FOR AREA	1	
		AREA (SE)	AREA (AC)	C	
OVERALL		2039	0.05	-	
CONTRIBL	JTING	2039	0.05		
FLOWING		0	0.00		
	011		0.00		$A \times C$
EX BUILDII	NG	0		0.95	C
EX PAVEM		0		0.95	C
PR BUILDII	NG	0		0.95	C
PR PAVEN	1ENT	1272		0.95	1208.4
GRASS		380		0.35	133
	TOTALS	1652			1341.4
		TOTAL A × 0	c	1341.4	0.66
COMPOU	$VD C = \frac{1}{CON}$	TOTAL A × 0	AREA	2039	0.00
				2033	
COMPOU	ND RUNOFF	COEFFICIEN	T FOR AREA	2	
		AREA (SF)	AREA (AC)	С	
OVERALL		13073	0.30		
CONTRIBL	JTING	13073	0.30		
FLOWING	OFF	0	0.00		
					$A \times C$
EX BUILDII	NG	0		0.95	0
EX PAVEM	ENT	0		0.95	C
PR BUILDII	NG	0		0.95	0
PR PAVEN	IENT	0		0.95	C
GRASS		13073		0.35	4575.55
	TOTALS	13073			4575.55
COMPONE	ID C	TOTAL A × 0	:	4575.55	0.35
COMPOUN	$TD C = \frac{CON}{CON}$	TOTAL A × C	AREA	13073	
COMPOU	ND RUNOFF	COEFFICIEN	T FOR AREA	3	
		ADEA (SE)	AREA (AC)	С	
		9502	0.22	C	
	ITING	9502	0.22		
		5502			
CONTRIBL	OEE	0			$A \times C$
CONTRIBL	OFF	0	0.00		
CONTRIBL FLOWING			0.00	0.05	
CONTRIBL FLOWING EX BUILDII	NG	0	0.00	0.95	C
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CONTRIBL FLOWING EX BUILDII EX PAVEM PR BUILDII PR PAVEM	NG IENT NG	0 0 6936 0	0.00	0.95 0.95 0.95	6589.2 0
CONTRIBL FLOWING EX BUILDII EX PAVEM PR BUILDII PR PAVEM	NG IENT NG	0 0 6936	0.00	0.95 0.95	6589.2 6589.2 898.1
OVERALL CONTRIBL FLOWING EX BUILDII EX PAVEM PR BUILDII PR PAVEM GRASS	NG IENT NG IENT TOTALS	0 0 6936 0 2566 9502		0.95 0.95 0.95	6589.2 0 898.1 7487.3
CONTRIBL FLOWING EX BUILDII EX PAVEM PR BUILDII PR PAVEM GRASS	NG IENT NG IENT TOTALS	0 0 6936 0 2566 9502		0.95 0.95 0.95 0.35	6589.2 6589.2 7487.3
CONTRIBL FLOWING EX BUILDII EX PAVEM PR BUILDII PR PAVEM GRASS	NG IENT NG IENT TOTALS	0 0 6936 0 2566 9502		0.95 0.95 0.95 0.35	6589. 898. 7487.

		AREA (AC)	С	
OVERALL	9885	0.23		
CONTRIBUTING	9885	0.23		
FLOWING OFF	0	0.00		
				$A \times C$
EX BUILDING	0		0.95	0
EX PAVEMENT	0		0.95	0
PR BUILDING	6936		0.95	6589.2
PR PAVEMENT	0		0.95	0
GRASS	2949		0.35	1032.15
TOTALS	9885			7621.35
COMPOUND	TOTAL A× C		7621.35	0.77
$COMPOUND C = {COI}$	NTRIBUTING.	AREA	9885	
COMPOUND RUNOF	F COEFFICIEN	T FOR AREA	6	
	ADEA (CE)	ADEA (AC)	С	
OVERALL		AREA (AC)	C	
OVERALL	9943	0.23		
CONTRIBUTING	9943	0.23		
FLOWING OFF	0	0.00		
				$A \times C$
EX BUILDING	0		0.95	0
EX PAVEMENT	0		0.95	0
PR BUILDING	6936		0.95	6589.2
PR PAVEMENT	0		0.95	0
GRASS	3007		0.35	1052.45
TOTALS	9943			7641.65
COMPONED C	TOTAL A× C		7641.65	0.77
$COMPOUND C = {CO!}$	NTRIBUTING.	AREA	9943	
COMPOUND RUNOF	F COEFFICIEN	T FOR AREA	7	
	ADEA (SE)	AREA (AC)	С	
OVERALL	23586	0.54	C	
CONTRIBUTING	23586	0.54		
FLOWING OFF	23586	0.00		
FLOWING OFF	U	0.00		$A \times C$
EX BUILDING	0		0.95	AXC
EX PAVEMENT	0		0.95	0
PR BUILDING	0		0.95	2505.4
PR PAVEMENT	2732		0.95	2595.4
			0.35	7298.9
GRASS	20854			
				9894.3
GRASS	23586		9894.3	9894.3

COMPOUND RUNOFF COEFFICIENT FOR AREA 5

COMPOUND RUNOFF	COEFFICIENT	FOR ENTIRE	SIIE	
	AREA (SF)	AREA (AC)		
OVERALL	171,916	3.95		
CONTRIBUTING	171,916	3.95		
FLOWING OFF	0	0.00		
			С	$A \times C$
EX BUILDING	34,522		0.95	32,798
EX PAVEMENT	33,250		0.95	31,588
PR BUILDING	27,743		0.95	26,356
PR PAVEMENT	3,567		0.95	3,389
GRASS	72,834		0.35	25,492
TOTAL	S 171,916			119,620
COMPOUND	$TOTAL\ A \times C$		119,620	0.70
$COMPOUND C = \frac{1}{CON}$	RIBUTING A	REA	171.916	



ORIGINAL ISSUE DATE: 11/13/2023

PROJECT NO: 23–127

SCALE: N/A

0 1/2" 1"

FIELD: RZ DRAWN BY: DAH DESIGN BY: KCM CHECK BY: MEB

C-9.1

OVERALL CONTRIBUTING FLOWING OFF

EX BUILDING EX PAVEMENT PR BUILDING

PR PAVEMENT

TOTALS

GRASS

AREA (SF) AREA (AC) C 9601 0.22 9601 0.22

0.00

6936 0

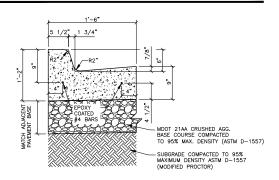
2665 9601

 $COMPOUND C = \frac{TOTAL \ A \times C}{CONTRIBUTING \ AREA} \qquad \frac{7521.95}{9601} \qquad 0.78$ 

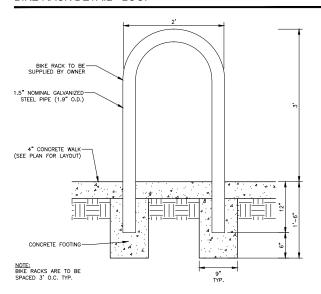
A × C 0.95 0 0.95 0 0.95 6589.2 0.95 0

0.35 932.75 7521.95

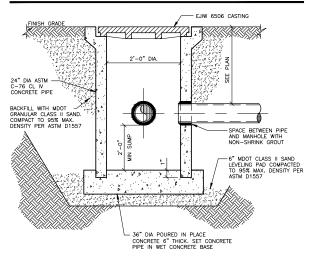
#### CURB AND GUTTER DETAIL - CONCRETE -STANDARD - 18" W 6" H 14" D



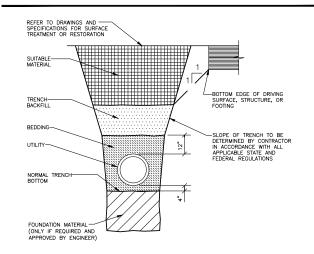
#### **BIKE RACK DETAIL - LOOP**



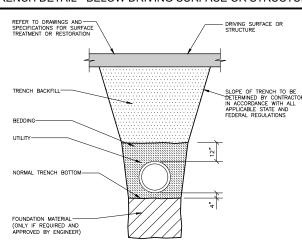
#### YARD BASIN DETAIL (2' DIA.)



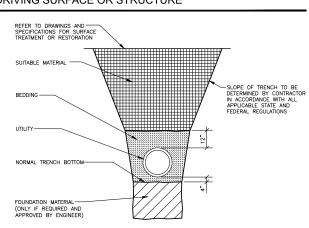
#### TRENCH DETAIL - ADJACENT TO DRIVING SURFACE OR STRUCTURE



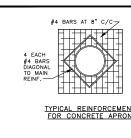
#### TRENCH DETAIL - BELOW DRIVING SURFACE OR STRUCTURE

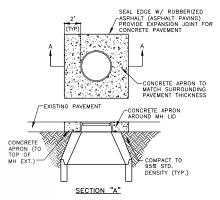


#### TRENCH DETAIL - NOT ADJACENT TO DRIVING SURFACE OR STRUCTURE

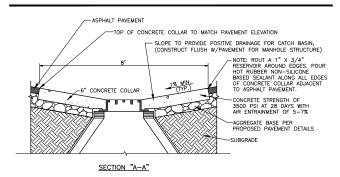


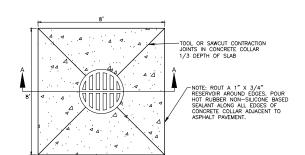
#### APRON DETAIL - CONCRETE AROUND MANHOLE



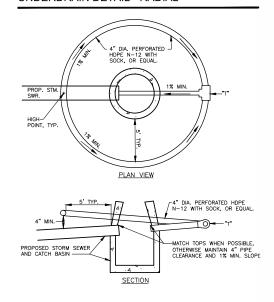


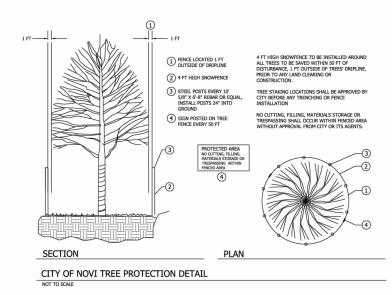
#### APRON DETAIL - CONCRETE AROUND CATCH BASIN





#### UNDERDRAIN DETAIL - RADIAL







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**Brivar** BRIVAR CONST. CO

9325 MALTBY ROAD BRIGTHON, MI 48116 (248) 446-8000

R. R. SUILDING ADDITION

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, OAKLAND COUNTY, N DETAILS

PROJECT NO: 23-127 SCALE: N/A

C-11.0

#### **GENERAL NOTES**

- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE LOCAL MANIFORMALITY, HE LOCAL WATER AND/OR SEWER AUTHORITY, THE COUNTY D.P.W., THE COUNTY DOWN CONMISSIONER MICHIGAN DEPARTMENT OF TRANSPORTATION, MICHIGAN, BOTH OF ENVIRONMENT, GREAT LAKES AND ENERGY, THE STATE OF MICHIGAN, BAD THE COUNTY ROAD COMMISSION WHERE APPLICABLE.
- RULES, REGULATIONS OR LAWS OF ANY CONTROLLING GOVERNMENTAL AGENCY SHALL GOVERN, WHEN THEY ARE MORE STRINGENT THAN THE REQUIREMENTS OF THESE SPECIFICATIONS.
- SHOULD THE CONTRACTOR ENCOUNTER A CONFLICT BETWEEN THESE FLANS AND SECRETICATIONS, ETHER AMONG THEBSELESS OR WITH THE REQUIREMENTS OF AN EXECUTION OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY BEFORE COMMENCEMENT OF CONSTRUCTION. FAILURE TO DO SO SHALL BE AT SOLE EXPENSE TO THE CONTRACTOR.
- OWNER'S REPRESENTATIVE.

  CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR MILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SIC CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND AND AND THE LUMINED TO NORMAL WORKING HOURS, AND CONTRACTOR TRUTHER AGREES TO DEFEND, INDEMNIFY AND HOLD BEIGHT PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGIENCE OF THE DESIGN PROFESSIONAL.
- ANY WORK WITHIN STREET OR HIGHWAY RIGHT-OF-WAYS SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE GOVERNMENTAL AGENCIES HAVING JURISDICTION AND SHALL NOT BEGIN UNTIL PERMITS HAVE BEEN ISSUED BY THESE GOVERNING AUTHORITIES.
- ALL NECESSARY PERMITS, BONDS, INSURANCES, ETC., SHALL BE PAID FOR BY THE CONTRACTOR.
- ALL ELEVATIONS SHOWN ARE BASED ON BENCHMARKS PROVIDED BY THE LOCAL MUNICIPALITY UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- ALL ITEMS OF WORK NOT SPECIFICALLY INDICATED AS PAY ITEMS ON THE DRAWINGS OR IN THE BID PACKAGE SHALL BE CONSIDERED INCIDENTAL ITEMS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL DURING THE PERIODS OF CONSTRUCTION.
- 11. AT LEAST THREE (3) WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL CONTACT MISS DIG (1=800-482-7171) TO VERIFY THE LOCATION OF ANY EXISTING UNDERGROUND UTILITIES AND SHALL NOTIFY REPRESENTATIVES OF OTHER UTILITIES IN THE VICINITY OF THE WORK.
- 12. ALL PROPERTIES OR FACILITIES IN THE SURROUNDING AREAS, PUBLIC OR PRIVATE, DESTROYED OR OTHERWISE DISTURBED DUE TO CONSTRUCTION, SHALL BE REPLACED AND/OR RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR, AT NO ADDITIONAL COST TO THE OWNER.
- MANHOLE, CATCH BASIN, GATE WELL RIMS AND HYDRANT FINISH GRADE ELEVATIONS MUST BE AS-BUILT AND APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR'S WORK IS CONSIDERED COMPLETE. AGENCY REQUIREMENTS FOR RECORD DRAWINGS ALSO APPLY.
- ALL REFERENCES TO M.D.O.T. SPECIFICATIONS REFER TO THE MOST CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION.
- 17. THE LOCATIONS AND DIMENSIONS SHOWN ON THE PLANS FOR EXISTING UNDERGROUND FACILITIES ARE IN ACCORDANCE WITH AVAILABLE INFORMATION PROVIDED BY THE UTILITY COMPANIES AND COVERNMENTAL ACENCES WITHOUT UNCOVERING AND MEASURING. THE DESIGN ENGINEER DOES NOT GUARANTEE THE ACCURACY OF THIS INFORMATION OR THAT ALL EXISTING UNDERGROUND FACILITIES ARE SHOWN.
- 18. THE OWNER MAY EMPLOY AND PAY FOR THE SERVICES OF AN ENGINEER TO PROVIDE ON-SITE INSPECTION AND VERIFY IN THE FIELD THAT ALL BACKFILL, PAYMENTS AND COMPACTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. IF, IN THE OPINION OF THE ENGINEER, THE WORK DOES NOT MEET THE TECHNICAL OR DESIGN REQUIREMENTS STIPULATED FOR THE WORK, THE CONTRACTOR SHALL MAKE ALL NECESSARY ADJUSTMENT SAS DIRECTED BY THE ENGINEER. THE OWNER OF THE WORK THE CONTRACT DECUMENTS WITHOUT SPECIFIC WRITTEN APPROVAL OF THE OWNER.
- 19. ALL EXCAVATED MATERIAL REMOVED FROM THE SANITARY SEWER, STORM SEWER AND WATER MAIN TRENCHES UNDER, THROUGH AND MTHIN 3 FEET OF THE 45° ZONE OF INFLUENCE LING OF EXISTING OF PROPOSED PAVING, SIDEWALK AREAS AND PER PLANS, NOT SUITABLE FOR BACKFILL, SHALL BE REMOVED FROM THESE AREAS AND DISPOSED OF
- 20. THE CONTRACTOR SHALL RESTORE TO THEIR PRESENT CONDITIONS ANY PAVEMENT OR PUBLIC RIGHTS—OF—WAY THAT IS DISTURBED BY THE OPERATIONS OF THE CONTRACTOR. ALL RESTORATION WORK IN PUBLIC RIGHTS—OF—WAY SHALL BE PERFORMED TO THE SATISFACTION OF THE GOVERNMENT AGENCIES HAVING JURISDICTION.
- 21. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE AND LIGHTS TO PROTECT THE WORK AND SAFELY MAINTAIN TRAFFIC, IN ACCORDANCE WITH LOCAL REQUIREMENTS AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION).
- 22. O.S.H.A. SAFETY REQUIREMENTS ALL WORK, WORK PRACTICE, AND MATERIALS SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL SAFETY, OCCUPATIONAL, HEALTH AND ENVIRONMENTAL REQUIATIONS AND ALSO MEPA AND ANSI CODES AS APPLICABLE. ALL WORK INSIDE A CONFINED SPACE SUCH AS MANHOLES OR UNDERGROUND STRUCTURES SHALL BE COORDINATED WITH UTILITY OWNER AND ALL WORKER SHATETY REQUIREMENTS STRICTLY ENFORCED. LAND SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- 24. CONTRACTOR SHALL PROVIDE FOR THE CONTINUOUS OPERATION OF EXISTING FACILITIES WITHOUT INTERRUPTION DURING CONSTRUCTION UNLESS SPECIFICALLY AUTHORIZED OTHERWISE BY THE RESPECTIVE AUTHORITY.
- 25. THE CONTRACTOR SHALL NOTE EXISTING UNDERGROUND UTILITIES IN THE PROJECT PLANS. TRENCH BACKFILL FOR EXISTING UTILITIES SHALL BE EXAMINED CRITICALLY. ANY TERCH WHICH, IN THE OPINION OF THE SOILS ENGINEER ARE FOUND TO BE SOFT, UNSTABLE, OR UNSUITABLE MATERIAL SHALL BE COMPLETELY EXCAVATED AND BACKFILLED WITH SUITABLE MATERIAL. SAND BACKFILL SHALL BE USED UNDER PAYEMENT OR WITHIN 3 FEET OF THE 45' INFLUENCE LINE OF PAYEMENT OR STRUCTURES.

#### EROSION CONTROL STANDARDS

- UNDER "MICHICANIS PERMIT—BY—RULE FOR CONSTRUCTION ACTIVITIES", PROMULGATED UNDER ACT 245, PUBLIC ACTS OF 1929 AS AMENDED, AN NPDES STORM WATER DISCHARGE COVERAGE PERMIT IS REQUIRED FOR ANY CONSTRUCTION ACTIVITY THAT DISTURBS 1 ACRES OR MORE OF LAND. A CERTIFIED STORM WATER OFFEATOR IS REQUIRED FOR THE SUPERVISION AND INSPECTION OF THE SOIL EROSION CONTROL MEASURES AT THE CONSTRUCTION SITE IN ACCORDANCE WITH THE PROMISIONS OF THESE RULES.
- DAILY INSPECTIONS SHALL BE MADE BY CONTRACTOR WHILE WORKING TO DETERMINE THE EFFECTIVENESS OF EROSION AND SEDIMENT CONTROL MEASURES. ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELLAY, ALL SOLL EROSION CONTROL PROVISIONS SHALL BE PROPERLY MAINTAINED DURING CONSTRUCTION.
- EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. WALTERWAYS INCLIDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES, AND PONDS.
- CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WHEN REQUIRED AND AS DIRECTED ON THESE PLANS. CONTRACTOR SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OTHER EARTH CHANGE AREA HAVE BEEN COMPLETED.

#### **EROSION CONTROL STANDARDS** CONTINUED

- 6. STAGING THE WORK WILL BE DONE BY THE CONTRACTOR AS DIRECTED IN THESE PLANS AND AS REQUIRED TO ENSURE PROGRESSIVE STABILIZATION OF DISTURBED FAPTH.
- 8. DUST SHALL BE CONTROLLED BY WATERING OR BY OTHER APPROVED MEANS THROUGHOUT ALL CONSTRUCTION OPERATIONS.
- ALL WATER FROM DEWATERING OR SURFACE DRAINAGE FROM THE CONSTRUCTION SITE SHALL BE CONTROLLED TO ELLIMINATE SEDIMENT CONTAMINATION OF OFF-SITE WATERWAYS OR STORM SEWERS. SUCH MEASURES SHALL BE APPROVED BY THE ENGINEER PRIGG TO ANY DEWATERING OR LAND DISTURBANCE.
- ENGINEER PHIOR TO ANY DEWATERING OR LAND DISTURBANCE.

  10. PERMANENT SOIL EROSION CONTROL MEASURES FOR SLOPES, CHANNELS, DITCHES OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 5 CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH CHANGE HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABLIZE A DISTURBED AREA AFTER HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED WITHIN 5 CALENDAR DAYS. ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES SHALL BE MEASURED WITHIN SEMENTED WITHIN 5 CALENDAR DAYS. ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MEASURED WITHIN SEMENTED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES SHALL BE MEASURED WITHIN SOURCE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES SHALL BE MEASURED WITHIN SOURCE MEASURES AND MEASURES AND MEASURES AS A CRETIFICATE OF COMPLIANCE IS ISSUED.

#### STORM SEWER SPECIFICATIONS

- THESE SPECIFICATIONS SHALL BE USED IN CONJUNCTION WITH THE GENERAL SPECIFICATIONS AND THE SPECIFICATIONS AND DETAIL SHEETS OF THE GOVERNING AGENCIES. IF ANY COMPLICT IS FOUND BETWEEN THE SPECIFICATIONS, THE STRICTER SPECIFICATIONS SHALL BE FOLLOWED.
- CONTRACTOR SHALL FURNISH CERTIFIED EVIDENCE THAT ALL MATERIAL TESTS AND INSPECTIONS HAVE BEEN PERFORMED AND THAT THE PRODUCT HAS BEEN MANUFACTURED IN COMPLIANCE WITH THE APPLICABLE SPECIFICATIONS.
- PROPER IMPLEMENTS, TOOLS AND FACILITIES SHALL BE PROVIDED AND USED FOR UNLOADING AND DISTRIBUTING MATERIALS ALONG THE LINE OF WORK. ANY PIPE OR FITTING DAMAGED IN TRANSPORTATION OR HANDLING SHALL BE REJECTED AN IMMEDIATELY REMOVED FROM THE JOB SITE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFE STORAGE OF ALL MATERIAL INTENDED FOR THE WORK. HE SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DAMAGE TO MATERIALS, EQUIPMENT AND WORK.
- PIPE BEDDING, UNLESS OTHERWISE INDICATED, SHALL BE CL. II SAND, CRUSHED STONE OR ROUNDED GRAVEL. BEDDING MATERIAL SHALL HAVE 95% PASSING A 3/4" SIEVE AND AT LEAST 50% RETAINED ON A NO. 4 SIEVE.
- POROUS FILTER MATERIAL FOR PERFORATED SUBSURFACE DRAINS SHALL BE CRUSHED ROCK OR GRAVEL GRADED BETWEEN 1-1/2" AND 3/4" OR PER PLANS AND DETAILS.
- BACKFILL, UNLESS OTHERWISE NOTED, SHALL BE COARSE SAND, FINE GRAVEL OR EARTH HAVING A LOW PLASTICITY INDEX, FREE OF ROCKS, DEBRIS AND OTHER PORCION MATERIALS AND DEFINED AS ALL PASSING THROUGH A 3/8" SIEVE AND NOT MORE THAN 10% BY VOLUME PASSING THROUGH A 200-MESH SIEVE.
- STORM SEWER PIPING AND FITTINGS SHALL BE OF THE SIZE AND TYPE INDICATED ON THE DRAWINGS AND SHALL CONFORM TO THE FOLLOWING:
  - A. POLYVINYL CHLORIDE (PVC) AND ACRYLONITRILE BUTADIENE STYRENE (ABS) FOR PIPE UP TO AND INCLUDING 10° IN DIAMETER, SHALL CONFORM TO ASTIM JOSA'S, SDR 23.5 FOR PVC PIPE AND ASTIM JOST) FOR ABS PIPE WITH ELASTOMETRIC GASKET JOINTS CONFORMING TO ASTIM JOSI2 OR CHEMICALLY WELDED PIPE JOINTS CONFORMING TO ASTIM F545.
  - B. REINFORCED CONCRETE PIPE, FOR PIPE 12" IN DIAMETER AND UP, SHALL CONFORM TO ASTM C-76, CLASS IV UNLESS MODIFIED BY THE DRAWINGS. JOINTS SHALL BE MODIFIED GROOVED TONGUE WITH RUBBER CASKET CONFORMING TO ASTM C-443.
  - C. PERFORATED SUBSURFACE DRAIN PIPE SHALL BE PVC CONFORMING TO ASTM D-2729 OR PERFORATED, CORRUGATED HIGH DENSITY POLYETHYLENE PIPE CONFORMING TO ASSHITO M-294 . JOINTS FOR PVC AND POLYETHYLENE PIPE SHALL BE PREFABRICATED COUPLING WITH SOLVENT WELD.
- MANHOLES, CATCH BASINS, AND INLETS SHALL BE OF THE SIZE AND TYPE INDICATED ON THE DRAWINGS AND SHALL BE CONSTRUCTED OF THE FOLLOWING:
  - A. REINFORCED PRE-CAST CONCRETE MANHOLE SECTIONS INCLUDING CONCENTRIC OR ECCENTRIC CONES AND GRADE RINGS SHALL BE 4000 PSI CONCRETE AND CONFORM TO ASTM C-478-64T.
  - B. BRICK SHALL BE SOUND, HARD-BURNED THROUGHOUT AND OF UNIFORM SIZE AND QUALITY AND SHALL BE IN ACCORDANCE WITH AASHTO M 91, GRADE MS.
  - C. CONCRETE MASONRY SHALL BE SOLID PRE-CAST SEGMENTAL UNITS CONFORMING TO ASTM C-139.
- 10. IRON CASTINGS SHALL CONFORM TO ASTM A-48, CLASS 30. BEARING SURFACES BETWEEN CAST IRON FRAMES, COVERS AND GRATES SHALL BE MACHINED, FITTED TOGETHER AND MATCHED—MARKED TO PREVENT ROCKING. SYSTEM IDENTIFYING LETTERS 2" HIGH SHALL BE STAMPED OR CAST INTO ALL COVERS SO THAT THEY ARE PLAINT VISIBLE. SEE MUNICIPALITY STANDARDS FOR ACTUAL WORDING.
- CASTINGS SHALL BE MANUFACTURED BY EAST JORDAN IRON WORKS, INC., NEENAH FOUNDRY COMPANY OR EQUAL.
- 12. CONCRETE AND MASONRY MATERIALS FOR CONSTRUCTION OF STORM DRAINAGE STRUCTURES SHALL CONSIST OF THE FOLLOWING:
- A. PORTLAND CEMENT SHALL BE STANDARD BRAND OF PORTLAND CEMENT CONFORMING TO ASTM C-150, TYPE I OR IA.
- B. FINE AND COARSE AGGREGATES FOR CONCRETE SHALL BE PER ASTM C-33.
- D. HYDRATED LIME SHALL COMPLY WITH ASTM C-207, TYPE S.
- E. WATER SHALL MEET THE REQUIREMENTS OF MDOT SPEC SECTION 911
- F. REINFORCING STEEL FOR CONCRETE SHALL BE INTERMEDIATE—GRADE NEW BILLET STEEL CONFORMING TO ASTM A-615, GRADE 40.
- 13. CONCRETE, UNLESS OTHERWISE NOTED, SHALL HAVE COMPRESSIVE STRENGTH AFTER 28 DAYS OF 3000 PSI MINIMUM WITH 3" MAXIMUM SLUMP.
  - A. CONCRETE FILL BELOW GRADE MAY BE 2500 PSI AT 28 DAYS.

  - B. CONCRETE, WHERE EXPOSED TO THE WEATHER, SHALL BE AIR-ENTRAINED. AIR ENTRAINMENT SHALL BE ACCOMPLISHED BY THE USE OF ADDITIVES CONFORMING TO ASTM C-260. AIR CONTENT SHALL BE 6 % + 1%. ADDITIVE SHALL BE USED STRICTLY IN ACCORDANCE WITH MANUFACTURER'S PRINTED DIRECTIONS.
  - C. READY-MIX CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF ASTM
- MODTAR SMALL BE SPECIFED HERBINAFTER. USE METHOD OF MUNIX BYOTAR AT VOICE SO THAT SPECIFIED PROCOPITIONS OF MOTAR MATERIALS CAN BE CONTROLLED AND ACCURATELY MANIFAMED DURING WORK PROCRESS. MORTAR BYALL NOT BE MUZED IN GREATER QUANTIES THAN REQUIRED FOR IMMEDIATE USE, WITH AMOUNT OF WATER CONSISTENT WITH SATISFACTORY WORKABILITY. RE-TAMPERION OF MORTAR IS NOT PERMITTED.
- A. MORTAR FOR LAYING BRICK OR CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C-270, TYPE M, AVERAGE COMPRESSIVE STRENGTH 2500 PSI MINIMUM AT 28 DAYS. MORTAR MIX SHALL BE PROPORTIONED BY VOLUME.
- C. MORTAR FOR GROUTING OF RIP—RAP SHALL CONSIST OF 1 PART PORTLAND CEMENT AND 3-1/2 PARTS SAND. PERFORM ALL EXCAVATING AND TRENCHING TO DIMENSIONS AND ELEVATIONS INDICATED ON DRAWINGS.

#### STORM SEWER SPECIFICATIONS, CONTINUED

- OPEN NO MORE TRENCH IN ADVANCE OF PIPE LAYING THAN IS NECESSARY TO EXPEDITE THE WORK.
- 17. CARE SHALL BE TAKEN NOT TO EXCAVATE BELOW THE DEPTHS INDICATED ON DRAWNGS. WHERE EXCESSIVE OR UNAUTHORIZED EXCAVATION TAKES PLACE, THE OVERDEPTH SHALL BE BACKFILLED TO THE PROPER GRADE WITH COMPACTED BEDDING MATERIAL, AT NO EXPENSE TO THE OWNER.
- WHERE UNSTABLE SOIL IS ENCOUNTERED, CONTRACTOR SHALL NOT PLACE PIPE UNTIL A SOLID BED HAS BEEN PROVIDED.
- EXCAVATION FOR DRAINAGE STRUCTURES SHALL EXTEND A SUFFICIENT DISTANCE FROM THE WALLS AND FOOTINGS TO ALLOWS FOR FORMS, CONSTRUCTION OF WALLS, CONNECTIONS AND FOR INSPECTION.
- 20. PROVIDE REQUIRED TIMBER SHEETING, BRACING AND SHORING TO PROTECT SIDES OF EXCAVATION. DO NOT BRACE SHEETING AGAINST PIPE. PROVIDE SUITABLE LADDERS FOR SAFE ENTRY TO AND EXIT FROM EXCAVATION.
- 21. DURING EXCAVATION, MATERIAL SUITABLE FOR BACKFILLING SHALL BE PILED IN AN ORDERLY MANNER A SUFFICIENT DISTANCE FROM THE BANKS OF TRENCHES TO AVOID OVERLOADING, AND TO PREVENT SLIDES OR CAVE—INS.
- WHEN WET EXCAVATION IS ENCOUNTERED, THE TRENCH SHALL BE DE-WATERED UNTIL THE PIPE HAS BEEN LAID AND BACKFILLED TO A POINT AT LEAST 1 FOOT ABOVE TOP OF PIPE.
- 23. MANHOLES AND CATCH BASINS SHALL BE CONSTRUCTED OF BRICK, CONCRETE MASONRY UNITS OR PRE-CAST CONCRETE WITH CAST IRON FRAMES, COVERS AND MANHOLE STEPS.
- 24. THE WALL THICKNESS OF MANHOLES AND CATCH BASINS CONSTRUCTED OF VARIOUS MATERIALS AND SET AT VARIOUS DEPTHS SHALL MEET THESE MINIMUMS. ADHERE 'OR REQUIREMENTS OF THE GOVERNING AGENCY IF THEY EXCEED THESE THICKNESSES:

DEPTH		BLOCK	PRE-CAST CONCRETE
	8"	6"	6" 8"
		12"	12"
	DEPTH 0' - 10' 10' - 16' 16' - 25'	DEPTH BRICK 0' - 10' 8" 10' - 16' 12"	0' - 10' 8" 6" 10' - 16' 12" 8"

- 25. WHENEVER EXISTING MANHOLES OR SEWER PIPE ARE TO BE TAPPED, DRILL HOLES 4° CENTER, TO CENTER, AROUND THE PERIPHERY OF OPENINGS TO CREATE A PLANE OF WEAKNESS JOINT BEFORE BREAKING SECTION OUT.
- MANHOLE STEPS SHALL BE BUILT INTO AND THOROUGHLY ANCHORED TO WALLS. STEPS SHALL BE FACTORY INSTALLED IN PRE-CAST STRUCTURES.
- ALL PIPING ENTERING OR LEAVING DRAINAGE STRUCTURES SHALL BE ADEQUATELY SUPPORTED BY POURED IN-PLACE CONCRETE FILL FROM PIPE CENTER TO UNDISTURBED GROUND.
- 28. SET FRAMES IN FULL BED OF STIFF MORTAR OR BITUMINOUS MASTIC JOINTING COMPOUND AT FINAL ELEVATION.
- ALL TIMBER SHEETING BELOW A PLANE 12" ABOVE TOP OF PIPE SHALL REMAIN II PLACE IN ORDER NOT TO DISTURE PIPE GRADING, BEFORE BACKFILLING, REMOVE ALL OTHER SHEETING BRACING AND SHORING.
- 30. BEDDING USED FOR TRENCH BOTTOM SHALL BE EXTENDED UP THE SIDES AND CAREFULLY PLACED AROUND AND OVER PIPE IN 6" MAXIMUM LAYERS. EACH LAYER SHALL BE THOROUGHLY AND CAREFULLY COMPACTED TO 95% OF MAXIMUM DRY DENSITY AS PER ASTM D-1557 (MODIFIED PROCTOR) UNTIL 12" OF COVER EXISTS OVER PIPE.
- REMAINDER OF TRENCH SHALL BE BACKFILLED WITH SPECIFIED BACKFILL MATERIAL TO SPECIFIED SUBGRADE ELEVATION. BACKFILLING SHALL BE COMPACTED TO 90% OF MAXIMUM DRY DENSITY PER ASTM D-1557.
- 32. WITHIN 3' OF THE AS' INFLUENCE LINE OF THE SUBGRADE OF STREETS, DRIVES, PARKING LOTS AND OTHER AREAS TO HAVE OR HANKING IMPROVED HAVE OS UPFACES, BACKFILL SHALL BE MATERIAL SPECIFIED AND SHALL BE DEPOSITED IN 6" LOOSE LAYERS AT OFFINAM MOSTURE CONTENT (427) COMPACTED TO 95% OF MAXIMUM DRY DENSITY PER ASTIN D1557. (MODIFIED PROCTOR) SUITABLE MATERIALS FOUND ON SITE MAY BE USED.
- 33. BEFORE BACKFILLING AROUND DRAINAGE STRUCTURES, ALL FORMS, TRASH AND DEBRIS SHALL BE REMOVED AND CLEARED AWAY. SELECTED EXCAVATED MATERIAL SHALL BE PLACED SYMMETRICALLY ON ALL SIDES IN 8" MAXIMUM LAYERS; EACH LAYER SHALL BE MOISTENED AND COMPACTED WITH MECHANICAL OR HAND TAMPERS.
- 34. AFTER INSTALLATION OF PIPES AND DRAINAGE STRUCTURES, CLEAN THEM, AND ADJUST TOPS TO FINISH GRADE. PIPE SHALL BE STRAIGHT BETWEEN STRUCTURES, WITH THE FULL INSIDE DIAMETER VISIBLE WHEN SIGHTING BETWEEN STRUCTURES.
- 35. ENDS OF HEADWALL AND END SECTIONS FOR PIPES LARGER THAN 6 INCHES, SHALL BE FITTED WITH A #4 ROUND MINIMUM WELDED STEEL ROD GRATING. RODS SHALL BE SPACED 6° O.C. MAXIMUM. WELD ROD AT ALL INTERSECTIONS. GRATE SHALL BE REMOVABLE FOR ACCESS AND CLEANING. 36. RIP-RAP SHALL BE LAID FROM THE BOTTOM UPWARD; STONES SHALL BE LAID BY HAND WITH 8" MINIMUM DIMENSION PERPENDICULAR TO GRADE WITH WELL-BROKEN JOINTS, COMPACTED AS IT GOES, TRUE TO LINE. ALL JOINTS SHALL BE FILLED WITH CEMENT MORTAR. SURFACE STONE TO BE EXPOSED. CLEAN JOINTS WITH WIRE BRUSH.
- 37. THE CONTRACTOR SHALL DO ALL REQUIRED EXCAVATION AND TRENCHING WORK AND THE CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR THE COMPLETION OF THE WORK HERRIN RECRAPILESS OF THE HATURE OF MATERIALS ENCOUNTERED DURING THE COURSE OF THE WORK. THE OWNER MILL NOT BE LIABLE FOR ANY COSTS WHATSOEVER ASSOCIATED WITH, BUT NOT LIMITED TO, THE PRESENCE OF ROCK, PATS JUSTIERRAMEAN STREAMS, EXCESSIVE WATER OR OTHER DIFFICULT OR UNANTICIPATED SIDE—SURFACE PHENOMENA.



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ORIGINAL ISSUE DATE

PROJECT NO: 23-127 SCALE: N/A

DRAWN BY: DAH
DESIGN BY: KCM
CHECK BY: MEB

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#### GRADING AND EARTHWORK SPECIFICATIONS

- ALTHOUGH A SUB-SURFACE INVESTIGATION MAY HAVE BEEN MADE BY THE OWNER, THE BIDDER AND ANY SUB-CONTRACTORS SHALL MAKE A PERSONAL INVESTIGATION OF SITE AND EXISTING SUBFACE AND SUB-SURFACE CONDITIONS. THE WORK AFEA. THE CONTRACTOR IS ADVISED TO DETERMINE THE SUB-SURFACE SOIL CONDITIONS AND GROUND WATER CONDITIONS TO HIS SOIL SOND SATISFACTION PRIOR TO BIDDING. NO MODIFICATIONS TO THE UNIT PRICES BID FOR ANY ITEM WILL BE MADE DUE TO VARIABLE SUB-SURFACE CONDITIONS. DEWATERING, IF DETERMINED NECESSARY BY THE CONTRACTOR, BY WELL POINTING OR DEEP WELLS WILL BE MADEDMALL TO THE MATILATION COST OF THE INTERIOR DEPARTMENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING DETERMINED TO HIS SATISFACTION PRIOR TO THE SUBMISSION OF HIS BID THE CONFIRMATION OF THE GROUND, THE CHARACTER AND QUALITY OF THE SUBSTIATA, THE TYPES AND QUANTITIES OF MATERIALS TO BE ENCOUNTERED, THE NATURE OF THE GROUNDWATER CONDITIONS, THE PROSECUTION OF THE WORK, THE GENERAL AND LOCAL CONDITIONS INCLUDING RECENT CLIMATIC CHANCES, THE TIME OF YEAR IN WHICH CONSTRUCTION MULT TAKE PLACE AND ALL OTHER MATTERS WHICH CAN IN ANY WAY AFFECT THE WORK UNDER THIS CONTRACT.
- THE CONTRACTOR SHALL CONSIDER, AND HIS PLAN FOR EXCAVATION SHALL REFLECT, THE EQUIPMENT AND METHODS TO BE EMPLOYED IN THE EXCAVATION AND WHAT METHODS WILL BE USED WHEN MET CONDITIONS ARE INCONTRETED WITH A CONTRACTOR SHALL SUBMIT AN OUTLINE OF HIS EARTHWORK METHODS WHICH SHALL TAKE HITO ACCOUNT THE OVERALL CONSTRUCTION SCHEDULE. THE PRICES ESTABLISHED IN THE PROPOSAL FOR THE WORK TO BE DONE SHALL REFLECT ALL COSTS PERTAINING TO THE WORK. NO GLAMMS FOR EXTRAS BASED ON SUBSTRATA OR GROUNDWATER TABLE CONDITIONS OR MOISTURE CONDITIONING WILL BE ALLOWED.
- THE CONTRACTOR SHALL KEEP INFORMED AND THE OWNER'S REPRESENTATIVE INFORMED AT ALL TIMES AS TO A "FILL SURPLUS OR SHORTAGE" STUATION. SHORTAGE OR SURPLUS OF SUITABLE MATERIAL AT THE CONCLUSION OF THE GRADING AND EARTHWORK OPERATION SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND HE WILL BE REQUIRED TO SUPPLY THE DEFICIENCY OR DISPOSE OF THE SURPLUS WITHOUT ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL REMOVE VEGETATION, DEBRIS, UNSATISFACTORY SOIL MATERIALS, OBSTRUCTIONS, AND OTHER DELETERIOUS MATERIALS FROM GROUND SURFACE PRIOR TO CUIT OR FILL OPERATIONS, SUCH MATERIAL SHALL BECOME PROPERTY OF THE CONTRACTOR TO BE DISPOSED OF IN A LEGAL MANNER OFF
- MATERIALS FOR FILL OR BACKFILL REQUIRED TO GRADE THE SITE AND ACHIEVE DESIGN ELEVATIONS SHALL BE EITHER ON OR OFF-SITE SOILS WHICH ARE FREE OF ORGANIC MATTER AND DEBRIS. NO TOPSOIL SHALL BE USED AS ENGINEERED FILL.
- 8. NO FILL MAY BE PLACED UNTIL THE EXPOSED SURFACES HAVE BEEN APPROVED BY THE GEOTECHNICAL ENGINEER. ALL FILL MATERIALS SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.
- IF ANY UNKNOWN SUBSURFACE STRUCTURES ARE ENCOUNTERED DURING CONSTRUCTION, THEY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE AND DESIGN ENGINEER PRIOR TO PROCEEDING.
- ALL FILL MATERIAL SHALL BE PLACED AND COMPACTED AT THE OPTIMUM MOISTURE CONTENT OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
- 11. NO FROZEN MATERIAL SHALL BE USED AS FILL NOR WILL ANY FILL BE PLACED ON A FROZEN BASE.
- 13. COMPACT FILL MATERIAL TO AT LEAST THE FOLLOWING PERCENTAGE OF MAXIMUM COMPACT FILL MATERIAL TO AT LEAST THE FOLLOWING PERCENTAGE OF MAXIMUM DRY DENSITY, AS DETERMINED BY AST M -1557 (MODIFIED PROCTOR). NO DEVATION FROM THESE COMPACTION DENSITIES WILL BE ALLOWED UNLESS SPECIFICALLY RECOMMENDED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY SPECIFICALLY RECOMMENDED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY

٠	FILL AREAS	% OF MAXIMUM DRY DEN
•	FILL UNDER BUILDING (EXTENDING 5' BEYOND FOOTINGS AT A SLOPE OF 1 ON 1)	98%
•	FILL UNDER PAVEMENT OR SIDEWALKS	95%
•	FILL PLACED UNDER OR BEHIND RETAINING WALLS	95%
	ALL OTHER FILL	90%

- 14. ALL FILL MATERIAL SHALL BE PLACED AND COMPACTED IN LIFTS, THAT WILL NOT EXCEED THE DEPTH IN WHICH THE COMPACTION EQUIPMENT CAN ACHEVE THE MAXIMUM DENSITY REQUIRED FOR THE ENTIRE DEPTH OF THE MATERIAL PLACED IN
- 15. ALL AREAS WHERE FILL HAS BEEN PLACED OR THE EXISTING SOILS HAVE BEEN DISTURBED SHALL BE SUBJECT TO COMPACTION TESTING BY THE GEOTECHNICAL ENGINEER AND SHALL BE TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER, OWNER AND OWNER'S REPRESENTATIVE.
- 16. FILL MATERIAL UNDER PAVEMENTS OR STRUCTURES SHALL BE FREE OF ORGANIC OR DELETERIOUS MATERIALS. IT SHALL BE SUITABLE FOR SUPPORTING PAVEMENTS AND STRUCTURES WITHOUT ADVERSE SHRINKING OR SWELLING.
- 17. FILL MATERIAL IN BERMS AND LANDSCAPE AREAS SHALL BE SUITABLE TO SUPPORT GROWTH OF THE LANDSCAPING MATERIALS (TYPICAL FOR THE LOCAL CLIMATE) AND AS PROPOSED BY THE LANDSCAPE ARCHITECT.

- BE EXAMINED CRITICALLY, AND ANY AREAS DISCOVERED WHICH, IN THE OPINION OF THE OWNERS' REPRESENTATIVE OR GEOTECHNICAL ENGINEER, ARE SOFT AND UNSTABLE, SHALL BE EXCAVATED TO SUCH DEPTHS AS MAY BE RECESSARY TO INSURE SAITS-ACTORY SUPPORTINO PROPERTIES AS DETERMINED BY THE GEOTECHNICAL ENGINEER. THESE AREAS OF EXCAVATION SHALL BE BACKFILLED MINEDIATELY AND SHALL BE REQUISH BACK TO THE ELEVATION OF THE SURROUNDING AREAS WITH APPROVED FILL MATERIAL AND IN ACCORDANCE WITH THE EARTH FILL CONSTRUCTION PROCEDURE.
- 22. THE FINISHED SUBGRADE SURFACE SHALL BE SHAPED TO INDICATED PROFILES AND SHALL BE REASONABLY SMOOTH AND FREE FROM IRREGULAR SURFACE CHANGES AND SHALL BE NO MORE THAN 1 INCH ABOVE OR BELOW THE INDICATED SUBGRADE ELEVATIONS.
- 23. THE GRADING CONTRACTOR SHALL BACKFILL ALL PARKING LOT PLANTERS AND LAWN AREAS TO WITHIN 2 INCHES OF THE TOP ADJACENT CURB GRADES. THE TOP 4 INCHES MINIMUM SHALL BE TOPSOIL, FREE FROM DEBRIS AND STONES LARGER THAN 1 INCH IN DIAMETER.
- I. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PUMPS, DITCHING, WELL POINT SYSTEMS AND OTHER MEANS FOR REMOVING WATER FROM EXCAVATIONS, ITENOHES, SUBGRADES AND OTHER PARTS OF THE WORK. THE CONTRACTOR SHALL CONTINUE DE-WATERING OPERATIONS UNTIL THE WATER HAS BEEN REMOVED ENTRIELY. UPON COMPLETION OF WATER REMOVAL THE CONTRACTOR SHALL TAKE APPROPRIATE ACTION TO DRY THE SOILS, RECRADE TO PROPOSED ELEVATIONS AND COMPACT SOILS TO THE SATISFACTION OF THE GEOTECHNICAL
- 25. THE CONTRACTOR SHALL DISPOSE OF WATER IN A SAFE AND SANITARY WAY TO PREVENT FLOODING OR INJURY TO PUBLIC OR PRIVATE PROPERTY AND SHALL OBTAIN APPROVAL OF THE LOCAL GOVERNING AUTHORITY BEFORE DISOHARING RON-OFF WATER TO THEIR SYSTEM. SEE EROSION CONTROL NOTES FOR ADDITIONAL REQUIREMENTS.
- 26. THE CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING GRADES AND NEW GRADES.

#### BITUMINOUS PAVING SPECIFICATIONS

- REFERENCE SPECIFICATIONS WHERE APPLICABLE TO WORK UNDER THIS SECTION ARE REFERRED TO BY ABBREVIATION AS FOLLOWS:
  - A. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO).

  - C. MICHIGAN DEPARTMENT OF TRANSPORTATION/ CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION (MDOT)
  - D. AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)
- AGGREGATE BASE COURSE SHALL MEET THE REQUIREMENTS OF SECTION 902 OF THE MIDOT STANDARD SPECIFICATION FOR CONSTRUCTION AND SHALL CONSIST OF 21AA CRUSHED AGGREGATE. THE USE OF SLAG IS PROHIBITED.
- TACK COAT SHALL BE EMULSIFIED ASPHALT MEETING REQUIREMENTS OF MDOT SECTION 904, GRADE CSS-1H.
- AGGREGATE SHALL CONSIST OF CRUSHED STONE, CRUSHED GRAVEL, A MIXTURE OF UNCRUSHED GRAVEL, AND THE FIRST STONE OF CRUSHED GRAVEL, OR CRUSHED OF ALCARY. WITH EITHER RUSHED STONE OF CRUSHED GRAVEL, OR COMPOSED OF CLEAN, TOUGH, DUPBABLE FROMENTS FROM AN EXCESS OF THAT OR ELONGATED PIECES, AND SHALL BE FREE OF ORGANIC MATTER AND FLETERIOUS SUBSTANCES AND MEET THE REQUIREMENTS OF MODIT STANDARD SPECIFICATIONS, SECTION 902, 21AA. CONTRACTOR MAY USE CRUSHED HAMA AGGREGATE SCREEMED TO MEET THE REQUIREMENTS OF MODIT STAM MATERIAL.
- FINE ACCREGATE SHALL BE WELL GRADE FROM COARSE TO FINE AND CONSIST OF NATURAL SAND, STONE SCREENINGS, OR A BLEND OF NATURAL SAND AND STONE SCREENINGS. IT SHALL BE COMPOSED OF ROUGH SURFACED AND ANOUARE GRANS OF BURNEY OF ROUGH SURFACED AND MEET THE REQUIREMENTS OF MODT STANDARD SPECTICATIONS, SECTION 207 FOR CLASS II OR CLASS II OR AND CARREST OF MATERIAL CONTRACTOR MAY USE CRUSHED HMA AGGREGATE SCREENED TO MEET THE REQUIREMENTS OF MODT CLASS II OR CLASS III MATERIAL.
- ASPHALT CEMENT SHALL COMPLY WITH THE REQUIREMENTS OF MDOT SECTION 904.
- BITUMINOUS LEVELING COURSE SHALL BE MDOT HMA, 13A, UNLESS OTHERWISE REQUIRED BY THE MUNICIPALITY OR ROAD AGENCY WITH JURISDICTION.
- BITUMINOUS WEARING COURSE SHALL BE MOOT HMA, 36A UNLESS OTHERWISE REQUIRED BY THE MUNICIPALITY OR ROAD AGENCY WITH JURISDICTION. CONTRACTOR MAY SUBSTITUTE 13A WITH THE APPROVAL OF THE OWNER AND ENGINEER.
- THE CONTRACTOR SHALL SUBMIT TO THE GEOTECHNICAL ENGINEER, JOB-MIX FORMULAS FOR EACH REQUIRED ASPHALT AGGREGATE MIXTURE. MIX DESIGNS SHALL BE WITHIN ALLOWABLE TOLERANCES AS SPECIFIED BY MOOT FOR THE PARTICULAR APPLICATION.
- 12. SUBGRADE PREPARATIONS SHALL CONSIST OF THE FINAL MACHINING OF THE SUBGRADE IMMEDIATELY PRIOR TO PLACING THE BITUMINOUS BASE COURSE. THE SUBGRADE SHALL BE COMPACTED FER PLANS AND DETAILS. THE SUBGRADE SHALL BE TRUE TO LINE AND GRADE.
- 13. CRUSHED AGGREGATE BASE COURSE SHALL BE COMPACTED TO A DENSITY EQUAL TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY
- ASTM D-1557 (MODIFIED PROCTOR).
- 15. THE CONTRACTOR SHALL NOT PLACE THE AGGREGATE BASE COURSE OR THE BITUMMOUS BASE COURSE PRIOR TO THE APPROVAL OF THE SUBGRADE BY THE GEOTECHNICAL ENGINEER.
- 17. APPLY BITUMINOUS TACK COATS ONLY WHEN TEMPERATURE HAS NOT BEEN BELOW 35 DEGREES F. FOR 12 HOURS IMMEDIATELY PRIOR TO APPLICATION. CONSTRUCT BITUMINOUS CONCRETE WEARING COURSE ONLY WHEN ATMOSPHERIC TEMPERATURE IS ABOVE 40-DEGREES F AND RISING, AND PROCEEDING COURSE OR LIFT IS CLEAN AND DRY. BASE COURSE MAY BE LAID WHEN TEMPERATURE IS ABOVE 35 DEGREES F. AND RISING AND APPROVED BY THE GEOTECHNICAL ENDINGER.
- 18. THE BITUMINOUS CONCRETE SHALL BE TRANSPORTED FROM THE MIXING PLANT TO THE POINT OF USE IN VEHICLES CONFORMING TO THE REQUIREMENTS OF SECTION 501 OF THE MODI STANDARD SPECIFICATIONS FOR CONSTRUCTION. DELIVERIES SHALL BE SCHEDULED SO THAT SPEEADING AND ROLLING OF ALL BITUMINOUS CONCRETE PREPARED FOR ONE DAY'S RUN CAN BE COMPLETED DURING DAYLIGHT, UNLESS ADEQUATE ARTIFICIAL LIGHTING IS PROVIDED. HAULING OVER FRESHLY PLACED BITUMINOUS MAT SHALL NOT BE PERMITTED UNIT. THE BITUMINOUS MAT SHALL NOT BE PERMITTED UNIT. THE BITUMINOUS CONCRETE HAS BEEN COMPACTED, AS SPECIFIED, AND ALLOWED TO COOL TO ATMOSPHERIC TEMPERATURE.
- A IMUSPHERIC TEMPERATURE.

  19. UPON ARRIVAL, THE BITUINIOUS CONCRETE SHALL BE SPREAD TO A THICKNESS NOT TO EXCEED 3-INCHES AND TO THE FULL WIDTH BY AN APPROVED BITUININOUS PAVER. IT SHALL BE STRUCK OFF IN A UNIFORM LAYER OF SUCH DEPTH HAT, WHEN THE WORK IS COMPLETED, IT SHALL HAVE THE REQUIRED THICKNESS AND CONFORM TO THE GRADE AND CONTOUR INDICATED. THE SPEED OF THE PAYER SHALL BE REQUIATED TO ELIMINATE PULLING AND TEARNO OF THE PAYER SHALL BE REQUIATED TO ELIMINATE PULLING AND TEARNO OF BITUININOUS CONCRETE SHALL BEGIN ALONG THE CENTERLINE OF A CROWNED SECTION OR ON THE HIGH SIDE OF AREAS WITH A ONE-WAY SLOPE. THE BITUININOUS CONCRETE SHALL BE PLACED IN CONSECUTIVE ADJACENT STRIPS HAVING A MINIMUM MIDTH OF TO FEET, EXCEPT WHERE EDGE LANSE REQUIRE LESS WOTH TO COMPLETE THE AREA. TRANSVERSE JOINTS IN ADJACENT LANES SHALL BE OFFSET A MINIMUM OF TO FEET.
- ON AREAS WHERE IRREGULARITIES OR UNAVOIDABLE OBSTACLES MAKE THE USE OF MECHANICAL SPREADING AND FINISHING EQUIPMENT IMPRACTICAL, THE BITUMINOUS CONCRETE MAY BE SPREAD AND RAKED BY HAND TOOLS.
- 22. THE BITUMINOUS CONCRETE MIXTURE SHALL BE THOROUGHLY AND UNIFORMLY COMPACTED BY ROLLING. THE SURFACE SHALL BE ROLLED WHEN THE BITUMINOUS MAT HAS ATTAINED SUFFICIONT STABILTY SO THAT THE ROLLING DOES NOT CAUSE UNDUE DISPLACEMENT, CRACKING, AND SHOVING. THE SEQUENCE OF ROLLING OPERATIONS SHALL BE AT THE DISCRETION OF THE
- 23. THE SPEED OF THE ROLLER SHALL, AT ALL TIMES, BE SUFFICIENTLY SLOW TO AVOID DISPLACEMENT OF THE HOT BITUMINOUS CONCRETE. ANY DISPLACEMENT OCCURRING AS A RESULT OF REVERSING THE DIRECTION OF THE ROLLER, OR FROM ANY OTHER CAUSE, SHALL BE CORRECTED AT ONCE.
- 24. SUFFICIENT ROLLERS SHALL BE FURNISHED TO HANDLE THE OUTPUT OF THE PLANT. ROLLING SHALL CONTINUE UNTIL ALL ROLLER MARKS ARE ELIMINATED, THE SURFACE IS OF UNIFORM TEXTURE AND TRUE TO GRADE AND CROSS-SECTION, AND THE REQUIRED FIELD DENSITY IS OBTAINED.
- TACK COAT SHALL BE APPLIED TO THE SURFACE OF PREVIOUS LIFTS AND COURSES OF BITUMINOUS CONCRETE AND TO SURFACES ABUTTING OR PROJECTING INTO THE BITUMINOUS CONCRETE.
- IMMEDIATELY BEFORE PLACING A SUCCEEDING LIFT OR COURSE OF BITUMINOUS CONCRETE THE PRECEDING LIFT OR COURSE SHALL BE CLEARED OF ANY DEBRIS OR STANDING WATER BY APPROPRIATE METHODS.

- 29. ANY BITUMINOUS CONCRETE THAT BECOMES LOOSE AND BROKEN, MIXED WITH DIRT, OR IN ANY WAY DEFECTIVE SHALL BE REMOVED AND REPLACED WITH FRESH HOT BITUMINOUS CONCRETE AND MMEDIATELY COMPACTED TO CONFORM TO THE
- 30. THE CONTRACTOR SHALL PROVIDE AT LEAST TWO ROLLERS FOR EACH PAVER OPERATING ON THE WORK. THE CONTRACTOR SHALL USE ADDITIONAL ROLLERS AS REQUIRED TO OBTAIN THE SPECIFIED PAVEMENT DENSITY.

#### BITUMINOUS PAVING SPECIFICATIONS,

- . THE CONTRACTOR SHALL CAREFULLY MAKE JOINTS BETWEEN OLD AND NEW PAVEMENTS, OR BETWEEN SUCCESSIVE DAYS' WORK, TO ENSURE A CONTINUOUS BOND BETWEEN ADJOINING WORK. CONSTRUCT JOINTS TO HAVE THE SAME TEXTURE, DENSITY AND SMOOTHNESS AS OTHER SECTIONS OF THE BITUMINOUS CONCRETE COURSE. THE CONTRACTOR SHALL CLEAN CONTACT SURFACES OF SAND, DRIT, OR OTHER OBJECTIONABLE MATERIAL AND APPLY TACK COAT BEFORE MAKING THE JOINT.
- 32. THE CONTRACTOR SHALL TEST THE FINISHED SURFACE OF EACH BITUMINOUS CONCRETE COURSE FOR SMOOTHNESS, USING A 10 FOOT STRAIGHTEDGE APPLIED PARALLEL WITH AND AT RIGHT ANGLES TO CENTERLINE OF PAYED AREA. SURFACE SHALL NOT BE ACCEPTABLE IF EXCEEDING THE FOLLOWING TOLERANCES FOR SMOOTHNESS.

  - B. SURFACE COURSE: 1/4 INCH
- 33. THE CONTRACTOR SHALL TEST CROWNED SURFACES WITH A CROWN TEMPLATE, CENTERED AND AT RIGHT ANGLES TO THE CROWN. SURFACES MIL. NOT BE ACCEPTABLE IF THE FINISHED CROWN SURFACES VARY MORE THAN 1/4 INCH FROM THE CROWN TEMPLATE.
- 34. AFTER FINAL ROLLING, THE CONTRACTOR SHALL NOT PERMIT VEHICULAR TRAFFIC ON THE BITUMINUS CONCRETE PAVEMENT UNTIL IT HAS COOLED AND HARDENED, AND IN NO CASE SOONER THAN SIX HOURS OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
- 35. THE AGGREGATE BASE MUST EXTEND A MINIMUM OF 1' BEHIND THE BACK-OF-CURB OR BEYOND EDGE OF PAVEMENT WHEN NO CURB IS PROPOSED.

#### CONCRETE CURB, SIDEWALK AND PAVEMENT SPECIFICATIONS

- THESE SPECIFICATIONS SHALL GOVERN THE CONSTRUCTION OF ALL PAVEMENTS, CURB AND GUTTER, SIDEWALKS, SERVICE WALKS, DRIVEWAY APPROACHES, AND LOADING DOCK AREAS, AS INDICATED ON THE DRAWINGS.
- 2. REFERENCE SPECIFICATIONS WHERE APPLICABLE TO WORK UNDER THIS SECTION ARE REFERRED BY ABBREVIATION AS FOLLOWS:
  - AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO).
  - B. AMERICAN CONCRETE INSTITUTE (ACI)
  - C. MICHIGAN DEPARTMENT OF TRANSPORTATION/ CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION (MDOT)
  - D. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
- THE FINE AGGREGATE SHALL MEET ALL REQUIREMENTS OF SECTION 902 OF OF MDOT SPECIFICATION FOR NO. 2NS NATURAL SAND.
- THE COARSE AGGREGATE SHALL MEET ALL REQUIREMENTS OF SECTION 902 OF M.D.O.T. SPECIFICATIONS FOR 6AA COARSE AGGREGATE.
- THE CONTRACTOR SHALL SUBMIT, TO THE GEOTECHNICAL ENGINEER, JOB MIX-FORMULAS FOR EACH REQUIRED CEMENT-AGGREGATE MIXTURE. MIX DESIGNS SHALL BE WITHIN ALLOWABLE TOLERANCES AS SPECIFIED FOR THE PARTICULAR APPLICATION.
- CONCRETE MIX SHALL BE AIR-ENTRAINED AND PROPORTIONED TO PROVIDE THE FOLLOWING:
- A. COMPRESSIVE STRENGTH AT 28 DAYS: 3500 PSI MIN., OR AS INDICATED ON PLANS.
- B. TOTAL AIR CONTENT BY VOLUME: 5% TO 8%.
- C. SLUMP 3 INCH MAXIMUM, OR AS INDICATED ON PLANS.
- THE CONTRACTOR SHALL AT HIS EXPENSE FURNISH SAMPLES OF FRESH CONCRETE AND PROVIDE SAFE AND SATISFACTORY FACILITIES FOR OBTAINING THE SAMPLES.
- CONSTRUCT CONCRETE CURBING ONLY WHEN GROUND TEMPERATURE IS ABOVE 35 DEGREES F. AND BASE IS DRY.
- ALL CEMENT USED IN CURB CONSTRUCTION SHALL BE PORTLAND CEMENT, TYPE I OR IA ASTM C-150. 11. WATER USED IN CONCRETE SHALL MEET THE REQUIREMENTS OF MDOT SECTION 911.
- 12. AIR ENTRAINING ADMIXTURE SHALL BE SELECTED FROM THE MDOT QUALIFIED PRODUCTS LIST.
- 13. ALL READY—MIXED CONCRETE SUPPLIERS MUST BE APPROVED BY THE OWNER AND MEET THE CURRENT REQUIRMENTS OF THE NATIONAL READY MIX CONCRETE ASSOCIATION (NRMCA). IF REQUESTED BY THE OWNER, SUBMIT A WRITTEN DESCRIPTION OF PROPOSED READY—MIXED CONCRETE MANUFACTURER, GIVING QUALIFICATIONS OF PERSONAL, LOCATION OF BATCHING PLANT, LIST OF PROMECTS SIMILAR IN SCOPE OF SPECIFIED WORK, AND OTHER INFORMATION AS MAY BE REQUESTED BY THE OWNER.

- 16. READY-MIXED CONCRETE SHALL BE BATCHED, MIXED AND TRANSPORTED IN ACCORDANCE WITH ASTM C94, AND COMPLY WITH ACI 304 "RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE," EXCEPT AS OTHERWISE SPECIFIED HERRIN.
- READY-MIXED CONCRETE SHALL BE MIXED AND DELIVERED TO THE POINT OF DISCHARGE AT THE JOB BY MEANS OF A READY MIX CONCRETE TRUCK.
- 18. NO WATER FROM THE TRUCK WATER SYSTEM OR ELSEWHERE SHALL BE ADDED AFTER THE INITIAL INTRODUCTION OF THE MIXING WATER FOR THE BATCH. UND NO CIRCUMSTANCES SHALL THE APPROVED MAXIMUM WATER CONTENT BE EXCEEDED NOR SHALL THE SLUMP EXCEED THE MAXIMUM SPECIFIED.
- DISCHARGE OF THE CONCRETE SHALL BE COMPLETED WITHIN 1-1/2 HOURS OR BEFORE THE DRIM HAS REVOLVED 300 REVOLUTIONS, WHICHEVER COMES FIRST, AFTER THE INTRODUCTION OF THE MIXING WATER TO THE CEMENT AND AGGREGATES OR THE INTRODUCTION OF THE CEMENT TO THE AGGREGATES.
- 21. CONCRETE DELIVERED IN COLD WEATHER (AIR TEMPERATURE 45-DEGREES F. AND LOWER) SHALL HAVE A TEMPERATURE NOT LESS THAN 60-DEGREES F. AT THE POINT OF DISCHARGE AT THE JOB, AND IN COMPLIANCE WITH ACI JOSOF "COLD WEATHER CONCRETING". CONCRETE PLACING WILL NOT BE PERMITTED WHEN THE AIR TEMPERATURE IS 35-DEGREES F. OR LOWER.
- 22. CONCRETE DELIVERED UNDER HOT WEATHER CONDITIONS CONTRIBUTING TO QUICK SIFFENING OF CONCRETE, OR IN AIR TEMPERATURE OF 80-DECREES F. AND OVER, SHALL HAVE A TEMPERATURE BETWEEN 60 AND 80-DECREES F. AT THE POINT OF DISCHARGE AT THE JOB, AND IN ACCORDANCE WITH ACI 305R "HOT WEATHER CONCRETING."
- 23. IN NO CASE SHALL THE MIXER OR TRUCK BE FLUSHED OUT ONTO THE STREET PAYEMENT, IN A CATCH BASIN OR SEWER MANHOLE, OR IN ANY PUBLIC RIGHT-OF-WAY. SEE SOIL EROSION CONTROL PLAN FOR CONCRETE WASHOUT LOCATION.

#### CONCRETE CURB, SIDEWALK AND PAVEMENT SPECIFICATIONS, CONTINUED

- 26. BAR SUPPORTS SHALL CONFORM TO THE BAR SUPPORT SPECIFICATIONS
  CONTAINED IN CONCRETE REINFORCING STEEL INSTITUTE'S (CRS) "MANUAL OF
  STANDARD PRACTICE." PROVIDE CHAIRS, SPACERS AND OTHER DEVICES SUITABLE
  FOR PROPER SPACING SUPPORTING AND FASTENING REINFORCING BARS.
- 27. WHEN FORMS ARE USED AND THE CURB RADIUS IS LESS THAN 200 FEET, THE CURVED ALIGNMENT SHALL BE PROVIDED FOR BY EITHER STANDARD STEEL FORMS EQUIPPED WITH FLEXIBEL LINES OR BY HEIZIBLE FORMS. THE FORMS SHALL BE OF THE FULL DEPTH OF THE SECTION. CURB AND GUTTER FORMS SHALL BE SO CONSTRUCTED AS TO PERMIT THE INSIDE OF THE FORMS TO BE SECURELY FASTENED TO THE OUTSIDE FORMS.
- 28. ALL NEW CURB SHALL BE PLACED ONLY ON A PREPARED SUBGRADE, SMOOTH AND LEVELED TO THE GRADES ESTABLISHED BY THE ENGINEER.
- CÓMPACT AND CUT-TO-GRADE SUBGRADE UNDER FORMS SO THAT FORMS WHEN SET WILL BE UNIFORMLY SUPPORTED FOR THE ENTIRE LENGTH. SECURELY STAKE AND BRACE OR TIE FORMS TO PREVENT LEAKAGE OF MORTAR. BRACING WITH EARTH WILL NOT BE PERMITTED.
- COAT SURFACES OF FORMS TO BE IN CONCRETE WITH A LIGHT CLEAR PARAFFIN OIL OR PARTING COMPOUND WHICH WILL NOT STAIN THE CONCRETE.
- THE INTERIOR SURFACES OF CONCRETE CONVEYING EQUIPMENT SHALL BE MAINTAINED FREE OF HARDENED CONCRETE, DEBRIS, WATER, SNOW, ICE AND OTHER DELETERIOUS MATERIALS.
- 32. CURBING MAY BE CONSTRUCTED EITHER BY USE OF FORMS OR BY A MECHANICAL CURB AND QUITER PAYER, PROVIDED HE REQUIRED HISIAI, AND ACCESS-SCHON, DEVELOPE OF THE PAYER OF THE PROVIDE OF THE PROVIDE ON ECONOMIC MONOTHING STRUCTURE WITHOUT THE USE OF MORTAR TOPPING OR SAND-CEMENT DRIER. CONCRETE SHALL BE SPACED OR VIBRATED SUFFICIENTLY TO ENSURE SATISFACTORY CONSCIDENTION.
- 34. THE CONCRETE CURB SURFACE SHALL BE STRUCK OFF THE REQUIRED CROSS—SECTION WITH A TEMPLATE. AFTER THE CONCRETE CURB HAS BEEN FLOATED TO AN EVEN SURFACE, THE CONTRACTION JOINT SHALL BE CUIT AND ALL SLAB EDGES ROUNDED WITH A 1/2 INCH RADIUS EDGING TOOL THAT WILL FINISH TO A WIDTH OF 2 INCHES. AFTER THE CONCRETE HAS SUGHTLY SET, A BROOM SHALL BE BRUSHED LIGHTLY ACROSS THE SURFACE PARALLEL TO FORMS SO AS TO IMPART A ROUGH FINISH.
- CONTRACTION JOINTS SHALL BE CUT IN CONCRETE CURBING AT MINIMUM 10' INTERVALS. THE JOINT SHALL CUT 1/4 INCH WIDE BY 1/3 THE DEPTH OF THE CONCRETE CURB SECTION. JOINTS SHALL ALSO BE LOCATED ADJACENT TO CURB DROPS.
- 36. ISOLATION JOINTS SHALL BE PLACED IN CURBING AT TANGENT POINTS IN CURB RETURNS AT INTERSECTIONS, AT BOTH SIDES OF STRUCTURES LOCATED IN THE LINE AND IN RUNS OF CURB AT INTERVALS NOT EXCEEDING 400 FEET. ISOLATION JOINTS SHALL BE 1<sup>st</sup> THICK PRE—FORMED JOINT FILLER STRIPS. THE STRIPS SHALL EXTEND THE FULL DEPTH OF THE CONCRETE CURB SECTION. ISOLATION JOINTS SHALL BE PLACED IN CURB AT THE END OF EACH DAYS POUR AND WHEN ABUTTING PREVIOUSLY POURED CURB.
- 37. THE CURING COMPOUND SHALL BE A WHITE PARAFIN BASED COMPOUND SELECTED FROM MDOT'S QUALIFIED PRODUCTS LIST APPLIED AT 200 SQ/FT/GAL.
- ALL CONTRACTION JOINTS IN CONCRETE CURB SECTIONS SHALL BE SEALED WITH EITHER HOT POURED JOINT SEALER OR COLD APPLIED JOINT SEALER.
- 40. FRESHLY PLACED CONCRETE SHALL BE PROTECTED AS REQUIRED TO MAINTAIN THE TEMPERATURE OF THE CONCRETE AT NOT LESS THAN 50 DEGREES F. NOR MORE THAN 80 DEGREES F. AND IN A MOIST CONDITION CONTINUOUSLY FOR THE PERIOD OF TIME NECESSARY FOR THE CONCRETE TO CURE. CHANGES IN TEMPERATURE OF THE CONCRETE DIVING CURING SHALL BE AS UNIFORM AS POSSIBLE AND SHALL NOT EXCRED 5 DEGREES F. IN ANY CONE HOUR, NOR 50 DEGREES F. IN ANY 24 HOUR FERIOR.
- COLD WEATHER PROTECTION: WHEN THE TEMPERATURE OF THE ATMOSPHERE IS 40-DEGREES F. AND BELOW, THE CONCRETE SHALL BE PROTECTED BY HEATING, INSULATION COVERING, OR COMBINATION THEREOF AS REQUIRED TO MAINTAIN THE TEMPERATURE OF THE CONCRETE AT OR ABOVE 50-DEGREES F. AND IN A MOIST CONDITION CONTINUOUSLY FOR THE CONCRETE CURING PERIOD. COLD WEATHER PROTECTION SHALL MEET THE REQUIREMENTS OF ACI 306R "COLD WEATHER
- 42. HOT WEATHER PROTECTION: WHEN THE TEMPERATURE OF THE ATMOSPHERE IS 
  90-DEGREES F. AND ABOVE, OR DURING OTHER CLIMATIC CONDITIONS WHICH WILL 
  CAUSE TOO RAPID DRIVING OF THE CONCRETE. THE CONCRETE SHALL BE 
  PROTECTED BY WINDBREAKS, SHADING, FOG SPRAYING LIGHT COLORED MOISTURE 
  RETAINING COVERING, OR A COMBINATION OF THEREOF AS REQUIRED TO MAINTAIN 
  THE TEMPERATURE OF THE CONCRETE BELOW 80-DEGREE F. AND IN A MOIST 
  CONDITION CONTINUOUSLY FOR THE CONCRETE CURING PERIOD. HOT WEATHER 
  PROTECTION SHALL MEET THE REQUIREMENTS OF ACI 305R "HOT WEATHER 
  CONCRETING"
- 43. ALL FORMS, RAILS AND STAKES SHALL BE REMOVED WITHIN 24 HOURS AFTER PLACING THE CURB. EXPOSED EDGES OF CONCRETE SHALL BE IMMEDIATELY BACKFILLED OR SPRAYED WITH CURING COMPOUND.
- 44. AFTER COMPLETION OF CONCRETE CURBING IN AN AREA, REMOVE ALL WEATHER PROTECTION MATERIALS, RUBBISH AND DEBRIS RESULTING FROM SPECIFIED WORK, SWEEP CONCRETE CURBS CLEAN, AND SEAL JOINTS.
- ALL CEMENT USED IN SIDEWALK CONSTRUCTION SHALL BE PORTLAND CEMENT, TYPE I OR IA ASTM C-150. 46. ALL NEW WALKS AND CONCRETE PAVEMENTS SHALL BE PLACED ONLY ON A PREPARED SUBGRADE, SMOOTHED AND LEVELED TO THE GRADES ESTABLISHED BY THE ENGINEER. IN CLAY SOLIS THE SUBGRADE SHALL BE EXCAVATED 2-INCHES BELOW THE SIDEMALK BASE AND FILLED WITH APPROVED SAND MEETING MOOT CLASS II, SAND DESIGNATION.
- CONSTRUCT CONCRETE SURFACE COURSE ONLY WHEN GROUND TEMPERATURE IS ABOVE 35 DEGREES F. AND BASE IS DRY.
- 48. SIDEWALKS SHALL PITCH TOWARD THE STREET OR AWAY FROM BUILDINGS WITH A MAXIMUM CROSS SLOPE OF 1/4-INCH PER FOOT OF WIDTH AND A MINIMUM CROSS SLOPE DIFFORCH PER FOOT OF WIDTH. CROSS SLOPE DIFFECTION TRANSITIONS SHALL BE ACCOMPLISHED IN LENGTHS OF 10 FEET OR LESS.
- 49. PRIOR TO PLACING THE CONCRETE, ALL DEBRIS, STONES, DIRT, ETC., SHALL BE REMOVED FROM THE SUBGRADE. THE SUBGRADE SHALL BE MOISTENED WITH WATER IN SUCH A MAINTER AS TO THOROUGHLY WET THE MATERIAL WITHOUT FORMING PUDDLES OR POCKETS OF WATER. NO CONCRETE SHALL BE PLACED ON FROZEM SUBGRADE. FRUZEN SUBURALE.

  50. FORMS SHALL BE METAL OR WOOD AND OF AN APPROVED SECTION. THEY SHALL BE STRAIGHT, FREE FROM DISTORTION AND SHALL SHOW NO VERTICAL VARIATION GRAITER THAN 1/8-INCH IN 10-FOOT LENGTHS FROM THE TIZE DAME SURFACE ON THE TOP OF THE FORMS WHEN TESTED WITH A 10-FOOT STRAIGHTEDGE, AND SHALL SHOW NO LATERAL VARIATION GREATER THAN 1/4-INCH IN 10-FEET FROM THE TRUE PLANE SURFACE OF THE LATERAL FACE OF THE FORM WHEN TESTED WHEN THE PLANE SURFACE OF THE LATERAL FACE OF THE FORM WHEN TESTED WHEN THE PLANE SURFACE OF THE LATERAL FACE OF THE FORM WHEN TESTED THE SECURELY HELD BY THE SECURE OF THE SECURE OF
- 51. THE CONCRETE SHALL BE DEPOSITED CONTINUOUSLY IN THE FORMS IN SUCH A MANNER AS TO AVIDD SEGRECATION AND IT SHALL BE THROUGHLY TAMPED OR WBRATED SO THAT THE FORMS ARE ENTIRELY FILLED AND THE CONCRETE THOROUGHLY CONSOLIDATED. THE SLASS SHALL BE PLACED IN SECTIONS OR BLOCKS IN ONE OPERATION AS A MODULTH.
- 52. THE CONCRETE SURFACE SHALL BE STRUCK OFF TO A PLANE SURFACE WITH A STRAIGHTEDGE. AFTER THE CONCRETE HAS BEEN FLOATED TO AN EVEN SURFACE, THE CONTRACTION JOINT SHALL BE CUT AND ALL SLAB EDGES ROUNDED WITH A 1/2-INCH RADIUS EDGING TOOL THAT WILL FINISH TO A WIDTH OF 2-INCHES. AFTER THE CONCRETE HAS SUIGHTY SET, A BROOM SHALL BE BRUSHED LIGHTLY ACROSS THE SURFACE AT RIGHT ANGLES TO FORMS SO AS TO IMPART A ROUGH FINISH.
- 1-1/4-INCHES FOR SIDEWALKS AND 3-INCHES FOR CONCRETE PAVEMENT SLABS.

#### CONCRETE CURB, SIDEWALK AND PAVEMENT SPECIFICATIONS, CONTINUED

- 55. ISOLATION PAPERS SHALL BE OF THE PRE-MOLDED, NON-EXTRUDING, ASPHALT IMPREGNATED TYPE, NOT LESS THAN 1/2-INCH THICK. THE LENGTH SHALL BE EQUAL TO THE WIDTH OF THE SLAB, AND THE DEPTH EQUAL TO THE THICKNESS OF THE SLAB PLUS I-INCH.
- 56. ISOLATION JOINTS SHALL BE PLACED AT THE FOLLOWING LOCATION FOR SIDEWALKS AND CONCRETE PAVEMENTS:
  - A. AT THE BACK OF THE CURB AND FRONT EDGE OF THE SIDEWALKS AND PAVEMENT SLABS ADJACENT TO EACH DRIVEWAY APPROACH AND SERVICE WALK.
  - B. AT INTERVALS NOT TO EXCEED 50-FEET IN ALL PUBLIC SIDEWALKS.
  - C. AT THE BACK OF THE CURB WHERE THE RAMPS EXTEND FROM THE KEY FLAG TO THE PAVEMENT.
  - D. BETWEEN THE KEY FLAG AND THE RAMP IN ALL CASES, EXCEPT WHERE THERE ARE EXISTING EXPANSION JOINTS AT THE INTERSECTIONS OF THE SIDEWALKS AND THE KEY FLAG.
  - E. AT ANY PLACE WHERE A SIDEWALK OR CONCRETE PAVEMENT ABUTS A BUILDING OR FIXED STRUCTURE.
  - F. AT ANY OTHER LOCATIONS INDICATED ON THE PLAN.
- 57. CONTRACTION JOINTS IN THE CONCRETE PAVEMENT WILL BE AS FOLLOWS:
  - TRANSVERSE JOINTS SHALL BE AT MAXIMUM 10—FOOT INTERVALS OR AS SHOWN ON PLANS AND DETAILS.
- B. LONGITUDINAL JOINTS SHALL BE AT MAXIMUM 12-FOOT INTERVALS OR AS SHOWN ON PLANS AND DETAILS. 58. PRIOR TO APPLYING JOINT SEALER, CLEAN JOINT GROOVE OF FOREIGN MATTER AND LOOSE PARTICLES, AND DRY SURFACE.

#### TRAFFIC LANE AND PARKING LOT MARKING

- PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, AND SERVICES NECESSARY TO COMPLETE ALL TRAFFIC LANE AND PARKING LOT MARKINGS AS INDICATED IN THE CONSTRUCTION DOCUMENTS.
- WORK INCLUDES, BUT NOT LIMITED TO PAINTING OF LETTERS, MARKINGS, STRIPES AND ISLANDS ON THE PAVEMENT SURFACE APPLIED IN ACCORDANCE WITH THIS SPECIFICATION AND AT THE LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- TRAFFIC MARKING PAINT SHALL MEET THE REQUIREMENTS OF FEDERAL SPECIFICATION TT-P-1952F, WITH OR WITHOUT REFLECTORIZED BEADS AS REQUIRED ON THE PLANS, OR SHALL BE A PRODUCT FROM THE CURRENT MDOT QUALIFIED PRODUCTS LIST.
- 4. COLOR SHALL BE AS SPECIFIED ON THE PLANS OR AS FOLLOWS: A. TRAFFIC LANE STRIPING SHALL BE WHITE OR YELLOW REFLECTORIZED, AS SHOWN ON THE PLANS.
- B. TRAFFIC MARKING AND CURB FACES SHALL BE WHITE UNLESS NOTED OTHERWISE.
- C. PARKING LOT STRIPING SHALL BE WHITE, UNLESS NOTED OTHERWISE. D. HANDICAP STALL STRIPING MEETING CURRENT ADA REQUIREMENTS SHALL BE BLUE UNLESS NOTED OTHERWISE.
- THE PAINTING SHALL BE PERFORMED ONLY WHEN THE EXISTING SURFACE IS DRY AND CLEAN, WHEN THE ATMOSPHERIC TEMPERATURE IS ABOVE 40-DECREES F. AND WHEN THE WEATHER IS NOT EXCESSIVELY WINDTY, DUSTYO OF FOGGY AND WHEN RAIN IS NOT FORECASTED FOR AT LEAST 2 HOURS AFTER PAINT IS APPLIED.
- 6. ALL EQUIPMENT FOR THE WORK SHALL BE APPROVED BY THE CONTRACTOR AND SHALL INCLUDE THE APPARATUS NECESSARY TO PROPERLY CLEAN THE EXISTING SURFACE, A MECHANICAL MARKING MACHINE, AND SUCH AUXILIARY HAND EQUIPMENT AS MAY BE NECESSARY TO SATISFACTORILY COMPLETE THE JOB.
- THE MECHANICAL MARKER SHALL BE AN APPROVED ATOMIZING SPRAY—TYPE MARKING MACHINE SUITABLE FOR APPLICATION OF TRAFFIC PAINT. IT SHALL PRODUCE AN EVEN AND UNIFORM FILM THICKNESS AT THE REQUIRED COVERAGE AND SHALL BE DESIGNED SO AS TO APPLY MARKINGS OF UNIFORM COROSS—SECTIONS AND CLEAR—OUT BEOSE WITHOUT RUNNING OR SPATTERING AND WITHIN THE LIMITS FOR STRAIGHTNESS SET FORTH HERRIN. WHEN NEEDED, A DISPENSER SHALL BE FURNISHED, WHICH IS PROPERTY DESIONED FOR ATTACHMENT TO THE MECHANICAL MARKER AND SUITABLE FOR DISPENSING THE REQUIRED QUANTITY OF REFLECTIVE BEADS.
- SUITABLE ADJUSTMENTS SHALL BE PROVIDED ON THE SPRAYER/SPRAYERS OF A MACHINE FOR PAINTING THE WIDTH REQUIRED. MULTIPLE PARALLEL PASSES TO PAINT THE REQUIRED WIDTH WILL NOT BE ALLOWD.
- MINDIATELY BEFORE APPLICATION OF THE LOWER.

  IMBEDIATELY BEFORE APPLICATION OF THE LOWER.

  BE ORLY AND ENTRELY FREE FROM DIRT, GREASE, OIL, ACIDS, DEBRIS, OR OTHER FOREIGN MATTER WHICH WOULD REDUCE THE BOND ESTWEEN THE COAT OF PAINT AND THE PAYEMENT. THE SUPERACE SHALL BE THOROUGHLY CLEAVED BY SWEEPING AND BLOWNES AS FEQUINED TO REMOY BALL DIST, DEBRIS AND LOOSE MATERIALS. AREAS WHICH CANNOT BE SATISFACTORILY CLEAVED BY BROOMING AND BLOWNES SHALL BE SCRUBBED AS DIRECTED WITH A WATER SOLUTION OF TRI-SODIUM PHOSPHATE (TO'S BY WEIGHT) OR AN APPROVED EQUAL SOLUTION. AFTER SCRUBBING, THE SOLUTION SHALL BE RINSED OFF AND THE SURFACE DRIED PRIOR TO PAINTING.
- 10. EXISTING MARKINGS OR STRIPES WHICH ARE TO BE ABANDONED OR REMOVED SHALL BE OBLITERATED OR OBSCURED BY THE BEST METHODS SUITED FOR THE PURPOSE AND TO THE SATISFACTION OF THE OWNER OR OWNER'S REPRESENTATIVE.
- 11. THE CONTRACTOR IS RESPONSIBLE FOR LAYING OUT A SAMPLE SECTION OF STRIPING WHICH IS TO BE APPROVED BY THE OWNER OR OWNERS REPRESENTATIVE AS TO QUALITY BEFORE THE CONTRACTOR MAY PROCEED WITH THE STRIPING. THE CONTRACTOR IS TO INSURE THAT ALL SUBSEQUENT STRIPING MEETS THE QUALITY OF THE APPROVED SAMPLE APPLICATION.
- 12. ON THOSE SECTIONS OF PAVEMENTS WHERE NO PREVIOUSLY APPLIED FIGURES, MARKINGS, OR STRIPES ARE AVAILABLE TO SERVE AS A QUIDE, SUITABLE LAYOUTS AND LINES OF PROPOSED STRIPES SHALL BE SPOTTED IN ADVANCE OF THE PAINT APPLICATION. CONTROL POINTS SHALL BE SPACED AT SUCH INTERVALS AS WILL ENSURE ACCURATE LOCATION OF ALL MARKINGS.
- 14. MARKINGS SHALL BE APPLIED AT THE LOCATIONS AND TO THE DIMENSIONS AND SPACING NDICATED ON THE PLANS OR AS SPECIFED. PAINT SHALL NOT BE APPLIED ONTIL THE NIGHTED ALIGNMENT IS LAID OUT AND THE CONDITIONS OF THE EMSTING SURFACE HAVE BEEN APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE.
- 15. THE PANT SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS BEFORE APPLICATION. THE PAINT SHALL BE THOROUGHLY MIXED AND APPLIED TO THE SHAFACE OF THE PAVEMENT WITH HE MARKING MACHINE AT ITS ORIGINAL CONSISTENCY WITHOUT THE ADDITION OF THINNER. IF THE PAINT IS APPLIED BY BIUSH, THE SURFACE SHALL RECEIVE TWO (2) COATS; THE FIRST COAT SHALL BE THOROUGHLY DRY BEFORE THE SECOND COAT IS APPLIED.
- IN THE APPLICATION OF STRAIGHT STRIPES, ANY DEVIATION IN THE EDGES EXCEEDING 1/2-INOH IN 50-FEET SHALL BE OBLITERATED AND THE MARKING CORRECTED. THE WIDTH OF THE MARKINGS SHALL BE AS DESIGNATED WITHIN A TOLERANCE OF 5 PERCENT (\$\$). ALL PAINING SHALL BE PERFORMED TO THE SATISFACTION OF THE OWNER OR OWNER'S REPRESENTATIVE BY COMPETENT AND EXPERIENCED COUPPMENT OPERATORS, LABORERS, AND ARTISANS IN A NEAT AND WORKMANLIKE MANNER.
- PAINT SHALL BE APPLIED UNIFORMLY BY SUITABLE EQUIPMENT AT A RATE OF 0.0094 GAL\_/S.F. FOR STENCILS AND 0.00313 GAL\_/FIT. FOR STRIPING. PAINT APPLICATIONS—SHALL PRODUCE AN AVERAGE WIT FILM THICKNESS OF
- 19. AFTER APPLICATIONS OF THE PAINT, ALL MARKINGS SHALL BE PROTECTED WHILE THE PAINT IS DRYING. THE FRESH PAINT SHALL BE PROTECTED FROM INJURY OR DAMAGE OF ANY KIND. THE CONTRACTOR SHALL BE DIRECTLY RESPONSIBLE AND SHALL ERECT OR PLACE SUITABLE WARNING SIGNS, FLAGS, OR BARRICADES, PROTECTEV SCREENS OR COVERINGS AS REQUIRED. ALL SURFACES SHALL BE PROTECTED FROM DISFIGURATION BY SPATTER, SPLASHES, SPILLAGE, DRIPPINGS OF PAINT OR OTHER MATERIAL.



(OFFICE) 517-223-35



Elleh Ps. Call MISS DIG full working days before you di lichigan's Utility One-Call Organizat

1-800-482-7171

CLIENT



9325 MALTBY ROAD BRIGTHON, MI 48116 (248) 446-8000

₽Ā≧ JING ADDITION
46440 DESOTO (4, SECTION 4, T1N
KLAND COUNTY, N SPECIFICATIONS JILDIN 8 4 1/4, OAKI TREK BUII 46470, 46500, PART OF THE SW 1 CITY OF NOVI, (

ORIGINAL ISSUE DATE

SCALE: N/A

PROJECT NO: 23-127

DRAWN BY: DAH
DESIGN BY: KCM
CHECK BY: MEB

C-12.1

FILE:P:\Projects\2023\23-127 Trek Bldg Add\Dwg\Engineering\23-127\_C-12.0\_Specs.dwg PLOT DATE:12/27/2023 7:22 AM

#### landscape requirement summary

open space site	REQUIRED	PROVIDED
TOTAL ACRES OF SITE GROSS 1.56 ±	6,795	18,250
OPEN SPACE MINIMUM 10% OF SITE GROSS (1.56 ACRES × 43,560= 67,953 SQ.FT. × .10%= 6,795 SQ		50.FT.
street trees	REQUIRED	PROVIDED
TOTAL LIN.FT. OF DESOTO COURT		
ONE (I) CANOPY TREE PER 35' IOO' / 35' PER TREE= 2.6 TREE5)	8	3
greenbelt (not adjacent to parking)	REQUIRED	PROVIDED
TOTAL LIN.FT. OF DESOTO COURT IC	00' <u>+</u>	
ONE (I) CANOPY OR EVERGREEN TREE PER 60'	2	2
ONE (I) ORNAMENTAL TREE PER 40' (100' / 40' PER TREE= 2.5 TREE5)		3
ONE (I) SHRUB PER 20' (IOO' / 20' PER TREE= 5 SHRUBS)	5	5
EARTH BERM OR MASONARY WALL (MIN. 3' HIGH)	NA	NA NA
building foundation	REQUIRED	PROVIDED
TOTAL LIN.FT BUILDING PERIMETER468' ±	07// 0077	2000 0077
FOUNDATION LANDSCAPE AREA	3,744 SQ.FT.	3,820 SQ.FT.

	12
4	
8	
	678
	4 8

(N) DENOTES NATIVE PLANT SPECIE ON THE PLANT MATERIAL LIST

#### landscape maintenance notes:

LANDSCAPE MAINTENANCE PROCEDURES AND FREQUENCIES TO BE FOLLOWED SHALL BE SPECIFIED ON THE LANDSCAPE PLAN, ALONG WITH THE MANNER IN WHICH THE EFFECTIVENES, HEALTH AND INTENDED FUNCTIONS OF THE VARIOUS LANDSCAPE AREAS ON THE SITE WILL BE

2. PRUNING SHALL BE MINIMAL AT THE TIME OF INSTALLATION, ONLY TO REMOVE DEAD OR DISEASED BRANCHES, SUBSEQUENT FRANKS SHALL ASSURE PROPER MATURATION OF PLANTS TO ACHIEVE THEIR APPROVED PURPOSE.

3. ALL DEAD OR DISEASED PLANT MATERIAL SHALL BE REMOVED AND REPLACED WITHIN SIX (6) MONTHS AFTER IT DIES OR IN THE NEXT PLANTING SEASON, WHICHEVER OCCURS FIRST. THE PLANTING SEASON FOR DECIDIOUS PLANTS SHALL BE BETWEEN MARCH IS AND NOVEMBER IS OR UNTIL THE PREPARED SOIL BECOMES FROZEN, THE PLANTING SEASON FOR EVERGREEN PLANTS SHALL BE BETWEEN MARCH I AND JUNE I, PLANT MATERIAL INSTALLED TO REPLACE DEAD OR DISEASED MATERIAL SHALL BE AS CLOSE AS PRACTICAL TO THE SIZE OF THE MATERIAL IT IS INTENDED TO REPLACE.

#### plant material list

		p.a			
key	quant. LS-1	botanical name	common name	size	comments
		DECIDUOUS AND EVERGREEN TREES			
Q۳	3	QUERCUS PALUSTRIS	PIN OAK	3" BB	NATIVE (N)
TR	1	TILIA AMERICANA 'REDMOND'	REDMOND LINDEN	3" BB	NATIVE (N)
ZS	2	ZELKOVA SERRATA 'GREEN VASE'	GREENVASE ZELKOVA	3" BB	
AC	3	AMELANCHIER X 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8' BB	MULTI-STEM (N)
P6	4	PINUS STROBUS	EASTERN WHITE PINE	8' BB	NATIVE (N)
PD	8	PICEA GLAUCA ' DENSATA'	BLACK HILLS SPRUCE	8' BB	NATIVE (N)
ΑW	3	ABIES CONCOLOR	CONCOLOR FIR	8' BB	NATIVE
		SHRUBS			
PO	8	PHYSOCARPUS OPULIFOLIUS 'SUMMER WINE'	SUMMER WINE NINEBARK	30" CONT	48" O.C. SPACING (N)
VD	21	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM	30" CONT	48" O.C. SPACING (N)
sк	30	SYRINGA P. MISS KIM'	MISS KIM LILAC	30" CONT	48" O.C. SPACING
		PERENNIALS AND GRASSES			
PV6	15	PANICUM VIRGATUM 'SHENANDOAH'	SHENANDOAH' SWITCH GRASS	*3 CONT.	42" O.C. SPACING (N)
CKF	31	CALAMAGROSTIS X.A. 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	*3 CONT.	48" O.C. SPACING

# Trek Building Addition City of Novi, Michigan

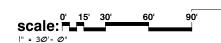
#### note:

replacement tree

NO. EXISTING REGULATED TREE REMOVE NO. EXISTING CODE COMPLIANCE TREES REMOVE

NO. EXISTING DEAD CODE COMPLIANCE TREES\_ (12-DEAD EXISTING EVERGREEN TREES LOCATED ALONG THE EAST PROPERTY LINE)

unless noted otherwise, numerical value on landscape quantities specified on plan take precedence over



#### general landscape notes:

I. LANDSCAPE CONTRACTOR SHALL VISIT THE SITE, INSPECT EXISTING CONDITIONS, REVIEW PROPOSED PLANTINGS AND RELATED WORK, CONTACT THE OWNER AND/OR LANDSCAPE ARCHITECT WITH ANY CONCERNS OR DISCREPANCY BETWEEN THE PLAN, PLANT MATERIAL LIST, AND/OR SITE CONDITIONS,

PLANT IMPRIENT LIST, AND/OR STIE CONTINUOUS ON ANY WORK, CONTRACTORS SHALL VERIFY LOCATIONS OF ALL ON SITE UTILITIES GAS, ELECTRIC, TELEPHONE, CABLE TO BE LOCATED BY CONTACTING MISS DIE 1820-482 "I'III, ANY DAVAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR COORDINATE ALL RELATED WORK, ACTIVITIES WITH OTHER TRADES AND REPORT ANY WACCEPTABLE JOB CONDITIONS TO OWNER PRIOR TO CONTENCING

3. NUMERICAL VALUE ON THE LANDSCAPE QUANTITIES SPECIFIED ON THE PLAN TAKE PRECEEDANCE OVER GRAPHIC REPRESENTATION, VERIFY ANY CONCERN-DISCREPANCY WITH LANDSCAPE ARCHITECT.

4. ALL CONSTRUCTION AND PLANT MATERIAL LOCATION TO BE ADJUSTED ON SITE IF NECESSARY

5. ALL SUBSTITUTIONS OR DEVIATIONS FROM THE LANDSCAPE PLAN MUST BE APPROVED BY CITY OF NOVI AND LANDSCAPE ARCHITECT IN WRITING.

6. ALL LARGE TREES AND EVERGREENS TO BE STAKED, GUYED AND WRAPPED AS DETAIL SHOWN ON PLAN.

1. PLANT BEDS TO BE DRESSED WITH MIN. 4" OF FINELY DOUBLE SHREDDED HARDBARK MULCH.

8. DIG SHRUB PITS I' LARGER THAN SHRUB ROOT BALLS AND TREE PITS 2' LARGER THAN ROOT BALL. BACK FILL WITH ONE PART TOP SOIL AND ONE PART SOIL FROM EXCAVATED PLANTING HOLE.

9. REMOVE ALL TWINE, WIRE AND BURLAP FROM TREE AND SHRUB EARTH BALLS, AND FROM TREE TRUNKS, 4" THICK BARK MULCH FOR TREES IN 4" DIA. CIRCLE WITH 3" PULLED AUMAY FROM TRUNK 4." THICK BARK MULCH FOR SHRUBS AND 2" THICK BARK MULCH FOR SHRUBS AND 2" THICK BARK MULCH FOR BURLBS AND 2" THICK BARK MULCH FOR BURLBS AND 3" THICK BURLBS AND 3" THICK BARK MULCH FOR BURLBS AND 3" THICK BURLBS AND 3" THICK

EXISTING LANDSCAPE

**Desoto Court** 

WATER MAIN (PER PEA)

8" WATER MAIN NOVI) (TYP) ==

IØ. PLANT MATERIAL QUALITY 4 INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN ASSOCIATION OF NURSERYMEN LANDSCAPE STANDARDS.

II. PROVIDE SOD FOR ALL NEW AND DISTURBED LAWN AREAS UNLESS NOTED OTHERWISE NO PEAT SOD

12. ALL PLANTING AREAS TO BE PREPARED WITH APPROPRIATE SOIL MIXTURES AND FERTILIZER BEFORE PLANT INSTALLATION.

FERTILIZER BEFORE PLANT INSTALLATION.

3. PLANT TREES AND PHRUBS GENERALLY NO CLOSER THEN THE FOLLOWING DISTANCES FROM SIDEWALKS, CURBS AND PARKING STALLS;

3. SHADE TREES D.

3. SHADE TREES D.

4. ORNAMENTAL AND EVERGREEN TREES D.

(CRAB, PINE, SPRUCE, ETC.) D.

6. SHRUBS THAT ARE LESS THAN I FOOT TALL D.

AND WIDE AT MATURITY.

14. NO TREES OR EVERGREENS TO BE INSTALLED OVER ANY PROPOSED OR EXISTING UTILITY LIBES AS SHOWN ON THE OVERALL LANDSCAPE PLAN. SEE ENGINEERING FLANS FOR LOCATION AND DETAILS.

IS. ALL NEW LAWN AREAS AND NEW LANDSCAPE BEDS TO BE FULLY IRRIGATED WITH A AUTOMATIC UNDERGROUND SYSTEMS. IRRIGATION SYSTEM TO HAVE SEPARATE ZONES FOR LAWN AREAS, PARKINS (IS.ANDS, AND SHAUB) SETS WITH DIFFERENT CONTROL MOISTURE LEVEL ADJUSTMENT PER ZONE AS REQUIRED, IRRIGATION PLAN TO BE PROVIDED DURING FINAL SITE PLAN APPROVAL

CROSSHATCHING DENOTES PROPOSED TREES CREDITED TOWARDS REPLACEMENT TREES

DISTURBED LAWN AREAS TO RECEIVE SOD ON FINISH GRADES. ADJUST IRRIGATION AS REQUIRED

DISTURBED LAWN AREAS TO RECEIVE LAWN SEEDING ON FINISH GRADES.

PVS-5

Trek Building

<u>5K-1</u>

CKF-12 apanese zelkowa <u>950 sq.</u>ft.

Building

Addition

160 SQ.FT.

VD-12

PV5-8

PV6-1

VD-9 5K-6 210 SQFT. SK-6 FORDATION CKF-19

(6. UNLESS NOTED OTHERWISE, LANDSCAPE BEDS ADJACENT TO LAUN TO RECIEVE EDGING, EDGING SHALL BE 4" X 1/8" INSTALL (FINISH BLACK OR GREEN) OR APPROVED EQUIAL AND TO BE INSTALLED WITH HORIZONTAL METAL STAYES AT 32" OZ. OR PER MANJEACTERER'S SPECIFICATION.

11. ALL NEW PARKING BLANDS AND LANDSCAPE BEDS ADJACENT AND NEXT TO BUILDING SHALL BE EXCAVATED OF ALL BUILDING MATERIALS AND POOR SOLIS A MIN. OF 16"-18" DEPTH BACK FILL WITH GOOD, MEDIUM TEXTURED PLANTING SOLIS, ADD A MIN. 4" OF TOPBOIL OVERFILL TO FINISH GRADE, PROVIDE POSITIVE DRAINAGE.

I8. WATERING OF ALL PLANTS AND TREES TO BE PROVIDED IMMEDIATELY AND MULCHING WITHIN 24 HOURS AFTER INSTALLATION.

20. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL LANDSCAPE PLANT MATERIALS AND IRRIGATION INSTALLATION FOR A PERIOD OF TUD YEAR BEGINNING AFTER THE COMPLETION OF LANDSCAPE INSTALLATION DATE APPROVED BY THE CITY OR LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL REPLACE DURING AND AT THE END OF THE GUARANTEE PERIOD, ANY DEAD OR UNACCEPTABLE PLANTS, AS DETERMINED BY THE TOUNSHIP OR LANDSCAPE ARCHITECT, WITHOUT COST TO THE

21. ESTIMATED INSTALLATION DATE: FALL OF 2024

22. PLANT MATERIALS SHALL NOT BE PLATED WITHIN 4' OF THE PROPERTY LINE

sheet index

LS-1 LANDSCAPE PLANTING DETAIL

LS-2 NOTES, PLANTING DETAILS & SOD, SEEDING REFERENCE PLAN

SHRUBS TO BE ALLOWED TO

SPADE EDGE BETWEEN LAUN AREA



24333 Orchard Lake Rd, Suite C phone: (248) 557-5588



RRIVAR CONSTRUCTION COMPANY 9325 Maltby Road Brighton, Michigan 48116

DISTURBED AREAS TO

HATCHING DENOTES HATCHING DENOTES
EXISTING TREES AND
VEGETATION TO REMA

RECEIVE LAWN SEEDING ON FINISH GRADES.

**TREK BUILDING ADDITION** 

City of Novi. Michigan 46470, 46500, & 46440 Desoto Court

LANDSCAPE PLANTING **DETAIL** 

job no. / issue / revision date

LS23.115.11 PSP 11-9-2023 LS23.115.11 PSP 12-22-2023

FP

11-5-2023

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Do Not scale drawings. Use figured dimensions only



For free location of public utility lines The rice location of public using west. The location and elevations of existing underground utilities as shown on this drawing are only approximate. In oguarantee is etil expressed or implied as to the completeness of accuracy, contra shall be exclusively responsible federemining the exact location an elevation prior to the start of construction

project no:

LS23.115.11

LS-1 of 2

JSP23-0032

#### City of Novi - landscape notes:

. ALL PLANT MATERIALS ARE TO BE INSTALLED IN A SOUND, WORKMAN-LIKE MANNER AND IN ACCORDANCE WITH THE CURRENT CITY OF NOVI PLANTING

2. ALL PLANT MATERIALS SHALL BE INSTALLED BETWEEN MARCH IS IN AND NOVEMBER IS IN.

3. ALL PLANT MATERIALS ARE TO BE NORTHERN NURSERY GROWN NO.1 GRADE AND INSTALLED ACCORDING TO ACCEPTED PLANTING PROCEDURES. ALL PLANT MATERIALS SHALL COMPORT TO THE CURRENT AAN STANDARDS FOR NURSERY STOCK. THEY SHALL BE PLANTED ACCORDING TO THE CITY OF NOVI PLANTING DETAILS AND SPECIFICATIONS. THE CITY SHALL HAVE THE RIGHT TO INSPECT THE PLANT MATERIALS PRIOR TO PLANTING AND TO REJECT ANY PLANT MATERIALS PRIOR TO PLANTING AND TO REJECT ANY PLANT MATERIALS PRIOR TO PLANTING AND TO REJECT ANY PLANT MATERIALS DEBITED NOT TO MEET THE STANDARDS OF THE ZONING ORDINANCE.

4. ALL TREES SHALL HAVE A CENTRAL LEADER AND A RADIAL BRANCHING STRUCTURE. PARK GRADE TREES ARE NOT ACCEPTABLE. ALL TREES SHALL BE BALLED AND BURLAPPED (BIB).

5. ANY DECIDUOUS CANOPY TREES WITH BRANCHES THAT MIGHT TEND TO DEVELOP INTO 'V" CROTCHES SHALL BE SUBORDINATED SO AS NOT TO BECOME DOWNLANT BRANCHES.

6. MULCH SHALL BE NATURAL COLOR, FINELY SHREDDED HARDWOOD BARK FOR ALL PLANTINGS. 4" THICK FOR TREES IN 4-FOOT DIAMETER CIRCLE WITH 3" PULLED AUXY FROM TRUNK. 3" THICK FOR SHRUBS AND SHRUB BEDS AND 2" THICK BARK FOR PERENNIALS.

1. ALL PLANT MATERIAL SHALL BE WARRANTIED FOR TWO (2) FULL YEARS AFTER DATE OF ACCEPTANCE BY THE CITY IF NOVI. ALL UNHEALTHY AND DEAD MATERIAL SHALL BE REPLACED WITHIN THESE (3) MONTHS OR THE NEXT APPROPRIATE PLANTING PERIOD WHICH EVER COMES FIRST.

9. A MINIMUM OF ONE WEED CONTROL CULTIVATION PER MONTH OCCURING IN JUNE, JULY AND AUGUST SHALL BE PERFORMED DURING THE TWO-YEAR ESTABLISHMENT PERIOD.

IØ. ANY SUBSTITUTIONS OR DEVIATIONS FROM THE LANDSCAPE PLAN MUST BE APPROVED IN WRITING BY THE CITY OF NOVI PRIOR TO INSTALLATION.

12. ALL LANDÉCAPE AREAS ARE TO BE MAINTAINED IN HEALTHY GROWING CONDITION FREE OF DEBRIS AND REFUSE AND IN CONFORMANCE WITH THE APPROVED LANDÉCAPE PLAN.

13. ALL LANDSCAPE AREAS ARE TO BE WATERED BY A FULLY AUTOMATIC IRRIGATION SYSTEM.

14. CONTRACTOR TO REMOVE All CONSTRUCTION DEBRIS AND EXCESS MATERIALS FROM THE SITE PRIOR TO FINAL ACCEPTANCE.

IS. PLANT MATERIALS, EXCEPT SOD, GROUND COVERS, AND CREEPING VINE TYPE PLANTINGS, SHALL NOT BE LOCATED WITHIN FOUR (4) FEET OF THE PROPERTY LINE.

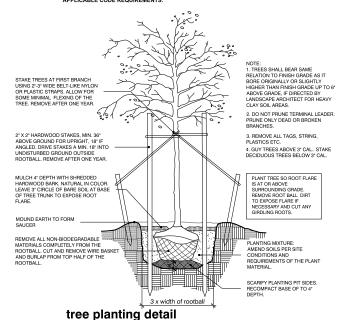
16. ALL TRANSFORMERS ARE TO BE SCREENED ON THREE SIDES (MIN.) IN ACCORDANCE WITH THE CITY OF NOW OFFDINANCE AND SO AS TO NOT CONFLICT WITH DTE RESTRICTIONS, (SEE DETAIL THIS SHEET).

IT. ALL BERMS MUST BE PLANTED WITH A COMBINATION OF TREES, SHRUBS, SOD OR OTHER EVERGREEN GROUND COVERS.

IS. THE OWNER IS RESPONSIBLE FOR REQUEST OF FINAL INSPECTION AND ACCEPTANCE OF THE LANDSCAPE AT THE END OF THE 2-YEAR GUARANTEE

19. THE PROVIDER OF THE FINANCIAL GUARANTEE FOR THE LANDSCAPE INSTALLATION SHALL BE FULLY RESPONSIBLE FOR COMPLETION OF THE LANDSCAPE INSTALLATION AND MAINTENANCE PER THE APPROVED LANDSCAPE PLAN AND APPLICABLE CITY ORDINANCES.

THE DETAILS AND NOTES SHOWN ON THIS PAGE ARE STANDARDS. THESE DETAILS ARE NOT ALL INCLUSIVE AND ARE NOT MET TO SUBSTITUTE FOR ANY ORDINANCE OR CODE REQUIREMENT. FOR COMPLETE LANDSCAPE REQUIREMENTS. SEE THE ZONING ORDINANCE LANDSCAPE SECTION 5.5, THE LANDSCAPE DESIGN MANUAL AND THE APPROPRIATE REFERENCES WITHIN THE APPLICABLE ZONING CLASSIFICATION AND ANY OTHER APPLICABLE CODE REQUIREMENTS



#### planting landscape notes:

PLANT MATERIALS TO BE INSTALLED ACCORDING TO THE CITY OF NOV AND CURRENT AMERICAN ASSOCIATION OF NURSERYMEN'S STANDARDS.

2) PLANT MATERIALS TO BE GUARANTEED FOR 2 YEARS, REPLACE FALLING MATERIAL WITHIN 3 MONTHS, OR THE NEXT APPROPRIATE PLANTING PERIOD

3) PLANT MATERIALS TO BE OF PREMIUM QUALITY, NO. I GRADE NORTHERN NURSURY GROWN, IN HEALTHY CONDITION, FREE OF PESTS AND DISEASES

4) MILCH IS TO BE NATURAL COLORED FINELY SHEEDDED HARDWOOD BARK OF 4" THICK BARK MILCH FOR TREES IN 4" DIA CIRCLE W3" FULLED AWAY FROM TRUNK, 3" THICK BARK MILCH FOR SHRJBS AND 2" THICK BARK MILCH FOR FERRENIALS.

5) CALL MISS DIG AT 1-800-482-1111 PRIOR TO ANY CONSTRUCTION

1) TREE SHALL BE INSTALLED SAME RELATIONSHIP TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 6" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY

SOIL AREAS.

2) DO NOT PRINE TERMINAL LEADER, PRINE ONLY DEAD OR BROKEN BRANCHES.

BERANCHES

) REMOVE LLL TAGS, STRING, PLASTICS AND OTHER MATERIALS THAT ARE INSLIGHTLY AND COULD CAUSE GIRDLING.

(S) ENDOWED TREE STAKES, GUY WIRES AND TREE WRAP AFTER ONE WINTER SHADON.

SHRUB.

1) SHRUB SHALL BE INSTALLED SAME RELATIONSHIP TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 4\*
ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL, AREAS.

2) DO NOT FRANCH TERMINAL LEADER PRIME ONLY DEAD OR BROKEN

BY AND THE STRING A STRING BY AND THE ONLY DEAD OR BROKEN

3) REMOVE ALL TAGS, STRING, PLASTICS AND OTHER MATERIALS THAT ARE UNSLIGHTLY AND COULD CAUSE GIRDLING.

2) STAKES SHALL BE METAL 'T' POLES SPACED NO FURTHER THAN 5' ON

CENTER 39 HALL NOT BE INSTALLED CLOSER TO THE TREE THAN THE DRIPLING OF THOSE TREES TO BE SAVED. SPECIAL CIRCUMSTANCES SHALL BE REVIELDED BY THE CITY.

4) FENCING SHALL BE ERECTED PRIOR TO CONSTRUCTION, THE CITY SHALL BE NOTIFIED ONCE THE FENCING IS INSTALLED FOR INSPECTION. 5) UNDER NO CIRCUMSTANCES SHALL THE PROTECTIVE FENCING BE REMOVED WITHOUT PROPER APPROVAL FROM THE CITY.

6) NO PERSON SHALL CONDUCT ANY ACTIVITY WITHIN THE AREAS PROPOSED TO REMAIN. THIS SHALL INCLUDE, BUT NOT LIMITED TO:

A. NO SOLVENTS OR CHEMICALS WITHIN THE PROTECTED AREAS.

 IN O. BUILDING MATERIALS OR CONSTRUCTION EQUIPTMENT WITHIN THE PROTECTED AREAS.

 C. NO GRADE CHANGES, INCLUDING FILL, WITHIN THE PROTECTED AREAS.

e. ANY REQUIRED SUALE NEEDS TO BE DIRECTED AROUND THE PROTECTED AREAS, IN NOTANCES WHERE SUALES ARE APPROVED THRU A PROTECTED AREA, THE SUALES NEED TO BE HAND DUG, MACHINERY OF ANY KIND IS PROHIBITED.

2. DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES

3. REMOVE ALL TAGS, STRING, PLASTICS ETC.

PLANTING MIXTURE: AMEND SOILS PER SITE

OF TO 4" DEPTH

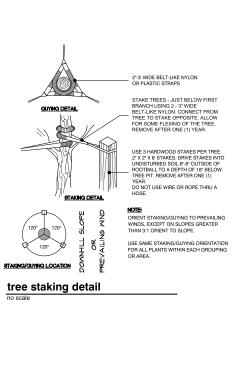
REGULATED WOODLANDS OR REGULATED TREES ADJACENT ADJACENT TO THE PROPERTY ARE ALSO REGUIRED TO BE PROTECTED WHETHER OR NOT THEY ARE SHOWN ON THE PLAN.

CONTRACTOR SHALL SEND PROOF OF THE SEED MIXES TO BE USED (PHOTO OF SEED BAG OR COPY OF INVOICE) TO THE CITY LANDSCAPE ARCHITECT AT RMEADER®CITYOPNOVI. ORG FOR APPROVAL PRIOR TO APPLYING THE SEED."

2" X 2" HARDWOOD STAKES, MIN. 36" ABOVE GROUND FOR UPRIGHT, 18" IF ANGLED. DRIVE STAKES A

REMOVE ALL NON

evergreen planting detail

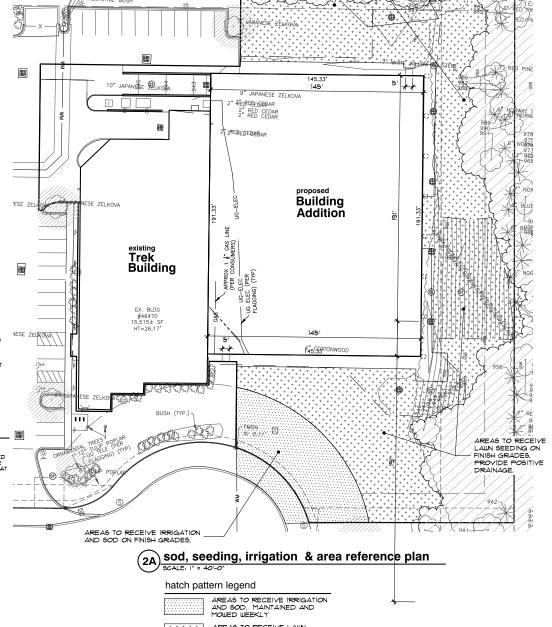


TRANSFORMER PAD 

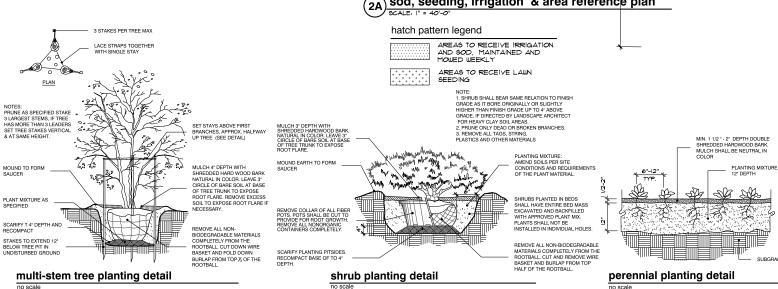
#### transformer pad planting detail

AMINIMA OF 2' SEPARATION BETILEEN TRANSPORTIER AND FILL GROUN SHRIBS AND TREES, GROUND COVERS ALLOUED UP TO TRANSPORTIER PAD IT MANNIANED BELOU 4' FILL GROUTH, IT TRANSPORTIER PADE TO TANNIANED BELOU 4' FILL GROUTH FIR ROLES TO TANNIANED FILLE HOUSE, THEN THE SAME CONDITIONS EXIST. NO FILL GROUTH IN FRONT OF THE TRANSPORTIER FOR AT LEAST AMINIMA OF 8', THERE ARE NO MAINTERS GRANTED TO THE ABOVE CONDITION, DETAIL FER THE DETROIT EDISON COMPANY-SERVICE PLANNING DEPARTIENT (9-11-38)

SEE ENGINEERING PLANS FOR PROPOSED LOCATIONS, TOTAL NUMBER OF TRANSFORMERS AND FINAL LOCATION PER DETROIT EDISON REQUIREMEN



DISTURBED AREAS TO RECEIVE



nity Land Planner an registered Landscape Architec 24333 Orchard Lake Rd, Suite G

phone: (248) 557-5588

RRIVAR CONSTRUCTION COMPANY 9325 Maltby Road Brighton, Michigan 48116

**TREK BUILDING ADDITION** 

City of Novi, Michigan

46470, 46500, & 46440 Desoto Court

PLANTING DETAILS AND LANDSCAPE NOTES

job no. / issue / revision date LS23.115.11 PSP 11-9-2023 LS23.115.11 PSP 12-22-2023

IΡ checked by FP

11-5-2023

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Do Not scale drawings. Use figured dimensions only



For free location of public utility lines The location and elevations of existing underground utilities as shown on this drawing are only approximate, no guarantee is either expressed or implied as to the completeness of accuracy, contract shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no: LS23.115.11

LS-2 of 2

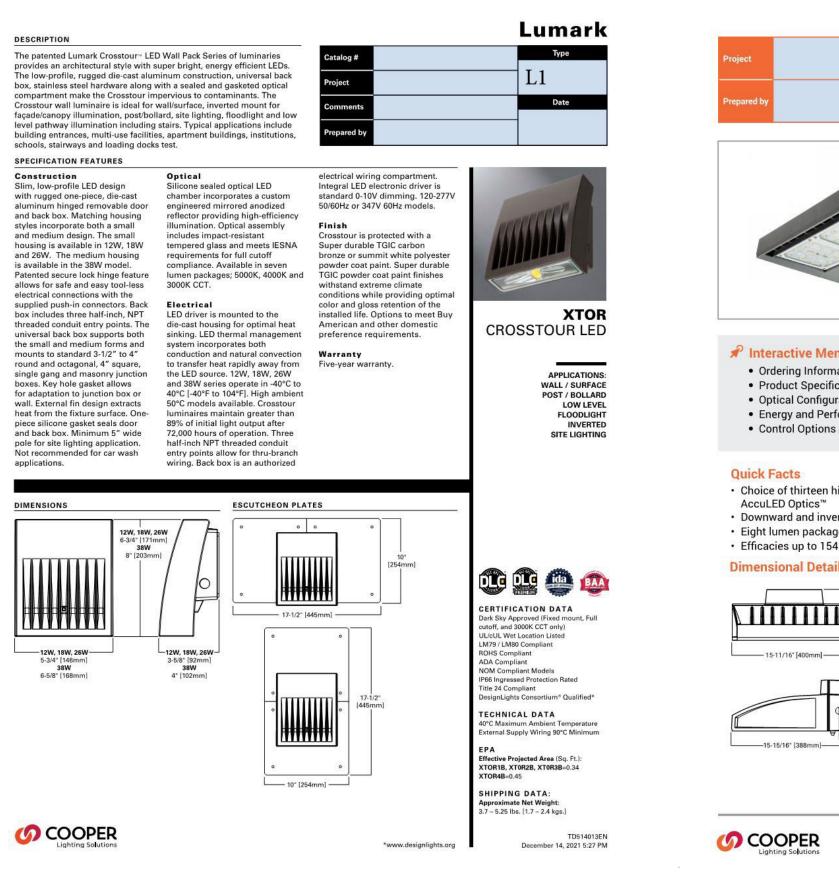
JSP23-0032

LC=S47°\31'03"

71.38'(R)

71.42'(M)

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF LAYOUT TO EXISTING/FUTURE FIELD CONDITIONS AND ALL MANDATORY BUILDING AND LIFE SAFETY CODES AND COMPLIANCE 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/LEDS AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE TO BOTTOM OF LUMINAIRE LENS OR FROM FLOOR TO BOTTOM OF LUMINAIRE LENS, UNLESS OTHERWISE NOTED. CLARUS DOES NOT ACT AS THE ELECTRICAL, CIVIL OR STRUCTURAL ENGINEER AND DOES NOT DETERMINE BASE REQUIREMENTS AND APPLICABLE CODE COMPLIANCE. CLARUS IS NOT LIABLE FOR ANY CODE COMPLIANCE DISCREPANCY. LIGHTING LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT OF RECORD IS RESPONSIBLE TO REVIEW FOR CODE COMPLIANCE, INCLUDING AND NOT LIMITED TO - NFPA 101 LIFE SAFETY CODE, MICHIGAN ENERGY CODE, MICHIGAN BUILDING CODE AND/OR IECC CODE, LIGHTING QUALITY COMPLIANCE AND LOCAL LIGHTING ORDINANCES. FOR SITE PLAN PHOTOMETRICS, THE USE OF ALTERNATES MUST BE RESUBMITTED TO THE CITY FOR APPROVAL.





## CALCULATION POINTS TAKEN AT GRADE.

PS500046EN page 1 April 12, 2021 1:55 PM

Calculation Summary						
Label	Units	Avg	Max	Min	Max/Min	Avg/Min
Exit Doors	Fc	2.64	7.1	0.4	17.75	6.60
Property Line	Fc	0.00	0.2	0.0	N.A.	N.A.
Truck Dock Area	Fc	3.69	9.3	1.3	7.15	2.84
East Exit Door	Fc	0.00	0.0	0.0	N.A.	N.A.
North Door	Fc	3.25	7.1	1.0	7.10	3.25
West Door	Fc	4.53	9.3	1.4	6.64	3.24

Scale: 1 inch= 20 Ft.

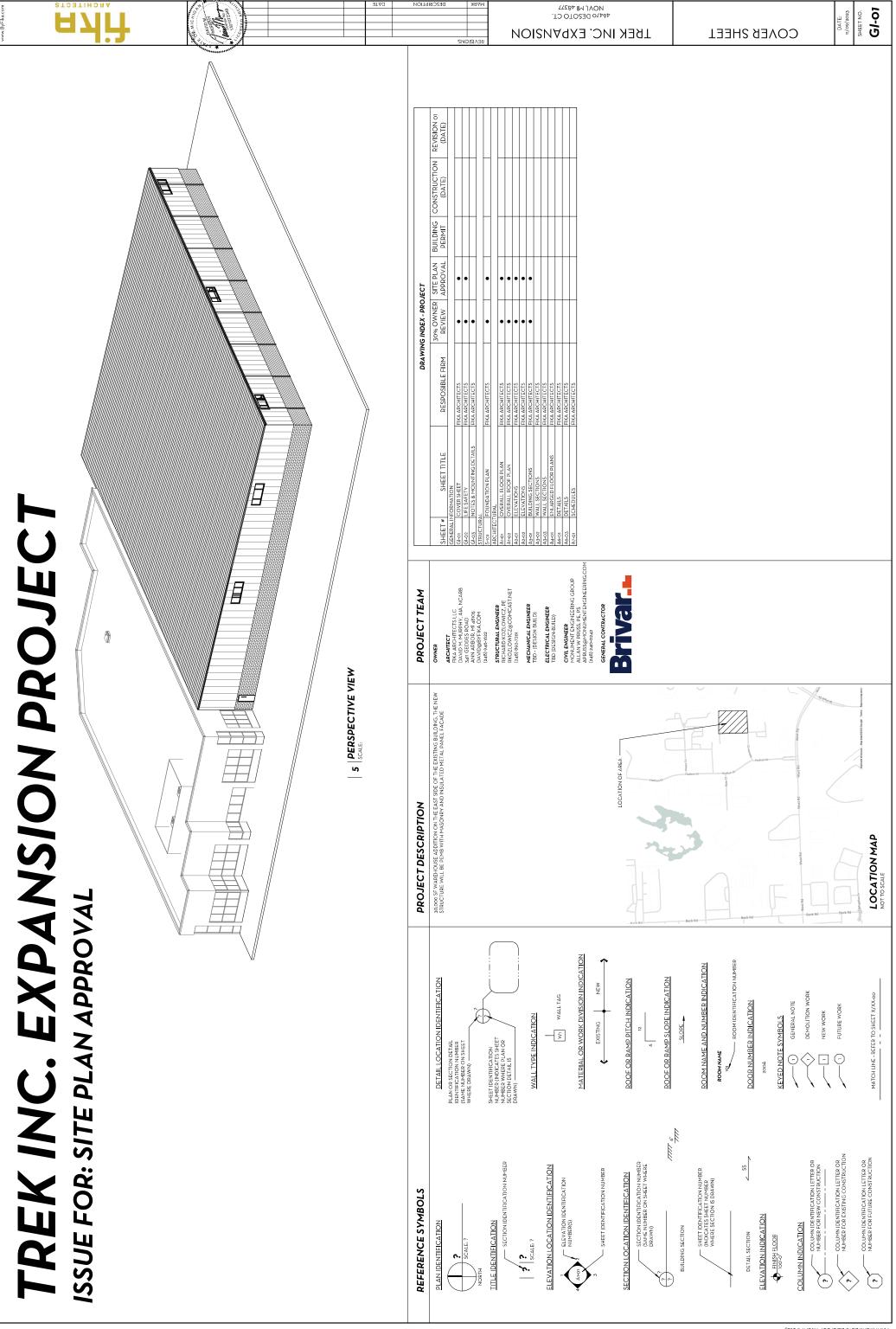
RIM=945.26

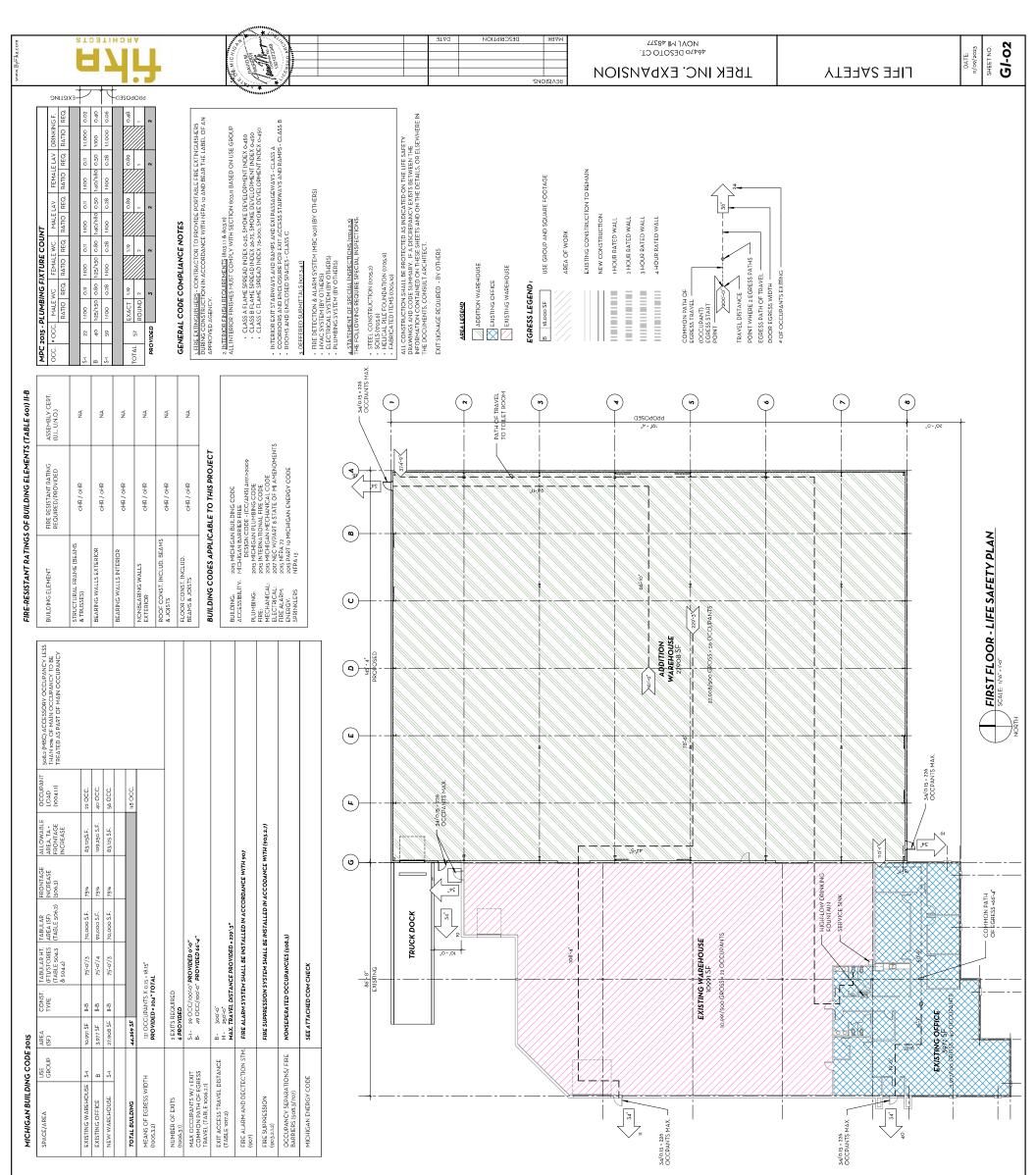
L=38.36 (R=)2.16 (R)

Symbol	Qty	Label	LLF	Description	Lum. Watts	Lum. Lumens	Mounting
							Height
<b>→</b>	3	L1	0.900	LUMARK AXCS1A	13.5	1806	8
->	1	L3	0.900	MCGRAW EDISON GWC-SA1C-740-U-SL4	59	7178	15.5

CLC23-111639

SHEET No.





VALUES BASED ON ASHRAE 901-2003 & MINCHIGAN ENERGY CODE 2015 CLIMATE ZONE - 5A

OPAQUE ASSEMBLIES:

MINIMUM INSULATION VALUES

• MASS WALLS (CONCRETE, CMU) R-11-4 C.I. (U-0.090)
• METAL BLUDING RO- R-29 CI. (U-0.050)
• STEEL-RRANED R-20 - R-10 C.I. (U-0.052)
• WOOD-FRAMED AND OTHER R-23.0 - R-25 C.I. (U-0.051) OR R-19 - R-5 C.I.

BELOW-GRADE WALLS (ALL) R-75 C.I. (C-0.119) FLOORS (EXPOSED BENEATH) MASS Ra-46. (L. U-0.057) STEEL-JOSTR-75.0 (U-0.028) WOOD-FRAMED AND OTHER R-30.0 (U-0.033)

WALLS, BELOW-GRADE:

INSULATION ENTRELY ABOVE DECK R-30.0 C.I. (U-0.032)
 METAL BUILDING R-19 + R-11 I.S (U-0.037) OR R-25 + R-8 LS
 ATTIC AND OTHER: R-49.0 (U-0.02)

WALLS, ABOVE-GRADE:

SKYLIGHT, ALL TYPES

• 0% - 3% OF ROOF UALL-0.50 SHGCALL-0.40 (NO VT/SHGC REQ'D.)

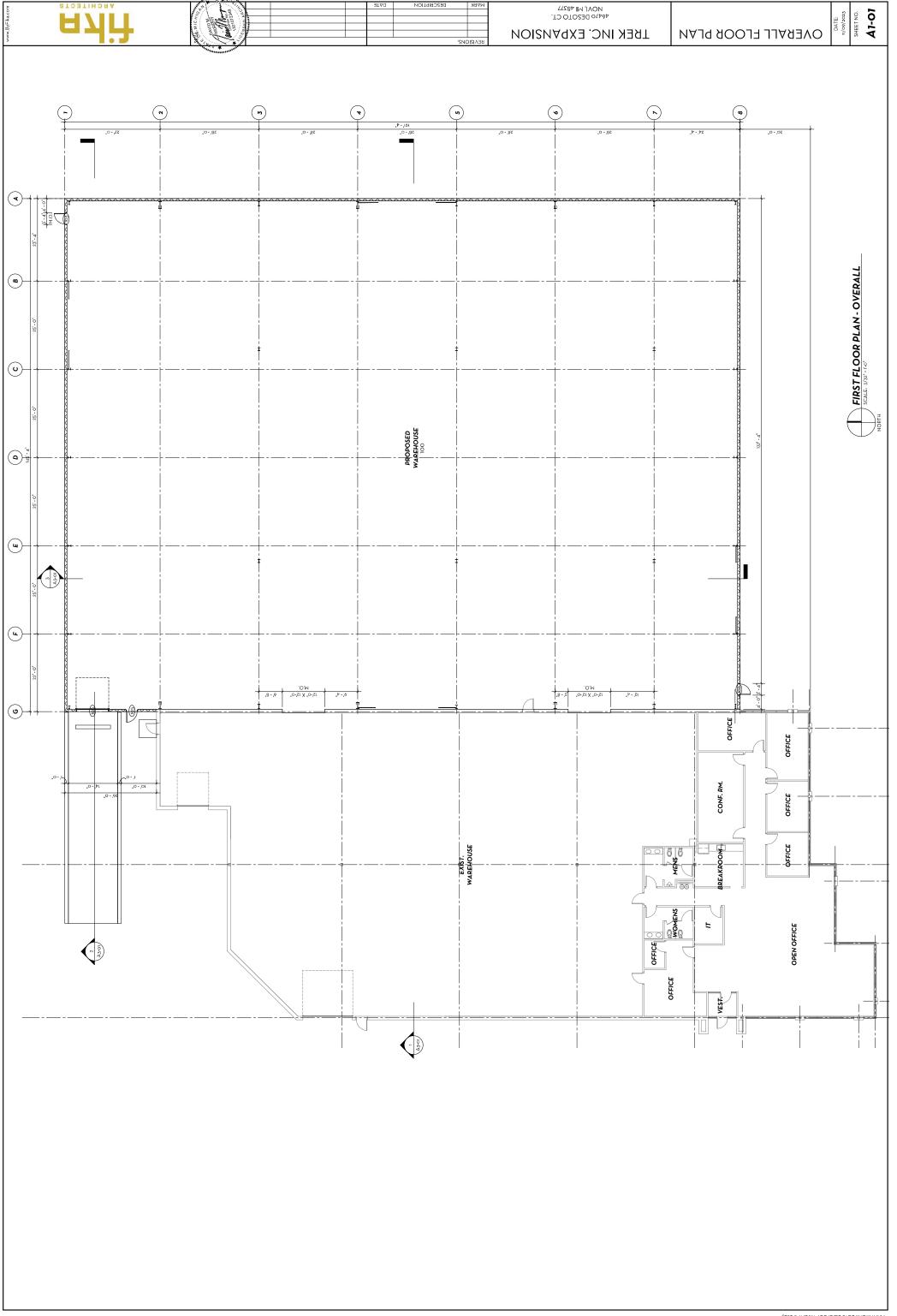
NONMETAL FRAMING (ALL) U-0.23 SHGC-0.40 VT/SHGC = 1.10 PREAL PRODUCT SHGC-0.40 VT/SHGC - 1.10 PREAL SHGC-0.40 VT/SHGC - 1.10 PREAL SHGC-0.40 VT/SHGC - 1.10 PREAR SHGC-0.40 VT/SHGC - 1.10 PREA

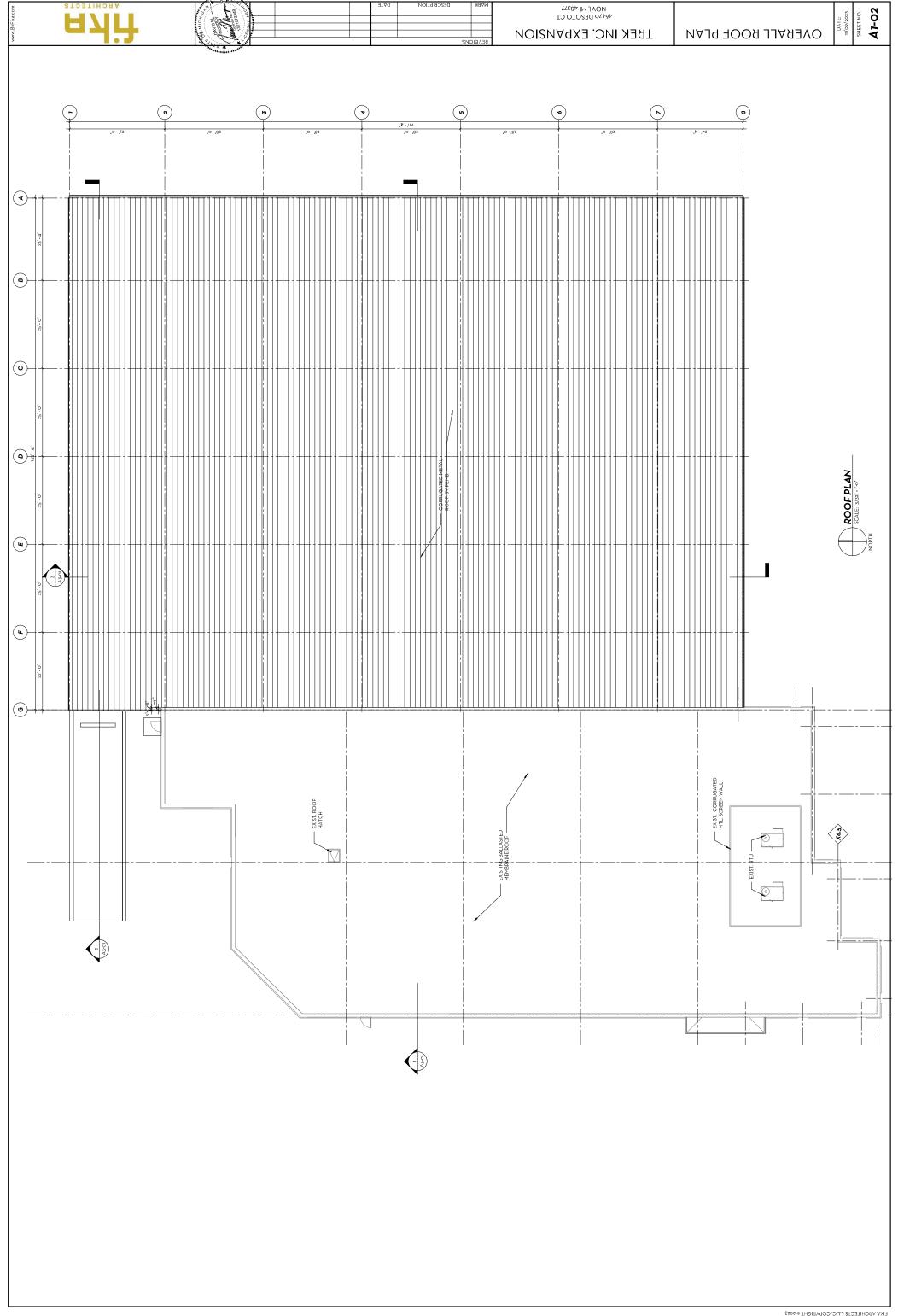
FENESTRATION (INCLUDING GLAZED DOORS):

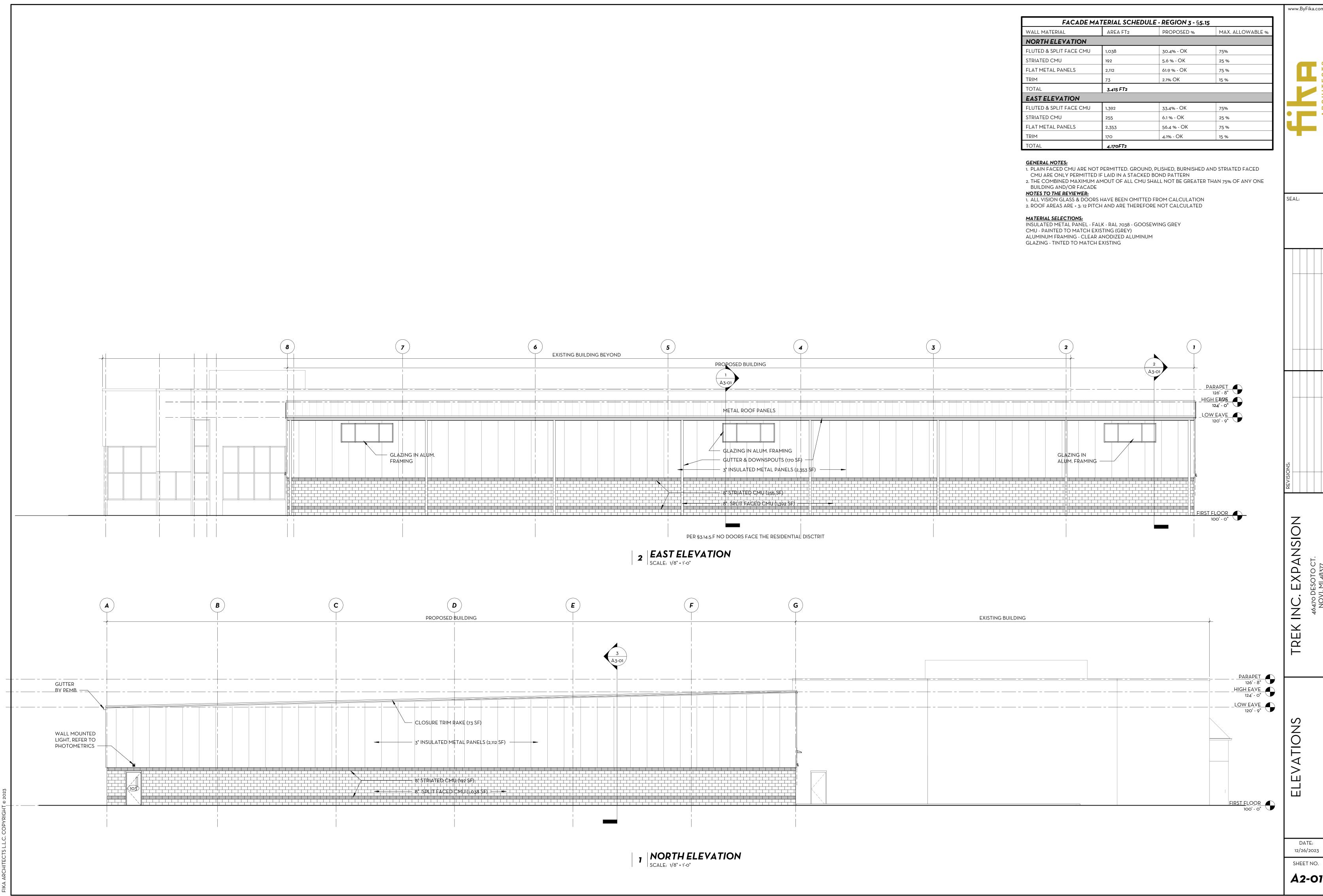
SWINGING & NONSWINGING (U-0.500)

OPAQUE DOORS

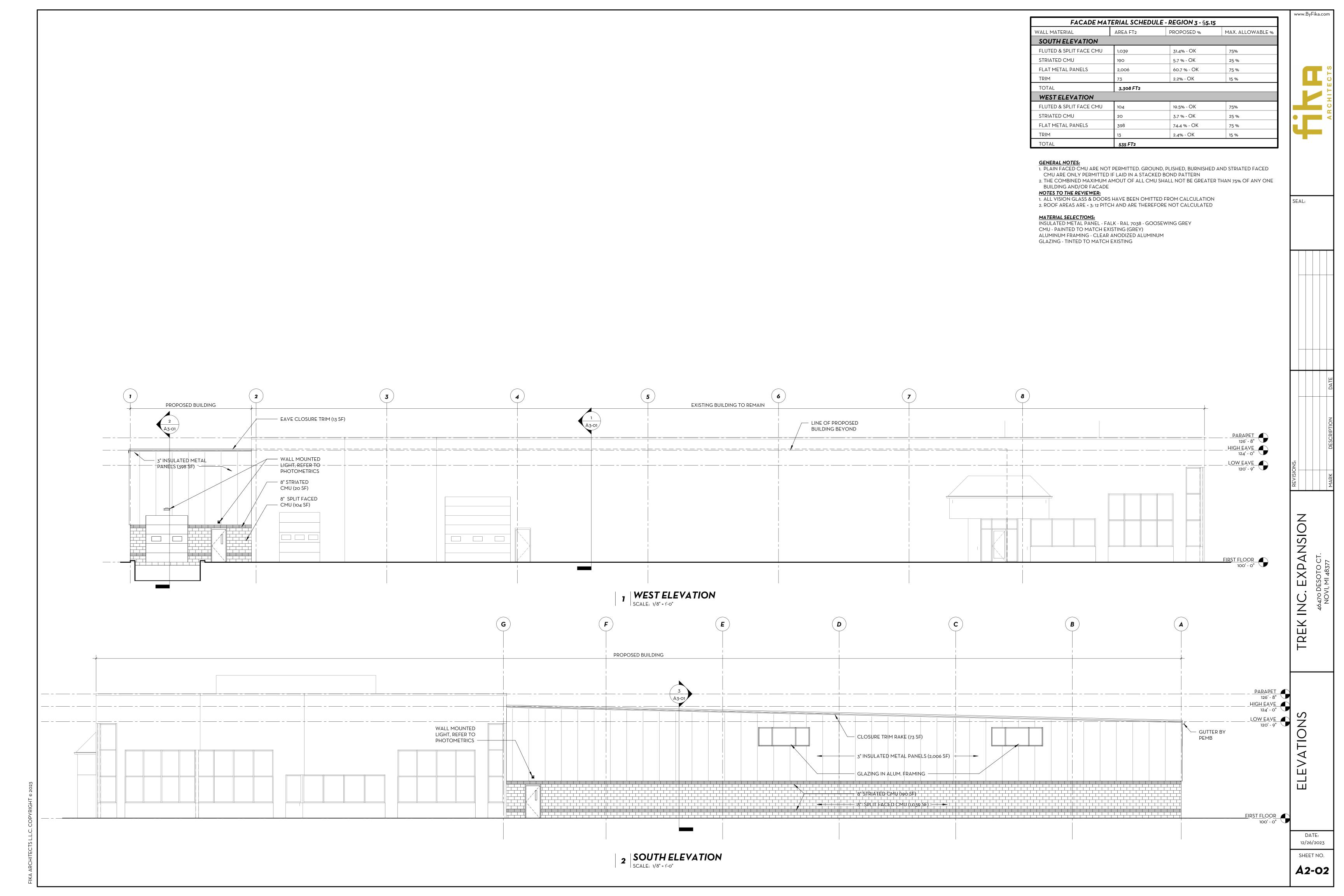
SLAB-ON-GRADE FLOORS UNHEATED R-15 FOR 24 IN. (F-0.520) HEATED R-20 FOR 48 IN. (F-0.688) VERTICAL GLAZING, 0% - 40% OF WALL

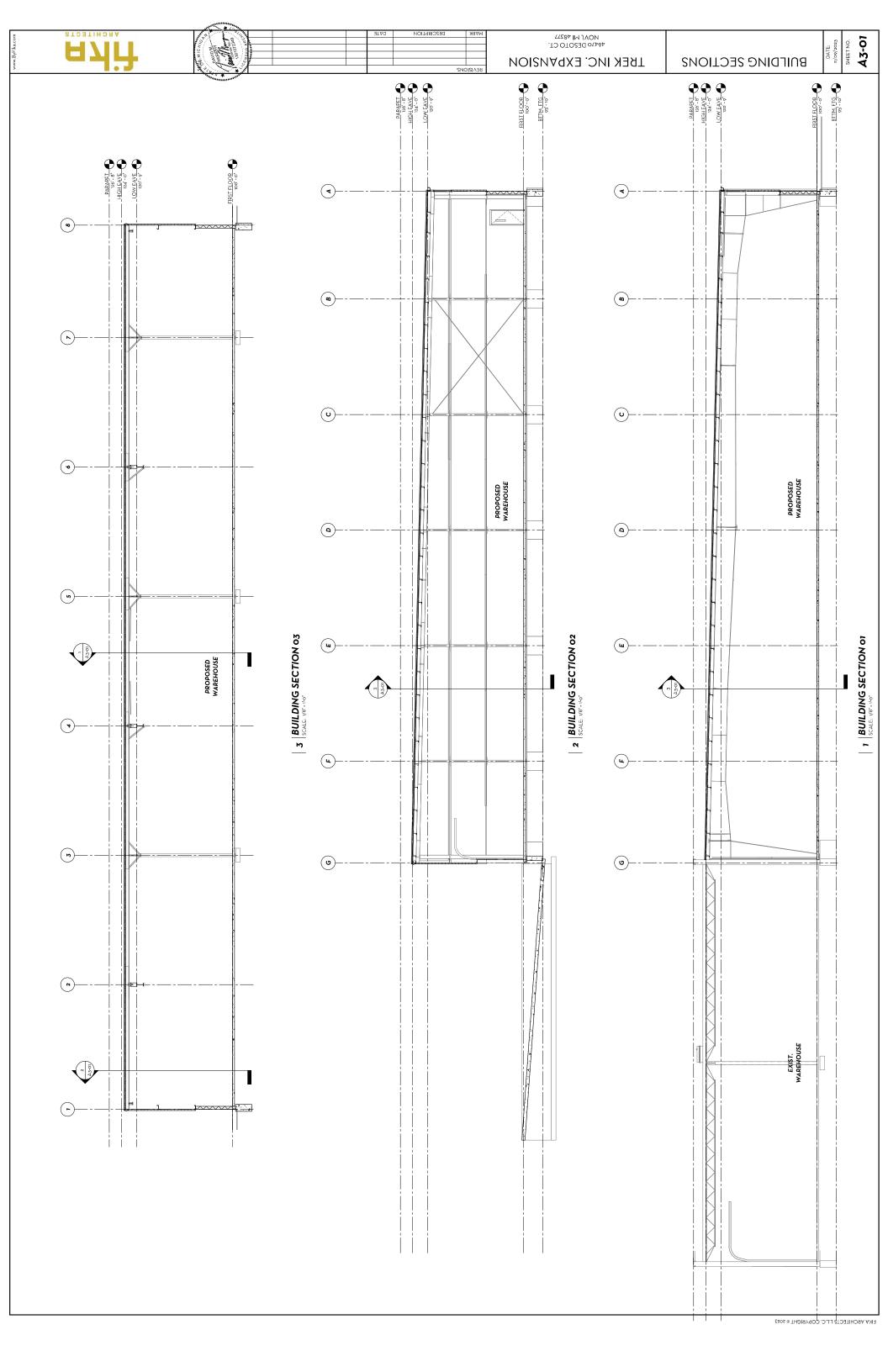






www.ByFika.com



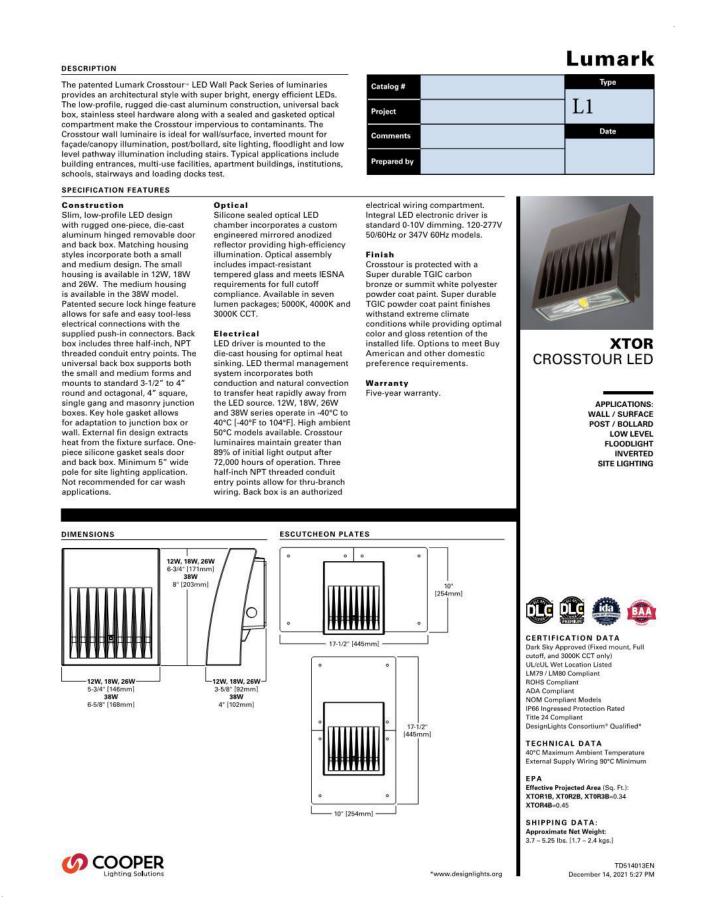


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## CALCULATION POINTS TAKEN AT GRADE.

Calculation Summary						
Label	Units	Avg	Max	Min	Max/Min	Avg/Min
Exit Doors	Fc	1.84	5.5	0.2	27.50	9.20
Property Line	Fc	0.00	0.0	0.0	N.A.	N.A.
Truck Dock Area	Fc	2.98	7.0	1.1	6.36	2.71
East Exit Door	Fc	0.00	0.0	0.0	N.A.	N.A.
North Door	Fc	2.43	5.5	0.6	9.17	4.05
West Door	Fc	3.50	7.0	1.1	6.36	3.18

Scale: 1 inch= 20 Ft.

RIM=945.26

L=38.36 (R=)2.16 (R)

Symbol	Qty	Label	LLF	Description	Lum. Watts	Lum. Lumens	Mounting Height
<b>→</b>	3	L1	0.900	LUMARK XTOR1B-Y	12.2	1327	8
<b>→</b>	1	L3	0.900	MCGRAW EDISON GWC-SA1C-730-U-SL4	59	6537	15.5

SHEET No.