

SITE PLANS FOR "NEAR NORTH" CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN TAX ID# 09-09-20-412-041

GENERAL NOTES:

- ALL CONSTRUCTION TO CONFORM AND COMPLY TO THE CURRENT STANDARDS AND SPECIFICATIONS OF CITY OF ANN ARBOR, WASHTENAW COUNTY ROAD COMMISSION, WASHTENAW COUNTY DRAIN COMMISSIONER AND ANY OTHER GOVERNING AGENCY.
- LOADING/UNLOADING TO BE COMPLETED FROM IN FRONT OF THE TRASH COMPACTOR AREA.
- WASTE WATER DISPOSAL TO BE DISCHARGED TO EXISTING CITY SEWER WITH ANN ARBOR, COUNTY, MDEQ APPROVAL.
- WATER SUPPLY TO BE CONNECTED TO EXISTING CITY PUBLIC WATER SUPPLY
- A PERMIT FROM MDOT IS REQUIRED FOR ALL WORK WITHIN N. MAIN STREET ROAD.
- A SOIL EROSION AND SEDIMENTATION PERMIT FROM THE CITY OF ANN ARBOR WILL BE REQUIRED.
- EXTERIOR LIGHTING TO BE WALL AND POLE MOUNTED AND SHIELDED PER CITY REQUIREMENTS.
- SIGN DETAILS ARE TO BE PROVIDED TO THE CITY AND APPROVAL GRANTED PRIOR TO THE PLACEMENT OF ANY SIGNS. SIGN PLAN TO BE SUBMITTED AT A LATER DATE
- SEE LANDSCAPE PLAN FOR PROPOSED LANDSCAPING.
- STORM SEWER DETENTION TO BE PROVIDED ON SITE IN DETENTION POND. ALL STORM WATER MUST BE APPROVED BY WCRC AND ANN ARBOR.
- ALL REQUIREMENTS BY THE FIRE DEPARTMENT PER THE INTERNATIONAL FIRE CODE WILL BE MET.
- THE ANTICIPATED DEVELOPMENT SCHEDULE IS TO RECEIVE APPROVALS FOR CONSTRUCTION IN 2020 AND BREAK GROUND IN 2021.

PROPRIETOR/DEVELOPER:

MR. ANTHONY RANDAZZO
TROWBRIDGE COMPANIES
2617 BEACON HILLS DRIVE
AUBURN HILLS, MI 48326
248-373-2440

SURVEYOR:

TOPOGRAPHIC/BOUNDARY SURVEY
MONUMENT ENGINEERING GROUP ASSOCIATES
638 SOUTH GRAND AVE
FOWLERVILLE MI, 48836

ARCHITECT:

MR. WILLIAM JARRATT
JARRATT ARCHITECTURE
WWW.JARRATTARCHITECTURE.COM
248-568-5200

ENGINEER:

CIVIL ENGINEERING
MR. MICHAEL POWELL
POWELL ENGINEERING & ASSOCIATES
4700 CORNERSTONE DRIVE
WHITE LAKE, MI, 48383

COMPARISON TABLE

	Existing PUD	Required R4-C	Proposed R4-C
Zoning:	Parcel 1		
Existing Dwelling Units	none	R4C req	Proposed
Proposed Dwelling Units	39 Units	23 units max	22 Units
	2,714 sf retail		
	1,553 sf office		
Minimum Lot Area	51,444 sf	8,500 sf	51,444 sf
Minimum Lot Width	362 ft	60 ft	362 ft
Maximum Density	1,329 sf/d.u.	2175 sf/d.u.	2338 sf/d.u.
	33 units/ac	20 units/ac	18.6 units/ac
Minimum Useable Open Space	59%	40%	43%
Minimum Active Open Space	not required	300 sf/unit	385 sf/unit*****
Minimum Vehicle Parking Spaces	53	26	55
1.5 Spaces per Dwelling Unit	1.35 sp/unit	1.5 sp/unit	2.5 sp/unit
Bicycle Parking		4 spaces	4 spaces
1 Space per 5 Dwelling Units	39 spaces	50% class A	22 class A
		50% class C	4 class C
Setbacks Minimum	Front 15'	10"	10'
Maximum	Front 15'	none	10'
	Side 13.5'	193'*****	15'
	Rear 24'	473'***	22' minimum one corner
			27.5' average
Height	50'	30'	30'
Building/Side Depth Dimension			108 ft
Building/Front Width Dimension			188 ft

* average front setbacks w/in 100 ft 8.67'

** incl addit setback for 188' bldg length

*** incl elevated common deck as open space

**** bldg is 108' long on side & shorter

***** than 35' on south end of site

***** incl patio and elevated decks

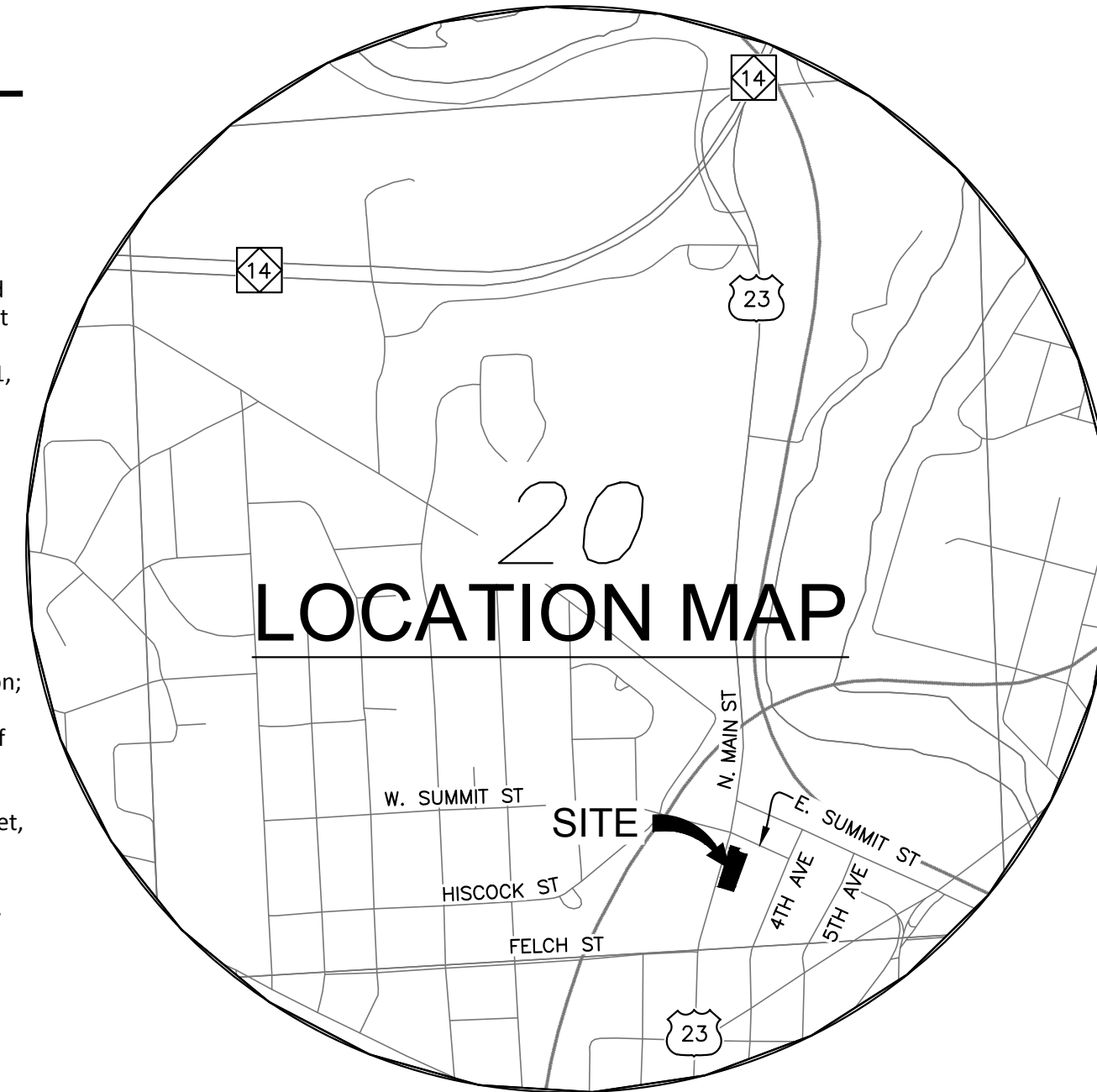
LEGAL DESCRIPTION

Schedule A Description:

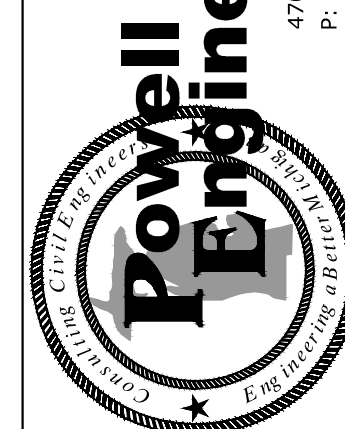
Situated in the County of Washtenaw, State of MI, is described as follows:

Commencing at the monumented intersection of Main Street and Summit Street; thence S 62°00'42" E 37.46 feet to a point along the centerline of Summit Street, said point being N 62°00'42" W 366.67 feet from the monumented intersection of Summit Street and N. Fourth Street; thence S 19°00'00" W 114.21 feet parallel to the monumented centerline of Main Street and along the westerly line of Lot 1 of Block 1, Ormsby and Page's Addition, as recorded in Liber M of Deeds, Pages 191 and 192, Washtenaw County Records, Michigan for a Point of Beginning;

thence S 71°02'44" E 80.66 feet; thence S 18°20'18" W 29.33 feet; thence S 70°52'52" E 10.05 feet; thence S 28°13'07" W 1.73 feet; thence S 71°07'58" E 67.47 feet along the north line of Lot 5 of said Addition; thence S 22°03'45" W 208.08 feet along the east line of lots 5, 7, 9 and 11 of said Addition to a found iron pipe; thence S 22°36'53" W 123.99 feet along the east line of lots 11 and 13 of said Addition; thence N 70°53'11" W 139.30 feet along the south line of Lot 13 of said Addition to a point which lines N 19°00'00" E 215.31 feet parallel to the monumented centerline of Main Street, along the easterly right-of-way line of Block 1 of said Addition from the southwest corner of Lot 19 of said Addition; thence N 19°00'00" E 362.08 feet parallel to the monumented centerline of Main Street, along the easterly right-of-way line of Block 1 of said Addition to the Point of Beginning, Being a part of Lots 1 and 2 and all of lots 5, 7, 9, 11 and 13 of Block 1, Ormsby and Page's Addition, in the SE 1/4 of Section 20, Town 2 South, Range 6 East, in the City of Ann Arbor, Washtenaw County, Michigan.



Consulting Civil Engineers
"Engineering A Better Michigan"



4700 Cornerstone Drive, White Lake, Michigan 48383
P: 248.214.9895 info@powellengineeringllc.com

NOTE: AS AN AID TO THE CONTRACTOR, UTILITY LINES AND UNDERGROUND STRUCTURES ARE SHOWN ON THESE PLANS AND ARE FOR INFORMATION ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTHS OF ALL UTILITIES AND STRUCTURES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN, AND ANY OTHER GOVERNING AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN, AND ANY OTHER GOVERNING AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN, AND ANY OTHER GOVERNING AGENCIES.



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1-800-482-7171

NEAR NORTH
COVER SHEET
NEAR NORTH
700 NORTH MAIN STREET, ANN ARBOR MI 48104

I) DEVELOPMENT PROGRAM

- Description:** The site had been previously approved for development as an affordable housing rental project with 39 apartment units, retail and office space.
 - The prior applicant rezoned the property to a PUD designation, but did not obtain final approvals and permits from Ann Arbor.
- Five of the seven original single-family homes had been demolished and removed from the site.
- The remaining two existing homes were demolished and removed in spring of 2016 by the present applicant.
- The proposed development seeks the following approvals:
 - Removal of the Planned Unit Development designation, back to the underlying R4C multi-family zoning.
 - Reduction in the front yard setback from 25 feet to 10 feet following the average neighboring properties existing setbacks. Reduction of the rear requirement from 33 feet to 22 feet in the southeast corner of the site.
 - Site plan approval.
 - Floodplain fill and mitigation for an area on the North side of the site. The existing floodway on the north end of the site will not be affected.
- The development program will be as follows:
 - 22 attached single family townhome units.
 - There two unit floor plans: The Narrower unit will have a footprint of about 16' x 40' on the tandem two car garage level, 17.5' x 42' on the upper levels and will be about 1,500 SF finish space. The Wider unit will have a footprint of about 17.5' x 40' on the two car garage level, 17.5' x 42' on the upper levels and will be about 1,700 SF finish space.
 - Units will have attached garages and either finished space at the kitchen living and dining on the main level, 2 bedrooms on the 2nd level, and a loft bedroom on the third level. The third level will be contained within the truss space, so the building will have a 2 story appearance.
 - Each building will two or three enclosed covered parking spaces and a small visitor parking lot of 7 spaces will be provided at the north end of the property.

- A common deck over the access drive serving the garages will be constructed, providing each unit an outdoor recreational space. The deck will provide screens to separate each unit's private deck space from the other units. Stormwater detention will be contained in a concrete structure, the top of which will contain a 1,100 square foot outdoor recreation deck.

ii) Preliminary Phasing Proposal & Probable Construction Costs

- Three phases of construction are proposed.
- Probable construction cost for site work, utilities and infrastructure is estimated to be \$600,000. Vertical construction costs are estimated to be \$5,450,000.

III) COMMUNITY ANALYSIS

- Impact of Proposed Development on Area Schools**
 - Increased tax base.
 - The anticipated number of school-age children from the development is estimated as follows: 16 units with 48 bedrooms = 38 children's bedrooms
38 bedrooms w/ 1 1/2 children/bedroom = 57 children
- Relationship of Intended Use to Neighboring Uses:** To the south are single family homes with R4C zoning, to the west are the Ann Arbor Community Center and a former City public works building zoned PL and C1, to the north are Summit Party Store and two single family homes, zoned C1 and O, respectively, to the east are single family homes zoned R4C. So the area is characterized by a mixture of single family, institutional and retail uses. At a density of 18.6 units to the acre of attached single family units, the proposed development will provide a moderate increase in density in the area.
- Impact of Adjacent Uses on the Proposed Development:** The adjacent uses are compatible. The Proposed townhomes are similar to the detached single family houses to the east and will provide a sound barrier for these homes from Main Street traffic. No negative impacts are expected to other surrounding uses.
- Impact of Proposed Development on Air and Water Quality and on the Existing Natural Features of the Site and Neighboring Sites:**
 - There will be no negative impact on air quality.
 - Water quality controls will be implemented to ensure that runoff during construction and from the additional impervious areas is managed and the current WRC stormwater

regulations. There are no adjacent bodies of water into which stormwater discharge will flow.

- A total of 14 non-landmark trees will be removed (131 diameter inches) and 5 landmark trees (136 diameter inches) will be removed mitigated.

- There are no regulated wetlands on the site.
- Storm sewers draining roofs & paved areas will be developed on site. The water and sanitary sewer connections will be via laterals to each building from the existing mains located in the Main Street right of way fronting the site.

iv) Existing Land Use or Historic Sites/Structures:

No historic structures exist on site. The site itself is not historic.

III) SITE ANALYSIS

- Existing Land Use and Activity on the Site:** The site is vacant. The property is not currently being farmed.
- Inventory of Site Conditions:** The site generally drains to the west and north. The site is generally open, being greatly disturbed through the removal of existing houses that once occupied the site. The site also contains several City regulated trees. See Tree Inventory. There is one area of the site where an existing retaining wall creates a steep slope condition. The remainder of the site, while sloping, wouldn't be consider steep sloped.
- Natural Features Descriptions**
 - There is no known endangered species habitat on the site.
 - There is a 100 year floodplain and a floodway that encumbers the northern 1/3 of the site. (128 CY) of the 100 year floodplain will be filled for part of the driveway serving the site. Compensating cut will be provided on the north end of the site per City, State and Federal requirements.
 - There are no streams, rivers, lakes or bodies of water adjacent to or on site.
 - There are trees on the site including 5 landmark trees that are being removed as part of this development. These are being mitigated with replacement trees on site in accordance with City tree replacement requirements.
 - 5 landmark trees in the area being disturbed are being removed. These are being mitigated with replacement trees planted on site in accordance with City tree replacement requirements.

- Generally, the tree protection fence will be placed at the edge of the critical root. In some cases, this is not possible and still save the tree; here, the tree protection fence will not be placed closer than 10 feet to the trunk of the tree. If placed closer than 10 feet from the trunk it shall be mitigated for.

d) Existing Structures:

None.

e) Existing Access Points

- Existing vehicle driveway cuts to Main Street will be closed. New internal private drives will intersect Main Street at one point; said location being preliminarily approved by MDOT.
- Pedestrian access will include: sidewalks along Main Street and lead walks serving unit front entries that face east.

f) Utilities

- A 14 inch water main is located within the Main Street right of way and will be tapped near the proposed road entry to the site to install a fire hydrant and provide fire suppression and domestic water laterals to each building.
- An 24 inch sanitary sewer is located within the Main Street right of way. 6 inch sanitary laterals are proposed to each building.
- Gas, electric, telephone and cable will be extended into the site from their present locations along Main Street.
- Drainage Patterns:** Presently, the site drains to the north and west toward Main Street.
- Existing Land Use:** The property is presently vacant.

IV) SCHEMATIC DESIGN

- A comparison chart of the proposed development and the City regulations is shown on the Sheet S3.
- The existing and proposed topography and limits of soil disturbance are shown on the Sheet S3.
- Orientation and general location of proposed improvements are shown on the Sheet S2.
- There are no areas of wetlands on the site and therefore no natural features buffers required.
- Proposed buildings and setbacks are shown on the Sheet S2.
- Existing landmark and City regulated trees are shown on the Sheet L-1. Tree mitigation replacement plantings are shown on the Sheets L-2 and L-3.

V) GENERAL INFORMATION

- Project Name: Near North
- Owner: Cinnaire Lending, Inc., fka Capital Fund Services, Inc. The developer is Trowbridge Land Holdings, LLC and holds a purchase contract interest in the property. Bruce Michael is contact. 2617 Beacon Hill Drive, Auburn Hills, 48326, 248/703-4653, bruce michael@gmail.com, 248/373-1230 fax.
- North indicator and scale are shown on each plan.
- The parcel is zoned R4C and PUD.
- The approximate floor area is shown in the comparison chart on the dimensional site plan.
- The applicant is the contract purchaser of the site.
- Trowbridge Land Holdings, LLC does not own or have an interest in any land contiguous to the site.
- A vicinity map is shown on the Sheet S1. An aerial photograph with an overlay of the proposed development is included Sheet S6.
- The anticipated development schedule is to start land development in the Summer of 2020 and a two year buildout is expected.
- All public areas and municipal corporation lines within or adjacent to the site are shown on the Sheet S2.
- The legal description is shown on the Sheet S1.
- Because this site is in the Huron River watershed, the Developer agrees to use only products that contain no or low levels of phosphate.

Per Chapter 49, Section 4-48 of the Unified Development Code (U.D.C.), "All sidewalks are to be kept and maintained in good repair by the Owner of the land adjacent to and abutting the same." Prior to issuance of the final Certificate of Occupancy for this site, all existing sidewalks must be repaired in accordance with City standards.

BENCHMARKS

DATUM: NAVD88

ANN ARBOR GEODETIC REFERENCE SYSTEM (AAGRS) REFERENCE BM'S
(CITY OF ANN ARBOR GEODETIC CONTROL MANUAL - 2004)

AAGRS/NGS NO. 0014A:
ELEV = 786.13

AAGRS/NGS NO. 0013A
ELEV = 829.12

AAGRS NO. 1010
ELEV = 811.95

SITE BM'S:

BM A:
BIG ARM HYDRANT 34± WEST NORTH MAIN STREET, 157± SOUTH FROM INTERSECTION NORTH MAIN STREET AND EAST SUMMIT STREET.
ELEV = 778.56

BM B:
NAIL ON NORTH SIDE UTILITY POLE, 48± NORTH FROM SUBJECT'S SOUTHWEST PROPERTY CORNER, 26± EAST NORTH MAIN STREET.
ELEV = 788.93

BM C:
NAIL ON SOUTH SIDE UTILITY POLE, 190± NORTH FROM SUBJECT'S SOUTHWEST PROPERTY CORNER, 26± EAST NORTH MAIN STREET.
ELEV = 782.11

SHEET INDEX

- COVER SHEET
- EXISTING CONDITIONS PLAN
- DIMENSIONAL LAYOUT PLAN
- NATURAL FEATURES OVERLAY & SOIL EROSION PLAN
- UTILITY PLAN & DRAINAGE ANALYSIS
- AREA 2 DRAINAGE ANALYSIS
- NORTH STORM PLAN DETAIL
- PROFILES & DETAILS
- GRADING
- FLOODPLAIN PLAN
- CONSTRUCTION PHASING PLAN
- DEMOLITION PLAN

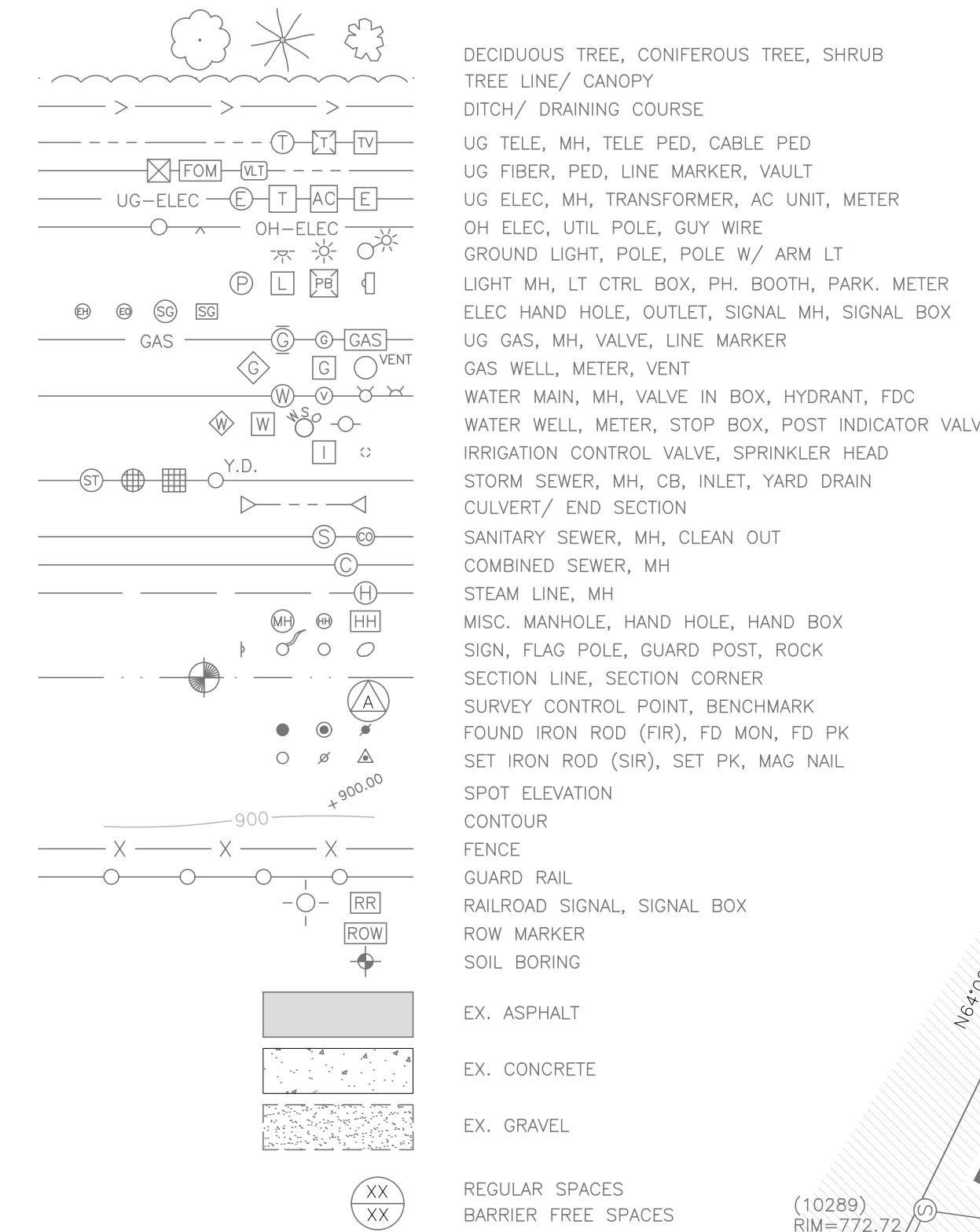
CONSTRUCTION NOTES:

- THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO THE CITY OF ANN ARBOR PUBLIC SERVICES STANDARD SPECIFICATIONS.
- THE OMISSION OF ANY STANDARD DETAILS DOES NOT RELIEVE THE CONTRACTORS OF THEIR OBLIGATION TO CONSTRUCT ITEMS IN COMPLETE ACCORDANCE WITH THE PUBLIC SERVICES STANDARD SPECIFICATIONS.
- USE OF LINE STOPS IS REQUIRED WHERE EXISTING WATER MAINS CANNOT BE SUFFICIENTLY ISOLATED TO COMPLETE THE WORK. THE COST OF ANY LINE STOP INSTALLATION IS THE RESPONSIBILITY OF THE DEVELOPER AND/OR CONTRACTOR.
- PAVEMENT MARKINGS DISTURBED DUE TO PAVEMENT CUTS OR CONSTRUCTION RELATED ACTIVITIES SHALL BE REPLACED AS DIRECTED BY ENGINEERING. REPLACEMENT DURING CONSTRUCTION OF THE PROJECT MAY BE CONSIDERED TEMPORARY, WITH FINAL PAVEMENT MARKING RESTORATION TO OCCUR AT THE END OF THE PROJECT.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING PUBLIC ROAD PAVEMENT. DAMAGE TO THE PUBLIC ROAD PAVEMENT DURING THE COURSE OF CONSTRUCTION MAY NECESSITATE MILLING AND RESURFACING OF THE DAMAGED AREAS PRIOR TO ISSUANCE OF THE CERTIFICATE OF OCCUPANCY.

DRAWN: BBB
DESIGNED: BBB
APPROVED: MCP
P.E. JOB No.: 16-431
SCALE: AS-SHOWN

C1

EXISTING LEGEND



ALTA SURVEY BY:

MEGA
 ENGINEERS · SURVEYORS · CONSULTANTS · LANDSCAPE ARCHITECTS · LAND PLANNERS
 638 SOUTH GRAND AVE.
 FOWLERVILLE, MICHIGAN 48836
 (OFFICE) 517-223-3512
 (FAX) 517-223-9987
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LEGAL DESCRIPTION

Schedule A Description:
 Situated in the County of Washtenaw, State of MI, is described as follows:
 Commencing at the monumented intersection of Main Street and Summit Street; thence S 62°00'42" E 37.46 feet to a point along the centerline of Summit Street, said point being N 62°00'42" W 366.67 feet from the monumented intersection of Summit Street and N. Fourth Street; thence S 19°00'00" W 114.21 feet parallel to the monumented centerline of Main Street and along the westerly line of Lot 1 of Block 1, Ormsby and Page's Addition, as recorded in Liber M of Deeds, Pages 191 and 192, Washtenaw County Records, Michigan for a Point of Beginning;
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 thence S 71°07'58" E 67.47 feet along the north line of Lot 5 of said Addition;
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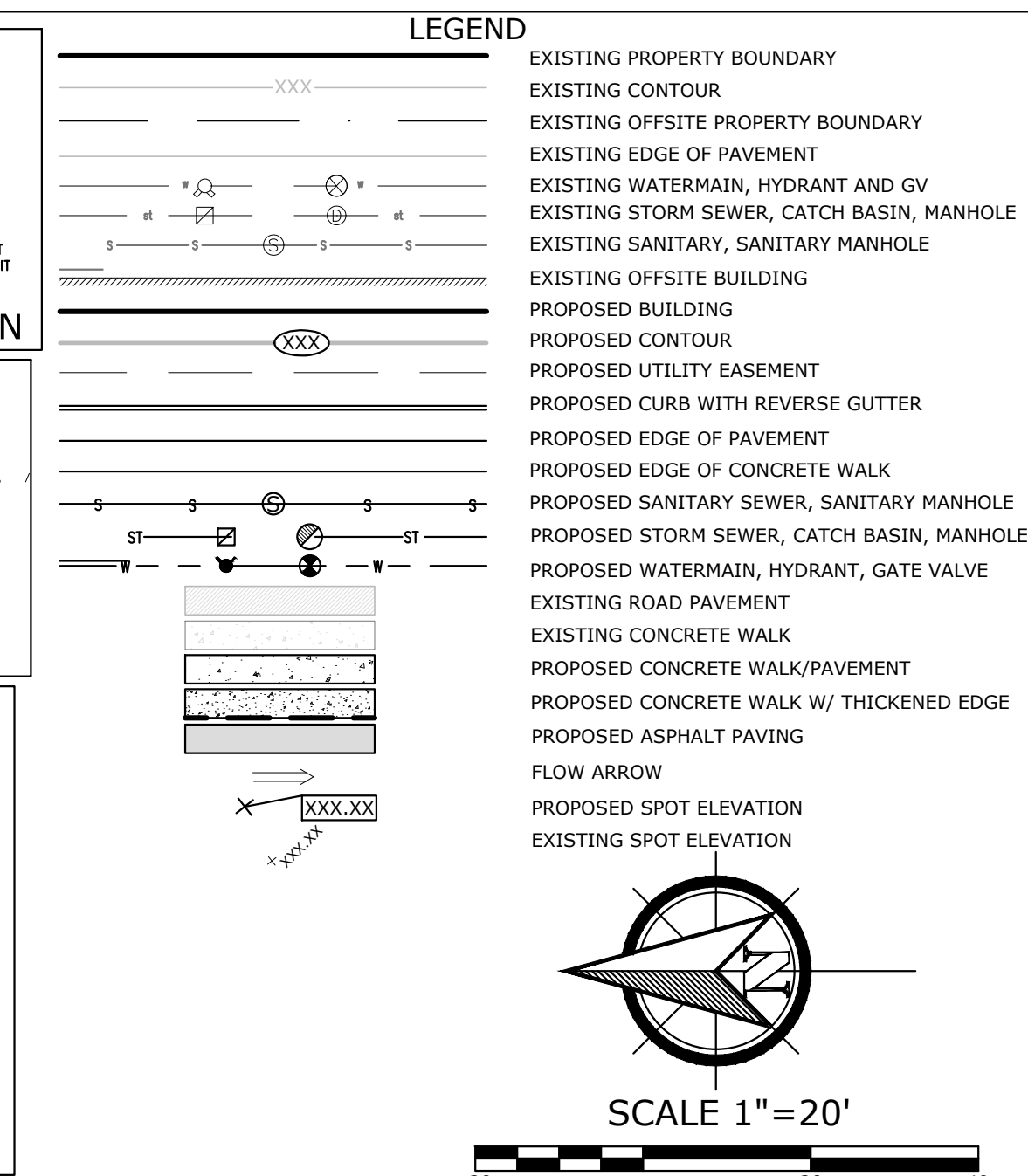
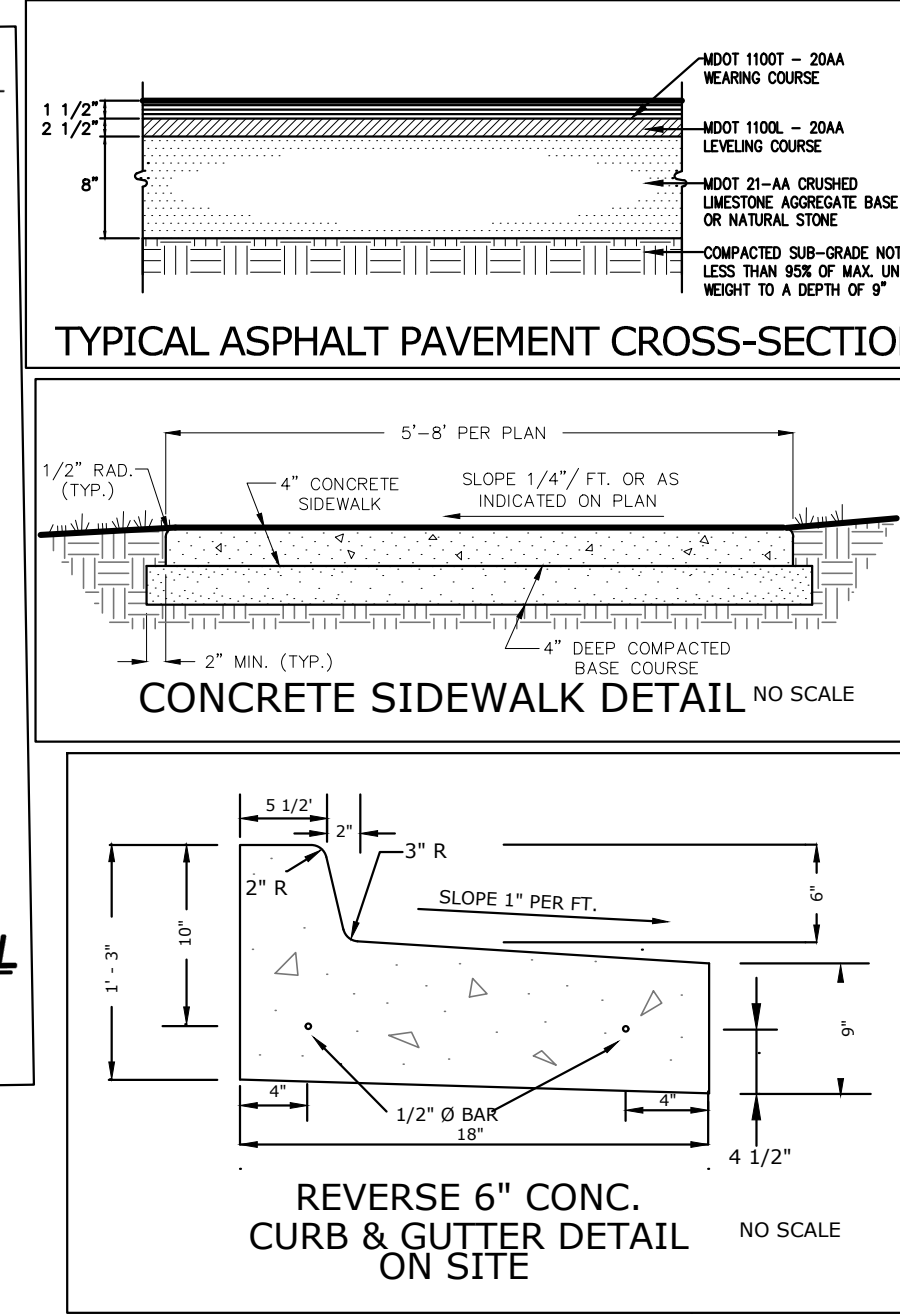
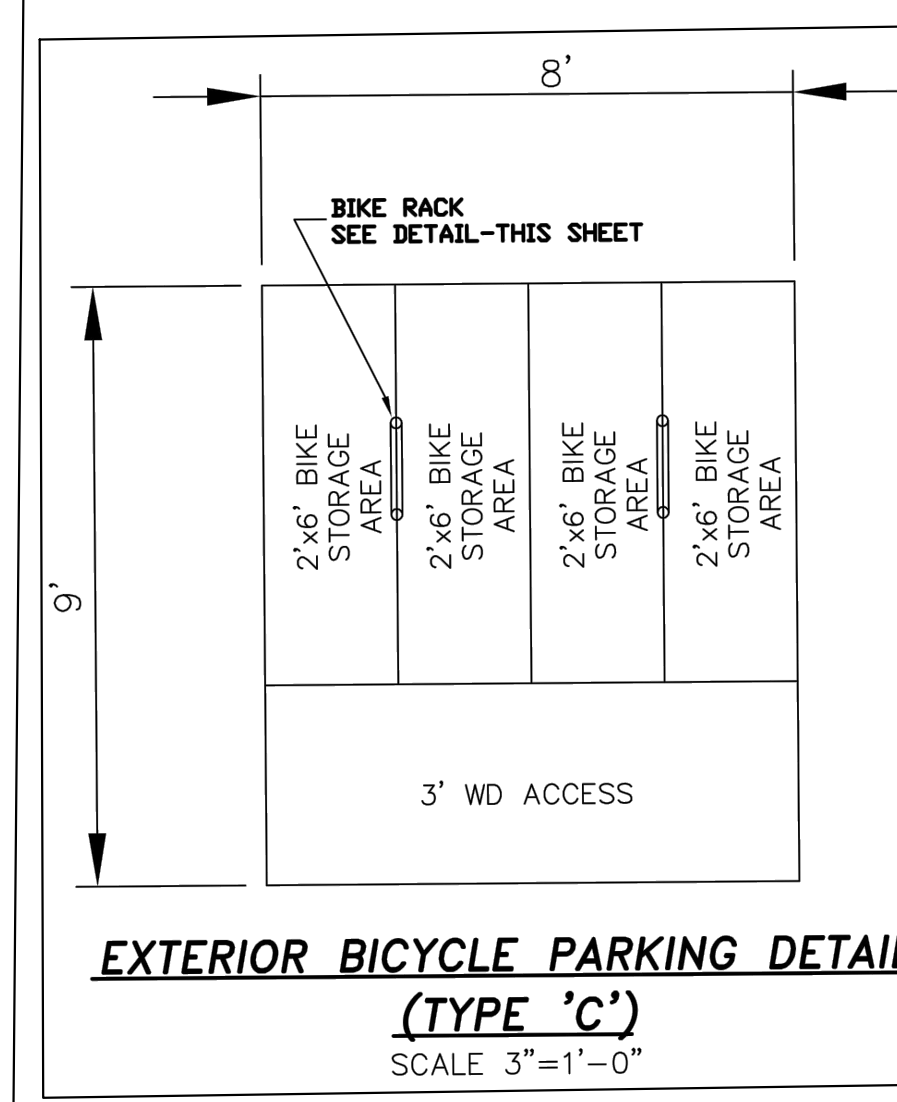
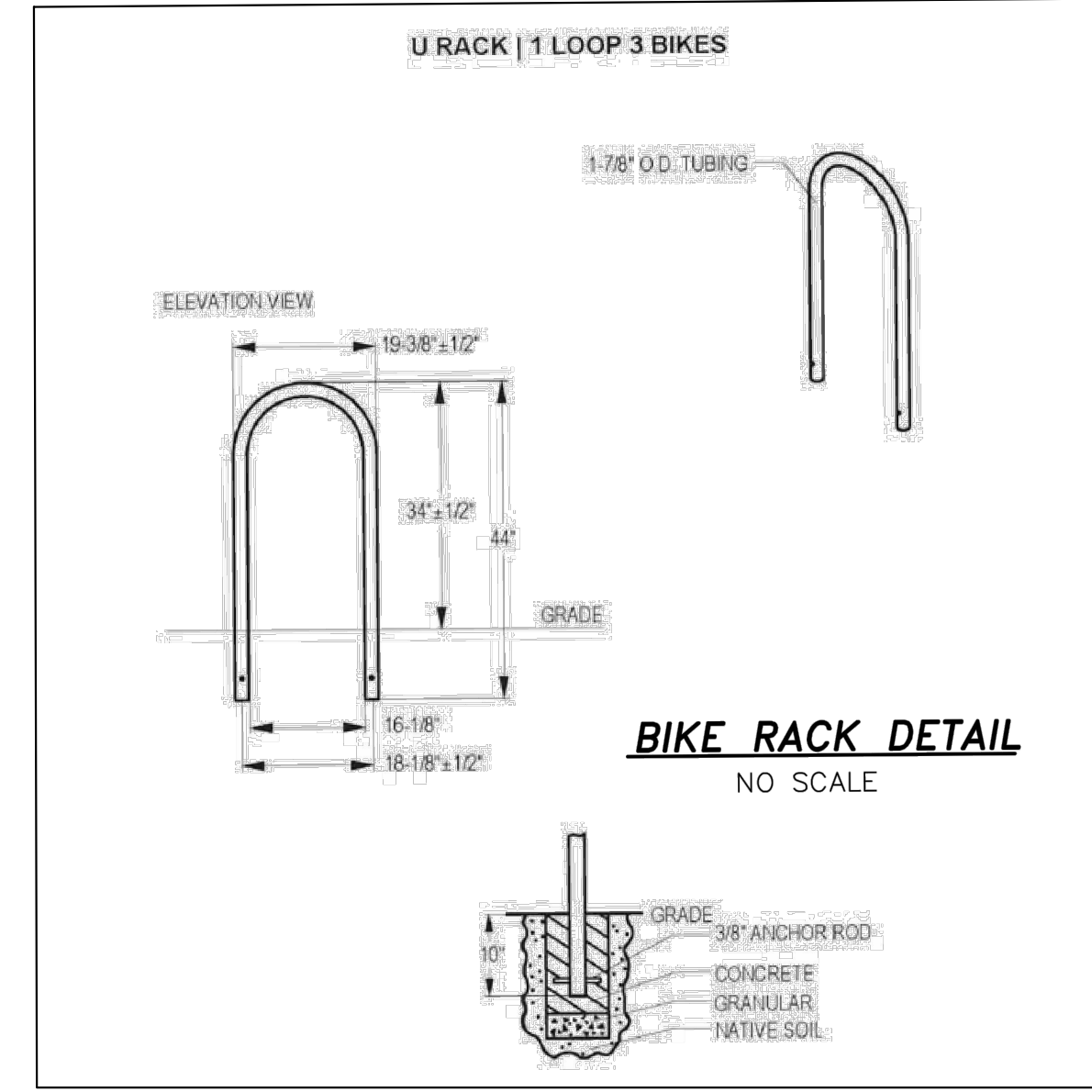
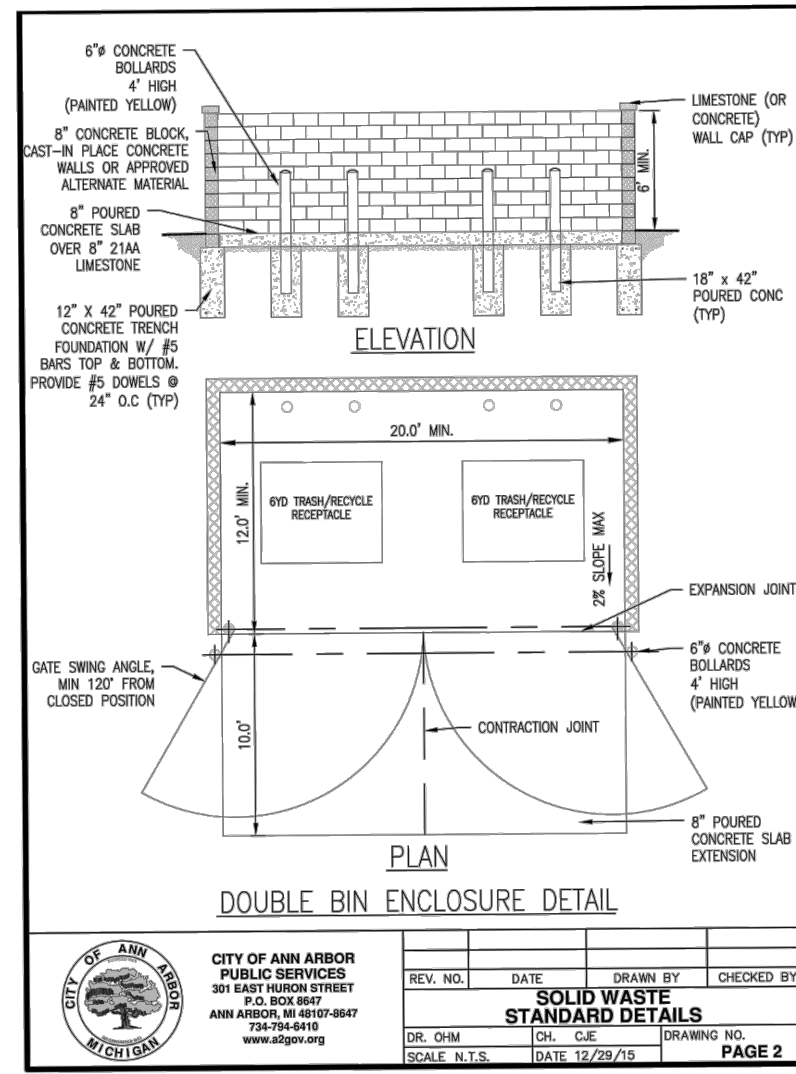
NEAR NORTH EX. CONDITIONS PLAN
 NEAR NORTH
 700 NORTH MAIN STREET, ANN ARBOR MI 48104

ISSUE DATES

SITE PLAN	1-23-16
OWNER	01-09-17
PER CITY	04-06-17
PER CITY	9-25-17
PER CITY	7-1-19
PER CITY	01-28-20
PER CITY	5-23-20
PER CITY	10-21-20

DRAWN BBB
DESIGNED BBB
APPROVED MCP
 P.E. JOB No. 16-431
SCALE AS-SHOWN

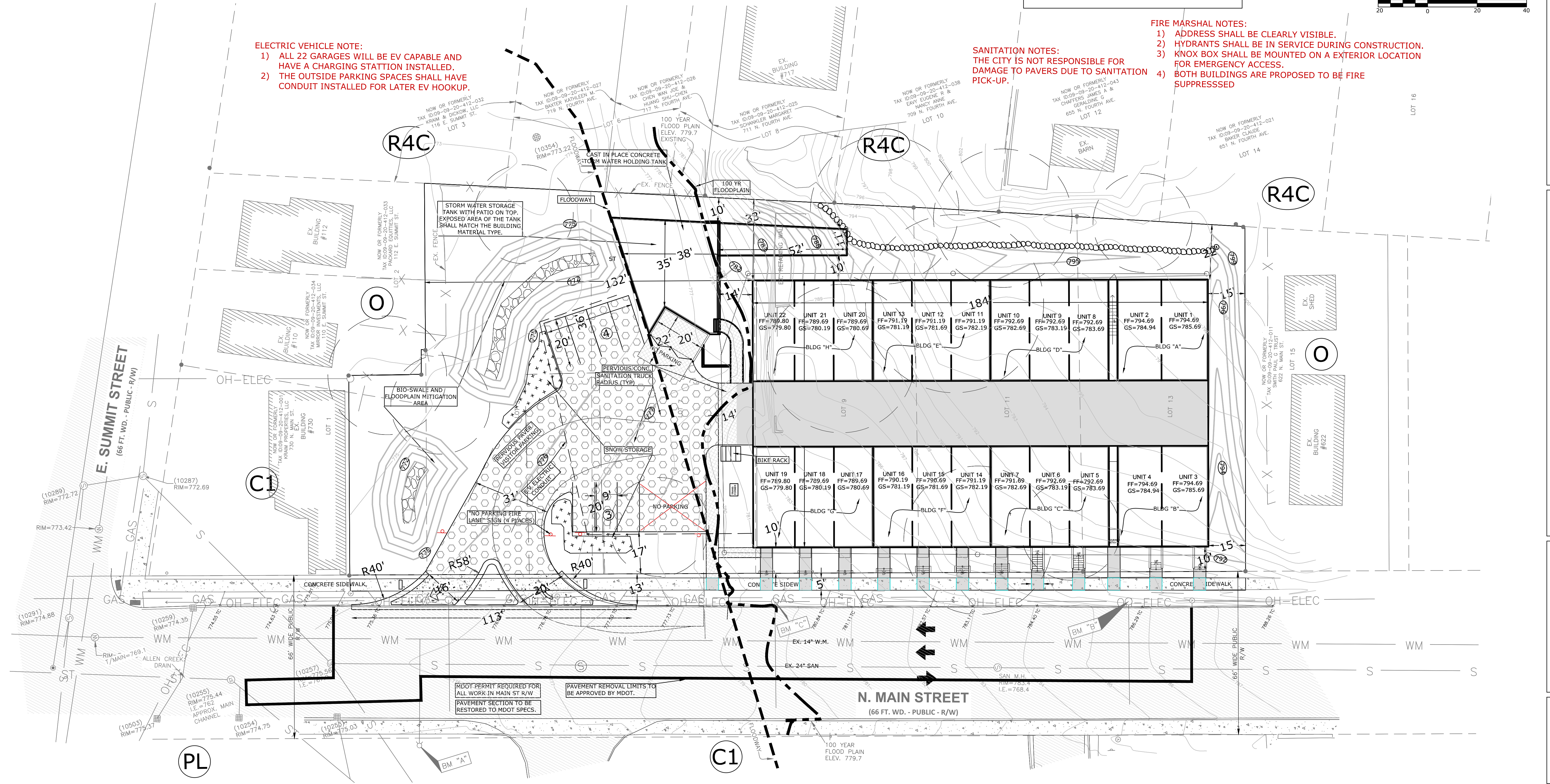
Address	Setback
542-548 N Main Street	14
603 N Main Street	6
607 N Main Street	6
608 N Main Street	17
612 N Main Street	16
611 N Main Street	0
613 N Main Street	0
614 N Main Street	19
615 N Main Street	10 w/in 100 feet
618 N Main Street	20 w/in 100 feet
622 N Main Street	22 w/in 100 feet
625 N Main Street	0 w/in 100 feet
730 N Main Street	0 w/in 100 feet
735 N Main Street	0 w/in 100 feet
110 E Summit Street	13
112 E Summit Street	12
116 E Summit Street	11
120 E Summit Street	15
124 E Summit Street	14
126 E Summit Street	15
639 N Fourth Street	7
645 N Fourth Street	12
651 N Fourth Street	11
701 N Fourth Street	12
709 N Fourth Street	18
711 N Fourth Street	40
717 N Fourth Street	7
719 N Fourth Street	2
Average w/in 100 ft	8.67



ELECTRIC VEHICLE NOTE:
 1) ALL 22 GARAGES WILL BE EV CAPABLE AND HAVE A CHARGING STATION INSTALLED.
 2) THE OUTSIDE PARKING SPACES SHALL HAVE CONDUIT INSTALLED FOR LATER EV HOOKUP.

SANITATION NOTES:
 THE CITY IS NOT RESPONSIBLE FOR DAMAGE TO PAVERS DUE TO SANITATION PICK-UP.

FIRE MARSHAL NOTES:
 1) ADDRESS SHALL BE CLEARLY VISIBLE.
 2) HYDRANTS SHALL BE IN SERVICE DURING CONSTRUCTION.
 3) KNOX BOX SHALL BE MOUNTED ON A EXTERIOR LOCATION FOR EMERGENCY ACCESS.
 4) BOTH BUILDINGS ARE PROPOSED TO BE FIRE SUPPRESSED



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BEFORE YOU DIG
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 1-800-482-7171

ISSUE DATES

SITE PLAN	05-21-21
CONSTRUCTION PLAN	03-21-21
WRC	4-2-21
PER CITY	7-21-21

DRAWN: BBB
 DESIGNED: BBB
 APPROVED: MCP
 P.E. JOB No. 16-431
 SCALE: AS-SHOWN

C3

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 WRC-2009-01-10
 Expires On: 01/11/2020

NEAR NORTH DIMENSIONAL PLAN
 NEAR NORTH
 700 NORTH MAIN STREET, ANN ARBOR MI 48104

W1 - C FACTORS AND CURVE NUMBERS			
Comp "C"			
Imp	0.49 ac.	0.95	0.46
perv	0.25 ac.	0.30	0.08
			0.54/ 0.74 = 0.73
CN-imp	98	0.49 ac.	
CN-perv	61	0.25 ac.	

W2 - STANDARD METHOD RUNOFF VOLUME CALCULATIONS			
FIRST FLUSH VOLUME CALCULATIONS (Vff)			
TRIBUTARY A	0.74 ac		
Runoff Coeff	0.73		
Vff=(1") ² (1/12") ² (43560sf / 1ac) *A'	1961 cf		

W3 - STANDARD METHOD RUNOFF VOLUME CALCULATIONS			
Pre-Development Bankfull Runoff Calculations (Vbf-pre)			
A.	2-YR/24 HOUR STORM EVENT	P=	2.35 in
B.	See rules for requirement "Good cover woods or Meadow"	CN=	61
C.	S = 1000/CN - 10	S=	6.39 in
D.	Q = (P-0.25) ² / (P+0.85)	Q=	0.15 in
E.	TOTAL SITE AREA EXCLUDING SELF-CREDITING BMP'S	AREA=	0.74 ac
		AREA=	32234 sf
F.	Vbf-pre = Q(1/12) Area	Vbf-pre=	413 cf

W4 - STANDARD METHOD RUNOFF VOLUME CALCULATIONS			
Pervious Cover Post Development Bankfull Runoff Calculation (Vbf-per-post)			
A.	2-YR/24 HOUR STORM EVENT	P=	2.35 in
B.	Pervious Cover From WS1	CN=	61
C.	S = 1000/CN - 10	S=	6.39 in
D.	Q = (P-0.25) ² / (P+0.85)	Q=	0.15 in
E.	Pervious Cover Area from WS1	AREA=	0.49 ac
		AREA=	21344 sf
F.	Vbf-per-post = Q(1/12) Area	Vbf-per-post=	273 cf

W5 - STANDARD METHOD RUNOFF VOLUME CALCULATIONS			
Impervious Cover Post Development Bankfull Runoff Calculation (Vbf-imp-post)			
A.	2-YR/24 HOUR STORM EVENT	P=	2.35 in
B.	Impervious Cover From WS1	CN=	98
C.	S = 1000/CN - 10	S=	0.20 in
D.	Q = (P-0.25) ² / (P+0.85)	Q=	2.12 in
E.	Impervious Cover Area from WS1	AREA=	0.49 ac
		AREA=	21344.4 sf
F.	Vbf-imp-post = Q(1/12) Area	Vbf-imp-post=	3774 cf

W6 - STANDARD METHOD RUNOFF VOLUME CALCULATIONS			
"Impervious Cover" Post-Development 100-YR Runoff Calculations			
A.	100-YR STORM EVENT	P=	5.11 in
B.	PERVIOUS COVER CURVE NO. (FR:WS1)	CN=	61
C.	S = 1000/CN - 10	S=	6.39 in
D.	Q = (P-0.25) ² / (P+0.85)	Q=	1.44 in
E.	PERVIOUS COVER AREA (Fr: WS1)	AREA=	0.25 ac
		AREA=	10890 sf
F.	V100-per-post = Q(1/12) Area	V100-per-post=	1303 cf

W7 - STANDARD METHOD RUNOFF VOLUME CALCULATIONS							
"Impervious Cover" Post Development 100-year Runoff Calculations (V100-imp-post)							
A.	100-YR STORM EVENT	P=	5.11 in				
B.	IMPERVIOUS COVER CURVE NO. (FR: WS1)	CN=	98				
C.	S = 1000/CN-10	S=	0.20 in				
D.	Q = (P-0.25) ² / (P+0.85)	Q=	4.87 in				
E.	IMPERVIOUS COVER AREA (Fr:WS1)	AREA=	0.49 ac				
		AREA=	21344.4 sf				
F.	V100-imp-post = Q(1/12)Area	V100-imp-post=	8668 ac				

W8 - STANDARD METHOD Runoff Volume Calculations							
Flow Type	K	Ch. in Elev.	Length (L)	Slope % (S*100%)	S*0.5	V=K*0.5	Tc=L/(V*3600)
Sheet Flow	0.48	25	380	6.58	2.56	1.23	0.09
							Tc = 0.09

A. Runoff Summary from Previous Worksheets			
WS2 : First Flush Volume (Vff)			1961 cf
WS3 : Pre-Development Bankfull Runoff Volume (Vbf-pre)			413 cf
WS4 : Pervious Cover Post-Dev. Bankfull Volume (Vbf-per-post)			273 cf
WS5 : Impervious Cover Post-Dev. Bankfull Volume (Vbf-imp-post)			3774 cf
Total Post Development Bank Full Volume Required	Vbf=		4047 cf
WS6 : Pervious Cover Post-Dev. 100-year Volume (V100-per-post)			1303 cf
WS7 : Impervious Cover Post-Dev. 100-yr Volume (V100-imp-post)			8668 cf
Total Post Development 100-yr Volume Required	Vbf=		9971 cf
	No infiltration =	120%V =	11965 cf

B. Determine Onsite Infiltration Requirement			
Subtract Pre-Development Bankfull from the Post-Development Bankfull Volume			
Total Post-Development Bankfull Volume (Bbf-post)			4047 cf
Pre-Development Bankfull Volume (Vbf-pre)			413 cf
Bankfull Volume Difference			3634 cf
On-Site Infiltration Volume Required (Vinf)	V(inf)=		3634 cf

Compare the BF volume difference and the FF volume. The greater is the infiltration. required

Therefore, due to poor soils infiltration will not be possible and we will store 120% of the volume

W10 - STANDARD METHOD RUNOFF VOLUME CALCULATIONS			
Detention/Retention Requirement			
A.	Qp=238.6 Tc ^{-0.82}	Tc=	0.09 hr
	peak of the unit hydrograph		
B.	Total Site Area (ac) excluding "Self Crediting" BMP's		0.74 AC
C.	Q100=A100-per+Q100-imp	Q100=	5.09 in
D.	Peak Flow (PF) = Qp(cfs/in-mi ²) * Q100(in) * Area(ac) / 640	PF=	10.11 cfs
E.	DELTA = PF (cfs) - 0.15 * Area(ac)	DELTA=	10.00 cfs
F.	Vdet=DELTA(cfs)/PF * V100(cf)	Vdet=	11834 cf

W11 - STANDARD METHOD RUNOFF VOLUME CALCULATIONS			
No infiltration can be provided so no credits are available			

W13 - SUMMARY			
A. STORMWATER MANAGEMENT SUMMARY			
Minimum Onsite Infiltration Requirement, Vinf			3634 cf
Designed/Provided Infiltration Volume			0 cf
Total Calc% Minimum Infiltration Provided			0 %
Net Required Detention Volume, (Vdet - Provided Infiltration Volume)			11,834 cf
B. DETENTION VOLUME INCREASE FOR SITES WHERE THE REQUIRED INFILTRATION VI			11,834 cf
% Required Infiltration NOT provided			100 %
Net % Penalty			20 %
Total Required Detention Volume, including penalty (100% + Net % Penalty) x Net Required Detention Volume)			14,200 cf
TOTAL DETENTION VOLUME REQUIRED (A1=14,200 CF) + (A2 = 2783 CF) = 16,983 CF			

STORAGE TANK VOLUME SUPPLIED			
766.9 - 775.9.00 = 9 ft depth			
1986 sf/ft x 9 ft = 17874 cf			
17,874 cf > 16,983 cf			

DRAINAGE NARRATIVE:
 Onsite storm water management will be accomplished by storing drainage area A1 runoff in an onsite storage tank upland from the Floodway. Storm water will then be released from the tank by restricted orifices into the Bio-Swale and then to a structure at the road R/W. The tank restriction is designed to maintain the overall site pre-development agricultural flow rate as it enters the public storm drain. The Bio-Swale has been designed to reduce the velocity of the water that is outlet from the tank and provide evapo-transpiration and treatment in the stone/rip-rap and plantings.

North Half of property is FoB Fox Sandy Loam 2-6% - Moderate Permeability
 South Half of property is FoC Fox Sandy Loam 6-12% - Moderate Permeability

Currently, during a rainfall event, the runoff produced sheet flows across the existing, grassy surface (varying slope 3% - 10%). Some of the initial runoff obviously perks into the Silty topsoil layer, but the balance travels overland into the main street storm sewer system. The pervious brick pavers will be constructed on a level bed of 6A washed stone, very similar to the system at the Ann Arbor City Hall. Rain water on the pavers will drop between the pavers into the voids of the 6A stone and onto the silty/sandy/clay subgrade. The water under the pavers will set on the subgrade where some will perk away (as in the original condition) and some will slowly move towards the north end of the pavers and be picked up in the perforated edge drain and vented out into the bio swale system. The runoff from the brick paver area is expected to be less than the existing turf surface.

OFFSITE DRAINAGE AREA A3 = 0.12 AC. WILL BE ACCOMMODATED AND PASSED THROUGH OVERFLOW STRUCTURE IN THE STORAGE TANK

PERVIOUS PAVER STONE VOLUME
 5228 sf X 1 FT. = 5228 CF X 30% = 1568 cf SUPPLIED
 100 YR STORM VOLUME = 16,500(0.7)(0.12 AC) = 1,386 cf REQUIRED
 1,568 cf > 1,386 cf

Mitigation Volume Supplied - 772.00 - 775.00.
 775.00 4943 4398 1.0 10127 Mitigation supplied
 774.00 3852 3388 1.0 5729
 773.00 2823 2341 1.0 2341
 772.00 1858 0 0 Bottom Bio-Swale
 Mitigation Volume Supplied = 10,127 > 7000 cf required

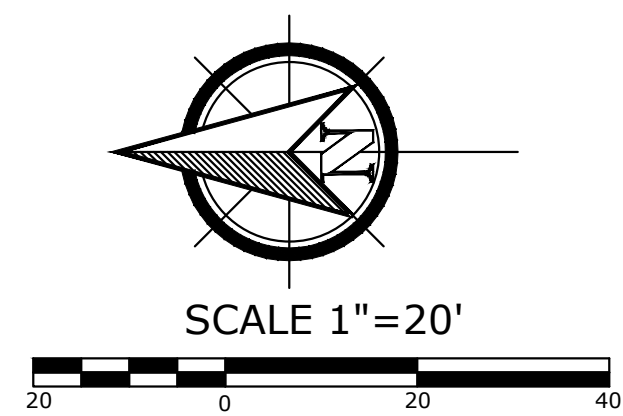
SANITARY SEWER MITIGATION CALCULATIONS:
 -The Following Residential structures have been removed from the site, House # 's : 628,630,700,708,712,718,722,724

Units = 16 (all 3 phases - 2000sf-2400sf Unit Areas)
 Single Family Homes removed = 8

-Design Flow = 16 Units x 300 gpd = 4,800 gpd
 -Existing Flow = 8 x 300 gpd = 2,400 gpd
 -Net flow 4,800 - 2,400 gpd = 2,400 gpd

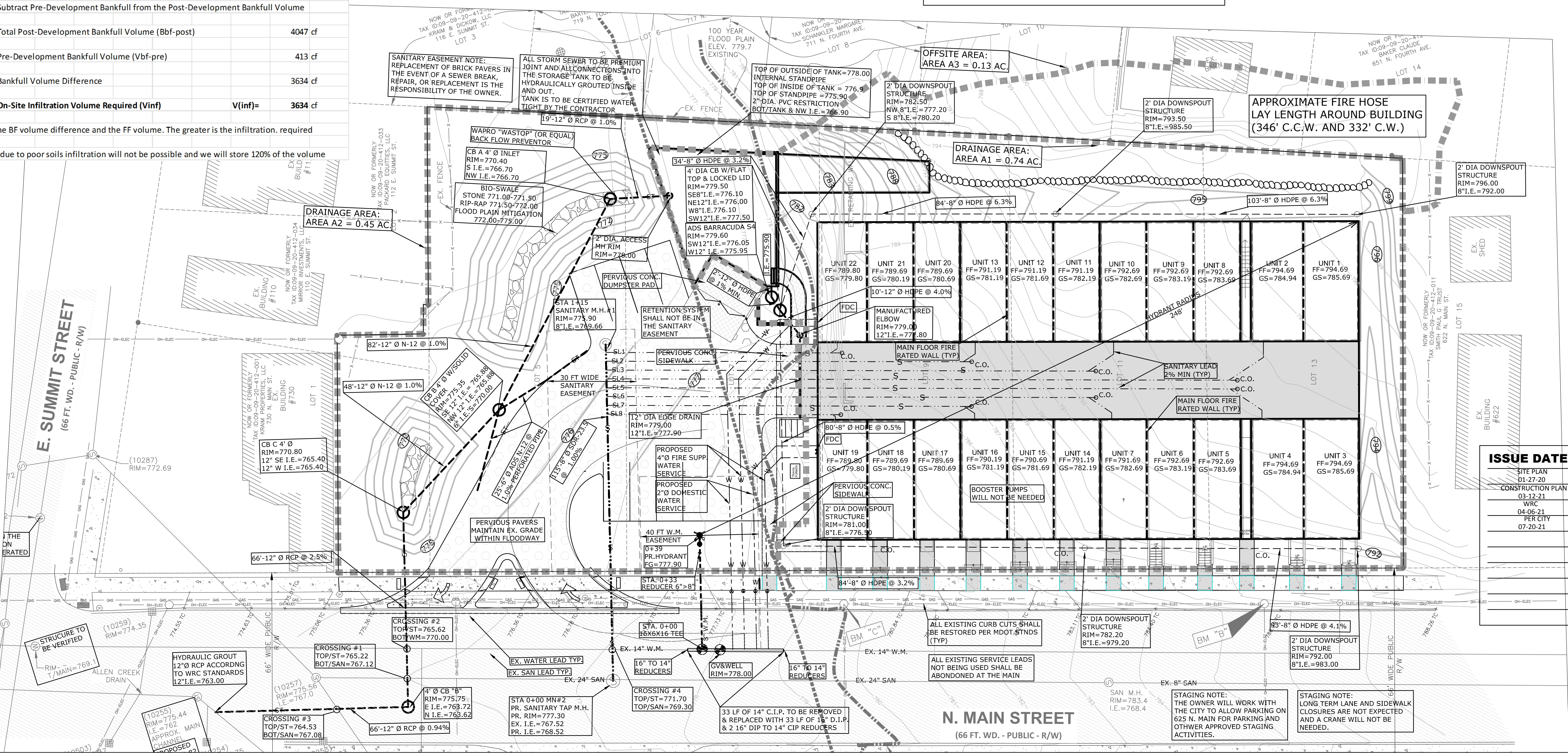
-Peak Flow = 2,400 X 4 (PF) X 1.1 (RF) = 10,560 gpd
 = 7.33 gpm

-7 GPM IS REQUIRED TO BE MITIGATED



UTILITY NOTES:
 1. ALL PUBLIC UTILITIES SHALL BE CONSTRUCTED IN PHASE 1, INCLUDING THE SANITARY AND WATER SERVICE LEADS CONSTRUCTED UP TO 5' OUTSIDE OF THE BUILDING.
 2. MAINTENANCE/REPLACEMENT OF ANY BRICK PAVERS WITHIN THE SANITARY SEWER EASEMENT WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER IN THE EVENT OF A MAIN BREAK, REPAIR OR PLACEMENT.

STRUCTURE SCHEDULE:
 CATCH BASINS IN LAWN AREA = EJIW 1040 N COVER
 CATCHBASINS IN CURBS = EJIW 1040 M2 COVER
 MANHOLES = SOLID COVERS
 END SECTION = BAR GRATES



ISSUE DATES		ISSUE DATES	
SITE PLAN	01-27-20	SITE PLAN	01-23-16
CONSTRUCTION PLAN	03-22-21	SITE PLAN	02-25-17
WRC	04-06-21	PER CITY	9-25-17
PER CITY	07-20-21	SITE PLAN	1-31-18
		SITE PLAN	4-2-18
		SITE PLAN	07-03-18
		SITE PLAN	02-14-19
		SITE PLAN	4-4-19
		SITE PLAN	7-1-19
		MDOT	10-07-19

DRAWN	BBB
DESIGNED	BBB
APPROVED	MCP
P.E. Job No.	16-431
SCALE	AS SHOWN

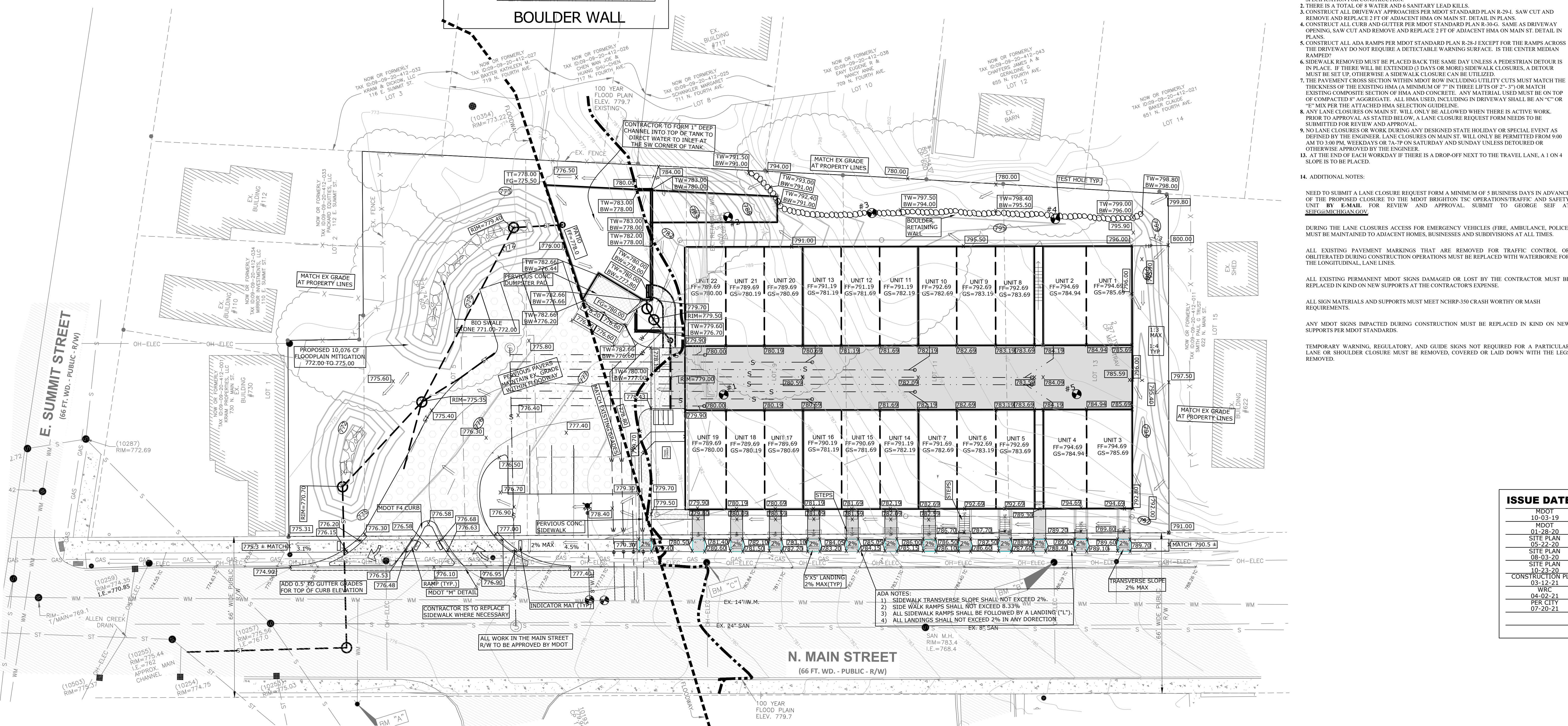
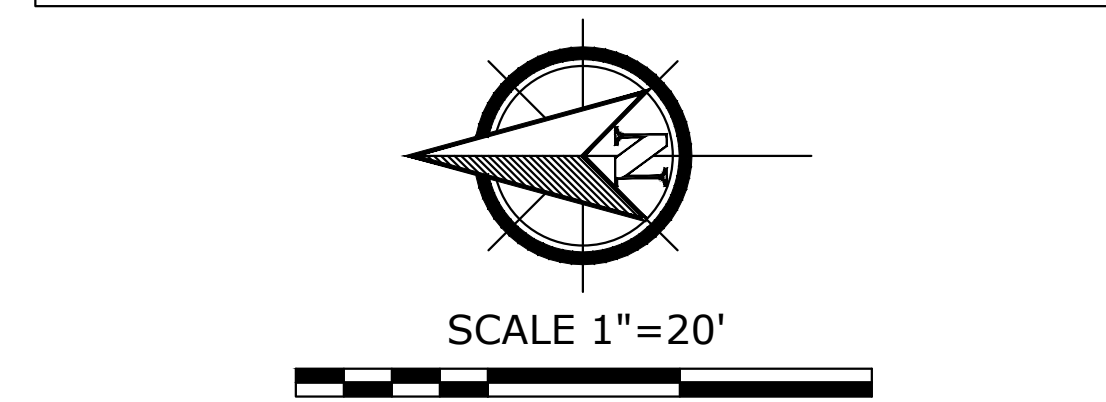
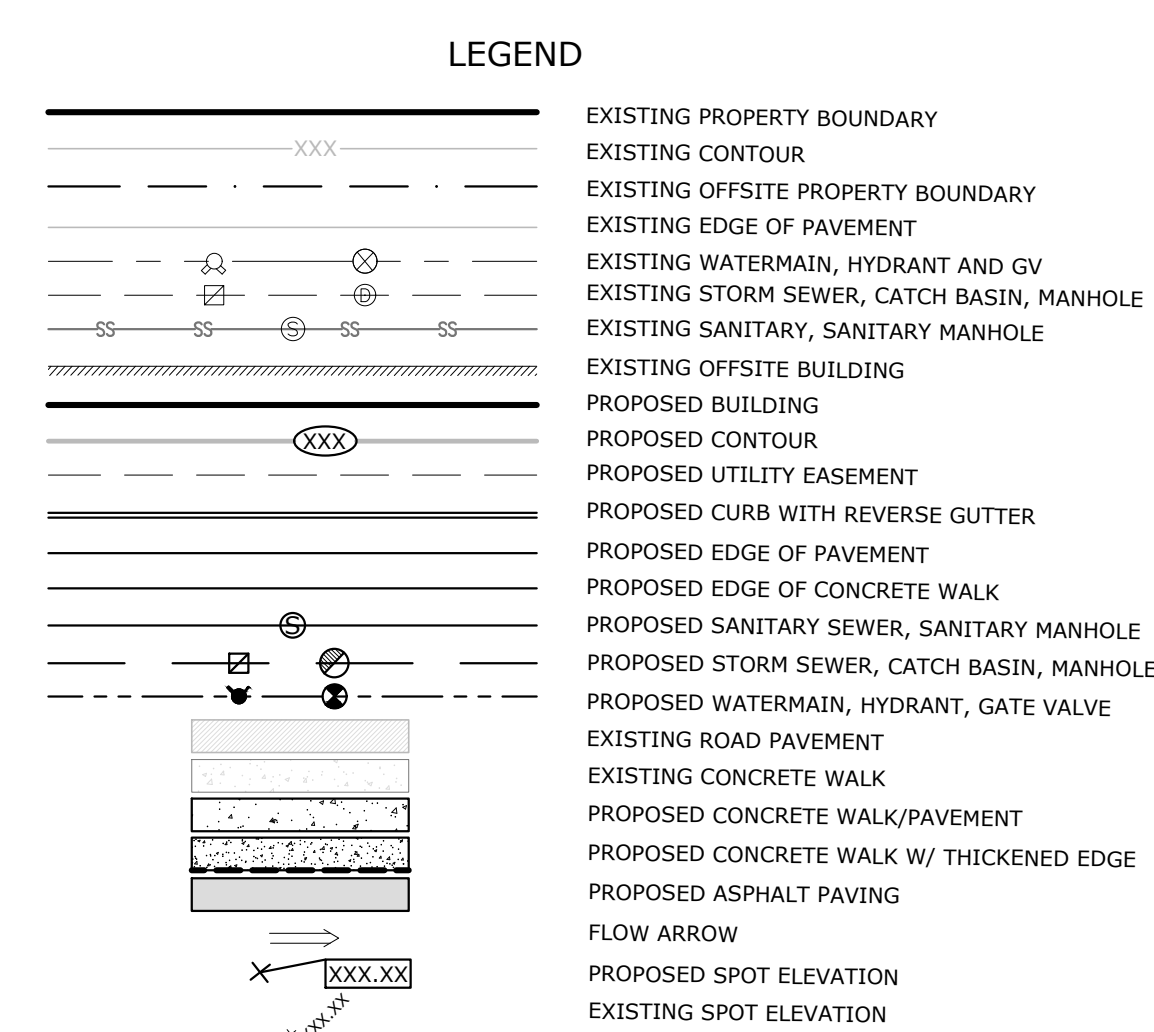
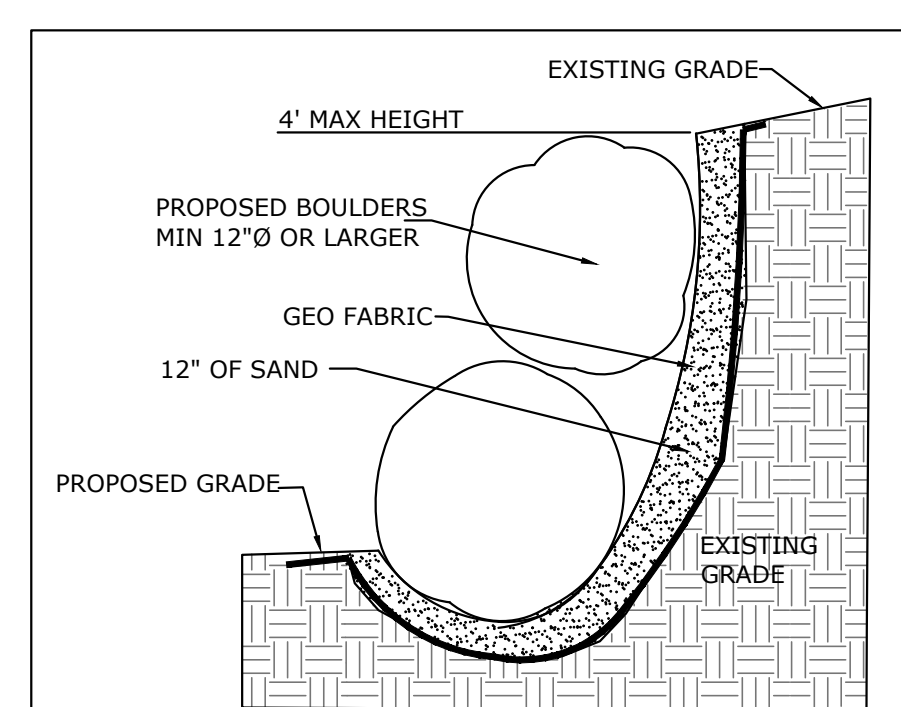
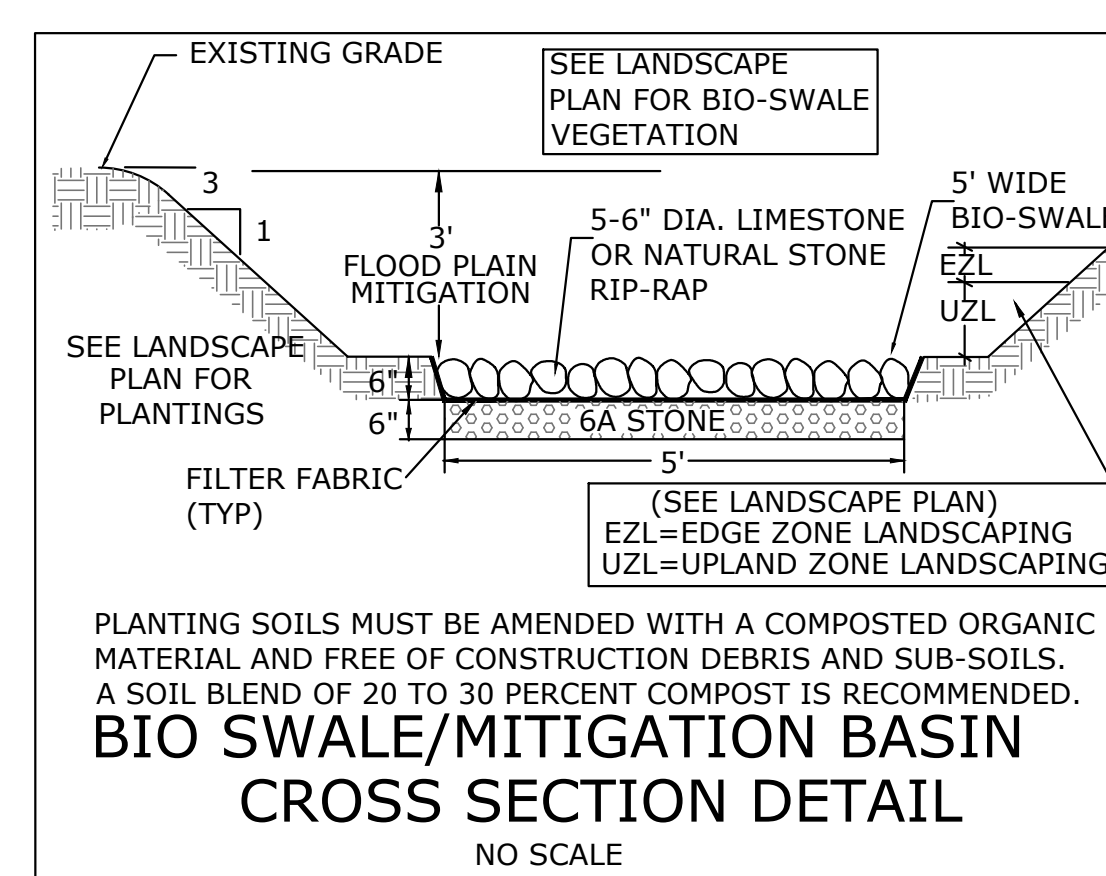
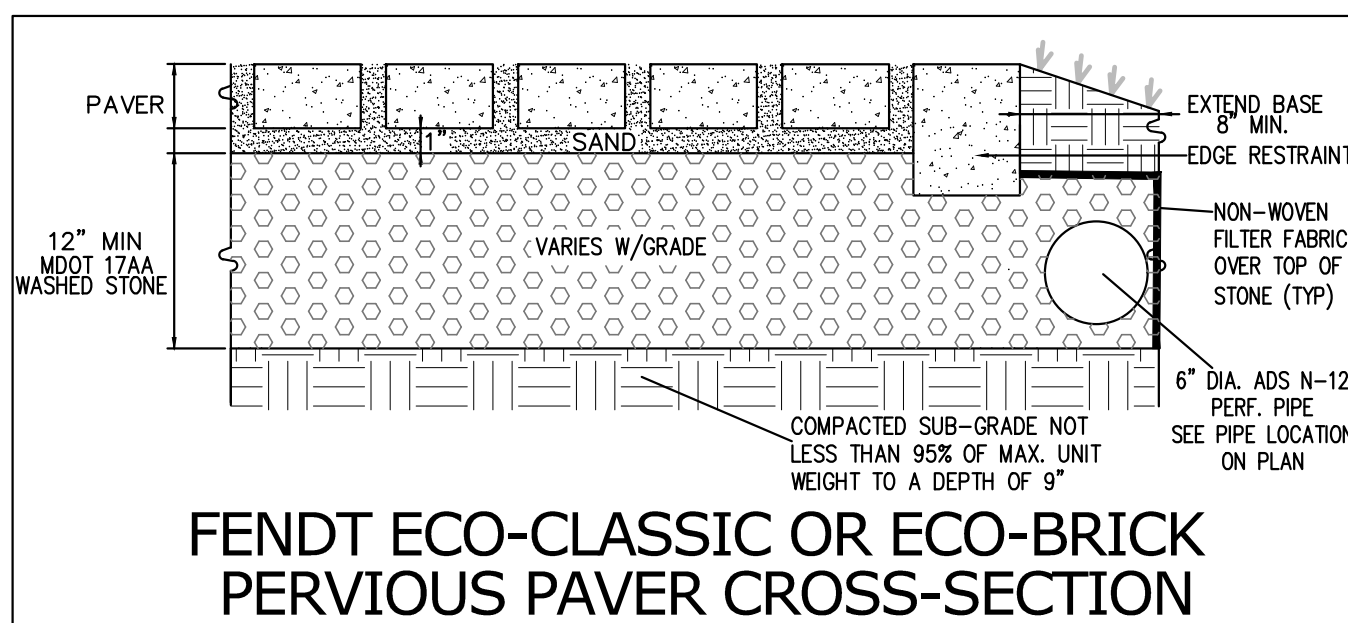
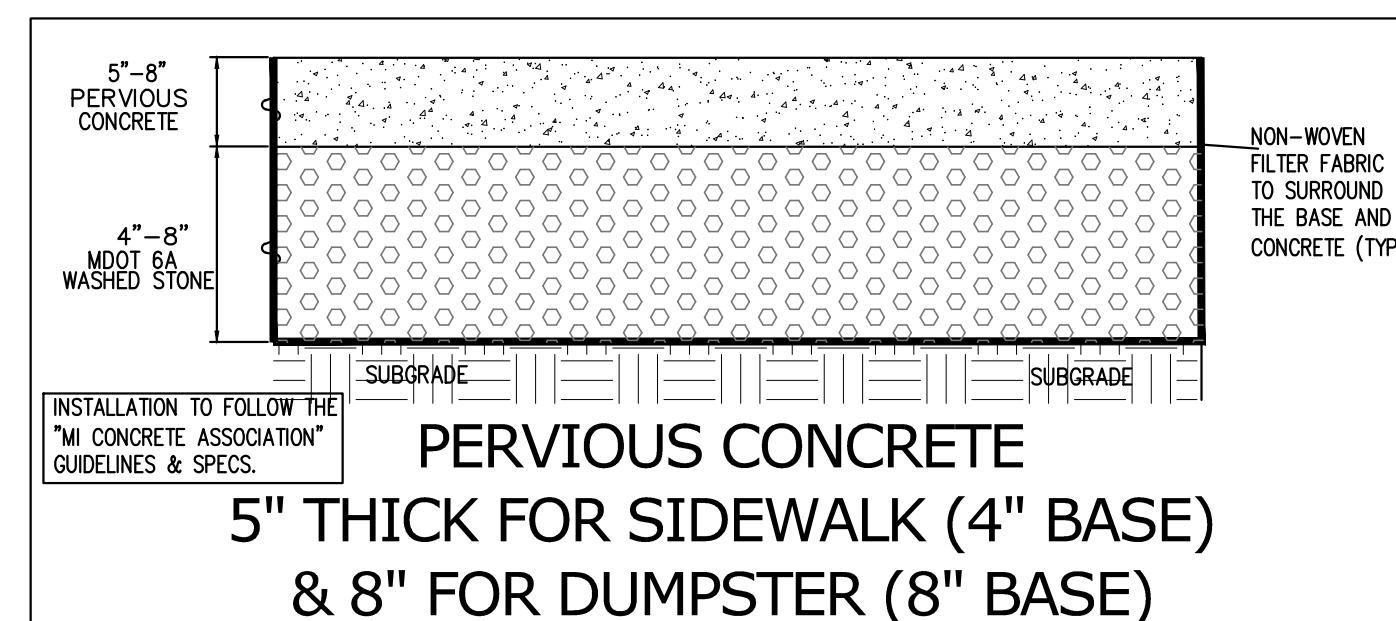
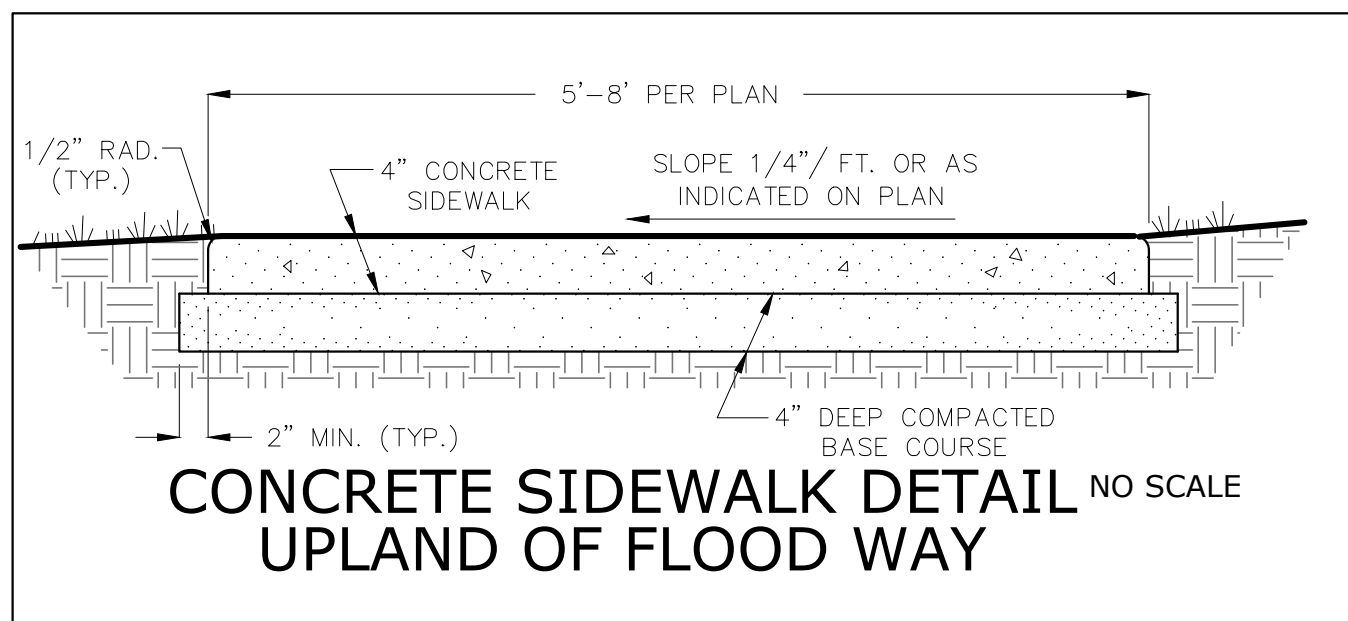
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 Approved
 Issued On: 01/11/2022
 Expires On: 01/11/2022



- MDOT NOTES PERMIT #76568**
1. ALL WORK WITHIN MDOT ROW MUST BE PERFORMED IN ACCORDANCE WITH THE 2012 STANDARD SPECIFICATION FOR CONSTRUCTION.
 2. THERE IS A TOTAL OF 8 WATER AND 6 SANITARY LEAD KILLS.
 3. CONSTRUCT ALL DRIVEWAY APPROACHES PER MDOT STANDARD PLAN R-29-L SAW CUT AND REMOVE AND REPLACE 2 FT OF ADJACENT HMA ON MAIN ST. DETAIL IN PLANS.
 4. CONSTRUCT ALL CURB AND GUTTER PER MDOT STANDARD PLAN R-30-G. SAME AS DRIVEWAY OPENING, SAW CUT AND REMOVE AND REPLACE 2 FT OF ADJACENT HMA ON MAIN ST. DETAIL IN PLANS.
 5. CONSTRUCT ALL ADA RAMPS PER MDOT STANDARD PLAN R-28-J EXCEPT FOR THE RAMPS ACROSS THE DRIVEWAY DO NOT REQUIRE A DETECTABLE WARNING SURFACE. IS THE CENTER MEDIAN RAMPED?
 6. SIDEWALK REMOVED MUST BE PLACED BACK THE SAME DAY UNLESS A PEDESTRIAN DETOUR IS IN PLACE. IF THERE WILL BE EXTENDED (3 DAYS OR MORE) SIDEWALK CLOSURES, A DETOUR MUST BE SET UP. OTHERWISE A SIDEWALK CLOSURE CAN BE UTILIZED.
 7. THE PAVEMENT CROSS SECTION WITHIN MDOT ROW INCLUDING UTILITY CUTS MUST MATCH THE THICKNESS OF THE EXISTING HMA (A MINIMUM OF 7" IN THREE LIFTS OF 2" - 3") OR MATCH EXISTING COMPOSITE SECTION OF HMA AND CONCRETE. ANY MATERIAL USED MUST BE ON TOP OF COMPACTED 8" AGGREGATE. ALL HMA USED, INCLUDING IN DRIVEWAY SHALL BE AN "C" OR "E" MIX PER THE ATTACHED HMA SELECTION GUIDELINE.
 8. ANY LANE CLOSURES ON MAIN ST. WILL ONLY BE ALLOWED WHEN THERE IS ACTIVE WORK. PRIOR TO APPROVAL AS STATED BELOW, A LANE CLOSURE REQUEST FORM NEEDS TO BE SUBMITTED FOR REVIEW AND APPROVAL.
 9. NO LANE CLOSURES OR WORK DURING ANY DESIGNATED STATE HOLIDAY OR SPECIAL EVENT AS DEFINED BY THE ENGINEER. LANE CLOSURES ON MAIN ST. WILL ONLY BE PERMITTED FROM 9:00 AM TO 3:00 PM, WEEKDAYS OR 7A-7P ON SATURDAY AND SUNDAY UNLESS DETOURED OR OTHERWISE APPROVED BY THE ENGINEER.
 13. AT THE END OF EACH WORKDAY IF THERE IS A DROP-OFF NEXT TO THE TRAVEL LANE, A 1 ON 4 SLOPE IS TO BE PLACED.

- 14. ADDITIONAL NOTES:**
- NEED TO SUBMIT A LANE CLOSURE REQUEST FORM A MINIMUM OF 5 BUSINESS DAYS IN ADVANCE OF THE PROPOSED CLOSURE TO THE MDOT BRIGHTON TSC OPERATIONS/TRAFFIC AND SAFETY UNIT BY E-MAIL FOR REVIEW AND APPROVAL. SUBMIT TO GEORGE SEIF AT SEIF@MICHIGAN.GOV.

DURING THE LANE CLOSURES ACCESS FOR EMERGENCY VEHICLES (FIRE, AMBULANCE, POLICE) MUST BE MAINTAINED TO ADJACENT HOMES, BUSINESSES AND SUBDIVISIONS AT ALL TIMES.

ALL EXISTING PAVEMENT MARKINGS THAT ARE REMOVED FOR TRAFFIC CONTROL OR ELIMINATED DURING CONSTRUCTION OPERATIONS MUST BE REPLACED WITH WATERBORNE FOR THE LONGITUDINAL, LANE LINES.

ALL EXISTING PERMANENT MDOT SIGNS DAMAGED OR LOST BY THE CONTRACTOR MUST BE REPLACED IN KIND OR NEW SUPPORTS AT THE CONTRACTOR'S EXPENSE.

ALL SIGN MATERIALS AND SUPPORTS MUST MEET NCHRP-350 CRASH WORTHY OR MASH REQUIREMENTS.

ANY MDOT SIGNS IMPACTED DURING CONSTRUCTION MUST BE REPLACED IN KIND ON NEW SUPPORTS PER MDOT STANDARDS.

TEMPORARY WARNING, REGULATORY, AND GUIDE SIGNS NOT REQUIRED FOR A PARTICULAR LANE OR SHOULDER CLOSURE MUST BE REMOVED, COVERED OR LAID DOWN WITH THE LEGS REMOVED.

ISSUE DATES		ISSUE PLAN	
MDOT	10-03-19	SITE PLAN	11-23-16
MDOT	01-28-20	OWNER	01-09-16
SITE PLAN	05-22-20	SITE PLAN	5-26-17
PER CITY	08-03-20	PER CITY	9-25-17
SITE PLAN	10-24-20	SITE PLAN	11-31-18
CONSTRUCTION PLAN	03-12-21	SITE PLAN	4-2-18
WRC	04-02-21	SITE PLAN	07-03-18
PER CITY	07-20-21	SITE PLAN	02-14-19
		SITE PLAN	07-03-18
		SITE PLAN	7-1-19

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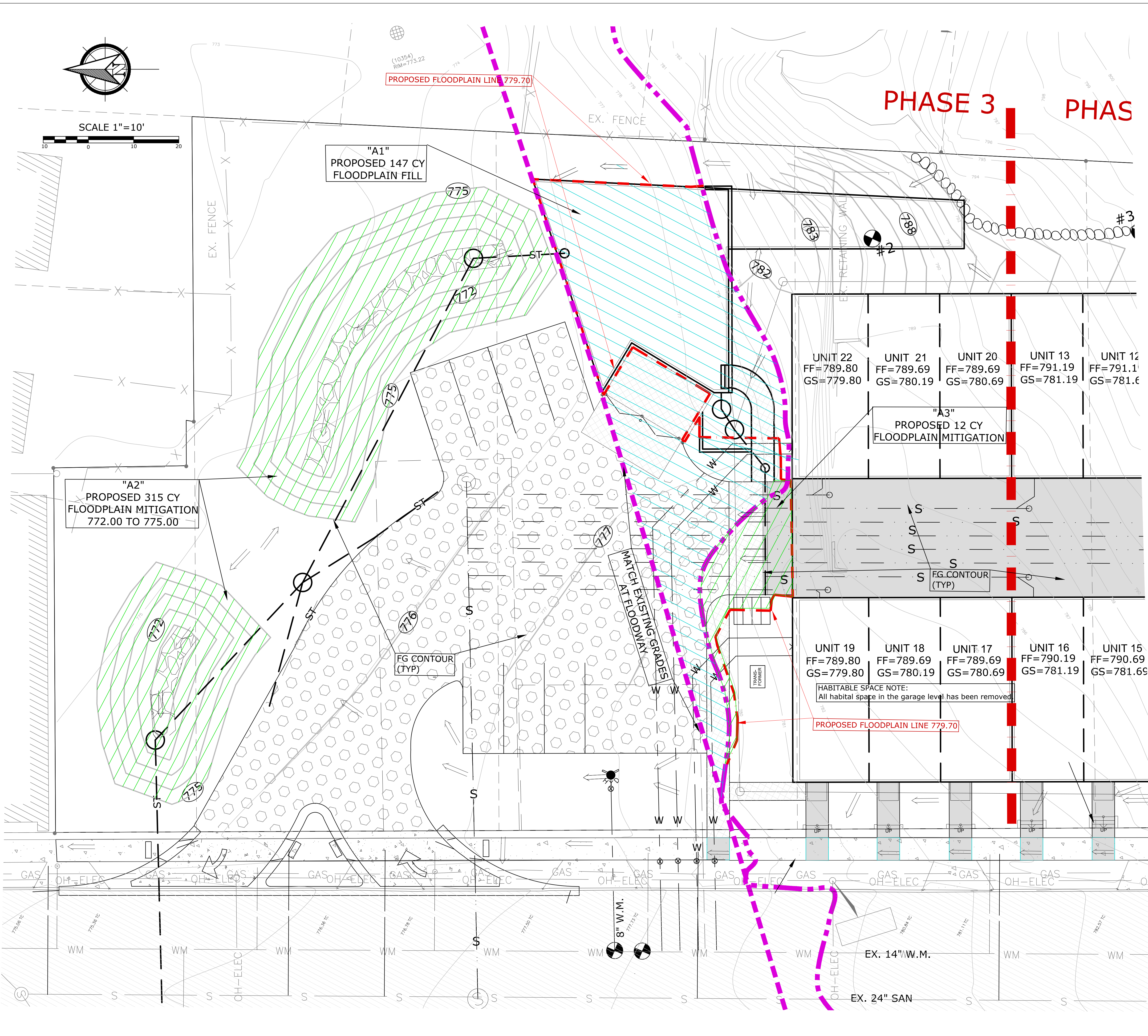
NEAR NORTH GRADING PLAN

NEAR NORTH
700 NORTH MAIN STREET, ANN ARBOR MI 48104

DRAWN		DESIGNED		APPROVED		P.E. JOB No.		SCALE	
BBB	BBB	BBB	BBB	MCP	MCP	16-431	16-431	AS-SHOWN	AS-SHOWN

C6

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PROJECT NARRATIVE
 We are proposing to install a 22 Unit Condominium structure, concrete detention storage tank, pervious paver drive and dumpster pad. We are not proposing to fill in the Floodway and all work in the floodway will maintain existing grades or lowering of grades to maintain the Floodways current flow characteristics. The proposed floodplain line is shown in red and the areas of cut and fill in the Floodplain are shown. Mainly due to the installation of the detention tank.

EGLE NOTE:
 An EGLE FloodPlain Permit will be required prior to issuance of the grading/SESC permit.

FLOODPLAIN CUT/FILL AREAS
 Area A1 is the fill required due to the activity in Floodplain
 Area A2 is an area of "cut" that can be counted as mitigation
 Area A3 is an area of "cut" that can be counted as mitigation

- A1=147.0 CY FILL (TOTAL MITIGATION REQUIRED)
- A2=315.0 CY CUT (MITIGATION PROPOSED)
- A3=12.0 CY CUT (MITIGATION PROPOSED)

FLOODPLAIN MITIGATION
 REQUIRED = 147 CY (A1)
 PROPOSED = 327 CY (A2+A3)
 NET CUT = 180 CY

FLOOD PLAIN MITIGATION PROPOSED
 The Bio-swale provides 8,505 cf or 315 cy of total volume

Mitigation Volume Proposed - 772.00 - 775.00.

775.00	4053	3533	1.0	8505	or 315 CY
774.00	3013	2555	1.0	4972	
773.00	2097	1701	1.0	2417	
772.00	1304	716	1.0	716	
771.00	127	0			

- LOMR-F PROJECT TIMING SEQUENCE:**
- 1) A permit will be obtained from EGLE for the filling associated with the project.
 - 2) A LOMR-F will be obtained prior to issuance of the final C of O.

BIO-SWALE & FLOODPLAIN ENHANCEMENT NOTE:
 The Bio-Swale itself and the Bio-Swale/wetland seed mix plantings are not required. The Floodplain area will be re-seeded with a native seed mix and not lawn.

The Bio-Swale plantings, configuration, and additional Floodplain capacity will enhance its overall function.

LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING CONTOUR
- EXISTING OFFSITE PROPERTY BOUNDARY
- EXISTING EDGE OF PAVEMENT
- EXISTING WATERMAIN, HYDRANT AND GV
- EXISTING STORM SEWER, CATCH BASIN, MANHOLE
- EXISTING SANITARY, SANITARY MANHOLE
- EXISTING OFFSITE BUILDING
- PROPOSED BUILDING
- PROPOSED CONTOUR
- PROPOSED UTILITY EASEMENT
- PROPOSED CURB WITH REVERSE GUTTER
- PROPOSED EDGE OF PAVEMENT
- PROPOSED EDGE OF CONCRETE WALK
- PROPOSED SANITARY SEWER, SANITARY MANHOLE
- PROPOSED STORM SEWER, CATCH BASIN, MANHOLE
- PROPOSED WATERMAIN, HYDRANT, GATE VALVE
- EXISTING ROAD PAVEMENT
- EXISTING CONCRETE WALK
- PROPOSED CONCRETE WALK/PAVEMENT
- PROPOSED CONCRETE WALK W/ THICKENED EDGE
- PROPOSED ASPHALT PAVING
- FLOW ARROW
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION

ISSUE DATES	ISSUE DATES
SITE PLAN 01-27-20	SITE PLAN 1-23-16
SITE PLAN 05-22-20	OWNER 01-09-16
SITE PLAN 08-03-20	SITE PLAN 5-26-17
SITE PLAN 10-22-20	PER CITY 9-25-17
CONSTRUCTION PLAN 03-12-21	SITE PLAN 1-31-18
PER CITY 07-20-21	SITE PLAN 4-2-18
	SITE PLAN 07-03-18
	SITE PLAN 2-14-19
	SITE PLAN 7-1-19
	MDOT 10-07-19

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 CALL MISS DIG
 1-800-482-7171

NEAR NORTH FLOODPLAIN PLAN
 NEAR NORTH
 700 NORTH MAIN STREET, ANN ARBOR MI 48104

DRAWN	BBB
DESIGNED	BBB
APPROVED	MCP
P.E. JOB No.	16-431
SCALE	AS SHOWN

C7