PITTSFIELD FUN CENTER

4095 Carpenter Road

PITTSFIELD TOWNSHIP, MICHIGAN

ABBREVIATIONS

A	A.F.F.	ABOVE FINISH FLOOR
	AC.	ACRE
	A/C	AIR CONDITION
	ALUM.	ALUMINUM
	ASPH.	ASPHALT
	B.F.F.	BELOW FINISH FLOOR
B	BIT.	BITUMINOUS
	BLDG.	BUILDING
C	CB	CATCH BASIN
	C.O.	CLEAN OUT
	COMP.	COMPRESSOR
	CONC.	CONCRETE
	CMU	CONCRETE MASONRY UNIT
	C.J.	CONTROL JOINT
D	DIA.	DIAMETER
	DIM.	DIMENSION
	DWG.	DRAWING
	D.I.	DUCTILE IRON
E	EA.	EACH
	ELEC.	ELECTRIC
	EL. / ELEV.	ELEVATION
	EQ.	EQUAL
	EXIST. / EX.	EXISTING
	EXP.	EXPANSION
	E.J.	EXPANSION JOINT
	EXT.	EXTERIOR
F	FT.	FEET
	F.F.	FINISH FLOOR
	F.H.	FIRE HYDRANT
	FIXT.	FIXTURE
	FLR.	FLOOR
	F.A.R.	FLOOR/AREA RATIO
G	GA.	GAUGE
	GALV.	GALVANIZED
	GL.	GLASS
H	HT.	HEIGHT
	H.P.	HIGH POINT
	H.M.	HOLLOW METAL
	HORIZ.	HORIZONTAL
I	I.D.	INSIDE DIAMETER
	INT.	INTERIOR
	INV.	INVERT
J	JT.	JOINT
L	L.L.	LIVE LOAD
	L.L.H.	LONG LEG HORIZONTAL
	L.L.V.	LONG LEG VERTICAL
	L.P.	LOW POINT
M	MFR.	MANUFACTURER
	MH	MANHOLE
	MAS.	MASONRY
	M.O.	MASONRY OPENING
	MAX.	MAXIMUM
	MIL.	MILLIMETER
	MIN.	MINIMUM
	MTD	MOUNTED
N	NOM.	NOMINAL
	N.I.C.	NOT IN CONTRACT
	NO.	NUMBER
O	O.C.	ON CENTER
	O.D.	OUTSIDE DIAMETER
	O.H.	OVERHEAD
	OE	OVERHEAD ELECTRIC
	OTE	OVERHEAD TELEPHONE & ELECTRIC
P	PTD.	PAINTED
	PSF	POUNDS PER SQUARE FOOT
	PSI	POUNDS PER SQUARE INCH
	PEMB	PRE-ENGINEERED METAL BUILDING
	PREFAB.	PREFABRICATED
R	RAD.	RADIUS
	REV.	REVISED
	R.O.W.	RIGHT OF WAY
	RTU	ROOF TOP UNIT
	RM.	ROOM
S	SAN.	SANITARY
	SCHED./SCH.	SCHEDULE
	SIM.	SIMILAR
	S.P.A.	SITE PLAN APPROVAL
	SQ. FT./ S.F.	SQUARE FEET
	STD.	STANDARD
	ST. MH	STORM MANHOLE
T	TV&S	TAPPING VALVE & SLEEVE
	T/A	TOP OF ASPHALT
	T/C	TOP OF CURB
	T/M	TOP OF MASONRY
	TBR	TO BE REMOVED
	TYP.	TYPICAL
U	UE	UNDERGROUND ELECTRICAL
	UTE	UNDERGROUND TELEPHONE & ELECTRICAL
	U.N.O.	UNLESS NOTED OTHERWISE
	U.P.	UTILITY POLE
V	VERT.	VERTICAL
W	W/	WITH
	W/O	WITHOUT

LEGAL DESCRIPTION

PARCEL ID #: L -12-13-200-019, 020, 021 & 022

LOTS 13 THROUGH 16 OF "SOMMERS SUBDIVISION" BEING PART OF THE NW 1/4 SECTION 13, T3N, R6E, PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN AS RECORDED IN LIBER 9 OF PLATS, PAGE 51, WASHTENAW COUNTY RECORDS

PROJECT DESCRIPTION

The project, located at 4095 Carpenter Road, is the combination of 4 parcels of land. The proposed use is an indoor recreation facility in a 29,900 sf building set toward the rear of the site. The front portion of the site is reserved for a multi-tenant commercial retail/office mixed use building to be constructed as Phase 2, and future development that has yet to be determined. All storm water shall be directed to the proposed detention facility at the rear of the site. Water and Sanitary extensions will be provided as part of the development.

GENERAL NOTES:

1. All site work shall meet all applicable codes, laws and regulations including Michigan Barrier-Free Design Requirements and ADA Accessibility Guidelines (ADAAG).
2. Verify existing conditions on site. Notify architect/engineer of discrepancies prior to proceeding with construction.
3. Provide signs per Michigan Barrier-Free Requirements at handicapped spaces. Van spaces shall have an additional sign, "VAN ACCESSIBLE" per ADAAG requirements.
4. All work In Carpenter R.O.W. shall conform to WCRC Standards and permitting guidelines.
5. All roads leading to the site are designated Class A for all season travel.
6. All work done shall be performed in accordance with Pittsfield Township's current ordinances, standards and regulations.
7. Existing underground utility information and locations are per existing records and may or may not have been field verified.

UTILITY NOTES

The existing utilities shown on the drawings represent the best information available as obtained by field surveys and from existing records. 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.

SEWER AND WATER
Utilities Department
Pittsfield Township
6201 West Michigan Ave.
Ann Arbor, MI 48108
Office (734) 822-3105

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

ELECTRIC
DTE
8001 Haggerty Road
Belleville, MI 48112
(734) 332-3322

GAS
Michigan Consolidated Gas Co.
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 the Pittsfield Township's standards and supplemental specifications.

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

SITE INFORMATION

ZONING:	C-2
EXISTING USE:	VACANT,
PROPOSED BUILDING USE:	INDOOR RECREATION / MULTI PURPOSE COMMERCIAL
PROPOSED BUILDING AREA:	41,512 SF - 1 Story
PROPOSED FLOOR AREA:	44,812 SF - 1 Story & mezzanine

	REQUIRED	PROPOSED
MIN. LOT AREA	20,000 SF	7.53 Acres Gross/Net (328,222 SF)
MIN. LOT WIDTH	100'	359'
MAX. LOT COVERAGE	25%	12.6%
FLOOR AREA RATIO	80%	13.7%
MAX. IMPERVIOUS	N/A	52.8% (173,382 SF)
MAX. BUILDING HEIGHT	45' max., 3 stories	25' maximum, 1 story
FRONT SETBACK	35'	126'
SIDE SETBACK	10' Least, 35' Total	33'
REAR SETBACK	35' MIN.	229'

PARKING & LOADING:

Parking Spaces Required:
1 Space per 250 sf retail; 11,612 / 250 = 47 Spaces
1 Space per 200 sf indoor recreation; 33,200 / 200 = 166 Spaces

Total Required Parking Spaces: 213

Parking Spaces Provided:
213 parking spaces are provided, Including 7 barrier-free spaces

Loading Spaces:
1 Loading Space Provided.
No Loading spaces required for the rear building

SOILS INFORMATION:

BbB - Blount Loam, 2 to 6 Percent Slopes, C
StB - St. Clair Loam, 2 to 6 Percent Slopes, D
StB - St. Clair Loam, 6 to 12 Percent Slopes, D
Pe - Pewamo Clay Loam, D

Ground water was not encountered to a depth of 12'

NATURAL FEATURES:

There are no significant natural features on-site. the upper branch of Paint Creek exists to the east of the site. a few trees exist along the creek and are shown to remain in the plans and are to remain.

BENCHMARK #1
FOUND SQUARE BOLT IN WEST FACE OF UTILITY POLE NEAR SOUTH WEST PROPERTY CORNER ELEV. = 836.57 NAVD 88
BENCHMARK #2
FOUND 'X' ON TOP OF NORTHWEST STEAMER VALVE OF HYDRANT 50' SOUTH OF THE NORTHWEST PROPERTY CORNER ELEV. = 836.65 NAVD 88

VICINITY MAP
SCALE: 1" = 1000'

GENERAL INFORMATION

PROPERTY LOCATION:
4095 Carpenter Road
Ypsilanti, Michigan 48197

DEVELOPER/OWNER:
ROGALAZ INVESTMENTS LLC
Ghazwan Ismail
22419 Paddington
Novi, Michigan 48374

SITE PLANNER/ENGINEER/CONTRACTOR:
Vanston/O'Brien, Inc.
2375 Bishop Circle West
Dexter, Michigan 48130
(734) 424-0661

LANDSCAPE ARCHITECT
O'Reilly Landscape Design, Inc
Ann Arbor, Michigan
(734) 276-8446
Robert O'Reilly

DRAWING INDEX:

C-1	TITLE SHEET
C-2	EXISTING CONDITIONS PLAN
C-3	SITE PLAN
C-4	GRADING PLAN
C-5	FIRE PROTECTION PLAN
C-6	LANDSCAPE PLAN
C-7	LIGHTING PLAN
C-8	DETAIL SHEET
A-1	PHASE 1 BUILDING FLOOR PLAN
A-2	PHASE 1 BUILDING ELEVATIONS
A-3	PHASE 2 BUILDING FLOOR PLAN& ELEVATIONS

RECEIVED
April 12, 2017

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

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

PITTSFIELD FUN CENTER
4095 Carpenter Road
Pittsfield Township, Michigan

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REVISED	7-22-16
REVISED	1-4-17
REVISED	2-10-17
REVISED	4-10-17

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JOB NO.: xxx

TITLE SHEET

SHEET NO.
C-1

PITTSFIELD FUN CENTER
C.S.P.A #16-09

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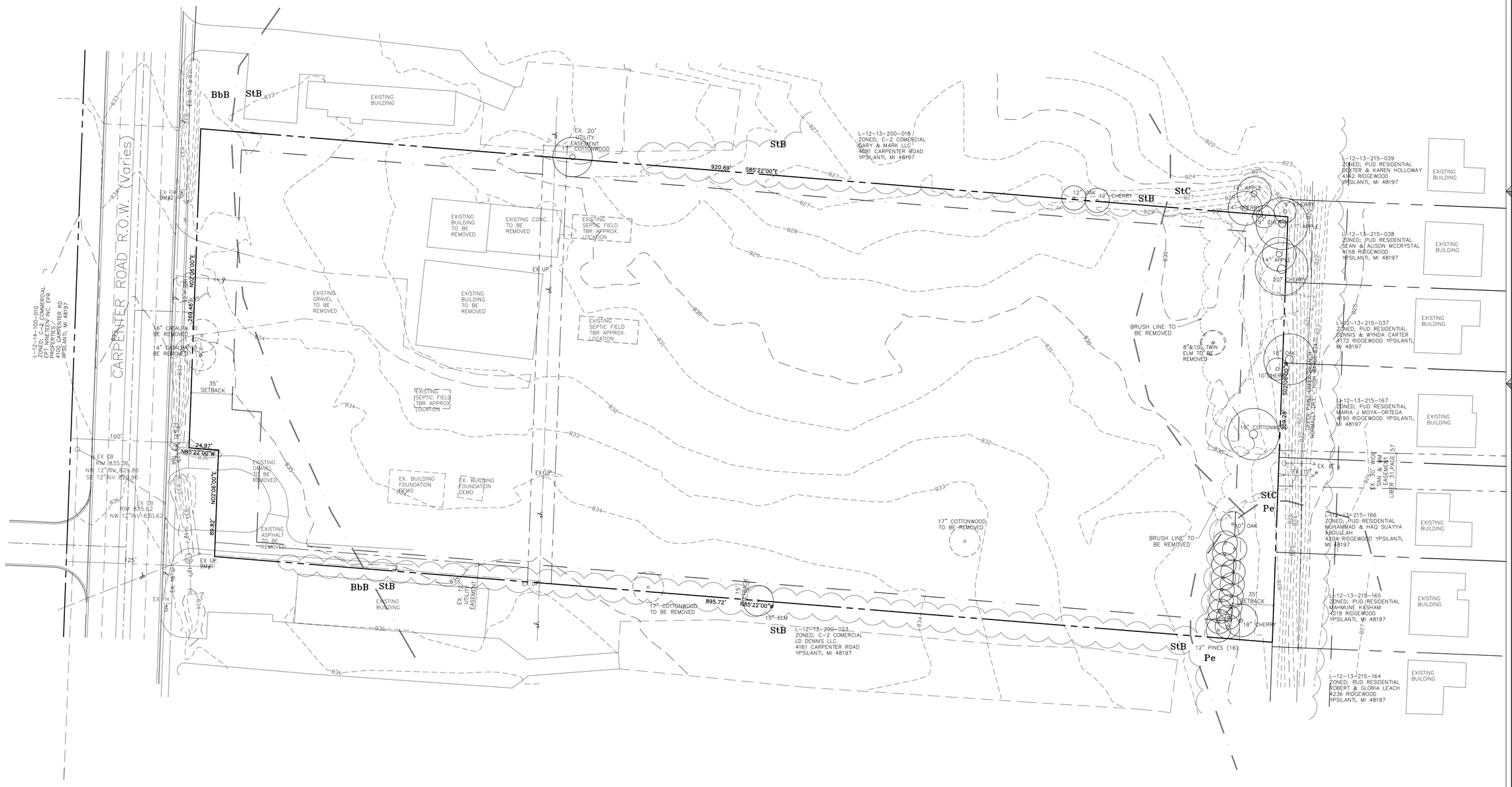

1. ALL REMAINING ON SITE WELLS AND/OR SEPTIC FIELDS AND TANKS SHALL BE ABANDONED AND REMOVED.
2. ABANDONMENT AND REMOVAL SHALL BE COORDINATED WITH WASHTENAW COUNTY ENVIRONMENTAL HEALTH DIVISION.
3. ALL SERVICE UTILITIES TO EXISTING BUILDINGS SHALL BE DISCONNECTED AND REMOVED OR REUSED AS PROPOSED.

LEGEND

	PROPERTY LINE
	SETBACK
	EASEMENT
R	PROPOSED STORM
W	PROPOSED WATER
UTE	PROPOSED UNDERGROUND ELECTRIC & TELEPHONE
G	PROPOSED GAS
S	PROPOSED SANITARY
	EXISTING STORM
	EXISTING WATER
	EXISTING TELEPHONE
	EXISTING ELECTRIC
	EXISTING UNDERGROUND CABLE
	EXISTING GAS
	EXISTING SANITARY
	EXISTING CENTERLINE OF DITCH
910	EXISTING CONTOUR
910	PROPOSED CONTOUR
	LINE OF SILT FENCE
	NEW BUILDING MOUNTED LIGHTING
	NEW POLE-MOUNTED LIGHT
EX.UP	EXISTING UTILITY POLE
EX.MH	EXISTING MANHOLE
EX.CO	EXISTING CLEAN OUT
MH S-1	PROPOSED MANHOLE
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	PROPOSED ELEVATION
x 660.90	EXISTING ELEVATION
	EXISTING BUILDING
	EXISTING ASPHALT PAVING
	PROPOSED CONCRETE
	PROPOSED BUILDING
	PROPOSED ASPHALT PAVING

EXISTING CONDITIONS PLAN

SCALE: 1" = 40'-0"

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

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JOB NO.: XXX

EXISTING CONDITIONS PLAN

SHEET NO.

C-2

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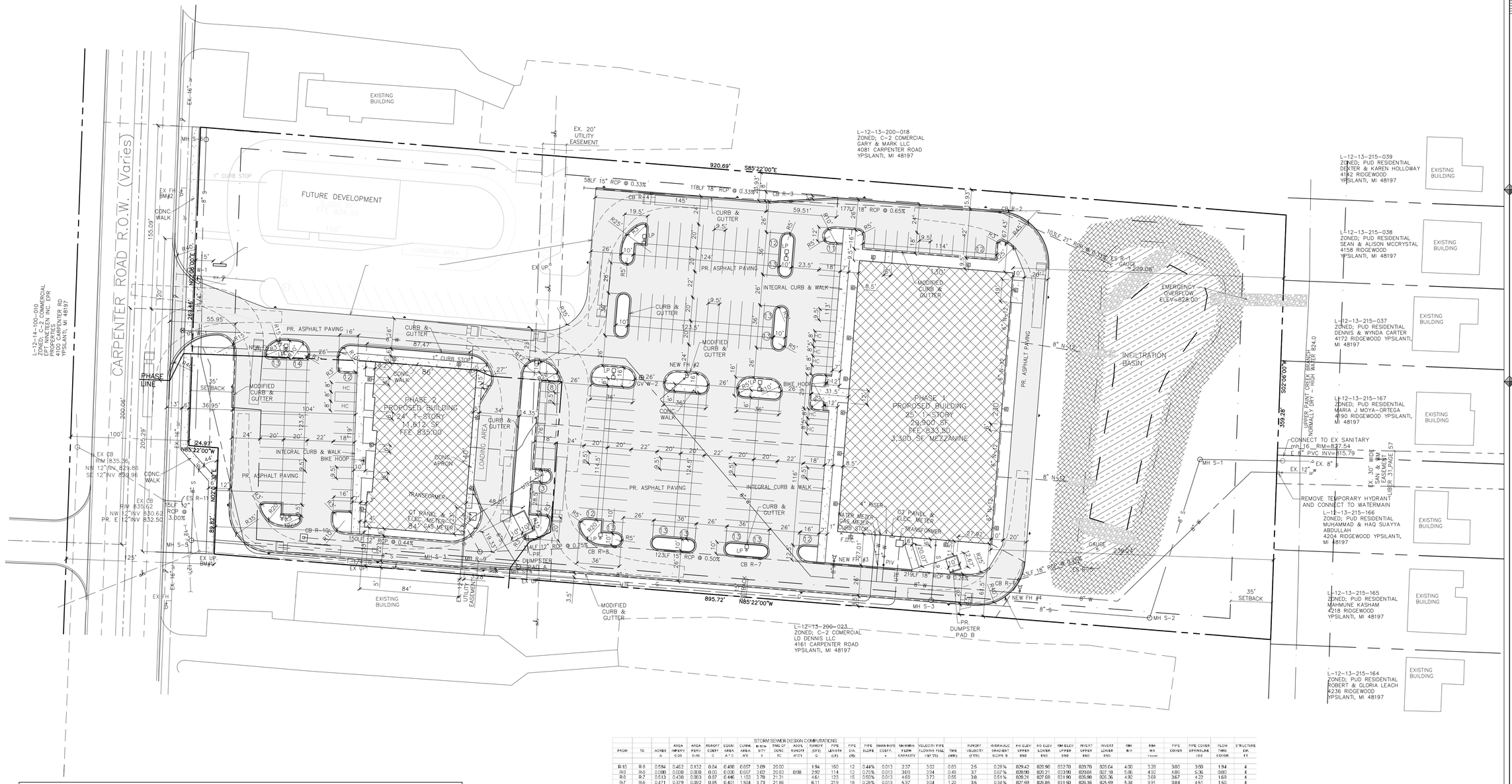
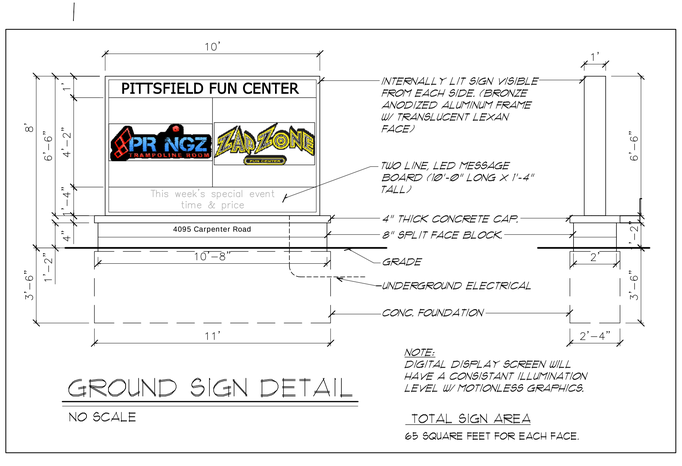


STORM SEWER DESIGN COMPUTATIONS

FROM	TO	ACRES A	AREA INVERV 0.95	AREA PERV 0.45	RUNOFF COEFF C	EQUIV. AREA A * C	CUMM. AREA A*C	INTENSITY I	TIME OF CONC. TC	ADDL RUNOFF A*C*I	RUNOFF (CFS) Q	PIPE LENGTH (LF)	PIPE DIA. (IN)	PIPE SLOPE	MANNINGS COEFF. n	MANNING FLOW CAPACITY	VELOCITY FULL FLOWING FULL >3.0' (FT/S)	TIME (MIN.)	RUNOFF VELOCITY (FT/S)	HYDRAULIC GRADIENT SLOPE %	INV ELEV UPPER END	INV ELEV LOWER END	RIM ELEV UPPER END	INVERT UPPER END	INVERT LOWER END	RIM-INV	RIM-INV Header	PIPE COVER	PIPE COVER BFW/RIM	FLOW THRU COVER	STRUCTURE EA. FT
R-10	R-9	0.594	0.462	0.132	0.54	0.498	0.657	3.69	20.00		1.94	160	12	0.44%	0.013	2.57	3.02	0.83	2.5	0.29%	829.42	826.98	832.70	829.70	828.04	4.00	3.28	3.00	3.60	1.94	4
R-9	R-8	0.000	0.000	0.000	0.00	0.000	0.657	3.62	20.83	0.98	2.92	114	12	0.75%	0.013	3.09	3.94	0.48	3.7	0.67%	826.98	826.21	833.90	829.04	827.18	5.06	4.92	4.86	5.06	0.00	4
R-8	R-7	0.513	0.439	0.063	0.67	0.446	1.103	3.78	21.31		4.61	123	15	0.65%	0.013	4.68	3.73	0.55	3.8	0.61%	826.21	825.68	831.90	825.98	825.36	4.92	3.68	3.67	4.22	1.68	4
R-7	R-6	0.471	0.379	0.092	0.65	0.401	1.504	3.73	21.88		6.11	219	18	0.28%	0.013	5.37	3.04	1.20	3.5	0.34%	827.59	826.86	831.50	825.98	825.59	5.34	3.91	3.84	4.51	1.52	4
R-6	R-5	0.169	0.098	0.069	0.73	0.117	1.621	3.64	23.06		6.63	53	18	0.26%	0.013	5.37	3.04	0.29	3.7	0.35%	826.85	826.66	831.30	825.59	825.45	5.71	4.45	4.21	4.96	0.42	4
stub	R-4	0.936	0.832	0.103	0.89	0.837	0.837	3.69	20.00		3.26	58	15	0.33%	0.013	3.72	3.03	0.32	2.7	0.25%	829.09	827.95	831.00	825.97	825.67	4.13	2.91	2.88	3.61	3.25	
R-4	R-3	0.932	0.811	0.121	0.89	0.826	1.662	3.66	20.32		6.44	118	18	0.33%	0.013	5.05	3.42	0.57	3.6	0.37%	827.96	827.51	830.80	825.47	825.08	4.33	2.85	2.83	3.51	3.19	4
R-3	R-2	0.715	0.635	0.079	0.89	0.636	2.301	3.61	20.69		8.08	177	18	0.65%	0.013	6.49	4.81	0.61	5.0	0.71%	827.51	826.25	830.40	825.08	824.52	4.32	2.89	2.82	3.57	2.44	4
R-2	R-1	0.111	0.084	0.027	0.83	0.092	2.393	3.76	21.51		9.02	103	21	0.33%	0.013	9.13	3.79	0.45	3.8	0.34%	826.25	825.90	831.30	824.72	824.38	5.58	5.05	4.83	5.63	0.35	4
roof 2	R-9	0.267	0.267	0.000	0.95	0.2532	0.2532	3.89	20.00		0.98	22	8	2.00%	0.011	2.03	5.80	0.06	2.8	0.47%	830.51	826.85	835.00	830.26	829.81	4.75	4.49	4.08	4.42	0.98	
R-11	exch	0.336	0.103	0.231	0.60	0.2023	0.2023	3.69	20.00		0.79	15	12	3.00%	0.013	6.19	7.88	0.03	1.0	0.05%	833.31	833.30	835.62	832.95	832.50	2.67	2.31	1.67	2.17	0.79	



GROUND SIGN DETAIL

NO SCALE

NOTE:
DIGITAL DISPLAY SCREEN WILL HAVE A CONSISTANT ILLUMINATION LEVEL W/ MOTIONLESS GRAPHICS.

TOTAL SIGN AREA

65 SQUARE FEET FOR EACH FACE.

NOTES:

1. STORM SEWER PIPE SHALL BE C-76 CL IV RIGID CONCRETE PIPE (RCP) UNLESS OTHERWISE NOTED.
2. SANITARY SEWER PIPE SHALL BE SDR 23.5 PVC UNLESS OTHERWISE NOTED.
3. WATER MAIN PIPE SHALL BE CL-54 DUCTILE IRON PIPE UNLESS OTHERWISE NOTED.
4. UTILITY SHALL MAINTAIN 18" VERTICAL AND 10' HORIZONTAL SEPERATION.
5. FOREBAYS SHALL HAVE A SEDIMENT DEPTH GAUGE.

LEGEND

- PROPERTY LINE
- SETBACK
- EASEMENT
- R — PROPOSED STORM
- W — PROPOSED WATER
- UTE — PROPOSED UNDERGROUND ELECTRIC & TELEPHONE
- G — PROPOSED GAS
- S — PROPOSED SANITARY
- — EXISTING STORM
- W — EXISTING WATER
- T — EXISTING TELEPHONE
- E — EXISTING ELECTRIC
- UG — EXISTING UNDERGROUND CABLE
- G — EXISTING GAS
- S — EXISTING SANITARY
- EXISTING CENTERLINE OF DITCH
- 910 — EXISTING CONTOUR
- 910 — PROPOSED CONTOUR
- LINE OF SILT FENCE
- NEW BUILDING MOUNTED LIGHTING
- NEW POLE-MOUNTED LIGHT
- EX.UP — EXISTING UTILITY POLE
- EX.MH — EXISTING MANHOLE
- EX.CO — EXISTING CLEAN OUT
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SITE PLAN

SCALE: 1" = 40'-0"

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SITE PLAN

SHEET NO.

C-3

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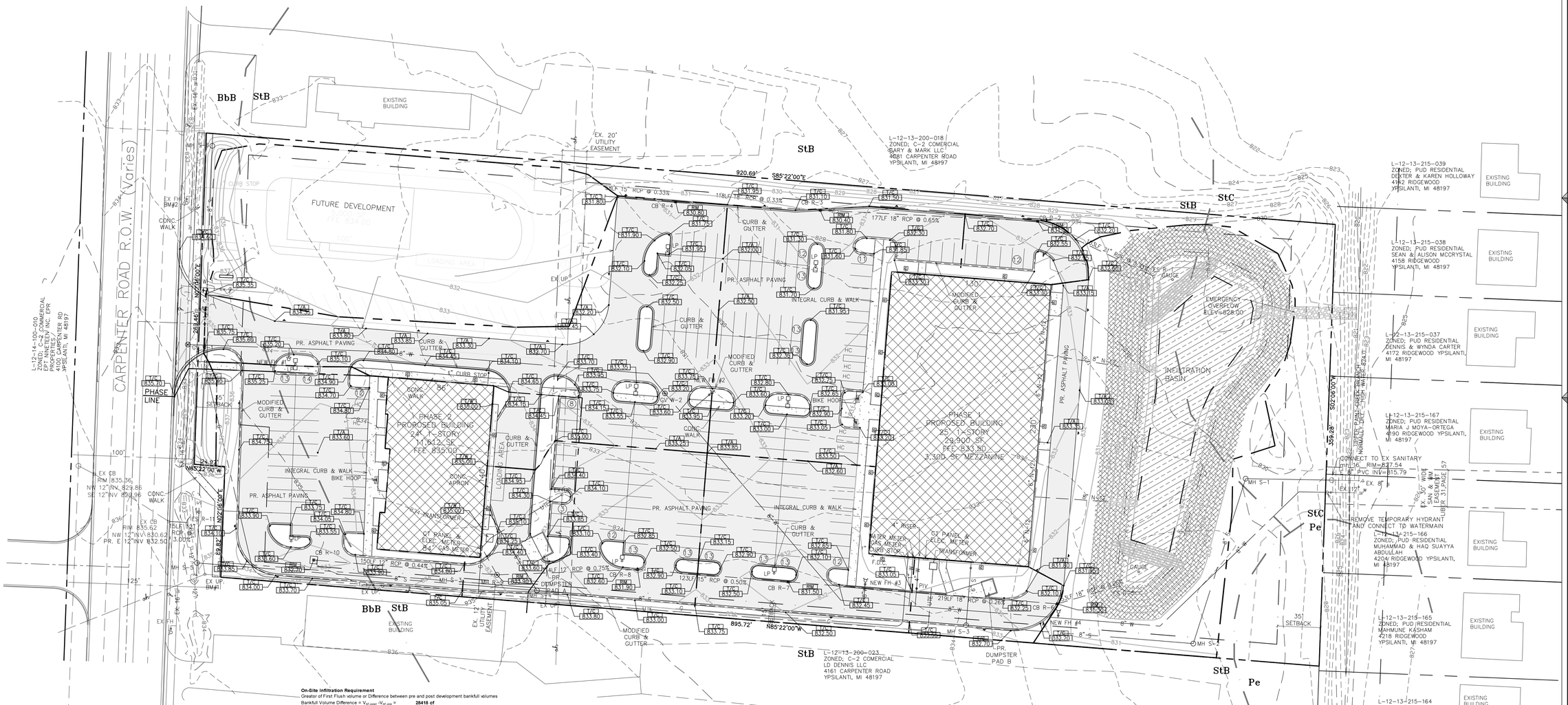

WASHTENAW COUNTY — DETENTION VOLUME CALCULATIONS

PROPOSED DRAINAGE CALCULATION

	ACRES		ON-SITE
Impervious Area (0.95)	4.61	C=	0.84
Pervious Area (0.45)	1.49	A=	6.69 ACRES
Bankfull Basin(1.0)	0.59		
ALLOWABLE RELEASE RATE=			0.15 CFS/AC
$Q_{(con-site)}$ = ALLOWABLE RELEASE RATE x A =			1.00 CFS

FIRST FLUSH VOLUME

V_{ff} =(1"(1/12")/43560SF/1ac) x A x C= — V_{ff} = 20479 cf

Pre-Development Bankfull Volume

2year/24 hour storm event	P=	2.35 in.
Pre-Development CN	CN=	77
S = 1000/CN - 10=	S=	2.967 in.
Q = (P-0.2S)^2 / (P+0.8S)	Q=	0.648 in.
Total Site Area (st) excl. S-C BMPs	A=	291590 sf
$V_{bf\text{-}pre}$ = Q/12 x A	$V_{bf\text{-}pre}$=	15748 cf

Pervious Cover Post-Development Bankfull Volume

2year/24 hour storm event	P=	2.35 in.
Pervious Cover CN	CN=	79
S = 1000/CN - 10=	S=	2.590 in.
Q = (P-0.2S)^2 / (P+0.8S)	Q=	0.759 in.
Pervious Cover Area (sf)	Ap=	65073 sf
$V_{bf\text{-}per\ post}$ = Q/12 x Ap	$V_{bf\text{-}per\ post}$=	4116 cf

Impervious Cover Post-Development Bankfull Volume

2year/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=	226517 sf
$V_{bf\text{-}imp\ post}$ = Q/12 x Ai	$V_{bf\text{-}imp\ post}$=	40050 cf

Pervious Cover Post-Development 100-Year Volume

100-year storm event	P=	5.11 in.
Pervious Cover CN	CN=	79
S = 1000/CN - 10=	S=	2.590 in.
Q_{100per} = (P-0.2S)^2 / (P+0.8S)	$Q_{100\text{-}per}$=	2.936 in.
Pervious Cover Area (sf)	$A_{100\text{-}per}$=	65073 sf
$V_{100\text{-}per\ post}$ = Q/12 x Ap	$V_{100\text{-}per\ post}$=	15922 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)	$A_{100\text{-}imp}$=	226517 sf
$V_{100\text{-}imp}$= Q/12 x A_{100imp}	$V_{100\text{-}imp}$=	91985 cf

Runoff Summary

V_{ff} =	20479 cf
$V_{bf\text{-}pre}$=	15748 cf
$V_{bf\text{-}per\ post}$=	4116 cf
$V_{bf\text{-}imp\ post}$=	40050 cf
$V_{bf\text{-}post}$=	44166 cf
V_{pre}=	66658 cf
$V_{100\text{-}per}$ =	15922 cf
$V_{100\text{-}imp}$ =	91985 cf
V_{100}=	107907 cf

On-Site Infiltration Requirement

Greator of First Flush volume or Difference between pre and post development bankfull volumes

Bankfull Volume Difference = $V_{bf\text{-}post}$ -$V_{bf\text{-}pre}$ = **28418 cf**

INFILTRATION DESIGN

Required Infiltration	$V_{req\text{-}inf}$ =	28418 cf
Depth of basin storage	d =	4 ft
Field Infiltration Rate	I_f =	9 in/hr
Design Infiltration Rate I_d =I_f /2	I_d =	4.5 in/hr
Infiltration period	t_i =	10 hr
Infiltration Interface Area	A_i =	9347 sf
Initial Infiltration Volume		
V_i =A_i x (I_d(in/hr) x 1ft/12(in) x t_i (hr)=	V_i =	35051 cf
Basin Storage Volume	V_s =	71219 cf
Total Proposed Infiltration	V_{inf} =	**106271 cf**

On-Site Infiltration Proposed

On-Site design soil infiltration rate I_d = 4.5 in/hr

PROPOSED INFILTRAION V_{inf} = 106271 cf

INFILTRATION PERIOD T_i = 30.3 hr

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	4.0	300	1.300	1.140	0.547	0.152
Waterway	1.20	5.0	400	1.300	1.140	1.368	0.081
Small Tributary	2.10	0.0	0	0.000	0.000	0.000	0.000

T_c= 0.23 hr

Q_p = 238.6 x T_c $^{-0.82}$ — Q_p = 786.52 cfs/in-m^2

Total Site Area (ac) excl. SC-BMPs — A= 6.69 ac

Q_{100} = $Q_{100\text{-}per}$ + $Q_{100\text{-}imp}$ — Q_{100}= 7.81 in

Peak Flow (PF) = Q_p x Q_{100} x A / 640 — PF= 64.24 cfs

Δ = PF(cfs) - 0.15(cfs/ac)*A(ac) — Δ= 63.24 cfs

V_S = Δ / PF x V_{100} — **V_S= 106220 cf**

REQUIRED DETENTION VOLUME WITH INFILTRATION

V_{req} = V_S -V_{inf} = V_{req} = -61 cf

REQUIRED INFILTRATION STORAGE VOLUME

COMPOUND C: 0.84

TOTAL DRAINAGE AREA: 6.69 ACRES

K1 = AxC (Design Constant) 5.642

INFILTRATION RATE = Q = I_d * A_i / 43200 = 0.974 CFS

100 YEAR STORM

DURATION MINUTES	DURATION SECONDS	INTENSITY (IN/HR)	INCHES (INA/C)	INFLOW VOLUME IN RUNOFF=AxC	OUTFLOW DURATION x Q	STORAGE VOLUME INFLOW - OUTFLOW
30	1800	5.00	9000	50775	1753	49022
60	3600	3.24	11647	65708	3505	62203
90	5400	2.39	12913	72851	5258	67593
120	7200	1.90	13655	77037	7010	70027
180	9600	1.49	14270	80508	9347	71161
180	10800	1.34	14488	81735	10515	71219
200	12000	1.22	14667	82744	11684	71060

REQUIRED 100 YEAR STORAGE VOLUME = 71219 CF

BASIN STORAGE PROVIDED

ELEV.	AREA (FT^2)	DEPTH (FT)	VOLUME (FT^3)	TOTAL VOLUME (FT^3)	
828	27866	1	26,040	94,482	**Freeboard**
827	24214	1	22,498	68,442	**Design Volume**
826	20717	1	19,046	45,976	
825	17374	1	15,785	26,931	
824	14196	1	11,146	11,146	
823	8095	0	0	0	

BOTTOM OF BASIN	X_b =	823.00
FIRST FLUSH	X_{ff} =	824.54
BANKFULL	X_{bf} =	825.90
100 YEAR	X_i =	827.11

FOREBAY A VOLUME

Pervious Cover Post-Development 100-Year Volume

100-year storm event	P=	5.11 in.
Pervious Cover CN	CN=	79
S = 1000/CN - 10=	S=	2.590 in.
Q_{100per} = (P-0.2S)^2 / (P+0.8S)	$Q_{100\text{-}per}$=	2.936 in.
Pervious Cover Area (sf)	$A_{100\text{-}per}$=	16395 sf
$V_{100\text{-}per\ post}$ = Q/12 x Ap	$V_{100\text{-}per\ post}$=	4012 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)	$A_{100\text{-}imp}$=	70898 sf
$V_{100\text{-}imp}$= Q/12 x A_{100imp}	$V_{100\text{-}imp}$=	28790 cf
	V_{100}=	32802 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) * 32802

STORAGE VOLUME REQUIRED: V(F)= **1640 CF**

ELEV	AREA	VOLUME	COMP. VOL.	
827	1842	1531	3036	**FOREBAY VOLUME**
826	1219	970	1505	
825	721	535	535	
824	349	0	0	

STORAGE VOLUME PROVIDED: **3036** CF

FOREBAY B VOLUME

Pervious Cover Post-Development 100-Year Volume

100-year storm event	P=	5.11 in.
Pervious Cover CN	CN=	79
S = 1000/CN - 10=	S=	2.590 in.
Q_{100per} = (P-0.2S)^2 / (P+0.8S)	$Q_{100\text{-}per}$=	2.936 in.
Pervious Cover Area (sf)	$A_{100\text{-}per}$=	14387 sf
$V_{100\text{-}per\ post}$ = Q/12 x Ap	$V_{100\text{-}per\ post}$=	3520 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)	$A_{100\text{-}imp}$=	102926 sf
$V_{100\text{-}imp}$= Q/12 x A_{100imp}	$V_{100\text{-}imp}$=	41797 cf
	V_{100}=	45317 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) * 45317

STORAGE VOLUME REQUIRED: V(F)= **2266 CF**

ELEV	AREA	VOLUME	COMP. VOL.	
826	1846	1513	2909	**FOREBAY VOLUME**
825	1179	921	1397	
824	662	476	476	
823	290	0	0	

STORAGE VOLUME PROVIDED: **2909** CF

DRAINAGE AREA CALCULATIONS

Pre-Development	Cover Type	Soil Type	AREA(sf)	AREA(ac)	C Value	CN	CN*A
BbB	Meadow	C	19449	0.446	0.30	71	32
StB	Meadow	D	259235	5.951	0.45	78	464
StC	Brush	D	12906	0.296	0.50	73	22
Pe	Brush	D	0	0.000	0.50	73	0
		TOTAL	291590	6.694	Weighted CN	77	
Post-Development	**Cover Type**	**Soil Type**	**AREA(sf)**	**AREA(ac)**	**C Value**	**CN**	**CN*A**
Impervious	Pavement	C/D	148745	3.415	0.95	98	335
	Pond	D	25512	0.585	1	98	57
	Building	D	52260	1.200	0.95	98	118
		TOTAL	226517	5.200	Weighted CN	98	
Pervious	Lawn	C	6187	0.142	0.30	74	11
	Lawn	D	58886	1.352	0.45	80	108.1
		TOTAL	65073	1.494	Weighted CN	79	

STORM DRAINAGE NARRATIVE

THE STORM WATER RUNOFF FOR THE DEVELOPMENT OF THIS SITE SHALL BE COLLECTED IN A PRIVATE STORM SEWER SYSTEM AND DIRECTED TO THE EASTERLY PORTION OF THE SITE. FOREBAYS HAVE BEEN PROVIDED FOR 5% OF THE 100-YEAR RUNOFF FOR EACH STORM RUN. AN INFILTRATION BASIN WILL RECEIVE THE STORM WATER RUNOFF. THE PROPOSED INFILTRATION BASIN HAS BEEN DESIGNED TO INCORPORATE ALL PROPOSED AND FUTURE DEVELOPMENT AS SHOWN ON THE SITE PLAN, HOWEVER EXCESS CAPACITY REMAINS FOR THE FUTURE DEVELOPMENT TO BE REVISED. THE SOIL TESTING OF THE SITE REVEALED POTENTIAL INFILTRATION IN THE AREA OF THE INFILTRATION BASIN. THE SANDY SOILS FOUND 7 TO 8 FEET BELOW GRADE AND EXTENDS TO A DEPTH GREATER THAN 10 FEET. THE SOIL WAS DETERMINED TO HAVE A FIELD INFILTRATION RATE OF 9 TO 10.5 IN/HR. WE HAVE PROPOSED COMPLETE INFILTRATION OF THE 100 YEAR STORM EVENT AT A DESIGN RATE OF 4.5 IN/HR OVER THE BASIN AREA OF 9,347 SF. THE BASIN VOLUME WAS DETERMINED BY THE PEAK IN RUNOFF LESS INFILTRATION AT THE DESIGN RATE. THE BASIN BOTTOM SHALL BE EXCAVATED TO THE SAND LAYER AND SHALL BE GRADED FLAT AT LESS THAN 1.5% SLOPE THE EMERGENCY OVERFLOW WILL DISCHARGE TO THE BRANCH OF THE UPPER PAINT CREEK DRAIN WHICH IS REGULATED BY THE WCWRC.

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
- NEW BUILDING MOUNTED LIGHTING
- NEW POLE-MOUNTED LIGHT
- EX.UP EXISTING UTILITY POLE
- EX.MH EXISTING MANHOLE
- EX.CO EXISTING CLEAN OUT
- MH S-1 PROPOSED MANHOLE
- CB R-1 NEW CATCH BASIN
- EX. FH EXISTING FIRE HYDRANT
- NEW FH #3 NEW FIRE HYDRANT
- PROPOSED ELEVATION
- EXISTING ELEVATION
- EXISTING BUILDING
- EXISTING ASPHALT PAVING
- PROPOSED CONCRETE
- PROPOSED BUILDING
- PROPOSED ASPHALT PAVING
- DRAINAGE AREA

GRADING PLAN

SCALE: 1" = 40'-0"

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

PITTSFIELD FUN CENTER

4095 Carpenter Road
Pittsfield Township, Michigan

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ISSUED FOR:	DATE:
PRELIMINARY SITE PLAN	4-6-16
REVISED SITE PLAN	5-25-16
FINAL SITE PLAN	7-7-16
REVISED	7-22-16
REVISED	2-10-17
REVISED	4-10-17

DRAWN BY: GAH
JOB NO.: XXX

GRADING PLAN

SHEET NO.

C-4

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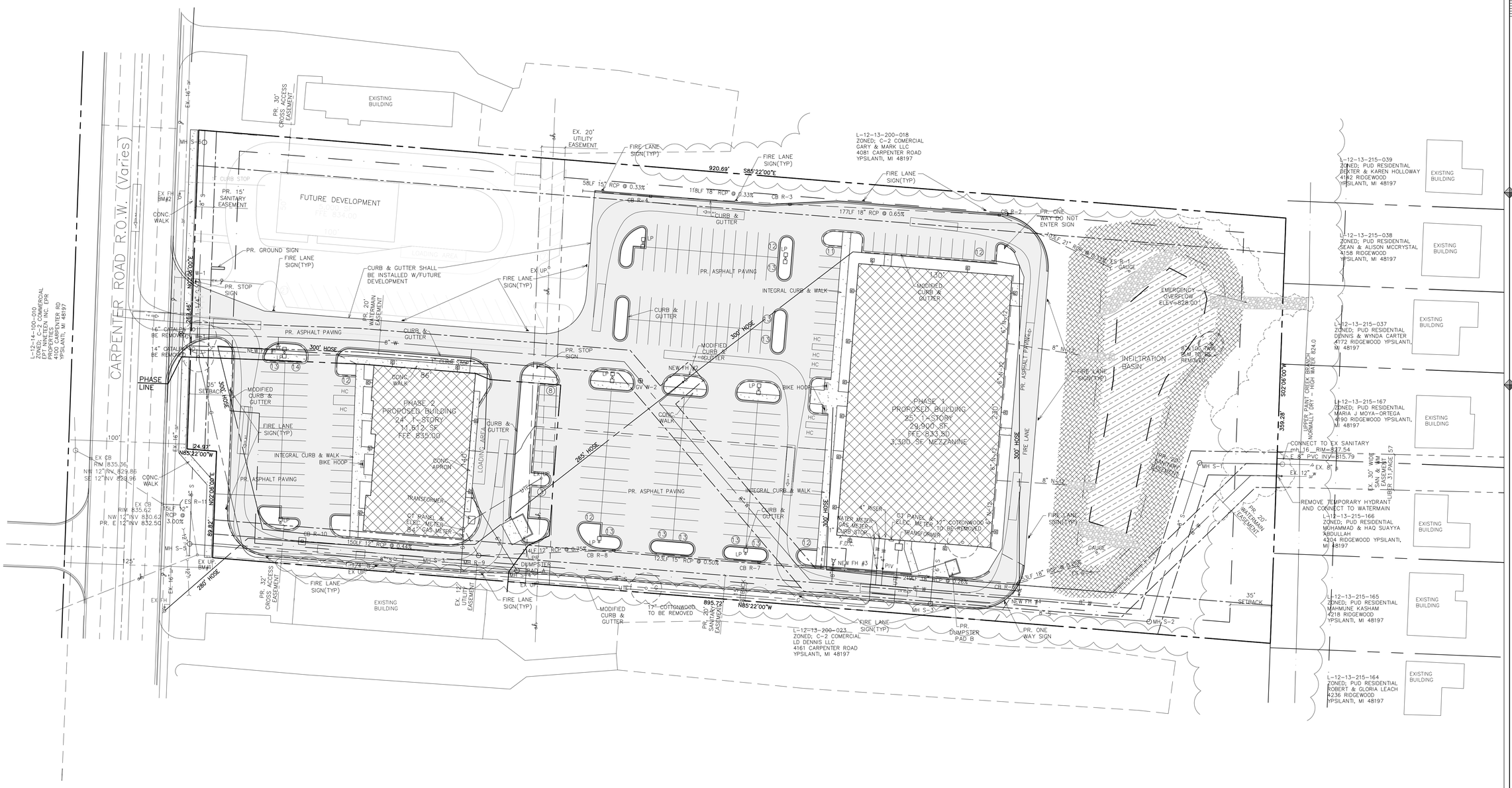

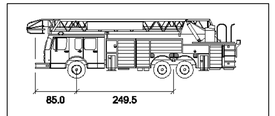

TURNING TEMPLATE SHOWN THIS SHEET

GENERAL NOTES:
1. NO PARKING FIRE LANE SIGNS SHALL BE POSTED ON ENTRANCE DRIVE

LEGEND

	PROPERTY LINE
	SETBACK
	EASEMENT
R	PROPOSED STORM
W	PROPOSED WATER
UTE	PROPOSED UNDERGROUND ELECTRIC & TELEPHONE
G	PROPOSED GAS
S	PROPOSED SANITARY
	EXISTING STORM
W	EXISTING WATER
T	EXISTING TELEPHONE
E	EXISTING ELECTRIC
UG	EXISTING UNDERGROUND CABLE
G	EXISTING GAS
S	EXISTING SANITARY
	EXISTING CENTERLINE OF DITCH
910	EXISTING CONTOUR
910	PROPOSED CONTOUR
	LINE OF SILT FENCE
	NEW BUILDING MOUNTED LIGHTING
	NEW POLE-MOUNTED LIGHT
EX.UP	EXISTING UTILITY POLE
EX.MH	EXISTING MANHOLE
EX.CO	EXISTING CLEAN OUT
MH S-1	PROPOSED MANHOLE
CB R-1	NEW CATCH BASIN
EX FH	EXISTING FIRE HYDRANT
NEW FH #3	NEW FIRE HYDRANT
	PROPOSED ELEVATION
x 660.90	EXISTING ELEVATION
	EXISTING BUILDING
	EXISTING ASPHALT PAVING
	PROPOSED CONCRETE
	PROPOSED BUILDING
	PROPOSED ASPHALT PAVING

FIRE PROTECTION PLAN

SCALE: 1" = 40'-0"

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

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ISSUED FOR:	DATE:
PRELIMINARY SITE PLAN	4-6-16
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REVISED	7-22-16
REVISED	2-10-17
REVISED	4-10-17

DRAWN BY: GAH
JOB NO.: XXX

FIRE PROTECTION PLAN

SHEET NO.
C-5

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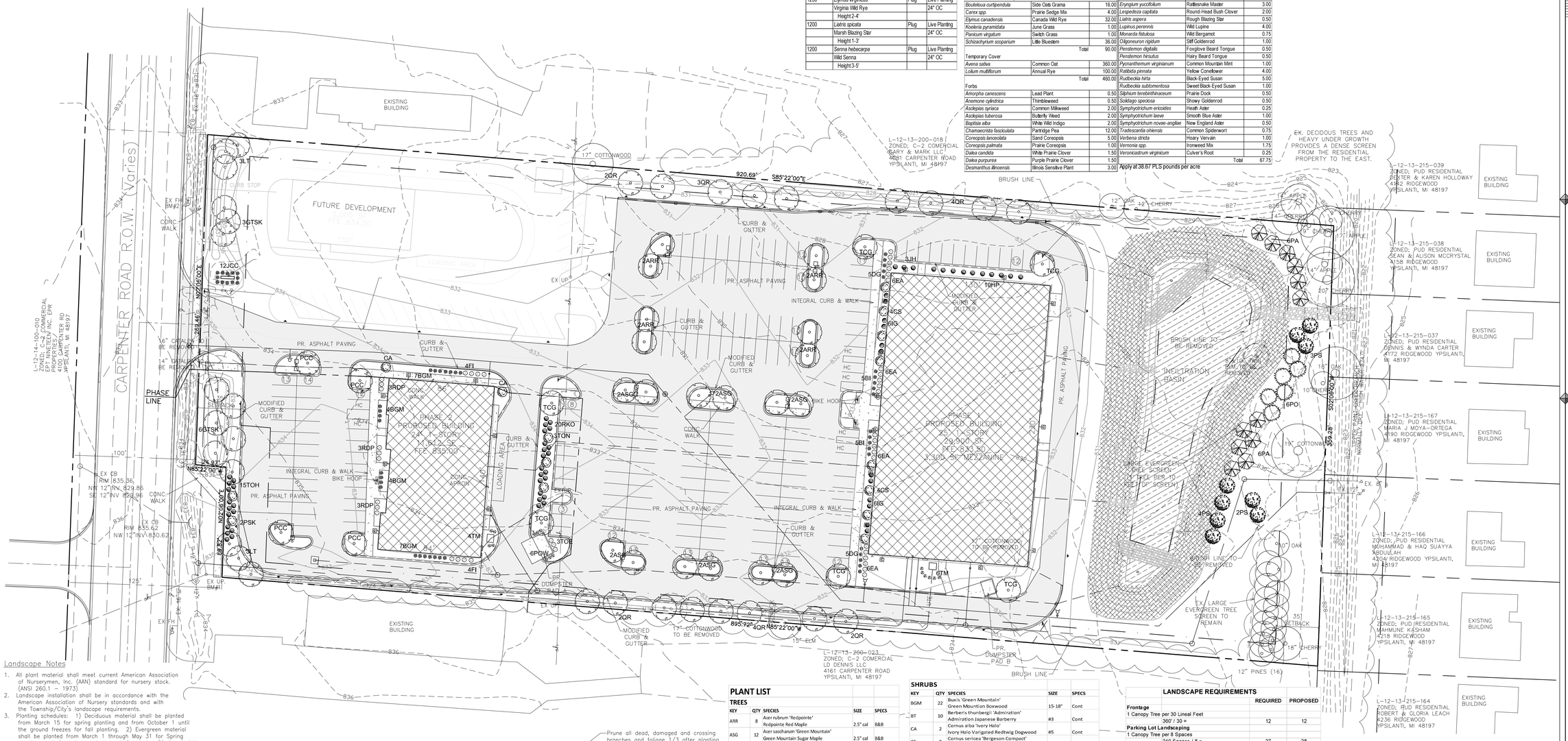
STORM WATER BMP PLANTINGS FOR AREAS BELOW FIRST FLUSH			
Qty	Species	Size	Specs
1250	*Elymus virginicus*	Plug	Live Planting
	Virginia Wild Rye		24" OC
	Height 2-4'		
1200	*Liatris spicata*	Plug	Live Planting
	Marsh Blazing Star		24" OC
	Height 1-3'		
1200	*Senna hebecarpa*	Plug	Live Planting
	Wild Senna		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		
Bouteloua curtipendula	Side Oats Grama	16.00
Carex spp.	Prairie Sedge Mix	4.00
Elymus canadensis	Canada Wild Rye	32.00
Koeleria pyramidata	June Grass	1.00
Panicum virgatum	Switch Grass	1.00
Schizachyrium scoparium	Little Bluestem	36.00
	Total	90.00
Temporary Cover		
Avena sativa	Common Oat	360.00
Lolium multiflorum	Annual Rye	100.00
	Total	460.00
Forbs		
Amorpha canescens	Lead Plant	0.50
Anemone cylindrica	Thimbleweed	0.50
Asclepias syriaca	Common Milkweed	2.00
Asclepias tuberosa	Butterfly Weed	2.00
Baptisia alba	White Wild Indigo	2.00
Chamaecrista fasciculata	Partridge Pea	12.00
Coreopsis lanceolata	Sand Coreopsis	5.00
Coreopsis palmata	Prairie Coreopsis	1.00
Dalea candida	White Prairie Clover	1.50
Dalea purpurea	Purple Prairie Clover	1.50
Desmanthus illinoensis	Illinois Sensitive Plant	3.00
Echinacea purpurea	Broad-Leaved Purple	7.00
Eryngium yuccifolium	Rattlesnake Master	3.00
Lespedeza capitata	Round-Head Bush Clover	2.00
Liatris aspera	Rough Blazing Star	0.50
Lupinus perennis	Wild Lupine	4.00
Monarda fistulosa	Wild Bergamot	0.75
Oligoneuron rigidum	Stiff Goldenrod	1.00
Penstemon digitalis	Foxglove Beard Tongue	0.50
Penstemon hirsutus	Hairy Beard Tongue	0.50
Pycnanthemum virginianum	Common Mountain Mint	1.00
Ratibida pinnata	Yellow Coneflower	4.00
Rudbeckia hirta	Black-Eyed Susan	5.00
Rudbeckia subtomentosa	Sweet Black-Eyed Susan	1.00
Silphium terebinthinaceum	Prairie Dock	0.50
Solidago speciosa	Showy Goldenrod	0.50
Symphyotrichum ericoides	Heath Aster	0.25
Symphyotrichum laeve	Smooth Blue Aster	1.00
Symphyotrichum novae-angliae	New England Aster	0.50
Tradescancia ohiensis	Common Spiderwort	0.75
Verbena stricta	Hoary Vervain	1.00
Vernonia spp.	Ironweed Mix	1.75
Veronicastrum virginicum	Culver's Root	0.25
	Total	67.75

Apply at 38.67 PLS pounds per acre



LANDSCAPE PLAN

SCALE: 1" = 40'-0"

LANDSCAPE PLAN PREPARED BY O'REILLY LANDSCAPE DESIGN, INC. ANN ARBOR, MICHIGAN

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 or:
    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	0.5 pounds per acre
–Little Blue Stem	20 pounds per acre
–Sheep Fescue	15 pounds per acre

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).

PLANT LIST

TREES

KEY	QTY	SPECIES	SIZE	SPECS
ARR	8	Acer rubrum 'Redpointe' Redpointe Red Maple	2.5" cal	B&B
ASG	12	Acer saccharum 'Green Mountain' Geen Mountain Sugar Maple	2.5" cal	B&B
GTSK	9	Gleditsia triacanthos v. inermis 'Skyline' Skyline Honeylocust	2.5"cal	B&B
LT	6	Liriodendron tulipifera Tulip Poplar	2.5"cal	B&B
PA	12	Picea abies Norway Spruce	7' ht	B&B
PCC	4	Pyrus calleryana 'Cleveland' Cleveland Callery Pear	2.5"cal	B&B
PO	6	Picea omorika Serbian Spruce	7' ht	B&B
PS	9	Pinus strobus White Pine	7' ht	B&B
QR	17	Quercus rubra Northern Red Oak	2.5" cal	B&B
TCG	6	Tilia cordata 'Greenspire' Greenspire Linden	2.5" cal	B&B

ORNAMENTAL TREES

KEY	QTY	SPECIES	SIZE	SPECS
PSK	2	Prunus serrulata 'Kwansan' Kwansan Oriental Cherry	2.0"	B&B

SHRUBS

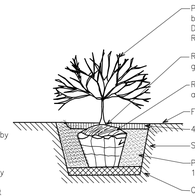
KEY	QTY	SPECIES	SIZE	SPECS
BGM	22	Buxis 'Green Mountain' Green Mountian Boxwood	15-18"	Cont
BT	10	Berberis thunbergii 'Admiration' Admiration Japanese Barberry	#3	Cont
CA	2	Cornus alba 'Ivory Halo' Ivory Halo Variigated Redtwig Dogwood	#5	Cont
CS	8	Cornus sericea 'Bergeson Compact' Bergeson Compact Redosier Dogwood	#5	Cont
DG	10	Deutzia gracilis 'Chardonnay Pearls' Chardonnay Pearls Deutzia	#3	Cont
EA	23	Euonymus alatus 'Compactus' Compact Burning Bush	24-30"	B&B
FI	8	Forsythia x intermedia 'Gold Tide' Gold Tide Forsythia	#5	Cont
HP	10	Hydrangea paniculata 'Quick Fire' Quick Fire Hydrangea	#5	Cont
IG	12	Ilex glabra 'Shamrock' Shamrock Inkberry	24-30"	Cont
JCC	12	Juniperus 'Calgary Carpet' Calgary Carpet Spreading Juniper	#3	Cont
JH	3	Juniperus 'Hetz Columnaris' Hetz Columnar Juniper	#7	Cont
POW	6	Physocarpus opulifolius 'Summer Wine' Eastern Ninebark Summer Wine	#5	Cont
RDP	9	Rosa species Pink Double Knockout	#3	Cont
RKO	25	Rosa species Red Knockout	#5	Cont
TM	10	Taxus species Moon Upright Yew	24-30"	B&B
TOE	3	Thuja occidentalis 'Emerald Green' Emerald Green Arborvitae	5'	B&B
TOH	15	Thuja occidentalis 'Hetz Midget' Hetz Midget Arborvitae	#5	Cont
TON	3	Thuja occidentalis 'Nigra' Nigra Arborvitae	5'	B&B

LANDSCAPE REQUIREMENTS

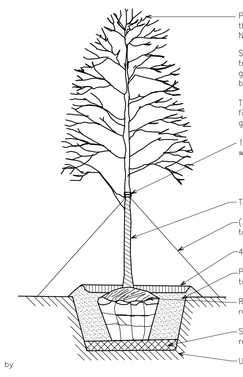
		REQUIRED	PROPOSED
Frontage			
1 Canopy Tree per 30 Lineal Feet			
	360' / 30 =	12	12
Parking Lot Landscaping			
1 Canopy Tree per 8 Spaces			
	210 Spaces / 8 =	27	28
Parking Lot Perimeter			
1 Canopy Tree per 40 Lineal Feet			
405' north + 400' south + 115' south= 920 / 40 =		23	23
Rear Yard Buffer			
1 Large Evergreen Tree per 10 Feet			16 existing
	360' /10 =	36	27
	Totals	**98 Trees**	**90 Proposed**
			106 Total

Foundation Landscaping: The area in front of the proposed buildings will be landscaped with a mixture of deciduous and evergreen shrubs and ornamental trees.
All landscaping shall meet the township ordinance for size and type of material.
Evergreen screen shall include 1 large evergreen tree per 10 linear foot of screen, staggered.

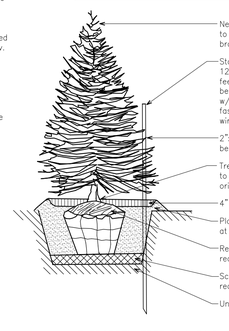
GENERAL LANDSCAPING: 152,840 SF / 328,222 SF = 46.6%



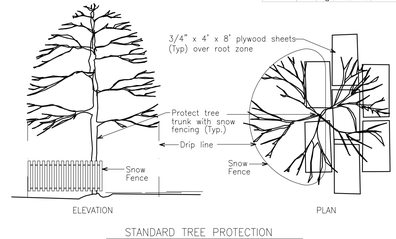
SHRUB BED PLANTING DETAIL



DECIDUOUS TREE PLANTING DETAIL



EVERGREEN TREE PLANTING DETAIL



STANDARD TREE PROTECTION

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

LEGEND

PROPERTY LINE	
SETBACK	
EASEMENT	
R — PROPOSED STORM	NEW BUILDING MOUNTED LIGHTING
W — PROPOSED WATER	NEW POLE-MOUNTED LIGHT
UTE — PROPOSED UNDERGROUND ELECTRIC & TELEPHONE	EX.UP EXISTING UTILITY POLE
G — PROPOSED GAS	EX.MH EXISTING MANHOLE
S — PROPOSED SANITARY	EX.CO EXISTING CLEAN OUT
EXISTING STORM	MH S-1 PROPOSED MANHOLE
EXISTING WATER	CB R-1 NEW CATCH BASIN
T — EXISTING TELEPHONE	EX. FH EXISTING FIRE HYDRANT
E — EXISTING ELECTRIC	NEW FH #3 NEW FIRE HYDRANT
UG — EXISTING UNDERGROUND CABLE	PROPOSED ELEVATION
G — EXISTING GAS	EXISTING ELEVATION
S — EXISTING SANITARY	x 660.90
EXISTING CENTERLINE OF DITCH	
910 — EXISTING CONTOUR	
910 — PROPOSED CONTOUR	
LINE OF SILT FENCE/TREE PROTECTION	

EXISTING BUILDING
EXISTING ASPHALT PAVING
PROPOSED CONCRETE
PROPOSED BUILDING
PROPOSED ASPHALT PAVING
PLANTINGS BELOW FIRST FLUSH
SEEDING ABOVE FIRST FLUSH

STATE OF MICHIGAN ROBERT M. O'REILLY LANDSCAPE ARCHITECT NO. 3301001417 REGISTERED LANDSCAPE ARCHITECT

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ISSUED FOR:	DATE:
PRELIMINARY SITE PLAN	4-6-16
REVISED SITE PLAN	5-25-16
FINAL SITE PLAN	7-7-16
REVISED	7-22-16
REVISED	1-4-17
REVISED	2-10-17
REVISED	4-10-17

DRAWN BY: GAH
JOB NO.: XXX

LANDSCAPE PLAN

SHEET NO.

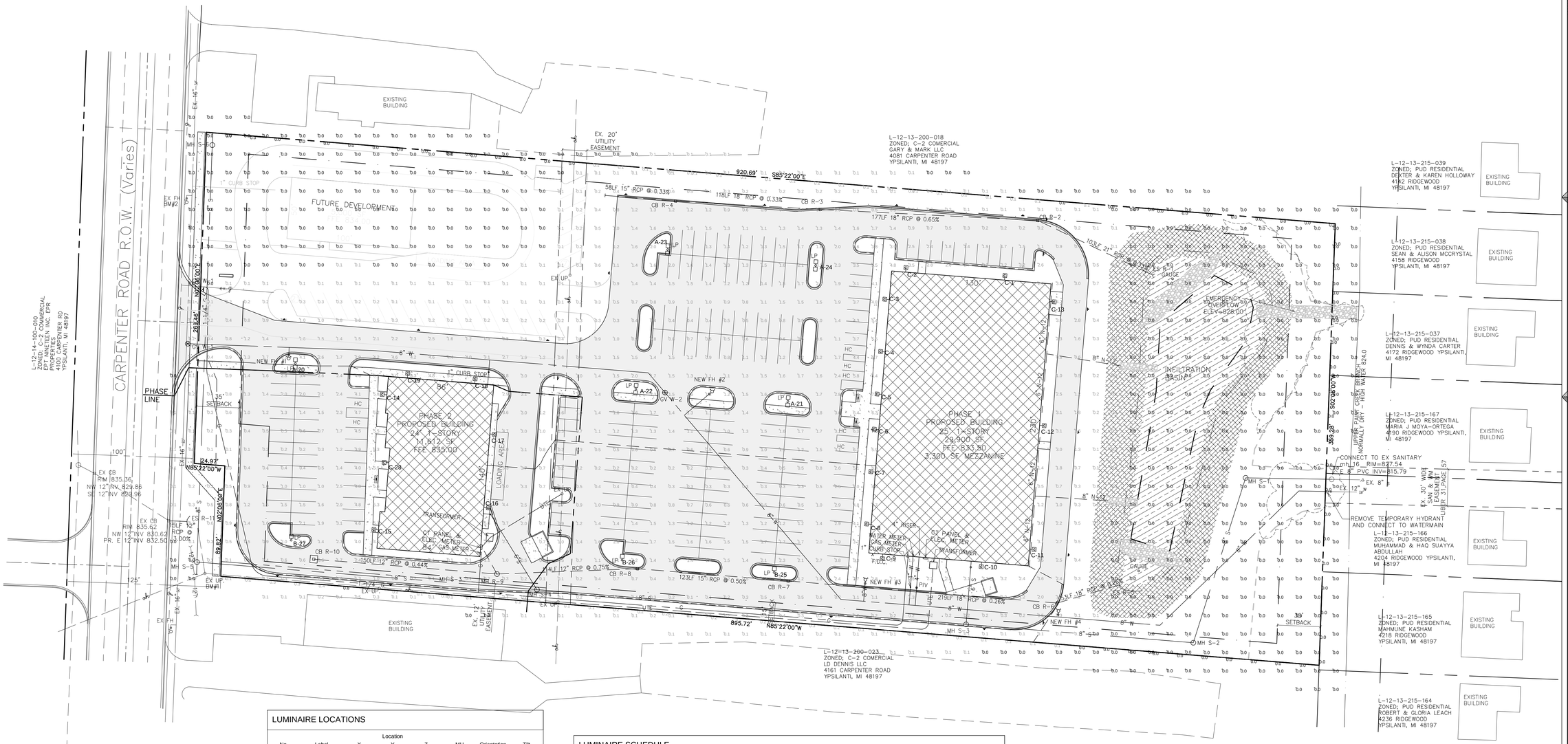
C-6

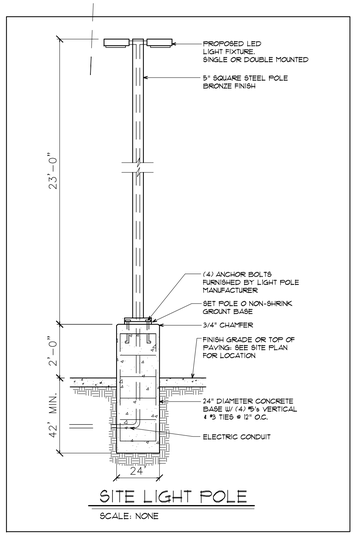
DESIGNERS
Vanston/O'Brien, Inc.
BUILDERS
2375 Bishop Circle West
Dexter, MI 48130
Tel: (734) 424-0661
Fax: (734) 424-0677
e-mail: sales@vanston.com ÷ www.vanston.com

4095 CARPENTER

PITTSFIELD FUN CENTER
4095 Carpenter Road
Pittsfield Township, Michigan

P:\4095 Carpenter\AUTOCAD\dwg\FSPA(C-6).dwg, 4/12/2017 10:47:56 AM





SITE LIGHT POLE

SCALE: NONE

LUMINAIRE LOCATIONS

No.	Label	Location X	Location Y	Location Z	MH	Orientation	Tilt
1	C	636.9	240.8	16.0	16.0	4.6	0.0
2	C	557.8	247.2	18.0	18.0	4.6	0.0
3	C	543.6	227.3	18.0	18.0	-85.4	0.0
4	C	539.7	183.6	18.0	18.0	-85.4	0.0
5	C	537.2	147.6	18.0	18.0	-85.4	0.0
6	C	534.9	119.7	18.0	18.0	-85.4	0.0
7	C	532.1	86.0	18.0	18.0	-85.4	0.0
8	C	528.6	41.2	18.0	18.0	-85.4	0.0
9	C	539.2	18.0	18.0	18.0	184.6	0.0
10	C	618.4	11.5	16.0	16.0	184.6	0.0
11	C	657.3	20.5	16.0	16.0	94.6	0.0
12	C	665.6	122.8	16.0	16.0	94.6	0.0
13	C	673.9	225.1	16.0	16.0	94.6	0.0
14	C	135.0	146.9	18.0	18.0	-85.4	0.0
15	C	128.2	38.4	18.0	18.0	-85.4	0.0
16	C	213.9	55.9	17.0	17.0	94.6	0.0
17	C	218.7	115.7	17.0	17.0	94.6	0.0
18	C	206.5	156.8	18.0	18.0	4.6	0.0
19	C	151.7	161.3	18.0	18.0	4.6	0.0
20	A	55.5	169.7	25.0	25.0	179.4	0.0
21	A	461.0	142.1	25.0	25.0	5.5	0.0
22	A	337.4	152.3	25.0	25.0	4.5	0.0
23	A	364.8	266.2	25.0	25.0	5.3	0.0
24	A	483.5	252.7	25.0	25.0	4.6	0.0
25	B	449.7	3.2	25.0	25.0	4.8	0.0
26	B	326.2	13.3	25.0	25.0	4.4	0.0
27	B	58.7	28.5	25.0	25.0	2.5	0.0
28	C	136.4	90.5	18.0	18.0	-86.2	0.0

LUMINAIRE SCHEDULE

Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LLF	Watts
	A	5	CSX1 LED 2 30B700/50K SR3 MVOLT	CSX1 LED FIXTURE WITH 2 LIGHT ENGINES, 700mA DRIVER, 5000K COLOR TEMP, TYPE 3 OPTIC	LED	CSX1_LED_2_30B700_50K_SR3_MVOLT.ies	Absolute	0.72	292
	C	20	CSX1 LED 2 30B700/50K SR3 MVOLT	CSX1 LED FIXTURE WITH 2 LIGHT ENGINES, 700mA DRIVER, 5000K COLOR TEMP, TYPE 3 OPTIC	LED	CSX1_LED_2_30B700_50K_SR3_MVOLT.ies	Absolute	0.72	146
	B	3	CSX1 LED 2 30B700/50K SR3 MVOLT	CSX1 LED FIXTURE WITH 2 LIGHT ENGINES, 700mA DRIVER, 5000K COLOR TEMP, TYPE 3 OPTIC	LED	CSX1_LED_2_30B700_50K_SR3_MVOLT.ies	Absolute	0.72	146

STATISTICS

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
PROPERTY LINE		0.1 fc	0.8 fc	0.0 fc	N / A	N / A
SITE		1.2 fc	9.1 fc	0.0 fc	N / A	N / A

LEGEND

- PROPERTY LINE
- SETBACK
- EASEMENT
- R — PROPOSED STORM
- W — PROPOSED WATER
- UTE — PROPOSED UNDERGROUND ELECTRIC & TELEPHONE
- G — PROPOSED GAS
- S — PROPOSED SANITARY
- EXISTING STORM
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING ELECTRIC
- EXISTING UNDERGROUND CABLE
- EXISTING GAS
- EXISTING SANITARY
- EXISTING CENTERLINE OF DITCH
- 910 — EXISTING CONTOUR
- 910 — PROPOSED CONTOUR
- LINE OF SILT FENCE
- NEW BUILDING MOUNTED LIGHTING
- NEW POLE-MOUNTED LIGHT
- EX.UP — EXISTING UTILITY POLE
- EX.MH — EXISTING MANHOLE
- EX.CO — EXISTING CLEAN OUT
- MH S-1 — PROPOSED MANHOLE
- CB R-1 — NEW CATCH BASIN
- EX. FH — EXISTING FIRE HYDRANT
- NEW FH #3 — NEW FIRE HYDRANT
- PROPOSED ELEVATION
- x 660.90 — EXISTING ELEVATION
- EXISTING BUILDING
- EXISTING ASPHALT PAVING
- PROPOSED CONCRETE
- PROPOSED BUILDING
- PROPOSED ASPHALT PAVING

LIGHTING PLAN

SCALE: 1" = 40'-0"

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

PITTSFIELD FUN CENTER

4095 Carpenter Road
Pittsfield Township, Michigan

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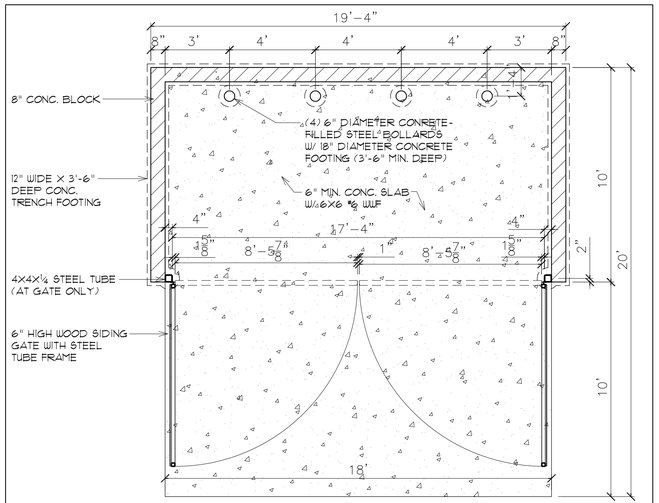
REVISED	7-22-16
REVISED	2-10-17
REVISED	4-10-17

DRAWN BY: GAH
JOB NO.: XXX

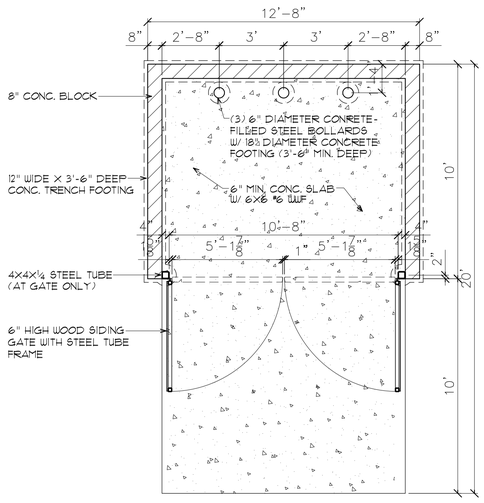
LIGHTING PLAN

SHEET NO.

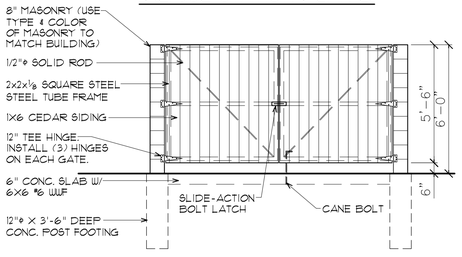
C-7



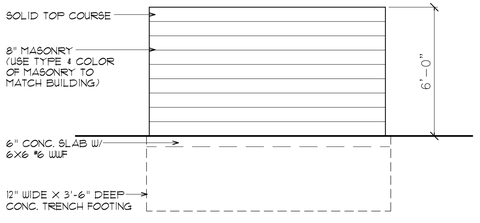
REFUSE STATION PLAN A



REFUSE STATION PLAN B



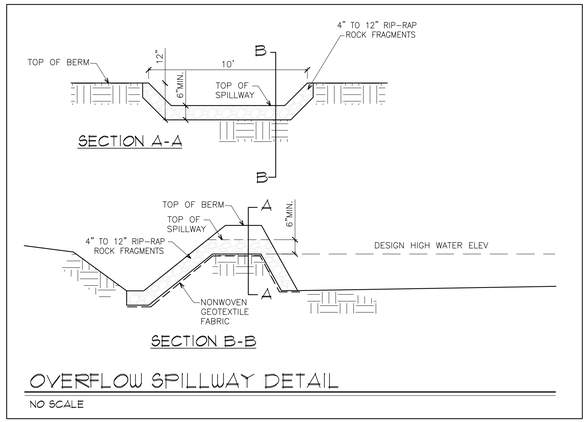
FRONT ELEVATION



SIDE ELEVATION

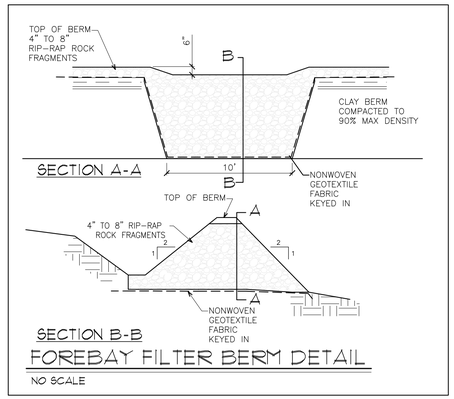
MASONRY DUMPSTER DETAIL

NO SCALE



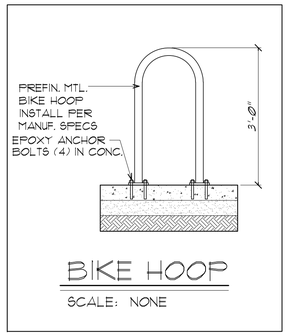
OVERFLOW SPILLWAY DETAIL

NO SCALE



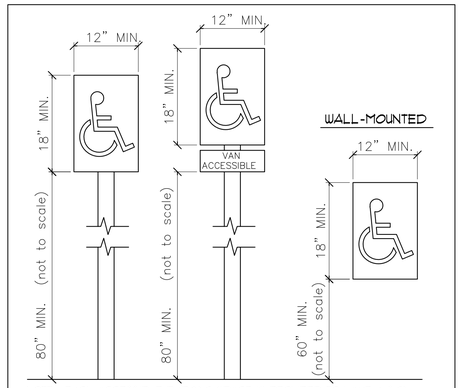
FOREBAY FILTER BERM DETAIL

NO SCALE



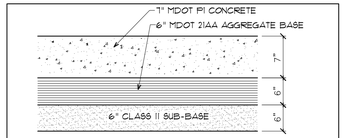
BIKE HOOP

SCALE: NONE



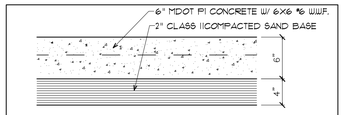
NOTE: EACH ACCESSIBLE PARKING SPACE IS REQUIRED TO HAVE A SIGN. THE SIGN SHALL BE CENTERED IN THE PARKING SPACE. VAN ACCESSIBLE SPACES SHALL BE DESIGNATED "VAN ACCESSIBLE" ON THE FACE OF THE SIGN OR SHALL HAVE AN ADDITIONAL SIGN "VAN ACCESSIBLE" MOUNTED BELOW THE REQUIRED SIGN.

BARRIER-FREE PARKING SIGN



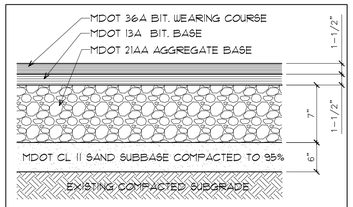
TYPICAL CONC. PAVEMENT SECTION

NO SCALE



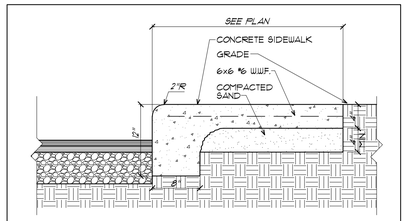
6" CONC. PAVEMENT SECTION

NO SCALE



ASPHALT PAVEMENT SECTION

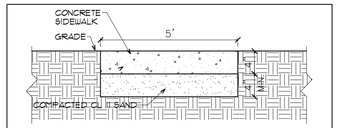
NO SCALE



NOTES: 1. PROVIDE CONTROL JOINTS AT MAX. 5'-0" O.C.
2. PROVIDE EXPANSION JOINTS AT MAX. 25'-0" O.C.

CONCRETE SIDEWALK - B

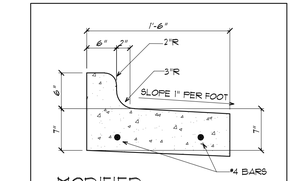
NO SCALE



NOTES: PROVIDE 1" DEEP TOOLED CONTROL JOINTS 5' O.C. EXPANSION JOINTS ONE-HALF INCH (1/2") THICKNESS, COMPOSED OF SOME SUITABLE INERT MATERIAL THOROUGHLY IMPREGNATED WITH BITUMINOUS OR ASPHALTIC COMPOUND, SHALL BE PLACED BETWEEN WALKS, CURBS, DRIVEWAYS AND AT ALL PLACES WHERE THEY MEET AND IN INTERMEDIATE JOINTS AT DISTANCES NOT EXCEEDING FIFTY FEET (50') AND SHALL EXTEND FROM THE FINISHED SIDEWALK SURFACE FOR THE FULL DEPTH OF THE SIDEWALK.

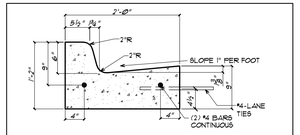
CONCRETE SIDEWALK DETAIL

NO SCALE



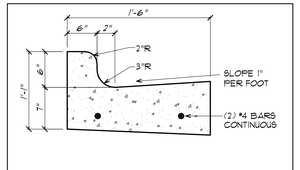
MODIFIED CURB & GUTTER DETAIL

NO SCALE



F3 CURB & GUTTER DETAIL

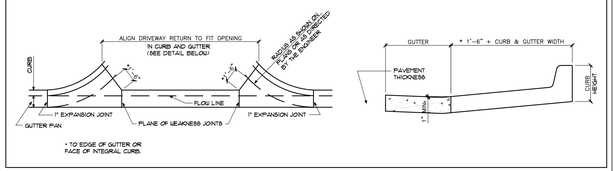
NO SCALE



CURB & GUTTER DETAIL

NO SCALE

CONCRETE DRIVEWAY OPENING - DETAIL M



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	STORM DETENTION AREAS	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			@ 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.

PERMENANT MAINTENANCE TASKS AND SCHEDULE:

OWNER'S RESPONSIBILITY TASKS	STREETS	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	CATCH BASIN INLET CASTINGS	CHANNELS	OUTFLOW CONTROL STRUCTURES	RIP-RAP	FILTRATION BASIN	STORM DETENTION AREAS	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								@ 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		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		ANNUALLY
KEEP RECORDS OF ALL COSTS FOR INSPECTIONS, MAINTENANCE AND REPAIRS. REPORT TO OWNER		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		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		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 MAINTENANCE

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 TOUNSHIP/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 TOUNSHIP/CITY OR COUNTY MAY PERFORM THE NEEDED MAINTENANCE AND ASSESS THE COSTS AGAINST THE OWNER.

SOIL EROSION CONTROL SEQUENCE:

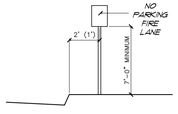
1. Install all perimeter erosion and sedimentation control measures.
2. Install storm drainage system, including rip-rap and parking lot inlet filter.
3. Rough grade site, stock pile top soil in location approved by owner and engineer.
4. Construct sanitary sewer, watermain.
5. Maintain Erosion and Sedimentation 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 floatables and 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:	$ 2,350.00

LATERAL CLEARANCE

IN URBAN AREAS, A MINIMUM CLEARANCE OF TWO FEET BETWEEN CURB FACE AND SIGN INSTALLATION SHOULD BE MAINTAINED, BUT A CLEARANCE OF ONE FOOT FROM CURB FACE IS PERMISSIBLE WHERE SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO THE CURB.



NOTE: SIGNS TO BE ERECTED PARALLEL TO DRIVE.

POSTS AND MOUNTING

SIGN SUPPORTS SHOULD BE OF A BREAKAWAY OR YIELDING DESIGN. CONCRETE BASES FOR SIGN SUPPORTS SHOULD BE FLUSH WITH GROUND LEVEL.

NO PARKING - FIRE LANE

NO SCALE

DESIGNERS
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PITTSFIELD FUN CENTER
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ISSUED FOR:	DATE:
FINAL SITE PLAN	7-7-16
REVISED	7-22-16
REVISED	2-10-17
REVISED	4-10-17

DRAWN BY: GAH
JOB NO.: XXX

DETAIL SHEET

SHEET NO.

C-8

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