Chicago Area Orienteering Club Course Setter's Package

Thank you for volunteering to direct a local meet. Without the generous commitment of our members, our club and the sport would suffer to the detriment of all of us. Being a course director should be a great deal of fun for you and your assistant. If it is not, you can get more help by contacting the president of the club (president@chicago-orienteering.org).

For most of the year, when you show up for a meet, you run for only an hour or so, and then go home. As a result, your time in the woods is limited to less than ten hours per season; your opportunity to develop better appreciation for good orienteering techniques is limited.

However, as course director, you will have many hours to become intimately familiar with the map you will organize your meet on and practice orienteering techniques. Working completely alone, you will find and mark dozens of features, some of which will be difficult to find. By the time you finish you should know the map just about as well as anyone in the club. Next year, when you are again competing on this map, you'll run this area as though it was your own back yard.

You Are Responsible

Course setters are responsible for working with the mapping director, permit coordinator and meet director to determine where the start is going to be, recruiting a qualified vetter, providing the courses to the course reviewer, printing the clue sheets, setting up ePunch both prior to the meet and during, providing control pick-up maps, exporting results. The only way to successfully handle all these responsibilities is to start early, plan carefully, and recruit volunteers to help you.

Schedule Overview for Course Setters:

What to Do Immediately

Obtain OCAD and current map from Mapping Director: mapping@chicago-orienteering.org

- Obtain picnic shelter location from Permit Director: permits@chicago-orienteering.org
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3 Months Before the Meet

Determine type of meet and get contact list from VP. Contact course setters before and after your event to confirm equipment hand off.

2 Months Before the Meet

Send courses for review to the Course Reviewer: course-reviewer@chicago-orienteering.org

1 Month Before the Meet

Provide an "all control" map, clue sheet and have flagged locations vetted.

1-3 Weeks Before the Meet

Help pick up controls at previous meet and equipment.

Day Before Meet

Sync ePunch controls, set controls and water.

Day of Meet

Finish setting controls and water. Set up ePunch computer, train ePunch start and finish volunteers. Direct control pickup, train volunteers, provide maps and cl

Post-meet

Finalize meet accounting sheet and send money and all forms to the treasurer (treasurer@chicago-orienteering.org). Send results to the webmaster (webmaster@chicago-orienteering.org).

Course Setters

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The course setters should familiarize themselves with the USOF guidelines. They will keep the meet director informed and discuss ideas together. After they design and flag the required courses and control description sheets in accordance with above schedule, they will be responsible for hanging all controls in proper location as described by approved control description sheet and map. On the morning of the meet, they will be available to assist meet director in any emergencies that occur on courses. Finally, they will help with control pick-ups on Sunday.

Make White, Yellow, and Orange Courses Easier

Please read the enclosed United States Orienteering Federation (USOF) course guidelines and interpret them generously. Orange controls should seldom be included on the Red course, since they will have large catching features and prominent handrails to assist the intermediate orienteer. Controls on advanced courses (Green and Red) should be set on smaller features with no nearby catching feature, handrail, or obvious attack point.

At least one month before your meet, please send all your courses to the course reviewer (course-reviewer@chicago-orienteering.org).

Blue Courses

As in recent years, we will not offer blue courses on our local meets. Any orienteer who wishes to run longer can combine Red and Green courses, or run a Pink course if it is offered.

Course Design

Even though you may have more than a month before your meet, you should begin to think about your courses now. Most people find that the most difficult courses to design properly are those furthest from their own expertise; White, Yellow, and Orange will require the most effort. This is because you cannot imagine how difficult most beginners find map reading.

Most people attending our local meets are inexperienced beginners. Your primary objective should be to ensure those people have a good time, feel a sense of learning and accomplishment, and want to come to another of your orienteering meets. You should therefore regard the White, Yellow, and Orange courses as the core of your meet; spend most of your time planning them so they are short, fun, and fair. Revise and revise again.

Send copies of your intended White, Yellow, and Orange courses to the course reviewer (course-reviewer@chicago-orienteering.org) and other more experienced meet directors and ask for their opinion. Go out on these courses with inexperienced friends and see how difficult these courses are for them. Do not resist suggestions others make to simplify these courses. For every leg, identify catching features, attack points, and handrails; ensure that these are prominent and easy to find on Yellow and Orange courses. And remember, it is traditional to make the GO control bag the common last control for all courses.

Green and Red advanced courses may use many of the same controls—all as difficult as you may wish. However, these advanced courses should not use easier White-, Yellow-, or Orange-level controls. The only difference between Green and Red courses is their length, so you are really just setting two variations of a single course. Analyze each leg to make sure there are at least two route choices. For an independent opinion, send copies of your courses to the editor (editor@chicago-orienteering.org) or president (president@chicago-orienteering.org).

Mapping

The mapping director (mapping@chicago-orienteering.org) will send you a couple of clean copies of the map you will use. You should photocopy the map and use as many black and white copies as you wish to plan your courses. In order to conserve club funds, we are trying to make our existing supply of printed maps last until we update and revise each map on OCAD, a computer cartography application.

As your meet date approaches, you will need to prepare two master maps of each course for your map boards. Also, if you encounter significant unmapped features, you should also prepare a map with highlighted corrections to be posted at the meet. Finally, you should have at least 150 clean maps on hand for competitors on meet day. Contact the mapping director (mapping@chicago-orienteering.org) to obtain maps.

You will direct control pick-up after the meet using pre-arranged volunteers. Sometimes, the master maps can be taken from the map-boards and used for control pick-up. Other times, you may want specially-prepared pick-up maps that divide the site into only three or four area. In order to manage all this, it is recommended to prepare a map with every control location indicated, and a master control description sheet.

Flagging

You should visit each control feature and hang streamer tape, which can be obtained in any hardware store. Verify with absolute certainty that you have located the correct feature shown on the map. Nothing ruins a meet more quickly than an incorrectly-hung bag. While there, physically appraise the suitability of the feature for your meet. Does the feature and surrounding areas conform to the map? If you have any doubts about the control feature, the area, or the map, you may wish to choose an alternate feature immediately. Also, verify your control description. You may need to add a modifier (e.g. on top of, east side, north end, etc.) in order to more precisely describe the control feature. You should finish flagging all controls at least two weeks before your meet.

Vetting

This is a good job for your Assistant Meet Director. All courses should be vetted once the control description sheets have been prepared and control locations flagged. The vetter should not only verify that the streamer is on the correct feature, but also that the control description is accurate and complete, that the proper bag code is shown on the streamer, and that other aspects of a well-designed course are observed. The vetter is the only other person who will see each control feature before the day of the meet. The vetter's input is important; use it.

Control Description Sheets

Control description sheets should be created electronically using OCAD
. If you do not have access to a computer with the Windows
operating system, contact the mapping director (mapping@chicago-
orienteering.org) for assistance. Please use verbal descriptions on the
White control description sheet, and both verbal and International
Orienteering Federation (IOF) codes on Yellow and Orange control
description sheets. Again, we are trying to make Orange more accessible
for novice orienteers. Control description sheets for advanced courses
(Green and Red) should only list the IOF codes. Remember that a Junction
(Y) and Intersection (X) can involve only linear features such as trail and
vegetation boundaries. You cannot have a trail/clearing intersection, since
the clearing is not a linear feature: use vegetation boundary instead in
describing the control description. You should print and cut at least 60
copies each of the White, Yellow, and Orange courses, and 40 copies each
of the advanced courses (Green and Red).

Equipment

Both you and your Meet Director
should volunteer to pick up controls for the meet preceding your own. Once
you get the controls and ePunch computer, you should inventory all controls
and other supplies against the attached list and purchase additional required
materials as required (equipment director:
equipment@chicago-orienteering.org).
 To facilitate errorless control setting, produce a "hang route" course on OCAD
 print the map and clue sheet, package the controls by set order, the use of several du
several large duffle bags with padded straps, a backpack for water can help transport.
Advanced courses can be hung on Saturday afternoon, leaving the closer,
easier controls until early Sunday morning. It is very important to ensure that
the control locations agree with control description sheets and the master
maps.

Control Bags

The club should have at least 75 good control bags on hand. If you don't
have a list of their codes, you can get a current tally from the equipment
director (equipment@chicago-orienteering.org). **Control bags should be
hung using a slipknot** so that they can be picked up easily at the end of
the day. For a tired volunteer, there's nothing worse than to spend five
minutes being bitten by mosquitoes at dusk, picking apart an over tightened
granny knot!

Please instruct your pick-up crew on the correct technique for wrapping up
control bags. For pin punch controls, the punch and strings should be collected into a
cloosely onto the outside of a panel, the two frames brought together, and the
hfabric rolled over each corner a couple times is sufficient and expedites future.
control hanging. ePunch controls need to be removed and packaged with care.

Registration Posters

A well-directed meet provides plenty of communication. Several large posters hung in the registration area vastly improve dissemination of important information. You should consider posters describing

- course lengths,
- number of controls,
- anticipated finishing times,
- map corrections,
- trail conditions,
- hazards, and
- safety bearings and procedures.

Meet Day

Although many of your meet volunteers have been arranged for you, you are still responsible for the conduct of your volunteers. So please be present when volunteers begin to arrive. A fully staffed Registration area should be set up and running from 9 a.m. to noon. If possible, call your volunteers prior to the meet to confirm their schedule and responsibilities. The secretary (secretary@chicago-orienteering.org) can provide you with a current club roster. Ensure that the people helping to pick up controls know that they may also be required to assist with Search and Rescue in accordance with USOF requirements.

At about 8:30 a.m., one of your registration volunteers should arrive with registration materials and highway signs, which he will be responsible for hanging and taking down. This volunteer will also be responsible for accounting for all cash, running beginners' clinics, and directing competitors to the start. Brief your volunteers on these duties in advance.

From that point on, your volunteers must start competitors, finish them, score them and rescue them, if necessary. You should plan for an uphill finish if possible to avoid excessive speed in the finish area. The volunteers at the finish area will have an easier time if the table is pointed in the direction from which the competitors will be running from the last control. For competitors who start after 11 a.m., you should emphasize the 3-hour time limit. Tell them that control pick-up will begin at 2 p.m. If you encounter any confusion, you may (at your discretion) refuse to register the person, return the registration fee, and suggest a hike around the area. In other words, decide who you wish to be responsible for later in the day.

Wrap-up

After the last competitor has gone out at noon, you'll have a two-hour slack period until you can begin to pick up controls. This is a good time to check each finisher's card punches and enter start and finish times into a computer. You should begin the wrap-up planning; highway signs can be taken down and registration materials packed. Since it may take considerable time to get out to distant controls in the first place, you can give the pick-up maps to volunteers at about 2 p.m. and instruct them to start at the furthest controls and work their way in.

You must account for all participants. It is a requirement of our USOF insurance that a reasonable effort be made to locate lost or injured orienteers. Before going out, competitors should be advised to:

- carry a whistle,
- stay on trails or safety bearing if lost, and
- if injured, try to get to a nearby large feature or control and stay there.

Before sounding the alarm, double-check your finishers' list against control cards to catch anyone you may have missed. Check the parking lot against car information on missing competitor's registration forms to see if, in fact, the person has not yet returned. Before sending out searchers, call the contact phone number on the registration form, and drive all roads surrounding the area to see if the missing person has come out.

If a search team is sent out, you should instruct them when to be back, which specific large features they should check, which areas should be searched, and which trails to take out and back. Two good orienteers should run the course both forward and backward, meeting in the middle. Try to analyze the course and check any confusing areas where a person could be injured or stray from the course. Prior to the meet, you should have determined emergency telephone numbers for paramedic evacuation or resuscitation; be ready to call for help if necessary. Finally, if all else fails, leave your name and a description of the missing person with local police, and stress the importance of contacting you when the person is located. Unless it is below freezing, do not begin a night search.

That evening you should export and send ePunch CSV file, the course OCD and the map OCD file to the club president (president@chicago-orienteering.org) and webmaster (webmaster@chicago-orienteering.org).

And then sit back, close your eyes, smile, and think of the fun, adventure, exercise and generally good time you gave to
literally hundreds of people that day. And accept the gratitude of all of us in the club for your efforts.

USOF Course Design Guidelines (modified for CAOC courses)

General Considerations for All Courses

Objective

Orienteering's slogan is "the thinking sport;" doing well requires a combination of physical and mental skills. These skills are put to the test by the course setter, working in the framework of the given map and terrain. It is nearly impossible to set a course that does not offer a good physical test, providing that it is of the proper length; the challenge for the course setter is to offer mental test appropriate to the skill level of those for whom the course is intended.

Skill not Luck

You are setting the course for an orienteer, not a surveyor, so the feature you use must be distinct. You should avoid such control sites as "the middle of the marsh" (unless it is a very small marsh) or "the hillside." Why? These introduce too much of an element of luck into the competition. The competitor should be able to orienteer directly to the control if he is skillful, and not have to count on finding it by using a systematic search (he or she may end up doing that anyway, but not through necessity). Often a contour line will have a gradual bend in it that could be called a spur (or reentrant). Avoid this also; it may be hard out in the woods to tell just where the spur or reentrant is. Your features for control sites can be small, but they must be distinct.

In general, ***avoid dense areas for controls***, especially if the terrain is somewhat vague. Again, it is a matter of what is fair; are you requiring skill or luck? Finding a control point (for example, a pit) in the middle of a large, flat, dense area places too great a premium on luck, even if the point itself (the pit, say) is distinct. Dense areas may be okay if the terrain is well defined.

Start-Finish Location

The location for the start is often dictated by good terrain for White and Yellow courses with plenty of linear features. Most competitors like to have the Finish as close to the parking as possible. Move the Start to a higher elevation to reduce climb (not an issue for most Chicago-area events).

Avoidance of Dog-legs

Leaving a control, there should *not* be a logical route that doubles back through the same area from which the control was approached. Why? Because competitor A may be just ahead of competitor B, so that A reveals the location of the control when leaving it, thereby helping B. This is called a dog-leg. It is at least potentially unfair, since some competitors may be luckier than others. Dog-legs may be obvious or not so obvious. For example, the best route to a control may be along the base of a hill to a reentrant and then continue along the base of the hill. You have a dog-leg, even though the straight lines you use to connect the points on the map do not show this. To avoid dog-legs, you can put in a short leg—100 to 300 meters long—to move the competitor away from the previous control to the start of another long leg. A similar problem can occur if you use the same control on more than one course, if runners on one course leave the control in the direction from which the people on the other course are arriving. Avoid this as well. Under some conditions, it may be necessary to have a dog-leg on a White course in order to have clarity. While not desirable, a dog-leg on White is preferable to a course that is confusing or too difficult. Avoiding dog-legs tends to be less important on courses with a smaller number of runners and relatively spread-out Start times. Remember that the USOF minimum for Start time intervals is two minutes. (At CAOC local meets, we start people at one-minute intervals.)

Avoidance of Dangerous Areas

Avoid dangerous areas such as cliffs with poor visibility, sink holes, large areas of poison ivy or poison oak, or deep swamps. Remember, a White or Yellow runner may go into these areas accidentally, while a Red or Blue runner may be tempted to try a dangerous short cut.

Controls on Similar Features

Have no less than 100 meters distance between any two controls on different courses if the features are similar enough to be confused at all and no less than 75 meters between any two controls on different courses regardless of the feature.

Optimum Route

Determine the "optimum route" that an orienteer would take on all of your courses. Measure its length in meters with the edge of a piece of paper or a string. Then count how many contour lines this route crosses going uphill. Multiply this number of contour lines by the contour interval in meters. This "climb" must not be over 4% of the optimum route distance. The 4% is an IOF maximum; it is better that you are well under it. For example, a 6.7 km Red course with an optimum distance of 7.5 km should never have over 300 meters of climb. If it is, change your course so that there is less climb. Try contouring along hillsides. A longer walk to get to a higher Start area can also help. This is rarely a problem at Chicago-area events.

Control Placement

Controls should never be hidden by a non-mapped feature for any course. It is extremely frustrating for the orienteer to navigate a leg properly only to lose time searching for a hidden control. Remember, unless the control description information clearly implies otherwise, every control should be equally visible from all directions.

For White, controls should usually be visible from the trail or road used to navigate. For other courses, the control feature should be seen first and then the control. In no case should the control be hung low, near the ground. Err on the side of visibility. Most controls are hung about 3 feet off the group. Do not place the controls on the ground or draped over a log or a rock. They should be hanging free and fully open.

It is fair, and often desirable, to block the view of the control by a mapped feature, especially where it is the control feature, such as a cliff, boulder, etc. But, be sure the feature is appropriately visible. It is hard to improve upon a control on the far side of a knoll, seen first as the runner reaches the crest or comes around the side. On the other hand, *nothing is worse than a control hidden behind a log, bush, or other unmapped obstruction, which punishes all but the lucky few who stumble upon it.*

It is desirable to place controls from different courses at least 75 meters apart regardless of the control feature.

Hidden Controls

Despite the consideration that the feature, not the bag, should be seen first, do not hide bags, especially in pits. Controls should be hung approximately three feet off the bottom of a pit or small depression, even if this makes the control visible from further away.

Duplicate Courses

If for some reason you are having duplicate courses, try to make them very similar in length, climb and number of controls. The first control must not be the same for any two courses.

Field Check

Check the planned control locations out in the field. Many controls are unsuitable due to map problems. You will find that even on a good map, up to 10% of the controls selected "on paper" (by yourself or suggested by the course consultant) will have to be rejected (and alternates chosen) after checking them in the field due to unsuitability of the map, vegetation, etc. An alternate control can usually be found only a short distance away, so that the leg can remain intact.

Course Purpose

For the design of the less difficult courses (White, Yellow, and Orange), be mindful of three overriding considerations which distinguish these courses from the advanced courses (Green and Red):

While, as a general rule, the advanced courses should be designed to be as technically difficult as terrain and map permit (and of equal technical difficulty), each of the lower courses—White, Yellow, and Orange—must be designed to fit a distinct range of technical difficulty.

The correct design of such courses is just as important as that of the advanced.

Because beginners and developing orienteers spend at least a season or two (usually longer) running the lower courses, it is especially important to the development and success of the sport that these courses be well designed.

White Course—2 to 3 kilometers

Winning Time: 25-30 Minutes

The White course should be designed for people who may have no orienteering experience and have had perhaps 15 minutes of instruction before setting out. The major complaints about White courses have been that they were too difficult. **It is impossible for the White course to be too easy.** When you believe you've made it as easy as possible, look again. If the winning times for the White course exceed 45-50 minutes, you've made it much too difficult.

A White course must be set in a section of the map which has an appropriate sequence of linear features, where the mapping is absolutely accurate and where, preferably, there is an interesting variety of topographic features. An ideal example would be a small lake, which can be circumnavigated without fear of losing one's way and with the expectation of a good trail system and interesting features. Usually the area of the map having the most trails is best for White course location.

An Easy Start

Make the first two or three points particularly easy. This allows the competitor to get familiar with the map and keeps him from getting discouraged from the very beginning. The first control should be as simple as possible—in fact, it might even be visible from the starting point.

Linear Features

Keep every leg along well marked trails or a similar linear feature such as a road, stone wall, field edge, stream or the like (trails are much preferred, however).

Short Legs

Generally the legs should be kept fairly short—certainly no more than 400 meters. It is better to have six to eight short legs than three or four long ones. On the other hand, don't use twenty legs each 100 meters long.

Large Features for Control Points

Make the difficulty of the control fit the course. Use large, obvious features—top of a big, distinct hill, rather than the back side of a three meter knoll; a trail junction rather than a reentrant. Rarely, therefore, will a control be suitable for both the White course and the Orange course.

Suitable Terrain

Generally, the terrain you use for a White course should be "friendly," with lots of good handrails, no excessively rugged features, etc.

Avoid Vague and Dense Areas

The features you choose for control sites must be distinct; even large features can be too vague (e.g. the top of a large flat-topped hill). If you pick precise spots, you will get fewer complaints about controls being a little bit off. Never put a White control in a dense area.

Very Simple Route Choices

It is not necessary to have a route choice on a White course, but sometimes it is nice to offer a little toward the end. The options should be very simple. Remember, people on the White course may take routes that you would never dream of! The controls should be obvious to anyone walking along the trail or other linear feature.

Interest and Variety

Guided by the above constraints, all effort should be made to add interest and variety. Study the map for distinctive features such as large boulders, ruins, fences, cliffs, stream junctions and the like. Locate the control at such a feature, but be sure it (the feature or even the control) can be seen from the trail. Make sure that there are no similar features nearby to confuse the runner. Avoid topographic features with which beginners are not familiar, such as reentrants or spurs.

Isolate the Course

Check the other courses to ensure that there are no nearby controls to confuse the White course runners.

Use Streamers Only If Necessary

If necessary, a leg can be run through the woods guided by streamers, but this should be used only in exceptional circumstances where needed to optimize distance due to lack of linear features.

No Use of Compass

Avoid directions or features that require the use of a compass. A White course should be able to be completed without having to use a compass.

Ideal Location for Start

Almost without exception, the ideal location for the White course, because of its length, dictates or constrains the Start area for all courses.

Yellow Course—3 to 5 kilometers

Winning Time: 35-40 Minutes

The Yellow course is designed for males or females who are 13 to 14 years old and for older orienteers who are relatively new to the sport. It offers the beginning orienteer an initial experience with the application of orienteering techniques, and the course designer should make an effort to involve as many fundamental skills as possible—compass, map reading, pacing, and route choice:

Basic Design

Just as with White, it is critical that the Yellow course be set in an area having well-mapped, clear features. It is vital to appreciate that the basic difference from White is that Yellow takes the runner from the trail into the woods. For instance, on White the course can be navigated entirely along trails, while on Yellow it could be navigated off trails. While trails can be used for a route on a Yellow leg, a faster off-trail route should also be available for the same leg.

Easy Course

Yellow should still be an easy course. These competing considerations confine the technical difficulty for Yellow to a rather narrow range. This objective is accomplished by the use of a handrail for much of each leg's length, with a catching feature near (25-50m) each control. The best Yellow legs are along handrails such as streams, ridges, vegetation boundaries or stone walls. It's better to have a Yellow course that is too easy than one that is too hard.

Route Choice

As with White, some challenge can be offered with shortcuts through open woods, but only if the distance is relatively short (up to 200 m, at most), and provided that a catching feature exists. And even in such cases, a longer "safe" route should also exist.

An Easy Start

Make the first two or three controls relatively easy so that the competitor may become familiar with the map.

A Variety of Lengths of Legs

Vary the lengths of the legs, but tend toward keeping them short. The maximum length should be 600 meters. Legs should be longer than White; usually 200-400 meters is good for Yellow.

Large Features for Control Points

Use large and rather obvious features, such as trail junction, top of hill, North side of pond. When a point feature is used, it should be within visual distance of a large feature.

Control Placement by a Collecting Feature

Put each control on or just after an obvious collecting feature. If the control is not on a collecting feature, put it within 50 meters of one, preferably just after it.

Catching Features

If a control is not on a collecting feature, a catching feature must be within 100 meters after the control.

Avoidance of Dense Areas

Never put a Yellow control in a dense area.

No Use of Compass

A Yellow course should be able to be completed without the use of a compass. A leg where use of a compass will result in a faster route is appropriate, however, that leg must have a reasonable route where a compass is not required.

Shared Controls

The practice of sharing a leg or control with White or Orange should be avoided, especially if a large turnout is expected. Because each of the three lower courses has a discrete range of technical difficulty, overlaps invariably cause compromise with correct standards.

Orange Course—4.5 to 6 Kilometers

Winning Time: 50-55 Minutes

The Orange course is characterized by moderately but not extremely difficult navigation. The controls and best routes should invite the intermediate orienteer away from strong collecting features (roads, trails) that the beginners must rely on. However, the penalty for navigational errors should not be extreme. An Orange control may be placed in an area of intricate small features, but only if there is at least one good attack point near by (preferably several) to help the competitors find it, and also a catching feature nearby to which they can "bail out" if they become confused.

One of the most challenging problems in designing an Orange course is finding controls with nearby catching features and route choices that allow less experienced competitors to still complete the course.

You are likely to spend more time working on the Orange course than on any other course for you event. This is time well spent.

Catching Features Are Critical

Because White and Yellow courses seem so short and easy, many competitors select the Orange course based more on the distance than on consideration for how difficult it is going to be. This, along with legs and controls that are more suited to Green or Red, has lead to a large number of competitors not finishing Orange courses. This can be reduced by having large catching features about 100-150 meters behind each control.

Lots of Route Choice

Set a course that forces the orienteer to make decisions constantly. Make sure that the competitor must continue to pay attention and think in order to execute his choice properly—it should not be, for example, just a matter of choosing which one of two main roads to follow for one kilometer. The best Orange legs require, and reward, constant navigation. Handrails should be infrequent and more suitable than for Yellow—e.g., a long, broad reentrant. Rather, the runner should pick off point markers (cliffs, boulders, knolls, marshes, etc.) as he proceeds along his chosen route. A trail—or a road—run should never be the fastest choice.

Variety

For variety, easy legs near Yellow in difficulty should be mixed with challenging legs near Red; in addition, a mix of short (200-300m) and longer (500-600 m) legs is desirable. It is important that the whole course contains as much variety as feasible. This variety should also cover control features, direction, route choice, and navigational problems.

Control Features

The control feature should be fairly prominent, unless a good attack point and catching features are nearby. The Orange runner should be forced to use all of his orienteering skills in the overall course.

Difficult controls may be used, but a good attack point should be nearby.

The fastest time should be about 50 minutes. Keep in mind that some very skillful -15-16A runners will be on Orange; so the course must not be too easy. A typical mistake is failure to reduce length due to climb, difficult footing (rocks) and slow run (fight).

Compass and Pace Count

Legs requiring the use of compass and pace count should be limited to one or two. These are legs that cannot reasonably be done by map reading alone.

Shared Controls

The practice of sharing a leg or control with Yellow or Green and Red should be avoided, especially if a large turnout is expected. Because each of the three lower courses has a discrete range of technical difficulty, overlaps invariably cause compromise with correct standards.

In particular, controls and legs suitable for Green or Red courses are likely to be too difficult for Orange.

Green and Red Courses

The advanced courses should be set so that the very experienced orienteer is well challenged. However, the element of luck should be reduced as much as possible. The Green and Red courses should be of the same technical level—difficult. The general requirements are the same. The only difference between the Green and Red course is length. This is often accomplished by designing a Red course and removing a few of the furthest-out controls. It is common practice to add one or two additional controls to the Green course to reduce congestion and following. The first controls on each course should be different.

Winning Times

Recommended winning times are 50 to 55 minutes for Green, and 60 to 65 minutes for Red (USOF Rules). Try to keep your course length reasonable, especially on hilly courses or in thick vegetation, to meet these times. Green courses are typically 5-6.5 km. Red courses are typically 6-8 km.

Control Feature Size

If you put the control on too large a feature, it is usually very easy to find; therefore, the competitor does not need to use precision techniques. Too big a feature might be the top of a large hill, the edge of a large clearing, a point along a trail or stream (if there are any confusing trails or streams, this could be okay), etc. In fact, having a control within 50-75 meters of a big feature is probably too easy as well. Use small features—boulders, cliffs, small reentrants, spurs and knolls, small marshes, depressions, etc. Make the competitor orienteer to the feature before he can find the control. If the competitor is coming from the south, for example, place the control on the north side of the knoll or boulder (include this information in the control description).

Controls too close to collecting features

Collecting features are long features lying across the competitor's direction of travel, such as roads, large trails, streams, ridges, clearings, large marshes, etc. Placing a control soon after a collecting feature (e.g. 100 meters after a road) will usually make it too easy to find even if the feature is small. Furthermore, the competitor will probably be able to run to the road without thinking, making the leg too easy. Instead, place the control some 200 meters before the road. That way the less skilled orienteer will have to cover the extra 400 meters if he or she must use the road to find his bearings. Concentrate on this: if the competitor uses them to make his route or his navigation easier, make him travel farther out of his way. Don't make a direct route along trails the easier route.

Lost Kilometers

This means any parts of a course that requires little or no thinking, merely physical effort. They are to be avoided as much as possible, as the preceding paragraphs have already implied. If a control is on top of a large hill, the leg becomes a hill-climb event instead of an orienteering event. If the control is placed right after a big collecting feature, the competitor can turn off his mind until he reaches the feature. If the best route is along a trail for several hundred meters, again the leg becomes a racing event requiring little or no thinking. This is one of the most common mistakes that course setters make when attempting to set a course of the appropriate length.

Handrails

Try to avoid having the routes parallel to obvious linear features such as roads, trails, streams, fences or power lines. Keep such features more nearly perpendicular to your route unless the linear feature network is complex so that a parallel route will not simplify the leg significantly. This can be very difficult to accomplish in the Chicago area, where we have so many trails and other linear features. Seek out opportunities to go through areas with no trails (while avoiding the worst vegetation).

Long Legs

Include at least one leg in excess of 800 meters on each course. Careful navigation along this route should still be required. Don't just have a leg run 1 km down a gravel road.

Route Choice

Maximize route choice and navigation difficulties while minimizing the luck element and the lost/dead kilometers. The most difficult route (navigationally) should be faster than the "easy way around."

Variety

A good course offers variety in both controls and routes. The larger the number and the greater variety of O-tests built into a course, the greater the chance that luck is eliminated and the orienteer with the best ability wins. It's also more fun to be on a course that uses 15 different kinds of features than one that uses nothing but marshes and small depressions.

Long-O

When setting Long-O courses, the emphasis should be on long legs with lots of good route choices. Legs of one to two kilometers are appropriate if they can avoid lost distance. The estimated winning times of Long Courses should not exceed 75 minutes for Green and 100 minutes for Red.