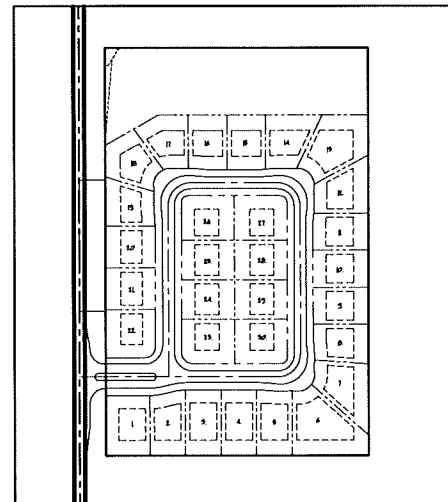


# Bloomer Woods

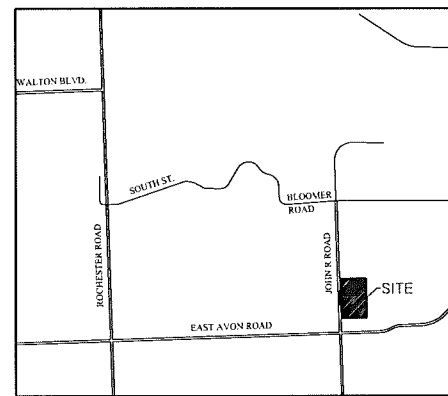
## SITE CONDOMINIUM COMMUNITY SITE PLANS

IN SECTION 13, T3N, R11E, ROCHESTER HILLS,  
OAKLAND COUNTY, MICHIGAN



SITE PLAN

N.T.S.



LOCATION MAP

SCALE: 1" = 2000'

### LEGAL DESCRIPTION:

PARCEL 15-13-301-058

PART OF THE SOUTHWEST 1/4 OF SECTION 13, T3N, R11E, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT A POINT WHICH IS NORTH 344.58' ALONG THE WEST LINE OF SAID SECTION 13 AND THE CENTERLINE OF JOHN R ROAD AND EAST 60.00' FROM THE SOUTHWEST CORNER OF SAID SECTION 13; THENCE NORTH 928.59'; THENCE N89°57'06"E 602.12'; THENCE S00°01'17"E 929.10'; THENCE WEST 502.47' TO THE POINT OF BEGINNING; CONTAINING 559,438 SQUARE FEET - 12.843 ACRES (NET)

# Bloomer Woods

A Lombardo Community

### DEVELOPER:

LOMBARDO HOMES

13001 23 MILE ROAD, SUITE 200, SHELBY TOWNSHIP, MI 48315  
(586) 781-2364

### ENGINEER:

COMMUNITY E.S., INC.

CIVIL ENGINEERING & SURVEYING  
(586) 677-4081

6303 26 MILE ROAD, STE. 110, WASHINGTON, MI 48094

### LANDSCAPE ARCHITECT:

DONALD C. WESTPHAL ASSOCIATES L.L.C.

LANDSCAPE ARCHITECTS AND SITE PLANNERS

(248) 651-5518

71 N. LIVERNOIS, SUITE A, ROCHESTER HILLS, MI 48307



Know what's below.  
Call before you dig.

### LEGEND

SANITARY SEWER	---
STORM SEWER	----
WATER MAIN	----
EXISTING MAJOR CONTOUR	-----
EXISTING MINOR CONTOUR	-----
EXISTING SPOT GRADE	-----
PROPOSED SPOT GRADE	----- 836.30
PROPOSED MANHOLE	○
EXISTING CATCH BASIN AND MANHOLE AS NOTED	○
PROPOSED R.Y.C.B.	○
EXISTING PAVEMENT CATCH BASIN	□
PROPOSED PAVEMENT CATCH BASIN	□
EXISTING GATE VALVE	⊗
PROPOSED GATE VALVE	⊗
EXISTING HYDRANT	X
PROPOSED HYDRANT	X
SIGN	T
UTILITY POLE	⊕
DRAINAGE ARROW	→
EXISTING FENCE	— — —
CL. ROAD OR DITCH AS NOTED	— — —
TREE/BRUSH LINE	~
TC= TOP OF CURB	
GU= GUTTER	
THIS TEXT TYPE (HARD) DENOTES EXISTING	

### SHEET INDEX:

0 OF 9	COVER SHEET
1 OF 9	SITE PLAN
2 OF 9	TOPOGRAPHY SURVEY
3 OF 9	UTILITY PLAN
4 OF 9	GRADING PLAN
5 OF 9	DETAILS
6 OF 9	R.O.W. IMPROVEMENTS
7 OF 9	TREE PRESERVATION PLAN
8 OF 9	LANDSCAPE PLAN
9 OF 9	LANDSCAPE DETAILS
IR - I	IRRIGATION DESIGN



DATE: 11/22/2015  
 REVISIONS: 01/25/2016 FOR CITY COMMENTS  
 03/03/2016 FOR CITY COMMENTS  
 03/31/2016 FOR FINAL SITE PLAN REVIEW  
 COMMENTS:  
 DRAWN BY: J.B. DRAWING # 103

SHEET No.

0 OF 9

CITY FILE #15-006

LEGAL DESCRIPTION: PARCEL 15-13-301-058

PART OF THE SOUTHWEST 1/4 OF SECTION 13, T.3N., R.11E., BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT A POINT WHICH IS NORTH 344.58' ALONG THE WEST LINE OF SAID SECTION 13 AND THE CENTERLINE OF JOHN R ROAD AND EAST 60.00' FROM THE SOUTHWEST CORNER OF SAID SECTION 13; THENCE NORTH 928.59'; THENCE N89°57'06"E 602.12'; THENCE S00°01'17"E 929.10'; THENCE WEST 602.47' TO THE POINT OF BEGINNING.  
CONTAINING 559,438 SQUARE FEET - 12.843 ACRES (NET)

**NOTES:**

**FLOOD PLAIN REQUIREMENTS:**

BASED ON THE FLOOD INSURANCE RATE MAP (FIRM) FOR THE CITY OF ROCHESTER HILLS, ACCORDING TO COMMUNITY PANEL NUMBER 26125C0411F, DATED SEPTEMBER 29, 2006 A 100-YEAR FLOODPLAIN DOES NOT AFFECT THIS PROPERTY.

**ZONING REQUIREMENTS:**

THIS PROPERTY IS ZONED R-3 SINGLE FAMILY RESIDENTIAL. BASED ON THE ROCHESTER HILLS ZONING ORDINANCE, THE FOLLOWING REQUIRED SETBACKS APPLY:  
MINIMUM WIDTH 80 FEET  
MINIMUM AREA 12,000 SF  
FRONT YARD SETBACK 30 FEET  
SIDE YARD SETBACK 10 FEET (20' TOTAL)/25' SIDE FOR ABUTTING CORNER  
REAR YARD SETBACK 35 FEET  
MAXIMUM HEIGHT 2.5 STORIES/30 FEET  
MINIMUM FLOOR AREA 1,200 SF  
MAXIMUM BUILDING COVERAGE 30%

**NOTES:**

- 1) THE DEVELOPER IS PROPOSING A 30 UNIT SITE CONDOMINIUM.
- 2) ALL SIGNAGE SHALL BE IN CONFORMANCE WITH THE CITY OF ROCHESTER HILLS REQUIREMENTS. A SEPARATE SIGN PERMIT MUST BE OBTAINED FROM THE BUILDING DEPARTMENT.
- 3) THE DEVELOPER WILL DEDICATE THE PROPOSED RIGHT-OF-WAY FOR THE PROPOSED ROADS.
- 4) THE PROPOSED ROADS WITHIN THIS DEVELOPMENT WILL BE PAVED WITH 3" MOUNTABLE CONCRETE CURB AND GUTTERS.
- 5) THE SITE ROADS ARE PROPOSED TO BE PRIVATE.

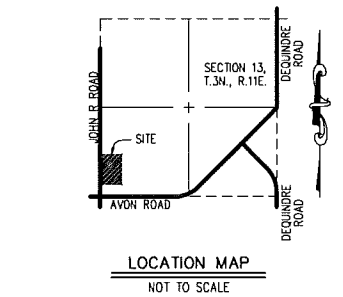
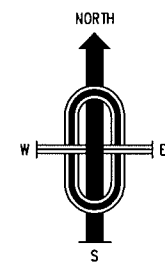
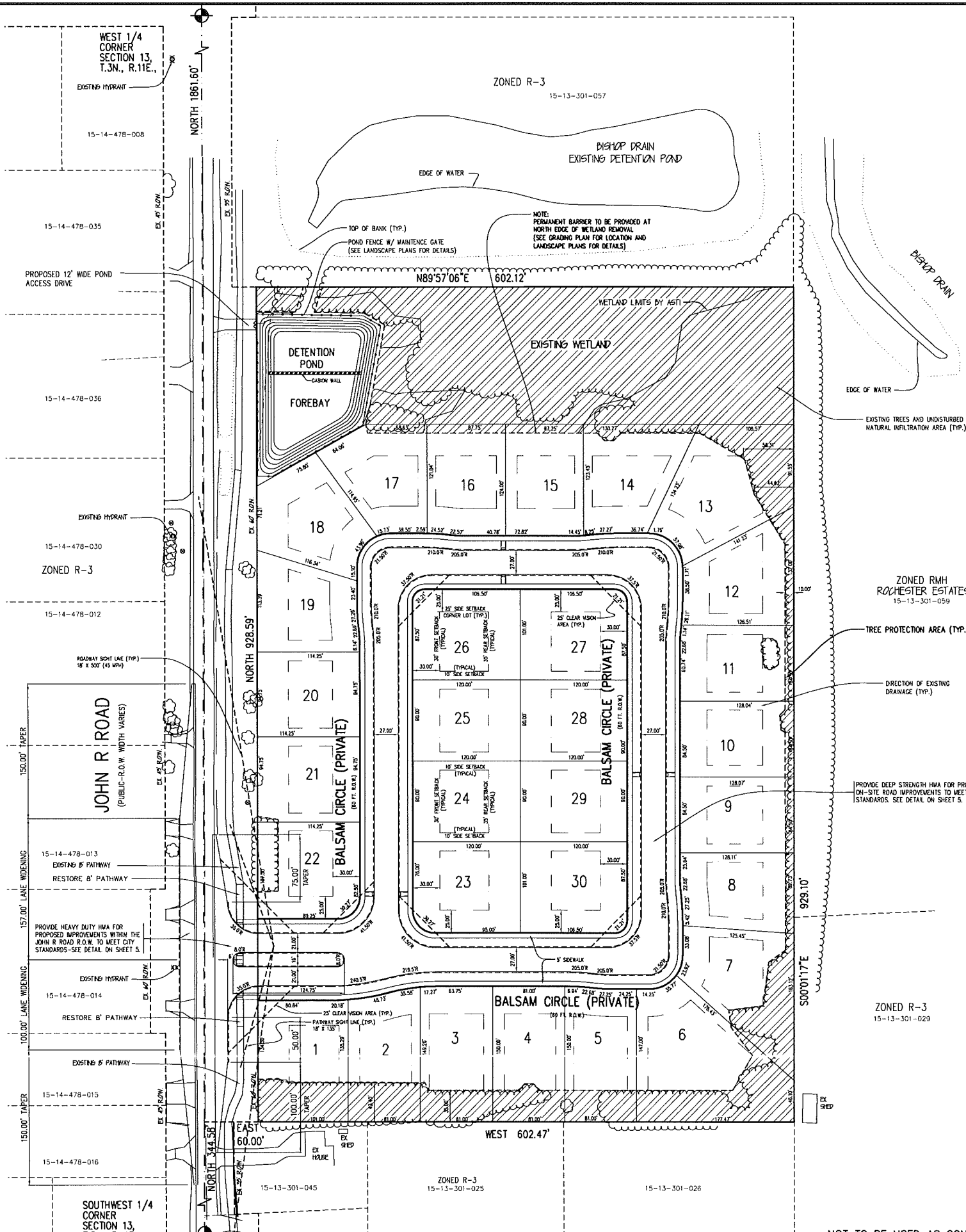
**FIRE DEPARTMENT NOTES:**

- 1) CONSTRUCTION SITES SHALL BE SAFEGUARDED IN ACCORDANCE WITH IFC 2006 CHAPTER 14.
- 2) OPEN BURNING IS NOT PERMITTED INCLUDING THE BURNING OF TRASH, DEBRIS, OR LAND CLEARING MATERIALS. OPEN BURNING FOR WARMING OF SAND AND/OR WATER FOR THE PREPARATION OF MORTAR SHALL BE WITHIN THE CITY OF ROCHESTER HILLS BURN PERMIT GUIDELINES.  
FIRE PREVENTION ORDINANCE CHAPTER 58, SEC. 307.6.2 & 307.6.2.3.
- 3) HOUSES SHALL BE FRAME CONSTRUCTION WITH AN AVERAGE HOUSE SIZE OF APPROX. 2800 SF.

NOTE: THE PROPOSED PRIVATE ROADS ARE NOT BEING CONSTRUCTED TO THE CITY'S PUBLIC ROAD STANDARDS, AND THEREFORE, CANNOT BE TRANSFERRED AS PUBLIC ROADS IN FUTURE

**LOT SIZE VARIATION TABLE**

LOT	WIDTH	DEPTH	AREA
1	101.00'	134.90'	13,589 SF
2	81.00'	142.28'	11,507 SF
3	81.00'	149.63'	12,145 SF
4	81.00'	150.00'	12,150 SF
5	81.00'	148.50'	12,000 SF
6	81.00'	151.72'	20,561 SF
7	86.00'	150.95'	14,155 SF
8	82.98'	126.79'	10,623 SF
9	84.50'	128.10'	10,824 SF
10	84.50'	128.07'	10,822 SF
11	84.50'	127.29'	10,807 SF
12	82.06'	133.88'	12,406 SF
13	81.00'	137.74'	12,150 SF
14	86.56'	128.84'	12,278 SF
15	87.25'	123.73'	10,816 SF
16	87.75'	122.52'	10,813 SF
17	81.00'	118.00'	11,257 SF
18	81.00'	115.65'	11,912 SF
19	88.32'	115.30'	10,813 SF
20	94.75'	114.25'	10,825 SF
21	94.75'	114.25'	10,825 SF
22	107.50'	114.25'	12,148 SF
23	101.00'	120.00'	11,986 SF
24	90.00'	120.00'	10,800 SF
25	90.00'	120.00'	10,800 SF
26	101.00'	120.00'	12,081 SF
27	101.00'	120.00'	12,081 SF
28	90.00'	120.00'	10,800 SF
29	90.00'	120.00'	10,800 SF
30	101.00'	120.00'	12,081 SF
AVERAGE	88.81'	128.22'	12,069 SF



**LEGEND**

SANITARY SEWER	---
STORM SEWER	---
WATER MAIN	---
EXISTING MAJOR CONTOUR	---
EXISTING MINOR CONTOUR	---
EXISTING SPOT GRADE	---
PROPOSED SPOT GRADE	836.30
PROPOSED MANHOLE	○
EXISTING CATCH BASIN AND MANHOLE AS NOTED	○
PROPOSED R.Y.C.B.	○
EXISTING PAVEMENT CATCH BASIN	□
EXISTING GATE VALVE	□
PROPOSED GATE VALVE WITH NO. 1	□
EXISTING HYDRANT	⊕
PROPOSED HYDRANT WITH NO. 1	⊕
SANITARY SEWER STRUCTURE NO. 1	⊕
STORM SEWER STRUCTURE NO. 1	⊕
SIGN	⊕
UTILITY POLE	⊕
DRAINAGE ARROW	→
EXISTING FENCE	---
CL ROAD OR DITCH AS NOTED	---
EXISTING TREE/BRUSH SCHEDULED TO BE SAVED	⊕
TC= TOP OF CURB	---
GU= GUTTER	---

THIS TEXT TYPE (TYPE) DENOTES EXISTING

**PREPARED FOR:**  
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SHELBY TWP, MI 48315  
LMILLER@LOUNGBROOKCOMPANIES.COM  
(586) 855-9556

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E-MAIL: RICH@COMMUNITYENG.COM

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REV. 06/31/16 CITY COMMENTS/FINAL SITE PLAN  
REV. 08/01/16 FINAL SITE PLAN  
REV. 01/15/16 CITY COMMENTS  
REV. 11/20/15 FORMAL SUBMITTAL TO CITY  
REV. 10/15/15 UTILITY & GRADING LIMITS TO SAVE ADD'L TREES

**COMMUNITY CIVIL ENGINEERING & SURVEYING**

6303 26 Mile Road, Suite 110  
Washington Twp., Michigan 48094  
Telephone (586) 677-4081  
www.communityeng.com

**"BLOOMER WOODS"**  
PART OF THE SOUTHWEST 1/4 OF SECTION 13, T.3N., R.11E. CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN.

DATE Sept. 14, 2015 SCALE 1"=60'  
DRAWN BY J.M.B. SHEET 1 OF 9  
CHECKED BY R.S.H. DRAWING Z-15-085

**SITE PLAN**

CITY FILE #15-008  
NOT TO BE USED AS CONSTRUCTION DRAWINGS

LEGAL DESCRIPTION: PARCEL 15-13-301-058

PART OF THE SOUTHWEST 1/4 OF SECTION 13, T.3N., R.11E., BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT A POINT WHICH IS NORTH 344.58' ALONG THE WEST LINE OF SAID SECTION 13 AND THE CENTERLINE OF JOHN R ROAD AND EAST 60.00' FROM THE SOUTHWEST CORNER OF SAID SECTION 13; THENCE NORTH 928.59'; THENCE NB95°06'E 602.12'; THENCE S00°01'17"E 929.10'; THENCE WEST 602.47' TO THE POINT OF BEGINNING. CONTAINING 559,438 SQUARE FEET - 12.843 ACRES (NET)

**BENCHMARK DESCRIPTIONS (NAVD 88 DATUM) \***

- 1). ARROW ON HYDRANT AT SOUTHWEST CORNER OF JOHN R ROAD AND GALLARD ROAD. ELEVATION: 763.34
- 2). ARROW ON HYDRANT AT WEST SIDE OF JOHN R ROAD IN FRONT OF HOUSE #790. ELEVATION: 761.48
- 3). ARROW ON HYDRANT AT WEST SIDE OF JOHN R ROAD IN FRONT OF HOUSE #910. ELEVATION: 775.30

**\* DATUM NOTES**

VERTICAL DATUM USED BY THE CITY IS USGS (UNITED STATES GEODETIC SURVEY) NAVD 29. THIS DIFFERS FROM THE CURRENT VERTICAL DATUM (NAVD 88) BY -40' AT THE GEOGRAPHICAL CENTER OF AVON TOWNSHIP ACCORDING TO THE NGS PROGRAM VERTCON.

THE PROPER MATH IS NAVD 88 - (-40) = NAVD 29 E.G. 830.21 - (-0.40) = 830.61

NOTE THAT CORRECTION IS SUBTRACTED ALGEBRAICALLY, IN OTHER WORDS, ADDED TO NAVD 88.

THE CITY'S BENCHMARK SYSTEM IS BASED ON A LEVEL NETWORK RUN IN THE EARLY 1980'S THAT TIED TO UNITED STATES GEOLOGICAL SURVEY, ARMY CORPS OF ENGINEERS, AND FEMA BENCHMARKS.

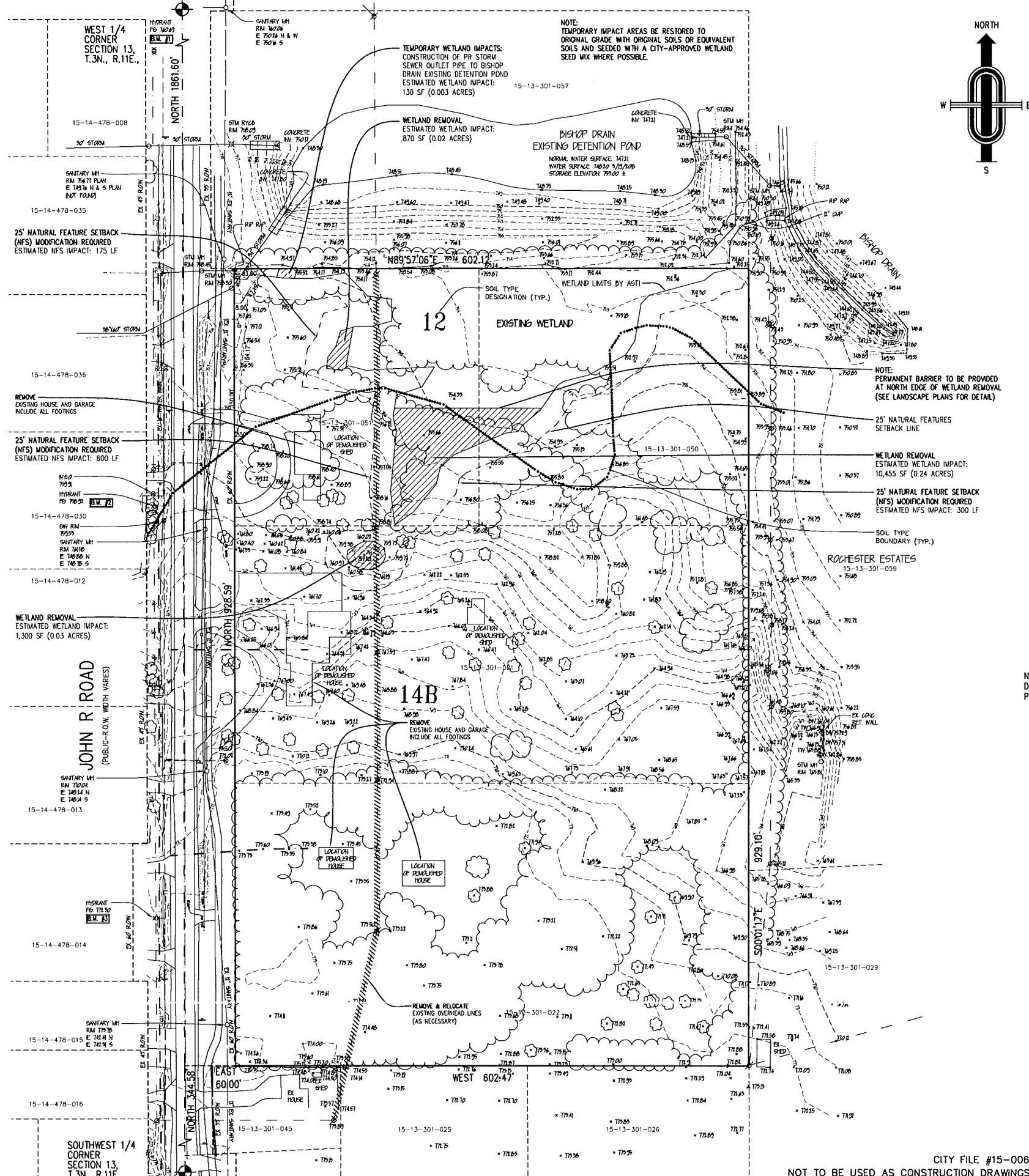
**SOIL TYPES:**

- 12 - BROOKSTON AND COLWOOD LOAMS.
- 14B - OAKVILLE FINE SAND, 0 TO 6 PERCENT SLOPES

**NOTES:**

1. PRIOR TO CONSTRUCTION, BENCHMARKS WILL BE SET AROUND THE DEVELOPMENT TO ENSURE THAT VERTICAL CONTROL WILL BE AVAILABLE THROUGHOUT THE DEVELOPMENT.
2. THE EXISTING HOUSES AND GARAGES ON THIS PROPERTY WILL BE DEMOLISHED - EXISTING SERVICES WILL BE SHUT-OFF AND REMOVED WITH THE UTILITY COMPANY/CITY'S INSPECTION.
3. ALL WORK SHALL BE DONE IN CONFORMANCE WITH THE CITY'S REQUIREMENTS. FLOODPLAIN DOES NOT EXIST ON THIS PROPERTY BASED ON RESEARCH OF THE FLOOD INSURANCE RATE MAP (FIRM).
- 4.

TOTAL ESTIMATED WETLAND IMPACT: 0.29 ACRES

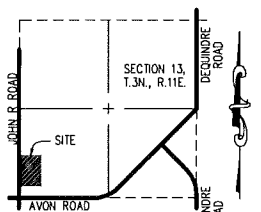
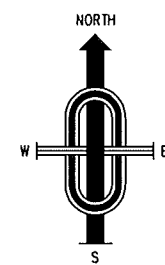


NOTE: TEMPORARY IMPACT AREAS BE RESTORED TO ORIGINAL GRADE WITH ORIGINAL SOILS OR EQUIVALENT SOILS AND SEEDED WITH A CITY-APPROVED WETLAND SEED MIX WHERE POSSIBLE.

WETLAND REMOVAL ESTIMATED WETLAND IMPACT: 870 SF (0.02 ACRES)

12 EXISTING WETLAND

14B EXISTING WETLAND



LOCATION MAP NOT TO SCALE

**LEGEND**

- △ CONTROL POINT
- ⊗ FIRE HYDRANT
- ⊗ GATE WELL OR D-BOX
- MANHOLE AS NOTED
- PAVEMENT CATCH BASIN
- ⊗ UTILITY POLE
- ▲ GUY WIRE BASE
- ⊙ SIGN
- LIGHT POLE
- FOUND IRON (F.I.) OR FOUND PIPE (F.P.)
- EXISTING FENCE
- - - CL ROAD OR DITCH AS NOTED
- TREE/BRUSH LINE
- EA= EDGE OF ASPHALT
- EC= EDGE OF CONCRETE
- TC= TOP OF CURB
- GU= GUTTER
- TB= TOP OF BANK
- THIS TEXT TYPE (H&D) DENOTES EXISTING

NOTE: PERMANENT BARRIER TO BE PROVIDED AT NORTH EDGE OF WETLAND REMOVAL (SEE LANDSCAPE PLANS FOR DETAIL)

WETLAND REMOVAL ESTIMATED WETLAND IMPACT: 10,455 SF (0.24 ACRES)

25' NATURAL FEATURE SETBACK (NFS) MODIFICATION REQUIRED ESTIMATED NFS IMPACT: 300 LF

SOIL TYPE BOUNDARY (TYP.)

NOTE: A WETLAND USE PERMIT FROM THE CITY AND A DEQ PART 303 PERMIT ARE REQUIRED. A COPY OF DEQ PERMIT WILL BE PROVIDED TO THE CITY ONCE OBTAINED.

- REV. 08/31/16 CITY COMMENTS/FINAL SITE PLAN
- REV. 08/01/16 FINAL SITE PLAN
- REV. 01/15/16 CITY COMMENTS
- REV. 11/20/15 FORMAL SUBMITTAL TO CITY
- REV. 10/15/15 UTILITY & GRADING LIMITS TO SAVE ADJ. REES

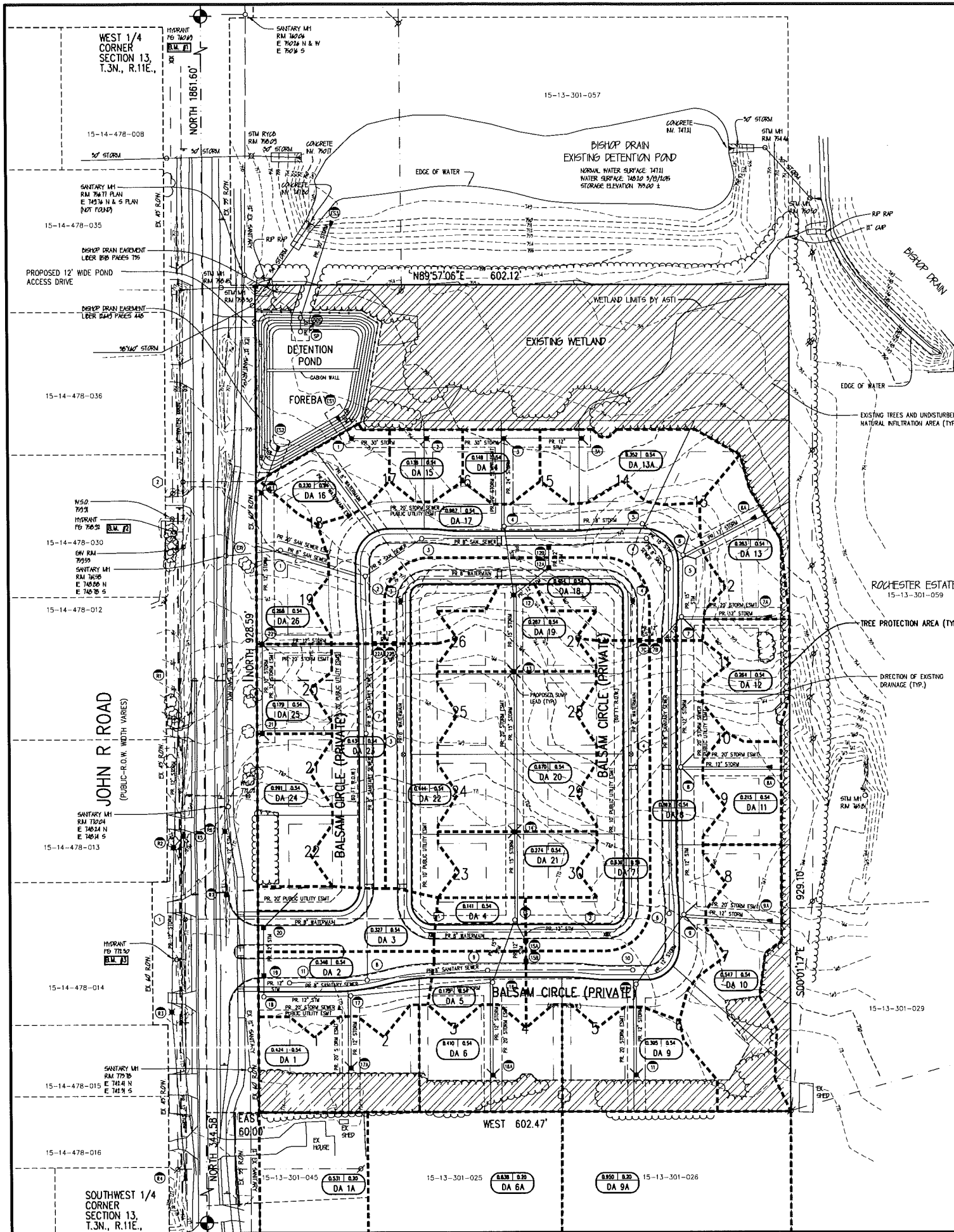


"BLOOMER WOODS"  
 PART OF THE SOUTHWEST 1/4 OF SECTION 13, T.3N., R.11E. CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

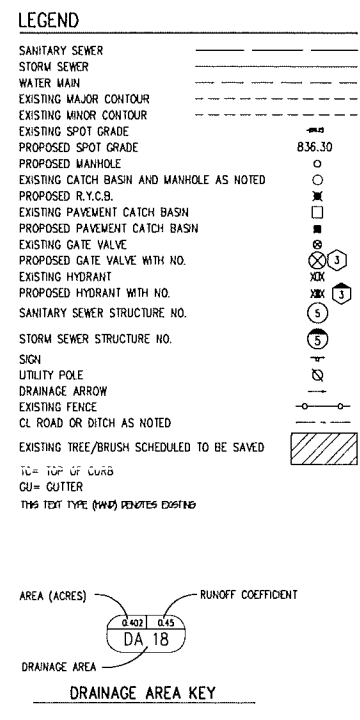
DATE Sept. 14, 2015 SCALE 1" = 60'  
 DRAWN BY J.M.B. SHEET 2 OF 9  
 CHECKED BY R.S.H. DRAWING Z-15-085

TOPOGRAPHIC SURVEY

CITY FILE #15-006 NOT TO BE USED AS CONSTRUCTION DRAWINGS



FROM	TO	ACRES	PERCY	ENVY	ADD	SUM	INTEN	TIME	DIFF	LENGTH	PIPE	HYDRAULIC	ACTUAL	HYDRAULIC	ACTUAL	FLOW	HC ELEV	HC ELEV	RM ELEV	INVERT	INVERT	FROM	TO		
MI	MI		FACTOR	AREA	AREA	OF	DENSITY	CONCENTRATION	(CFS)	(FT)	DIA	GRADE	SLOPE	VELOCITY	VELOCITY	(GPM)	UPPER	LOWER	UPPER	UPPER	LOWER	MI	MI		
				A * C	A * C	A * C					IN	%	(FPS)	(FPS)											
11	10	9	0.305	0.54	0.21	0.19	0.40	3.89	20.00	1.56	102	12	0.18%	0.33%	1.68	2.57	0.00	2.02	768.42	768.09	771.80	767.62	767.28	11	10
10	9	8	0.000	0.54	0.00	0.40	0.40	3.89	20.00	1.56	95	12	0.19%	0.33%	1.98	2.57	0.00	2.02	767.99	767.65	774.40	767.19	766.89	10	9
9	8	7	0.000	0.54	0.00	0.30	0.70	3.89	20.00	2.72	168	12	0.24%	0.41%	3.47	4.17	0.60	3.23	768.50	768.14	773.30	766.70	766.41	9	8
8	7	6	0.000	0.54	0.00	0.12	0.83	3.89	20.00	3.15	169	12	0.77%	1.28%	3.99	6.24	0.71	6.47	765.14	759.50	769.10	764.34	758.80	8	7
7	6	5	0.000	0.54	0.00	0.97	1.79	3.76	21.50	6.73	70	18	0.41%	0.40%	3.81	3.77	0.31	6.73	757.99	757.00	764.00	756.08	755.60	7	6
6	5	4	0.000	0.54	0.00	0.15	1.84	3.74	21.81	7.26	59	18	0.47%	0.60%	4.11	4.52	0.24	8.16	756.17	755.82	762.90	754.97	754.52	6	5
5	4	3	0.000	0.54	0.00	1.94	3.72	3.72	22.05	7.22	156	18	0.47%	0.60%	4.08	4.82	0.64	8.16	755.72	754.78	762.50	754.52	753.58	5	4
4	3	2	0.000	0.54	0.00	2.72	4.65	3.67	22.68	17.10	99	24	0.57%	1.90%	5.44	8.95	0.30	31.27	754.17	752.30	762.60	752.57	750.69	4	3
3	2	1	0.148	0.54	0.08	0.19	4.83	3.65	22.99	11.99	88	30	0.19%	0.13%	3.67	3.92	0.40	17.99	753.30	753.14	755.00	750.19	750.08	3	2
2	1	1	0.148	0.54	0.08	0.19	4.83	3.65	22.99	11.99	88	30	0.19%	0.13%	3.67	3.92	0.40	17.99	753.30	753.14	755.00	750.19	750.08	2	1
1	1	1	0.231	0.54	0.12	5.13	3.59	3.59	23.77	18.42	30	30	0.20%	0.14%	3.75	3.13	0.13	18.42	751.89	751.83	755.50	749.87	749.83	1	1
20	19	3	0.327	0.54	0.18	0.18	3.89	3.89	20.00	0.70	54	12	0.04%	1.00%	0.89	4.55	0.00	3.57	770.17	769.63	773.70	769.37	768.83	20	19
19	18	2	0.348	0.54	0.19	0.37	3.89	3.89	20.00	1.44	24	12	0.15%	0.55%	1.83	3.37	0.00	2.65	769.63	769.50	773.70	768.83	768.70	19	18
18	17	1	0.000	0.54	0.00	0.31	3.89	3.89	20.00	1.44	98	12	0.15%	0.55%	1.83	3.37	0.00	2.65	769.40	768.86	774.70	768.60	768.04	18	17
17	16	1	0.000	0.54	0.00	0.34	0.71	3.89	20.00	2.76	163	15	0.18%	0.24%	2.25	2.59	1.21	3.17	768.76	768.37	775.80	767.76	767.37	17	16
16	15	1	0.000	0.54	0.00	0.39	1.10	3.79	21.21	4.17	75	15	0.41%	0.50%	3.40	3.73	0.37	4.58	768.27	767.89	778.40	767.27	766.89	16	15
15	14	1	0.000	0.54	0.00	0.17	1.27	3.76	21.58	4.78	99	15	0.54%	1.00%	3.89	8.14	0.42	11.22	767.69	764.72	778.10	766.69	763.72	15	14
14	13	21	0.274	0.54	0.15	1.42	3.72	3.72	22.00	5.28	180	15	0.67%	1.00%	4.30	8.14	0.70	11.22	764.72	759.33	767.90	763.72	758.32	14	13
13	12	20	0.670	0.54	0.36	0.79	2.57	3.67	22.70	9.43	86	15	2.12%	3.00%	7.69	8.14	0.19	11.22	759.32	756.74	762.50	758.32	755.74	13	12
12	11	4	0.287	0.54	0.15	2.72	3.65	3.65	22.68	9.83	78	18	0.80%	1.09%	5.62	8.22	0.23	11.00	755.62	754.77	760.00	754.42	753.57	12	11
21	22	24	0.291	0.54	0.16	0.16	3.89	3.89	20.00	0.62	101	12	0.03%	1.00%	0.79	7.88	0.00	8.19	763.32	760.29	768.70	762.52	759.49	21	22
22	23	23	0.179	0.54	0.10	0.47	0.71	3.89	20.00	3.84	120	12	0.13%	0.61%	1.63	7.88	0.18	8.19	760.19	754.93	763.90	759.39	754.19	22	23
23	22	26	0.268	0.54	0.14	0.87	3.82	3.82	20.78	3.32	58	12	0.87%	1.00%	4.50	4.50	0.22	3.57	760.19	760.53	756.50	756.39	749.83	23	22
24	23	10	0.547	0.54	0.30	0.30	3.89	3.89	20.00	1.17	100	12	0.11%	1.00%	1.49	4.55	0.00	3.57	767.50	766.60	766.70	766.70	765.70	24	23
25	24	11	0.215	0.54	0.12	0.12	3.89	3.89	20.00	0.47	103	12	0.02%	2.00%	0.58	8.43	0.00	5.05	767.30	765.74	766.50	766.50	764.44	25	24
26	25	12	0.284	0.54	0.14	0.14	3.89	3.89	20.00	0.54	102	12	0.02%	1.00%	0.69	4.55	0.00	3.57	757.30	757.38	757.50	757.50	756.48	26	25
27	26	7	0.639	0.54	0.35	0.35	3.89	3.89	20.00	1.36	24	12	0.15%	1.00%	1.73	4.55	0.00	3.57	760.31	760.07	763.69	760.81	759.27	27	26
28	27	8	0.892	0.54	0.48	0.83	3.89	3.89	20.00	3.23	37	12	0.82%	1.00%	4.11	4.55	0.15	3.57	760.00	759.70	763.69	760.17	758.80	28	27
129	128	18	0.484	0.54	0.26	0.25	3.89	3.89	20.00	1.01	24	12	0.06%	1.00%	1.29	4.55	0.00	3.57	756.56	756.32	759.85	755.76	755.52	129	128
128	127	17	0.987	0.54	0.53	0.79	3.89	3.89	20.00	3.07	20	12	0.74%	1.00%	3.91	4.55	0.21	3.57	756.22	755.72	759.85	755.42	754.94	128	127
28	27	13	0.283	0.54	0.15	0.15	3.89	3.89	20.00	0.58	93	12	0.03%	1.00%	0.74	4.55	0.00	3.57	756.80	756.27	756.00	756.00	755.07	28	27
29	28	3	0.352	0.54	0.19	0.19	3.89	3.89	20.00	0.74	68	12	0.04%	0.32%	0.84	2.57	0.00	2.02	752.44	752.40	755.00	750.82	750.54	29	28
228	227	22	0.444	0.54	0.24	0.24	3.89	3.89	20.00	0.93	24	12	0.07%	1.00%	1.19	4.55	0.00	3.57	763.19	762.95	766.57	762.39	762.15	228	227
227	226	23	0.434	0.54	0.23	0.47	3.89	3.89	20.00	1.83	127	12	0.26%	2.01%	2.33	6.45	0.00	5.06	762.95	760.29	766.57	762.15	759.80	227	226
17A	17	1	0.424	0.54	0.23	0.11	0.47	3.89	20.00	1.32	61	12	0.14%	0.32%	1.68	2.57	0.00	2.02	769.12	768.66	772.50	769.32	768.06	17A	17
18A	18	6	0.410	0.54	0.22	0.17	0.39	3.89	20.00	1.52	104	12	0.18%	0.32%	1.93	2.57	0.00	2.02	769.12	768.79	772.50	768.32	767.99	18A	18
15B	15A	5	0.175	0.54	0.09	0.09	3.89	3.89	20.00	0.35	24	12	0.01%	1.00%	0.45	4.55	0.00	3.57	771.33	771.09	774.94	770.53	770.22	15B	15A
15A	15	4	0.141	0.54	0.08	0.17	3.89	3.89	20.00	0.66	27	12	0.03%	0.32%	0.84	2.57	0.00	2.02	770.99	770.90	774.94	770.19	770.10	15A	15
SP OCS	0	0	0.000	0.54	0.00	0.00	3.89	3.89	20.00	0.00	16	12	0.00%	0.32%	0.00	2.57	0.00	2.02	750.94	750.94	753.83	749.83	749.78	SP OCS	0
OCS	0	0	0.000	0.54	0.00	0.00	3.89	3.89	20.00	0.00	16	12	0.00%	0.32%	0.00	2.57	0.00	2.02	750.94	750.94	753.83	749.83	749.78	OCS	0
1A	0	0	0.531	0.20	0.11				127.33	19.66	114	30	0.97%	1.00%	2.21	8.38	0.86	41.13	750.94	749.80	754.00	748.94	747.80	1A	0



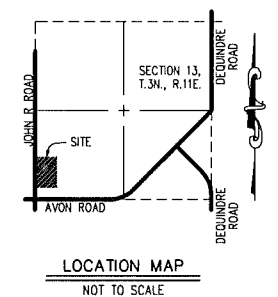
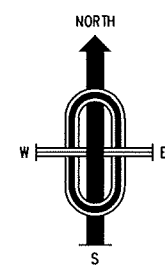
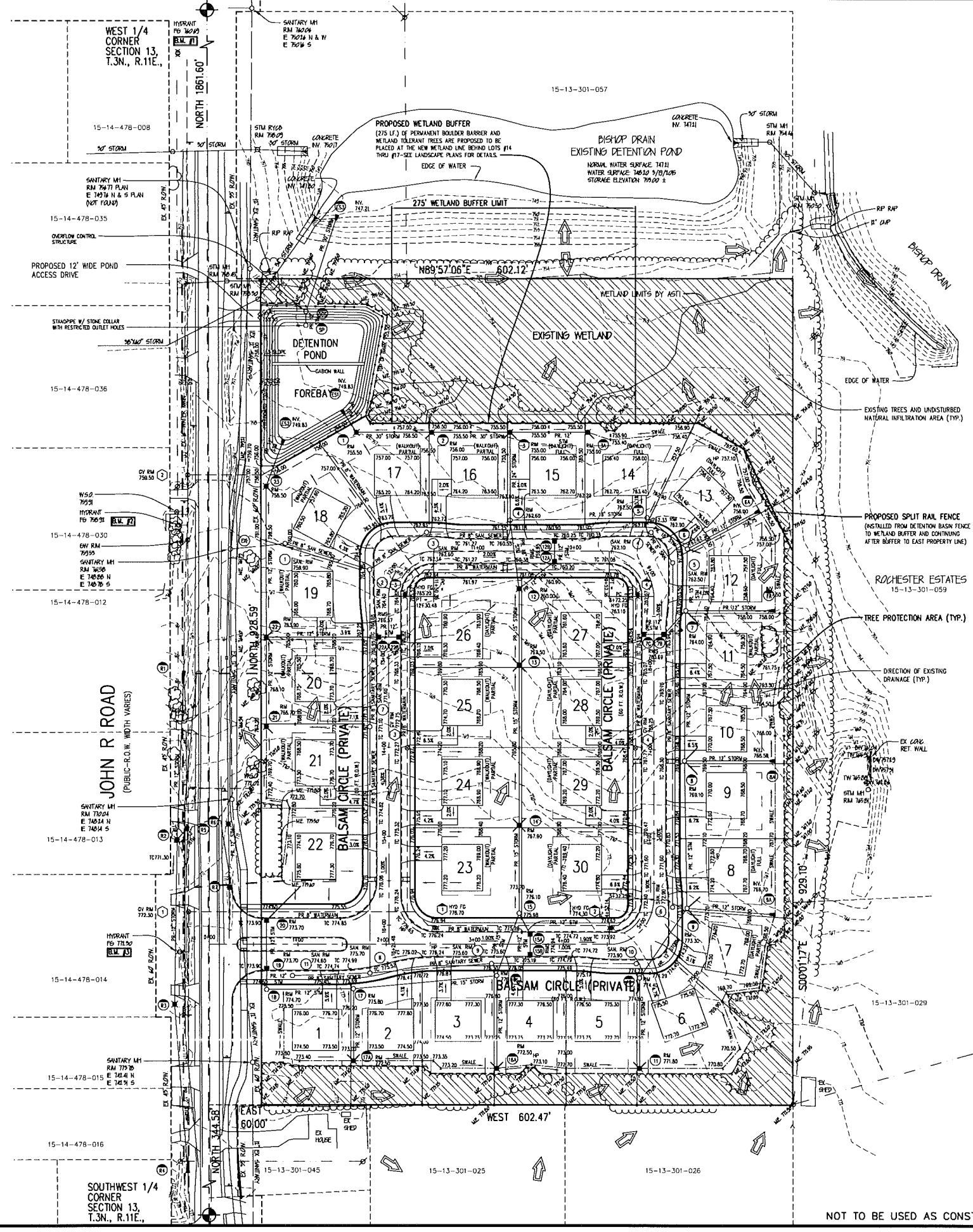
- NOTES:
- CONTRACTOR SHALL VERIFY DEPTH AND LOCATION OF EXISTING UTILITIES.
  - THE STORM SEWER OUTLET FROM THE DETENTION BASIN WILL BE SIZED TO ACCOMMODATE THE UN-RESTRICTED FLOW FOR THE 10-YEAR STORM FROM THE OPPOSITE AREAS TO THE SOUTH. COMPLETE COMPUTATIONS WILL BE PROVIDED ON THE ENGINEERING PLANS.
  - A PERMIT IS REQUIRED FROM THE OAKLAND COUNTY WATER RESOURCE COMMISSION FOR THE CONNECTION TO THE EXISTING NORTH DETENTION POND.
  - FINAL CONSTRUCTION PLANS SHALL INCLUDE PLAN AND PROFILE VIEWS AND HYDRAULIC GRADE LINE FOR ALL STORM LINES. CROSS-SECTIONS, SLOPES, ECT. SHALL BE PROVIDED FOR ALL EXISTING AND PROPOSED OPEN DRAINAGE COURSES. DESIGN CALCULATIONS SHALL BE PROVIDED FOR ALL DRAINAGE FACILITIES PROPOSED AND EXISTING.
  - THE MINIMUM STORM SEWER PIPE SIZE WILL BE 12" DIAMETER.
  - A SOIL EROSION AND SEDIMENTATION CONTROL PERMIT IS REQUIRED.

REV. 08/31/15 CITY COMMENTS/FINAL SITE PLAN  
 REV. 08/01/16 FINAL SITE PLAN  
 REV. 01/15/16 CITY COMMENTS  
 REV. 11/20/15 FORMAL SUBMITTAL TO CITY  
 REV. 10/15/15 UTILITY & GRADING LIMITS TO SAVE ADD'L TREES



Old Engineering and Surveying 6333 26 Mile Road, Suite 110 Washington Twp., Michigan 48394 Telephone (586) 677-0081 www.communityeng.com	"BLOOMER WOODS" PART OF THE SOUTHWEST 1/4 OF SECTION 13, T.3N., R.11E, CITY OF ROCHESTER, OAKLAND COUNTY, MICHIGAN.
DATE Sept. 14, 2015	SCALE 1"=60'
DRAWN BY J.M.B.	SHEET 3 OF 9
CHECKED BY R.S.H.	DRAWING Z-15-085
UTILITY PLAN	

CITY FILE #15-006  
 NOT TO BE USED AS CONSTRUCTION DRAWINGS



**LEGEND**

SANITARY SEWER	---
STORM SEWER	---
WATER MAIN	---
EXISTING MAJOR CONTOUR	---
EXISTING MINOR CONTOUR	---
EXISTING SPOT GRADE	836.30
PROPOSED SPOT GRADE	836.30
PROPOSED MANHOLE	○
EXISTING CATCH BASIN AND MANHOLE AS NOTED	○
PROPOSED R.Y.C.B.	○
EXISTING PAVEMENT CATCH BASIN	□
PROPOSED PAVEMENT CATCH BASIN	□
EXISTING GATE VALVE	⊗
PROPOSED GATE VALVE WITH NO.	⊗
EXISTING HYDRANT	⊗
PROPOSED HYDRANT WITH NO.	⊗
SANITARY SEWER STRUCTURE NO.	⊗
STORM SEWER STRUCTURE NO.	⊗
SIGN	⊗
UTILITY POLE	⊗
DRAINAGE ARROW	→
EXISTING FENCE	---
CL ROAD OR DITCH AS NOTED	---
EXISTING TREE/BRUSH SCHEDULED TO BE SAVED	⊗
TC= TOP OF CURB	---
GU= GUTTER	---
THIS TEXT TYPE (WAVE) DENOTES EXISTING	---
PROPOSED POND FENCE	---
PROPOSED WETLAND BUFFER-BOULDER BARRIER	---
PROPOSED SPLIT RAIL FENCE	---

- SOIL EROSION CONTROL NOTES:**
- 1) THE DEVELOPER SHALL SUBMIT AN EROSION CONTROL PLAN, COMPLETED APPLICATION, AND CHECKLIST FORMS, PAY ALL FEES AND POST AN EROSION CONTROL PERFORMANCE BOND, AS REQUIRED, PRIOR TO ANY EARTH CHANGE.
  - 2) CONSTRUCTION OPERATION SHALL BE SCHEDULED AND PERFORMED SO THAT PREVENTATIVE SOIL EROSION CONTROL MEASURES ARE IN PLACE PRIOR TO EXCAVATION IN CRITICAL AREAS AND TEMPORARY STABILIZATION MEASURES ARE IN PLACE IMMEDIATELY FOLLOWING BACKFILLING.
  - 3) SPECIAL PRECAUTIONS WILL BE TAKEN WITH THE USE OF CONSTRUCTION EQUIPMENT TO PREVENT SITUATIONS THAT PROMOTE EROSION.
  - 4) CLEANUP WILL BE DONE IN A MANNER TO ENSURE THAT EROSION CONTROL MEASURES ARE NOT DISTURBED.
  - 5) THE PROJECT WILL CONTINUALLY BE INSPECTED FOR SOIL EROSION AND SEDIMENT CONTROL COMPLIANCE. DEFICIENCIES WILL BE CORRECTED BY THE CONTRACTOR WITHIN 24 HOURS.
  - 6) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR STORM WATER DISCHARGE FROM THE CONSTRUCTION ACTIVITIES IS REQUIRED PRIOR TO STARTING ANY EARTH CHANGE.
  - 7) DEVELOPER IS RESPONSIBLE FOR GRADING THE SIDE AND REAR YARD SWALES AS DESIGNED SO THAT THE ENTIRE SITE DRAINS AS IS DESIGNED.

- CONSTRUCTION SEQUENCE:**
- 1) CLEAR TREES, BRUSH, AND STUMPS FROM DESIGNATED CLEARING AREAS. ALL STUMPS, CHIPS, AND DEBRIS SHALL BE DISPOSED OFF-SITE.
  - 2) MASS GRADE SITE, INCLUDING EXCAVATION OF DETENTION POND. MAINTAIN EROSION CONTROL AS REQUIRED.
  - 3) INSTALL SANITARY SEWER, WATERMAIN AND STORM SEWER. IMMEDIATELY AFTER INSTALLATION OF STORM SEWER INSTALL STONE AND SOD INLET FILTERS AT ALL INLETS TO THE STORM SEWER SYSTEM.
  - 4) BRING PAVEMENT AREAS TO SUB-BASE GRADE AND PLACE TOPSOIL ON SIDE SLOPES. VERIFY THAT IT HAS BEEN CHECKED BY THE ENGINEER AND CORRECTED IF NECESSARY.
  - 5) INSTALL PAVEMENT AND BACKFILL CURBS. AFTER INSTALLATION OF PAVEMENT, REPLACE STONE INLET FILTERS IN PAVED AREAS.
  - 6) FINISH GRADE AND REDISTRIBUTE A MINIMUM OF 4" OF TOP SOIL, SEED AND MULCH ALL DISTURBED AREAS AND MAINTAIN TEMPORARY SOIL EROSION MEASURES AS REQUIRED.
  - 7) UPON COMPLETION, REMOVE ACCUMULATED SEDIMENT AND DEBRIS FROM STORM SYSTEM AND REMOVE SOIL EROSION CONTROLS.

- NOTES:**
- 1) ALL DRIVES SHALL BE A MINIMUM 15' WIDE.
  - 2) THE BISHOP DRAIN IS UNDER THE JURISDICTION OF THE OAKLAND COUNTY DRAIN COMMISSIONER'S OFFICE.
  - 3) THE PROPOSED ROAD WILL BE CROWNED AND WILL FOLLOW THE CITY'S STANDARDS.
  - 4) PROPOSED GRADES SHALL WATCH EXISTING ELEVATIONS AT THE SPLIT FENCE.
  - 5) THE PROPOSED ROADS WILL BE PUBLIC.
  - 6) ALL ROAD IMPROVEMENTS WITHIN THE JOHN R ROAD R.O.W. WILL MEET CITY OF ROCHESTER HILLS STANDARDS. AN ACCESS PERMIT WILL BE OBTAINED FROM THE CITY PRIOR TO STARTING CONSTRUCTION.
  - 7) ALL LOTS AND OPEN SPACE AREAS SHALL HAVE ACCESS TO A UTILITY EASEMENT.

- GRADING NOTES:**
- 1) THE BOXES SHOWN ARE TO REPRESENT THE ESTIMATED HOME LOCATION. ACTUAL HOME SIZES, LOCATION AND GRADING WILL BE DETERMINED AT THE TIME THE PLOT PLAN IS PREPARED.
  - 2) NO WORK WILL BE PERMITTED IN A WETLAND AREA UNLESS A PERMIT HAS BEEN ISSUED TO DO SO.
  - 3) ALL GRADE IN PAVEMENT AREA ARE TOP OF CURB (0.25' OR 3" HIGH) UNLESS OTHERWISE NOTED.
  - 4) ALL SIDE YARD AND REAR YARD GRADES SHALL HAVE A MINIMUM 1% SLOPE. THESE SWALES ARE REQUIRED TO BE ESTABLISHED BY THE DEVELOPER WHEN THE SITE IS ROUGH GRADED.
  - 5) SLOPES BETWEEN 2% AND 4.5% WILL BE SODDED. SLOPES GREATER THAN 4.5% WILL BE SODDED AND STAKED.
  - 6) ALL PROPOSED GRADES WILL WATCH THE EXISTING AT THE PERIMETER OF THE SITE (SPLIT FENCE LOCATION).
  - 7) A PERMANENT BENCHMARK WILL BE ESTABLISHED ON-SITE PRIOR TO STARTING WORK.
  - 8) ALL DRAINAGE SWALES SHALL BE A MINIMUM SLOPE OF 1%.

REV. 06/31/16 CITY COMMENTS/FINAL SITE PLAN  
 REV. 09/01/16 FINAL SITE PLAN  
 REV. 01/15/16 CITY COMMENTS  
 REV. 11/20/15 FORMAL SUBMITTAL TO CITY  
 REV. 10/15/15 UTILITY & GRADING LIMITS TO SAVE ADJ. TREES

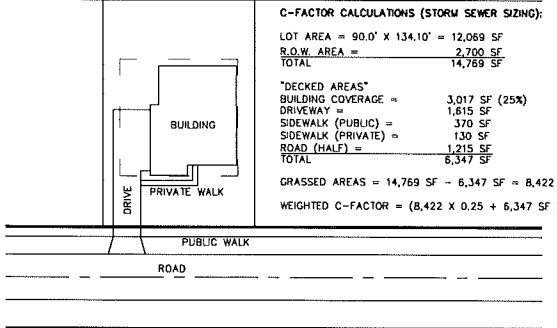


**"BLOOMER WOODS"**  
 PART OF THE SOUTHWEST 1/4 OF SECTION 13, T.3N., R.11E. CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN.

DATE: Sept. 14, 2015 SCALE: 1"=60'  
 DRAWN BY: J.M.B. SHEET 4 OF 9  
 CHECKED BY: R.S.H. DRAWING Z-15-085

CITY FILE #15-006  
 NOT TO BE USED AS CONSTRUCTION DRAWINGS





**C-FACTOR CALCULATIONS (DETENTION POND SIZING):**  
 TOTAL PARCEL AREA = 559,438 SF (12.843 ACRES)  
 TOTAL WETLAND / NATURAL AREA = 119,227 SF (2.737 ACRES)  
 TOTAL DEVELOPED AREA FOR LOTS = 419,483 SF (9.630 ACRES)  
 TOTAL DETENTION POND AREA = 20,728 SF (0.476 ACRES)  
 (5,060 SF NORMAL WATER + 15,668 SF GRASS AREAS)

WEIGHTED C-FACTOR FOR POND SIZING = 0.54  
 ((15,668 X 0.25 + 5,060 X 1.00 + 419,483 X 0.54) / 440,211 SF)

**DETENTION CALCULATIONS (EXISTING POND OFF SITE):**

C = 0.29 RUNOFF COEFFICIENT USED IN ORIGINAL POND DESIGN  
 A = 12.843 ACRES (NET)  
 Q = 0.20 CFS/ACRE  
 ALLOWABLE RELEASE RATE: (0.20 CFS/ACRE)  
 Q<sub>A</sub> = 12.843 ACRES X 0.20 = 2.569 CFS

DETENTION REQUIRED  
 FLOODING PROTECTION (OVERBANK)  
 10-YEAR FLOOD VOLUME PROVIDED IN EXISTING POND NORTH OF SITE:  
 Q<sub>0</sub> =  $\frac{Q}{A \times C} = 0.690$  CFS/ACRE-IMP

$T = -25 + \sqrt{(6562.5 / Q_0)}$   
 T = 72.55 MIN.

V<sub>S</sub> = (10,500 X 1) / (T + 25) - (40 X T X Q<sub>0</sub>)  
 V<sub>S</sub> = 5,808 CF/ACRE-IMP

V<sub>10</sub> = V<sub>S</sub> X A X C  
 V<sub>10</sub> = 21,831 CF TOTAL PROVIDED 10-YEAR FLOODING PROTECTION IN EXISTING POND NORTH OF SITE

**DETENTION CALCULATIONS (PROPOSED SITE):**

C = 0.54 RUNOFF COEFFICIENT  
 A = 10.11 ACRES (12.843 ACRES SITE - 2.737 ACRES WETLAND & NAT. AREA)  
 Q = 0.20 CFS/ACRE  
 ALLOWABLE RELEASE RATE: (0.20 CFS/ACRE)  
 Q<sub>A</sub> = 10.11 ACRES X 0.20 = 2.022 CFS

DETENTION REQUIRED  
 FLOODING PROTECTION (OVERBANK)  
 100-YEAR FLOOD VOLUME REQUIRED:  
 Q<sub>0</sub> =  $\frac{Q}{A \times C} = 0.370$  CFS/ACRE-IMP

$T = -25 + \sqrt{(10,312.5 / Q_0)}$   
 T = 141.85 MIN.

V<sub>S</sub> = (16,500 X 1) / (T + 25) - (40 X T X Q<sub>0</sub>)  
 V<sub>S</sub> = 11,926.24 CF/ACRE-IMP

V<sub>100</sub> = V<sub>S</sub> X A X C  
 V<sub>100</sub> = 65,110 CF

**100-YEAR ADJUSTED FLOOD VOLUME REQUIRED ON-SITE:**  
 ADJUSTED FOR EXISTING 10-YEAR STORAGE VOLUME PROVIDED IN EXISTING POND NORTH OF SITE

V<sub>100 ADJ</sub> = V<sub>100</sub> - V<sub>10</sub>  
 V<sub>100 ADJ</sub> = 65,110 - 21,831  
 V<sub>100 ADJ</sub> = 43,480 CF TOTAL REQUIRED FLOODING PROTECTION

**FLOODING PROTECTION VOLUME PROVIDED:**

ELEVATION	AREA	VOLUME	TOTAL
749.83	4200	772	772
750.00	4290	772	772
751.00	4883	4587	5308
752.00	5508	5196	10504
752.00	13078	13674	24378
753.00	14550	12,714	37,032
753.83	16087		51,021 CF

**FOREBAY REQUIRED**  
 POST DEVELOPMENT WATER QUALITY  
 1/2" STORM VOLUME REQUIRED:  
 (ROCHESTER HILLS REQUIREMENT)  
 W<sub>0</sub> = 1,815 X A X C  
 W<sub>0</sub> = 1,815 X (10.11) X (0.54)  
 W<sub>0</sub> = 9,909 CF TOTAL REQUIRED WATER QUALITY ROCHESTER HILLS MIN. STANDARD

**1-YEAR STORAGE VOLUME REQUIRED:**  
 (OCWRC REQUIREMENT)  
 Q<sub>0</sub> =  $\frac{Q}{A \times C} = 0.370$  CFS/ACRE-IMP

$T = -25 + \sqrt{(2,700.0 / Q_0)}$   
 T = 60.42 MIN.

V<sub>S</sub> = (4,320 X 1) / (T + 25) - (40 X T X Q<sub>0</sub>)  
 V<sub>S</sub> = 2,161.44 CF/ACRE-IMP

V<sub>1</sub> = V<sub>S</sub> X A X C  
 V<sub>1</sub> = 11,800 CF TOTAL REQUIRED WATER QUALITY OCWRC MIN. STANDARD

**WATER QUALITY VOLUME PROVIDED:**

ELEVATION	AREA	VOLUME	TOTAL
749.83	5670	973	973
750.00	5778	6138	7111
751.00	6498	6878	13989
752.00	7258		

TOTAL PROPOSED WATER QUALITY / FOREBAY VOLUME = 13989 CF

**CHANNEL PROTECTION (BANKFULL)**  
 1-YEAR FLOOD VOLUME REQUIRED:  
 C<sub>pv</sub> = 6,788 X A X C  
 C<sub>pv</sub> = 6,788 X (10.11) X (0.54)  
 C<sub>pv</sub> = 37,058 CF TOTAL REQUIRED CHANNEL PROTECTION  
 C<sub>pv</sub> ELEV = 753.83

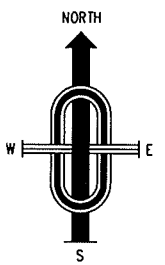
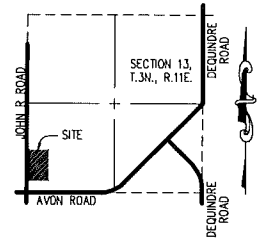
**CHANNEL PROTECTION VOLUME PROVIDED:**

ELEVATION	AREA	VOLUME	TOTAL
749.83	4200	772	772
750.00	4290	772	772
751.00	4883	4587	5308
752.00	5508	5196	10504
752.00	13078	13674	24378
753.00	14550	12,714	37,032
753.83	16087		51,021 CF

**INFILTRATION AREA REQUIRED**  
 STORMWATER RECHARGE AND INFILTRATION  
 1-YEAR FLOOD VOLUME REQUIRED:  
 W<sub>0</sub> = 1,815 X A X C  
 W<sub>0</sub> = 1,815 X (10.11) X (0.54)  
 W<sub>0</sub> = 9,909 CF TOTAL REQUIRED STORMWATER RECHARGE & INFILTRATION

EXISTING UNDISTURBED WETLAND & EXISTING TREE AREAS  
 EX. WETLAND & DETENTION BASIN & AREA NORTH OF LOTS 13-18: 119,227 SF  
 AREA EAST OF LOTS 6-13: 20,337 SF  
 AREA SOUTH OF LOTS 1-6: 22,921 SF  
 TOTAL AREA: 162,485 SF

INFILTRATION OF 1" (0.8) USED IN CALCULATION.  
 162,485 SF X 0.8 = 12,999 CF TOTAL PROPOSED STORMWATER RECHARGE & INFILTRATION



**SANITARY SEWER BASIS OF DESIGN**

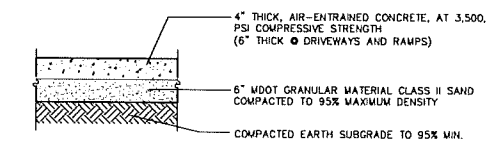
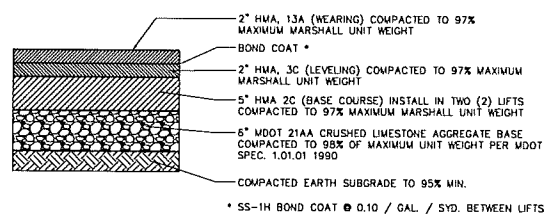
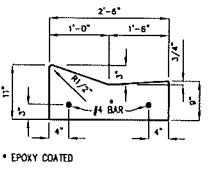
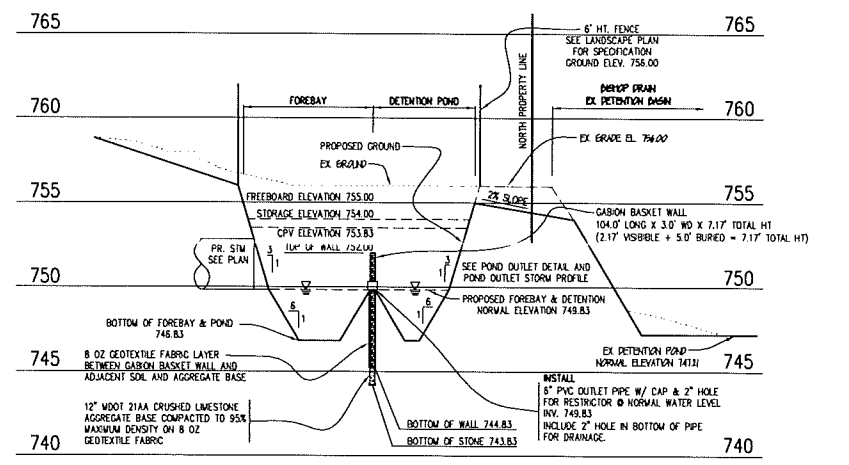
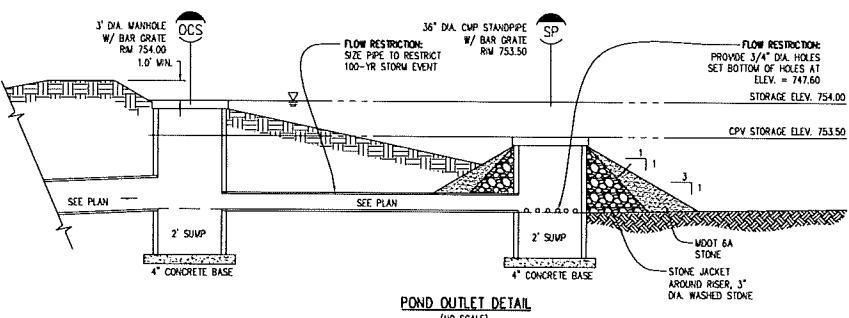
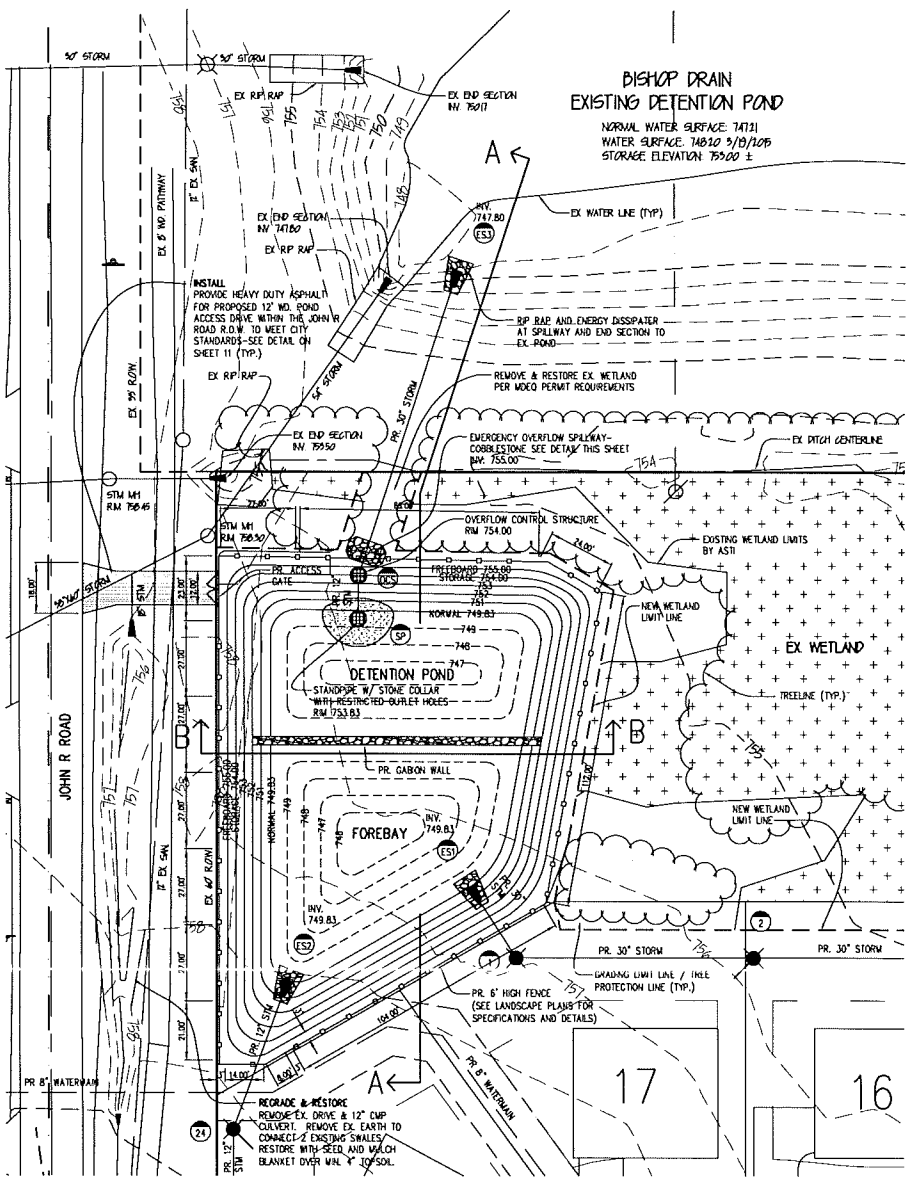
**INITIAL DISCHARGE**  
 TOTAL SINGLE FAMILY UNITS = 30 UNITS  
 PEOPLE = 30 UNITS X 3.5 PEOPLE/UNIT = 105 PERSONS  
 AVERAGE ESTIMATED FLOW = 105 PEOPLE X 100 G.P.C.P.D. = 10500 G.P.D. = 0.014 CFS

PEAK FACTOR = 4.0 X 0.014 CFS = 0.056 CFS  
 PEAK FLOW = 0.056 CFS

A 8" SANITARY SEWER AT A MINIMUM SLOPE OF 0.40 % HAS A CAPACITY OF 0.78 C.F.S.

ULTIMATE DISCHARGE = INITIAL DISCHARGE

NOTE: EXISTING JOHN R. ROAD 12" SANITARY SEWER WAS DESIGNED TO ACCOMMODATE 32 LOTS AT 2.9 UNITS/ACRE FOR PARCELS 301-021, 301-022, AND 301-051 (SUB DISTRICT "A" MANHOLE 33). PROPOSED SITE IS DESIGNED FOR 30 LOTS AT 2.3 UNITS/ACRE. THE EXISTING SANITARY SEWER HAS THE CAPACITY TO HANDLE THE PROPOSED DEVELOPMENT.



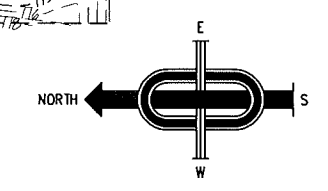
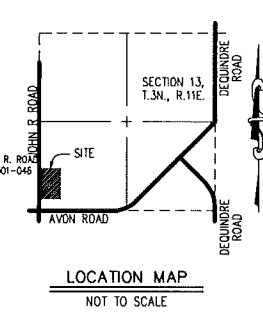
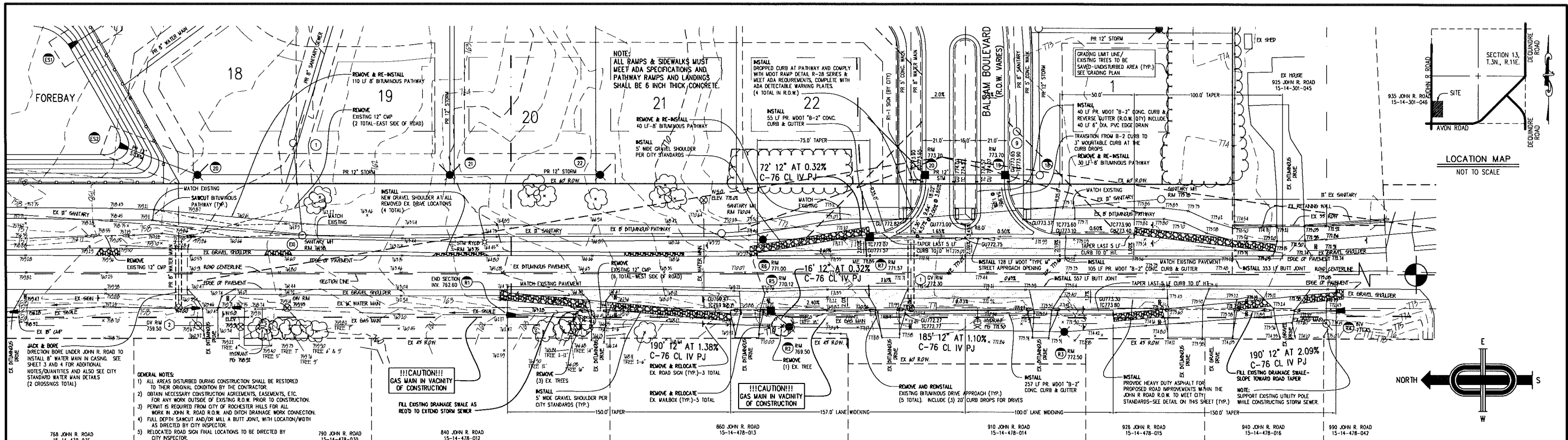
REV. 08/31/16 CITY COMMENTS/FINAL SITE PLAN  
 REV. 08/01/16 FINAL SITE PLAN  
 REV. 01/15/16 CITY COMMENTS  
 REV. 11/20/15 FORMAL SUBMITTAL TO CITY  
 REV. 10/15/15 UTILITY & GRADING LIMITS TO SAVE ADO. TREES

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 800-487-7171

City Engineering and Surveying  
 6301 26 Mile Road, Suite 110  
 Warrenton, Oregon 97146  
 Telephone (503) 877-4261  
 www.communityeng.com

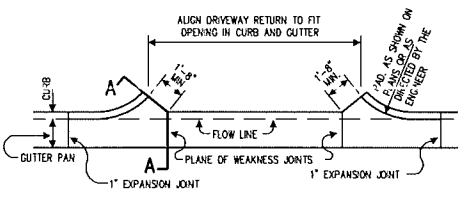
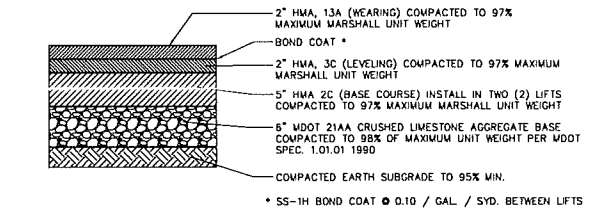
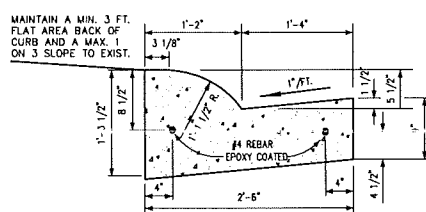
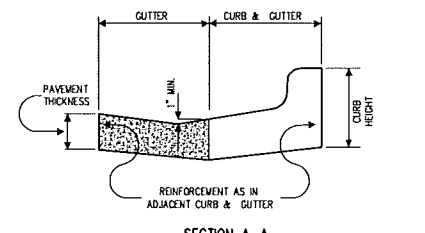
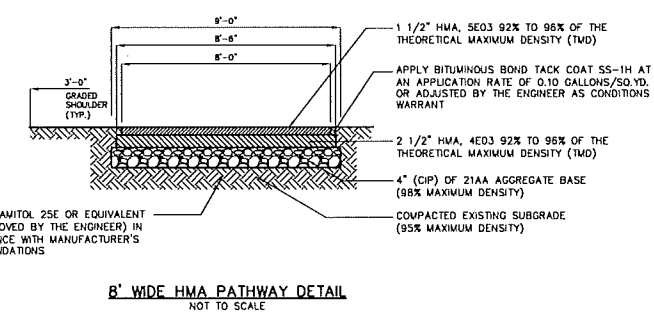
"BLOOMER WOODS"  
 PART OF THE SOUTHWEST 1/4 OF SECTION 13, T.3N., R.11E CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

DATE Sept. 14, 2015 SCALE 1" = 50'  
 DRAWN BY J.M.B. SHEET 5 OF 9  
 CHECKED BY R.S.H. DRAWING Z-15-085



**LEGEND**

SANITARY SEWER	---
STORM SEWER	---
WATER MAIN	---
EXISTING MAJOR CONTOUR	---
EXISTING MAJOR CONTOUR	---
EXISTING SPOT GRADE	---
PROPOSED SPOT GRADE	836.30
EXISTING CATCH BASIN AND MANHOLE AS NOTED	○
PROPOSED R.Y.C.B.	○
EXISTING PAVEMENT CATCH BASIN	□
PROPOSED PAVEMENT CATCH BASIN	□
EXISTING GATE VALVE	⊗
PROPOSED GATE VALVE WITH NO.	⊗
EXISTING HYDRANT	⊗
PROPOSED HYDRANT WITH NO.	⊗
SANITARY SEWER STRUCTURE NO.	⑤
STORM SEWER STRUCTURE NO.	⑤
SIGN	⊕
UTILITY POLE	⊕
DRAINAGE ARROW	→
EXISTING FENCE	---
CL ROAD OR DITCH AS NOTED	---
EXISTING TREE/BRUSH SCHEDULED TO BE SAVED	⊗
TC= TOP OF CURB	
GU= GUTTER	
THIS TEXT TYPE (HW) DENOTES EXISTING	



3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-442-7171

REV. 08/31/16 CITY COMMENTS/FINAL SITE PLAN  
REV. 08/01/16 FINAL SITE PLAN  
REV. 01/15/16 CITY COMMENTS  
REV. 11/20/15 FORMAL SUBMITTAL TO CITY  
REV. 10/15/15 UTILITY & GRADING LIMITS TO SAVE ADJ. TREES

**COMMUNITY CIVIL ENGINEERING & SURVEYING**

401 Engineering and Surveying  
6303 26 Mile Road, Suite 110  
Washington Twp., Michigan 48094  
Telephone: (586) 677-0281  
www.communityeng.com

**"BLOOMER WOODS"**  
PART OF THE SOUTHWEST 1/4 OF SECTION 13, T.3N., R.1E. CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

DATE Sept. 14, 2015 SCALE 1"=30'  
DRAWN BY J.M.B. SHEET 6 OF 9  
CHECKED BY R.S.H. DRAWING Z-15-085

CITY FILE #15-006  
NOT TO BE USED AS CONSTRUCTION DRAWINGS

R.O.W. IMPROVEMENTS

DATE: 1/22/2015  
 DRAWING: 15-13-301-057  
 PROJECT: 15-13-301-057  
 DRAWN BY: JLD

**donald c. westphal**  
 ASSOCIATES, L.L.C.  
 71 N. VERMONT, SUITE 100, ROCHESTER, MI 48067  
 (248)951-3311

**TREE PRESERVATION PLAN AND DETAILS**

**Bloomer Woods**  
 Rochester Hills, Oakland County, Michigan

**CITY TREE PROTECTION NOTES**

- IMPORTANT:** ALL TREES ON ADJACENT PROPERTIES MUST BE PROTECTED. THE TREE PROTECTIVE FENCING MAY BE PLACED ALONG THE ACTUAL PROPERTY LINE IF THE BRANCHES OF THE TREES ON THE ADJACENT PROPERTIES DO NOT OVERHANG ONTO THE SITE BEING DEVELOPED. IF THE BRANCHES OVERHANG ONTO THE AREA OF THE SITE BEING DEVELOPED, THE TREE PROTECTIVE FENCING MUST BE PLACED AT THE ACTUAL DRIP LINE OF THESE TREES. IT SHOULD ALSO BE NOTED THAT THE SILT FENCING MUST BE PLACED ON THE DEVELOPMENT SIDE OF THE TREE PROTECTIVE FENCING. THE SILT FENCING MAY NOT BE PLACED BETWEEN THE TREE BEING PRESERVED AND THE TREE PROTECTIVE FENCING. IF ANY REGULATED TREES ARE DAMAGED ON THE ADJACENT PROPERTIES, THE DAMAGED TREES WILL BE EITHER REPLACED ON THE OWNER'S PROPERTY ON AN INCH FOR INCH BASIS OR A FINE IN THE SUM OF \$122.00 PER CALIPER INCH WILL BE ISSUED AGAINST THE DEVELOPER. THIS FINE WILL BE DUE PRIOR TO BUILDING PERMITS BEING ISSUED. IF YOU HAVE ANY QUESTIONS OR NEED ADDITIONAL INFORMATION, CALL THE CITY'S PLANNING DEPARTMENT AT 248-656-4660.
- TREE PROTECTION NOTES:**
- The tree protection fencing (TPF) shall be erected per the plans approved by the City of Rochester Hills Planning Department. The TPF must be in place and be inspected by the City of Rochester Hills Planning Staff prior to the start of any earthwork or construction operations. It is the developer's responsibility to contact the City Planning Department at 248-656-4660 to schedule a TPF inspection. The TPF shall remain in place throughout the entire construction process or until the City authorizes the removal or issues a Final Certificate of Occupancy, whichever occurs first.
  - Upon completion of grading and the installation of the infrastructure, a second inspection of the TPF and the trees designated for preservation is required by the City of Rochester Hills Forest prior to the start of any additional construction. It is the developer's responsibility to contact the City Planning Department at 248-656-4660 to schedule this inspection.
  - A final inspection by the City of Rochester Hills Planning Staff is required at the end of the warranty and maintenance period. The Landscape Maintenance Bond will not be released until this inspection is complete and all related issues are resolved. It is the developer's responsibility to contact the City Planning Department at 248-656-4660 to schedule this inspection.
  - The Tree Conservation Ordinance prohibits any construction or development activities within the drip line of any regulated trees not approved for removal, including, but not limited to, land clearing, grubbing, trenching, grading or filling; no person shall place any solvents, building material, construction equipment, soil deposits or harmful materials within the drip line limit of trees designated for preservation.
  - Proposed grades are to match the existing elevations outside the limits of the TPF. No grading either cut or fill is permitted within the drip line of any tree designated for preservation.
  - During the construction process no person shall attach any device or wire/cable/rope to an existing tree designated to be preserved.
  - All utility service requests must include notification to the installer that protected trees must be avoided. All trenching shall occur outside the TPF.
  - Swales shall be routed to avoid the area within the drip line of the only tree designated for preservation. Swales shall be constructed so as to not direct any additional flow into the drip line of a tree designated for preservation.
  - If tree protection cannot be maintained for a tree throughout entire period required, the replacement of that tree will be required on an inch for inch basis prior to the issuance of any Certificate of Occupancy.
  - Regulated trees located off-site on adjacent properties that may be affected by construction operations must be protected defined herein.
  - The TPF shall consist of four-foot high orange silt fencing to be installed around the drip line of all trees designated to be saved. This fencing shall be supported by six-foot metal T-bar posts five-foot on center and driven a minimum of 24" into the ground. The TPF fencing shall remain upright and securely in place for the required time as specified above.
  - Prior the release of the Performance Bond, the City of Rochester Hills Forestry Division needs to inspect all trees existing or planted, to identify any that pose a hazard to the safe use of the public right of way. Forestry may require the developer to remove and possibly replace any such trees.

**TREE REPLACEMENT CREDITS**

**KEY:** DECIDUOUS TREES: 2" CAL. = 1 CREDIT, 3" CAL. = 2 CREDITS  
 EVERGREEN TREES: 8" HT. = 1 CREDIT, 10" HT. = 2 CREDITS

1. DECIDUOUS TREES:  
 35 DECIDUOUS TREES AT 3" CALIPER  
 REPLACEMENT TREE CREDITS: (35x2) = 70 CREDITS

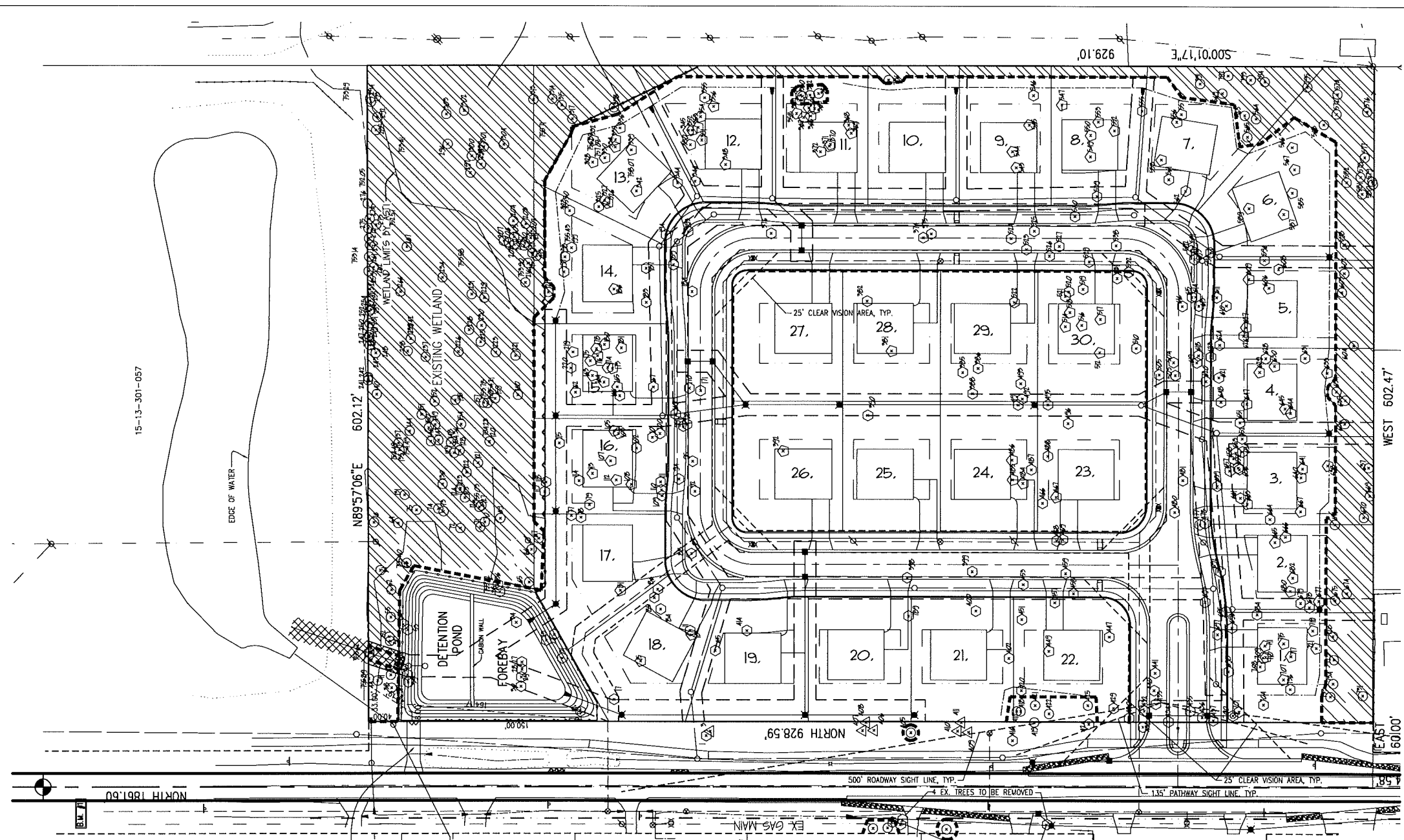
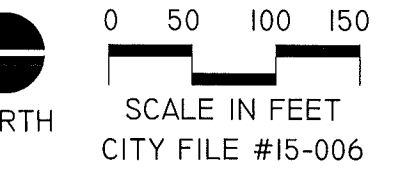
2. EVERGREEN TREES:  
 6 EVERGREEN TREES AT 8" HEIGHT  
 105 EVERGREEN TREES AT 10" HEIGHT  
 REPLACEMENT TREE CREDITS: (6x1)+(105x2) = 216 CREDITS

**TOTAL TREE REPLACEMENT CREDITS:**  
 DECIDUOUS TREES - 70      EVERGREEN TREES - 216  
**TOTAL - (70+216) = 286 REPLACEMENT TREE CREDITS**

\*NOTE: REPLACEMENT TREE CREDITS ARE ACCOUNTED FOR FROM PLANT LISTS ON SHEETS 8 AND 9.

**KEY**

- BUILDING ENVELOPE
- TREE PROTECTION BARRIER
- EXISTING TREE TO BE REMOVED FOR GRADING AND/OR UTILITIES
- EXISTING TREE TO BE REMOVED IN BUILDING ENVELOPE
- EXISTING TREE TO BE SAVED
- EXISTING DEAD/DYING TREE TO BE REMOVED IN R.O.W. REPLACEMENT OF DEAD/DYING TREES ARE NOT REQUIRED



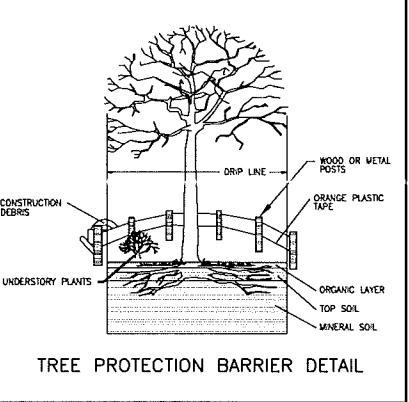
**TREE REPLACEMENT PROGRAM**

- NUMBER OF REPLACEMENT TREE CREDITS REQUIRED = 285. REPLACEMENT TREES WILL CONSIST OF 2" MINIMUM CALIPER DECIDUOUS TREES OR 8" MINIMUM HEIGHT EVERGREEN TREES.
- THE REPLACEMENT TREES SHALL CONFORM TO THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK AND 260.1-1996 AND MUST BE APPROVED BY THE CITY PRIOR TO PLANTING.
- ALL REPLACEMENT OR LANDSCAPE TREES SHALL NOT BE PLANTED WITHIN 10' OF AN UNDERGROUND UTILITY LINE, NOR WITHIN 15' OF AN OVERHEAD UTILITY LINE.
- REPLACEMENT TREES MAY NOT BE PLANTED WITHIN THE DRIP LINE OF EXISTING TREES.
- REPLACEMENT AND RELOCATED TREES MUST BE STAKED, FERTILIZED AND MULCHED, AND SHALL BE GUARANTEED BY THE TREE REMOVAL PERMIT HOLDER TO EXHIBIT A NORMAL GROWTH CYCLE FOR AT LEAST ONE (1) YEAR FOLLOWING PLANTING.
- ON-SITE REPLACEMENT TREE COST HAS BEEN ESTIMATED TO BE \$33,504.47 (SEE COST ESTIMATES SHEET 8 OF 9).

**GENERAL TREE NOTES**

- THIS TREE PRESERVATION AND REPLACEMENT PLAN INVENTORIES ALL REGULATED TREES IN PROXIMITY TO PROPOSED IMPROVEMENTS IN ACCORDANCE WITH THE CITY ORDINANCE.
- HEXAGONS REPRESENT REGULATED TREES TO BE REMOVED IN GRADING & UTILITIES AREAS. TRIANGLES REPRESENT TREES TO BE REMOVED IN BUILDING ENVELOPES. TRIANGLES REPRESENT DEAD OR DYING TREES TO BE REMOVED IN R.O.W. DEAD OR DYING TREES ARE NOT REQUIRED TO BE REPLACED. ALL CIRCLED TREES WILL BE PRESERVED.
- FOR TREE PROTECTION MEASURES, SEE "TREE PROTECTION NOTES".
- SEE THE ATTACHED "BLOOMER WOODS - TREE INVENTORY" DOCUMENT FOR TREE IDENTIFICATION LISTS.
- SEE THIS SHEET FOR TREE PROTECTION BARRIER LOCATIONS.
- BUILDING ENVELOPES SHALL CONSIST OF THE BUILDABLE AREA REMAINING ON A LOT OR BUILDING SITE AFTER SATISFYING THE SETBACK REQUIREMENTS.

R.O.W. TREES TO BE REMOVED AT 840 & 860 JOHN R WILL BE REPLACED WITH APPROVED TREES. PROPERTY OWNER AT THESE ADDRESSES WILL BE NOTIFIED OF PROPOSED TREE REMOVAL.



**TREE REPLACEMENT CALCULATIONS**

<b>ON-SITE TREES</b>	
TOTAL NUMBER OF REGULATED TREES (≥ 6" DBH)	455
TOTAL NUMBER OF REGULATED TREES IN BUILDING ENVELOPES	108
TOTAL NUMBER OF REGULATED TREES IN PROPOSED GRADING AND UTILITIES AREAS	177
TOTAL NUMBER OF REGULATED TREES TO BE REMOVED (108+177)	285
TOTAL NUMBER OF REGULATED TREES TO BE SAVED (455-285)	170
PERCENTAGE OF REGULATED TREES TO BE SAVED	37%
REQUIRED PERCENTAGE OF REGULATED TREES TO BE SAVED	37%
TREES THAT ARE REMOVED WILL BE REPLACED ON A ONE-FOR-ONE BASIS PER CITY ORDINANCE	
<b>ON-SITE REPLACEMENT TREES</b>	
TOTAL NUMBER OF REPLACEMENT TREES REQUIRED	285
TOTAL NUMBER OF REPLACEMENT TREE CREDITS PROVIDED ON-SITE	286

**ADDITIONAL TREE PROTECTION NOTES**

- BEFORE DEVELOPMENT, LAND CLEARING, FILLING OR ANY LAND ALTERATION FOR WHICH A TREE REMOVAL PERMIT IS REQUIRED, THE PERMIT HOLDER SHALL CLEARLY MARK BY PAINTING, FLAGGING, OR OTHER APPROVED METHOD ALL TREES TO BE REMOVED AND SHALL ERECT AND MAINTAIN SUITABLE BARRIERS TO PROTECT REMAINING TREES. PROTECTIVE BARRIERS SHALL REMAIN IN PLACE UNTIL THE CITY AUTHORIZES THEIR REMOVAL OR ISSUES A FINAL CERTIFICATE OF OCCUPANCY, WHICHEVER OCCURS FIRST. BARRIERS ARE REQUIRED FOR ALL TREES NOT APPROVED FOR REMOVAL, EXCEPT FOR THE FOLLOWING:  
 STREET RIGHT-OF-WAY AND UTILITY EASEMENTS MAY BE CORDONED BY PLACING STAKES A MINIMUM OF FIFTY (50) FEET APART AND TRING RIBBON, PLASTIC TAPE, ROPE, ETC., FROM STAKE TO STAKE ALONG THE OUTSIDE PERIMETERS OF AREAS TO BE CLEARED.  
 LARGE PROPERTY AREAS SEPARATE FROM THE CONSTRUCTION OR LAND CLEARING AREA ONTO WHICH NO EQUIPMENT WILL VENTURE MAY ALSO BE CORDONED OFF AS DESCRIBED IMMEDIATELY ABOVE.
- NO VEHICLE OR OTHER CONSTRUCTION EQUIPMENT SHALL BE PARKED OR STORED WITHIN PROTECTED AREAS.
- METHOD OF FIELD DELINEATION: INDIVIDUAL SPECIMEN TREES WERE LOCATED AND IDENTIFIED ACCORDING TO STANDARD SURVEYING PRACTICES.



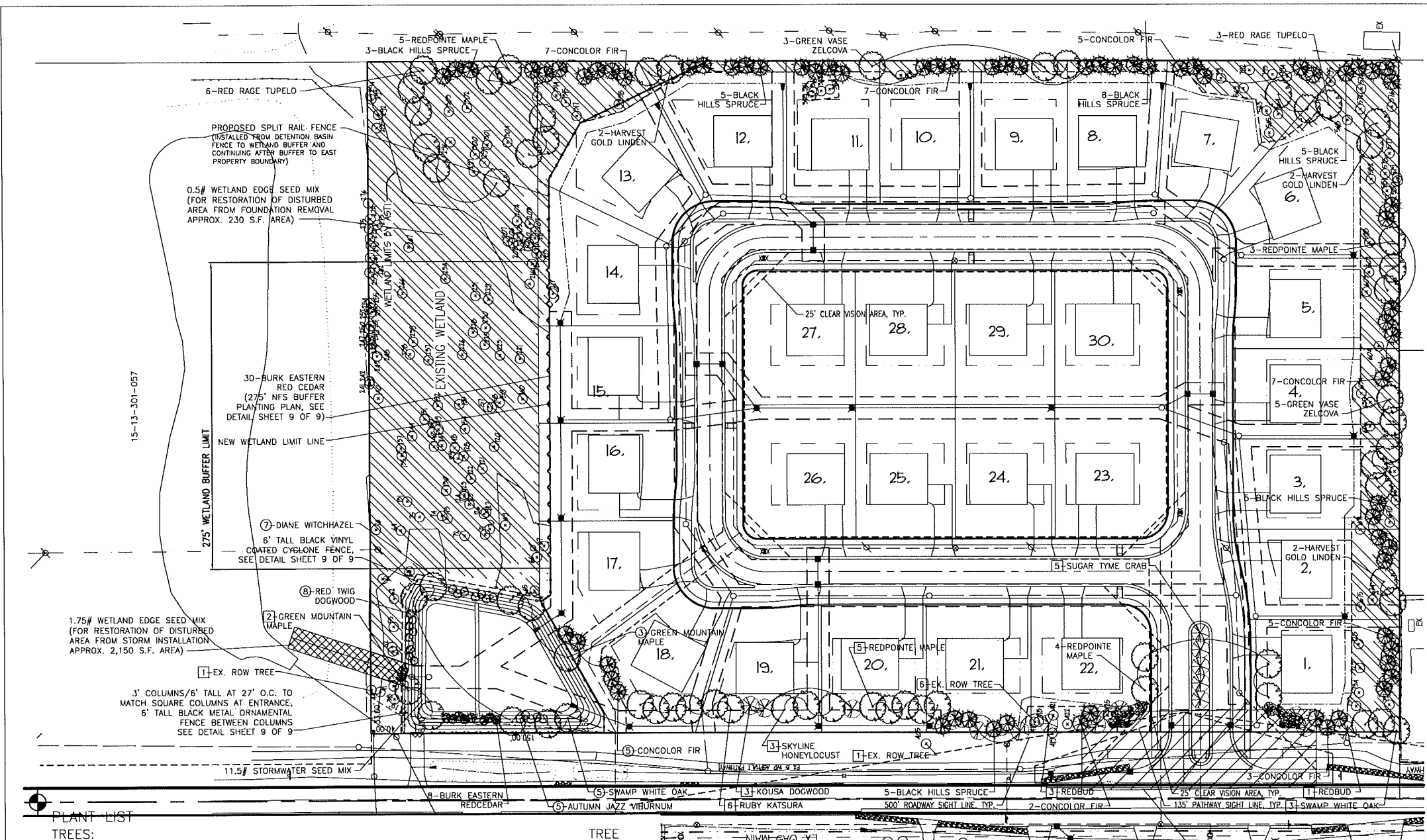


DATE: 11/20/2015  
 REVIEWED: 11/23/2015  
 PREPARED BY: DONALD C. WESTPHAL  
 PROJECT: 15-13-301-057  
 DRAWING: 15-13-301-057-08  
 SCALE: AS SHOWN  
 SHEET: 8 OF 9

**donald c. westphal**  
 LANDSCAPE ARCHITECT  
 71 N. WATKINS ST., SUITE 100  
 ROCHESTER HILLS, MI 48067  
 (248)961-3518

LANDSCAPE PLAN & DETAILS

**Bloomer Woods**  
 Rochester Hills, Oakland County, Michigan



- PLANT NOTES:**
- PLANT MATERIALS SHALL BE SOUND, HEALTHY, VIGOROUS, FREE FROM PLANT DISEASES AND INSECTS OR THEIR EGGS, AND SHALL HAVE NORMAL, HEALTHY ROOT SYSTEMS. CALIPER MEASUREMENTS SHALL BE TAKEN 6" ABOVE THE GROUND LEVEL. ALL OTHER MEASUREMENTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z-60.1-1996).
  - PLANTING POCKETS SHALL BE DIG SO THAT THE POCKET DIAMETER IS A MINIMUM OF 12" LARGER THAN THE ROOT BALL AND THE SIDES OF POCKET ARE VERTICAL AND FRACTURED. INDIGENOUS SOILS SHALL BE TAMPED AND WATERED DURING BACK FILLING PROCEDURE.
  - PLANTING POCKETS SHALL BE NO DEEPER THAN THE HEIGHT OF THE ROOT BALL. SAUCER SHALL BE MADE ON THE EDGES OF PLANTING POCKET.
  - TREES SHALL BE GUYED WITH TWO STRANDS TWISTED OF 12 GAUGE GALVANIZED WIRE. PROTECT THE TREE TRUNK WITH HOSE OR OTHER ACCEPTABLE MEANS GUY TO TWO HARDWOOD 2" x 2" x 8' POSTS, DRIVEN 2' DEEP IN UNDISTURBED SOIL.
  - MULCH SHALL BE GROUND OR SHREDDED HARDWOOD BARK, FREE FROM DELETERIOUS MATERIALS AND SUITABLE AS A TOP DRESSING OF PLANTING BEDS AND INDIVIDUAL TREE PLANTINGS.
  - TREES SHALL BE MULCHED WITH MIN. 4" DEEP HARDWOOD BARK MULCH 30" DIAMETER CIRCLE AROUND THE TREE.
  - SHRUBS SHALL BE MULCHED IN BEDS ACCORDING WITH THE DETAIL ON THIS SHEET. MULCH SHALL BE MIN. 4" DEEP HARDWOOD BARK. SEE LANDSCAPE PLAN FOR LOCATION OF PLANTING BEDS. SEE PLANTING DETAILS FOR INDIVIDUAL PLANTINGS.
  - PLANTS SHALL BE GUARANTEED FOR ONE COMPLETE GROWING SEASON (12 MONTHS). DEAD MATERIALS SHALL BE REPLACED AS NEEDED PRIOR TO THE EXPIRATION OF THE GUARANTEE PERIOD. IN ACCORDANCE WITH THE CITY OR TOWNSHIP ORDINANCE REQUIREMENTS.
  - CONTRACTOR SHALL PROVIDE IN WRITING A LIST OF RECOMMENDED MAINTENANCE PROCEDURES FOR THE FIRST GROWING SEASON.
  - EVERGREEN TREES SHOWN ON THE PLANT LIST VARY IN HEIGHT IN THE RANGE SHOWN PROVIDING FOR AN EVEN DISTRIBUTION OF TALLER AND SHORTER TREES.
  - REMOVE TOP 1/2 OF BURLAP ON ROOT BALL OR ALL IF WRAPPED IN PLASTIC COVERING AND/OR ALL NYLON CORD.
  - PLANT MATERIALS SHALL BE USED IN COMPLIANCE WITH THE PROVISIONS OF THE CITY OR TOWNSHIP ORDINANCE AND SHALL BE NURSERY GROWN, FREE OF PESTS AND DISEASES, HARDY IN THE COUNTY, IN CONFORMANCE WITH THE STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN, AND SHALL HAVE PASSED INSPECTIONS REQUIRED UNDER STATE REGULATIONS. IN ADDITION, PLANT MATERIALS SHALL CONFORM TO THE STANDARDS OF THE COUNTY COOPERATIVE EXTENSION SERVICE, A COPY OF WHICH SHALL BE KEPT ON FILE WITH THE OFFICIAL.
  - SOD SHALL BE CERTIFIED TURF GRASS SOD COMPLYING WITH A.S.P.A. SPECIFICATIONS FOR MACHINE-CUT THICKNESS, SIZE, STRENGTH, MOISTURE CONTENT, AND MOWED HEIGHT, AND FREE OF WEEDS AND UNDESIRABLE NATIVE GRASSES. PROVIDE Viable SOD OF UNIFORM DENSITY, COLOR, AND TEXTURE. SOD SHALL BE STRONGLY ROOTED AND CAPABLE OF VIGOROUS GROWTH AND DEVELOPMENT WHEN PLANTED. CUT SOD SHALL NOT BE PERMITTED TO DRY OUT AND SHALL BE LAD WITHIN 24 HOURS OF WHEN CUT. FERTILIZE AND WATER THE SOD AS REQUIRED DURING THE FIRST GROWING SEASON TO MAINTAIN A DENSE AND VIGOROUS GROWING SOD.
  - PLANTING BED SOIL FOR ANNUALS SHALL BE SCREENED TOPSOIL. TO DETER NEED GROWTH DURING THE ESTABLISHMENT OF ANNUAL BED, APPLY A PRE-EMERGENT ("PREEN" OR EQUAL) AFTER PLANTING ANNUALS, 2-3 TIMES PER GROWING SEASON, AT A RATE AS PER RECOMMENDATION OF PRODUCT MANUFACTURER.
  - TREES OF 2" CALIPER AND GREATER SHALL BE WRAPPED WITH 8" WIDE KRAFT CREPE. WRAP THE TRUNK TO THE FIRST LIMBS. OVERLAP HALF OF EACH STRIP WRAP TO FORM A DOUBLE WRAPPING. SECURE WRAPPING WITH TWINE. DO NOT WRAP SPECIES SUBJECT TO BORERS.

**LANDSCAPE CONTRACTOR'S "ONE-YEAR IRRIGATION REQUIREMENT PERIOD"**

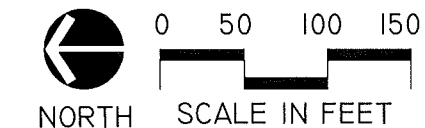
IT SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR TO PROGRAM AND PERIODICALLY ADJUST THE IRRIGATION SYSTEM (PROVIDED BY OTHERS) AS REQUIRED TO INSURE DELIVERY OF PROPER AND ADEQUATE WATER SUPPLY TO ALL PLANT MATERIALS, SOD AND SEEDED LAWN AREAS (SERVICED BY THE IRRIGATION SYSTEM) TO INSURE THE ESTABLISHMENT OF HEALTHY PLANT MATERIALS AND LAWNS FOR THEIR FIRST YEAR OF GROWTH. FOLLOWING THE LANDSCAPE CONTRACTOR'S "ONE-YEAR IRRIGATION REQUIREMENT PERIOD", THE LANDSCAPE CONTRACTOR SHALL PROVIDE THE OWNER WITH A SUGGESTED "IRRIGATION MAINTENANCE SCHEDULE" FOR HIS USE.

**GENERAL NOTES**

- PROPOSED TREES WITHIN TREE PROTECTION AREAS SHALL BE FIELD ADJUSTED TO ACCOUNT FOR EXISTING TREES
- BEST MANAGEMENT PRACTICES WILL BE STRICTLY FOLLOWED DURING CONSTRUCTION TO MINIMIZE THE IMPACTS ON THE NATURAL FEATURES SETBACKS



Know what's below.  
 Call before you dig.



**PLANT LIST**

NO.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	TREE CREDITS
31	BLACK HILLS SPRUCE	PICEA GLAUCA VAR DENSATA	10' HT. B.&B.	13' O.C.	2 PER TREE
38	BURK EASTERN RED CEDAR	JUNIPERUS VIRGINIANA 'BURKII'	10' HT. B.&B.	6' O.C.	2 PER TREE
36	CONCOLOR FIR	ABIES CONCOLOR	10' HT. B.&B.	13' O.C.	2 PER TREE
8	GREEN VASE ZELCOVA	ZELCOVA SERRATA 'GREEN VASE'	3" CAL. B.&B.	20' O.C. MIN.	2 PER TREE
6	HARVEST GOLD LINDEN	TILIA CORDATA X MONGOLICA 'HARVEST GOLD'	3" CAL. B.&B.	20' O.C. MIN.	2 PER TREE
12	REDPOINTE MAPLE	ACER RUBRUM 'FRANK JR.'	3" CAL. B.&B.	20' O.C. MIN.	2 PER TREE
9	RED RAGE TUPELO	NYSSA SYLVATICA 'HAYMANRED'	3" CAL. B.&B.	20' O.C. MIN.	2 PER TREE

NO.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING
2	GREEN MOUNTAIN MAPLE	ACER SACCHARUM 'GREEN MOUNTAIN'	3" CAL. B.&B.	25' O.C.
3	KOUSA DOGWOOD	CORNUS KOUSA	3" CAL. B.&B.	13' O.C.
4	REDBUD	CERCIS CANADENSIS	3" CAL. B.&B.	13' O.C. MIN.
5	REDPOINTE MAPLE	ACER RUBRUM 'FRANK JR.'	3" CAL. B.&B.	15' O.C. MIN.
6	RUBY KATSURA	CERCIDIPHYLLUM JAPONICUM 'RUBY'	3" CAL. B.&B.	15' O.C. MIN.
3	SWAMP WHITE OAK	QUERCUS BICOLOR	3" CAL. B.&B.	15' O.C. MIN.
5	SUGAR TYME CRAB	MALUS 'SUTYZAM'	3" CAL. B.&B.	15' O.C. MIN.

NO.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING
5	CONCOLOR FIR	ABIES CONCOLOR	10' HT. B.&B.	13' O.C.
3	GREEN MOUNTAIN MAPLE	ACER SACCHARUM 'GREEN MOUNTAIN'	3" CAL. B.&B.	20' O.C. MIN.
3	SWAMP WHITE OAK	QUERCUS BICOLOR	3" CAL. B.&B.	20' O.C. MIN.

NO.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING
5	AUTUMN JAZZ VIBURNUM	VIBURNUM DENTATUM 'RALPH SENIOR'	30" HT. B.&B.	6' O.C.
7	DIANE WITCHHAZEL	HAMAMELIS X INTERMEDIA 'DIANE'	30" HT. B.&B.	6' O.C.
8	RED TWIG DOGWOOD	CORNUS SERICEA F. 'BAILEY'	30" HT. B.&B.	6' O.C.

**PERENNIALS AND GRASSES:**

- 11.5# STORMWATER SEED MIX BY CARDNO JFNEW
- 2.25# WETLAND EDGE SEED MIX BY CARDNO JFNEW

\*SUBSTITUTIONS TO BE APPROVED BY LANDSCAPE ARCHITECT.

**COST ESTIMATES**

REPLACEMENT TREE ESTIMATE:	\$33,504.47
REQUIRED LANDSCAPING ESTIMATE:	\$17,652.45
ENTRANCE LANDSCAPE ESTIMATE:	\$ 947.50
IRRIGATION ESTIMATE:	\$ 8,500.00
<b>TOTAL LANDSCAPING ESTIMATE:</b>	<b>\$60,604.42</b>

**LANDSCAPE REQUIREMENTS**

STORMWATER MANAGEMENT POND BUFFER: 1.5 DECIDUOUS TREES + 1 EVERGREEN TREE + 4 SHRUBS PER 100 LINEAL FEET

LINEAL FEET OF STORMWATER POND PERIMETER: 491 LF  
 NUMBER OF DECIDUOUS TREES REQUIRED (491/100)x1.5: 8  
 NUMBER OF EVERGREEN TREES REQUIRED (491/100)x1: 5  
 NUMBER OF SHRUBS REQUIRED (491/100)x4: 20  
 NUMBER OF DECIDUOUS TREES PROVIDED: 8  
 NUMBER OF EVERGREEN TREES PROVIDED: 5  
 NUMBER OF SHRUBS PROVIDED: 20

RIGHT OF WAY: 1 DECIDUOUS TREE PER 35 LINEAL FEET + 1 ORNAMENTAL TREE PER 60 LINEAL FEET

LINEAL FEET OF RIGHT OF WAY (JOHN R): 928 LF  
 NUMBER OF DECIDUOUS TREES REQUIRED (928/35)x1: 27  
 NUMBER OF ORNAMENTAL TREES REQUIRED (928/60)x1: 16  
 NUMBER OF DECIDUOUS TREES PROVIDED: 27  
 NUMBER OF SHRUBS PROVIDED: 16  
 NUMBER OF ORNAMENTAL TREES PROVIDED: 16

\*\*NOTE-ALL CALCULATIONS INCLUDE PLANT MATERIALS ON SHEETS 8 & 9.

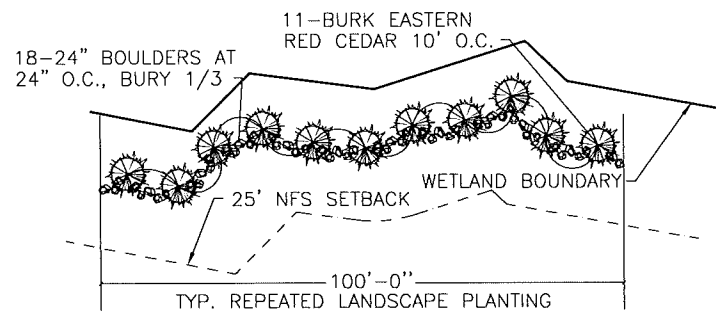
ENTRANCE LANDSCAPE PLAN  
 SEE DETAIL SHEET 9

- LANDSCAPE NOTES**
- NO TREE OR SHRUB MAY BE PLANTED WITHIN THE TRIANGULAR AREA FORMED AT THE INTERSECTION OF ANY STREET RIGHT-OF-WAY AT A DISTANCE OF 25' FROM THEIR POINT OF INTERSECTION. NO TREE OR SHRUB MAY BE PLANTED IN THE TRIANGULAR AREA FORMED AT THE INTERSECTION OF ANY DRIVEWAY WITH A PUBLIC SIDEWALK AT A DISTANCE ALONG EACH LINE OF 15' FROM THEIR POINT OF INTERSECTION. ROAD AND PATHWAY SIGHT LINES MUST BE UNOBSTRUCTED BY LANDSCAPING OR OTHER OBJECTS.
  - PLANT MATERIALS MAY NOT BE PLACED CLOSER THAN 4 FEET FROM THE PROPERTY LINE, OR WITHIN 10 FEET OF A FIRE HYDRANT. DECIDUOUS TREES AND ALL SHRUBS MAY NOT BE PLANTED WITHIN 5 FEET, AND EVERGREEN TREES MAY NOT BE PLANTED WITHIN 10 FEET OF ANY CURB OR PUBLIC WALKWAY. TREES SHALL NOT BE PLANTED WITHIN 10' OF AN UNDERGROUND UTILITY LINE, NOR WITHIN 15' OF AN OVERHEAD UTILITY LINE.
  - THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES.
  - A MINIMUM 4 INCHES OF TOPSOIL SHALL BE PROVIDED FOR ALL LAWN AREAS, GROUND COVERS, AND PLANTING BEDS.
  - LAWN TREES AND PLANTING BEDS SHALL BE MULCHED WITH A MINIMUM OF 4 INCHES OF SHREDDED HARDWOOD BARK. GROUNDCOVERS SHALL BE MULCHED WITH 2 INCHES OF SHREDDED HARDWOOD BARK.
  - ALL LANDSCAPED AREAS, INCLUDING LAWNS, SHALL BE IRRIGATED BY AUTOMATIC UNDERGROUND OR DRIP IRRIGATION SYSTEM DESIGNED TO MINIMIZE WATER USAGE. SPRINKLERS SHALL NOT BROADCAST SPRAY ON OR OVER PATHWAY.
  - ALL LANDSCAPING SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS STANDARDS.
  - NO SUBSTITUTIONS OR CHANGES OF LOCATION OR PLANT TYPES SHALL BE MADE WITHOUT THE APPROVAL OF THE DEVELOPER AND THE CITY OF ROCHESTER HILLS LANDSCAPE ARCHITECT.

**LEGEND**

- ⊙362 EXISTING TREE TO BE SAVED
- TREE PROTECTION / GRADING LIMIT LINE
- PROPOSED DECIDUOUS TREE
- ⊗ PROPOSED EVERGREEN TREE
- ⊗ PROPOSED ORNAMENTAL TREE
- ⊙ PROPOSED SHRUB
- ⊙ RED TWIG DOGWOOD
- ⊙3 REQUIRED DETENTION POND BUFFER TREES OR SHRUBS
- ⊙3 REDBUD
- NUMBERS WITH SQUARES INDICATE REQUIRED RIGHT OF WAY TREES

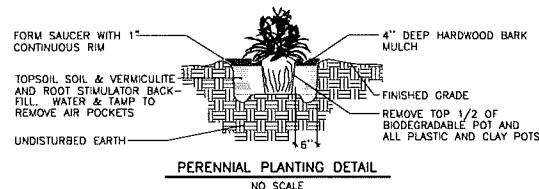
CITY FILE #15-006



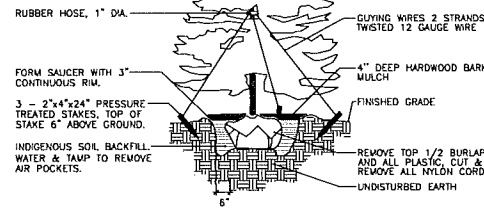
\*NOTES: FIELD ADJUST LOCATIONS TO AVOID UTILITY EASEMENTS & PRESERVED TREES

**NFS BUFFER PLANTING PLAN**

NOT TO SCALE

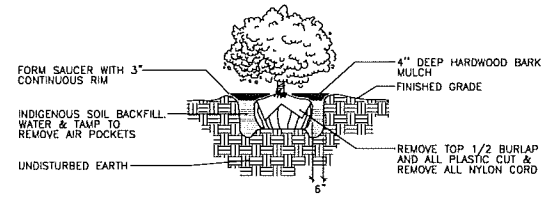


NOTE:  
 - PLANT SO THAT TOP OF ROOT BALL IS EVEN WITH THE FINISHED GRADE.  
 - FLAG GUYING WIRES WITH SURVIVOR TAPE, ONE PER GUYING WIRE.



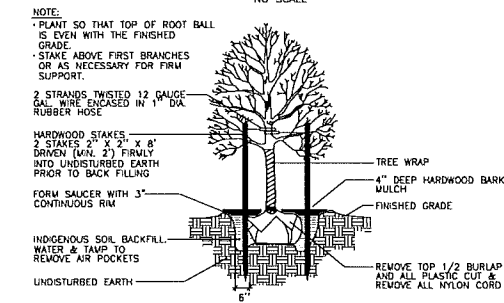
**EVERGREEN TREE PLANTING DETAIL**

NO SCALE



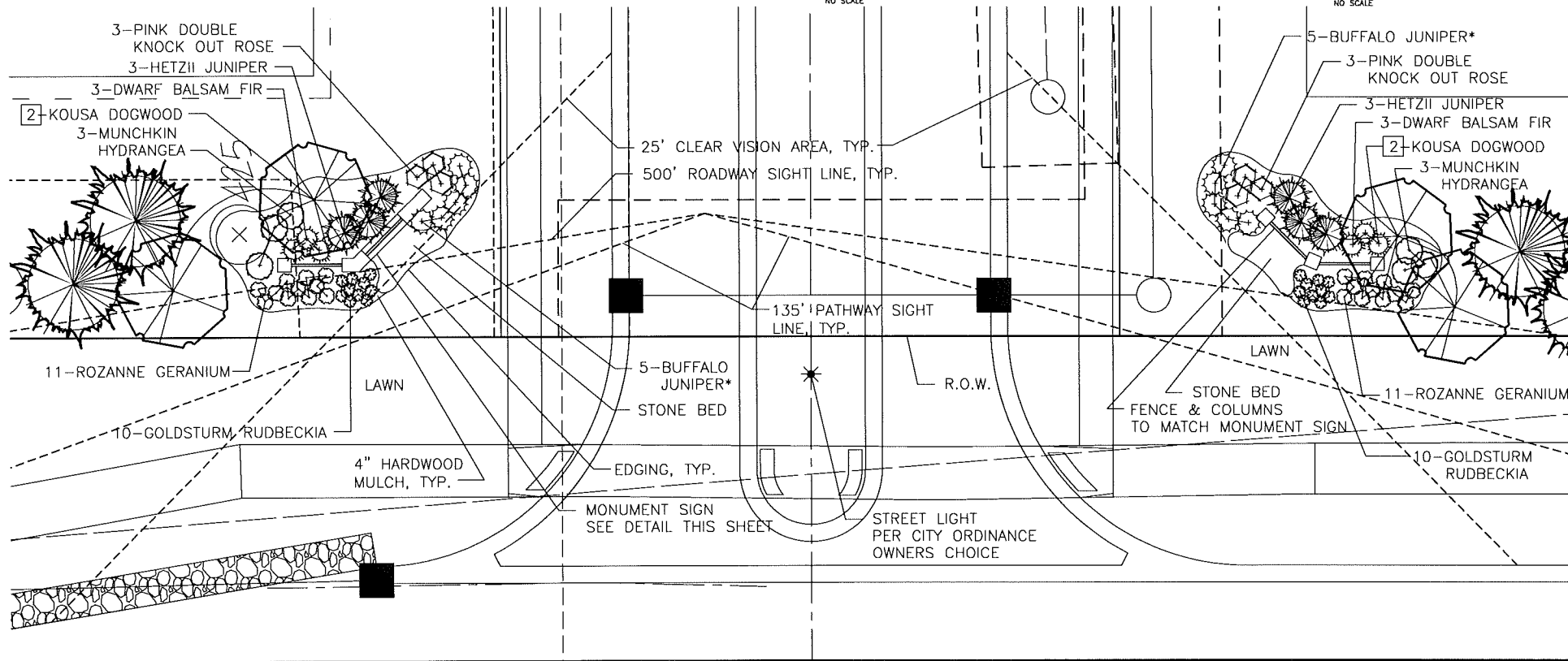
**SHRUB PLANTING DETAIL**

NO SCALE



**DECIDUOUS TREE PLANTING DETAIL**

NO SCALE



**ENTRANCE LANDSCAPE PLAN**

SCALE: 1" = 10'

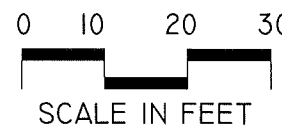
**PLANT LIST**

TREES:		NO.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	TREE CREDITS
6	HETZII JUNIPER			JUNIPERUS CHINENSIS 'HETZII'	8' HT. B.&B.	4' O.C.	1 PER TREE
SHRUBS:		NO.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	
10	BUFFALO JUNIPER			JUNIPERUS SABINA 'BUFFALO'	24" SPD. B.&B.	3' O.C.	
6	DWARF BALSAM FIR			ABIES BALSAMEA 'NANA'	24" SPD. B.&B.	2.5' O.C.	
0	MUNCHKIN HYDRANGEA			HYDRANGEA QUERCIFOLIA 'MUNCHKIN'	30" HT. D.&B.	3' O.C.	
6	PINK DOUBLE KNOCK OUT ROSE			ROSA 'RADTKOPINK' PP#18,507	24" SPD. B.&B.	3' O.C.	
PERENNIALS:		NO.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	
20	GOLDSTURM RUDBECKIA			RUDBECKIA FULDIGA 'GOLDSTURM'	1 GAL. CONT.	1.5' O.C.	
22	ROZANNE GERANIUM			GERANIUM MACULATUM 'ROZANNE'	1 GAL. CONT.	2' O.C.	
RIGHT OF WAY TREES:		NO.	COMMON NAME	BOTANICAL NAME	SIZE	SPACING	
4	KOUSA DOGWOOD			CORNUS KOUSA	3" CAL. B.&B.	12' O.C.	

\*SUBSTITUTIONS TO BE APPROVED BY LANDSCAPE ARCHITECT.

**LANDSCAPE NOTES**

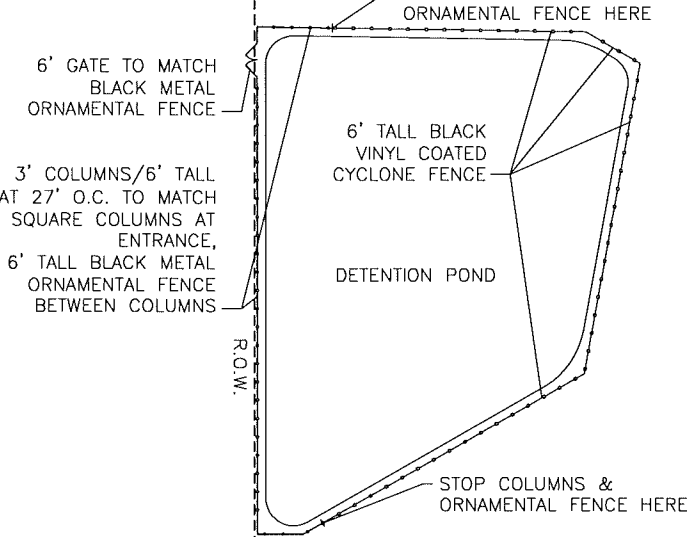
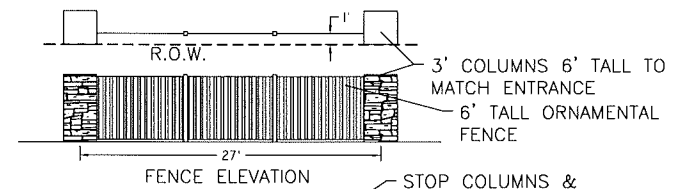
- PRIOR APPROVAL IS REQUIRED TO PLANT ANY TREE OR SHRUB ON THE PUBLIC RIGHT-OF-WAY. ALL TREES AND SHRUBS MUST BE PLANTED AT LEAST 10' FROM THE EDGE OF THE PUBLIC ROAD. SHADE TREES AND SHRUBS MUST BE PLANTED AT LEAST 5' FROM THE EDGE OF THE PUBLIC WALKWAY. EVERGREEN AND ORNAMENTAL TREES MUST BE PLANTED AT LEAST 10' FROM THE EDGE OF THE PUBLIC WALKWAY. NO TREES OR SHRUBS MAY BE PLANTED WITHIN THE TRIANGULAR AREA FORMED AT THE INTERSECTION OF ANY STREET RIGHT-OF-WAY LINES AT A DISTANCE ALONG EACH LINE OF 25' FROM THEIR POINT OF INTERSECTION. NO TREES OR SHRUBS MAY BE PLANTED IN THE TRIANGULAR AREA FORMED AT THE INTERSECTION OF ANY DRIVEWAY WITH A PUBLIC WALKWAY AT A DISTANCE ALONG EACH LINE OF 15' FROM THEIR POINT OF INTERSECTION. ALL TREES AND SHRUBS MUST BE PLANTED AT LEAST 10' FROM ANY FIRE HYDRANT. SHADE AND EVERGREEN TREES MUST BE PLANTED AT LEAST 15' AWAY FROM THE NEAREST OVERHEAD WIRE. TREES MUST BE PLANTED A MINIMUM OF 5' FROM AN UNDERGROUND UTILITY, UNLESS THE CITY'S LANDSCAPE ARCHITECT REQUIRES A GREATER DISTANCE.
- PRIOR TO THE RELEASE OF THE PERFORMANCE BOND, THE CITY OF ROCHESTER HILLS FORESTRY DIVISION NEEDS TO INSPECT ALL TREES, EXISTING OR PLANTED, TO IDENTIFY ANY THAT POSE A HAZARD TO THE SAFE USE OF THE PUBLIC RIGHT-OF-WAY. FORESTRY MAY REQUIRE THE DEVELOPER TO REMOVE, AND POSSIBLY REPLACE, ANY SUCH TREES.
- THESE REQUIREMENTS ARE INCORPORATED INTO THE PLAN.
- BEST MANAGEMENT PRACTICES WILL BE STRICTLY FOLLOWED DURING CONSTRUCTION TO MINIMIZE IMPACTS ON NATURAL FEATURES SETBACKS.



**LEGEND**

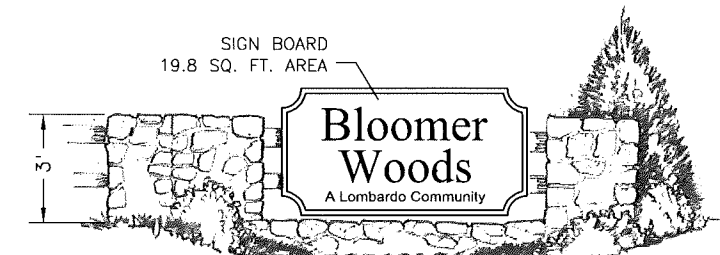
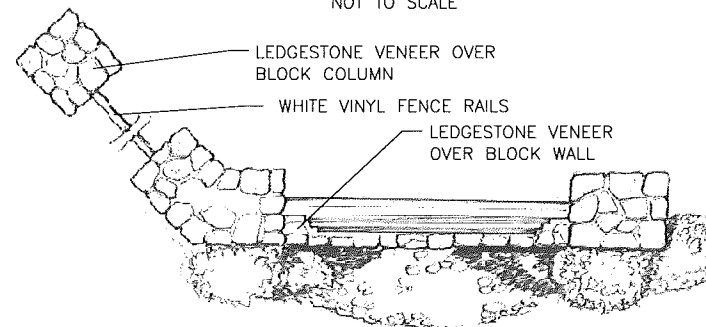
- ⊙362 EXISTING TREE TO BE SAVED
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- ⊙ PROPOSED ORNAMENTAL TREE
- PROPOSED SHRUB
- NUMBERS WITH SQUARES INDICATE REQUIRED RIGHT OF WAY TREES

CITY FILE #15-006



**DETENTION POND FENCE DETAIL**

NOT TO SCALE



**ENTRANCE SIGN CONCEPT SKETCH**

NOT TO SCALE

DATE: 11/23/2015  
 DRAWN BY: J.L.S.  
 CHECKED BY: J.L.S.  
 PROJECT: 15-006  
 SHEET: 9 OF 9

**donald c. westphal**  
 LICENSED PROFESSIONAL LANDSCAPE ARCHITECT  
 71 N. WINDSOR, SUITE 100, ROCHESTER HILLS, MI 48067  
 (248) 851-1318

**LANDSCAPE DETAILS**

**Bloomer Woods**  
 Rochester Hills, Oakland County, Michigan

650 Stephenson Highway  
Troy, Michigan 48063  
Phone: 248.588.2100  
Fax: 248.588.3528  
www.SiteOne.com  
800.347.4272

Project Name:  
**BLOOMER WOODS**  
ROCHESTER HILLS, MI, 48308

Customer Name:

Design Date: 01/07/16

Drawn By:  
*Troy Robinson Inc*  
*D.S. Gibson Ret*  
*AWB, Inc*  
*48308*  
*348-391-0030*

**REVISIONS**

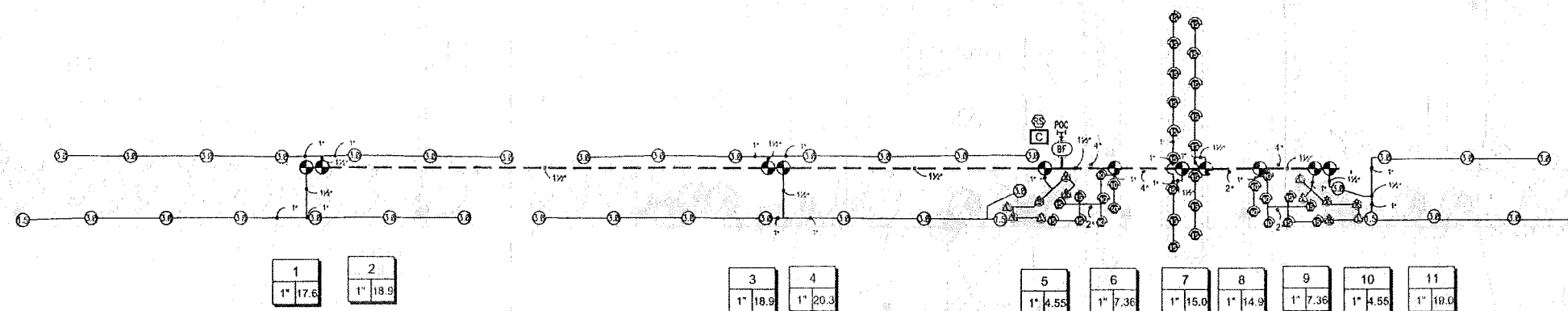
Description	Date

Drawing Title:  
**IRRIGATION DESIGN**

Drawing Scale: 1" = 30'

Project Services Number: 91717

Sheet Number:  
**IR-1**



1	1" 17.6
2	1" 18.9

3	1" 18.9
4	1" 20.3

5	1" 4.55	6	1" 7.36	7	1" 15.0	8	1" 14.9	9	1" 7.36	10	1" 4.55	11	1" 10.0
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**IRRIGATION SCHEDULE**

SYMBOL	MANUFACTURER/MODEL	QTY
	Watts 4"	10
	Watts 4"	25
	Watts 4"	12

SYMBOL	MANUFACTURER/MODEL	QTY
	Rain Bird 5004	4
	Rain Bird 5004	33

SYMBOL	MANUFACTURER/MODEL	QTY
	Rain Bird 5004	11

SYMBOL	MANUFACTURER/MODEL	QTY
	Febco 785 1"	1

SYMBOL	MANUFACTURER/MODEL	QTY
	Controller	1

SYMBOL	MANUFACTURER/MODEL	QTY
	POC	1

————— Irrigation Lateral Line: Polyethylene Pipe 1"

————— Irrigation Lateral Line: Polyethylene Pipe

----- Irrigation Mainline:

----- Pipe Sleeve: PVC Class 160 SDR 26 2"

----- Pipe Sleeve: PVC Class 160 SDR 26 4"

----- Valve Cabinet



**IRRIGATION SPECIFICATIONS**

- IRRIGATION SYSTEM DESIGN BASED ON 22 GPM AT 55 PSI.
- IRRIGATION DESIGN IS FROM THE POINT OF CONNECTION(POC) ONLY. THE DESIGN IS BASED ON GALLONS PER MINUTE(GPM) AND POUNDS PER SQUARE INCH(PPI) FURNISHED BY OTHERS.
- IRRIGATION CONTRACTOR IS TO VERIFY POINT OF CONNECTION IN THE FIELD. INSTALLER IS TO CONFIRM THE MINIMUM DISCHARGE REQUIREMENTS OF THE POINT OF CONNECTION AS INDICATED ON THE LEGEND PRIOR TO INSTALLATION.
- THE PRESSURE REQUIREMENT AT THE POINT OF CONNECTION IS BASED ON NO MORE THAN 5 FEET OF ELEVATION CHANGE IN THE AREAS OF IRRIGATION.
- ALL PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND ACCORDING TO LOCAL BUILDING, ELECTRICAL, AND PLUMBING CODES.
- IRRIGATION CONTRACTOR WILL ARRANGE INSPECTIONS REQUIRED BY LOCAL AGENCIES AND ORDINANCES DURING THE COURSE OF CONSTRUCTION AS REQUIRED. ALL WIRING TO BE PER LOCAL CODE. BACKFLOW PREVENTION TO BE PER LOCAL CODE.
- LOCATION OF IRRIGATION COMPONENTS SHOWN ON DRAWING IS APPROXIMATE. ACTUAL PLACEMENT MAY VARY SLIGHTLY AS REQUIRED TO ACHIEVE FULL, EVEN COVERAGE.
- ALL SPRINKLER HEADS SHALL BE INSTALLED PERPENDICULAR TO FINISH GRADES. EXCEPT AS OTHERWISE INDICATED.

*9. Watering will only occur between the hours of dawn and dusk*

