S07011

City of Madison
Planning Department
215 Martin Luther King Jr Blvd
Madison,WI 53703



RE: Yaharaview Condominiums
430 S. Thornton Avenue & Jenifer St
&
1144 & 1148 Jenifer St.

Staff Plan Review Narrative Additional Comments

430 South Thornton Avenue

- 1- Design revisions for final Urban Design Committee Approval including;
 - garage narrowed to eliminate exposed garage on side property boundary
 - garage shortened to eliminate exposed garage in front yard
 - building narrowed to allow more space between existing and new building
- 2- The indoor parking spaces are sized for small cars. Full size parking spaces are available outside the garage.
- 3- Existing building wood siding to be repaired and repainted. New building to match
- 4- Decorative treatment for existing foundation planned for existing 430 Cantwell Ct

1144 & 1148 Jenifer St

- 1- Urban Design Committee comments that have been incorporated into plans;
 - Driveway length limited to only 30 feet into site, no turn-around
 - Relocated building to be 4 feet from property boundary
 - Mostly 12 ft between buildings, 9.5 ft minimum distance
- 2- Existing building wood siding to be repaired and repainted
- 3- No accessible entrances planned for duplexes, including van accessible space

December 17, 2008

Yaharaview Condominiums

Knapp
Schmidt
Architects
LLC Profit by Design

430 South Thornton Avenue 434 South Thornton Avenue 1526 Jenifer Street 433 Cantwell Court Madison, WI 53704

Zoning Text

Legal Descriptions:

PROPERTY ADDRESS: 430 S. Thornton Ave.

Parcel Number: 071007216073

Cantwells replat, being all of Lots 2,4,5 & part of Lots 1,3,6 & 7, Blk 237

Original Plat Lot 23 & that part of Blk 237

Frarwells replat lying betw lot 23, Cantwells replat & SWLY Line of Thornton Ave. &

Betw Cont. of NWLY & SELY Line of Lot 23 to SWLY Line of Thornton Ave.

PROPERTY ADDRESS: 434 S. Thornton Ave.

Parcel Number: 071007216304

Cantwells replat, being all of Lots 2,4,5 & part of Lots 1,3,6 & 7, Blk 237

Original Plat Lot 26 & all that part of Blk 237

Frarwells replat lying betw SD lot 26 & SWLY Line of Thornton Ave. &

Betw Cont. of NWLY & SELY Line of SD Lot 26 to SWLY Line of Thornton Ave.

PROPERTY ADDRESS: 1526 Jenifer St.

Parcel Number: 071007216297

Cantwells replat, being all of Lots 2,4,5 & part of Lots 1,3,6 & 7, Blk 237

Original Plat

PROPERTY ADDRESS: 433 Cantwell Ct.

Parcel Number: 071007216289

Cantwells replat, being all of Lots 2,4,5 & part of Lots 1,3,6 & 7, Blk 237

Original Plat, now known as Yahara Park Condominiums, a condominium as

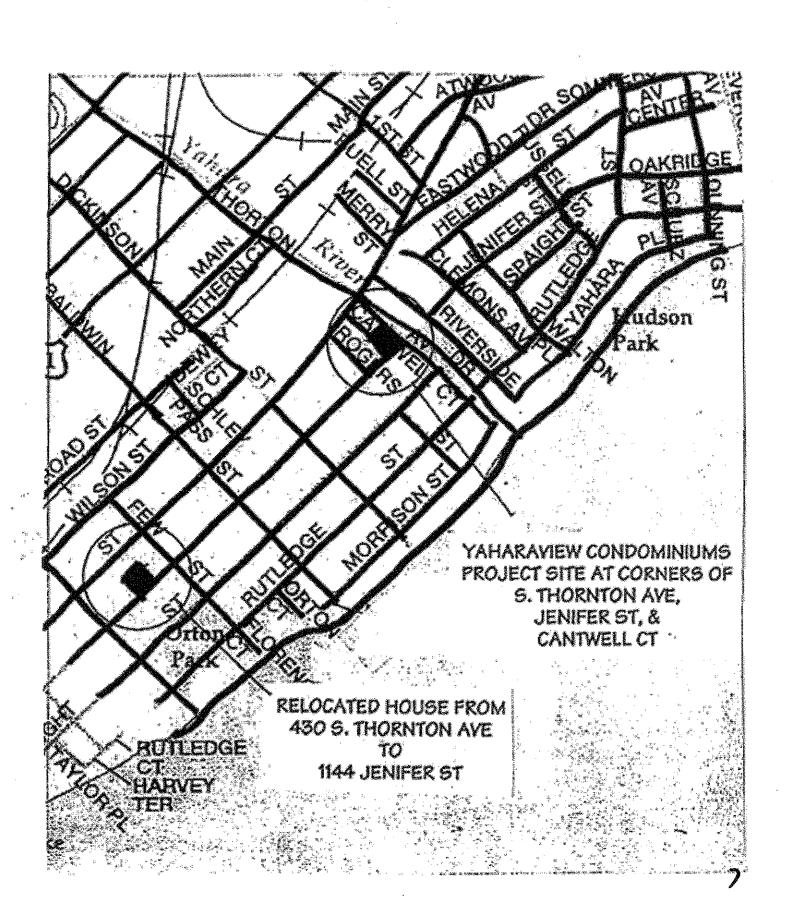
declared

And recorded in Dane County Register of Deeds as Document 4192228, Notation

Parcel Only, assessed with all units within SD CDM, see 0710-072-41.:

A. Statement of Purpose: This zoning district is established to allow for the construction of four residential buildings and shared parking structure.

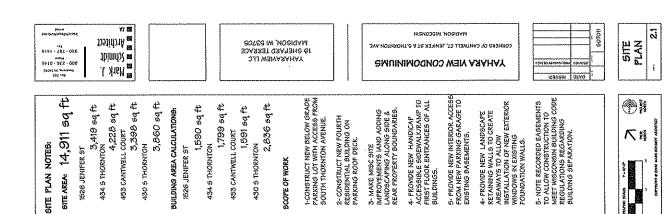
- B. Permitted Uses:
 - 1. Those that are stated as permitted uses in the R4 District.
 - 2. Uses accessory to permitted uses as permitted in the R4 District.
- C. Lot Area 14,911 sf
- D. Floor Area Ratio
 - 1. Maximum floor area ratio permitted is 2.0
 - 2. Maximum building height shall be 3 stories or as shown on approved plans.
- E. Yard Requirements: Yard areas will be provided as shown on the approved plans.
- F. Landscaping: Site landscaping will be provided as shown on the approved plans.
- G. Accessory Off-Street Parking & Loading: Accessory off-street parking and loading will be provided as shown on approved plans.
- H. Lighting: Site lighting will be provided as shown on approved plans.
- I. Signage: Signage will be allowed as per Chapter 31 of the Madison General Ordinances, as compared to the R6 district, or signage will be provided as approved on the recorded plans.
- J. Family Definition: The family definition of this PUD-SIP shall coincide with the definition given in Chapter 28.03(2) of the Madison General Ordinances for the R4 zoning district.
- K. Alterations and Revisions: No alteration or revision of this planned unit development shall be permitted unless approved by the City Plan Commission, however, the Zoning Administrator may issue permits for minor alterations or additions which are approved by the Director of Planning and Development and the alderperson of the district and are compatible with the concept approved by the City Plan Commission.

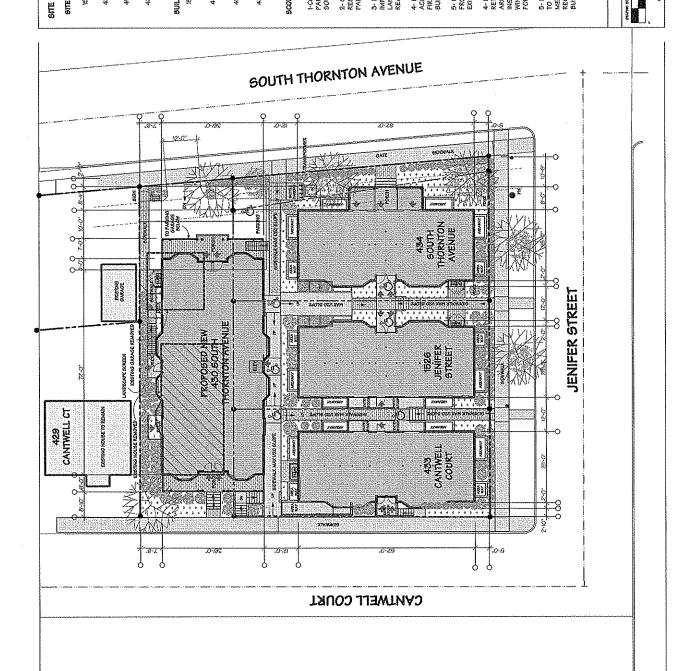


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Gross Gross Area Gross Lower Area First Level Floor	र्ले स्रे स्र			Lower Level Common Building Area 325 sf Unit \$5 Lower Level Unit \$5 Lower Level Unit \$6 Lower Level First Floar Common Building Area	760 sf		507 507 Total 1,549 sf 1,591 sf	433 Cantwell Court Lower Level Common Building Area 325 sf Unit #36 Lower Level 612 sf 612 sf Unit #10 Lower Level 612 sf	71 st 760 st 750 st 750 st	Second Floor Common Building Area Unit#11 Second Floor Unit#12 Second Floor	Unit #11 Third Floor Unit #12 Third Floor Total 1,599 sf 1,591 sf	430 S. Thornton Avenue Open Parking Garage Area 3432 sf Unit #13 First Floor 843	the B43 sf	Unit#14 Second Floor Unit#18 Third Floor F	Total 3,432 sf 1,686 sf	Total Building Floor Area		Total Building Area 8,079 sf	
Gross Area Second Floor	संसंस		st 1,591 st	پي		81 st 755 st 755 st	s! 1,591 st			755 st 755 st 755 st	sf 1,597 sf	35	sf 828 sf	is 070	sf 1,656 sf				
Grass Area Third Floor		290 sf 290 sf	580 sf				290 sf 290 sf 580 sf				290 sf 290 sf 580 sf			285 sf	570 st				
Total Buiding F			5,311 sf				5,311 sf				5,311 sf					23,277 st	14,911 sf	8,079 sf	54.2%
Residential R Unit #1	612 sf 760 sf														1,372 st				
Residential F Unit#2	612 sf 760 sf														1,372 sf				
Residential R Unit #3		755 sf 290 sf													1.045 st				
Residential F Unit #4		755 sf 290 sf													1,045 sf				
Residential Unit #5				612 sf	760 sf						·				1,372 sf				
Residential Unit #6				612 sf	760 sf										1,372 sf				
Residental Unit #7						755 sf	55 DAY								1,045 sf				
Residential Unit #8						755 sf	290 sf								1,045 sf				
Residental f Unit#9								612 sf	760 sf						1,372 sf				
Residential Unit #10								612 sf	760 sf						1.372 sf				
Residential Unit #11										755 sf	is 267				1,045 sf				
Residential Unit #12										755 sf	290 sf				1,045 sf				
Residential Unit #13												843 sf	828 sf	285 sf	1,956 sf				
Residential Unit #14															1,956				









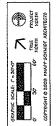
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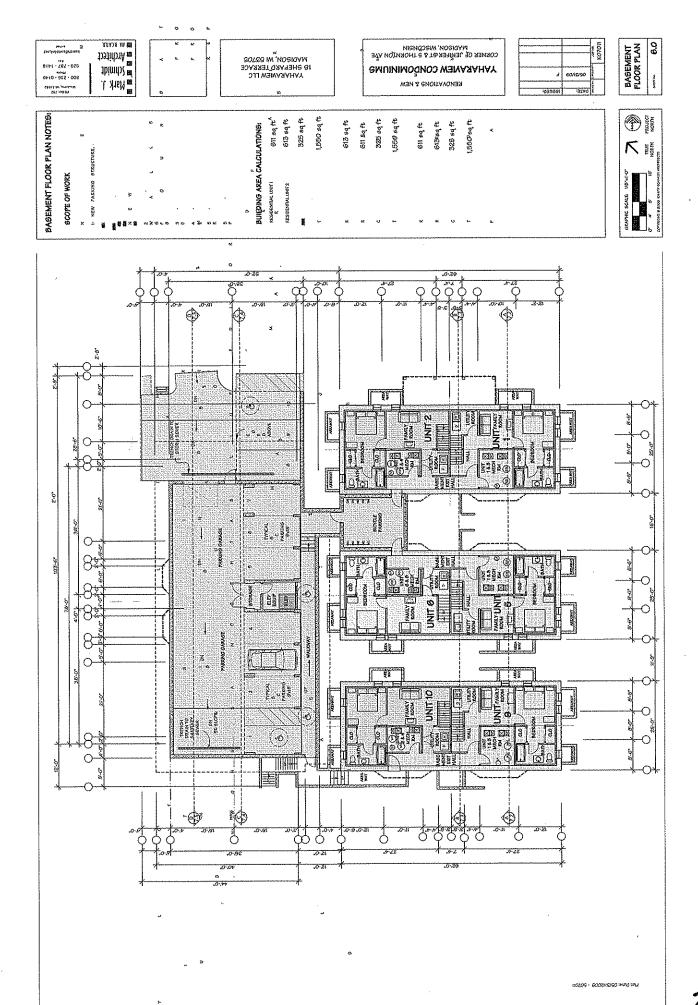
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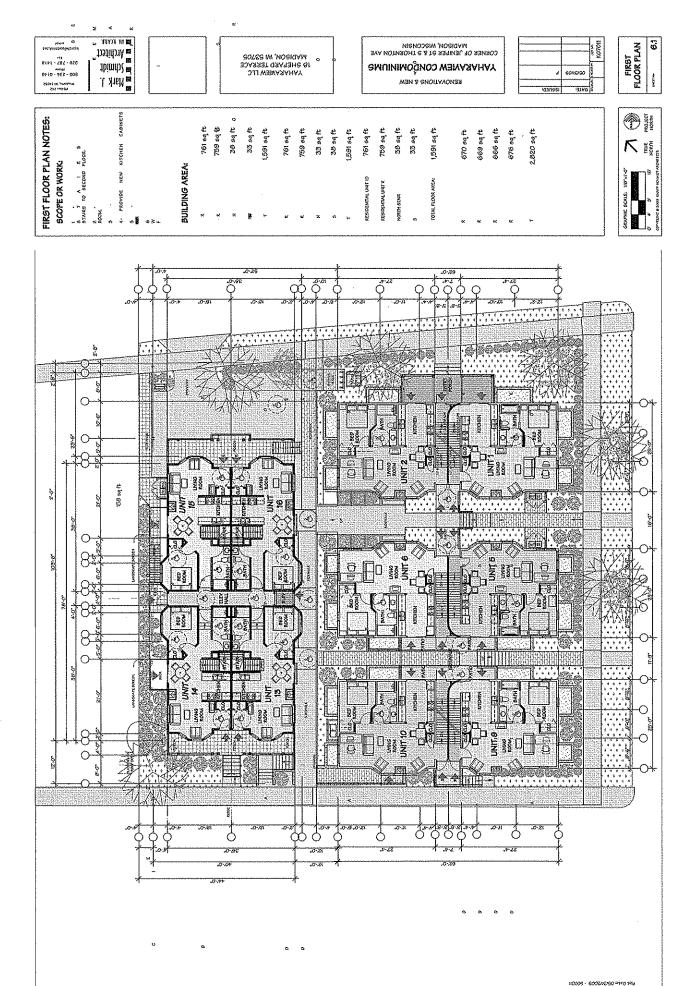


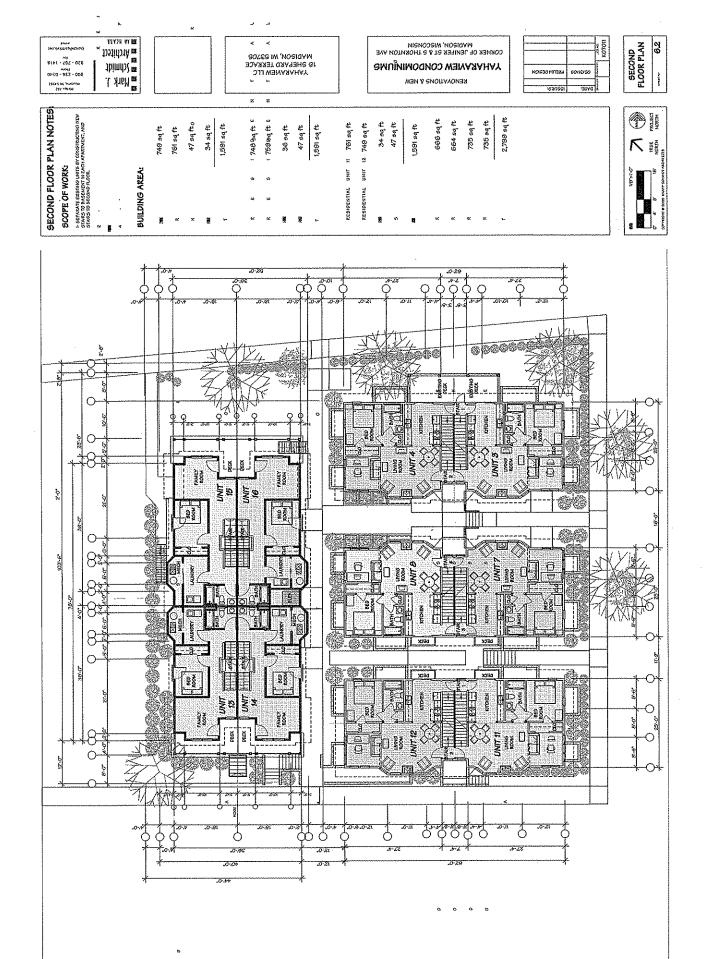
SITE PLAN NOTES:



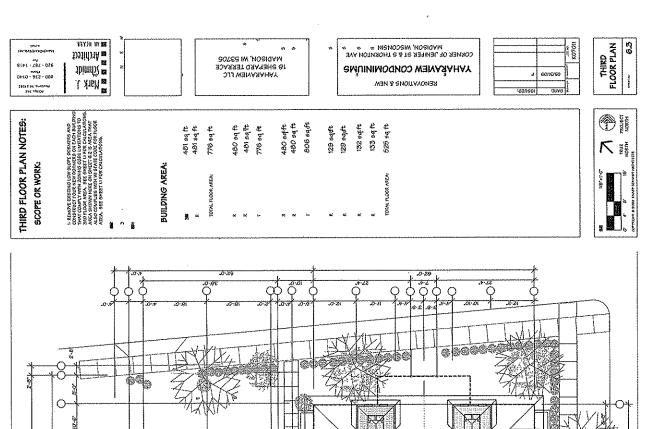


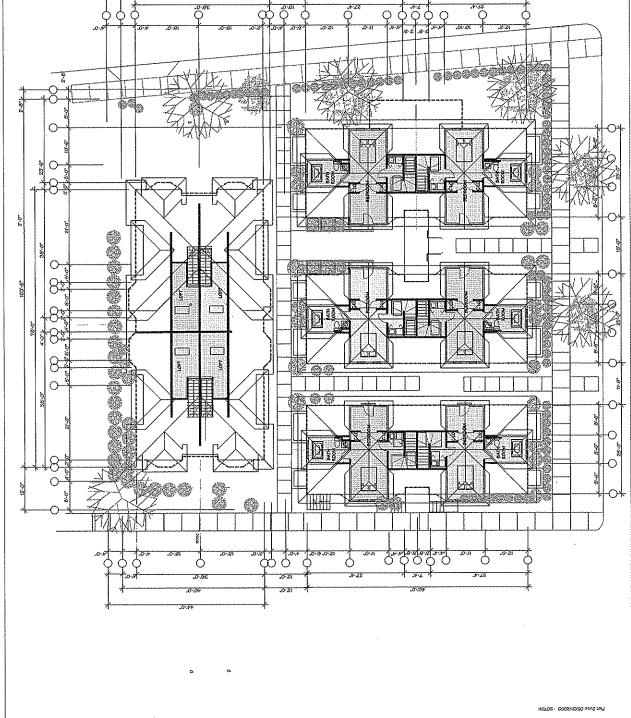


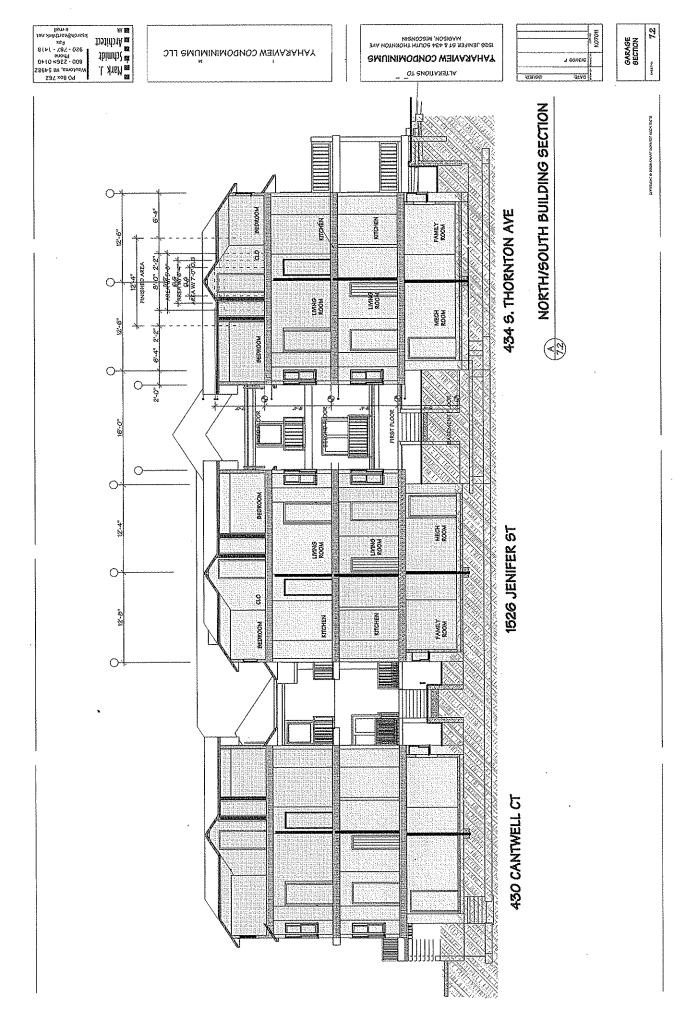


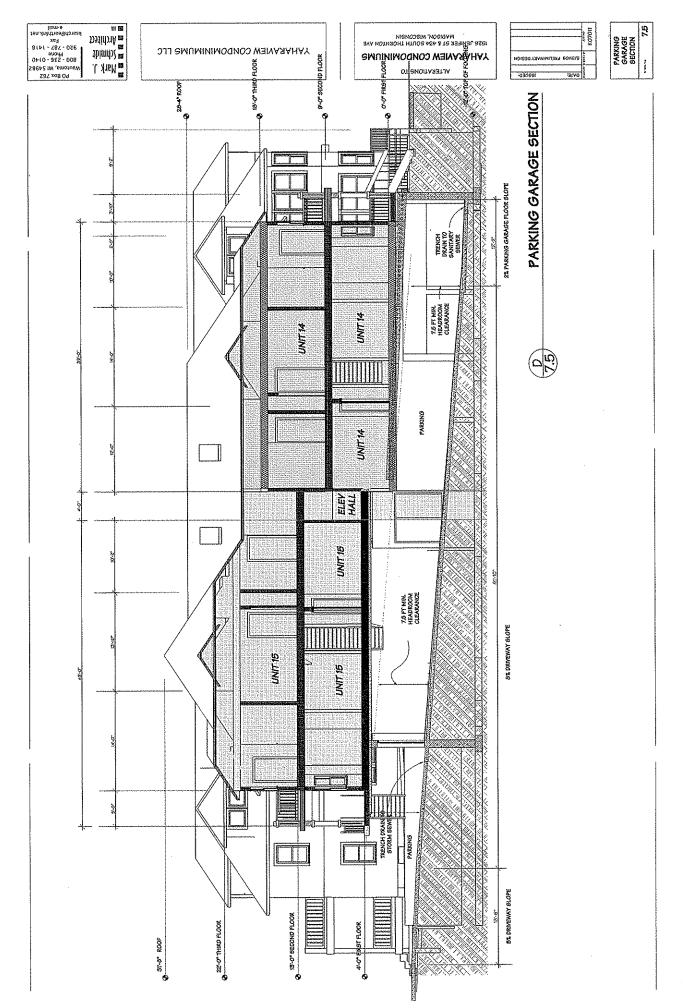


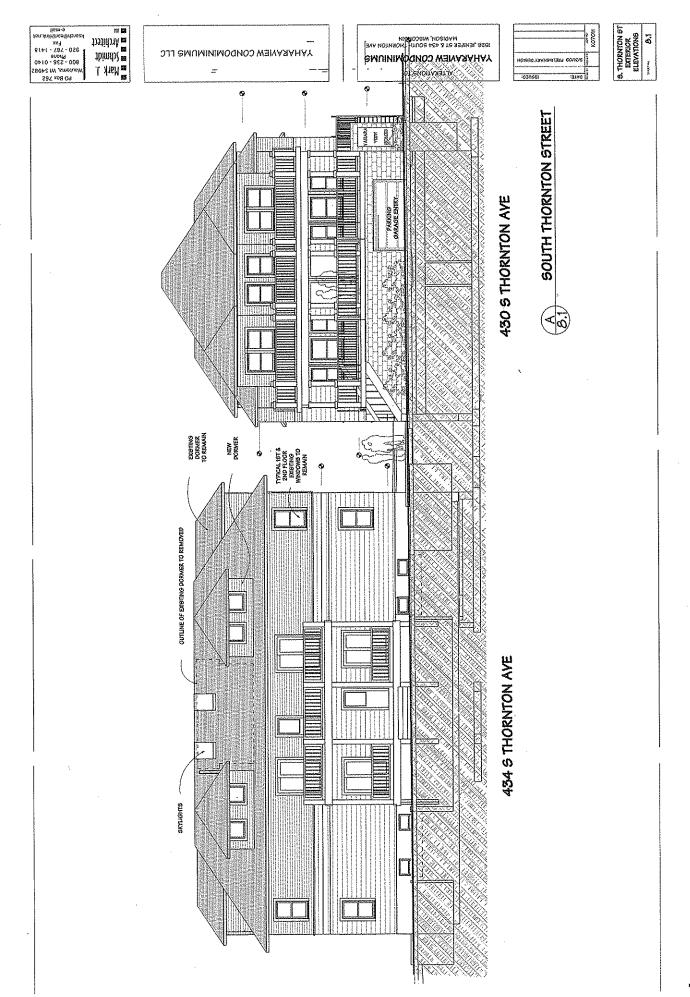
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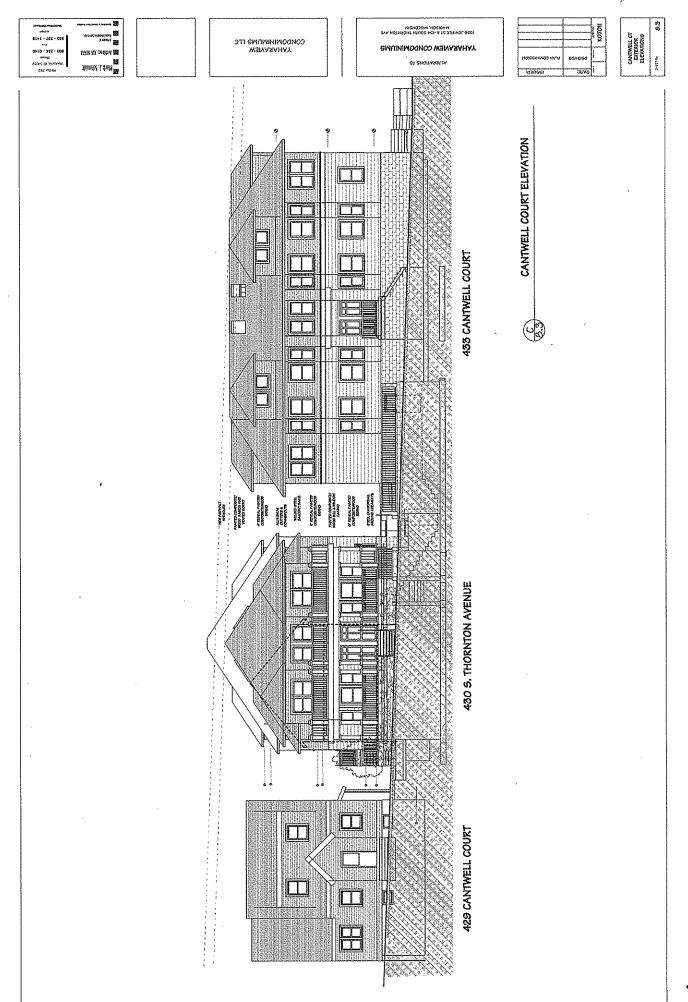


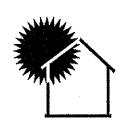












Janesville Home & Solar Survey

126 Forest Park Blvd, Janesville, WI 53545-4104 (608) 449-4376 janevtribe@charter.net





"Specializing in improvements that pay for themselves"

August 5, 2009

NEW YAHARAVIEW CONDOMINIUM AND POTENTIAL SHADING OF BURKE O'NIEL'S PV SOLAR ELECTRIC ARRAYS

TO: Planning Commission of the City of Madison

C/O: Navin Jarugumilli

Yaharaview LLC 18 Shepard Terrace Madison, WI 53705

As a Wisconsin Certified PV Solar Electric Site Assessor (Certification #16), I, Neale Thompson, have been asked to comment on any possible shading of the neighbor's PV systems by the construction of the new 3-story condominium located at 430 South Thornton Avenue, Madison. Living at 421 Cantwell, Mr. Burke O'Niel raised this concern at a hearing of the Madison Planning Commission.

The output or distributed generating capability of a solar electric system depends on gaining the most of the sun's power. PV output is affected and reduced whenever there is shading of the sun's rays. The Focus on Energy Solar standards require a clear "solar window" from 9 am until 3 pm. This is the time when the predominant amount of energy is gained. Outside of this time frame, the solar gain is reduced by less intensity and also because less of the sun's power can be transmitted through the glass surface of the panel when the rays of sunlight glance at a shallow angle to the surface of a fixed-tilt array.

Mr. O'Niel's solar systems are impacted by a number of factors. First, his home is the southern-most home on Cantwell Court in the local historical district. Within the architectural rules of this protected district, he can only install panels flat to the roof's slopes. He cannot have any arrays standing up off the roof's surface. This has some effect on the system's productivity. Secondly, his roofs do not face south but rather face southeast. This has an effect on the system output. The panels on these roof slopes face the early morning sun much more than the sun of the later part of the afternoon. The panels on the house roof are about 18.5 feet taller than the garage panels so they are less affected. Thirdly, there is an over-grown lilac bush/tree about 14.5 feet southeast of the garage solar electric array that is measured to be about 6 feet taller than the base of the array.

The primary concern is for the panels on the single story garage roof. These panels are on a low-slope 3/12 14 degree roof starting at 10.5 feet of the ground and running up to the peak at 12.5 feet off the ground.

The existing three houses (421, 429, and 430) are approximately 29 feet tall. The proposed new building is estimated to be 37 feet tall, based on the plans from the architect and geometric measurements in the field. The distance from the peak of the O'Niel house to the location of the peak or ridge line of the new building along Cantwell Court is 76 feet. The distance from the O'Niel garage solar array to the determined location of the peak of the new building is 87 feet along Thornton Avenue. The estimated distance from the O'Niel garage solar array to the peak of the new building on the Cantwell Court side is 137 feet.

Overall, Burke O'Niel is trying to maximize the solar electric power at his site that is slightly constricted. The garage panels face southeast but have the row of houses in the way of the afternoon sun. Currently, the panels look over the lower 2-story garage presently behind 430 Cantwell Court for about two hours in the morning. With the new construction at 430 South Thurston, the garage panels will look toward the 37 feet tall condominium during this same time period.

To approach the analysis of any shading of the garage array in the morning, it is necessary to understand the effect of having this low-slope array facing southeast instead of due south. The attached reports from "PV Watts" (an internet based analysis tool for solar output) detail the differences in output of the two directions. Overall, the array on the O'Niel garage loses 4% compared to the same array facing South. However, the monthly output for November, December, and January lose 7.5%, 10.4%, and 10.5%, about double that of the overall loss from the southeasterly orientation. The second fact from this analysis is that November, December, and January account for 4%, 4%, and 5% of the array's annual output, about half of the statistical "average" of 8+%. Summer months account for about 12% of the annual output. This system loses much more output in the winter months than a "normal" South-facing system.

The standard 9 am to 3 pm solar window basically sweeps across the sky from the array's orientation of 135 degrees southeast to the southwest 225 degrees. This covers 6 hours or 360 minutes of time. Any modest solar gain before 9 am would not interact with the new building but would look down the street and over trees on the street and in the parkway along the river. The attached "Sun Chart" from the University of Oregon shows the angle of the sun (solar elevation), the solar direction (solar azimuth), and the time of day. This analysis follows the 9am line down to the smallest bell curves that are the three winter months. For December, the 9am line indicates the solar elevation is 12 degrees. For November and January, the solar elevation at 9 am is 15 degrees.

Besides the heights of the arrays and buildings, there is a slight uphill grade that raises the O'Niel arrays slightly. This analysis uses a 1 degree slope to calculate this factor.

For the second story house arrays, the shadow of the new building casts an angle of 9 degrees to the bottom of those arrays. Because this is less than 12 degrees of solar elevation in December, these arrays are not shaded in the morning by the new building.

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For the garage arrays, the shadow of the new building casts an angle of 16 degrees in December compared to the 12 degrees from the sun chart. This means there is some shading of the arrays in December until about 9:30 am. For November and December with 15 degrees sun elevation, there is a tiny bit of shading that theoretically lasts until 9:15 am or so. Compared to the 6 hour period from 9 am to 3 pm, December's impact covers 8% of the solar day and November/January have an impact of 4% of the solar day.

The loss of output is .32% of the annual output in December and .16% of the annual output in November and January. The loss in winter totals to .64% of the annual output. This amounts to an estimated loss of 13 kWh/year. At \$.11 per kWh, the monetary loss is about \$1.43 per year. This loss will clearly matter more to the owner of the solar systems than to the condominium developer.

The Focus on Energy PV standards also demand a 2% deduction of output from shading from snow cover in winter. Because that snow is very likely to occur in the November to January time, the morning snow shading loss would seem to minimize or at least reduce the calculated shading losses due to the new building. This is one factor that suggests the shading loss in the morning is not significant. Perhaps, the loss from shading besides the snow shading is only one-half of the calculated amount or \$.72 per year.

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The presence of the over-grown lilac bush/tree also has a slight shadow easting an angle of 19 degrees, an angle greater than the shadow of the building. The owner stated that he could probably approach the neighbor and trim that bush but he has not done so. Even though the leaves fall off the bush in winter, the remaining branches do cast some shading on the garage array in the morning. This very small factor also suggests the shading is not significant.

*

My conclusion is that the new condominium building's shading of the O'Niel garage PV array is not significant. If the owner has more detailed logs of morning production in winter months for this array, that information could be considered. Still, the analysis is my best effort combining geometry, solar assessment, fieldwork, and analysis.



I hope my contribution is helpful.

Angle analysis was done by a "Construction Master IV" calculator. Field measurements were taken Monday, July 27, 2009.

Sincerely,

Neale Thompson

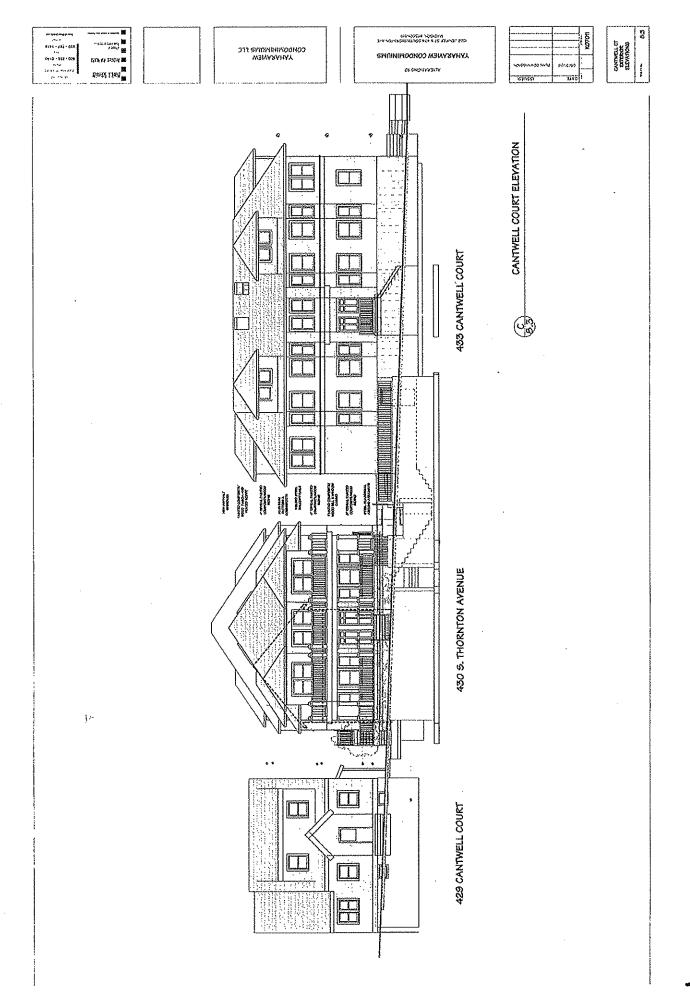
Janesville Home and Solar

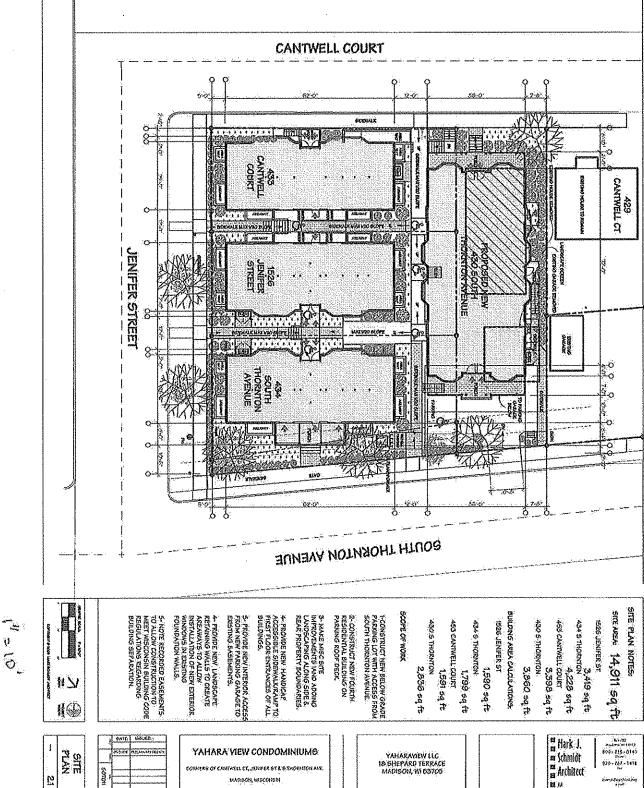
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PS. I have to mention that the proposed new condominium building also has solar potential. Businesses can gain 80% to 90+% of the costs back from a solar electric/PV investment because of state incentives, utility programs, federal tax credits, and accelerated depreciation. Only your tax accountant can determine the actual costs and tax benefits.

Attachments
Aerial photo
Architects drawings
PV Watts analysis (2)
Sun chart from University of Oregon
Photos









AC Energy & Cost Savings

1.8kw Garage array at 14 degrees pointing south

Station Identification						
City:	Madison					
State:	Wisconsin					
Latitude:	43.13° N					
Longitude:	89.33° W					
Elevation:	262 m					
PV System Specifications						
DC Rating:	1.8 kW					
DC to AC Derate Factor:	0.780					
AC Rating:	1.4 kW					
Array Type:	Fixed Tilt					
Array Tilt:	14.0°					
Array Azimuth:	180.0°					
Energy Specifications						
Cost of Electricity:	11.0 ¢/kWh					

Results							
Month	Solar Radiation (kWh/m²/day)	AC Energy (kWh)	Energy Value (\$)				
1	2.39	108	11.88				
2	3.45	141	15.51				
3	4.07	180	19.80				
4	4.78	195	21.45				
5	6.12	252	27.72				
6	6.48	249	27.39				
7	6.39	250	27.50				
8	6.00	238	26.18				
9	4.49	176	19.36				
10	3.46	143	15.73				
11	2.27	92	10.12				
12	2.14	94	10.34				
Year	4.34	2117	232.87				

Existing 1.8 kw array at 14 degs pointing 135 SE

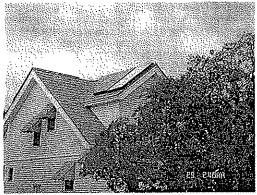
Station Identifi	cation
City:	Madison
State:	Wisconsin
Latitude:	43.13° N
Longitude:	89.33° W
Elevation:	262 m
PV System Specifications	- American and American State (Control of Control of Control of Control of Control of Control of Control of Co
DC Rating:	1.8 kW
DC to AC Derate Factor:	0.780
AC Rating:	1.4 kW
Array Type:	Fixed Tilt
Array Tilt:	14.0°
Array Azimuth:	135.0°
Energy Specifications	
Cost of Electricity:	11.0 ¢/kWh

Results							
Month	Solar Radiation (kWh/m²/day)	AC Energy (kWh)	Energy Value (\$)				
1	2.20	98	10.78				
2	3.24	132	14.52				
3	3.93	173	19.03				
4	4.67	191	21.01				
5	6.03	247	27.17				
6	6.39	247	27.17				
7	6.30	246	27.06				
8	5.88	233	25.63				
9	4.35	171	18.81				
10	3.28	135	14.85				
11	2.13	85	9.35				
12	1.96	84	9.24				
Year	4.20	2042	224.62				

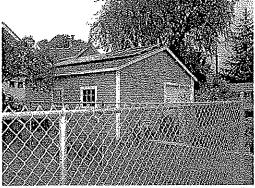
DETAILED PHOTOS



O'Niel residence on Cantwell Court



Solar panels on rear of house facing 140 degrees



O"Niel garage PV array with lilac tree/bush



Looking approx. south from O'Niel home



Looking approx. south from O'Niel garage roof



House to be replaced by 3-story new condominium at 430 South Thornton Ave. Existing structures to the right are similar in size to the proposed new building.

