3874 RESEARCH PARK DRIVE MULTI-TENANT 'FLEX-TECH' BUILDING

SITE PLAN

LOCATED IN THE SW 1/4 OF SECTION 9, T3S, R6E

OWNER:
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ENGINEER/LANDSCAPE ARCHITECT:
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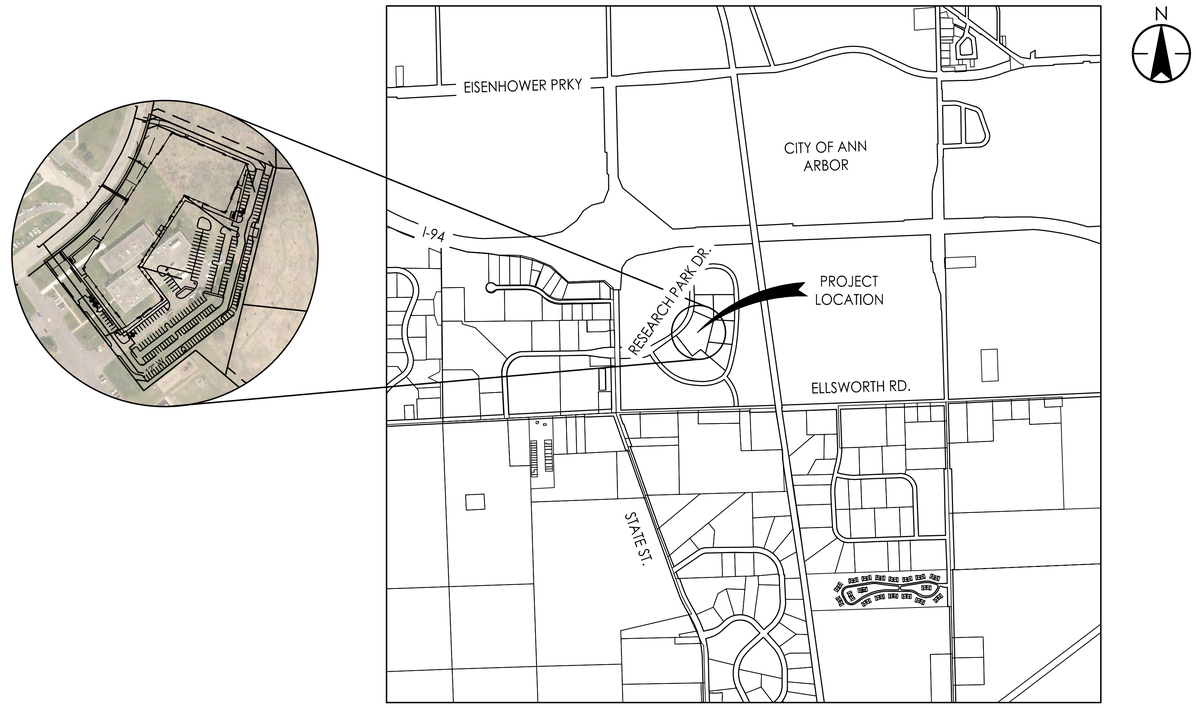

PROJECT LOCATION MAP
NOT TO SCALE

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G-002	02	GENERAL NOTES, SITE DATA AND LEGEND
G-003	03	ALTA SURVEY
CIVIL SHEETS:		
C-101	04	EXISTING CONDITIONS AND DEMOLITION PLAN
C-102	05	SOIL EROSION & SEDIMENTATION CONTROL PLAN
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C-105	08	GRADING PLAN
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SPR 101	20	FLOOR PLAN
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SPR 103	22	BUILDING RENDERINGS

Stantec

JANUARY, 2020

PROJECT NUMBER: 2075150000

LEGAL DESCRIPTION:
(PER TITLE COMMITMENT FILE NO. 85809, PREPARED BY ABSOLUTE TITLE, INC. WITH AN EFFECTIVE DATE OF APRIL 26, 2019)

PARCEL B
LOT 25, OUT LOT B, AND PART OF LOT 24 AND 33, OF RESEARCH PARK SUBDIVISON AS RECORDED IN LIBER 15 OF PLATS, PAGE 56-57, WASHTENAW COUNTY RECORDS, DESCRIBED AS: BEGINNING AT NORTHEAST CORNER OF SAID LOT 25, THENCE SOUTH 67 DEGREES 13 MINUTES EAST 353.4 FEET; THENCE SOUTH 13 DEGREES 24 MINUTES WEST 556.12 FEET; THENCE NORTH 49 DEGREES 48 MINUTES WEST 101.96 FEET; THENCE SOUTH 51 DEGREES 40 MINUTES 41 SECONDS WEST 170.87 FEET; THENCE NORTH 38 DEGREES 00 MINUTES 52 SECONDS WEST 419.34 FEET; THENCE NORTH 51 DEGREES 57 MINUTES EAST 68.05 FEET; THENCE 417.5 FEET ALONG A CURVE LEFT, RADIUS 612.95 FEET, CHORD BEARING NORTH 32 DEGREES 26 MINUTES 03 SECONDS EAST 409.54 FEET TO THE POINT OF BEGINNING.

CLIENT REFERENCE: 3874 RESEARCH PARK DR, ANN ARBOR, MI
48108-2218

Site Data/Comparison Chart

Zoning		RE	Research	
Site Area				
	Provided	245,054 s.f.	5.61 Acres	
	Minimum Required	60,000 s.f.		
Lot Width				
	Provided	490 Ft.	At front setback	
	Minimum Required	150 Ft.		
Number of Buildings				
	Existing*	2		
	Proposed	1		
	* Includes a small storage building			
Building Height (Ft.)		Feet	Stories	
	Allowed	No Limit	No Limit	
	Proposed	22	1	
	Existing	20	1.5	
Building Use (S.F.)		Ground Floor	Lower Level	Total
Proposed	Office	45,000	0	
	Research	34,000	0	
	Total	79,000	0	79,000
Existing	Office	9,250	0	
	Research	18,000	0	
	Mechanical/Storage	0	19,630	
	Total	27,250	19,630	46,880
Land Coverage of Structure				
	Provided	32%		
	Maximum allowed	No limit		
Density (FAR)				
	Provided	32%		
	Maximum allowed	75%		
Setbacks (Ft.)		Required	Provided	
	Front	25 min/50 max.	33.3	
	Side	0	20.8/67.5	
	Rear	0	78.8	
Parking				
	Required			
		Office 1/333	136	
		Research 1/600	57	30%
		Total Required	193	
	Provided			
		Standard	139	
		Compact	57	
		Proposed	196	
		Deferred	24	
		Total	220	
	Barrier Free Parking			
		Van	2	
		Standard	5	
		Total	7	
Bicycle Parking		Required	Provided	
	A Enclosed	4.5	12*	
	B Covered	5	0	
	C Fixed Rack Spaces	10.5	8**	
	*6 double lockers			
	* *4 hoops, 2 spaces per hoop			
Impervious Coverage				
	Square Feet*	172,069		
	Percentage	70%		
	*Includes sidewalks, building, driveways, parking and deferred parking			

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

NOTE:

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

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GENERAL NOTES

1. THIS PROJECT MAY NOT UTILIZE ALL SYMBOLS, NOTES, AND ABBREVIATIONS SHOWN ON THIS SHEET.
2. ALL ITEMS INCIDENTAL TO AND/OR REQUIRED TO COMPLETE THE INSTALLATION SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
3. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND CERTIFICATES OF INSPECTIONS FOR ALL WORK AS REQUIRED.
4. ALL MATERIAL AND EQUIPMENT SHALL BE STORED IN SUCH A MANNER TO PREVENT BREAKAGE OR PHYSICAL DAMAGE. STORE EQUIPMENT IN ITS ORIGINAL PACKAGING MATERIALS AND PROVIDE PROTECTIVE COVER TO KEEP OUT RAIN, DIRT, AND FOREIGN OBJECTS.
5. ALL WORK ON THIS PROJECT SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND GENERAL SPECIFICATIONS, INCLUDING SOIL EROSION AND SEDIMENTATION CONTROL, OF THE CITY OF ANN ARBOR.
6. ALL CONSTRUCTION AND MATERIALS ARE TO COMPLY WITH THE CITY OF ANN ARBOR AND/OR WASHTENAW COUNTY STANDARDS AS THEIR JURISDICTION MAY APPLY.
7. ALL PAVEMENT CONSTRUCTION SHALL IN GENERAL BE PERFORMED PER THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATION FOR CONSTRUCTION EARTHWORK AND PAVING AND ALSO CONSTRUCTION DETAILS AS SPECIFIED ON THE APPROVED CONSTRUCTION PLANS. DENSITY FOR AGGREGATE BASE TO BE 98% MAXIMUM UNIT WEIGHT AT OPTIMUM MOISTURE CONTENT.
8. ALL YARD AREAS SHALL BE COMPACTED TO A MINIMUM OF 90% OF MODIFIED PROCTOR ASTM D-1557, FOR THAT SOIL. BACKFILL SHALL BE BROWN COMPACTABLE MATERIAL FREE OF BLUE CLAY, MARL, ORGANICS OR ANY OTHER DELETERIOUS MATERIAL.
9. ALL DISTURBED AREAS TO BE REPLACED WITH A MINIMUM OF 3" OF TOPSOIL AND SEEDED. GRASS SEED: 210LB/ACRE. FERTILIZER: 150LB/ACRE. STRAW MULCH: 3" IN DEPTH, 1.5-2 TON/ACRE. ALL MULCH MUST HAVE A TIE DOWN, SUCH AS TACKIFIER, NET BINDING, ETC. HYDRO-SEEDING IS NOT ACCEPTABLE FOR SLOPES EXCEEDING 1%.
10. PAVEMENT REMOVALS SHALL EXTEND TO THE LIMITS SHOWN ON THE PLANS, UNLESS OTHERWISE APPROVED BY THE ENGINEER. THE REMOVAL OF MORE OF LESS PAVEMENT THAN SHOWN ON THE PLANS IS NOT ACCEPTABLE UNLESS OTHERWISE APPROVED BY THE ENGINEER. TEMPORARY SHEETING AND SHORING MUST BE USED IN AREAS WHERE WORK IS IN CLOSE PROXIMITY TO PAVEMENT OR UTILITIES NOT INDICATED FOR REMOVAL. A PRE-CONSTRUCTION WALKTHROUGH WILL BE NECESSARY WITH OWNER, ENGINEER AND CONTRACTOR PRIOR TO SAWCUTTING.
11. ALL GRADES AND DRAINAGE PATTERNS SHALL BE RESTORED TO THE EXISTING CONDITION OR MODIFIED ONLY TO ALLOW FOR SUPERIOR DRAINAGE.
12. THE CONTRACTOR SHALL FURNISH AND INSTALL SILT FENCE, TREE FENCE AND INLET FILTERS AS DIRECTED BY THE ENGINEER AND/OR SPECIFIED ON THE DRAWINGS PRIOR TO THE START OF ANY EXCAVATION. REFER TO DRAWING 04 FOR SOIL EROSION AND SEDIMENTATION CONTROL NOTES AND DETAILS.
13. THE CONTRACTOR SHALL PROTECT ALL TREES NOT INDICATED FOR REMOVAL. NO TREES ARE TO BE REMOVED WITHOUT EXPRESSED APPROVAL OF THE PROPERTY OWNER, OR THE GOVERNMENTAL BODY HAVING JURISDICTION THEREOF, AND OF THE ENGINEER. CONTRACTOR SHALL PERFORM A WALK THROUGH WITH THE ENGINEER TO REVIEW ALL TREES DESIGNATED FOR REMOVAL PRIOR TO CONSTRUCTION.
14. CONTRACTOR SHALL TAKE CARE WHEN WORKING NEAR EXISTING UTILITY POLES. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT APPROVED BY THE UTILITY COMPANY HAVING JURISDICTION FOR UTILITY POLES FOUND TO BE INTERFERING WITH CONSTRUCTION. TEMPORARY UTILITY POLE SUPPORTS SHALL BE PAID FOR UNDER UTILITY EXPLORATION AND COORDINATION PAY ITEM.
15. BENCHMARKS AS SHOWN ON THE PLAN SHEETS ARE BASED ON NAVD88 DATUM.
16. NO MATERIALS CAN BE STORED IN THE ROAD RIGHTS-OF-WAY.
17. ALL ITEMS ARE TO BE CONSTRUCTED ACCORDING TO THE CITY OF ANN ARBOR STANDARD PLANS, UNLESS OTHERWISE INDICATED.
18. EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED THEREIN, ALL MATERIALS AND WORKMANSHIP FOR ALL IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE CITY OF ANN ARBOR.
19. FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMATION WITH PUBLIC ACT 53, THE CONTRACTOR SHALL DIAL 811 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

DEVELOPMENT NOTES

1. THE PARCEL OWNER INTENDS TO DEVELOP THE LAND RELATED TO OFFICE AND RESEARCH USE PER THE SITE PLAN.
2. THE PROPOSED AND EXISTING ZONING IS RE (RESEARCH). THE SITE IS CURRENTLY OCCUPIED BY A SINGLE 27,250 SQUARE FOOT BUILDING WITH BASEMENT (19,630 SQUARE FEET). THE BUILDING AND ASSOCIATED SIDEWALKS AND VEHICULAR USE AREA TO BE REMOVED.
3. THE PROPOSED DEVELOPMENT INCLUDES CONSTRUCTION OF A 79,000 SQUARE FOOT SINGLE STORY BUILDING. THE BUILDING IS TO BE DESIGNED WITH FLEX SPACE FOR OFFICE AND RESEARCH AT A RATIO OF 57/43.
4. SEE SITE DATA FOR RELATED LOT COVERAGE, SETBACKS AND PARKING CALCULATIONS.
5. DETENTION SHALL BE PROVIDED UNDERGROUND.
6. A PUBLIC SIDEWALK IN THE RIGHT OF WAY, TREES AND LANDSCAPE PLANTS ARE TO BE INSTALLED.
7. THE OVERALL TOTAL ESTIMATED CONSTRUCTION COST IS $1,000,000.
8. THE ESTIMATED CONSTRUCTION TIME IS SPRING THROUGH SUMMER 2020.
9. UTILITY DEMOLITION/REMOVAL IS LIMITED TO REMOVAL OF EXISTING BUILDING LEADS AND PRIVATE WATERMAIN AND HYDRANT.
10. TREES TO BE REMOVED ARE NOTED ON THE DEMOLITION PLAN.

COMMUNITY ANALYSIS

1. THE PROJECT WILL NOT HAVE AN IMPACT ON THE PUBLIC SCHOOLS.
2. THE RELATIONSHIP OF THIS PROJECT TO THE NEIGHBORHOOD SHOULD NOT CHANGE.
3. THE ADJACENT PROPERTIES ARE ZONED RE AND ORL, NO IMPACT ON ADJACENT USES IS ANTICIPATED.
4. STORMWATER WILL BE CONTROLLED ON SITE.
5. THE PROJECT IS NOT LOCATED IN A HISTORIC DISTRICT.

SITE ANALYSIS

1. THE SITE IS CURRENTLY OCCUPIED BY A SINGLE 27,250 SQUARE FOOT BUILDING WITH BASEMENT (19,630 SQUARE FEET).
2. ACCESS TO THE SITE SHALL BE FROM RESEARCH PARK DRIVE THOUGH THE ADJACENT SITE. AN EXISTING INGRESS-EGRESS EASEMENT (LIBER 5226, PAGE 81) PROVIDES ACCESS TO THE PUBLIC STREET TO THE NORTHWEST AND WEST (2 ACCESS POINTS).
3. THE SITE IS NOT WITHIN A FLOODPLAIN.
4. THE SITE IS GENERALLY MANICURED LAWN WITH SOME BRUSH IN THE NORTH AND EAST. A TREE LIST HAS BEEN PROVIDED ON THE NATURAL FEATURES PLAN.
5. THE SITE GENERALLY DRAINS TO THE EAST AT 1-2%.
6. THE USDA SOIL SURVEY IDENTIFIES THE ON-SITE SOILS AS FILL. REFER TO THE SOIL BORING LOGS FOR MORE DETAINED INFORMATION.

NATURAL FEATURES STATEMENT OF IMPACT

1. THE SITE VEGETATION IS GENERALLY MANICURED LAWN MAINTAINED THROUGH REGULAR MOWING. THERE ARE 14 TREES OVER 6" DBH ON SITE. THESE ARE LANDSCAPE TREES, NOT NATURALLY OCCURRING. THREE TREES ARE LANDMARK SIZE. ONE OF THESE TREES ARE TO BE REMOVED. MITIGATION WILL BE PROVIDED FOR THE REMOVED LANDMARK TREE. AN ALTERNATIVE ANALYSIS PLAN HAS BEEN PROVIDED.
2. SOIL EROSION CONTROL WILL BE PROVIDED IN ACCORDANCE WITH CITY AND STATE CODES. IMPACT TO ADJACENT NATURAL FEATURES IS NOT ANTICIPATED.

PEDESTRIAN CIRCULATION

1. A NEW PUBLIC SIDEWALK WILL BE INSTALLED ALONG THE PUBLIC ROW.
2. THE DEVELOPER WILL BE RESPONSIBLE FOR MAINTAINING THE NEW SIDEWALK.
3. PEDESTRIAN CIRCULATION WILL BE PROVIDED FROM THE PUBLIC SIDEWALK TO THE BUILDING AND PARKING AREAS VIA ON-SITE SIDEWALKS. SEE THE LAYOUT PLAN FOR SIDEWALK LOCATIONS.

TRAFFIC STATEMENT

TRAFFIC IMPACT WILL BE LIMITED TO LESS THAN 50 PEAK TRIPS INCREASE.

			Trips per 1000 S.F.		Trips Generated	
Building Use		S.F.	AM	PM	AM	PM
Proposed	Office	45,000	1.16	1.15	52.2	51.75
	Research	34,000	0.42	0.49	14.28	16.66
	Maximum			66.48	68.41	
Existing	Office	9,250	1.16	1.15	10.73	10.6375
	Research	18,000	0.42	0.49	7.56	8.82
	Maximum			18.29	19.4575	
Net Maximum Increase					49	49

			Trips per 1000 S.F.		Trips Generated	
Building Use		S.F.	AM	PM	AM	PM
Proposed	Office	45,000	1.16	1.15	52.2	51.75
	Research	34,000	0.42	0.49	14.28	16.66
	Maximum				66.48	68.41
Existing	Office	9,250	1.16	1.15	10.73	10.6375
	Research	18,000	0.42	0.49	7.56	8.82
	Maximum				18.29	19.4575
Net Maximum Increase					49	49

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

LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
835	EXIST. CONTOUR		EXIST. CURB AND GUTTER
835	PROP. CONTOUR		PROP. CURB AND GUTTER
× 854.6	EXIST. SPOT ELEVATION		CENTERLINE OF DITCH
× 854.6	PROP. SPOT ELEVATION		EDGE OF WATER
T/C	TOP OF CURB		EDGE OF WETLAND
T/P	TOP OF PAVEMENT	×	EXISTING FENCE
G	GUTTER	×	PROPOSED FENCE
12"ST	EXIST. STORM SEWER	T	TREE PROTECTION FENCE
12"ST	PROP. STORM SEWER		SILT FENCE
D S E	EXIST. MANHOLE		CLEARING LIMITS
D S	PROP. MANHOLE		EXIST. GUARDRAIL
	PROP. EDGE DRAIN		PROP. GUARDRAIL
	EXIST. CATCH BASIN/INLET	PL	PROPERTY LINE
■	PROP. CATCH BASIN/INLET	CL	CENTERLINE
	CULVERT		EXIST. SIGN
	INLET FILTER		PROP. SIGN
	PROP. AIR RELEASE VALVE	⊠	ENCLOSED TRASH AREA
	PROP. BYPASS CONNECTION		DRAINAGE DIRECTION
●C.O.	PROP. CLEANOUT	R	SIDEWALK RAMP
8"S	EXIST. SANITARY SEWER	♿	BARRIER FREE PARKING
18" SS	PROP. SANITARY SEWER	F.F.	FINISH FLOOR ELEV.
8"W	EXIST. WATER MAIN	F.G.	FINISH GRADE ELEV.
8"W	PROP. WATER MAIN	B.F.	BASEMENT FLOOR ELEV.
	EXIST. HYDRANT	G.F.	GARAGE FLOOR ELEV.
	PROP. HYDRANT		SECTION CORNER
P.I.V.	EXIST. POST INDICATOR VALVE		CONTROL POINT
	EXIST. GATE VALVE AND BOX/STOP BOX	○	FOUND IRON PIPE
	PROP. CURB STOP BOX	○ S	SET IRON PIPE
W	EXIST. GATE VALVE AND WELL	◎	FOUND CONCRETE MONUMENT
W	PROP. GATE VALVE AND WELL	◎ S	SET CONCRETE MONUMENT
	PROP. REDUCER	× F	FOUND PK NAIL
	PROP. END CAP	× S	SET PK NAIL
OHP	EXIST. OVERHEAD ELECTRIC	F	FOUND LEADED CHISEL HOLE
OHP	PROP. OVERHEAD ELECTRIC	S	SET LEADED CHISEL HOLE
UGE	EXIST. UNDERGROUND ELECTRIC	○ F-RR	FOUND REROD
UGE	PROP. UNDERGROUND ELECTRIC		APPROX. LOCATION OF SOIL BORING
	EXIST. LIGHT POLE		APPROX. LOCATION OF MONITORING WELL
	PROP. LIGHT POLE		APPROX. LOCATION OF PENETRATION TEST
○ U.P.	EXIST. UTILITY POLE		EXIST. DECIDUOUS TREE
	GUY WIRE		EXIST. EVERGREEN TREE
e	EXIST. ELECTRIC TRANSFORMER		EXIST. SHRUB
E	PROP. ELECTRIC TRANSFORMER		EXIST. TREE OR BRUSH LIMIT
OHT	EXIST. OVERHEAD TELEPHONE		TREE TO BE REMOVED
OHT	PROP. OVERHEAD TELEPHONE	▨	REMOVE AND REPLACE
UGT	EXIST. UNDERGROUND TELEPHONE		
UGT	PROP. UNDERGROUND TELEPHONE		BITUMINOUS PAVEMENT
2"G	EXIST. GAS		
2"G	PROP. GAS		GRAVEL PAVEMENT
MB	EXIST. MAILBOX		
G	EXIST. GAS RISER		CONCRETE PAVEMENT
T	EXIST. TELEPHONE RISER		
	COMPACTED SAND BACKFILL		BRICK PAVERS

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Stantec

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Notes

D	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.24
C	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.07
B	SITE PLAN RESUBMITTAL	AMS	MDP	2019.11.21
A	SITE PLAN SUBMITTAL	AMS	MDP	2019.09.26
Issued		By	Appd	YYYY.MM.DD

File Name: 15000_G-002	BWA	BWA	AMS	2018.08.25
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Permit/Seal

PRELIMINARY NOT FOR CONSTRUCTION

Not for permits, pricing or other official purposes. This document has not been completed or checked and is for general information or comment only.

Client/Project Logo

Client/Project
PCP-AARPOZ, LLC

3874 RESEARCH PARK DRIVE
MULTI-TENANT 'FLEX-TECH' BUILDING

City of Ann Arbor, MI

Title

GENERAL NOTES, SITE DATA AND LEGEND

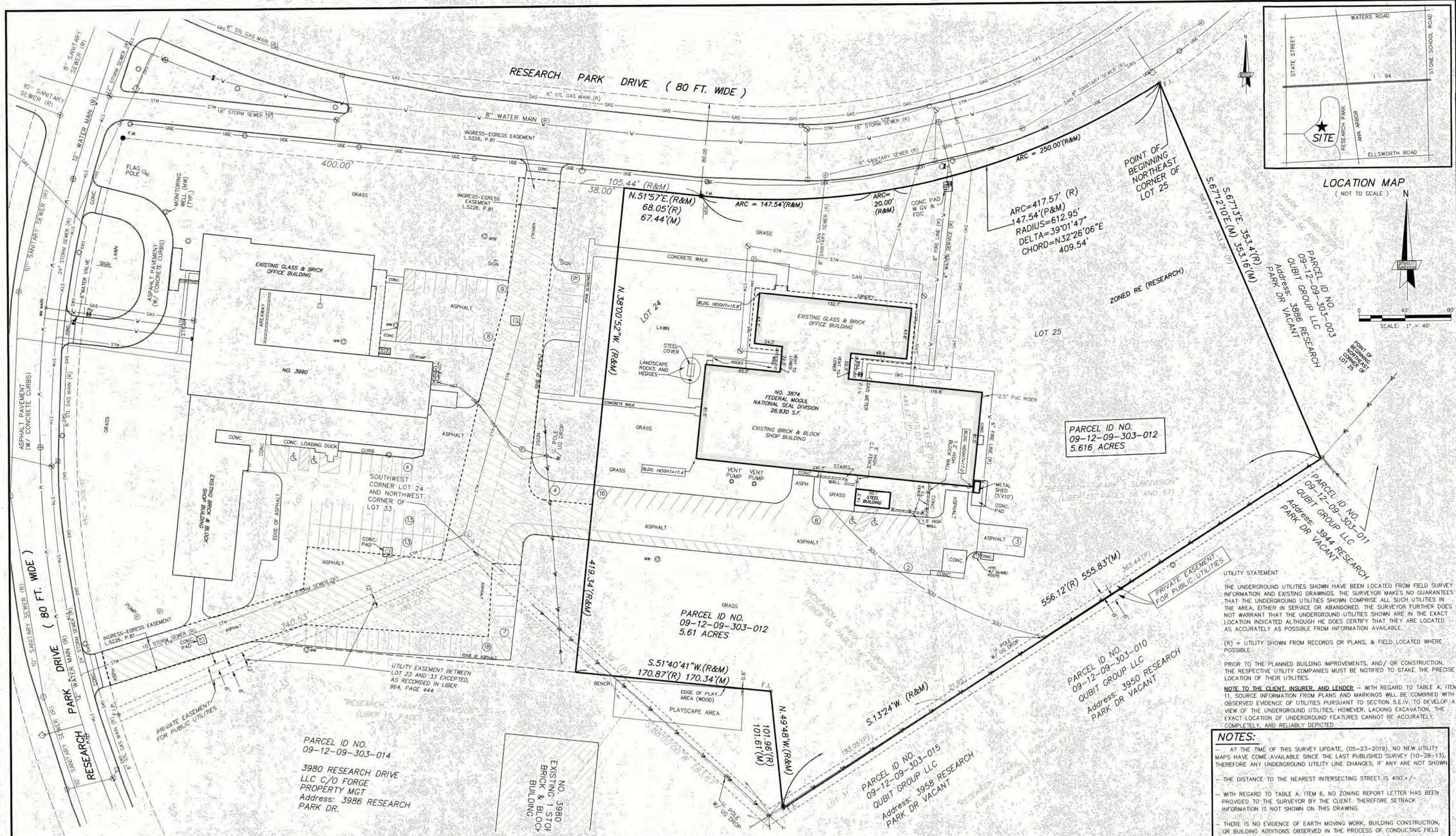
Project No. 2075150000

Scale

Revision 0

Sheet 2 of 22

Drawing No. **G-02**



LEGEND – EXISTING

- SECTION LINE
- E/ PAVEMENT
- CURB
- E/ GRAVEL
- CL ROAD
- E/ WALK
- E/ BRICK
- MISC. LINE
- FENCE
- GUARD RAIL
- WALL
- BLDG. LINE
- OVERHEAD WIRES
- RAILING
- OVERHANG LINE
- T/ BANK
- B/ BANK
- CL DITCH/STREAM
- WATER EDGE
- STORM LINE
- SAN. LINE
- WATER LINE
- GAS LINE
- UG ELEC. LINE
- UG TELE. LINE
- UG CABLE TV LINE
- PAINT STRIPE
- COMBINED SEWER
- PLD LINE
- STEAM LINE
- ELECTRIC OVERHEAD
- TELEPHONE OVERHEAD
- ASPH. ASPHALT
- CONC. CONCRETE
- A.C. AIR CONDITIONER
- G.P. GUARD POST
- C.L.F. CHAIN-LINK FENCE
- D.L. DOOR LEDGE
- F.F. FINISHED FLOOR
- O.H. OVERHANG
- F.I. FOUND IRON
- S.I. SET IRON
- F.I.P. FOUND IRON PIPE
- SAN. MH
- O.C.O. SAN. CLEAN OUT
- SAN. RISER
- SAN. PUMP STATION
- COMB. MH
- GATE VALVE
- HYDRANT
- WATER VALVE
- WATER METER
- POST INDICATOR VALVE
- WELL HEAD
- FDC CONNECTION
- IRRIGATION CONTROL BOX
- STORM MH
- CATCH BASIN
- BEEHIVE CB
- CULVERT E.S.
- ROOF/DOWN SPOUT
- OVERFLOW/OUTLET STRUCTURE
- O.C.O. STORM CLEAN OUT
- ROUND CB
- LIGHT POLE
- UTILITY POLE
- ELEC. TRANS.
- AIR CONDITIONER
- ELEC. MH
- ELEC. METER
- ELEC. RISER
- TRAFFIC CONTROL BOX
- STEAM MH
- PUBLIC LIGHTING MH
- MEASURED
- RECORD
- P. PLAT
- F.M. FOUND MONUMENT
- S.N. SET NAIL
- CMP. CORREGATED METAL PIPE
- RCP. REINFORCED CONCRETE PIPE
- G.L. GROUND LIGHT
- BLDG. CORNER (FIELD LOCATED)
- HANDICAP PARKING
- WETLAND FLAG
- BUSH/SHRUB
- PARKING METER
- RESIDENTIAL MAILBOX
- U.S. MAILBOX
- MONITORING WELL
- LAWN IRRIG. HEAD
- CENTERLINE R.R. TRACK
- MISC. TOPO. SHOT
- SURVEY CONTROL POINT
- FOUND IRON
- FOUND NAIL
- F. CUT CROSS
- SECTION COR.
- FENCE POST
- BENCHMARK
- FOUND PIPE
- FOUND MON.
- INGRESS-EGRESS EASEMENT L.5226, P.81

PROPERTY DESCRIPTION

(PER TITLE COMMITMENT FILE NO. 85809, PREPARED BY ABSOLUTE TITLE, INC., WITH AN EFFECTIVE DATE OF APRIL 26, 2019.)

PARCEL B
LOT 25, OUT LOT B, AND PART OF LOT 24 AND 33, OF RESEARCH PARK SUBDIVISION AS RECORDED IN LIBER 15 OF PLATS, PAGES 56-57, WASHTENAW COUNTY RECORDS, DESCRIBED AS: BEGINNING AT NORTHEAST CORNER OF SAID LOT 25, THENCE SOUTH 67 DEGREES 13 MINUTES EAST 353.4 FEET; THENCE SOUTH 13 DEGREES 24 MINUTES WEST 556.12 FEET; THENCE NORTH 49 DEGREES 48 MINUTES WEST 101.96 FEET; THENCE SOUTH 51 DEGREES 40 MINUTES 41 SECONDS WEST 170.87 FEET; THENCE NORTH 38 DEGREES 00 MINUTES 52 SECONDS WEST 419.34 FEET; THENCE NORTH 51 DEGREES 57 MINUTES EAST 68.05 FEET; THENCE 417.57 FEET ALONG A CURVE LEFT, RADIUS 612.95 FEET, CHORD BEARING NORTH 32 DEGREES 26 MINUTES 03 SECONDS EAST 409.54 FEET TO THE POINT OF BEGINNING.

CLIENT REFERENCE: 3874 RESEARCH PARK DR, ANN ARBOR, MI 48108-2218

SCHEDULE B – II. EXCEPTIONS:

(PER TITLE COMMITMENT FILE NO. 85809, PREPARED BY ABSOLUTE TITLE, INC., WITH AN EFFECTIVE DATE OF APRIL 26, 2019.)

ITEM 6. – WATER RIGHTS AGREEMENT IN FAVOR OF THE CITY OF ANN ARBOR RECORDED IN LIBER 221, PAGE 119. – VACATED STREET IS NOT LOCATED ON SUBJECT PARCEL.

ITEM 7. EASEMENTS FOR PUBLIC UTILITIES OVER SUBJECT PROPERTY AS SHOWN ON RECORDED PLAT.
– SHOWN ON SURVEY.

ITEM 8. DECLARATION OF INGRESS/EGRESS EASEMENT, AS RECORDED IN LIBER 5226, PAGE 81, WASHTENAW COUNTY RECORDS.
– SHOWN ON SURVEY.

FLOOD NOTE:

– THIS PARCEL IS LOCATED WITHIN A FEDERALLY DESIGNATED FLOOD HAZARD AREA ZONE "X" (AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) IN ACCORDANCE WITH THE FEDERAL INSURANCE RATE MAP, PANEL NUMBER 401 OF 585, MAP NUMBER 26161C0401E, EFFECTIVE DATE APRIL 3, 2012.

UTILITY STATEMENT

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE.

(R) = UTILITY SHOWN FROM RECORDS OR PLANS, & FIELD LOCATED WHERE POSSIBLE.

PRIOR TO THE PLANNED BUILDING IMPROVEMENTS, AND/ OR CONSTRUCTION, THE RESPECTIVE UTILITY COMPANIES MUST BE NOTIFIED TO STAKE THE PRECISE LOCATION OF THEIR UTILITIES.

NOTE TO THE CLIENT, INSURER, AND LENDER – WITH REGARD TO TABLE A, ITEM 11, SOURCE INFORMATION FROM PLANS AND MARKINGS WILL BE COMBINED WITH OBSERVED EVIDENCE OF UTILITIES PURSUANT TO SECTION 5.E.IV. TO DEVELOP A VIEW OF THE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY, AND RELIABLY DEPICTED.

NOTES:

– AT THE TIME OF THIS SURVEY UPDATE, (05-23-2019), NO NEW UTILITY MAPS HAVE COME AVAILABLE SINCE THE LAST PUBLISHED SURVEY (10-28-13), THEREFORE ANY UNDERGROUND UTILITY LINE CHANGES, IF ANY ARE NOT SHOWN

– THE DISTANCE TO THE NEAREST INTERSECTING STREET IS 400'+/–

– WITH REGARD TO TABLE A, ITEM 6, NO ZONING REPORT LETTER HAS BEEN PROVIDED TO THE SURVEYOR BY THE CLIENT. THEREFORE SETBACK INFORMATION IS NOT SHOWN ON THIS DRAWING.

– THERE IS NO EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING FIELD WORK.

– THERE IS NO EVIDENCE OF PROPOSED CHANGES IN STREET RIGHT OF WAY LINES.

– THERE IS NO EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS OBSERVED IN THE PROCESS OF CONDUCTING FIELDWORK, UNLESS OTHERWISE NOTED.

– THERE IS NO EVIDENCE OF FIELD DELINEATION OF WETLANDS OBSERVED IN THE PROCESS OF CONDUCTING FIELD WORK, UNLESS OTHERWISE NOTED.

CERTIFICATION

CERTIFY TO:
– M.V. VENTURES, LLC, A MICHIGAN LIMITED LIABILITY COMPANY
– ABSOLUTE TITLE, INC.
– OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 3, 4, 6(A), 6(B), 7(A), 7(B)(1), 7(C), 8, 9, 11, 13, 16, AND 18 OF TABLE A THEREOF.
THE FIELDWORK WAS COMPLETED AUGUST 17, 2017 AND UPDATED MAY 21, 2019.

DATE OF PLAT OR MAP: AUGUST 17, 2017
LAST REVISED: MAY 23, 2019

JOHN N. REDASH, MICHIGAN P.S. NO. 37281

giffels webster
Engineers
Surveyors
Planners
Landscape Architects
6303 26 Mile Road
Suite 100
Washington Twp, MI 48094
p (586) 781-8950
f (313) 962-5068
www.giffelswebster.com

Executive:	JNR
Manager:	CAA
Designer:	LDA
Quality Control:	JNR
Section:	9
	T-3-S R-6-E

Professional Seal:

STATE OF MICHIGAN
JOHN N. REDASH
PROFESSIONAL SURVEYOR
No. 37281
LICENSED PROFESSIONAL SURVEYOR

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

DATE:	ISSUE:
09-12-17	REV. PER TITLE REPORT
05-23-19	UPDATE SURVEY

Developed For:

ALTA/NSPS LAND TITLE SURVEY

3874 RESEARCH DR

City of Ann Arbor
Washtenaw County
MICHIGAN

Date:	08.17.17
Scale:	1"=30'
Sheet:	1 of 1
Project:	15887.16

N:\15\15800\15887.16 - 3874 Research Dr., Ann Arbor - ALTA update\Drawings\ALTA\3874 Research Park_ALTA_Update_5-21-19.dwg

DEMOLITION NOTES

(101) REMOVE EXISTING BUILDING

(102) REMOVE EXISTING PAVEMENT

(103) REMOVE EXISTING CONCRETE SIDEWALK

(104) REMOVE EXISTING TREE

(105) REMOVE EXISTING UTILITIES

(106) DEMOLISH STORM LEAD TO EXISTING MANHOLE

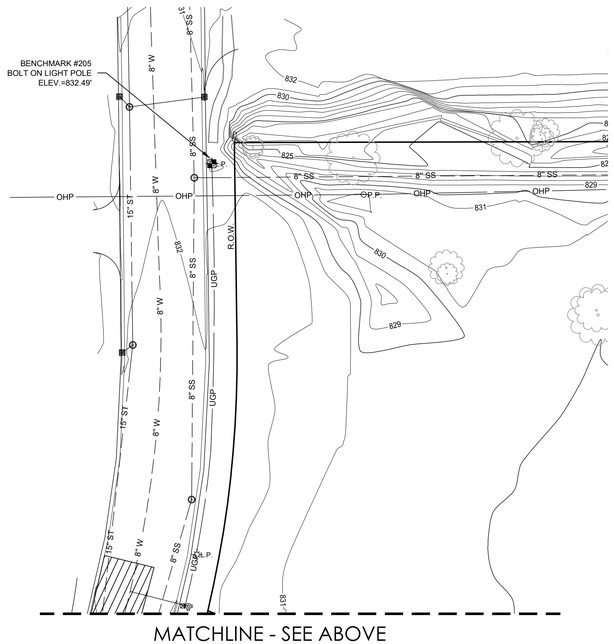
(107) DEMOLISH SANITARY LEAD FROM MANHOLE TO OUTSIDE EDGE OF CRITICAL ROOT ZONE

(108) BULKHEAD SANITARY LEAD AT OUTSIDE EDGE OF CRITICAL ROOT ZONE (BOTH SIDES)

(109) PAVEMENT/CURB REMOVAL TO LANE LINE. REMOVAL LIMITS TO BE DETERMINED BY ENGINEERING AS PRUDENT AND REASONABLE

NOTE:
NO WETLANDS ON SITE PER NATIONAL WETLAND MAPPER. SOIL CONDITIONS: 100% OF SOILS ON SITE ARE DEFINED AS Fd (FILL LAND) PER THE USDA (NRCS) WEB SOIL SURVEY. REFER TO SOIL BORINGS FOR ADDITIONAL INFORMATION ON SOILS.

CRITICAL ROOT ZONE IS 1FOOT FOR EVERY 1 INCH DIAMETER OF TREE.



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

NOTE:

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Ann Arbor MI 48108-2771
Tel: (734) 761-1010
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Notes

Issued				
D	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.24
C	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.07
B	SITE PLAN RESUBMITTAL	AMS	MDP	2019.11.21
A	SITE PLAN SUBMITTAL	AMS	MDP	2019.09.26
		By	Appd	YYYY.MM.DD
File Name: 15000C-101		BWA	BWA	AMS	2018.08.25
		Dwn.	Dsgn.	Cnkd.	YYYY.MM.DD

Permit/Seal

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Client/Project Logo

Client/Project
PCP-AARPOZ, LLC

3874 RESEARCH PARK DRIVE
MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

Title

EXISTING CONDITIONS AND DEMOLITION PLAN

Project No.
2075150000

Scale
0 40' 80'

Revision 0

Sheet 4 of 22

Drawing No.
C-101

SOIL EROSION CONTROL NOTES:

GENERAL

1. THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN THE SOIL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AT ALL TIMES DURING CONSTRUCTION ON THIS PROJECT. ANY MODIFICATIONS OR ADDITIONS TO THE SOIL EROSION CONTROL MEASURES DUE TO CONSTRUCTION OR CHANGED CONDITIONS, SHALL BE COMPLIED WITH AS REQUIRED OR DIRECTED BY THE OWNER, PROJECT ENGINEER OR SALEM TOWNSHIP.
2. ALL SOIL EROSION AND SEDIMENTATION CONTROL WORK SHALL CONFORM TO THE PERMIT REQUIREMENTS OF THE CITY OF ANN ARBOR AND THE LAWS OF THE STATE OF MICHIGAN.
3. A NPDES CONSTRUCTION ACTIVITY PERMIT IS REQUIRED.
4. DAILY INSPECTIONS SHALL BE MADE BY THE CONTRACTOR. PERIODIC INSPECTIONS MAY BE MADE BY THE OWNER/PROJECT ENGINEER/TOWNSHIP/CITY TO DETERMINE THE EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES. ANY NECESSARY CORRECTIONS SHALL BE MADE WITHOUT DELAY.
5. EROSION AND SEDIMENTATION FROM WORK ON THE SITE SHALL BE CONTAINED ON THE SITE AND NOT BE ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS.
6. ALL MUD/DIRT TRACKED ONTO ROADS FROM THE SITE DUE TO CONSTRUCTION, SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
7. RESTORATION OF ALL DISTURBED AREAS, INCLUDING PLACEMENT OF TOPSOIL, SEED, FERTILIZER AND MULCH AND/OR SOD SHALL BE DONE WITHIN 5 DAYS OF THE COMPLETION OF FINAL GRADE.
8. CONSTRUCTION OPERATIONS SHALL BE SCHEDULED AND PERFORMED SO THAT PREVENTATIVE SOIL EROSION CONTROL MEASURES ARE IN PLACE PRIOR TO EXCAVATION IN CRITICAL AREAS AND TEMPORARY STABILIZATION MEASURES ARE IN PLACE IMMEDIATELY FOLLOWING BACKFILLING OPERATIONS.
9. SPECIAL PRECAUTIONS WILL BE TAKEN IN THE USE OF CONSTRUCTION EQUIPMENT TO PREVENT SITUATIONS THAT PROMOTE EROSION.
10. PROPER DUST CONTROL SHALL BE MAINTAINED DURING CONSTRUCTION BY USE OF WATER TRUCKS AND/OR CHLORIDE AS REQUIRED.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND REMOVAL OF SOME UPON AUTHORIZED COMPLETION OF PROJECT. COMPLETION OF PROJECT WILL NOT BE AUTHORIZED UNTIL ALL SITE WORK, HOME BUILDING, ROAD WORK AND UTILITY CONSTRUCTION IS COMPLETE AND ALL SOILS ARE STABILIZED.
12. THE CONTRACTOR SHALL NOT GRADE IN EXISTING WETLAND OR CONSERVATION AREAS TO BE PROTECTED IF PRESENT. SILT FENCE SHALL BE INSTALLED AND MAINTAINED ADJACENT TO EXISTING WETLAND AND CONSERVATION AREAS TO PREVENT GRADING, EROSION AND SEDIMENTATION INTO THEM.
13. TREE PROTECTION FENCING MUST REMAIN INTACT UNTIL RESTORATION OF THE SITE IS COMPLETE.

SEQUENCE OF CONSTRUCTION

1. INSTALL SESC MEASURES.
2. REMOVE EXISTING BUILDING.
3. ROUGH GRADE SITE, AND STOCKPILE TOPSOIL.
4. INSTALL BUILDING FOUNDATIONS.
5. INSTALL WATER MAIN AND HYDRANTS (HYDRANTS SHALL BE IN SERVICE PRIOR TO BUILDING CONSTRUCTION).
6. INSTALL STORM DRAINAGE SYSTEM.
7. ERECT STEEL FRAME AND BUILDING SHELL
8. INSTALL SITE CONCRETE, SITE LIGHTING AND PAVING.
9. INSTALL CURB CUTS.
10. FINISH GRADE, REDISTRIBUTE TOPSOIL, SEED AND MULCH ALL DISTURBED AREAS.
11. INSURE ALL SOIL IS STABILIZED. REMOVE ALL TEMPORARY SOIL EROSION CONTROL MEASURES.

SEEDING/SOD

SEED OR SOD IN ACCORDANCE WITH PROJECT SPECIFICATIONS.

1. ALL AREAS OF DISTURBED EARTH THAT ARE NOT TO BE PAVED OR SODDED SHALL HAVE 4 INCHES OF TOPSOIL, SEED, FERTILIZER AND MULCH.
2. IMMEDIATELY AFTER SEEDING, MULCH ALL SEEDED AREAS WITH UNWEATHERED SMALL GRAIN STRAW (PREFERABLY WHEAT) OR HAY SPREAD. SPREAD UNIFORMLY AT THE RATE OF 1 ½ TO 2 TONS OR 100 POUNDS (2 TO 3 BALES) PER 1,000 SQUARE FOOT. THIS MULCH SHOULD BE ANCHORED WITH A DISC-TYPE MULCH-ANCHORING TOOL.
3. ANY DISTURBED AREA NOT PAVED, SEEDED OR MULCHED, SODDED OR BUILT UPON BY NOVEMBER 15, IS TO BE MULCHED IN THE MANNER AS SPECIFIED ABOVE, IN ORDER TO PROVIDE SOIL EROSION PROTECTION DURING THE WINTER AND EARLY SPRING.
4. ALL EROSION AND SEDIMENTATION CONTROL PREVENTION PROCEDURES AND STRUCTURES ARE TO COMPLY WITH THE STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL OF THE WASHTENAW COUNTY SOIL CONSERVATION DISTRICT.
5. DRAINAGE DITCHES AND SLOPES STEEPER THAN 1:4 (25%) SHALL BE STABILIZED WITH EROSION CONTROL BLANKETS.
6. STEEP SLOPES THAT DO NOT TAKE UPON INITIAL SEEDING MUST BE RE-SEEDED AND STABILIZED WITH EROSION CONTROL BLANKETS.
7. WHERE EXCAVATION HAS BEEN THROUGH LAWN AREAS, THE CONTRACTOR SHALL RESTORE THE DISTURBED AREA BY PLACING TOPSOIL AND SEEDING OR SODDING OVER THE FINAL BACKFILL MATERIAL.

CATCH BASIN/MANHOLE PROTECTION

1. PROTECT STORM SEWER CATCH BASINS WITH SILTSACK. OR APPROVED EQUIVALENT AS FOLLOWS:

ROADS

1. DURING CONSTRUCTION, ALL ROADS SHALL BE PROTECTED FROM UNVEGETATED AREAS WASHING ONTO ROAD SURFACES BY PLACEMENT OF SILT FENCE BEHIND CURB OR A 10 FOOT WIDE STRAW MULCH BANK BEHIND THE CURB OR OTHER APPROVED METHOD AND/OR AS SHOWN ON THE PLANS.
2. DURING CONSTRUCTION OF ANY PORTION OF THE PROJECT, ROADS SHALL BE MAINTAINED FREE OF DIRT, SILT AND CONSTRUCTION DEBRIS.

SOIL EROSION/SEDIMENTATION CONTROL OPERATION TIME SCHEDULE

CONSTRUCTION SEQUENCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ROUGH GRADE / SEDIMENT CONTROL				■								
TEMPORARY CONTROL MEASURES				■	■	■	■	■				
STRIP & STOCKPILE TOPSOIL					■							
PERMANENT CONTROL STRUCTURES									■			
FINISH GRADING									■			
LANDSCAPING/SEED/FINAL STABILIZATION										■		

Soil Erosion Control Quantities

Impervious Area

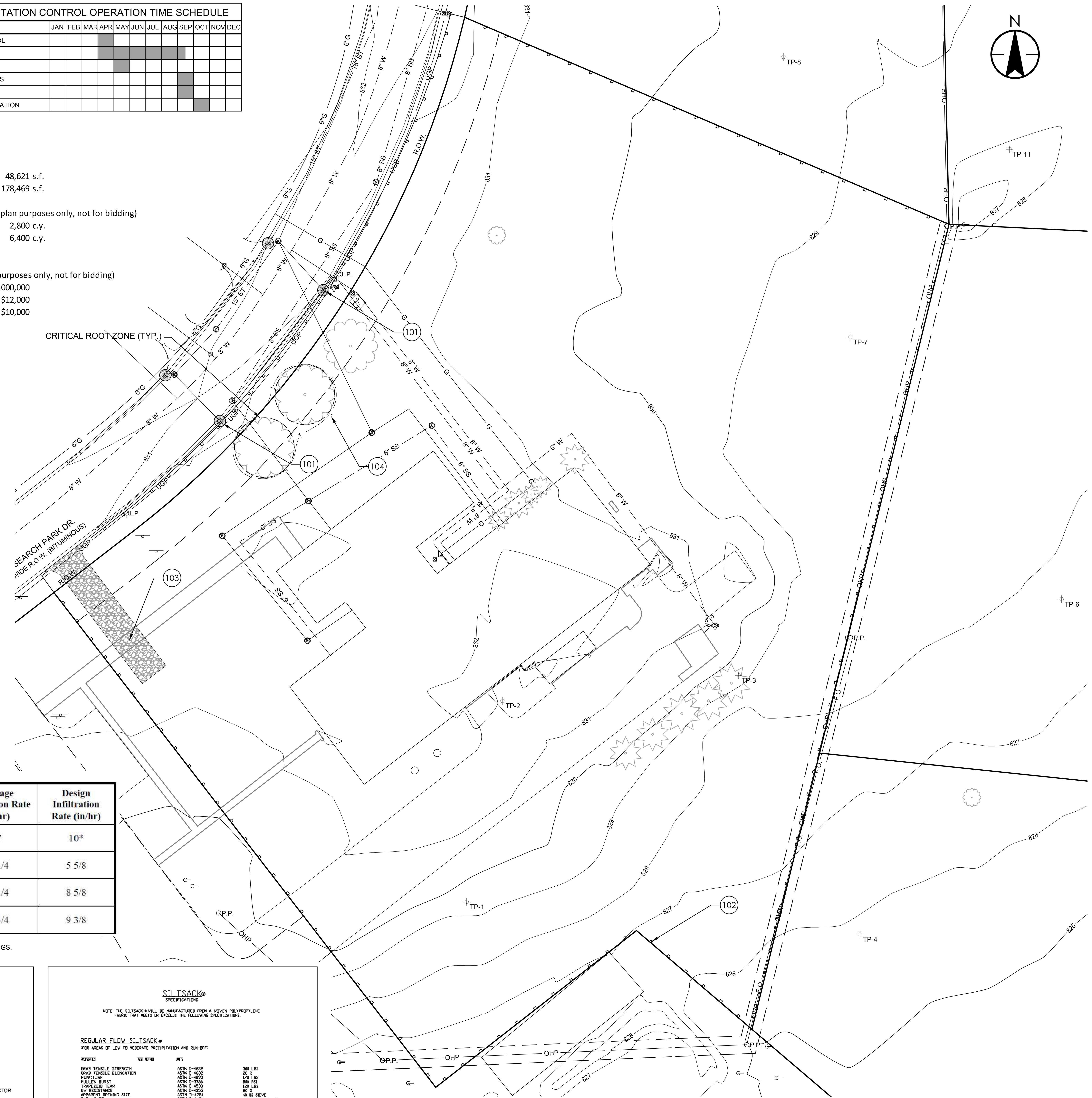
Existing	48,621 s.f.
Proposed	178,469 s.f.

Estimated Cut and Fill (for site plan purposes only, not for bidding)

Cut	2,800 c.y.
Fill	6,400 c.y.

Estimated Costs (for site plan purposes only, not for bidding)

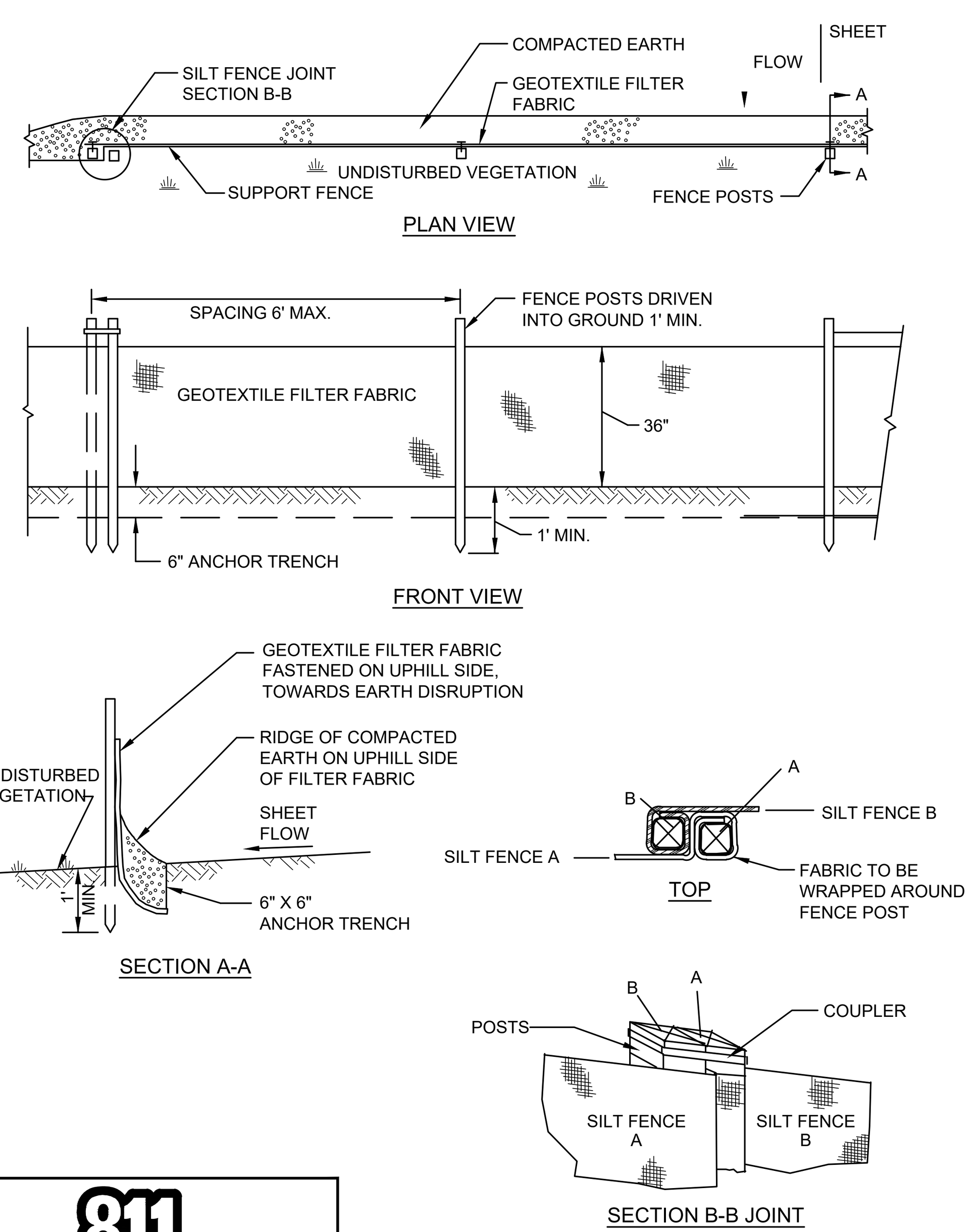
Construction	$1,000,000
Soil Erosion Measures	$12,000
Site Stabilization	$10,000



Infiltration Test Results

Test Pit	Test No.	Stabilized Infiltration Rate (in/hr)	Average Infiltration Rate (in/hr)	Design Infiltration Rate (in/hr)
TP-1	1.1	24	27	10*
	1.2	30		
TP-2	2.1	12	11 1/4	5 5/8
	2.2	10 1/2		
TP-3	3.1	16 1/2	17 1/4	8 5/8
	3.2	18		
TP-7	7.1	21	18 3/4	9 3/8
	7.2	16 1/2		

SEE MTC REPORT DATED SEPTEMBER 13, 2019 FOR SOIL BORING LOGS.



SILT FENCE
NOT TO SCALE

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

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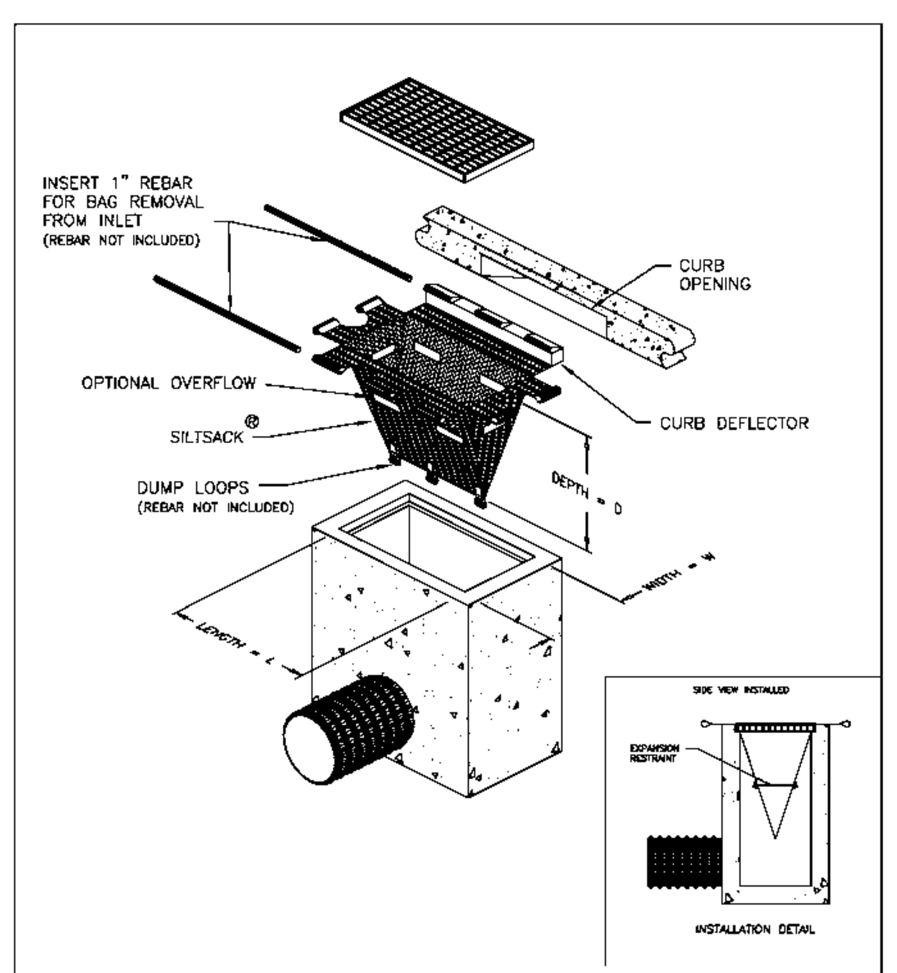

DETAIL OF INLET SEDIMENT CONTROL DEVICE
TYPE B – WITH CURB DEFLECTOR

ACF Environmental
Your Complete Source for Geosynthetic Solutions
ACF Environmental, Inc.
2831 Cardwell Rd.
Richmond, Virginia 23234
(800) 448-3636

SILTSACK®
SPECIFICATIONS

NOTE: THE SILTSACK® WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS.

REGULAR FLOW SILTSACK®
(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

* HI-FLOW SILTSACK®
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90 %
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1

OIL-ABSORBANT SILTSACK®
(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)

DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK ®WITH A WOVEN PILLOW INSERT.

SILTSACK DISTRIBUTORS:
PRICE & COMPANY
(www.priceandcompany.com)

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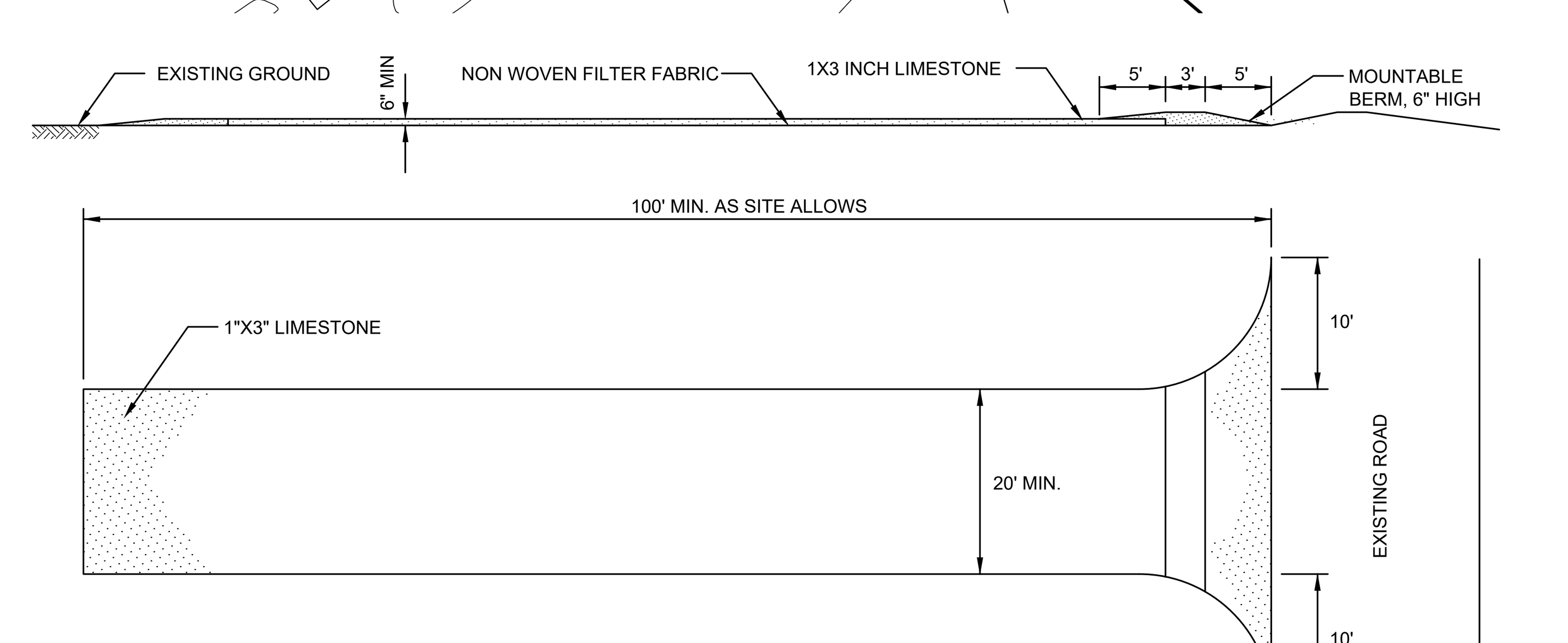
1-800-248-8230

METRO DETROIT, MI
29165 WALL STREET
WIXOM, MI 48393-3525
1-866-960-4300

(* HI-FLOW SILT SACK SHALL BE USED FOR ALL APPLICATIONS WITHIN PITTSFIELD TOWNSHIP)

SILTSACK
NOT TO SCALE



MUD TRACKING ROAD (MUD MAT) DETAIL
NOT TO SCALE

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3754 Ranchero Drive
Ann Arbor MI 48108-2771
Tel: (734) 761-1010
www.stantec.com

Notes

SOIL EROSION CONTROL NOTES

- (101) INLET FILTER
- (102) SILT FENCE
- (103) GRAVEL MUD MAT
- (104) TREE PROTECTION FENCE AT CRITICAL ROOT ZONE (SEE DETAIL ON SHEET L-501)

		By	Appd	YYYY.MM.DD
D	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.24
C	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.07
B	SITE PLAN RESUBMITTAL	AMS	MDP	2019.11.21
A	SITE PLAN SUBMITTAL	AMS	MDP	2019.09.26

Issued

File Name: 15000C-102	BWA	BWA	AMS	2018.08.25
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Permit/Seal

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Client/Project Logo

Client/Project
PCP-AARPOZ, LLC

3874 RESEARCH PARK DRIVE
MULTI-TENANT 'FLEX-TECH' BUILDING

City of Ann Arbor, MI

Title

SOIL EROSION & SEDIMENTATION CONTROL PLAN

Project No. 2075150000

Scale 0 40' 80'

Revision 0

Sheet 5 of 22

Drawing No. **C-102**

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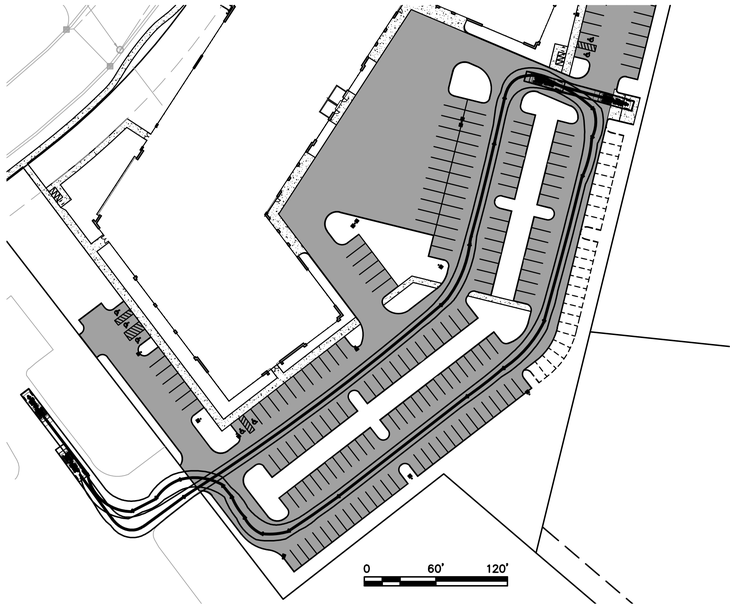
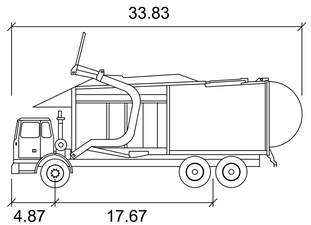
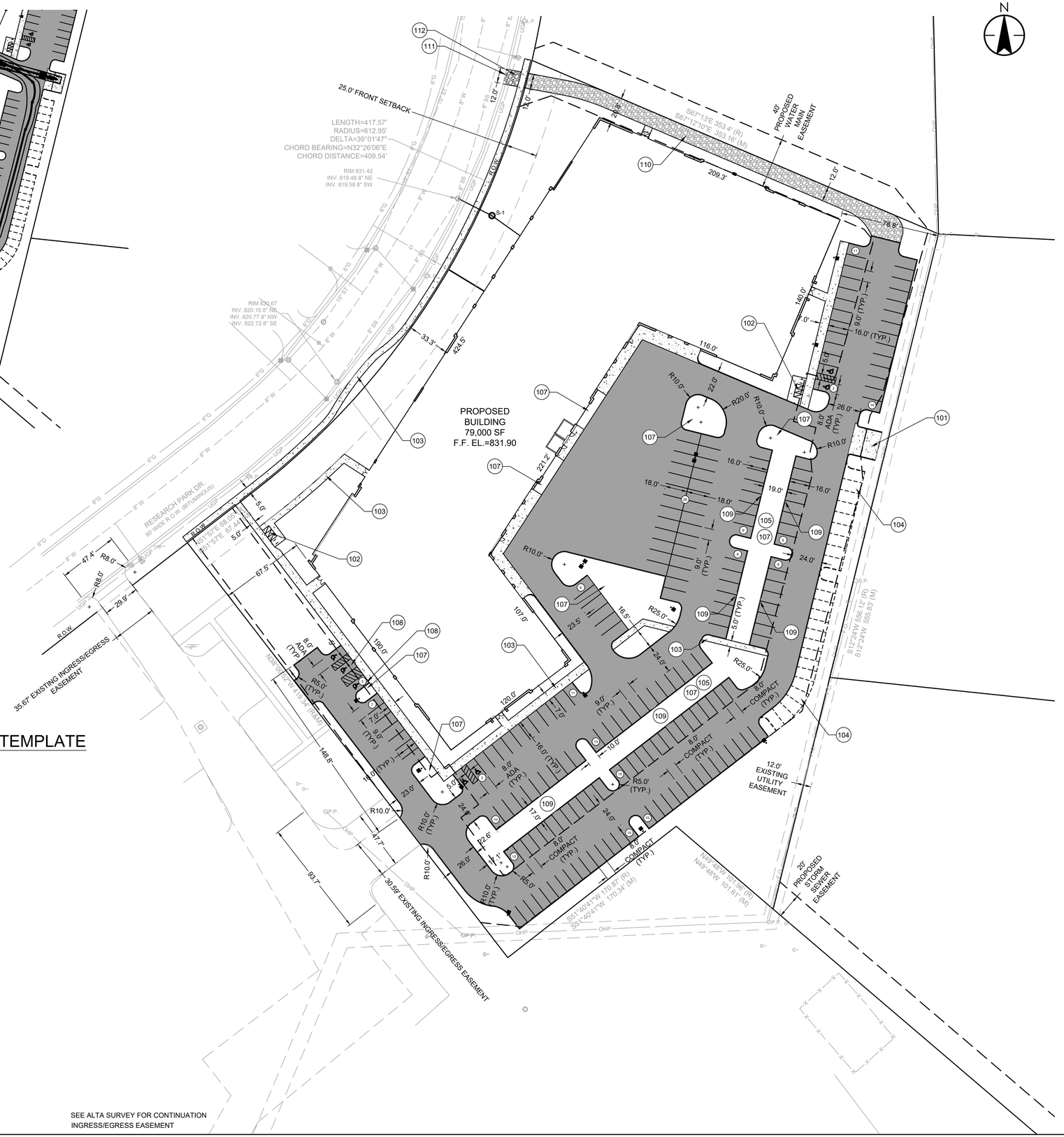
2020.01.24 8:38:38 AM





	feet
Width	: 8.46
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 45.0

FRONT LOAD GARBAGE TRUCK TURNING TEMPLATE



101	PROPOSED TRASH ENCLOSURE (22.5'x12' CONCRETE PAD)
102	PROPOSED BIKE PARKING (2 HOOPS AND 3 DOUBLE LOCKERS
103	PROPOSED CONCRETE WALK
104	DEFERRED PARKING SPACES
105	BIO-RENTENTION AREA
106	DEMOLISH STORM LEAD TO EXISTING MANHOLE
107	LANDSCAPE AREA
108	VAN ACCESSIBLE SPACE
109	5' CURB CUT
110	12' EMERGENCY GRAVEL ACCESS DRIVE
111	MOUNTABLE CURB
112	GRASS PAVERS

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

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Notes

D	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.24
C	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.07
B	SITE PLAN RESUBMITTAL	AMS	MDP	2019.11.21
A	SITE PLAN SUBMITTAL	AMS	MDP	2019.09.26
Issued		By	Appd	YYYY.MM.DD

File Name: 15000C-103	BWA	BWA	AMS	2018.08.25
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3874 RESEARCH PARK DRIVE
MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

Title

DIMENSIONAL LAYOUT PLAN

Project No.
2075150000

Scale
0 40' 80'

Revision
0

Sheet
6 of 22

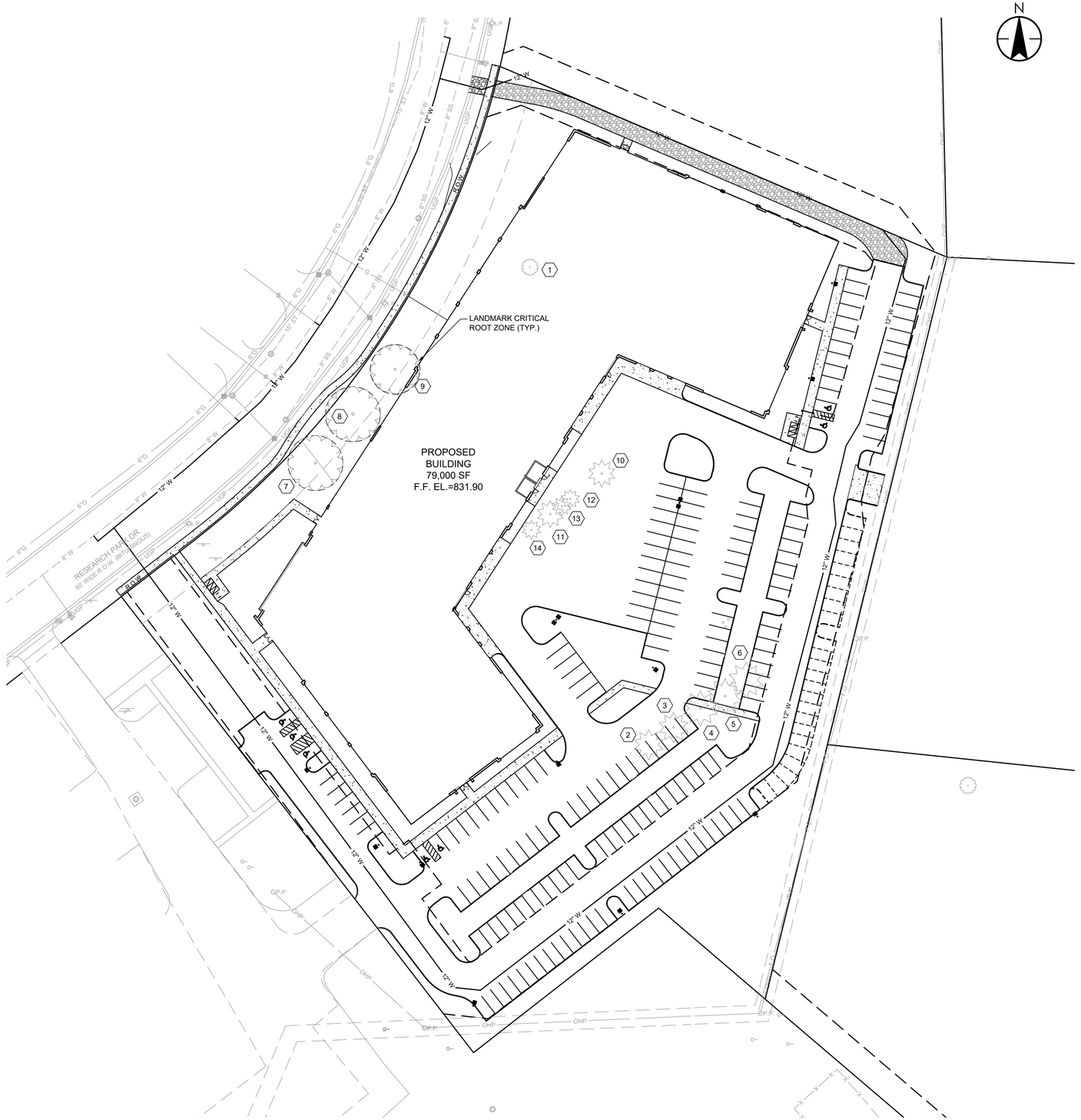
Drawing No.
C-103

Tree List

Number	Size	Common Name	Species	Condition	Landmark	Save/Remove
1	6"	Boxelder	Acer negundo	Good		Remove
2	11"	Blue Spruce	Picea glauca	Good		Remove
3	11"	Blue Spruce	Picea glauca	Fair		Remove
4	13"	Blue Spruce	Picea glauca	Fair		Remove
5	13"	Blue Spruce	Picea glauca	Fair		Remove
6	13"	Blue Spruce	Picea glauca	Good		Remove
7	20"	Honey Locust	Gleditsia triacantho	Good	Yes	Save
8	20"	Honey Locust	Gleditsia triacantho	Good	Yes	Save
9	18"	Honey Locust	Gleditsia triacantho	Good	Yes	Remove
10	10"	Arborvitae	Thuja occidentalis	Poor		Remove
11	10"	Arborvitae	Thuja occidentalis	Fair		Remove
12	7"	Arborvitae	Thuja occidentalis	Fair		Remove
13	7"	Arborvitae	Thuja occidentalis	Fair		Remove
14	7"	Arborvitae	Thuja occidentalis	Fair		Remove

NATURAL FEATURES NOTES:

1. THE SITE VEGETATION IS GENERALLY MANICURED LAWN MAINTAINED THROUGH REGULAR MOWING. THERE IS SOME FIELD/BRUSH VEGETATION IN THE NORTHEAST CORNER OF THE SITE WHICH PREVIOUSLY WAS MAINTAINED THROUGH PERIODIC MOWING. THERE ARE 14 TREES OVER 6" DBH ON SITE. THESE ARE LANDSCAPE TREES, NOT NATURALLY OCCURRING. THREE TREES ARE LANDMARK SIZE. TWO OF THESE TREES ARE TO BE SAVED. MITIGATION WILL BE PROVIDED FOR THE REMOVED LANDMARK TREE (SEE THE LANDSCAPE PLAN). AN ALTERNATIVE ANALYSIS PLAN HAS BEEN PROVIDED.
2. THERE ARE NO OTHER NATURAL FEATURES OR NATURAL FEATURES BUFFERS. THERE ARE NO WETLANDS, STEEP SLOPES, FLOODPLAIN, OR WOODLANDS ON SITE.
3. MALLETS CREEK IS APPROXIMATELY 350 FEET TO THE NORTH OF THE SITE. IMPACT TO ANY ADJACENT NATURAL FEATURES IS NOT ANTICIPATED.
4. SOIL EROSION CONTROL WILL BE PROVIDED IN ACCORDANCE WITH CITY AND STATE CODES.



811
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A SITE PLAN SUBMITTAL	AMS	MDP	2019.09.26

File Name: 15000C-104	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
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MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

Title

NATURAL FEATURES OVERLAY PLAN

Project No.
2075150000

Scale
0 40' 80'

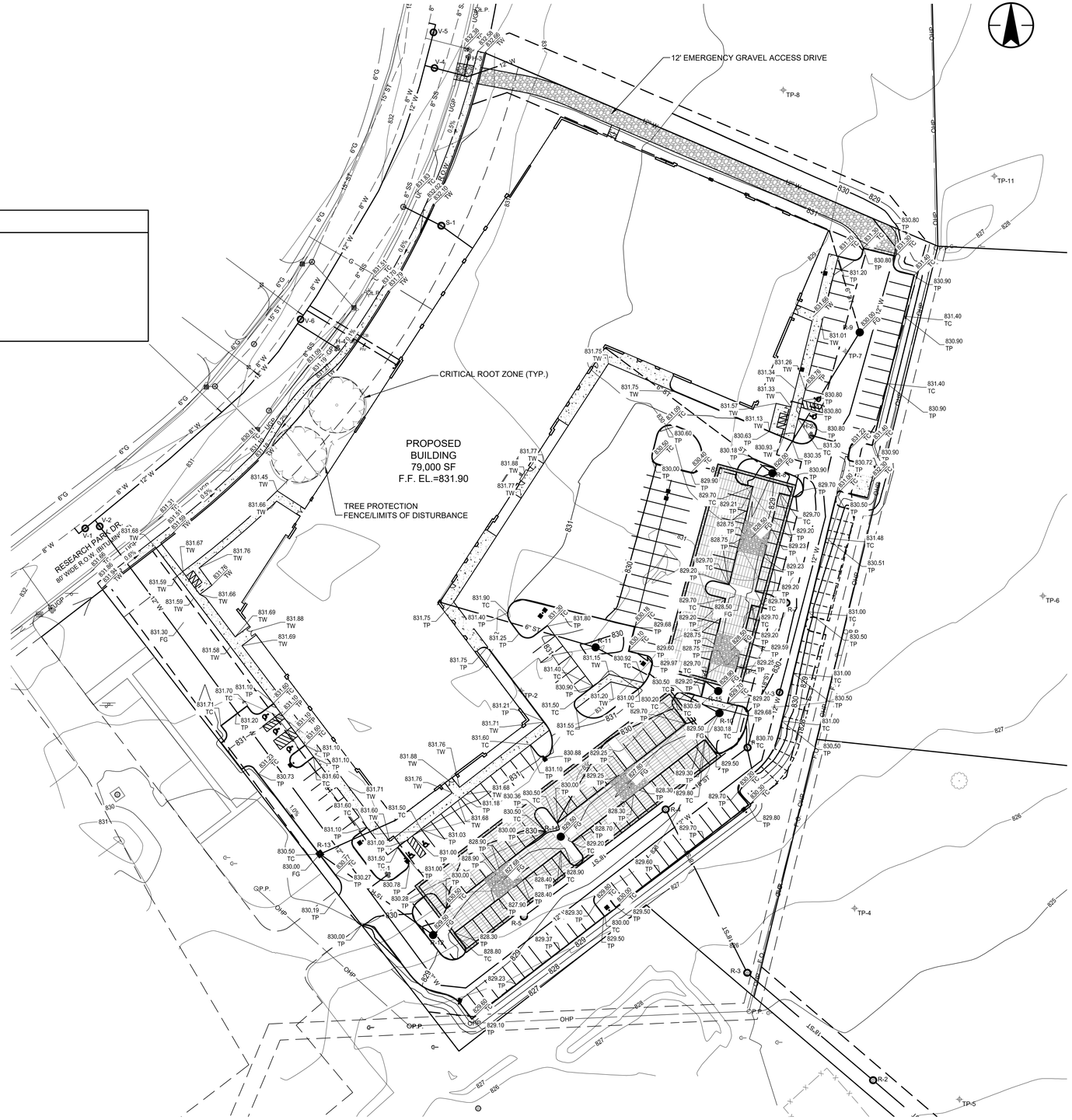
Revision
0

Sheet
7 of 22

Drawing No.
C-104

GRADING NOTES:

1. SEE STORM SEWER WATER MANAGEMENT PLAN FOR STORM SEWER INVERTS.
2. SEE LANDSCAPE DETAILS FOR BIO-RETENTION DETAIL.



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B	SITE PLAN RESUBMITTAL		AMS	MDP	2019.11.21
A	SITE PLAN SUBMITTAL		AMS	MDP	2019.09.26

File Name: 15000C-105	BWA	BWA	AMS	2018.08.25
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MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

Title

GRADING PLAN

Project No.
2075150000

Scale
0 40' 80'

Revision
0

Sheet
8 of 22

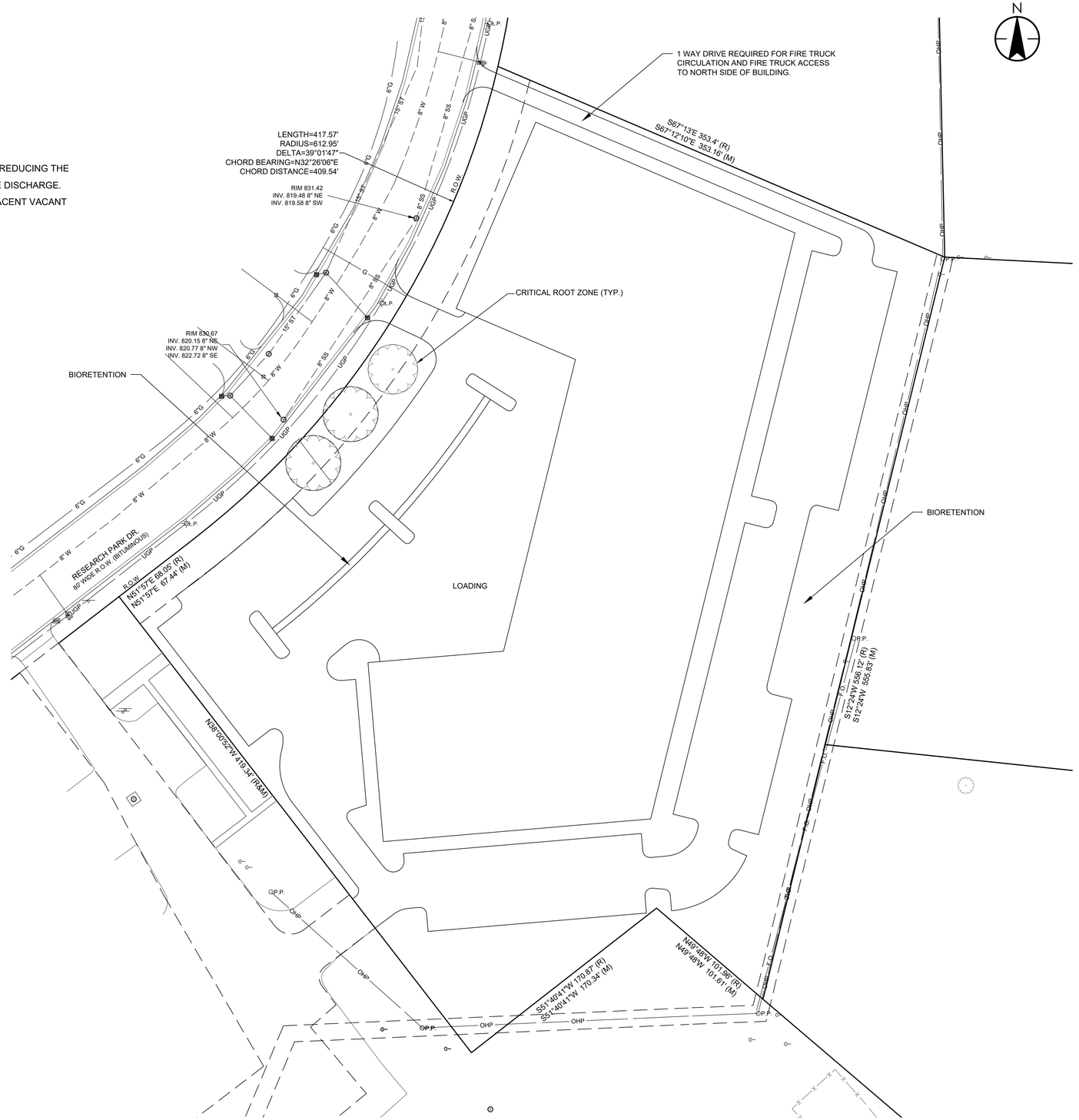
Drawing No.
C-105

PROS:

- SAVES 3 LANDMARK TREES.
- INCREASES PARKING LOT FRONTAGE TO BUILDING.

CONS:

- PUTS LOADING AND PARKING IN FRONT OF BUILDING.
- BUILDING IS IN LOWER PORTION OF SITE INCREASING THE AMOUNT OF REQUIRED FILL, REDUCING THE EFFECTIVENESS OF SITE ABSORPTION FOR STORM WATER INCREASING SITE DRAINAGE DISCHARGE.
- IMPAIRS THE DEVELOPERS DESIRE OF DEVELOPING A CAMPUS SETTING WITH THE ADJACENT VACANT PARCELS.
- REQUIRES ADDITIONAL CURB CUTS.
- INCREASED IMPERVIOUS COVER.



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A SITE PLAN SUBMITTAL	AMS	MDP	2019.09.26
File Name: 15000C-106	BWA Dwn.	BWA Dsgn.	AMS Chkd.	2018.08.25 YYYY.MM.DD

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MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

Title

ALTERNATE ANALYSIS SITE PLAN

Project No.
2075150000

Scale
0 40' 80'

Revision
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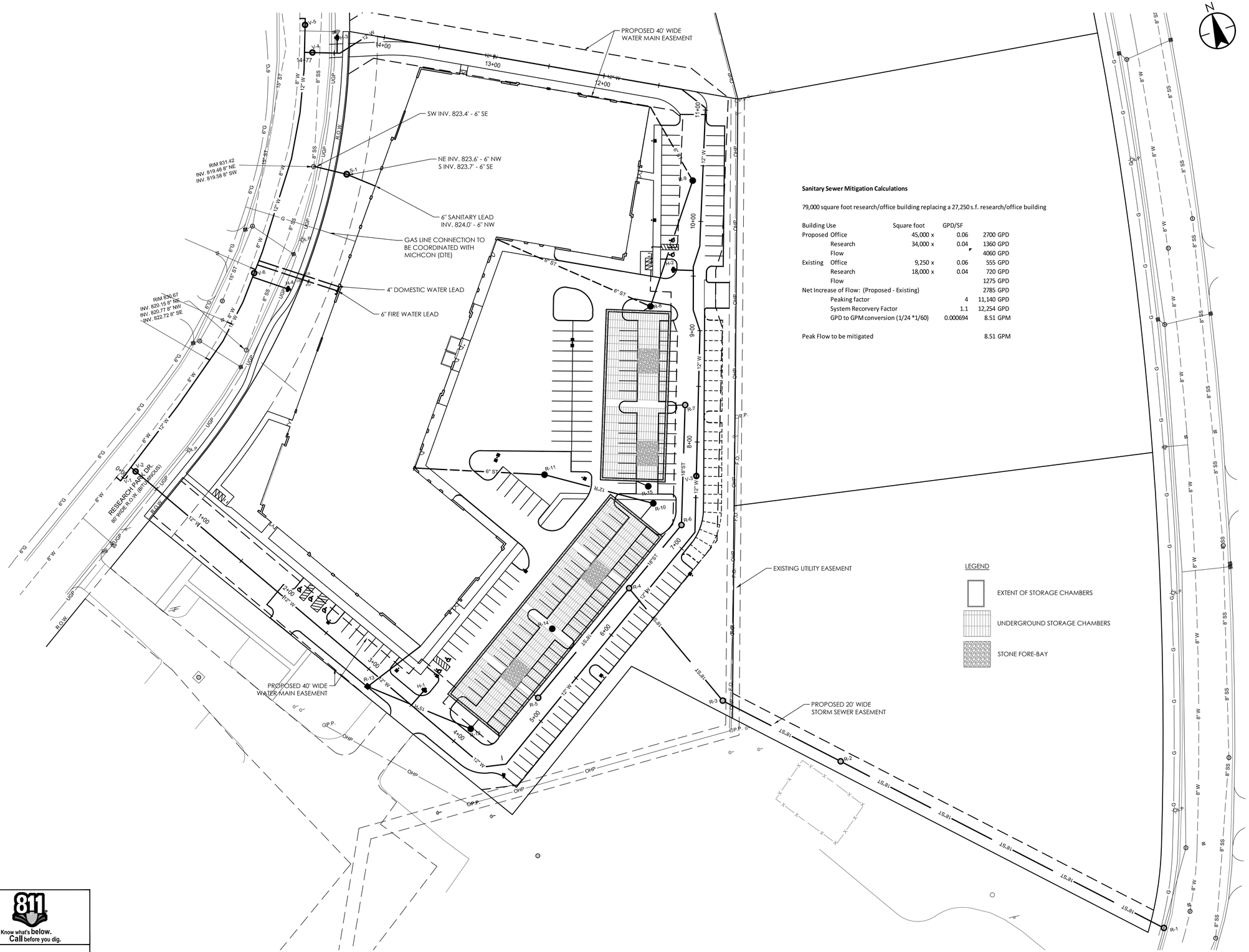
Sheet
9 of 22

Drawing No.
C-106



Sanitary Sewer Mitigation Calculations

79,000 square foot research/office building replacing a 27,250 s.f. research/office building

Building Use		Square foot	GPD/SF	
Proposed	Office	45,000 x	0.06	2700 GPD
	Research	34,000 x	0.04	1360 GPD
	Flow			4060 GPD
Existing	Office	9,250 x	0.06	555 GPD
	Research	18,000 x	0.04	720 GPD
	Flow			1275 GPD
Net Increase of Flow: (Proposed - Existing)				2785 GPD
	Peaking factor		4	11,140 GPD
	System Recovery Factor		1.1	12,254 GPD
	GPD to GPM conversion (1/24 *1/60)		0.000694	8.51 GPM

Peak Flow to be mitigated 8.51 GPM

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Notes

1. ALL OFF SITE EASEMENTS MUST BE OBTAINED PRIOR TO THE ISSUANCE OF ANY PERMITS.
2. NO BOOSTER PUMP WILL BE USED FOR THE BUILDINGS WATER SERVICE LEADS.
3. THERE ARE NO FIREWALLS PROPOSED.

D	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.24
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City of Ann Arbor, MI

Title

UTILITY PLAN

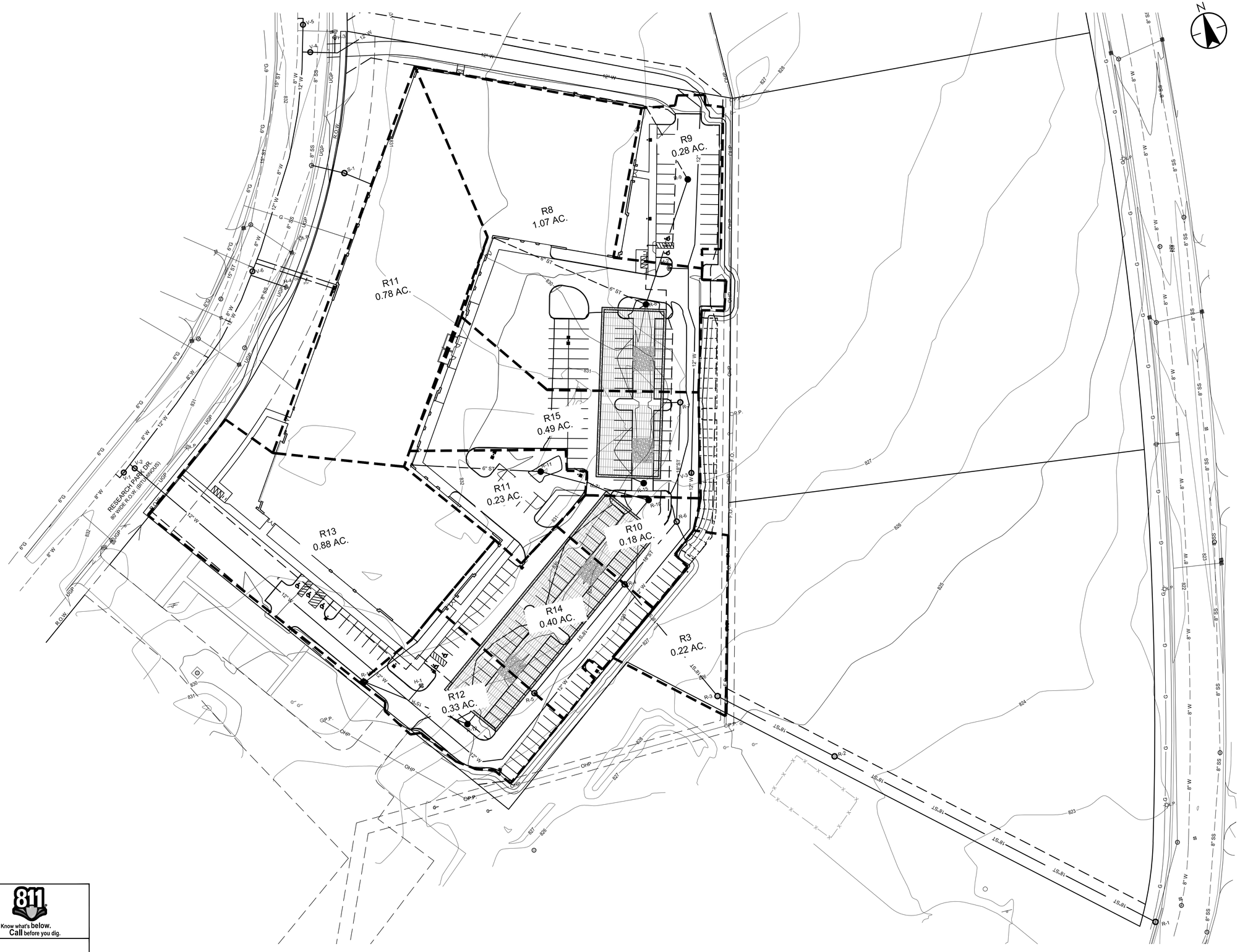
Project No.
2075150000

Scale 0 40' 80'

Revision 0

Sheet 10 of 22

Drawing No.
C-107



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A	SITE PLAN SUBMITTAL	AMS	MDP	2019.09.26
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File Name: 15000C-108	BWA	BWA	AMS	2018.08.25
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MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

Title

STORM WATER MANAGEMENT PLAN

Project No.
2075150000

Scale
0 40' 80'

Revision
0

Sheet
11 of 22

Drawing No.
C-108

STORM WATER DETENTION CALCULATIONS

Rational Method Variables				
Cover Type	**Soil Type**	**Area (Ac)**	**C**	**C x A (Ac)**
Roof	B	1.87	0.95	1.77
Gravel	B	0.02	0.85	0.02
Lawn	B	1.57	0.61	0.96
Concrete	B	0.14	0.95	0.13
Asphalt	B	2.04	0.95	1.94
	TOTALS	5.63		4.82
Weighted C = (C X A) / Ac			0.86	

NRCS Pervious Variables				
Cover Type	**Soil Type**	**Area (Ac)**	**CN**	**CN x A (Ac)**
Lawn	B	1.57	61	95.58
	TOTALS	1.57		95.58
Weighted CN = (CN X A) / Ac			61	

NRCS Impervious Variables				
Cover Type	**Soil Type**	**Area (Ac)**	**CN**	**CN x A (Ac)**
Roof	B	1.87	98	182.91
Gravel	B	0.02	91	2.01
Concrete	B	0.14	98	13.50
Asphalt	B	2.04	98	199.87
	TOTALS	4.07		398.28
Weighted CN = (CN X A) / Ac			98	

Pervious Cover Post-Development 1% Storm Runoff Calculation (V100-per-post)			
2 yr / 24 hour storm	P	5.11	in
Determine Post Development Pervious CN. Assume Good Cover Fully Developed Urban	CN	61	
S = 1000/CN - 10	S	6.39	in
Q = (P - 0.2*S)^2 / (P + 0.8*S)	Q	1.44	in
Total site area exluding "Self Crediting" BMPs	A	68253	sf
V100-per-post = Q(1/12)A	V100-per-post	8165.50	cft

Impervious Cover Post-Development 1% Storm Runoff Calculation (V100-imp-post)			
2 yr / 24 hour storm	P	5.11	in
Determine Post Development Impervious CN. Assume Good Cover Fully Developed Urban	CN	98	
S = 1000/CN - 10	S	0.20	in
Q = (P - 0.2*S)^2 / (P + 0.8*S)	Q	4.87	in
Total site area exluding "Self Crediting" BMPs	A	177101	sf
V100-imp-post = Q(1/12)A	V100-imp-post	71852	cft

Qp = 238.6*Tc^-.82 (Peak of the Unit Hydrograph)	(Qp)	836.51	cfs/in-mi^2
Total site area (Ac) excuding "Self-Crediting" BMPs	(A)	5.63	Ac
Q100 = Q100-per + Q100-imp	(Q100)	6.30	in
Peak Flow (PF) = (Qp*Q100*A)/640	(PF)	46.41	cfs
Change in flow = PF - 0.15*A	(Delta)	45.57	
Impervious/Pervious Cover Post-Development 1% Storm Runoff Calculation = Q(1/12)A	(V100)	80018	cft
Required Deten. Vdet = (Delta/PF)*V100	(Vdet)	**78561**	**cft**
Average Infiltration Rate		8.4	in/hr
Required Area of Detention over 6 hours = Vdet/(Infiltration Rate * 6 hours)		18705	sft
Required SC-160LP Chambers (14.93 sft/unit)		**1255**	**SC-160LP chambers**
Detention Area 1 = 27 rows of 29 chambers		783	SC-160LP chambers
		216	SC-160LP end caps
		14500	cft stone
		1	15" x 8" ADS N-12 manifold tee fittings (45' long)
		1	12" x 8" ADS N-12 manifold tee fittings (45' long)
		3	12" x 8" ADS N-12 manifold cross fittings (45' long)
		3	isolator row
Detention Area 2 = 26 rows of 20 chambers		520	SC-160LP chambers
		104	SC-160LP end caps
		8900	cft stone
		2	12" x 8" ADS N-12 manifold tee fittings (48' long)
		1	12" x 8" ADS N-12 manifold cross fittings (48' long)
		4	isolator row

STORM WATER DESIGN CALCULATIONS

I = 175/(T+25) C= VARIES T= 15 MIN. SHEET 1 OF 1

PROJECT: Ann Arbor - Research Park JOB NO. 2075150000 COMMUNITY: City of Ann Arbor COUNTY: Washtenaw

STRUCTURE NUMBER UP STREAM	STRUCTURE NUMBER DOWN STREAM	INCRE-MENT ACRES (A)	C	EQUIV. AREA 100% ACRES CA	TOTAL AREA 100% ACRES SUM CA	T TIME (MIN.)	I (IN PER HOUR)	Q=CIA C.F.S. FLOW	CAPAC-ITY OF SEWER (C.F.S.)	DIAM. OF PIPE (IN.)	LENGTH OF LINE (FT.)	SLOPE OF PIPE (%)	MIN HG BASED ON "Q" (%)	HG FOR 3.0 FPS GIVEN "D" (%)	ACTUAL HG (%)	VEL. FLOW FULL (FT./ SEC.)	TIME OF FLOW (MIN.)	INVERT ELEVATION UP STREAM	INVERT ELEVATION DOWN STREAM	RIM ELEVATION UP STREAM	RIM ELEVATION DOWN STREAM	COVER UPPER COVER	COVER LOWER COVER	DROP ACROSS MANHOLE (FT)
DETENTION AREA #1 (D1)																								
R13	**R12**	0.88	0.79	0.69	0.69	15.00	4.38	3.03	3.65	**15**	**95**	**0.32**	0.22	0.32	0.32	3.0	0.53	**824.00**	**823.70**	830.40	828.50	4.96	3.36	0.30
R12	**D1**	0.33	0.79	0.26	0.95	15.53	4.32	4.15	0.00	**15**	**5**	**0.00**	0.41	0.32	0.41	0.0	0.00	**823.55**	**823.55**	828.50	829.00	3.51	4.01	0.00
R11	**R10**	0.23	0.76	0.17	0.17	15.00	4.38	0.76	2.34	**12**	**95**	**0.43**	0.05	0.44	0.43	3.0	0.53	**824.00**	**823.60**	830.00	828.10	4.83	3.33	0.40
R10	**D1**	0.18	0.69	0.12	0.30	15.53	4.32	1.30	0.00	**12**	**5**	**0.00**	0.13	0.44	0.13	0.0	0.00	**823.55**	**823.55**	828.10	829.00	3.38	4.28	0.00
R14	**D1**	0.40	0.76	0.30	0.30	15.00	4.38	1.32	0.00	**12**	**5**	**0.00**	0.14	0.44	0.14	0.0	0.00	**823.55**	**823.55**	829.50	829.00	4.78	4.28	0.00
D1	**R4**	0.00	0.00	0.00	0.45	23.03	3.64	1.47	0.00	**12**	**5**	**0.00**	0.17	0.44	0.17	0.0	0.00	**823.55**	**823.55**	829.00	828.25	4.28	3.53	0.00
D1	**R5**	0.00	0.00	0.00	1.10	23.03	3.64	3.61	0.00	**12**	**5**	**0.00**	1.03	0.44	1.03	0.0	0.00	**823.55**	**823.55**	829.00	828.80	4.28	4.08	0.00
DETENTION AREA #2 (D2)																								
R9	**R8**	0.28	0.82	0.23	0.23	15.00	4.38	1.00	2.34	**12**	**115**	**0.43**	0.08	0.44	0.43	3.0	0.64	**824.90**	**824.40**	829.90	828.80	3.83	3.23	0.50
R8	**D2**	1.07	0.79	0.84	1.07	15.64	4.31	4.63	0.00	**12**	**5**	**0.00**	1.69	0.44	1.69	0.0	0.00	**824.30**	**824.30**	828.80	828.50	3.33	3.03	0.00
R15	**D2**	0.49	0.79	0.39	0.39	15.00	4.38	1.69	0.00	**12**	**5**	**0.00**	0.22	0.44	0.22	0.0	0.00	**824.30**	**824.30**	829.00	828.50	3.53	3.03	0.00
D2	**R7**	0.00	0.00	0.00	1.46	30.64	3.15	4.74	0.00	**12**	**5**	**0.00**	1.77	0.44	1.77	0.0	0.00	**824.30**	**824.30**	828.50	829.00	3.03	3.53	0.00
OVERFLOW (Note: Required overflow capacity assumed to be 3/4 of calculated flow)																								
R5	**R4**	0.00	0.00	0.00	1.10	23.03	3.64	3.61	6.89	**18**	**120**	**0.43**	0.12	0.25	0.43	3.9	0.51	**824.00**	**823.55**	828.80	828.25	3.09	2.99	0.45
R7	**R6**	0.00	0.00	0.00	1.46	30.64	3.15	4.74	10.50	**18**	**98**	**1.00**	0.20	0.25	1.00	5.9	0.27	**824.30**	**823.30**	829.00	827.70	2.99	2.69	1.00
R6	**R4**	0.00	0.00	0.00	1.46	30.92	3.13	4.74	10.50	**18**	**72**	**1.00**	0.20	0.25	1.00	5.9	0.20	**823.30**	**822.60**	827.70	828.25	2.69	3.94	0.70
R4	**R3**	0.00	0.00	0.00	3.01	77.70	1.70	9.82	13.29	**18**	**117**	**1.60**	0.87	0.25	1.60	7.5	0.26	**821.50**	**820.70**	828.25	825.60	5.04	3.19	0.80
R3	**R2**	0.22	0.30	0.07	3.08	77.95	1.70	9.93	11.74	**18**	**119**	**1.25**	0.89	0.25	1.25	6.6	0.30	**820.70**	**819.20**	825.60	824.30	3.19	3.39	1.50
R2	**R1**	0.00	0.00	0.00	3.08	78.25	1.69	9.93	13.29	**18**	**325**	**1.60**	0.89	0.25	1.60	7.5	0.72	**819.20**	**814.00**	824.30	821.50	3.39	5.79	5.20

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

NOTE:

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Maintenance Tasks and Schedule

TASKS	COMPONENTS: STREETS	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	CATCH BASIN INLET CASTINGS	CHANNELS	OUTFLOW CONTROL STRUCTURES	RIP-RAP	FILTRATION MEDIA	DETENTION AREAS	WETLANDS	EMERGENCY OVERFLOW	SCHEDULE
INSPECT FOR SEDIMENT ACCUMULATION		X	X		X	X	X			X		ANNUALLY
REMOVAL OF SEDIMENT ACCUMULATION		X	X		X	X	X			X		EVERY 5-10 YEARS AS NEEDED*
INSPECT FOR FLOATABLES AND DEBRIS		X	X	X	X	X	X			X		ANNUALLY
CLEANING FOR FLOATABLES AND DEBRIS		X	X	X	X	X	X			X		ANNUALLY
INSPECTION FOR EROSION		X			X		X					ANNUALLY
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES					X							AS NEEDED
REPLACEMENT OF GRAVEL JACKETS												EVERY 3-5 YEARS AS NEEDED*
CLEAN STREETS AND PARKING LOTS												SEMI-ANNUALLY
MOWING					X					X		1 TIME PER YEAR
INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY A PROFESSIONAL ENGINEER REPORTING TO THE OWNER)		X				X				X	X	ANNUALLY
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED BY ANNUAL WET WEATHER INSPECTION		X				X	X			X	X	AS NEEDED
KEEP RECORDS OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES AND REPORT TO OWNER		X				X	X			X	X	ANNUALLY
KEEP RECORDS OF ALL COSTS FOR INSPECTIONS, MAINTENANCE AND REPAIRS. REPORT TO OWNER.		X	X			X	X			X	X	ANNUALLY
REVIEW COST EFFECTIVENESS OF THE PREVENTATIVE MAINTENANCE PROGRAM AND MAKE ADJUSTMENTS AS NEEDED		X	X			X	X			X		ANNUALLY
OWNER TO HAVE A PROFESSIONAL ENGINEER CARRY OUT EMERGENCY INSPECTIONS UPON IDENTIFICATION OF SEVERE PROBLEMS		X	X		X	X	X			X	X	AS NEEDED
WATER DISTURBED AREAS TO PROVIDE DUST CONTROL	ALL DISTURBED AREAS OF SITE											WEEKLY OR AS DETERMINED BY PERMITTING AGENCY

* "AS NEEDED" MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE FOOT DEPTH
- REGULAR STORM WATER MANAGEMENT SYSTEM MAINTENANCE WILL BE PERFORMED BY AN OPERATIONS COMPANY, CONTRACTED BY OWNER.
- THE ESTIMATED ANNUAL BUDGET FOR MAINTENANCE IS:
$200 - FOR YEARLY INSPECTION
$100 - FOR YEARLY MOWING
$100/YEAR FOR SEDIMENT REMOVAL, REQUIRED REPAIRS
$50/YEAR FOR RECORD KEEPING
$50/YEAR FOR AS-NEEDED EMERGENCY INSPECTIONS
$500 TOTAL ESTIMATED ANNUAL BUDGET

STORM SEWER STRUCTURE SCHEDULE

Structure	Rim (ft) (Match)	Invert (ft)	
R1	821.50	814.00	NW
		813.60	NE & SW
R2	824.30	819.20	NW & SE
R3	825.60	820.70	N & SE
R4	828.25	823.55	N
		822.60	E
		821.50	SW
		823.55	W
R5	828.80	824.00	N & E
R6	827.70	823.30	NE & W
R7	829.00	824.30	NW & SW
R8	828.80	824.30	NW & SE
R9	829.90	824.90	NW
R10	828.10	823.60	N
		823.55	NW
R11	830.00	824.00	SW
R12	828.50	823.70	N
		823.55	SE

Stantec

Stantec Consulting Michigan Inc.
3754 Ranchero Drive
Ann Arbor MI 48108-2771
Tel: (734) 761-1010
www.stantec.com

Notes

D	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.24
C	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.07
B	SITE PLAN RESUBMITTAL	AMS	MDP	2019.11.21
A	SITE PLAN SUBMITTAL	AMS	MDP	2019.09.26
Issued		By	Appd	YYYY.MM.DD
File Name: 15000C-109		BWA	BWA	AMS 2018.08.25
		Dwn.	Dsgn.	Chkd. YYYY.MM.DD

Permit/Seal

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Client/Project Logo

Client/Project
PCP-AARPOZ, LLC

3874 RESEARCH PARK DRIVE
MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

Title

STORM WATER CALCULATIONS

Project No. 2075150000
Scale
Revision 0
Sheet 12 of 22
Drawing No. **C-109**

Part E.
STANDARD METHOD RUNOFF VOLUME WORK SHEETS

W1 Determining Post-Development Cover Types, Areas, Curve Numbers, and Runoff Coefficients

Total Site Area = 5.63 ac
Total Site Area Excluding "Self- Crediting" BMPs = 5.63 ac[4]

Rational Method Variables[1]

Cover Type	Soil Type	Area (ft²)	Area(ac)	Runoff Coefficient (c)	(C) (Area)
Roof	B	81,300	1.87	0.95	1.77
Gravel	B	960	0.02	0.85	0.02
Lawn	B	68,253	1.57	0.61	0.47
Concrete	B	6,000	0.14	0.95	0.13
Asphalt	B	88,841	2.04	0.95	1.94

Total - ∑(C)(Area) = 4.82
Area Total - ∑ac or ∑sf = 5.63
Weighted C - ∑(C)(Area)/∑ac or ∑sf = 0.86

NRCS Variables[2]

Pervious Cover Type	Soil Type	Area (ft²)	Area(ac)	Curve Number	(CN) (Area)
Lawn	B	68,253	1.57	61	95.58

Total - ∑(CN)(Area) = 95.58
Area Total - ∑ac or ∑sf = 1.57
Weighted CN - ∑(CN)(Area)/∑ac or ∑sf = 61

NRCS Variables[3]

Impervious Cover Type	Soil Type	Area (ft²)	Area(ac)	Curve Number	(CN) (Area)
Roof	B	81,300	1.87	98	182.91
Gravel	B	960	0.02	91	2.01
Concrete	B	6,000	0.14	98	13.5
Asphalt	B	88,841	2.04	98	199.87

Total - ∑(CN)(Area) = 398.28
Area Total - ∑ac or ∑sf = 4.07
Weighted CN - ∑(CN)(Area)/∑ac or ∑sf = 98

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

W2 Standard Method Runoff Volume Calculations

First Flush Runoff Calculations (V_{ff})

A. $V_{ff} = (1") \left(\frac{1'}{12"}\right) \left(\frac{43560 ft^2}{1ac}\right) AC$ $\quad V_{ff} = (1") \left(\frac{1'}{12"}\right) \left(\frac{43560 ft^2}{1ac}\right) (5.63) (.86)$

$V_{ff} = 17,482.02 ft^3$

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

W3 Standard Method Runoff Volume Calculations

Pre-development Bankfull Runoff Calculations ($V_{bf\,pre}$)

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

B. The pre-development land cover will be **Good Cover Woods or Meadow.** Determine the associated soil hydrologic group for the entire site and choose the curve number. $CN = 48$

C. $S = \frac{1000}{CN} - 10$ $\quad S = \frac{1000}{48} - 10$ $\quad S = 10.83 in$

D. $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\quad Q = \frac{(2.35-(0.2)(10.83))^2}{(2.35+(0.8)(10.83))}$ $\quad Q = 0.0031 in$

E. Total Site Area (sf) excluding "Self- Crediting" BMPs — $Area = 245,354 s.f$

F. $V_{bf\,pre} = Q(1/12)Area$ $\quad V_{bf\,pre} = (0.0031)(1/12)^{245,354}$ $\quad V_{bf\,pre} = 62.38 ft^3$

W4 Standard Method Runoff Volume Calculations

Pervious Cover Post-Development Bankfull Runoff Calculations ($V_{bf\,per\text{-}post}$)

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

B. Pervious Cover CN From Worksheet 1 $\quad CN = 61$

C. $S = \frac{1000}{CN} - 10$ $\quad S = \frac{1000}{61} - 10$ $\quad S = 6 \quad in$

D. $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\quad Q = \frac{(2.35-(0.2)(6))^2}{(2.35+(0.8)(6)}$ $\quad Q = 0.15 in$

E. Pervious Cover Area from Worksheet 1 — $Area = 68,253 s.f$

F. $V_{bf\,per\text{-}post} = Q(1/12)Area$ $\quad V_{bf\,per\text{-}post} = (0.15)(1/12)^{68,253}$ $\quad V_{bf\,per\text{-}post} = 874.5 ft^3$

W5 Standard Method Runoff Volume Calculations

Impervious Cover Post-Development Bankfull Runoff Calculations ($V_{bf\,imp\text{-}post}$)

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

B. Impervious Cover CN From Worksheet 1 $\quad CN = 98$

C. $S = \frac{1000}{CN} - 10$ $\quad S = \frac{1000}{98} - 10$ $\quad S = 0.21 in$

D. $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\quad Q = \frac{(2.35-(0.2)(.21))^2}{(2.35+(0.8)(.21))}$ $\quad Q = 2.12 in$

E. Impervious Cover Area from Worksheet 1 — $Area = 177,101 s.f$

F. $V_{bf\,imp\text{-}post} = Q(1/12)Area$ $\quad V_{bf\,imp\text{-}post} = (2.1)(1/12)^{177,101}$ $\quad V_{bf\,imp\text{-}post} = 31,252 ft^3$

W6 Standard Method Runoff Volume Calculations

Pervious Cover Post-Development 100-year Storm Runoff Calculations ($V_{100\text{-}per\text{-}post}$)

A. 100-year Storm Event — $P = 5.11in$

B. Pervious Cover CN From Worksheet 1 $\quad CN = 61$

C. $S = \frac{1000}{CN} - 10$ $\quad S = 1000/61 - 10$ $\quad S = 6.39 in$

D. $Q_{100\text{-}per} = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\quad Q_{100\text{-}per} = \frac{(5.11-(0.2)(6))^2}{(5.11+0.8(6))}$ $\quad Q_{100\text{-}per} = 1.44 in$

E. Pervious Cover Area from Worksheet 1 — $Area = 68,253 s.f$

F. $V_{100\text{-}per\text{-}post} = Q(1/12)Area$ $\quad V_{100\text{-}per\text{-}post} = (\quad)(1/12)^{68,253}$ $\quad V_{100\text{-}per\text{-}post} = 8,165.5 ft^3$

W7 Standard Method Runoff Volume Calculations

Impervious Cover Post-Development 100-year Storm Runoff Calculations ($V_{100\text{-}imp\text{-}post}$)

A. 100-year Storm Event — $P = 5.11in$

B. Impervious Cover CN From Worksheet 1 $\quad CN = 98$

C. $S = \frac{1000}{CN} - 10$ $\quad S = \frac{1000}{98} - 10$ $\quad S = 0.21 in$

D. $Q_{100\text{-}imp} = \frac{(P-0.2S)^2}{(P+0.8S)}$ $\quad Q_{100\text{-}imp} = \frac{(5.11-(0.2)(.21))^2}{(5.11+0.8(.21))}$ $\quad Q_{100\text{-}imp} = 4.87 in$

E. Impervious Cover CN From Worksheet 1 — $Area = 177,101 s.f$

F. $V_{100\text{-}imp\text{-}post} = Q(1/12)Area$ $\quad V_{100\text{-}imp\text{-}post} = (4.8)(1/12)^{177,101}$ $\quad V_{100\text{-}imp\text{-}post} = 71,852 ft^3$

W8 Standard Method Runoff Volume Calculations

Determine Time of Concentration for Applicable Flow Types ($T_{c\,this}$)

Flow Type	K	Change in Elevation	Length (L)	Slope % (S)	$S^{0.5}$	$V=K*S^{0.5}$	$T_c=L/(V*3600)$
Sheet Flow*	0.48	1	225	0.44	0.67	0.32	0.20
Waterway	1.2	4	150	2.67	1.63	1.96	0.021
Waterway	1.2						
Waterway	1.2						
Waterway	1.2						
Waterway	1.2						
Waterway	1.2						
Waterway	1.2						
Waterway	1.2						
Waterway	1.2						
Waterway	1.2						
Waterway	1.2						
Waterway	1.2						
Waterway	1.2						
Waterway	1.2						
Small Tributary	2.1						
Small Tributary	2.1						
Small Tributary	2.1						
Small Tributary	2.1						
Small Tributary	2.1						
Small Tributary	2.1						
Small Tributary	2.1						
Small Tributary	2.1						
Small Tributary	2.1						
Small Tributary	2.1						
Small Tributary	2.1						
Small Tributary	2.1						

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

Total Time of Concentration ($T_{c\,this}$) = 0.221

W9 Standard Method Runoff Volume Calculations

Runoff Summary & Onsite Infiltration Requirement

A. Runoff Summary from Previous Worksheets

First Flush Volume (V_{ff})	17,482	ft³
Pre-Development Bankfull Runoff Volume ($V_{bf\,pre}$)	62	ft³
Pervious Cover Post-Development Bankfull Volume ($V_{bf\,per\text{-}post}$)	874	ft³
Impervious Cover Post-Development Bankfull Volume ($V_{bf\,imp\text{-}post}$)	31,252	ft³
Total BF Volume ($V_{bf\text{-}post}$)	32,126	ft³
Pervious Cover Post-Development 100-year Volume ($V_{100\text{-}per\text{-}post}$)	8,165	ft³
Impervious Cover Post-Development 100-year Volume ($V_{100\text{-}imp\text{-}post}$)	71,852	ft³
Total 100-year Volume (V_{tot})	80,018	ft³

B. Determine Onsite Infiltration Requirement

Subtract the Pre-Development Bankfull from the Post-Development Bankfull volume

Total Post-Development Bankfull Volume ($V_{bf\,post}$)	32,126	ft³
Pre-Development Bankfull Runoff Volume ($V_{bf\,pre}$)	62	ft³
Bankfull Volume Difference	32,064	ft³

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

Onsite Infiltration Requirement (V_{inf}) = 32,064 ft³

W10 Standard Method Runoff Volume Calculations

Detention/Retention Requirement

Detention

A. $Q_{ff} = 238.6 T_c^{0.62}$ $\quad Q_{ff} = 238.6(.221)^{0.62}$

Peak of the Unit Hydrograph $\quad Q_{ff} = \frac{836.51 * Tc}{(in-mi)^2}$

B. *Total Site Area (ac) excluding "Self-Crediting" BMPs* — $Area = 5.63 ac$

C. $Q_{100} = Q_{100\,per} + Q_{100\,imp}$ $\quad Q_{100} = 1.44 + 4.87$

Note: $Q_{100\,per}$ and $Q_{100\,imp}$ from W6 and W7, respectively $\quad Q_{100} = 6.30 in$

D. Peak Flow (PF) = $\frac{Q_p\left(\frac{cfs}{(in-mi)^2}\right) V_{100}(in) Area(ac)}{640}$ $\quad PF = \frac{6(in)(5.30)(5.63)}{640}$

$PF = 46.41$ cfs

E. Δ = PF (cfs) – 0.15 Area(ac) $\quad \Delta = (46.41) - 0.15(5.63)$

$\Delta = 45.57$ cfs

F. $V_{det} = \frac{\Delta(27)}{PF(cfs)} V_{100}$ (ft³) $\quad V_{det} = \frac{45.57}{46.41}(80,018)$

$V_{det} = 78,561$ ft³

V_{det} = Calculated Detention (ft³), not including volume reduction credit for infiltration or penalty

Note: Projects/sites where the required infiltration volume cannot be achieved must increase the required detention volume by up to an additional 20%.

Retention

A. $V_{ret} = 2(V_{100})$ $\quad V_{ret} = 2(80,018)$

$V_{ret} = 160,036$ ft³

W11 Standard Method Runoff Volume Calculations

Determine Applicable BMPs and Associated Volume Credits

Proposed BMP*	Area (ft²)	Storage Volume[2] (ft³) Surface	Soil	Ave. Design Infiltration Rate (in/hr)	Infiltration Volume During Storm[3] (ft³)	Total Volume Reduction[4] (ft³)
Pervious Pavement w/Infiltration Bed						
Infiltration Basin						
Subsurface Infiltration Bed	19,409	14,911		8.4	81,515	96,426
Infiltration Trench						
Bioretention Systems	4,825	4,825	10,400	8.4	20,265	35,490
Rain Gardens						
Dry Well						
Bioswale						
Vegetated Filter Strip						
Green Roof						

Total Volume Reduction Credit by Proposed Structural BMPs (ft³) = 131,916
Runoff Volume Infiltration Requirement (V_{inf}) from Worksheet 9 - 32,064
Runoff Volume Credit (ft³) = 99,852

* Complete checklist from Section VI for each Structural BMP type
[2] Storage volume as defined in individual BMP write-ups
[3] Approximated as the average design infiltration rate over 6 hours multiplied by the BMP area: Infiltration Rate x 6 hours x BMP Area x Unit Conversions = Infiltration Volume (ft³)
[4] Total Volume Reduction Credit is the sum of the Storage Volume and the Infiltration Volume During Storm

W12 Natural Features Inventory

1. Provide Natural Resources Map. This map should identify waterbodies, floodplains, riparian areas, wetlands, woodlands, natural drainage ways, steep slopes and other natural features.
2. Summarize the existing extent of each natural resource in the Existing Natural Resources Table.
3. Summarize total proposed Protected/Undisturbed Area.
4. Do not count any area twice. For example, an area that is both a floodplain and a wetland may only be considered once (include as either floodplain or wetland, not both).

Existing Natural Resources	Mapped (yes, no, n/a)	Total Area (ac)	Protected/Undisturbed Area (ac)
Waterbodies	n/a		
Floodplains	n/a		
Riparian Areas	n/a		
Wetlands	n/a		
Woodlands	n/a		
Natural Drainage Area	n/a		
Steep Slopes, 15%-25%	n/a		
Steep Slopes, over 25%	n/a		
Special Habitat Areas	n/a		
Other	n/a		
TOTAL EXISTING (ac)			

W13 Summary

Site Summary of Infiltration & Detention

A. Stormwater Management Summary

Minimum Onsite Infiltration Requirement, V_{inf}	32,064	ft³
Designed/Provided Infiltration Volume	101,780	ft³
% Minimum Required Infiltration Provided	100	%
Total Calculated Detention Volume, V_{det}	78,561	ft³
Net Required Detention Volume *(V_{det} - Designed/Provided Infiltration Volume)*	-23,219	ft³

B. Detention Volume Increase for sites where the required infiltration volume cannot be achieved

% Required Infiltration NOT provided *(100% - % Minimum Required Infiltration Provided)*	0	%
Net % Penalty *(20% x % Required Infiltration NOT Provided)*	0	%
Total Required Detention Volume, including penalty *[(100% + Net % Penalty) x Net Required Detention Volume)]*	78,561	ft3

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

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Notes

D	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.24
C	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.07
B	SITE PLAN RESUBMITTAL	AMS	MDP	2019.11.21
A	SITE PLAN SUBMITTAL	AMS	MDP	2019.09.26
Issued		By	Appd	YYYY.MM.DD

File Name: 15000C-110 | BWA Dwn. | BWA Dsgn. | AMS Chkd. | 2018.08.25 YYYY.MM.DD

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Client/Project
PCP-AARPOZ, LLC

3874 RESEARCH PARK DRIVE
MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

Title

COUNTY WORK SHEETS

Project No. 2075150000 | Scale

Revision 0 | Sheet 13 of 22 | Drawing No. C-110

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	EPM NAME EPM NUMBER EPM EMAIL
ADS SALES REP	SALES NAME SALES NUMBER SALES EMAIL
PROJECT NO.	

ADVANCED DRAINAGE SYSTEMS, INC.

SiteASSIST by StormTech

FOR STORMTECH INSTRUCTIONS, DOWNLOAD THE INSTALLATION APP

ANN ARBOR RESEARCH PARK

CITY OF ANN ARBOR, MI

SC-160LP STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-160LP.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 1.5".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD. THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-160LP SYSTEM

1. STORMTECH SC-160LP CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-160LP CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-160LP CONSTRUCTION GUIDE".
3. FOUNDATION STONE AND EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE; AASHTO M43 #3,357, 4, 467, 5, 56, OR 57.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. THE DEPTH OF FOUNDATION STONE SHALL BE DETERMINED BASED ON THE SUBGRADE BEARING CAPACITY PROVIDED BY THE SITE DESIGN ENGINEER.
6. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES CONCERNING CHAMBER FOUNDATION DESIGN AND SUBGRADE BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
7. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
8. CHAMBERS SHALL BE INSTALLED "TOE TO TOE". NO ADDITIONAL SPACING BETWEEN ROWS IS REQUIRED.
9. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
10. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

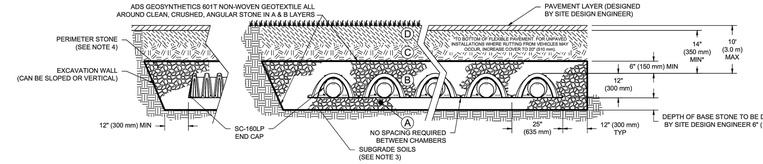
1. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-160LP CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-160LP CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-106LP CONSTRUCTION GUIDE".
2. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

ACCEPTABLE FILL MATERIALS: STORMTECH SC-160LP CHAMBER SYSTEMS

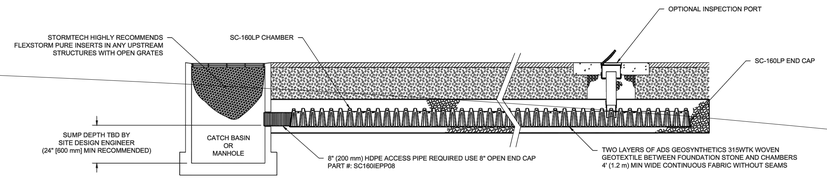
	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 14" (355 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[4] A-1, A-2-4, A-3 OR AASHTO M43[3] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[3] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[3] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 1.5"
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.



SC-160LP ISOLATOR ROW DETAIL

NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 3. IF NOT, PROCEED TO STEP 2.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

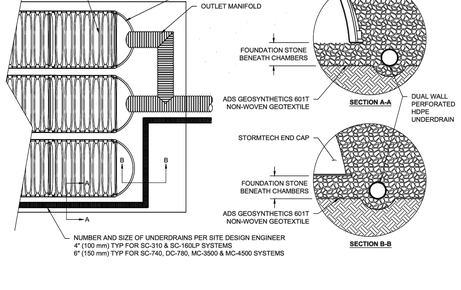
STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

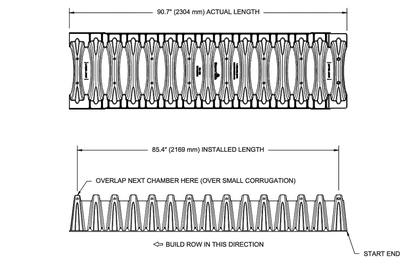
UNDERDRAIN DETAIL

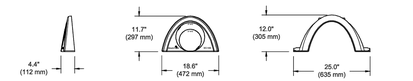
NTS



SC-160LP TECHNICAL SPECIFICATION

NTS





NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	25.0" X 12.0" X 85.4"	(635 mm X 305 mm X 2169 mm)
CHAMBER STORAGE	6.85 CUBIC FEET	(0.19 m³)
MINIMUM INSTALLED STORAGE*	16.0 CUBIC FEET	(0.45 m³)
WEIGHT	24.0 lbs.	(10.9 kg)

*ASSUMES 6" (152 mm) ABOVE, 6" (152 mm) BELOW, AND STONE BETWEEN CHAMBERS WITH 40% STONE POROSITY.

PART #	STUB	A
SC160EPP	6" (150 mm)	0.66" (16 mm)
	8" (200 mm)	0.80" (20 mm)
SC160EPP08	8" (200 mm)	0.96" (24 mm)

ALL STUBS ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

NOTE: ALL DIMENSIONS ARE NOMINAL

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

NOTE:

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

ANN ARBOR RESEARCH PARK, CITY OF ANN ARBOR, MI — DRAWN: DW — CHECKED: NA — DATE: — PROJECT #: — THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING - ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO STANTEC WITHOUT DELAY. — THE CONTRACTOR SHALL NOTIFY ALL UTILITIES PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCTS SPECIFIED AND ALL ASSOCIATED SITE WORKS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

REV	DWN	CHK	DESCRIPTION

StormTech — 20 BANCROFT, SUITE 110 HOOD HILL, CT 06067 — 860-529-8188 FAX 888-892-2694 — 800-821-6710 WWW.STORMTECH.COM

ADS — 4640 TRUEMAN BLVD HILLIARD, OH 43026 — 1-800-733-7473

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS AT THE TIME OF DRAWING PREPARATION. ADS RESERVES THE RIGHT TO REVISE THIS DRAWING AS NECESSARY TO ENSURE THAT THE PRODUCTS SPECIFIED ARE ADEQUATE FOR THE SITE CONDITIONS AS THEY ARE DETERMINED BY THE SITE DESIGN ENGINEER. IT IS THE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCTS SPECIFIED ARE ADEQUATE FOR THE SITE CONDITIONS AND THAT THE DESIGN COMPLIES WITH ALL APPLICABLE CODES AND REGULATIONS. ADS ASSUMES NO RESPONSIBILITY FOR THE ENGINEERING OF THE SITE DESIGN.

SHEET 4 OF 5

SHEET 3 OF 5

SHEET 5 OF 5

Stantec
Stantec Consulting Michigan Inc.
3754 Ranchero Drive
Ann Arbor MI 48108-2771
Tel: (734) 761-1010
www.stantec.com

Notes

D	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.24
C	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.07
B	SITE PLAN RESUBMITTAL	AMS	MDP	2019.11.21
A	SITE PLAN SUBMITTAL	AMS	MDP	2019.09.26
Issued		By	Appd	YYYY.MM.DD
File Name: 15000C-111		BWA	BWA	AMS 2018.08.25
		Dwn.	Dsgn.	Chkd. YYYY.MM.DD

Permit/Seal

PRELIMINARY NOT FOR CONSTRUCTION

Not for permits, pricing or other official purposes. This document has not been completed or checked and is for general information or comment only.

Client/Project Logo

Client/Project
PCP-AARPOZ, LLC

3874 RESEARCH PARK DRIVE
MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

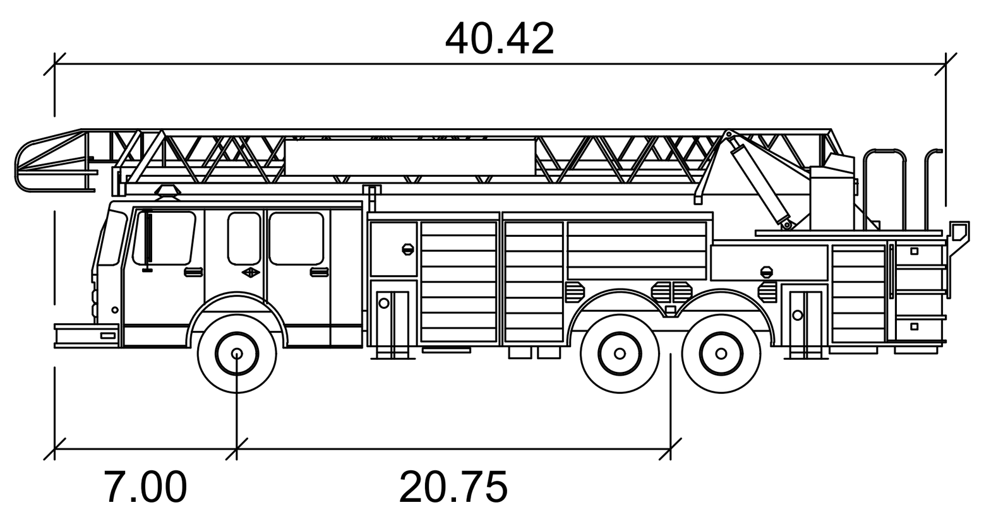
Title

STORM WATER DETAILS

Project No. 20751500000 — Scale

Revision 0 — Sheet 14 of 22

Drawing No. **C-111**

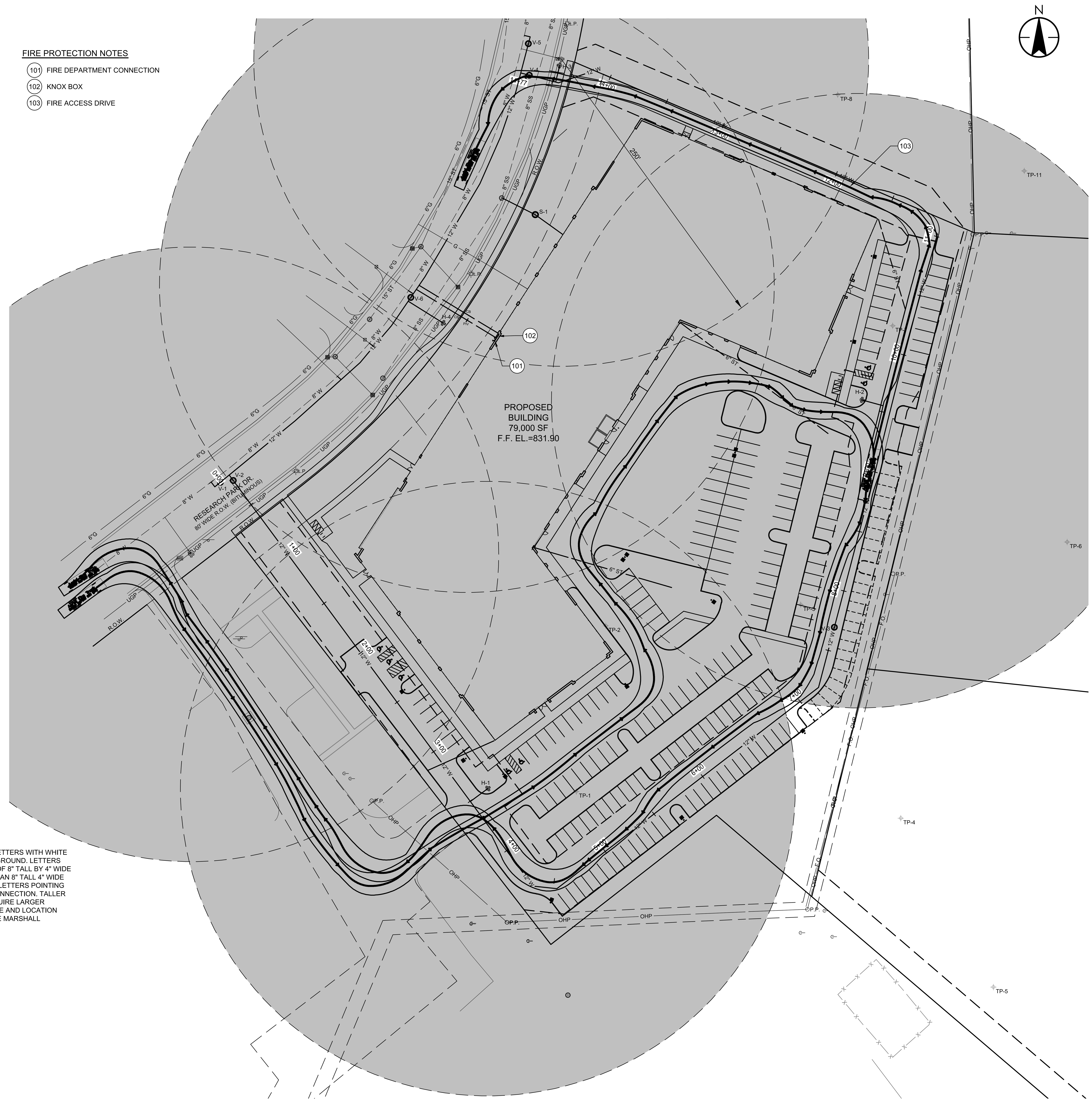


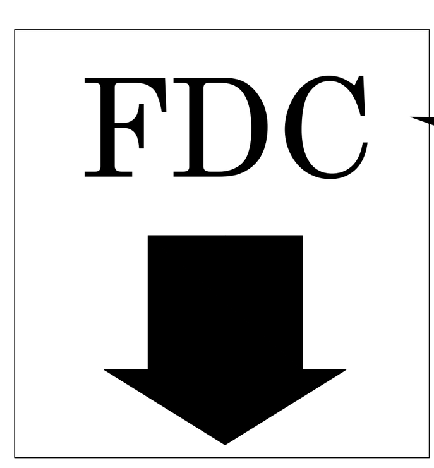
CITY OF ANN ARBOR FIRE

	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 33.0

FIRE PROTECTION NOTES

- (101) FIRE DEPARTMENT CONNECTION
- (102) KNOX BOX
- (103) FIRE ACCESS DRIVE





RED "REFLECTIVE" LETTERS WITH WHITE "REFLECTIVE" BACKGROUND. LETTERS WILL BE A MINIMUM OF 8" TALL BY 4" WIDE WITH 2" GIRTH, WITH AN 8" TALL 4" WIDE RED ARROW UNDER LETTERS POINTING DIRECTLY AT THE CONNECTION. TALLER BUILDINGS MAY REQUIRE LARGER LETTERING. SIGN SIZE AND LOCATION DETERMINED BY FIRE MARSHALL

FIRE DEPARTMENT CONNECTION LABEL DETAIL

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

NOTE:

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Stantec

Stantec Consulting Michigan Inc.
3754 Ranchero Drive
Ann Arbor MI 48108-2771
Tel: (734) 761-1010
www.stantec.com

Notes

		By	Appd	YYYY.MM.DD
D	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.24
C	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.07
B	SITE PLAN RESUBMITTAL	AMS	MDP	2019.11.21
A	SITE PLAN SUBMITTAL	AMS	MDP	2019.09.26

Issued

File Name: 15000C-112	BWA	BWA	AMS	2018.08.25
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Permit/Seal

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Client/Project Logo

Client/Project
PCP-AARPOZ, LLC

3874 RESEARCH PARK DRIVE
MULTI-TENANT 'FLEX-TECH' BUILDING

City of Ann Arbor, MI

Title

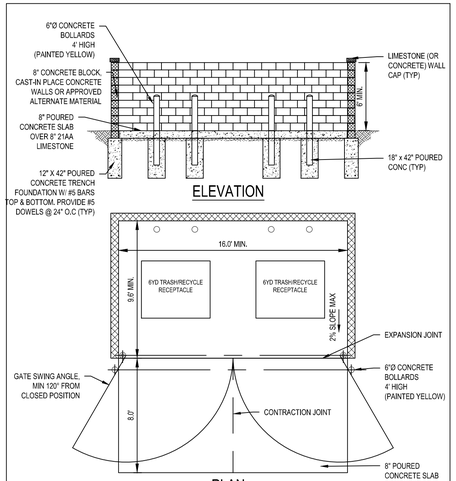
FIRE PROTECTION PLAN

Project No. 2075150000

Scale 0 40' 80'

Revision 0

Drawing No. **C-112**



DOUBLE BIN ENCLOSURE DETAIL

REV. NO.	DATE	DRAWN BY	CHECKED BY

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

SOLID WASTE STANDARD DETAILS

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

GENERAL NOTES:

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

CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
734-794-6410
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00	06/05/18	OHM	CJE
REV. NO.	DATE	DRAWN BY	CHECKED BY

SOLID WASTE STANDARD DETAILS

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

GENERAL NOTES CONTINUED:

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

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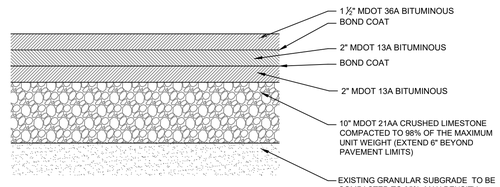
00	06/05/18	OHM	CJE
REV. NO.	DATE	DRAWN BY	CHECKED BY

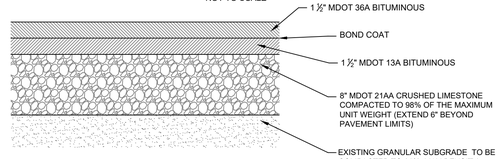
SOLID WASTE STANDARD DETAILS

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



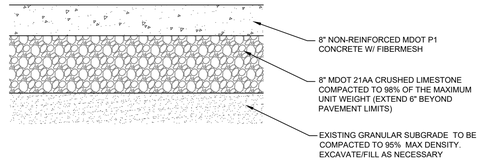
BITUMINOUS DRIVEWAY SECTION DETAIL

NOT TO SCALE



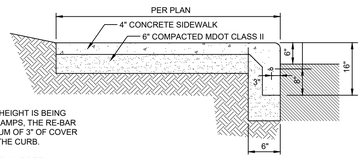
BITUMINOUS PARKING LOT SECTION DETAIL

NOT TO SCALE



CONCRETE CROSS SECTION DETAIL

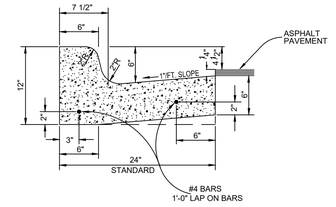
NOT TO SCALE

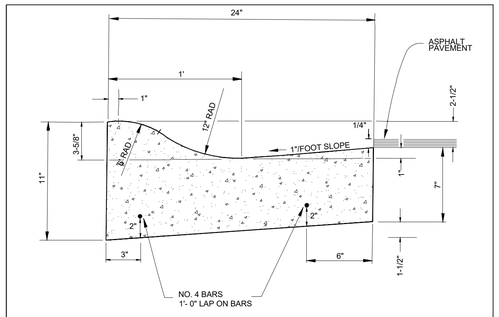


NOTES:
1. WHERE THE CURB HEIGHT IS BEING REDUCED FOR ADA RAMPS, THE RE-BAR SHALL HAVE A MINIMUM OF 3" OF COVER BELOW THE TOP OF THE CURB.
2. RAMPS PER MDOT R-28-F DETAIL.

INTEGRAL CONCRETE CURB AND SIDEWALK SECTION

NOT TO SCALE





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

PUBLIC SERVICES DEPARTMENT
CITY OF ANN ARBOR

BARRIER CURB AND GUTTER

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

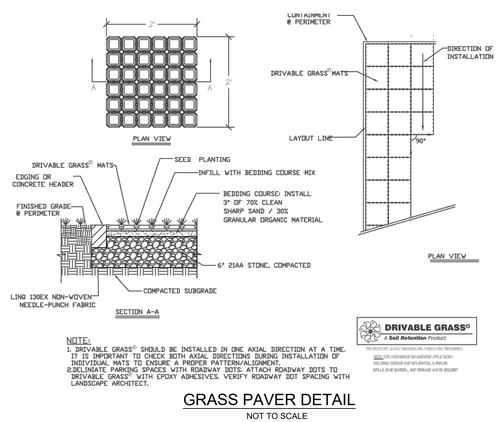
NOTE: FRONT EDGE OF INLET CASTINGS SHALL BE FLUSH WITH FRONT EDGE OF GUTTER (EDGE-OF-METAL)

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

PUBLIC SERVICES DEPARTMENT
CITY OF ANN ARBOR

MOUNTABLE CURB & GUTTER

DR. BY DF	CH. BY CSS	DRAWING NO.	
SCALE NONE	DATE 11-6-92	SD-R-2	
INCH 0 1"		SHEET NO. ____ OF ____	

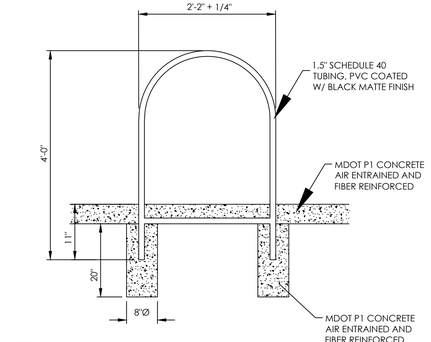


NOTE:
1. DRIVABLE GRASS® SHOULD BE INSTALLED IN ONE AXIAL DIRECTION AT A TIME. IT IS IMPORTANT TO CHECK BOTH AXIAL DIRECTIONS DURING INSTALLATION OF INDIVIDUAL MATS TO ENSURE A PROPER PATTERN/ALIGNMENT.
2. DELINEATE PARKING SPACES WITH ROADWAY DOTS. ATTACH ROADWAY DOTS TO DRIVABLE GRASS® WITH EPOXY ADHESIVES. VERIFY ROADWAY DOT SPACING WITH LANDSCAPE ARCHITECT.

DRIVABLE GRASS®
A Soil Retention Product

GRASS PAVER DETAIL

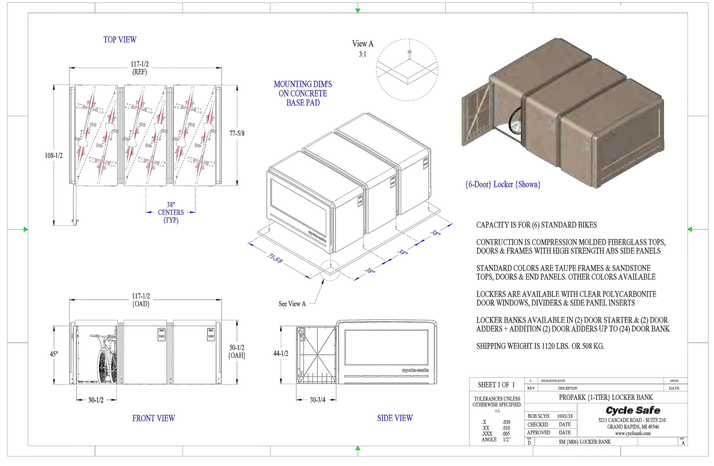
NOT TO SCALE

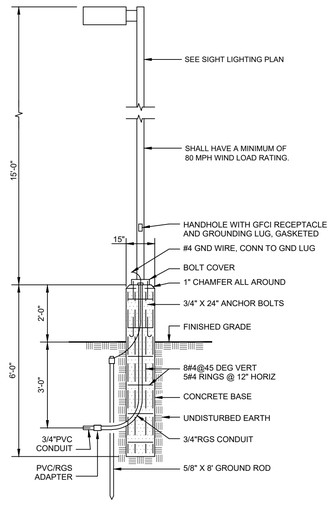


NOTES:
1. 3 HOOPS PLACES 2'-0" O.C.
2. CONCRETE PAD TO BE 4' BY 8'.
3. PROVIDE BICYCLE HOOPS BY S&G PRODUCTS, HOWELL MI OR APPROVED EQUAL.

BIKE HOOP DETAIL

NOT TO SCALE





PARKING LOT LIGHT FIXTURE DETAIL (TYP.)

NOT TO SCALE

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

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Notes

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		Dwn.	Dsgn.	Chkd. YYYY.MM.DD

Permit/Seal

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Client/Project Logo

Client/Project
PCP-AARPOZ, LLC

3874 RESEARCH PARK DRIVE
MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

Title

PROJECT DETAILS I

Project No.
2075150000

Scale

Revision 0
Sheet 16 of 22

Drawing No.
C-501

LANDSCAPE NOTES:

1. ALL UTILITY BOXES SHALL BE SCREENED FROM PUBLIC VIEW AND ON 3 SIDES.
2. TOPSOIL SUITABLE FOR PLANT GROWTH SHALL BE STOCKPILED ON SITE PRIOR TO CONSTRUCTION. IF STOCKPILED TOPSOIL IS INSUFFICIENT IN QUALITY OR QUANTITY THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TOPSOIL IN ACCORDANCE WITH ASTM STANDARDS WITH A MINIMUM OF 10% ORGANIC MATERIAL CONTENT. TOPSOIL SHALL BE SCREENED AND FREE OF ANY DEBRIS, WEEDS, ROOTS, STICKS, FOREIGN MATERIAL AND STONE.
3. COMPACTED SOILS IN NON-PAVED AREAS SHALL BE RIPPED TO A DEPTH OF 6-12" PRIOR TO SPREADING TOPSOIL OR PLANTING MEDIUM. ANY DEBRIS, STICKS, FOREIGN MATERIAL OR STONE SHALL BE REMOVED PRIOR TO SPREADING TOPSOIL.
4. ALL DISTURBED NON-PAVED AREAS SHALL BE SPREAD WITH A MINIMUM OF 4" TOPSOIL AND SEEDED OR SODDED WITH MDOT CLASS A SEED OR SOD, EXCLUSIVE OF LANDSCAPE AREAS, BIORETENTION AND MULCHED AREAS.
5. PLANTING MEDIA FOR LANDSCAPE AND BIORETENTION AREAS SHALL BE AMENDED SANDY LOAM, (SOIL PARTICLES WITHIN THE FOLLOWING PERCENTAGES: CLAY: 0-25; SILT: 25-50; SAND: 50-70) AMENDED WITH 10% DECOMPOSED ORGANIC MATTER. THE SOIL SHALL HAVE A SOIL ACIDITY RANGE BETWEEN A PH 5.0 TO PH 7.0. THE SOIL SALINITY SHALL NOT EXCEED 3 MILLIMHOS PER CENTIMETER AT 25OC (AS DESCRIBED BY USDA CIRCULAR NO. 982). AMENDED SOIL SHALL BE SCREENED AND FREE OF ANY DEBRIS, WEEDS, ROOTS, STICKS, FOREIGN MATERIAL AND STONE. DEPTH OF AMENDED SOIL SHALL BE MINIMUM 4" IN LANDSCAPE AREAS AND 8" IN BIORETENTION AREAS. PLACEMENT OF AMENDED SOIL IN PLANTING PITS SHALL BE PER PLANTING DETAILS.
6. ALL TREES AND SHRUBS SHALL BE MULCHED WITH 4" DEPTH OF SHREDDED HARDWOOD MULCH (NON-COLORED). TREES SHALL HAVE A 4' DIAMETER CIRCLE OF MULCH, 3" AWAY FROM TRUNK. SHRUB BEDS SHALL BE MULCHED TO A MINIMUM OF 2' BEYOND THE SHRUBS. MULCH SHALL BE FREE FROM DEBRIS AND FOREIGN MATERIALS AND LARGER BARK PIECES.
7. PLANTS SHALL BE INSTALLED PER PLANTING DETAILS ON SHEET L-102.
8. ALL LANDSCAPE AREAS SHALL BE PROVIDED WITH READILY AVAILABLE WATER. SEE LOCATION OF HOSE BIBS THIS SHEET.
9. SNOW SHALL BE STORED IN SOUTHEAST CORNER OF SITE AS SHOWN ON THIS SHEET. SNOW IS NOT TO BE STOCKPILED WITHIN 5' OF SHRUBS AND 10' OF TREES.
10. THE STREET TREE ESCROW OF $630.48 MUST BE PAID PRIOR TO ISSUING BUILDING PERMITS.
11. TREES SHALL BE PLANTED A MINIMUM OF 5' FROM UNDERGROUND UTILITIES, 10' FROM FIRE HYDRANTS, AND 15' FROM OVERHEAD UTILITIES.
12. ALL PLANTS SHALL BE MIDWEST (WITHIN 100 MILES) REGIONALLY GROWN, NO 1 GRADE PLANT MATERIAL IN ACCORDANCE WITH THE MOST RECENT AMERICAN STANDARDS FOR NURSERY STOCK.
13. ALL PLANT MATERIAL SHALL BE GUARANTEED BY THE CONTRACTOR FOR TWO YEARS FROM INSTALLATION. THE OWNER SHALL BE RESPONSIBLE FOR MAINTAINING LANDSCAPING IN ACCORDANCE WITH CITY STANDARDS AS A CONTINUED OBLIGATION AFTER THE TWO-YEAR WARRANTEE PERIOD. ANY DEAD OR DAMAGED PLANT MATERIAL SHALL BE REPLACED WITHIN THE NEXT APPROPRIATE PLANTING PERIOD.
14. LANDSCAPING SHALL BE KEPT IN A NEAT, ORDERLY, AND HEALTHY GROWING CONDITION FREE FROM DEBRIS AND REFUSE. A REGULAR PROGRAM OF MOWING, WATERING, WEEDING, FERTILIZING AND PRUNING SHALL BE PROVIDED. APPLICATIONS OF FERTILIZER BEYOND THE INITIAL TOPSOIL AND SEEDING SHALL BE A FERTILIZER WITH NO PHOSPHORUS.
15. ANY SUBSTITUTION OR DEVIATION FROM THE LANDSCAPE PLAN MUST BE APPROVED BY THE CITY OF ANN ARBOR PRIOR TO INSTALLATION. IN THE EVENT OF A DISCREPANCY, THE QUANTITIES ON THE PLAN SHALL TAKE PRESIDENT OVER THE PLANT LIST.

LANDMARK TREES:

THERE ARE 3 LANDMARK TREES ON SITE. 1-18" HONEY LOCUST, 2-20" HONEY LOCUST. THE TWO 20" TREES ARE TO BE SAVED. THE 18" HONEY LOCUST IS TO BE REMOVED, MITIGATION FOR THIS TREE IS PROPOSED.

Plant List

Key	Quantity	Common Name	Botanical Name	Caliper Size	Height	Root type	Landscape Requirement fulfillment
Trees							
AR-R	2	Red Sunset Red Maple	Acer rubrum 'Red Sunset'	2" cal.	12-14'	B&B	Right-of-way Screening Tree
AS-L	1	Sugar Maple	Acer sachanum	2" cal.	12-14'	B&B	Landmark Replacement Tree
CB-S	3	Hornbeam	Carpinus betulus	2" cal.	12-14'	B&B	Street Tree Planting
CB-V	7	Hornbeam	Carpinus betulus	2" cal.	12-14'	B&B	Vehicular Use Area Island
CO-L	2	Hackberry	Celtis occidentalis	2" cal.	12-14'	B&B	Landmark Replacement Tree
CO-V	4	Hackberry	Celtis occidentalis	2" cal.	12-14'	B&B	Vehicular Use Area Island
GT-S	5	Shademaster Honey Locust	Gleditsia triacanthos 'Shademaster'	2" cal.	12-14'	B&B	Street Tree Planting
GT-V	9	Shademaster Honey Locust	Gleditsia triacanthos 'Shademaster'	2" cal.	12-14'	B&B	Vehicular Use Area Island
NS-S	3	Black Gum	Nyssa sylvatica	2" cal.	12-14'	B&B	Street Tree Planting
NS-V	6	Black Gum	Nyssa sylvatica	2" cal.	12-14'	B&B	Vehicular Use Area Island
QP-L	2	Pin Oak	Quercus palustris	2" cal.	12-14'	B&B	Landmark Replacement Tree
Shrubs							
JC-R	8	San Jose Juniper	Juniperus chinensis 'San Jose'	N/A 30" spread	30"	Cont.	Right of way Screening height & opacity

Ground Cover in landscape areas (not including bioretention)		Square Feet	Pounds of Seed
No-mow grass mix or equal		8,206 s.f.	35 pounds
	Festuca rubra (Creeping Red Fescue)		
	Festuca brevipila 'Chariot' (Hard Fescue 'Chariot')		
	Festuca ovina var. duriuscula 'Heron (Hard Fescue 'Heron')		

Ground cover in bioretention area		Square Feet	Pounds of Seed
Native low meadow seed mix		6,684 s.f.	24 pounds
		Percent of seed	
Grasses		20%	
	Carex sprengelii — Sprengel's Sedge		
	Carex stipata — Common Fox Sedge		
	Carex grayii — Gray' Sedge		
	Eleocharis adicularis — Needle spike rush		
	Eleocharis obtusa — Blunt spike rush		
	Glyceria striata — Fowl Manna Grass		
	Juncus effusus — Soft Rush		
	Juncus torreyi — Torrey's Rush		
Forbs		20%	
	Allium cernuum — Nodding Wild Onion		
	Aquilgea canadensis — Columbine		
	Asclepias incarnata — Swamp Milkweed		
	Asclepias syriaca — Common Milkweed		
	Aster dumosis "Woods Light Blue — Woods Blue Aster		
	Monarda fistulosa — Wild bergamot		
	Pycnanthemum virginianum — Mountain Mint		
	Physostegia vergiliana — Obedient Plant		
	Solidago caesia — Blue-stemmed goldenrod		
	Tradescantia ohiensis — Spiderwort		
	Zizia aurea — Golden Alexander		
Temporary Grasses		60%	
	Lolium multiflorum — Annual Ryegrass		
	Avena sativa — Seed Oats		

Species from Rules of WCWRC plant list in Section VIII part M and Low Impact Development Manual for Michigan Appendix C

Mulch around trees and shrubs	Square feet	Cubic Yards
Shreaded hardwood Mulch (non-colored), minimum 4" depth	1,600 s.f.	16 c.y.

Landscape Requirements

Right of Way (ROW) Screening (52 linear feet of parking visible from ROW) — R

	Required	Provided
Height	30"	30"*
* Evergreen shrubs		
Opacity	50%	80%*
* 30" wide evergreen shrubs to be planted 5' on center, 2 staggered rows providing 4' opacity in 5' (4/5=80%)		
Trees (52'/1 tree per 30')	2	2

Vehicle Use Area (88,841 s.f. of parking lot and drives) — V

	Required	Provided
Islands (1 s.f. per 15 s.f. area= 88,841/15)	5,923 s.f.	14,890 s.f.
Trees (1 tree/250 s.f. island = 5,923/250)	24	26
Bioretention (50% of required islands=5,923*0.50)	2,962 s.f.	6,684 s.f.
Non-bioretention area (total-50%=5923-2962)	2,961 s.f.	8,206 s.f.

Conflicting Land Use (Not applicable)

The adjacent zoning does not require conflicting land use plantings

Street Trees (485.60 l.f. of ROW along Research Park Drive) — S

	Required	Provided
1 tree/45 l.f. of ROW=484.98/45)	11	11
Street tree escrow ($1.30 per l.f. of ROW=$1.30*484.98)	$630.48	$630.48*
*To be paid prior to issuing building permits		

Landmark Tree Replacement — L

Total DBH Removed	18"*
Mitigation Required (50% of total dbh removed=18*0.50	9"
Trees proposed	5
Total DBH replacement (2*5)	10"
*One 18" Honey Locust to be removed	

Know what's below. Call before you dig.

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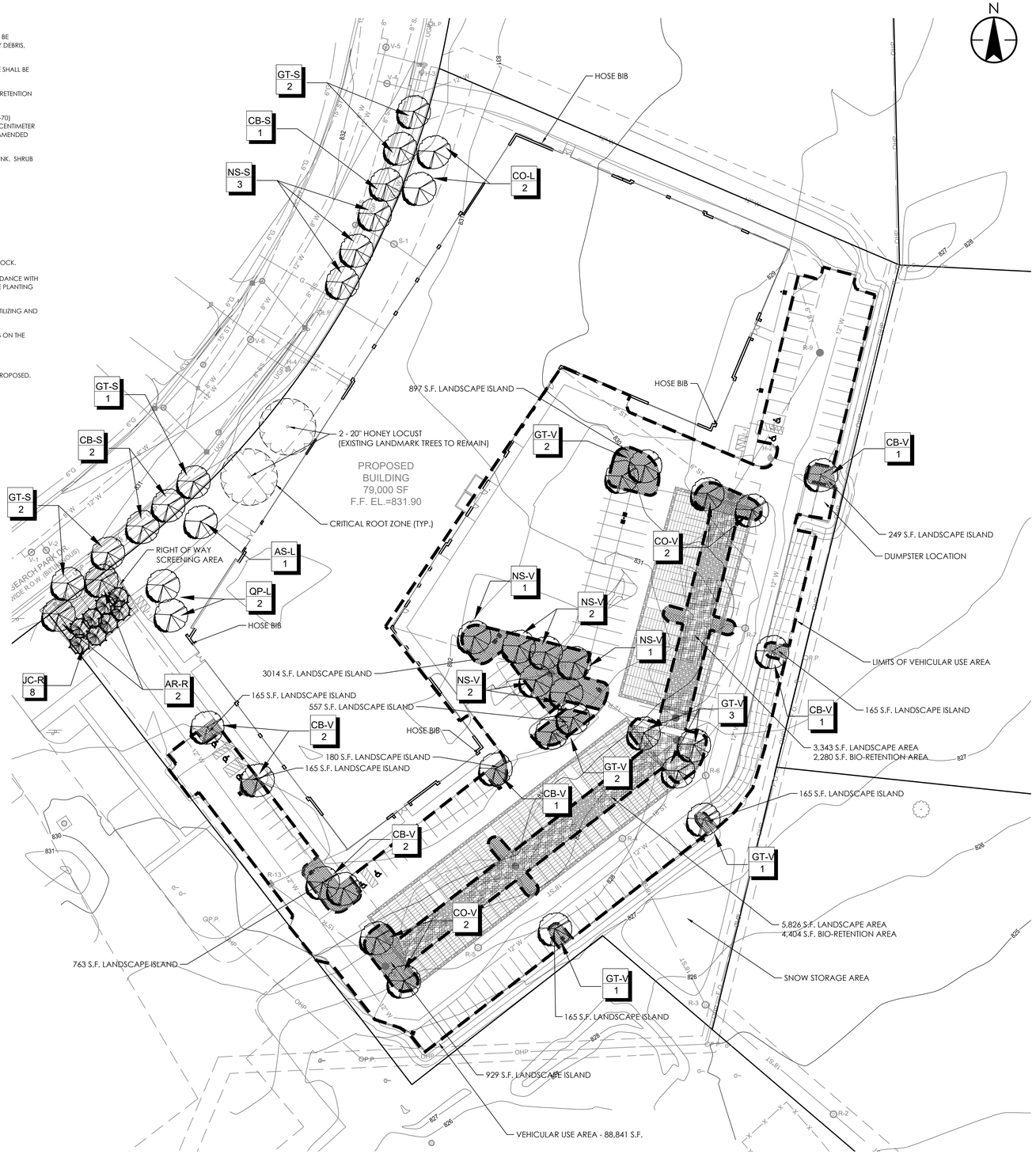

LANDSCAPE AREA LEGEND:

- INTERIOR LANDSCAPE ISLANDS
- DEPRESSED BIO-RETENTION AREA
- VEHICULAR USE AREA
- RIGHT OF WAY SCREENING AREA
- STONE FOREBAY (NOT INCLUDED IN ISLAND OR BIO-RETENTION AREAS)

Stantec

Stantec Consulting Michigan Inc.
3754 Ranchero Drive
Ann Arbor MI 48108-2771
Tel: (734) 761-1010
www.stantec.com

Notes

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		Dwn.	Dsgn.	Chkd. YYYY.MM.DD

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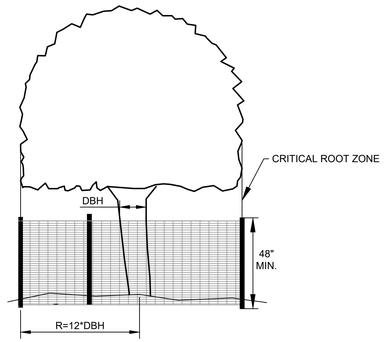
Client/Project
PCP-AARPOZ, LLC

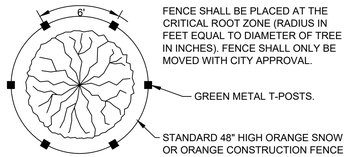
3874 RESEARCH PARK DRIVE
MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

Title

LANDSCAPE PLAN

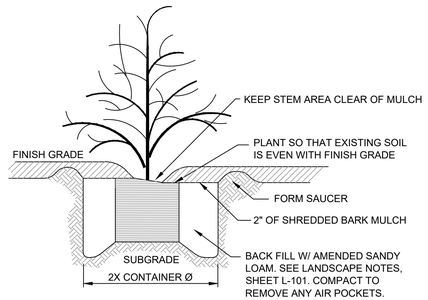
Project No. 2075150000
Scale 0 40' 80'
Revision 0
Sheet 17 of 22
Drawing No. **L-101**



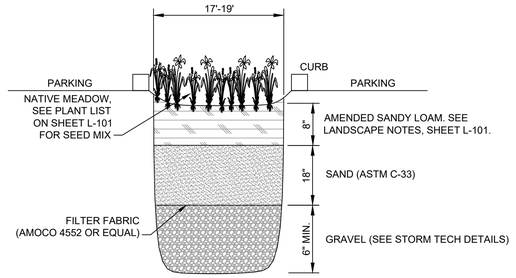


NOTES:
1. ALL TREES TO BE REMOVED WILL BE IDENTIFIED BY RED FLAGGING.
2. TREE PROTECTION FENCING IS TO BE ERECTED PRIOR TO ANY EARTHWORK OR CONSTRUCTION AND IS TO REMAIN IN PLACE UNTIL CONSTRUCTION AND GRADING IS COMPLETE.
3. ALL DEBRIS, FILL, EQUIPMENT OR MATERIAL IS TO BE KEPT CLEAR OF AREA WITHIN PROTECTIVE FENCE. NO CLEANING OF EQUIPMENT OR MATERIAL OR STORAGE OR DISPOSAL OF ANY MATERIAL WITHIN THE CRITICAL ROOT ZONE LINE OF ANY TREES TO BE SAVED.

TREE PROTECTION FENCE DETAIL
NOT TO SCALE

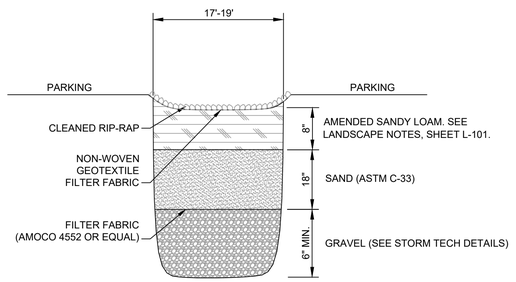


SHRUB PLANTING DETAIL
NOT TO SCALE

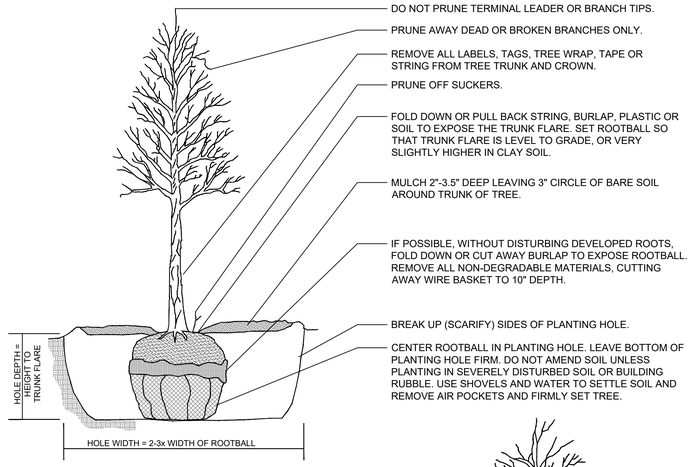


NOTE: SEE PLANT LIST ON SHEET L-101 FOR SEED MIX SPECIFICATIONS.

BIO-RETENTION DETAIL
NOT TO SCALE

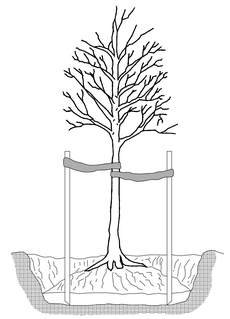


FOREBAY DETAIL
NOT TO SCALE

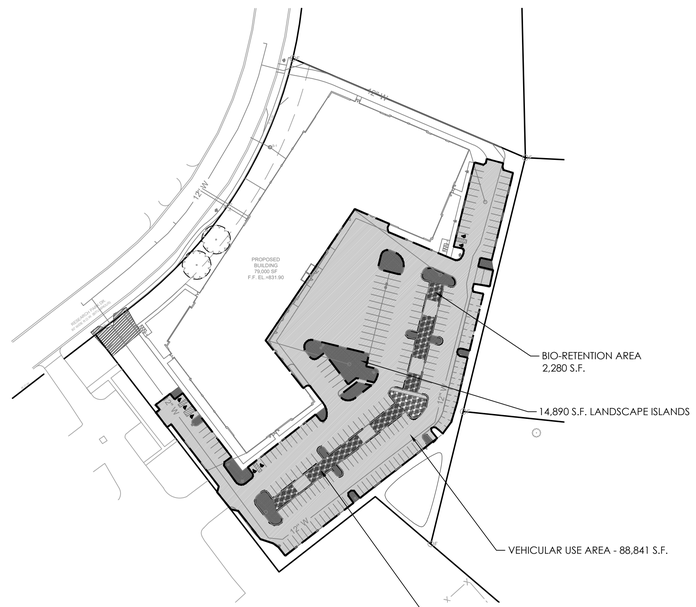


DO NOT STAKE UNLESS IN HEAVY CLAY SOIL, WINDY CONDITIONS, 3" OR GREATER DIAMETER TREE TRUNK OR LARGE CROWN. IF STAKING IS NEEDED DUE TO THESE CONDITIONS:

- STAKE WITH 2 x 2 HARDWOOD STAKES, OR APPROVED EQUAL, DRIVEN 6"-8" OUTSIDE OF ROOTBALL.
- LOOSELY STAKE TREE TRUNK TO ALLOW FOR TRUNK FLEXING.
- STAKE TREES JUST BELOW FIRST BRANCH WITH 2"-3" WIDE BELT-LIKE, NYLON OR PLASTIC STRAPS (2 PER TREE ON OPPOSITE SIDES OF TREE, CONNECT FROM TREE TO STAKE HORIZONTALLY. DO NOT USE ROPE OR WIRE THROUGH A HOSE.)
- REMOVE ALL STAKING MATERIALS AFTER 1 YEAR.



CITY OF ANN ARBOR TREE PLANTING DETAIL
NOT TO SCALE



USE AREA PLAN
SCALE: 1"=100'

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	Dwn.	Dsgn.	Cnkd.	YYYY.MM.DD

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3874 RESEARCH PARK DRIVE
MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

Title

LANDSCAPE DETAILS

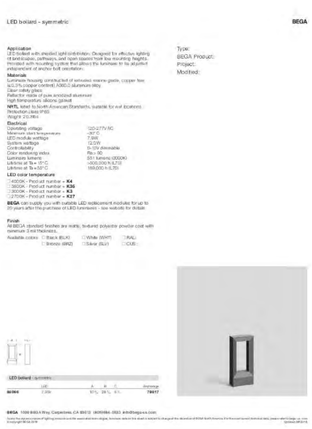
Project No.
2075150000

Scale

Revision
0

Sheet
18 of 22

Drawing No.
L-501



WST LED
Architectural Wall Sconce

Catalog Number
Notes
Type

Specifications
Luminaire
Height: 8-1/2"
Width: 11"
Depth: 10-3/16"
Weight: 20 lbs

Optional Back Box (PBBW)
Height: 8.49"
Width: 17.05"
Depth: 3.39"

Optional Back Box (BBW)
Height: 4"
Width: 5.410"
Depth: 1.512"

Capable Luminaire
This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.
- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background.

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

See ordering tree for details.

A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately. Link to Roam; Link to DTL DLL

LITHONIA LIGHTING COMMERCIAL OUTDOOR One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.705.SERV (7378) • © 2011-2014 Acuity Brands Lighting, Inc. All rights reserved. MOD WST LED Rev. 08/01/14

D-Series Size 1
LED Area Luminaire

Catalog Number
Notes
Type

Introduction
The modern styling of the D-Series is strikingly yet unobtrusive – making a bold, progressive statement even as it blends harmoniously with the environment.

The D-Series distills the benefits of high-power LED technology into a high performance, high efficacy, long-life luminaire. The D-Series' photometric performance results in even, even excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing 250-400W metal halide in pedestrian and area lighting applications with typical energy savings of 50% and expected service life of over 100,000 hours.

Specifications
EPA: 1.2 ft²
Length: 32" (813 mm)
Width: 13" (330 mm)
Height: 7-1/2" (191 mm)
Weight (max): 47 lbs (21 kg)

Ordering Information
EXAMPLE: DSX1 LED 60C 1000 40K T3M MVOLT SPA DDBXD

DSX1 LED

Series	LEDs	Drive current	Color temperature	Distribution	Voltage	Mounting	Control options	Other options	Finish
DSX1 LED	30C 30 LEDs 700 mA 40C 40 LEDs 700 mA 60C 60 LEDs 700 mA 1000 1000 mA (1 A) 1A0 100 LEDs 1000 mA (1 A)	1000 1000 mA (1 A)	30K 3000K 40K 4000K 50K 5000K	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium TLTM Left throw medium TRTM Right throw medium	MVOLT 120-277V HVOLT 347-480V	Shipped included SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor RPUMBA Round pole universal mounting adaptor Shipped separately KMA8 DDBXD U Mast arm adaptor (8" square)	Shipped included PE Photocell, SSL twist-lock (120-277V) DMG 0-10V dimming wires pulled outside fixture (for use with an external control, ordered separately) DS Dual switching (comparable to two-circuit operation) PIR Bi-level, motion/ambient sensor, 8' mounting height, 180° detection pattern PIR1FC3V Bi-level, motion/ambient sensor, 15' mounting height, 360° detection pattern SF Single fuse (120, 277 V) DF Double fuse (208, 240, 480 V)	Shipped included BS Bird spikes EGS External glare shield DDL Diffused drop lens SF Single fuse (120, 277 V) DF Double fuse (208, 240, 480 V) HS House-side shield SPD Surge protection device	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DSSXD Sandstone

Drilling
Tenon Mounting Slipfitter

Tenon O.D.	A	B	C	D	E	F	G	Wall thickness
3.5" (88.9 mm)	5" (127 mm)	10" (254 mm)	5.5" (140 mm)	3" (76.2 mm)	3" (76.2 mm)	3" (76.2 mm)	3" (76.2 mm)	0.25" (6.4 mm)
4" (101.6 mm)	5" (127 mm)	10" (254 mm)	5.5" (140 mm)	3" (76.2 mm)	3" (76.2 mm)	3" (76.2 mm)	3" (76.2 mm)	0.25" (6.4 mm)

Accessories
DSX1 LED Bird spikes DSX1 LED
DSX1 LED External glare shield DSX1 LED
DSX1 LED Diffused drop lens DSX1 LED
DSX1 LED House-side shield DSX1 LED
PUMBA Square pole universal mounting adaptor
RPUMBA Round pole universal mounting adaptor
KMA8 DDBXD U Mast arm adaptor (8" square)

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GENERAL LIGHTING NOTES:
- SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
- SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR.
- CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 3' AFG IN PARKING AREAS AND AT GRADE ALONG PROPERTY LINES

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

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

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

Schedule

Symbol	Label	QTY	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	LLF	Wattage	Mounting Height
	A2	2	Lithonia Lighting	DSX1 LED P8 50K T5M MVOLT	DSX1 LED P8 50K T5M MVOLT	LED	1	DSX1_LED_P8_50K_T5M_MVOLT.ies	0.95	414	25'
	C	1	Lithonia Lighting	DSX1 LED P8 50K T3M MVOLT	DSX1 LED P8 50K T3M MVOLT	LED	1	DSX1_LED_P8_50K_T3M_MVOLT.ies	0.95	207	25'
	E	6	Lithonia Lighting	DSX1 LED P8 50K TFTM MVOLT	DSX1 LED P8 50K TFTM MVOLT	LED	1	DSX1_LED_P8_50K_TFTM_MVOLT.ies	0.95	207	25'
	EBLC	0	Lithonia Lighting	DSX1 LED P8 50K BLC MVOLT	DSX1 LED P8 50K BLC MVOLT	LED	1	DSX1_LED_P8_50K_BLC_MVOLT.ies	0.95	207	25'
	ES	5	Lithonia Lighting	DSX1 LED P8 50K TFTM MVOLT HS	DSX1 LED P8 50K TFTM MVOLT with houseside shield	LED	1	DSX1_LED_P8_50K_TFTM_MVOLT_HS.ies	0.95	207	25'
	F	16	BEGA	88066	28" HIGH, 10" WIDE, 5" DEEP BOLLARD, DIE-CAST ALUMINUM HOUSING, TEMPERED GLASS, FULLY GASKETED, BUG RATING OF B0-U0-G0	LED - RATING OF 0 UPLIGHT	1	88066.IES	0.9	10	AT GRADE
	H	22	Lithonia Lighting	WST LED P2 50K VF MVOLT	WST LED, Performance package 2, 5000 K, visual comfort forward throw, MVOLT, rated for 0 uplight	LED	1	WST_LED_P2_50K_VF_MVOLT.ies	0.9	25	9'/15' AFG

Statistics

Description	Avg	Max	Min	Max/Min	Avg/Min	Avg/Max	Symbol
PARKING LOT & DRIVES	2.5 fc	6.1 fc	0.6 fc	10.2:1	4.2:1	0.4:1	X
PROPERTY LINE @ GRADE - EAST	0.3 fc	0.8 fc	0.0 fc	N/A	N/A	0.4:1	■
PROPERTY LINE @ GRADE - NORTH	0.2 fc	1.0 fc	0.0 fc	N/A	N/A	0.2:1	■
PROPERTY LINE @ GRADE - SOUTH	0.8 fc	2.9 fc	0.0 fc	N/A	N/A	0.3:1	■
PROPERTY LINE @ GRADE - WEST	0.0 fc	0.0 fc	0.0 fc	N/A	N/A	N/A	■
SITE	1.3 fc	27.7 fc	0.0 fc	N/A	N/A	0.0:1	+

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

NOTE:
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING MISS DIG PRIOR TO CONSTRUCTION.

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2020.01.24 4:01:57 PM

3874 RESEARCH PARK DRIVE - ANN ARBOR, MI
SITE LIGHTING PHOTOMETRIC PLAN
PREPARED FOR: STANTEC
GASSER BUSH ASSOCIATES
WWW.GASSERBUSH.COM

Designer JD/NE
Date 9/20/2019
Scale Not to Scale
Drawing No. #19-41941-V3
1 of 1

Stantec

Stantec Consulting Michigan Inc.
3754 Ranchero Drive
Ann Arbor MI 48108-2771
Tel: (734) 761-1010
www.stantec.com

Notes

D	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.24
C	SITE PLAN RESUBMITTAL	AMS	MDP	2020.01.07
B	SITE PLAN RESUBMITTAL	AMS	MDP	2019.11.21
A	SITE PLAN SUBMITTAL	AMS	MDP	2019.09.26
Issued		By	Appd	YYYY.MM.DD

File Name: 15000PH-101 — BWA Dwn. — BWA Dsgn. — AMS Chkd. — 2018.08.25 YYYY.MM.DD

Permit/Seal

PRELIMINARY NOT FOR CONSTRUCTION
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Client/Project Logo

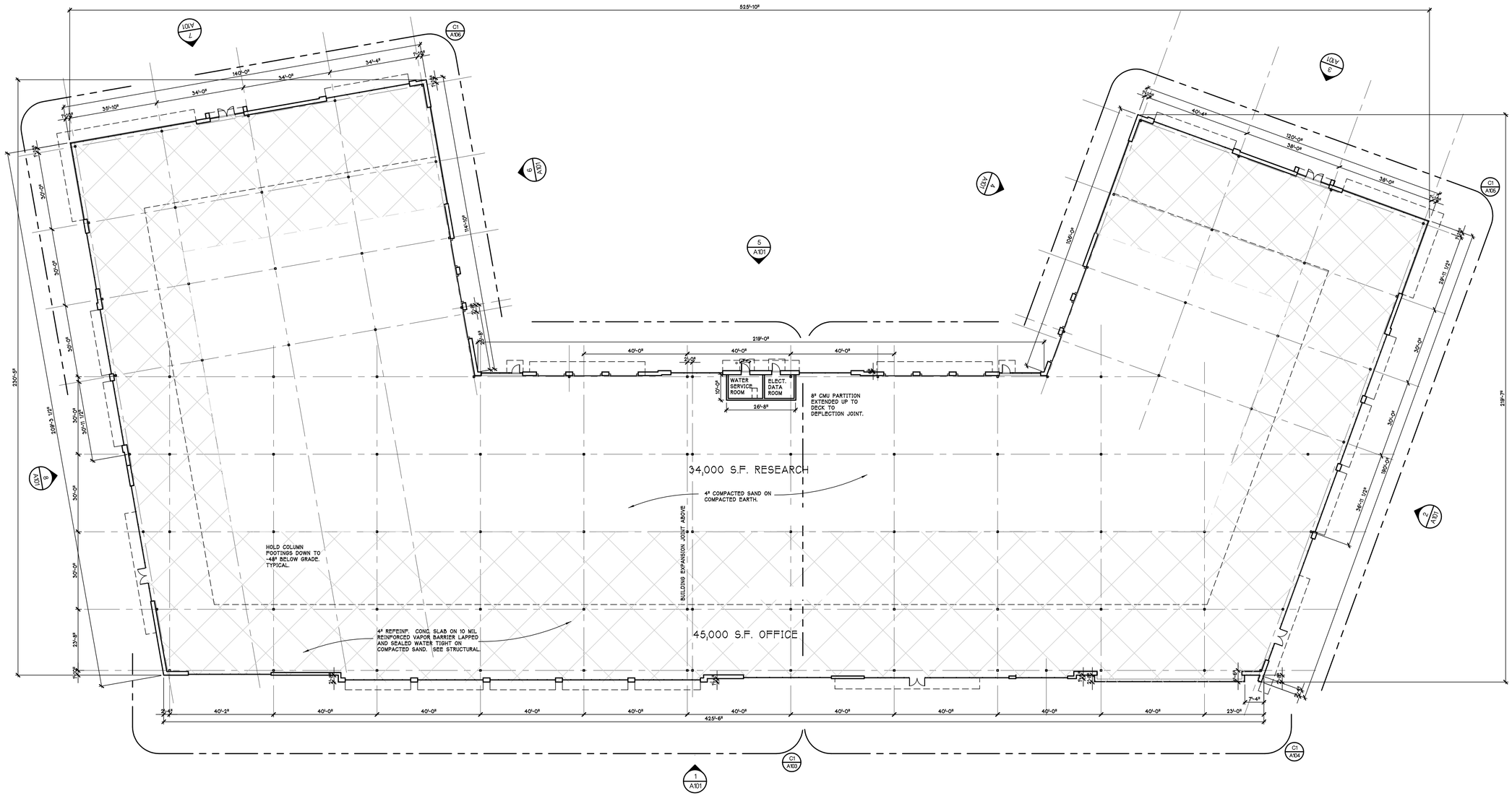
Client/Project
PCP-AARPOZ, LLC

3874 RESEARCH PARK DRIVE
MULTI-TENANT 'FLEX-TECH' BUILDING
City of Ann Arbor, MI

Title

SITE LIGHTING PLAN

Project No. 2075150000
Scale
Revision 0
Sheet 19 of 22
Drawing No. **PH-101**



SCHEMATIC FLOOR PLAN

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

FILENAME

SITE PLAN RESUBMITTAL 2019/11/21
SPR 2019/9/26
PRE-APP MTG 2019/9/19
DATE ISSUED

DRAWN BY
TLP
CHECKED BY

HOBBS + BLACK ARCHITECTS
www.hobbs-black.com
100 N. State St.
Ann Arbor, MI 48104
P. 734.663.4189

The Tech Loop @ Ann Arbor Research Park
Site: 3874 Research Park Drive,
Ann Arbor, Michigan 48108

Owner: PCP-AARPOZ, LLC
15040 Cleat Street,
Plymouth, MI 48170

PROJECT

CONSULTANT

FLOOR PLAN

SHEET TITLE

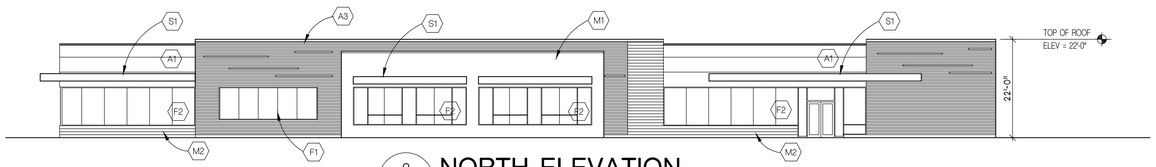
19-134

PROJECT NUMBER

SPR 101

SHEET NUMBER

Drawing: C:\Files Thom\HOMEWORK\ANN ARBOR RESEARCH PARK\ 19 134 20190926\20 19 SITE PLAN SUBMITTAL\ARSHSPO1.dwg
Date: Nov 20, 2019, 1:40pm Layout: SPR 101 Plotted by: tphillips



8 SP101 **NORTH ELEVATION**
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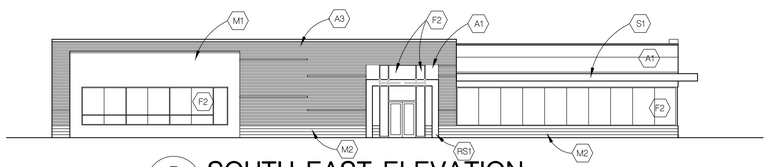
FILENAME



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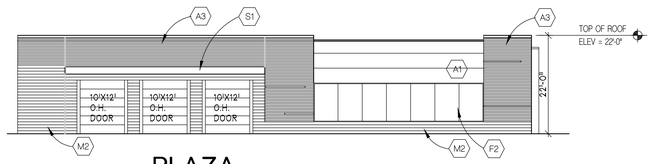

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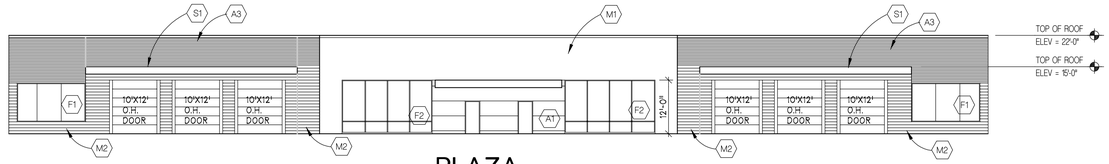

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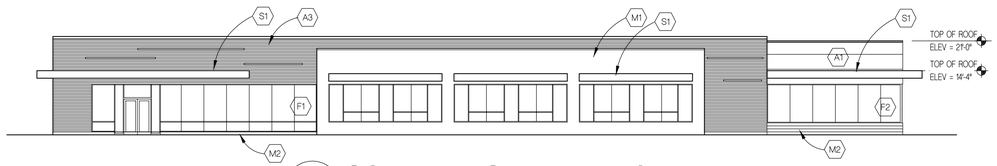

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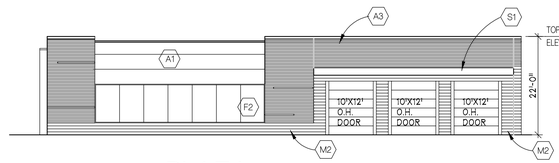

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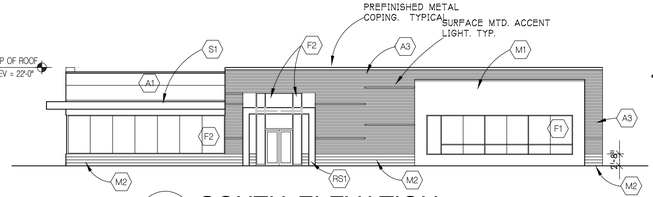

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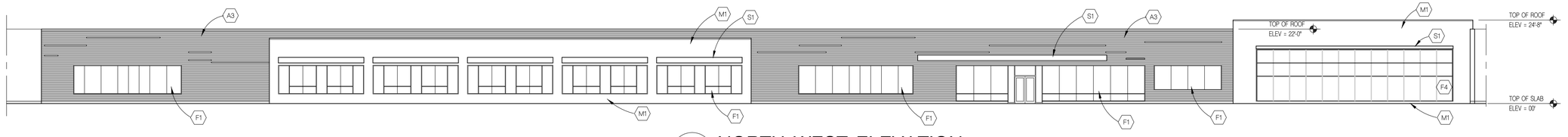
SCALE - 1/16" = 1'-0"
FILENAME



1 SP101 **NORTH WEST ELEVATION**
SCALE - 1/16" = 1'-0"
FILENAME

PRE-FINISHED HORIZONTAL SIDING MECHANICAL SCREEN WALLS WILL BE SHOWN ONCE ROOF TOP MECHANICAL UNITS HAVE BEEN SIZED AND LOCATED.

EXTERIOR LIGHTS ILLUMINATE ALL EXIT DOORS AND OVERHEAD DOORS. TYPICAL.

ALUMINUM FRAMES	BUILDING GLASS
DESIGN BASIS	DESIGN BASIS
F1 TYPICAL UNLESS NOTED OTHERWISE KAWNEER 601 T, THERMALLY BROKEN. 2" X 6" DEEP STOREFRONT FRAME, FACE GLAZED. VERTICAL BUTT JOINTS. F2 KAWNEER 451 T, THERMALLY BROKEN. 2" X 4 1/2" DEEP STOREFRONT FRAME, CENTER GLAZED. F3 KAWNEER 451 T, THERMALLY BROKEN. 2" X 4 1/2" DEEP STOREFRONT FRAME, FACE GLAZED. F4 CURTAINWALL THERMALLY BROKEN. 2" X 7" DEEP STOREFRONT FRAME, FACE GLAZED. VERTICAL BUTT JOINTS; HORIZONTAL CAPS.	G1 GRAY TINTED INSULATED GLASS GUARDIAN SNX 62 / 27 ON CRYSTALGRAY TRANSM: 44%, REFLECT OUT: 8% REFLECT IN: 11% U-VALUE: .29 SHGC: .22 LSG: 198 TYPICAL EXCEPT WHERE NOTED OTHERWISE.
FINISH: PRE-FINISHED PAINTED STOREFRONT FRAMING U.N.O.	

METAL PANEL LEGEND — DESIGN BASIS: CENTRIA PANELS

PANEL TYPE	SIZE	PANEL LENGTH	COLOR	PANEL ORIENTATION	R-VALUE
A1 FORMAWALL DIMENSION, SMOOTH	3" THICK, 10-40" WIDE	16 FEET,	SLATE GRAY 181	HORIZONTAL	R-22
A2 FORMAWALL DIMENSION, SMOOTH	3" THICK, 10-40" WIDE	16 FEET,	SILVERSMITH 9946, MICA	HORIZONTAL	R-22
A3 KING SPAN KARRIER PANEL,	3" THICK,		SILVERSMITH	HORIZONTAL	
A4 LINEAR METAL WALL SYSTEM AT SOFFITS WHERE SHOWN. 6" FACE ALUMINUM SIDING. Design Basis: Mayne Coatings Corp, 27575-50th Ave, Langley, BC; Canada. www.longboardproducts.com					
RS1 STONE TILE RAIN SCREEN ON METAL GRID ON ADHERED HIGH TEMP WATERPROOFING MEMBRANE ON REINFORCED CMU.					
M1 4" X 4" X 16" BRICK VENEER WITH COLOR MORTAR.					
M2 8" HI X 4" THICK X 16" LONG COLORED GROUND FACE CMU VENEER WITH COLOR MORTAR.					
S1 SUN SHADE					

SPR	9/26/2019
PRE-APP MTG	9/19/2019

DATE ISSUED

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TLP
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HOBBS + BLACK ARCHITECTS
100 N. State St.
Ann Arbor, MI 48104
P.734.663.4189
www.hobbs-black.com

The Tech Loop @ Ann Arbor Research Park
Site: 3874 Research Park Drive, Ann Arbor, Michigan 48108

Owner: PCP-AARPOZ, LLC
15040 Cleat Street,
Plymouth, MI 48170

PROJECT

CONSULTANT

BUILDING ELEVATIONS

SHEET TITLE

19-134

PROJECT NUMBER

SPR 102

SHEET NUMBER

Drawing: C:\Files_Trom\HOME\WORKANN ARBOR RESEARCH PARK_19_134 2019\ARSHSP02.dwg
Date: Sep 25, 2019, 11:45pm Layout: SPR 101 Plotted by: tphillips

RESEARCH PARK DRIVE ELEVATION

WEST VIEW AT ENTRY DRIVE

SERVICE AREA

ENTRY DRIVE FACING SOUTH WEST

CORNER FACING RESEARCH PARK DRIVE AT ENTRY DRIVE

Sheet Size - 24x36

SPR	9/26/2019
PRE-APP MTG	9/19/2019

DATE ISSUED

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HOBBS + BLACK ARCHITECTS
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The Tech Loop @ Ann Arbor Research Park
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Owner: PCP-AARPOZ, LLC
15040 Cleat Street,
Plymouth, MI 48170

PROJECT

CONSULTANT

BUILDING RENDERINGS

SHEET TITLE

19-134

PROJECT NUMBER

SPR 103

SHEET NUMBER

Drawing: C:\Files Thom\HOME\WORKMANN ARBOR RESEARCH PARK, I 9\134.20 I 9\ARS\HSP02.dwg
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