DYNICS
620 Fairfield Ct.
COMBINED PRELIMINARY/FINAL SITE PLAN
11,264 SF BUILDING ADDITION

PITTSFIELD TOWNSHIP, MICHIGAN

ABBREVIATIONS

A	A.F.F.	ABOVE FINISH FLOOR
	AC.	ACRE
	A/C	AIR CONDITION
B	B/C	BOTTOM OF CURB
	B.F.F.	BELOW FINISH FLOOR
	BLDG.	BUILDING
C	CB	CATCH BASIN
	C.O.	CLEAN OUT
	CONC.	CONCRETE
	C.J.	CONTROL JOINT
D	DIA.	DIAMETER
	D.I.	DUCTILE IRON
E	EA.	EACH
	ELEC.	ELECTRIC
	EL./ ELEV.	ELEVATION
	EXIST./ EX.	EXISTING
F	FT.	FEET
	F.F.	FINISH FLOOR
	F.H.	FIRE HYDRANT
G	GA.	GAUGE
	GALV.	GALVANIZED
H	HT.	HEIGHT
	H.P.	HIGH POINT
	H.M.	HOLLOW METAL
	HORIZ.	HORIZONTAL
I	I.D.	INSIDE DIAMETER
	INV.	INVERT
J	JT.	JOINT
L	L.L.	LIVE LOAD
	L.P.	LOW POINT
M	MH	MANHOLE
	MAS.	MASONRY
	M.O.	MASONRY OPENING
	MAX.	MAXIMUM
	MIL.	MILLIMETER
	MIN.	MINIMUM
	MTD	MOUNTED
N	NOM.	NOMINAL
	NO.	NUMBER
O	O.C.	ON CENTER
	O.D.	OUTSIDE DIAMETER
	O.H.	OVERHEAD
	OE	OVERHEAD ELECTRIC
	OTE	OVERHEAD TELEPHONE & ELECTRIC
P	PSF	POUNDS PER SQUARE FOOT
	PSI	POUNDS PER SQUARE INCH
	PEMB	PRE-ENGINEERED METAL BUILDING
R	RAD.	RADIUS
	R.O.W.	RIGHT OF WAY
	RTU	ROOF TOP UNIT
S	SAN.	SANITARY
	SCH.	SCHEDULE
	S.P.A.	SITE PLAN APPROVAL
	SQ. FT./ S.F.	SQUARE FEET
	ST. MH	STORM MANHOLE
T	TV&S	TAPPING VALVE & SLEEVE
	T/C	TOP OF CURB
	TYP.	TYPICAL
U	UE	UNDERGROUND ELECTRICAL
	UTE	UNDERGROUND TELEPHONE & ELECTRICAL
	U.P.	UTILITY POLE
V	VERT.	VERTICAL
W	W/	WITH
	W/O	WITHOUT

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

PROJECT DESCRIPTION

Construction of 11.264 square foot building addition and parking lot with truck loading and turnaround on the two parcels of land to be combined. Construction of 15 parking spaces and related landscaping for the project shall be located to the East of the building. The Building will be equipped with a fire alarm system that shall be monitored 24 hours a day.

LEGAL DESCRIPTION

L -12-20-100-017

COMMENCING AT NE CORNER SEC 20, THENCE N 89°43'03" W 793.71 FT, THENCE S 00°23'55" W 165.88 FT, THENCE 117.66 FT ALONG AN ARC CURVING RIGHT W/ RAD=75.00 FT CH=S 44°39'34" E 10R.96 FT TO POINT OF BEGINNING, THENCE S 89°43'03" E 345.00 FT, THENCE S 00°23'55" W 329.61 FT, THENCE ALONG AN ARC CURVING LEFT W/ RAD=283.00 FT CH=S 35°48'43" W 175.28 FT, THENCE N 89°43'03" W 188.89 FT, THENCE 105.35 FT ALONG ARC CURVING RIGHT W/ RAD=717.00 FT CH=N 85°30'29" W 105.26 FT, THENCE 41.37 FT ALONG ARC CURVING RIGHT W/ RAD=25.00 FT CH=N 33°53'41" W 36.81 FT, THENCE 257.69 FT ALONG ARC CURVING LEFT W/ RAD=113.00 FT CH=257.14 FT, THENCE N 00°23'55" E 111.25 FT, THENCE CONTINUING ALONG EASTERLY R/W LINE OF FAIRFIELD CT TO POINT OF BEGINNING. PART OF NE 1/4 SEC 20, T3S-R6E. 4.01 AC.

L -12-20-100-019
REMAINING 3.3 ACRES MORE OR LESS FROM PARCEL AS FOLLOWS

Commencing at the Northeast corner of Section 20, T3S, R6E, Pittsfield Township, Washtenaw County, Michigan; thence South 88°05'06" West 793.71 feet along the North line of said Section 20; thence South 01°46'27"East 165.54 feet; thence the following four courses along the West Right-of Way line of Fairfield Court: 201.45 feet along the arc of a 75.00 foot radius non-tangential circular curve to the left, chord bearing South 11°16'40" West 146.12 feet, South 01°46'27" East 111.25 feet, 242.55 feet along the arc of a 1067.00 foot radius circular curve to the right, chord bearing South 04°44'17" West 242.03 feet, 41.41 feet along the arc of a 25.00 foot radius non-tangential circular curve to the right, chord bearing South 58°41'51" West 36.83 feet; thence South 16°08'40" West 66.00 feet; thence the following two courses along the South Right-of-Way line of Waterways Drive: 246.46 feet along the arc of a 783.00 foot radius non-tangential circular curve to the left; chord bearing South 82°52'22" East 245.45 feet, North 88°06'35" East 176.45 feet; thence the following two courses along the West Right-of-Way line of Avis Drive: 20.94 feet along the arc of a 283.00 foot radius non-tangential circular curve to the left, chord bearing South 00°09'10" East 20.94 feet, South 02°16'23" East 600.00 feet; thence North 87°43'38" East 33.00 feet; thence South 02°16'23" East 218.65 feet; thence North 87°43'37" East 456.29 feet; thence North 02°03'58" West 1615.44 feet along the East line of said Section 20 to the Northeast ¼ of Section 20, T3S, R6E, said point being the Place of Beginning; together with and subject to Highway Easement as described in Liber 3970, Page 908, Washtenaw County Records; excepting therefrom portions conveyed in Liber 2200, Page 605, Liber 2357, Page 310, Liber 2425, Page 530, and in Liber 2504, Page 292, Washtenaw County Records.✓

COMBINED PARCEL LEGAL DESCRIPTION

Part of the Northeast 1/4 of Section 20, T3S-R6E, Pittsfield Township, Washtenaw County, Michigan, more particularly described as follows: Commencing at the Northeast Corner of Section 20, thence along the North line of Section 20, N 89°43'03" W (recorded as S 88°05'06" W), 313.71 feet, to the POINT OF BEGINNING of the Parcel to be described; thence S 00°23'55" W, 536.61 feet; thence along the northerly Right of Way line of Avis Drive (66 foot wide Right of Way), southwesterly along an arc left, having a length of 247.35 feet, a radius of 283.00 feet, a central angle of 50°04'42", and a long chord which bears S 42°48'38" W, 239.55 feet; thence along the northerly Right of Way line of Technology Drive (66 foot wide Right of Way), the following two (2) courses: 1) N 89°43'03" W, 188.89 feet; 2) westerly along an arc right, having a length of 105.35 feet, a radius of 717.00 feet, a central angle of 08°25'08", and a long chord which bears N 85°30'29" W, 105.26 feet; thence along the easterly Right of Way line of Fairfield Court (66 foot wide Right of Way), the following four (4) courses: 1) northwesterly along an arc right, having a length of 41.37 feet, a radius of 25.00 feet, a central angle of 94°49'03", and a long chord which bears N 33°53'41" W, 36.81 feet; 2) northerly along an arc left, having a length of 257.69 feet, a radius of 1133.00 feet, a central angle of 13°01'53", and a long chord which bears N 06°54'59" E, 257.14 feet; 3) N 00°24'02" E (recorded as N 00°23'55" E), 111.25 feet; 4) northerly along a 75 foot radius Cul-De-Sac, on an arc left, having a length of 83. 79 feet, a radius of 75.00 feet, a central angle of 64°00'37", and a long chord which bears N 32°17'18" E, 79.50 feet, said point being previously described from the Northeast Corner of Section 21, along the following three (3) courses: 1) along the North line of Section 20, N 89°43'03" W, 793.71 feet; 2) S 00°23'55" W, 165.88 feet; 3) along the Right of Way of a 75 foot radius Cul-De-Sac of Fairfield Court, southeasterly along an arc right, having a length of 117.66 feet, a radius of 75.00 feet, a central angle of 89°53'08", and a long chord which bears S 44°39'34" E, 105.96 feet; thence S 89°43'03" E, 305.00 feet; thence N 00°23'55" E, 240.88 feet; thence along the North line of Section 20, S 89°43'03" E, 100.00 feet, to the POINT OF BEGINNING, containing 5.00 acres, more or less, and including the use of Avis Drive, Technology Drive and Fairfield Court. Also subject to a 126 foot wide permanent private easement for public utilities – sanitary sewer and water main, as recorded in Uber 2683, Page 594, Washtenaw County Records. Also subject to a 42 foot easement for construction, maintenance, repair and use of public utilities (Easement G), as recorded in Uber 2200, Page 587, Washtenaw County Records. Also subject to a 20 foot wide easement for public utilities along the Right of Way of Fairfield Court. Also subject to any other easements or restrictions of record.

NATURAL FEATURES IMPACT STATEMENT

The proposed building addition shall have an impact on some of the natural features of this site. The site contains wetlands with an area of 0.6 acre that will be removed. Portions of wetland that tie into the detention basin are overgrown with Phragmites(invasive) and a low area accepting runoff from nieghboring parcels with good quality wetlands shall be removed. This shall be mitigated with 0.9 acre minimum mitigation ares with native wetlands plantings provided within the forebay area and the proposed rainwater garden on site. A few trees installed with recent development will be removed for the construction of the building, each is less than 6" DBH. The onsite detention basin shall remain largely undisturbed and no mature trees shall be removed.

Note: The wetlands shown on the plans were delineated on October 6, 2016 by Metro Consulting Associates (MCA) and surveyed on October 28, 2016 by Vanston/O'Brien, Inc.

SITE INFORMATION

CONSTRUCTION TYPE:	Type II B (Non-Combustible, Unprotected)
ZONING:	BP, Business Park
BUILDING USE:	Office (4,128 SF GROSS) Factory (18,976 SF NET) Warehouse (11,998 SF NET)
BUILDING AREA:	EXISTING (26,026 SF GROSS) PROPOSED (11,264 SF GROSS)
BUILDING USE GROUPS:	B, Business (Office) F-1, Moderate Hazard Factory (Electronic Components) F-2, Low Hazard Factory (Sheet Metal Fabrication)
CURRENT PROPERTY USE:	Manufacturing
LOT AREA:	5.00 Acres (217,654 SF)
NET LOT AREA:	4.05 Acres (176,303 SF)

	EXISTING	PROPOSED
BUILDING AREA:	26,026 SF (Total)	37,290 SF (Total)
PAVEMENT AREA:	28,944 SF	49,824 SF
IMPERVIOUS AREA:	54,970 SF	87,114 SF

	REQUIRED	PROPOSED
MIN. LOT AREA	1 ACRE	5.00 ACRES
MIN. LOT WIDTH	150 ft.	387 ft.
MAX. LOT COVERAGE	40%	21.1%
FLOOR AREA RATIO	60%	21.1%
IMPERVIOUS AREA RATIO	60%	49.4%
MAX. BUILDING HEIGHT	45 ft. max., 3 stories	24 ft., 1 story
FRONT SETBACK	25 ft.	102.2 ft.
SIDE SETBACK	20 ft. min.	20.5 ft.
REAR SETBACK	35 ft	261.3 ft.

PARKING:
REQUIRED:
OFFICE: (1) space for each 300 sf of gross floor area = 4128/300 = 13.8 spaces
WAREHOUSE: (1) space for each 1500 sf of gross floor area + 1 per employee max. shift = 11998/1500 + 2 employees = 10 spaces
MANUFACTURING/RESEARCH: (1) space for each 550 sf of gross floor area = 18976/550 = 34.5 spaces
For Total of (59) spaces required.
PROPOSED: 59 parking spaces, including (3) barrier-free spaces.

LOADING:
(1) space, plus (1) space for each 20,000 sf in excess of 20,000 sf
= 37,290 sf / 20,000 sf = (2) loading spaces required.
PROPOSED: (2) loading spaces provided.

UTILITY NOTES

PUBLIC UTILITIES

The existing utilities shown on the drawings represent the best information available as obtained from existing records and by field surveys. This information does not relieve the contractor of the responsibility to contact Miss Dig or to satisfy himself as to the accuracy of the location shown. These documents were prepared using the best information available from existing documents and records. The contractor/project manager/subcontractor/superintendent is responsible for verifying the existing conditions on the site, and shall notify the engineer of any discrepancies prior to proceeding with work.

SEWER & WATER
Utilities Department
Pittsfield Township
6201 W. Michigan Ave.
Ann Arbor, Michigan 48108
Office (734) 822-2110

TELEPHONE
AT&T
5500 South Maple Road
Ann Arbor, Michigan 48103
(734) 996-5351

ELECTRIC
DTE Energy
982 Broadway Ave.
Ann Arbor, Michigan 48105
Service Planning (734) 332-3300

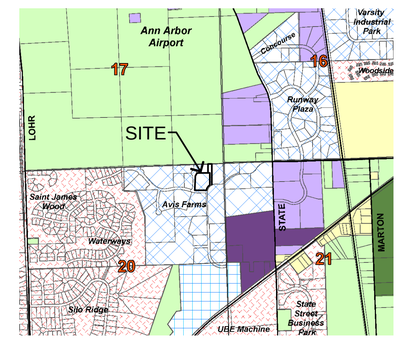
GAS
DTE Energy
3150 East Michigan Avenue
Ypsilanti, Michigan 48198
(734) 485-8230

For protection of underground utilities, the contractor shall notify the Miss Dig Utility Location Service a minimum of 72 hours prior to excavation.

The improvements covered by these plans shall be done in accordance with Pittsfield Township current standard specifications and supplemental specifications.

GENERAL NOTES:

1. All site work shall meet all applicable codes, laws, and regulations, including ADA Accessibility Guidelines (ADAAG) and Michigan Barrier-Free Design Requirements.
2. Provide signs per Michigan Barrier-Free Requirements at all handicapped spaces.
3. The Contractor shall call Miss Dig utility location service at least 72 hours prior to any excavation.
4. The entire proposed and existing building shall be equipped with a 24 hour monitored fire and smoke alarm system. Meeting NFPA 72
5. All Walkways shall be ADA compliant, ramps shall meet current MDOT R-28 Details.



1" = 1000'

VICINITY MAP
SCALE: 1" = 1000'

GENERAL INFORMATION

OWNER/OCCUPANT:	Dynics 620 Fairfield Court Ann Arbor, Michigan 48108 (734)-677-6100
PROPERTY LOCATION:	620 Fairfield Ct. Ann Arbor, Michigan 48108
PROJECT ENGINEER/ APPLICANT:	Vanston/O'Brien, Inc. 2375 Bishop Circle West Dexter, Michigan 48130 Ph: (734) 424-0661 Fax: (734) 424-0677

DRAWING INDEX:

C-1	TITLE SHEET
C-2	SITE PLAN
C-3	GRADING, DRAINAGE & SOIL EROSION CONTROL PLAN
C-4	LIGHTING PLAN
C-5	AREA WIDE DRAINAGE PLAN
C-6	FLOOR PLAN
C-7	ELEVATIONS
C-8	FIRE ACCESS PLAN
C-9	LANDSCAPE PLAN

RECEIVED MAR 6 2017

STATE OF MICHIGAN
GREGORY AHRIM
ENGINEER
No. 56447
LICENSED PROFESSIONAL ENGINEER

DYNICS
DESIGNERS
Vanston/O'Brien, Inc.
BUILDERS
2375 Bishop Circle West
Dexter, MI 48130
Tel: (734) 424-0661
Fax: (734) 424-0677
e-mail: sales@vanston.com • www.vanston.com

DYNICS
BUILDING ADDITION
620 Fairfield Ct.
Pittsfield Township, Michigan

THIS MATERIAL, INCLUDING IDEAS, DRAWINGS AND DESIGN, IS OWNED BY AND IS THE EXCLUSIVE PROPERTY OF VANSTON/O'BRIEN, INC. AND CANNOT BE REPRODUCED OR REUSED IN ANY MANNER WITHOUT THE PRIOR CONSENT OF VANSTON/O'BRIEN, INC.

ISSUED FOR:	DATE:
SITE PLAN	9-1-16
REVISED	2-22-17
REVISED	3-3-17

DRAWN BY: GAH
JOB NO.: XXX

COVER SHEET

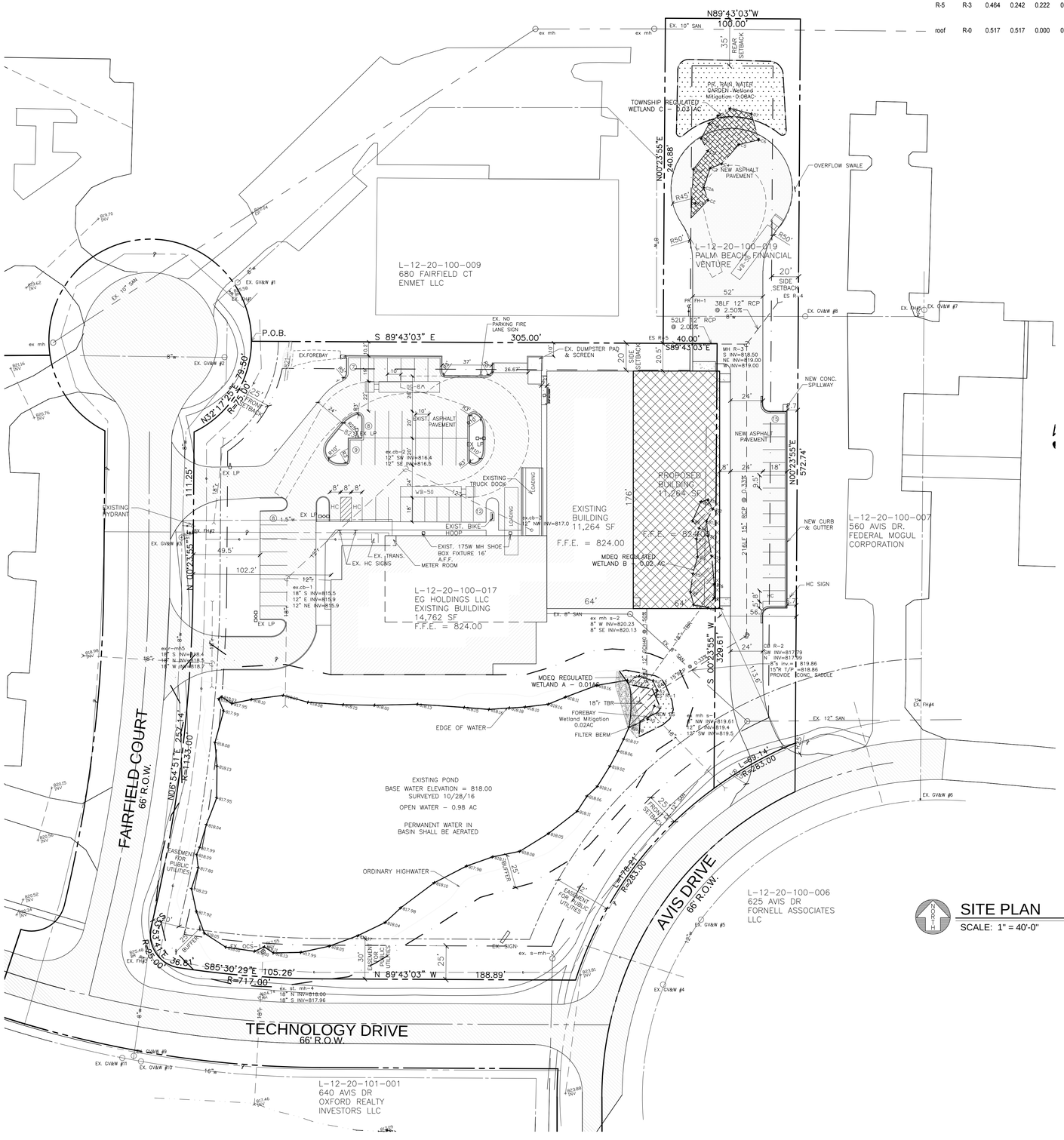
SHEET NO.
C-1

DYNICS BUILDING ADDITION
TWP. ID # CSPA 16-14

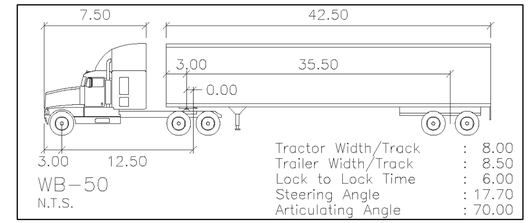
P:\Dynics\AutoCAD\dwg\C-1.dwg, 3/3/2017 3:21:43 PM

STORM SEWER DESIGN COMPUTATIONS

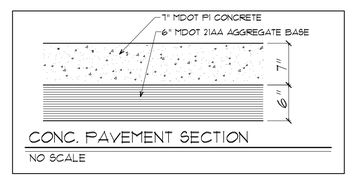
FROM	TO	ACRES A	AREA IMPERV 0.95	AREA PERV 0.35	RUNOFF COEFF C	EQUIV. AREA A * C	CUMM. AREA A*C	INTEN-SITY I	TIME OF CONC. TC	ADD'L RUNOFF A*C*I	RUNOFF (CFS) Q	PIPE LENGTH (LF)	PIPE DIA. (IN)	ACTUAL SLOPE USED	MANNING FLOW CAPACITY	MIN. VELOCITY FLOWING FULL >3(FT/S)	TIME (MIN)	HG ELEV UPPER END	HG ELEV LOWER END	RIM ELEV UPPER END	INVERT UPPER END	INVERT LOWER END	RIM-INV	RIM-HG >1	FLOW THRU COVER	PIPE COVER SPRINGLINE >3.5	STRUCTURE DIA FT
R-4	R-3	0.696	0.365	0.331	0.66	0.463	0.463	3.89	20.00		1.80	38	12	2.50%	5.63	7.17	0.09	820.75	819.80	N/A	819.95	819.00	N/A	N/A	1.80	N/A	ES
R-3	R-2	0.000	0.000	0.000	0.00	0.000	0.463	3.88	20.09	1.20	2.99	216	15	0.33%	3.71	3.02	1.19	819.67	819.21	823.00	818.50	817.78	4.50	3.33	0.00	3.50	4
R-2	R-1	0.089	0.041	0.048	0.62	0.055	0.518	3.78	21.28		3.20	84	15	0.33%	3.71	3.02	0.46	819.21	819.00	823.10	817.78	817.50	5.32	3.89	0.21	4.70	4
R-5	R-3	0.464	0.242	0.222	0.66	0.3075	0.3075	3.89	20.00		1.20	52	12	2.00%	5.04	6.4	0.14	820.84	819.80	N/A	820.04	819.00	N/A	N/A	1.20	N/A	ES
roof	R-0	0.517	0.517	0.000	0.95	0.4913	0.4913	3.89	20.00		1.91	54	12	1.50%	4.36	5.6	0.16	820.61	819.80	824.00	819.81	819.00	4.19	3.39	1.91	3.69	RD

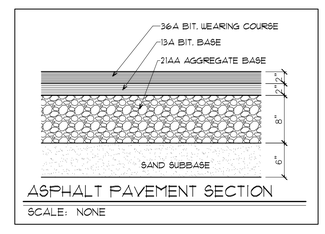


SITE PLAN
SCALE: 1" = 40'-0"



Note: The wetlands shown on the plans were delineated on October 6, 2016 by Metro Consulting Associates (MCA) and surveyed on October 28, 2016 by Vanston/O'Brien, Inc.





LEGEND

- PROPERTY LINE
- SETBACK
- EASEMENT
- PROPOSED STORM
- PROPOSED WATER
- PROPOSED UNDERGROUND ELECTRIC & TELEPHONE
- PROPOSED GAS
- PROPOSED SANITARY
- EXISTING STORM
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING ELECTRIC
- EXISTING UNDERGROUND CABLE
- EXISTING GAS
- EXISTING SANITARY
- EXISTING CENTERLINE OF DITCH
- (914) EXISTING CONTOUR
- 914 PROPOSED CONTOUR
- LINE OF SILT FENCE
- NEW BUILDING MOUNTED LIGHTING
- NEW POLE-MOUNTED LIGHT
- EX POLE-MOUNTED LIGHT
- EX.MH EXISTING MANHOLE
- CB R-1 NEW CATCH BASIN
- EX. FH EXISTING FIRE HYDRANT
- x 660.90 EXISTING ELEVATION
- 825.95 PROPOSED ELEVATION
- EXISTING BUILDING
- EXISTING ASPHALT PAVING
- EXISTING ASPHALT TO BE REMOVED
- PROPOSED BUILDING
- PROPOSED HEAVY DUTY ASPHALT PAVING
- PROPOSED CONCRETE

DYNICS
DESIGNERS
Vanston/O'Brien, Inc.
BUILDERS
2375 Bishop Circle West
Dexter, MI 48130
Tel: (734) 424-0661
Fax: (734) 424-0677
email: sales@vanston.com ◆ www.vanston.com

DYNICS Building Addition
620 Fairfield Ct
Pittsfield Township, Michigan

THIS MATERIAL, INCLUDING IDEAS, DRAWINGS AND DESIGN, IS OWNED BY AND IS THE EXCLUSIVE PROPERTY OF VANSTON/O'BRIEN, INC. AND CANNOT BE REPRODUCED OR REUSED IN ANY MANNER WITHOUT THE PRIOR CONSENT OF VANSTON/O'BRIEN, INC.

ISSUED FOR:	DATE:
SITE PLAN	9-1-16
WETLAND	11-18-16
REVISED	2-22-17
REVISED	3-3-17

DRAWN BY: GAH
JOB NO.: XXX

SITE PLAN
SHEET NO.
C-2

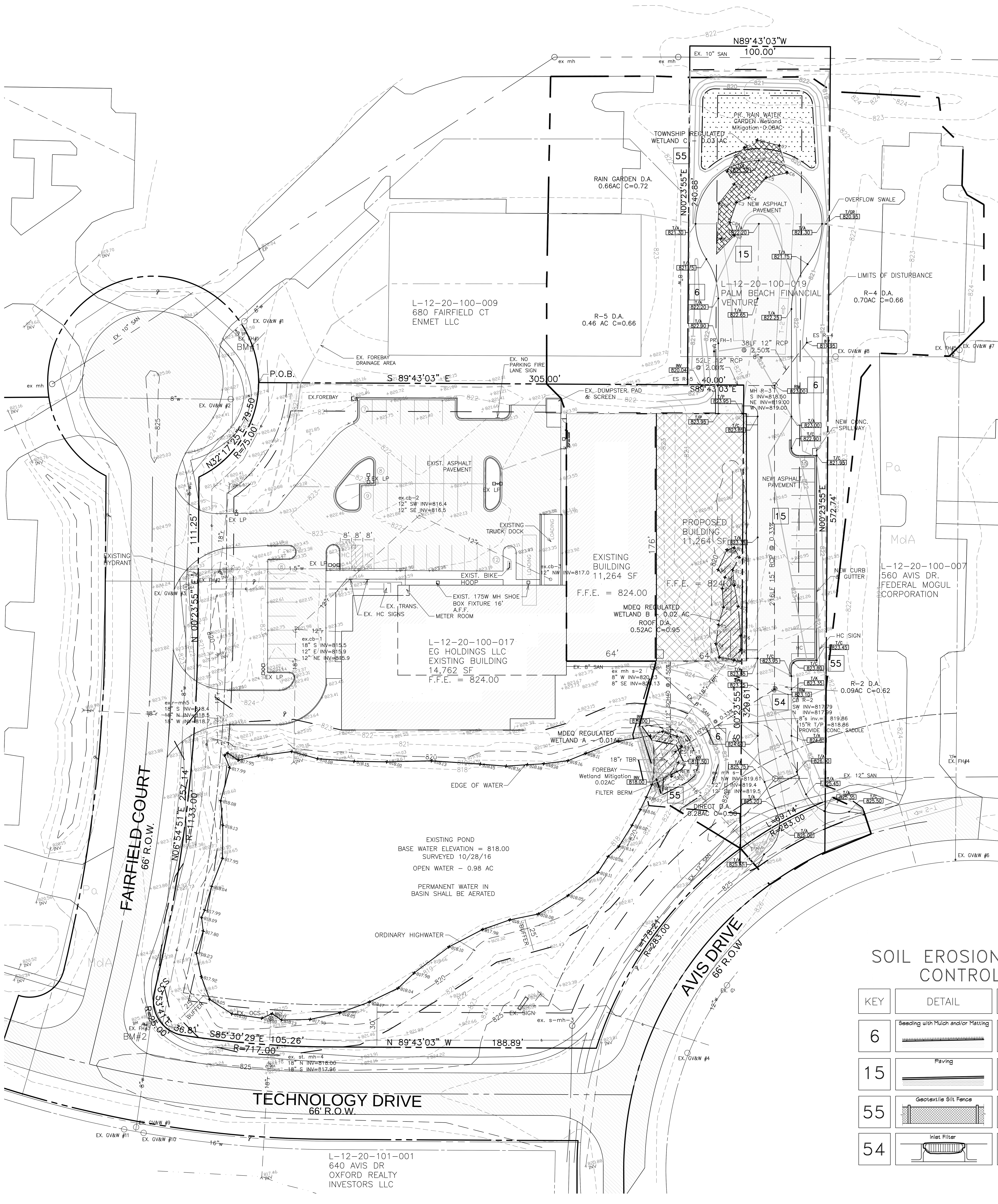
P:\Dynics\AutoCAD\dwg\C-2.dwg, 3/3/2017 4:34:37 PM

FOREBAY DRAINAGE AREA CALCULATIONS

Pre-Development	Cover Type	Soil Type	AREA(sf)	AREA(ac)	C Value	CN	CN*A
MdA	Meadow	B	29659	0.681	0.25	58	39
Pa	Meadow	D	59702	1.371	0.45	78	107
		TOTAL	89361	2.051	Weighted CN	71	
Post-Development	**Cover Type**	**Soil Type**	**AREA(sf)**	**AREA(ac)**	**C Value**	**CN**	**CN*A**
Impervious	Pavement	B/D	25555	0.587	0.95	98	57
	Pond	B	1016	0.023	1	98	2
	Building	B/D	29286	0.672	0.95	98	66
		TOTAL	55857	1.282	Weighted CN	98	
Pervious	Lawn	B	12389	0.284	0.25	61	17
	Lawn	D	21115	0.485	0.45	80	38.8
		TOTAL	33504	0.769	Weighted CN	73	

RAIN WATER GARDEN DRAINAGE AREA CALCULATIONS

Pre-Development	Cover Type	Soil Type	AREA(sf)	AREA(ac)	C Value	CN	CN*A
Pa	Meadow	D	28920	0.664	0.45	78	52
		TOTAL	28920	0.664	Weighted CN	78	
Post-Development	**Cover Type**	**Soil Type**	**AREA(sf)**	**AREA(ac)**	**C Value**	**CN**	**CN*A**
Impervious	Pavement	D	12146	0.279	0.95	98	27
	Pond	D	2984	0.069	1	98	7
		TOTAL	15130	0.347	Weighted CN	98	
Pervious	Lawn	D	13790	0.317	0.25	61	19
		TOTAL	13790	0.317	Weighted CN	61	



MAINTENANCE TASKS AND SCHEDULE DURING CONSTRUCTION:

CONTRACTOR'S RESPONSIBILITY TASKS	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	CATCH BASIN INLET CASTINGS	CHANNELS	OUTFLOW CONTROL STRUCTURES	RIP-RAP	FILTRATION BASIN	INFILTRATION/DETENTION BASINS	WETLANDS	EMERGENCY OVERFLOW	SCHEDULE
INSPECT FOR SEDIMENT ACCUMULATION	X	X		X	X		X	X			WEEKLY
REMOVAL OF SEDIMENT ACCUMULATION	X	X		X	X		X	X			AS NEEDED (SEE NOTE) & PRIOR TO TURNOVER
INSPECT FOR FLOATABLES AND DEBRIS			X	X	X		X	X			QUATERLY
CLEANING FOR FLOATABLES AND DEBRIS			X	X	X		X	X			QUATERLY & AT TURNOVER
INSPECT FOR EROSION				X	X		X	X			WEEKLY
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES				X			X	X			AS NEEDED (SEE NOTE) & PRIOR TO TURNOVER
REPLACEMENT OF GRAVEL JOINTS					X						AS NEEDED (SEE NOTE)
MOWING				X	X	X	X	X			0 TO 2 TIMES PER YEAR
INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY PROFESSIONAL ENGINEER REPORTING TO THE OWNER)				X	X		X	X			ANNUALLY & AT TURNOVER
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED	X	X	X	X	X	X	X	X	X	X	AS NEEDED (SEE NOTE)

NOTE: 'AS NEEDED'' MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE FOOT DEPTH OR THE JACKET HAS BEEN CLOGGED WITH SEDIMENT DUE TO CONSTRUCTION ACTIVITIES. NO CHEMICALS SHALL BE USED WITHIN INFILTRATION BASINS EXCEPT FOR INVASIVE SPECIES MAY BE TREATED BY A CERTIFIED APPLICATOR.

SOIL EROSION CONTROL SEQUENCE:

1. Install all perimeter erosion and sedimentation control measures.
2. Install storm drainage system, including rip-rap and parking lot inlet filter.
3. Rough grade site, stock pile top soil in location approved by owner and engineer.
4. Construct sanitary sewer, watermain.
5. Maintain Erosion and Sedimentation control measures, as required.
6. Bring pavement areas to sub-base grade and install concrete curb and gutter.
7. Install all utilities (Phone, Gas and Electric).
8. Install pavement complete, repair or replace inlet filter as required.
9. Finish grade, redistribute top soil, see and mulch in all distributed areas.
10. Remove all temporary soil erosion and sedimentation control measures.
11. Complete construction of building.

MAINTENANCE PLAN BUDGET:

Annual inspection for sedimentation accumulation	$ 100.00
Removal of sediment accumulation every 5 years as needed	$ 500.00
Inspect for floatables and debris annually and after major storms	$ 100.00
Removal of floatablesand debris annually and after major storms	$ 150.00
Inspect system for erosion annually and after major storms	$ 100.00
Reestablish permanent vegetation of eroded slopes as needed	$ 350.00
Replacement of gravel jackets every 3-5 years as needed	$ 100.00
Mowing 0-2 times per year	$ 400.00
Inspect structural elements during wet weather and compare to as built plans every 2 years.	$ 150.00
Make structural adjustments or replacements as determined by inspection as needed	$ 400.00
Have Professional Engineer carry out emergency inspections upon indentification of severe problems.	$ 200.00
TOTAL ANNUAL BUDGET:	$ 2,550.00

PERMENANT MAINTENANCE TASKS AND SCHEDULE:

OWNER'S RESPONSIBILITY TASKS	STREETS	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	CATCH BASIN INLET CASINGS	CHANNELS	OUTFLOW CONTROL STRUCTURES	RIP-RAP	FILTRATION BASIN	INFILTRATION/DETENTION BASINS	WETLANDS	EMERGENCY OVERFLOW	SCHEDULE
INSPECT FOR SEDIMENT ACCUMULATION		X	X		X	X	X	X	X			ANNUALLY
REMOVAL OF SEDIMENT ACCUMULATION		X	X		X	X	X	X	X			EVERY 5-10 YEARS AS NEEDED (SEE NOTE)
INSPECT FOR FLOATABLES AND DEBRIS		X	X	X	X	X	X	X	X			ANNUALLY
CLEANING FOR FLOATABLES AND DEBRIS		X	X	X	X	X	X	X	X			ANNUALLY
INSPECT FOR EROSION					X	X	X	X	X			AS NEEDED (SEE NOTE)
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES					X			X	X			EVERY 3-5 YEARS AS NEEDED (SEE NOTE)
REPLACEMENT OF GRAVEL JOINTS						X						SEMI-ANNUALLY
MOWING					X			X	X			0 TO 2 TIMES PER YEAR
INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY PROFESSIONAL ENGINEER REPORTING TO THE OWNER)		X	X	X	X	X	X	X	X	X	X	ANNUALLY
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED BY ANNUAL WET WEATHER INSPECTION		X	X	X	X	X	X	X	X	X	X	AS NEEDED (SEE NOTE)
KEEP RECORDS OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES AND REPORT TO OWNER		X	X	X	X	X	X	X	X	X	X	ANUALLY
KEEP RECORDS OF ALL COSTS FOR INSPECTIONS, MAINTENANCE AND REPAIRS. REPORT TO OWNER		X	X	X	X	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	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	X	X	X	AS NEEDED (SEE NOTE)

NOTE: 'AS NEEDED'' MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE FOOT DEPTH OR THE JACKET HAS BEEN CLOGGED WITH SEDIMENT DUE TO CONSTRUCTION ACTIVITIES. NO CHEMICALS SHALL BE USED WITHIN INFILTRATION BASINS EXCEPT FOR INVASIVE SPECIES MAY BE TREATED BY A CERTIFIED APPLICATOR.

RESPONSIBILITY AND MAINTAINENCE

A. DURING CONSTRUCTION, IT IS THE DEVELOPER'S RESPONSIBILITY TO PERFORM THE MAINTAINENCE.
B. FOLLOWING CONSTRUCTION IT WILL BE THE RESPONSIBILITY OF THE OWNER TO PERFORM MAINTENANCE.
C. ROUTINE MAINTENANCE SHALL BE COMPLETED WITHIN 45 DAYS OF RECEIPT OF WRITTEN NOTIFICATION THAT ACTION IS REQUIRED, UNLESS OTHER ACCEPTABLE ARRAIGNMENTS ARE MADE WITH THE TOWNSHIP/CITY OR COUNTY COMMISIONER. EMERGENCY MAINTENANCE SHALL BE PERFORMED IMMEDIATELY UPON RECEIPT OF WRITTEN NOTICE. SHOULD THE OWNER FAIL TO ACT WITHIN THESE TIME FRAMES, THE TOWNSHIP/CITY OR COUNTY MAY PERFORM THE NEEDED MAINTENANCE AND ASSESS THE COSTS AGAINST THE OWNER.

FOREBAY VOLUME

Pervious Cover Post-Development 100-Year Volume

100-year storm event	**P=**	5.11 in.
Pervious Cover CN	**CN=**	73
S = 1000/CN - 10=	**S=**	3.703 in.
Q_{100per} = (P-0.2S)^2 / (P+0.8S)	$Q_{100-per}$=	2.365 in.
Pervious Cover Area (sf)	$A_{100-per}$=	33504 sf
$V_{100-per\ post}$ = Q/12 x Ap	$V_{100-per\ post}$=	6603 cf

Impervious Cover Post-Development 100-Year Volume

100-year storm event	**P=**	5.11 in.
Impervious Cover CN	**CN=**	98
S = 1000/CN - 10=	**S=**	0.204 in.
Q_{100imp} = (P-0.2S)^2 / (P+0.8S)	$Q_{100-imp}$=	4.873 in.
Impervious Cover Area (sf)	$A_{100-imp}$=	55857 sf
$V_{100-imp}$= Q/12 x A_{100imp}	$V_{100-imp}$=	22683 cf
	V_{100}=	29285 cf

V(F) = 5% OF THE 100-YEAR STORM VOLUME BASED ON THE AREA TRIBUTARY TO THE INLET

V(F)= (.05) * (V_{100})

V(F)= (.05) * 29285

STORAGE VOLUME REQUIRED: V(F)= **1464** **CF**

ELEV	AREA	VOLUME	COMP. VOL.	
820	1234	988	1543	**FOREBAY VOLUME**
819	741	556	556	
818	370	0	0	
817	92	0	0	

STORAGE VOLUME PROVIDED: **1543** CF

PROPOSED RAIN GARDEN TRIBUTARY DRAINAGE CALCULATION

	ACRES	ON-SITE	
Impervious Area (0.95)	0.28	C=	0.72
Pervious Area (0.45)	0.32	A=	0.66 ACRES
Bankfull Basin(1.0)	0.07		
ALLOWABLE RELEASE RATE=			0.15 CFS/AC
$Q_{a(on-site)}$ = ALLOWABLE RELEASE RATE x A =			0.10 CFS

Pervious Cover Post-Development 100-Year Volume

100-year storm event	**P=**	5.11 in.
Pervious Cover CN	**CN=**	61
S = 1000/CN - 10=	**S=**	6.393 in.
Q_{100per} = (P-0.2S)^2 / (P+0.8S)	$Q_{100-per}$=	1.436 in.
Pervious Cover Area (sf)	$A_{100-per}$=	13790 sf
$V_{100-per\ post}$ = Q/12 x Ap	$V_{100-per\ post}$=	1650 cf

Impervious Cover Post-Development 100-Year Volume

100-year storm event	**P=**	5.11 in.
Impervious Cover CN	**CN=**	98
S = 1000/CN - 10=	**S=**	0.204 in.
Q_{100imp} = (P-0.2S)^2 / (P+0.8S)	$Q_{100-imp}$=	4.873 in.
Impervious Cover Area (sf)	$A_{100-imp}$=	15130 sf
$V_{100-imp}$= Q/12 x A_{100imp}	$V_{100-imp}$=	6144 cf

Rain Garden Runoff Summary

$V_{100-per}$ =	1650 cf
$V_{100-imp}$ =	6144 cf
V_{100}=	**7794 cf**

SOIL EROSION CONTROL NOTES

1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF PITTSFIELD TOWNSHIP.
2. DAILY INSPECTIONS SHALL BE MADE BY THE CONTRACTOR FOR EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES AND WHEN NECESSARY, REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
3. EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS, WHICH INCLUDE BOTH NATURAL AND MANMADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
4. EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CONSTRUCTION - SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THIS SITE.
5. THE OWNER SHALL OBTAIN OR CAUSE HIS CONTRACTOR TO OBTAIN ALL REQUIRED PERMITS, PAY ALL FEES AND POST ALL BONDS TO EACH AND ALL GOVERNMENTAL AGENCIES HAVING JURISDICTION OVER EROSION CONTROL MEASURES ON THIS PROJECT.
6. THE CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTTATION CONTROL MEASURES WHEN REQUIRED AND AS DIRECTED ON THIS PLAN - HE SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES AND OTHER CHANGES HAVE BEEN ACCOMPLISHED.
7. SILT SACKS SHALL BE USED OVER ALL CATCH BASINS AND INLETS IN THE CONSTRUCTION AREA.
8. THE CONTRACTOR IS TO PROTECT AS MUCH EXISTING VEGETATION AS POSSIBLE.
9. ALL MUD, DIRT AND DEBRIS TRACKED ONTO EXISTING ROADS FROM THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR AND/OR BUILDER. ALL MUD, DIRT AND DEBRIS TRACKED OR SPILLED ONTO PAVED SURFACES WITHIN THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR AND/OR BUILDER.
10. ANY SOIL EROSION CONTROL MEASURES DAMAGED BY THEIR CONTRACTOR'S OPERATION SHALL BE REPLACED THE SAME DAY.
11. THE CONTINUED MAINTENANCE OF THE PERMANENT EROSION CONTROL DEVICES WILL INCLUDE REMOVAL OF ANY SEDIMENT IN THE CATCH BASIN SUMPS AS NEEDED AND IN THE FOREBAYS WHEN THEY BECOME 40 TO 50 PERCENT FILLED. THE MAINTENANCE WILL BE PERFORMED BY THE OWNER WE EXPECT THAT ONCE THE VEGETATIVE COVER IS ESTABLISHED THAT LITTLE, IF ANY, MAINTENANCE OF THE PERMANENT EROSION CONTROL DEVICES WILL BE REQUIRED.
12. THE STORM WATER MANAGEMENT SYSTEM SHALL BE PRIVATELY OWNED OPERATED AND MAINTAINED.
13. ALL SLOPES STEEPER THAN 4:1 SHALL HAVE EROSION CONTROL BLANKETS STAKED IN PLACE.
14. GROUND WATER DEWATERING WILL NOT BE NECESSARY.

SOIL CONDITIONS:

SOILS ON-SITE CONSIST OF:
MdA – Martherton Sandy Loam, 0 to 4 Percent Slopes and
Pa – Palms Muck

SITE BENCHMARKS

BM#1—ARROW ON HYDRANT ADJACENT TO DRIVE FOR 680 FAIRFIELD CT, ELEV.=825.60 NAVD 88

BM#2—ARROW ON HYDRANT AT INTERSECTION OF TECHNOLOGY DR & FAIRFIELD CT, ELEV.=825.47 NAVD 88

DISTURBED AREA

1.41 ACRES

GRADING DRAINAGE & SOIL EROSION CONTROL PLAN

NORTH

SCALE: 1" = 40'-0"

SOIL EROSION & SEDIMENTATION CONTROL MEASURES

KEY	DETAIL	CHARACTERISTICS
6	Seeding with Mulch and/or Matting	Facilitates establishment of vegetative cover. Effective for drainageways with low velocity. Easily placed in small quantites by inexperienced personnel. Should include prepared topsoil bed.
15	Paving	Protects areas which cannot otherwise be protected, but increases runoff volume and velocity. Irregular surface will help slow velocity.
55	Geotextile Silt Fence	Uses geotextile and posts or poles. May be constructed or pre packaged. Easy to construct and locate as necessary.
54	Inlet Filter	Inexpensive and easy to construct. May be repaired if damaged. Filters sediment from runoff

LEGEND

PROPERTY LINE	EXISTING WALL MOUNTED LIGHT FIXTURE	EXISTING BUILDING
SETBACK	NEW BUILDING MOUNTED LIGHTING	EXISTING ASPHALT PAVING
EASEMENT	EX POLE-MOUNTED LIGHT	PROPOSED BUILDING
PROPOSED STORM	EX.MH EXISTING MANHOLE	PROPOSED HEAVY DUTY ASPHALT PAVING
PROPOSED WATER	CB R-1 NEW CATCH BASIN	PROPOSED CONCRETE
PROPOSED UNDERGROUND ELECTRIC & TELEPHONE	EX. FH EXISTING FIRE HYDRANT	
PROPOSED GAS	x 660.90 EXISTING ELEVATION	
PROPOSED SANITARY	T/A 823.95 PROPOSED ELEVATION	
EXISTING STORM		
EXISTING WATER		
EXISTING TELEPHONE		
EXISTING ELECTRIC		
EXISTING UNDERGROUND CABLE		
EXISTING GAS		
EXISTING SANITARY		
EXISTING CENTERLINE OF DITCH		
(914) EXISTING CONTOUR		
914 PROPOSED CONTOUR		
LINE OF SILT FENCE		
LIMITS OF DISTURBANCE		

DESIGNERS
Vanston/O'Brien, Inc.
BUILDERS
2375 Bishop Circle West
Dexter, MI 48130
e-mail: sales@vanston.com ◇ www.vanston.com
Tel: (734) 424-0661
Fax: (734) 424-0677

DYNICS Building Addition

620 Fairfield Ct

Pittsfield Township, Michigan

THIS MATERIAL, INCLUDING IDEAS, DRAWINGS AND DESIGN, IS OWNED BY AND IS THE EXCLUSIVE PROPERTY OF VANSTON/O'BRIEN, INC. AND CANNOT BE REPRODUCED OR REUSED IN ANY MANNER WITHOUT THE PRIOR CONSENT OF VANSTON/O'BRIEN, INC.

ISSUED FOR:	DATE:
SITE PLAN	9-1-16
REVISED	2-22-17
REVISED	3-3-17

DRAWN BY: GAH
JOB NO.: XXX

GRADING DRAINAGE & SOIL EROSION

SHEET NO.

C-3

EX. WEST SIDE DETAILS

LUMINAIRE SCHEDULE

Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LLF	Watts
	B	4	KAD 250M R3 (PULSE START)	Area Luminaire, 250W MH, R3 Reflector, Full Cutoff MEETS THE 'NIGHTTIME FRIENDLY' CRITERIA	ONE (1) 250 WATT CLEAR BT28 PULSE START METAL HALIDE LAMP IN HORIZONTAL POSITION	KAD_250M_R3_(PULSE_START).ies	22500	0.75	576
	C	1	KAD 250M R3 (PULSE START)	Area Luminaire, 250W MH, R3 Reflector, Full Cutoff MEETS THE 'NIGHTTIME FRIENDLY' CRITERIA	ONE (1) 250 WATT CLEAR BT28 PULSE START METAL HALIDE LAMP IN HORIZONTAL POSITION	KAD_250M_R3_(PULSE_START).ies	22500	0.75	288
	A	3	KAD 175M R4 (PULSE START)	Area Luminaire, 175W MH, R4 Reflector, Full Cutoff MEETS THE 'NIGHTTIME FRIENDLY' CRITERIA	ONE 175-WATT CLEAR BT-28 METAL HALIDE, HORIZONTAL POSITION.	KAD_175M_R4_(PULSE_START).ies	14400	0.75	208

STATISTICS

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
PROPERTY LINE VALUES	◇	0.1 fc	0.5 fc	0.0 fc	N / A	N / A
PARKING VALUES	✳	3.9 fc	9.9 fc	1.0 fc	9.9:1	3.9:1
SITE VALUES	+	1.1 fc	9.9 fc	0.0 fc	N / A	N / A

LUMINAIRE LOCATIONS

No.	Label	Location X	Location Y	Location Z	MH	Orientation	Tilt	Aim X	Aim Y	Aim Z
1	C	-149.3	130.2	24.0	24.0	179.7	0.0	-149.3	128.9	0.0
2	B	-81.1	93.4	22.0	22.0	-90.0	0.0			
3	B	-132.4	14.0	24.0	24.0	0.0	0.0			
4	B	-55.5	153.4	24.0	24.0	-0.5	0.0			
5	B	36.5	149.3	24.0	24.0	269.0	0.0			
6	A	59.2	78.6	16.0	16.0	0.0	0.0	59.2	78.6	0.0
7	A	-6.2	78.9	16.0	16.0	-2.3	0.0	-6.2	78.9	0.0
8	A	84.5	174.9	16.0	16.0	-90.0	0.0	84.5	174.9	0.0

NEW EAST SIDE DETAILS

LUMINAIRE SCHEDULE

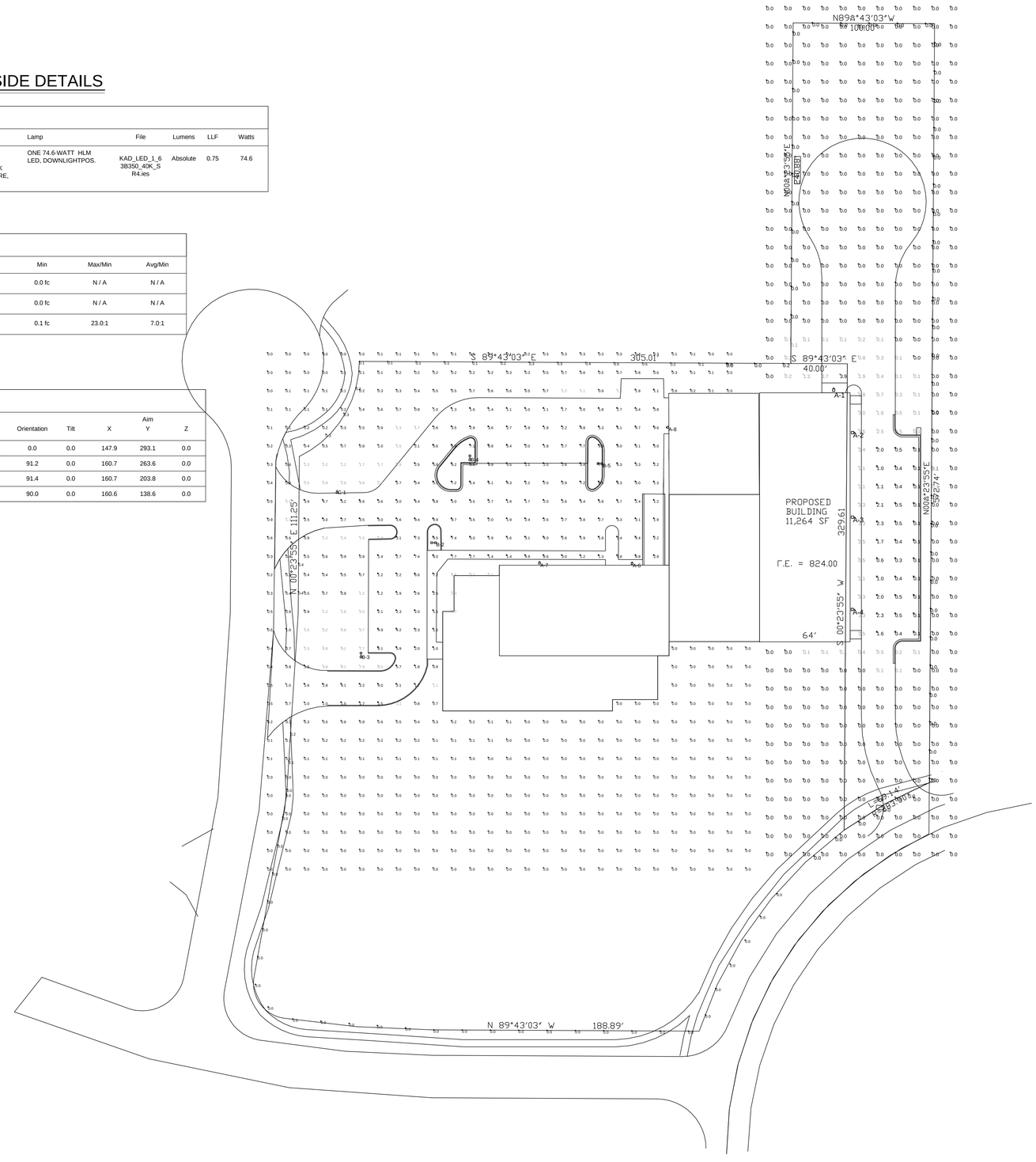
Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LLF	Watts
	A	4	KAD LED 1 63B350/40K SR4	KAD LED WITH HLM MODULE, 63 LED's, 350mA DRIVER, 4000K COLOR TEMPERATURE, TYPE 4 LENS	ONE 74.6-WATT HLM LED, DOWNLIGHTPOS.	KAD_LED_1_63B350_40K_SR4.ies	Absolute	0.75	74.6

STATISTICS

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	0.2 fc	3.9 fc	0.0 fc	N / A	N / A
Property line	◇	0.0 fc	0.2 fc	0.0 fc	N / A	N / A
Stat Zone # 3	✳	0.7 fc	2.3 fc	0.1 fc	23.0:1	7.0:1

PROPOSED LUMINAIRE LOCATIONS

No.	Label	Location X	Location Y	Location Z	MH	Orientation	Tilt	Aim X	Aim Y	Aim Z
1	A	147.9	291.9	16.0	16.0	0.0	0.0	147.9	293.1	0.0
2	A	159.5	263.6	16.0	16.0	91.2	0.0	160.7	263.6	0.0
3	A	159.5	203.8	16.0	16.0	91.4	0.0	160.7	203.8	0.0
4	A	159.4	138.6	16.0	16.0	90.0	0.0	160.6	138.6	0.0



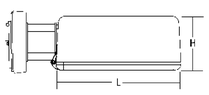
LIGHTING PLAN
SCALE: 1" = 40'-0"

KAD LED
LED Area Luminaire

Catalog Number
Notes
Type

Specifications

EPA: 1.2 ft²
Length: 17" / 43.2 cm
Width: 17" / 43.2 cm
Height: 7" / 17.8 cm
Weight (max): 36 lbs. / 16.3 kg



A+ 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 interoperability[1]
- This luminaire is part of an A+ Certified solution for ROAM®2 or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background.

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

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

A+ Capable options indicated by this color background.

EXAMPLE: KAD LED 40C 1000 40K R5 MVOLT SPD04 DDBXD

KAD LED

KAD LED	20C[1]	20 LEDs	530	530 mA	30K	3000 K	R2	Type 2	MVOLT	277[2]	**Shipped included**						**Shipped separately**		
	30C[1]	30 LEDs	700	700 mA	40K	4000 K	R3	Type 3	120[2]	347[2]	SPLMBA__	Surface pole mounting adapter[3]	04	4 in			DAD12P	Decorative cover	
	40C	40 LEDs	1000	1000 mA	50K	5000 K	R4	Type 4	208[2]	480[2]	RPJMBA__	Round pole universal mounting adapter[3]	06	6 in			DAD12WB	Decorative cover	
	60C	60 LEDs					R5	Type 5	240[2]		SPD__	Surge device	09	9 in			KMA	Mast arm adapter	
											RPD__	Round pole	12	12 in					
											WBD__	Wall bracket							
											WWD__	Wood utility pole							

Shipped installed

PER5	NEMA twist-lock five-wire receptacle only (no controls)[4]	PIR HTCSV	Bi-level motion and ambient sensor, 8-15' mounting height, ambient sensor enabled at 50 fc[5]	PNMTFDGS	Photocell, dimming, high
PER7	Seven-wire receptacle only (no controls)[4]	PIR HTFCSV	Bi-level motion and ambient sensor, 15-30' mounting height, ambient sensor enabled at 5 fc[5]	PNMTFDS	Photocell, dimming, high
SF	Single fuse (120, 277, 347V)[2]	BL30	Bi-level automatic dimming, 30%	PNMTFRDS	Photocell, dimming, high
DF	Double fuse (208, 240, 480V)[2]	BL50	Bi-level automatic dimming, 50%	PNMTFTDS	Photocell, dimming, high
PIR	6 level, motion sensor enabled at 15' mounting height and dimmer enabled at 50%[5]			HS	House side shield[6]
PIRH	6 level, motion sensor enabled at 30' mounting height and dimmer enabled at 50%[5]				

Shipped separately[7]

WG	Wire guard

DDBXD	Dark bronze	DDBTXD	Textured dark bronze
DBLXD	Black	DBLBKT	Textured black
DNAXD	Natural aluminum	DNATXD	Textured natural aluminum
DWHXD	White	DWHGXT	Textured white

DYNICS
DESIGNERS
Vanston/O'Brien, Inc.
BUILDERS
2375 Bishop Circle West
Dexter, MI 48130
Tel: (734) 424-0661
Fax: (734) 424-0677
e-mail: sales@vanston.com • www.vanston.com

DYNICS
Building Addition
620 Fairfield Ct
Pittsfield Township, Michigan

THIS MATERIAL, INCLUDING IDEAS, DRAWINGS AND DESIGN, IS OWNED BY AND IS THE EXCLUSIVE PROPERTY OF VANSTON/O'BRIEN, INC. AND CANNOT BE REPRODUCED OR REUSED IN ANY MANNER WITHOUT THE PRIOR CONSENT OF VANSTON/O'BRIEN, INC.

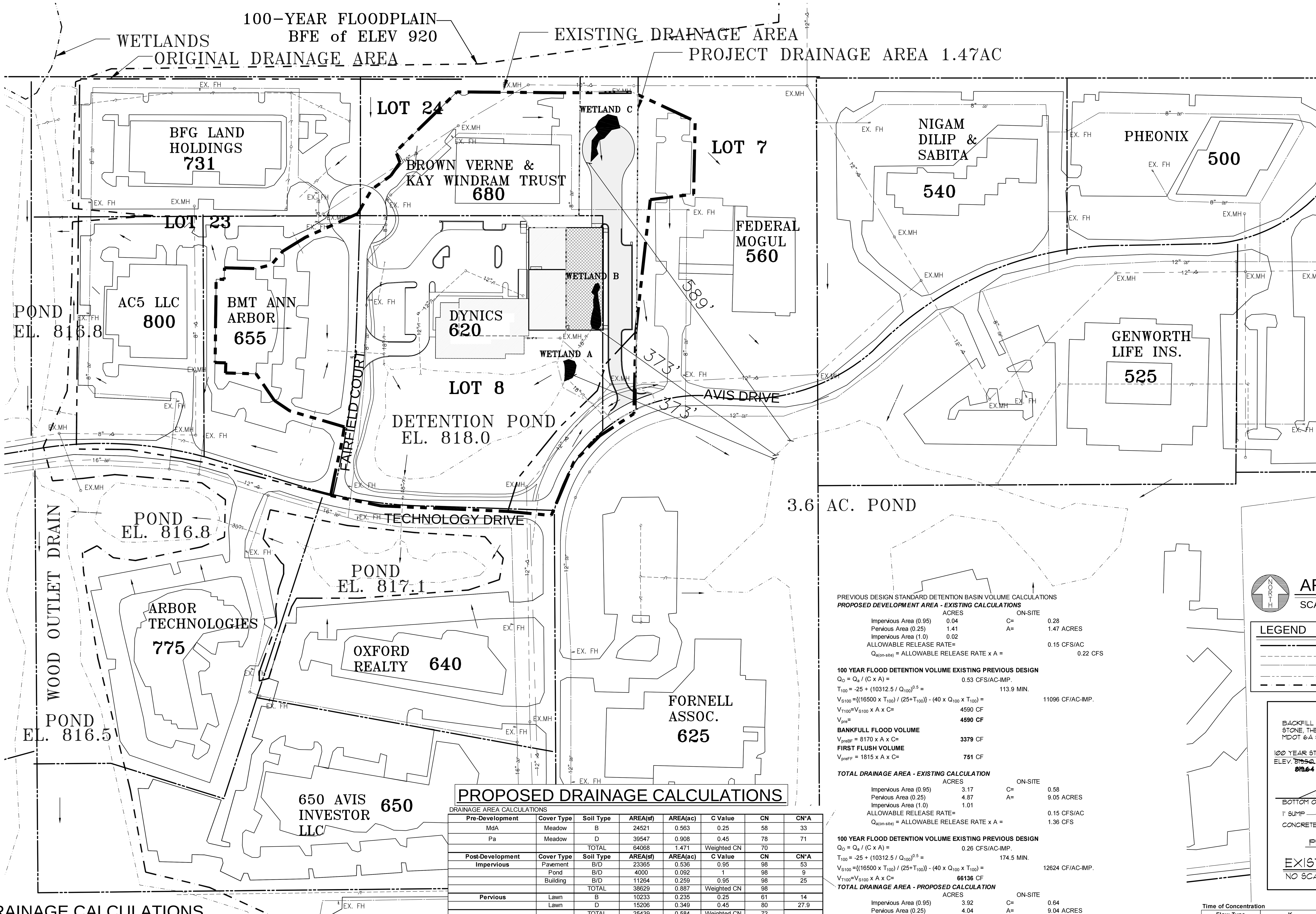
ISSUED FOR:	DATE:
SITE PLAN	9-1-16
REVISED	2-22-17
REVISED	3-3-17

DRAWN BY: GAH
JOB NO.: XXX

LIGHTING PLAN

SHEET NO.
C-4

P:\Dynics\AUTOCAD\dwg\C-4.dwg, 3/3/2017 3:21:58 PM



Storm Water Narrative

Previous Design Narrative

This 4.01 acre site in Avis Farms Business Park contains an existing 21,418 square foot facility with 37 existing parking spaces and a pond that was previously designed for regional storm water detention. The addition of a 4,608 square foot addition to this facility is proposed and includes an additional 7 deferred parking spaces. The addition has no impact on the previously designed 3 stage outlet control system. The 18" outlet from the existing basin is equipped with a flap valve in the existing manhole mh-4. The current drainage area, including the proposed development, of 9.05 acres at a relative impervious factor of C=0.58 was used to check the design of the existing outlet. The addition of 4000 square feet of new impervious area raised the elevation of the bankfull and 100-year elevations ¼ inch, which is within an acceptable tolerance of the installation. . Therefore the existing outlet shall remain. The existing outlet pipe has a maximum invert of 818.00 and the verified normal water elevation was consistent with that level. This pipe outlet drains to a pond with a normal water elevation of 817.1 and then discharges to the Wood Outlet Drain to the west. The storage volume of 66,114 cubic feet is stored between 818.00 and 819.50 thus providing a minimum of 1 foot of freeboard prior to overflowing the system by backing up through the system on the west side of Fairfield Ct. and traveling west down the ditch on the north side of Technology Drive to the Wood Outlet Drain. The outlet is to a floodplain thus it has been verified that the storage of the zero outlet condition has been met at an elevation of 819.91 with available freeboard.

Proposed Design Narrative

This project consists of the expansion of the current facility with the addition of a 0.99 ac. parcel of land adjacent to the existing 4.01 ac. site. The area of construction includes 1.47 ac. of the area tributary to the existing regional basin located on site. In order to meet the infiltration requirement of the latest WCWRC standards we have provided a rain water garden at the northern end of the site. The flow to this garden comes from part of this site and adjacent sites that currently flow to the detention basin. The rain garden shall over flow to the south and be collected by the proposed storm system. The rain garden is designed to infiltrate 7,794cf of runoff which is greater than the required 5,757cf difference of pre-developed and post-developed bankfull runoff in the construction area. The proposed development and design standard revisions produce 20,316cf of runoff. The existing conditions and previous drainage standard required 4,590cf of runoff. When subtracting the existing runoff and the proposed infiltration 7,933cf of additional runoff must be detained in the detention basin. The detention outlet shall be modified for the new detention volume of 74,069cf.

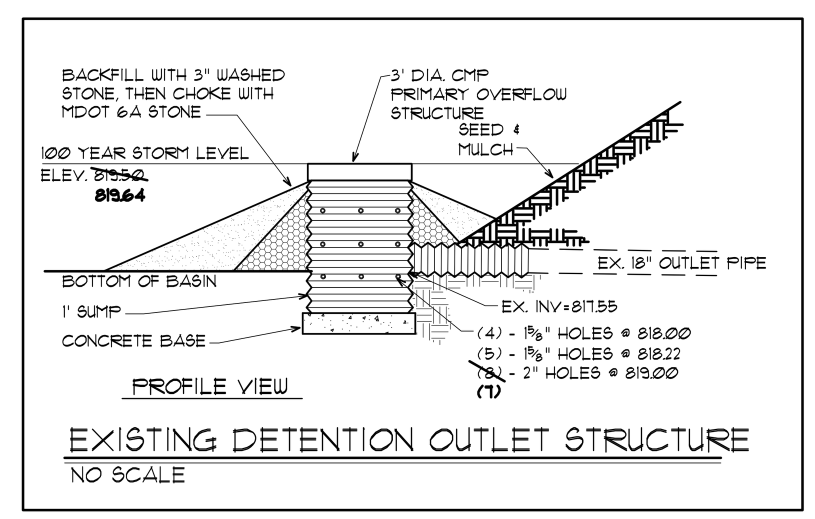
The proposed storm sewer shall discharge to a forebay. This discharge pipe shall be partially submerged due to a conflict with the existing sanitary sewer crossing located just upstream of the basin. Basins shall be planted with native species according to the landscape plan and chemicals shall not be used within basins or buffer zones.

AREA WIDE DRAINAGE PLAN

SCALE: 1" =100'-0"

LEGEND

- PROPERTY LINE
- EXISTING STORM
- EXISTING WATER
- EXISTING SANITARY
- 100-YEAR FLOOD PLAIN
- EX. FH — EXISTING FIRE HYDRANT
- EX.MH — EXISTING MANHOLE
- EX.CB — EXISTING CATCH BASIN
- DRAINAGE ARROW



EXISTING DETENTION OUTLET STRUCTURE

NO SCALE

ORIGINAL DRAINAGE CALCULATIONS

VANSTON/O'BRIEN INC. dated 11/19/12

WASHTENAW COUNTY
REGIONAL DETENTION BASIN VOLUME CALCULATIONS & OUTLET DESIGN FOR ON-SITE RUNOFF

	ACRES		ON-SITE
Impervious Area (0.95)	3.17	C=	0.58
Pervious Area (0.25)	4.87	A=	9.05 ACRES
Impervious Area (1.0)	1.01		

ALLOWABLE RELEASE RATE= 0.15 CFS/AC
$Q_{a(on\text{-}site)}$ = ALLOWABLE RELEASE RATE x A = 1.36 CFS

100 YEAR FLOOD DETENTION VOLUME REQUIRED

$Q_O = Q_a / (C \times A) =$ 0.26 CFS/AC-IMP.
$T_{100} = -25 + (10312.5 / Q_{100})^{0.5} =$ 174.5 MIN.
$V_{S100} = \{(16500 \times T_{100}) / (25+T_{100})\} - (40 \times Q_{100} \times T_{100}) =$ 12624 CF/AC-IMP.
$V_{T100}=V_{S100} \times A \times C=$ **66114** CF

100 YEAR ZERO OUTLET CONDITION

$V_0 = 16500 \times A \times C=$ **86417** CF

BANKFULL FLOOD VOLUME

$V_{BF} = 8170 \times A \times C=$ **42789** CF

FIRST FLUSH VOLUME

$V_{FF} = 1815 \times A \times C=$ **9506** CF

STORAGE PROVIDED
DETENTION BASIN

ELEV.	AREA (FT^2)	DEPTH (FT)	VOLUME (FT^3)	TOTAL VOLUME (FT^3)	
822	63550	1	60,257	204,897	
821	56963	1	53,766	144,640	**FREEBOARD ELEVATION**
820	50569	1	47,929	90,874	**DESIGN HIGHWATER ELEVATION**
819	45288	1	42,946	42,946	
818	40603	0	0	0	

FIRST FLUSH X_{FF} = 818.22
BANKFULL X_{BF} = 819.00
100 YEAR X_{100} = 819.48
100 YEAR ZERO OUTLET X_0 = 819.91

PROPOSED OUTLET CONTROL
FIRST FLUSH OF RUNOFF
THE AVERAGE ALLOWABLE RELEASE RATE FOR RUNOFF IS 0.5" OVER AREA OF SITE IN 24 HRS.

$Q_{FF} = V_{FF} \times (1/24HRS) \times (1HR/3600SEC)=$ 0.110 CFS
PLACE OPENINGS IN STANDPIPE AT BOTTOM OF BASIN = 818.00

TO DETERMINE THE APPROPRIATE SIZE ORIFICE TO RELEASE THE FIRST FLUSH VOLUME, AN AVERAGE HEAD VALUE MUST BE USED IN THE ORIFICE EQUATION. IF THE BASIN IS DESIGNED TO BE TRAPEZOIDAL IN SHAPE, 2/3 OF THE TOTAL HEAD IS AN ACCEPTABLE APPROXIMATION FOR THE AVERAGE HEAD.

h_{ave}= 2/3 x (X_{FF} - BOTTOM BASIN ELEV.)= 0.15 FT
$A = Q_{FF} / (0.62 \times (2 \times 32.2 \times h_{ave})^{0.5}) =$ 0.058 FT^2

A 1.625 INCH DIAMETER ORIFICE HAS AN AREA OF 0.0144 SF
A/ 0.0144 = 4.00

THEREFORE, USE THE FOLLOWING NUMBER OF 1.625" DIAMETER HOLES,
4.00 HOLES, AT ELEV. 818.00

BANKFULL FLOOD
FOR THE ALLOWABLE RELEASE RATE OF 24-40 HOURS, CHECK THE DISCHARGE THROUGH THE FIRST FLUSH ORIFICE TO SEE IF ADDITIONAL HOLES ARE NECESSARY.

h_{ave}= 2/3 x (X_{BF} - BOTTOM BASIN ELEV.)= 0.66 FT

$Q_{90.0}$ = 0.62x #HOLES x (AREA EACH HOLE$_{FF}$) x (2 x 32.2 x h_{ave})$^{0.5}$ = 0.234 CFS
$T_{90.0}$ = (1SEC / $Q_{90.0}$) x V_{BF} x (1HR / 3600SEC) = 50.88 HRS

BECAUSE THE HOLDING TIME EXCEEDS 40 HRS, ADDITIONAL ORIFICES IN THE STANDPIPE ARE REQUIRED.

VOLUME THROUGH 4 1.625 INCH DIAMETER HOLES IN 24 HOURS:
V=Q90.0x24HRSx3600SEC/HR = 20184 CF
REMAINING VOL. = 22605 CF
QBF = REMAINING VOLUME x (1 / 24HRS) x (1 / 3600SEC) = 0.262 CFS

PLACE OPENINGS AT FIRST FLUSH ELEVATION = 818.22
have = 2/3 x (XBF - XFF) = 0.52 FT
A = QBF / { O.62 * SQRT(2*32.2*have)} = 0.073 SF

A 1.625 INCH DIAMETER ORIFICE HAS AN AREA OF 0.014 SF
A/ 0.014 = 5.08
THEREFORE, USE 5 1.625 INCH DIAMETER HOLES AT ELEV. = 818.22

100 YEAR FLOOD

Q_a = ALLOWABLE RELEASE RATE x AREA SITE IN ACRES= 1.36 CFS

Q_a IS A PEAK OR MAXIMUM FLOW. CALCULATE THE MAXIMUM FLOW PASSING THROUGH FIRST FLUSH AND BANKFULL ORIFICES, USING THE TOTAL HEAD, AND SUBTRACT FROM Q_a TO DETERMINE THE ORIFICE SIZE TO RELEASE THE 100 YEAR STORM VOLUME:

$Q_{FF} + Q_{BF}$ = 0.62x#HOLES$_{FF}$xAREA EACH HOLE$_{FF}$x{2*32.2*(X_{100}-$X_{BOTTOM\ BASIN}$)}$^{0.5}$
+ 0.62x#HOLES$_{BF}$xAREA EACH HOLE$_{BF}$x{2*32.2*(X_{100}-X_{FF})}$^{0.5}$

$Q_{FF}+Q_{BF}$ = 0.75 CFS

$Q_a - (Q_{FF} + Q_{BF})$ = 0.61 CFS

A= Q_a / (0.62 * (2 *32.2 * (X_{100}-X_{BF}))$^{0.5}$) = 0.174 SF

A 2 INCH DIAMETER ORIFICE HAS AN AREA OF 0.022 SF

A/ 0.022 = 7.99

THEREFORE, USE THE FOLLOWING NUMBER OF 2" DIAMETER HOLES:
8 HOLES AT ELEV. = 819.00

PROPOSED DRAINAGE CALCULATIONS

DRAINAGE AREA CALCULATIONS

Pre-Development	Cover Type	Soil Type	AREA(sf)	AREA(ac)	C Value	CN	CN*A
MdA	Meadow	B	24521	0.563	0.25	58	33
Pa	Meadow	D	39547	0.908	0.45	78	71
		TOTAL	64068	1.471	Weighted CN	70	
Post-Development	**Cover Type**	**Soil Type**	**AREA(sf)**	**AREA(ac)**	**C Value**	**CN**	**CN*A**
Impervious	Pavement	B/D	23365	0.536	0.95	98	53
	Pond	B/D	4000	0.092	1	98	9
	Building	B/D	11264	0.259	0.95	98	25
		TOTAL	38629	0.887	Weighted CN	98	
Pervious	Lawn	B	10233	0.235	0.25	61	14
	Lawn	D	15206	0.349	0.45	80	27.9
		TOTAL	25439	0.584	Weighted CN	72	

WASHTENAW COUNTY DETENTION VOLUME CALCULATIONS
PROPOSED DRAINAGE CALCULATION

	ACRES		ON-SITE
Impervious Area (0.95)	0.79	C=	0.75
Pervious Area (0.30)	0.58	A=	1.47 ACRES
Bankfull Basin(1.0)	0.09		

ALLOWABLE RELEASE RATE= 0.15 CFS/AC
$Q_{a(on\text{-}site)}$ = ALLOWABLE RELEASE RATE x A = 0.22 CFS

FIRST FLUSH VOLUME

V_{ff} =(1")(1'/12")(43560SF/1ac) x A x C= **V_{ff} =** 4029 cf

Pre-Development Bankfull Volume

2-year/24 hour storm event	**P=**	2.35 in.
Pre-Development CN	**CN=**	70
S = 1000/CN - 10=	**S=**	4.286 in.
Q = (P-0.2S)^2 / (P+0.8S)	**Q=**	0.386 in.
Total Site Area (sf) excl. S-C BMPs	**A=**	64068 sf
$V_{bf\text{-}pre}$ = Q/12 x A	**$V_{bf\text{-}pre}$=**	2059 cf

Pervious Cover Post-Development Bankfull Volume

2-year/24 hour storm event	**P=**	2.35 in.
Pervious Cover CN	**CN=**	72
S = 1000/CN - 10=	**S=**	3.820 in.
Q = (P-0.2S)^2 / (P+0.8S)	**Q=**	0.465 in.
Pervious Cover Area (sf)	**Ap=**	25439 sf
$V_{bf\text{-}per\ post}$ = Q/12 x Ap	**$V_{bf\text{-}per\ post}$=**	986 cf

Impervious Cover Post-Development Bankfull Volume

2-year/24 hour storm event	**P=**	2.35 in.
Impervious Cover CN	**CN=**	98
S = 1000/CN - 10=	**S=**	0.204 in.
Q = (P-0.2S)^2 / (P+0.8S)	**Q=**	2.122 in.
Impervious Cover Area (sf)	**Ai=**	38629 sf
$V_{bf\text{-}imp\ post}$ = Q/12 x Ai	**$V_{bf\text{-}imp\ post}$=**	6830 cf

Pervious Cover Post-Development 100-Year Volume

100-year storm event	**P=**	5.11 in.
Pervious Cover CN	**CN=**	72
S = 1000/CN - 10=	**S=**	3.820 in.
Q_{100per} = (P-0.2S)^2 / (P+0.8S)	**$Q_{100\text{-}per}$=**	2.313 in.
Pervious Cover Area (sf)	**$A_{100\text{-}per}$=**	25439 sf
$V_{100\text{-}per\ post}$ = Q/12 x Ap	**$V_{100\text{-}per\ post}$=**	4903 cf

Impervious Cover Post-Development 100-Year Volume

100-year storm event	**P=**	5.11 in.
Impervious Cover CN	**CN=**	98
S = 1000/CN - 10=	**S=**	0.204 in.
Q_{100imp} = (P-0.2S)^2 / (P+0.8S)	**$Q_{100\text{-}imp}$=**	4.873 in.
Impervious Cover Area (sf)	**$A_{100\text{-}imp}$=**	38629 sf
$V_{100\text{-}imp}$= Q/12 x A_{100imp}	**$V_{100\text{-}imp}$=**	15687 cf

Runoff Summary

V_{ff} =	**4029 cf**
$V_{bf\text{-}pre}$=	**2059 cf**
$V_{bf\text{-}per\ post}$=	986 cf
$V_{bf\text{-}imp\ post}$=	6830 cf
$V_{bf\text{-}post}$=	**7816 cf**
V_p=	**11459 cf**
$V_{100\text{-}per}$ =	4903 cf
$V_{100\text{-}imp}$ =	15687 cf
V_{100}=	**20590 cf**

PREVIOUS DESIGN STANDARD DETENTION BASIN VOLUME CALCULATIONS
PROPOSED DEVELOPMENT AREA - EXISTING CALCULATIONS

	ACRES		ON-SITE
Impervious Area (0.95)	0.04	C=	0.28
Pervious Area (0.25)	1.41	A=	1.47 ACRES
Impervious Area (1.0)	0.02		

ALLOWABLE RELEASE RATE= 0.15 CFS/AC
$Q_{a(on\text{-}site)}$ = ALLOWABLE RELEASE RATE x A = 0.22 CFS

100 YEAR FLOOD DETENTION VOLUME EXISTING PREVIOUS DESIGN

$Q_O = Q_a / (C \times A) =$ 0.53 CFS/AC-IMP.
$T_{100} = -25 + (10312.5 / Q_{100})^{0.5} =$ 113.9 MIN.
$V_{S100} = \{(16500 \times T_{100}) / (25+T_{100})\} - (40 \times Q_{100} \times T_{100}) =$ 11096 CF/AC-IMP.
$V_{T100}=V_{S100} \times A \times C=$ 4590 CF
V_{pre}= **4590 CF**

BANKFULL FLOOD VOLUME

$V_{preBF} = 8170 \times A \times C=$ **3379** CF

FIRST FLUSH VOLUME

$V_{preFF} = 1815 \times A \times C=$ **751** CF

TOTAL DRAINAGE AREA - EXISTING CALCULATION

	ACRES		ON-SITE
Impervious Area (0.95)	3.17	C=	0.58
Pervious Area (0.25)	4.87	A=	9.05 ACRES
Impervious Area (1.0)	1.01		

ALLOWABLE RELEASE RATE= 0.15 CFS/AC
$Q_{a(on\text{-}site)}$ = ALLOWABLE RELEASE RATE x A = 1.36 CFS

100 YEAR FLOOD DETENTION VOLUME EXISTING PREVIOUS DESIGN

$Q_O = Q_a / (C \times A) =$ 0.26 CFS/AC-IMP.
$T_{100} = -25 + (10312.5 / Q_{100})^{0.5} =$ 174.5 MIN.
$V_{S100} = \{(16500 \times T_{100}) / (25+T_{100})\} - (40 \times Q_{100} \times T_{100}) =$ 12624 CF/AC-IMP.
$V_{T100}=V_{S100} \times A \times C=$ **66136** CF

TOTAL DRAINAGE AREA - PROPOSED CALCULATION

	ACRES		ON-SITE
Impervious Area (0.95)	3.92	C=	0.64
Pervious Area (0.25)	4.04	A=	9.04 ACRES
Impervious Area (1.0)	1.08		

0.15 CFS/AC
$Q_{a(on\text{-}site)}$ = ALLOWABLE RELEASE RATE x A = 1.36 CFS

100 YEAR ZERO OUTLET CONDITION

$V_0 = 16500 \times A \times C=$ **95907** CF

100 YEAR PROPOSED

$V_{DET} = V_{T100} + V_d =$ **74069** CF

BANKFULL FLOOD VOLUME

V_{BF} =8170xAxC - V_{preBF} + $V_{bf\text{-}post}$= **47239** CF

FIRST FLUSH VOLUME

V_{FF} = 1815xAxC - V_{preFF} + V_{ff}= **12787** CF

STORAGE PROVIDED
DETENTION BASIN

ELEV.	AREA (FT^2)	DEPTH (FT)	VOLUME (FT^3)	TOTAL VOLUME (FT^3)	
822	64231	1	60,904	206,922	
821	57577	1	54,337	146,018	**FREEBOARD ELEVATION**
820	51097	1	48,387	91,681	**DESIGN HIGHWATER ELEVATION**
819	45676	1	43,294	43,294	
818	40912	0	0	0	

FIRST FLUSH X_{FF} = 818.30
BANKFULL X_{BF} = 819.08
100 YEAR EX X_{100} = 819.47
100 YEAR PROPOSED X_{DET} = 819.64
100 YEAR ZERO OUTLET X_0 = 820.08

PROPOSED OUTLET CONTROL
FIRST FLUSH OF RUNOFF
USE THE FOLLOWING NUMBER OF 1.625" DIAMETER HOLES,
4 HOLES, AT ELEV. 818.00

BANKFULL FLOOD
USE 5 1.625 INCH DIAMETER HOLES AT ELEV. = 818.30

100 YEAR FLOOD
Q_a = ALLOWABLE RELEASE RATE x AREA SITE IN ACRES= 1.36 CFS
Q_a IS A PEAK OR MAXIMUM FLOW. CALCULATE THE MAXIMUM FLOW PASSING THROUGH FIRST FLUSH AND BANKFULL ORIFICES, USING THE TOTAL HEAD, AND SUBTRACT FROM Q_a TO DETERMINE THE ORIFICE SIZE TO RELEASE THE 100 YEAR STORM VOLUME:
$Q_{FF} + Q_{BF}$ = 0.62x#HOLES$_{FF}$xAREA EACH HOLE$_{FF}$x{2*32.2*(X_{DET}-$X_{BOTTOM\ BASIN}$)}$^{0.5}$
+ 0.62x#HOLES$_{BF}$xAREA EACH HOLE$_{BF}$x{2*32.2*(X_{DET}-X_{FF})}$^{0.5}$
$Q_{FF}+Q_{BF}$ = 0.78 CFS
$Q_a - (Q_{FF} + Q_{BF})$ = 0.58 CFS
A= Q_a / (0.62 * (2 *32.2 * (X_{DET}-X_{BF}))$^{0.5}$) = 0.155 SF
A 2 INCH DIAMETER ORIFICE HAS AN AREA OF 0.022 SF
A/ 0.022 = 7.13
THEREFORE, USE THE FOLLOWING NUMBER OF 2" DIAMETER HOLES:
7 HOLES AT ELEV. = 819.08

Time of Concentration

Flow Type	K	Elev. Change	Length (L)	Slope % (S)	$S^{0.5}$	V=K * $S^{0.5}$	T_c=L / (V*3600)
Sheet Flow	0.48	3.0	250	1.200	1.095	0.526	0.132
Waterway	1.20	3.0	210	1.429	1.195	1.434	0.041
Small Tributary	2.10	0.0	0	0.000	0.000	0.000	0.000

	T_c=	0.17 hr
$Q_p = 238.6 \times T_c^{-0.82}$=	Q_p =	1006.94 cfs/in-mi^2
Total Site Area (ac) excl. SC-BMPs	A=	1.47 ac
$Q_{100} = Q_{100\text{-}per} + Q_{100\text{-}Imp}$ =	Q_{100}=	7.19 in
Peak Flow (PF) = $Q_p \times Q_{100} \times A / 640$	PF=	16.63 cfs
Δ = PF(cfs) - 0.15(cfs/ac)*A(ac)	Δ=	16.41 cfs
V_0 = Δ / PF x V_{100}	**V_0=**	**20316 cf**

REQUIRED DETENTION VOLUME WITH INFILTRATION
$V_{det} = V_0 - V_{inf}$ = **V_{det} =** **12523 cf**
PREVIOUSLY DESIGNED DETENTION VOLUME
V_{pre} = **4590 cf**
Additional Detention V_{det}-V_{pre}= **V_d =** **7933 cf**

On-Site Infiltration Requirement
Greator of First Flush volume or Difference between pre and post development bankfull volumes
Bankfull Volume Difference = $V_{bf\text{-}post}$ - $V_{bf\text{-}pre}$ = **5757 cf**

INFILTRATION DESIGN

Required Infiltration	$V_{req\text{-}inf}$ =	5757 cf
Depth of basin storage	d =	0.5 ft
Field Infiltration Rate	I_f =	7.5 in/hr
Design Infiltration Rate $I_d = I_f / 2$	I_d =	3.75 in/hr
Infiltration period	t_i =	6 hr
Infiltration Interface Area	A_i =	3975 sf
Initial Infiltration Volume		
$V_i = A_i \times I_d$(in/hr) x 1(ft)/12(in) x t_i (hr)=	V_i =	7452 cf
Basin Storage Volume	V_b =	1987 cf
Proposed Infiltration= Rain Garden V_{100} =	**V_{inf} =**	**7794 cf**

On-Site Infiltration Proposed
On-Site design soil infiltration rate I_d = 3.75 in/hr
PROPOSED INFILTRATION V_{inf} = **7794 cf**
INFILTRATION PERIOD T_i = **6.3 hr**

RAIN WATER BASIN STORAGE PROVIDED

ELEV.	AREA (FT^2)	DEPTH (FT)	VOLUME (FT^3)	TOTAL VOLUME (FT^3)	
821	5709	1	4,979	6,966	**Freeboard**
820	4249	0.5	1,987	1,987	**Design Volume**
819.5	3700	0	0	0	

BOTTOM OF BASIN X_o = 819.50
INFILTRATION X_b = 820.00

DYNICS

DESIGNERS
Vanston/O'Brien, Inc.
BUILDERS
2375 Bishop Circle West
Dexter, MI 48130
e-mail: sales@vanston.com
Tel: (734) 424-0661
Fax: (734) 424-0677
www.vanston.com

DYNICS Building Addition
620 Fairfield Ct
Pittsfield Township, Michigan

THIS MATERIAL, INCLUDING IDEAS, DRAWINGS AND DESIGN, IS OWNED BY AND IS THE EXCLUSIVE PROPERTY OF VANSTON/O'BRIEN, INC. AND CANNOT BE REPRODUCED OR REUSED IN ANY MANNER WITHOUT THE PRIOR CONSENT OF VANSTON/O'BRIEN, INC.

ISSUED FOR:	DATE:
SITE PLAN	9-1-16
WETLAND	11-18-16
REVISED	2-22-17
REVISED	3-3-17

DRAWN BY: GAH
JOB NO.: XXX

AREA WIDE DRAINAGE PLAN

SHEET NO.

C-5

GENERAL CONDITIONS

1. IF ANY GENERAL NOTE CONFLICTS WITH ANY DETAIL OF NOTE ON THE PLANS OR IN THE SPECIFICATIONS THE STRICTEST PROVISION SHALL GOVERN.

2. THE STRUCTURAL DRAWINGS ARE FOR THE PLACEMENT AND SIZE OF STRUCTURAL COMPONENTS ONLY. OSHA, DNR, AND SAFETY CODE REQUIREMENTS ARE DETERMINED AND PROVIDED BY THE CONTRACTOR.

3. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER IT IS FULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENTS DURING ERECTION. THIS INCLUDES PROVIDING TEMPORARY BRACING, SHORING, GUYS, OR TIE-DOWNS. THESE WILL REMAIN UNTIL ALL STRUCTURAL COMPONENTS ARE IN PLACE AND COMPLETED.

MASONRY

1. ALL MASONRY WORK IS TO BE IN ACCORDANCE WITH THE LATEST BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (A.C.I. 530/A.S.C.E. 5) AND SPECIFICATIONS FOR MASONRY STRUCTURES (A.C.I. 530/A.S.C.E. 6) AND N.C.M.A. SPECIFICATIONS.

2. REINFORCED CONCRETE BLOCK WALLS SHALL BE MATERIALS AND CONSTRUCTION AS DEFINED IN THE 2000 INTERNATIONAL BUILDING CODE.

3. BLOCK SHALL BE STANDARD WEIGHT UNITS CONFORMING TO A.S.T.M. C-90 GRADE N, TYPE I. WITH f'm = 1250 P.S.I. (MINIMUM).

4. SAND SHALL CONFORM TO A.S.T.M. C-144.

5. MASONRY COMPRESSIVE STRENGTH f'm = 1500 P.S.I. MINIMUM.

6. MASONRY GROUT SHALL CONFORM TO A.S.T.M. C476, WITH PEA GRAVEL AGGREGATE AND A MINIMUM STRENGTH OF 2000 P.S.I., BUT NOT LESS THAN SPECIFIED f'm.

7. ALL REINFORCING BARS, DOWELS AND TIES SHALL CONFORM TO A.S.T.M. A615 GRADE 60.

8. ALL HORIZONTAL REINFORCING STEEL IN CONCRETE BLOCK WALLS SHALL BE CONTINUOUS AROUND CORNERS FOR 24" FROM THE CORNER IN EACH DIRECTION.

9. HORIZONTAL REINFORCING SHALL BE "DUR-O-WAL" "TRUSS" WALL REINFORCMENT WITH 9 GAUGE SIDE AND CROSS RODS IN EVERY SECOND COURSE. VERTICAL REINFORCING SHALL BE A.S.T.M. SPEC A-615 DEFORMED BARS WITH A MINIMUM YIELD STRESS OF 60,000 P.S.I.

10. MORTAR SHALL BE TYPE "S" (ONE PART CEMENT, ONE-QUARTER TO ONE-HALF PART HYDRATED LIMES OR LIME PUTTY, AND TWO AND ONE-QUARTER TO THREE PARTS SAND), 1800 P.S.I. CONFORMING TO A.S.T.M. C-270.

11. CONTRACTOR SHALL PROVIDE NECESSARY LABOR, MATERIALS, AND EQUIPMENT TO LAY UP MASONRY AS SHOWN OR SPECIFIED IN THESE DOCUMENTS. ALL WORK SHALL BE LAID PLUMB, TRUE AND SQUARE WITH FILLED JOINTS.

12. ALL WALLS SHALL BE ADEQUATELY BRACED UNTIL SECURELY TIED TO THE STRUCTURE. NO WORK SHALL BE DONE SUBJECT TO FREEZING CONDITIONS.

13. ALL MASONRY WORK SHALL BE LAID RUNNING BOND UNLESS NOTED OTHERWISE.

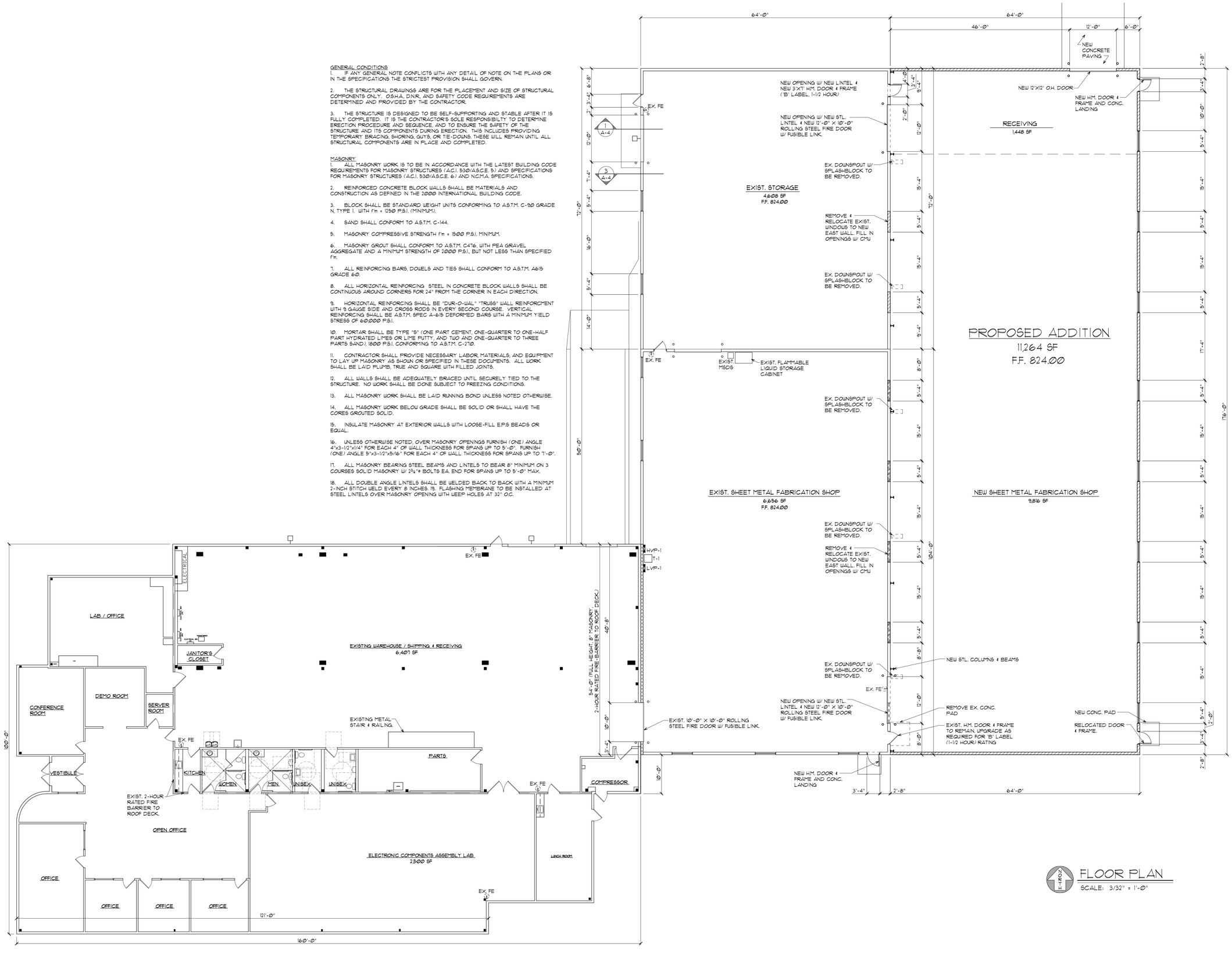
14. ALL MASONRY WORK BELOW GRADE SHALL BE SOLID OR SHALL HAVE THE CORES GROUTED SOLID.

15. INSULATE MASONRY AT EXTERIOR WALLS WITH LOOSE-FILL E.P.S BEADS OR EQUAL.

16. UNLESS OTHERWISE NOTED, OVER MASONRY OPENINGS FURNISH (ONE) ANGLE 4"x3-1/2"x1/4" FOR EACH 4" OF WALL THICKNESS FOR SPANS UP TO 5'-0". FURNISH (ONE) ANGLE 5"x3-1/2"x5/16" FOR EACH 4" OF WALL THICKNESS FOR SPANS UP TO 7'-0".

17. ALL MASONRY BEARING STEEL BEAMS AND LINTELS TO BEAR 8" MINIMUM ON 3 COURSES SOLID MASONRY W/ 2¾"ø BOLTS EA. END FOR SPANS UP TO 5'-0" MAX.

18. ALL DOUBLE ANGLE LINTELS SHALL BE WELDED BACK TO BACK WITH A MINIMUM 2-INCH STITCH WELD EVERY 8 INCHES. 19. FLASHING MEMBRANE TO BE INSTALLED AT STEEL LINTELS OVER MASONRY OPENING WITH WEEP HOLES AT 32" O.C.



FLOOR PLAN

SCALE: 3/32" = 1'-0"

DYNICS ADDITION

DESIGNERS
Vanston/O'Brien, Inc.
BUILDERS
2375 Bishop Circle West
Dexter, MI 48130
Tel: (734) 424-0661
Fax: (734) 424-0677
e-mail: sales@vanston.com • www.vanston.com

DYNICS
620 Fairfield Court
Pittsfield Township, Michigan

THIS MATERIAL, INCLUDING IDEAS, DRAWINGS AND DESIGN, IS OWNED BY AND IS THE EXCLUSIVE PROPERTY OF VANSTON/O'BRIEN, INC. AND CANNOT BE REPRODUCED OR REUSED IN ANY MANNER WITHOUT THE PRIOR CONSENT OF VANSTON/O'BRIEN, INC.

ISSUED FOR:	DATE:
REVIEW	9-1-16

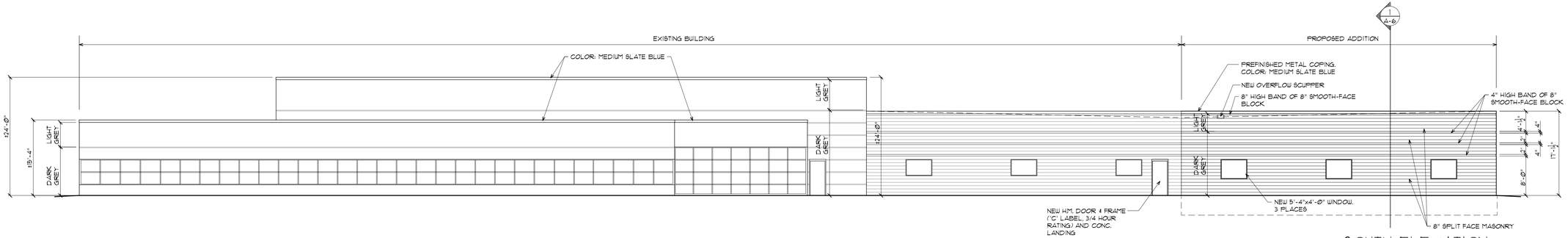
DRAWN BY: CLN/SA
JOB NO.: –

FLOOR PLAN

SHEET NO.

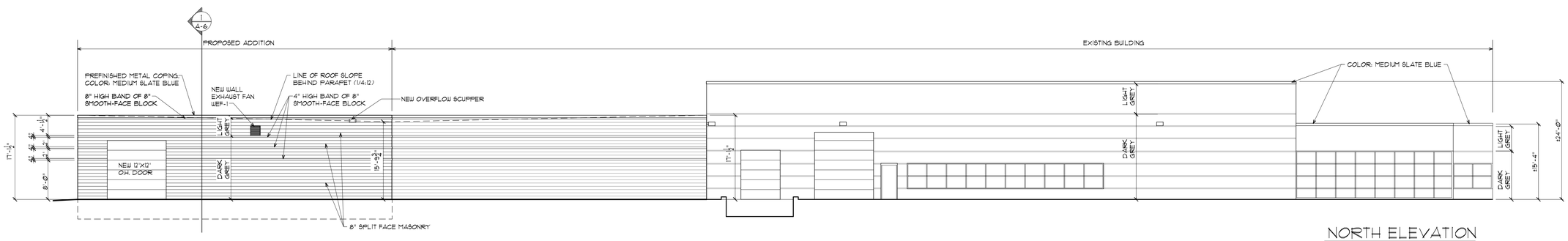
C-6

P:\Dynics\AutoCAD\dwg\C-6.dwg, 3/3/2017 3:22:08 PM



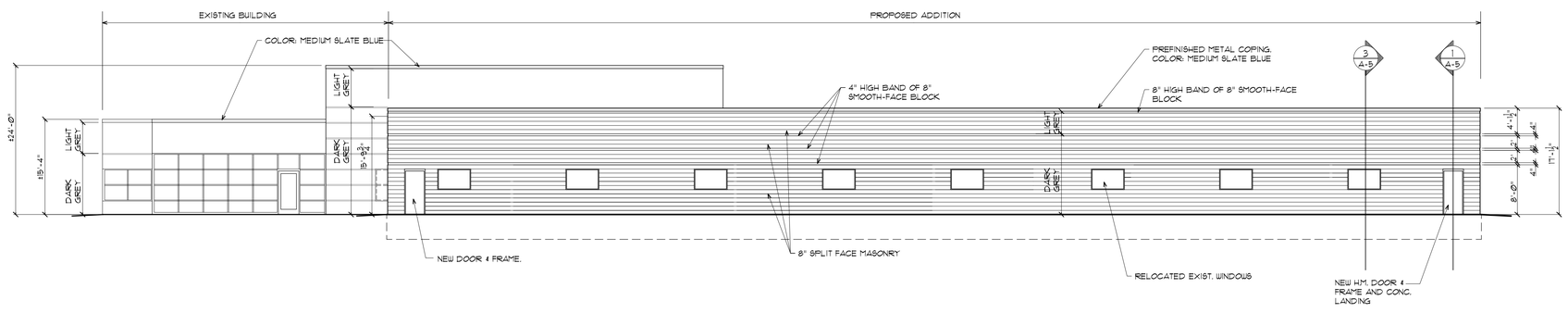
SOUTH ELEVATION

SCALE: 3/32" = 1'-0"



NORTH ELEVATION

SCALE: 3/32" = 1'-0"



EAST ELEVATION

SCALE: 3/32" = 1'-0"

DYNICS ADDITION

DESIGNERS
Vanston/O'Brien, Inc.
BUILDERS
2375 Bishop Circle West
Dexter, MI 48130
Tel: (734) 424-0661
Fax: (734) 424-0677
e-mail: sales@vanston.com • www.vanston.com

DYNICS
620 Fairfield Court
Pittsfield Township, Michigan

THIS MATERIAL, INCLUDING IDEAS, DRAWINGS AND DESIGN, IS OWNED BY AND IS THE EXCLUSIVE PROPERTY OF VANSTON/O'BRIEN, INC. AND CANNOT BE REPRODUCED OR REUSED IN ANY MANNER WITHOUT THE PRIOR CONSENT OF VANSTON/O'BRIEN, INC.

ISSUED FOR:	DATE:
REVIEW	9-1-16
REVISED	3-3-17

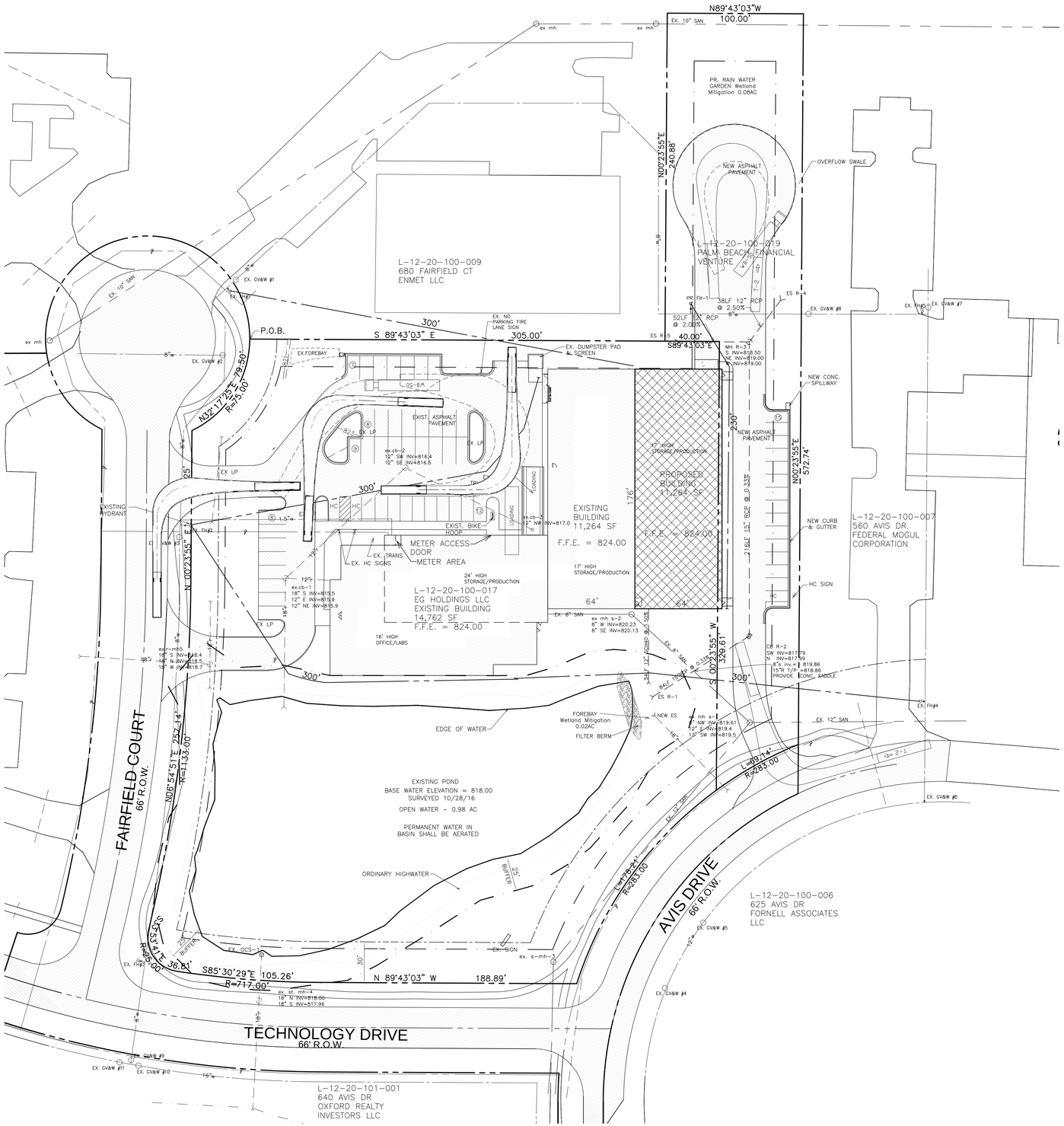
DRAWN BY: CLN/SA
JOB NO.: –

ELEVATIONS

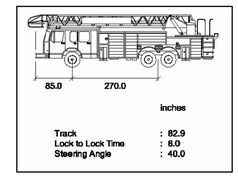
SHEET NO.

C-7

P:\Dynics\AUTOCAD\dwg\C-7.dwg, 3/3/2017 3:22:13 PM



NOTES:
1. PITTSFIELD TOWNSHIP FIRE TRUCK TURN TEMPLATE AND WB-50 TRUCK TURN TEMPLATES ARE SHOWN FOR SITE CIRCULATION.
2. THE EXISTING AND PROPOSED BUILDINGS ARE NOT FIRE SUPPRESSED.
3. EXISTING HYDRANT TO BE REMOVED SHALL BE RETURNED TO PITTSFIELD TOWNSHIP UTILITY DEPARTMENT.
4. THE ENTIRE PROPOSED AND EXISTING BUILDING SHALL BE EQUIPPED WITH A 24 HOUR MONITORED FIRE AND SMOKE ALARM SYSTEM.



FIRE TRUCK

FIRE ACCES PLAN

SCALE: 1" = 40'-0"

LEGEND

PROPERTY LINE	EXISTING WALL MOUNTED LIGHT FIXTURE		EXISTING BUILDING
SETBACK	NEW BUILDING MOUNTED LIGHTING		EXISTING ASPHALT PAVING
EASEMENT	EX POLE-MOUNTED LIGHT		PROPOSED BUILDING
R — PROPOSED STORM	EX.MH EXISTING MANHOLE		PROPOSED HEAVY DUTY ASPHALT PAVING
W — PROPOSED WATER	CB R-1 NEW CATCH BASIN		PROPOSED CONCRETE
UTE — PROPOSED UNDERGROUND ELECTRIC & TELEPHONE	EX FH EXISTING FIRE HYDRANT		
G — PROPOSED GAS	x 660.90 EXISTING ELEVATION		
S — PROPOSED SANITARY	823.35 PROPOSED ELEVATION		
EXISTING STORM			
EXISTING WATER			
EXISTING TELEPHONE			
EXISTING ELECTRIC			
EXISTING UNDERGROUND CABLE			
EXISTING GAS			
EXISTING SANITARY			
EXISTING CENTERLINE OF DITCH			
(914) EXISTING CONTOUR			
914 PROPOSED CONTOUR			
LINE OF SILT FENCE		300'	HYDRANT COVERAGE

DYNICS

DESIGNERS
Vanston/O'Brien, Inc.
BUILDERS
2375 Bishop Circle West
Dexter, MI 48130
Tel: (734) 424-0661
Fax: (734) 424-0677
email: sales@vanston.com ◆ www.vanston.com

DYNICS Building Addition

620 Fairfield Ct
Pittsfield Township, Michigan

THIS MATERIAL, INCLUDING IDEAS, DRAWINGS AND DESIGN, IS OWNED BY AND IS THE EXCLUSIVE PROPERTY OF VANSTON/O'BRIEN, INC. AND CANNOT BE REPRODUCED OR REUSED IN ANY MANNER WITHOUT THE PRIOR CONSENT OF VANSTON/O'BRIEN, INC.

ISSUED FOR:	DATE:
SITE PLAN	9-1-16
REVISED	2-22-17
REVISED	3-3-17

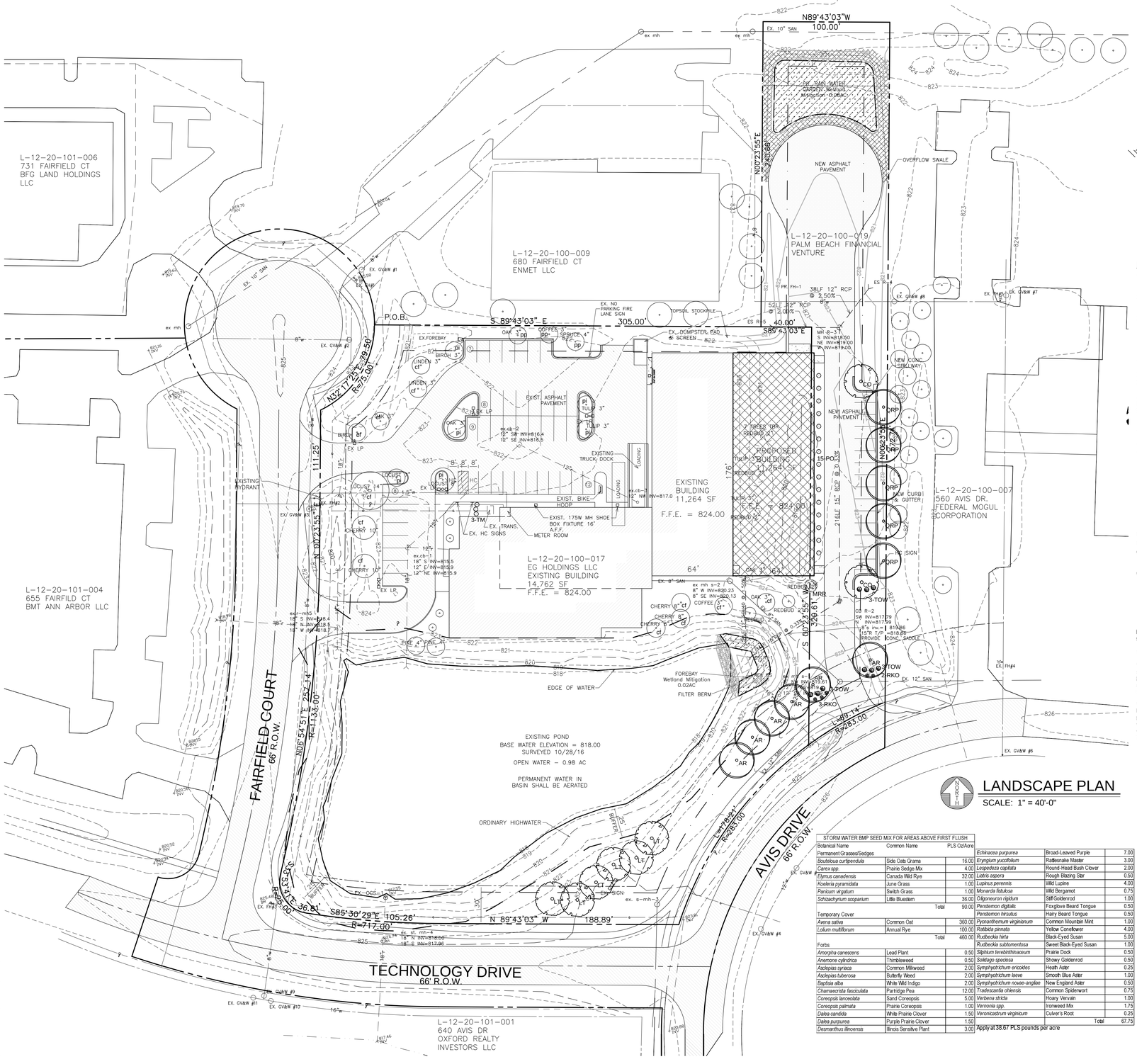
DRAWN BY: GAH
JOB NO.: XXX

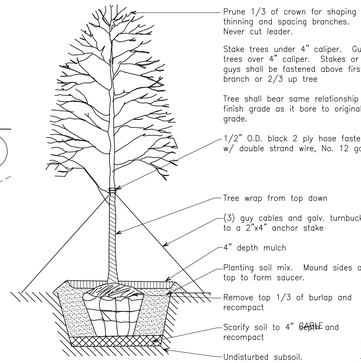
FIRE ACCESS PLAN

SHEET NO.

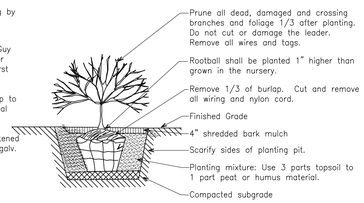
C-8

P:\Dynics\AutoCAD\dwg\C-Rev.dwg, 3/3/2017 3:22:18 PM

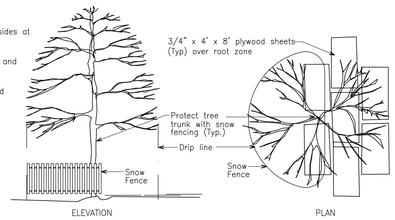




DECIDUOUS TREE PLANTING DETAIL



SHRUB BED PLANTING DETAIL



STANDARD TREE PROTECTION

NOTE: Pull back fencing to install plywood when access in root zone is necessary.

Landscape Notes

1. All plant material shall meet current American Association of Nurserymen, Inc. (AAN) standard for nursery stock. (ANSI 260.1 – 1973)
2. Landscape installation shall be in accordance with the American Association of Nursery standards and with the Township/City's landscape requirements.
3. Planting schedules: 1) Deciduous material shall be planted from March 15 for spring planting and from October 1 until the ground freezes for fall planting. 2) Evergreen material shall be planted from March 1 through May 31 for Spring plantings and from August 1 through September 30 for all fall planting.
4. Mulch plant beds, individual tree and shrub planting pits uniform depth of 4 inches.
5. Provide weed mat for greenbelt and foundation plantings.
6. All planting beds are to be edged. Recommended either "Permaloc Aluminum" edging or "Black Diamond" plastic edging.
7. All areas with stone cover shall have weed mat.
8. All landscaping to be continuously maintained.
9. All site improvements detailed on this plan are to be completed prior to issuance of final certificate of occupancy.
10. All construction to conform to the latest applicable Township/City regulations.
11. R.O.W. areas to be seeded or sod.
12. Tree protection consists of:
    A. Yellow ribbon barriers for large areas not disturbed by construction.
    B. Stakes 10' on center and wood snow fence around individual and groups of individual trees.
    C. Trees to be removed will be tagged with red ribbon.

    The barrier or fence surrounding the tree or group of trees shall be located no closer to the tree than the tree's drip line. If this is not possible, the barrier shall be no closer than 6 feet from the trunk of the tree or group of trees.
13. There will be no outside storage on site.
14. Seed Mix

* Temporary planting mixture for erosion control.
- –Seed Oats 30 pounds per acre
- –Annual Rye 10 pounds per acre

* Permanent planting mixture on all disturbed areas excluding BMPs.
- –Scaldis Hard Fescue 12 pounds per acre
- –Danson's Creeping Red Fescue 6 pounds per acre
- –Perennial Rye 20 pounds per acre
- –Buffalo Grass 20 pounds per acre
- –Creeping Bent
- –Little Blue Stem
- –Sheep Fescue

Existing soil nutrient levels shall be tested by an independent soil testing laboratory before fertilizers are applied.

15. Rain Water Garden / Infiltration Basin Plantings

* Within areas above the first flush elevation of the infiltration basins, seeding and/or live plantings are allowed. Only native seeds (as defined by Michigan Flora, www.michiganflora.net) are allowed for permanent soil stabilization. Annual seeds are allowed in an amount necessary to temporarily stabilize the limits of disturbance.

* Within areas below the first flush elevation of the infiltration basins, only live plantings are allowed in a storm water system of any kind. Native plants are preferred. Cultivars and non–native perennials are allowable if approved by WCWRC. Plants listed on the WCWRC Rain Garden Plant List are acceptable. Invasive species are not allowed (see the City of Ann Arbor's invasive species list).

LANDSCAPE REQUIREMENTS			
		REQUIRED	PROPOSED
Frontage for Condominium			
1 Tree per 50 Lineal Feet			
	1026.5' / 50 =	21	12
Parking Lot Landscaping			
1 Tree per 8 Spaces			
	59 Spaces / 8 =	8	2
Parking Lot Perimeter			
1 Tree per 40 Lineal Feet			
	(188' + 132') / 40 =	8	5
EX TREES			18
	Totals	**37**	**37**
Misc. Landscaping			
	Ornamental Trees & Shrubs		33

cf – EXISTING CONDO FRONTAGE TREE
pi – EXISTING INTERIOR PARKING LOT TREE
pp – EXISTING PARKING LOT PERIMETER TREE

20% GENERAL SITE LANDSCAPING REQUIRED – 23.8% PROVIDED

PLANT LIST

TREES

KEY	QTY	SPECIES	SIZE	SPECS
AR	6	Acer rubrum 'Autumn Blaze' Autumn Blaze Red Maple	2.5" cal	B&B
CO	2	Celtis occidentalis Hackberry	2.5" cal	B&B
LT	6	Liriodendron tulipifera Tulip Poplar	2.5"cal	B&B
QRP	5	Quercus x warei 'Long' Regal Prince Oak	2.5" cal	B&B

ORNAMENTAL TREES

KEY	QTY	SPECIES	SIZE	SPECS
MRR	1	Malus 'Royal Raindrops' Royal Raindrops Crabapple	7' multi	B&B

SHRUBS

KEY	QTY	SPECIES	SIZE	SPECS
PO	15	Physocarpus opulifolius 'Summer Wine' Eastern Ninebark Summer Wine	#5	Cont
RKO	5	Rosa species Red Knockout	#5	Cont
TOW	9	Thuja occidentalis 'Woodwardii' Woodwards Globe Arborvitae	24-30"	B&B
TM	3	Taxus species Moon Upright Yew	24-30"	B&B

STORM WATER BMP PLANTINGS FOR AREAS BELOW FIRST FLUSH			
Qty	Species	Size	Specs
320	*Elymus virginicus*	Plug	Live Planting
	Virginia Wild Rye		24" OC
	Height:2-4'		
300	*Liatris spicata*	Plug	Live Planting
	Marsh Blazing Star		24" OC
	Height:1-3'		
300	*Senna hebecarpa*	Plug	Live Planting
	Wild Senna		24" OC
	Height:3-5'		

STORM WATER BMP SEED MIX FOR AREAS ABOVE FIRST FLUSH					
Botanical Name	Common Name	PLS Oz/Acre			
Permanent Grasses/Sedges			*Echinacea purpurea*	Broad-Leaved Purple	7.00
Bouteloua curtipendula	Side Oats Grama	16.00	*Eryngium yuccifolium*	Rattlesnake Master	3.00
Carex spp.	Prairie Sedge Mix	4.00	*Lespedeza capitata*	Round-Head Bush Clover	2.00
Elymus canadensis	Canada Wild Rye	32.00	*Liatris aspera*	Rough Blazing Star	0.50
Koeleria pyramidata	June Grass	1.00	*Lupinus perennis*	Wild Lupine	4.00
Panicum virgatum	Switch Grass	1.00	*Monarda fistulosa*	Wild Bergamot	0.75
Schizachyrium scoparium	Little Bluestem	36.00	*Oligoneuron rigidum*	Stiff Goldenrod	1.00
	Total	90.00	*Penstemon digitalis*	Foxglove Beard Tongue	0.50
Temporary Cover			*Penstemon hirsutus*	Hairy Beard Tongue	0.50
Avena sativa	Common Oat	360.00	*Pycnanthemum virginianum*	Common Mountain Mint	1.00
Lolium multiflorum	Annual Rye	100.00	*Ratibida pinnata*	Yellow Coneflower	4.00
	Total	460.00	*Rudbeckia hirta*	Black-Eyed Susan	5.00
Forbs			*Rudbeckia subtomentosa*	Sweet Black-Eyed Susan	1.00
Amorpha canescens	Lead Plant	0.50	*Silphium terebinthinaceum*	Prairie Dock	0.50
Anemone cylindrica	Thimbleweed	0.50	*Solidago speciosa*	Showy Goldenrod	0.50
Asclepias syriaca	Common Milkweed	2.00	*Symphyotrichum ericoides*	Heath Aster	0.25
Asclepias tuberosa	Butterfly Weed	2.00	*Symphyotrichum laeve*	Smooth Blue Aster	1.00
Baptisia alba	White Wild Indigo	2.00	*Symphyotrichum novae-angliae*	New England Aster	0.50
Chamaecrista fasciculata	Partridge Pea	12.00	*Tradescantia ohiensis*	Common Spiderwort	0.75
Coreopsis lanceolata	Sand Coreopsis	5.00	*Verbena stricta*	Hoary Vervain	1.00
Coreopsis palmata	Prairie Coreopsis	1.00	*Vernonia spp.*	Ironweed Mix	1.75
Dalea candida	White Prairie Clover	1.50	*Veronicastrum virginicum*	Culver's Root	0.25
Dalea purpurea	Purple Prairie Clover	1.50		Total	67.75
Desmanthus illinoensis	Illinois Sensitive Plant	3.00			

Apply at 38.87 PLS pounds per acre

LEGEND

- PROPERTY LINE
- SETBACK
- EASEMENT
- PROPOSED STORM
- PROPOSED WATER
- PROPOSED UNDERGROUND ELECTRIC & TELEPHONE
- PROPOSED GAS
- PROPOSED SANITARY
- EXISTING STORM
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING ELECTRIC
- EXISTING UNDERGROUND CABLE
- EXISTING GAS
- EXISTING SANITARY
- EXISTING CENTERLINE OF DITCH
- EXISTING CONTOUR
- PROPOSED CONTOUR
- LINE OF SILT FENCE
- LIMITS OF DISTURBANCE
- EXISTING WALL MOUNTED LIGHT FIXTURE
- NEW BUILDING MOUNTED LIGHTING
- EX POLE–MOUNTED LIGHT
- EXISTING MANHOLE
- NEW CATCH BASIN
- EXISTING FIRE HYDRANT
- EXISTING ELEVATION
- PROPOSED ELEVATION
- EXISTING BUILDING
- EXISTING ASPHALT PAVING
- PROPOSED BUILDING
- PROPOSED HEAVY DUTY ASPHALT PAVING
- PROPOSED CONCRETE

LANDSCAPE PLAN

SCALE: 1" = 40'-0"

DYNICS

DESIGNERS
Vanston/O'Brien, Inc.
BUILDERS
2375 Bishop Circle West
Dexter, MI 48130
email: sales@vanston.com
Tel: (734) 424-0661
Fax: (734) 424-0677
www.vanston.com

DYNICS
Building Addition
620 Fairfield Ct
Pittsfield Township, Michigan

THIS MATERIAL, INCLUDING IDEAS, DRAWINGS AND DESIGN, IS OWNED BY AND IS THE EXCLUSIVE PROPERTY OF VANSTON/O'BRIEN, INC. AND CANNOT BE REPRODUCED OR REUSED IN ANY MANNER WITHOUT THE PRIOR CONSENT OF VANSTON/O'BRIEN, INC.

ISSUED FOR:	DATE:
SITE PLAN	9–1–16
REVISED	2–22–17
REVISED	3–3–17

DRAWN BY: GAH
JOB NO.: XXX

LANDSCAPE PLAN

SHEET NO.

C–9

P:\Dynics\AutoCAD\dwg\C-9.dwg, 3/3/2017 3:22:23 PM