



Residential Above-Ground and In-Ground Swimming Pool, Hot Tub and Spa Construction

April 2020

*City of Milan
Building Department
Guide to Installing
A Residential Swimming Pool,
Hot Tub, or Spa*



City of Milan Building Department
147 Wabash Street
734-439-7089

INTRODUCTION

Residential Swimming Pools, Hot Tubs, and Spas

The City of Milan Building Department has prepared this Guidebook to assist you in the process of building an above-ground or in-ground residential swimming pool, hot tub or spa within our City. This Guidebook contains important information that will help you understand the Building Permit and construction process from application to completion. We have included details for areas that have generated confusion or delays in the past. The information is presented in a start-to-finish sequence to guide you as you progress through your project.

A Building Permit is required for all residential swimming pools, hot tubs or spas that have any one of the following:

- a pool depth intended for swimming or bathing, more than 24" deep
- a permanent water-recirculation system
- construction that involves structural materials

This Guidebook contains the following information for your use:

Before You Build.....Page 1

- Items that should be checked at the beginning of your project.

From Application to Completion.....Pages 2-4

- This is intended to be your general guide through the complete process. Information is provided on the application requirements, Permit and Inspections.

Construction Requirements.....Pages 5-8

- A general guide to help you understand and apply the common Zoning Ordinance and Building Code requirements for your project. This information should be used as you prepare your plot plan, construction drawings and install your pool, hot tub or spa.

Plot Plan Requirements.....Pages 9-11

- A list of the items required to be shown on the Plot Plan. This list should be given to your Plot Plan preparer. Please take time to make sure your drawings are complete.
- Plot Plans that contain all the necessary information and details will help expedite the plan review process.

Sample Plot Plans.....Pages 10-11

- Sample Plot Plans are included to help you understand the information that is required on your Plot Plan.

Sample Fence/Barrier and Gate Details.....Page 12

- A detailed drawing showing the fence/barrier and gate requirements. This should be used as a guide as you prepare your fence detail and construct your enclosure around the residential swimming pool, hot tub or spa (as applicable).

Electrical Grounding and Pool Section Details.....Page 13

- Details showing the Electrical grounding requirements and sample drawings showing the information and details that is required on the pool section drawings, and to assist you with the construction of your residential swimming pool, hot tub or spa.

This Guidebook contains many procedures and requirements. We urge you to read through it completely. It may save you valuable time in completing your project. We hope this Guidebook is helpful and we encourage you to provide us with any suggestions you may have.

Note: This Guidebook is only intended to be a guide and is not all inclusive of the 2015 Michigan Residential Building Code or the 2015 International Swimming Pool and Spa Code. For complete details of all requirements, please consult those two codes. The information in this Guidebook is subject to change without notice.

BEFORE YOU BUILD

Residential Swimming Pools, Hot Tubs and Spas

Location – Residential swimming pools, hot tubs, or spas shall not be located within any easement, above a septic field or tank, or water well. Overhead wires (electric, phone, cable) shall not be located over a pool, diving structure, any pool platform or within 10 feet of the water's edge. All wires beyond 10 feet must be at least 22 1/2 feet above the ground, deck, patio, or other walking surface below the wires. You may verify the location of all underground utilities by calling Miss Dig at 1-800-482-7171.

Setbacks – All residential swimming pools, hot tubs and spas shall be at least 6 feet from the side and rear property lines and shall not be located within any front yard. The setback distance is measured from the water's edge.

Drainage – Will the existing yard drainage be affected by the location of the proposed pool? All changes to the existing drainage shall be shown on the Plot Plan. If large grade changes and/or slopes are proposed, retaining walls or special grading may be required.

Flood Plains – Flood plains are usually associated with lakes, streams, rivers and drainage courses. They are areas designated to flood during times of rain. Building in these areas is strictly regulated. If you are proposing to build a residential swimming pool, hot tub or spa or place fill in a floodplain, it may require a Structural Engineer's design and a Floodplain Use Permit prior to Building Permit approval.

Wetlands – These areas have been determined to be indispensable and are to be protected as a natural resource. They provide numerous beneficial functions such as wildlife habitat, water, quality, flood control, pollution reduction, erosion control, open space, recreation areas and aesthetics. If your residential swimming pool, hot tub or spa will be close to or in regulated wetlands, additional paperwork, including permits, may be required from the City or State of Michigan prior to Building Permit approval. Please contact the Building Department at (734) 439-7089 for more information.

Pool Fences/Barriers to Create an Enclosure – All residential swimming pools (and hot tubs and spas not provided with a protective cover) shall be protected by fences/barriers to create an enclosure to make the area inaccessible to small children. Enclosures may include approved fencing, the walls of a house, the walls of above-ground pools, gates, and door and window alarms.

These are some of the common items that may cause delays in the permit process. If your project is beyond the scope of this Guidebook, additional requirements may be necessary. Please call the Building Department at (734) 439-7089 if you have any questions.

FROM APPLICATION TO COMPLETION

Residential Swimming Pools, Hot Tubs and Spas

A General Guide through the Complete Process

1. Information Required For Permit Application

A. Building Permit Application

- Applications are available online at <http://milanmich.org> or at the Building Department counter. Applications shall be filled out completely.

B. Plot Plan – Three Sets

- Plot plans containing all necessary information will help expedite the plan review process.

C. Construction Drawings – Two Complete Sets of Everything

• Above-ground pools

- Provide a set of manufacturer's drawings and specifications.
- The plans submitted shall contain complete details of the pool fence/barrier.

• In-ground Pools

- Provide complete construction details showing the size, spacing and location of all structural members and reinforcement.
- Provide pool sections with details.
- Indicate the location and provide details of the steps and/or ladder.
- The plans submitted shall contain complete details of the pool enclosure.

D. Hot Tubs or Spas

- Provide a set of manufacturer's drawings and specifications.
- The plans submitted shall contain complete details of the pool fence/barrier.
- Information about the safety cover is required if a fence/barrier is not being installed.

E. Residential Swimming Pool Information Form

Forms are available online at <http://milanmich.org/> or at the Building Department counter. This Form shall be filled out completely.

F. Owners may submit a Building Permit application for work on property that is, or will be, on completion, their place of residence.

Please be advised: Any Contractor hired by the Owner for a contract price of \$600.00 or more, shall be licensed in accordance with the State of Michigan Residential Builders Laws.

Please note: All information noted above shall be submitted with the Building Permit Application.

2. Registration of Builder's License

- A Builder shall be currently registered with the City of Milan to be able to submit a Building Permit Application.
- Builders not currently registered can register at the time of application by providing or presenting the following:
 - The original or a copy of your Builder's License
 - The original or a copy of your Driver's License
 - Contractor Registration Form with an original signature by License Holder
 - Copy of Insurance Certificate

3. Plans Reviewed and Approved

All Building Permit applications for above-ground residential swimming pools, hot tubs, or spas will be reviewed by the Building Department.

A. Permits

Construction drawings will be reviewed for compliance with City Ordinances, this Guidebook, the 2015 Michigan Residential Code, and the 2015 International Swimming Pool and Spa Code.

4. Permit Ready

Whether a permit has been processed, the Permit Applicant will be called when the Building Permit is ready to be picked up.

5. Mechanical and Electrical Permits are typically required and can be obtained after the Building Permit has been issued.

- All items to be installed shall be listed on the appropriate permits.
- Items not listed shall be added to the appropriate permits prior to the Final Inspection.

6. Inspections Once your Building Permit has been issued, you can begin construction. Approved plans shall be on site for all inspections.

A. Underground Mechanical Inspection (as applicable)

- Underground gas lines shall be inspected before covering.
- All work shall comply with the 2015 Michigan Residential Code.

B. Underground Electrical Inspection – After grounding, bonding and all underground Electrical work is completed, the Electrical work shall be inspected before covering. The following will be verified:

- Proper materials approved for pool installations have been used.
- Wiring from house to pool is at least 18 inches below grade.
- All work complies with the 2015 Michigan Residential Code.

C. Steel or Structural Inspection (for In-Ground Pools only) – Required before concrete, gunite or backfill. The following will be verified:

- Structural steel and reinforcement shall be installed in accordance with the approved plans and the manufacturer's requirements.

D. Final Mechanical Inspection (as applicable) - After all Mechanical equipment and gas piping are installed and operational. The following will be verified:

- Above-ground gas piping & pool heater have been properly installed with the correct materials.
- Pool heaters have been provided with a readily accessible on/off switch to allow shutting off the heater without adjusting the thermostat setting.
- Pool heaters do not have continuously running pilot lights.

E. Final Electrical Inspection - After all Electrical equipment, switches, plugs, covers and fixtures are installed and operational. The following will be verified:

- All grounding and bonding are completed.
- Ground fault circuit interrupters operate properly. The proper breaker size has been installed.
- Timer switches have been installed that can automatically turn off and on heaters and pumps according to preset schedules.

Please Note: The Inspector may need access to the inside of the house to complete the Electrical inspection. An adult at least 18 years of age must be present for the Inspector to enter the house.

F. Final Building Inspection – After Mechanical and Electrical inspections (as applicable) are done and the pool enclosure/barrier is completed.

- A Final Inspection is required for all residential swimming pools, hot tubs, and spas.
- Common items the Inspector looks for are:
 - Window and door alarms have been installed on all required windows and doors
(**Please Note:** An adult must be home to allow access to check the alarm operation.)
 - The proper type and installation of fencing and gates.
 - Swimming pool walls and floor slope.
 - Diving board requirements (as applicable).
 - Ladder installation requirements (as applicable).
 - A safety cover has been installed on the hot tub or spa if a barrier is not being installed.
 - Grading has been done in accordance with approved plot plan.

Note: Refer to the City of Milan Ordinances Chapter 20 on Swimming Pools for more information.

This itemized list is provided as a guide to help you understand the process for installing a residential swimming pool, hot tub or spa in the City Milan. It covers the most common types of projects. If your project is beyond the scope of this Guidebook it may require additional information, inspections or permits. Please call the Building Department at (734) 439-7089 if you have any questions on how to apply this Guidebook to your specific project.

CONSTRUCTION REQUIREMENTS

Residential Swimming Pools, Hot Tubs and Spas

This information is provided in a “User-friendly” format as a general guide to help you apply the common 2015 Michigan Residential Code requirements to your project. It covers the most common types of projects. The actual 2015 Michigan Residential Code language may contain additional requirements or exceptions that may apply if your project is beyond the scope of this Guidebook.

Your residential swimming pool, hot tub or spa will be reviewed and inspected in accordance with the following:

Building Code:	2015 Michigan Residential Code and, by reference, the 2015 International Swimming Pool and Spa Code
Plumbing:	2015 Michigan Residential Code
Electrical:	2015 Michigan Residential Code
Mechanical:	2015 Michigan Residential Code

1. Setbacks:

All residential swimming pools, hot tubs and spas shall be at least 6 feet from the side and rear property lines, at least 1 foot from any easement, and shall not be located in the front yard. The setback distance is measured from the water’s edge.

2. Residential Swimming Pool, Hot Tub, and Spa Construction:

The residential swimming pool, hot tub, or spa shall be installed and/or constructed in accordance with the manufacturer’s installation instructions, the approved construction drawings and the approved Plot Plan.

Safety Precautions shall be maintained throughout construction. Residential swimming pools, hot tubs or spas shall not be filled with water until the pool fence/barrier requirements of the Michigan Residential Code are completed.

Wall Slopes: (this typically applies to In-Ground pools only) The wall slopes around the pool shall not exceed 11% to a depth of 2 feet 9 inches from the top. Please provide wall slope details on your pool sections.

Floor Slopes: (this typically applies to In-Ground pools only) The slope of the floor on the shallow side of the transition point shall not exceed one-unit vertical to seven units horizontal. Please provide floor slope details on your pool sections.

Surface Cleaning: All residential swimming pools shall be provided with a re-circulating skimmer or overflow gutters to remove scum and foreign matter from the surface of the water.

Steps and Ladders: At least one way to get out of the swimming pool shall be provided. Treads of steps and ladders shall have a slip resistant surface. All steps and ladders shall comply with the requirements outlined in the Michigan Residential Code and the International Swimming Pool and Spa Code. Construction plans shall show the location and details of the steps and/or ladders.

Water Treatment: Swimming pool filters shall have the capacity to filter the total volume of water in the pool at least once every 12 hours. The pool Owner shall be instructed in the care and maintenance of the pool by the Supplier or Builder, including treatment.

Divng Boards: (this typically applies to In-Ground pools only) The International Swimming Pool and Spa Code referenced in the Michigan Residential Code has specific requirements for the installation of diving boards, dependent on your residential swimming pool configuration. Please refer to the International Swimming Pool and Spa Code for specific requirements. If your residential swimming pool will have a diving board, you will need to provide information that shows how your diving board will comply with the International Swimming Pool and Spa Code requirements.

3. Pool Fence/Barrier Used as an Enclosure

All residential swimming pools, hot tubs, or spas shall be protected by a fence/barrier enclosure to make the area inaccessible to small children. Approved fencing, walls of the pool, walls of the house, gates, and door and window alarms may be part of fence/barriers used as enclosures. Enclosures are not required for hot tubs or spas when an approved lockable safety cover that has been tested in accordance with ASTM F-1346-91 (2010) and bears a tag stating compliance has been installed. Enclosures are also not required for residential swimming pools protected with an approved safety cover.

Residential swimming pool, hot tub and spa enclosures shall meet the following requirements:

Fence/Barrier:

The fence/barrier shall be 48 inches above the grade measured on the side of the fence/barrier that faces away from the swimming pool, hot tub or spa.

Please Note: If property within 3 feet of a fence/barrier slopes upward, or contains a retaining wall or some similar climbing feature, the fence/barrier will have to either be increased in height or moved further back onto the property containing the residential swimming pool, hot tub or spa to accommodate the height difference at the adjacent property. This requirement ensures that the 48" barrier/fence height is properly maintained around and within 3 feet of the entire residential swimming pool, hot tub or spa and that higher surfaces cannot be used to help climb over the fence/barrier.

The maximum vertical clearance between the fence/barrier and surfaces that are not solid, such as grass or gravel shall be 2 inches measured on the side of the fence/barrier that faces away from the residential swimming pool, hot tub or spa.

The maximum vertical clearance between the barrier and a solid surface such as concrete shall not exceed 4" measured on the fence/barrier that faces away from the residential swimming pool, hot tub or spa.

Openings in the fence/barrier shall not allow the passage of a 4-inch diameter or larger sphere (openings shall be less than 4").

Solid fences/barriers such as brick or masonry walls shall not contain indentations or protrusions that would create a toe-hold or make the fence/ barrier climbable.

Closely Spaced Horizontal Members - Where the fence/barrier is composed of horizontal and vertical members (wood, aluminum, picket, etc.) and the distance between the tops of the horizontal members is less than 45 inches, the horizontal members shall be located on the residential swimming pool, hot tub or spa side of the fence/barrier. Spacing between vertical members shall not exceed 1-3/4".

Widely Spaced Horizontal Members - Where the fence/barrier is composed of horizontal members and the distance between the tops of the horizontal members is 45" or more, spacing between vertical members shall not exceed 4". (This typically applies to wrought iron fencing.)

Chain link fences/barriers shall have maximum opening size of 1-3/4 inch. Chain link fences/barriers with larger squares that are provided with slats fastened at the top or bottom shall have reduced openings not more than 1-3/4 inches.

Lattice fencing may be used as a fence/barrier when properly supported and the opening formed by the diagonal members is not more than 1-3/4 inches. The angle of the diagonal members from horizontal shall not be less than 45 degrees.

Gates:

- Access gates shall comply with the fence/barrier requirements.
- Gates shall be equipped to accommodate a locking device.
- Pedestrian access gates shall open outward away from the residential swimming pool, hot tub or spa and shall be self-closing and have a self-latching device.
- Utility or service gates not intended for pedestrian use shall remain locked when not in use.
- Double or multiple gates shall have at least one leaf secured in place and the adjacent leaf shall be secured with a self-latching device. The release mechanism is required to be 54" above the grade.
- If the release mechanism of the self-latching device is located less than 54 inches from the grade, the following requirements apply:
 - The release mechanism shall be located on the swimming pool, hot tub or spa side of the gate at least 3 inches below the top of the gate.
 - The gate and fence/barrier shall not have an opening greater than 1/2 inches within 18 inches of the release mechanism.

Doors and Windows:

Doors and windows that form part of a residential swimming pool, hot tub or spa fence/barrier enclosure and provide direct access to the residential swimming pool, hot tub or spa from a house or garage area shall comply with the following requirements:

- Each door and window shall contain a listed and labeled hazard entrance alarm (per UL 2017) that produces an audible warning when the door or window and its screen, if present, are opened.
- The audible warning shall start immediately after the door or window and its screen, if present, are opened.
- The audible warning shall sound continuously for at least 30 seconds.
 - The alarm shall be capable of being heard throughout the house.
 - The alarm shall automatically reset under all conditions.
 - The alarm shall be equipped with a deactivation device such as a touch pad or switch.
 - The deactivation device shall temporarily deactivate the alarm for not more than 15 seconds to allow a single opening for the door from either direction.
 - The deactivation device shall be located at least 54 inches above the floor.
 - A listed and labeled safety cover that meets the requirements of ASTM 1346 may be used in lieu of door and window alarms.

Above-Ground Residential Swimming Pools:

The walls of the above-ground residential swimming pool can be used as part of the fence/barrier if the top of the pool walls are at least 48 inches above the grade for the entire perimeter within 3 feet of the pool and the pool manufacturer allows the walls to serve as the fence/barrier.

Ladders or steps used to access the residential swimming pool, hot tub or spa shall be capable of being secured, locked, or removed to prevent access. Ladders or steps may be enclosed with fencing/barriers and gates that meet fence/barrier requirements.

Hot Tubs and Spas:

Hot tubs and spas shall be provided with an approved lockable safety cover that has been tested in accordance with ASTM F-1346-91(2010). All approved safety covers shall have a tag indicating that the cover has passed the ASTM F-1346-91(2010) test.

Safety covers are not required when hot tubs or spas are enclosed by a fence/barrier that meets all the guidelines mentioned above.

Entrapment Protection:

Residential swimming pools, hot tubs and spas shall have suction outlets provided in accordance with ANSI/ASPS/ICC-7 2103.

Wood Decks Constructed Near a Residential Swimming Pool, Hot Tub or Spa:

Wood decks constructed near a residential swimming pool, hot tub or spa shall comply with the requirements of the Residential Wood Deck Construction Guide (based on the 2015 Michigan Residential Code) and the 2015 International Swimming Pool and Spa Code (General requirements and requirements for above-ground pools).

PLOT PLAN REQUIREMENTS

Residential Swimming Pools, Hot Tubs and Spas

Three sets of Plot Plans containing all the information and details noted below shall be submitted with the Building Permit application. The Plot Plans can be drawn by the Homeowner, Contractor, Land Surveyor, Engineer or Architect. Special circumstances may require Plot Plans to be drawn by a licensed Engineer, Architect or Land Surveyor. This will be determined during the Plan Review process.

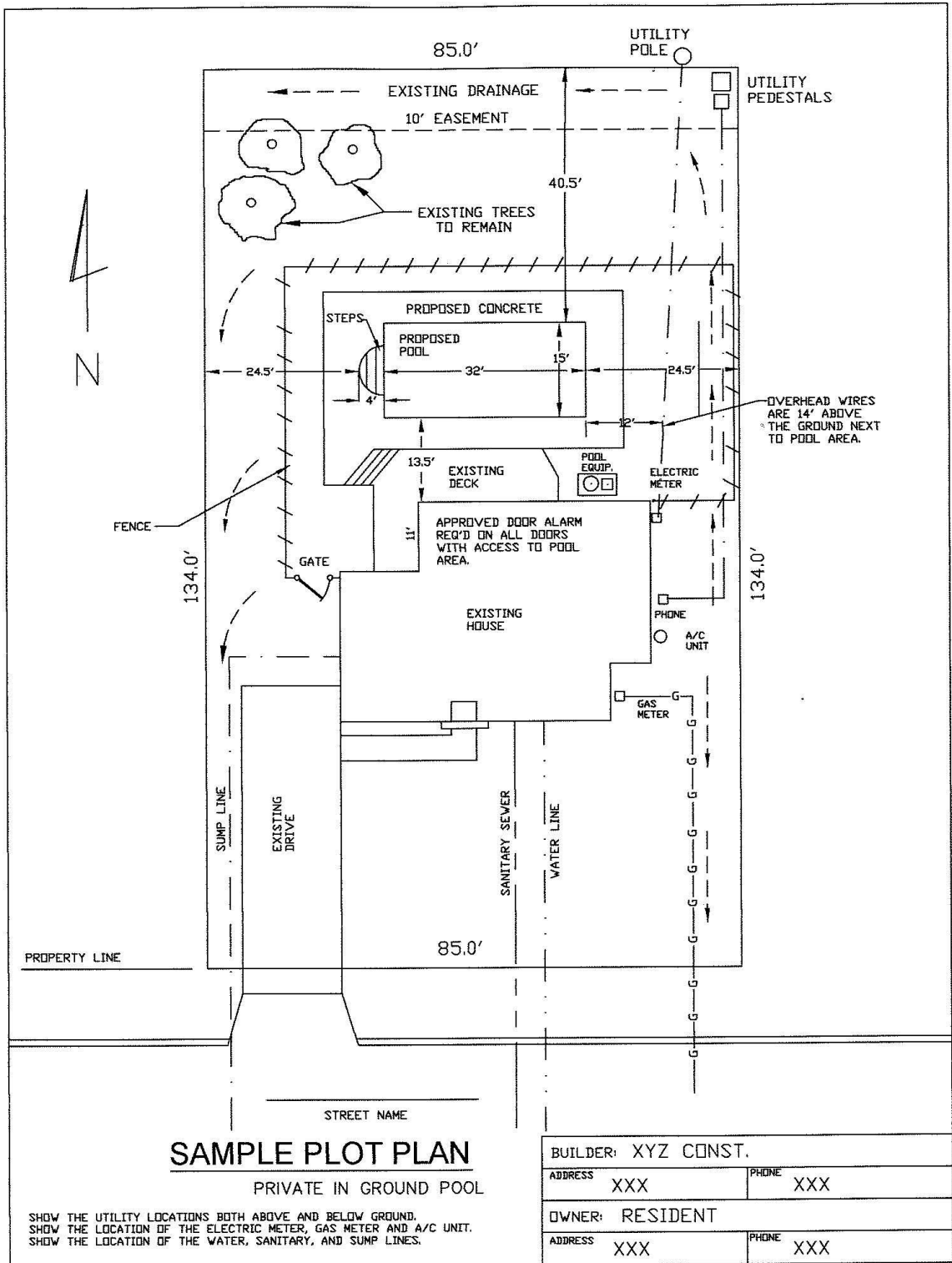
The Plot Plans shall contain the following information:

General:

- Builder's name, address, and telephone number.
- The North arrow, street right-of-way and street name.
- The plan scale shall be between 1" = 20' and 1" = 50'.
- The preferred plan size is 8 ½" x 11". If it is necessary to go to a larger size, please do not exceed 18" x 24".
- Temporary soil erosion control measures may be required based on the field conditions.
- Permanent soil erosion control measures may be required for Final Grade approval.

Zoning and Building:

- Show lot dimensions.
- Show the location and dimensions of the proposed residential swimming pool, hot tub, or spa and ALL structures on the lot.
- Indicate the distance from the water's edge to all property lines, easements and buildings.
- Show the location of all fencing and gates.
- Indicate the location of all above-ground and underground utilities. Include septic and well, if applicable.
- Show the location of all overhead wires. Include the distance between the wires and the water's edge, and the height of the wires above the ground, deck, patio, or other walking surface below the wires.
- Overhead wires (electrical, phone or cable) shall not be located over a pool or within 10 feet of the water's edge. All wires beyond 10 feet, shall be at least 22-1/2 feet above the ground, deck, patio, or other walking surface below the wires. The Plot Plan footprint and the construction drawings shall be consistent.

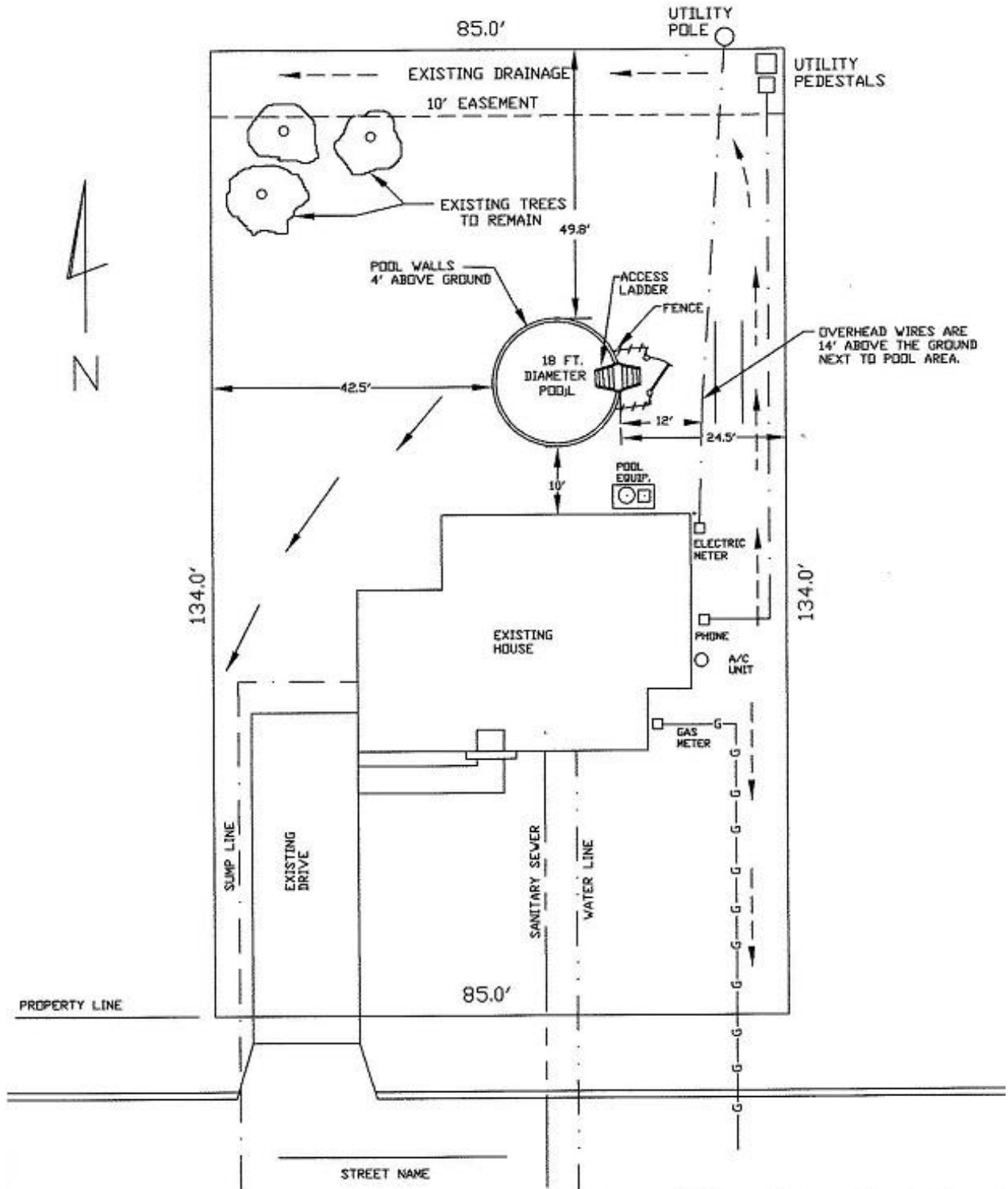


SAMPLE PLOT PLAN

PRIVATE IN GROUND POOL

SHOW THE UTILITY LOCATIONS BOTH ABOVE AND BELOW GROUND.
 SHOW THE LOCATION OF THE ELECTRIC METER, GAS METER AND A/C UNIT.
 SHOW THE LOCATION OF THE WATER, SANITARY, AND SUMP LINES.

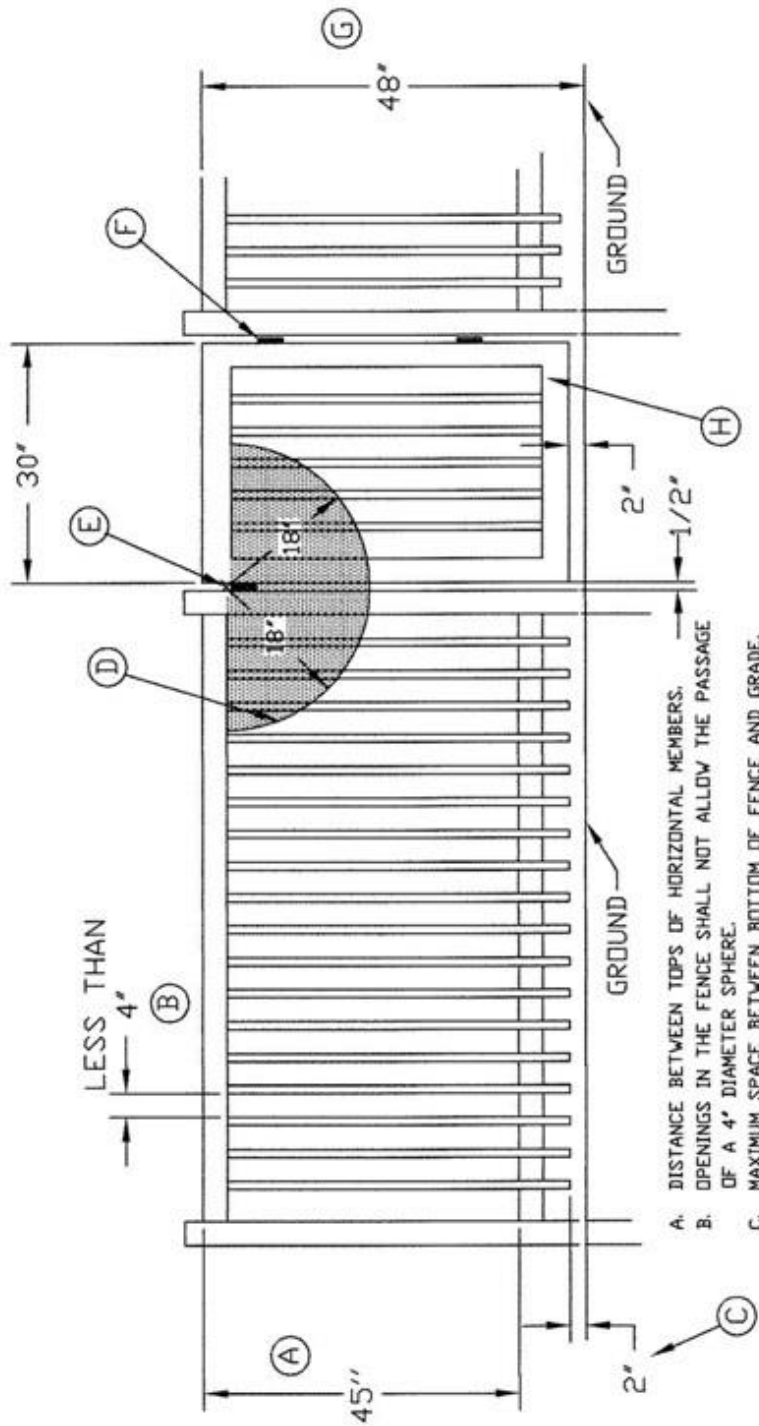
BUILDER: XYZ CONST.	
ADDRESS XXX	PHONE XXX
OWNER: RESIDENT	
ADDRESS XXX	PHONE XXX



SAMPLE PLOT PLAN
PRIVATE ABOVE GROUND POOL

SHOW THE UTILITY LOCATIONS BOTH ABOVE AND BELOW GROUND.
SHOW THE LOCATION OF THE ELECTRIC METER, GAS METER AND A/C UNIT.
SHOW THE LOCATION OF THE WATER, SANITARY, AND SUMP LINES.

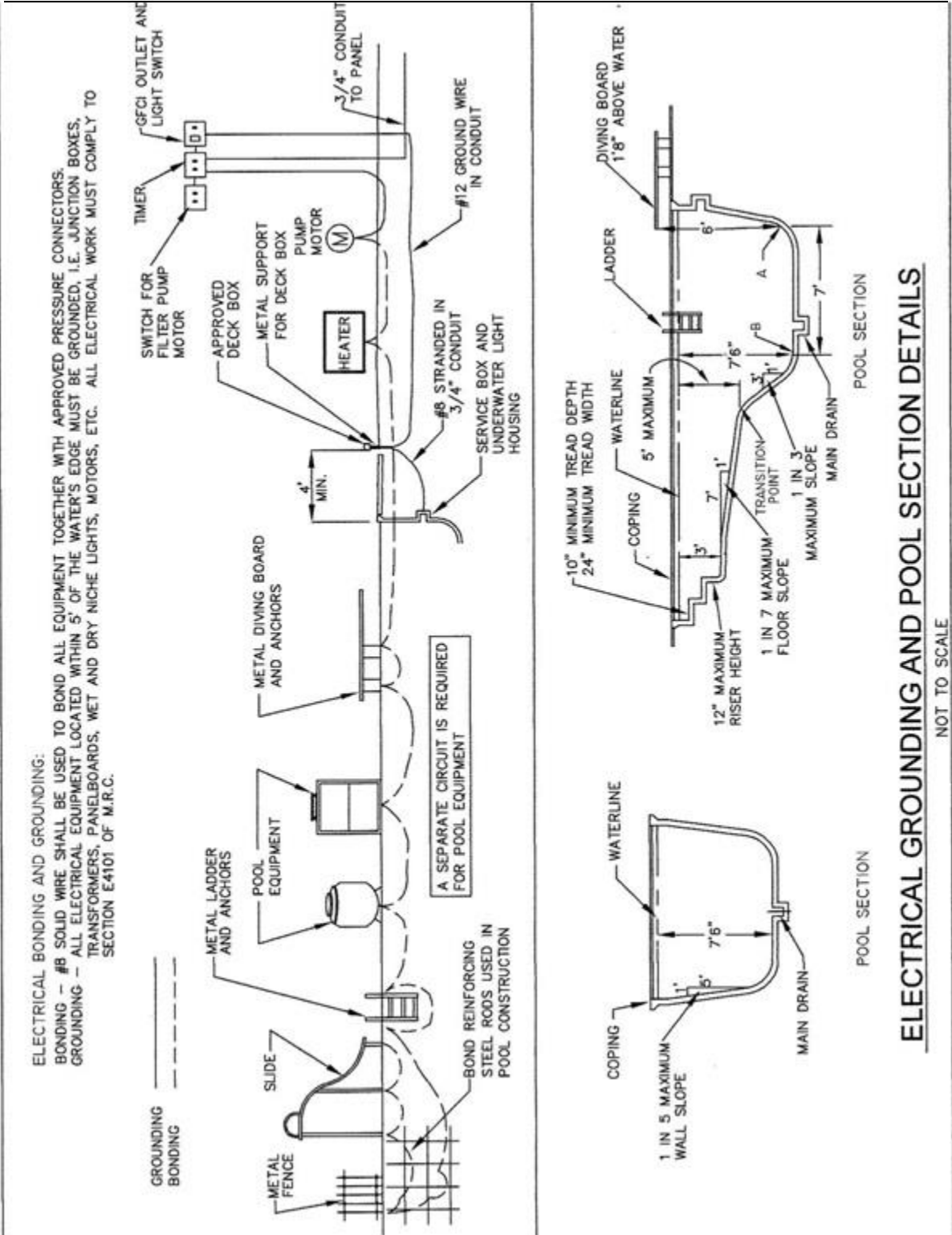
BUILDER: XYZ CONST.	
ADDRESS XXX	PHONE XXX
OWNER: RESIDENT	
ADDRESS XXX	PHONE XXX



- A. DISTANCE BETWEEN TOPS OF HORIZONTAL MEMBERS.
- B. OPENINGS IN THE FENCE SHALL NOT ALLOW THE PASSAGE OF A 4" DIAMETER SPHERE.
- C. MAXIMUM SPACE BETWEEN BOTTOM OF FENCE AND GRADE.
- D. THE GATE AND FENCE SHALL NOT HAVE AN OPENING GREATER THAN 1/2" WITHIN 18" OF THE GATE RELEASE MECHANISM. (PLEXI-GLASS, TREATED PLYWOOD, ETC. CAN BE INSTALLED IN SHADED AREA TO MEET 1/2" MAXIMUM REQUIREMENT.)
- E. SELF-LATCHING DEVICE WITH RELEASE MECHANISM LOCATED ON THE POOLSIDE 3' BELOW TOP OF GATE.
- F. SELF-CLOSING GATE.
- G. HEIGHT OF FENCE ABOVE GRADE.
- H. GATE MUST OPEN OUTWARDS AWAY FROM POOL.

SAMPLE FENCE & GATE DETAILS

SCALE 1/2" = 1'



ELECTRICAL GROUNDING AND POOL SECTION DETAILS

NOT TO SCALE