



Falcons, Up Close & Personal

(by Karen Carra)

On a rainy non-flyable weekend last fall, Matthew & I drove to the posh WV resort, The Greenbrier, researching activities for one of Matthew's articles. Although we wouldn't be flying ourselves, we planned to hang out with some flying creatures at the Greenbrier's Falconry Academy. When we arrived at the falconry reservation desk only the receptionist and the bird handler were in attendance. Everyone else had cancelled due to the rain. The desk person asked if we still wanted to go. Of course we did! This somewhat depressed the bird handler, Cody, but off he went to get the birds ready. We had to wait for the offi-

cial bus to pick us up and take us the short distance to the center.

The Falconry center consists of a clearing in the forest with two large pens next to the woods and an open shelter in

The desk person asked If we still wanted to go. Of course we did!

the middle of the clearing. Each pen held six birds - a mixture of falcons, hawks and one disgruntled owl. Upon arriving Cody greeted us and asked us how much we knew about falcons. I proudly said "Well, we're hang glider pilots, and we sometimes fly with hawks

and eagles." Instead of being overwhelmed by our flying activities (I should know better by now) he dismissively said "Well then, you know about as much as most people, which isn't much". He asks us to guess the weight of the largest bird there. We both guessed such extremely heavy amounts that it confirmed his low opinion of our knowledge base. The birds only weigh between 1 and 3 pounds.

The birds are weighed daily and kept at specific (*slightly hungry*) weight so they will be willing to work with the handler. The handler rewards the bird with small strips of meat to distract the bird from a successful kill and then quickly hides the prey, merely covering it or masking

(See *FALCONS* on page 3)

Ralph Sickinger

Pre-Flight



Happy New Year!

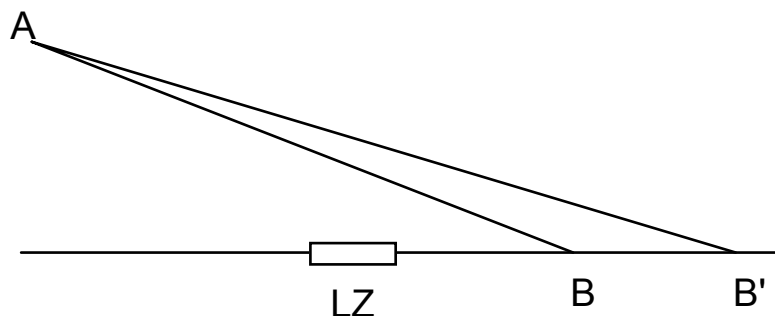
I hope everyone enjoyed the holidays; I went home to Michigan to see my family for Christmas, and had a great time. One of the things I like best about Northern Michigan at this time of year, is that you're almost guaranteed to have a white Christmas. Apparently, however, the Washington area had more snow than we did this year! Go figure. Still, it was quiet and peaceful, and most enjoyable. By then end of a week though, I was starting to miss my CHGPA friends. (*The internet hasn't quite made it all the way to the "tip-o-the-mitt" area.*) Just when I thought I was going to go into serious withdrawal, God himself sent me a sign, that restored my faith...

(See *PRE-FLIGHT* on page 7)

Speeds to Fly - Part I

(by Brian Vant-Hull)

The main thing we want to do as pilots is return to earth safely. If you think about going towards an LZ, this means arriving with as great an altitude as possible. A little geometry will convince you this is equivalent to using a flight path which will cover the furthest distance possible as shown in the diagram below for a pilot going from point A towards point B which overflies the LZ:



The path heading towards B' covers the greatest possible distance and also maintains the largest altitude over all intermediate points. This "best glide" is therefore the safest route, with a glide angle controlled by the speed we fly.

(See *SPEEDS* on page 4)

It's time to make plans for the 2003 KHK Hang Gliding Spectacular May 16-19, 2003

Hawk Kites will hold the World Wide Terry Sweeney Hang Gliding ViPre-register at:
<http://www.hangglidingspectacular.com/register.html>

This year will be special because of the celebration of 100 years of flight!
Contact Doug Haber for more details: haber149@bellsouth.net
or Bruce Weaver at: bruce@kittyhawk.com (1-252-441-2426)

Event Features: Parachute Clinic, Instructor Certification, World Wide Terry Sweeney Hang Gliding Video Contest

News flash: WORLD RECORD 100 LOOP ATTEMPT BY CHAD ELCHIN
AND POSSIBLY OTHER GREAT LOOPING PILOTS!

Current info at: http://www.hangglidingspectacular.com/news_updates.html

Parachute Clinic With Betty Pfeiffer - 2003 Dates:

Tuesday, May 20 (Free for everyone)
Wednesday, May 21 (Available if you are signed up for the ICP)

The Parachute clinic with Betty Pfeiffer (High Energy Sports) will be held at the Kitty Hawk Kites flight park in Maple, North Carolina directly after the 2003 Hang Gliding Spectacular (May 16-19). Tuesday's clinic (May 20th) will be geared towards pilots learning about parachutes and deployment. Wednesday's clinic (May 22nd) will be tied in with an ICP and will be geared towards Instructors teaching pilots about parachutes and deployment.

Instructor Certification Program - 2003 Dates:

Tuesday, May 20 - Wednesday, May 21 - Thursday, May 22

In celebration of Terry Sweeney's classic hang gliding film "Sweeney's Glider", Kitty Hawk Kites will hold the World Wide Terry Sweeney Hang Gliding Video Contest at the Just Fly Film Festival. Anyone can submit one VHS homemade hang gliding video or favorite video clip. All videos must relate to hang gliding in some way. On the night of the event the crowd will vote for the best video and the winner will receive \$250.00 Cash! The winner takes all. For any questions please contact Bruce Weaver bruce@kittyhawk.com Please put "Video Contest Questions" in the subject line. (252-441-2426)

Instructor Alumni Invitation

Kitty Hawk Kites would like to invite all former Kitty Hawk Kites instructors back to the beach. We want to thank all the instructors who helped make Kitty Hawk Kites the largest hang gliding school in the world. Come relive old memories and rekindle old friendships as over 25 years worth of instructors return to the place where it all began!

Capital Hang Gliding and Paragliding Association

CHGPA represents hang glider and paraglider pilots from the Washington, DC mid-Atlantic region. We are committed to the safety, growth and solidarity of hang gliding and paragliding.

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Gaithersburg, MD
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Joe Brauch

Prez-Sez



Happy Cold New Year...

I have held to my resolution of not flying unless the temperature is above 50 degrees. This winter so far has made it very easy for me. I was going to try some colder weather flying but it seems that the weekends are either EVIL cold or so blown out and snowy it was a no-brainer. I did stop by Emma Jane's and saw the multitude of flights for the end of December. Great job to everyone involved.

Coming up after this month's meeting are the elections. Start thinking about who you would like to be your leaders for the upcoming year. I had a great time but didn't get as much air-time as I'd hoped this year. Thanks to all involved with our club business (the board), events, observers, site maintenance, web support (Marc Cavanaugh), High Rock (Joe Gregor), and the MHGA with all of their people and support. Some other important items for January are the Skyline vote on format and frequency and Site maintenance, earlier the better (paragliding launch).

Another Gregor has taken up High Rock cause and became site monitor organizer. Apparently, Janet has taken over the duties of organizing the site monitor volunteers. Yet another big thanks to the Gregors for their dedication to this sport. If you have not already been contacted I am sure Janet will be in touch. Thanks Janet and Joe.

Keep flying safe, remember it is always better to be on the ground saying I wish I was up there than in the air saying I wish I was down there. All you new 2's and 3's listen to the more experienced pilots closely, they know what they are doing and love to share their knowledge. Above all remember this is supposed to be fun!

~ joe

(FALCONS, continued from page 1)

the raptor's eyes. The birds learn that their handlers are their first and easiest source of food. Cody stressed that the birds have merely a working relationship with their handlers - there's no emotional bond. I was sure, of course, that the birds would take an immediate liking to me and I really wanted to pet them.

Cody went on about the history of falconry for some time. It was very interesting but I kept getting distracted by Cody's nose, which had obviously been reconstructed by someone not too concerned with aesthetics. It looked just like a bird could have landed on it and ripped the hell out of it. I started feeling a little protective towards my proboscis.

Falconry is an ancient sport of kings. In the Middle Ages anyone not of noble birth caught using raptors to hunt would be severely punished. Even among nobility, social rank played a roll. Only kings could fly the Gry falcon. Peregrine Falcons were the province of princes, while dukes flew Rock Falcons, etc.

Cody brought out a Harris Hawk to work with us. Harris Hawks have become the most popular bird in the sport because they are one of the few birds of prey that work within a social structure to hunt, and therefore they are easier to train. He warned us that the bird might not be too eager to work because of the rain. He claimed that hawks don't like to fly - they only do so out of necessity. I thought that this was anthropomorphizing in reverse.

The bird behaved well in spite of the drizzle. Up to this point we had been under shelter but after the lecture we moved out into the clearing. Cody launched the bird into a nearby tree by merely swinging his arm. He then removed a small sliver of chicken meat and held it in his gloved hand. The hawk dove down, skimmed along in ground effect, and then swooped up to execute a perfect flare on Cody's arm. He launched the bird into the trees again and asked Matthew and I to stand facing each other about two feet apart. Cody stood offset between us and pulled out another piece of meat. The hawk swooped right between us as though we weren't there. Cody explained that as long as the hawk could see the food, everything else was irrele-

vant. We then stood only a couple inches apart and once Cody launched the bird and then offered another treat. The bird tucked his wings as he passed silently between us and finished with another gorgeous flare.

Cody then gave the glove to me. I was facing away from the trees initially and I didn't realize that the bird had landed on my hand until I turned my head. I got to launch him and bring him back in again before I relinquished the glove to Matthew. We walked down a path into the woods for a small hike with the hawk maintaining a constant distance in the trees, ready to magically appear as soon as some food was offered.

Just as we were finishing another bird handler drove up with a hooded falcon perched on a piece of board on the front seat of his van. He had been out hunting, and offered to take us back to the resort. As the bird pitched and swayed with the van's motion, we couldn't resist asking the driver about Cody's nose. Turns out that it was the result of a childhood bicycle accident, no avians took part in it's destruction.

We went on that evening to have massages and a five star dinner but the birds made the greatest impression.



Karen with Falcon

(Photo by Matthew Graham)

If anyone is interested in attending the Falconry Academy they can call the Greenbrier at 800-453-4858 or go to www.greenbrier.com.

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(Continued from page 1)

The safety of the LZ could also be replaced with the front of a ridge for a pilot who has gotten blown too far behind, or the location of a suspected thermal.

This article will be divided into three sections. We start with a basic theory section for those who don't feel comfortable with the speeds to fly concept. This is followed by a discussion of the sensitivity of the glide ratio to changes in speed, and includes details I haven't found anywhere else, so even the knowledgeable pilot will find some things of use. We conclude with an equation section also done in a way not found anywhere else, but which has more intellectual than practical use for those who like such things.

Basic Theory

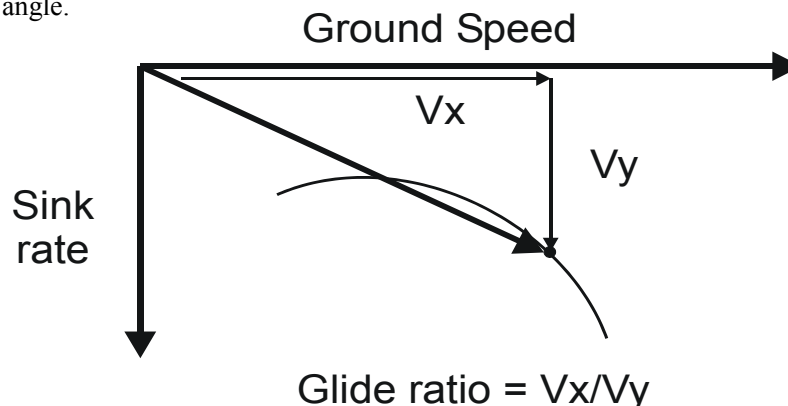
All speeds to fly literature insists on treating airspeed in either miles per hour or feet per second, and sink rate in feet per minute. This makes comparisons and math aggravating. If I had my druthers, all speeds would be in meters per second so that a standard glider would fly with a trim speed of approximately 10 m/s and sink at approximately 1 m/s. For Americans we can use the conversion that 1 m/s is approximately 1/2 mph, and 1 mph is approximately 100 feet/min (88 ft/min). Since we are mainly interested in concepts, these approximations are good enough.

$$1 \text{ mph} = 2 \text{ meters/sec} = 100 \text{ ft/min} \quad \text{approximately}$$

Boring Definition Stuff - you will also hear or read about other speeds to fly encountered in contests or cross country: speed for least time, speed for best climb rate, or best strategic speed for traversing a field of thermals. We will discuss none of these in this article and instead concentrate on the speed to fly for best distance across the ground for any particular set of conditions.

"Best Glide Speed" refers to a glider in calm air, and is considered a fixed characteristic of the glider. But a head or tail wind can change the glide path (and hence the angle) taken across the ground: *the speed for best glide angle over the ground in a given situation should not be confused with the Best Glide Speed*. We will distinguish them by the use of capital letters for fixed glider characteristics.

Arithmetic and Graphs - understanding any version of speeds to fly involves little more than basic arithmetic and simple graphs. The actual flight path we take can be broken down into the distance we cover across the ground and the distance we sink. But if a glider travels 10 meters forward for every meter it sinks, doesn't this mean it's going 10 meters/second forward and 1 meter/second down? The speeds indicate the flight path just as well as the distances! In many ways the speeds are a better indication because they tell you what you are doing at any instant, while the distances assume you are gonna keep doing the same thing until you smack earth. So let's look at how speeds indicate your glide angle.



Assuming you're not accelerating, for every forward airspeed there is a corresponding sink rate. When you draw them together, you can see the path or angle the glider will take through still air, as shown by the diagonal line above. A graph of sink rate versus forward airspeed is called a "polar", and is indicated by the thin curving line. Every glider has it's own characteristic polar.

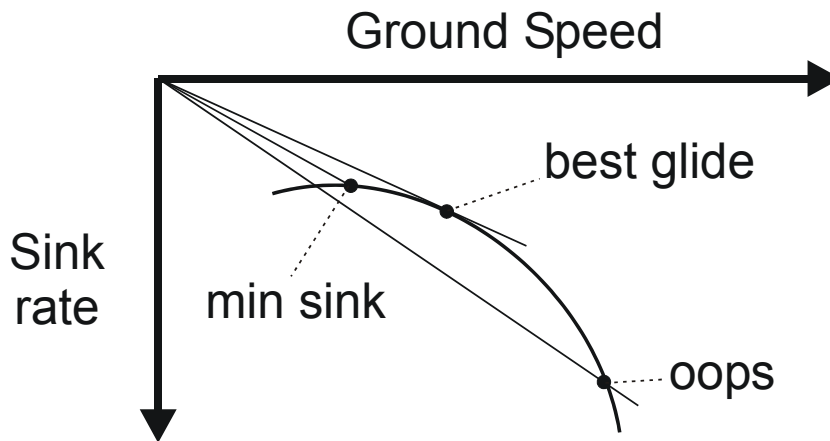
Some people are very comfortable with graphs, but many people feel more comfortable with numbers. This is where we diverge from the normal presentations which do everything in terms of graphs.

What I've done is taken the forward and sink speeds for a Falcon, and converted them to mph, rounding them all to one decimal place:

	Falcon in still air				All speeds in mph			
Ground	19	22	24	27	29	32	34	37
sink mph	2.8	2.4	2.6	3	3.5	4.4	5.6	7.1
glide ratio	6.8	9.2	9.2	9	8.3	7.3	6.1	5.2

We see that for every ground speed we have a sink rate, the sink rates go up and come back down, and if we graph these numbers we'd get a polar which would look like the one in the previous figure. The graph shows a glide angle visually. We get the same type of thing if we take the "glide ratio" of ground speed to sink speed by dividing one by the other. The larger the glide ratio, the smaller the glide angle. So we're looking for large glide ratios! Because of rounding it's not so clear, but the best glide ratio for a falcon is at about 24 mph.

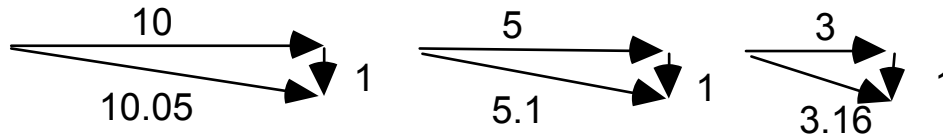
The Basic Speeds



Going back to the graph for a moment, we see that there must be a point of minimum sink at the top of the polar. This occurs at a ground speed of 22 mph for our falcon with a glide ratio of about 9.2. As we go faster we reach a point where the glide path has the smallest angle possible. This is the Best Glide Speed, where the glide path is tangent to the polar. Go any faster or slower and the angle increases again. For our rounded numbers this would occur somewhere between 22 and 24 mph, but closer to 24 mph. With accurate numbers the glide ratio at 24 mph is about 9.5.

A note aside: some pilots may be complaining round about now that most polars use actual airspeed, not ground speed. The air speed would be the length of the diagonal as opposed to the horizontal leg of the triangle. But playing around with the Pythagorean

Theorem will convince you the difference is minimal - it's hard to get more than 5% error. Since it's easier to use ground speed, that's what we'll do!



Wind Effects - So far everything has dealt with a glider in still air. If that was all there was to life, you need only memorize the bar position for Best Glide Speed and hang gliding would be simple. But what happens if we add wind or sink? Traditionally this is explained by shifting around the polar graph, but we're gonna stick with the numbers. Horizontal wind will affect your ground speed; lift or sink affects your sink rate. Let's see what happens....

Add 10 mph headwind:

Ground mph	19 ↘ 9	22 ↘ 12	24 ↘ 14	27 ↘ 17	29 ↘ 19	32 ↘ 22	34 ↘ 24	37 ↘ 27
sink mph	2.8	2.4	2.6	3	3.5	4.4	5.6	7.1
glide ratio	3.2	5	5.4	5.7	5.4	5	4.3	3.8

We have subtracted the 10 mph headwind from each of our original ground speeds and recalculated the glide ratios. We find that with a headwind all the glide ratios are reduced, and we have to fly a few mph faster in order to find the best glide distance under these circumstances. A tailwind would have the opposite effect.

Add 2 mph sink:

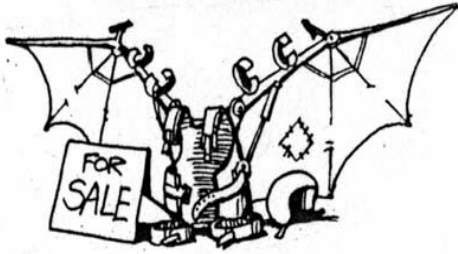
Ground mph	19	22	24	27	29	32	34	37
sink mph	2.8 ↘ 4.8	2.4 ↘ 4.4	2.6 ↘ 4.6	3.0 ↘ 5.0	3.5 ↘ 5.5	4.4 ↘ 6.4	5.6 ↘ 7.6	7.1 ↘ 9.1
glide ratio	4.0	5	5.2	5.4	5.3	5	4.5	4.1

Adding 2 mph to all our sink speeds we find a very similar result to the headwind: reduced glides and the need to fly a little faster to do the best we can. Lift would have somewhat the opposite effect.

Fundamentally, that's all there is to speeds to fly. There's always one best speed to fly for distance (equivalent to altitude) and this speed will change depending on the wind and sink. Your job is to find that speed.

So, how do you do that? We'll answer that question next month, when we continue this discussion in Part II.





Wing Things

Moyes 147 xtralite

Orange leading edge, orange and white top, and orange, green and white bottom. This glider is in fair shape it has some small scratches on the leading edge and some delaminating on the tips. This is a high performance glider It's not suitable for inexperienced pilots. \$1200

Charly insider helmet

Blue with some small scratches, size medium. \$120

John Harper: 434.929.7207 jharper@ceva.net

Falcon 195

Excellent condition. Blue, lime green, and yellow.
Manufactured 2002. \$1975 firm.

Howard Wagner: 301.870.9235 howwagner@msn.com

10 Meter Pulse

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High Energy Sports knee hanger harness

colors match glider, with parachute. \$350

Brauniger IQ-Classic vario with airspeed indicator - \$100

Lewis Truitt 443.956.4395

Aeros Stealth III

151 squares, Carbon crossbar, mylar sail, 66 hours, winglets, spring battens

LE: white, Under: Lime Green, spare downtube

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Falcon 2 195

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Falcon 170

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Excellent condition, < 60 hours, Wheels, 2 spare downtubes, spare corner bracket, batten tip kit, extra faired basetube. \$1500

Litek vario - \$50

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ADI AT-201 FM Transceiver - \$75

High Energy knee hanger harness -

chute container, steel carabiner, helmet included - \$65

White glider condom

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Airwave K5 148

Fair condition. Still flies good. Black undersurface, yellow leading edge. Spare nose cone. \$300 OBO

Mike Chevalier: 301.270.0445

Talon 150

Almost new, only 5 hours. \$3995. see it at: <http://www.buffam.com/talon.html>

Bill Buffam: 610.344.0704

Falcon 140

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High Energy Sports knee hanger harness, Small, White

Helmet

Charly Insider helmet

Glider and equipment are in excellent/new condition as they've only been used five times. Complete set for only \$2700. Will consider selling items separately.

Holly: 412-421-1508

(PRE-FLIGHT, continued from page 1)

There I was, heading back home *(to Maryland)*, just listening to the radio and enjoying the drive. I was on I-75 in the middle of Michigan when I happened to look to my right, and the truck next to me had this blue and white bumper sticker on it that said "got wings?". It was so out-of-context, that it actually took me a minute to figure out why that looked so familiar. *(Answer: I have the same sticker on the back of my truck!)* 1500 miles from home, and I'm looking at a CHGPA bumper sticker on somebody's truck! I pulled up to see who it was, and honked and waved, but I don't think he knew who I was. *(Hey Cavanaugh! How do you NOT recognize the only truck in four states with Christmas lights on the hang glider rack?!)* Still, it was a beautiful thing to see, out in the middle of nowhere!

Now that it's 2003, it's time to make some resolutions. Here are mine:

I resolve to do more training this year. A 56% good-landing record is pathetic. By this time next year I intend to be looking at 75% or better.

I resolve to fly at least 35 miles X-C. *(Not all in one flight.)* That may not seem like much to you experienced X-C pilots, but so far I only have 6. Hopefully, I'll go further than that, and I'd like to see my first 10-miler in the Falcon.

I resolve to exercise more. Ok, that's just the guilt from the Christmas cookies talking. But I'd really like to have more stamina for flying.

I also resolve to watch what I eat. *(And not just as it goes from the plate to my mouth...)* I'd like to still fit into my harness come Fall, when I need to add additional layers of clothing. Heck, I'd like to be able to fit into my harness this Summer, when I'm only wearing a T-shirt!

I resolve to fly safely. 'Nuff said.

Ok, it's not a big list, but it covers what's important to me. I'd like to wish everyone the best for a happy, and healthy, year in '03.



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Tex Forrest	703.492.9908	Woodbridge, VA
Richard Hays	410.527.0975	Baltimore, MD
John Middleton	703.533.1965	Arlington, VA
Steve Wendt	540.432.6557	Manquin, VA

* * * ELECTIONS * * *

**2003 Board Member Elections will take place at the
February CHGPA Meeting!**

8:00pm, February 26th, at Lasick's in College Park, MD



**Capital Hang Gliding and
Paragliding Association**

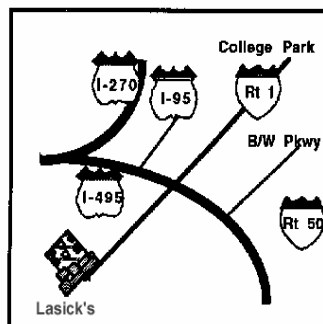
15914B Shady Grove Road #L-197
Gaithersburg, MD 20877-1315

**Next CHGPA meetings will be held:
January 22, 2003
February 26, 2003 (*** Elections! ***)**

Meetings are held downstairs at: Lasick's Beef House

Directions: 0.8 mile inside the beltway on Route 1 South, just past the Super 8 Motel (College Park exit off I-495).

Note: If coming from points north on I-95, at the Capital Beltway stay right at the split and then take the immediate left exit to Route 1 South, College Park.



Lasick's Beef House
9128 Baltimore Blvd.
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(301) 441-2040



Pulpit Ramp at Dusk—Photo by Susanna Clapsaddle