

PRELIMINARY SITE PLAN REGAL ESTATES

PART OF THE S.W. 1/4 OF SECTION 25, T3N, R11E,
CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

FLOOD PLAIN NOTE
EXAMINATION OF THE FLOOD HAZARD BOUNDARY MAP (MAP NUMBER 2612503413F, EFFECTIVE SEPTEMBER 23, 2006) PREPARED IN ACCORDANCE WITH THE NATIONAL FLOOD INSURANCE PROGRAM OF 1968, INDICATES THE SUBJECT PROPERTY IS LOCATED OUTSIDE THE AREAS OF THE 100-YEAR FLOOD ZONE.

GENERAL NOTES
1) NO STREET LIGHTING PROPOSED.
2) UNIT AREAS SHOWN ARE ROUNDED TO ±1.0 SFT AND MAY CHANGE UPON FINAL APPROVAL.
3) MINIMUM UNIT WIDTH DIMENSION IS MEASURED AT THE FRONT SETBACK LINE.
4) MINIMUM LOT DEPTHS ARE MEASURED AT THE CENTERLINE OF THE UNIT.
5) SMALL SIGNS TO BE INSTALLED TO DEMARCATATE WETLAND BOUNDARY LINES ON UNIT 5 TO PREVENT YARD FROM ENCRoACHING INTO WETLAND AREA.
6) ANY APPROVED AREAS OF TEMPORARY NATURAL FEATURES SETBACK IMPACTS MUST BE RESTORED WITH ORIGINAL SOILS OR EQUIVALENT SOILS AND SEEDED WITH A CITY APPROVED SEED MIX, WHERE POSSIBLE.
7) SNOW FENCE SHALL BE PLACED ALONG THE NATURAL FEATURES SETBACKS TO INSURE NO ENCRoACHMENTS INTO THESE AREAS OTHER THAN THOSE WHICH ARE APPROVED HEREIN.

FIRE DEPARTMENT NOTES
1) CONSTRUCTION SITES SHALL BE SAFE GUARDED 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, SECTION 307.5.2 & 307.5.3

NOTE
THIS SITE WILL CONSIST OF APPROXIMATELY 2,500 SQ. FT. SINGLE FAMILY HOMES CONSTRUCTED OF MASONRY BRICK AND WOOD.

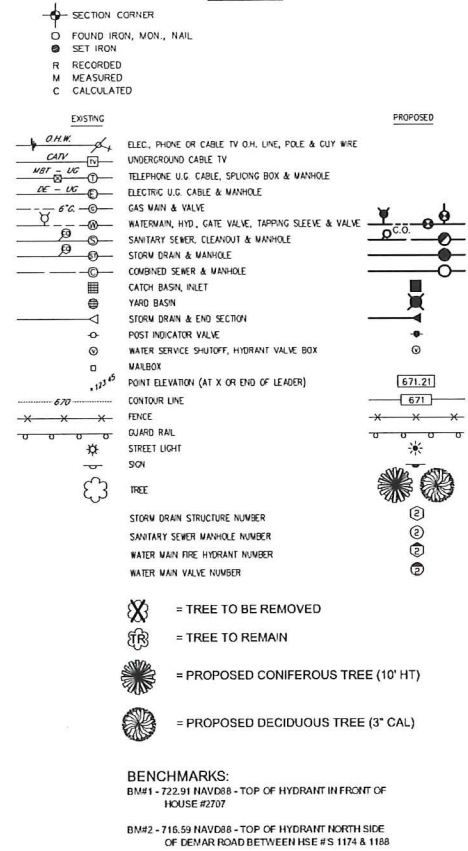
ZONED R-4

PRIOR TO DURING CONSTRUCTION OF EMERGENCY OVERFLOW, DEVELOPER SHALL:

- 1.) PROVIDE WRITTEN NOTICE TO THE CITY ENGINEER AND OBTAIN WRITTEN CONSENT FROM THE CITY MAYOR.
- 2.) CONDUCT WORK USING BEST MANAGEMENT PRACTICES TO ENSURE FLOW AND CIRCULATION PATTERNS AND THAT CHEMICAL AND BIOLOGICAL CHARACTERISTICS OF WETLANDS ARE NOT IMPACTED.
- 3.) MINIMIZE ALL IMPACTS TO THE AQUATIC ENVIRONMENT.



LEGEND



SHEET INDEX

- 1.) GENERAL PLAN
- 2.) TOPOGRAPHIC SURVEY & TREE PRESERVATION PLAN
- 3.) TREE PRESERVATION NOTES & DETAILS
- 4.) PRELIMINARY ENGINEERING PLAN

SITE DATA
RESIDENTIAL SINGLE FAMILY
EXISTING ZONING R-4
ALL ADJACENT ZONING R-4
SITE AREA 351 ACRES
COMMON AREA 0.44 ACRES
SETBACKS
FRONT: 25'
REAR: 35'
SIDEYARD: MINIMUM 10'
SIDEYARD: TOTAL 60'± 20'
REGULATED WETLAND BUFFER: 25'
MINIMUM AREA OF UNIT: 900 SQ. FT.
MINIMUM SIZE OF UNIT: (WIDTH) x 120' (DEPTH)
MAXIMUM DENSITY ALLOWED: 3.4 UNITS/ACRE
MAXIMUM UNITS: 3.51 x 34 = 12 UNITS
PROPOSED 9 UNITS
NET DENSITY: 9/351 = 2.55 UNITS/ACRE
MINIMUM FLOOR AREA: 912 SQ. FT.
MAXIMUM STORIES: 2
MAXIMUM HEIGHT: 25'
MAXIMUM LOT AREA COVERAGE: 30%

PROPERTY DESCRIPTION
PART OF THE SOUTHWEST 1/4 OF SECTION 25, T3N, R11E, EAST BEGINNING AT A POINT DISTANCE EAST (RECORDED AS NORTH 88 DEGREES 01 MINUTES 00 SECONDS EAST) 660 FEET AND NORTH 00 DEGREES 30 MINUTES 00 SECONDS EAST (RECORDED AS NORTH 89 DEGREES 20 MINUTES 00 SECONDS WEST) 160 FEET FROM THE SOUTHWEST CORNER, THENCE NORTH 00 DEGREES 30 MINUTES 00 SECONDS EAST (RECORDED AS NORTH 01 DEGREES 20 MINUTES 00 SECONDS WEST) 30 FEET, THENCE EAST 660 FEET (RECORDED AS NORTH 88 DEGREES 01 MINUTES 00 SECONDS EAST 660 FEET), THENCE SOUTH 00 DEGREES 30 MINUTES 00 SECONDS WEST (RECORDED AS SOUTH 01 DEGREES 24 MINUTES 00 SECONDS EAST) 300 FEET, THENCE WEST 443.39 FEET (RECORDED AS SOUTH 88 DEGREES 01 MINUTES 00 SECONDS WEST) 443.39 FEET, THENCE NORTH 00 DEGREES 30 MINUTES 00 SECONDS WEST (RECORDED AS NORTH 01 DEGREES 20 MINUTES 00 SECONDS WEST) 225 FEET TO THE POINT OF BEGINNING.



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1-800-482-7171
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NOT TO BE USED AS CONSTRUCTION DRAWINGS

Fenn & Associates, Inc.
Land Surveying and Civil Engineering
14933 Greenleaf Drive, Shelby Township, MI 48154
Phone: 586-254-2576 Fax: 586-254-2577
www.fennandassociates.com

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REGAL ESTATES
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CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

DISTRIBUTION	
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○	AS-BUILT

REVISIONS	
DATE	REMARKS
06/18/2013	PER CITY
08/08/2013	PER CITY

SEAL

CLIENT
RATHKA BUILDING
11684 MAJESTIC COURT
SHELBY TOWNSHIP, MI
PHONE: 586-254-2576

PROJECT NAME
REGAL ESTATES

PROJECT NUMBER
C13-009

SHEET NAME
GENERAL PLAN

DRAWING SCALE: 1" = 30'
DATE: 03/09/2013
PROJECT MANAGER: J.D.K.
DESIGNED BY: J.D.K.
DRAWN BY: J.D.K.
FIELD BY: T.D., K.M.
CHECKED BY: J.S.R., P.E.

SHEET NUMBER
1 OF 4

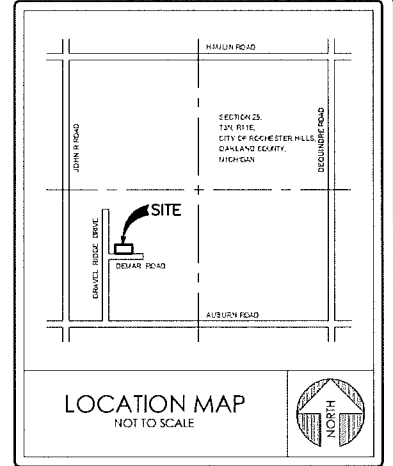
CITY FILE NO. 13-001

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PRELIMINARY SITE PLAN REGAL ESTATES

PART OF THE S.W. 1/4 OF SECTION 25, T3N, R11E,
CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

PROPERTY DESCRIPTION
PART OF THE S.W. 1/4 OF SECTION 25, T3N, R11E, BEGINNING AT A POINT DISTANCE EAST (RECORDED AS NORTH 89 DEGREES 01 MINUTES 00 SECONDS EAST) 660 FEET AND NORTH (09 DEGREES 39 MINUTES 00 SECONDS EAST) RECORDED AS NORTH 01 DEGREES 20 MINUTES 00 SECONDS WEST) 1623 FEET FROM THE S.W. CORNER, THENCE NORTH (09 DEGREES 39 MINUTES 00 SECONDS EAST) (RECORDED AS NORTH 01 DEGREES 20 MINUTES 00 SECONDS WEST) 30 FEET, THENCE EAST 667.78 FEET (RECORDED AS NORTH 88 DEGREES 01 MINUTES 00 SECONDS EAST (99.96 FEET) THENCE SOUTH (09 DEGREES 39 MINUTES 00 SECONDS WEST) RECORDED AS SOUTH 01 DEGREES 24 MINUTES 00 SECONDS EAST) 300 FEET, THENCE WEST 443.16 FEET (RECORDED AS SOUTH 01 DEGREES 01 MINUTES 00 SECONDS WEST) 443.38 FEET, THENCE NORTH (09 DEGREES 39 MINUTES 00 SECONDS WEST) RECORDED AS NORTH 01 DEGREES 20 MINUTES 00 SECONDS WEST) 300 FEET, THENCE WEST (RECORDED AS SOUTH 89 DEGREES 01 MINUTES 00 SECONDS WEST) 223 FEET TO THE POINT OF BEGINNING.



LEGEND

●	SECTION CORNER	R	RECORDED
○	FOUND IRON, MON., NAIL	M	MEASURED
○	SET IRON	C	CALCULATED

EXISTING

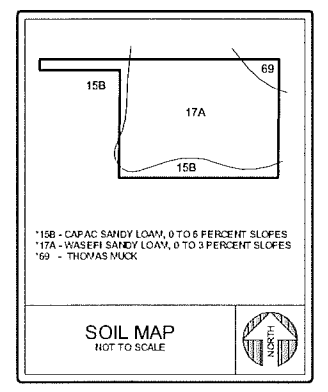
—	ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
—	UNDERGROUND CABLE TV
—	TELEPHONE U.G. CABLE, SPLICING BOX & MANHOLE
—	ELECTRIC U.G. CABLE & MANHOLE
—	GAS MAIN & VALVE
—	WATER MAIN, HD., GATE VALVE, TAPPING SLEEVE & VALVE
—	SANITARY SEWER, CLEANOUT & MANHOLE
—	STORM DRAIN & MANHOLE
—	COMBINED SEWER & MANHOLE
—	CATCH BASIN, RALET
—	YARD BASIN
—	STORM DRAIN & END SECTION
—	POST INDICATOR VALVE
—	WATER SERVICE SHUTOFF, HYDRANT VALVE BOX
—	MAILBOX
—	POINT ELEVATION (AT X OR END OF LEADER)
—	CONTOUR LINE
—	FENCE
—	GUARD RAIL
—	STREET LIGHT
—	SIGN
—	TREE

TREE PRESERVATION DATA

⊗ = TREE TO BE REMOVED
⊕ = TREE TO REMAIN

TOTAL TREES ON SITE	= 47
TREES TO BE REMOVED	= 27
TREES TO REMAIN	= 20
TREE PRESERVATION	= 20/47 = 42%

SEE SHEETS 1 & 3 FOR REPLACEMENT TREE LOCATIONS/DATA



BENCHMARKS:
BM#1 - T22.91 NAVD83 - TOP OF HYDRANT IN FRONT OF HOUSE #2707
BM#2 - 716.59 NAVD83 - TOP OF HYDRANT NORTH SIDE OF DEMAR ROAD BETWEEN HSE #5 1174 & 1168

NOTE:
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GRAVEL RIDGE ROAD (50' WD.)

DEMAR ROAD (64' WD.)

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SHEET NUMBER
2 OF 4

CITY FILE NO. 13-001

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TREE LIST

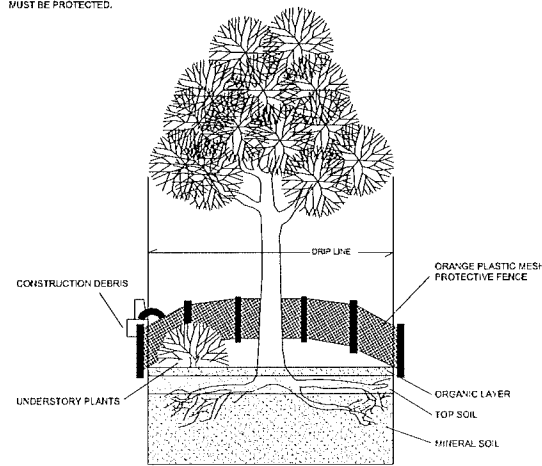
TAG #	TREE SIZE	SPECIES	NOTE
1	18"	CHERRY	
2	22"	ELM	
3	12"	ELM	
4	12"	POPLAR	
5	12"	PINE	
6	36"	SPRUCE	
7	20"	BEECH	
8	12", 8", 6"	MAPLE	QUAD
9	10"	ELM	
10	16", 16"	MAPLE	TWIN
11	8", 10", 16"	CHERRY	TRIPLE
12	10"	SPRUCE	
13	14"	PINE	
14	10"	SPRUCE	
15	12"	MAPLE	
16	12"	MAPLE	
17	10"	SPRUCE	
18	16", 16"	MAPLE	TWIN
19	10", 10"	ELM	TWIN
20	8"	CHERRY	
22	10"	PINE	
23	10"	PINE	
24	10"	PINE	
25	18"	PINE	
26	10"	PINE	
27	12"	PINE	
28	6"	CHERRY	
29	16"	HICKORY	
30	12", 12"	CHERRY	TWIN
31	24"	OAK	
32	15"	BOX ELDER	
33	15"	LOCUST	
34	18", 24"	OAK	TWIN
35	15"	HICKORY	
36	18", 18"	CHERRY	TWIN/613
37	12"	PINE	
38	10"	CHERRY	ALSO #522
39	8", 10"	BOX ELDER	TWIN
40	22"	HICKORY	
41	8", 8", 10"	CHERRY	TRIPLE
42	14"	BOX ELDER	
43	10"	PINE	
44	12"	PINE	
45	9"	PINE	
46	12"	PINE	
47	12"	PINE	
48	12"	PINE	
49	8"	PINE	
50	8", 10"	CHERRY	TWIN
51	8"	CHERRY	
517	8", 8"	CHERRY	TWIN
564	10", 10"	CHERRY	TWIN
646	16"	OAK	
665	48"	MAPLE	
661	18", 24"	OAK	TWIN
699	22"	OAK	

TREE PROTECTION NOTES

- 1) 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.
- 2) 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 FORESTRY 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 A TPF INSPECTION.
- 3) 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.
- 4) 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.
- 5) 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.
- 6) DURING THE CONSTRUCTION PROCESS NO PERSON SHALL ATTACH ANY DEVICE OR WIRE/CABLE/ROPE TO ANY EXISTING TREE DESIGNATED TO BE PRESERVED.
- 7) ALL UTILITY SERVICE REQUESTS MUST INCLUDE NOTIFICATION TO THE INSTALLER THAT PROTECTED TREES MUST BE AVOIDED. ALL TRENCHING SHALL OCCUR OUTSIDE THE TPF.
- 8) SWALES SHALL BE ROUTED TO AVOID THE AREA WITHIN THE DRIP LINE OF ANY 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.
- 9) 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.
- 10) REGULATED TREES LOCATED OFF-SITE ON ADJACENT PROPERTIES THAT MAY BE AFFECTED BY CONSTRUCTION OPERATIONS MUST BE PROTECTED AS DEFINED HEREIN.
- 11) THE TPF SHALL CONSIST OF FOUR-FOOT HIGH ORANGE SHOWN 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 FEET 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.
- 12) PRIOR TO THE RELEASE OF THE PERFORMANCE BOND, THE CITY OF ROCHESTER HILLS FORESTRY DIVISION NEED 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 PROTECTION NOTES

- 1) APPROVED TREE PROTECTION SHALL BE ERECTED PRIOR TO START OF CONSTRUCTION ACTIVITIES, AND SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE. THE FORESTRY DIVISION SHALL BE NOTIFIED AFTER TREE PROTECTION IS IN PLACE, PRIOR TO CONSTRUCTION ACTIVITIES, INCLUDING DELIVERY OF MATERIALS.
- 2) NO PERSON MAY CONDUCT ANY ACTIVITY WITHIN THE DRIP LINE OF ANY TREE DESIGNATED TO REMAIN, INCLUDING, BUT NOT LIMITED TO, PLACING SOLVENTS, BUILDING MATERIALS, CONSTRUCTION EQUIPMENT, OR SOIL DEPOSITS WITHIN THE DRIP LINES.
- 3) GRADE CHANGES MAY NOT OCCUR WITHIN THE DRIP LINES OF PROTECTED TREES.
- 4) DURING CONSTRUCTION, NO PERSON SHALL ATTACH ANY DEVICE OR WIRE TO REMAINING TREE.
- 5) ALL UTILITY SERVICE REQUESTS MUST INCLUDE NOTIFICATION TO THE INSTALLER THAT PROTECTED TREES MUST BE AVOIDED. ALL TRENCHING SHALL OCCUR OUTSIDE OF THE PROTECTIVE FENCING.
- 6) SWALES SHALL BE ROUTED TO AVOID THE AREA WITHIN THE DRIP LINES OF PROTECTED TREES.
- 7) IF TREE PROTECTION CANNOT BE MAINTAINED FOR A TREE THROUGHOUT THE CONSTRUCTION PERIOD, REPLACEMENT OF THAT TREE MAY BE REQUIRED PRIOR TO THE ISSUANCE OF THE CERTIFICATE OF OCCUPANCY.
- 8) REGULATED TREES LOCATED ON ADJACENT PROPERTY THAT MAY BE AFFECTED BY CONSTRUCTION ACTIVITIES MUST BE PROTECTED.



TREE PROTECTION DETAIL

REPLACEMENT TREE DATA

TOTAL REPLACEMENT TREES:	14
DECIDUOUS TREES (3" CAL):	7 (14 CREDITS)
CONIFEROUS TREES (10" HT):	7 (14 CREDITS)
TOTAL CREDITS REQUIRED:	27
TOTAL CREDITS PROVIDED:	28

PRELIMINARY COST ESTIMATE

	QTY	SIZE	CONDITION	SPACING	UNIT	TOTAL
DECIDUOUS SHADE TREES	7	3" CAL	B + B	AS SHOWN	\$ 425	\$ 2,975
EVERGREEN TREES	7	10' HT.	B + B	AS SHOWN	\$ 500	\$ 3,500
TOTAL						\$ 6,475

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DRAWING SCALE:	N/A
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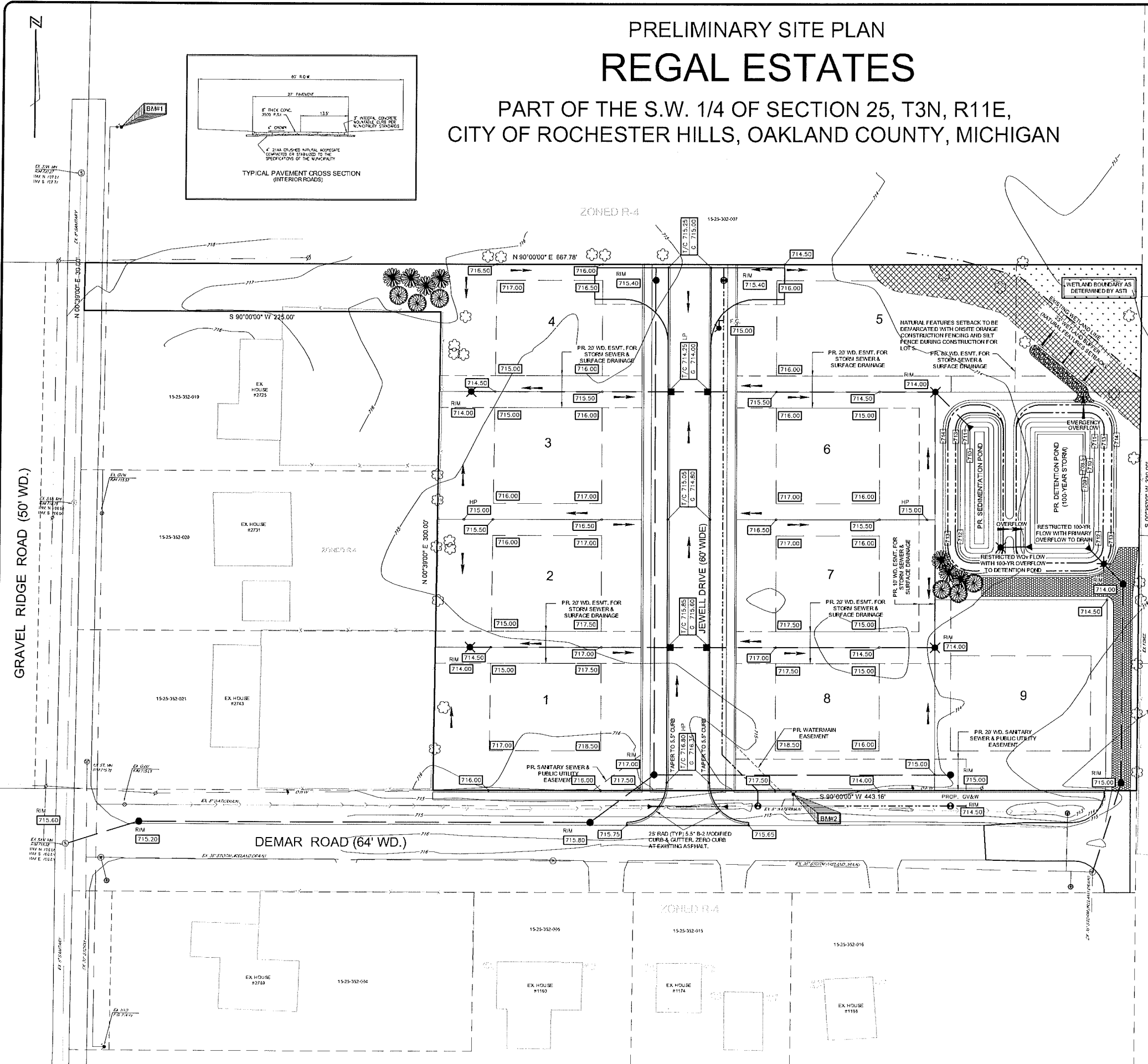
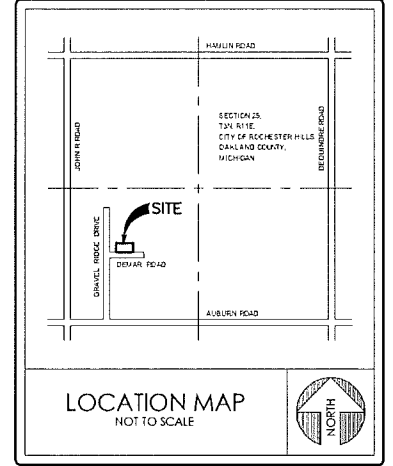
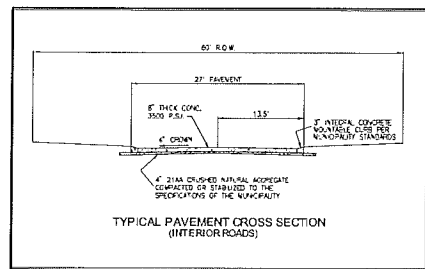
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WEIGHTED "C" VALUE
 TOTAL AREA OF AREA OF BUILDINGS AND PAVEMENT = 35,910 SF
 AREA OF LAWN = 116,886 SF C = 0.2
 $C_{adj} = \left(\frac{35,910}{152,896} \right) (0.95) + \left(\frac{116,886}{152,896} \right) (0.25) = 0.4144$
 USE C = 0.41

SEDIMENT BASIN VOLUME CALCULATION PER OAKLAND COUNTY STANDARDS
 AREA = 3.51 ACRES
 RUNOFF COEFF C = 0.41
 VOLUME OF RUNOFF $V_r = 4,320 \times C \times A = 6216.91$ CU.FT.
 TOTAL STORAGE REQUIRED = 6217 CU.FT.
 STORAGE HEIGHT PROVIDED H = 4.00 FEET
 TOP AREA OF BASIN AREA OF CONTOUR 713.0 A1 = 3440.00 SQ.FT.
 BOTTOM AREA OF BASIN AREA OF CONTOUR 709.0 A2 = 420.00 SQ.FT.
 TOTAL STORAGE VOLUME PROVIDED $V = ((A1 + A2 + \text{SQRT}(A1 \times A2)) \times H) / 3 = 6749$ CU.FT.

DETENTION CALCULATION 100 YEAR STORM PER OAKLAND COUNTY STANDARDS
 ALLOWABLE DISCHARGE C1 = 0.20 CFS/ACRE
 AREA A = 3.51 ACRES
 RUNOFF COEFF C = 0.41
 TOTAL ALLOWABLE DISCHARGE $QA = C1 \times A = 0.70$ CFS
 ALLOWABLE OUTFLOW $QO = QA / (A \times C) = 0.49$ CFS/ACRE
 PEAK STORAGE TIME $T = 25 + (\text{SQRT}(10312.5 / QO)) = 120.40$ MINUTES
 MAX. STORAGE VOLUME/ACRE $VS = (16500 \times T / (T + 25)) - (40 \times QO \times T) = 11313.73$ CU.FT./ACRE
 TOTAL STORAGE REQUIRED $VT = VS \times A \times C = 16281.59$ CU.FT.

STORAGE HEIGHT PROVIDED
 TOP AREA OF BASIN AREA OF CONTOUR 713.0 A1 = 6100.00 SQ.FT.
 BOTTOM AREA OF BASIN AREA OF CONTOUR 709.5 A2 = 1900.00 SQ.FT.
 TOTAL STORAGE VOLUME PROVIDED $V = ((A1 + A2 + \text{SQRT}(A1 \times A2)) \times H) / 3 = 17106.61$ CU.FT.

AREA OF ORIFICE
 DIAMETER OF OUTLET $D = 2 \times \text{SQRT}(144 \times AR / PI) = 3.49$ INCHES

SANITARY SEWER BASIS OF DESIGN
 TOTAL NUMBER OF UNITS/LOTS = 9 UNITS/LOTS
 3.5 PEOPLE PER UNIT * NO. OF UNITS = 32 PEOPLE
 AVE Q = $\frac{(100 \text{ G.P.C.P.D.} \times \text{NO. PEOPLE})}{(86,400 \text{ SEC./DAY} \times 7.48 \text{ GAL./C.F.})} = 0.005$ cfs.
 G.P.C.P.D. $\frac{100 (18 + \text{SQ.P.}) / (4 + \text{SQ.P.})}{(P = \text{POP. IN THOUSANDS})} = 435$
 PEAK Q = $\frac{(G.P.C.P.D. \times \text{NO. PEOPLE})}{(86,400 \text{ SEC./DAY} \times 7.48 \text{ GAL./C.F.})} = 0.02$ cfs.
 SIZE OF SANITARY SEWER = 8 inch
 PIPE SLOPE = 0.40 %
 PIPE CAPACITY = 0.77 cfs.

NOTE:
 WATERMAIN BASIS OF DESIGN WILL BE PROVIDED PENDING ROCHESTER HILLS FIRE DEPARTMENT DATA PRIOR TO APPROVALS.

BENCHMARKS:
 BM#1 - 722.91 NAVD88 - TOP OF HYDRANT IN FRONT OF HOUSE #2707
 BM#2 - 716.59 NAVD88 - TOP OF HYDRANT NORTH SIDE OF DEMAR ROAD BETWEEN HSE #S 1174 & 1188

NOTE:
 UTILITY INFORMATION, AS SHOWN, INDICATES APPROXIMATE LOCATIONS AND TYPES OF FACILITIES ONLY, AS DISCLOSED TO THIS FIRM BY THE VARIOUS UTILITY COMPANY'S RECORDS. NO GUARANTEE IS GIVEN OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY.

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Fenn & Associates, Inc.
 Land Surveying and Civil Engineering
 11684 MAJESTIC COURT
 SHELBY TOWNSHIP, MI
 PHONE: 586-254-2576

**PRELIMINARY SITE PLAN
REGAL ESTATES**
 PART OF THE S.W. 1/4 OF SECTION 25, T3N, R11E,
 CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

DISTRIBUTION	
●	PRELIMINARY
○	APPROVAL
○	CONSTRUCTION
○	AS-BUILT

REVISIONS	
DATE	REMARKS
05/18/2013	PER CITY
05/08/2013	PER CITY

SEAL

CLIENT
 RATHKA BUILDING
 11684 MAJESTIC COURT
 SHELBY TOWNSHIP, MI
 PHONE: 586-254-2576

PROJECT NAME
 REGAL ESTATES

PROJECT NUMBER
 C13-009

SHEET NAME
 PRELIMINARY
 ENGINEERING
 PLAN

DRAWING SCALE: 1" = 30'
DATE: 03/08/2013
PROJECT MANAGER: J.D.K.
DESIGNED BY: J.D.K.
DRAWN BY: J.D.K.
FIELD BY: T.O. K.M.
CHECKED BY: J.S.R., P.E.

SHEET NUMBER
 4 OF 4

NOT TO BE USED AS CONSTRUCTION DRAWINGS