

Planning Your Gun Club

DETERMINING NEEDS

Determining the need and the interest is the first step one needs to take in planning a Gun Club. As in most endeavors, determining needs is followed by careful planning. In the early stages of establishing a new shooting facility, this will save time, effort and money.

GATHERING INFORMATION

SUGGESTED FIRST STEP:

Choose a centrally located, easily identifiable location and invite a number of people to a meeting to discuss the venture. Among the persons to be invited there should be:

1. Representation from local and/or area sports clubs
2. Representative from the State Conservation Department-game warden, hunter safety coordinator, etc.
3. Local NRA field representative
4. Representative of the local Planning and Zoning Board
5. Sports editor or representative of local newspaper
6. Member of the Parks and Recreation Department
7. Chairperson or representative of the City Council or County Commission
8. Representatives from the largest, most community minded business or industry in the community

Add anyone whom you know who is interested in community development, recreational activities, and new ventures. Make this an open meeting with community bulletins on the local radio station and a notice in the local newspaper about the proposed meeting and its purpose. Follow up the written invitation to identified individuals by a phone call for confirmation of attendance. This will insure the cross section of persons who may be interested in a new recreational facility.

SUGGESTED AGENDA:

1. Introduce idea of establishing a gun club
 - a. American freedom of owning a gun, prevalence of hunting, benefits of improved hunting techniques through target shooting, recreation aspects of gun sports, firearm safety training, etc.
2. Discuss revitalizing old club, if applicable, or benefits of establishing a new one.
3. Bring up financial configuration possibilities
 - a. Private financing
 - b. Limited membership-private club
 - c. Governmental participation

FORMING COMMITTEES

If one obtains a commitment from a number of people at this meeting, the formation of committees to investigate various aspects of establishing a gun club can be formed.

Finance Committee

This committee has the responsibility of investigating the various means of financing the club, including possible grants from various agencies. See Sources of Financial Assistance later in this section.

Site Selection Committee

This committee has the responsibility of investigating the possibilities utilizing the decision making model at the end of this section.

Application/Permit Committee

This committee should have the responsibility of working with town and county officials, obtaining the appropriate applications and environmental impact statements, exploring applicable tax regulation. (Some clubs may obtain tax-exempt status under 26USL 501[c(7)].

Clubhouse Committee

This committee should obtain plans for the construction of a clubhouse that meets the needs of the proposed membership. Close work with the site selection committee for the land configuration will determine some parameters of the clubhouse.

Outdoor Facilities Committee

This committee should be responsible for determining the number of fields, grounds configuration location and number of outside viewing stands, picnic areas, landscaping and maintenance needs.

Set regular meeting times for reports from these committees and, when the committee work is completed, arrange for a decision-making meeting in which the recommendations are discussed and decisions made concerning best options based on committee research.

In summary, it is essential to do your homework early and plan your action with diligence. After preliminary plans are established as above, it is time to choose a site for your club.



Land Requirements

Before discussing specific requirements such as size, acreage, etc., your organizing committee must be aware of certain guidelines when selecting a plot of land to establish the club upon. Specific requirements are discussed later in this section.

PLANNING

In order to start a shooting range; you must first follow some guidelines. Here are some steps to consider.

Step I – Preliminary Concerns

What type of range are you considering and what is required.

1. To determine needs, the planner must first conduct a survey of the community. This will also determine how the community will back the project.
2. Determine how many shooters the range needs to accommodate.
3. Will the range be used for recreation, competition, training or all three?
4. Will the club be public or exclusive to members?
5. Will there be special uses for the facility?

Step II – Considering Alternatives

Alternatives- the possibility of upgrading or reconstructing an existing facility.

Existing Facilities

- Restore
- Expand
- Rebuild
- Sell and relocate
- Remain as is

New Facility

- Move to existing range or share with another group
- Lease shooting time
- Construct new facility

Step III - Zoning, Permits, Restrictions

1. Prior to site selection, all plans should be based on the above criteria. Careful planning and evaluation will result in a site that will accommodate the facility. In order to find an appropriate site, the following information must be gathered. In order to ascertain that legal requirements have been met, it is essential that a reputable attorney has been hired.

2. Obtain from state, county and local authorities copies of ordinances, zoning regulation, soil and water conservation standards, health department regulations and any other regulations that may pertain to the project. Your attorney should thoroughly review all this information to determine if the project is legally feasible. In some cases, local authority may not include shooting ranges in codebooks and may cause major delays and call for extensive public hearings to resolve the matter. In such cases, valuable time and money are expended in a process that may take years to resolve. Precautions should be taken in proceeding with the project.
3. Identify and select several sites. A site selection guide is included at the end of this section.
4. Gather all sorts of information on each site. Rank each site by evaluation using the form at the end of this section.
5. After all evaluations are ranked the following additional data should be considered:
 - Environmental restrictions
 - Access
 - Prohibitive cost
 - Restrictive ordinances
 - Property values
6. In the final process you need to select the site that meets or exceeds the acceptable standards for safety, space, access, zoning, local acceptance, cost, and future land values.

Step IV - Preliminary Design

1. Layout sketches of each site
2. Include all pertinent zone and building code requirements
3. Prepare a safety plan (See Safety section)
4. Submit all Zoning and Building permit applications for approval

Step V - Final Design

1. Make final site selection based on previous findings
2. Hire necessary professional help such as engineer, contractor, attorney, surveyor, etc.
3. Obtain detailed plans to submit for construction bids and permits
4. Include drawings of the total layout and safety ranges

Additional Considerations

- Community Relations
- Size
- Location
- Design
- Environment
- Safety Zones

Land Is Not Enough

In the selection process for the land to develop a gun club, it would be prudent to obtain city and county maps of all landfills under the local jurisdiction that have been closed. This land is less expensive, restricted from residential development or commercial use, but can be utilized for limited recreational purposes. Landfills are accessed by hard surfaced roads and are located in semi-isolated areas. If solid waste management processing has been present at the site, the land improvements including electricity, water, sewage, and possible gas are already in place. This development reduces the initial cost of constructing a gun facility enormously. While septic tanks can be installed, wells dug and butane tanks purchased, without electrical service it will be impossible to generate enough electricity to support the electrical needs of skeet fields, clubhouse facilities, and outside lighting for evening shoots. Therefore, the presence of the above mentioned amenities is essential.

A master plan should be developed that includes items such as:

1. The number of fields the project anticipates.
2. Is this the first phase of a program, anticipating additional fields as needed?
3. Have clubhouse size and needs been established?
4. Have minimum and maximum memberships been established?
5. Have estimates for tournament parking been projected including RV hookups?

Based on the major items in your master plan, use a problem solving model in the selection of a site.

After considering all the physical parameters, you should address permits and zoning questions.

Application for all necessary permits must be made to the appropriate city, county, or state agency that has jurisdiction over the desired property.

If you are dealing with a private citizen concerning the purchase of a large tract of land, your first phone call should be to the closest municipality concerning zoning jurisdictions. Even if the site plot is filed with the county, the municipality may have responsibility over permits for construction and use.

If you are dealing with a real estate agent, the agent can tell you who to call concerning identification of the proper authority to address your questions of zoning and land use.



Preparation of an environmental impact study, and a projected noise level statement that takes place into accord projected land development for the area adjacent to the desired property should be handled by the appropriate committee members.

Hours of operation to minimize the noise nuisance level to residential areas, strip malls, or public organizations such as schools, churches, etc., should be carefully considered.

A public relations campaign by the management staff and owner should seek support for the establishment of the facility. Projection of off-hour use of the grounds, clubhouse, and supporting other recreational activities desired by the contiguous community are desirable approaches when seeking supportive voices for the proposed project.

EXAMPLE:

Wolf Creek Gun Club (Now called Tom Lowe Shooting Grounds) in Atlanta, Georgia has been built on a landfill. The land cannot be approved for residential or commercial use. It is under the glide path of the Atlanta airport and adds little to the noise level experienced by the surrounding community. The closest residential development is more than two miles away, with the exception of a few long standing farm dwellings that are the remainder of previously rural neighborhood, and a few scattered residences, many of which have been purchased by the county because of their relationship to the landfill.

Within two miles is a church, and consideration of their times of services is of paramount concern in the overall planning of tournament and hours of general operation of the facility. Church members are cognizance of the financial benefits to their community through the influx of money, therefore, the relationship to the community is a positively reinforcing one.

Site Evaluation Form

PART 1

Gather information on this form for future rating on part 2 and final selection of the site for your club

Site Number: _____ Location: _____

Access:	Dedicated right of way _____	Natural Foliage:	Large Timber _____
	Trail _____		Small Timber _____
	Dirt road _____		Scrub _____
	Paved road _____		Cleared _____
Travel distance from locality:		Size:	Acres _____
	0-10 mi. _____	Land base:	Hard rock _____
	11-20 mi. _____		Swamp _____
	21-30 mi. _____		Sand _____
	over 30 mi. _____		Clay _____
Utilities:	Electric _____	Topography:	Flat _____
	Phone _____		Hilly _____
	Water _____		Mountains _____
	Septic _____		Swamp _____
Local Population and Housing:		Weather:	Dry _____
	0-.5 mi. _____		Seasonal _____
	.5-1 mi. _____		Wet _____
	1-2 mi. _____		Winds _____
	over 2 mi. _____		Other (name) _____
Land uses:	Hunting _____	Zoning:	Rural residential _____
	Fishing _____		Light industry _____
	Park _____		Heavy industry _____
	Other recreation _____		Farm _____
Ownership:	Private _____		
	County _____		
	State _____		
	Federal _____		

Site Evaluation Form

PART 2

Total					
Environmental Impact					
Land Use Projections					
Sound Abatement					
Local Support					
Political Opposition					
Easements					
Zoning					
Access					
Land Improvement/Utilities					
Terrain					
Acreage available					
Cost per acre					
<p>Evaluate each site of the following variables. Give a value of 5 for excellent, 4 for good, 3 for fair, 2 for poor, and 1 for unacceptable. List each site by number/location in the blocks below.</p>					

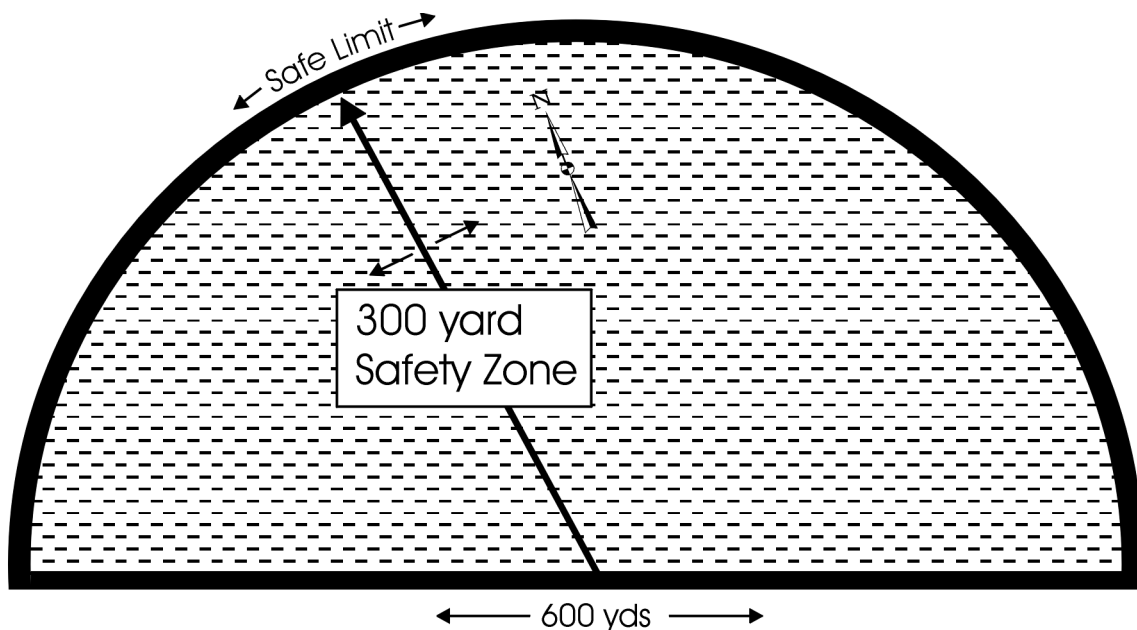
Field Layout

While planning your field layout, recognition of the shot fall zones comes into play. In order to optimize full use of your facility and maximize your revenues, lighting on at least one field (night shooting) is recommended. The diagrams following this section explain various aspects of field layout.

When selecting a site for a skeet field, you should consider a tract that is relatively flat and well drained. The background should not be broken by nearby buildings or other distractions. Factors such as future growth of your community, industrial growth, and accessibility to the property need also be considered. Consider roadway access and public utility tie in when selecting your site. A site evaluation form is also included in this section.

Your skeet field needs to have a tract 600 yards (1800 feet) by 300 yards (900 feet) with the shooting semi circle located in the middle of the long side. Each additional skeet field will require a minimum of an additional 50 yards (150 feet) to the long side. This allows for the distance of the adjacent field and additional traphouse. For best use of the facility, the skeet fields should face northeast to allow the shooters the longest shooting times without the sun in the shooter's face. The area of a skeet field including all safety zones is approximately 45 acres, including room for a clubhouse and storage. Refer to the diagrams at the end of this section for exact dimensions of the layout. Also included are dimensions for traphouses construction.

Field-Shotfall Zone



Ordinance Technical Manual 9-1990 also gives a formula, called 'Journee's Formula', for determining the approximate maximum ranges for shotgun. This formula states that the maximum range in yards is roughly 2200 times the shot diameter in inches. This would give the results in Table Three". (below)

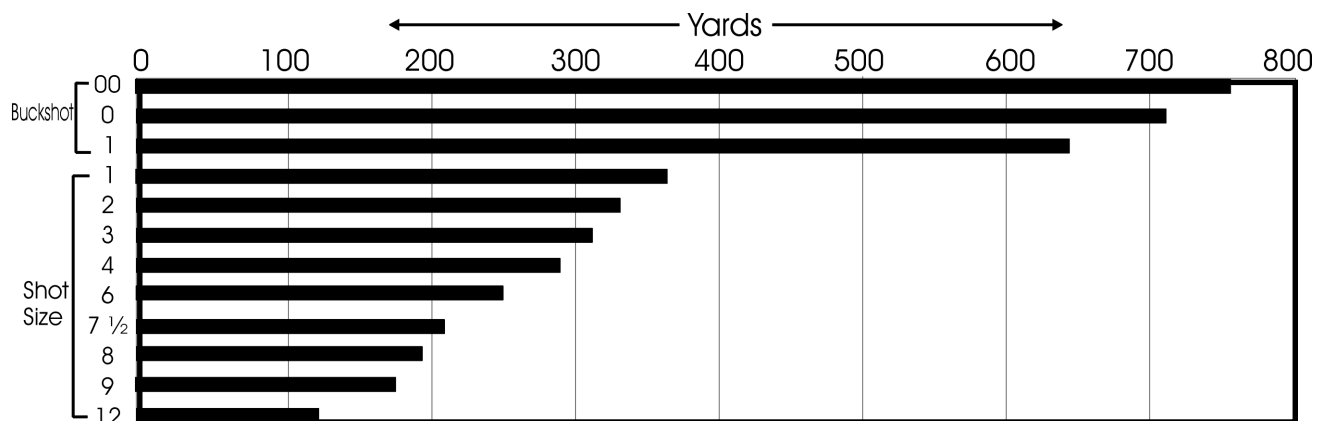
Table Three Maximum Ranges of Shot Based on Journee's Formula		
Shot Size	Diameter (ins.)	Maximum Range (yds.)
12-ga. round ball	.645	1420
16-ga. " "	.610	1340
20-ga. " "	.545	1200
.410-ga. " "	.38	850
00 buckshot	.34	748
0 buckshot	.32	704
1 buckshot	.30	660
#1 shot	.16	352
#2 shot	.15	330
#3 shot	.14	308
#4 shot	.13	286
#5 shot	.12	264
#6 shot	.11	242
# 7 1/2 shot	.095	209
#8 shot	.09	198
# 9 shot	.08	176
#12 shot	.05	110
(cal. .22 shot cartridges)		

Air Rifle	BB	No.4 Buck	No.3 Buck	No.1 Buck	No.0 Buck	No.00
● .175	● .18	● .24	● .26	● .30	● .32	● .33

12	11	10	9	8	7 1/2	6	5	4	2
● .05	● .06	● .07	● .08	● .09	● .095	● .11	● .12	● .13	● .15

The above data was taken from NRA FIREARMS & AMMUNITION FACT BOOK, (3rd Printing) Copyright 1970 pp.26-30, 213.

Range of American Shot



-Not To Scale-

How Much Land Do You Need?



The following charts will give you an idea of how much land you need to build a skeet field or a 5-Stand Sporting field. These charts have been prepared assuming all other requirements have been met.

The minimum size needed is 600 yards long and 333.34 yards wide (41.32 acres). Since a 300 yard safety zone is required from any shooting zone, you need 300 yards on each side of station 8 on a skeet field. The black box in the first diagram indicates the requirement for 1 field. The extra 100 feet or 33.34 yards is to allow for parking and a clubhouse. As other fields are added to the layout, the width need not be increased, however you need an additional 2.76 acres (50 yards), to the long side to adjust the shot fall zone for the adjacent field.

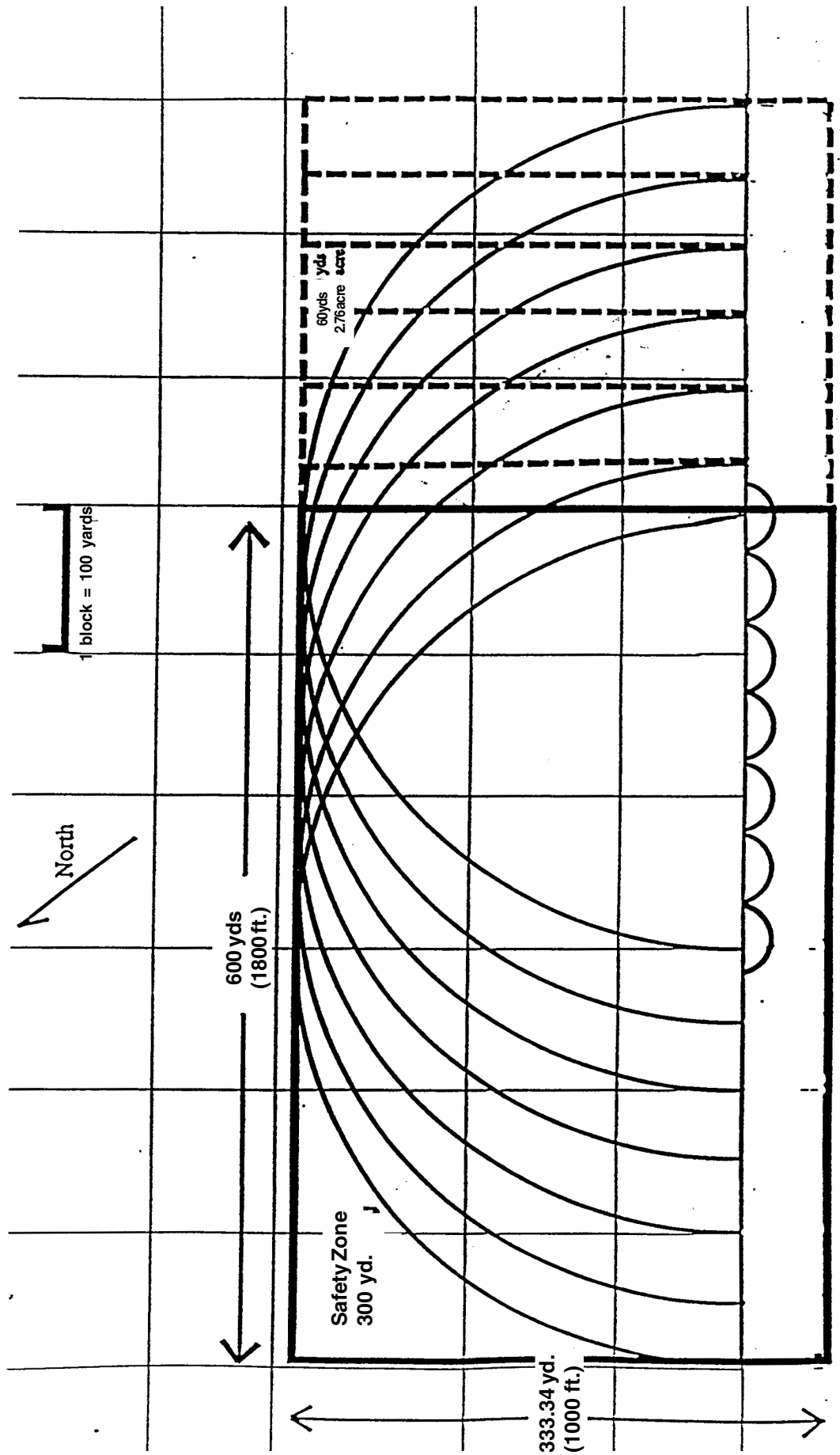
As you can see, you need 57.86 acres to build 7 fields in this particular tract. Remember that this is only for reference and other factors such as sound abatement and environmental factors must be addressed prior to construction.

Sample charts for typical acreage is also given. As you can see, a typical 40 acre plot (.25 mile x .25 mile) would not accommodate even one field. However as you elongate the typical tracts, multi fields can be constructed still allowing room for a clubhouse, roadway, parking and storage.

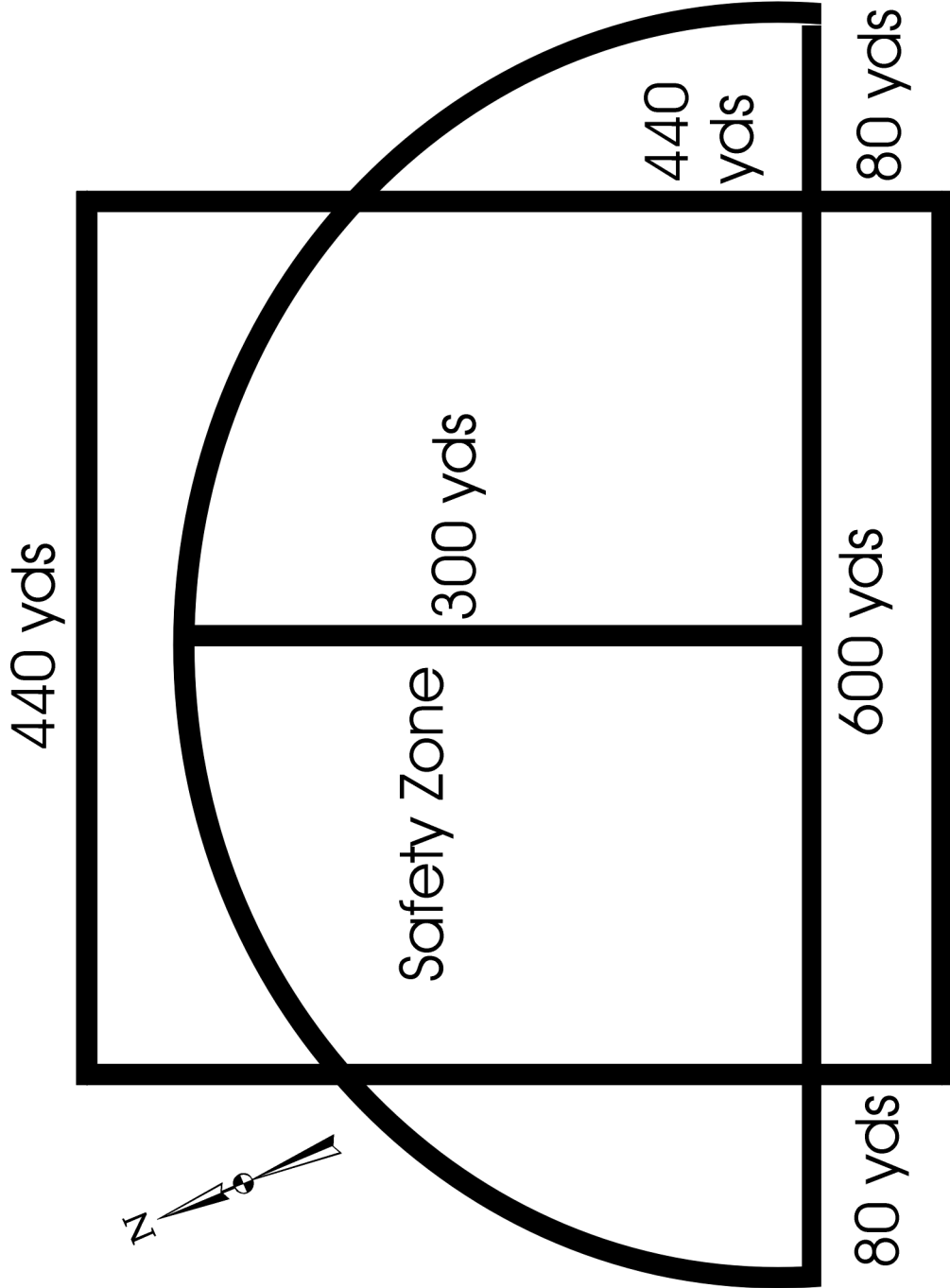
Multi Field with 300 yd Safe Zone

1 Field....41.32 acres
7 Fields....57.86 acres

Each additional Field.... 2.76 acres

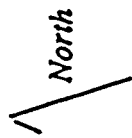


Typical 40 Acre Plot

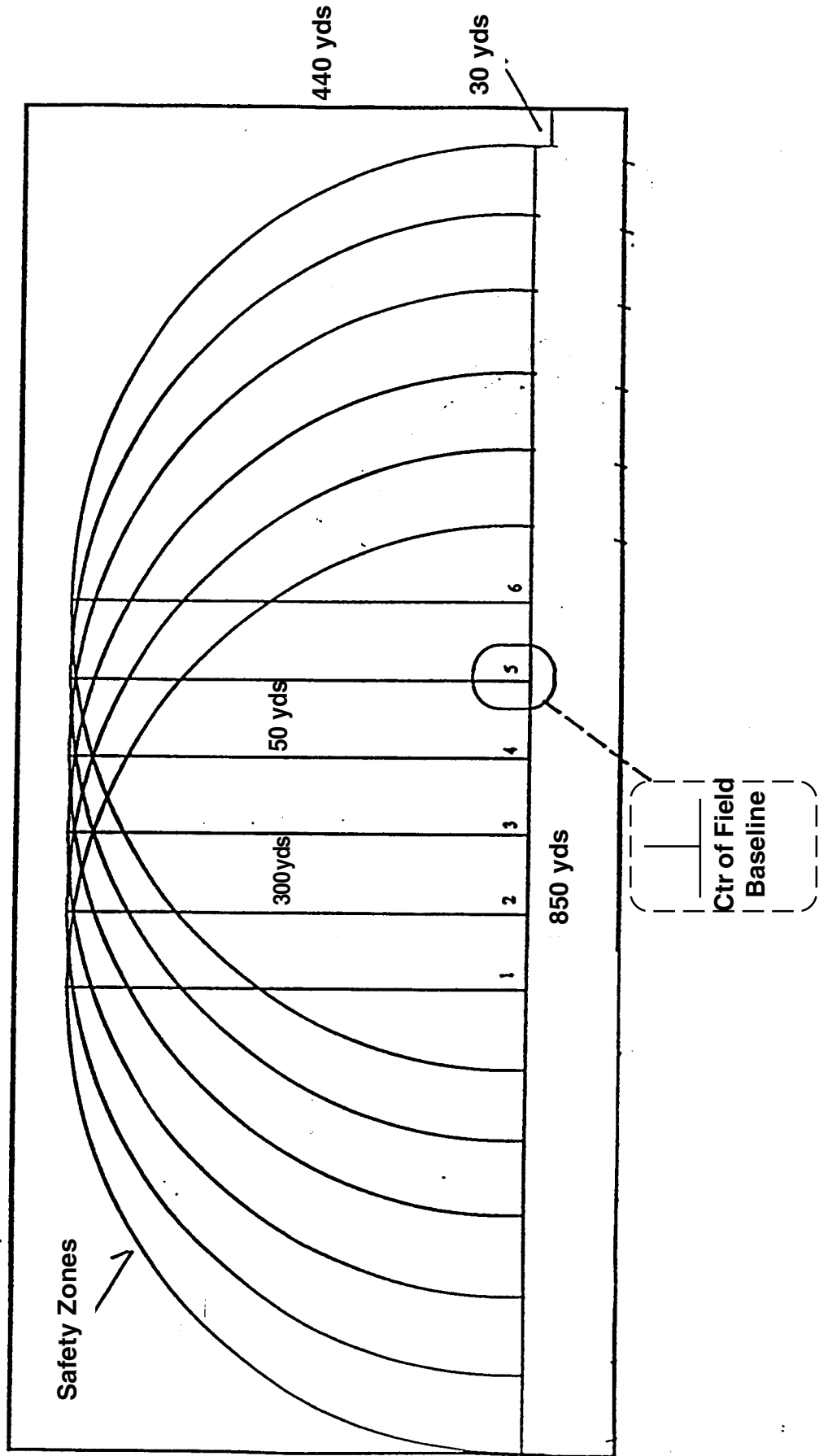


Typical 80 Acre Plot

Accommodates 6 Fields



880 yds



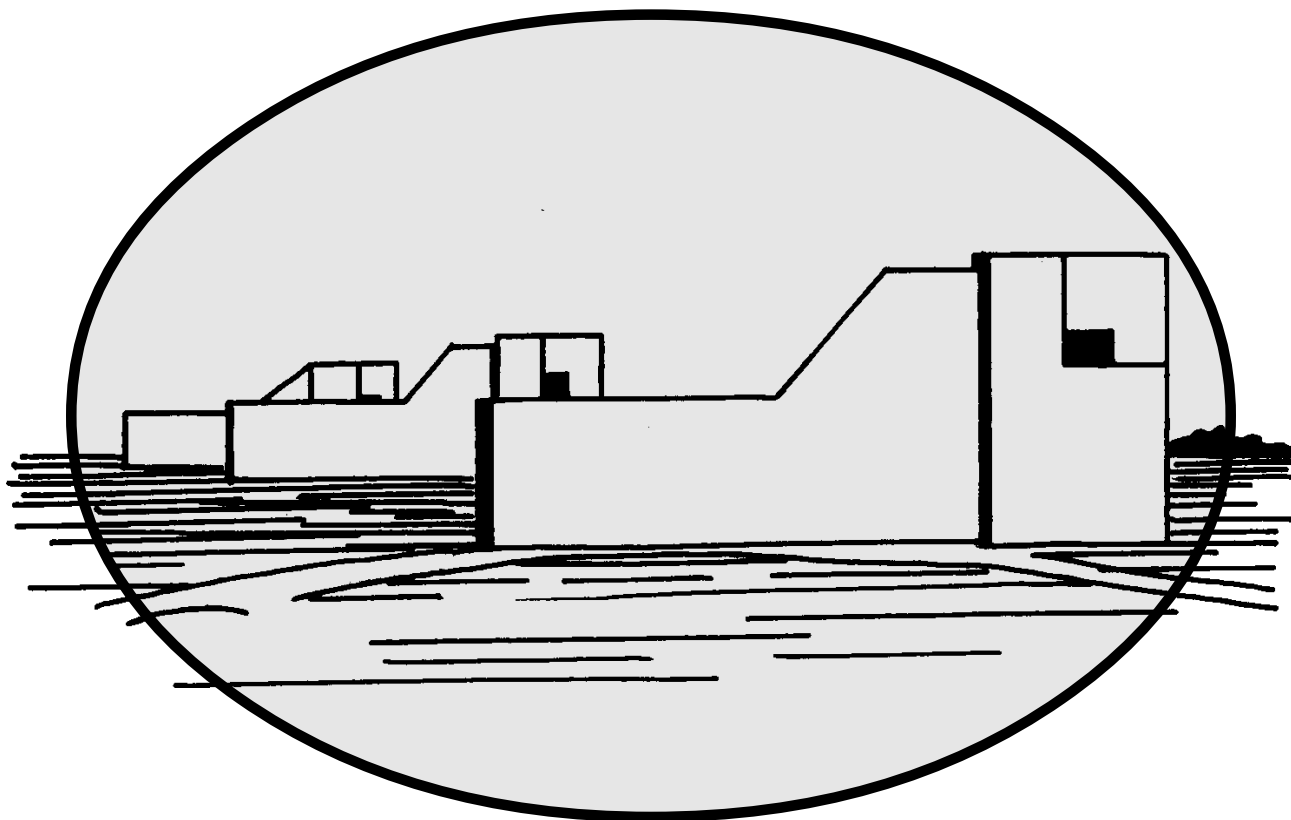
Traphouses

The construction of traphouses can lead to a book alone. For reference, we have included the following basic layouts with dimensions for your reference. Although the basic dimensions remain the same, many various materials and designs can be used.

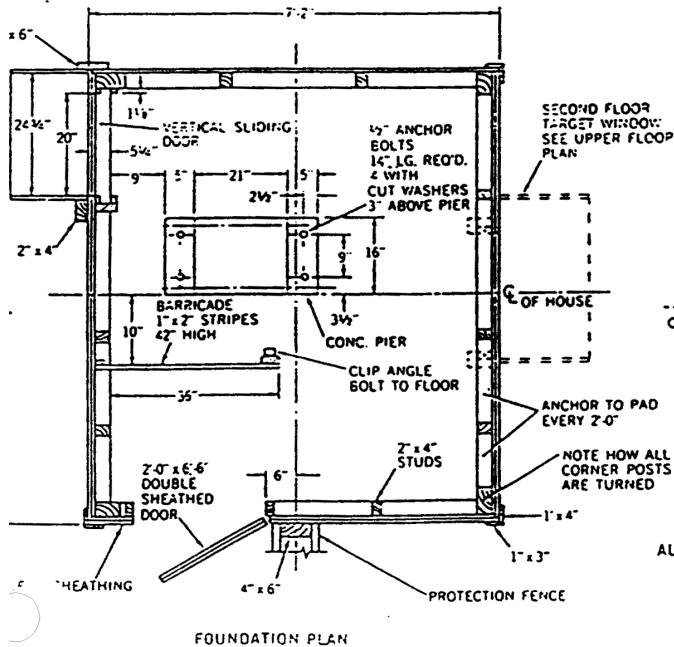
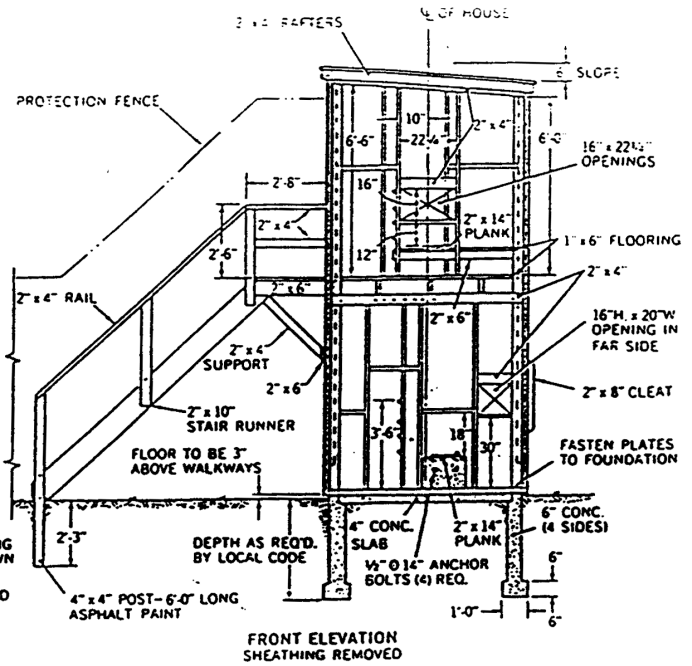
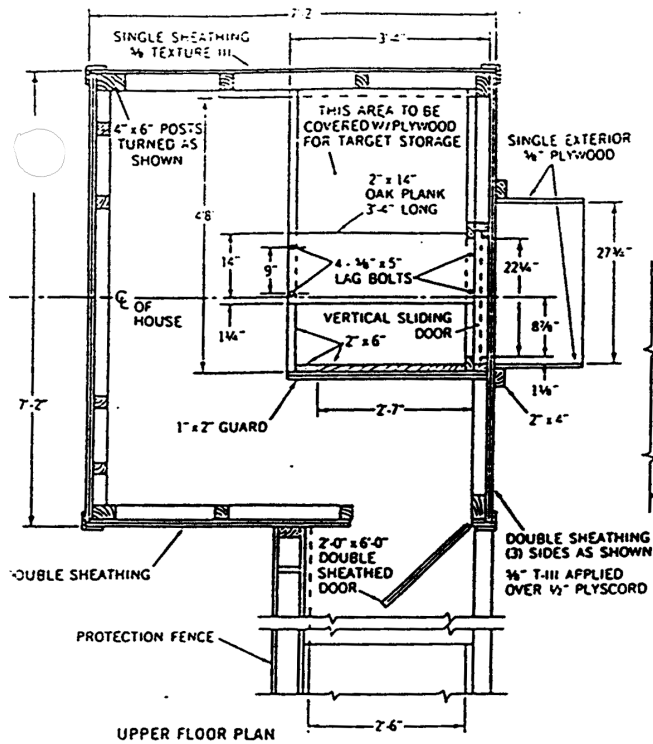
The enclosed diagrams show dimensions for both wood and masonry materials.

A very popular version has been used lately. These concrete block buildings on multiple field layouts employ the field dividers as storage for targets and equipment. The divider is simply a two sided, enclosed hallway that is constructed so that a common fork truck can fit in the door and thus deliver an entire skid of targets. Building plans for this style of skeet house are available from NSSA for a nominal fee.

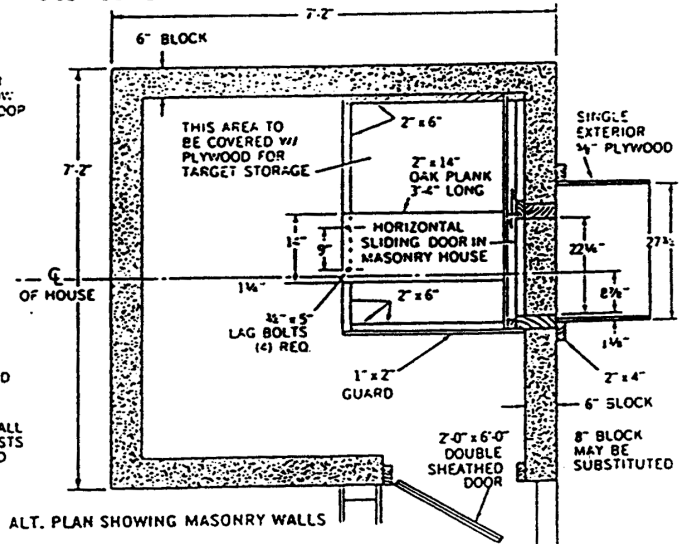
As always, we recommend the services of a competent contractor to aid you in your traphouse construction decisions.

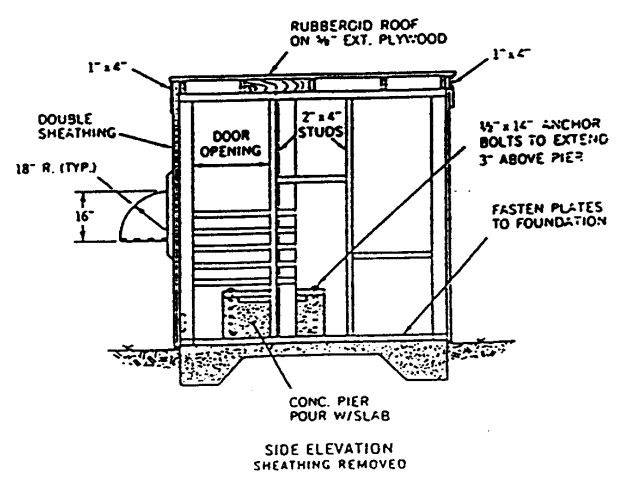
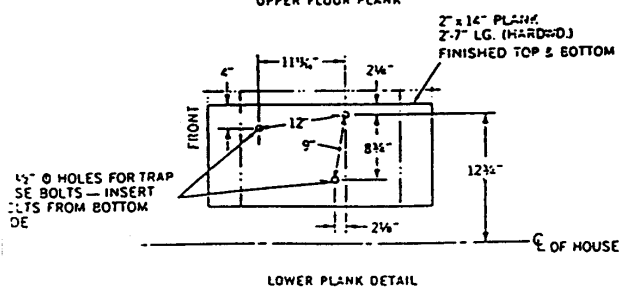
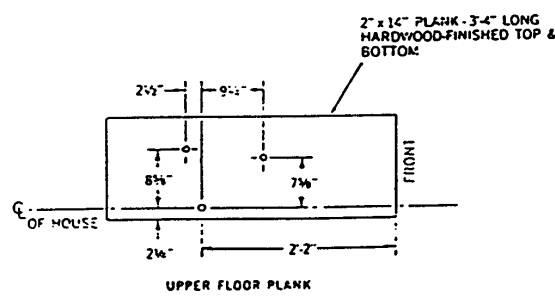
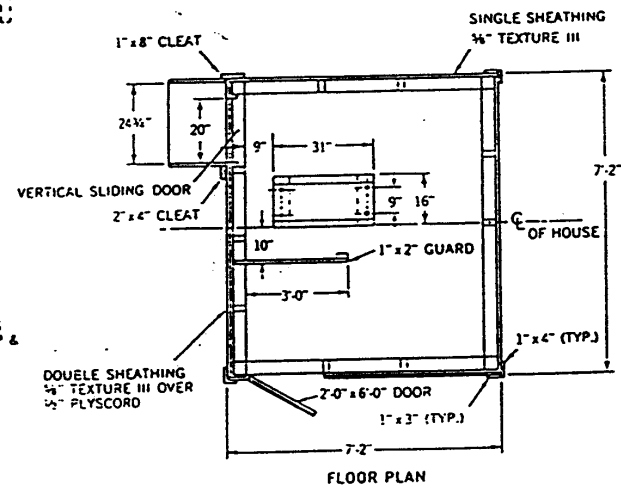
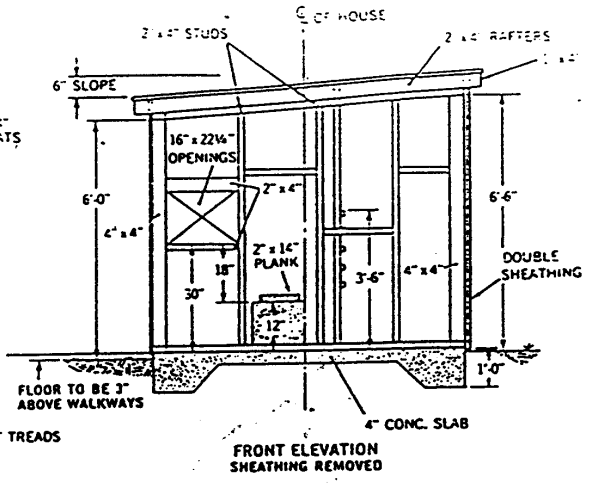
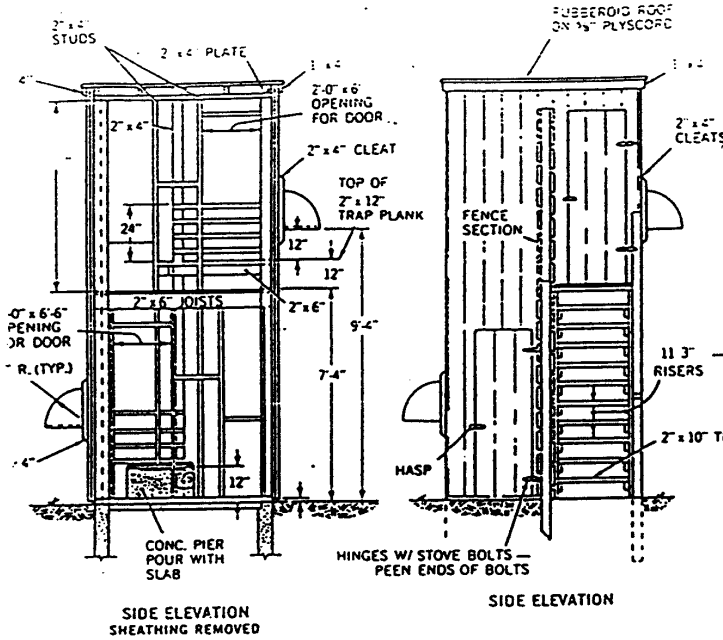


Combination Hi-Lo Skeet House

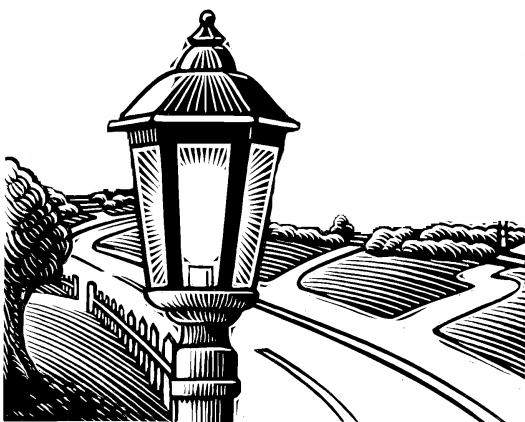


NOTE: EXTERIOR WALLS CAN BE 4" BLK. ABOVE UPPER FLOOR — OUTSIDE DIMENSIONS TO BE THE SAME





Field Lighting



In order to give your members a chance to shoot for longer periods of time, you may want to equip at least one field for night shooting. The opportunity to shoot year-round even during daylight savings time changes is a must for a club with an active league program. Many shooters devote weekend time to other things such as family time and a program of active shooting during the week, in the evenings, is a real benefit to clubs. For many years, the bowling industry has depended upon evening leagues as a source of income for the alley.

In 1991, The National Shooting Complex, homegrounds of the NSSA/NSCA, installed a new field lighting system for the World Championships and the National Sporting Clays Championship and it is this information that we are recommending as specifications for member clubs regarding field lighting on skeet and 5-Stand Sporting layouts.

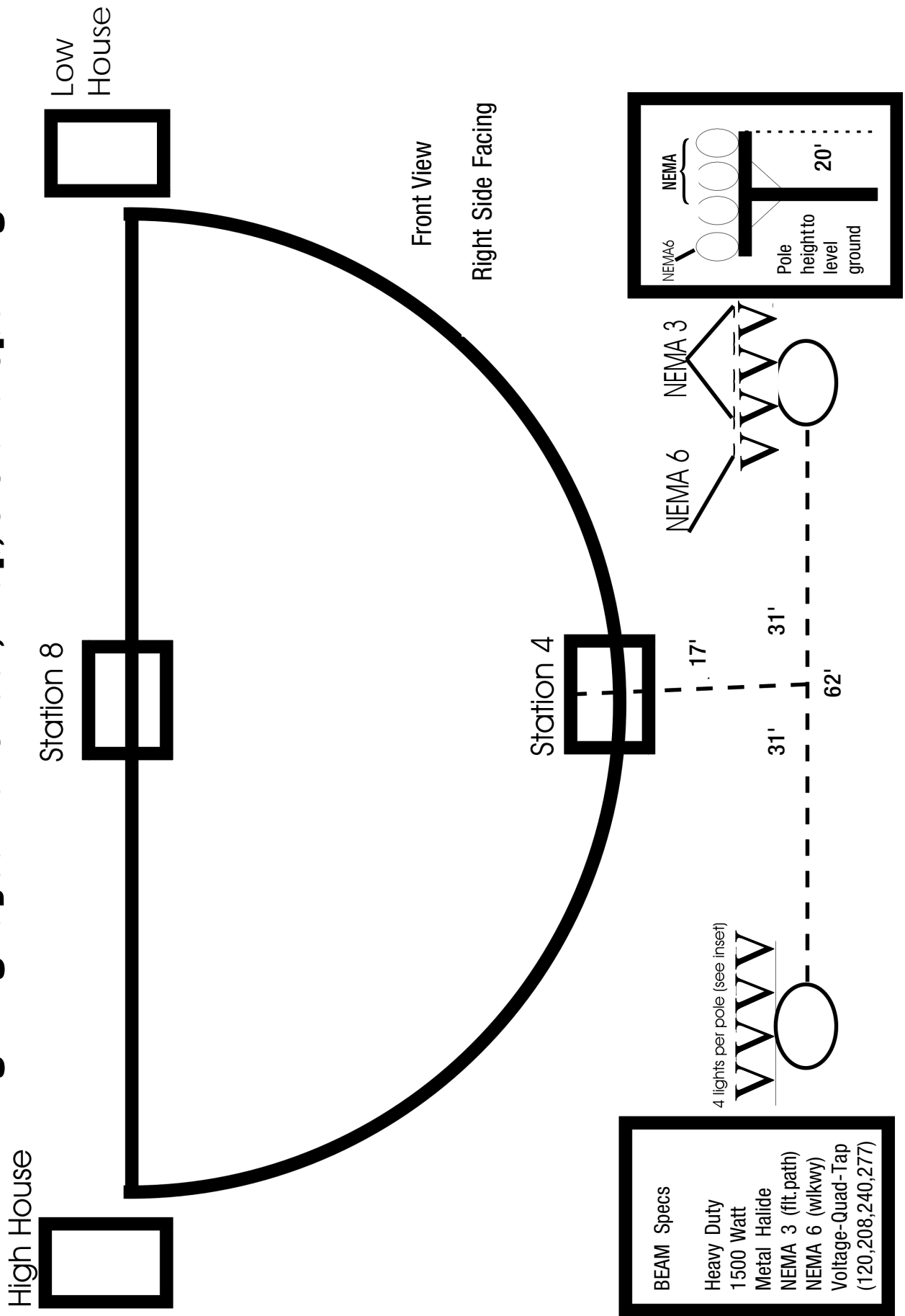
You will find a list of light specifications. On the following page is a diagram of pole and fixture locations. Contact the lighting contractor in your area for cost and other information regarding this equipment.

LIGHT SPECIFICATIONS

Manufacturer	Hubbell Lighting Division
	2000 Electric Way
	Christianburg, VA 24073
	540-382-6111
Beam	Sportsliter SLH Series
Watts	1500
Volts	Quad-Tap
NEMA Spread	Qty 6 NEMA #3 per field
	Qty 2 NEMA #6 per field
Lamp Type	Metal Halide (High Pressure Sodium is available)

Refer to the manufacturer for details on mounting brackets, etc.

Lighting Layout for Skeet, Trap, 5-Stand Sporting



Clubhouse

In today's society whole families are participating in skeet shoots, and corporations are recognizing that mutual recreational experiences for employees enhances their dedication to their employer. The clubhouse facility takes on a much more significant aspect in planning a gun club. The first and most lasting impression of the gun club will be the first view of the clubhouse. You can't sell a person a costly membership to an ill-equipped lean-to! You must be competitive for there are too many options open for individuals and companies to spend their allotted recreational budgets.

There is no such thing as a second chance to make a first impression, and first impressions are most often lasting ones. This aspect of your gun club should present a warm and friendly atmosphere; an atmosphere that encourages long term membership, attraction of tournaments and other competitive participation, and corporate sponsored team outings. While clubhouses can vary in size from single or doublewide trailers to permanently constructed buildings, all must have an ambiance of welcoming and friendliness.

The presence of a pro-shop space, snack bar, clean restroom facilities and bulletin/score board will help with your membership drives, promote filled-to-capacity tournaments and could lead to leasing by corporations for special events.



Safety Plan

Gun club safety is a function of management and shooters combined. It involves a series of decisions to develop a workable plan. The plan must be clear and understood by all.

The safety plan must stipulate how, when, why, and by whom the facility will be used. The plan must be a written document. It must cover all aspects of gun safety, range rules, and administrative regulations. The plan must also address the action to be used in case of violation.

Gun handling is of prime importance and a specific set of rules should be posted in the clubhouse and on each shooting field. An example of some basic range rules is provided at the end of the section.

Also remember, it is an NSSA/NSCA rule for all shooters and range personnel to wear adequate eye and ear protection at all times on the field.



**THINK
GUN
SAFETY**

Sample Safety Plan

Jim Durham, former NSSA President, provided the following safety plan. It is an excellent example of a plan for all aspects of a gun club.

OIL CAPITAL ROD AND GUN CLUB RANGE RULES REVISED: 1991

Please Note: Safe operation of our shooting ranges requires strict adherence to the following rules. These are rules, not just suggestions. Club Bylaws provide for severe penalties for violations of these rules.

RIFLE/PISTOL AREA RANGE RULES

1. Ranges are for use by members and escorted guests **ONLY**, except for participation in events open to the general public. Members are responsible for the actions of their family and guests.
2. No cross shooting. Your bench must be in line with your target. Shoot only proper targets attached to the club's target holders. Bullets should not hit wooden target supports or target numbers. Bullets must impact the BERM below midline. Do not shoot glass, tin cans, trash, or the ground.
3. Coming to or from the firing line, guns are to be unloaded and completely clear of ammunition. Unless shooters on the line are firing, guns must be racked or the action open (i.e., unloaded, magazine out) or as ordered by the Range Master during a sanctioned event.
4. Call for a cease-fire and verify this with every other shooter at the firing line before going down range. Do not handle guns on the firing line while anyone is down range.
5. No fully automatic firing is permitted. Tracer, explosive, or incendiary ammunition or targets are prohibited.
6. When more than one member is on the range, those present appoint a Range Officer to give "commence fire" and "cease-fire". All members are always responsible for safe facility use and must take immediate action to stop an unsafe situation.
7. No alcohol is permitted on the firing line. No one impaired by alcohol or medications is permitted to use the ranges. There is also no smoking allowed at the shooting benches.

8. Always control your muzzle. Point your gun at the back berm during loading, unloading, or when making adjustments or repairs.
9. Proper containers are required for powder, primers, and the like.
10. Damage to club property or unsafe use of guns is never permitted. Members must correct and observe unsafe situations and must report damage/unsafe conditions to the appropriate chairman (see list of officers and chairmen).
11. Clean up after yourself. Put all “dud” ammunition in the trashcans.
12. Use of eye and ear protection is required for all persons on the firing line beyond the signed point.
13. Shooting hours: 30 minutes before official sunrise to 30 minutes after sundown. Singly loaded fire under adequate artificial lighting is allowed until 10 P.M.
14. Event chairman controls the range during club-sanctioned events. The chairman will try to accommodate casual member use of ranges during events when possible.

**SPECIFIC RULES FOR PLINKING RANGE
(GENERAL RANGE RULES ALSO APPLY)**

1. Shotguns loaded with birdshot or buckshot may not be fired at the club’s target holders at any time. Slugs may be fired at the 25 and 50 yard target holders.
2. Members may place swinging metal targets (for .22 cal and the like) at the club’s marked location only. Full-metal jacketed ammunition may not be fired at metal targets.

**SPECIFIC RANGE RULES FOR THE 100-200 YARD RIFLE RANGE
(GENERAL RANGE RULES ALSO APPLY)**

1. Targets must be posted only on the club’s target holders at 100 yards and 200 yards. Special club-provided target holders may be posted during special events. For casual member use, the club will provide special target holders to be used at specific distances.
2. No pistol or revolver with a barrel length less than 4” may be used on this range.
3. Shooters on the range must ensure that everyone is back from down range before the “commence fire” command is given.
4. Target numbers MUST NOT be used as targets.

SPECIFIC RULES FOR THE PISTOL RANGE
(GENERAL RANGE RULES ALSO APPLY)

1. No guns may be handled in the range shelter or in any up range location while anyone is down range.
2. Target stands and other equipment MAY NOT be removed from the pistol range. Target stands are to be used with WOODEN LATH.
3. Do not shoot the railroad-tie wall or match props marked "No Target."
4. All metal targets must be reactive (i.e., they must move or fall when hit) and must be positioned at right angles to the line of fire.
5. All rounds must be directed into the north berm.
6. Keep muzzle pointed at the north berm while loading, unloading, adjusting, or repairing guns.
7. Shoot from up range of the 30-yard line ONLY when the other half of the range is not occupied. NO rifle fire is permitted from any distance when the other half of the range is OCCUPIED.
8. This is the best range for holstered pistol use and is useful for basic handgun orientation.

SKEET AND TRAP FIELD RULES

1. Action of gun is to remain open while at the facility except when it is your turn to shoot.
2. Gun MUST NOT be loaded until you are in a shooting position.
3. Gun MUST be pointed down range while loading.
4. Load no more than 2 shells at skeet stations 1 through 7 or trap doubles. Load no more than 1 shell at skeet station 8 or trap singles.
5. In case of gun or ammunition malfunction, the gun MUST be pointed down range until cleared.
6. NO hulls are to be PICKED UP during a skeet or trap round.
7. Do not walk in FRONT of the low house or the trap house while the release mechanism is in the hands of the puller.

8. No intoxicating beverage is permitted on or in the vicinity of the range at any time.
9. No one is permitted in skeet or trap houses without permission of the Range Master or shoot management.
10. No ammunition heavier than 3 drams of powder and number 7 ½ shot is permitted.
11. In all instances not covered by established safety rules, the decision and direction of the Range Master or shoot management will be final.
12. Proper eye and ear protection **MUST** be worn by all persons beyond the **POSTED SIGNS**.

SHOTGUN PATTERNING BOARD

- 1 No lead shot larger than #2.
2. Warning: Beware of ricochet!
3. Eye and ear protection is required down range of the instructional sign.

TO SHOOT OR NOT TO SHOOT: Lightning Safety

Spring is here, and many clubs are planning for the new shooting season. Now is an opportune time to address a safety issue that is associated with many myths: when to suspend or resume shooting due to thunderstorms and their deadly partners, lightning. Matt Bragaw, lightning specialist at the National Weather Service office in Melbourne, Florida, offers answers to the following important lightning safety questions:

Why should a shoot be suspended?

Although all gun clubs are painfully meticulous in enforcing the rules of gun safety, many shooters and shoot management do not recognize the threat posed by one of nature's most deadly forces: Lightning. Only floods kill more people than lightning on an average annual basis.

What are the basic facts about lightning?

Lightning storms, whether they produce 10 bolts or 10,000 bolts, are ALL potential killers. Rain, hail, tornados and microbursts may be the most recognized hazards of thunderstorms; but, nationwide, lightning consistently injures and kills more than tornados and microbursts COMBINED! An interesting study has shown that more intense storms tend to strike fewer people while weaker storms tend to strike more people. This ironic statistic indicates that people recognize the lightning threat associated with stronger storms but fail to perceive that very same threat with weaker ones. (This is a curious behavior quirk, considering that if one steps onto the Interstate in front of a single tractor-trailer or a convoy of them, he will be just as dead.)

With the ability to strike as far as 25 miles from its parent storm, lightning is the first storm hazard to arrive and the last to leave. By contrast, most thunder can not be heard beyond 10 miles. Therefore, **IF YOU CAN HEAR THE THUNDER, YOU ARE ALREADY AT RISK!** More than one official study has shown that the majority of lightning victims are struck—not during the height of a storm as one might suspect—but just before the rain arrives due to not seeking shelter soon enough or

shortly after the rain has ended due to leaving shelter too soon.

With these facts in mind, when should officials suspend a shoot?

If a storm is approaching, when to suspend a shoot depends on two questions: Where will people go for shelter, and how long will it take everyone to get there? Recently, a number of qualified experts, including NASA officials, research meteorologists, medical professionals, and insurance adjustors, collaborated to form the Lightning Safety Group whose express purpose is to address the issue of lightning safety. Basing their findings on recent improvements in the understanding of storm behavior, they issued standardized recommendations, the most prominent of which is known as “**The 30/30 Rule.**”

The 30/30 Rule states that people should seek shelter if the Flash-to-Bang (length of time in seconds from the sight of the lightning flash to the sound of the accompanying thunder) is 30 seconds or less and that they should remain under cover until 30 minutes after the final clap of thunder.

What is the reason for so extended a delay?

A thirty second flash-to-bang window is necessary prior to a storm's arrival because lightning often strikes ahead of a storm center (See the accompanying pictures). Shoot management needs to consider the length of time it will take competitors, officials and spectators to reach safe shelter. A thirty minute wait is necessary after the storm departs (after the final clap of thunder is heard) since the

trailing clouds still carry some lingering charge which can and does occasionally cause a lightning bolt to emerge from the back edge of a storm. A thirty minute delay before resuming outdoor activity allows this charge to dissipate safely.

What steps can shoot management take to insure safety?

Since shoot calendars are planned far in advance and weather is always unpredictable, it is wise to have a lightning contingency plan in place before the shooting season begins. Organizers responsible for shoots should determine how far away shelter is, remembering to account for group size since more people will require more space and a longer evacuation time.

On the day of a shoot, management should check the local weather forecast. If storms are predicted, they must make sure to monitor the conditions continuously for lightning and thunder. There should be a designated storm spotter whose primary responsibility is to watch the sky and monitor a portable NOAA weather radio or the TV Weather Channel. That way, management would be alert to deteriorating conditions so that evacuation procedures could be initiated quickly.

Managers of large regional shoots need to realize that the problems increase proportionately to the number of people involved in the shoot, and large shoots may require considerable evacuation time. In areas that are geographically prone to thunderstorms, lightning observation personnel may not be adequate. Professional lightning detection equipment should be made available for such events in order to observe any developing threat well in advance. While such technology cannot guarantee safety, especially for storms developing immediately overhead, it can be used to observe the location and motion of the storms in order to predict their arrival. Detectors also have the added benefit of determining when the last strike has occurred so that the 30 minute mark can be accurately determined.

Once conditions warrant and the evacuation order has been given, where should people go?

While no place offers 100% lightning safety, many places are much safer than others. Safe locations include large ENCLOSED structures such as the club house or any other WALLED building. Once inside, people should avoid metal objects, such as faucets, showers, and pipes. They should not use electrical appliances as lightning can travel through extension cords and power outlets.

Telephones are dangerous except for cordless or cell phones.

Computers are also dangerous since they are usually connected to both power and phone outlets. FULLY ENCLOSED metal vehicles, such as cars, vans, buses, with the windows rolled up provide good shelter from lightning, but people should avoid contact with metal or conducting surfaces outside or inside the vehicle. Vehicles with removable METAL roofs are also safe.

Are there any potential shelters that should be avoided?

Buildings which have exposed openings, such as small metal sheds, picnic shelters, gun club pavilions, should be avoided, even if they are "grounded." People should also avoid places where they would be the tallest objects around or in close contact with the tallest object around, such as open fields, gun ranges, bleachers, light or flag poles, isolated single or clusters of trees, towers, and lakes, Convertible automobiles, jeeps with nonmetal

tops, or vehicles with an open cage, such as golf carts often used at gun clubs, offer NO protection from lightning, even if the top is "up."

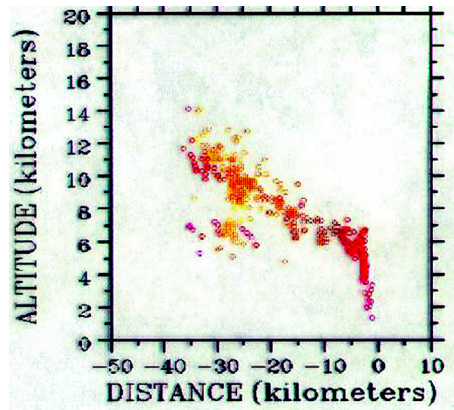
So is it realistic to expect clubs to account for all safety risks associated with shoots held during thunderstorms?

It is impossible to plan for every possible safety risk. Attempts to do so usually end in social paralysis. Life itself is a risk (there is even a documented case of a Florida resident being struck by lightning while sitting on the commode inside his house). But,

unless a more serious respect for lightning is adopted, sooner or later some unlucky shooter is going to point his METAL (lightning rod) gun into the sky at precisely the wrong time. In today's litigious society, it would be foolish for any gun club to ignore lightning safety rules, especially when they are widely known.

Sources: Holle, R., R.Lopez, R.Ortix, C. Paxton, D. Decker, and D. Smith. "The Local Meteorological Environment of Lightning Casualties in Central Florida" 17th Annual Conference on Severe Local Storms, Conference on Atmospheric Electricity (NOAA), October 4-8, 1993, St. Louis, MO.

Editor's note: Matt Bragaw, the son of Darby Colwell, an avid Virginia skeet shooter, is a forecaster and lightning specialist at the National Weather Service office in Melbourne, FL. He manages the Melbourne website on lightning information and can be reached by an e-mail link from the homepage to answer any lightning-related questions. The Melbourne Lightning Information Homepage is available on the Internet at: <<http://www.srh.noaa.gov/mlb/litgcenter/litgmain.html>>.



This picture is from the LDAR technology developed through NASA/KSC and illustrates how far a lightning bolt can strike from the center of a storm.



A Father's Advice to His Son

If a Sportsman true you'd be,
Listen carefully to me.

Never, never let your gun
Pointed be at anyone
That it may unloaded be
Matters not the least to me.

When a hedge or fence you cross,
Though of time it causes a loss,
From your gun the cartridge take,
For the greater safety's sake.

If 'twixt you and neighboring gun
Birds may fly or beasts may run,
Let this maxim e'er be thine:
Follow Not Across the Line.

Stops and beaters oft unseen
Lurk behind some leafy screen;
Calm and steady always be:
Never Shoot Where You Can Not See.

Keep your place and silent be:
Game can hear and game can see;
Don't be greedy, better spared
Is a pheasant than one shared.

You may kill or you may miss,
But at all times think of this:
All the pheasants ever bred
Won't repay for one man dead.

